SITE PLAN

FULL DEVELOPMENT BUILDOUT

- A — MUNICIPAL SERVICES BUILDING
  72,000 SQ. FT. X 3.5 FLOORS
- B — TOWN EXPANSION BUILDING
  28,000 SQ. FT. X 3.5 FLOORS
- C — UNIVERSITY BUILDING
  100,000 SQ. FT. X 3.5 FLOORS
- SP — STRUCTURED PARKING
- S — SURFACE PARKING
- SCM — STORM WATER CONTROL MEASURE
  BIORETENTION CELL
- INTERMITTENT STREAM CENTERLINE
- 50 FT. STREAM BUFFER

NOT TO SCALE - FOR REFERENCE ONLY

TOWN OF CHAPEL HILL

TOWN OF CHAPEL HILL
MUNICIPAL SERVICES BUILDING
05.02.2018

Exhibit X - Site Plan
Phase 1

EXHIBIT A

PHASE ONE DEVELOPMENT

- **A** — MUNICIPAL SERVICES BUILDING
  72,000 SQ. FT. X 3.5 FLOORS
- **SP** — SURFACE PARKING
  290 SPACES PROVIDED
- **SCM** — STORM WATER CONTROL MEASURE
  BIORETENTION CELL
- INTERMITTENT STREAM CENTERLINE
- 50 FT. STREAM BUFFER

NOT TO SCALE - FOR REFERENCE ONLY

TOWN OF CHAPEL HILL

TOWN OF CHAPEL HILL
MUNICIPAL SERVICES BUILDING
05.02.2018

Exhibit X - Clearing Limits Phase 1

EXHIBIT B

PHASE ONE CLEARING LIMITS

CLEARING BOUNDARY

CLEARING AREA

NOT TO SCALE - FOR REFERENCE ONLY

TOWN OF CHAPEL HILL

TOWN OF CHAPEL HILL
MUNICIPAL SERVICES BUILDING
05.02.2018

Exhibit X - Buffering & Landscaping Phase 1

EXHIBIT C

PHASE ONE BUFFERING AND LANDSCAPING

B BUFFER OPPORTUNITY
BERMING AND PLANTING

L LANDSCAPING OPPORTUNITY

NOT TO SCALE - FOR REFERENCE ONLY

TOWN OF CHAPEL HILL

TOWN OF CHAPEL HILL
MUNICIPAL SERVICES BUILDING
05.02.2018

Exhibit X - Sidewalks & Paths Phase 1

EXHIBIT D

PHASE ONE SIDEWALKS AND PATHS

- SIDEWALK/MULTI-MODAL PATH
- BUS STOP WITH ACCESSIBLE ROUTE
- INTERNAL SIDEWALK (CONNECTION TO ESTES DRIVE)
- PATHWAY CONNECTION (HARTIG ST.)
- INTERNAL PEDESTRIAN CIRCULATION

NOT TO SCALE - FOR REFERENCE ONLY

TOWN OF CHAPEL HILL

TOWN OF CHAPEL HILL
MUNICIPAL SERVICES BUILDING
05.02.2018

Exhibit X: Permitted Land Uses

Uses	
Accessory use customarily incidental to a permitted principal or special use	A
Automated teller machines (ATM) (Walkup)	P
Automated teller machines (ATM) (Drive-up)	S
Child day care facility (See also Article 6)	P, A
Clinic	P, A
College or University	P
Essential services	P, A
Independent Senior Living Facility (See also Article 6)	P, A
Public cultural facility	P, A
Public service facility (See also Article 6)	P, A
Public use facility	P, A
Radio, television or wireless transmitting and/or receiving antenna, accessory	A
Recreation facility: Non-profit	P, A
Research activities	P, A
Temporary portable building: Construction-related (See also Article 6)	A
Temporary portable building: Not construction-related	S

Legal Description: Former Dixon Property

Beginning at an iron pipe located in the southern right of way of Estes Drive Extension (S.R. 1780) running thence S 11° 23’ 00” E 348.61 feet to an iron pipe, thence N 76° 30’ 50” W 161.71 feet to an iron pipe; thence N 76° 30’ 50” W 86.10 feet to an iron pipe located in the eastern right of way of Powell Street; thence N 76° 51’ 00” W 66.45 feet to an iron pipe located in the western right of way of Powell Street; thence N 76° 29’ 00” W 247.69 feet to an iron pipe; thence N 76° 29’ 00” W 216.68 feet to an iron pipe located in the southern right of way of Estes Drive Extension (S.R. 1780); thence with the southern right of way of Estes Drive Extension (S.R. 1780) in a general northeasterly direction along a 557.97 foot radius curve to the right, said curve having a chord bearing and distance of N 62° 17’ 17” E 248.62 feet, to an iron pipe in the southern right of way of Estes Drive Extension (S.R. 1780); thence continuing with the southern right of way of Estes Drive Extension (S.R. 1780) N 75° 09’ 40” E 321.76 to an iron pipe, the point and place of beginning, containing 2.42 acres, more or less.

Legal Description: Facilities Parcel Division

Beginning at an iron pipe located in the southern right of way of Estes Drive Extension (S.R. 1780) running thence S 21° 31’ 42” E 346.01 feet to an iron pipe; thence S 86°46’ 22” E 1109.76 feet to a point; thence N 00° 41’ 32” E 744.68 feet to a point; thence N 33° 28’ 00” W 319.16 feet to a point in the southern right of way of Estes Drive Extension (S.R. 1780); thence with the southern right of way of Estes Drive Extension (S.R. 1780) in a general northwesterly direction along a 2019.02 foot radius curve to the right, said curve having a chord bearing and distance of S 53° 57’ 42” W 586.01 feet, to a point in the southern right of way of Estes Drive Extension (S.R. 1780); thence continuing with the southern right of way of Estes Drive Extension S 64° 46’ 47” W 685.46 feet to an iron pipe, the place and point of beginning, containing 18.13 acres, more or less.

Exhibit X - Zoning Atlas Amendment Application

ZONING ATLAS AMENDMENT APPLICATION

TOWN OF CHAPEL HILL
Planning Department
405 Martin Luther King Jr. Blvd
phone (919) 969-5066 *fax* (919) 969-2014
www.townofchapelhill.org

Parcel Identifier Number (PIN): 9789-24-7373, 9789-03-3163 Date: March 8, 2018

Section A: Project Information

Project Name: Town and University Joint Services Center

Property Address: Unaddressed Zip Code: 27514

Use Groups (A, B, and/or C): B Existing Zoning District: OI-2

Project Description: A rezoning from OI-2 to U-1 to facilitate a Development Agreement that will allow for the Town Municipal Services Center and future University Uses.

Section B: Applicant, Owner, and/or Contract Purchaser Information

Applicant Information (to whom correspondence will be mailed)

Name: Aaron Frank, Town of Chapel Hill Planning & Development Services

Address: 405 Martin Luther King Jr. Blvd

City: Chapel Hill State: NC Zip Code: 27514

Phone: 919-969-5059 Email: afrank@townofchapelhill.org

The undersigned applicant hereby certifies that, to the best of their knowledge and belief, all information supplied within this application is true and accurate.

Signature: [signature] Date: 3/15/18

Owner/Contract Purchaser Information (9789-24-7373):

☐ **Owner** ☐ **Contract Purchaser**

Name: The University of North Carolina at Chapel Hill

Address: 300 South Building – CB #1000

City: Chapel Hill State: North Carolina Zip Code: 27599-1000

Phone: 919-962-3795 Email: annaw@fac.unc.edu

The undersigned applicant hereby certifies that, to the best of their knowledge and belief, all information supplied within this application is true and accurate.

Signature: [signature] Date: 03.15.2018

ZONING ATLAS AMENDMENT APPLICATION
SUBMITTAL REQUIREMENTS

TOWN OF CHAPEL HILL
Planning Department

Owner/Contract Purchaser Information (9789-03-3163):

☐ **Owner** ☐ **Contract Purchaser**

Name: Trustees, University of North Carolina at Chapel Hill Endowment Fund

Address: 300 South Building – CB #1000

City: Chapel Hill State: North Carolina Zip Code: 27599-1000

Phone: 919-962-3795 Email: jpruitt@unc.edu

The undersigned applicant hereby certifies that, to the best of their knowledge and belief, all information supplied within this application is true and accurate.

Signature: Jon K Pruitt Date: 3-15-2018

The following must accompany your application. Failure to do so will result in your application being considered incomplete. For assistance with this application, please contact the Chapel Hill Planning Department (Planning) at (919) 969-5066 or at planning@townofchapelhill.org. For detailed information, please refer to the Description of Detailed Information handout.

N/A	**Application fee** (refer to fee schedule)	Amount Paid $ N/A
Yes	**Pre-Application Meeting – with appropriate staff**	
Yes	**Digital Files** – provide digital files of all plans and documents	
Yes	**Mailing list of owners of property within 1,000 foot perimeter of subject property** (see GIS notification tool)	
N/A	**Mailing fee for above mailing list**	Amount Paid $
Yes	**Written Narrative describing the proposal**	
Yes	**Statement of Justification**	
Yes	**Digital photos of site and surrounding properties**	
Yes	**Legal description of property to be rezoned**	
Yes	**Phasing Plan (if applicable) indicating phasing boundaries and phasing notes**	
Yes	**Reduced Site Plan Set (reduced to 8.5" x 11")**	

Plan Sets (10 copies to be submitted no larger than 24" x 36")

Plans should be legible and clearly drawn. All plan set sheets should include the following:

- Project Name
- Legend
- Labels

- North Arrow (North oriented toward top of page)
- Property Boundaries with bearing and distances
- Scale (Engineering), denoted graphically and numerically
- Setbacks
- Streams, RCD Boundary, Jordan Riparian Buffer Boundary, Floodplain, and Wetlands Boundary, where applicable

Area Map

a) Project name, applicant, contact information, location, PIN, & legend
b) Dedicated open space, parks, greenways
c) Overlay Districts, if applicable
d) Property lines, zoning district boundaries, land uses, project names of site and surrounding properties, significant buildings, corporate limit lines
e) 1,000 foot notification boundary

Town University Joint Services Center Rezoning Application

Written Narrative

March 14, 2018

Orange County PINs 9789-24-7373, 9789-03-3163, ~20.55 acres

Introduction & Background

The Town has identified the need for a new Municipal Service Center facility and initiated an effort to identify potential sites that would meet the functional, operational, and location needs for several Town departments including the police, parks and recreation administration, fire department administration, health and wellness clinic, ombuds, and training. The Town also recognized this as an opportunity to facilitate increased collaboration, shared training, operations, and public services for Town operations.

The Town tested the capacity of a University-owned site on Estes Drive, recognizing that a coordinated effort could meet long-term interests for both the Town and the University. The site-test shows that there is a significant opportunity to develop a plan for the property that respects the site constraints, the neighboring properties, and complements the planned Carolina North campus. Co-location of certain functions could enhance operations, facilitate shared responses, and encourage joint training and planning for public safety or other uses.

In 2017, Town Council authorized the Town Manager to proceed with a development agreement for the site, and separately in 2017 the University Board of Trustees agreed to consider a lease that would set the groundwork for the Town and University to move forward with a project.

The "property" consists of two unaddressed parcels 9789-24-7373, 9789-03-3163, owned by the University of North Carolina and the University of North Carolina Endowment Fund, respectively. The project area contains approximately 20.55 acres. Of the 9789-24-7373 parcel, the project only encompasses the portion of this parcel that is currently zoned Office Institutional-2.

Property Rezoning & Development Agreement

The property is proposed to be rezoned from Office/Institutional-2 (OI-2) to University-1 (U-1) to allow for a maximum of 200,000 square feet, up to 50% of which may be occupied by the Town. The Town proposes to develop a portion of the property first with the future Town Municipal Services Center in an approximately ~72,000 square foot building. A 99 year lease is proposed and will accommodate the long-term timeline for future development of additional University and Town buildings.

The rezoning is proposed from Office/Institutional-2 to University-1 to facilitate the companion development agreement. A development agreement is an instrument suited to permit long-range implementation of a development program, shared infrastructure between the University and the Town, and a customized set of development standards. The University-1 (U-1) district is designed as a carrying district for a development agreement authorizing public uses such as civic and university uses, which are being proposed. The baseline permitted land uses within a U-1 zoning district are those within the Office/Institutional-4 district, a district designed primarily for University uses. The proposed permitted land uses with this application are refined further from this list to reflect compatibility with neighboring properties and the programmatic needs of the Town and the University. Notably, certain

land uses that are permitted within U-1 but generally regarded as more intense, such as *General Business*, *Service Stations,* will be prohibited by this Development Agreement.

A conceptual site plan accompanies the rezoning application and provides the anticipated general building and infrastructure layout of the site. This site plan was designed with input from adjacent property owners and University representatives. Site specific standards regarding site design and performance standards are proposed in the development agreement that reflect these conversations. Notably, vehicular access is prohibited to the south through the Elkin Hills neighborhood, buildings have been pushed towards Estes Drive, and a 100'+ vegetated buffer is proposed adjacent to the neighborhood to provide a harmonious transition to the adjacent neighborhood.

Draft development agreement standards are provided as an attachment to this application and will be refined further with continued discussion with community members, advisory boards, Town staff, and University staff. Six focused community meetings were held with community members prior to review by advisory boards and commissions.

Project Description

The University-1 zoning district intends for public or private development notably for university and civic uses. While the first user will be the Municipal Services Center the order of following development phases remains to be determined. However, the Municipal Services Project aims to limit the development envelope only to earthwork necessary for the Municipal Services Center and associated infrastructure. The infrastructure included in the first phase of development will include two vehicular accesses (as required for police access), parking only as needed for the Municipal Services Center (to limit development footprint), and stormwater management facilities that will meet the stormwater quantity and quality requirements for the anticipated full build-out by the Town and the University.. Stormwater management is anticipated through bio-retention basins, located at the southern portions of the site. These facilities are planned at depressed areas of the site to accommodate natural drainage patterns to the extent possible within the existing development footprint.

The project is designed with a centralized plaza between the primary buildings of the site, and a drive aisle will encircle the buildings leading to the two vehicular accesses; one of which is planned to match with the UNC park & ride access. Buildings have been brought towards Estes Drive in order to allow for greater buffering from the Elkin Hills neighborhood, and buildings and parking structures are proposed to be constructed into the hillside to limit relative height and land disturbance required for construction.

A 100'+ buffer of existing vegetation is proposed and a buffer is provided adjacent to the intermittent streams located on-site. Sanitary sewer will be connected from the south via Hartig Street, and a break in the buffer is required for this utility connection. A greenway is proposed to connect Justice Street to the Municipal Services Center for a non-vehicular connection as proposed in the Mobility & Connectivity Plan.

Three intermittent streams are located on the property and no development is planned within the 50' RCD except for the internal drive aisle, which is designed to cross the RCD perpendicularly to minimize disturbance.

Rezoning Statement of Justification

Town University Joint Services Center

March 21, 2018

Introduction

The Town and the University of North Carolina are seeking a rezoning from Office-Institutional-2 (OI-2) to University-1 (U-1) to facilitate the development of Town and University services on University-owned land. A rezoning to U-1 is necessary in order to accommodate the Development Agreement proposed between the Town and University. A Development Agreement is the appropriate zoning instrument to facilitate a long-term development partnership between the Town and University. The Town is pursuing a 99-year lease and build-out is anticipated within this period; a Special Use Permit would not allow for a long-term build-out during this timeframe. A total of 200,000 square feet of floor area, of which up to 50% may be occupied by the Town, is proposed across multiple buildings, and the Town anticipates constructing the Municipal Services Center in the immediate future to address Town needs. The remaining balance of square footage will be constructed by the University and the Town within the lease period although a timeline has not been established.

The project exists on two parcels, one of which contains the existing Giles Horney Building and other University services along Airport Drive. A zoning change is only requested for the OI-2-zoned portion of the property.

Compatibility with the Comprehensive Plan

This statement of justification demonstrates how the project aligns with goals of the Comprehensive Plan.

A Place for Everyone

The Municipal Services Center and surrounding grounds will be publicly accessible and the site will feature a pedestrian plaza, trails, and open space that may be used as amenities by the public. A design goal for the project is to create a pleasurable environment both for employees who work at the Municipal Services Center as well as for members of the public who visit the site. Ideally this property will be an amenity for nearby residents as well. The site will be accessible by multiple modes of transportation utilizing a proposed bus stop on Estes Drive, a greenway connection to Justice Street, and bicycle lanes on Estes Drive.

- *Family-friendly, accessible exterior and interior places throughout the town for a variety of active uses (PFE.1)*
- *A creative place to live, work, and play because of Chapel Hill's arts and culture (PFE.2)*
- *A community of high civic engagement and participation (PFE.5)*

Getting Around

The project is sited and designed in a way to promote multi-modal transportation opportunities for employees and visitors of the site. The users of the first phase of project development will be Town

employees, who are encouraged by the Town to use a variety of commuting options. The site is situated to capitalize on multi-modal transportation opportunities in the following ways:

Transit: The project site is located on Estes Drive and directly served by the NU and HS transit routes, and is less than half a mile from Martin Luther King Jr. Blvd, served by NS, G, T, and A routes. A bus stop is planned for on Estes Drive.

Bicycle: The property will be accessed by bicycle through bicycle lanes that may be provided on Estes Drive Extension, and bicycle parking shall be provided to meet Town standards. A Transportation Management Plan shall be submitted and reviewed on an annual basis to meet the Town's satisfaction.

Pedestrian: A greenway is proposed into the site via Justice Street and will provide connectivity and recreational opportunities for users of the municipal services center as well as residents from the surrounding neighborhood. A greenway may also be constructed along Estes Drive to provide future pedestrian connectivity along this roadway.

Vehicular parking shall be built to serve the phases as they are constructed in order to minimize the development envelope.

- *A well-conceived and planned, carefully thought-out, integrated, and balanced transportation system that recognizes the importance of automobiles, but encourages and facilitates the growth and use of other means of transportation such as bicycle, pedestrian, and public transportation options (GA.1)*
- *A connected community that links neighborhoods, businesses, and schools through the provision of greenways, sidewalks, bike facilities, and public transportation (GA.2)*
- *Create a comprehensive transportation system that provides everybody safe and reasonable access to all the community offers (GA.5)*
- *A transportation system that accommodates transportation needs and demands while mitigating congestion and promoting air quality, sustainability, and energy conservation (GA.6)*

Nurturing Our Community

This project is being designed in an environmentally conscious manner and LEED certification is being pursued. The building siting and orientation is designed to optimize southern building exposure for winter solar gain, and the buildings will feature natural daylighting to minimize energy usage. The building is designed to optimize collaborative and shared spaces for the multiple users of the building, both creating an innovative work environment as well resulting in a more efficient project footprint, resulting in economic and carbon reductions. The general siting of the Municipal Services Center in this location is necessary for police to provide fast response time, as well as to locate other Town services in a centralized location within the Town.

Stormwater management may be provided in bio-retention basins and will meet or exceed the minimum Town stormwater management requirements. Stormwater rate management is anticipated to exceed the 25-year, 24-hour storm event and the stormwater volume management may exceed the 2-year, 24-hour storm event. The final conditions and type of stormwater control measure will be determined when final engineering is performed. The project aims to provide maximum stormwater volume and rate control using bio-retention

basins located within the proposed development footprint. The first one inch of precipitation shall be treated to remove 85% of total suspended solids of all new impervious surfaces resulting from development anticipated at full build-out by the Town and the University, and the project shall meet Jordan Watershed Stormwater requirements for Nitrogen and Phosphorous removal. The Jordan Watershed Stormwater requirements for Nitrogen and Phosphorus are required as this project is located on State owned property and remains subject to these requirements.

A 50' RCD buffer is provided surrounding each of the intermittent streams of the site, and the driveway crossing has been designed to cross the buffer area in a perpendicular manner to reduce encroachment.

Attention has been given to the impact of stormwater runoff, light, noise pollution, and traffic to the adjacent neighborhood. The project will be designed with glare control light fixtures, and use of timed or photocell lights is being evaluated. The location of buildings has been designed close to Estes Drive in response to community feedback about visual impact of buildings to the surrounding properties.

Vehicular traffic is prohibited from the Elkin Hills neighborhood to prevent any traffic impacts to this residential area. A Transportation Impact Analysis has been performed and improvements to Estes Drive including a dedicated center turn lane will be provided.

- *Maintain and improve air quality and water quality, and manage stormwater to heal local waterways and conserve biological ecosystems within the town boundaries and the Extra Territorial Jurisdiction (NOC.2)*
- *Reduce the carbon footprint of all Town-owned or managed services and properties; require that all new development meets standards; and support residents in minimizing their personal footprints (NOC.7)*
- *Protect neighborhoods from the impact of development such as stormwater runoff, light and noise pollution, and traffic (NOC.8)*

<u>Good Places, New Spaces</u>

This project is a result of coordination between the University (property owner) and the Town to utilize the property that fits the needs of both the users, visitors of the property, as well as adjacent property owners. Environmental protection is proposed by consciously limiting the development envelope and maintaining a vegetative buffer along the periphery of the site. This project will serve an integral role in the Town's growth by offering new space for critical Town services, and also serving as an open gathering space accessible to the community.

The proposed use aligns with the future land use map and the form and density is proposed in such a manner to meet Town needs while maintaining compatibility with adjacent properties.

- *A joint Town/University development strategy that aligns initiatives for transportation, housing, environmental protection, and entrepreneurial programs (GPNS.4)*
- *Open and accessible common spaces for community gathering, cultural uses, and community development (GPNS.7)*
- *Future land use, form, and density that strengthen the community, social equity, economic prosperity, and natural environment (GPNS.8)*

Town and Gown Collaboration

This project is a collaborative effort between the Town and University to meet respective organizational interests while respecting the land and adjacent properties. Prior to filing of this rezoning application the Town project team has met several times with community members, University stakeholders, and reported project progress to Town Council to receive feedback.

- *The University, the UNC Health Care System, and the Town will coordinate closely to manage development in ways that respect history, traditions, and the environment while fostering revitalization and innovation (TGC.5)*

Municipal Services Center Photographs

View of site from Justice Street

View of site from Hartig Street

View of site from Powell Street

View from northeast

View from Southeast

View from Park & Ride

9.78E+09	GOFORTH I	PO BOX 20	RALEIGH	NC	2.76E+08
9.78E+09	POWELL AS	604 IRONW	CHAPEL HII	NC	27516
9.78E+09	DAVIS LESL	100 EASTRI	CHAPEL HII	NC	2.75E+08
9.78E+09	GARRETT N	108 HARDV	CHAPEL HII	NC	27516
9.78E+09	THACKER C	109 HARDV	CHAPEL HII	NC	27516
9.78E+09	FARLEY WI	105 HARDV	CHAPEL HII	NC	27516
9.78E+09	ADALSTEIN	104 EASTRI	CHAPEL HII	NC	2.75E+08
9.78E+09	HARDY RAL	616 IRONW	CHAPEL HII	NC	27516
9.78E+09	HEWETT CA	104 BURLW	CHAPEL HII	NC	2.75E+08
9.78E+09	SHYAM KAI	101 EASTRI	CHAPEL HII	NC	27516
9.78E+09	WILLIAMS '	102 BURLW	CHAPEL HII	NC	27517
9.78E+09	BAKER TAM	101 NORTH	CHAPEL HII	NC	2.75E+08
9.78E+09	GAERTNER	103 EASTRI	CHAPEL HII	NC	27516
9.78E+09	CHEN TSUN	105 EASTRI	CHAPEL HII	NC	2.75E+08
9.78E+09	ORANGE U	1220 MART	CHAPEL HII	NC	27514
9.78E+09	POON CHI I	102 NORTH	CHAPEL HII	NC	27516
9.78E+09	BROWN M.	102 MARIG	CHAPEL HII	NC	2.75E+08
9.78E+09	WRIGHT ST	103 MARIG	CHAPEL HII	NC	27516
9.78E+09	KUCERA JO	104 NORTH	CHAPEL HII	NC	27516
9.78E+09	DENT GEOF	106 NORTH	CHAPEL HII	NC	2.75E+08
9.78E+09	SUBRAMAN	108 NORTH	CHAPEL HII	NC	27516
9.78E+09	WHITEHEA	104 MARIG	CHAPEL HII	NC	2.75E+08
9.78E+09	BURK ALBE	105 MARIG	CHAPEL HII	NC	2.75E+08
9.78E+09	PENDZICH I	110 NORTH	CHAPEL HII	NC	2.75E+08
9.79E+09	WASHINGT	320 SEVERI	CHAPEL HII	NC	27516
9.79E+09	WANG TIAI	301 SEVERI	CHAPEL HII	NC	27516
9.79E+09	MCCOMBS	8211 TERR/	NORTHVILL	MI	48167
9.79E+09	AUFDERHA	805 WARD	CHAPEL HII	NC	27516
9.79E+09	DANIEL JOH	5 OAKHURS	DECATUR	GA	30030
9.79E+09	SOMERS SA	405 BARCL/	CHAPEL HII	NC	27516
9.79E+09	HUMPHRE'	801 WARD	CHAPEL HII	NC	2.75E+08
9.79E+09	BROWN GE	304 WESLY	Chapel Hill	NC	27516
9.79E+09	RUSSELL EL	832 WARD	CHAPEL HII	NC	27516
9.79E+09	MORSE MA	824 WARD	CHAPEL HII	NC	27516
9.79E+09	HAWKINS [	401 BARCL/	CHAPEL HII	NC	27516
9.79E+09	ODONNELL	808 WARD	CHAPEL HII	NC	2.75E+08
9.79E+09	WEISENSTE	810 WARD	CHAPEL HII	NC	2.75E+08
9.79E+09	RUSSELL SC	820 WARD	CHAPEL HII	NC	27516
9.79E+09	TLALKA IRE	11711 DELI	RALEIGH	NC	27617
9.79E+09	RICHMONE	4718 TIMB	DURHAM	NC	27707
9.79E+09	SMITH ROE	2144 RETA	CHARLOTTI	NC	2.83E+08
9.79E+09	HEWITT ST.	804 WARD	CHAPEL HII	NC	2.75E+08
9.79E+09	ECONOME'	PO BOX 16	CHAPEL HII	NC	27516
9.79E+09	FRANTZ EM	325 BARCL/	CHAPEL HII	NC	27516
9.79E+09	SLEDGE RO	328 BARCL/	CHAPEL HII	NC	27514
9.79E+09	GUNN THO	324 BARCL/	CHAPEL HII	NC	27516
9.79E+09	SCHARLOC	805 POWEI	CHAPEL HII	NC	2.75E+08

9.79E+09	ECONOME	PO BOX 16	CHAPEL HII	NC	27516
9.79E+09	FAHERTY K	108 S HILLS	HILLSBORO	NC	2.73E+08
9.79E+09	WOOD JAN	817 POWEI	CHAPEL HII	NC	27516
9.79E+09	DE BRUYN	316 SEVERI	CHAPEL HII	NC	2.75E+08
9.79E+09	BARCLAY W	2422 MOLL	ROXBORO	NC	27574
9.79E+09	SOUROULL	320 BARCL	CHAPEL HII	NC	2.75E+08
9.79E+09	THEISEN G	312 SEVERI	CHAPEL HII	NC	27514
9.79E+09	BELL JOHN	317 BARCL	CHAPEL HII	NC	27514
9.79E+09	SQUIRES S	8 POWELL	CHAPEL HII	NC	2.75E+08
9.79E+09	BEER KIM	308 SEVERI	CHAPEL HII	NC	27516
9.79E+09	MARKS JAY	3712 HAW	CHAPEL HII	NC	27516
9.79E+09	MUMBY DI	800 POWEI	CHAPEL HII	NC	2.75E+08
9.79E+09	ZELDIN LES	804 POWEI	CHAPEL HII	NC	27516
9.79E+09	RADZICKA	506 MANO	Carrboro	NC	27510
9.79E+09	MOORING	P O BOX 33	LA GRANGI	NC	2.86E+08
9.79E+09	HINKLE DI	304 SEVERI	CHAPEL HII	NC	2.75E+08
9.79E+09	FULCHER L	3931 KELLY	DURHAM	NC	27707
9.79E+09	FLAXMAN	312 BARCL	CHAPEL HII	NC	27516
9.79E+09	UNIVERSIT	ENDOWME	CHAPEL HII	NC	27514
9.79E+09	SMITHERS	273 SEVERI	CHAPEL HII	NC	2.75E+08
9.79E+09	ROMEL JO	403 WESLE	CHAPEL HII	NC	27516
9.79E+09	MCCORMI	401 WESLE	CHAPEL HII	NC	27516
9.79E+09	MULCAHY	300 SEVERI	CHAPEL HII	NC	27516
9.79E+09	SCHWARTZ	2017 S LAK	CHAPEL HII	NC	27514
9.79E+09	NAIDEN FR	308 BARCL	Chapel Hill	NC	27516
9.79E+09	NEEBE ALI	1002 HIGH	CHAPEL HII	NC	27517
9.79E+09	MELVIN AN	3805 MAN	CHAPEL HII	NC	27516
9.79E+09	MULCAHY	300 SEVERI	CHAPEL HII	NC	27516
9.79E+09	CLEMENTS	301 BARCL	CHAPEL HII	NC	27516
9.79E+09	HEARN RA	933 AUTUN	CLOVER	SC	29710
9.79E+09	BURKE SIG	P O BOX 45	CHAPEL HII	NC	27515
9.79E+09	MANTON P	PO BOX 14	CARRBORO	NC	27510
9.79E+09	LANE NAN	786 WEINE	CHAPEL HII	NC	2.75E+08
9.79E+09	SKAKLE SY	269 SEVERI	CHAPEL HII	NC	2.75E+08
9.79E+09	WILLIAMS	1 WEINER	CHAPEL HII	NC	27516
9.79E+09	NEAL ANN	239 HEMP	CHARLOTT	NC	2.82E+08
9.79E+09	NEAL ANN	239 HEMP	CHARLOTT	NC	2.82E+08
9.79E+09	MARKWAY	804 HARTI	CHAPEL HII	NC	27516
9.79E+09	HUMPHRIE	802 HARTI	CHAPEL HII	NC	27516
9.79E+09	BLACK SEM	265 SEVERI	CHAPEL HII	NC	27516
9.79E+09	HACKNEY J	104 CAROL	CHAPEL HII	NC	27514
9.79E+09	SCOTT JEN	231 BARCL	CHAPEL HII	NC	2.75E+08
9.79E+09	THIEDA PA	226 BARCL	CHAPEL HII	NC	27516
9.79E+09	BLACK SEM	265 SEVERI	CHAPEL HII	NC	27516
9.79E+09	DAYSON CI	257 SEVERI	CHAPEL HII	NC	27516
9.79E+09	OKUN CAR	260 SEVERI	CHAPEL HII	NC	27516
9.79E+09	VAUGHAN	229 BARCL	CHAPEL HII	NC	27516

9.79E+09	DIVARIS KII	227 BARCL/	CHAPEL HII	NC	27516
9.79E+09	FLASH BET	750 WEAVI	CHAPEL HII	NC	2.75E+08
9.79E+09	PARKS RON	8401 CEDA	CHAPEL HII	NC	27516
9.79E+09	SCHARLOC	253 SEVERI	CHAPEL HII	NC	27516
9.79E+09	RAPER JULI	248 SEVERI	CHAPEL HII	NC	2.75E+08
9.79E+09	BARFIELD C	PO BOX 20	MCCALL	SC	27570
9.79E+09	MOORE AN	220 BARCL/	CHAPEL HII	NC	27516
9.79E+09	LEHNER RI	375 WESLE	CHAPEL HII	NC	27516
9.79E+09	ANDERSON	247 SEVERI	CHAPEL HII	NC	27516
9.79E+09	GERARDEN	107 POLKS	CHAPEL HII	NC	27516
9.79E+09	KEARNS KA	223 BARCL/	CHAPEL HII	NC	2.75E+08
9.79E+09	OWEN JOH	4002 TROP	COLUMBIA	MO	6.52E+08
9.79E+09	STANG FRE	218 BARCL/	CHAPEL HII	NC	2.75E+08
9.79E+09	CARPENTEI	377 WESLE	CHAPEL HII	NC	27516
9.79E+09	LYON MILD	241 SEVERI	CHAPEL HII	NC	27516
9.79E+09	SOADY SHE	236 SEVERI	CHAPEL HII	NC	27516
9.79E+09	BARRY DAN	PO BOX 20	CARRBORO	NC	27510
9.79E+09	SIMONSEN	216 BARCL/	CHAPEL HII	NC	27516
9.79E+09	BRICE CARI	379 WESLE	CHAPEL HII	NC	27516
9.79E+09	MATTHEW	235 SEVERI	CHAPEL HII	NC	27516
9.79E+09	GARDNER S	4828 OLD N	DURHAM	NC	2.77E+08
9.79E+09	SWANSON	229 THOM/	HILLSBORO	NC	27278
9.79E+09	BROEK THO	215 BARCL/	CHAPEL HII	NC	27516
9.79E+09	SMITH JOA	1505 W LA	DURHAM	NC	2.77E+08
9.79E+09	GURGANUS	P O BOX 16	HILLSBORO	NC	27278
9.79E+09	KILLOUGH	208 JUSTIC	CHAPEL HII	NC	2.75E+08
9.79E+09	CHANTON .	P O BOX 12	TALLAHASS	FL	32302
9.79E+09	RHODES M	998 WILDE	LINDEN	VA	22642
9.79E+09	BISHOP EL\	4 WYRICK S	CHAPEL HII	NC	27516
9.79E+09	WILLIAMS	209 JUSTIC	Chapel Hill	NC	27516
9.79E+09	LANE GREG	100 BUCK T	CHAPEL HII	NC	27516
9.79E+09	MILLS FAM	P O BOX 52	SNOW CAM	NC	27349
9.79E+09	UNIVERSIT	UNKNOWN	CHAPEL HII	NC	27514
9.79E+09	LEDUC BRI/	381 WESLE	CHAPEL HII	NC	27516
9.79E+09	BEHRENDS	229 SEVERI	CHAPEL HII	NC	2.75E+08
9.79E+09	CANOUTAS	224 SEVERI	CHAPEL HII	NC	27516
9.79E+09	JOLLEY VIR	115 WOOD	DURHAM	NC	27713
9.79E+09	ANDERSON	223 SEVERI	CHAPEL HII	NC	2.75E+08
9.79E+09	MCIVER JO	218 SEVERI	CHAPEL HII	NC	27516
9.79E+09	BAROFF RC	240 BUTEO	PITTSBORO	NC	27312
9.79E+09	REECE ROB	385 WESLE	CHAPEL HII	NC	27516
9.79E+09	SEVERIN ST	31 ROGERS	CHAPEL HII	NC	27514
9.79E+09	NEAL ANNE	239 HEMPS	CHARLOTTI	NC	28207
9.79E+09	BARROW R	209 BARCL/	CHAPEL HII	NC	2.75E+08
9.79E+09	STABLER DI	123 PRIEST	CHAPEL HII	NC	2.75E+08
9.79E+09	PETTIFOR A	389 WESLE	CHAPEL HII	NC	27516
9.79E+09	PERKINS RO	211 SEVERI	CHAPEL HII	NC	27516

9.79E+09	HANEY MA	208 SEVERI	CHAPEL HII	NC	2.75E+08
9.79E+09	BROWN SU	304 WESLE	CHAPEL HII	NC	27516
9.79E+09	MILLS NATI	PO BOX 67(	CARRBORC	NC	27510
9.79E+09	PALIOURAS	393 WESLE	Chapel Hill	NC	27516
9.79E+09	MILLS NATI	PO BOX 67(	CARRBORC	NC	27510
9.79E+09	MATTHEW	205 SEVERI	CHAPEL HII	NC	2.75E+08
9.79E+09	PACE SHAN	721 BRADL	CHAPEL HII	NC	2.75E+08
9.79E+09	HEITSCH D(	727 BRADL	CHAPEL HII	NC	2.75E+08
9.79E+09	KCC VENTU	PO BOX 12(	RALEIGH	NC	27605
9.79E+09	MATTHEW	205 SEVERI	CHAPEL HII	NC	27514
9.79E+09	MATTHEW	205 SEVERI	CHAPEL HII	NC	27516
9.79E+09	ROBERTS L(	749 WILLIA	CHAPEL HII	NC	2.75E+08
9.79E+09	MCLEOD JC	737 BRADL	CHAPEL HII	NC	27516
9.79E+09	LEITNER FR	112 TIMBE(	CHAPEL HII	NC	27514
9.79E+09	COGGER LI	739 WILLIA	CHAPEL HII	NC	27516
9.79E+09	TORNERO \	731 WILLIA	CHAPEL HII	NC	2.75E+08
9.79E+09	KEY REBEC(	735 WILLIA	CHAPEL HII	NC	27516
9.79E+09	ELLIOTT CA	3 WYRICK S	CHAPEL HII	NC	27516
9.79E+09	WOLF MER	104 BLACK'	CARRBORC	NC	2.75E+08
9.79E+09	SAUNDERS	385 MEAD(	Chapel Hill	NC	27517
9.79E+09	FEW JAME!	517 ROBIN	CHAPEL HII	NC	27516
9.79E+09	HEWETT M	803 BRANC	Chapel Hill	NC	27516
9.79E+09	O'KEEFE D/	805 BRANC	CHAPEL HII	NC	27516
9.79E+09	STURGESS (	3000 GALL(	PITTSBORC	NC	27312
9.79E+09	RADEMACH	7 BRANCH (	CHAPEL HII	NC	27516
9.79E+09	STARBACK	206 BARCL/	CHAPEL HII	NC	27516
9.79E+09	THOMAS P.	PO BOX 95(	Chapel Hill	NC	27515
9.79E+09	BROWN GE	200 JUSTIC	CHAPEL HII	NC	27516
9.79E+09	JAHANNIA	800 BRANC	CHAPEL HII	NC	27516
9.79E+09	BARNEY KR	5 BRANCH (	CHAPEL HII	NC	27516
9.79E+09	SUMMERS	1923 EPHE!	CHAPEL HII	NC	27517
9.79E+09	KALOUDIS .	96 LORRAII	MONTCLAI	NJ	7043
9.79E+09	OBLER JEFF	1830 17TH	WASHINGT	DE	20009
9.79E+09	BROWN GE	304 WESLE	CHAPEL HII	NC	27516
9.79E+09	NISBET A P	919 OXBO\	CHAPEL HII	NC	27516
9.79E+09	ABERNETH'	143 GOAH	CHAPEL HII	NC	27516
9.79E+09	GERARDEN	107 POLKS	Chapel Hill	NC	27516
9.79E+09	ROBERTS D	749 WILLIA	CHAPEL HII	NC	2.75E+08
9.79E+09	CARTER MI	102 SEREN(	CHAPEL HII	NC	27516
9.79E+09	KIM EUN A	212 E WINI	CHAPEL HII	NC	27516
9.79E+09	BERRY ANN	132 JUSTIC	CHAPEL HII	NC	27516
9.79E+09	WALKER C/	716 CASWE	CHAPEL HII	NC	27514
9.79E+09	GIBSON KE	1755 RIDGI	ATLANTA	GA	3.03E+08
9.79E+09	CAMPBELL	406 BROAL	Carrboro	NC	27510
9.79E+09	SHAPLEY Q	130 JUSTIC	CHAPEL HII	NC	2.75E+08
9.79E+09	CRANNY TI	328 UMSTE	CHAPEL HII	NC	27516
9.79E+09	CAMPBELL	406 BROAL	Carrboro	NC	27510

9.79E+09	FLASH BET	750	WEAVI	CHAPEL HII	NC	2.75E+08
9.79E+09	MCADAMS	8505	ORAN	CHAPEL HII	NC	2.75E+08
9.79E+09	TAL LLC	1924	MT SI	Chapel Hill	NC	27514
9.79E+09	BAKER JAS	124	JUSTIC	CHAPEL HII	NC	27516
9.79E+09	EDMONDS	740	WILLIA	CHAPEL HII	NC	27516
9.79E+09	WHITE JOH	2207	WHIT	RALEIGH	NC	2.76E+08
9.79E+09	MERTZ JAN	15541	QUE	FORT MYEI	FL	3.39E+08
9.79E+09	DE MARCO	120	JUSTIC	Chapel Hill	NC	27514
9.79E+09	SPARROW	727	WILLIA	CHAPEL HII	NC	27516
9.79E+09	SCHNURR E	736	WILLIA	CHAPEL HII	NC	27516
9.79E+09	BRINKHOU	1162	FEARI	PITTSBORC	NC	27312
9.79E+09	JOHNSON E	734	WILLIA	CHAPEL HII	NC	27516
9.79E+09	LEONARD E	304	SEVERI	CHAPEL HII	NC	2.75E+08
9.79E+09	OCHOA TO	730	WILLIA	CHAPEL HII	NC	27516
9.79E+09	SINGH MO	728	WILLIA	CHAPEL HII	NC	27516
9.79E+09	CICCONE A	33	SPINNIN	MARLTON	NJ	8053
9.79E+09	MALINOWS	83	GRASSY	CHAPEL HII	NC	27517
9.79E+09	DINO ROCK	875	MARTI	CHAPEL HII	NC	27514
9.79E+09	ELKINS J W	2511	COLG	FAYETTEVII	NC	2.83E+08
9.79E+09	DINO ROCK	103	MARIG	CHAPEL HII	NC	27516
9.79E+09	A&W REAL	315	PALAF/	CHAPEL HII	NC	27516
9.79E+09	WEHR PETE	300	SUNSE	HOLLY SPR	NC	27540
9.79E+09	HUENING M	UNIT 19		CHAPEL HII	NC	2.75E+08
9.79E+09	SAVIT PROI	510	APPLE(	MEBANE	NC	27302
9.79E+09	SALEM COL	875	MARTI	CHAPEL HII	NC	27514
9.79E+09	WORLEY D(	9004	ONEA	RALEIGH	NC	2.76E+08
9.79E+09	KRAMER SE	875	MLK JF	CHAPEL HII	NC	27516
9.79E+09	WILSON NA	4060	E HAF	BURLINGTC	NC	27215
9.79E+09	LI LI	3852	WIND	JAMESTOW	NC	27282
9.79E+09	ZIEMENDO	875	MARTI	CHAPEL HII	NC	27514
9.79E+09	JOHNSON F	1549	TAYL(	HIAWASSEI	GA	3.05E+08
9.79E+09	JW&S HOLI	2207	WHIT	RALEIGH	NC	27608
9.79E+09	SIMON ERI	119	JUSTIC	CHAPEL HII	NC	27516
9.79E+09	THORNHILL	405	JOHNS	CHAPEL HII	NC	27514
9.79E+09	BULBROOK	118	JUSTIC	Chapel Hill	NC	27514
9.79E+09	KNIGHT AL	119	BARCL/	CHAPEL HII	NC	27516
9.79E+09	MILLS FAM	P O BOX 52		SNOW CAN	NC	27349
9.79E+09	MOORE SC	816	PINEHI	CHAPEL HII	NC	27517
9.79E+09	STUBBS TH	308	MUIRF	MEBANE	NC	27302
9.79E+09	ORTIZ MAR	115	BARCL/	Chapel Hill	NC	27516
9.79E+09	KAIROS VEI	601	W ROS	CHAPEL HII	NC	27516
9.79E+09	RESNICK M	102	GURNE	Chapel Hill	NC	27517
9.79E+09	WILLIAMS .	110	JUSTIC	CHAPEL HII	NC	27516
9.79E+09	JOLLEY VIR	115	WOOD	DURHAM	NC	27713
9.79E+09	ROBERTS D	749	WILLIA	CHAPEL HII	NC	2.75E+08
9.79E+09	STATE OF N	1321	MAIL	RALEIGH	NC	2.77E+08
9.79E+09	STATE OF N	1321	MAIL	RALEIGH	NC	2.77E+08

9.79E+09	STRATFORI	PO BOX 98	RALEIGH	NC	27624
9.79E+09	PETTY KRIS	100 BARCL	CHAPEL HII	NC	27516
9.79E+09	MILLS NATI	602 DAVIE	Carrboro	NC	27510
9.79E+09	CHAPEL HII	302 OAK TI	CHAPEL HII	NC	27517
9.79E+09	CHAPEL HII	302 OAK TI	CHAPEL HII	NC	27517
9.79E+09	FGV VII LLC	870 MARTI	Chapel Hill	NC	27517
9.79E+09	LEGACY CR	316 SWIFT	DURHAM	NC	27713
9.79E+09	SULIK MEL/	199 MERIW	VASS	NC	28394
9.79E+09	CEDAR RID	PO BOX 13	DURHAM	NC	2.77E+08
9.79E+09	CEDAR RID	PO BOX 13	DURHAM	NC	2.77E+08
9.79E+09	CARVER CH	890 MARTI	CHAPEL HII	NC	27514
9.79E+09	MEDICAL F	CB#7565 8	CHAPEL HII	NC	27516
9.79E+09	FGV VII LLC	870 MARTI	CHAPEL HII	NC	27514
9.79E+09	CORNERST	SUITE 200	CHAPEL HII	NC	27514
9.79E+09	EMMERSO	CUSTODIAI	CHAPEL HII	NC	27514
9.79E+09	CHIMCO II	940 MARTI	CHAPEL HII	NC	27514
9.79E+09	PEGASUS P	SUITE 200	CHAPEL HII	NC	27514
9.79E+09	SAWMILL D	PO BOX 15	CHAPEL HII	NC	27514
9.79E+09	AMITY UNI	825 ESTES	CHAPEL HII	NC	27514
9.79E+09	BUTLER KA	404 WOOD	APEX	NC	27523
9.79E+09	CHAPEL HII	92 RIVER R	SUMMIT	NJ	7901
9.79E+09	GOFORTH J	PO BOX 20	RALEIGH	NC	27619
9.79E+09	CHILUKURI	15 MT BOL	CHAPEL HII	NC	27514
9.79E+09	KIRK WILLI/	121 MAPLE	CHAPEL HII	NC	2.75E+08
9.79E+09	CHARMFOI	2375 CRES	SANFORD	FL	32771
9.79E+09	NEXT LEVE	4411 E LA F	ANAHEIM	CA	92807
9.79E+09	GOFORTH I	PO BOX 20	RALEIGH	NC	2.76E+08
9.79E+09	GIJOLU LLC	319 PROVII	CHAPEL HII	NC	27514
9.79E+09	PEACE JAM	11020 CHA	LOS ANGEL	CA	90077
9.79E+09	SAWMILL D	P O BOX 15	CHAPEL HII	NC	27514
9.79E+09	CHAPEL HII	980 MARTI	CHAPEL HII	NC	27514
9.79E+09	LOTZ DANI	119 MAPLE	CHAPEL HII	NC	27514
9.79E+09	RICHARDSO	8 KENDALL	Chapel Hill	NC	27517
9.79E+09	WU YUE	122 WOOD	CHAPEL HII	NC	27514
9.79E+09	COKER WO	117 WOOD	CHAPEL HII	NC	27514

Crow Branch
MUNICIPAL DR
Municipal Dr Ext
MARTIN LUTHER KING JR BLVD
MISTYWOODS CIR
SHADOWOOD DR
WOODSHIRE LN
TIMBER HOLLOW CT
MENDEL DR
LINNAEUS PL
PINCHOT LN
CROW HOLLOW
HUNTINGTON DR
WELLINGTON DR
PORTER PL
ROCK CREEK RD
WELLS CT
CROOM CT
TOTTEN PL
CONCORDIA CT
BEECH TREE CT
KENSINGTON DR
SOMERSET DR
LYONS RD
N ELLIOTT RD
Tennis Court - Phillips M
CURTIS RD
CLAYTON RD
ESTES DR
N ESTES DR
CUMBERLAND RD
SURRY RD
CHATHAM LN
CASWELL RD
CHEROKEE CIR
HALIFAX RD
GRANVILLE RD
FACILITIES DR
AIRPORT DR
MAPLE DR
MARIGOLD CT
NORTH HAVEN DR
WOODLEAF DR
HANOVER PL
EMERYWOOD PL
IRONWOODS DRIVE
HARDWICK PL
BOLTON PL
DARTMOUTH CT
BRIGHTON CT
THETFORD CT
OLDHAM PL
BIRCHCREST PL
JUSTICE ST
BARCLAY RD
SEVERIN ST
WESLEY CT
WEINER ST
CEDAR ST
SYCAMORE DR
MT BOLUS RD
BURLAGE CIR
MEADOWBROOK DR
HOOT OWL LN
SPARROW TRL
MULLIN CT
SONGBIRD LN
LEA CT
READE RD
BRADLEY RD
BURRIS PL
WESLEY DR
UMSTEAD DR
GREENE ST
SUNRISE LN
BOLINWOOD DR
BOLIN HEIGHTS
Bolin Creek
AIRPORT CIR
COLUMBIA PL W
COLUMBIA PL E
MILL RACE DR
BRECKENRIDGE PL
WILD IRIS LN
DEEPWOOD RD
ELIZABETH ST
HOLLOWAY LN
LONE PINE RD
0.5 km
0.5 mi

Legal Description: Facilities Parcel Division

Beginning at an iron pipe located in the southern right of way of Estes Drive Extension (S.R. 1780) running thence S 21° 31’ 42” E 346.01 feet to an iron pipe; thence S 86°46’ 22” E 1109.76 feet to a point; thence N 00° 41’ 32” E 744.68 feet to a point; thence N 33° 28’ 00” W 319.16 feet to a point in the southern right of way of Estes Drive Extension (S.R. 1780); thence with the southern right of way of Estes Drive Extension (S.R. 1780) in a general northwesterly direction along a 2019.02 foot radius curve to the right, said curve having a chord bearing and distance of S 53° 57’ 42” W 586.01 feet, to a point in the southern right of way of Estes Drive Extension (S.R. 1780); thence continuing with the southern right of way of Estes Drive Extension S 64° 46’ 47” W 685.46 feet to an iron pipe, the place and point of beginning, containing 18.13 acres, more or less.

Legal Description: Former Dixon Property

Beginning at an iron pipe located in the southern right of way of Estes Drive Extension (S.R. 1780) running thence S 11° 23’ 00” E 348.61 feet to an iron pipe, thence N 76° 30’ 50” W 161.71 feet to an iron pipe; thence N 76° 30’ 50” W 86.10 feet to an iron pipe located in the eastern right of way of Powell Street; thence N 76° 51’ 00” W 66.45 feet to an iron pipe located in the western right of way of Powell Street; thence N 76° 29’ 00” W 247.69 feet to an iron pipe; thence N 76° 29’ 00” W 216.68 feet to an iron pipe located in the southern right of way of Estes Drive Extension (S.R. 1780); thence with the southern right of way of Estes Drive Extension (S.R. 1780) in a general northeasterly direction along a 557.97 foot radius curve to the right, said curve having a chord bearing and distance of N 62° 17’ 17” E 248.62 feet, to an iron pipe in the southern right of way of Estes Drive Extension (S.R. 1780); thence continuing with the southern right of way of Estes Drive Extension (S.R. 1780) N 75° 09’ 40” E 321.76 to an iron pipe, the point and place of beginning, containing 2.42 acres, more or less.

Study Area

2.42 Acres

18.38 Acres

Legend

- Study Area
- UNC Existing Buildings

Carolina North

Study Area

UNC Central Campus

N

W E

S

100 0 100 Feet

THE UNIVERSITY of NORTH CAROLINA at CHAPEL HILL

05 January 2017

Proposed Guiding Principles
for the Municipal Services Center Development Agreement
DRAFT – 1.18.2018

Residents of the Elkin Hills neighborhood and other concerned citizens who have participated in meetings about the municipal services center request that the following guiding principles be incorporated into the development agreement for this project. These guiding principles take into consideration prior documents adopted by UNC-related entities.[1]

Guiding Principles

A. After discussions with residents, the Town and the University, the final agreed-upon principles will be voted on by the Chapel Hill Town Council and incorporated into the development agreement as its guiding principles. These principles will also serve as one of the design drivers for the project.

B. The Town and the University will continue to consult with and seek feedback from the neighborhood if and when any additional buildings beyond the municipal services center building are under consideration.

C. Site
   1. Preserve in perpetuity at least 50% of the site[2] as natural, non-fragmented and contiguous space[3] serving as both a buffer to the neighboring residential properties, and as preservation of the natural environment for wildlife and a sense of forest and greenspace.
   2. Allow a maximum of 50% to be razed for development.

D. Design with Empathy
   1. The impact on neighbors should be kept front and center in all planning and implementation.
   2. The project should not decrease the market values of the residential properties adjacent and near-adjacent to the site. The residents request the Town to seek a qualified opinion from an impartial, licensed appraiser.
   3. Manage development of the site to minimize impacts on adjacent neighborhood and the environment,[4] using measurable indicators of impact, including both lighting and noise impacts (e.g., sirens used by the fire and police departments) and maximize aesthetics in accordance with the high standards set by the University.
      a) Situate buildings away from the neighborhood and by preference along Estes Drive Extension with minimum setbacks from the street.
      b) Extend the 100-foot required buffer to at least 200 feet.
      c) Give strong preference to higher buildings rather than lower structures that cover more surface area.
      d) Restrict the use and storage of hazardous materials such as fuels and chemicals.
      e) Limit the use of fences.

E. Environmental Leadership
   1. Demonstrate a leadership position in environmentally sensitive development regarding air quality, and energy production and consumption.[5][6]
      a) Construct buildings to meet high environmental standards, such as the AIA-2030 carbon reduction energy performance standards as recommended to the Town by the Environmental Stewardship Advisory Board (ESAB).[7]
      b) Give strong preference to a multi-storied parking garage or parking under each building on the site, rather than expanded surface parking.

c) Construct surface parking which optimizes storm water control including the use of permeable surfaces wherever possible.
d) Where technically possible, incorporate green energy options into site design, e.g., solar panels on roofs, solar carports over surface parking areas.

2. Demonstrate a leadership position in environmentally sensitive development regarding landscaping and maintaining natural areas.
   a) Retain as many mature and medium-height native trees and hardwoods as possible, particularly between the developed area and the buffer for the Elkin Hills neighborhood.[8]
   b) Use only native plants in new and replacement landscaping for the site (as recommended by UNC's NC Botanical Garden).

F. Exceed Storm Water Requirements
   1. Demonstrate a leadership position regarding sustainable water management, waste water treatment and reuse,[9] and creek water quality.
      a) Exceed storm water management regulations on the site to eliminate or greatly decrease the risk of flooding and damage to property adjacent to and downstream from the site. Ensure that development of the site will result in no net increase in storm water discharge[10] and flooding of the adjacent neighborhoods, and no net increase in loading of sediment and nutrients into local streams.[11]
      b) Reclaim and re-use rain and storm water (e.g., flushing within buildings, watering of vegetation, etc.).
      c) Take prudent and reasonable steps, including improvement of stream channels in the Elkin Hills neighborhood and other neighborhoods downstream from the site, to improve management of run-off and to limit impact on Bolin Creek.

---

[1] These documents include: A) Carolina North 2007 Plan; B) REPORT OF THE LEADERSHIP ADVISORY COMMITTEE FOR CAROLINA NORTH January 19, 2007; C) UNC response to Horace Williams Citizens Committee report, 25 January 2006, Natural areas/parks and recreational facilities; D) Faculty Council Resolution 2002-6. Urging the University Administration to Commit Itself to Sustainability Measures in its Institutional Policies and Practices. PROPOSED BY THE BUILDINGS AND GROUNDS COMMITTEE (April 4, 2002).

[2] UNC response to Horace Williams Citizens Committee report, 25 January 2006, Natural areas/parks and recreational facilities, Principle 1, p. 5

[3] REPORT OF THE LEADERSHIP ADVISORY COMMITTEE FOR CAROLINA NORTH, January 19, 2007, V. OPEN SPACE, NATURAL AREAS, PARKS AND RECREATION, p. 5

[4] UNC response to Horace Williams Citizens Committee report, 25 January 2006, Development principle 1, p. 4

[5] REPORT OF THE LEADERSHIP ADVISORY COMMITTEE FOR CAROLINA NORTH, January 19, 2007, V. OPEN SPACE, NATURAL AREAS, PARKS AND RECREATION, p. 4

[6] Three zeros environmental initiative; Frequently asked questions; https://threezeros.unc.edu/faq/

[7] CAROLINA NORTH PLANNING PROCESS SUMMARY OF KEY INTERESTS BY CATEGORY [FEBRUARY 11, 2009], p. 184

[8] Sustainability at UNC. Grounds. https://sustainability.unc.edu/initiatives/operations/grounds/

[9] UNC response to Horace Williams Citizens Committee report, 25 January 2006, Water and Sewer / Stormwater Management / Air Quality Principle 1, p. 5

[10] UNC response to Horace Williams Citizens Committee report, 25 January 2006, Water and Sewer / Stormwater Management / Air Quality Principle, Principle 2, p. 5

[11] REPORT OF THE LEADERSHIP ADVISORY COMMITTEE FOR CAROLINA NORTH, January 19, 2007, Environmental principles, p. 4

PUBLIC WORKS DEPARTMENT
STORMWATER MANAGEMENT DIVISION
405 Martin Luther King, Jr. Blvd.
Chapel Hill, NC 27514-5705
Telephone (919) 969-7246
Fax (919) 969-7276
www.townofchapelhill.org

February 28, 2018

Mr. Matthew West
Dewberry
2610 Wycliff Road, Suite 410
Raleigh, North Carolina 27607
mwest@dewberry.com

RE: Stream Determination for undeveloped parcel owned by UNC Endowment Fund on Estes Drive Extension, Chapel Hill, NC (PIN 9789-03-3163)

Dear Mr. West:

As requested, the Town Public Works Department has performed a stream determination for the property identified on the attached forms. This determination indicates whether different types of streams (perennial, intermittent, and/or ephemeral) or perennial waterbodies are present on the property in question or on nearby properties. These streams and their classifications are shown on the accompanying map. Stream segments regulated by the Town's Jordan Lake Watershed Riparian Buffer regulations are highlighted. **Locations of all features on the map are approximate and must be field surveyed for precise location.**

This stream determination information is used to determine the location and extent of the Resource Conservation District (RCD) and Jordan Lake Watershed Riparian Buffers. Specific land use regulations and restrictions apply within the boundaries of these protected areas. If you are considering any kind of work on this property, including clearing vegetation, paving, grading, or building, please consult with the Town Planning Department to determine the possible extent of the Resource Conservation District (RCD) and Jordan Lake Watershed Riparian Buffer on this property and the applicable corresponding regulations.

This stream determination will remain in effect for five years from the date of the site visit, after which a new stream determination with site visit will be required.

In accordance with the Town's procedures, you may appeal this administrative decision to the Town Manager. If you wish to do so, you must file your written appeal accompanied by any materials you believe support your appeal, within **30 days** of receipt of this letter.

If you have questions regarding stream determinations, please contact me at (919) 969-7202 or aweakley@townofchapelhill.org. If you have questions regarding the Town's Resource Conservation District (RCD) or the Jordan Watershed Riparian Buffer regulations, please contact the Planning Department at (919) 968-2728, or view information online at: http://www.townofchapelhill.org/town-hall/departments-services/public-works/stormwater-management/regulations-ordinances.

Regards,

Allison Weakley

Allison Schwarz Weakley
Stormwater Analyst

PUBLIC WORKS DEPARTMENT
STORMWATER MANAGEMENT DIVISION
405 Martin Luther King, Jr. Blvd.
Chapel Hill, NC 27514-5705
Telephone (919) 969-7246
Fax (919) 969-7276
www.townofchapelhill.org

STREAM DETERMINATION SITE VISIT RESULTS

Property Information	
Parcel ID Number (PIN)	**Address / Location Description**
9789-03-3163	Estes Drive Extension

These are the results of a site visit to the properties listed above for a stream determination conducted on 2/23/2018 by Town Staff:

☐ No perennial, intermittent, or ephemeral streams or perennial waterbodies were identified on or near the property(ies) in question.

☒ Perennial, intermittent, or ephemeral streams, or perennial waterbodies, were identified on or near the property(ies) in question and shown on the attached map(s).

A map showing water features, their Town flow classifications, presence of Jordan Watershed Riparian Buffers, and their approximate locations is attached. Origins or breakpoints that have been flagged in the field are marked on the map. Stream classification forms and additional site visit notes and maps are also attached.

Other conditions exist which may affect the location of the Resource Conservation District or Jordan Watershed Riparian Buffer:

☐ FEMA floodzone is mapped in the area. Precise location of the Base Flood Elevation and associated Resource Conservation District must determined by a field survey commissioned by the owner or a representative.

☒ Segments of perennial or intermittent stream are piped in the area, as shown on the map. These segments do not have an associated Jordan Watershed Riparian Buffer.

☒ Possible Jurisdictional Wetlands have been identified in the area. A formal review by a professional certified in Jurisdictional Wetland Delineation is recommended if impacts to wetlands are likely.

Allison Weakley

Town Staff Signature

2/28/2018
Date

PUBLIC WORKS DEPARTMENT
STORMWATER MANAGEMENT DIVISION
405 Martin Luther King, Jr. Blvd.
Chapel Hill, NC 27514-5705
Telephone (919) 969-7246
Fax (919) 969-7276
www.townofchapelhill.org

STREAM DETERMINATION RECORDS REVIEW

Property Information	
Parcel ID Number (PIN)	**Address / Location Description**
9789-03-3163	Estes Drive Extension

After reviewing Town GIS information, USGS 1:24,000 Topographic maps, and County Soil Survey maps, I have determined no new stream determination will be required for the property(ies) listed above for the following reason(s):

☐ No unclassified streams or waterbodies, streams or waterbodies identified as requiring a new classification or determination, or unidentified flowlines (possible streams) are shown within 150 feet of the property in question on the Town's GIS, the USGS 1:24,000 Topographic map, or the County Soil Survey map for the area.

☐ A Resource Conservation District boundary was set on a recorded final plat for the property in question, and there are no streams or waterbodies shown on the USGS 1:24,000 Topographic map or County Soil Survey within 150 feet of the property.

☒ A stream determination has been done for this property, a property uphill or upstream, or a nearby property as of February 23, 2013 or later, and that stream determination applies to this property. A copy of the documentation for the relevant site visit(s) is available upon request.

Relevant PIN(s): 9789-24-7373 (site visit 10-1-2016)

A map showing water features, their Town flow classifications, presence of Jordan Watershed Riparian Buffers, and their approximate locations is attached. Origins or breakpoints that have been flagged in the field are marked on the map.

Other conditions exist which may affect the location of the Resource Conservation District or Jordan Watershed Riparian Buffer:

☐ FEMA floodzone is mapped in the area. Precise location of the Base Flood Elevation and associated Resource Conservation District must be determined by a field survey commissioned by the owner or a representative.

☒ Segments of perennial or intermittent stream are piped in the area. These segments do not have an associated Jordan Watershed Riparian Buffer.

☒ Possible Jurisdictional Wetlands have been identified in the area. A formal review by a professional certified in Jurisdictional Wetland Delineation is recommended if impacts to wetlands are likely.

Allison Weakley

Town Staff signature

2/28/2018
Date

Stream Determination Area Map

- Ephemeral Stream
- Intermittent Stream
- Perennial Stream
- Culverts
- 2-foot Contours
- 10-foot Contours
- Buildings
- Parcels
- Approximate Jordan Buffer
- Subject Property
- Ephemeral Breakpoint
- Intermittent Breakpoint
- Perennial Breakpoint

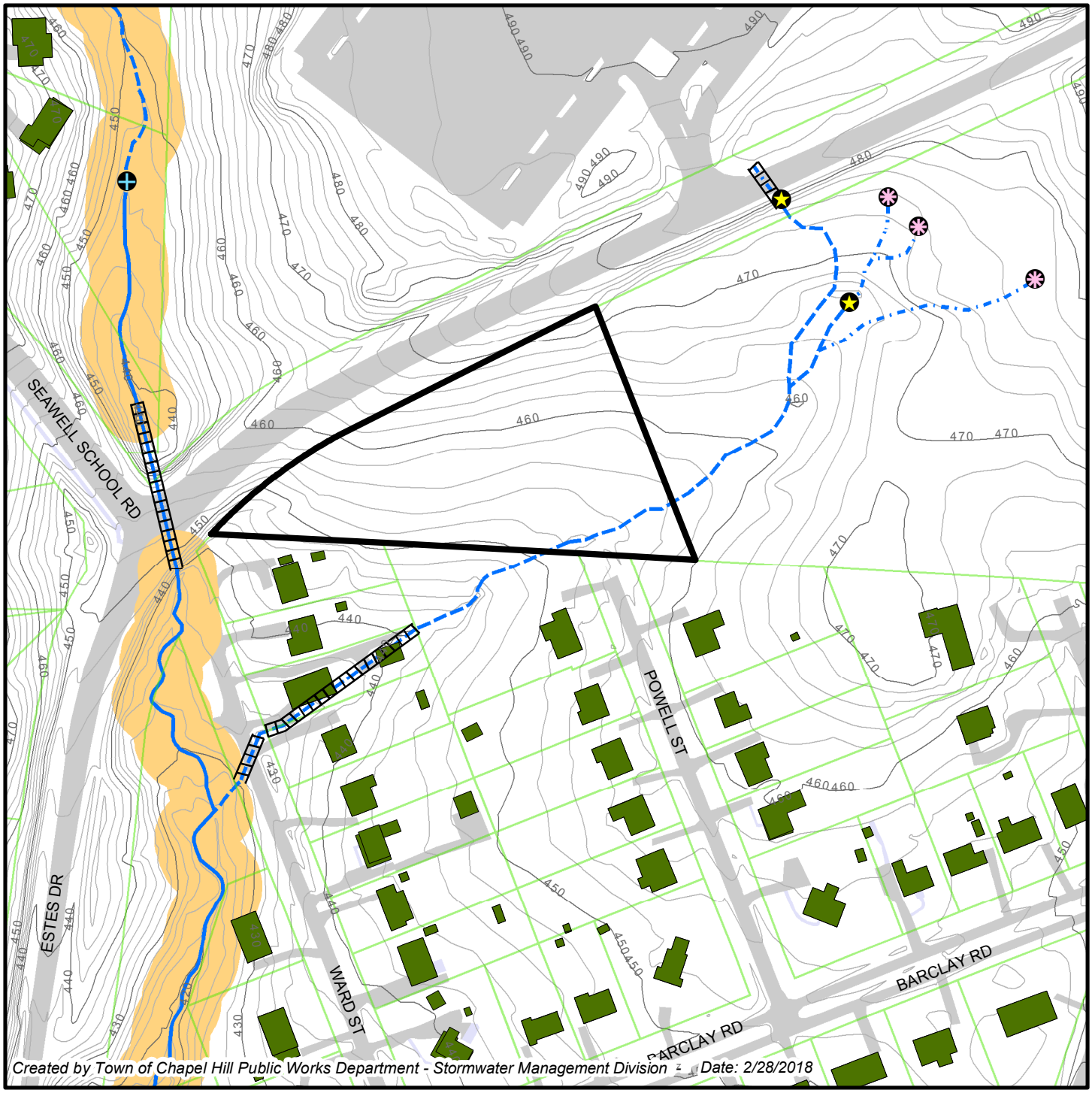
Address: UNC Endowment Fund Property
Estes Drive Extension, Chapel Hill, NC

Parcel ID: 9789-03-3163

0 90 180 360 Feet

1 inch = 183 feet

Stream locations are approximate and must be verified by survey.
Buffers are measured from top of bank. RCD buffers may apply.
Please contact the Town of Chapel Hill Planning Department to verify.



Created by Town of Chapel Hill Public Works Department - Stormwater Management Division *Date: 2/28/2018*

USGS 24K Topographic / County Soil Survey Maps

Subject Property

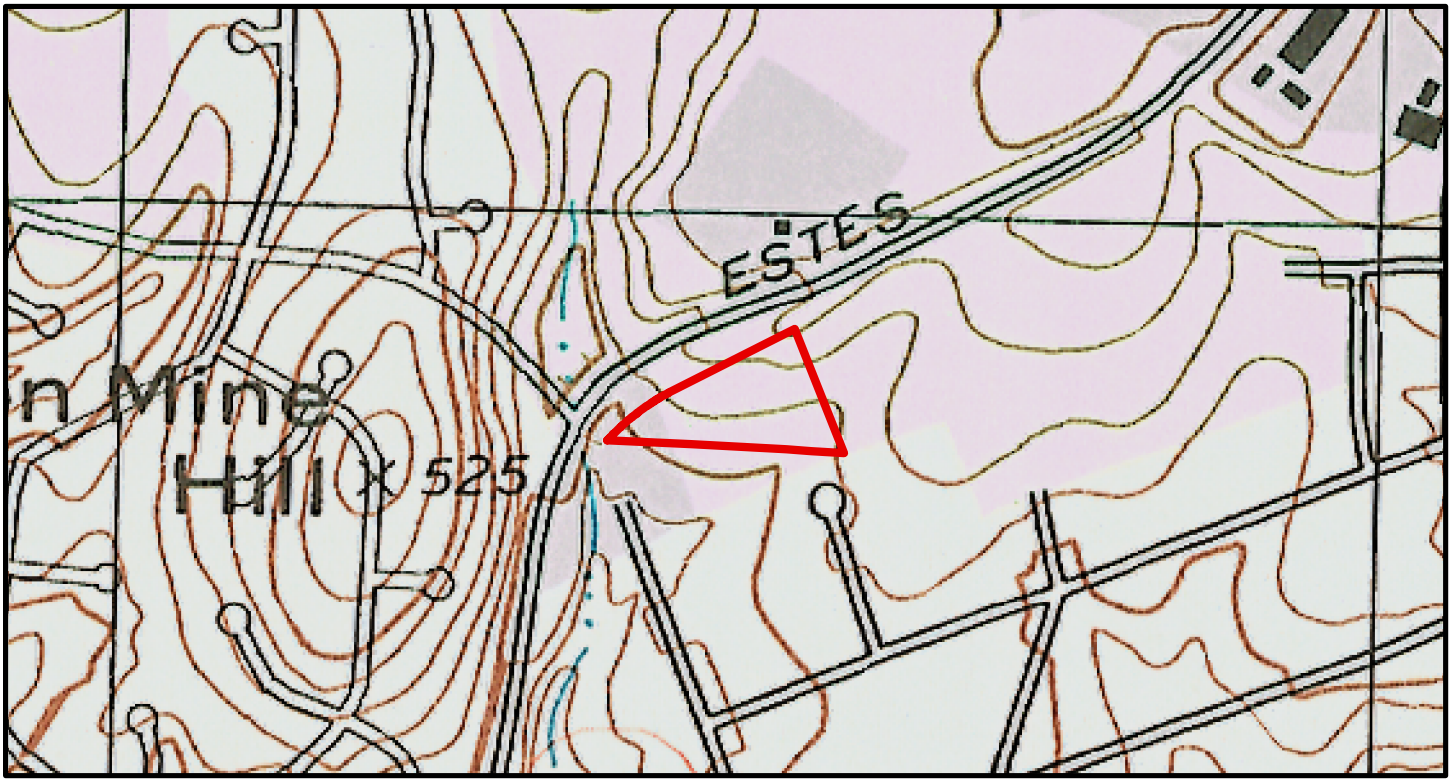
0 150 300 450 600 Feet

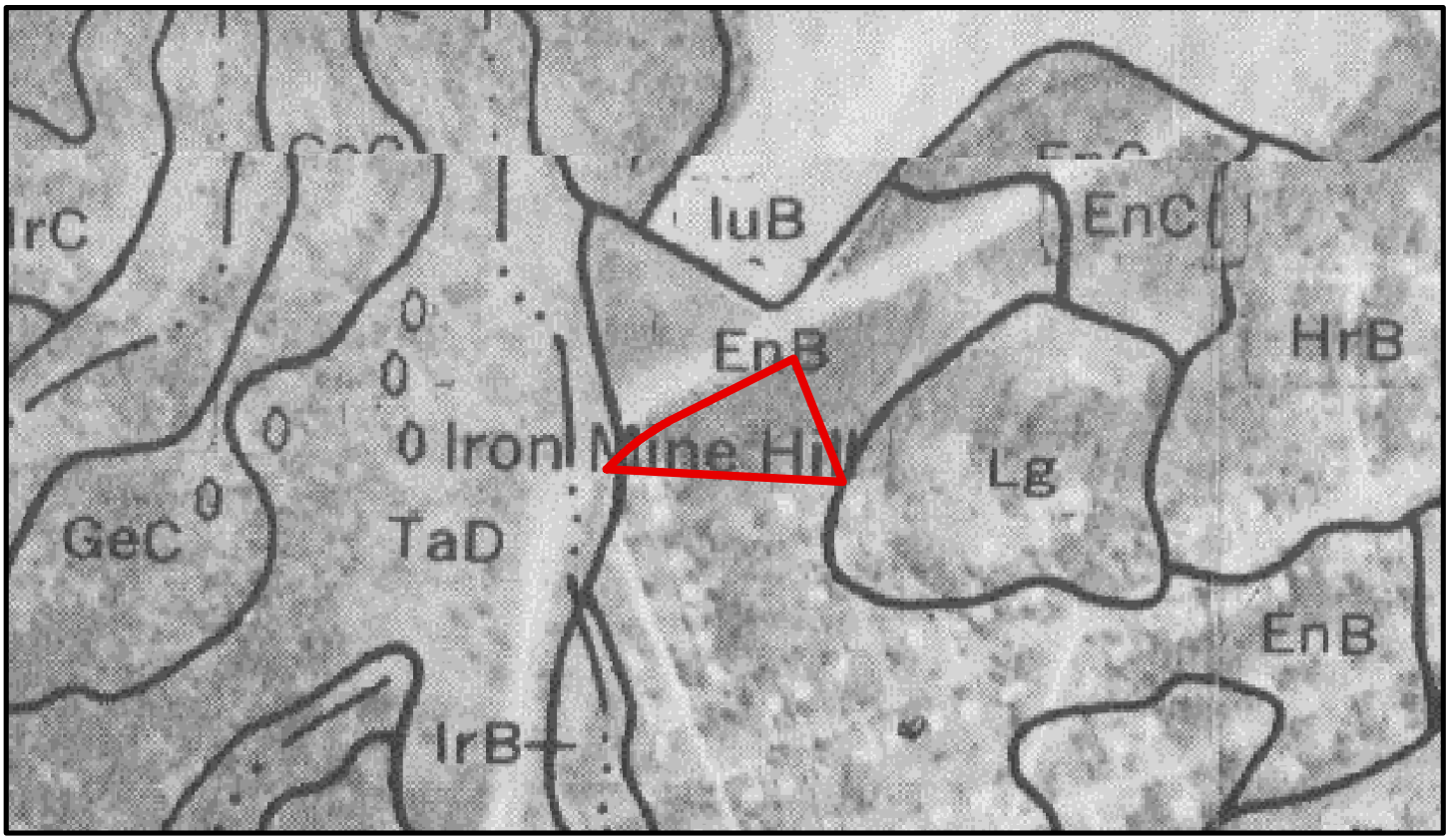
1 inch = 500 feet

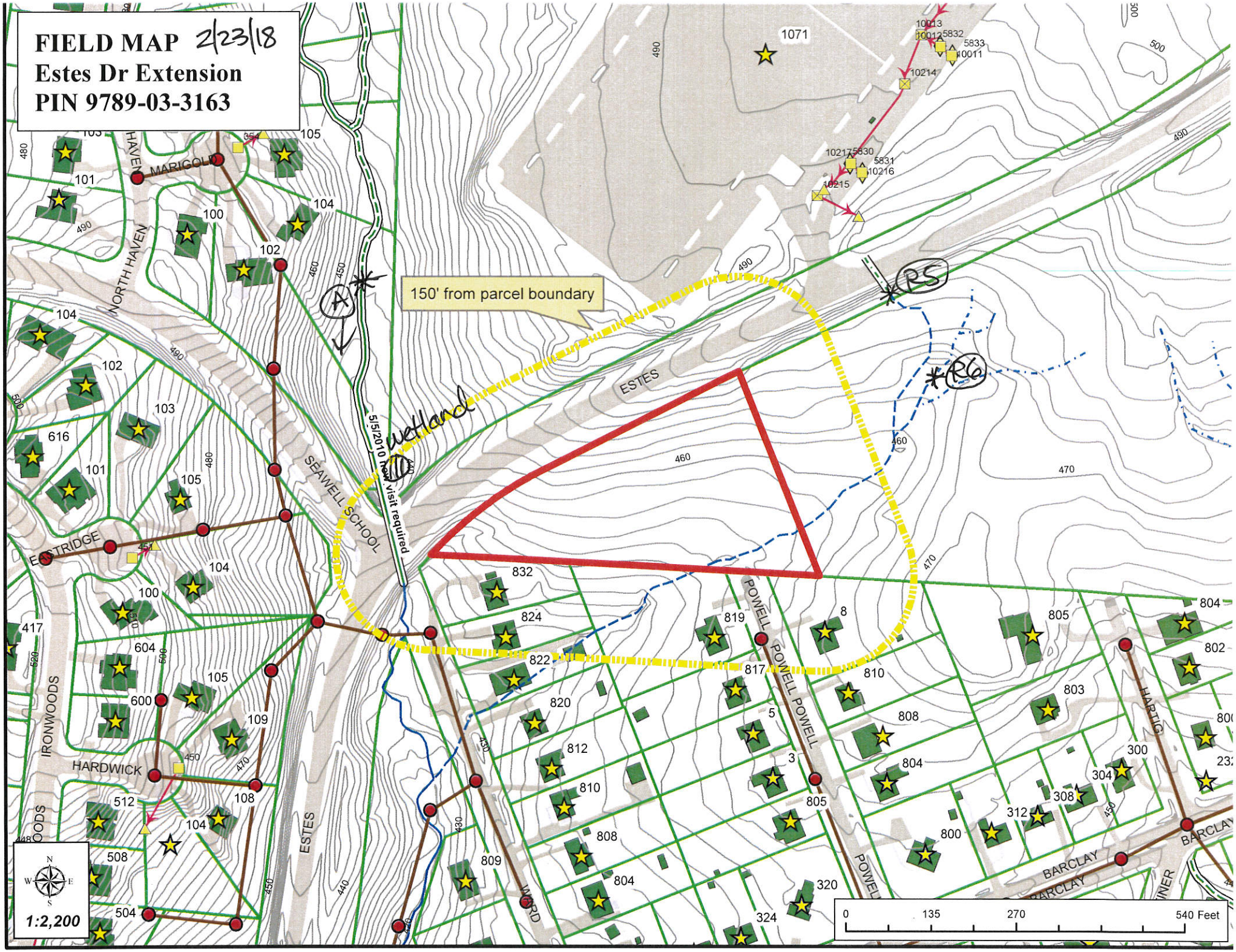
Address: UNC Endowment Fund Property
Estes Drive Extension, Chapel Hill, NC

Parcel ID: 9789-03-3163

Created by Town of Chapel Hill Public Works Department - Stormwater Management Division- 2/26/2018






FIELD MAP 2/23/18
Estes Dr Extension
PIN 9789-03-3163
150' from parcel boundary
5/5/2010 new visit required
wetland
A
RS
RG
ESTES
SEAWELL SCHOOL
NORTH HAVEN
MARIGOLD
EASTRIDGE
IRONWOODS
HARDWICK
POWELL
BARCLAY
HARTIG
WARD
1071
1:2,200
0
135
270
540 Feet

20180223 1134

Estes Dr. Ext Feature (A)

NC DWQ Stream Identification Form Version 4.11

Date: 2/23/18	**Project/Site:** PIN 9789-03-3163	**Latitude:** 35.93
Evaluator: Weakley & Sabat + Clarke Myers	**County:** Orange	**Longitude:** -79.067
Total Points: *Stream is at least intermittent if ≥ 19 or perennial if ≥ 30** 36	**Stream Determination (circle one)** Ephemeral Intermittent (Perennial)	**Other** *e.g. Quad Name:*

A. Geomorphology (Subtotal = 18)	Absent	Weak	Moderate	Strong
1[a]. Continuity of channel bed and bank	0	1	(2)	3
2. Sinuosity of channel along thalweg	0	(1)	2	3
3. In-channel structure: ex. riffle-pool, step-pool, ripple-pool sequence	0	1	(2)	3
4. Particle size of stream substrate	0	1	(2)	3
5. Active/relict floodplain	0	1	(2)	3
6. Depositional bars or benches	0	(1)	2	3
7. Recent alluvial deposits	0	1	(2)	3
8. Headcuts	0	(1)	2	3
9. Grade control	0	0.5	(1)	1.5
10. Natural valley	0	0.5	(1)	1.5
11. Second or greater order channel	No = 0		Yes = (3)	

[a] artificial ditches are not rated; see discussions in manual

B. Hydrology (Subtotal = 10.5)				
12. Presence of Baseflow absent upper reach, flowing in lower reach	0	1	(2)	3
13. Iron oxidizing bacteria	0	1	(2)	3
14. Leaf litter	1.5	(1)	0.5	0
15. Sediment on plants or debris	0	0.5	1	(1.5)
16. Organic debris lines or piles	0	0.5	(1)	1.5
17. Soil-based evidence of high water table?	No = 0		Yes = (3)	

C. Biology (Subtotal = 7.5)				
18. Fibrous roots in streambed	3	(2)	1	0
19. Rooted upland plants in streambed	(3)	2	1	0
20. Macrobenthos (note diversity and abundance)	0	(1)	2	3
21. Aquatic Mollusks	(0)	1	2	3
22. Fish	0	(0.5)	1	1.5
23. Crayfish	(0)	0.5	1	1.5
24. Amphibians	(0)	0.5	1	1.5
25. Algae abundant in lower reach	0	0.5	(1)	1.5
26. Wetland plants in streambed none	FACW = 0.75; OBL = 1.5 (Other = 0)			

*perennial streams may also be identified using other methods. See p. 35 of manual.

Notes: isopods & amphipods, fish (lower reach)

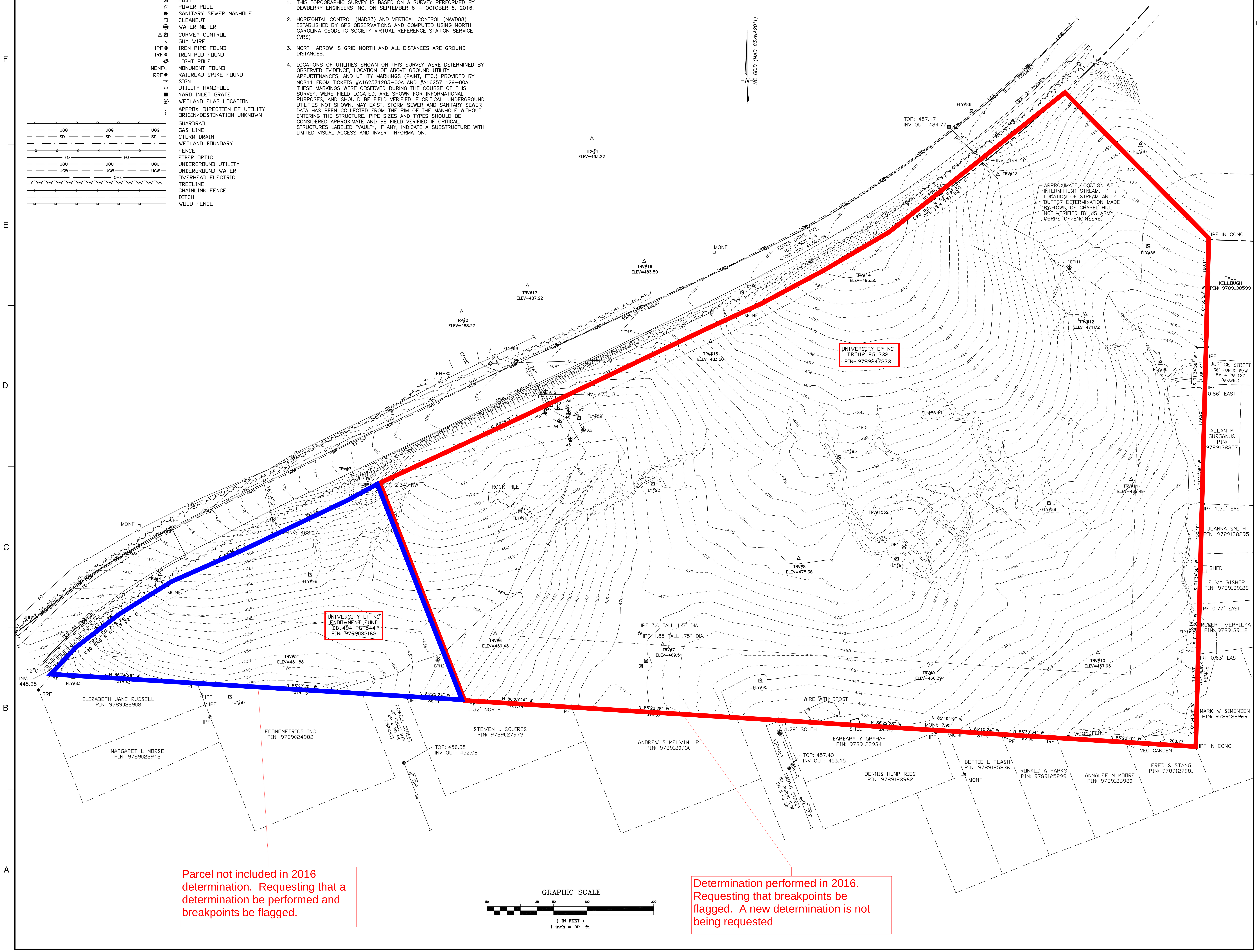
Sketch: Feature begins @ headcut (flagged) & ends at box culvert @ Estes Dr. Channel shallow & dry in upper reach, but well-defined & with water flowing & in pools in lower reach. Small wetland located at base of slope on left bank, just north of Estes.

LEGEND

- POST
- POWER POLE
- SANITARY SEWER MANHOLE
- CLEANOUT
- WATER METER
- SURVEY CONTROL
- GUY WIRE
- IPF IRON PIPE FOUND
- IRF IRON ROD FOUND
- LIGHT POLE
- MONF MONUMENT FOUND
- RRF RAILROAD SPIKE FOUND
- SIGN
- UTILITY HANDHOLE
- YARD INLET GRATE
- WETLAND FLAG LOCATION
- APPROX. DIRECTION OF UTILITY ORIGIN/DESTINATION UNKNOWN
- GUARDRAIL
- UGG GAS LINE
- SD STORM DRAIN
- WETLAND BOUNDARY
- FENCE
- FO FIBER OPTIC
- UGU UNDERGROUND UTILITY
- UGW UNDERGROUND WATER
- OHE OVERHEAD ELECTRIC
- TREELINE
- CHAINLINK FENCE
- DITCH
- WOOD FENCE

TOPOGRAPHIC SURVEY NOTES:

1. THIS TOPOGRAPHIC SURVEY IS BASED ON A SURVEY PERFORMED BY DEWBERRY ENGINEERS INC. ON SEPTEMBER 6 – OCTOBER 6, 2016.
2. HORIZONTAL CONTROL (NAD83) AND VERTICAL CONTROL (NAVD88) ESTABLISHED BY GPS OBSERVATIONS AND COMPUTED USING NORTH CAROLINA GEODETIC SOCIETY VIRTUAL REFERENCE STATION SERVICE (VRS).
3. NORTH ARROW IS GRID NORTH AND ALL DISTANCES ARE GROUND DISTANCES.
4. LOCATIONS OF UTILITIES SHOWN ON THIS SURVEY WERE DETERMINED BY OBSERVED EVIDENCE, LOCATION OF ABOVE GROUND UTILITY APPURTENANCES, AND UTILITY MARKINGS (PAINT, ETC.) PROVIDED BY NC811 FROM TICKETS #A162571203–00A AND #A162571129–00A. THESE MARKINGS WERE OBSERVED DURING THE COURSE OF THIS SURVEY, WERE FIELD LOCATED, ARE SHOWN FOR INFORMATIONAL PURPOSES, AND SHOULD BE FIELD VERIFIED IF CRITICAL. UNDERGROUND UTILITIES NOT SHOWN, MAY EXIST. STORM SEWER AND SANITARY SEWER DATA HAS BEEN COLLECTED FROM THE RIM OF THE MANHOLE WITHOUT ENTERING THE STRUCTURE. PIPE SIZES AND TYPES SHOULD BE CONSIDERED APPROXIMATE AND BE FIELD VERIFIED IF CRITICAL. STRUCTURES LABELED "VAULT", IF ANY, INDICATE A SUBSTRUCTURE WITH LIMITED VISUAL ACCESS AND INVERT INFORMATION.



NC GRID (NAD 83/NA2011)
UNIVERSITY OF NC
DB 112 PG 332
PIN: 9789247373
UNIVERSITY OF NC
ENDOWMENT FUND
DB 494 PG 544
PIN: 9789033163
APPROXIMATE LOCATION OF INTERMITTENT STREAM. LOCATION OF STREAM AND BUFFER DETERMINATION MADE BY TOWN OF CHAPEL HILL. NOT VERIFIED BY US ARMY CORPS OF ENGINEERS.
ESTES DRIVE EXT.
100' PUBLIC R/W
NCDOT PROJ. #6.502098
ROCK PILE
PAUL KILLOUGH
PIN: 9789138599
JUSTICE STREET
36' PUBLIC R/W
BM 4 PG 122
(GRAVEL)
ALLAN M GURGANUS
PIN: 9789138357
JOANNA SMITH
PIN: 9789138295
ELVA BISHOP
PIN: 9789139128
ROBERT VERMILYA
PIN: 9789139112
MARK W SIMONSEN
PIN: 9789128969
FRED S STANG
PIN: 9789127981
ANNALEE M MOORE
PIN: 9789126980
RONALD A PARKS
PIN: 9789125899
BETTIE L FLASH
PIN: 9789125836
DENNIS HUMPHRIES
PIN: 9789123962
BARBARA Y GRAHAM
PIN: 9789123934
ANDREW S MELVIN JR
PIN: 9789120930
STEVEN J SQUIRES
PIN: 9789027973
ECONOMETRICS INC
PIN: 9789024982
ELIZABETH JANE RUSSELL
PIN: 9789022908
MARGARET L MORSE
PIN: 9789022942
POWELL STREET
HARTIG STREET
GRAPHIC SCALE
(IN FEET)
1 inch = 50 ft.

Parcel not included in 2016 determination. Requesting that a determination be performed and breakpoints be flagged.

Determination performed in 2016. Requesting that breakpoints be flagged. A new determination is not being requested

Dewberry®

Dewberry Engineers Inc.
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
FAX: 919.881.9923
NCBELS #F-0929

TOPOGRAPHIC SURVEY FOR TOWN OF CHAPEL HILL MUNICIAP SERVICES CENTER

PROPERTY OF UNIVERSITY OF NC
ESTES DRIVE EXTENSION
CHAPEL HILL, NC

SEAL

PRELIMINARY
NOT FOR RECORDATION, SALES OR CONVEYANCES

KEY PLAN

SCALE

No.	DATE	BY	Description

REVISIONS

DRAWN BY	ACH
APPROVED BY	ACH
CHECKED BY	TLH
DATE	10/7/16

TITLE

TOPOGRAPHIC SURVEY AREA

PROJECT NO. 50079224

SHEET NO. 1

1 OF 1

PUBLIC WORKS DEPARTMENT
STORMWATER MANAGEMENT DIVISION
405 Martin Luther King, Jr. Blvd.
Chapel Hill, NC 27514-5705
Telephone (919) 969-7246
Fax (919) 969-7276
www.townofchapelhill.org

REQUEST FOR STREAM DETERMINATION

Stream determinations provide information used to determine whether the Town's Resource Conservation District (RCD) or Jordan Watershed Riparian Buffer Protection regulations apply to a property. Town staff will typically conduct a field visit to classify streams on the property(ies) indicated below within two weeks of a request, depending on weather conditions, staff availability, and scope of the request. Please note that stream determinations cannot be conducted within 48 hours of a rain event. There is no fee for stream determinations conducted by Town staff.

A stream determination report indicates the results of a stream classification. Stream classifications expire after five years. If a stream determination has been completed on or near the property(ies) listed below within the last five years, a site visit may not be required unless local hydrology has changed significantly or the stream classification has expired. If a site visit is not required, the stream determination will be based on a records review.

Requests may be emailed (aweakley@townofchapelhill.org), faxed, dropped off at Town Hall or the Stormwater Office, or mailed to the above address in care of the "Stormwater Analyst."

Requestor's Name: Dewberry

Mailing Address: 2610 Wycliff Road, Suite 410

City, State, ZIP: Raleigh, NC 27607

Phone / FAX / Email: 919.424.3770 / 919.881.9939 / mwest@dewberry.com

Check method(s) for report to be sent: ☐ US Mail ☒ Email ☐ FAX ☐ Call for pickup

Signature of property owner or designated legal agent granting permission to Town Staff to enter the property(ies) indicated below for purposes of a Stream Determination:

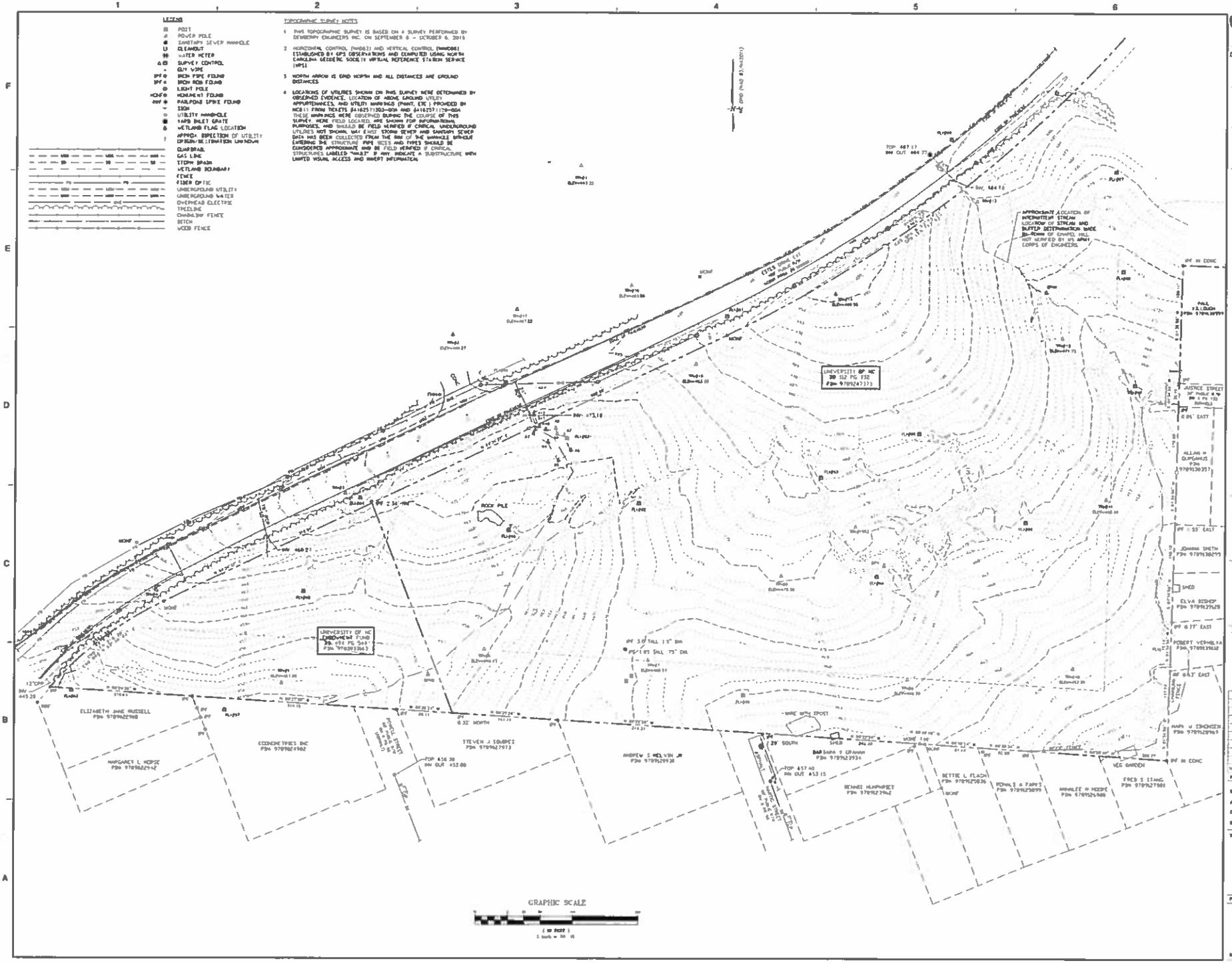
(Signature) 1/19/18 (Date)

Owner Name(s): _____
(Please print)

Company Name (if applicable): University of North Carolina at Chapel Hill

Property Information **Fill in both columns, *or* fill in Parcel ID Number (PIN) and attach a site map indicating location.**	
Parcel ID Number (PIN)	Address / Location Description
9789033163	Estes Drive Ext
9789247373	Estes Drive Ext

Where the **total area** of the property(ies) to visit is **over 3 acres**, please attach an as-built drawing or a topographic map with current landmarks.



Dewberry

Dewberry Engineers Inc.

TOPOGRAPHIC SURVEY
FOR
TOWN OF CHAPEL HILL MUNICIAP SERVICES CENTER
PROPERTY OF UNIVERSITY OF NC

PRELIMINARY

No.	DATE	BY	Description

DRAWN BY ACH
APPROVED BY ACH
CHECKED BY RLH
DATE 10/7/16

TITLE
TOPOGRAPHIC SURVEY AREA

PROJECT NO. 50079224

1

SHEET NO. 1 OF 1

PUBLIC WORKS DEPARTMENT
STORMWATER MANAGEMENT DIVISION
405 Martin Luther King, Jr. Blvd.
Chapel Hill, NC 27514-5705
Telephone (919) 969-7246
Fax (919) 969-7276
www.townofchapelhill.org

10/7/2016

Cindy Hoffman, PLA, A SLA
Dewberry
2610 Wycliff Road, Suite 410
Raleigh, NC 27607-3366

RE: Stream Determination for Parcel #9789-24-7373

Dear Ms. Hoffman:

As requested, the Town Public Works Department has performed a stream determination on the property identified on the attached forms. This determination indicates whether different types of streams (perennial, intermittent, and/or ephemeral) or perennial waterbodies are present on the property in question or on nearby properties. These streams and their classifications are shown on the accompanying map. Stream segments regulated by the Jordan Lake Stream Buffer ordinance are highlighted. **Locations of all features on the map are approximate and must be field surveyed for precise location.**

This stream determination information is used to determine the location and extent of the Resource Conservation District and the Jordan Lake Watershed Riparian Buffer. Specific land use regulations and restrictions apply within the boundaries of these protected areas. If you are considering any kind of work on your property, including clearing vegetation, paving, grading, or building, please consult with the Town Planning Department to determine the possible extent of the Resource Conservation District and Jordan Lake Watershed Riparian Buffer on your property and corresponding regulations.

This classification will remain in effect for five years from the date of the site visit before a request for reclassification will be considered, unless the stream channel characteristics are significantly altered as a result of watershed changes.

In accordance with the Town's procedures, you may appeal this administrative decision to the Town Manager. If you wish to do so, you must file your written appeal accompanied by any materials you believe support your appeal, within **30** days of receipt of this letter.

If you have questions regarding stream determinations, please contact me at (919) 969-5083. If you have questions regarding the Town's Resource Conservation Districts or the Jordan Watershed Riparian Buffer regulations, please contact the Planning Department at (919) 968-2728, or view information online at http://www.townofchapelhill.org/town-hall/departments-services/public-works/stormwater-management/regulations-ordinances.

Regards,

Dave Milkereit
Stormwater Specialist

PUBLIC WORKS DEPARTMENT
STORMWATER MANAGEMENT DIVISION
405 Martin Luther King, Jr. Blvd.
Chapel Hill, NC 27514-5705
Telephone (919) 969-7246
Fax (919) 969-7276
www.townofchapelhill.org

STREAM DETERMINATION SITE VISIT RESULTS

Property Information	
Parcel ID Number (PIN)	Address / Location Description
9789-24-7373	101 Airport Rd/Estes Dr Extension

These are the results of a site visit to the properties listed above for a stream determination conducted on 10/6 & 10/7/2016 by Town Staff:

☐ No perennial, intermittent, or ephemeral streams or perennial waterbodies were identified on or near the property(ies) in question.

☒ Perennial, intermittent, or ephemeral streams, or perennial waterbodies, were identified on or near the property(ies) in question and shown on the attached map(s).

A map showing water features, their Town flow classifications, presence of Jordan Watershed Riparian Buffers, and their approximate locations is attached. Origins or breakpoints that have been flagged in the field are marked on the map. Stream classification forms and additional site visit notes and maps are also attached.

Other conditions exist which may affect the location of the Resource Conservation District or Jordan Watershed Riparian Buffer:

☐ FEMA floodzone is mapped in the area. Precise location of the Base Flood Elevation and associated Resource Conservation District must determined by a field survey commissioned by the owner or a representative.

☒ Segments of perennial or intermittent stream are piped in the area, as shown on the map. These segments do not have an associated Jordan Watershed Riparian Buffer.

☒ Possible Jurisdictional Wetlands have been identified in the area. A formal review by a professional certified in Jurisdictional Wetland Delineation is recommended.

_____ 10/7/2016
Town Staff signature date

Stream Determination Area Map

- Unclassified Stream
- Ephemeral Stream
- Intermittent Stream
- Perennial Stream
- Culverts
- 2-foot Contours
- 10-foot Contours
- Buildings
- Parcels
- Site visited
- Non-regulated Waterbody
- Non-perennial Waterbody
- Wide Perennial Stream
- Perennial Waterbody
- Approximate Jordan Buffer
- Ephemeral Breakpoint
- Intermittent Breakpoint
- Perennial Breakpoint

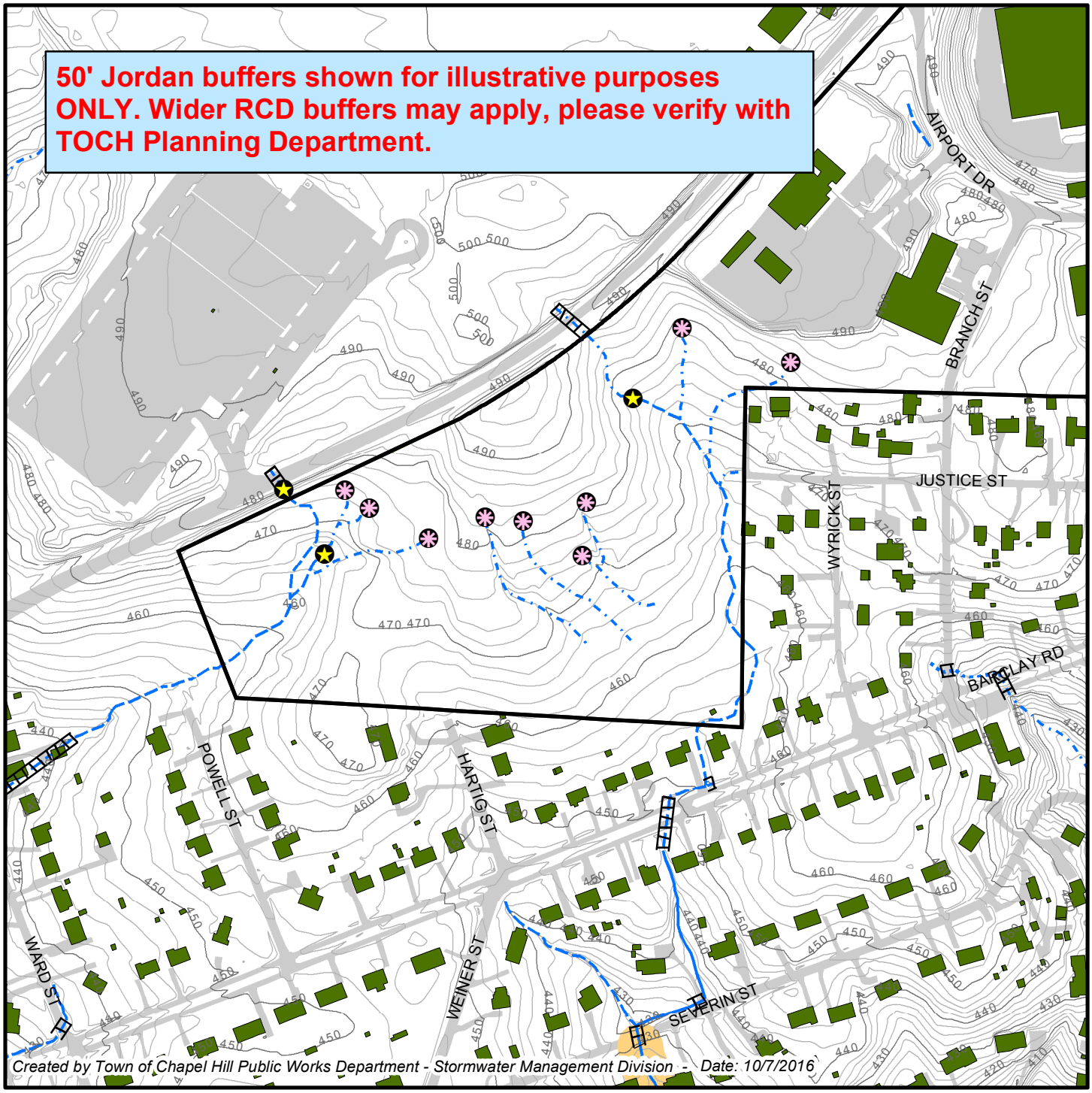
Address: 101 Airport Rd

Parcel ID: 9789-24-7373

0 155 310 620 Feet

1 inch = 316 feet

Stream locations are approximate and must be verified by survey.



USGS 24K Topographic / County Soil Survey Maps

Site Parcel Boundary

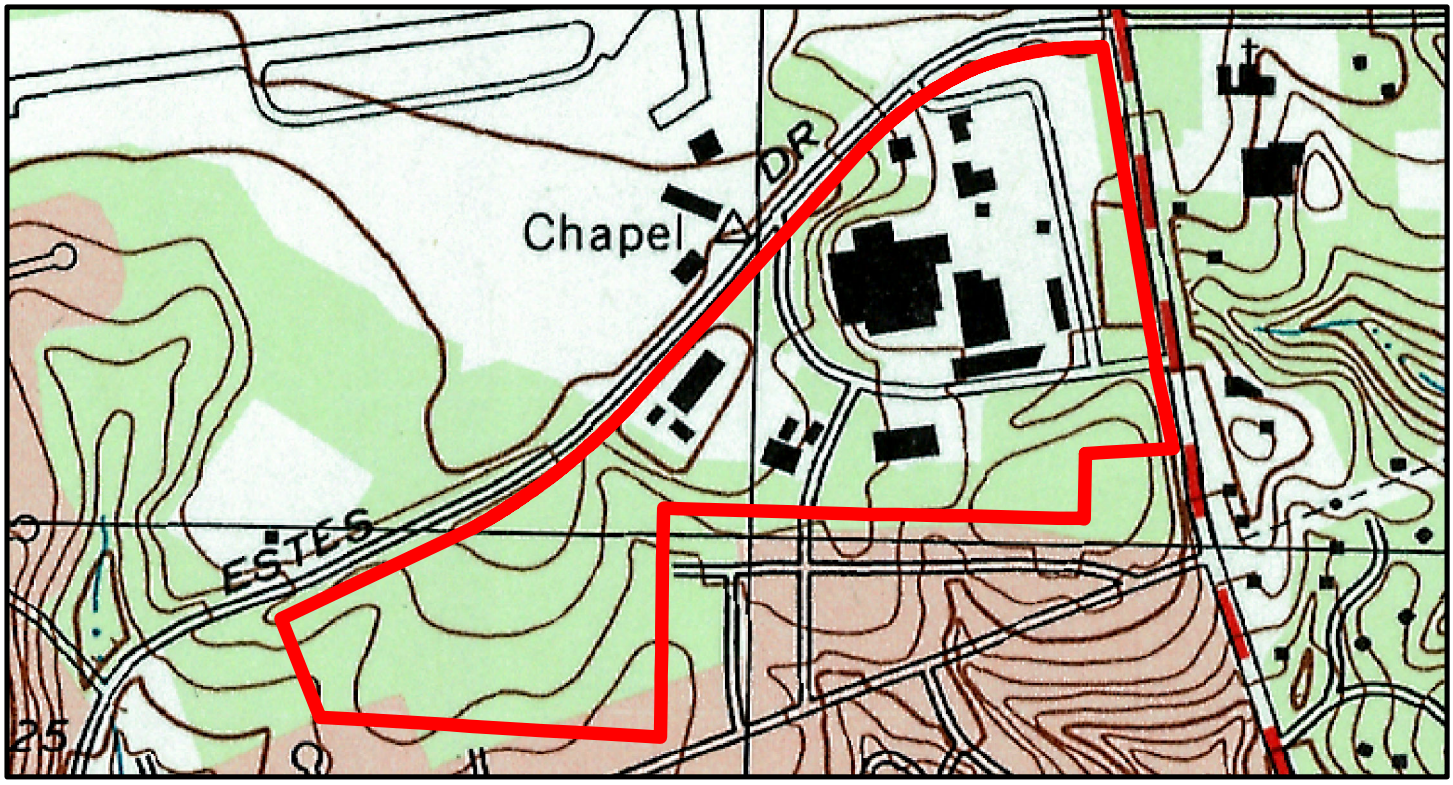
0 190 380 570 760 Feet

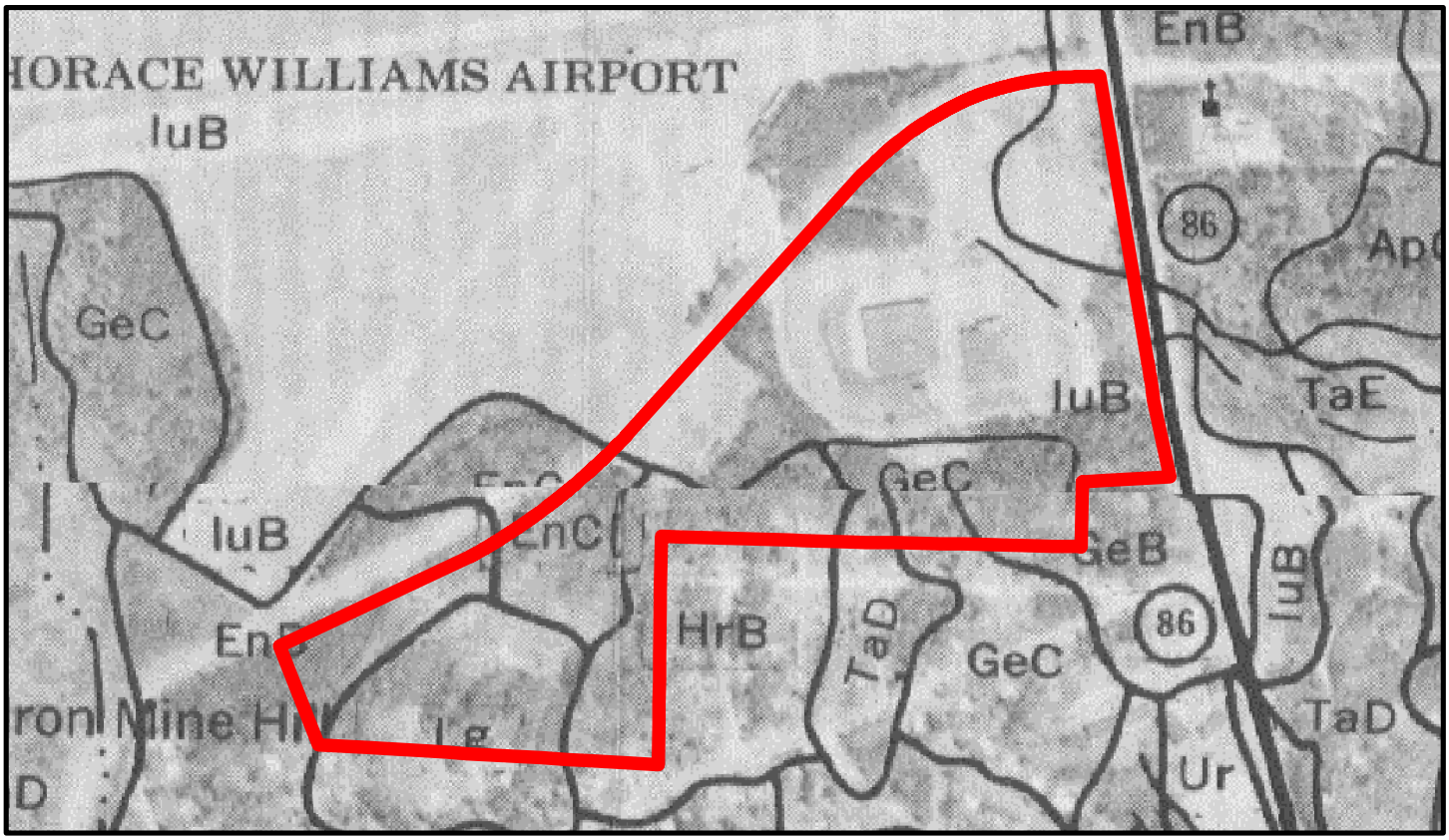
1 inch = 625 feet

Address: 101 Airport Rd

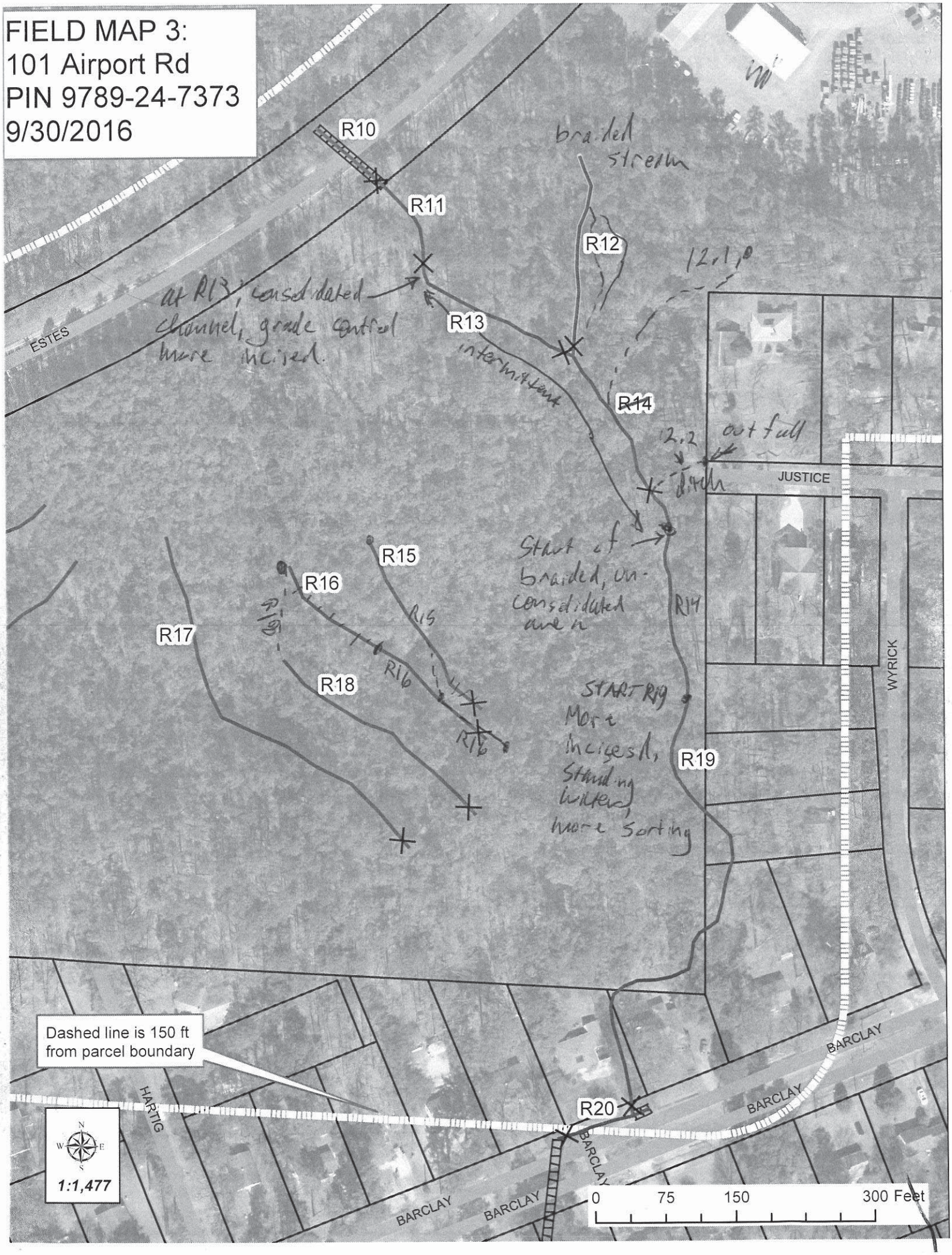
Parcel ID: 9789-24-7373

Created by Town of Chapel Hill Public Works Department - Stormwater Management Division- 9/29/2016






FIELD MAP 2:
101 Airport Rd
PIN 9789-24-7373
9/30/2016
Start R2 (signs of scour)
R1
R2
R3
R4
R5
R6
R7
R8 (no R8)
ESTES Outfall
end R2
start R3
start R4
R5 - wetland, weak channel
R6 starts at head cut
weak channel
R7 starts at beginning of consolidated channel
large headcut
areas of weak channel/wet land
POWELL
POWELL
HARTIG
Dashed line is 150 ft from parcel boundary
1:1,477
0
75
150
300 Feet


FIELD MAP 3:
101 Airport Rd
PIN 9789-24-7373
9/30/2016
R10
R11
R12
R13
R14
R15
R16
R17
R18
R19
R20
braided stream
12.1.0
at R13, consolidated channel, grade control more incised.
intermittent
12.2
outfall
ditch
Start of braided, un-consolidated area
START R19
More incised, standing water, more sorting
ESTES
JUSTICE
WYRICK
HARTIG
BARCLAY
Dashed line is 150 ft from parcel boundary
1:1,477
0
75
150
300 Feet

20161005243 R13

NC DWQ Stream Identification Form Version 4.11

Date:	Project Site: 9789-24-7373	Latitude:
Evaluator: DM	County:	Longitude:
Total Points: 28.15 Stream is at least intermittent if ≥ 19 or perennial if ≥ 30*	Stream Determination (circle one) Ephemeral (Intermittent) Perennial	Other e.g. Quad Name:

A. Geomorphology (Subtotal = 16.5)	Absent	Weak	Moderate	Strong
1[a] Continuity of channel bed and bank	0	1	(2)	3
2. Sinuosity of channel along thalweg	0	1	(2)	3
3. In-channel structure: ex. riffle-pool, step-pool, ripple-pool sequence	0	1	(2)	3
4. Particle size of stream substrate	0	(1)	2	3
5. Active/relict floodplain	0	1	2	(3)
6. Depositional bars or benches	0	(1)	2	3
7. Recent alluvial deposits	0	(1)	2	3
8. Headcuts	0	1	2	(3)
9. Grade control	0	0.5	(1)	1.5
10. Natural valley	0	(0.5)	1	1.5
11. Second or greater order channel	No = 0		Yes = 3	

[a] artificial ditches are not rated; see discussions in manual

B. Hydrology (Subtotal = 5.5)				
12. Presence of Baseflow	(0)	1	2	3
13. Iron oxidizing bacteria	(0)	1	2	3
14. Leaf litter	1.5	(1)	0.5	0
15. Sediment on plants or debris	0	(0.5)	1	1.5
16. Organic debris lines or piles	0	0.5	(1)	1.5
17. Soil-based evidence of high water table?	No = 0		Yes = (3)	

C. Biology (Subtotal = 6.75)				
18. Fibrous roots in streambed	3	(2)	1	0
19. Rooted upland plants in streambed	3	(2)	1	0
20. Macrobenthos (note diversity and abundance)	(0)	1	2	3
21. Aquatic Mollusks	(0)	1	2	3
22. Fish	(0)	0.5	1	1.5
23. Crayfish	(0)	0.5	1	1.5
24. Amphibians	(0)	0.5	1	1.5
25. Algae	0	0.5	(1)	1.5
26. Wetland plants in streambed	FACW = (0.75)	OBL = 1.5	Other = 0	

*perennial streams may also be identified using other methods. See p. 35 of manual.

Notes:

Sketch: 19: Sweet gum, hickory, 26: micro stegeum, smilax

1: <25% of reach is unconsolidated

20161005258

R16

NC DWQ Stream Identification Form Version 4.11

Date: 10/5/16	Project Site: 9789-24-7373	Latitude:
Evaluator: DM	County:	Longitude:
Total Points: 17.75 Stream is at least intermittent if ≥ 19 or perennial if ≥ 30*	Stream Determination (circle one) Ephemeral Intermittent Perennial	Other e.g. Quad Name:

A. Geomorphology (Subtotal = 11)	Absent	Weak	Moderate	Strong
1[a] Continuity of channel bed and bank	0	(1)	2	3
2. Sinuosity of channel along thalweg	0	1	(2)	3
3. In-channel structure: ex. riffle-pool, step-pool, ripple-pool sequence	0	(1)	2	3
4. Particle size of stream substrate	0	(1)	2	3
5. Active/relict floodplain	0	(1)	2	3
6. Depositional bars or benches	(0)	1	2	3
7. Recent alluvial deposits	0	1	(2)	3
8. Headcuts	0	1	(2)	3
9. Grade control	0	0.5	(1)	1.5
10. Natural valley	(0)	0.5	1	1.5
11. Second or greater order channel	No = (0)		Yes = 3	

[a] artificial ditches are not rated; see discussions in manual

B. Hydrology (Subtotal = 2)				
12. Presence of Baseflow	(0)	1	2	3
13. Iron oxidizing bacteria	(0)	1	2	3
14. Leaf litter	1.5	1	(0.5)	0
15. Sediment on plants or debris	(0)	0.5	1	1.5
16. Organic debris lines or piles	0	0.5	1	(1.5)
17. Soil-based evidence of high water table?	No = 0		Yes = (3)	

C. Biology (Subtotal = 4.75)				
18. Fibrous roots in streambed	3	(2)	1	0
19. Rooted upland plants in streambed	3	2	(1)	0
20. Macrobenthos (note diversity and abundance)	(0)	1	2	3
21. Aquatic Mollusks	(0)	1	2	3
22. Fish	(0)	0.5	1	1.5
23. Crayfish	(0)	0.5	1	1.5
24. Amphibians	(0)	0.5	1	1.5
25. Algae	0	0.5	(1)	1.5
26. Wetland plants in streambed	FACW = (0.75) OBL = 1.5 Other = 0			

*perennial streams may also be identified using other methods. See p. 35 of manual.

Notes:

Sketch:

20161006 1130

R2

NC DWQ Stream Identification Form Version 4.11

Date: 10/6/16	Project Site: 9739-24-7373	Latitude:
Evaluator: DM	County:	Longitude:
Total Points: 9.75 (Stream is at least intermittent if ≥ 19 or perennial if ≥ 30*)	Stream Determination (circle one): Ephemeral / Intermittent / Perennial	Other (e.g. Quad Name):

A. Geomorphology (Subtotal = 3.5)	Absent	Weak	Moderate	Strong
1[a] Continuity of channel bed and bank	0	(1)	2	3
2. Sinuosity of channel along thalweg	0	(1)	2	3
3. In-channel structure: (ex. riffle-pool, step-pool, ripple-pool sequence	0	1	(2)	3
4. Particle size of stream substrate	0	(1)	2	3
5. Active/relict floodplain	(0)	1	2	3
6. Depositional bars or benches	(0)	1	2	3
7. Recent alluvial deposits	(0)	1	2	3
8. Headcuts	(0)	1	2	3
9. Grade control	0	(0.5)	1	1.5
10. Natural valley	(0)	0.5	1	1.5
11. Second or greater order channel	No = (0)		Yes = 3	

[a] artificial ditches are not rated; see discussions in manual

B. Hydrology (Subtotal = 1.5)				
12. Presence of Baseflow	(0)	1	2	3
13. Iron oxidizing bacteria	(0)	1	2	3
14. Leaf litter	1.5	1	(0.5)	0
15. Sediment on plants or debris	(0)	0.5	1	1.5
16. Organic debris lines or piles	0	0.5	(1)	1.5
17. Soil-based evidence of high water table?	No = (0)		Yes = 3	

C. Biology (Subtotal = 2.75)				
18. Fibrous roots in streambed	3	(2)	1	0
19. Rooted upland plants in streambed	(3)	2	1	0
20. Macrobenthos (note diversity and abundance)	(0)	1	2	3
21. Aquatic Mollusks	(0)	1	2	3
22. Fish	(0)	0.5	1	1.5
23. Crayfish	(0)	0.5	1	1.5
24. Amphibians	(0)	0.5	1	1.5
25. Algae	(0)	0.5	1	1.5
26. Wetland plants in streambed	FACW = (0.75)	OBL = 1.5	Other = 0	

*perennial streams may also be identified using other methods. See p. 35 of manual.

Notes:

Sketch:

20161006 1125 R3

NC DWQ Stream Identification Form Version 4.11

Date: 10/6/16	Project Site: 9789-24-7373	Latitude:
Evaluator: DM	County:	Longitude:
Total Points: Stream is at least intermittent if ≥ 19 or perennial if ≥ 30* 15.75	Stream Determination (circle one): Ephemeral Intermittent Perennial	Other (e.g. Quad Name):

A. Geomorphology (Subtotal = 8)	Absent	Weak	Moderate	Strong
1[a] Continuity of channel bed and bank	0	1	2	3
2. Sinuosity of channel along thalweg	0	1	2	3
3. In-channel structure (ex. riffle-pool, step-pool, ripple-pool sequence	0	1	2	3
4. Particle size of stream substrate	0	1	2	3
5. Active/relict floodplain	0	1	2	3
6. Depositional bars or benches	0	1	2	3
7. Recent alluvial deposits	0	1	2	3
8. Headcuts	0	1	2	3
9. Grade control	0	0.5	1	1.5
10. Natural valley	0	0.5	1	1.5
11. Second or greater order channel	No = 0		Yes = 3	

[a] artificial ditches are not rated; see discussions in manual

B. Hydrology (Subtotal = 4.5)				
12. Presence of Baseflow	0	1	2	3
13. Iron oxidizing bacteria	0	1	2	3
14. Leaf litter	1.5	1	0.5	0
15. Sediment on plants or debris	0	0.5	1	1.5
16. Organic debris lines or piles	0	0.5	1	1.5
17. Soil-based evidence of high water table?	No = 0		Yes = 3	

C. Biology (Subtotal = 3.25)				
18. Fibrous roots in streambed	3	2	1	0
19. Rooted upland plants in streambed	3	2	1	0
20. Macrobenthos (note diversity and abundance)	0	1	2	3
21. Aquatic Mollusks	0	1	2	3
22. Fish	0	0.5	1	1.5
23. Crayfish	0	0.5	1	1.5
24. Amphibians	0	0.5	1	1.5
25. Algae	0	0.5	1	1.5
26. Wetland plants in streambed	FACW = 0.75	OBL = 1.5	Other = 0	

*perennial streams may also be identified using other methods. See p. 35 of manual.

Notes:

Sketch:

20161006 1116 R4

NC DWQ Stream Identification Form Version 4.11

Date: 10/6/16	Project Site: 9789-24-7373	Latitude:
Evaluator: DM	County:	Longitude:
Total Points: Stream is at least intermittent if ≥ 19 or perennial if ≥ 30* 13.25	Stream Determination (circle one): Ephemeral / Intermittent / Perennial	Other: e.g. Quad Name:

A. Geomorphology (Subtotal = 5.5)	Absent	Weak	Moderate	Strong
1[a] Continuity of channel bed and bank	0	(1)	2	3
2. Sinuosity of channel along thalweg	0	(1)	2	3
3. In-channel structure: ex. riffle-pool, step-pool, pool-pool sequence	0	(1)	2	3
4. Particle size of stream substrate	0	(1)	2	3
5. Active/relict floodplain	(0)	1	2	3
6. Depositional bars or benches	(0)	1	2	3
7. Recent alluvial deposits	(0)	1	2	3
8. Headcuts	0	(1)	2	3
9. Grade control	0	(0.5)	1	1.5
10. Natural valley	(0)	0.5	1	1.5
11. Second or greater order channel	No = (0)		Yes = 3	

[a] artificial ditches are not rated; see discussions in manual

B. Hydrology (Subtotal = 4.0)				
12. Presence of Baseflow	(0)	1	2	3
13. Iron oxidizing bacteria	(0)	1	2	3
14. Leaf litter	1.5	1	(0.5)	0
15. Sediment on plants or debris	(0)	0.5	1	1.5
16. Organic debris lines or piles	0	(0.5)	1	1.5
17. Soil-based evidence of high water table?	No = 0		Yes = (3)	

C. Biology (Subtotal = 3.75)				
18. Fibrous roots in streambed	3	2	(1)	0
19. Rooted upland plants in streambed	3	(2)	1	0
20. Macrobenthos (note diversity and abundance)	(0)	1	2	3
21. Aquatic Mollusks	(0)	1	2	3
22. Fish	(0)	0.5	1	1.5
23. Crayfish	(0)	0.5	1	1.5
24. Amphibians	(0)	0.5	1	1.5
25. Algae	(0)	0.5	1	1.5
26. Wetland plants in streambed	FACW = (0.75)	OBL = 1.5	Other = 0	

*perennial streams may also be identified using other methods. See p. 35 of manual.

Notes:

Sketch:

2016100611150

R5

NC DWQ Stream Identification Form Version 4.11

Date: 10/6/16	Project Site: 9789-24-7373	Latitude:
Evaluator: DM	County:	Longitude:
Total Points: Stream is at least intermittent if ≥ 19 or perennial if ≥ 30* 23.25	Stream Determination (circle one): Ephemeral (Intermittent) Perennial	Other (e.g. Quad Name):

A. Geomorphology (Subtotal = 7)	Absent	Weak	Moderate	Strong
1[a] Continuity of channel bed and bank	0	1	(2)	3
2. Sinuosity of channel along thalweg	0	(1)	2	3
3. In-channel structure (ex. riffle-pool, step-pool, ripple-pool sequence	0	1	(2)	3
4. Particle size of stream substrate	0	(1)	2	3
5. Active/relict floodplain	(0)	1	2	3
6. Depositional bars or benches	(0)	1	2	3
7. Recent alluvial deposits	(0)	1	2	3
8. Headcuts	(0)	1	2	3
9. Grade control	0	0.5	(1)	1.5
10. Natural valley	(0)	0.5	1	1.5
11. Second or greater order channel	No = (0)		Yes = 3	

[a] artificial ditches are not rated; see discussions in manual

B. Hydrology (Subtotal = 7.5)				
12. Presence of Baseflow	0	(1)	2	3
13. Iron oxidizing bacteria	0	(1)	2	3
14. Leaf litter	1.5	(1)	0.5	0
15. Sediment on plants or debris	0	(0.5)	1	1.5
16. Organic debris lines or piles	0	0.5	(1)	1.5
17. Soil-based evidence of high water table?	No = 0		Yes = (3)	

C. Biology (Subtotal = 8.75)				
18. Fibrous roots in streambed	(3)	2	1	0
19. Rooted upland plants in streambed	(3)	2	1	0
20. Macrobenthos (note diversity and abundance)	0	(1)	2	3
21. Aquatic Mollusks	(3)	1	2	3
22. Fish	(0)	0.5	1	1.5
23. Crayfish	(0)	0.5	1	1.5
24. Amphibians	(0)	0.5	1	1.5
25. Algae	0	0.5	(1)	1.5
26. Wetland plants in streambed	FACW = 0.75	OBL = 1.5	Other = 0	

*perennial streams may also be identified using other methods. See p. 35 of manual.

Notes: 20+ lots of isopods

Sketch:

20161006 1206

17

NC DWQ Stream Identification Form Version 4.11

Date: 10/6/16	Project Site: 9789-24-7373	Latitude:
Evaluator: DM	County:	Longitude:
Total Points: 18.25 *Stream is at least intermittent if ≥ 19 or perennial if ≥ 30*	Stream Determination (circle one) Ephemeral Intermittent Perennial	Other *e.g. Quad Name:*

A. Geomorphology (Subtotal = 8.5)	Absent	Weak	Moderate	Strong
1[a] Continuity of channel bed and bank	0	1	(2)	3
2. Sinuosity of channel along thalweg	0	1	(2)	3
3. In-channel structure: ex. riffle-pool, step-pool, ripple-pool sequence	0	(1)	2	3
4. Particle size of stream substrate	0	(1)	2	3
5. Active/relict floodplain	(0)	1	2	3
6. Depositional bars or benches	(0)	1	2	3
7. Recent alluvial deposits	0	(1)	2	3
8. Headcuts	0	(1)	2	3
9. Grade control	0	(0.5)	1	1.5
10. Natural valley	(0)	0.5	1	1.5
11. Second or greater order channel	No = (0)		Yes = 3	

[a] artificial ditches are not rated; see discussions in manual

B. Hydrology (Subtotal = 4.5)				
12. Presence of Baseflow	(0)	1	2	3
13. Iron oxidizing bacteria	(0)	1	2	3
14. Leaf litter	1.5	(1)	0.5	0
15. Sediment on plants or debris	(0)	0.5	1	1.5
16. Organic debris lines or piles	0	(0.5)	1	1.5
17. Soil-based evidence of high water table?	No = 0		Yes = (3)	

C. Biology (Subtotal = 5.75)				
18. Fibrous roots in streambed	3	2	(1)	0
19. Rooted upland plants in streambed	(3)	2	1	0
20. Macrobenthos (note diversity and abundance)	(0)	1	2	3
21. Aquatic Mollusks	(0)	1	2	3
22. Fish	(0)	0.5	1	1.5
23. Crayfish	(0)	0.5	1	1.5
24. Amphibians	(0)	0.5	1	1.5
25. Algae	0	0.5	(1)	1.5
26. Wetland plants in streambed	FACW = (0.75)	OBL = 1.5	Other = 0	

[b] perennial streams may also be identified using other methods. See p. 35 of manual.

Notes:

Sketch:

20161006 1210

R1B

NC DWQ Stream Identification Form Version 4.11

Date: 10/6/16	Project Site: 9789-24-7373	Latitude
Evaluator: DM	County	Longitude
Total Points: Stream is at least intermittent if ≥ 19 or perennial if ≥ 30* 16.25	Stream Determination (circle one): Ephemeral Intermittent Perennial	Other (e.g. Quad Name)

A. Geomorphology (Subtotal = 8)	Absent	Weak	Moderate	Strong
1[a] Continuity of channel bed and bank	0	(1)	2	3
2. Sinuosity of channel along thalweg	0	1	(2)	3
3. In-channel structure (ex. riffle-pool, step-pool, ripple-pool sequence	0	(1)	2	3
4. Particle size of stream substrate	0	(1)	2	3
5. Active/relict floodplain	(0)	1	2	3
6. Depositional bars or benches	0	(1)	2	3
7. Recent alluvial deposits	0	(1)	2	3
8. Headcuts	(0)	1	2	3
9. Grade control	0	0.5	(1)	1.5
10. Natural valley	(0)	0.5	1	1.5
11. Second or greater order channel	No = (0)		Yes = 3	

[a] artificial ditches are not rated; see discussions in manual

B. Hydrology (Subtotal = 1.5)				
12. Presence of Baseflow	(0)	1	2	3
13. Iron oxidizing bacteria	(0)	1	2	3
14. Leaf litter	1.5	1	(0.5)	0
15. Sediment on plants or debris	(0)	0.5	1	1.5
16. Organic debris lines or piles	0	0.5	(1)	1.5
17. Soil-based evidence of high water table?	No = 0		Yes = (3)	

C. Biology (Subtotal = 6.75)				
18. Fibrous roots in streambed	3	(2)	1	0
19. Rooted upland plants in streambed	(3)	2	1	0
20. Macrobenthos (note diversity and abundance)	(0)	1	2	3
21. Aquatic Mollusks	(0)	1	2	3
22. Fish	(0)	0.5	1	1.5
23. Crayfish	(0)	0.5	1	1.5
24. Amphibians	(0)	0.5	1	1.5
25. Algae	0	0.5	(1)	1.5
26. Wetland plants in streambed	FACW = (0.75)	OBL = 1.5	Other = 0	

*perennial streams may also be identified using other methods. See p. 35 of manual.

Notes:

Sketch:

20161006/220

R15

NC DWQ Stream Identification Form Version 4.11

Date: 10/6/2016	Project Site: 9789-24-7373	Latitude:
Evaluator: DM	County:	Longitude:
Total Points: 14.25 Stream is at least intermittent if ≥ 19 or perennial if ≥ 30*	Stream Determination (circle one) Ephemeral Intermittent Perennial	Other e.g. Quad Name:

A. Geomorphology (Subtotal = 7.5)	Absent	Weak	Moderate	Strong
1[a] Continuity of channel bed and bank	0	(1)	2	3
2. Sinuosity of channel along thalweg	0	1	(2)	3
3. In-channel structure: ex. riffle-pool, step-pool, ripple-pool sequence	0	1	(2)	3
4. Particle size of stream substrate	0	(1)	2	3
5. Active/relict floodplain	(0)	1	2	3
6. Depositional bars or benches	(0)	1	2	3
7. Recent alluvial deposits	0	(1)	2	3
8. Headcuts	(0)	1	2	3
9. Grade control	0	(0.5)	1	1.5
10. Natural valley	(0)	0.5	1	1.5
11. Second or greater order channel	No = (0)		Yes = 3	

[a] artificial ditches are not rated; see discussions in manual

B. Hydrology (Subtotal = 4.5)				
12. Presence of Baseflow	(0)	1	2	3
13. Iron oxidizing bacteria	(0)	1	2	3
14. Leaf litter	1.5	1	(0.5)	0
15. Sediment on plants or debris	(0)	0.5	1	1.5
16. Organic debris lines or piles	0	0.5	(1)	1.5
17. Soil-based evidence of high water table?	No = 0		Yes = (3)	

C. Biology (Subtotal = 2.75)				
18. Fibrous roots in streambed	3	2	(1)	0
19. Rooted upland plants in streambed	3	2	(1)	0
20. Macrobenthos (note diversity and abundance)	(0)	1	2	3
21. Aquatic Mollusks	(0)	1	2	3
22. Fish	(0)	0.5	1	1.5
23. Crayfish	(0)	0.5	1	1.5
24. Amphibians	(0)	0.5	1	1.5
25. Algae	0	(0.5)	1	1.5
26. Wetland plants in streambed	FACW = (0.75)	OBL = 1.5	Other = 0	

*perennial streams may also be identified using other methods. See p. 35 of manual.

Notes:

Sketch:

20161006/226

RII

NC DWQ Stream Identification Form Version 4.11

Date: 10/6/16	**Project/Site:** 9789-24-7373	**Latitude:**
Evaluator: DM	**County:**	**Longitude:**
Total Points: *Stream is at least intermittent if ≥ 19 or perennial if ≥ 30** 12.75	**Stream Determination (circle one)** Ephemeral Intermittent Perennial	**Other** *e.g. Quad Name:*

A. Geomorphology (Subtotal = 4.5)	Absent	Weak	Moderate	Strong
1[a]. Continuity of channel bed and bank	0	(1)	2	3
2. Sinuosity of channel along thalweg	(0)	1	2	3
3. In-channel structure: ex. riffle-pool, step-pool, ripple-pool sequence	0	(1)	2	3
4. Particle size of stream substrate	0	(1)	2	3
5. Active/relict floodplain	(0)	1	2	3
6. Depositional bars or benches	(0)	1	2	3
7. Recent alluvial deposits	0	(1)	2	3
8. Headcuts	(0)	1	2	3
9. Grade control	0	(0.5)	1	1.5
10. Natural valley	(0)	0.5	1	1.5
11. Second or greater order channel	No = 0		Yes = 3	

[a] artificial ditches are not rated; see discussions in manual

B. Hydrology (Subtotal = 2)				
12. Presence of Baseflow	(0)	1	2	3
13. Iron oxidizing bacteria	(0)	1	2	3
14. Leaf litter	1.5	(1)	0.5	0
15. Sediment on plants or debris	(0)	0.5	1	1.5
16. Organic debris lines or piles	0	0.5	(1)	1.5
17. Soil-based evidence of high water table?	No = 0		Yes = 3	

C. Biology (Subtotal = 6.25)				
18. Fibrous roots in streambed	3	(2)	1	0
19. Rooted upland plants in streambed	(3)	2	1	0
20. Macrobenthos (note diversity and abundance)	(0)	1	2	3
21. Aquatic Mollusks	(0)	1	2	3
22. Fish	(0)	0.5	1	1.5
23. Crayfish	(0)	0.5	1	1.5
24. Amphibians	(0)	0.5	1	1.5
25. Algae	0	(0.5)	1	1.5
26. Wetland plants in streambed	FACW = 0.75; OBL = 1.5 Other = 0			

*perennial streams may also be identified using other methods. See p. 35 of manual.

Notes:

Sketch:

20161006 1231

RIZ

NC DWQ Stream Identification Form Version 4.11

Date: 10/6/16	**Project/Site:** 9789-24-1373	**Latitude:**
Evaluator: DM	**County:**	**Longitude:**
Total Points: *Stream is at least intermittent if ≥ 19 or perennial if ≥ 30** 14.5	**Stream Determination (circle one)** Ephemeral Intermittent Perennial	**Other** *e.g. Quad Name:*

A. Geomorphology (Subtotal = 4.5)	Absent	Weak	Moderate	Strong
1[a]. Continuity of channel bed and bank	0	(1)	2	3
2. Sinuosity of channel along thalweg	(0)	1	2	3
3. In-channel structure: ex. riffle-pool, step-pool, ripple-pool sequence	0	(1)	2	3
4. Particle size of stream substrate	(0)	1	2	3
5. Active/relict floodplain	(0)	1	2	3
6. Depositional bars or benches	(0)	1	2	3
7. Recent alluvial deposits	0	(1)	2	3
8. Headcuts	0	(1)	2	3
9. Grade control	0	(0.5)	1	1.5
10. Natural valley	(0)	0.5	1	1.5
11. Second or greater order channel	No = (0)		Yes = 3	

[a] artificial ditches are not rated; see discussions in manual

B. Hydrology (Subtotal = 4)				
12. Presence of Baseflow	(0)	1	2	3
13. Iron oxidizing bacteria	(0)	1	2	3
14. Leaf litter	1.5	1	(0.5)	0
15. Sediment on plants or debris	(0)	0.5	1	1.5
16. Organic debris lines or piles	0	(0.5)	1	1.5
17. Soil-based evidence of high water table?	No = 0		Yes = (3)	

C. Biology (Subtotal = 6)				
18. Fibrous roots in streambed	(3)	2	1	0
19. Rooted upland plants in streambed	(3)	2	1	0
20. Macrobenthos (note diversity and abundance)	(0)	1	2	3
21. Aquatic Mollusks	(0)	1	2	3
22. Fish	(0)	0.5	1	1.5
23. Crayfish	(0)	0.5	1	1.5
24. Amphibians	(0)	0.5	1	1.5
25. Algae	(0)	0.5	1	1.5
26. Wetland plants in streambed	FACW = 0.75; OBL = 1.5 Other = (0)			

*perennial streams may also be identified using other methods. See p. 35 of manual.

Notes:

Sketch:

20161006 1235

12.1

NC DWQ Stream Identification Form Version 4.11

Date: 10/6/16	**Project/Site:** 9789-24-7373	**Latitude:**
Evaluator: DM	**County:**	**Longitude:**
Total Points: *Stream is at least intermittent if ≥ 19 or perennial if ≥ 30** 12.75	**Stream Determination (circle one)** Ephemeral Intermittent Perennial	**Other** *e.g. Quad Name:*

A. Geomorphology (Subtotal = 4.5)	Absent	Weak	Moderate	Strong
1[a]. Continuity of channel bed and bank	0	(1)	2	3
2. Sinuosity of channel along thalweg	0	(1)	2	3
3. In-channel structure: ex. riffle-pool, step-pool, ripple-pool sequence	0	(1)	2	3
4. Particle size of stream substrate	(0)	1	2	3
5. Active/relict floodplain	(0)	1	2	3
6. Depositional bars or benches	(0)	1	2	3
7. Recent alluvial deposits	0	(1)	2	3
8. Headcuts	(0)	1	2	3
9. Grade control	0	(0.5)	1	1.5
10. Natural valley	(0)	0.5	1	1.5
11. Second or greater order channel	No = (0)		Yes = 3	

[a] artificial ditches are not rated; see discussions in manual

B. Hydrology (Subtotal = 4)				
12. Presence of Baseflow	(0)	1	2	3
13. Iron oxidizing bacteria	(0)	1	2	3
14. Leaf litter	1.5	1	(0.5)	0
15. Sediment on plants or debris	(0)	0.5	1	1.5
16. Organic debris lines or piles	0	(0.5)	1	1.5
17. Soil-based evidence of high water table?	No = 0		Yes = (3)	

C. Biology (Subtotal = 4.25)				
18. Fibrous roots in streambed	3	2	(1)	0
19. Rooted upland plants in streambed	3	(2)	1	0
20. Macrobenthos (note diversity and abundance)	(0)	1	2	3
21. Aquatic Mollusks	(0)	1	2	3
22. Fish	(0)	0.5	1	1.5
23. Crayfish	(0)	0.5	1	1.5
24. Amphibians	(0)	0.5	1	1.5
25. Algae	0	(0.5)	1	1.5
26. Wetland plants in streambed	FACW = 0.75; OBL = 1.5 Other = (0)			

*perennial streams may also be identified using other methods. See p. 35 of manual.

Notes:

Sketch:

2 d6100612-45

Ditch

12.2

NC DWQ Stream Identification Form Version 4.11

Date: 10/6/16	Project/Site:	Latitude:
Evaluator: DM	County:	Longitude:
Total Points: *Stream is at least intermittent if ≥ 19 or perennial if ≥ 30** 13.5	Stream Determination (circle one) Ephemeral Intermittent Perennial	Other *e.g. Quad Name:*

A. Geomorphology (Subtotal = 2)	Absent	Weak	Moderate	Strong
1[a]. Continuity of channel bed and bank	0	1	(2)	3
2. Sinuosity of channel along thalweg	(0)	1	2	3
3. In-channel structure: ex. riffle-pool, step-pool, ripple-pool sequence	(0)	1	2	3
4. Particle size of stream substrate	(0)	1	2	3
5. Active/relict floodplain	(0)	1	2	3
6. Depositional bars or benches	(0)	1	2	3
7. Recent alluvial deposits	(0)	1	2	3
8. Headcuts	(0)	1	2	3
9. Grade control	(0)	0.5	1	1.5
10. Natural valley	(0)	0.5	1	1.5
11. Second or greater order channel	No = (0)		Yes = 3	

[a] artificial ditches are not rated; see discussions in manual

B. Hydrology (Subtotal = 5.5)				
12. Presence of Baseflow	0	(1)	2	3
13. Iron oxidizing bacteria	(0)	1	2	3
14. Leaf litter	1.5	(1)	0.5	0
15. Sediment on plants or debris	0	(0.5)	1	1.5
16. Organic debris lines or piles	(0)	0.5	1	1.5
17. Soil-based evidence of high water table?	No = 0		Yes = (3)	

C. Biology (Subtotal = 6)				
18. Fibrous roots in streambed	3	(2)	1	0
19. Rooted upland plants in streambed	(3)	2	1	0
20. Macrobenthos (note diversity and abundance)	(0)	1	2	3
21. Aquatic Mollusks	(0)	1	2	3
22. Fish	(0)	0.5	1	1.5
23. Crayfish	(0)	0.5	1	1.5
24. Amphibians	0	(0.5)	1	1.5
25. Algae	0	(0.5)	1	1.5
26. Wetland plants in streambed	FACW = 0.75; OBL = 1.5 Other = 0			

*perennial streams may also be identified using other methods. See p. 35 of manual.

Notes:

Sketch:

PUBLIC WORKS DEPARTMENT
STORMWATER MANAGEMENT DIVISION
405 Martin Luther King, Jr. Blvd.
Chapel Hill, NC 27514-5705
Telephone (919) 969-7246
Fax (919) 969-7276
www.townofchapelhill.org

REQUEST FOR STREAM DETERMINATION

Stream determinations are used to determine whether the Resource Conservation District or the Jordan Stream Buffer will apply to a property, and the areas protected if that is the case. There is no fee for stream determinations. By default, we will search records and notify you if a site visit is not needed for a property.

☒ Check here if you want Town staff to conduct a stream determination. A new site visit may not be needed if a determination has been done in the last five years. Turnaround time is within two weeks for single-family lots depending on weather conditions, staff availability, and size of the lots.

Requests may be emailed (DMilkereit@townofchapelhill.org), faxed, dropped off at Town Hall or the Stormwater Office, or mailed to the above address care of "Stormwater Specialist".

Requestor's Name: Dewberry

Mailing Address: 2610 Wycliff Road, Suite 410

City, State, ZIP: Raleigh, NC 27607

Phone / FAX / Email: 919-424-3767/choffman@dewberry.com

Check method(s) for report to be sent: ☒ US Mail ☒ Email ☐ FAX ☐ Call for pickup

Signature of property owner or designated legal agent granting permission to Town Staff to enter the property(ies) indicated below for purposes of a Stream Determination:

(Signature) 6/24/16 (Date)

Owner Name(s): Gordon Marklein
(Please print)

Property Information **fill in both columns, *or* fill in Parcel ID Number (PIN) and attach a site map indicating location**	
Parcel ID Number (PIN)	Address / Location Description
Western Portion 9789247373	101 Airport Road/Estes Drive Extension

Where the **total area** of the property(ies) to visit is **over 3 acres** please attach an as-built drawing or a topographic map with current landmarks.

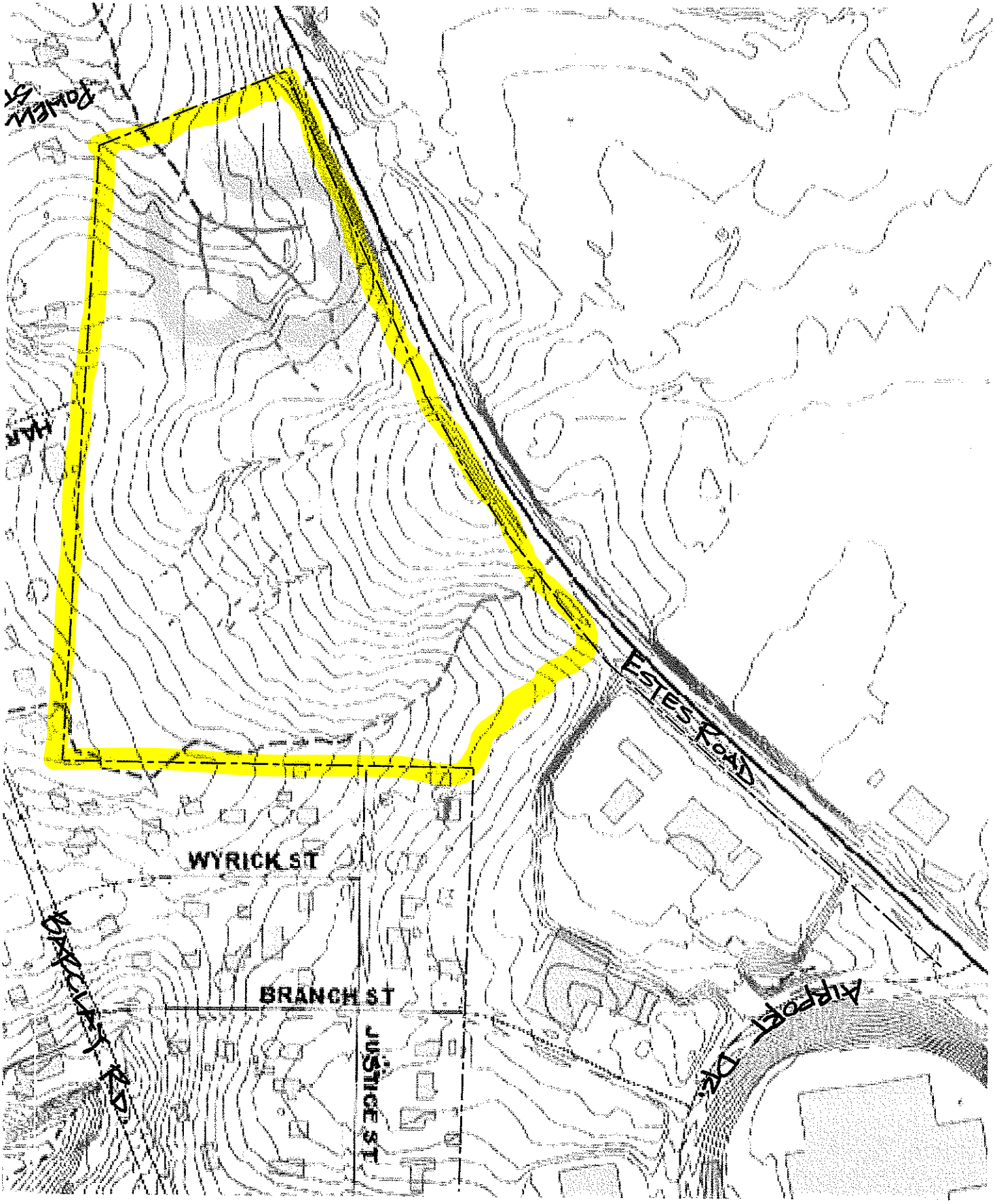

ESTES ROAD
WYRICK ST
BRANCH ST
JUSTICE ST

Exhibit X - Impact Analysis on the Value of Contiguous Properties of a Proposed Municipal Services Center

IMPACT ANALYSIS

ON THE VALUE OF CONTIGUOUS PROPERTIES OF
A PROPOSED MUNICIPAL SERVICES CENTER

LOCATED ON

ESTES DRIVE
CHAPEL HILL, NORTH CAROLINA

AS OF

APRIL 2, 2018

FOR

TOWN OF CHAPEL HILL
405 MARTIN LUTHER KING, JR. BOULEVARD
CHAPEL HILL, NC 27514

BY

DAVID A SMITH, MAI, SRA
POST OFFICE BOX 51597
DURHAM, NORTH CAROLINA 27717-1597

PART ONE - INTRODUCTION

DAVID A. SMITH, MAI, SRA

P.O. BOX 51597
DURHAM, NORTH CAROLINA 27717-1597
PHONE (919) 493-1534
smithappraiser@verizon.net

April 3, 2018

Town of Chapel Hill
405 Martin Luther King, Jr. Boulevard
Chapel Hill, NC 27514

As requested, I have inspected the properties contiguous to a proposed municipal services center to be located on Estes Drive in Chapel Hill, North Carolina.

The purpose of this analysis is to determine if a proposed municipal services center is "located, designed, and proposed to be operated so as to maintain or enhance the value of contiguous property." The intended use of this report is to assist the approving body in determining the effect of the proposed municipal services center. The intended users of this report are officers and employees of the Town of Chapel Hill and anyone they designate.

As requested, a summary report has been prepared. This is not an appraisal, but a consulting assignment.

The property was last inspected on April 2, 2018 which is the effective date of this report and analysis. Based on an inspection of the property and the contiguous properties, an analysis of data gathered and facts and conclusions as contained in the following report of 17 pages, and subject to the assumptions and limiting conditions as stated, it is my opinion that the **proposed municipal services center will maintain or enhance the value of contiguous property.**

I certify that I have personally inspected the property and the contiguous properties. I further certify that I have no interest either present or contemplated in the properties and that neither the employment to make this analysis nor the compensation is contingent upon the result of the analysis.

Respectfully submitted,

David A. Smith, MAI, SRA
NC State-Certified General Real Estate Appraiser #A281

TABLE OF CONTENTS

CERTIFICATION

I certify that, to the best of my knowledge and belief,...

The statements of fact contained in this report are true and correct.

The reported analyses, opinions, and conclusions are limited only by the reported assumptions and limiting conditions, and are my personal, impartial, and unbiased professional analyses, opinions, and conclusions.

I have no present or prospective interest in the property that is the subject of this report, and no personal interest with respect to the parties involved.

I have no bias with respect to the property that is the subject of this report or to the parties involved with this assignment.

My engagement in this assignment was not contingent upon developing or reporting predetermined results.

My compensation for completing this assignment is not contingent upon the development or reporting of a predetermined value or direction in value that favors the cause of the client, the amount of the value opinion, the attainment of a stipulated result, or the occurrence of a subsequent event directly related to the intended use of this appraisal.

My analyses, opinions, and conclusions were developed, and this report has been prepared, in conformity with the *Uniform Standards of Professional Appraisal Practice*.

I have made a personal inspection of the property that is the subject of this report.

No one provided significant real property appraisal assistance to the person signing this certification.

The reported analysis, opinions, and conclusions were developed, and this report has been prepared, in conformity with the requirements of the Code of Professional Ethics and the Standards of Professional Appraisal Practice of the Appraisal Institute.

The use of this report is subject to the requirements of the Appraisal Institute relating to review by its duly authorized representatives.

As of the date of the report, I have completed the requirements of the continuing education program of the Appraisal Institute.

This assignment was not made, nor was the appraisal rendered on the basis of a requested minimum valuation, specific valuation, or an amount, which would result in approval of a credit transaction.

David A. Smith

David A. Smith, MAI, SRA

PART TWO – PREMISES OF THE REPORT

STATEMENT OF COMPETENCE

I have completed all of the requirements to become a state certified-general appraiser for the State of North Carolina and all of the requirements for the MAI designation. In addition I have successfully completed USPAP courses and continuing education seminars for over thirty years. More detailed information about these courses and seminars are in the qualifications section of this report. I have prepared similar analyses and feel competent to perform this analysis.

EXTRAORDINARY ASSUMPTIONS AND HYPOTHETICAL CONDITIONS

An extraordinary assumption is an assumption, directly related to a specific assignment, which if found to be false, could alter the appraiser's opinions or conclusions. A hypothetical condition is something that is contrary to what exists but is supposed for the purpose of the analysis. This analysis assumes that the property will be improved with the municipal services center as planned. No other extraordinary assumptions or hypothetical conditions are made.

GENERAL ASSUMPTIONS AND LIMITING CONDITIONS

The report has been made with the following general assumptions:

1. Possession of this report, or a copy thereof, does not carry with it the right of publication.

2. The appraiser by reason of this report is not required to give further consultation or testimony or to be in attendance in court with reference to the property in question unless arrangements have been previously made.

3. Neither all nor any part of the contents of this report (especially any conclusions, the identity of the appraiser, or the firm with which the appraiser is connected) shall be disseminated to the

public through advertising, public relations, news, sales or other media without the prior written consent and approval of the appraiser.

4. Definitions used in this report have been taken from *The Dictionary of Real Estate Appraisal*, 5th ed., published by the Appraisal Institute, copyright 2010.

5. Descriptions of the site and proposed improvements is based on a personal inspection of the property, public records and information supplied by the Town of Chapel Hill. This includes a set of plans entitled "Town of Chapel Hill, Municipal Services Building, Site and Building Design" dated February 22, 2018. For purposes of this report this information is assumed to be correct. Copies of these plans are in the addenda.

PURPOSE, INTENDED USE AND USERS OF THE REPORT

The purpose of this analysis is to determine if a proposed municipal service center will maintain or enhance the value of contiguous properties. The intended use of the appraisal is to assist the approving body in determining the effect of the proposed center. The intended users of this report are offices and employees of the Town of Chapel Hill and anyone they designate.

DEFINITION OF VALUE

The opinion of value in this appraisal is the market value. The definition of market value is that used by federally regulated financial institutions

> The most probable price which a property should bring in a competitive and open market under all conditions requisite to a fair sale, the buyer and seller each acting prudently and knowledgeably, and assuming the price is not affected by undue stimulus. Implicit in this definition is the consummation of a sale as of a specified date and the passing of title from seller to buyer under conditions whereby:

1. buyer and seller are typically motivated;

2. both parties are well informed or well advised, and acting in what they consider their own best interests;

3. a reasonable time is allowed for exposure in the open market;

4. payment is made in terms of cash in United States dollars or in terms of financial arrangements comparable thereto; and

5. the price represents the normal consideration for the property sold unaffected by special or creative financing or sales concessions granted by anyone associated with the sale.

DATE OF ANALYSIS AND DATE OF REPORT

The effective date of the analysis is April 2, 2018. The date of the report is April 3, 2018.

PROPERTY RIGHTS

The ownership interest considered in this report is the fee simple interest. The contiguous properties may be leased or have other property rights transferred, but the effect is for the fee simple value of the properties. The definition of fee simple as used in this report is:

> Absolute ownership unencumbered by any other interest or estate, subject only to the limitations imposed by the governmental powers of taxation, eminent domain, police power, and escheat.

SCOPE OF WORK

The scope of the report involves collection and confirmation of data relative to the municipal services center property and the contiguous properties. I inspected the property and the plans provided and observed the contiguous properties from the street right-of-ways. I performed an analysis based on properties that are contiguous to an existing municipal facility to determine the effect on other properties. From this information, I determined that the proposed use will maintain or enhance the value of contiguous properties.

PART THREE – PRESENTATION OF DATA

DESCRIPTION OF PROPERTY

Since the purpose of this report is to determine the effect of the proposed municipal services center on contiguous properties and not the property where the center will be located, only a brief description of the municipal services center property is given. It consists of two parcels with tax IDs of 9789-03-3163 and 9789-24-7373. The first parcel is owned by the University of North Carolina Endowment Fund Trustees, contains 2.5 acres and is heavily wooded. The second is owned by the University of North Carolina and contains 59.33 acres. The eastern section of this parcel is improved with facilities for the University of North Carolina but the western area where the proposed municipal services center will be located is unimproved and heavily wooded.

The property is located on the south side of Estes Drive a short distance north of the Estes /Seawell School Road intersection. Four roads dead end into the property, Justice Street, Hartig Street, Powell Street and Ward Street. Traffic would enter and leave the site at two points on Estes Drive roughly in the middle of the site.

The building will be three and a half stories in height and contain about 72,000 square feet of enclosed area. The exterior walls will be mostly glass. Three will be several paved surface parking lots with a total of 285 to 330 spaces.

The land will be leased to the Town by the University. Uses on the property include: Police Headquarters, Fire Administration, Parks and Recreation Administration and other small town functions (wellness clinic, omsbud, etc). The police will leave the property at 6 pm and the patrol is out in the community until 6 am. The building is not occupied 24/7 although there may occasionally be an individual officer or cleaning service on site.

The Town plans to pursue LEED designation for the Municipal Services Center and has committed to minimum light, sound, noise pollution through building design, technology, and the preservation of existing perimeter vegetation as well as additional landscaping around the disturbed area of the site.

The Town will also build a storm water treatment system. Currently, storm water is unmanaged and exits the property in the southeastern corner occasionally flooding the residential properties in that location. Post-development storm water runoff cannot exceed pre-development runoff and might actually be mitigated or improved.

Future facilities could include: A UNC building with similar office/administrative uses, a smaller town or university building with similar uses, or a fire station on the western end of the site with access to Estes Drive.

Copies of the site plan, tax cards, zoning map, aerial, floodplain map of the property from the GIS records are in the addenda. Photos of the property are also in the addenda.

CONTIGUOUS PROPERTIES

The proposed municipal services center is located in Orange County and in the city limits of Chapel Hill. The property is located on the south side of Estes Road across the street from the Chapel Hill Airport. Some of the site is part of a larger parcel and only those properties that adjoin that portion of the parcel where the center will be constructed are considered.

There are sixteen properties that will be contiguous to the proposed municipal services center. I did not enter any of the buildings but observed them all from the street. All are improved with single family dwellings. The following information is from tax records. One of the dwellings was built in 2002 but the rest were constructed between 1941 and 1962. One is 2,026 square feet in size but the rest range from 700 to 1,728 square feet in size. The average age is 67 years and the average size is 1,099 square feet. All of the properties appear to be in good condition and the neighborhood is a stable middle class one. The dwellings are occupied by a mixture of owners and tenants. A chart of the contiguous properties is on the following page. Photographs of some of the dwellings are in the addenda.

Pin	Address	Size	Land Value	Building Value	Total Value	Year Built	Building Size
9789123934	804 Hartig St	0.28	$100,000	$172,000	$272,000	1954	2,026
9789022908	832 Ward St	0.47	$100,000	$124,100	$224,100	1956	1,333
9789027973	8 Powell St	0.72	$100,000	$112,100	$212,100	1962	1,148
9789120930	805 Hartig St	0.81	$100,000	$154,300	$254,300	1941	1,456
9789125836	224 Barclay Rd	0.37	$100,000	$88,400	$188,400	1942	806
9789125899	222 Barclay Rd	0.31	$100,000	$102,200	$202,200	1942	962
9789126980	220 Barclay Rd	0.31	$100,000	$125,800	$225,800	1947	1,385
9789127981	218 Barclay Rd	0.21	$100,000	$126,800	$226,800	1955	1,401
9789128969	216 Barclay Rd	0.46	$100,000	$92,200	$192,200	1942	800
9789139112	1 Wyrick St	0.31	$100,000	$77,200	$177,200	1947	768
9789139128	4 Wyrick St	0.3	$100,000	$47,000	$147,000	1947	750
9789138295	807 Wyrick St	0.3	$100,000	$79,800	$179,800	1947	775
9789138599	208 Justice St	0.5	$100,000	$163,300	$263,300	2002	1,728
9789139599	206 Justice St	0.31	$100,000	$74,000	$174,000	1942	700
9789230579	204 Justice St	0.33	$100,000	$100,900	$200,900	1942	850
9789138357	211 Justice St	0.22	$100,000	$39,000	$139,000	1952	700

PART FOUR – ANALYSIS OF DATA AND CONCLUSIONS

EFFECT OF THE PROPOSED MUNICIPAL SERVICES CENTER

The potential adverse effects from any proposed use are environmental hazards, odor, noise, lighting, traffic and visual impact. Based on the information supplied, there will be no environmental hazards or increased odor associated with the proposed use. Lighting and visual impact will be minor and not more than a typical office building which is currently allowed without further approval. Traffic and noise should also not be higher than if the building was used as an office building. Police leave at 6 pm and do not return until 6am. There will be no direct access between the center and the adjacent neighborhood.

In order to estimate the effect of the proposed municipal services center on contiguous properties, I researched sales of dwellings in close proximity to existing municipal facilities. A short distance to the east of the proposed center are similar facilities for UNC. These facilities are contiguous to properties along the north side of Justice Street. I located three contiguous properties on Justice Street and compared them with four properties on the south side of Justice Street that are not contiguous to the facilities. The properties are similar in most respects. I only considered properties that sold since 2010 and were built between 1942 and 1955. I adjusted them for differences in market conditions (time) and divided the result by the square footage of the dwellings. A chart showing these properties is on the following page.

The three properties on the north side of Justice Street (contiguous to the municipal facilities) give an average adjusted selling price of $191.44 per square foot. Those on the south side (not contiguous to the facilities) give and average adjusted selling price of $187.07 per square foot or about 2.00% less. That is the properties that are contiguous to the municipal facilities actually sold for more. However, this is a very small difference and is within the margin of error.

Pin	Address	Land Size	Date Sold	Sales Price	Year Built	Build Sq Ft	Market Condition	Adjusted
CONTIGUOUS TO MUNICIPAL FACITLITES								
9789230579	204 Justice	0.33	6/13/2012	$ 175,000	1942	850	14.51%	$235.76
9789234596	134 Justice	0.31	12/21/2015	$ 299,500	1948	1790	5.71%	$176.86
9789239576	120 Justice	0.32	12/12/2010	$ 295,000	1955	2158	18.27%	$161.68
							Average	**$191.44**
NOT CONTIGUOUS TO MUNICIPAL FACILITIES								
9789234307	135 Justice	0.31	10/27/2014	$ 158,000	1942	1216	8.58%	$141.09
9789235358	131 Justice	0.31	8/10/2017	$ 342,000	1942	2064	1.61%	$168.36
9789236326	129 Justice	0.31	7/30/2012	$ 165,000	1942	1121	14.19%	$168.08
9789239434	123 Justice	0.33	7/25/2013	$ 190,000	1942	784	11.73%	$270.76
							Average	**$187.07**

CONCLUSION AND SUMMARY

To determine if the proposed municipal services center will maintain or enhance the value of contiguous property, I considered properties near the proposed center that are currently contiguous to similar municipal facilities. I compared properties contiguous to these facilities with those that are not contiguous and found little difference in the selling prices. Based on this it is my opinion that the proposed municipal services center will not adversely affect the property values of those dwellings that will be contiguous to the center and the proposed use will maintain the value of the contiguous property.

DAVID A. SMITH, MAI, SRA

DAVID A SMITH & ASSOCIATES, INC.
P.O. BOX 51597
DURHAM, NORTH CAROLINA 27717-1597
PHONE (919) 493-1534
smithappraiser@frontier.com

QUALIFICATIONS OF
DAVID A. SMITH, MAI, SRA

The appraiser, David A. Smith, has been involved in the appraisal of real estate for over thirty years. He worked with his father, Charles W. Smith, from 1976 to 2003. After the retirement of Charles W. Smith in 2003 he formed Smith & Whitfield, Inc. and later David A. Smith & Associates. In 1988 he was awarded the RM designation. With the merger of the American Institute of Real Estate Appraisers and the Society of Real Estate Appraisers in January of 1991, the RM designation was changed to the SRA designation. In 1991 he was awarded the MAI designation of the Appraisal Institute. He became a state-certified real estate appraiser in 1991 the year the state first began licensing real estate appraisers and his certification number is A281.

He has also trained and supervised several appraisers and has prepared all types of appraisal reports. His primary focus is Durham County and the adjoining counties of Orange, Person, Granville and Chatham.

EDUCATION: Graduate Episcopal High School, Alexandria, VA, 1976
A.B., Duke University, Durham, NC, 1981

APPRAISAL INSTITUTE COURSES:

Real Estate Appraisal Principles (Exam 1A-1/8-1), University of North Carolina, 1981
Residential Valuation (Exam 8-2), University of North Carolina, 1981
Basic Valuation Procedures (Exam 1A-2), University of North Carolina, 1983
Standards of Professional Practice (Exam SPP), University of North Carolina, 1983
Capitalization Theory & Techniques, A (Exam 1B-A), University of Colorado, 1984
Capitalization Theory & Techniques, B (Exam 1B-B), University of Colorado, 1984
Valuation Analysis and Report Writing (Exam 2-2), University of North Carolina, 1987
Case Studies in Real Estate Valuation (Exam 2-1), University of North Carolina, 1987
Advanced Sales Comparison & Cost Approaches, Atlanta, Georgia, 2002
General Appraiser Market Analysis and Highest and Best Use, Atlanta, Georgia, 2007
Online Business Practices and Ethics, Chicago, Illinois, 2007
Appraisal Curriculum Overview, 2009
Condemnation Appraising: Principles & Applications, Greensboro, NC, 2011

APPRAISAL INSTITUTE SEMINARS:

Highest and Best Use, 1988
Industrial Valuation, 1988
Rates, Ratios and Reasonableness, 1988
Valuation of Leased Fee Interests, 1989
Current Problems in Industrial Valuation, 1989
Methods of Subdivision Analysis, 1989
Expert Witness in Litigation, 1989
Discounted Cash Flow, 1990
RTC Appraisal Standards, 1990
Preparation and Use of the UCIAR Form, 1990
Standards of Professional Practice Update, 1990
Commercial Construction Overview, 1991
Appraising Troubled Properties, 1991
Appraisal Regulations of the Federal Banking Agency, 1992
Real Estate Law for Appraisals, 1992
Appraising Apartments, 1993
Discounted Cash Flow Analysis, 1994
Appraiser's Legal Liabilities, 1994
Understanding Limited Appraisals, 1994
Analysis Operating Expenses, 1995
Future of Appraisals, 1996
Highest and Best Use Applications, 1996
Standards of Professional Practice, Parts A & B, 1997
Litigation Skills for the Appraiser, 1997
Eminent Domain & Condemnation Appraising, 1998
Matched Pairs/Highest & Best Use/Revisiting Report Options, 1998
Valuation of Detrimental Conditions, 1998
Appraisal of Nonconforming Uses, 2000
How GIS Can Help Appraisers Keep Pace with Changes in R E Industry, 2001
Feasibility Analysis, Market Value and Investment Timing, 2002
Analyzing Commercial Lease Clauses, 2002
Standards of Professional Appraisal Practice, 2002
Effective Appraisal Writing, 2003
Supporting Capitalization Rates, 2004
National USPAP Update, 2004
Rates and Ratios: Making Sense of GIMs, OARs, and DCFs, 2005
The Road Less Traveled: Special Purpose Properties, 2005
National USPAP Update, 2006
Appraisal Consulting: A Solutions Approach for Professionals, 2006
What Clients Would Like Their Appraisers to Know, 2007
Valuation of Detrimental Conditions, 2007
Business Practice and Ethics, 2007
Office Building Valuation: A Contemporary Perspective, 2008
Subdivision Valuation, 2008
National USPAP Update, 2009
Effective Appraisal Writing, 2009
Appraisal Curriculum Overview, 2009
Discounted Cash Flow Model: Concepts, Issues and Apps., 2010
National USPAP Update, 2010

Rates and Ratios: Making sense of GIMs, OARs and DCFs, 2011
National USPAP Update, 2012
Business Practices and Ethics, 2012
Marketability Studies: Advanced Considerations & Applications, 2013
Real Estate Valuation Conference, 2013
National USPAP Update, 2014

OTHER SEMINARS:

Commercial Segregated Cost Seminar, Marshall & Swift, 1988
Appraisal Guide and Legal Principles, Department of Transportation, 1993
The Grammar Game, Career Track, 1994

MEMBERSHIPS:

Appraisal Institute, MAI #09090
Appraisal Institute, SRA/RM #2248
Durham Board of Realtors
North Carolina Association of Realtors
National Association of Realtors

CERTIFICATION:

State Certified General Real Estate Appraiser for North Carolina, #A281

OTHER:

NC Property Tax Commission, 2013 – Present
Durham Civilian Police Review Board, 2009 - Present, Past Chair
Durham County Board of Equalization and Review, 2013 – Present
Durham Public Schools Budget Advisory Committee, 2013 - Present
City of Durham Audit Oversight Committee, 2002 – 2006
Durham Board of Adjustment, 1994 - 2002
Durham City/County Zoning Commission, 1990 – 1995
John Avery Boys and Girls Club, 1994-2002
Historical Preservation Society, 1992 - 1995
Vice President of the Candidates, 1989, NC Chapter 40
President of the Candidates, 1990, NC Chapter 40
Candidate of the Year, 1990, NC Chapter 40

RECENT CLIENTS (within the past five years):

LENDING INSTITUTIONS
American National Bank & Trust Company
AMEX Financial
BB&T

Citizens National Bank
CommunityOne Bank NA
Fidelity Bank
First South Bank
Harrington Bank
KeySource Commercial Bank
Live Oak Banking Company
Mechanics & Farmers Bank
Pacific International Bank
PNC Bank
RBC Bank
Self-Help
State Farm Bank
SunTrust Bank
Wells Fargo Bank

MUNICIPALITIES AND OTHER GOVERNMENT AGENCIES
Chapel Hill Transit
City of Durham
NC Department of Administration
Durham County
Durham Public Schools
Durham Technical Community College
Housing Authority of the City of Durham
NCDOT
Orange County
Orange Water and Sewer Authority
Person County
Town of Chapel Hill

OTHER
Allenton Management
AND Associates
Barcosnic
Builders of Hope
BCG Properties
Blanchard, Miller, Lewis & Styers Attorneys at Law
Blue Cross & Blue Shield of NC
Boulevard Proeprties
Bugg & Wolf Attorneys at Law
Carolina Land Acquisitions
CRC Health Corporation
Development Ventures Inc.
Duke Energy
Durham Academy
Durham Rescue Mission
Durham Technical Community College
Edward Jones Trust Company
Farrington Road Baptist Church

Forest History Society
GBS Properties of Durham, LLC
Hayden Stanziale
Georgia Towers, LLC
Hawthorne Retail Partners
Integral
Investors Title Insurance
IUKA Development
Joelepa Associates LP
John and Mary Hebrank
LCFCU Financial Partners
Manor Associates
McDonald's USA
Mt. Gilead Baptist Church
Northgate Realty, LLC
Property Advisory Services, Inc.
Rand Enterprises
Research Triangle Foundation
Sehed Development Corporation
Simba Management
Southwest Durham Partners, LLC
Stirling Bridge Group, LLC
Styers, Kemerait & Mitchell, PLLC
Talbert & Bright Attorneys at Law
Teer Associates
Thalle Construction
The Bogey Group
TKTK Accountants
Treyburn Corporate Park, LLC
Trinity Properties
UNC Hospitals
Voyager Academy
Wilhekan Associates

In addition, Mr. Smith has made appraisals for other lending institutions, municipalities, individuals, corporations, estates and attorneys. Appraisal assignments have been made throughout the Triangle, North Carolina, and South Carolina.

Properties appraised include all types of single family residential, multi-family residential, office, retail, commercial, industrial, churches, schools and other specialty type uses, vacant and improved, existing and proposed.

Appraisal assignments were for a variety of purposes including: mortgage loans, estate planning, condemnation, bankruptcy and equitable distribution.

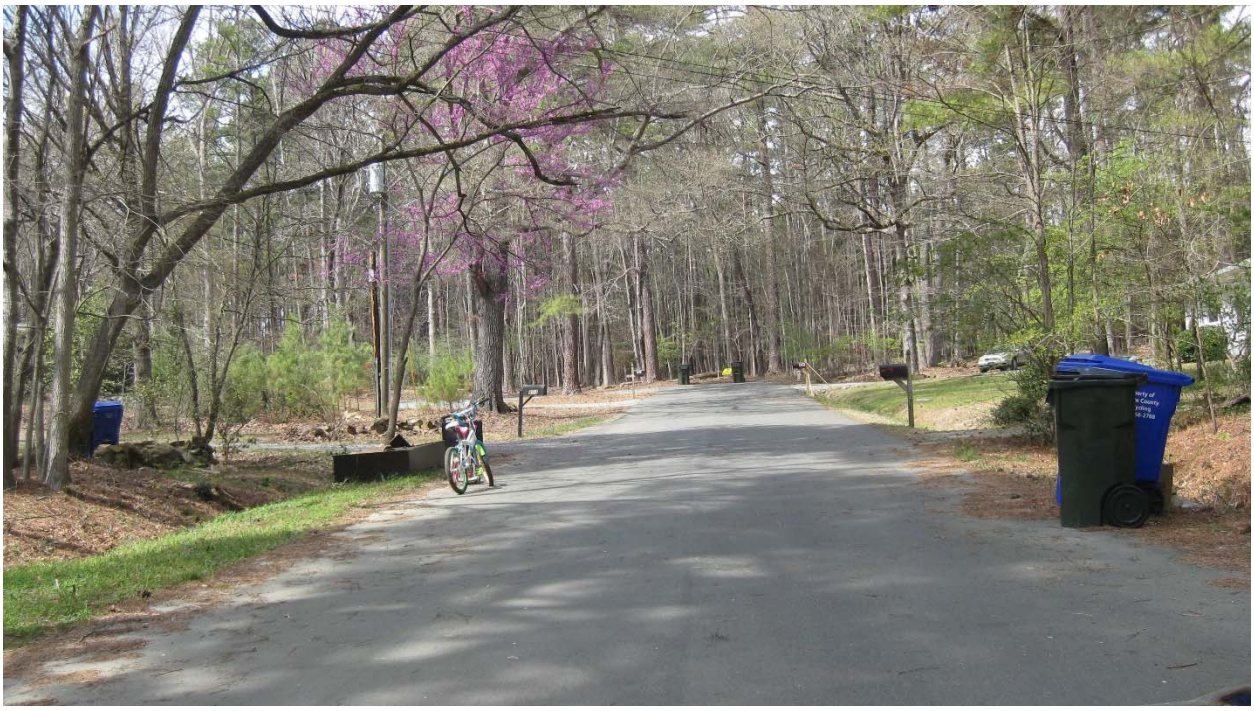
ADDENDA

PHOTOGRAPHS OF SUBJECT

Street Scene along Estes Drive

Street Scene along Estes Drive

PHOTOGRAPHS OF SUBJECT



Hartig Street Dead End into Property

805 Hartig Street

PHOTOGRAPHS OF SUBJECT

804 Hartig Street

Powell Street Dead End into Property

PHOTOGRAPHS OF SUBJECT

819 Powell Street

820 Powell Street

PHOTOGRAPHS OF SUBJECT

Ward Street Dead End

832 Ward Street

PHOTOGRAPHS OF SUBJECT

Justice Street Dead End into Property

211 Justice Street

PHOTOGRAPHS OF SUBJECT

200 Justice Street

Municipal Buildings Contiguous to Justice Street

PHOTOGRAPHS OF SUBJECT

Municipal Building Contiguous to Justice Street

Municipal Building Contiguous to Justice Street

PHOTOGRAPHS OF SUBJECT

Justice Street Property Seen from Contiguous Parking Lot

Justice Street Property Seen from Contiguous Parking Lot

Aerial Map

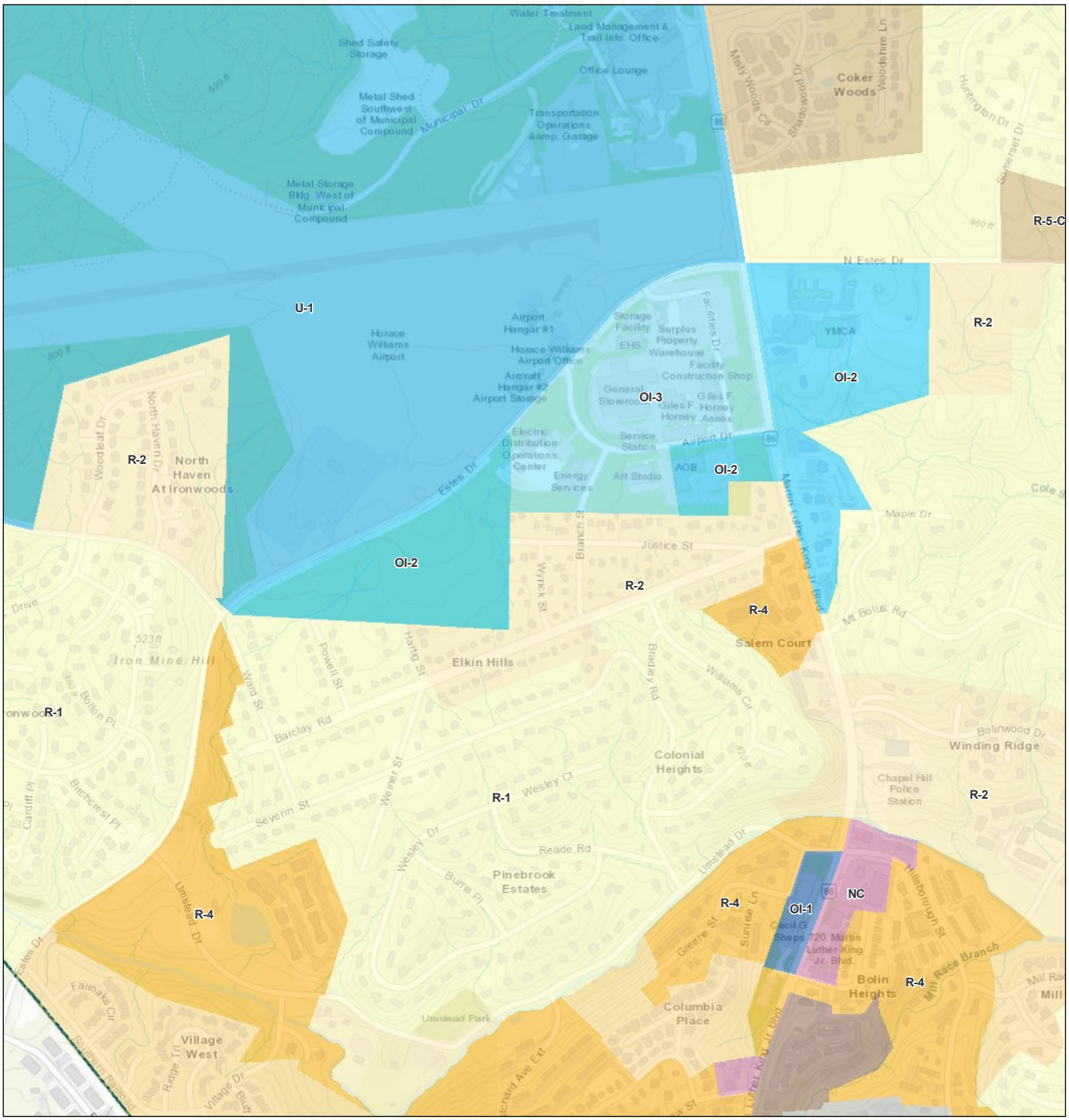
April 2, 2018

1:4,800

0 0.04 0.08 0.16 mi

0 0.05 0.1 0.2 km

Zoning Map



4 / 2 / 2018 10 : 52 : 16 AM

1:9,028

0 0.075 0.15 0.3 mi

0 0.075 0.15 0.3 km

- Chapel Hill Jurisdictional Limits
- Chapel Hill Urban Service Area
- Chapel Hill Corporate Limits

Zoning Districts

- R-1 - Residential 1, 3 units/acre
- R-2 - Residential 2, 4 units/acre
- R-3 - Medium Density Residential, 7 units/acre
- R-4 - Medium Density Residential, 10 units/acre
- R-5 - High Density Residential, 15 units/acre
- R-5-C - High Density Residential Conditional, 15 units/acre
- R-6 - High Density Residential, 15 units/acre
- R-SS-C - Residential Special Standards Conditional
- OI-1 - Office and Institutional 1
- OI-2 - Office and Institutional 2
- OI-3 - Office and Institutional 3
- U-1 - University 1
- NC - Neighborhood Commercial

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, © OpenStreetMap contributors, and the GIS User Community

GIS/Tax Data

April 2, 2018

PIN: **9789033163**
OWNER 1: UNIVERSITY OF N C ENDOWMENT FUND TRUSTEES
OWNER 2:
ADDRESS 1: ENDOWMENT FUND TRUSTEES
ADDRESS 2:
CITY: CHAPEL HILL
STATE, ZIP: NC 27514
LEGAL DESC: S/S SR 1780

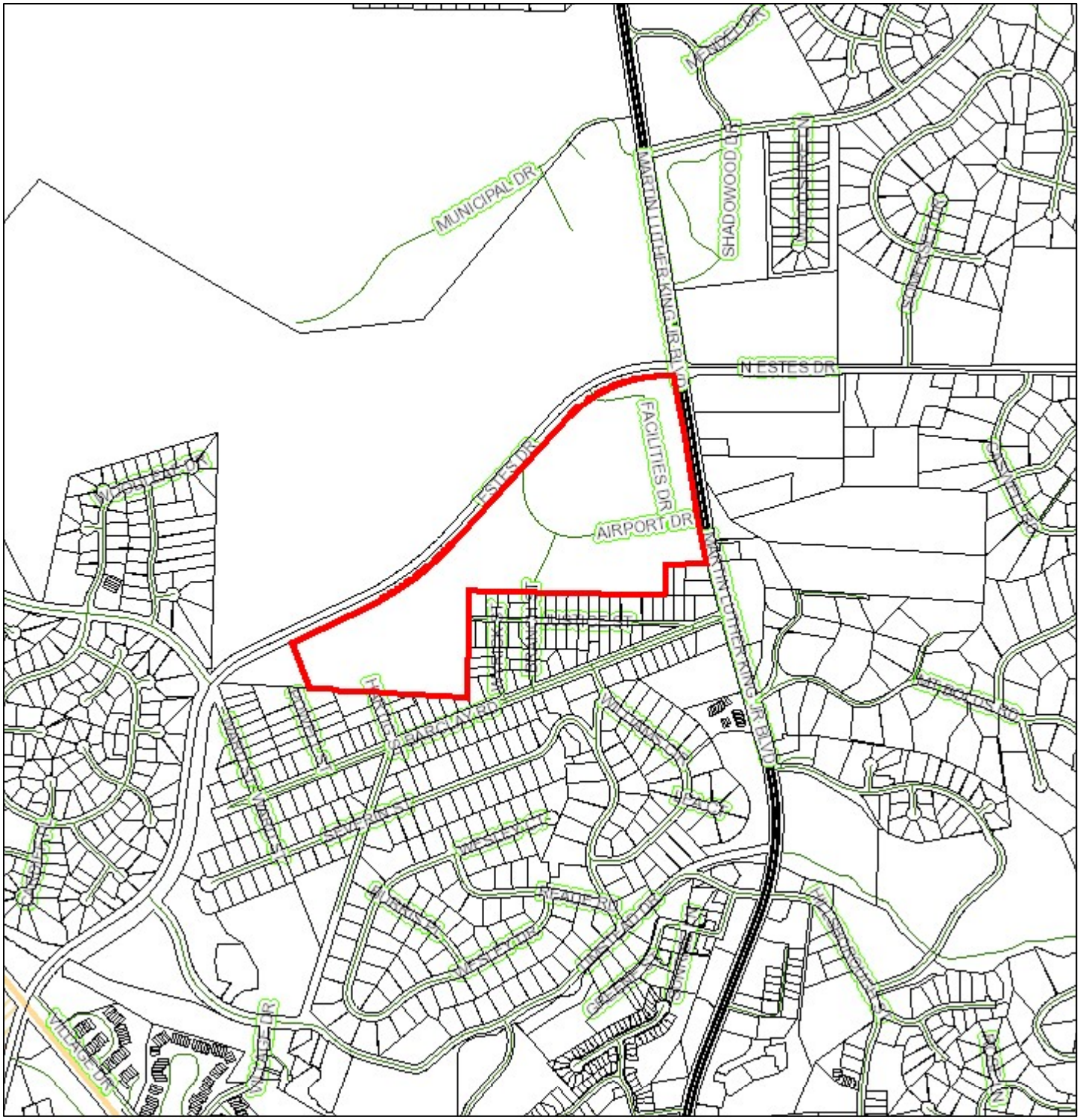
SIZE: 2.5 A
DEED REF: 424/544
RATECODE: 22
DATE SOLD: 12/14/1984
BLDG SQFT:
YEAR BUILT:

BUILDING COUNT:
LAND VALUE: $0
BLDG_VALUE: $0
USE VALUE: $0
TOTAL VALUE: $0

1:4,800

0 0.04 0.08 0.16 mi
0 0.05 0.1 0.2 km

Tax/GIS Map



This map contains parcels prepared for the inventory of real property within Orange County, and is compiled from recorded deed, plats, and other public records and data. Users of this map are hereby notified that the aforementioned public primary information sources should be consulted for verification of the information contained on this map. The county and its mapping companies assume no legal responsibility for the information on this map.

April 2, 2018

PIN: **9789247373**
OWNER 1: UNIVERSITY OF N C
OWNER 2:
ADDRESS 1: PROPERTY OFFICE
ADDRESS 2:
CITY: CHAPEL HILL
STATE, ZIP: NC 27514
LEGAL DESC: S/W INT HWY 86 & ESTES DR

SIZE: 59.233 A
DEED REF: 000/000
RATECODE: 22
DATE SOLD: 10/22/2002
BLDG SQFT:
YEAR BUILT:

BUILDING COUNT:
LAND VALUE: $355,400
BLDG_VALUE: $0
USE VALUE: $0
TOTAL VALUE: $355,400

1:12,000

0 0.1 0.2 0.4 mi
0 0.15 0.3 0.6 km

SITE PLAN

- **A** MUNICIPAL SERVICES BUILDING
  72,000 SQ. FT. X 3.5 FLOORS
- **B** TOWN FUTURE BUILDING
  28,000 SQ. FT. X 3.5 FLOORS
- **C** UNIVERSITY FUTURE BUILDING
  100,000 SQ. FT. X 3 FLOORS
- **SP** SURFACE PARKING
- **TP** TABLE TOP STRUCTURED PARKING
- **SCM** STORM WATER CONTROL MEASURE
- STREAM CENTERLINE
- 50 FT. STREAM BUFFER

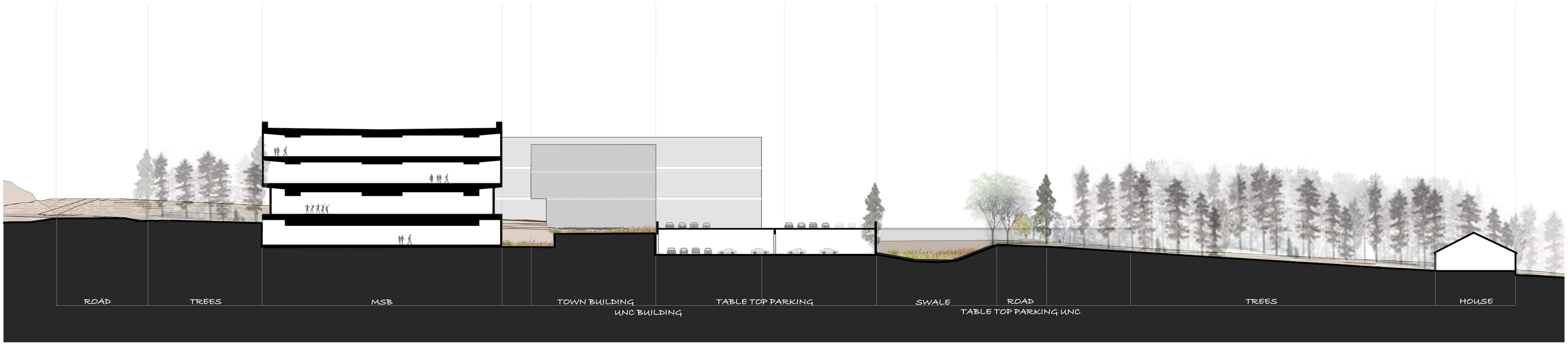
TOWN OF CHAPEL HILL
MUNICIPAL SERVICES CENTER

Dewberry®

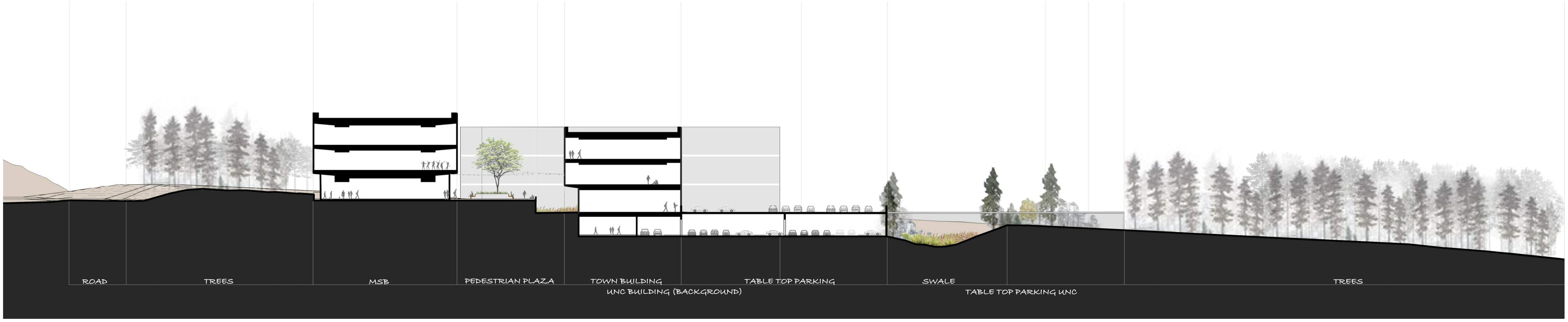
SITE PLAN
03.01.2018

25' 100' SCALE 1" = 50'-0"
50 200'

SITE SECTION A



SITE SECTION B



TOWN OF CHAPEL HILL
MUNICIPAL SERVICES CAMPUS

TRAFFIC IMPACT STUDY

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

February 2018

HNTB

TOWN OF CHAPEL HILL
MUNICIPAL SERVICES CAMPUS

TRAFFIC IMPACT STUDY

Prepared for:

The Town of Chapel Hill
Public Works Department - Engineering

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HNTB North Carolina, PC

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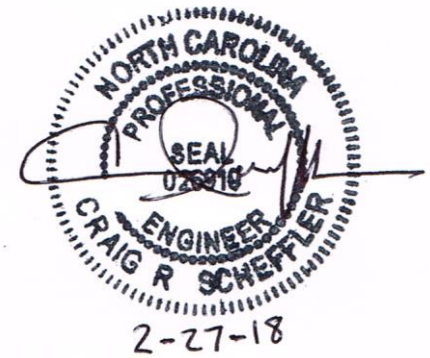
NCBELS License #: C-1554

February 2018



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Appendices

I. EXISTING CONDITIONS

A. Project Overview

A new municipal services campus for the Town of Chapel Hill is being proposed along the Estes Drive Extension near its intersection with Seawell School Road. The project proposes to create multiple buildings for Town services and potential uses for future office space for the University of North Carolina – Chapel Hill (UNC). **Figure 1** (found in ***Appendix A***) shows the general location of the site. Phase 1 of the project is anticipated to be fully complete by 2020. This report analyzes the Phase 1 build-out scenario for the year 2021 (one year after anticipated completion of Phase 1), the no-build scenario for 2021, as well as 2017 existing year traffic conditions. Future phased development of the site will require updates to this Phase 1 traffic impact study when that development occurs.

The proposed site concept plan shows a provision for two full movement access driveways that connect to the Estes Drive Extension. No other vehicular access connections are proposed. The site driveways are proposed to have internal connectivity with on-site parking areas. **Figure 2** displays the preliminary concept plan of the Town of Chapel Hill Municipal Services Campus and nearby land uses and roadways. The site is expected to provide approximately 168 parking spaces on surface lots in its first phase.

B. Site Location and Study Area

This report analyzes and presents the transportation impacts that the Town of Chapel Hill Municipal Services Campus will have on the following intersections in the project study area:

- Estes Drive Extension and Seawell School Road
- Estes Drive Extension and UNC Student RR Lot / Future West Site Driveway
- Estes Drive Extension and Potential Future Carolina North Access / Future East Site Driveway
- Estes Drive Extension and Airport Drive
- Estes Drive Extension / Estes Drive and NC 86 (Martin Luther King, Jr. Boulevard)
- NC 86 (Martin Luther King, Jr. Boulevard) and Airport Drive

The impacts of the proposed site at the study area intersections will be evaluated during the AM, noon, and PM peak hours of an average weekday. The following study is based on background traffic for the existing year, 2017, the year following the estimated Phase 1 site build-out (2020), as well as the estimated Phase 1 site-generated traffic produced by the Town Services Campus.

There are several Town-approved or anticipated future developments in, or just beyond, the immediate project study area that were considered to be constructed by 2021 and may generate additional background traffic. An area-wide ambient future traffic growth percentage of 1.0 percent per year was applied to the existing volumes, based on historical average annual daily traffic (AADT) growth rate data provided by the Town of Chapel Hill and NCDOT, and consistent with recent traffic impact studies near the project study area.

C. Site Description

The Town Municipal Campus site is currently owned by UNC and contains a large amount of undeveloped, wooded land. It borders Carolina North property to the north and single-family residential developments to the west and south. It also borders UNC property to the east. Additional residential subdivisions, commercial and institutional developments are present along the NC 86 (Martin Luther King, Jr. Boulevard) corridor in the project study area.

The site has frontage along the Estes Drive Extension which will provide all vehicular access. The proposed site concept, shown in **Figure 2**, indicates all parking for Phase 1 will be accommodated on-site, through the use of surface parking facilities. The two proposed site driveways will include internal connections to parking areas adjacent to the proposed campus buildings. The proposed driveways are located to form future four-legged intersections with the existing UNC Park-and-Ride facility and a future connection to Carolina North development.

D. Existing and Proposed Uses in Vicinity of Site

The land uses and development in the study area are primarily residential and institutional, with some commercial areas located along Martin Luther King, Jr. Boulevard. The Existing Land Use Plan shown in the 2021 *Town of Chapel Hill Comprehensive Plan* and adopted June 25, 2012, indicates that the proposed site is designated as "Institutional". The Future Land Use Plan, that is also a part of the Town Comprehensive Plan, indicates that the parcel would be considered as "University". The Comprehensive Plan also indicates that this parcel is a "Future Focus Discussion Area – S. MLK Jr. Boulevard / Homestead Road to Estes Drive". The parcel is currently zoned "OI-2" – delineating it as "office and institutional use".

E. Existing and Committed Surface Transportation Network

Roadways

The Town of Chapel Hill Municipal Services Campus project study area features several major and minor arterial roadways serving areas throughout the Town of Chapel Hill and points beyond, as well as a number of collector and local access streets. **Table 1** summarizes pertinent information on the study area roadway facilities.

Table 1. Existing Study Area Roadways

Road Name	Functional Classification*	Study Area Cross-Section	2015 AADT	Speed Limit	Sidewalk	On-Street Parking
N.C. 86 (Martin Luther King, Jr. Blvd)	Other Principal Arterial	5 lane undivided with TWLTL	29,000	35	Y	N
Estes Drive	Minor Arterial	2 lane undivided	16,000	35	Y	N
Estes Drive Extension	Minor Arterial	2 lane undivided	13,000	35	N	N
Seawell School Road	Minor Collector	2 lane undivided / 3 lane undivided with TWLTL	4,100	35	Y	N
Airport Drive	Local	2 lane undivided	N/A	25	S	N

S – Some Sidewalk/Parking Present TWLTL – Two-Way Left-turn Lane
* - As defined on the NCDOT Functional Classification web page http://ncdot.maps.arcgis.com/home/webmap/viewer.html

AADT data was taken from 2015 AADT mapping produced by the NCDOT Traffic Survey Unit. **Figure 3** shows the existing lane configuration, traffic control, and speed limits for these study area roadways. Detailed descriptions of several of the major study area roadways are as follows:

- **N.C. Highway 86 (Martin Luther King Jr, Blvd)** is a principal arterial in the study area, serving areas from I-40 (via Martin Luther King Jr. Boulevard) to downtown Chapel Hill and the US 15-501 corridor to the south. In the study area vicinity, Martin Luther King, Jr. Boulevard is a five-lane undivided section (with two-way left-turn lane). There are multiple driveway access points along the roadway and several major street intersections. No on-street parking is permitted along N.C. 86 in the project study area. Several bus stops are located along the facility. The posted speed limit is 35 mph in the study area.

- **Estes Drive / Estes Drive Extension** is a minor arterial that connects areas of west and north Chapel Hill. In the study area, Estes Drive and Estes Drive Extension are undivided facilities with two-lane cross-sections near NC 86 and both have a 35 mph speed limit. Auxiliary turn-lanes are present at major intersections. Sidewalk is present on at least one side of the roadway along Estes Drive, but no sidewalk is present along Estes Drive Extension. Several bus stops are located along the facilities.

- **Seawell School Road** is a collector roadway that provides access to residential neighborhoods and multiple schools along the facility. It is primarily a two-lane facility, with some sections having a continuous center left-turn lane. Some sections of sidewalk are also present. The posted speed limit is 35 mph on Seawell School Road.

- **Airport Drive** is a two-lane local access roadway for UNC properties and residential neighborhoods just south of the Estes Drive Extension and west of NC 86.

Intersections

Table 2, below, summarizes all five existing study area intersections, traffic control features, and pedestrian amenities at each. Laneage details and intersection turn bay lengths are also detailed on **Figure 3**.

Table 2. Existing Study Area Intersection Details

Intersection	Traffic Control	Signal Phases	Signal Operation	Cross walk	Ped Signals
Estes Drive Extension and Seawell School Road	Signal	3	Free-Run	No	No
Estes Drive Extension and UNC Student RR Lot	TWSC	N/A	N/A	No	No
Estes Drive Extension and Airport Drive	TWSC	N/A	N/A	No	No
Estes Drive Extension / Estes Drive and NC 86 (Martin Luther King, Jr. Boulevard)	Signal	8	Coordinated	Yes (1)	Yes (1)
NC 86 (Martin Luther King, Jr. Boulevard) and Airport Drive	TWSC	N/A	N/A	No	No

TWSC = Two-Way Stop Controlled Intersection

The project study area along the Estes Drive Extension features a mixture of signalized and unsignalized intersections. The N.C. 86 (Martin Luther King, Jr. Boulevard) corridor features coordinated signal operation for weekday peak hours.

Bicycle Routes and Sidewalks

Specific bicycle facilities are present in the immediate study area, with sharrow markings in both directions along Martin Luther King, Jr. Boulevard south of Estes Drive Extension. No other bicycle facilities are currently present. Pedestrian sidewalk is found along both sides of Martin Luther King Jr. Boulevard through the study area. Additional connectivity exists along the Estes Drive corridor from Martin Luther King, Jr. Boulevard eastward on the south side of the road. Sidewalk is also present on one side of Seawell School Road north of the Estes Drive Extension. A crosswalk and pedestrian signal is present across Estes Drive at the Martin Luther King, Jr. Boulevard intersection. **Figure 4** displays a schematic of existing pedestrian and bicycle facilities in the project study area.

Transit Routes

Current Chapel Hill Transit (CHT) Routes A, G, HS, NU, NS and T serve the project study area along NC 86 (Martin Luther King, Jr. Boulevard) and the Estes Drive Extension with weekday bus service (T Route also provides Saturday service). Several bus stops, with a range of amenities (shelters, benches), are present in the study area. **Table 3** details the six current CHT routes serving the study area. Most buses run on 10, 20, 30, or hour headways during weekday peak service periods. Only the HS and NU Routes currently provide service directly to the proposed site along the Estes Drive Extension.

GoTriangle provides regional bus service to the immediate study area via the 420 Route that runs along NC 86 between Chapel Hill and Hillsborough. Service for this route occurs at 30 minute headways during peak weekday periods. GoTriangle also provides express bus service from Chapel Hill to Raleigh on the CRX Route that operates along NC 86 (Martin Luther King, Jr. Boulevard) in the study area on 30 minute headways during weekday peak hours.

Table 3. Current Study Area Weekday Transit Service

Route	Headways (minutes)			Study Area Stops	Destinations
	AM Peak	PM Peak	Off Peak		
Chapel Hill Transit					
A	10-20	30	30	• NC 86 Corridor	• Downtown Chapel Hill • UNC Campus/Hospitals Area
G	35	50	45-50	• NC 86 Corridor • Estes Drive	• Downtown Chapel Hill • Glen Lennox/University Place
HS	30	30**	30	• Estes Drive Extension • Seawell School Road	• Rogers Road Area • Homestead Road • NC 86 Corridor
NS	10	20	10	• NC 86 Corridor	• UNC Campus/Hospitals Area • Eubanks Park and Ride • Southern Village Park and Ride
NU	20	20	20	• UNC RR Lot • Airport Drive	• UNC Main Campus • UNC Hospitals
T	25-30	35	35	• NC 86 Corridor	• Tymberline Shopping Center • Downtown Chapel Hill • E. Chapel Hill HS/Cedar Falls Pk

Source: CHT 2017 Fall Ride Guide

Table 3 (Continued). Current Study Area Weekday Transit Service

Route	Headways (minutes)			Study Area Stops	Destinations
	AM Peak	PM Peak	Off Peak		
GoTriangle					
420	30	30	N/A	• NC 86 Corridor	• Hillsborough • Downtown Chapel Hill/UNC Campus
CRX	15-35	15-35	N/A	• None (Express Service)	• Downtown Chapel Hill/UNC Campus • Eubanks Park-and-Ride • Raleigh

Source: http://www.gotriangle.org/maps-and-schedules

Figure 5 displays transit routes and bus stops that currently exist in the project study area. The potential for transit trips are accounted for in the Town of Chapel Hill Municipal Services Campus site in the following sections of this report, as the proximity and frequency of transit service directly near proposed site may account for a measurable portion of site trips.

Recommended/Committed Surface Transportation Improvement Projects

There is one committed/programmed NCDOT State Transportation Improvement Program (STIP) project – STIP EB-5886, which will construct a multi-use path, additional sidewalks and bicycle lanes along the Estes Drive Extension from N Greensboro Street to NC 86 (Martin Luther King, Jr. Blvd). Right-of-way acquisition is scheduled for 2020 and construction for 2021. This improvement was considered to be complete for the 2021 analysis year.

The Town of Chapel Hill, in cooperation with NCDOT, also has a transportation improvement project to construct sidewalk and bicycle lanes along Estes Drive east of NC 86 (Martin Luther King Jr. Blvd), which will also include laneage improvements to the Estes Drive/NC 86 intersection. This project was considered to be complete for the 2021 analysis year. **Figure 6** shows a schematic representation of the improvements from the January 2016 Public Hearing Map.

There are no private development-related projects to improve roadway facilities in the study area that are expected to be complete by 2021. Several development projects near the study area have recommended, as part of their traffic impact study reports, reoptimization of traffic signals along the NC 86 (Martin Luther King, Jr. Blvd) corridor. This was considered to be included as part of the Town project improvements at this intersection.

There are numerous additional recommended improvements to transportation facilities in Town of Chapel Hill Municipal Services Campus project study area that may occur as the Carolina North development progresses just to the north of the project study area. However, any additional improvements due to Carolina North were considered post-2021 Phase 1 analysis year for the purposes of this study.

F. Existing Traffic Conditions

Figure 7 shows the existing AM, noon, and PM peak hour traffic volumes for the study area intersections. The counts used to determine these volumes were conducted in February 2018 for all study area intersections during the weekday periods 7:00 - 9:00 AM, 11:30 AM – 1:30 PM, and 4:00 – 6:00 PM. This data, along with all turning movement count output is found in ***Appendix B***. **Table 4** provides a detailed listing of each intersection count, peak hour, and count date.

Table 4. Traffic Count Information

Traffic Count Location	Period Counted	Peak Hour	Date of Count
Estes Drive Extension and Seawell School Road	AM Peak	7:40 – 8:40 AM	11/14/17
	Noon Peak	12:05 – 1:05 PM	
	PM Peak	4:55 – 5:55 PM	
Estes Drive Extension and UNC Student RR Lot	AM Peak	7:40 – 8:40 AM	11/14/17
	Noon Peak	12:05 – 1:05 PM	
	PM Peak	4:35 – 5:35 PM	
Estes Drive Extension and Airport Drive	AM Peak	7:40 – 8:40 AM	11/14/17
	Noon Peak	12:05 – 1:05 PM	
	PM Peak	4:35 – 5:35 PM	
Estes Drive Extension / Estes Drive and NC 86 (Martin Luther King, Jr. Boulevard)	AM Peak	7:30 – 8:30 AM	11/14/17
	Noon Peak	12:15 – 1:15 PM	
	PM Peak	4:55 – 5:55 PM	
NC 86 (Martin Luther King, Jr. Boulevard) and Airport Drive	AM Peak	7:35 – 8:35 AM	11/14/17
	Noon Peak	11:45 – 12:45 PM	
	PM Peak	4:45 – 5:45 PM	

Traffic count information shows traffic flows on N.C. 86 (Martin Luther King, Jr. Boulevard) were heavy during the AM and PM peak count periods, with southbound flows into downtown Chapel Hill heaviest in the AM peak and northbound return flows heaviest in the PM peak. Traffic on Estes Drive and the Estes Drive Extension was moderate to heavy during the peak commuting periods. Traffic flows were light to moderate on the remaining study area roadways that function as collector or local access streets.

Turning movement counts were also collected on November 14, 2017 in the field for the two existing driveways serving the Chapel Hill Police Station along NC 86 (Martin Luther King, Jr. Blvd) just south of the project study area. Turning movements entering and exiting the site were compiled for the peak hours corresponding to highest adjacent street traffic for use in trip generation estimation in **Section II. C** of this report. Raw count data for the driveways is also found in ***Appendix B***.

II. FUTURE BUILD-OUT YEAR CONDITIONS

A. Future Ambient Area-Wide Traffic Growth Estimation

Based on information on average daily traffic collected by the Town of Chapel Hill and the NCDOT, a yearly ambient traffic growth rate of 1.0 percent per year was used for the short-term 2021 design year capacity analyses. This rate is based on previous and anticipated growth trends for this area from Town and NCDOT average daily traffic information from the period 2003-2015, and is generally consistent with recent traffic impact studies near the project study area. **Figure 8** shows ambient area-wide growth traffic volume projections.

B. Approved Background Development Traffic Estimation

Per information from Town of Chapel Hill staff and the Town's Development Activity Report, five potential future developments that are either currently in the concept plan phase, approved, under construction, or are expected to be built out and fully operational by the 2021 design analysis year were studied for the

inclusion of specific background traffic for this report. The five developments are listed in **Table 5**, along with their current status and impact to 2021 traffic volumes.

Table 5. Study Area Background Development Status

Development Name	Fall 2017 Status	Development Density	TIS Status	2021 Traffic Impact
Chapel Hill Retirement Residences	Approved, Not Constructed	100 Units	No - Exempt	Assume 100% built out – specific generator
Sawmill Condominiums	Concept Plan Phase	150 Units	No	Assume 100% built out – specific generator
North Estes Mixed-Use Center	Concept Plan Phase	100k SF Office 100k SF Retail	Yes – RS&H (2012) – Older Concept Plan	Assume Build-Out Post 2021
Women's Health & Wellness Center	Approved, Not Constructed	25k SF Redevelopment	No	Assume Included in Ambient Growth Projections
Carolina North	Approved, No Major Anticipated Near-Term Activity	Phase 1	Yes – VHB (2009)	Assume Any Impact Between 2017 and 2021 Included in Ambient Growth Projections

Figure 9 shows the relative location of the background developments listed in **Table 5**. Total estimated background traffic volumes for the two background generators assumed to be complete by the 2021 analysis year in the project study area are shown in **Figure 10. Figure 11** shows the total background peak hour traffic volumes estimated for the 2021 Without Site analysis scenario. These volumes include the projected ambient area-wide traffic growth and the specific background generator estimates displayed in **Figure 10**.

Appendix C displays individual background traffic generator peak hour volumes estimates projected across the project study area. Traffic assignment from the two specific generator developments was estimated based on development density information and/or trip generation data provided for the Chapel Hill Retirement Residences and the Sawmill Condominiums projects. Background traffic assignment in the project study area was determined by using current turning movement peak hour volumes and engineering judgment.

C. Proposed Project Traffic

i. Trip Generation

Projected trips for the proposed government services facility expansion were generated based on the *ITE Trip Generation Manual* (Institute of Transportation Engineers, 9th Edition, 2013) and supplemented with field traffic count data for the existing Chapel Hill Police Station on NC 86 (Martin Luther King, Jr Blvd). Trip generation methodologies for estimated trips utilize the number of dwelling units and average rate methodology (per NCDOT recommendations) as trip-generating variables. **Table 6** shows the number of vehicular trips generated by existing Town of Chapel Hill Municipal Services Campus during the weekday AM, noon, and PM peak hours of adjacent streets, based on the generation methodologies described above. A peak hour truck percentage of two percent was estimated for all site-generated traffic.

Table 6
Phase 1 Weekday Peak Hour Vehicle Trip Generation Summary

ITE LUC	Description	Density	Daily			AM Peak			Noon Peak			PM Peak		
			Enter	Exit	Total	Enter	Exit	Total	Enter	Exit	Total	Enter	Exit	Total
710	General Office Building	48,467 SF	379	379	758	94	13	107	59**	62**	121**	23	110	133
N/A	Police Station – Field Data Adjusted	24,346 SF	146	146	292	32	3	35	28	22	50	15	40	55
Total Phase 1		**72,813 SF**	**525**	**525**	**1,050**	**126**	**16**	**142**	**87**	**84**	**171**	**38**	**150**	**188**

** - No ITE Data Available for Noon Peak Hour, Data is Average of AM and PM Results

ii.) Adjustments to Trip Generation Rates

Raw ITE trip generation estimates for daily and peak hour trips are typically adjusted for the following factors to reduce raw trip generation estimates to actual estimated vehicular trips produced by the Town of Chapel Hill Municipal Services Campus development.

a.) Internal Capture
The land uses proposed for Town of Chapel Hill Municipal Services Campus development would not exhibit the potential for internally captured trips for any on-site uses. No additional modifications or reductions were made to trip generation results to account for internal capture.

b.) Modal Split
The study area is well served by several CHT and Triangle Transit fixed bus routes with frequent existing service with connectivity to trip attractions in downtown Chapel Hill and the UNC Main Campus, although most routes are not currently easily accessible from the site parcel. Likewise, pedestrian and bicycle facilities exist in the study area but lack connectivity to the site parcel itself currently. To be conservative, no quantitative reductions in vehicular trips was made using these modes. However, it is recognized that some peak period trip-making will occur with the availability and potential future connectivity provided for non-motorized transportation.

c.) Pass-by Trips
No pass-by trips were accounted for in this study, since the proposed Town of Chapel Hill Municipal Services Campus is not a typical pass-by trip generator.

d.) Trip Generation Budget
Current plans for Town of Chapel Hill Municipal Services Campus are for the project to be built in multiple phases, but only Phase 1 is included in this analysis. Additional phases are not explicitly defined in terms of development densities or schedules, so this analysis will need to be updated when plans for those future phases are complete.

iii.) Trip Distribution

Trip distribution for site-related traffic was based existing daily and peak hour traffic patterns to determine the directional peak hour characteristics of traffic to and from the site from the major study area thoroughfares. No local trips to/from lower volume collector and residential streets were estimated, though the possibility exists a small portion of trip-making may occur to/from these local streets. Basic distribution estimates for site traffic flow utilized existing peak hour turning movement counts and overall comparison to local and regional trip attractors. Distribution estimates for the two

site driveways were based on assumptions of utilization of the closest driveway and adjacent proposed parking facilities to the Phase 1 site building. **Figure 12** presents the projected trip distribution traffic percentages for the proposed site in 2021.

iv.) Trip Assignment

Figure 13 shows the corresponding Phase 1 site traffic volumes distributed on the 2021 study area network. Total volumes into and out of the site correspond to total external vehicular trips generated, based on the trip generation methodology developed previously.

D. Future Traffic Forecasts with the Proposed Development

Figure 14 displays the 2021 Build-out+1 year projected study area traffic volumes with site traffic added. These traffic volumes represent the aggregate traffic growth over existing traffic volumes for a) ambient traffic growth, b) specific background development traffic assignments from those developments, and c) estimated site traffic assignment for Phase 1 of the Town of Chapel Hill Municipal Services Campus. ***Appendix D*** contains all the peak hour scenario volume development spreadsheets used in the estimation of 2021 traffic volumes for both the with and without site scenarios**.**

III. IMPACT ANALYSES

A. Peak Hour Intersection Level of Service Analysis

i.) Methodology

Evaluation of traffic operations on suburban arterial, collector, and local roadway facilities is most effective through the determination of level of service (LOS) criteria. The concept of level of service correlates qualitative aspects of traffic flow to quantitative terms. This enables transportation professionals to take the qualitative issues, such as congestion and substandard geometrics, and translate them into measurable quantities, such as operating speeds and vehicular delays. The 2010 *Highway Capacity Manual (HCM 2010)* characterizes level of service by letter designations A through F. Level of service A represents ideal low-volume traffic operations, and level of service F represents over-saturated high-volume traffic operations. Level of service is measured differently for various roadway facilities, but in general, level of service letter designations are described in **Table 7**.

The minimum acceptable peak hour intersection level of service established for this project is LOS D for signalized intersections or LOS E for critical movements at unsignalized intersections, or no increase in delay for signalized intersections operating below LOS D or unsignalized intersection critical movements operating below LOS E without the inclusion of site traffic. The following four conditions were evaluated:

Condition 1 - Existing Traffic

Condition 2 - 2021 Traffic without Site Traffic

Condition 3 - 2021 Traffic with Phase 1 Site Traffic Volumes Added

Condition 4 - 2021 Traffic with Phase 1 Site Traffic and Improvements

Table 7. Level of Service (LOS) Characteristics

Level of Service Description	Per Vehicle Delay at Signal	Per Vehicle Delay at Stop Sign
LOS A ➢ Free flow ➢ Freedom to select desired speed and to maneuver is extremely high ➢ General level of comfort and convenience for motorists is excellent	**< 10.0 sec**	**< 10.0 sec**
LOS B ➢ Stable flow ➢ Other vehicles in the traffic stream become noticeable ➢ Reduction in freedom to maneuver from LOS A	**10.0 – 20.0 sec**	**10.0 – 15.0 sec**
LOS C ➢ Stable flow ➢ Maneuverability and operating speed are significantly affected by other vehicles ➢ General level of comfort and convenience declines noticeably	**20.0 – 35.0 sec**	**15.0 – 25.0 sec**
LOS D ➢ High density but stable flow ➢ Speed/freedom to maneuver are very restricted ➢ General level of comfort / convenience is poor ➢ Small increases in traffic will generally cause operational problems	**35.0 – 55.0 sec**	**25.0 – 35.0 sec**
LOS E ➢ Unstable flow ➢ Speed reduced to lower but relatively uniform value ➢ Volumes at or near capacity level ➢ Comfort and convenience are extremely poor ➢ Small flow increases or minor traffic stream disturbances will cause breakdowns	**55.0 – 80.0 sec**	**35.0 – 50.0 sec**
LOS F ➢ Forced or breakdown flow ➢ Volumes exceed roadway capacity ➢ Formation of unstable queues ➢ Stoppages for long periods of time because of traffic congestion	**> 80.0 sec**	**> 50.0 sec**

The *Synchro Professional Version 9* operations analysis software was used to analyze peak hour conditions at signalized intersections. Synchro was also used to analyze peak hour conditions at unsignalized intersections, through the use of its HCM 2010 two-way stop controlled output function. The methodology of evaluating each condition for signalized intersections is presented below:

- **Condition 1** – Use current Town of Chapel Hill data for the cycle length, splits and offsets of individual signalized intersections and report LOS and delay values from Synchro.

- **Conditions 2 and 3** – Reoptimize the cycle lengths and splits of individual intersections in Synchro, if existing timing data does not provide adequate overall intersection LOS. Adjust cycle lengths, splits, and offsets, if necessary, if the signal is currently operating in a coordinated system. The optimized signal timing information will be held constant for both Conditions, to provide a means to compare effects of the proposed site traffic. No changes to free run traffic signal inputs were made for Conditions 2 and 3.

- **Condition 4** – Optimize coordinated traffic signals for effects of recommended mitigation strategies that change existing/committed changes to lane geometrics. Evaluate the potential for different signal phasing schemes (left-turn lag phases, for example). Retain existing split minimums and any pedestrian timing values. Recommendations, if warranted, will be made to obtain at least LOS D for the intersection as a whole.

The net effect of this process is that direct comparisons, by movement, of delay and LOS between each of the three conditions are impossible because splits and cycle lengths can and do change between conditions. The pertinent statistic of this analysis is the *overall intersection level of service and delay*. Improvements to deficient intersections in Condition 3 were made by first attempting to adjust signal operations via changes in cycle lengths, splits and/or with acceptable adjustments to signal phasing. If that did not produce satisfactory results for all intersections, geometric improvements to improve intersection capacity were considered for the deficient intersections. ***Appendix E*** contains the Synchro signalized intersection output for all four conditions (where applicable).

Unsignalized intersections were analyzed using HCM methodologies. Their results were evaluated on a per-movement basis, since HCM methods do not produce an overall intersection level of service for unsignalized intersections. Thus, intersections with deficient (LOS F) movements in Condition 2 would need to be evaluated for improvements in Condition 3. This methodology differs from signalized intersections, where one or more movements at an intersection may be deficient in Condition 2, but as long as the overall intersection level of service does not fall below LOS D, no intersection improvements may be deemed necessary. ***Appendix F*** contains the Synchro 2010 HCM unsignalized output for all stop-controlled intersections under study.

ii.) 2017 Existing Conditions Results

Table 8 presents the results for the existing year traffic conditions as compiled from field data. The table lists LOS and delay values for those movements that are in existence at this time. Currently, all study area signalized intersections operate at an overall acceptable level of service for all of the analyzed 2017 peak hours, with the exception of NC 86 and Estes Drive, which operates at a LOS E in the 2017 PM peak hour. The stop-controlled approaches along Airport Drive with its intersections with Estes Drive Extension and NC 86 also operate at a deficient LOS F in at least one peak hour in 2017.

iii.) 2021 No-Build Scenario (Condition 2) Results

Table 9 presents the results for the 2021 analysis year estimated traffic conditions without the impacts of site-related traffic. This analysis includes ambient growth, and data for the future background site developments.

During Condition 2 - 2021 Without Site Traffic, delays marginally increase for most study area intersections/critical movements, with the same deficient LOS F stop-controlled approaches anticipated for Airport Drive intersections with Estes Drive Extension and NC 86. There were specific geometric improvements to the NC 86 and Estes Drive intersection area that are committed by the Town/NCDOT project to improve the Estes Drive corridor to the east. For traffic capacity analysis inputs, these are primarily auxiliary lane improvements to the intersection along with signal phasing and timing upgrades. These upgrades provide minor beneficial effects in terms of LOS and delay improvements, though they do mitigate the effect of additional projected background traffic to some extent. The NC 86 and Estes Drive intersection still is expected to operate at an overall LOS E in the 2021 PM peak hour in this scenario.

Table 8. Capacity Analysis Results for Study Area Intersections
Condition 1 – 2017 Existing Traffic

Intersections/Movements	LOS			Average Vehicular Delay (seconds/vehicle)		
	AM	Noon	PM	AM	Noon	PM
Estes Drive Extension and Seawell School Road	B	A	B	15.0	9.9	17.5
SB LT	C	B	C	23.5	18,7	30.3
SB RT	C	B	D	25.3	19,6	37.4
EB LT	A	A	A	9.3	4.5	8.3
EB THRU	B	A	A	11.6	5.4	6.4
WB THRU	B	B	C	19.5	12.9	23.6
WB RT	A	A	A	3.9	3.3	3.1
Estes Drive Extension and UNC Student RR Lot	N/A	N/A	N/A	N/A	N/A	N/A
EB LT	A	A	A	8.1	8.2	9.4
SB LT	C	C	D	22.8	16.7	29.9
SB RT	A	A	B	0.0	0.0	14.3
Estes Drive Extension and Airport Drive	N/A	N/A	N/A	N/A	N/A	N/A
WB LT	B	A	A	10.3	8.2	8.5
NB LT-RT	C	B	***F***	24.8	14.9	***50.7***
Estes Drive Extension / Estes Drive and NC 86 (Martin Luther King, Jr. Boulevard)	D	D	***E***	44.1	39.7	***61.8***
EB LT	D	***E***	***F***	51.3	***59.3***	***109.2***
EB THRU	***E***	***E***	***E***	***78.0***	***79.4***	***57.2***
EB RT	D	D	D	36.3	47.3	38.2
WB LT	D	D	D	47.4	52.5	42.5
WB THRU	***E***	***F***	***F***	***55.5***	***91.9***	***126.3***
WB RT	C	D	***F***	20.2	43.1	***96.4***
NB LT	D	C	C	40.7	23.2	32.1
NB THRU-RT	D	C	D	42.7	26.5	45.4
SB LT	D	C	***F***	40.1	25.2	***98.7***
SB THRU-RT	D	B	C	37.4	18.7	31.1
NC 86 (Martin Luther King, Jr. Boulevard) and Airport Drive	N/A	N/A	N/A	N/A	N/A	N/A
EB LT	***F***	D	***F***	***58.1***	28.6	***67.4***
EB RT	C	B	B	16.6	11.2	11.8
NB LT	B	A	A	13.2	9.5	9.9

N/A => Not Applicable, i.e. movement is non-existent or overall intersection values are not reported for unsignalized intersections
BOLD/ITALICS – Movement or overall intersection is over Town TIS Guidelines threshold capacity

Table 9. Capacity Analysis Results for Study Area Intersections
Condition 2 – 2021 Traffic Without Site

Intersections/Movements	LOS			Average Vehicular Delay (seconds/vehicle)		
	AM	Noon	PM	AM	Noon	PM
Estes Drive Extension and Seawell School Road	B	B	B	15.5	10.1	18.6
SB LT	C	B	C	24.6	19.3	31.7
SB RT	C	C	D	26.4	20.3	39.5
EB LT	A	A	A	9.8	4.5	9.2
EB THRU	B	A	A	12.1	5.4	6.5
WB THRU	B	B	C	19.6	12.9	24.3
WB RT	A	A	A	3.8	3.2	3.0
Estes Drive Extension and UNC Student RR Lot	N/A	N/A	N/A	N/A	N/A	N/A
EB LT	A	A	A	8.1	8.3	9.5
SB LT	D	C	D	32.2	17.5	32.6
SB RT	A	A	B	0.0	0.0	14.7
Estes Drive Extension and Airport Drive	N/A	N/A	N/A	N/A	N/A	N/A
WB LT	B	A	A	10.5	8.3	8.6
NB LT-RT	D	C	***F***	27.0	15.5	***65.3***
Estes Drive Extension / Estes Drive and NC 86 (Martin Luther King, Jr. Boulevard)	D	D	***E***	42.7	40.8	***59.9***
EB LT	***E***	***E***	***F***	***71.7***	***78.5***	***107.6***
EB THRU	***E***	***E***	***E***	***64.9***	***55.7***	***56.9***
EB RT	C	C	D	22.3	33.3	38.4
WB LT	***E***	***E***	***F***	***70.4***	***77.1***	***92.2***
WB THRU	***F***	***E***	***F***	***80.1***	***76.7***	***106.1***
WB RT	C	C	D	30.5	25.8	54.3
NB LT	C	D	D	23.2	38.5	44.5
NB THRU	D	D	***E***	40.8	40.2	***65.1***
NB RT	B	B	B	15.7	15.9	17.6
SB LT	C	C	***F***	27.5	33.6	***90.5***
SB THRU	D	C	C	37.8	25.7	33.6
SB RT	A	B	B	5.4	10.7	12.9
NC 86 (Martin Luther King, Jr. Boulevard) and Airport Drive	N/A	N/A	N/A	N/A	N/A	N/A
EB LT	***F***	D	***F***	***68.4***	32.4	***87.5***
EB RT	C	B	B	17.7	11.4	12.1
NB LT	B	A	B	14.0	9.7	10.2

N/A => Not Applicable, i.e. movement is non-existent or overall intersection values are not reported for unsignalized intersections
BOLD/ITALICS – Movement or overall intersection is over Town TIS Guidelines threshold capacity
BLUE = New or Modified Movements Committed in No Build Scenario

Iv.) 2021 Build Scenario (Condition 3) Results

Table 10 presents results for 2021 Build-out+1 year estimated traffic conditions, including impacts of site-related traffic. In general, the addition of site-related traffic will marginally increase delays at existing intersections and is not expected to cause additional intersections or critical intersection stop-controlled movements to drop to deficient levels in the 2021 analysis year.

Table 10. Capacity Analysis Results for Study Area Intersections
Condition 3 – 2021 Traffic With Site (Phase 1)

Intersections/Movements	LOS			Average Vehicular Delay (seconds/vehicle)		
	AM	Noon	PM	AM	Noon	PM
Estes Drive Extension and Seawell School Road	B	B	B	15.6	10.1	18.7
SB LT	C	B	C	25.1	19.5	32.3
SB RT	C	C	D	26.6	20.4	40.1
EB LT	A	A	A	9.7	4.5	9.4
EB THRU	B	A	A	12.2	5.4	6.5
WB THRU	B	B	C	19.5	13.0	24.3
WB RT	A	A	A	3.8	3.2	3.1
Estes Drive Extension and West Site Driveway / UNC Student RR Lot	N/A	N/A	N/A	N/A	N/A	N/A
EB LT	A	A	A	8.1	8.3	9.5
WB LT	B	A	A	10.2	8.4	8.6
NB LT-THRU-RT	C	B	C	23.6	13.8	20.2
SB LT	E	C	E	46.2	21.8	47.0
SB **THRU**-RT	A	A	B	0.0	0.0	14.8
Estes Drive Extension and East Site Driveway	N/A	N/A	N/A	N/A	N/A	N/A
WB LT	B	A	A	10.9	8.6	8.9
NB LT	E	C	E	43.3	22.7	39.9
NB RT	C	B	B	17.1	12.0	14.9
Estes Drive Extension and Airport Drive	N/A	N/A	N/A	N/A	N/A	N/A
WB LT	B	A	A	10.6	8.5	9.1
NB LT-RT	E	C	***F***	42.6	20.2	***134.3***
Estes Drive Extension / Estes Drive and NC 86 (Martin Luther King, Jr. Boulevard)	D	D	***E***	43.1	42.3	***62.5***
EB LT	***E***	***E***	***F***	***71.7***	***78.9***	***130.5***
EB THRU	***E***	D	***E***	***64.8***	53.3	***57.8***
EB RT	C	C	D	21.9	32.5	39.8
WB LT	***E***	***E***	***F***	***68.9***	***77.1***	***92.2***
WB THRU	***F***	***E***	***F***	***84.4***	***76.2***	***107.8***
WB RT	C	C	D	29.6	24.6	53.4
NB LT	C	D	D	27.4	41.4	46.8
NB THRU	D	D	***E***	41.5	42.6	***66.8***
NB RT	B	B	B	15.8	17.1	17.8
SB LT	C	D	***F***	28.2	37.6	***90.9***
SB THRU	D	C	C	39.2	29.1	34.0
SB RT	A	B	B	5.8	12.2	13.2
NC 86 (Martin Luther King, Jr. Boulevard) and Airport Drive	N/A	N/A	N/A	N/A	N/A	N/A
EB LT	***F***	E	***F***	***81.9***	37.6	***106.1***
EB RT	C	B	B	17.9	11.8	12.9
NB LT	B	A	B	14.8	10.0	10.5

N/A => Not Applicable, i.e. movement is non-existent or overall intersection values are not reported for unsignalized intersections
BOLD/ITALICS – Movement or overall intersection is over Town TIS Guidelines threshold capacity
BLUE = New or Modified Movements Committed in Build Scenario

v.) 2021 Build + Mitigation Scenario (Condition 4) Results

Table 11 presents results for 2021 Build-out+1 year estimated traffic conditions, including impacts of site-related traffic and safety-related recommended mitigation improvements along the Estes Drive Extension. These improvements include the development of a three-lane undivided cross-section from the existing UNC RR Lot intersection to NC 86 (Martin Luther King, Jr Blvd), which would provide a continuous two-way left-turn lane at each existing or proposed intersection. In addition, an additional eastbound left-turn lane was tested at the NC 86 intersection with Estes Drive/Estes Drive Extension. The Town has committed to including this improvement in the Estes Drive pedestrian and bicycle improvements project.

Table 11. Capacity Analysis Results for Study Area Intersections
Condition 4 – 2021 Traffic With Site & Mitigation

Intersections/Movements	LOS			Average Vehicular Delay (seconds/vehicle)		
	AM	Noon	PM	AM	Noon	PM
Estes Drive Extension and West Site Driveway / UNC Student RR Lot	N/A	N/A	N/A	N/A	N/A	N/A
EB LT	A	A	A	8.1	8.3	9.5
WB LT	B	A	A	10.2	8.4	8.6
NB LT-THRU-RT	C	B	C	23.6	13.8	20.1
SB LT	E	C	E	45.7	21.7	46.5
SB THRU-RT	A	A	B	0.0	0.0	14.8
Estes Drive Extension and East Site Driveway	N/A	N/A	N/A	N/A	N/A	N/A
WB LT	B	A	A	10.9	8.6	8.9
NB LT	C	C	C	20.7	15.5	20.1
NB RT	C	B	B	17.1	12.0	14.9
Estes Drive Extension and Airport Drive	N/A	N/A	N/A	N/A	N/A	N/A
WB LT	B	A	A	10.6	8.5	9.1
NB LT-RT	C	C	D	22.6	15.1	30.9
Estes Drive Extension / Estes Drive and NC 86 (Martin Luther King, Jr. Boulevard)	D	D	D	40.1	39.7	54.0
EB LT	***E***	***E***	***F***	***56.6***	***74.2***	***98.0***
EB THRU	***E***	***E***	***E***	***68.0***	***66.6***	***68.8***
EB RT	C	D	D	23.3	39.6	45.9
WB LT	***E***	***E***	***F***	***72.8***	***75.3***	***92.2***
WB THRU	***E***	***E***	***F***	***72.6***	***75.9***	***93.3***
WB RT	C	C	D	28.1	30.8	45.5
NB LT	C	C	D	24.7	30.7	40.4
NB THRU	D	C	***E***	38.3	31.9	***55.5***
NB RT	B	B	B	14.9	11.8	15.2
SB LT	C	C	***E***	25.7	31.4	***73.5***
SB THRU	D	C	C	36.2	23.6	28.3
SB RT	A	B	B	6.9	12.4	14.9

N/A => Not Applicable, i.e. movement is non-existent or overall intersection values are not reported for unsignalized intersections
BLUE = New or Modified Movements Analyzed in Mitigation Scenario

B. Access Analysis

Vehicular site access is to be accommodated at two proposed full movement access driveways connecting to Estes Drive Extension. The western site driveway is about 800 feet to the east of the Estes

Drive Extension signalized intersection with Seawell School Road. As conceptually shown in **Figure 2**, the driveways have single inbound lanes. The western driveway is assumed to have one outbound lane, with the eastern (main) driveway assumed to have two outbound lanes. The driveway connections to the Estes Drive Extension have throat lengths of approximately 150 feet (eastern) and 500 feet (western) prior to internal parking lot connections. Throat lengths are acceptable, based on 50 foot minimum throat length standards found on Page 69 of the 2017 *Town of Chapel Hill Public Works Design Manual*.

Driveway distances along Estes Drive Extension from the signalized intersection at Seawell School Road is approximately 800 feet as noted above, and is acceptable, 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 the 100 foot minimum along collector streets specified in the Town Design Manual. The distance between the proposed driveway connections is approximately 600 feet and would also be acceptable, based on the recommended 50 foot spacing between driveways along collector roadways found in Table 3.2 – Street Standards in the Town Design Manual.

Access for pedestrians and bicycles is not adequate in the project study area. Sidewalk is present along the NC 86 corridor and along sections of Seawell School Road and Estes Drive to the east of NC 86. Crosswalk exists across the Estes Drive intersection with the NC 86 signalized intersection in only one quadrant. No specific bicycle amenities are present along the Estes Drive Extension, but bicycle "sharrow" lanes are present along NC 86 south of the Estes Drive Extension. With the completion of the pedestrian and bicycle projects along Estes Drive and the Estes Drive Extension, pedestrian and bicycle access to the site will improve significantly, as continuous facilities for both modes will be constructed along over two miles of the Estes Drive/Estes Drive Extension corridor.

C. Signal Warrant Analysis

Based on projected 2021 traffic volumes and proposed access plans, the unsignalized Site Driveway intersections with the Estes Drive Extension would not warrant the installation of a traffic signal, based on the methodology found in the *2009 Manual on Uniform Traffic Control Devices (MUTCD).*

The stop-controlled approaches at the intersections of Estes Drive Extension and Airport Drive and NC 86 and Airport Drive are expected to operate at a LOS F in the 2021 analysis year with site traffic added. 2021 peak hour volumes and existing geometrics at these locations were analyzed for meeting the Peak Hour Warrant in the 2009 MUTCD and HCS Warrants software package. The results shown in ***Appendix G*** indicate that the Estes Drive and Airport Drive intersection would warrant the installation of a traffic signal, but the NC 86 and Airport Drive intersection would not, based on only the Peak Hour Warrant. Satisfaction of additional warrants would be needed to justify the implementation of a traffic signal at these locations.

D. Sight Distance Analysis

In general, sight distance issues entering/exiting the existing Town of Chapel Hill Municipal Services Campus driveways would be minimal, considering the fact that Estes Drive Extension has no horizontal curvature in the vicinity of this existing access location and vertical curvature at this location is minimal, giving entering and exiting traffic adequate sight distance in both directions.

E. Crash Analysis

Data from the NCDOT Traffic Safety Unit TEAAS crash software database was extracted for the five year period from 11/1/2012 to 10/31/2017 for the segment of the Estes Drive Extension from Seawell School Road to NC 86 (Martin Luther King, Jr. Boulevard). Raw crash data can be found in ***Appendix H***.

Estes Drive Extension Corridor

There were 25 crashes reported along the Estes Drive Extension study area corridor between Seawell School Road and NC 86 over the five year period. In this 0.78 mile segment, crash types varied with no predominate crash type. Several left-turn, run-off road and rear end crash types were noted. Spatial distribution of crashes along the corridor from the segment strip map indicates that a considerable number of crashes (16) occurred in the vicinity of the NC 86 (Martin Luther King, Jr. Blvd) intersection. The remaining crashes were distributed near other intersections along the rest of the segment, with four crashes occurring in the vicinity of the Airport Drive intersection and three crashes near Seawell School Road. One fatality crash (motorcyclist) occurred at the intersection with Seawell School Road.

Table 12 presents a comparison between the Estes Drive Extension study area crash rates and the latest North Carolina statewide rates for the period 2013-2015 (compiled by NCDOT Traffic Safety Unit). Overall, the crash rates along Estes Drive Extension in the project study area are lower than statewide averages for similar facilities (two-lane undivided) in every reported category, except for fatal crashes.

Table 12. Study Area Crash Rate Comparison – Estes Drive Extension Corridor

Statistic	Crashes Per 100 Million Vehicle Miles	
	Estes Drive Extension Seawell School Rd to NC 86 (MLK Jr. Blvd)	NC Statewide Average* 2-Lane Undivided
Total Crash Rate	141.55	247.39
Fatal Crash Rate	5.66	1.18
Non-Fatal (Injury) Crash Rate	33.97	76.16
Night Crash Rate	50.96	65.51
Wet Crash Rate	45.30	46.04

* - Data for Urban Secondary Routes

F. 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 13** are germane to the scope of this study.

G. Special Analysis/Issues Related to Project

Based on discussions with Town of Chapel Hill staff, there are no special issues or analyses beyond the ones already discussed for this proposed site.

Table 13. Other Transportation-Related Analyses

Analysis	Comment
Turn Lane Storage Requirements	Storage bay lengths at study area intersections were analyzed using Synchro and HCS 95th percentile (max) queue length estimates for the 2021 Build Scenario. At the intersection of Estes Drive/Estes Drive Extension and NC 86 (Martin Luther King, Jr. Blvd), projected 95th percentile queue lengths may exceed future delineated storage bay lengths as the intersection is still near/at capacity even with the assumed committed improvements to auxiliary turn lanes. Dual eastbound left-turn lanes, which would require 300 feet of dual left-turn lane storage are recommended to serve this movement and provide some improved overall intersection capacity which would benefit other movements that are projected to exceed turn bay storage lengths.
Appropriateness of Acceleration/ Deceleration Lanes	The site concept plan shows no specifics related to acceleration/deceleration lanes. It is recommended that a westbound left-turn lane be constructed along Estes Drive Extension at the proposed site driveway to remove turning traffic movements from the westbound through traffic flow along Estes Drive Extension. Site traffic volumes heading eastbound to the site are expected to be low and would not require a right-turn deceleration lane. No other specific acceleration/deceleration lane issues were analyzed in the project study area.
Pedestrian and Bicycle Analysis	Existing pedestrian access and connectivity currently lacking along the Estes Drive Extension corridor adjacent to the site. With the completion of Town and NCDOT projects along Estes Drive and the Estes Drive Extension, the proposed site will have fully connected, safe and efficient pedestrian and bicycle access along those corridors. Signalized crosswalks and pedestrian signals are recommended for the NCDOT STIP project at the Seawell School Road/Estes Drive Extension intersection.
Public Transportation Analysis	Public transportation service to the study area, and to the proposed site is available, with bus stops and multiple local and regional bus routes along NC 86 in both directions and two local routes serving the Estes Drive Extension proximate to the site. It is recommended that a bus stop be constructed along the site frontage near the East Site Driveway.

IV. MITIGATION MEASURES / RECOMMENDATIONS

A. Planned Improvements

The Town of Chapel Hill in coordination with NCDOT has a pedestrian and bicycle improvement project for Estes Drive east of NC 86 (Martin Luther King, Jr. Blvd) that includes auxiliary lane improvements and pedestrian crosswalk/signal heads at the Estes Drive/NC 86 intersection. This project is expected to be complete by the 2021 site build-out+1 analysis year. As a result of the mitigation analysis for this traffic impact study, the Town is including the provision of an additional eastbound left-turn lane at the NC 86 and Estes Drive intersection into the design of the project. See **Figure 15** for details.

NCDOT also has a programmed pedestrian and bicycle facility enhancement project (STIP EB-5886) that will construct sidewalks, multi-use paths and bicycle lanes along the Estes Drive Extension facility between N. Greensboro Street in Carrboro to NC 86. This project is scheduled for construction in 2021 and it was also assumed to be complete by the 2021 analysis year in this study.

B. Background Committed Improvements

There are no specific geometric improvements to the study area roadway intersections related to background private development projects that are expected to be completed between 2017 and 2021. Several traffic impact studies for development projects in and near the study area recommended signal timing reoptimization for signalized intersections along the NC 86 (Martin Luther King, Jr. Blvd) corridor by their respective build-out years. It is assumed that signal timing reoptimization will occur for the NC 86 intersection with Estes Drive/Estes Drive Extension, due to the geometric and signal phasing upgrades expected to occur as part of the Estes Drive Pedestrian/Bicycle project.

As previously discussed, additional recommended improvements to transportation facilities in Town of Chapel Hill Municipal Services Campus project study area may occur as the Carolina North development progresses. However, any additional improvements due to Carolina North were considered post-2021 Phase 1 analysis year for the purposes of this study. The Carolina North traffic impact study will need to be revised and updated as definitive phased construction occurs during the course of the project.

C. 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 Town of Chapel Hill Municipal Services Campus site. The two proposed site driveways and initial laneage assumptions are schematically shown in **Figure 15**, based on the preliminary concept plans shown in **Figure 2**.

D. Necessary Improvements – Due to Site Impact

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 are recommended as being necessary for adequate transportation network operations due specifically to site transportation impact (see improvements in **Figure 16** highlighted in green).

1) Widen Estes Drive Extension along the length of site frontage to provide a consistent three-lane cross-section with exclusive westbound left-turns lane into the site at the two proposed site driveway intersections. This improvement improves operations for stop-controlled movements at both intersections and improves overall safety by removing the left-turn movements from the through traffic streams along the Estes Drive Extension.

2) Provide a bus stop and amenities for transit riders along the frontage of the proposed Municipal Services Campus.

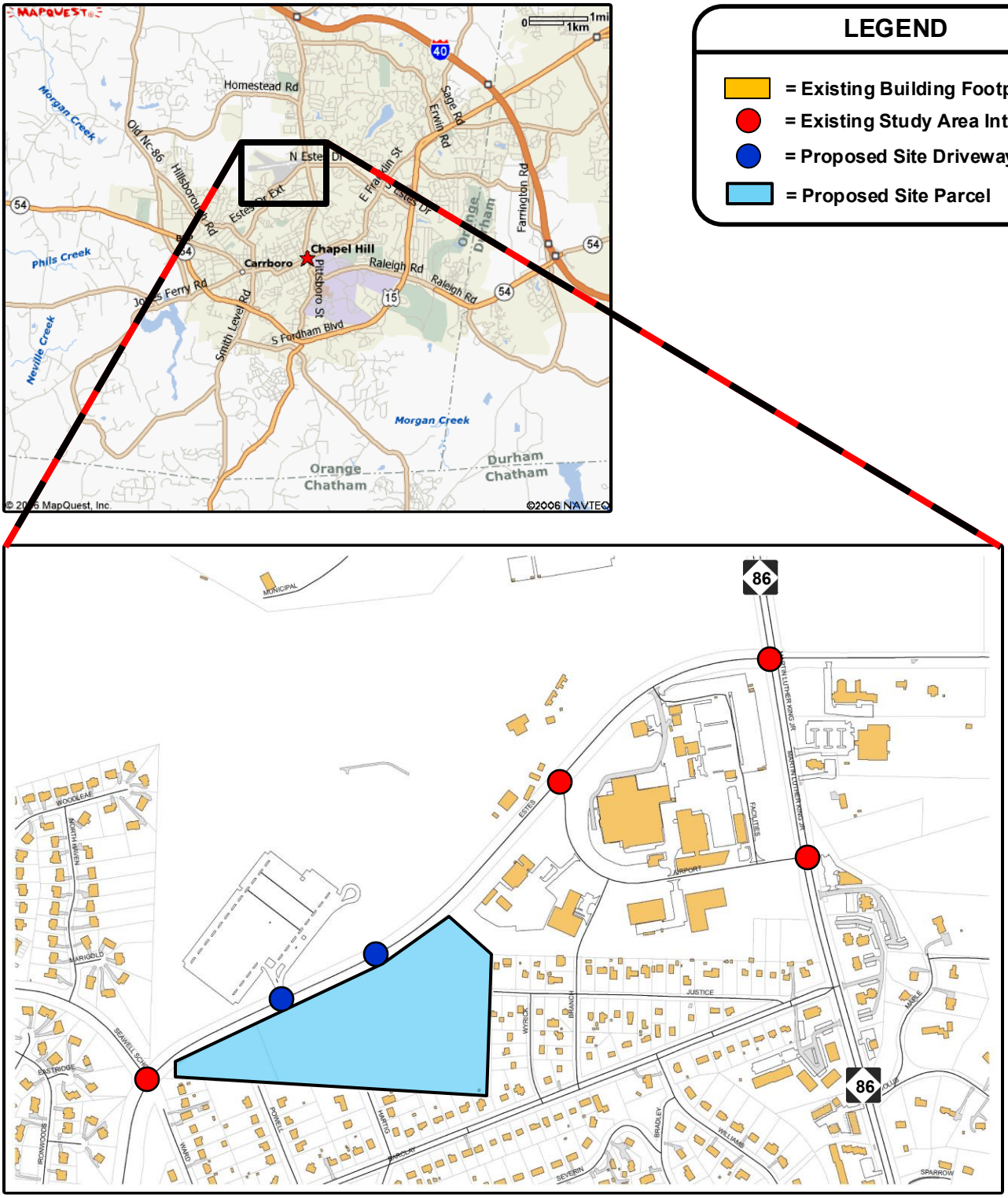
E. Necessary Improvements – Regardless of Site Development

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 are recommended as being necessary for adequate transportation network operations due existing traffic congestion issues or issues arising from background traffic growth whether or not the Town Municipal Services Campus is constructed (see improvements in **Figure 16** highlighted in blue).

1) Widen Estes Drive Extension between the proposed site frontage and the NC 86 (Martin Luther King Jr. Blvd.) intersection to a consistent three-lane cross-section. This provides operational and safety improvements for the Airport Drive intersection with the Estes Drive Extension and should be considered in the design of the NCDOT pedestrian and bicycle improvement project along the Estes Drive Extension corridor.

Though the Estes Drive Extension intersection with Airport Drive meets MUTCD Peak Hour Signal Warrants, it is not recommended that a signal be installed at this location if the proposed recommendations to widen Estes Drive Extension to a three-lane cross-section are constructed. No additional improvements are recommended at the Airport Drive intersection with NC 86, though 2021 peak hour capacity analyses indicate a LOS F for stop-controlled left-turn movements for eastbound Airport Drive at this location. Provision of additional improvements at this intersection, along with signalizing the Airport Drive/Estes Drive Extension intersection may encourage additional cut-through traffic along the Airport Drive facility.

Appendix A – Figures



Source: Town of Chapel Hill GIS Files

NOT TO SCALE

HNTB

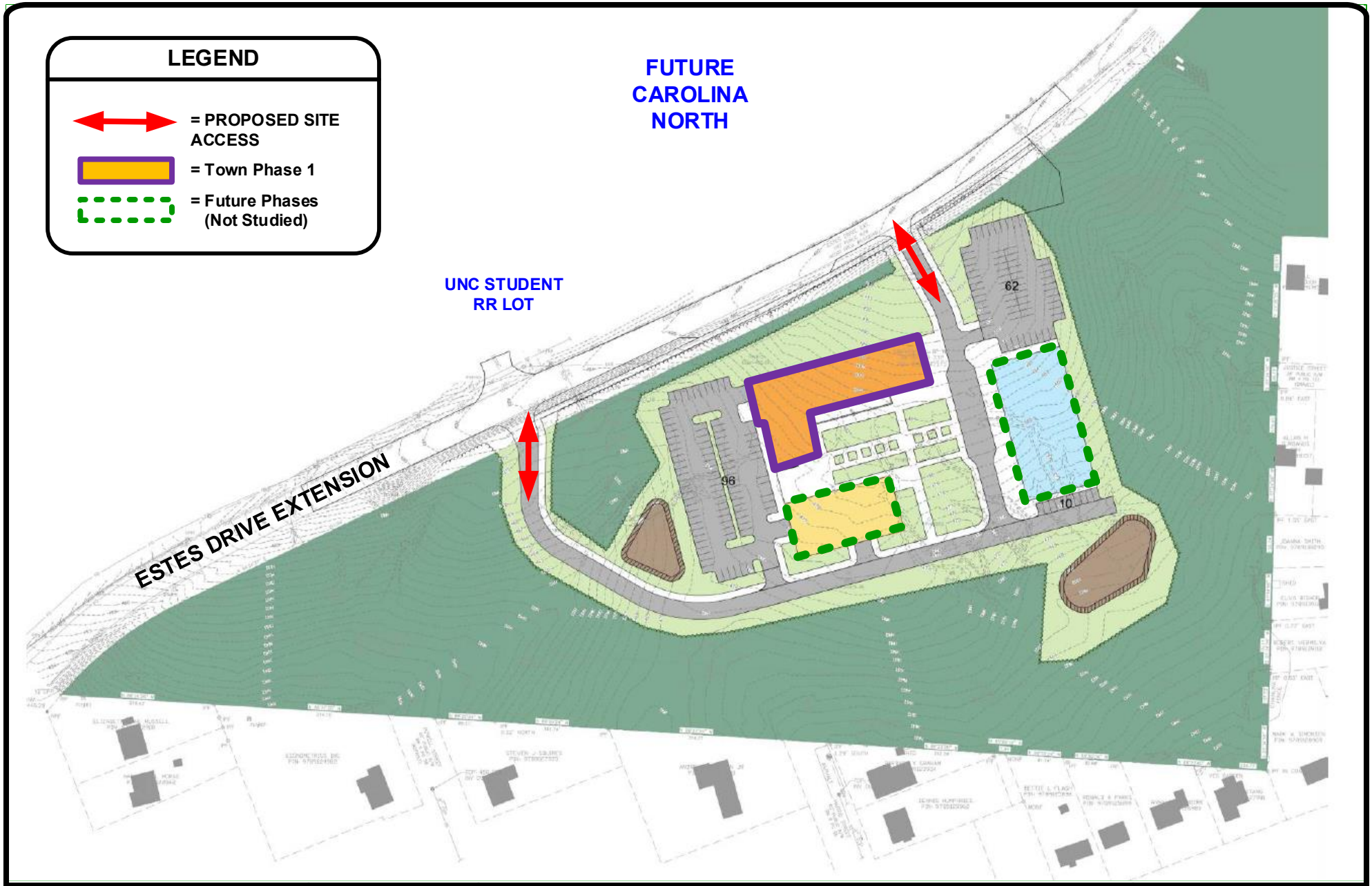
TOWN OF CHAPEL HILL

Chapel Hill Municipal Services Campus
Traffic Impact Study

DATE: February 2018

PROJECT STUDY AREA

FIGURE 1



HNTB

TOWN OF CHAPEL HILL

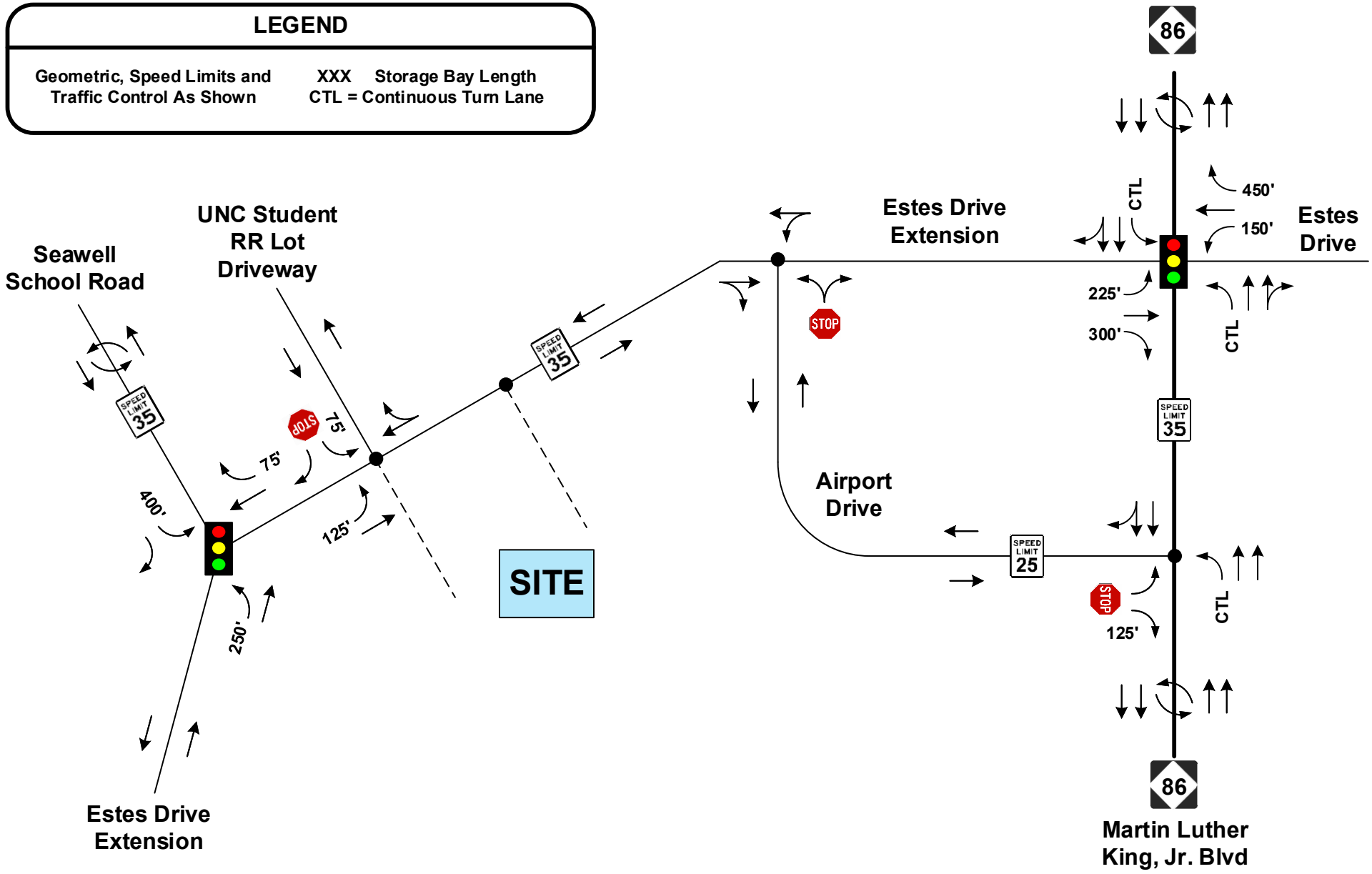
NOT TO SCALE

Chapel Hill Municipal Services Campus
Traffic Impact Study

DATE: February 2018

PRELIMINARY SITE PLAN

FIGURE 2



HNTB

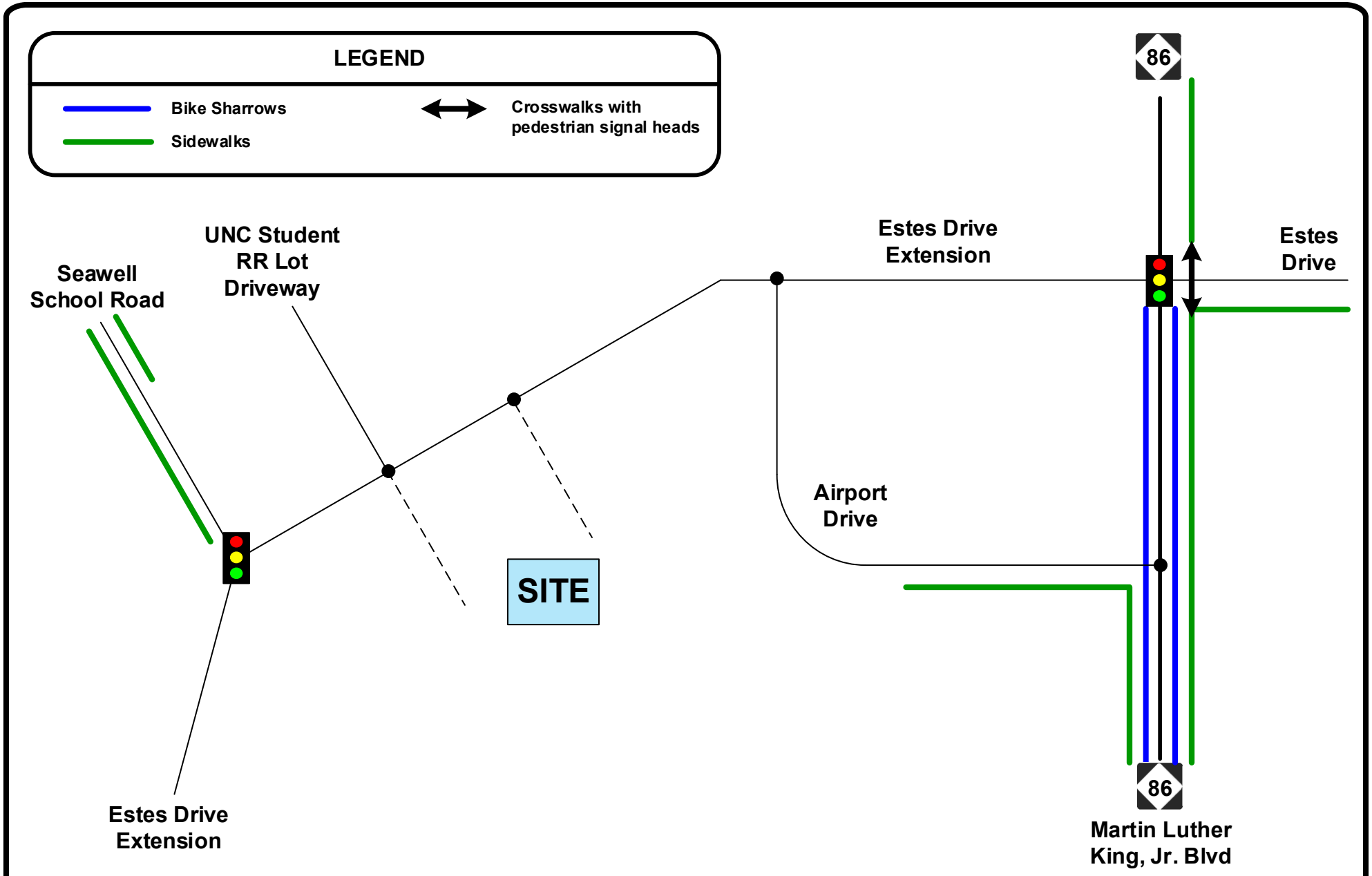
NOT TO SCALE

Chapel Hill Municipal Services Campus
Traffic Impact Study

DATE: February 2018

EXISTING LANEAGE AND GEOMETRICS

FIGURE 3



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TOWN OF CHAPEL HILL

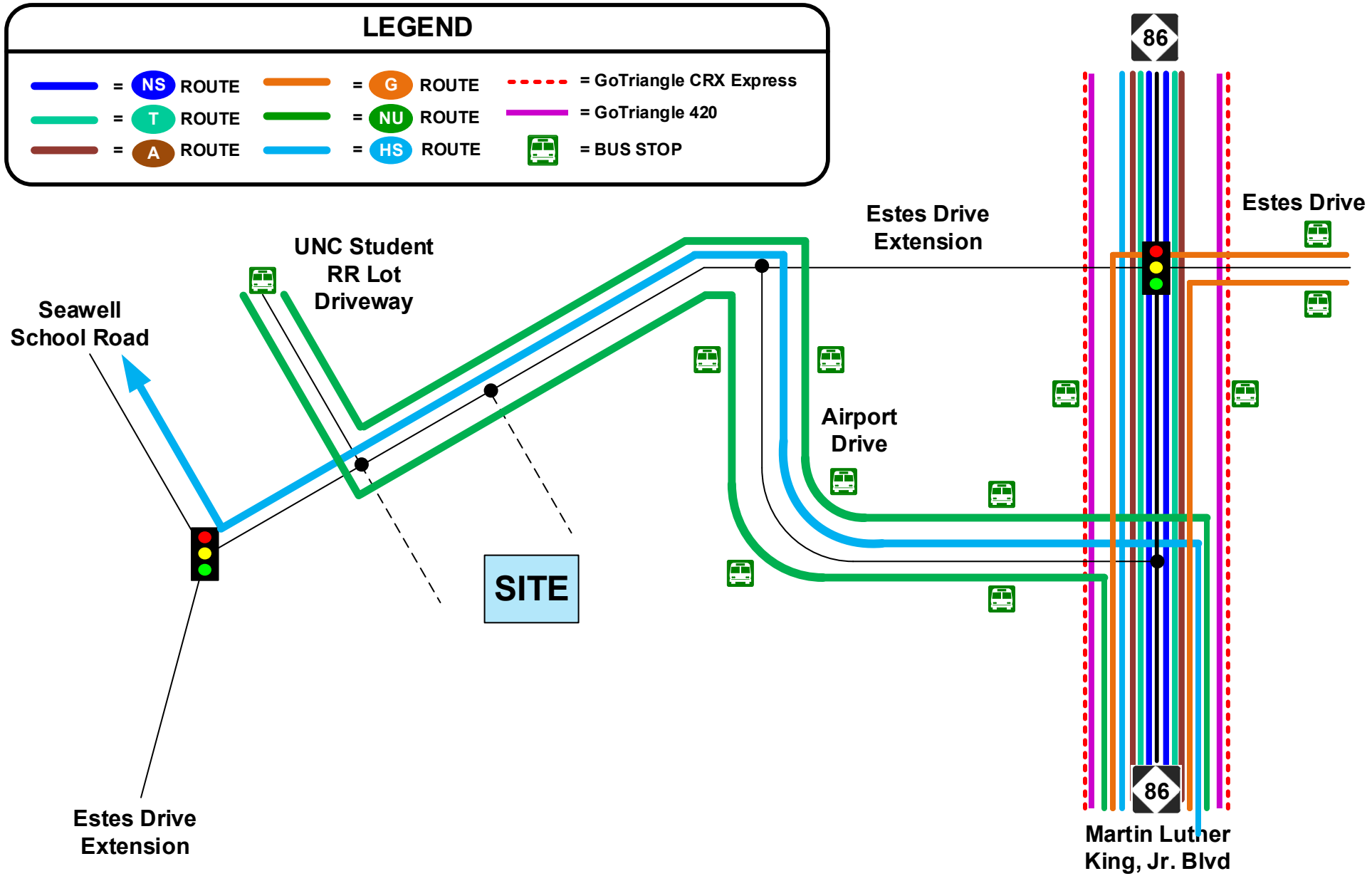
NOT TO SCALE

Chapel Hill Municipal Services Campus
Traffic Impact Study

STUDY AREA PEDESTRIAN AND BICYCLE FACILITIES

DATE: February 2018

FIGURE 4



HNTB

TOWN OF CHAPEL HILL

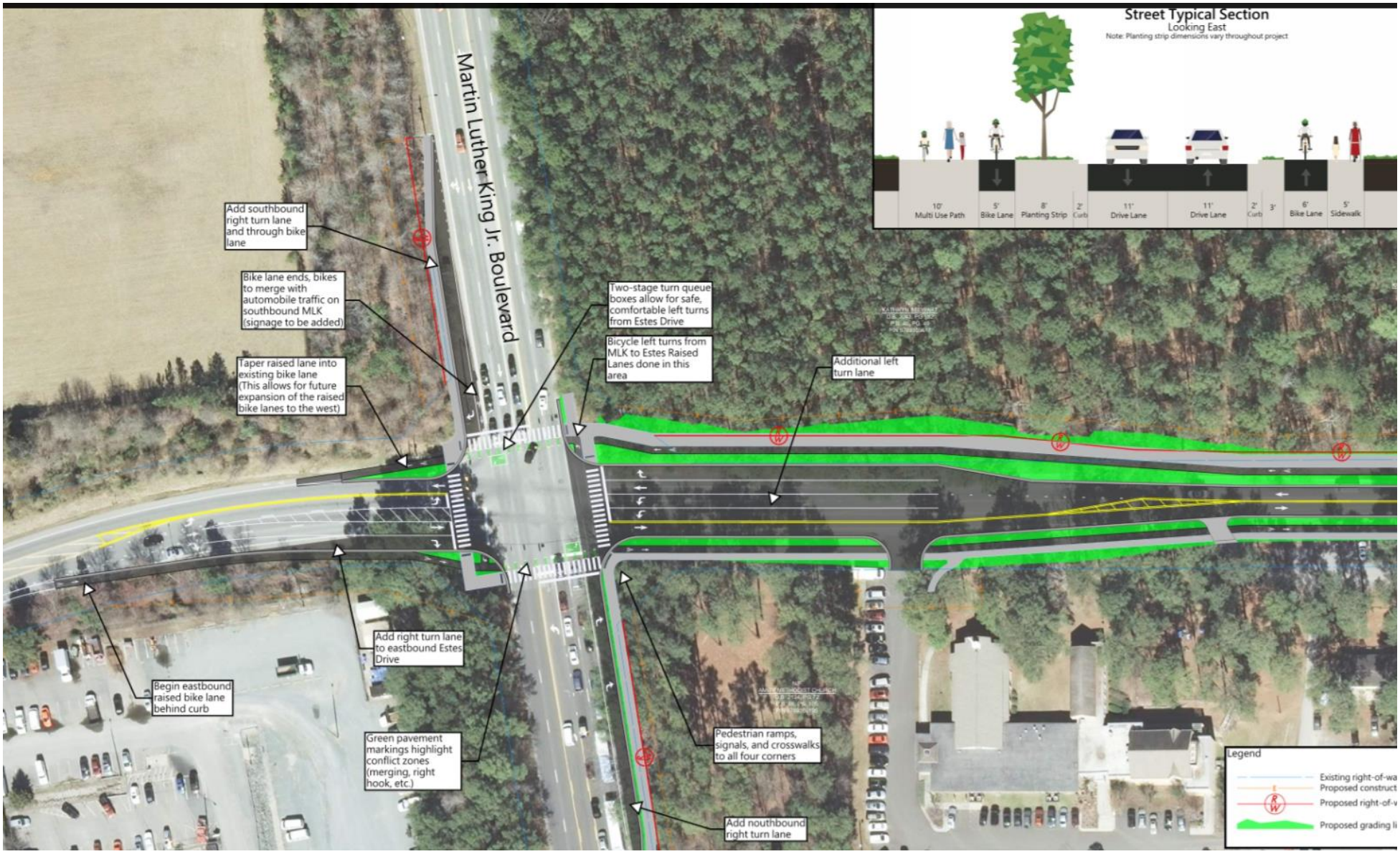
NOT TO SCALE

Chapel Hill Municipal Services Campus
Traffic Impact Study

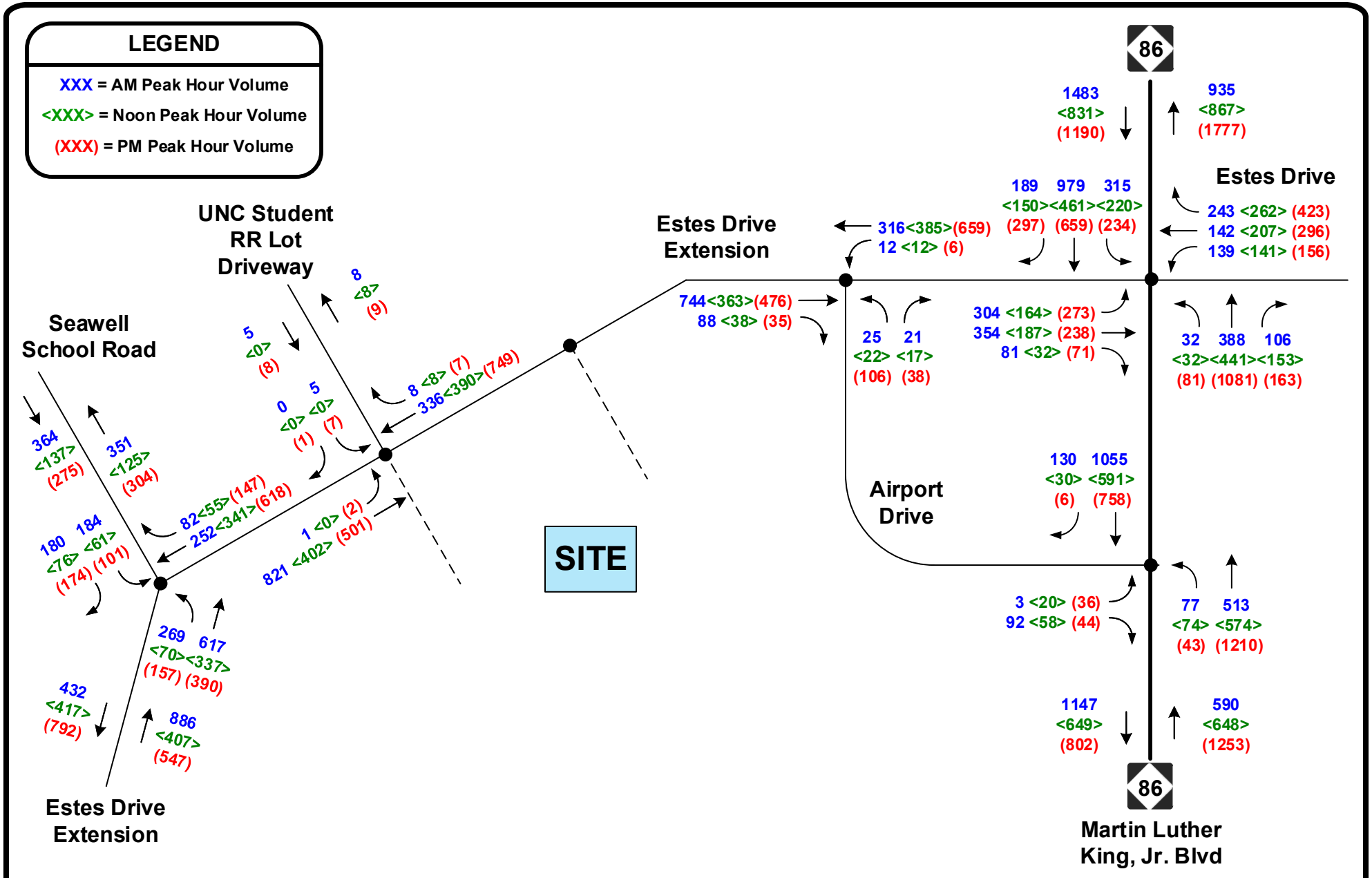
DATE: February 2018

STUDY AREA TRANSIT ROUTES

FIGURE 5



HNTB	TOWN OF CHAPEL HILL	NOT TO SCALE	**Chapel Hill Municipal Services Campus** **Traffic Impact Study**	**DATE:** February 2018
			TOWN OF CHAPEL HILL – ESTES DRIVE IMPROVEMENTS SCHEMATIC DETAIL	**FIGURE 6**



HNTB

TOWN OF CHAPEL HILL

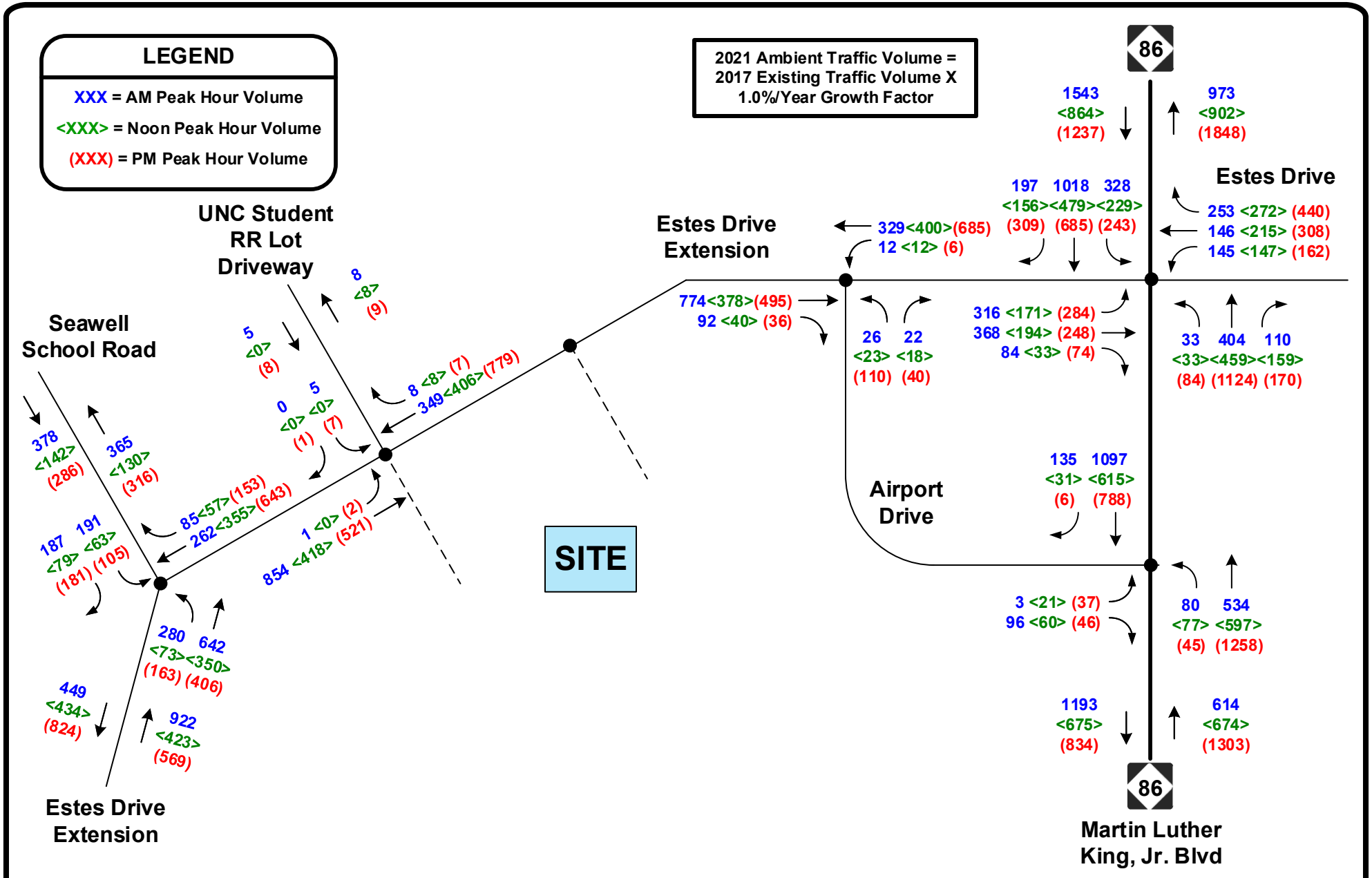
NOT TO SCALE

Chapel Hill Municipal Services Campus
Traffic Impact Study

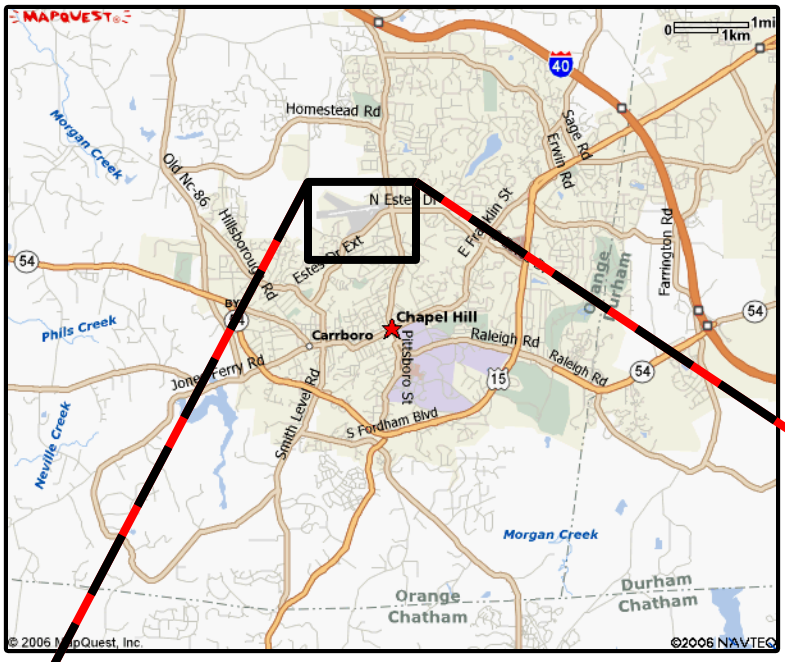
DATE: February 2018

2017 EXISTING PEAK HOUR TRAFFIC VOLUMES

FIGURE 7



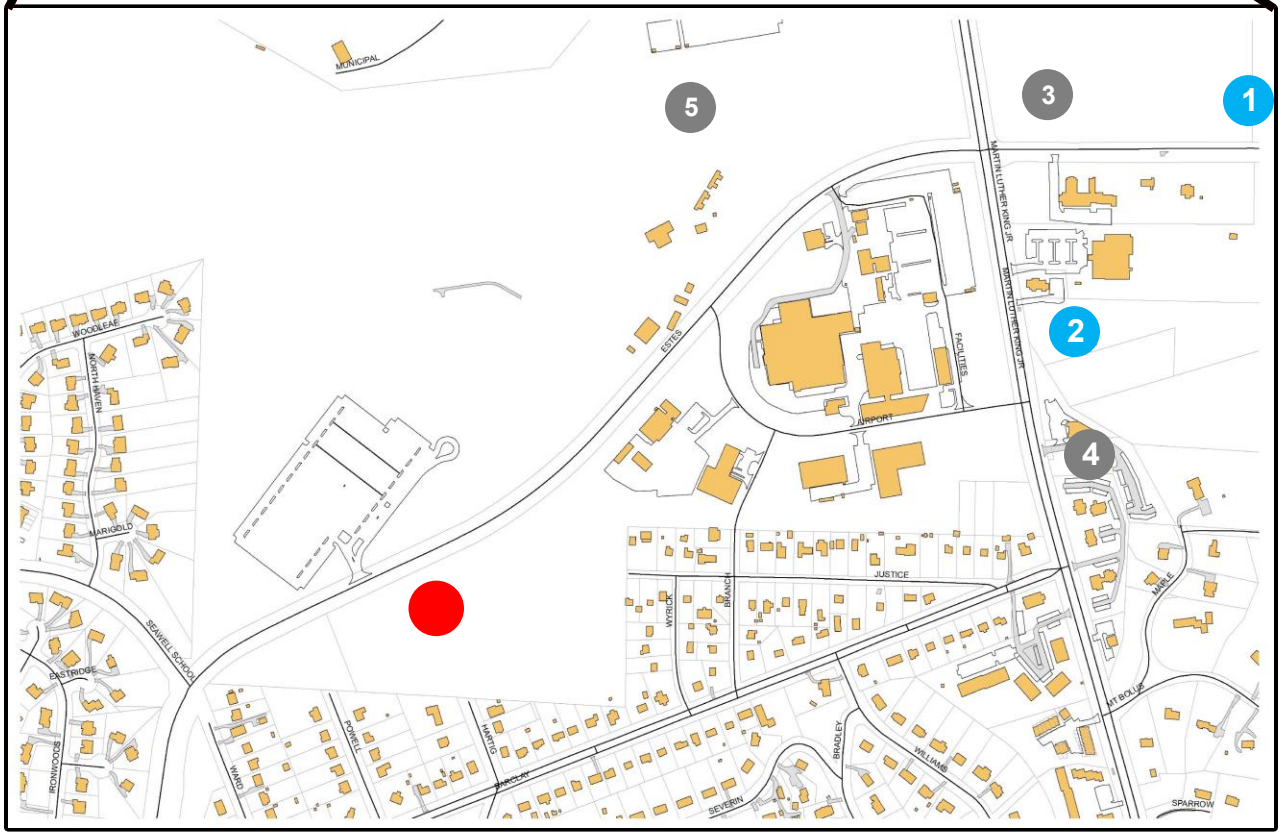
HNTB	TOWN OF CHAPEL HILL	NOT TO SCALE	Chapel Hill Municipal Services Campus Traffic Impact Study	DATE: February 2018
			2021 AMBIENT GROWTH PEAK HOUR TRAFFIC VOLUMES	FIGURE 8



LEGEND

1	Chapel Hill Retirement Residence
2	Sawmill Condominiums
3	North Estes Mixed-Use Center
4	Womens Health & Wellness Center
5	Carolina North
●	Chapel Hill Municipal Services Campus Site

X = Not Specifically Studied as Background Generator



Source: Town of Chapel Hill GIS Files

NOT TO SCALE

HNTB

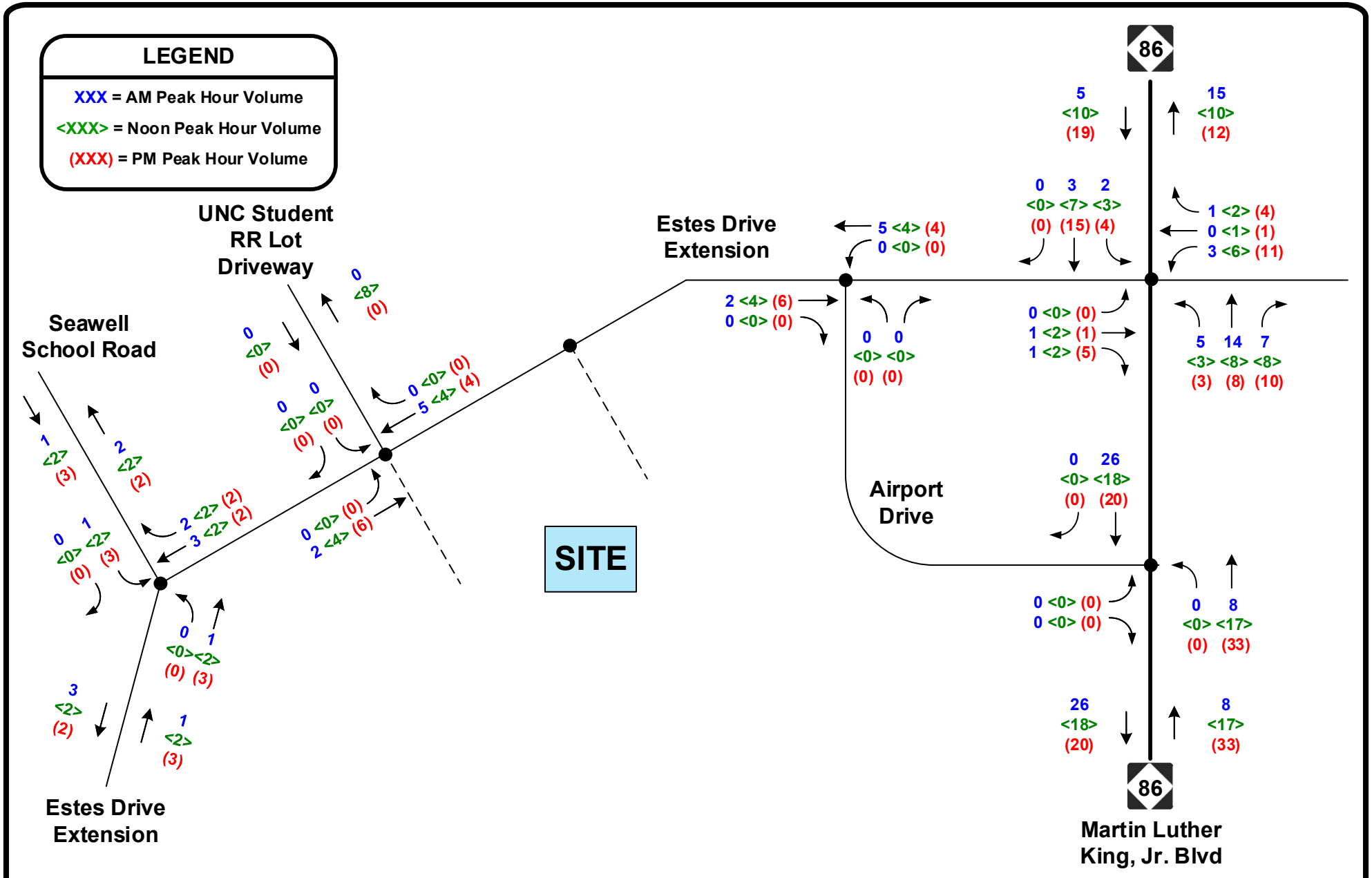
TOWN OF CHAPEL HILL

Chapel Hill Municipal Services Campus
Traffic Impact Study

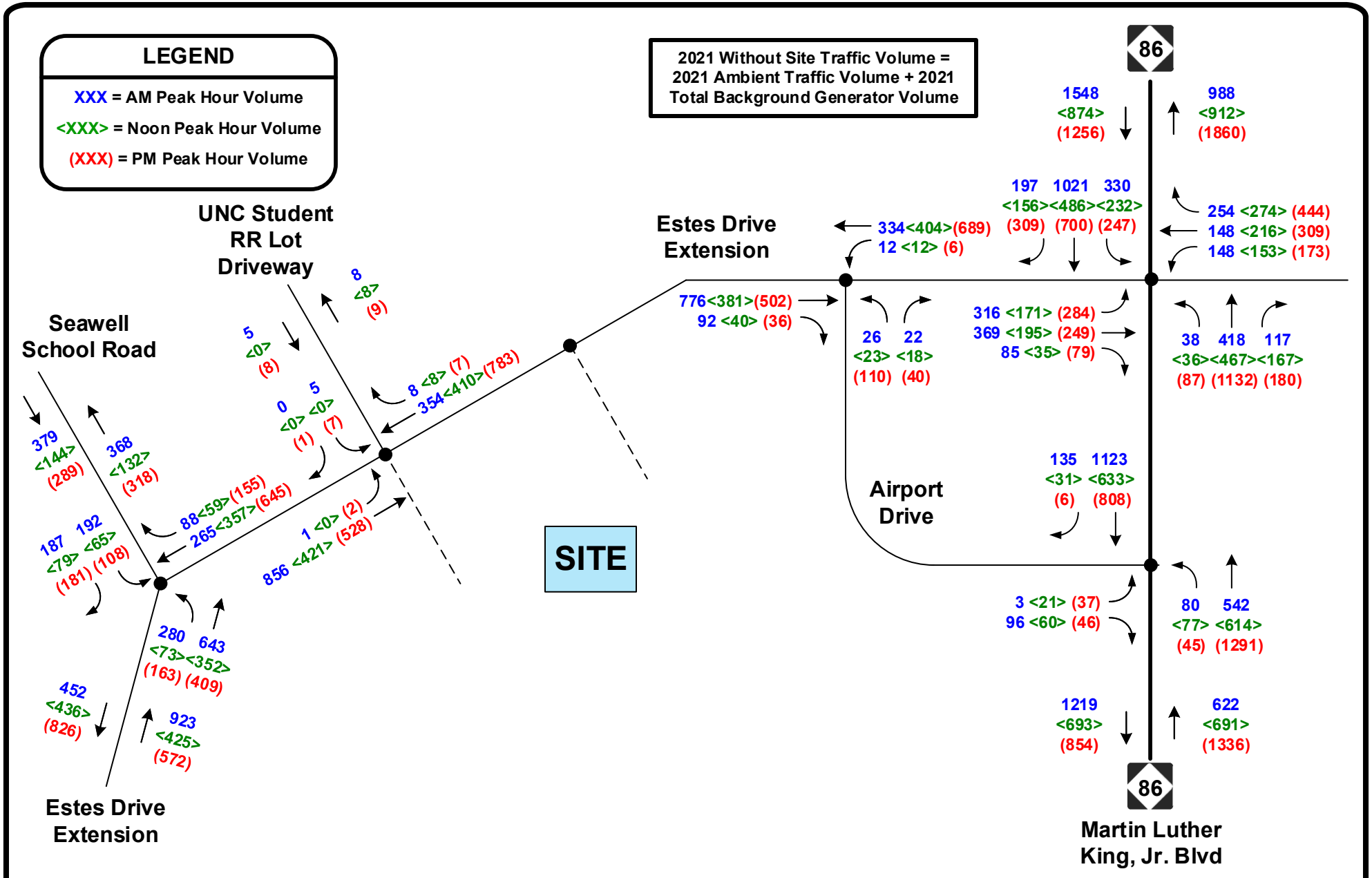
DATE: February 2018

BACKGROUND DEVELOPMENT LOCATIONS

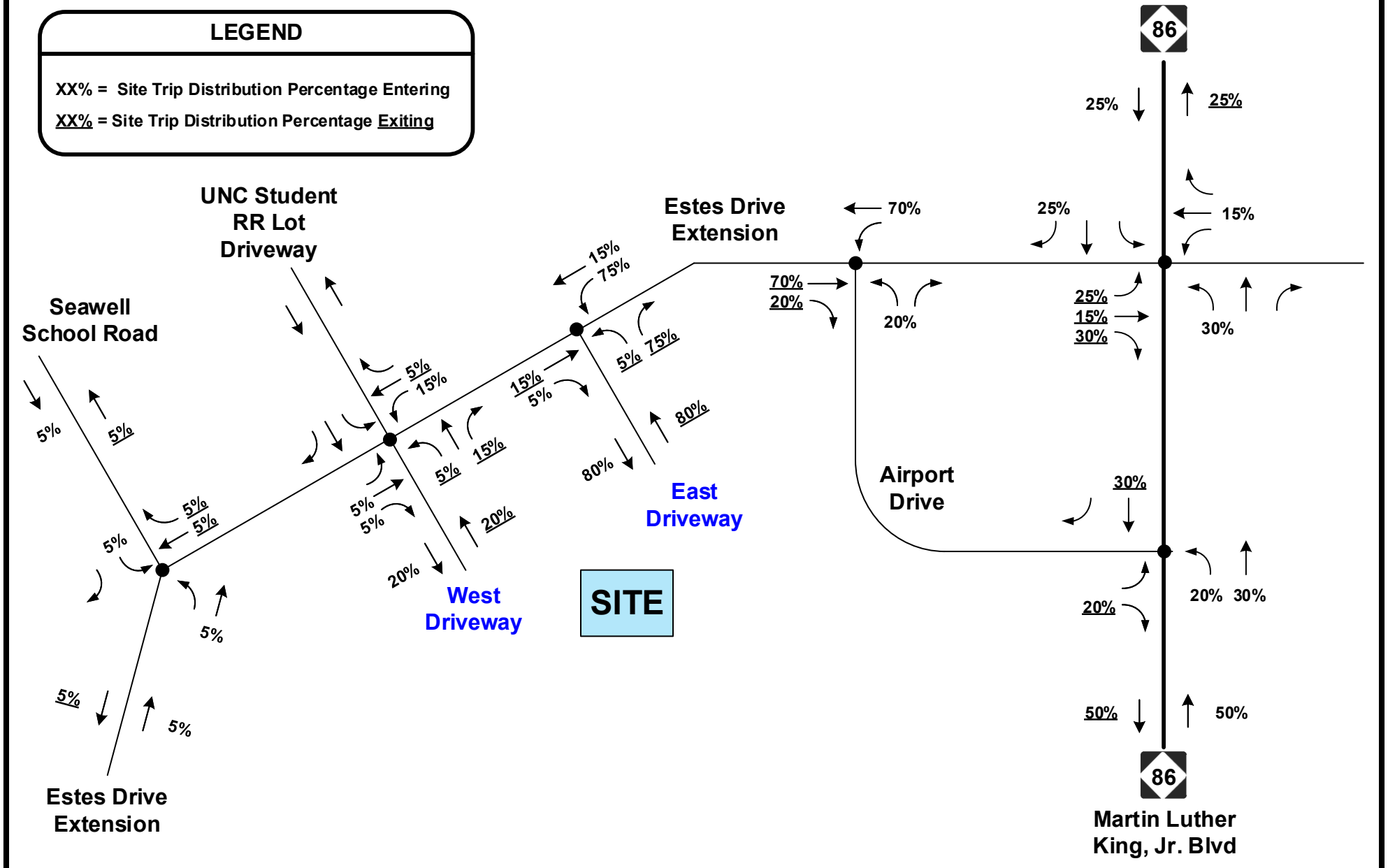
FIGURE 9



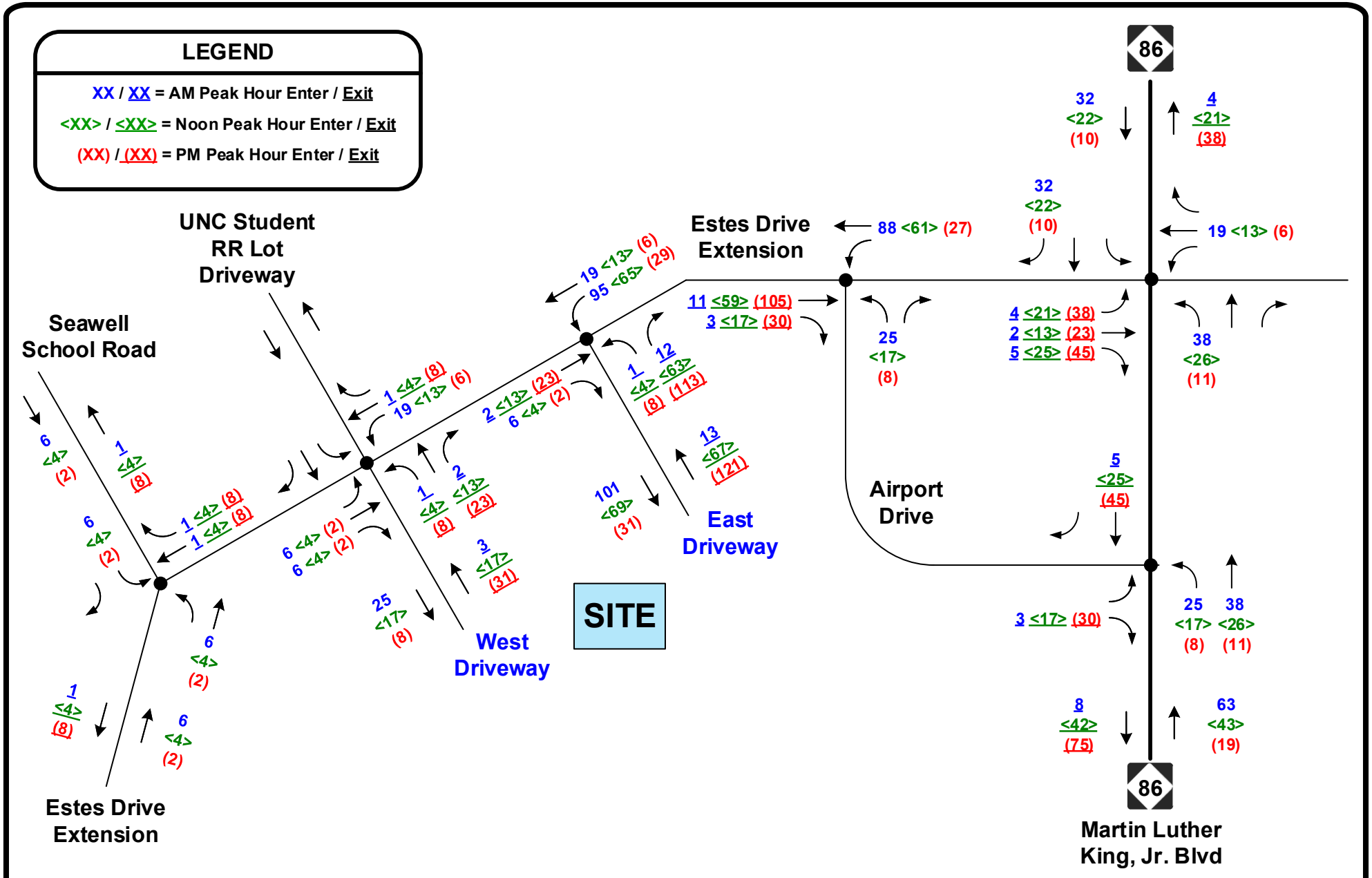
HNTB	TOWN OF CHAPEL HILL	NOT TO SCALE	**Chapel Hill Municipal Services Campus** **Traffic Impact Study** **2021 TOTAL BACKGROUND GENERATOR PEAK HOUR TRAFFIC VOLUMES**	**DATE:** February 2018 **FIGURE 10**



HNTB	TOWN OF CHAPEL HILL	NOT TO SCALE	**Chapel Hill Municipal Services Campus** **Traffic Impact Study** **2021 PEAK HOUR TRAFFIC VOLUMES – WITHOUT SITE PHASE 1**	**DATE:** February 2018 **FIGURE 11**



HNTB	TOWN OF CHAPEL HILL	NOT TO SCALE	Chapel Hill Municipal Services Campus Traffic Impact Study 2021 SITE TRIP DISTRIBUTION PERCENTAGES – PHASE 1	DATE: February 2018 FIGURE 12



HNTB

TOWN OF CHAPEL HILL

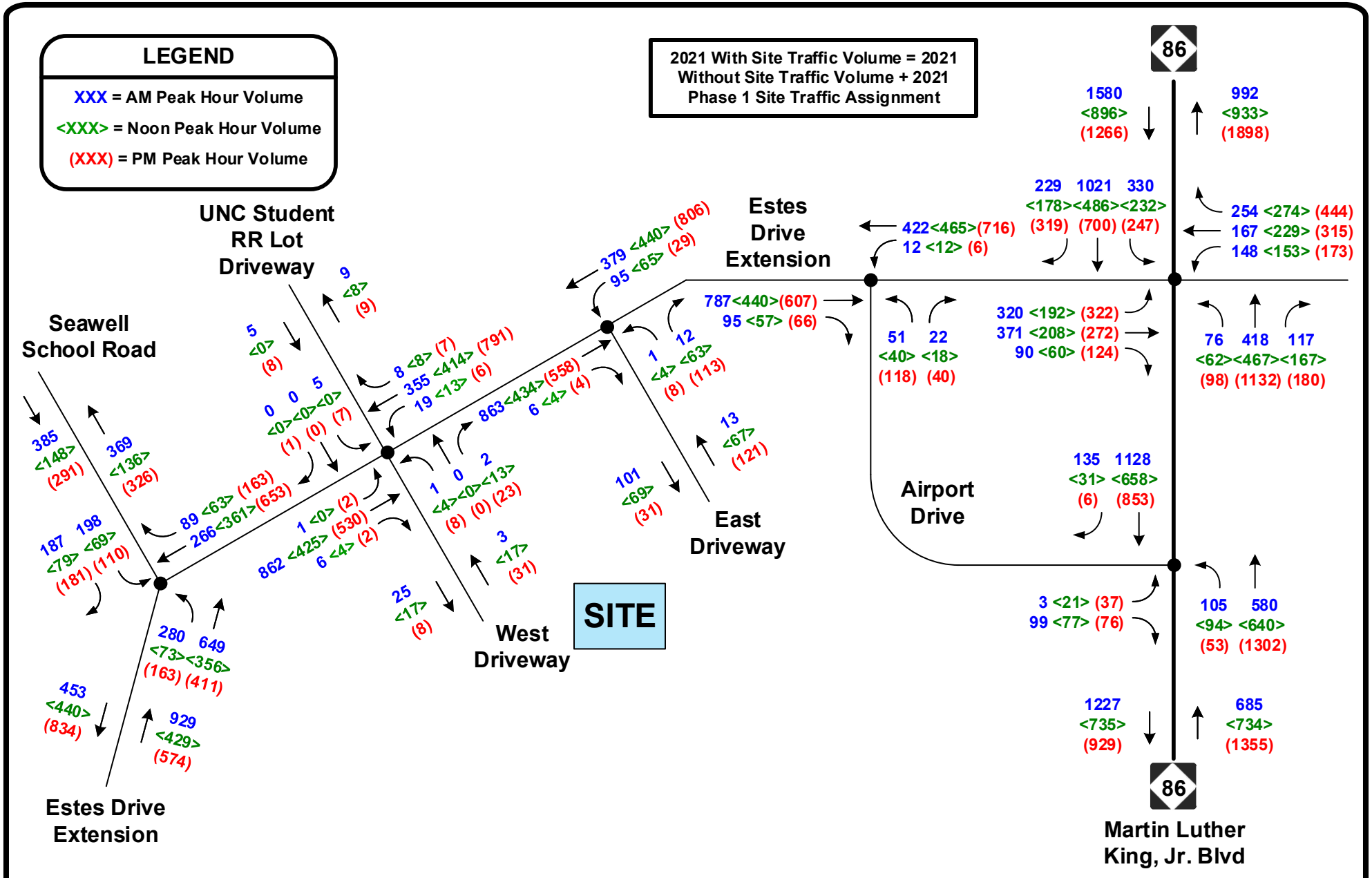
NOT TO SCALE

Chapel Hill Municipal Services Campus
Traffic Impact Study

2021 PEAK HOUR SITE TRAFFIC ASSIGNMENT – PHASE 1

DATE: February 2018

FIGURE 13



HNTB

TOWN OF CHAPEL HILL

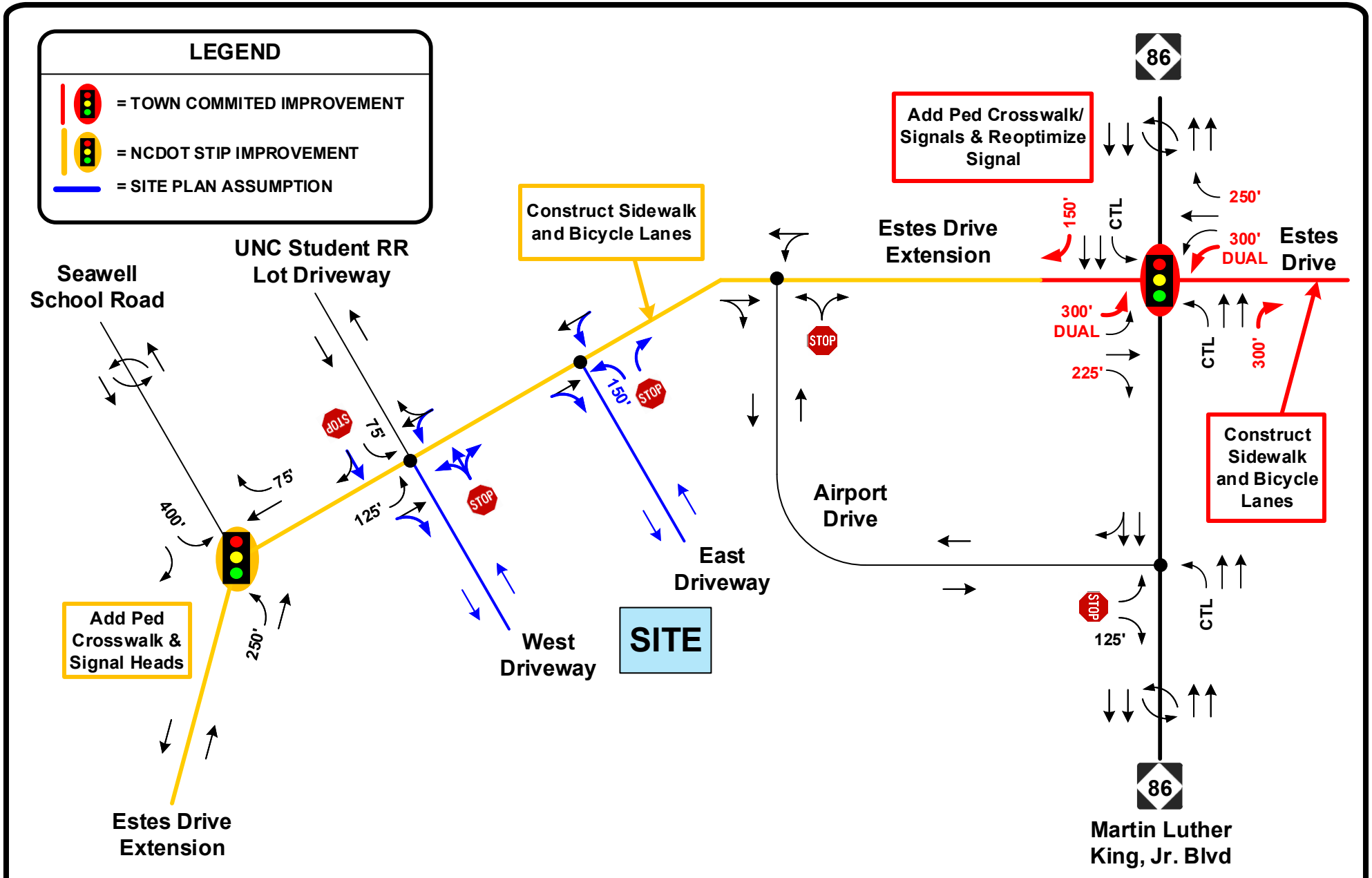
NOT TO SCALE

Chapel Hill Municipal Services Campus
Traffic Impact Study

2021 PEAK HOUR TRAFFIC VOLUMES – WITH SITE PHASE 1

DATE: February 2018

FIGURE 14



HNTB

TOWN OF CHAPEL HILL

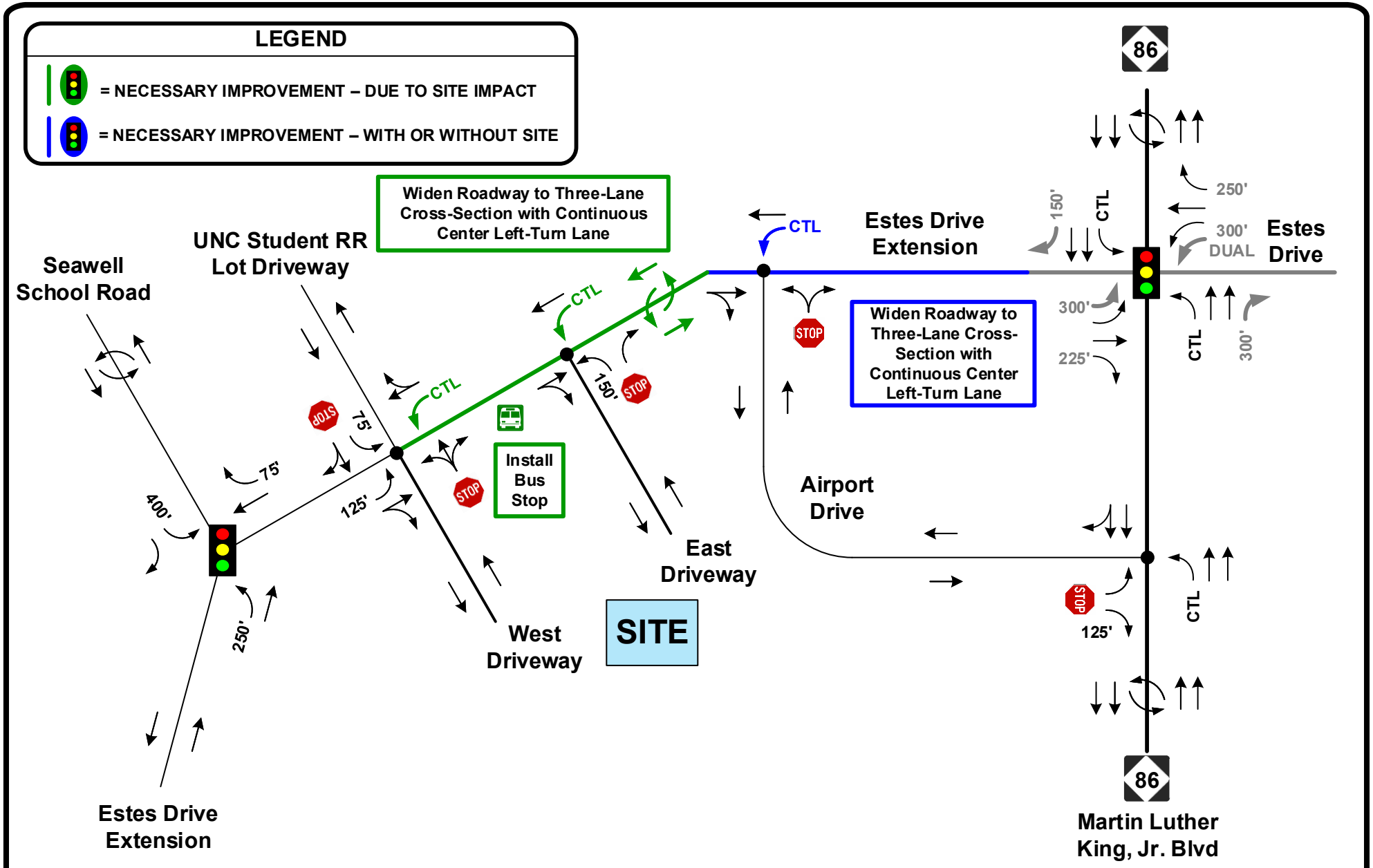
NOT TO SCALE

Chapel Hill Municipal Services Campus
Traffic Impact Study

2021 COMMITTED IMPROVEMENTS

DATE: February 2018

FIGURE 15



HNTB	TOWN OF CHAPEL HILL	N	Chapel Hill Municipal Services Campus Traffic Impact Study	DATE: February 2018
		NOT TO SCALE	NECESSARY IMPROVEMENTS	FIGURE 16

Appendix B – Traffic Count Data

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: UNC Park and Ride Dwy -- Estes Dr Ext

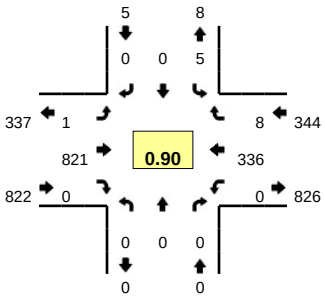
CITY/STATE: Chapel Hill, NC

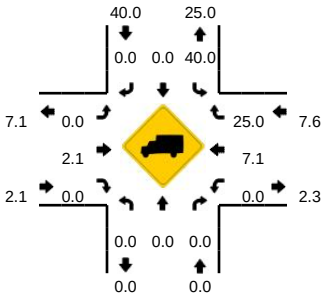
QC JOB #: 14560301

DATE: Tue, Nov 14 2017

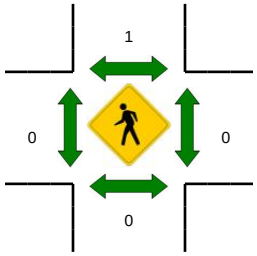
Peak-Hour: 7:40 AM -- 8:40 AM

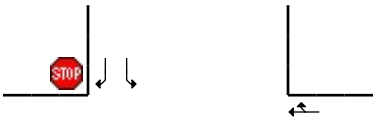
Peak 15-Min: 7:50 AM -- 8:05 AM

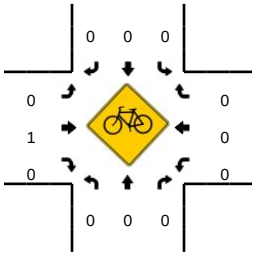


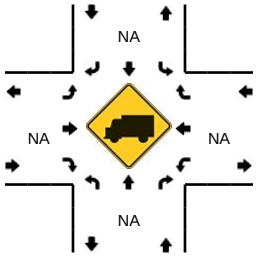


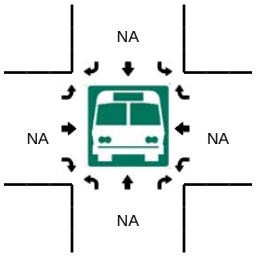
Quality Counts
TRANSPORTATION DATA COLLECTION SERVICES











5-Min Count Period Beginning At	UNC Park and Ride Dwy (Northbound)				UNC Park and Ride Dwy (Southbound)				Estes Dr Ext (Eastbound)				Estes Dr Ext (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	0	0	0	0	0	0	0	0	30	0	0	0	20	0	0	50	
7:05 AM	0	0	0	0	1	0	0	0	0	30	0	0	0	13	2	0	46	
7:10 AM	0	0	0	0	0	0	0	0	0	31	0	0	0	14	0	0	45	
7:15 AM	0	0	0	0	0	0	0	0	0	40	0	0	0	23	0	0	63	
7:20 AM	0	0	0	0	0	0	0	0	0	42	0	0	0	28	0	0	70	
7:25 AM	0	0	0	0	0	0	0	0	0	42	0	0	0	35	1	0	78	
7:30 AM	0	0	0	0	0	0	0	0	0	50	0	0	0	27	1	0	78	
7:35 AM	0	0	0	0	0	0	0	0	0	57	0	0	0	22	1	0	80	
7:40 AM	0	0	0	0	0	0	0	0	0	77	0	0	0	29	4	0	110	
7:45 AM	0	0	0	0	1	0	0	0	0	69	0	0	0	26	0	0	96	
7:50 AM	0	0	0	0	1	0	0	0	0	88	0	0	0	26	1	0	116	
7:55 AM	0	0	0	0	0	0	0	0	0	84	0	0	0	22	0	0	106	938
8:00 AM	0	0	0	0	0	0	0	0	0	63	0	0	0	42	0	0	105	993
8:05 AM	0	0	0	0	0	0	0	0	0	61	0	0	0	25	0	0	86	1033
8:10 AM	0	0	0	0	0	0	0	0	0	72	0	0	0	19	0	0	91	1079
8:15 AM	0	0	0	0	0	0	0	0	0	79	0	0	0	25	2	0	106	1122
8:20 AM	0	0	0	0	0	0	0	0	0	50	0	1	0	36	0	0	87	1139
8:25 AM	0	0	0	0	1	0	0	0	0	68	0	0	0	24	1	0	94	1155
8:30 AM	0	0	0	0	1	0	0	0	0	53	0	0	0	26	0	0	80	1157
8:35 AM	0	0	0	0	1	0	0	0	0	57	0	0	0	36	0	0	94	1171
8:40 AM	0	0	0	0	1	0	0	0	0	56	0	1	0	20	0	0	78	1139
8:45 AM	0	0	0	0	0	0	0	0	0	61	0	0	0	33	0	0	94	1137
8:50 AM	0	0	0	0	0	0	0	0	1	64	0	0	0	35	0	0	100	1121
8:55 AM	0	0	0	0	0	0	0	0	0	47	0	0	0	24	0	0	71	1086

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	4	0	0	0	0	940	0	0	0	360	4	0	1308
Heavy Trucks	0	0	0		4	0	0		0	28	0		0	24	0		56
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	1	0		0	0	0		1
Railroad																	
Stopped Buses																	

Comments:

Report generated on 11/22/2017 3:12 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

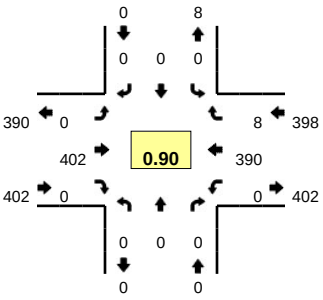
LOCATION: UNC Park and Ride Dwy -- Estes Dr Ext

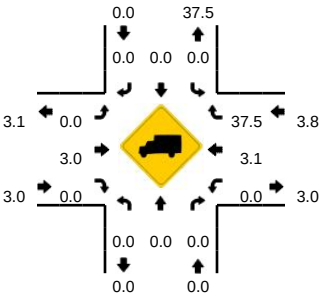
CITY/STATE: Chapel Hill, NC

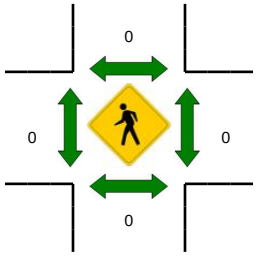
QC JOB #: 14560302

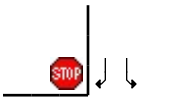
DATE: Tue, Nov 14 2017

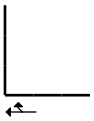
Peak-Hour: 12:05 PM -- 1:05 PM
Peak 15-Min: 12:05 PM -- 12:20 PM

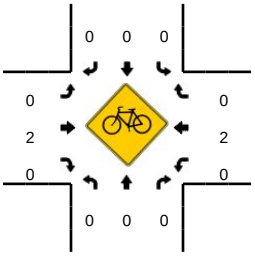


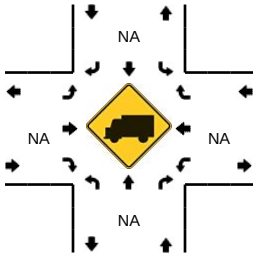


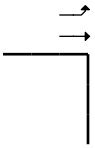


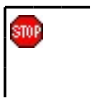


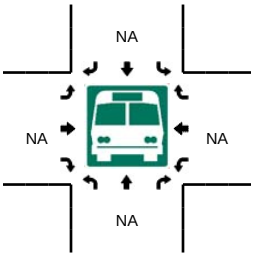












5-Min Count Period Beginning At	UNC Park and Ride Dwy (Northbound)				UNC Park and Ride Dwy (Southbound)				Estes Dr Ext (Eastbound)				Estes Dr Ext (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
11:30 AM	0	0	0	0	0	0	0	0	0	25	0	0	0	22	0	0	47	
11:35 AM	0	0	0	0	0	0	0	0	0	25	0	0	0	25	0	0	50	
11:40 AM	0	0	0	0	0	0	0	0	0	34	0	0	0	33	0	0	67	
11:45 AM	0	0	0	0	0	0	0	0	0	29	0	0	0	31	2	0	62	
11:50 AM	0	0	0	0	0	0	0	0	0	24	0	0	0	24	0	0	48	
11:55 AM	0	0	0	0	0	0	0	0	0	26	0	0	0	29	1	0	56	
12:00 PM	0	0	0	0	0	0	0	0	0	22	0	0	0	18	0	0	40	
12:05 PM	0	0	0	0	0	0	0	0	0	40	0	0	0	38	1	0	79	
12:10 PM	0	0	0	0	0	0	0	0	0	34	0	0	0	34	0	0	68	
12:15 PM	0	0	0	0	0	0	0	0	0	42	0	0	0	32	0	0	74	
12:20 PM	0	0	0	0	0	0	0	0	0	35	0	0	0	30	0	0	65	
12:25 PM	0	0	0	0	0	0	0	0	0	34	0	0	0	42	1	0	77	733
12:30 PM	0	0	0	0	0	0	0	0	0	23	0	0	0	24	1	0	48	734
12:35 PM	0	0	0	0	0	0	0	0	0	25	0	0	0	39	1	0	65	749
12:40 PM	0	0	0	0	0	0	0	0	0	38	0	0	0	33	1	0	72	754
12:45 PM	0	0	0	0	0	0	0	0	0	30	0	0	0	32	1	0	63	755
12:50 PM	0	0	0	0	0	0	0	0	0	34	0	0	0	31	1	0	66	773
12:55 PM	0	0	0	0	0	0	0	0	0	31	0	0	0	26	0	0	57	774
1:00 PM	0	0	0	0	0	0	0	0	0	36	0	0	0	29	1	0	66	800
1:05 PM	0	0	0	0	0	0	0	0	0	27	0	0	0	24	0	0	51	772
1:10 PM	0	0	0	0	0	0	0	0	0	31	0	0	0	38	0	0	69	773
1:15 PM	0	0	0	0	0	0	0	0	0	31	0	0	0	32	2	0	65	764
1:20 PM	0	0	0	0	0	0	0	0	0	27	0	0	0	21	0	0	48	747
1:25 PM	0	0	0	0	0	0	0	0	0	30	0	0	0	32	0	0	62	732

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	0	0	0	0	0	464	0	0	0	416	4	0	884
Heavy Trucks	0	0	0		0	0	0		0	24	0		0	8	4		36
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	1	0		1
Railroad																	
Stopped Buses																	

Comments:

Report generated on 11/22/2017 3:12 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

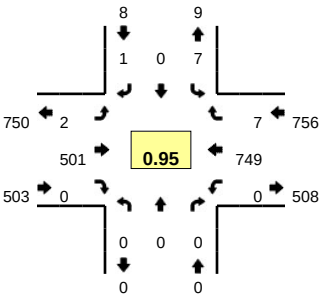
LOCATION: UNC Park and Ride Dwy -- Estes Dr Ext

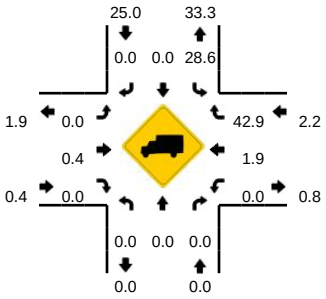
CITY/STATE: Chapel Hill, NC

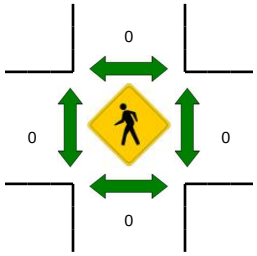
QC JOB #: 14560303

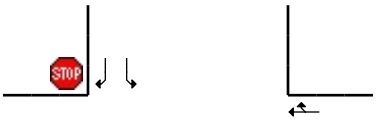
DATE: Tue, Nov 14 2017

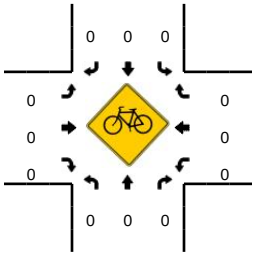
Peak-Hour: 4:35 PM -- 5:35 PM
Peak 15-Min: 5:10 PM -- 5:25 PM

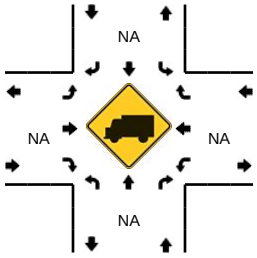


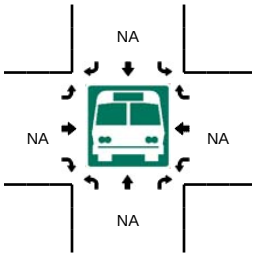












5-Min Count Period Beginning At	UNC Park and Ride Dwy (Northbound)				UNC Park and Ride Dwy (Southbound)				Estes Dr Ext (Eastbound)				Estes Dr Ext (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	0	0	0	3	0	0	0	0	40	0	0	0	41	2	0	86	
4:05 PM	0	0	0	0	2	0	0	0	0	48	0	0	0	56	0	0	106	
4:10 PM	0	0	0	0	1	0	0	0	0	40	0	0	0	57	2	0	100	
4:15 PM	0	0	0	0	0	0	0	0	0	37	0	0	0	53	1	0	91	
4:20 PM	0	0	0	0	3	0	0	0	0	39	0	0	0	55	0	0	97	
4:25 PM	0	0	0	0	1	0	0	0	0	32	0	0	0	50	1	0	84	
4:30 PM	0	0	0	0	0	0	0	0	0	35	0	0	0	67	0	0	102	
4:35 PM	0	0	0	0	1	0	0	0	0	47	0	0	0	70	1	0	119	
4:40 PM	0	0	0	0	0	0	0	0	0	45	0	0	0	60	1	0	106	
4:45 PM	0	0	0	0	1	0	0	0	0	33	0	0	0	72	0	0	106	
4:50 PM	0	0	0	0	0	0	1	0	0	39	0	0	0	61	1	0	102	
4:55 PM	0	0	0	0	1	0	0	0	0	37	0	0	0	51	1	0	90	1189
5:00 PM	0	0	0	0	0	0	0	0	0	45	0	0	0	51	0	0	96	1199
5:05 PM	0	0	0	0	0	0	0	0	0	43	0	0	0	52	1	0	96	1189
5:10 PM	0	0	0	0	3	0	0	0	1	47	0	0	0	60	0	0	111	1200
5:15 PM	0	0	0	0	1	0	0	0	0	54	0	0	0	61	0	0	116	1225
5:20 PM	0	0	0	0	0	0	0	0	0	37	0	0	0	68	0	0	105	1233
5:25 PM	0	0	0	0	0	0	0	0	1	36	0	0	0	70	1	0	108	1257
5:30 PM	0	0	0	0	0	0	0	0	0	38	0	0	0	73	1	0	112	1267
5:35 PM	0	0	0	0	2	0	0	0	0	35	0	0	0	59	1	0	97	1245
5:40 PM	0	0	0	0	2	0	0	0	0	36	0	0	0	69	3	0	110	1249
5:45 PM	0	0	0	0	1	0	0	0	0	41	0	0	0	69	1	0	112	1255
5:50 PM	0	0	0	0	1	0	0	0	0	42	0	0	0	55	3	0	101	1254
5:55 PM	0	0	0	0	3	0	0	0	0	34	0	0	0	47	0	0	84	1248

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	16	0	0	0	4	552	0	0	0	756	0	0	1328
Heavy Trucks	0	0	0		4	0	0		0	0	0		0	16	0		20
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 11/22/2017 3:12 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

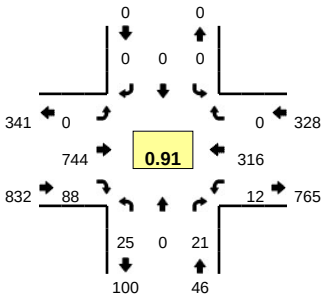
Type of peak hour being reported: Intersection Peak

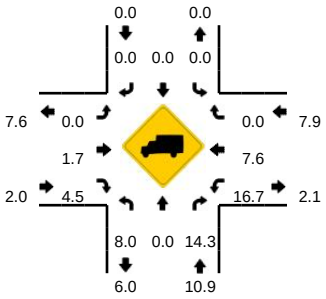
Method for determining peak hour: Total Entering Volume

LOCATION: Airport Dr -- Estes Dr Ext
CITY/STATE: Chapel Hill, NC

QC JOB #: 14560304
DATE: Tue, Nov 14 2017

Peak-Hour: 7:40 AM -- 8:40 AM
Peak 15-Min: 7:45 AM -- 8:00 AM





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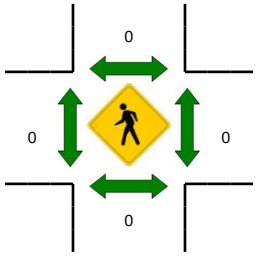
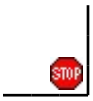
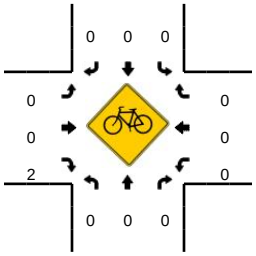
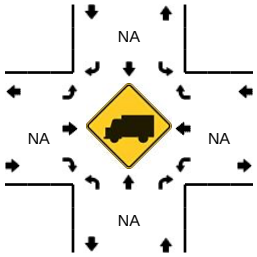
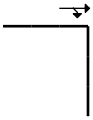
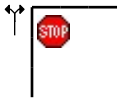


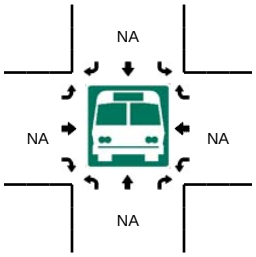












5-Min Count Period Beginning At	Airport Dr (Northbound)				Airport Dr (Southbound)				Estes Dr Ext (Eastbound)				Estes Dr Ext (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	3	0	0	0	0	0	0	0	0	28	1	0	1	17	0	0	50	
7:05 AM	1	0	1	0	0	0	0	0	0	27	3	0	0	14	0	0	46	
7:10 AM	1	0	0	0	0	0	0	0	0	29	2	0	1	14	0	0	47	
7:15 AM	3	0	1	0	0	0	0	0	0	38	3	0	0	19	0	0	64	
7:20 AM	3	0	1	0	0	0	0	0	0	37	3	0	0	32	0	0	76	
7:25 AM	1	0	2	0	0	0	0	0	0	36	5	0	0	25	0	0	69	
7:30 AM	3	0	1	0	0	0	0	0	0	46	6	0	3	29	0	0	88	
7:35 AM	3	0	1	0	0	0	0	0	0	44	8	0	3	22	0	0	81	
7:40 AM	3	0	1	0	0	0	0	0	0	69	5	0	1	31	0	0	110	
7:45 AM	2	0	2	0	0	0	0	0	0	63	11	0	0	24	0	0	102	
7:50 AM	1	0	3	0	0	0	0	0	0	77	11	0	0	25	0	0	117	
7:55 AM	2	0	1	0	0	0	0	0	0	70	11	0	1	29	0	0	114	964
8:00 AM	2	0	0	0	0	0	0	0	0	59	6	0	2	29	0	0	98	1012
8:05 AM	3	0	1	0	0	0	0	0	0	57	8	0	3	24	0	0	96	1062
8:10 AM	2	0	1	0	0	0	0	0	0	62	7	0	1	21	0	0	94	1109
8:15 AM	1	0	2	0	0	0	0	0	0	75	7	0	1	21	0	0	107	1152
8:20 AM	2	0	3	0	0	0	0	0	0	46	6	0	0	33	0	0	90	1166
8:25 AM	2	0	2	0	0	0	0	0	0	60	9	0	0	30	0	0	103	1200
8:30 AM	2	0	2	0	0	0	0	0	0	54	2	0	0	25	0	0	85	1197
8:35 AM	3	0	3	0	0	0	0	0	0	52	5	0	3	24	0	0	90	1206
8:40 AM	1	0	1	0	0	0	0	0	0	48	8	0	0	26	0	0	84	1180
8:45 AM	0	0	1	0	0	0	0	0	0	43	1	0	1	24	0	0	70	1148
8:50 AM	3	0	0	0	0	0	0	0	0	51	8	0	3	36	0	0	101	1132
8:55 AM	2	0	3	0	0	0	0	0	0	53	3	0	3	19	0	0	83	1101

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	20	0	24	0	0	0	0	0	0	840	132	0	4	312	0	0	1332
Heavy Trucks	0	0	4		0	0	0		0	12	4		4	28	0		52
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 11/22/2017 3:12 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

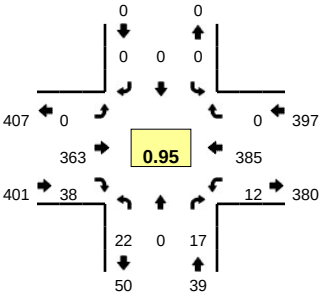
Type of peak hour being reported: Intersection Peak

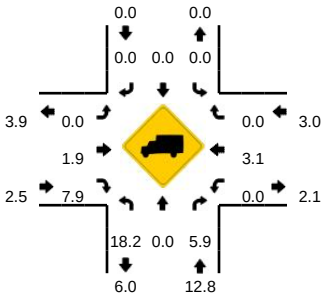
Method for determining peak hour: Total Entering Volume

LOCATION: Airport Dr -- Estes Dr Ext
CITY/STATE: Chapel Hill, NC

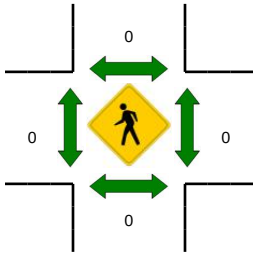
QC JOB #: 14560305
DATE: Tue, Nov 14 2017

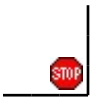
Peak-Hour: 12:05 PM -- 1:05 PM
Peak 15-Min: 12:15 PM -- 12:30 PM

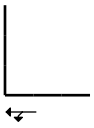


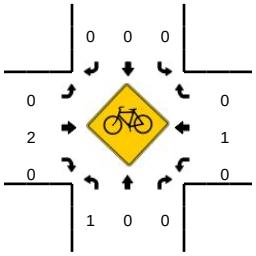


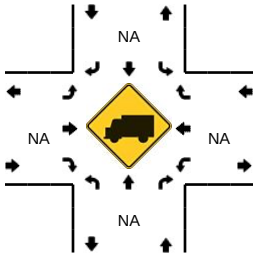
Quality Counts
TRANSPORTATION DATA COLLECTION SERVICES

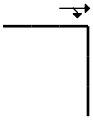


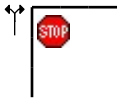


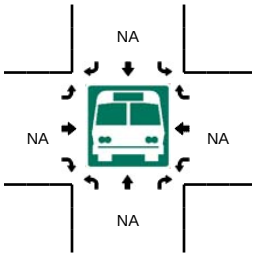












5-Min Count Period Beginning At	Airport Dr (Northbound)				Airport Dr (Southbound)				Estes Dr Ext (Eastbound)				Estes Dr Ext (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
11:30 AM	2	0	1	0	0	0	0	0	0	21	1	0	0	28	0	0	53	
11:35 AM	3	0	1	0	0	0	0	0	0	21	3	0	1	25	0	0	54	
11:40 AM	2	0	4	0	0	0	0	0	0	28	2	0	0	23	0	0	59	
11:45 AM	5	0	2	0	0	0	0	0	0	32	4	0	1	27	0	0	71	
11:50 AM	1	0	0	0	0	0	0	0	0	29	3	0	0	24	0	0	57	
11:55 AM	0	0	5	0	0	0	0	0	0	23	2	0	0	28	0	0	58	
12:00 PM	1	0	5	0	0	0	0	0	0	27	3	0	0	21	0	0	57	
12:05 PM	7	0	1	0	0	0	0	0	0	29	2	0	1	33	0	0	73	
12:10 PM	1	0	0	0	0	0	0	0	0	31	5	0	1	30	0	0	68	
12:15 PM	3	0	0	0	0	0	0	0	0	28	2	0	2	42	0	0	77	
12:20 PM	0	0	1	0	0	0	0	0	0	31	4	0	2	32	0	0	70	
12:25 PM	1	0	2	0	0	0	0	0	0	34	1	0	1	35	0	0	74	771
12:30 PM	2	0	2	0	0	0	0	0	0	40	4	0	0	20	0	0	68	786
12:35 PM	1	0	4	0	0	0	0	0	0	33	6	0	1	32	0	0	77	809
12:40 PM	0	0	2	0	0	0	0	0	0	31	4	0	1	32	0	0	70	820
12:45 PM	1	0	2	0	0	0	0	0	0	27	3	0	0	39	0	0	72	821
12:50 PM	0	0	1	0	0	0	0	0	0	30	1	0	2	28	0	0	62	826
12:55 PM	3	0	1	0	0	0	0	0	0	25	2	0	1	30	0	0	62	830
1:00 PM	3	0	1	0	0	0	0	0	0	24	4	0	0	32	0	0	64	837
1:05 PM	0	0	1	0	0	0	0	0	0	24	1	0	1	28	0	0	55	819
1:10 PM	2	0	3	0	0	0	0	0	0	32	2	0	1	28	0	0	68	819
1:15 PM	4	0	2	0	0	0	0	0	0	34	1	0	1	31	0	0	73	815
1:20 PM	1	0	1	0	0	0	0	0	0	21	1	0	1	23	0	0	48	793
1:25 PM	2	0	2	0	0	0	0	0	0	28	3	0	0	29	0	1	65	784

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	16	0	12	0	0	0	0	0	0	372	28	0	20	436	0	0	884
Heavy Trucks	0	0	4		0	0	0		0	0	4		0	8	0		16
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	1	0		0	0	0		1
Railroad																	
Stopped Buses																	

Comments:

Report generated on 11/22/2017 3:12 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: Airport Dr -- Estes Dr Ext

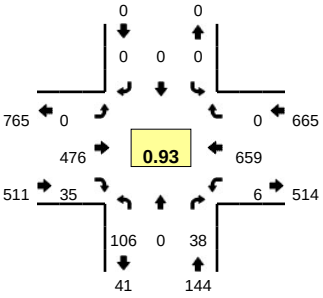
CITY/STATE: Chapel Hill, NC

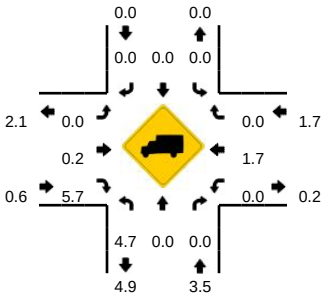
QC JOB #: 14560306

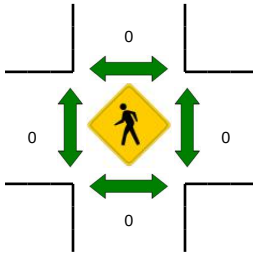
DATE: Tue, Nov 14 2017

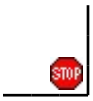
Peak-Hour: 4:35 PM -- 5:35 PM

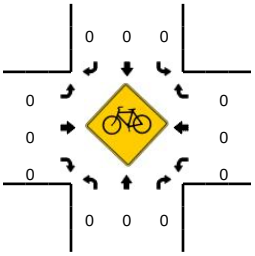
Peak 15-Min: 4:35 PM -- 4:50 PM

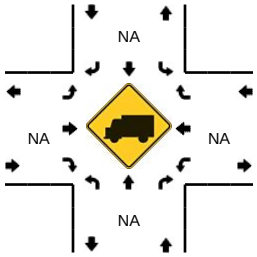


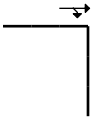


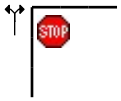


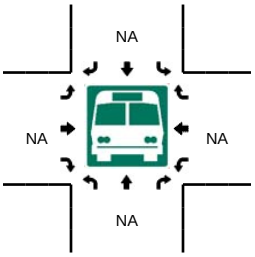












5-Min Count Period Beginning At	Airport Dr (Northbound)				Airport Dr (Southbound)				Estes Dr Ext (Eastbound)				Estes Dr Ext (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	6	0	4	0	0	0	0	0	0	34	1	0	0	41	0	0	86	
4:05 PM	8	0	4	0	0	0	0	0	0	51	5	0	1	52	0	0	121	
4:10 PM	7	0	1	0	0	0	0	0	0	43	4	0	0	48	0	0	103	
4:15 PM	5	0	4	0	0	0	0	0	0	29	1	0	0	52	0	0	91	
4:20 PM	1	0	2	0	0	0	0	0	0	46	0	0	1	58	0	0	108	
4:25 PM	1	0	3	0	0	0	0	0	0	33	1	0	0	46	0	0	84	
4:30 PM	21	0	6	0	0	0	0	0	0	35	0	0	0	48	0	0	110	
4:35 PM	18	0	7	0	0	0	0	0	0	38	4	0	1	52	0	0	120	
4:40 PM	12	0	2	0	0	0	0	0	0	47	2	0	1	62	0	0	126	
4:45 PM	8	0	2	0	0	0	0	0	0	30	7	0	0	61	0	0	108	
4:50 PM	6	0	5	0	0	0	0	0	0	34	2	0	1	50	0	0	98	
4:55 PM	7	0	2	0	0	0	0	0	0	37	3	0	0	45	0	0	94	1249
5:00 PM	5	0	2	0	0	0	0	0	0	47	2	0	0	50	0	0	106	1269
5:05 PM	9	0	6	0	0	0	0	0	0	38	3	0	1	41	0	0	98	1246
5:10 PM	9	0	3	0	0	0	0	0	0	48	1	0	0	51	0	0	112	1255
5:15 PM	11	0	4	0	0	0	0	0	0	50	7	0	0	54	0	0	126	1290
5:20 PM	8	0	3	0	0	0	0	0	0	29	3	0	2	54	0	0	99	1281
5:25 PM	8	0	1	0	0	0	0	0	0	36	1	0	0	72	0	0	118	1315
5:30 PM	5	0	1	0	0	0	0	0	0	42	0	0	0	67	0	0	115	1320
5:35 PM	3	0	4	0	0	0	0	0	0	32	3	0	0	54	0	0	96	1296
5:40 PM	7	0	2	0	0	0	0	0	0	35	3	0	0	69	0	0	116	1286
5:45 PM	6	0	1	0	0	0	0	0	0	40	0	0	0	64	0	0	111	1289
5:50 PM	2	0	0	0	0	0	0	0	0	45	1	0	0	57	0	0	105	1296
5:55 PM	0	0	3	0	0	0	0	0	0	33	6	0	0	44	0	0	86	1288

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	152	0	44	0	0	0	0	0	0	460	52	0	8	700	0	0	1416
Heavy Trucks	4	0	0		0	0	0		0	0	0		0	16	0		20
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 11/22/2017 3:12 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: NC 86 -- Estes Dr Ext

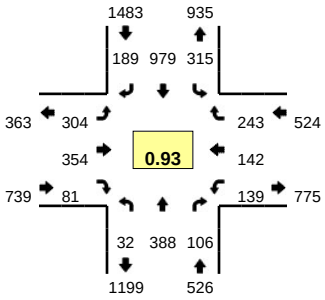
CITY/STATE: Chapel Hill, NC

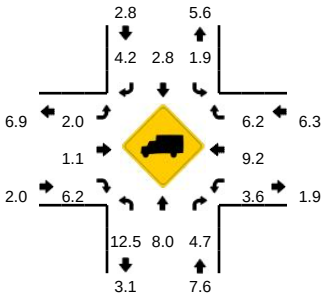
QC JOB #: 14560307

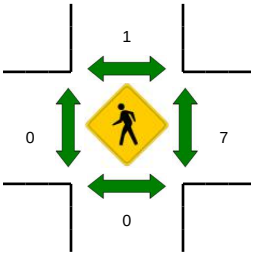
DATE: Tue, Nov 14 2017

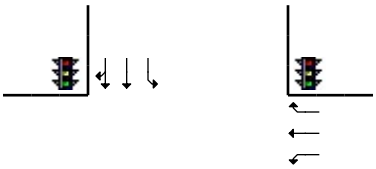
Peak-Hour: 7:30 AM -- 8:30 AM

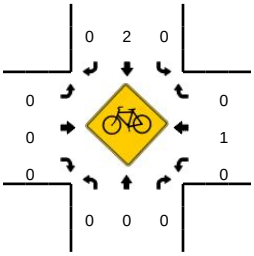
Peak 15-Min: 7:40 AM -- 7:55 AM

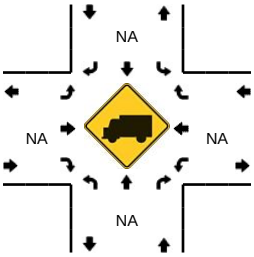


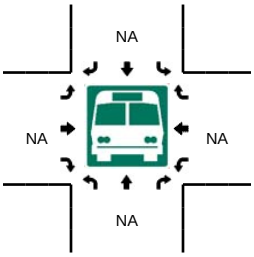












5-Min Count Period Beginning At	NC 86 (Northbound)				NC 86 (Southbound)				Estes Dr Ext (Eastbound)				Estes Dr Ext (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	18	2	0	9	32	12	0	10	17	3	0	6	13	3	0	125	
7:05 AM	0	31	3	0	15	65	10	0	5	12	1	0	4	3	6	0	155	
7:10 AM	1	35	2	0	14	43	10	0	10	12	1	0	3	4	7	0	142	
7:15 AM	1	23	4	0	17	61	14	0	22	19	4	0	7	13	12	0	197	
7:20 AM	0	28	7	0	27	69	20	0	15	17	1	0	9	12	6	0	211	
7:25 AM	1	23	13	0	28	83	17	0	5	12	3	0	8	8	11	0	212	
7:30 AM	0	27	4	0	24	64	19	0	21	40	5	0	15	17	25	0	261	
7:35 AM	0	33	9	0	19	85	20	0	16	21	1	0	9	12	19	0	244	
7:40 AM	2	31	11	0	33	109	28	0	30	22	3	0	9	6	18	0	302	
7:45 AM	6	36	10	0	37	107	11	0	24	31	4	0	7	9	19	0	301	
7:50 AM	2	20	7	0	31	74	17	0	22	53	8	0	12	11	21	0	278	
7:55 AM	5	47	7	0	22	75	12	0	29	35	9	0	13	11	23	0	288	2716
8:00 AM	2	15	8	0	26	54	12	0	24	26	13	0	12	15	19	0	226	2817
8:05 AM	2	30	11	0	24	96	16	0	29	21	4	0	17	14	19	0	283	2945
8:10 AM	5	47	10	0	23	84	10	0	27	20	11	0	9	6	31	0	283	3086
8:15 AM	1	36	9	0	28	76	18	0	22	26	10	0	11	9	21	0	267	3156
8:20 AM	1	25	10	0	33	91	13	0	34	31	6	0	19	20	17	0	300	3245
8:25 AM	6	41	10	0	15	64	13	0	26	28	7	0	6	12	11	0	239	3272
8:30 AM	2	24	5	0	22	97	18	0	33	25	3	0	6	10	14	0	259	3270
8:35 AM	1	18	10	0	14	76	16	0	25	24	9	0	12	11	17	0	233	3259
8:40 AM	0	33	7	0	24	72	16	0	23	25	4	0	14	12	5	0	235	3192
8:45 AM	1	23	9	0	29	97	20	0	19	18	3	0	10	14	11	0	254	3145
8:50 AM	3	20	11	0	26	76	18	0	30	29	8	0	15	16	18	0	270	3137
8:55 AM	4	28	4	0	29	59	9	0	22	35	8	0	13	14	17	0	242	3091

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	40	348	112	0	404	1160	224	0	304	424	60	0	112	104	232	0	3524
Heavy Trucks	4	16	4		8	20	4		12	4	4		0	12	8		96
Pedestrians		0				0				0				8			8
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 11/22/2017 3:12 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

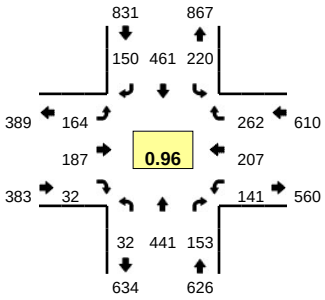
Type of peak hour being reported: Intersection Peak

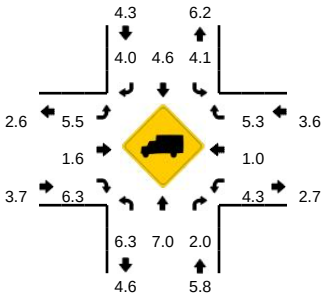
Method for determining peak hour: Total Entering Volume

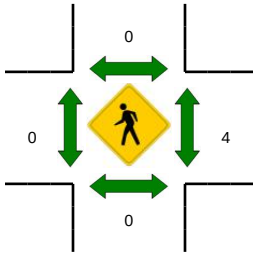
LOCATION: NC 86 -- Estes Dr Ext
CITY/STATE: Chapel Hill, NC

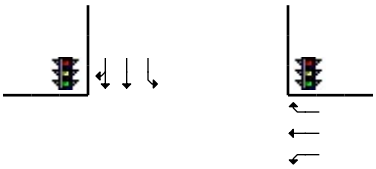
QC JOB #: 14560308
DATE: Tue, Nov 14 2017

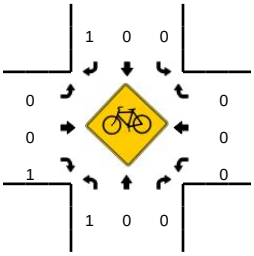
Peak-Hour: 12:15 PM -- 1:15 PM
Peak 15-Min: 12:35 PM -- 12:50 PM

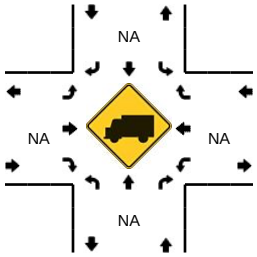


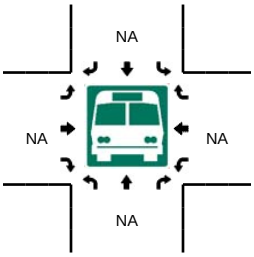












5-Min Count Period Beginning At	NC 86 (Northbound)				NC 86 (Southbound)				Estes Dr Ext (Eastbound)				Estes Dr Ext (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
11:30 AM	1	29	9	0	14	36	8	0	11	15	2	0	12	12	13	0	162	
11:35 AM	1	37	12	0	20	34	14	0	7	11	1	0	9	12	15	0	173	
11:40 AM	3	14	9	0	20	31	4	0	21	15	3	0	7	17	12	0	156	
11:45 AM	2	39	14	0	16	42	10	0	11	15	1	0	9	13	18	0	190	
11:50 AM	1	29	5	0	14	37	11	0	12	23	2	0	13	16	17	0	180	
11:55 AM	1	44	13	0	11	31	9	0	11	14	3	0	11	13	28	0	189	
12:00 PM	1	24	13	0	18	39	9	0	18	23	4	0	10	15	16	0	190	
12:05 PM	3	61	10	0	19	42	16	0	10	14	2	0	8	16	13	0	214	
12:10 PM	2	25	6	0	16	35	8	0	16	22	5	0	14	22	19	0	190	
12:15 PM	6	40	15	0	13	43	16	0	10	10	2	0	14	17	19	0	205	
12:20 PM	5	25	10	0	26	35	11	0	20	16	2	0	14	21	22	0	207	
12:25 PM	6	51	13	0	18	48	17	0	7	17	3	0	7	14	16	0	217	2273
12:30 PM	2	32	12	0	18	32	10	0	13	22	1	0	8	16	18	0	184	2295
12:35 PM	2	52	17	0	11	49	15	0	17	22	6	0	9	8	23	0	231	2353
12:40 PM	2	27	10	0	25	28	10	0	18	16	4	0	9	29	12	0	190	2387
12:45 PM	1	52	15	0	19	47	16	0	9	10	3	0	7	16	19	0	214	2411
12:50 PM	3	22	12	0	18	38	8	0	13	22	2	0	14	21	32	0	205	2436
12:55 PM	0	39	7	0	16	43	12	0	15	9	2	0	12	16	14	0	185	2432
1:00 PM	2	27	14	0	15	29	13	0	15	14	3	0	21	18	30	0	201	2443
1:05 PM	2	38	12	0	21	37	11	0	13	10	2	0	14	11	27	0	198	2427
1:10 PM	1	36	16	0	20	32	11	0	14	19	2	0	12	20	30	0	213	2450
1:15 PM	0	49	9	0	11	29	17	0	13	16	2	0	15	14	17	0	192	2437
1:20 PM	1	33	5	0	16	29	9	0	14	16	2	0	14	17	17	0	173	2403
1:25 PM	1	33	7	0	22	55	12	0	12	10	4	0	4	13	22	0	195	2381

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	20	524	168	0	220	496	164	0	176	192	52	0	100	212	216	0	2540
Heavy Trucks	4	32	0		8	20	8		12	8	8		0	8	12		120
Pedestrians		0				0				0				8			8
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad Stopped Buses																	

Comments:

Report generated on 11/22/2017 3:12 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

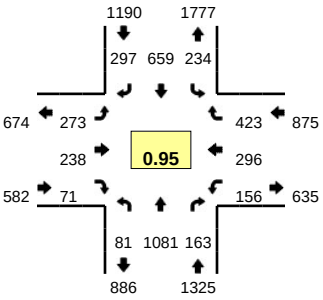
LOCATION: NC 86 -- Estes Dr Ext

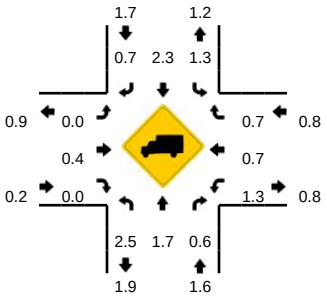
CITY/STATE: Chapel Hill, NC

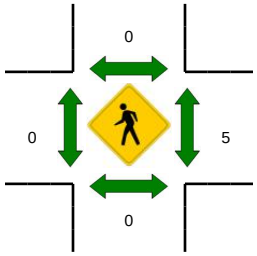
QC JOB #: 14560309

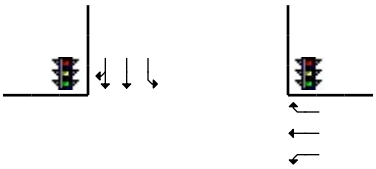
DATE: Tue, Nov 14 2017

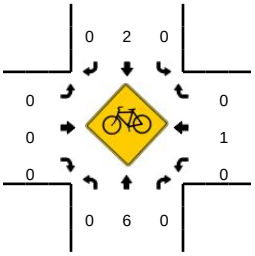
Peak-Hour: 4:55 PM -- 5:55 PM
Peak 15-Min: 5:15 PM -- 5:30 PM

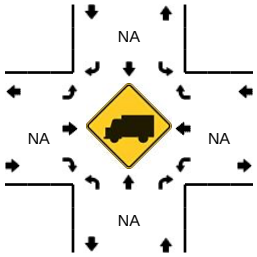


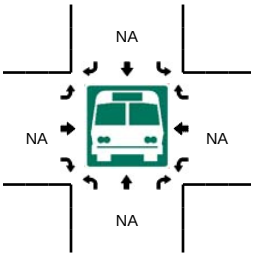












5-Min Count Period Beginning At	NC 86 (Northbound)				NC 86 (Southbound)				Estes Dr Ext (Eastbound)				Estes Dr Ext (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	4	60	17	0	24	37	18	0	20	14	5	0	13	17	22	0	251	
4:05 PM	2	76	11	0	22	51	23	0	23	21	8	0	11	19	27	0	294	
4:10 PM	8	65	13	0	17	45	22	0	25	14	3	0	11	21	31	0	275	
4:15 PM	5	74	13	0	20	39	25	0	26	18	3	0	11	21	27	0	282	
4:20 PM	4	75	19	0	26	52	28	0	16	21	5	0	14	24	47	0	331	
4:25 PM	4	57	14	0	24	42	20	0	33	17	3	0	15	20	22	0	271	
4:30 PM	4	76	13	0	20	38	18	0	25	22	5	0	16	28	38	0	303	
4:35 PM	10	97	15	0	17	50	19	0	26	20	4	0	13	20	29	0	320	
4:40 PM	15	83	17	0	19	39	18	0	22	21	8	0	13	25	30	0	310	
4:45 PM	4	79	12	0	20	63	25	0	18	18	3	0	12	26	14	0	294	
4:50 PM	8	77	17	0	26	57	17	0	23	13	2	0	19	28	22	0	309	
4:55 PM	4	67	13	0	28	41	18	0	26	26	4	0	14	22	34	0	297	3537
5:00 PM	4	80	13	0	24	45	22	0	36	22	7	0	15	19	30	0	317	3603
5:05 PM	8	86	17	0	14	45	16	0	28	27	2	0	13	27	31	0	314	3623
5:10 PM	8	96	14	0	19	42	20	0	22	26	8	0	18	25	39	0	337	3685
5:15 PM	2	120	14	0	16	68	30	0	22	25	8	0	9	22	37	0	373	3776
5:20 PM	8	101	18	0	11	48	25	0	20	15	3	0	10	21	37	0	317	3762
5:25 PM	3	107	12	0	21	66	35	0	9	16	6	0	11	27	40	0	353	3844
5:30 PM	9	91	15	0	23	53	33	0	23	8	6	0	11	26	33	0	331	3872
5:35 PM	6	92	12	0	20	49	22	0	28	14	10	0	18	23	39	0	333	3885
5:40 PM	10	84	9	0	17	69	28	0	20	20	5	0	8	33	26	0	329	3904
5:45 PM	13	83	7	0	22	54	23	0	20	20	4	0	18	31	42	0	337	3947
5:50 PM	6	74	19	0	19	79	25	0	19	19	8	0	11	20	35	0	334	3972
5:55 PM	5	57	21	0	25	58	22	0	10	17	6	0	6	17	37	0	281	3956

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	52	1312	176	0	192	728	360	0	204	224	68	0	120	280	456	0	4172
Heavy Trucks	4	24	0		4	20	0		0	0	0		0	0	0		52
Pedestrians		0				0				0				4			4
Bicycles	0	1	0		0	1	0		0	0	0		0	0	0		2
Railroad																	
Stopped Buses																	

Comments:

Report generated on 11/22/2017 3:12 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: NC 86 -- Airport Dr

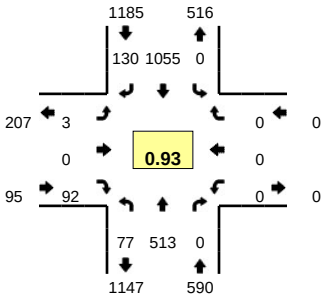
CITY/STATE: Chapel Hill, NC

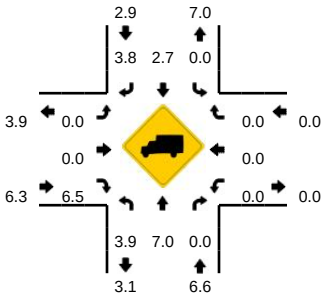
QC JOB #: 14560310

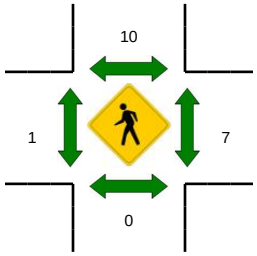
DATE: Tue, Nov 14 2017

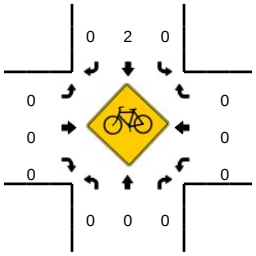
Peak-Hour: 7:35 AM -- 8:35 AM

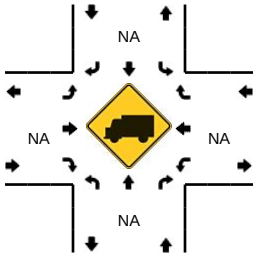
Peak 15-Min: 7:35 AM -- 7:50 AM

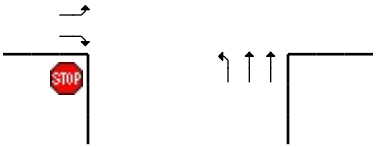


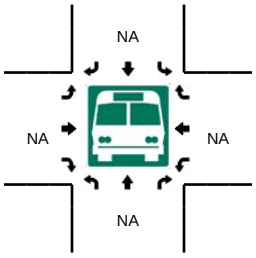












5-Min Count Period Beginning At	NC 86 (Northbound)				NC 86 (Southbound)				Airport Dr (Eastbound)				Airport Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	1	20	0	0	0	37	4	0	4	0	8	0	0	0	0	0	74	
7:05 AM	3	29	0	0	0	58	9	0	2	0	2	0	0	0	0	0	103	
7:10 AM	2	36	0	0	0	49	0	0	0	0	10	0	0	0	0	0	97	
7:15 AM	4	26	0	0	0	66	6	0	1	0	5	0	0	0	0	0	108	
7:20 AM	3	29	0	0	0	59	4	0	2	0	3	0	0	0	0	0	100	
7:25 AM	1	38	0	0	0	81	13	0	0	0	3	0	0	0	0	0	136	
7:30 AM	4	31	0	0	0	77	10	0	1	0	4	0	0	0	0	0	127	
7:35 AM	12	43	0	0	0	84	8	0	0	0	6	0	0	0	0	0	153	
7:40 AM	5	43	0	0	0	90	11	0	1	0	6	0	0	0	0	0	156	
7:45 AM	8	45	0	0	0	125	10	0	0	0	4	0	0	0	0	0	192	
7:50 AM	6	40	0	0	0	82	11	0	0	0	10	0	0	0	0	0	149	
7:55 AM	7	43	0	0	0	78	17	0	0	0	8	0	0	0	0	0	153	1548
8:00 AM	6	32	0	0	0	81	8	0	0	0	8	0	0	0	0	0	135	1609
8:05 AM	9	44	0	0	0	94	19	0	1	0	3	0	0	0	0	0	170	1676
8:10 AM	5	53	0	0	0	81	9	0	0	0	6	0	0	0	0	0	154	1733
8:15 AM	6	53	0	0	0	82	12	0	0	0	12	0	0	0	0	0	165	1790
8:20 AM	5	42	0	0	0	97	11	0	0	0	14	0	0	0	0	0	169	1859
8:25 AM	2	47	0	0	0	59	9	0	1	0	10	0	0	0	0	0	128	1851
8:30 AM	6	28	0	0	0	102	5	0	0	0	5	0	0	0	0	0	146	1870
8:35 AM	4	33	0	0	0	87	6	0	0	0	4	0	0	0	0	0	134	1851
8:40 AM	3	34	0	0	0	74	5	0	0	0	12	0	0	0	0	0	128	1823
8:45 AM	2	27	0	0	0	90	3	0	1	0	7	0	0	0	0	0	130	1761
8:50 AM	5	35	0	0	0	99	8	0	0	0	11	0	0	0	0	0	158	1770
8:55 AM	2	30	0	0	0	82	3	0	0	0	10	0	0	0	0	0	127	1744

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	100	524	0	0	0	1196	116	0	4	0	64	0	0	0	0	0	2004
Heavy Trucks	4	20	0		0	24	0		0	0	4		0	0	0		52
Pedestrians		0				24				4				12			40
Bicycles	0	0	0		0	1	0		0	0	0		0	0	0		1
Railroad																	
Stopped Buses																	

Comments:

Report generated on 11/22/2017 3:12 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

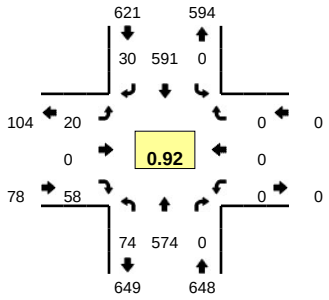
Method for determining peak hour: Total Entering Volume

LOCATION: NC 86 -- Airport Dr

CITY/STATE: Chapel Hill, NC

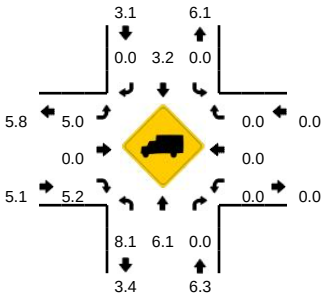
QC JOB #: 14560311

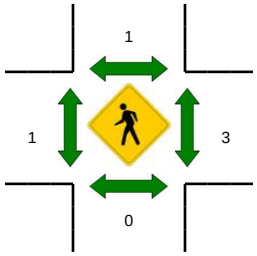
DATE: Tue, Nov 14 2017

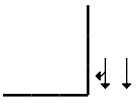


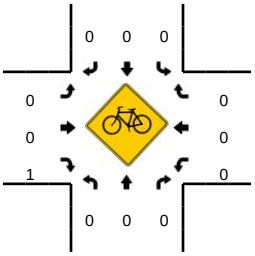
Peak-Hour: 11:45 AM -- 12:45 PM

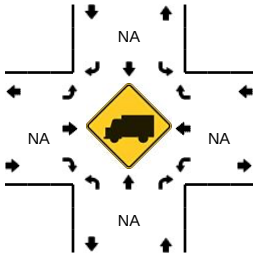
Peak 15-Min: 12:25 PM -- 12:40 PM

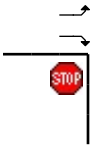


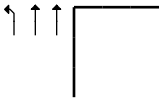


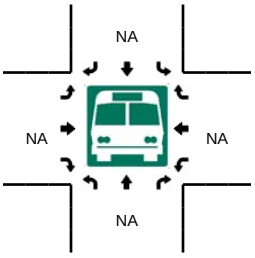












5-Min Count Period Beginning At	NC 86 (Northbound)				NC 86 (Southbound)				Airport Dr (Eastbound)				Airport Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
11:30 AM	7	40	0	0	0	55	0	0	3	0	7	0	0	0	0	0	112	
11:35 AM	7	41	0	0	0	36	0	0	0	0	4	0	0	0	0	0	88	
11:40 AM	9	24	0	0	0	41	4	0	3	0	5	0	0	0	0	0	86	
11:45 AM	9	46	0	0	0	50	4	0	3	0	8	0	0	0	0	0	120	
11:50 AM	5	36	0	0	0	52	2	0	1	0	3	0	0	0	0	0	99	
11:55 AM	8	50	0	0	0	35	2	0	2	0	3	0	0	0	0	0	100	
12:00 PM	8	41	0	0	0	54	2	0	0	0	5	0	0	0	0	0	110	
12:05 PM	8	62	0	0	0	45	0	0	1	0	5	0	0	0	0	0	121	
12:10 PM	4	39	0	0	0	57	2	0	2	0	5	0	0	0	0	0	109	
12:15 PM	8	45	0	0	0	56	3	0	4	0	4	0	0	0	0	0	120	
12:20 PM	4	48	0	0	0	52	2	0	0	0	5	0	0	0	0	0	111	
12:25 PM	2	57	0	0	0	50	2	0	3	0	6	0	0	0	0	0	120	1296
12:30 PM	9	45	0	0	0	47	2	0	0	0	3	0	0	0	0	0	106	1290
12:35 PM	6	64	0	0	0	57	6	0	2	0	6	0	0	0	0	0	141	1343
12:40 PM	3	41	0	0	0	36	3	0	2	0	5	0	0	0	0	0	90	1347
12:45 PM	3	58	0	0	0	45	5	0	0	0	5	0	0	0	0	0	116	1343
12:50 PM	5	34	0	0	0	53	3	0	0	0	3	0	0	0	0	0	98	1342
12:55 PM	8	41	0	0	0	43	3	0	1	0	7	0	0	0	0	0	103	1345
1:00 PM	2	37	0	0	0	60	0	0	1	0	4	0	0	0	0	0	104	1339
1:05 PM	0	46	0	0	0	42	7	0	0	0	6	0	0	0	0	0	101	1319
1:10 PM	5	54	0	0	0	52	1	0	0	0	14	0	0	0	0	0	126	1336
1:15 PM	14	51	0	0	0	35	0	0	0	0	2	0	0	0	0	0	102	1318
1:20 PM	4	35	0	0	0	49	1	0	0	0	10	0	0	0	0	0	99	1306
1:25 PM	7	37	0	0	0	52	1	0	1	0	12	0	0	0	0	0	110	1296

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	68	664	0	0	0	616	40	0	20	0	60	0	0	0	0	0	1468
Heavy Trucks	12	24	0		0	12	0		0	0	0		0	0	0		48
Pedestrians		0				0				0				12			12
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 11/22/2017 3:12 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

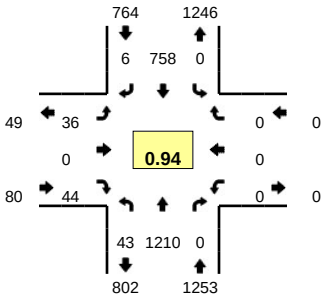
Type of peak hour being reported: Intersection Peak

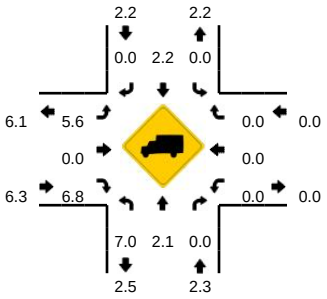
Method for determining peak hour: Total Entering Volume

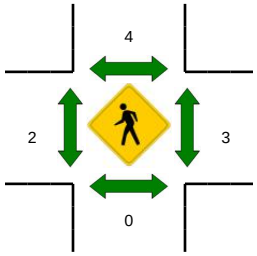
LOCATION: NC 86 -- Airport Dr
CITY/STATE: Chapel Hill, NC

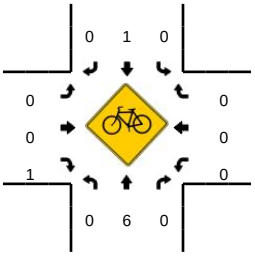
QC JOB #: 14560312
DATE: Tue, Nov 14 2017

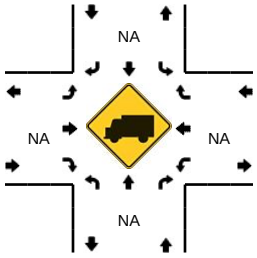
Peak-Hour: 4:45 PM -- 5:45 PM
Peak 15-Min: 5:15 PM -- 5:30 PM

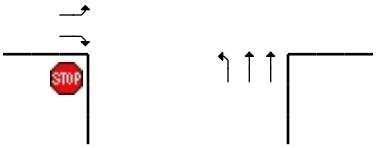


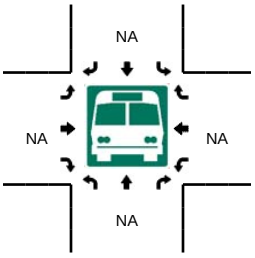












5-Min Count Period Beginning At	NC 86 (Northbound)				NC 86 (Southbound)				Airport Dr (Eastbound)				Airport Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	4	68	0	0	0	52	1	0	5	0	4	0	0	0	0	0	134	
4:05 PM	4	82	0	0	0	60	1	0	9	0	9	0	0	0	0	0	165	
4:10 PM	8	80	0	1	0	57	2	0	1	0	5	0	0	0	0	0	154	
4:15 PM	8	81	0	0	0	46	2	0	4	0	5	0	0	0	0	0	146	
4:20 PM	2	89	0	0	0	67	1	0	8	0	3	0	0	0	0	0	170	
4:25 PM	4	78	0	0	0	53	2	0	3	0	3	0	0	0	0	0	143	
4:30 PM	1	83	0	0	0	48	2	0	11	0	10	0	0	0	0	0	155	
4:35 PM	4	115	0	0	0	62	1	0	10	0	9	0	0	0	0	0	201	
4:40 PM	5	80	0	0	0	44	5	0	3	0	9	0	0	0	0	0	146	
4:45 PM	4	86	0	0	0	71	2	0	5	0	4	0	0	0	0	0	172	
4:50 PM	2	77	0	0	0	72	1	0	6	0	1	0	0	0	0	0	159	
4:55 PM	3	84	0	0	0	55	0	0	3	0	2	0	0	0	0	0	147	1892
5:00 PM	3	118	0	0	0	56	0	0	4	0	6	0	0	0	0	0	187	1945
5:05 PM	4	113	0	0	0	56	0	0	6	0	8	0	0	0	0	0	187	1967
5:10 PM	4	107	0	0	0	57	0	0	1	0	3	0	0	0	0	0	172	1985
5:15 PM	4	109	0	0	0	71	0	0	0	0	6	0	0	0	0	0	190	2029
5:20 PM	6	111	0	0	0	51	1	0	1	0	4	0	0	0	0	0	174	2033
5:25 PM	6	109	0	0	0	78	0	0	1	0	2	0	0	0	0	0	196	2086
5:30 PM	2	101	0	0	0	59	0	0	3	0	0	0	0	0	0	0	165	2096
5:35 PM	3	113	0	0	0	61	1	0	3	0	3	0	0	0	0	0	184	2079
5:40 PM	2	82	0	0	0	71	1	0	3	0	5	0	0	0	0	0	164	2097
5:45 PM	2	82	0	0	0	70	1	0	2	0	1	0	0	0	0	0	158	2083
5:50 PM	2	83	0	0	0	73	0	0	1	0	1	0	0	0	0	0	160	2084
5:55 PM	0	57	0	0	0	58	1	0	2	0	4	0	0	0	0	0	122	2059

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	64	1316	0	0	0	800	4	0	8	0	48	0	0	0	0	0	2240
Heavy Trucks	4	24	0		0	20	0		0	0	4		0	0	0		52
Pedestrians		0				0				0				0			0
Bicycles	0	1	0		0	0	0		0	0	0		0	0	0		1
Railroad																	
Stopped Buses																	

Comments:

Report generated on 11/22/2017 3:12 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: NC 86 -- Police Station Dwy North

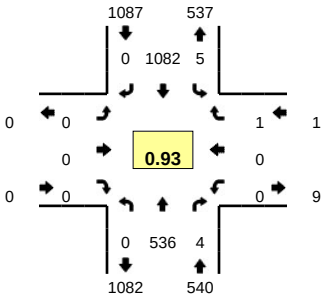
CITY/STATE: Chapel Hill, NC

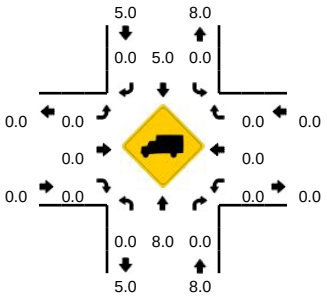
QC JOB #: 14560313

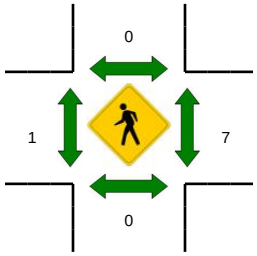
DATE: Tue, Nov 14 2017

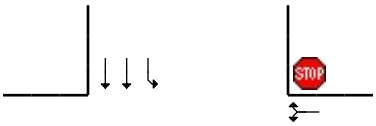
Peak-Hour: 7:25 AM -- 8:25 AM

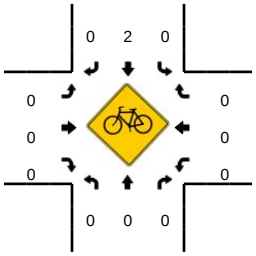
Peak 15-Min: 7:40 AM -- 7:55 AM

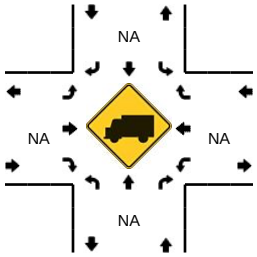


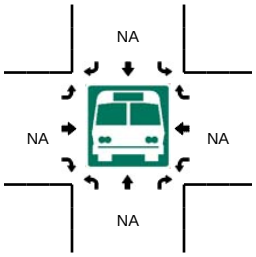












5-Min Count Period Beginning At	NC 86 (Northbound)				NC 86 (Southbound)				Police Station Dwy North (Eastbound)				Police Station Dwy North (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	22	0	0	1	48	0	0	0	0	0	0	0	0	0	0	71	
7:05 AM	0	35	1	0	0	48	0	0	0	0	0	0	0	0	0	0	84	
7:10 AM	0	33	0	0	0	70	0	0	0	0	0	0	0	0	2	0	105	
7:15 AM	0	33	0	0	0	68	0	0	0	0	0	0	0	0	0	0	101	
7:20 AM	0	24	1	0	0	60	0	0	0	0	0	0	1	0	0	0	86	
7:25 AM	0	33	2	0	2	79	0	0	0	0	0	0	0	0	0	0	116	
7:30 AM	0	36	0	0	0	81	0	0	0	0	0	0	0	0	0	0	117	
7:35 AM	0	50	0	0	0	102	0	0	0	0	0	0	0	0	0	0	152	
7:40 AM	0	41	0	0	0	83	0	0	0	0	0	0	0	0	1	0	125	
7:45 AM	0	55	0	0	0	106	0	0	0	0	0	0	0	0	0	0	161	
7:50 AM	0	47	0	0	0	106	0	0	0	0	0	0	0	0	0	0	153	
7:55 AM	0	38	0	0	0	79	0	0	0	0	0	0	0	0	0	0	117	1388
8:00 AM	0	34	1	0	0	77	0	0	0	0	0	0	0	0	0	0	112	1429
8:05 AM	0	64	0	0	0	100	0	0	0	0	0	0	0	0	0	0	164	1509
8:10 AM	0	37	0	0	1	84	0	0	0	0	0	0	0	0	0	0	122	1526
8:15 AM	0	49	0	0	1	75	0	0	0	0	0	0	0	0	0	0	125	1550
8:20 AM	0	52	1	0	1	110	0	0	0	0	0	0	0	0	0	0	164	1628
8:25 AM	0	40	0	0	1	71	0	0	0	0	0	0	0	0	0	0	112	1624
8:30 AM	0	31	0	0	2	79	0	0	0	0	0	0	0	0	1	0	113	1620
8:35 AM	0	39	0	0	1	102	0	0	0	0	0	0	1	0	0	0	143	1611
8:40 AM	0	22	0	0	2	80	0	0	0	0	0	0	0	0	0	0	104	1590
8:45 AM	0	28	1	0	0	84	0	0	0	0	0	0	0	0	0	0	113	1542
8:50 AM	0	39	0	0	0	108	0	0	0	0	0	0	0	0	0	0	147	1536
8:55 AM	0	36	0	0	1	97	0	0	0	0	0	0	0	0	0	0	134	1553

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	572	0	0	0	1180	0	0	0	0	0	0	0	0	4	0	1756
Heavy Trucks	0	40	0		0	44	0		0	0	0		0	0	0		84
Pedestrians		0				0				0				8			8
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 11/22/2017 3:12 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: NC 86 -- Police Station Dwy North

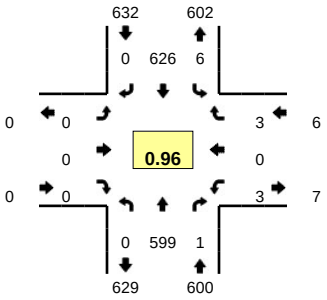
CITY/STATE: Chapel Hill, NC

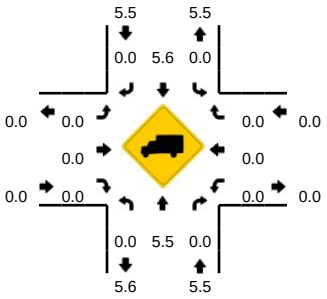
QC JOB #: 14560314

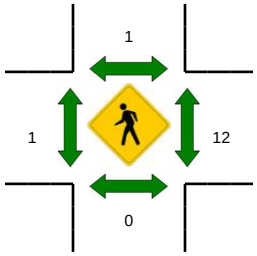
DATE: Tue, Nov 14 2017

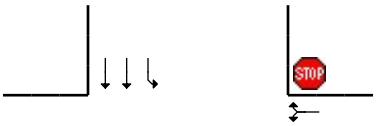
Peak-Hour: 12:05 PM -- 1:05 PM

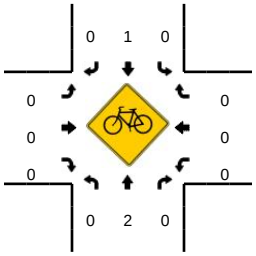
Peak 15-Min: 12:20 PM -- 12:35 PM

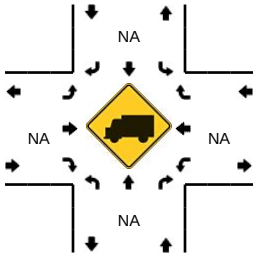


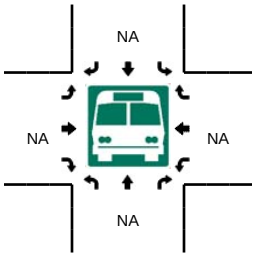












5-Min Count Period Beginning At	NC 86 (Northbound)				NC 86 (Southbound)				Police Station Dwy North (Eastbound)				Police Station Dwy North (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
11:30 AM	0	43	0	0	0	63	0	0	0	0	0	0	2	0	0	0	108	
11:35 AM	0	33	1	0	0	36	0	0	0	0	0	0	0	0	1	0	71	
11:40 AM	0	44	1	0	0	50	0	0	0	0	0	0	1	0	0	0	96	
11:45 AM	0	35	0	0	1	43	0	0	0	0	0	0	1	0	1	0	81	
11:50 AM	0	42	1	0	0	64	0	0	0	0	0	0	0	0	0	0	107	
11:55 AM	0	48	0	0	0	34	0	0	0	0	0	0	1	0	0	0	83	
12:00 PM	0	16	0	0	0	21	0	0	0	0	0	0	0	0	0	0	37	
12:05 PM	0	58	0	0	0	49	0	0	0	0	0	0	0	0	1	0	108	
12:10 PM	0	42	0	0	0	59	0	0	0	0	0	0	1	0	1	0	103	
12:15 PM	0	43	0	0	0	55	0	0	0	0	0	0	0	0	1	0	99	
12:20 PM	0	44	0	0	0	61	0	0	0	0	0	0	0	0	0	0	105	
12:25 PM	0	51	0	0	0	52	0	0	0	0	0	0	0	0	0	0	103	1101
12:30 PM	0	66	0	0	0	48	0	0	0	0	0	0	0	0	0	0	114	1107
12:35 PM	0	52	1	0	0	51	0	0	0	0	0	0	1	0	0	0	105	1141
12:40 PM	0	51	0	0	1	47	0	0	0	0	0	0	0	0	0	0	99	1144
12:45 PM	0	52	0	0	0	48	0	0	0	0	0	0	1	0	0	0	101	1164
12:50 PM	0	48	0	0	1	53	0	0	0	0	0	0	0	0	0	0	102	1159
12:55 PM	0	43	0	0	1	44	0	0	0	0	0	0	0	0	0	0	88	1164
1:00 PM	0	49	0	0	3	59	0	0	0	0	0	0	0	0	0	0	111	1238
1:05 PM	0	38	2	0	0	47	0	0	0	0	0	0	0	0	1	0	88	1218
1:10 PM	0	61	0	0	0	60	0	0	0	0	0	0	0	0	1	0	122	1237
1:15 PM	0	53	0	0	0	26	0	0	0	0	0	0	3	0	1	0	83	1221
1:20 PM	0	44	1	0	0	63	0	0	0	0	0	0	0	0	0	0	108	1224
1:25 PM	0	41	1	0	0	57	0	0	0	0	0	0	0	0	0	0	99	1220

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	644	0	0	0	644	0	0	0	0	0	0	0	0	0	0	1288
Heavy Trucks	0	44	0		0	28	0		0	0	0		0	0	0		72
Pedestrians		0				0				0				16			16
Bicycles	0	0	0		0	1	0		0	0	0		0	0	0		1
Railroad																	
Stopped Buses																	

Comments:

Report generated on 11/22/2017 3:12 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: NC 86 -- Police Station Dwy North

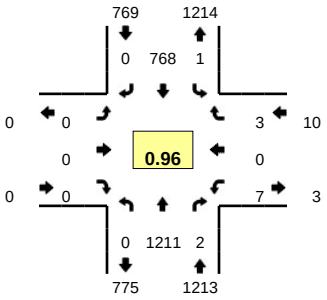
CITY/STATE: Chapel Hill, NC

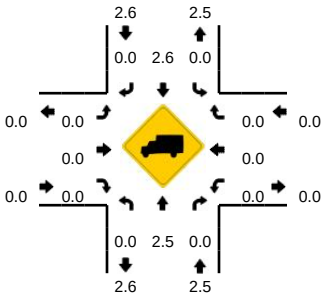
QC JOB #: 14560315

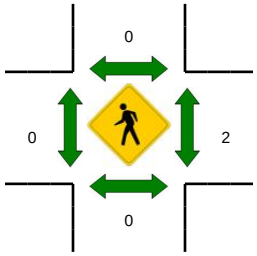
DATE: Tue, Nov 14 2017

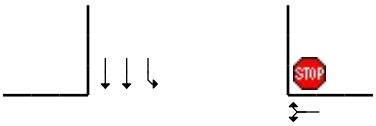
Peak-Hour: 4:45 PM -- 5:45 PM

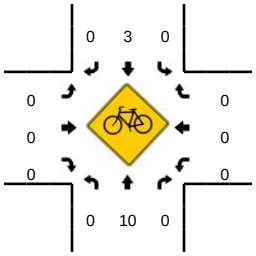
Peak 15-Min: 5:15 PM -- 5:30 PM

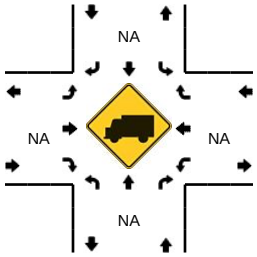


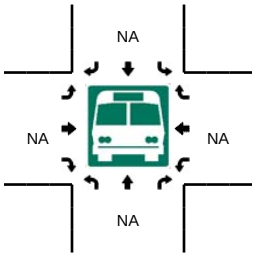












5-Min Count Period Beginning At	NC 86 (Northbound)				NC 86 (Southbound)				Police Station Dwy North (Eastbound)				Police Station Dwy North (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	66	1	0	0	56	0	0	0	0	0	0	0	0	1	0	124	
4:05 PM	0	82	0	0	0	59	0	0	0	0	0	0	1	0	0	0	142	
4:10 PM	0	81	0	0	0	48	0	0	0	0	0	0	0	0	0	0	129	
4:15 PM	0	87	0	0	0	53	0	0	0	0	0	0	0	0	0	0	140	
4:20 PM	0	76	0	0	0	62	0	0	0	0	0	0	0	0	0	0	138	
4:25 PM	0	75	1	0	3	63	0	0	0	0	0	0	0	0	0	0	142	
4:30 PM	0	93	0	0	0	46	0	1	0	0	0	0	1	0	1	0	142	
4:35 PM	0	99	0	0	0	72	0	0	0	0	0	0	0	0	0	0	171	
4:40 PM	0	68	0	0	0	43	0	0	0	0	0	0	1	0	0	0	112	
4:45 PM	0	92	0	0	0	75	0	0	0	0	0	0	0	0	0	0	167	
4:50 PM	0	85	1	0	0	61	0	0	0	0	0	0	1	0	1	0	149	
4:55 PM	0	76	0	0	0	72	0	0	0	0	0	0	1	0	0	0	149	1705
5:00 PM	0	109	0	0	0	62	0	0	0	0	0	0	1	0	0	0	172	1753
5:05 PM	0	112	0	0	0	67	0	0	0	0	0	0	1	0	0	0	180	1791
5:10 PM	0	107	0	0	0	57	0	0	0	0	0	0	1	0	0	0	165	1827
5:15 PM	0	104	0	0	0	65	0	0	0	0	0	0	1	0	0	0	170	1857
5:20 PM	0	117	0	0	0	53	0	0	0	0	0	0	0	0	0	0	170	1889
5:25 PM	0	112	0	0	1	66	0	0	0	0	0	0	0	0	2	0	181	1928
5:30 PM	0	111	1	0	0	46	0	0	0	0	0	0	1	0	0	0	159	1945
5:35 PM	0	86	0	0	0	76	0	0	0	0	0	0	0	0	0	0	162	1936
5:40 PM	0	100	0	0	0	68	0	0	0	0	0	0	0	0	0	0	168	1992
5:45 PM	0	75	1	0	0	64	0	0	0	0	0	0	1	0	0	0	141	1966
5:50 PM	0	70	0	0	1	69	0	0	0	0	0	0	1	0	1	0	142	1959
5:55 PM	0	59	0	0	0	48	0	0	0	0	0	0	0	0	0	0	107	1917

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	1332	0	0	4	736	0	0	0	0	0	0	4	0	8	0	2084
Heavy Trucks	0	36	0		0	16	0		0	0	0		0	0	0		52
Pedestrians		0				0				0				4			4
Bicycles	0	3	0		0	2	0		0	0	0		0	0	0		5
Railroad																	
Stopped Buses																	

Comments:

Report generated on 11/22/2017 3:12 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: NC 86 -- Police Station Dwy South

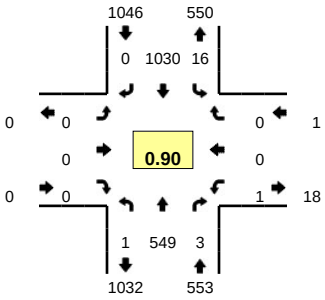
QC JOB #: 14560316

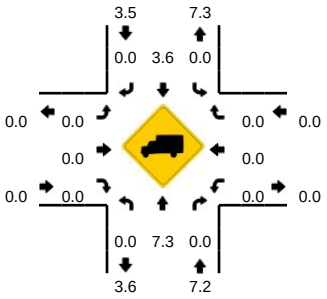
CITY/STATE: Chapel Hill, NC

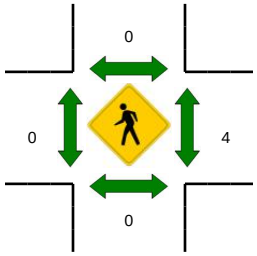
DATE: Thu, Nov 16 2017

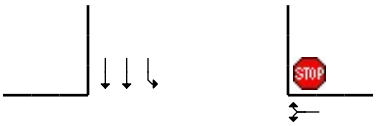
Peak-Hour: 7:45 AM -- 8:45 AM

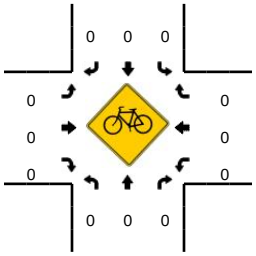
Peak 15-Min: 7:45 AM -- 8:00 AM

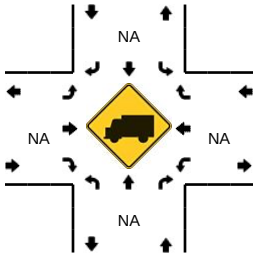


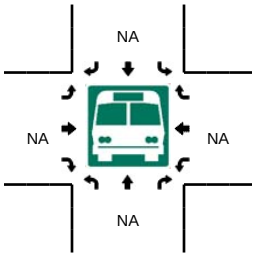












5-Min Count Period Beginning At	NC 86 (Northbound)				NC 86 (Southbound)				Police Station Dwy South (Eastbound)				Police Station Dwy South (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	24	0	0	0	39	0	0	0	0	0	0	0	0	0	0	63	
7:05 AM	0	44	0	0	0	41	0	0	0	0	0	0	1	0	0	0	86	
7:10 AM	0	25	1	0	1	56	0	0	0	0	0	0	0	0	0	0	83	
7:15 AM	0	29	0	0	2	65	0	0	0	0	0	0	0	0	0	0	96	
7:20 AM	0	28	1	0	0	60	0	0	0	0	0	0	0	0	0	0	89	
7:25 AM	0	29	1	0	1	66	0	0	0	0	0	0	0	0	1	0	98	
7:30 AM	0	35	0	0	1	87	0	0	0	0	0	0	0	0	0	0	123	
7:35 AM	0	45	0	0	0	70	0	0	0	0	0	0	0	0	0	0	115	
7:40 AM	0	44	0	0	0	79	0	0	0	0	0	0	1	0	0	0	124	
7:45 AM	0	64	0	0	0	126	0	0	0	0	0	0	0	0	0	0	190	
7:50 AM	0	46	0	0	1	84	0	0	0	0	0	0	0	0	0	0	131	
7:55 AM	0	41	0	0	0	80	0	0	0	0	0	0	0	0	0	0	121	1319
8:00 AM	0	57	0	1	1	70	0	0	0	0	0	0	0	0	0	0	129	1385
8:05 AM	0	59	0	0	2	93	0	0	0	0	0	0	1	0	0	0	155	1454
8:10 AM	0	49	0	0	3	65	0	0	0	0	0	0	0	0	0	0	117	1488
8:15 AM	0	32	0	0	0	73	0	0	0	0	0	0	0	0	0	0	105	1497
8:20 AM	0	52	0	0	2	102	0	0	0	0	0	0	0	0	0	0	156	1564
8:25 AM	0	43	1	0	0	84	0	1	0	0	0	0	0	0	0	0	129	1595
8:30 AM	0	33	1	0	3	65	0	0	0	0	0	0	0	0	0	0	102	1574
8:35 AM	0	38	1	0	2	87	0	0	0	0	0	0	0	0	0	0	128	1587
8:40 AM	0	35	0	0	1	101	0	0	0	0	0	0	0	0	0	0	137	1600
8:45 AM	0	38	2	0	1	93	0	0	0	0	0	0	0	0	0	0	134	1544
8:50 AM	0	46	2	0	2	94	0	0	0	0	0	0	0	0	0	0	144	1557
8:55 AM	0	35	2	0	1	67	0	0	0	0	0	0	0	0	0	0	105	1541

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	604	0	0	4	1160	0	0	0	0	0	0	0	0	0	0	1768
Heavy Trucks	0	44	0		0	20	0		0	0	0		0	0	0		64
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 11/22/2017 3:12 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: NC 86 -- Police Station Dwy South

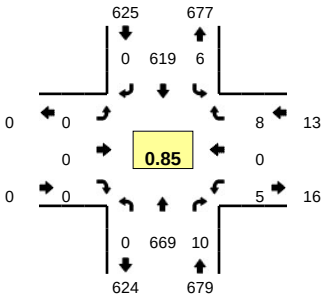
CITY/STATE: Chapel Hill, NC

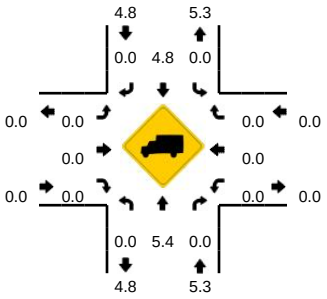
QC JOB #: 14560317

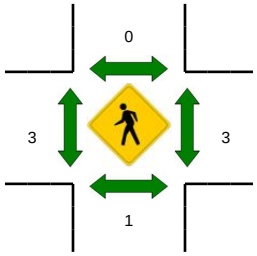
DATE: Thu, Nov 16 2017

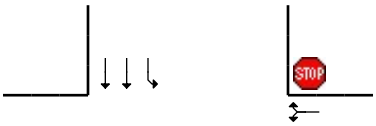
Peak-Hour: 12:30 PM -- 1:30 PM

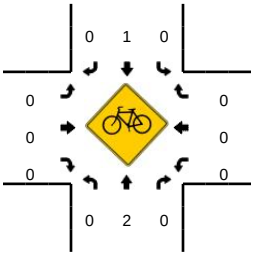
Peak 15-Min: 1:10 PM -- 1:25 PM

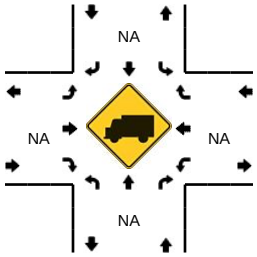


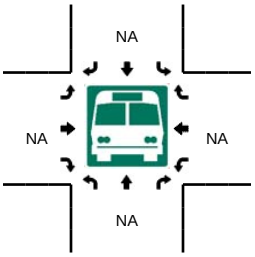












5-Min Count Period Beginning At	NC 86 (Northbound)				NC 86 (Southbound)				Police Station Dwy South (Eastbound)				Police Station Dwy South (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
11:30 AM	0	51	0	0	1	56	0	0	0	0	0	0	1	0	0	0	109	
11:35 AM	0	32	0	0	0	35	0	0	0	0	0	0	1	0	0	0	68	
11:40 AM	0	42	1	0	0	47	0	0	0	0	0	0	0	0	0	0	90	
11:45 AM	0	46	1	0	0	48	0	0	0	0	0	0	0	0	0	0	95	
11:50 AM	0	40	1	0	0	53	0	0	0	0	0	0	0	0	0	0	94	
11:55 AM	0	39	0	0	0	68	0	0	0	0	0	0	2	0	2	0	111	
12:00 PM	0	47	1	0	1	61	0	0	0	0	0	0	1	0	1	0	112	
12:05 PM	0	50	0	0	0	47	0	0	0	0	0	0	1	0	0	0	98	
12:10 PM	0	48	0	0	0	62	0	0	0	0	0	0	5	0	0	0	115	
12:15 PM	0	48	1	0	1	59	0	0	0	0	0	0	1	0	1	0	111	
12:20 PM	0	72	1	0	1	54	0	0	0	0	0	0	0	0	1	0	129	
12:25 PM	0	50	0	0	1	35	0	0	0	0	0	0	1	0	0	0	87	1219
12:30 PM	0	64	0	0	1	47	0	0	0	0	0	0	0	0	1	0	113	1223
12:35 PM	0	49	1	0	0	60	0	0	0	0	0	0	0	0	0	0	110	1265
12:40 PM	0	59	0	0	0	55	0	0	0	0	0	0	0	0	1	0	115	1290
12:45 PM	0	39	1	0	0	47	0	0	0	0	0	0	1	0	0	0	88	1283
12:50 PM	0	49	0	0	0	56	0	0	0	0	0	0	1	0	0	0	106	1295
12:55 PM	0	48	3	0	0	40	0	0	0	0	0	0	1	0	0	0	92	1276
1:00 PM	0	57	2	0	1	48	0	0	0	0	0	0	0	0	2	0	110	1274
1:05 PM	0	54	0	0	1	48	0	0	0	0	0	0	0	0	1	0	104	1280
1:10 PM	0	56	2	0	0	72	0	0	0	0	0	0	1	0	1	0	132	1297
1:15 PM	0	68	0	0	1	50	0	0	0	0	0	0	1	0	2	0	122	1308
1:20 PM	0	75	0	0	1	56	0	0	0	0	0	0	0	0	0	0	132	1311
1:25 PM	0	51	1	0	1	40	0	0	0	0	0	0	0	0	0	0	93	1317

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	796	8	0	8	712	0	0	0	0	0	0	8	0	12	0	1544
Heavy Trucks	0	40	0		0	28	0		0	0	0		0	0	0		68
Pedestrians		0				0				0				4			4
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 11/22/2017 3:12 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: NC 86 -- Police Station Dwy South

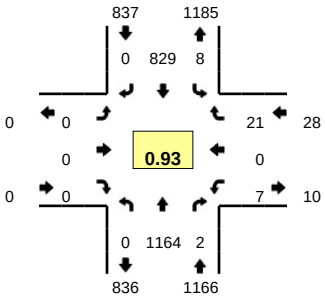
CITY/STATE: Chapel Hill, NC

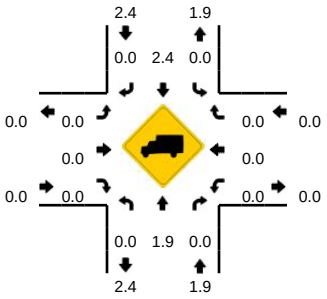
QC JOB #: 14560318

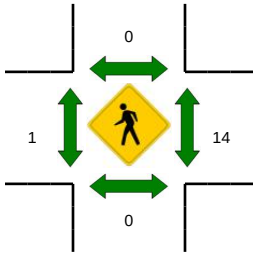
DATE: Thu, Nov 16 2017

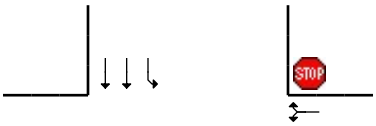
Peak-Hour: 5:00 PM -- 6:00 PM

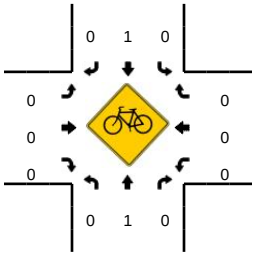
Peak 15-Min: 5:25 PM -- 5:40 PM

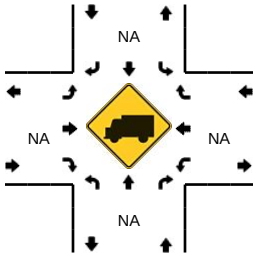


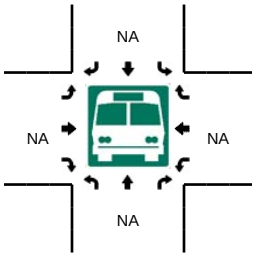












5-Min Count Period Beginning At	NC 86 (Northbound)				NC 86 (Southbound)				Police Station Dwy South (Eastbound)				Police Station Dwy South (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	63	0	0	0	57	0	0	0	0	0	0	0	0	0	0	120	
4:05 PM	0	62	0	0	3	57	0	0	0	0	0	0	0	0	0	0	122	
4:10 PM	0	74	0	0	1	60	0	0	0	0	0	0	0	0	2	0	137	
4:15 PM	0	70	1	0	0	65	0	0	0	0	0	0	0	0	0	0	136	
4:20 PM	0	61	2	0	1	61	0	0	0	0	0	0	2	0	2	0	129	
4:25 PM	0	61	0	0	0	62	0	0	0	0	0	0	0	0	2	0	125	
4:30 PM	0	66	1	0	0	76	0	0	0	0	0	0	0	0	0	0	143	
4:35 PM	0	78	0	0	0	68	0	0	0	0	0	0	0	0	4	0	150	
4:40 PM	0	64	0	0	1	58	0	0	0	0	0	0	0	0	0	0	123	
4:45 PM	0	106	0	0	1	48	0	0	0	0	0	0	0	0	0	0	155	
4:50 PM	0	70	0	0	2	66	0	0	0	0	0	0	0	0	1	0	139	
4:55 PM	0	86	0	0	0	63	0	0	0	0	0	0	0	0	0	0	149	1628
5:00 PM	0	86	0	0	0	66	0	0	0	0	0	0	3	0	4	0	159	1667
5:05 PM	0	112	1	0	2	82	0	0	0	0	0	0	0	0	6	0	203	1748
5:10 PM	0	81	0	0	1	71	0	0	0	0	0	0	1	0	4	0	158	1769
5:15 PM	0	93	0	0	0	69	0	0	0	0	0	0	0	0	1	0	163	1796
5:20 PM	0	121	0	0	0	53	0	0	0	0	0	0	0	0	1	0	175	1842
5:25 PM	0	109	0	0	0	74	0	0	0	0	0	0	0	0	1	0	184	1901
5:30 PM	0	106	0	0	1	71	0	0	0	0	0	0	0	0	1	0	179	1937
5:35 PM	0	103	0	0	1	80	0	0	0	0	0	0	0	0	0	0	184	1971
5:40 PM	0	102	1	0	0	76	0	0	0	0	0	0	1	0	2	0	182	2030
5:45 PM	0	78	0	0	0	60	0	0	0	0	0	0	2	0	0	0	140	2015
5:50 PM	0	94	0	0	2	55	0	0	0	0	0	0	0	0	1	0	152	2028
5:55 PM	0	79	0	0	1	72	0	0	0	0	0	0	0	0	0	0	152	2031

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	1272	0	0	8	900	0	0	0	0	0	0	0	0	8	0	2188
Heavy Trucks	0	32	0		0	24	0		0	0	0		0	0	0		56
Pedestrians		0				0				0				24			24
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 11/22/2017 3:12 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

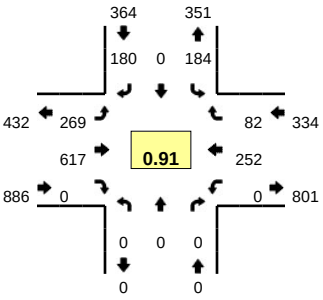
Type of peak hour being reported: Intersection Peak

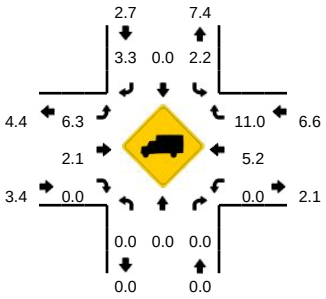
Method for determining peak hour: Total Entering Volume

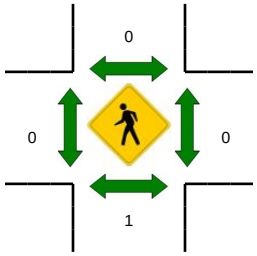
LOCATION: Seawell School Rd -- Estes Dr Ext
CITY/STATE: Chapel Hill, NC

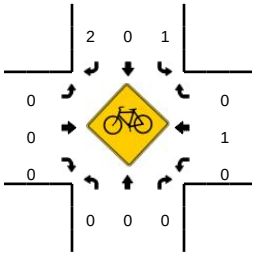
QC JOB #: 14560319
DATE: Tue, Nov 14 2017

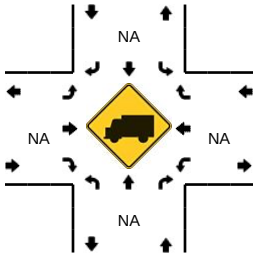
Peak-Hour: 7:40 AM -- 8:40 AM
Peak 15-Min: 7:50 AM -- 8:05 AM

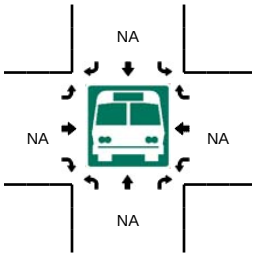












5-Min Count Period Beginning At	Seawell School Rd (Northbound)				Seawell School Rd (Southbound)				Estes Dr Ext (Eastbound)				Estes Dr Ext (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	0	0	0	5	0	8	0	3	24	0	0	0	13	5	0	58	
7:05 AM	0	0	0	0	6	0	3	0	3	26	0	0	0	15	0	0	53	
7:10 AM	0	0	0	0	4	0	4	0	5	27	0	0	0	11	2	0	53	
7:15 AM	0	0	0	0	10	0	1	0	3	31	0	0	0	17	5	0	67	
7:20 AM	0	0	0	0	8	0	3	0	11	30	0	0	0	21	6	0	79	
7:25 AM	0	0	0	0	11	0	11	0	9	36	0	0	0	30	6	0	103	
7:30 AM	0	0	0	0	11	0	14	0	13	40	0	0	0	19	5	0	102	
7:35 AM	0	0	0	0	6	0	14	0	12	49	0	0	0	18	6	0	105	
7:40 AM	0	0	0	0	7	0	12	0	14	65	0	0	0	28	4	0	130	
7:45 AM	0	0	0	0	18	0	11	0	19	55	0	0	0	13	11	0	127	
7:50 AM	0	0	0	0	25	0	18	0	21	66	0	0	0	23	5	0	158	
7:55 AM	0	0	0	0	19	0	24	0	16	52	0	0	0	16	4	0	131	1166
8:00 AM	0	0	0	0	14	0	15	0	23	51	0	0	0	30	13	0	146	1254
8:05 AM	0	0	0	0	14	0	8	0	24	48	0	0	0	12	8	0	114	1315
8:10 AM	0	0	0	0	22	0	19	0	17	46	0	0	0	15	7	0	126	1388
8:15 AM	0	0	0	0	19	0	10	0	14	55	0	0	0	21	2	0	121	1442
8:20 AM	0	0	0	0	15	0	15	0	26	35	0	0	0	34	4	0	129	1492
8:25 AM	0	0	0	0	12	0	13	0	30	58	0	0	0	21	6	0	140	1529
8:30 AM	0	0	0	0	7	0	18	0	37	44	0	0	0	20	8	0	134	1561
8:35 AM	0	0	0	0	12	0	17	0	28	42	0	0	0	19	10	0	128	1584
8:40 AM	0	0	0	0	12	0	12	0	12	46	0	0	0	19	5	0	106	1560
8:45 AM	0	0	0	0	12	0	14	0	12	50	0	0	0	19	7	0	114	1547
8:50 AM	0	0	0	0	15	0	12	0	11	52	0	0	0	37	5	0	132	1521
8:55 AM	0	0	0	0	5	0	11	0	6	40	0	0	0	21	4	0	87	1477

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	232	0	228	0	240	676	0	0	0	276	88	0	1740
Heavy Trucks	0	0	0		8	0	12		16	24	0		0	8	12		80
Pedestrians		4				0				0				0			4
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 11/22/2017 3:12 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: Seawell School Rd -- Estes Dr Ext

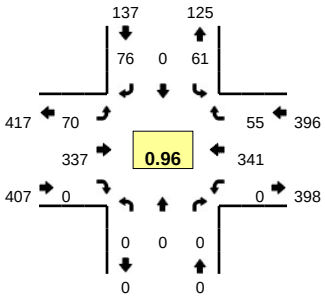
CITY/STATE: Chapel Hill, NC

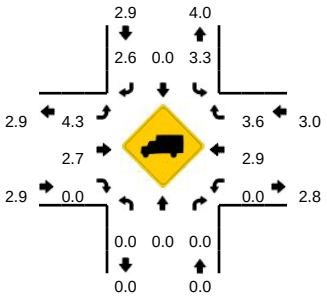
QC JOB #: 14560320

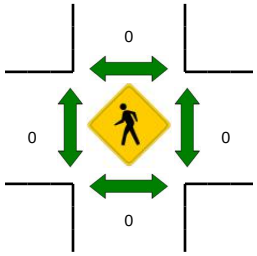
DATE: Tue, Nov 14 2017

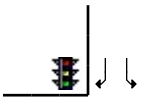
Peak-Hour: 12:05 PM -- 1:05 PM

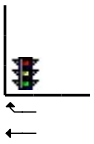
Peak 15-Min: 12:15 PM -- 12:30 PM

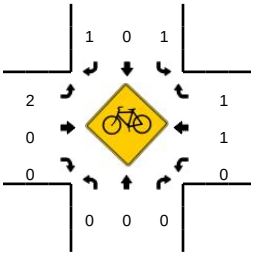


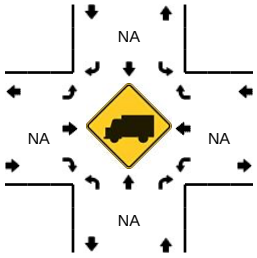


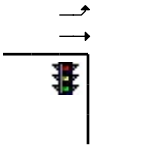


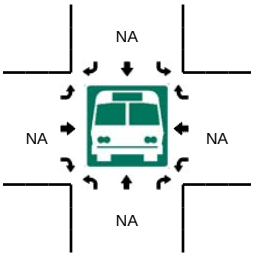












5-Min Count Period Beginning At	Seawell School Rd (Northbound)				Seawell School Rd (Southbound)				Estes Dr Ext (Eastbound)				Estes Dr Ext (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
11:30 AM	0	0	0	0	4	0	6	0	4	16	0	0	0	24	1	0	55	
11:35 AM	0	0	0	0	3	0	5	0	4	21	0	0	0	22	3	0	58	
11:40 AM	0	0	0	0	2	0	9	0	4	30	0	0	0	26	7	0	78	
11:45 AM	0	0	0	0	9	0	5	0	6	22	0	0	0	24	1	0	67	
11:50 AM	0	0	0	0	2	0	4	0	5	31	0	0	0	24	4	0	70	
11:55 AM	0	0	0	0	4	0	6	0	5	20	0	0	0	23	1	0	59	
12:00 PM	0	0	0	0	5	0	3	0	3	22	0	0	0	21	2	0	56	
12:05 PM	0	0	0	0	3	0	6	0	5	32	0	0	0	32	3	0	81	
12:10 PM	0	0	0	0	3	0	9	0	5	29	0	0	0	29	8	0	83	
12:15 PM	0	0	0	0	4	0	4	0	6	29	0	0	0	31	2	0	76	
12:20 PM	0	0	0	0	5	0	9	0	5	28	0	0	0	30	7	0	84	
12:25 PM	0	0	0	0	9	0	7	0	6	29	0	0	0	31	3	0	85	852
12:30 PM	0	0	0	0	5	0	3	0	2	35	0	0	0	25	2	0	72	869
12:35 PM	0	0	0	0	10	0	13	0	6	28	0	0	0	19	5	0	81	892
12:40 PM	0	0	0	0	6	0	7	0	8	29	0	0	0	33	6	0	89	903
12:45 PM	0	0	0	0	5	0	7	0	6	26	0	0	0	25	2	0	71	907
12:50 PM	0	0	0	0	5	0	3	0	7	25	0	0	0	28	6	0	74	911
12:55 PM	0	0	0	0	5	0	4	0	7	20	0	0	0	25	4	0	65	917
1:00 PM	0	0	0	0	1	0	4	0	7	27	0	0	0	33	7	0	79	940
1:05 PM	0	0	0	0	2	0	6	0	7	23	0	0	0	19	3	0	60	919
1:10 PM	0	0	0	0	7	0	2	0	4	33	0	0	0	23	7	0	76	912
1:15 PM	0	0	0	0	3	0	5	0	9	27	0	0	0	22	7	0	73	909
1:20 PM	0	0	0	0	1	0	4	0	8	22	0	0	0	28	4	0	67	892
1:25 PM	0	0	0	0	7	0	7	0	6	26	0	0	0	21	7	0	74	881

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	72	0	80	0	68	344	0	0	0	368	48	0	980
Heavy Trucks	0	0	0		0	0	4		0	4	0		0	8	0		16
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		1	0	0		0	0	0		0	0	0		1
Railroad																	
Stopped Buses																	

Comments:

Report generated on 11/22/2017 3:12 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

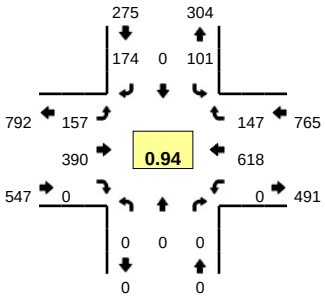
Method for determining peak hour: Total Entering Volume

LOCATION: Seawell School Rd -- Estes Dr Ext

CITY/STATE: Chapel Hill, NC

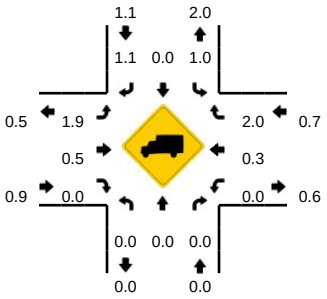
QC JOB #: 14560321

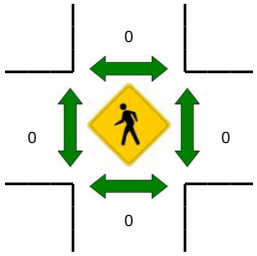
DATE: Tue, Nov 14 2017

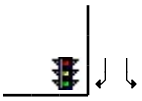


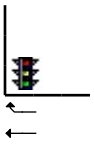
Peak-Hour: 4:55 PM -- 5:55 PM

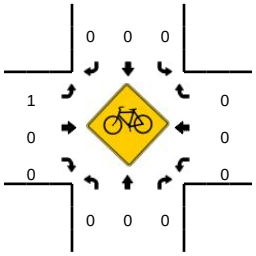
Peak 15-Min: 5:20 PM -- 5:35 PM

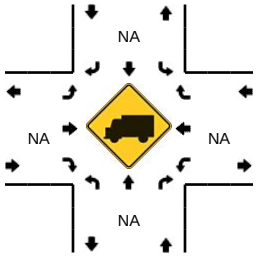


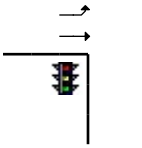


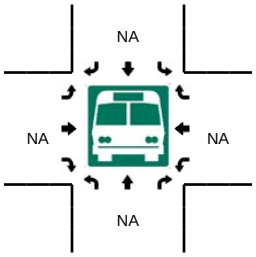












5-Min Count Period Beginning At	Seawell School Rd (Northbound)				Seawell School Rd (Southbound)				Estes Dr Ext (Eastbound)				Estes Dr Ext (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	0	0	0	10	0	19	0	12	33	0	0	0	34	9	0	117	
4:05 PM	0	0	0	0	19	0	20	0	12	30	0	0	0	45	6	0	132	
4:10 PM	0	0	0	0	13	0	16	0	2	33	0	0	0	38	11	0	113	
4:15 PM	0	0	0	0	8	0	17	0	11	33	0	0	0	42	12	0	123	
4:20 PM	0	0	0	0	9	0	19	0	22	27	0	0	0	48	7	0	132	
4:25 PM	0	0	0	0	5	0	12	0	14	25	0	0	0	39	13	0	108	
4:30 PM	0	0	0	0	8	0	5	0	11	26	0	0	0	54	11	0	115	
4:35 PM	0	0	0	0	4	0	9	0	21	32	0	0	0	57	13	0	136	
4:40 PM	0	0	0	0	10	0	6	0	22	27	0	0	0	48	13	0	126	
4:45 PM	0	0	0	0	4	0	6	0	11	28	0	0	0	56	19	0	124	
4:50 PM	0	0	0	0	6	0	6	0	10	32	0	0	0	49	10	0	113	
4:55 PM	0	0	0	0	5	0	11	0	17	31	0	0	0	42	11	0	117	1456
5:00 PM	0	0	0	0	7	0	9	0	5	37	0	0	0	40	15	0	113	1452
5:05 PM	0	0	0	0	16	0	14	0	11	36	0	0	0	43	13	0	133	1453
5:10 PM	0	0	0	0	12	0	25	0	16	35	0	0	0	51	12	0	151	1491
5:15 PM	0	0	0	0	13	0	11	0	16	35	0	0	0	48	9	0	132	1500
5:20 PM	0	0	0	0	6	0	24	0	8	28	0	0	0	55	10	0	131	1499
5:25 PM	0	0	0	0	7	0	20	0	11	28	0	0	0	60	15	0	141	1532
5:30 PM	0	0	0	0	4	0	12	0	25	34	0	0	0	65	12	0	152	1569
5:35 PM	0	0	0	0	5	0	11	0	15	34	0	0	0	50	11	0	126	1559
5:40 PM	0	0	0	0	13	0	13	0	9	30	0	0	0	52	15	0	132	1565
5:45 PM	0	0	0	0	2	0	14	0	13	34	0	0	0	66	13	0	142	1583
5:50 PM	0	0	0	0	11	0	10	0	11	28	0	0	0	46	11	0	117	1587
5:55 PM	0	0	0	0	2	0	16	0	6	31	0	0	0	34	12	0	101	1571

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	68	0	224	0	176	360	0	0	0	720	148	0	1696
Heavy Trucks	0	0	0		4	0	8		4	4	0		0	0	0		20
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		1	0	0		0	0	0		1
Railroad																	
Stopped Buses																	

Comments:

Report generated on 11/22/2017 3:12 PM

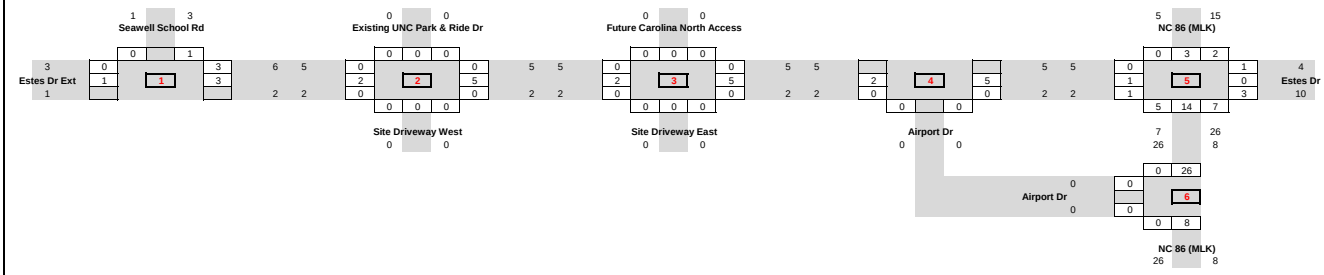
SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Appendix C – Background Generator Information

2021 Total Background Traffic Volumes

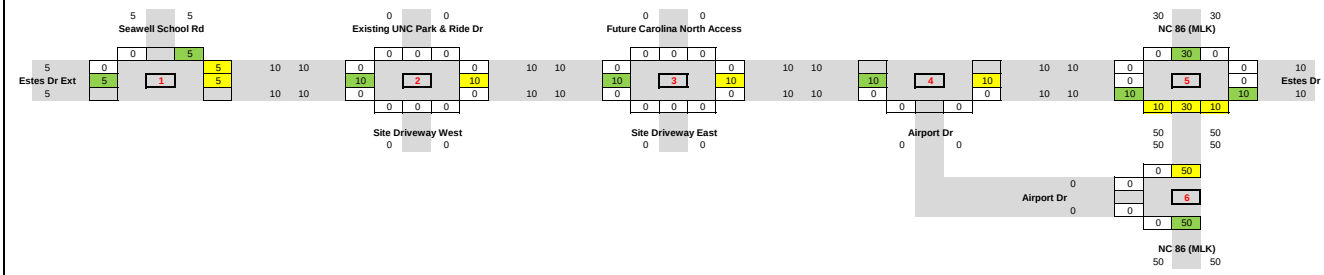
12/12/17

Peak: AM



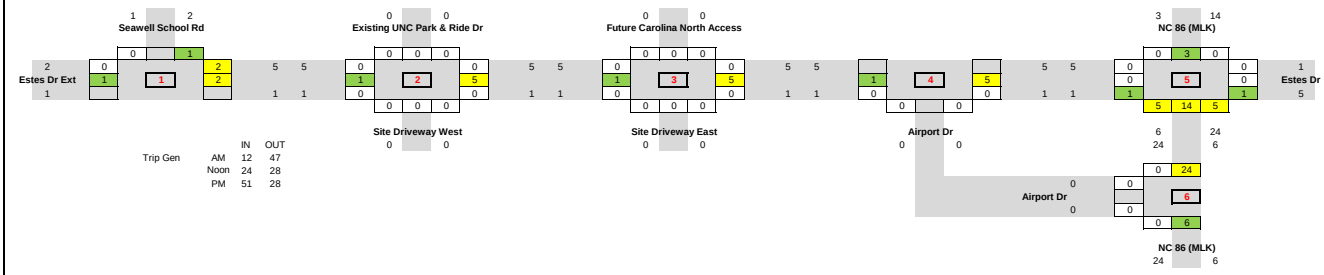
2021 Sawmill Trip Distribution %

Peak: AM



2021 Sawmill Background Traffic Volumes

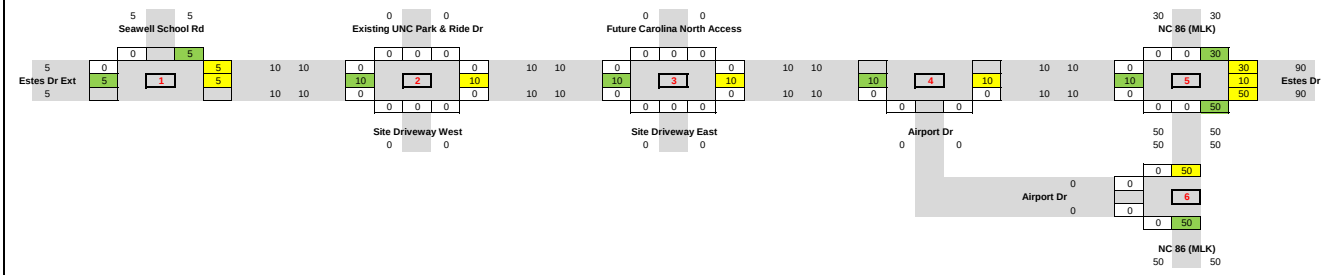
Peak: AM



		IN	OUT
Trip Gen	AM	12	47
	Noon	24	28
	PM	51	28

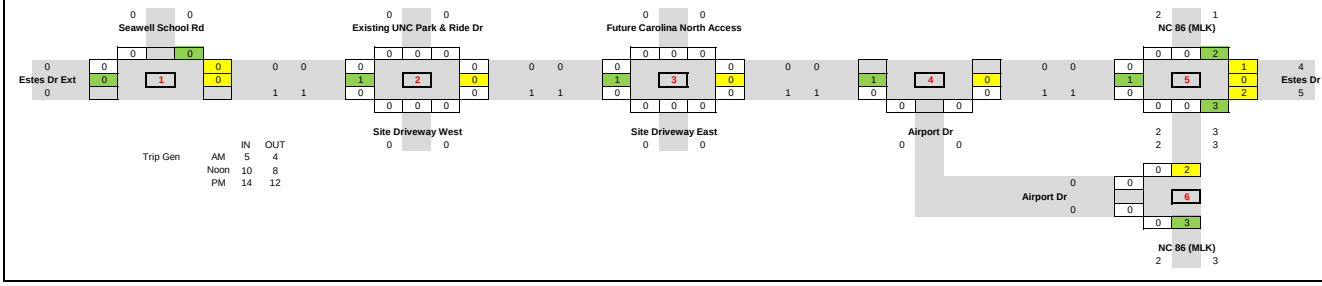
2021 Charlotte Retirement Residence Trip Distribution %

Peak: AM



2021 Charlotte Retirement Residence Background Traffic Volumes

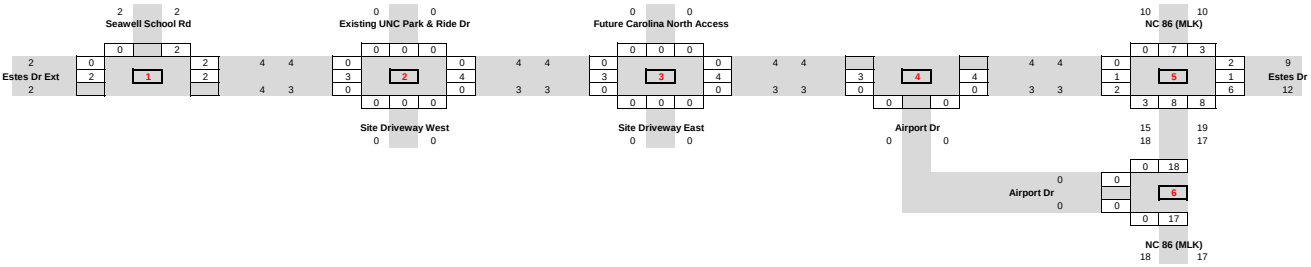
Peak: AM



		IN	OUT
Trip Gen	AM	5	4
	Noon	10	8
	PM	14	12

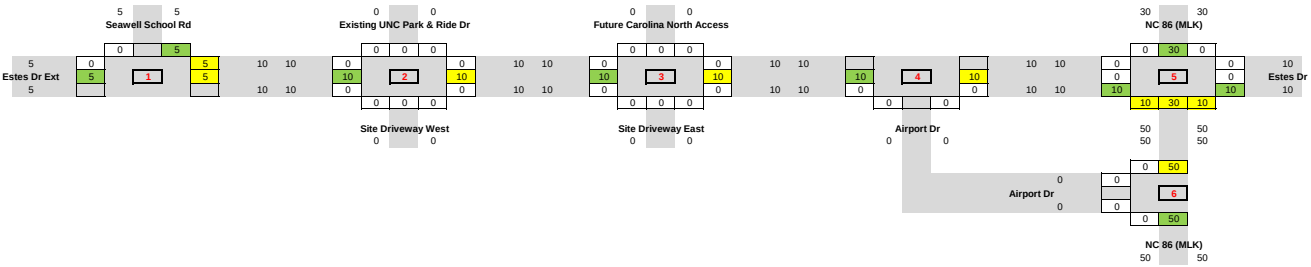
2021 Total Background Traffic Volumes 12/12/17

Peak | Noon



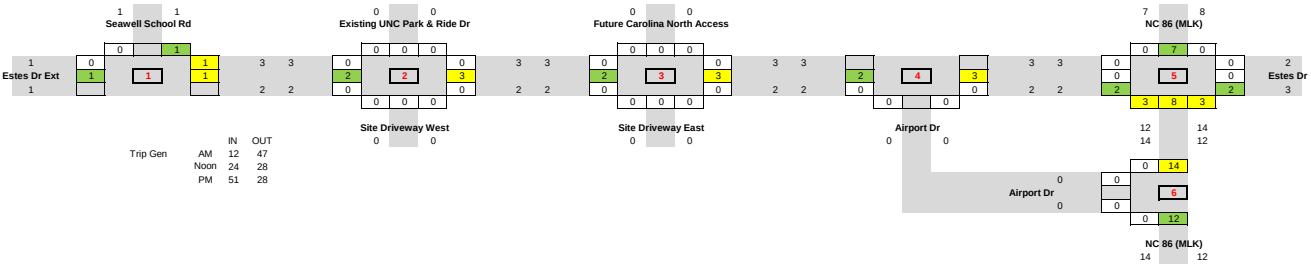
2021 Sawmill Trip Distribution %

Peak | Noon



2021 Sawmill Background Traffic Volumes

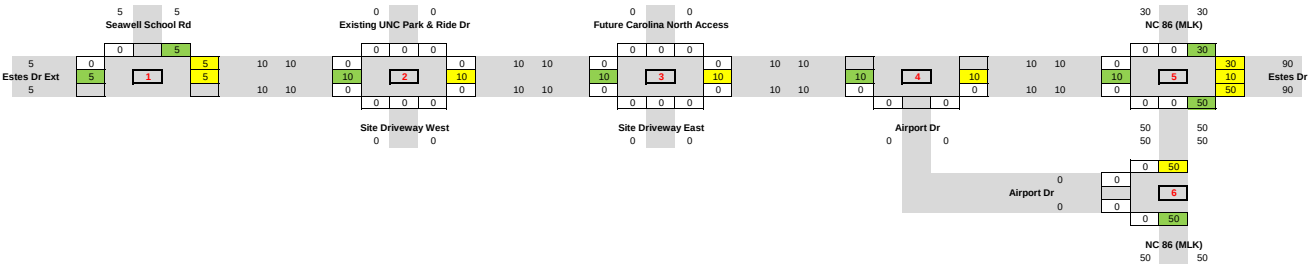
Peak | Noon



		IN	OUT
Trip Gen	AM	12	47
	Noon	24	28
	PM	51	28

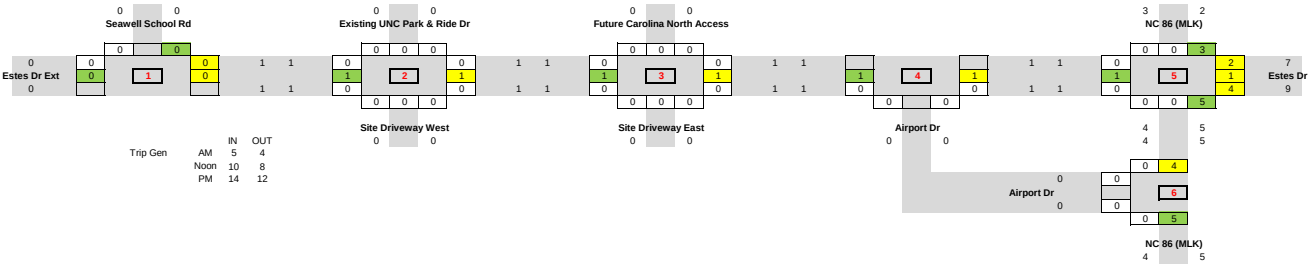
2021 Charlotte Retirement Residence Trip Distribution %

Peak | Noon



2021 Charlotte Retirement Residence Background Traffic Volumes

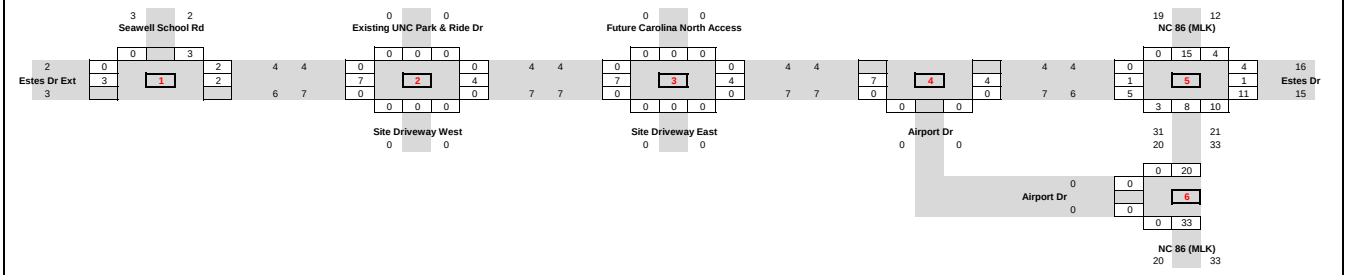
Peak | Noon



		IN	OUT
Trip Gen	AM	5	4
	Noon	10	8
	PM	14	12

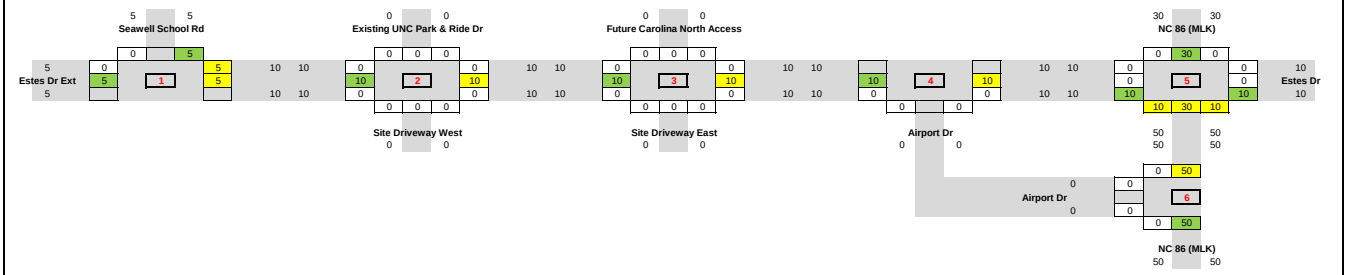
2021 Total Background Traffic Volumes 12/12/17

Peak PM



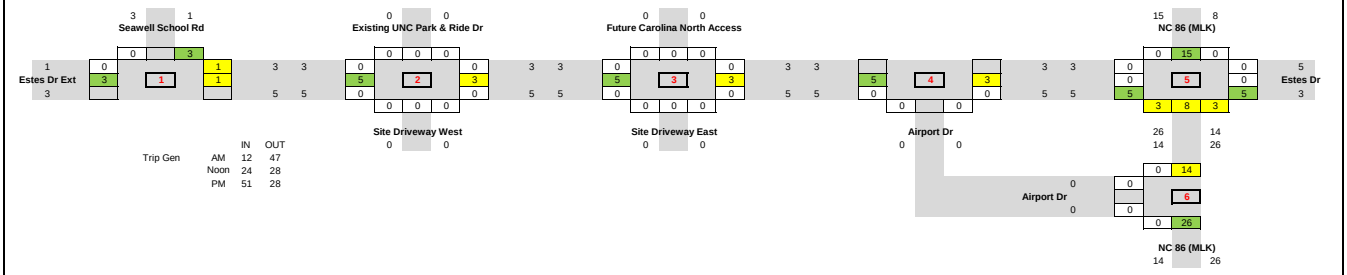
2021 Sawmill Trip Distribution %

Peak PM



2021 Sawmill Background Traffic Volumes

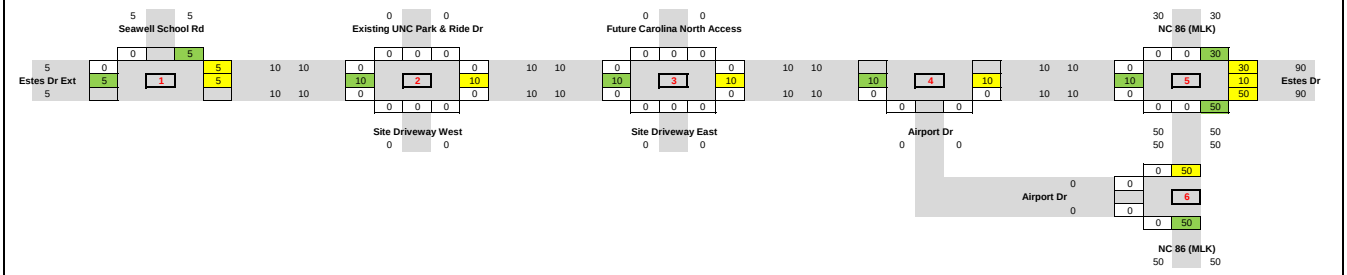
Peak PM



		IN	OUT
Trip Gen	AM	12	47
	Noon	24	28
	PM	51	28

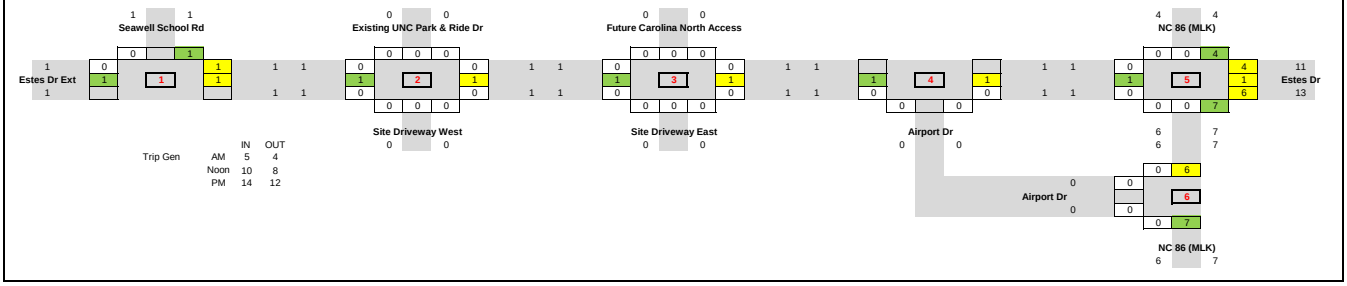
2021 Charlotte Retirement Residence Trip Distribution %

Peak PM



2021 Charlotte Retirement Residence Background Traffic Volumes

Peak PM



		IN	OUT
Trip Gen	AM	5	4
	Noon	10	8
	PM	14	12

Appendix D - Traffic Volume Development Spreadsheets

Chapel Hill Municipal Campus Trip Generation Results

Phase 1

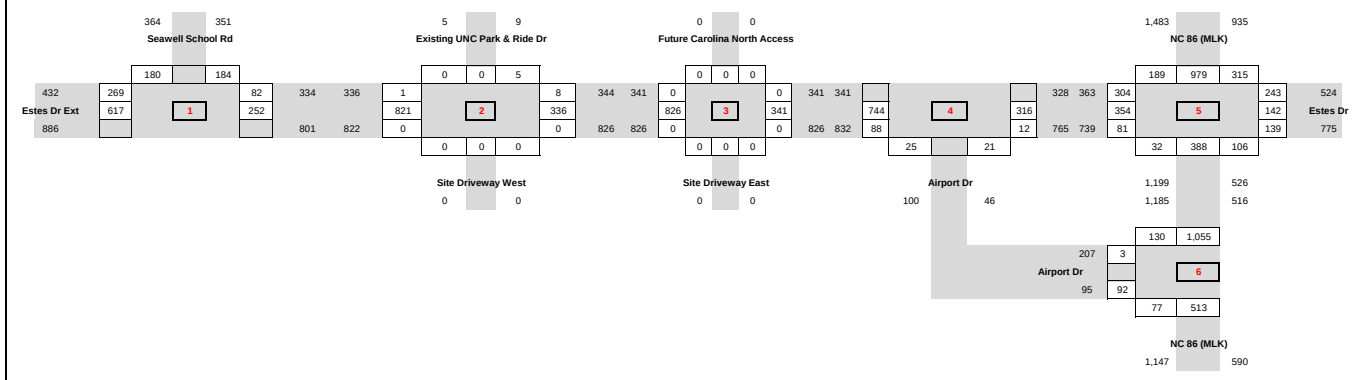
ITE LUC	Description	Density	Daily Enter	Daily Exit	Daily Total	AM Peak Enter	AM Peak Exit	AM Peak Total	Noon Peak Enter	Noon Peak Exit	Noon Peak Total	PM Peak Enter	PM Peak Exit	PM Peak Total
710	General Office Building	48467 SF	379	379	758	94	13	107	59	62	121	23	110	133
	Police Station - Field Data Adjusted	24346 SF	146	146	292	32	3	35	28	22	50	15	40	55
	Total Phase 1	**72813 SF**	**525**	**525**	**1050**	**126**	**16**	**142**	**87**	**84**	**171**	**38**	**150**	**188**

Existing	Description	Density	Daily Enter	Daily Exit	Daily Total	AM Peak Enter	AM Peak Exit	AM Peak Total	Noon Peak Enter	Noon Peak Exit	Noon Peak Total	PM Peak Enter	PM Peak Exit	PM Peak Total
	Police Station - Field Data	24000 SF				30	3	33	27	21	48	14	38	52
		5% Inc				32	3	35	28	22	50	15	40	55

Daily Estimate for Police Station	AM Ratio	Noon Ratio	PM Ratio	Weighted
	0.33	0.41	0.41	**0.38**

2017 Count Data — 11/9/17

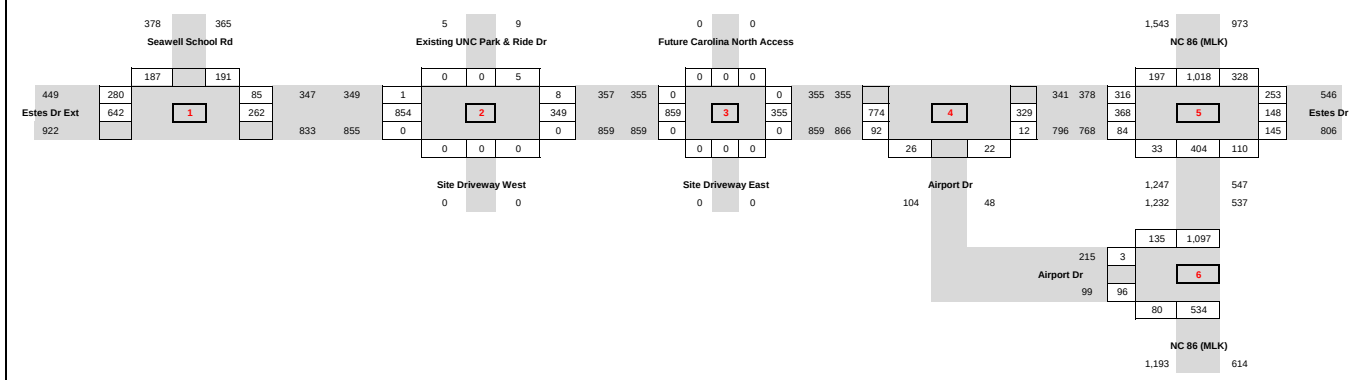
Peak | AM



2021 Ambient Growth

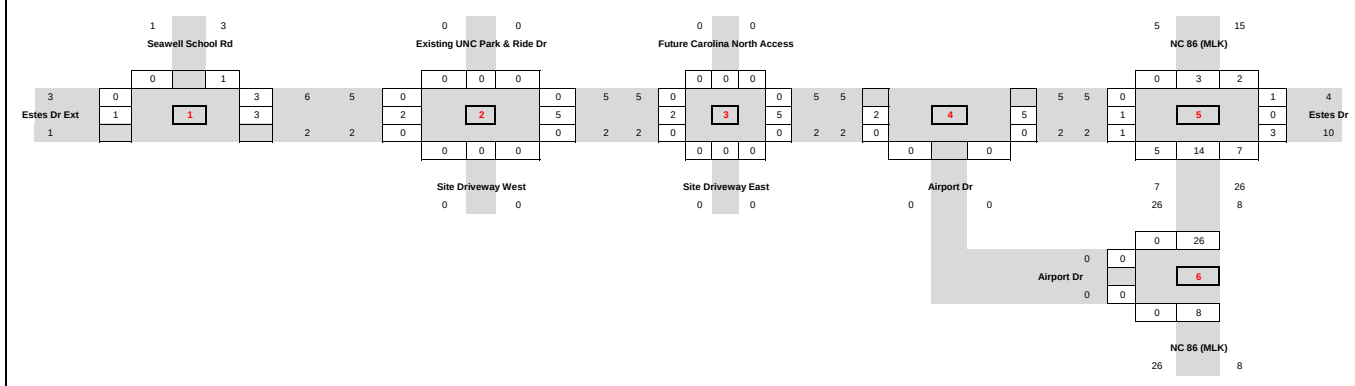
Peak | AM

Ambient Growth Rate/Yr =	*1.0%*
Ambient Growth Total =	*1.040*



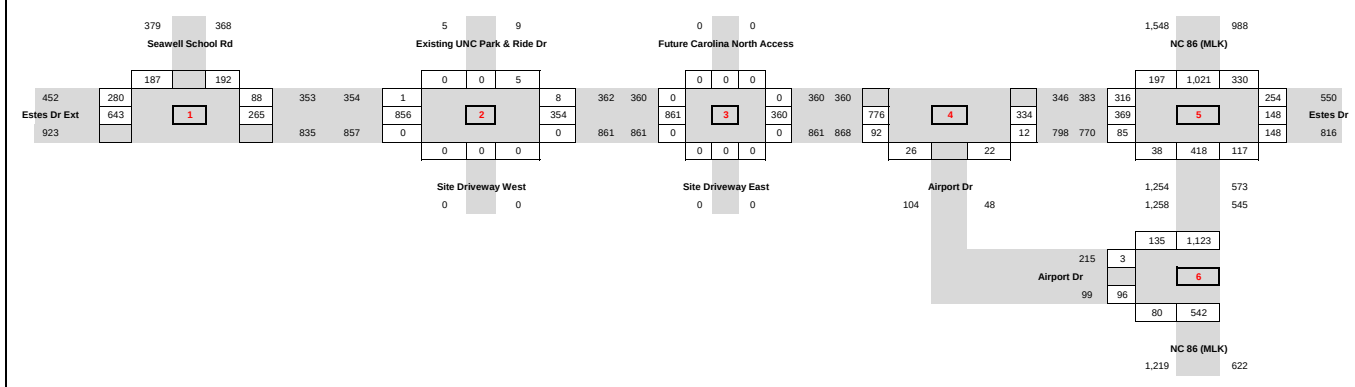
2021 Total Background Traffic Volumes — 12/12/17

Peak | AM



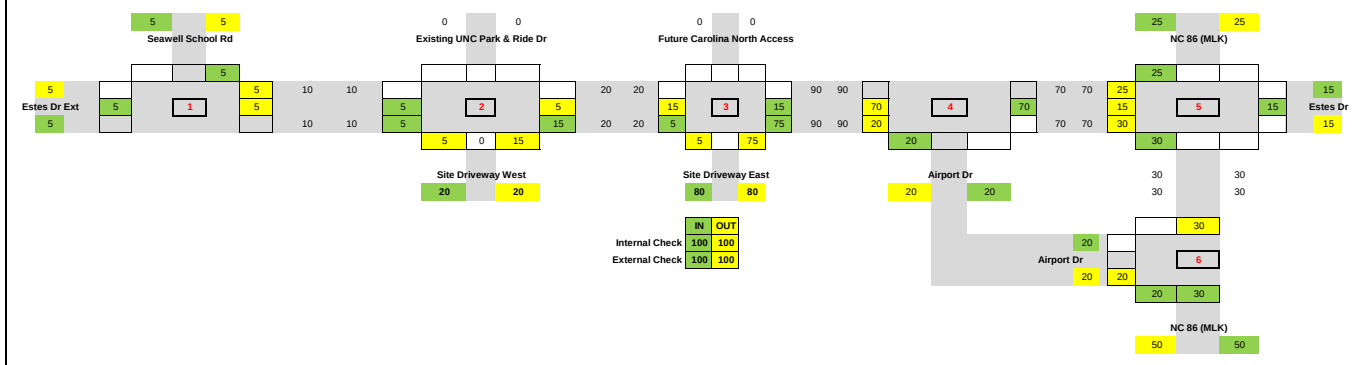
2021 Traffic Without Site

Peak | AM



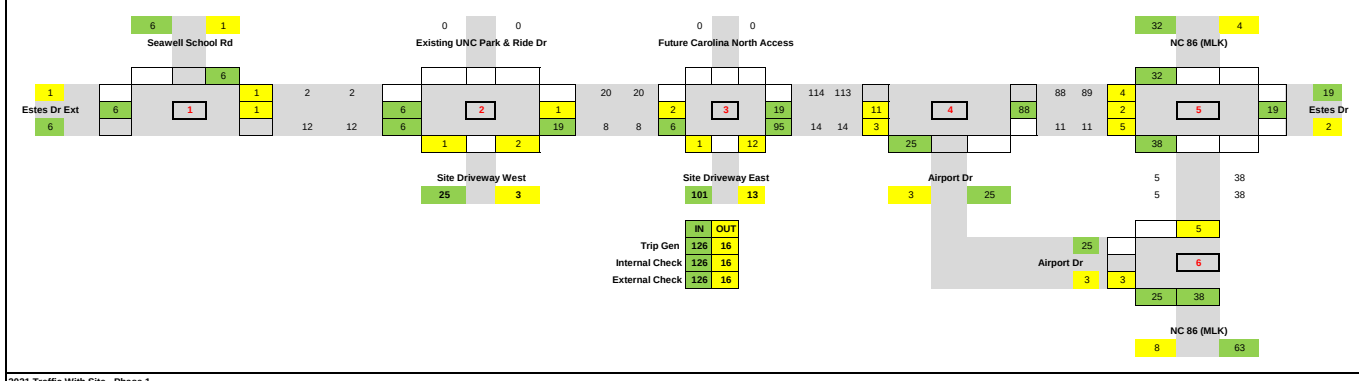
2021 Site Trip Distribution Percentages - Phase 1

Peak | AM



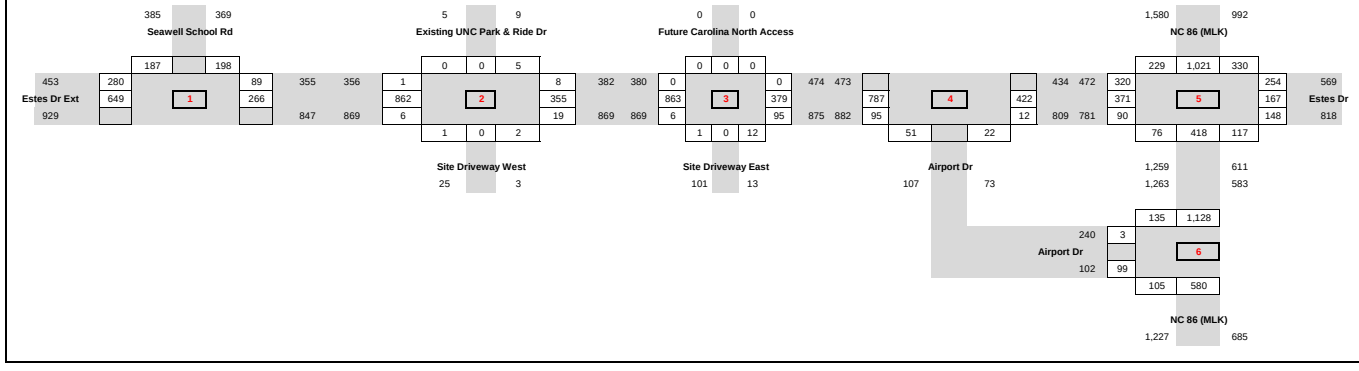
2021 Site Traffic Assignment - Phase 1

Peak | AM



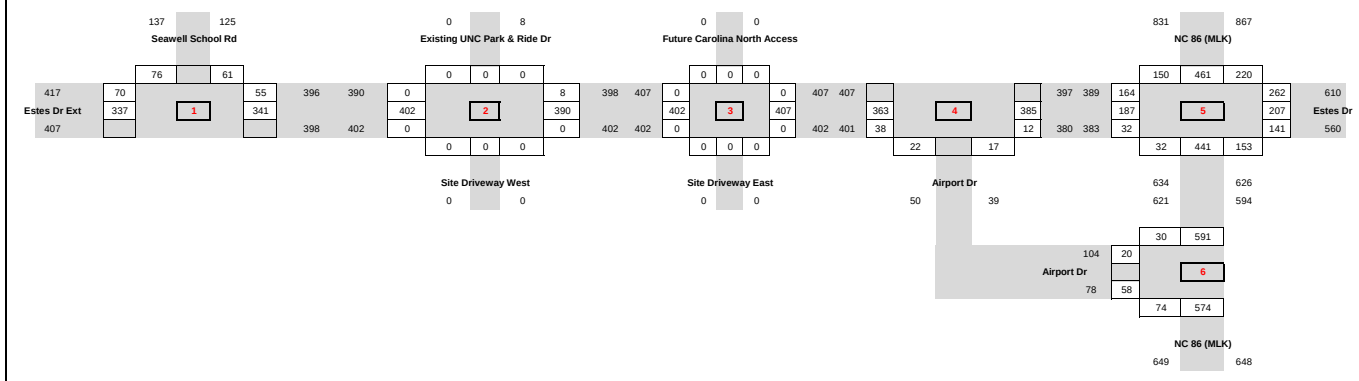
2021 Traffic With Site - Phase 1

Peak | AM



2017 Count Data — 11/9/17

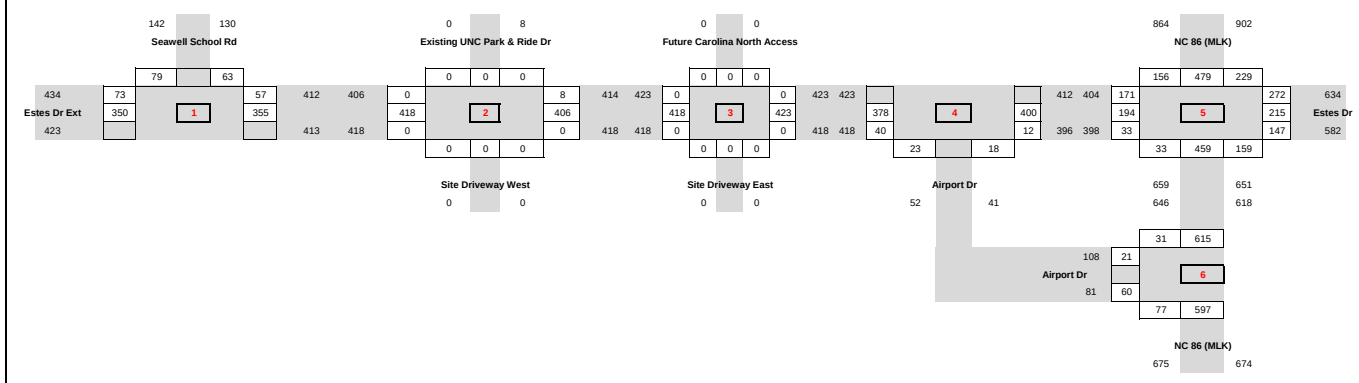
Peak | Noon



2021 Ambient Growth

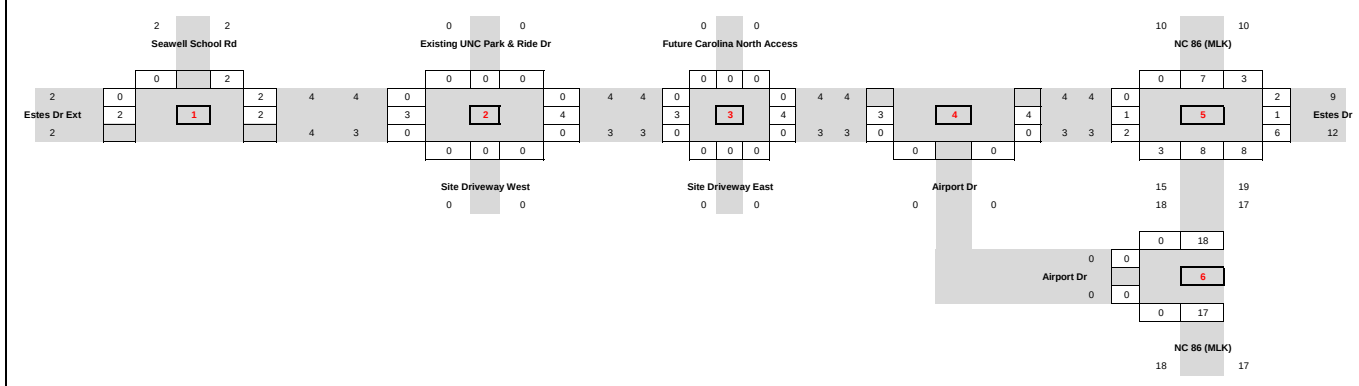
Peak | Noon

Ambient Growth Rate/Yr =	*1.0%*
Ambient Growth Total =	*1.040*



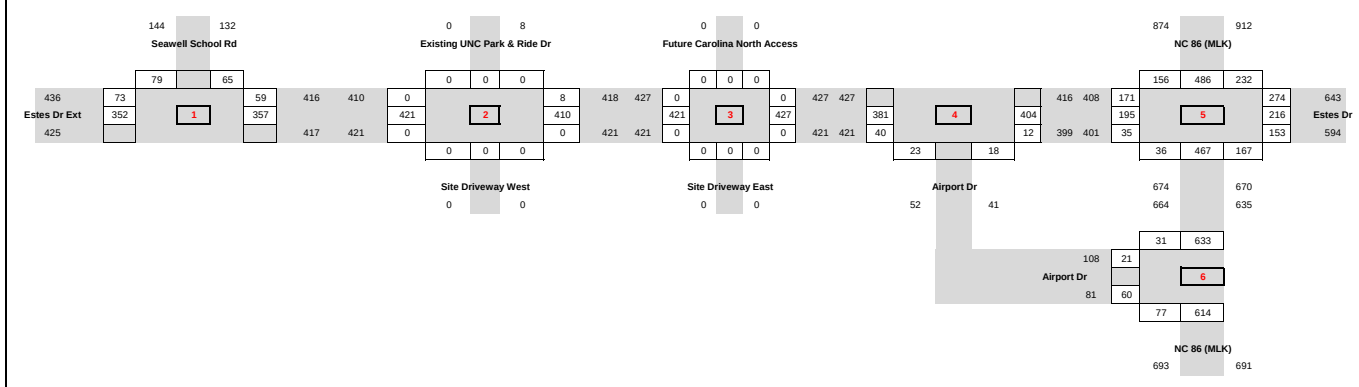
2021 Total Background Traffic Volumes — 12/12/17

Peak | Noon



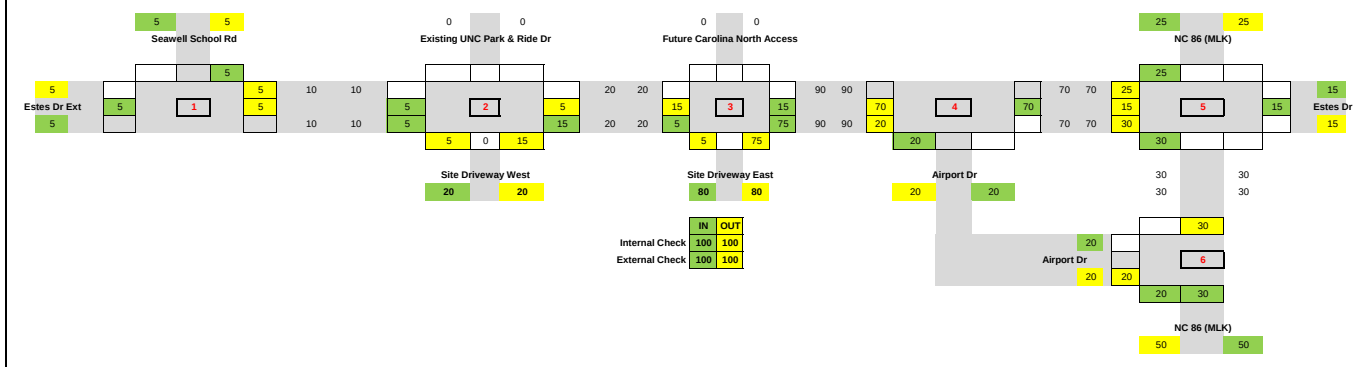
2021 Traffic Without Site

Peak | Noon



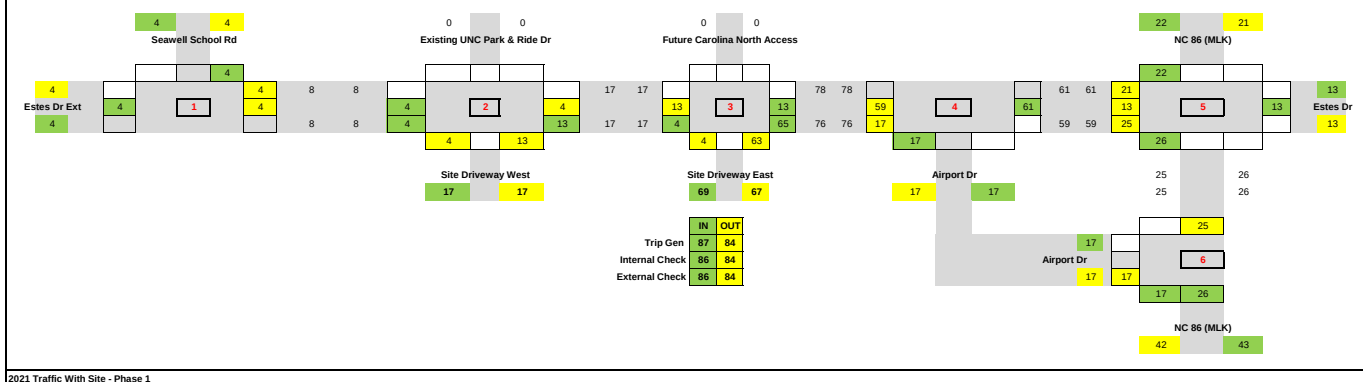
2021 Site Trip Distribution Percentages - Phase 1

Peak | Noon



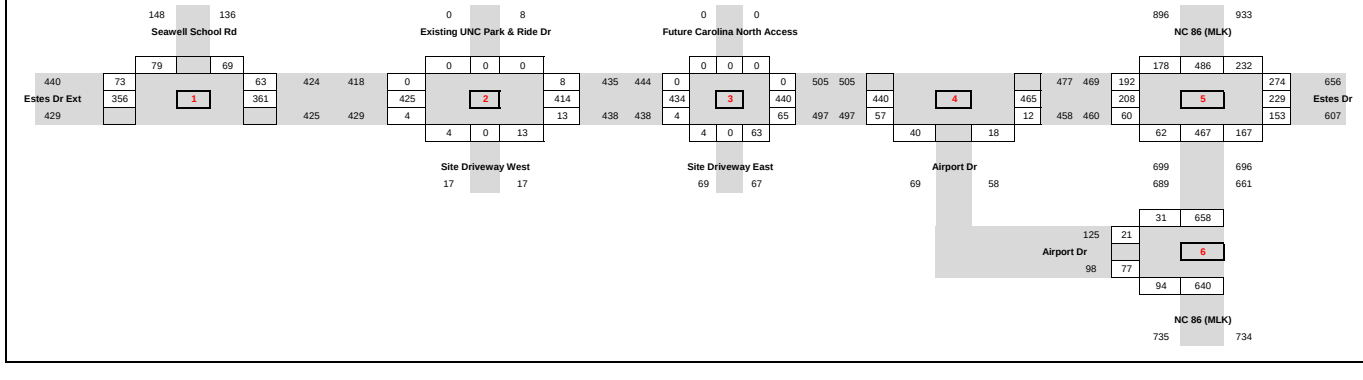
2021 Site Traffic Assignment - Phase 1

Peak | Noon



2021 Traffic With Site - Phase 1

Peak | Noon



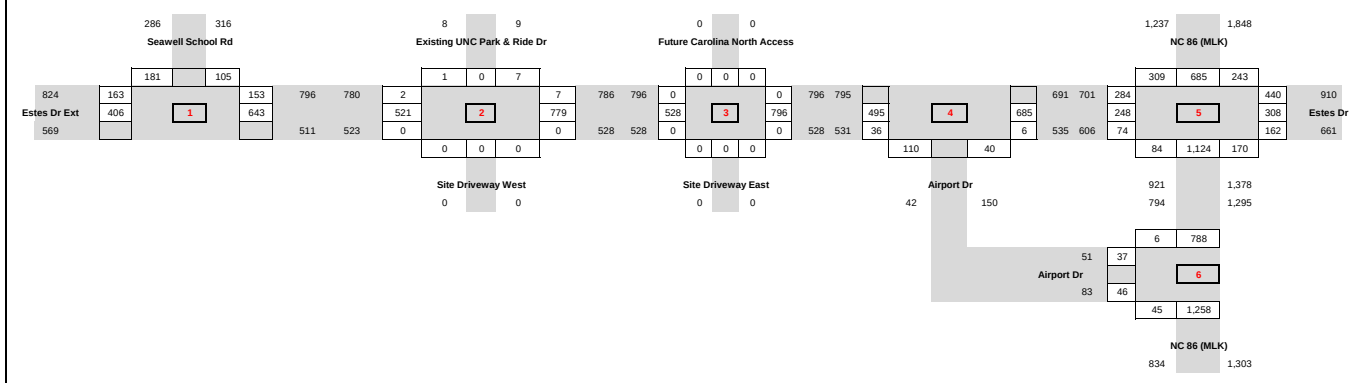
2017 Count Data — 11/9/17

Peak | PM

2021 Ambient Growth

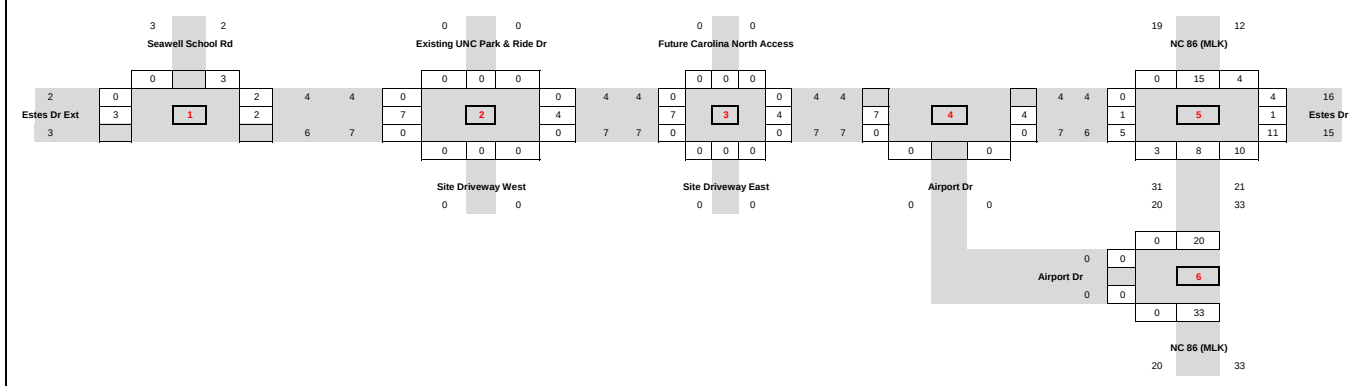
Ambient Growth Rate/Yr =	*1.0%*
Ambient Growth Total =	*1.040*

Peak | PM



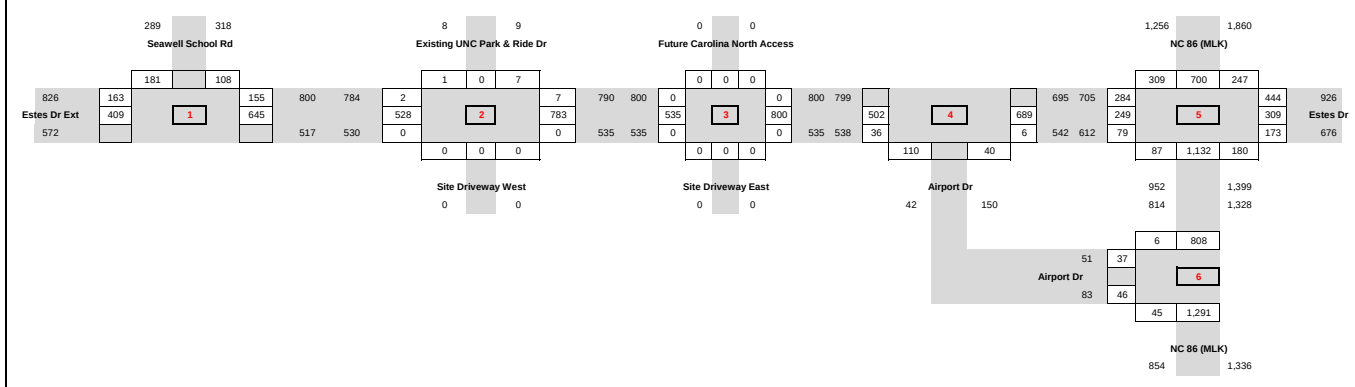
2021 Total Background Traffic Volumes — 12/12/17

Peak | PM



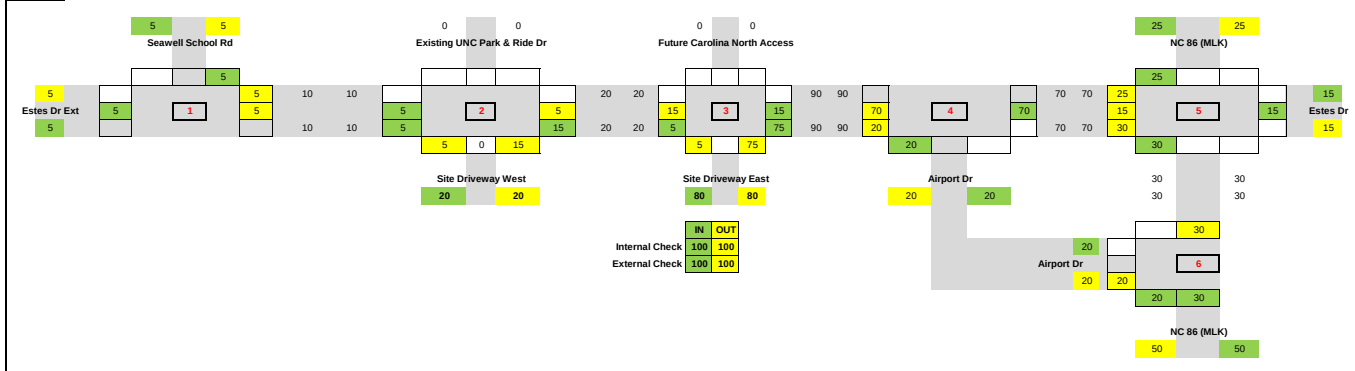
2021 Traffic Without Site

Peak | PM



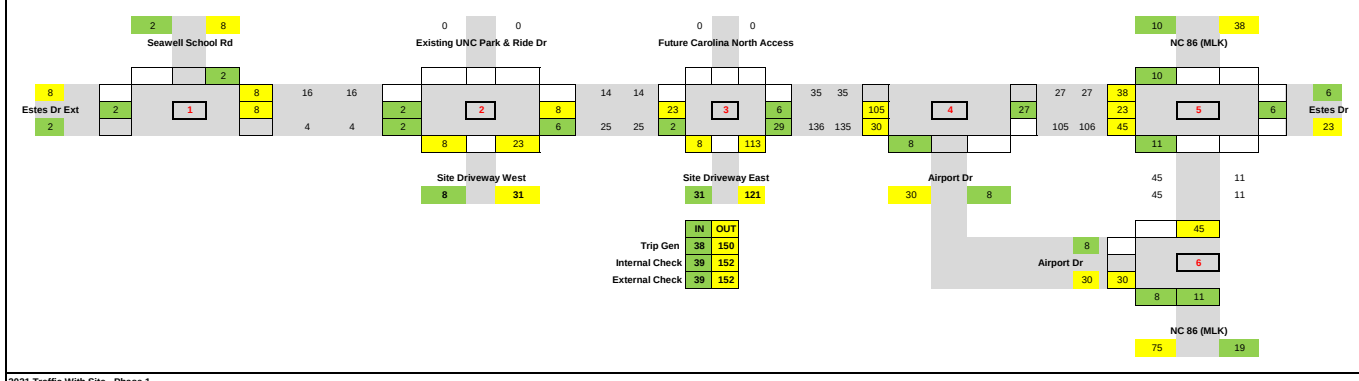
2021 Site Trip Distribution Percentages - Phase 1

Peak | PM



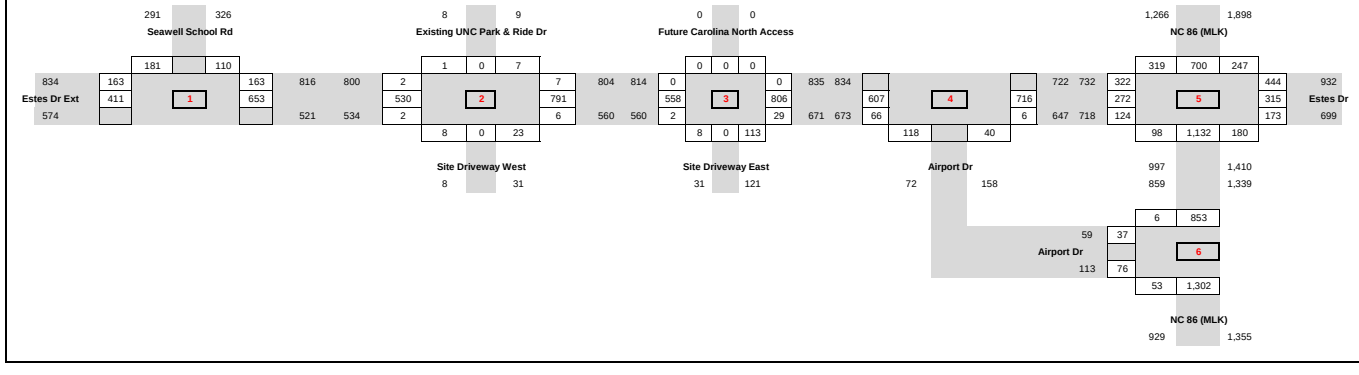
2021 Site Traffic Assignment - Phase 1

Peak | PM



2021 Traffic With Site - Phase 1

Peak | PM



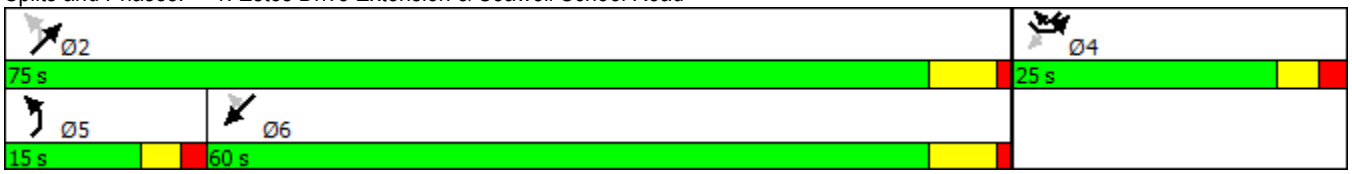
Appendix E – Synchro Signalized Capacity Analysis Output

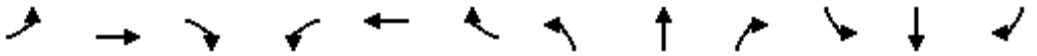
Lane Group	SEL	SER	NEL	NET	SWT	SWR
Lane Configurations						
Traffic Volume (vph)	184	180	269	617	252	82
Future Volume (vph)	184	180	269	617	252	82
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	-3%			2%	-3%	
Storage Length (ft)	400	0	250			75
Storage Lanes	1	1	1			1
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1779	1591	1735	1826	1819	1546
Flt Permitted	0.950		0.393			
Satd. Flow (perm)	1779	1591	718	1826	1819	1546
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	35			35	35	
Link Distance (ft)	862			645	825	
Travel Time (s)	16.8			12.6	16.1	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	3%	3%	3%	3%	6%	6%
Adj. Flow (vph)	202	198	296	678	277	90
Shared Lane Traffic (%)						
Lane Group Flow (vph)	202	198	296	678	277	90
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	0.98	0.98	1.01	1.01	0.98	0.98
Turning Speed (mph)	15	9	15			9
Turn Type	Prot	Perm	pm+pt	NA	NA	pm+ov
Protected Phases	4		5	2	6	4
Permitted Phases		4	2			6
Detector Phase	4	4	5	2	6	4
Switch Phase						
Minimum Initial (s)	7.0	7.0	7.0	12.0	12.0	7.0
Minimum Split (s)	14.0	14.0	14.0	19.0	19.0	14.0
Total Split (s)	25.0	25.0	15.0	75.0	60.0	25.0
Total Split (%)	25.0%	25.0%	15.0%	75.0%	60.0%	25.0%
Yellow Time (s)	3.1	3.1	3.0	5.0	5.0	3.1
All-Red Time (s)	2.3	2.3	1.9	1.2	1.2	2.3
Lost Time Adjust (s)	-0.4	-0.4	0.1	-1.2	-1.2	-0.4
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None	None	None	Min	Min	None
Act Effct Green (s)	12.6	12.6	31.8	31.8	16.7	34.4

Lane Group	SEL	SER	NEL	NET	SWT	SWR
Actuated g/C Ratio	0.23	0.23	0.58	0.58	0.31	0.63
v/c Ratio	0.49	0.54	0.49	0.64	0.50	0.09
Control Delay	23.5	25.3	9.3	11.6	19.5	3.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.5	25.3	9.3	11.6	19.5	3.9
LOS	C	C	A	B	B	A
Approach Delay	24.4			10.9	15.7	
Approach LOS	C			B	B	
Queue Length 50th (ft)	54	53	40	120	70	9
Queue Length 95th (ft)	127	128	100	283	150	20
Internal Link Dist (ft)	782			565	745	
Turn Bay Length (ft)	400		250			75
Base Capacity (vph)	667	597	608	1823	1728	1199
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.33	0.49	0.37	0.16	0.08

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 54.6			
Natural Cycle: 50			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.64			
Intersection Signal Delay: 15.0		Intersection LOS: B	
Intersection Capacity Utilization 51.0%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 1: Estes Drive Extension & Seawell School Road





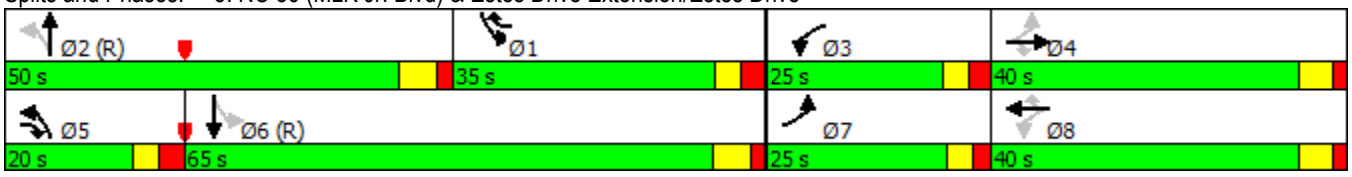
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	304	354	81	139	142	243	32	388	106	315	979	189
Future Volume (vph)	304	354	81	139	142	243	32	388	106	315	979	189
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			1%			1%			-2%	
Storage Length (ft)	225		300	150		450	0		0	0		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor	1.00					0.99		0.99		0.99		
Frt			0.850			0.850		0.968			0.976	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1694	1783	1516	1678	3223	0	1770	3455	0
Flt Permitted	0.444			0.156			0.097			0.455		
Satd. Flow (perm)	827	1863	1583	278	1783	1497	171	3223	0	840	3455	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		1360			1121			1058			1059	
Travel Time (s)		26.5			21.8			20.6			20.6	
Confl. Peds. (#/hr)	1					1			7	7		
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	2%	2%	2%	6%	6%	6%	7%	7%	7%	3%	3%	3%
Adj. Flow (vph)	327	381	87	149	153	261	34	417	114	339	1053	203
Shared Lane Traffic (%)												
Lane Group Flow (vph)	327	381	87	149	153	261	34	531	0	339	1256	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.01	1.01	1.01	1.01	1.01	1.01	0.99	0.99	0.99
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4	5	3	8	1	5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Detector Phase	7	4	5	3	8	1	5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	12.0		7.0	12.0	
Minimum Split (s)	12.0	13.0	13.0	13.0	13.0	13.0	13.0	34.0		13.0	18.0	
Total Split (s)	25.0	40.0	20.0	25.0	40.0	35.0	20.0	50.0		35.0	65.0	
Total Split (%)	16.7%	26.7%	13.3%	16.7%	26.7%	23.3%	13.3%	33.3%		23.3%	43.3%	
Yellow Time (s)	3.0	3.8	3.0	3.0	3.8	3.0	3.0	4.3		3.0	4.3	
All-Red Time (s)	1.9	1.7	2.8	2.4	1.7	2.8	2.8	1.7		2.8	1.7	
Lost Time Adjust (s)	0.1	-0.5	-0.8	-0.4	-0.5	-0.8	-0.8	-1.0		-0.8	-1.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lag	Lead	Lead		Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Recall Mode	None	None	None	None	None	None	None	C-Max		None	C-Max	
Act Effct Green (s)	53.4	34.6	48.5	44.7	29.7	59.7	50.3	50.3		71.5	71.5	
Actuated g/C Ratio	0.36	0.23	0.32	0.30	0.20	0.40	0.34	0.34		0.48	0.48	
v/c Ratio	0.78	0.89	0.17	0.67	0.43	0.44	0.23	0.49		0.58	0.76	
Control Delay	51.3	78.0	36.3	47.4	55.5	20.2	40.7	42.7		40.1	37.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	51.3	78.0	36.3	47.4	55.5	20.2	40.7	42.7		40.1	37.4	
LOS	D	E	D	D	E	C	D	D		D	D	
Approach Delay		62.5			37.0			42.6			38.0	
Approach LOS		E			D			D			D	
Queue Length 50th (ft)	242	354	60	98	130	113	23	223		218	538	
Queue Length 95th (ft)	327	#541	104	149	198	156	52	291		323	677	
Internal Link Dist (ft)		1280			1041			978			979	
Turn Bay Length (ft)	225		300	150		450						
Base Capacity (vph)	419	449	576	280	416	599	208	1080		586	1645	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.78	0.85	0.15	0.53	0.37	0.44	0.16	0.49		0.58	0.76	

Intersection Summary

Area Type: Other
Cycle Length: 150
Actuated Cycle Length: 150
Offset: 91 (61%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.89
Intersection Signal Delay: 44.1 Intersection LOS: D
Intersection Capacity Utilization 83.8% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: NC 86 (MLK Jr. Blvd) & Estes Drive Extension/Estes Drive

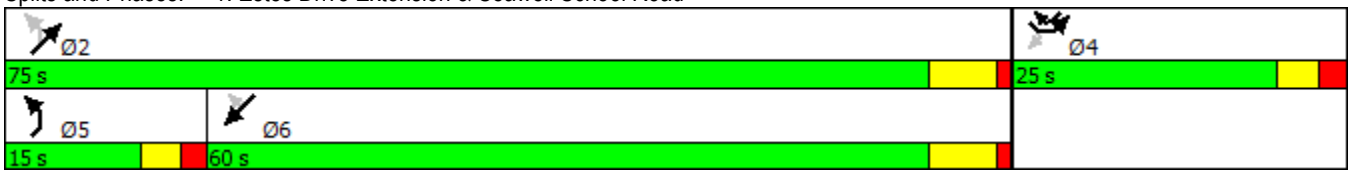


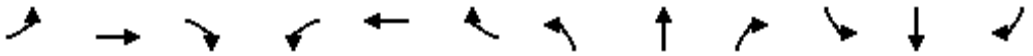
Lane Group	SEL	SER	NEL	NET	SWT	SWR
Lane Configurations						
Traffic Volume (vph)	61	76	70	337	341	55
Future Volume (vph)	61	76	70	337	341	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	-3%			2%	-3%	
Storage Length (ft)	400	0	250			75
Storage Lanes	1	1	1			1
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1779	1591	1735	1826	1872	1591
Flt Permitted	0.950		0.401			
Satd. Flow (perm)	1779	1591	732	1826	1872	1591
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	35			35	35	
Link Distance (ft)	862			645	825	
Travel Time (s)	16.8			12.6	16.1	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Adj. Flow (vph)	64	79	73	351	355	57
Shared Lane Traffic (%)						
Lane Group Flow (vph)	64	79	73	351	355	57
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	0.98	0.98	1.01	1.01	0.98	0.98
Turning Speed (mph)	15	9	15			9
Turn Type	Prot	Perm	pm+pt	NA	NA	pm+ov
Protected Phases	4		5	2	6	4
Permitted Phases		4	2			6
Detector Phase	4	4	5	2	6	4
Switch Phase						
Minimum Initial (s)	7.0	7.0	7.0	12.0	12.0	7.0
Minimum Split (s)	14.0	14.0	14.0	19.0	19.0	14.0
Total Split (s)	25.0	25.0	15.0	75.0	60.0	25.0
Total Split (%)	25.0%	25.0%	15.0%	75.0%	60.0%	25.0%
Yellow Time (s)	3.1	3.1	3.0	5.0	5.0	3.1
All-Red Time (s)	2.3	2.3	1.9	1.2	1.2	2.3
Lost Time Adjust (s)	-0.4	-0.4	0.1	-1.2	-1.2	-0.4
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None	None	None	Min	Min	None
Act Effct Green (s)	8.8	8.8	26.9	28.1	21.5	33.7

Lane Group	SEL	SER	NEL	NET	SWT	SWR
Actuated g/C Ratio	0.20	0.20	0.63	0.65	0.50	0.78
v/c Ratio	0.18	0.24	0.11	0.29	0.38	0.05
Control Delay	18.7	19.6	4.5	5.4	12.9	3.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.7	19.6	4.5	5.4	12.9	3.3
LOS	B	B	A	A	B	A
Approach Delay	19.2			5.2	11.6	
Approach LOS	B			A	B	
Queue Length 50th (ft)	14	18	6	37	73	5
Queue Length 95th (ft)	46	55	19	79	155	14
Internal Link Dist (ft)	782			565	745	
Turn Bay Length (ft)	400		250			75
Base Capacity (vph)	874	781	703	1826	1860	1453
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.10	0.10	0.19	0.19	0.04

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 43			
Natural Cycle: 50			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.38			
Intersection Signal Delay: 9.9		Intersection LOS: A	
Intersection Capacity Utilization 42.1%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 1: Estes Drive Extension & Seawell School Road



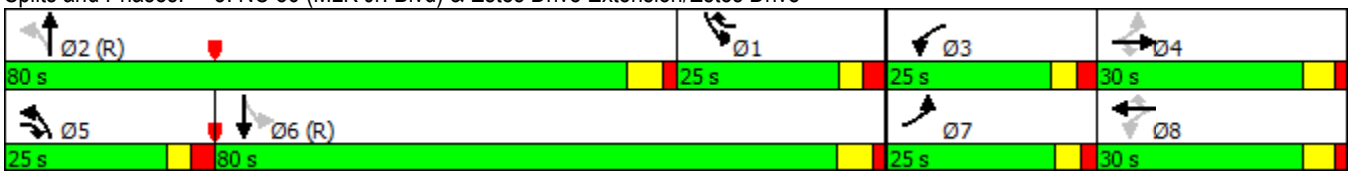


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	164	187	32	141	207	262	32	441	153	220	461	150
Future Volume (vph)	164	187	32	141	207	262	32	441	153	220	461	150
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			1%			1%			-2%	
Storage Length (ft)	225		300	150		450	0		0	0		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor								0.99		1.00		
Frt			0.850			0.850		0.961			0.963	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1736	1827	1553	1727	1818	1545	1694	3230	0	1753	3376	0
Flt Permitted	0.228			0.348			0.322			0.412		
Satd. Flow (perm)	417	1827	1553	633	1818	1545	574	3230	0	757	3376	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		1360			1121			1058			1059	
Travel Time (s)		26.5			21.8			20.6			20.6	
Confl. Peds. (#/hr)									4	4		
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	6%	6%	6%	4%	4%	4%
Adj. Flow (vph)	171	195	33	147	216	273	33	459	159	229	480	156
Shared Lane Traffic (%)												
Lane Group Flow (vph)	171	195	33	147	216	273	33	618	0	229	636	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.01	1.01	1.01	1.01	1.01	1.01	0.99	0.99	0.99
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4	5	3	8	1	5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Detector Phase	7	4	5	3	8	1	5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	12.0		7.0	12.0	
Minimum Split (s)	12.0	13.0	13.0	13.0	13.0	13.0	13.0	34.0		13.0	18.0	
Total Split (s)	25.0	30.0	25.0	25.0	30.0	25.0	25.0	80.0		25.0	80.0	
Total Split (%)	15.6%	18.8%	15.6%	15.6%	18.8%	15.6%	15.6%	50.0%		15.6%	50.0%	
Yellow Time (s)	3.0	3.8	3.0	3.0	3.8	3.0	3.0	4.3		3.0	4.3	
All-Red Time (s)	1.9	1.7	2.8	2.4	1.7	2.8	2.8	1.7		2.8	1.7	
Lost Time Adjust (s)	0.1	-0.5	-0.8	-0.4	-0.5	-0.8	-0.8	-1.0		-0.8	-1.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lag	Lead	Lead		Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Recall Mode	None	None	None	None	None	None	None	C-Max		None	C-Max	
Act Effct Green (s)	41.3	24.0	37.4	39.0	22.9	42.9	79.9	79.9		94.0	94.0	
Actuated g/C Ratio	0.26	0.15	0.23	0.24	0.14	0.27	0.50	0.50		0.59	0.59	
v/c Ratio	0.69	0.71	0.09	0.56	0.83	0.66	0.10	0.38		0.40	0.32	
Control Delay	59.3	79.4	47.3	52.5	91.9	43.1	23.2	26.5		25.2	18.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	59.3	79.4	47.3	52.5	91.9	43.1	23.2	26.5		25.2	18.7	
LOS	E	E	D	D	F	D	C	C		C	B	
Approach Delay		68.1			61.9			26.3			20.4	
Approach LOS		E			E			C			C	
Queue Length 50th (ft)	140	193	27	118	219	186	18	215		119	186	
Queue Length 95th (ft)	207	289	58	180	#338	260	40	273		181	242	
Internal Link Dist (ft)		1280			1041			978			979	
Turn Bay Length (ft)	225		300	150		450						
Base Capacity (vph)	277	293	475	304	284	414	426	1612		569	1983	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.62	0.67	0.07	0.48	0.76	0.66	0.08	0.38		0.40	0.32	

Intersection Summary			
Area Type:	Other		
Cycle Length: 160			
Actuated Cycle Length: 160			
Offset: 104 (65%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.83			
Intersection Signal Delay: 39.7		Intersection LOS: D	
Intersection Capacity Utilization 72.2%		ICU Level of Service C	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 5: NC 86 (MLK Jr. Blvd) & Estes Drive Extension/Estes Drive

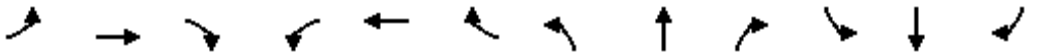


Lane Group	SEL	SER	NEL	NET	SWT	SWR
Lane Configurations						
Traffic Volume (vph)	101	174	157	390	618	147
Future Volume (vph)	101	174	157	390	618	147
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	-3%			2%	-3%	
Storage Length (ft)	400	0	250			75
Storage Lanes	1	1	1			1
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1796	1607	1752	1844	1891	1607
Flt Permitted	0.950		0.161			
Satd. Flow (perm)	1796	1607	297	1844	1891	1607
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	35			35	35	
Link Distance (ft)	862			645	825	
Travel Time (s)	16.8			12.6	16.1	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	107	185	167	415	657	156
Shared Lane Traffic (%)						
Lane Group Flow (vph)	107	185	167	415	657	156
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	0.98	0.98	1.01	1.01	0.98	0.98
Turning Speed (mph)	15	9	15			9
Turn Type	Prot	Perm	pm+pt	NA	NA	pm+ov
Protected Phases	4		5	2	6	4
Permitted Phases		4	2			6
Detector Phase	4	4	5	2	6	4
Switch Phase						
Minimum Initial (s)	7.0	7.0	7.0	12.0	12.0	7.0
Minimum Split (s)	14.0	14.0	14.0	19.0	19.0	14.0
Total Split (s)	25.0	25.0	15.0	75.0	60.0	25.0
Total Split (%)	25.0%	25.0%	15.0%	75.0%	60.0%	25.0%
Yellow Time (s)	3.1	3.1	3.0	5.0	5.0	3.1
All-Red Time (s)	2.3	2.3	1.9	1.2	1.2	2.3
Lost Time Adjust (s)	-0.4	-0.4	0.1	-1.2	-1.2	-0.4
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None	None	None	Min	Min	None
Act Effct Green (s)	13.8	13.8	46.7	46.7	31.9	50.9
Actuated g/C Ratio	0.19	0.19	0.66	0.66	0.45	0.72

Lane Group	SEL	SER	NEL	NET	SWT	SWR
v/c Ratio	0.31	0.59	0.43	0.34	0.77	0.14
Control Delay	30.3	37.4	8.3	6.4	23.6	3.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.3	37.4	8.3	6.4	23.6	3.1
LOS	C	D	A	A	C	A
Approach Delay	34.8			7.0	19.6	
Approach LOS	C			A	B	
Queue Length 50th (ft)	40	73	23	66	229	17
Queue Length 95th (ft)	102	170	53	134	397	30
Internal Link Dist (ft)	782			565	745	
Turn Bay Length (ft)	400		250			75
Base Capacity (vph)	533	477	411	1697	1494	1318
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.20	0.39	0.41	0.24	0.44	0.12

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 71			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.77			
Intersection Signal Delay: 17.9		Intersection LOS: B	
Intersection Capacity Utilization 59.6%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 1: Estes Drive Extension & Seawell School Road



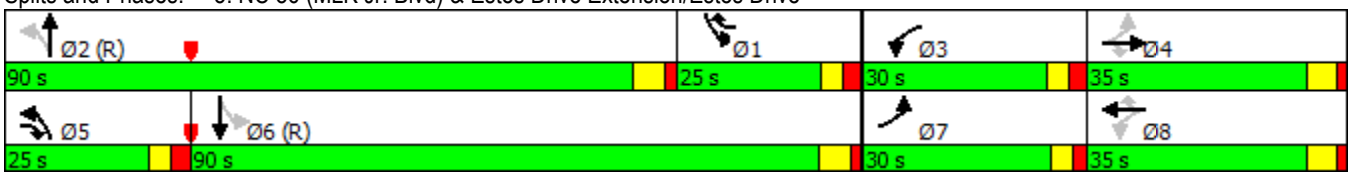
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	273	238	71	156	296	423	81	1081	163	234	659	297
Future Volume (vph)	273	238	71	156	296	423	81	1081	163	234	659	297
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			1%			1%			-2%	
Storage Length (ft)	225		300	150		450	0		0	0		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor								1.00				
Frt			0.850			0.850		0.980			0.953	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1761	1853	1575	1761	3435	0	1787	3407	0
Flt Permitted	0.116			0.371			0.146			0.102		
Satd. Flow (perm)	216	1863	1583	688	1853	1575	271	3435	0	192	3407	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		1360			1121			1058			1059	
Travel Time (s)		26.5			21.8			20.6			20.6	
Confl. Peds. (#/hr)									5	5		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	287	251	75	164	312	445	85	1138	172	246	694	313
Shared Lane Traffic (%)												
Lane Group Flow (vph)	287	251	75	164	312	445	85	1310	0	246	1007	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.01	1.01	1.01	1.01	1.01	1.01	0.99	0.99	0.99
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4	5	3	8	1	5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Detector Phase	7	4	5	3	8	1	5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	12.0		7.0	12.0	
Minimum Split (s)	12.0	13.0	13.0	13.0	13.0	13.0	13.0	34.0		13.0	18.0	
Total Split (s)	30.0	35.0	25.0	30.0	35.0	25.0	25.0	90.0		25.0	90.0	
Total Split (%)	16.7%	19.4%	13.9%	16.7%	19.4%	13.9%	13.9%	50.0%		13.9%	50.0%	
Yellow Time (s)	3.0	3.8	3.0	3.0	3.8	3.0	3.0	4.3		3.0	4.3	
All-Red Time (s)	1.9	1.7	2.8	2.4	1.7	2.8	2.8	1.7		2.8	1.7	
Lost Time Adjust (s)	0.1	-0.5	-0.8	-0.4	-0.5	-0.8	-0.8	-1.0		-0.8	-1.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lag	Lead	Lead		Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None	None	None	C-Max		None	C-Max	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effct Green (s)	59.0	36.7	52.8	48.3	30.0	50.0	85.0	85.0		93.9	93.9	
Actuated g/C Ratio	0.33	0.20	0.29	0.27	0.17	0.28	0.47	0.47		0.52	0.52	
v/c Ratio	1.00	0.66	0.16	0.56	1.01	1.02	0.39	0.81		0.89	0.57	
Control Delay	108.3	75.9	49.1	52.5	126.3	96.4	31.7	45.4		94.8	31.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	108.3	75.9	49.1	52.5	126.3	96.4	31.7	45.4		94.8	31.1	
LOS	F	E	D	D	F	F	C	D		F	C	
Approach Delay		87.8			98.7			44.6			43.6	
Approach LOS		F			F			D			D	
Queue Length 50th (ft)	292	276	66	143	~380	~396	55	688		191	418	
Queue Length 95th (ft)	#519	#423	117	212	#596	#691	93	785		#367	505	
Internal Link Dist (ft)		1280			1041			978			979	
Turn Bay Length (ft)	225		300	150		450						
Base Capacity (vph)	286	379	542	359	308	437	293	1622		277	1776	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	1.00	0.66	0.14	0.46	1.01	1.02	0.29	0.81		0.89	0.57	

Intersection Summary

Area Type: Other
Cycle Length: 180
Actuated Cycle Length: 180
Offset: 88 (49%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.02
Intersection Signal Delay: 62.5 Intersection LOS: E
Intersection Capacity Utilization 95.5% ICU Level of Service F
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: NC 86 (MLK Jr. Blvd) & Estes Drive Extension/Estes Drive

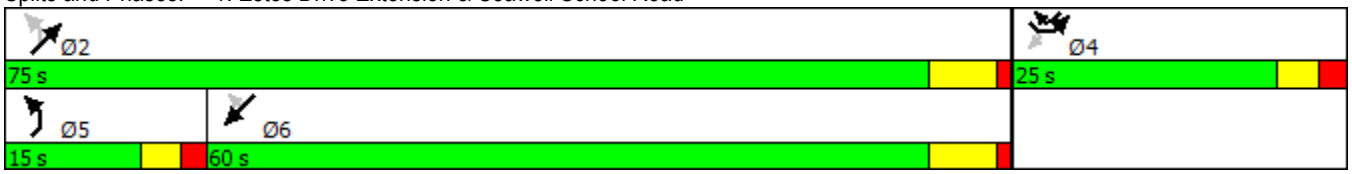


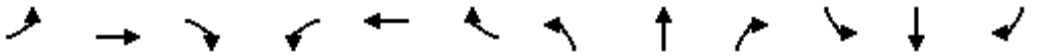
Lane Group	SEL	SER	NEL	NET	SWT	SWR
Lane Configurations						
Traffic Volume (vph)	192	187	280	643	265	88
Future Volume (vph)	192	187	280	643	265	88
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	-3%			2%	-3%	
Storage Length (ft)	400	0	250			75
Storage Lanes	1	1	1			1
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1779	1591	1735	1826	1819	1546
Flt Permitted	0.950		0.383			
Satd. Flow (perm)	1779	1591	699	1826	1819	1546
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	35			35	35	
Link Distance (ft)	862			645	825	
Travel Time (s)	16.8			12.6	16.1	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	3%	3%	3%	3%	6%	6%
Adj. Flow (vph)	211	205	308	707	291	97
Shared Lane Traffic (%)						
Lane Group Flow (vph)	211	205	308	707	291	97
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	0.98	0.98	1.01	1.01	0.98	0.98
Turning Speed (mph)	15	9	15			9
Turn Type	Prot	Perm	pm+pt	NA	NA	pm+ov
Protected Phases	4		5	2	6	4
Permitted Phases		4	2			6
Detector Phase	4	4	5	2	6	4
Switch Phase						
Minimum Initial (s)	7.0	7.0	7.0	12.0	12.0	7.0
Minimum Split (s)	14.0	14.0	14.0	19.0	19.0	14.0
Total Split (s)	25.0	25.0	15.0	75.0	60.0	25.0
Total Split (%)	25.0%	25.0%	15.0%	75.0%	60.0%	25.0%
Yellow Time (s)	3.1	3.1	3.0	5.0	5.0	3.1
All-Red Time (s)	2.3	2.3	1.9	1.2	1.2	2.3
Lost Time Adjust (s)	-0.4	-0.4	0.1	-1.2	-1.2	-0.4
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None	None	None	Min	Min	None
Act Effct Green (s)	12.9	12.9	32.7	32.7	17.6	35.6

Lane Group	SEL	SER	NEL	NET	SWT	SWR
Actuated g/C Ratio	0.23	0.23	0.58	0.58	0.31	0.64
v/c Ratio	0.51	0.56	0.52	0.66	0.51	0.10
Control Delay	24.6	26.4	9.8	12.1	19.6	3.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.6	26.4	9.8	12.1	19.6	3.8
LOS	C	C	A	B	B	A
Approach Delay	25.5			11.4	15.6	
Approach LOS	C			B	B	
Queue Length 50th (ft)	58	57	42	131	75	10
Queue Length 95th (ft)	138	138	104	305	157	21
Internal Link Dist (ft)	782			565	745	
Turn Bay Length (ft)	400		250			75
Base Capacity (vph)	654	585	599	1809	1703	1196
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.32	0.35	0.51	0.39	0.17	0.08

Intersection Summary	
Area Type:	Other
Cycle Length: 100	
Actuated Cycle Length: 55.9	
Natural Cycle: 50	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.66	
Intersection Signal Delay: 15.5	Intersection LOS: B
Intersection Capacity Utilization 52.8%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 1: Estes Drive Extension & Seawell School Road



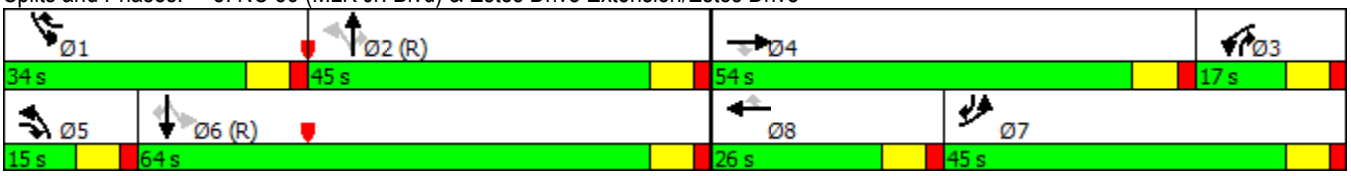


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	316	369	85	148	148	254	38	418	117	330	1021	197
Future Volume (vph)	316	369	85	148	148	254	38	418	117	330	1021	197
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			1%			1%			-2%	
Storage Length (ft)	225		225	300		250	0		225	0		150
Storage Lanes	1		1	2		1	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00					0.99			0.96	0.99		
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	3287	1783	1516	1678	3357	1502	1770	3540	1584
Flt Permitted	0.950			0.950			0.162			0.365		
Satd. Flow (perm)	1768	1863	1583	3287	1783	1496	286	3357	1444	675	3540	1584
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		1360			1121			1058			1059	
Travel Time (s)		26.5			21.8			20.6			20.6	
Confl. Peds. (#/hr)	1					1			7	7		
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	2%	2%	2%	6%	6%	6%	7%	7%	7%	3%	3%	3%
Adj. Flow (vph)	340	397	91	159	159	273	41	449	126	355	1098	212
Shared Lane Traffic (%)												
Lane Group Flow (vph)	340	397	91	159	159	273	41	449	126	355	1098	212
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.01	1.01	1.01	1.01	1.01	1.01	0.99	0.99	0.99
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA	pm+ov	Prot	NA	pm+ov	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4	5	3	8	1	5	2	3	1	6	7
Permitted Phases			4			8	2		2	6		6
Detector Phase	7	4	5	3	8	1	5	2	3	1	6	7
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	12.0	7.0	7.0	12.0	7.0
Minimum Split (s)	14.0	14.0	15.0	15.0	14.0	15.0	15.0	35.0	15.0	15.0	19.0	14.0
Total Split (s)	45.0	54.0	15.0	17.0	26.0	34.0	15.0	45.0	17.0	34.0	64.0	45.0
Total Split (%)	30.0%	36.0%	10.0%	11.3%	17.3%	22.7%	10.0%	30.0%	11.3%	22.7%	42.7%	30.0%
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lag	Lead	Lead	Lag	Lead	Lead	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Recall Mode	None	None	None	None	None	None	None	C-Max	None	None	C-Max	None
Act Effct Green (s)	34.8	39.4	48.8	14.3	18.9	43.1	61.6	52.1	66.4	81.3	66.8	101.6
Actuated g/C Ratio	0.23	0.26	0.33	0.10	0.13	0.29	0.41	0.35	0.44	0.54	0.45	0.68
v/c Ratio	0.83	0.81	0.18	0.51	0.71	0.63	0.20	0.39	0.20	0.65	0.70	0.20
Control Delay	71.7	64.9	22.3	70.4	80.1	30.5	23.2	40.8	15.7	27.5	37.8	5.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	71.7	64.9	22.3	70.4	80.1	30.5	23.2	40.8	15.7	27.5	37.8	5.4
LOS	E	E	C	E	F	C	C	D	B	C	D	A
Approach Delay		63.0			54.6			34.5			31.5	
Approach LOS		E			D			C			C	
Queue Length 50th (ft)	316	366	46	75	150	121	19	181	42	202	463	42
Queue Length 95th (ft)	423	453	73	119	231	147	43	254	82	298	584	63
Internal Link Dist (ft)		1280			1041			978			979	
Turn Bay Length (ft)	225		225	300		250			225			150
Base Capacity (vph)	472	608	521	318	249	482	211	1166	647	577	1576	1128
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.72	0.65	0.17	0.50	0.64	0.57	0.19	0.39	0.19	0.62	0.70	0.19

Intersection Summary			
Area Type:	Other		
Cycle Length: 150			
Actuated Cycle Length: 150			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.83			
Intersection Signal Delay: 42.7		Intersection LOS: D	
Intersection Capacity Utilization 83.6%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 5: NC 86 (MLK Jr. Blvd) & Estes Drive Extension/Estes Drive

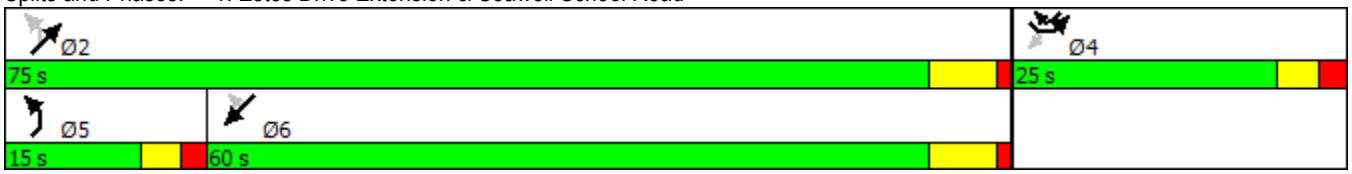


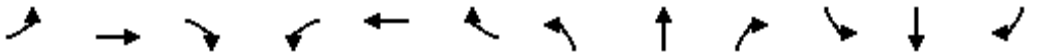
Lane Group	SEL	SER	NEL	NET	SWT	SWR
Lane Configurations						
Traffic Volume (vph)	65	79	73	352	357	59
Future Volume (vph)	65	79	73	352	357	59
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	-3%			2%	-3%	
Storage Length (ft)	400	0	250			75
Storage Lanes	1	1	1			1
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1779	1591	1735	1826	1872	1591
Flt Permitted	0.950		0.390			
Satd. Flow (perm)	1779	1591	712	1826	1872	1591
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	35			35	35	
Link Distance (ft)	862			645	825	
Travel Time (s)	16.8			12.6	16.1	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Adj. Flow (vph)	68	82	76	367	372	61
Shared Lane Traffic (%)						
Lane Group Flow (vph)	68	82	76	367	372	61
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	0.98	0.98	1.01	1.01	0.98	0.98
Turning Speed (mph)	15	9	15			9
Turn Type	Prot	Perm	pm+pt	NA	NA	pm+ov
Protected Phases	4		5	2	6	4
Permitted Phases		4	2			6
Detector Phase	4	4	5	2	6	4
Switch Phase						
Minimum Initial (s)	7.0	7.0	7.0	12.0	12.0	7.0
Minimum Split (s)	14.0	14.0	14.0	19.0	19.0	14.0
Total Split (s)	25.0	25.0	15.0	75.0	60.0	25.0
Total Split (%)	25.0%	25.0%	15.0%	75.0%	60.0%	25.0%
Yellow Time (s)	3.1	3.1	3.0	5.0	5.0	3.1
All-Red Time (s)	2.3	2.3	1.9	1.2	1.2	2.3
Lost Time Adjust (s)	-0.4	-0.4	0.1	-1.2	-1.2	-0.4
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None	None	None	Min	Min	None
Act Effct Green (s)	8.9	8.9	27.6	28.9	22.2	34.6

Lane Group	SEL	SER	NEL	NET	SWT	SWR
Actuated g/C Ratio	0.20	0.20	0.63	0.66	0.51	0.79
v/c Ratio	0.19	0.25	0.12	0.31	0.39	0.05
Control Delay	19.3	20.3	4.5	5.4	12.9	3.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.3	20.3	4.5	5.4	12.9	3.2
LOS	B	C	A	A	B	A
Approach Delay	19.9			5.3	11.6	
Approach LOS	B			A	B	
Queue Length 50th (ft)	16	19	7	39	78	5
Queue Length 95th (ft)	50	58	20	85	164	15
Internal Link Dist (ft)	782			565	745	
Turn Bay Length (ft)	400		250			75
Base Capacity (vph)	861	770	695	1826	1845	1451
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.11	0.11	0.20	0.20	0.04

Intersection Summary	
Area Type:	Other
Cycle Length: 100	
Actuated Cycle Length: 43.9	
Natural Cycle: 50	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.39	
Intersection Signal Delay: 10.1	Intersection LOS: B
Intersection Capacity Utilization 43.0%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 1: Estes Drive Extension & Seawell School Road





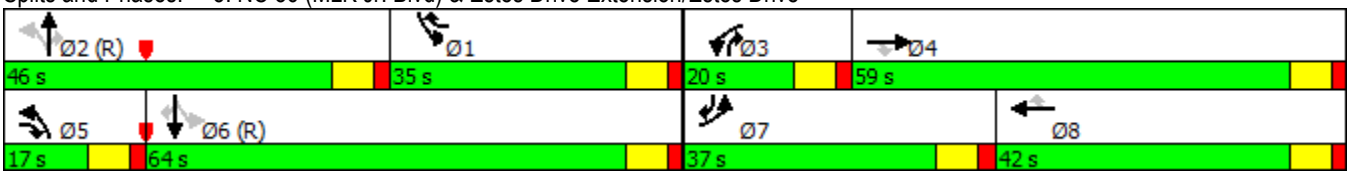
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	171	195	35	153	216	274	36	467	167	232	486	156
Future Volume (vph)	171	195	35	153	216	274	36	467	167	232	486	156
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			1%			1%			-2%	
Storage Length (ft)	225		225	300		250	0		225	0		150
Storage Lanes	1		1	2		1	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor									0.97	0.99		
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1736	1827	1553	3350	1818	1545	1694	3389	1516	1753	3506	1568
Flt Permitted	0.950			0.950			0.335			0.475		
Satd. Flow (perm)	1736	1827	1553	3350	1818	1545	597	3389	1469	871	3506	1568
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		1360			1121			1058			1059	
Travel Time (s)		26.5			21.8			20.6			20.6	
Confl. Peds. (#/hr)									4	4		
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	6%	6%	6%	4%	4%	4%
Adj. Flow (vph)	178	203	36	159	225	285	38	486	174	242	506	163
Shared Lane Traffic (%)												
Lane Group Flow (vph)	178	203	36	159	225	285	38	486	174	242	506	163
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.01	1.01	1.01	1.01	1.01	1.01	0.99	0.99	0.99
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA	pm+ov	Prot	NA	pm+ov	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4	5	3	8	1	5	2	3	1	6	7
Permitted Phases			4			8	2		2	6		6
Detector Phase	7	4	5	3	8	1	5	2	3	1	6	7
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	12.0	7.0	7.0	12.0	7.0
Minimum Split (s)	14.0	14.0	15.0	15.0	14.0	15.0	15.0	35.0	15.0	15.0	19.0	14.0
Total Split (s)	37.0	59.0	17.0	20.0	42.0	35.0	17.0	46.0	20.0	35.0	64.0	37.0
Total Split (%)	23.1%	36.9%	10.6%	12.5%	26.3%	21.9%	10.6%	28.8%	12.5%	21.9%	40.0%	23.1%
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lag	Lead	Lead	Lead	Lag	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Recall Mode	None	None	None	None	None	None	None	C-Max	None	None	C-Max	None
Act Effct Green (s)	23.6	36.7	52.0	13.9	27.0	57.0	59.3	59.3	73.3	81.8	81.8	110.5
Actuated g/C Ratio	0.15	0.23	0.32	0.09	0.17	0.36	0.37	0.37	0.46	0.51	0.51	0.69
v/c Ratio	0.70	0.48	0.07	0.55	0.73	0.52	0.13	0.39	0.26	0.40	0.28	0.15
Control Delay	78.5	55.7	33.3	77.1	76.7	25.8	38.5	40.2	15.9	33.6	25.7	10.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	78.5	55.7	33.3	77.1	76.7	25.8	38.5	40.2	15.9	33.6	25.7	10.7
LOS	E	E	C	E	E	C	D	D	B	C	C	B
Approach Delay		63.5			55.1			34.0			25.1	
Approach LOS		E			E			C			C	
Queue Length 50th (ft)	179	187	26	82	226	154	26	196	54	146	161	58
Queue Length 95th (ft)	254	240	47	123	307	166	61	287	113	258	251	110
Internal Link Dist (ft)		1280			1041			978			979	
Turn Bay Length (ft)	225		225	300		250			225			150
Base Capacity (vph)	347	616	522	314	420	550	304	1256	686	610	1792	1164
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.51	0.33	0.07	0.51	0.54	0.52	0.13	0.39	0.25	0.40	0.28	0.14

Intersection Summary

Area Type: Other
Cycle Length: 160
Actuated Cycle Length: 160
Offset: 104 (65%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.73
Intersection Signal Delay: 40.8 Intersection LOS: D
Intersection Capacity Utilization 73.7% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 5: NC 86 (MLK Jr. Blvd) & Estes Drive Extension/Estes Drive

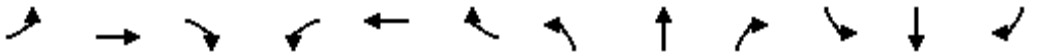


Lane Group	SEL	SER	NEL	NET	SWT	SWR
Lane Configurations						
Traffic Volume (vph)	108	181	163	409	645	155
Future Volume (vph)	108	181	163	409	645	155
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	-3%			2%	-3%	
Storage Length (ft)	400	0	250			75
Storage Lanes	1	1	1			1
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1796	1607	1752	1844	1891	1607
Flt Permitted	0.950		0.147			
Satd. Flow (perm)	1796	1607	271	1844	1891	1607
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	35			35	35	
Link Distance (ft)	862			645	825	
Travel Time (s)	16.8			12.6	16.1	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	115	193	173	435	686	165
Shared Lane Traffic (%)						
Lane Group Flow (vph)	115	193	173	435	686	165
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	0.98	0.98	1.01	1.01	0.98	0.98
Turning Speed (mph)	15	9	15			9
Turn Type	Prot	Perm	pm+pt	NA	NA	pm+ov
Protected Phases	4		5	2	6	4
Permitted Phases		4	2			6
Detector Phase	4	4	5	2	6	4
Switch Phase						
Minimum Initial (s)	7.0	7.0	7.0	12.0	12.0	7.0
Minimum Split (s)	14.0	14.0	14.0	19.0	19.0	14.0
Total Split (s)	25.0	25.0	15.0	75.0	60.0	25.0
Total Split (%)	25.0%	25.0%	15.0%	75.0%	60.0%	25.0%
Yellow Time (s)	3.1	3.1	3.0	5.0	5.0	3.1
All-Red Time (s)	2.3	2.3	1.9	1.2	1.2	2.3
Lost Time Adjust (s)	-0.4	-0.4	0.1	-1.2	-1.2	-0.4
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None	None	None	Min	Min	None
Act Effct Green (s)	14.3	14.3	48.7	48.7	33.8	53.3
Actuated g/C Ratio	0.19	0.19	0.66	0.66	0.46	0.73

Lane Group	SEL	SER	NEL	NET	SWT	SWR
v/c Ratio	0.33	0.62	0.46	0.36	0.79	0.14
Control Delay	31.7	39.5	9.2	6.5	24.3	3.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.7	39.5	9.2	6.5	24.3	3.0
LOS	C	D	A	A	C	A
Approach Delay	36.6			7.3	20.2	
Approach LOS	D			A	C	
Queue Length 50th (ft)	44	79	24	73	249	18
Queue Length 95th (ft)	112	183	56	141	421	31
Internal Link Dist (ft)	782			565	745	
Turn Bay Length (ft)	400		250			75
Base Capacity (vph)	515	461	391	1664	1454	1314
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.22	0.42	0.44	0.26	0.47	0.13

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 73.5			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.79			
Intersection Signal Delay: 18.6		Intersection LOS: B	
Intersection Capacity Utilization 61.5%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 1: Estes Drive Extension & Seawell School Road



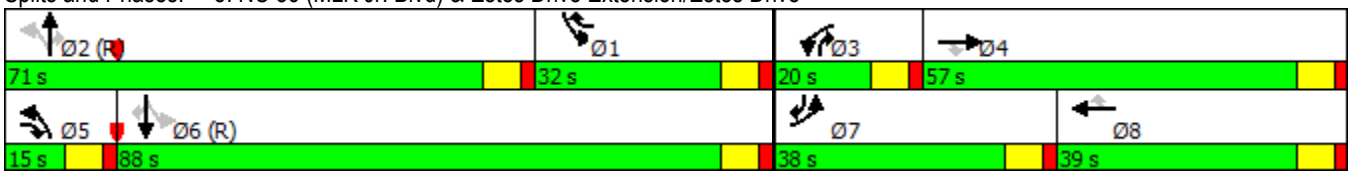
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	284	249	79	173	309	444	87	1132	180	247	700	309
Future Volume (vph)	284	249	79	173	309	444	87	1132	180	247	700	309
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			1%			1%			-2%	
Storage Length (ft)	225		225	300		250	0		225	0		150
Storage Lanes	1		1	2		1	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor									0.96			
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	3416	1853	1575	1761	3522	1575	1787	3575	1599
Flt Permitted	0.950			0.950			0.198			0.071		
Satd. Flow (perm)	1770	1863	1583	3416	1853	1575	367	3522	1519	134	3575	1599
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		1360			1121			1058			1059	
Travel Time (s)		26.5			21.8			20.6			20.6	
Confl. Peds. (#/hr)									5	5		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	299	262	83	182	325	467	92	1192	189	260	737	325
Shared Lane Traffic (%)												
Lane Group Flow (vph)	299	262	83	182	325	467	92	1192	189	260	737	325
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.01	1.01	1.01	1.01	1.01	1.01	0.99	0.99	0.99
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA	pm+ov	Prot	NA	pm+ov	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4	5	3	8	1	5	2	3	1	6	7
Permitted Phases			4			8	2		2	6		6
Detector Phase	7	4	5	3	8	1	5	2	3	1	6	7
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	12.0	7.0	7.0	12.0	7.0
Minimum Split (s)	14.0	14.0	15.0	15.0	14.0	15.0	15.0	35.0	15.0	15.0	19.0	14.0
Total Split (s)	38.0	57.0	15.0	20.0	39.0	32.0	15.0	71.0	20.0	32.0	88.0	38.0
Total Split (%)	21.1%	31.7%	8.3%	11.1%	21.7%	17.8%	8.3%	39.4%	11.1%	17.8%	48.9%	21.1%
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lag	Lead	Lead	Lead	Lag	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	None	None	C-Max	None

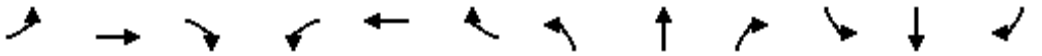
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effct Green (s)	32.6	51.6	66.6	14.6	33.6	60.6	66.8	66.8	81.4	83.9	83.9	121.4
Actuated g/C Ratio	0.18	0.29	0.37	0.08	0.19	0.34	0.37	0.37	0.45	0.47	0.47	0.67
v/c Ratio	0.93	0.49	0.14	0.66	0.94	0.88	0.43	0.91	0.27	0.84	0.44	0.30
Control Delay	107.6	56.9	38.4	92.2	106.1	54.3	44.5	65.1	17.6	90.5	33.6	12.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	107.6	56.9	38.4	92.2	106.1	54.3	44.5	65.1	17.6	90.5	33.6	12.9
LOS	F	E	D	F	F	D	D	E	B	F	C	B
Approach Delay		78.1			78.7			57.7			39.7	
Approach LOS		E			E			E			D	
Queue Length 50th (ft)	352	258	65	109	383	323	73	711	84	250	308	150
Queue Length 95th (ft)	#540	356	110	155	#580	#478	120	#824	122	#404	367	204
Internal Link Dist (ft)		1280			1041			978			979	
Turn Bay Length (ft)	225		225	300		250			225			150
Base Capacity (vph)	324	538	585	284	350	530	214	1307	695	310	1665	1082
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.92	0.49	0.14	0.64	0.93	0.88	0.43	0.91	0.27	0.84	0.44	0.30

Intersection Summary

Area Type: Other
Cycle Length: 180
Actuated Cycle Length: 180
Offset: 88 (49%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.94
Intersection Signal Delay: 59.9 Intersection LOS: E
Intersection Capacity Utilization 93.6% ICU Level of Service F
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: NC 86 (MLK Jr. Blvd) & Estes Drive Extension/Estes Drive



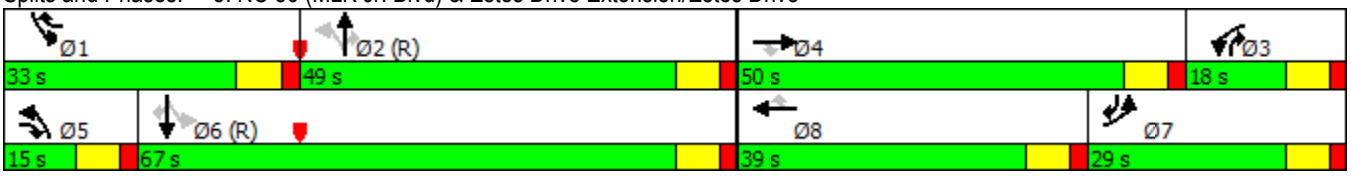


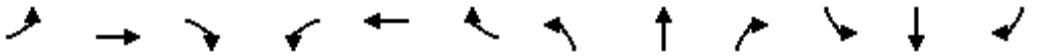
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	320	371	90	148	167	254	76	418	117	330	1021	229
Future Volume (vph)	320	371	90	148	167	254	76	418	117	330	1021	229
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			1%			1%			-2%	
Storage Length (ft)	300		225	300		250	0		225	0		150
Storage Lanes	2		1	2		1	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	1.00	1.00	0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00					0.99			0.96	0.99		
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	1863	1583	3287	1783	1516	1678	3357	1502	1770	3540	1584
Flt Permitted	0.950			0.950			0.164			0.374		
Satd. Flow (perm)	3425	1863	1583	3287	1783	1497	290	3357	1444	692	3540	1584
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		1360			1121			1058			1059	
Travel Time (s)		26.5			21.8			20.6			20.6	
Confl. Peds. (#/hr)	1					1			7	7		
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	2%	2%	2%	6%	6%	6%	7%	7%	7%	3%	3%	3%
Adj. Flow (vph)	344	399	97	159	180	273	82	449	126	355	1098	246
Shared Lane Traffic (%)												
Lane Group Flow (vph)	344	399	97	159	180	273	82	449	126	355	1098	246
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes										
Headway Factor	1.00	1.00	1.00	1.01	1.01	1.01	1.01	1.01	1.01	0.99	0.99	0.99
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA	pm+ov	Prot	NA	pm+ov	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4	5	3	8	1	5	2	3	1	6	7
Permitted Phases			4			8	2		2	6		6
Detector Phase	7	4	5	3	8	1	5	2	3	1	6	7
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	12.0	7.0	7.0	12.0	7.0
Minimum Split (s)	14.0	14.0	15.0	15.0	14.0	15.0	15.0	35.0	15.0	15.0	19.0	14.0
Total Split (s)	29.0	50.0	15.0	18.0	39.0	33.0	15.0	49.0	18.0	33.0	67.0	29.0
Total Split (%)	19.3%	33.3%	10.0%	12.0%	26.0%	22.0%	10.0%	32.7%	12.0%	22.0%	44.7%	19.3%
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lag	Lead	Lead	Lag	Lead	Lead	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Recall Mode	None	None	None	None	None	None	None	C-Max	None	None	C-Max	None
Act Effct Green (s)	29.4	38.5	48.5	13.3	22.4	45.9	64.6	54.6	67.9	83.2	68.2	97.6
Actuated g/C Ratio	0.20	0.26	0.32	0.09	0.15	0.31	0.43	0.36	0.45	0.55	0.45	0.65
v/c Ratio	0.51	0.83	0.19	0.55	0.68	0.59	0.38	0.37	0.19	0.64	0.68	0.24
Control Delay	56.6	68.0	23.3	72.8	72.6	28.1	24.7	38.3	14.9	25.7	36.2	6.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.6	68.0	23.3	72.8	72.6	28.1	24.7	38.3	14.9	25.7	36.2	6.9
LOS	E	E	C	E	E	C	C	D	B	C	D	A
Approach Delay		58.2			52.8			32.1			29.8	
Approach LOS		E			D			C			C	
Queue Length 50th (ft)	153	369	50	77	169	128	38	175	42	194	459	53
Queue Length 95th (ft)	210	475	80	118	241	160	71	244	76	286	564	99
Internal Link Dist (ft)		1280			1041			978			979	
Turn Bay Length (ft)	300		225	300		250			225			150
Base Capacity (vph)	673	558	514	300	404	506	219	1222	663	584	1609	1031
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.51	0.72	0.19	0.53	0.45	0.54	0.37	0.37	0.19	0.61	0.68	0.24

Intersection Summary			
Area Type:	Other		
Cycle Length: 150			
Actuated Cycle Length: 150			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.83			
Intersection Signal Delay: 40.1		Intersection LOS: D	
Intersection Capacity Utilization 83.6%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 5: NC 86 (MLK Jr. Blvd) & Estes Drive Extension/Estes Drive



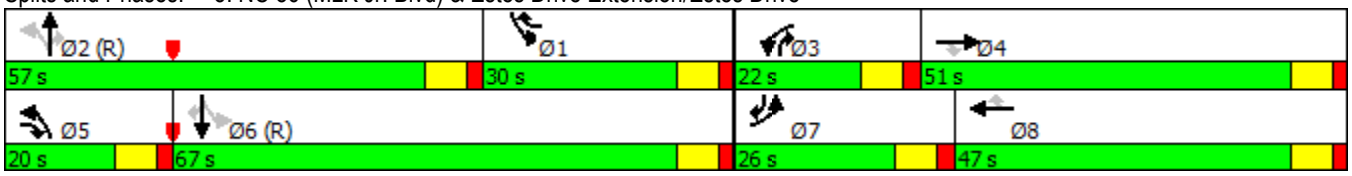


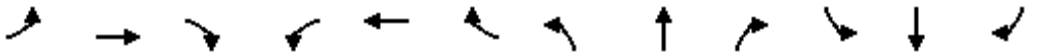
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	192	208	60	153	229	274	62	467	167	232	486	178
Future Volume (vph)	192	208	60	153	229	274	62	467	167	232	486	178
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			1%			1%			-2%	
Storage Length (ft)	300		225	300		250	0		225	0		150
Storage Lanes	2		1	2		1	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	1.00	1.00	0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor									0.97	0.99		
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3367	1827	1553	3350	1818	1545	1694	3389	1516	1753	3506	1568
Flt Permitted	0.950			0.950			0.360			0.475		
Satd. Flow (perm)	3367	1827	1553	3350	1818	1545	642	3389	1469	871	3506	1568
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		1360			1121			1058			1059	
Travel Time (s)		26.5			21.8			20.6			20.6	
Confl. Peds. (#/hr)									4	4		
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	6%	6%	6%	4%	4%	4%
Adj. Flow (vph)	200	217	63	159	239	285	65	486	174	242	506	185
Shared Lane Traffic (%)												
Lane Group Flow (vph)	200	217	63	159	239	285	65	486	174	242	506	185
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes										
Headway Factor	1.00	1.00	1.00	1.01	1.01	1.01	1.01	1.01	1.01	0.99	0.99	0.99
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA	pm+ov	Prot	NA	pm+ov	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4	5	3	8	1	5	2	3	1	6	7
Permitted Phases			4			8	2		2	6		6
Detector Phase	7	4	5	3	8	1	5	2	3	1	6	7
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	12.0	7.0	7.0	12.0	7.0
Minimum Split (s)	14.0	14.0	15.0	15.0	14.0	15.0	15.0	35.0	15.0	15.0	19.0	14.0
Total Split (s)	26.0	51.0	20.0	22.0	47.0	30.0	20.0	57.0	22.0	30.0	67.0	26.0
Total Split (%)	16.3%	31.9%	12.5%	13.8%	29.4%	18.8%	12.5%	35.6%	13.8%	18.8%	41.9%	16.3%
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lag	Lead	Lead	Lead	Lag	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Recall Mode	None	None	None	None	None	None	None	C-Max	None	None	C-Max	None
Act Effct Green (s)	16.8	30.5	47.0	14.6	28.4	53.4	69.8	69.8	84.5	83.4	83.4	105.2
Actuated g/C Ratio	0.10	0.19	0.29	0.09	0.18	0.33	0.44	0.44	0.53	0.52	0.52	0.66
v/c Ratio	0.57	0.62	0.14	0.52	0.74	0.55	0.18	0.33	0.22	0.41	0.28	0.18
Control Delay	74.2	66.6	39.6	75.3	75.9	30.8	30.7	31.9	11.8	31.4	23.6	12.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	74.2	66.6	39.6	75.3	75.9	30.8	30.7	31.9	11.8	31.4	23.6	12.4
LOS	E	E	D	E	E	C	C	C	B	C	C	B
Approach Delay		66.2			57.0			27.0			23.4	
Approach LOS		E			E			C			C	
Queue Length 50th (ft)	104	212	49	82	240	179	40	174	47	137	151	71
Queue Length 95th (ft)	144	282	80	121	322	212	83	252	92	240	234	132
Internal Link Dist (ft)		1280			1041			978			979	
Turn Bay Length (ft)	300		225	300		250			225			150
Base Capacity (vph)	441	525	490	355	477	515	379	1479	801	591	1827	1072
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.45	0.41	0.13	0.45	0.50	0.55	0.17	0.33	0.22	0.41	0.28	0.17

Intersection Summary			
Area Type:	Other		
Cycle Length: 160			
Actuated Cycle Length: 160			
Offset: 104 (65%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.74			
Intersection Signal Delay: 39.7		Intersection LOS: D	
Intersection Capacity Utilization 70.7%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 5: NC 86 (MLK Jr. Blvd) & Estes Drive Extension/Estes Drive





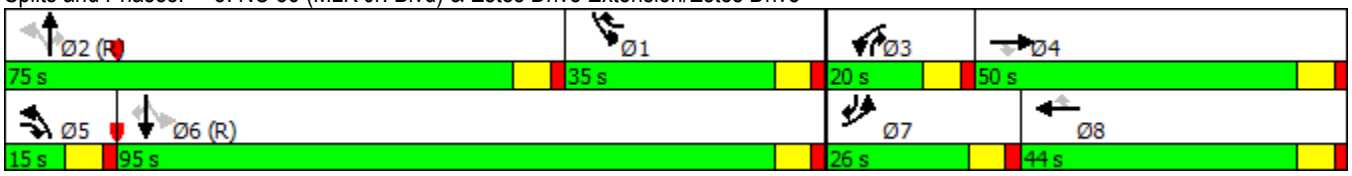
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	322	272	124	173	315	444	98	1132	180	247	700	319
Future Volume (vph)	322	272	124	173	315	444	98	1132	180	247	700	319
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			1%			1%			-2%	
Storage Length (ft)	225		225	300		250	0		225	0		150
Storage Lanes	2		1	2		1	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	1.00	1.00	0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor									0.96			
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	1863	1583	3416	1853	1575	1761	3522	1575	1787	3575	1599
Flt Permitted	0.950			0.950			0.227			0.095		
Satd. Flow (perm)	3433	1863	1583	3416	1853	1575	421	3522	1519	179	3575	1599
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		1360			1121			1058			1059	
Travel Time (s)		26.5			21.8			20.6			20.6	
Confl. Peds. (#/hr)									5	5		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	339	286	131	182	332	467	103	1192	189	260	737	336
Shared Lane Traffic (%)												
Lane Group Flow (vph)	339	286	131	182	332	467	103	1192	189	260	737	336
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes										
Headway Factor	1.00	1.00	1.00	1.01	1.01	1.01	1.01	1.01	1.01	0.99	0.99	0.99
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA	pm+ov	Prot	NA	pm+ov	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4	5	3	8	1	5	2	3	1	6	7
Permitted Phases			4			8	2		2	6		6
Detector Phase	7	4	5	3	8	1	5	2	3	1	6	7
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	12.0	7.0	7.0	12.0	7.0
Minimum Split (s)	14.0	14.0	15.0	15.0	14.0	15.0	15.0	35.0	15.0	15.0	19.0	14.0
Total Split (s)	26.0	50.0	15.0	20.0	44.0	35.0	15.0	75.0	20.0	35.0	95.0	26.0
Total Split (%)	14.4%	27.8%	8.3%	11.1%	24.4%	19.4%	8.3%	41.7%	11.1%	19.4%	52.8%	14.4%
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lag	Lead	Lead	Lead	Lag	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	None	None	C-Max	None

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effct Green (s)	20.8	42.9	58.4	14.6	36.7	66.7	72.5	72.5	87.1	92.0	92.0	117.8
Actuated g/C Ratio	0.12	0.24	0.32	0.08	0.20	0.37	0.40	0.40	0.48	0.51	0.51	0.65
v/c Ratio	0.85	0.65	0.26	0.66	0.88	0.80	0.42	0.84	0.26	0.72	0.40	0.32
Control Delay	98.0	68.8	45.9	92.2	93.3	45.5	40.4	55.5	15.2	73.5	28.3	14.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	98.0	68.8	45.9	92.2	93.3	45.5	40.4	55.5	15.2	73.5	28.3	14.9
LOS	F	E	D	F	F	D	D	E	B	E	C	B
Approach Delay		77.9			70.3			49.4			33.7	
Approach LOS		E			E			D			C	
Queue Length 50th (ft)	206	303	113	109	379	341	79	685	73	217	285	171
Queue Length 95th (ft)	#285	412	175	155	#534	451	127	784	107	329	338	232
Internal Link Dist (ft)		1280			1041			978			979	
Turn Bay Length (ft)	225		225	300		250			225			150
Base Capacity (vph)	400	465	513	284	401	583	248	1418	742	359	1827	1048
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.85	0.62	0.26	0.64	0.83	0.80	0.42	0.84	0.25	0.72	0.40	0.32

Intersection Summary

Area Type: Other
Cycle Length: 180
Actuated Cycle Length: 180
Offset: 88 (49%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.88
Intersection Signal Delay: 54.0 Intersection LOS: D
Intersection Capacity Utilization 87.4% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: NC 86 (MLK Jr. Blvd) & Estes Drive Extension/Estes Drive

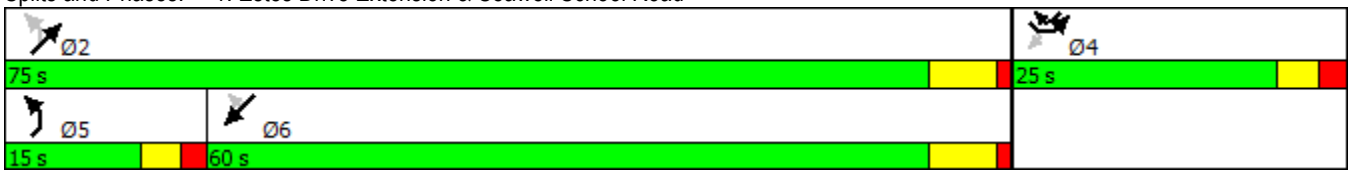


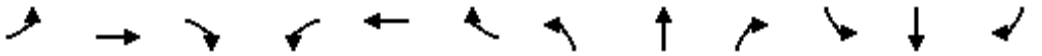
Lane Group	SEL	SER	NEL	NET	SWT	SWR
Lane Configurations						
Traffic Volume (vph)	198	187	280	649	266	89
Future Volume (vph)	198	187	280	649	266	89
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	-3%			2%	-3%	
Storage Length (ft)	400	0	250			75
Storage Lanes	1	1	1			1
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1779	1591	1735	1826	1819	1546
Flt Permitted	0.950		0.383			
Satd. Flow (perm)	1779	1591	699	1826	1819	1546
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	35			35	35	
Link Distance (ft)	862			645	825	
Travel Time (s)	16.8			12.6	16.1	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	3%	3%	3%	3%	6%	6%
Adj. Flow (vph)	218	205	308	713	292	98
Shared Lane Traffic (%)						
Lane Group Flow (vph)	218	205	308	713	292	98
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	0.98	0.98	1.01	1.01	0.98	0.98
Turning Speed (mph)	15	9	15			9
Turn Type	Prot	Perm	pm+pt	NA	NA	pm+ov
Protected Phases	4		5	2	6	4
Permitted Phases		4	2			6
Detector Phase	4	4	5	2	6	4
Switch Phase						
Minimum Initial (s)	7.0	7.0	7.0	12.0	12.0	7.0
Minimum Split (s)	14.0	14.0	14.0	19.0	19.0	14.0
Total Split (s)	25.0	25.0	15.0	75.0	60.0	25.0
Total Split (%)	25.0%	25.0%	15.0%	75.0%	60.0%	25.0%
Yellow Time (s)	3.1	3.1	3.0	5.0	5.0	3.1
All-Red Time (s)	2.3	2.3	1.9	1.2	1.2	2.3
Lost Time Adjust (s)	-0.4	-0.4	0.1	-1.2	-1.2	-0.4
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None	None	None	Min	Min	None
Act Effct Green (s)	12.9	12.9	32.8	32.8	17.7	35.7

Lane Group	SEL	SER	NEL	NET	SWT	SWR
Actuated g/C Ratio	0.23	0.23	0.59	0.59	0.32	0.64
v/c Ratio	0.53	0.56	0.52	0.67	0.51	0.10
Control Delay	25.1	26.6	9.7	12.2	19.5	3.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.1	26.6	9.7	12.2	19.5	3.8
LOS	C	C	A	B	B	A
Approach Delay	25.8			11.4	15.5	
Approach LOS	C			B	B	
Queue Length 50th (ft)	60	57	42	132	76	10
Queue Length 95th (ft)	144	140	104	308	157	21
Internal Link Dist (ft)	782			565	745	
Turn Bay Length (ft)	400		250			75
Base Capacity (vph)	653	584	599	1808	1699	1198
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.33	0.35	0.51	0.39	0.17	0.08

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 56			
Natural Cycle: 50			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.67			
Intersection Signal Delay: 15.6		Intersection LOS: B	
Intersection Capacity Utilization 53.5%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 1: Estes Drive Extension & Seawell School Road





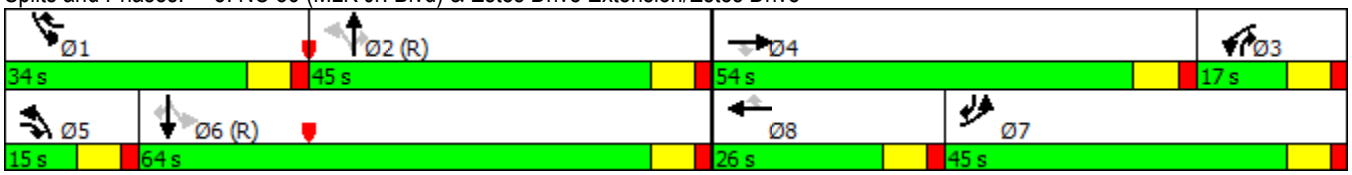
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	320	371	90	148	167	254	76	418	117	330	1021	229
Future Volume (vph)	320	371	90	148	167	254	76	418	117	330	1021	229
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			1%			1%			-2%	
Storage Length (ft)	225		225	300		250	0		225	0		150
Storage Lanes	1		1	2		1	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00					0.99			0.96	0.99		
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	3287	1783	1516	1678	3357	1502	1770	3540	1584
Flt Permitted	0.950			0.950			0.154			0.361		
Satd. Flow (perm)	1768	1863	1583	3287	1783	1496	272	3357	1444	668	3540	1584
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		1360			1121			1058			1059	
Travel Time (s)		26.5			21.8			20.6			20.6	
Confl. Peds. (#/hr)	1					1			7	7		
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	2%	2%	2%	6%	6%	6%	7%	7%	7%	3%	3%	3%
Adj. Flow (vph)	344	399	97	159	180	273	82	449	126	355	1098	246
Shared Lane Traffic (%)												
Lane Group Flow (vph)	344	399	97	159	180	273	82	449	126	355	1098	246
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.01	1.01	1.01	1.01	1.01	1.01	0.99	0.99	0.99
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA	pm+ov	Prot	NA	pm+ov	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4	5	3	8	1	5	2	3	1	6	7
Permitted Phases			4			8	2		2	6		6
Detector Phase	7	4	5	3	8	1	5	2	3	1	6	7
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	12.0	7.0	7.0	12.0	7.0
Minimum Split (s)	14.0	14.0	15.0	15.0	14.0	15.0	15.0	35.0	15.0	15.0	19.0	14.0
Total Split (s)	45.0	54.0	15.0	17.0	26.0	34.0	15.0	45.0	17.0	34.0	64.0	45.0
Total Split (%)	30.0%	36.0%	10.0%	11.3%	17.3%	22.7%	10.0%	30.0%	11.3%	22.7%	42.7%	30.0%
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lag	Lead	Lead	Lag	Lead	Lead	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Recall Mode	None	None	None	None	None	None	None	C-Max	None	None	C-Max	None
Act Effct Green (s)	35.1	39.5	49.6	15.2	19.7	44.0	61.0	51.0	66.2	80.2	65.2	100.3
Actuated g/C Ratio	0.23	0.26	0.33	0.10	0.13	0.29	0.41	0.34	0.44	0.53	0.43	0.67
v/c Ratio	0.83	0.81	0.19	0.48	0.77	0.62	0.40	0.39	0.20	0.66	0.71	0.23
Control Delay	71.7	64.8	21.9	68.9	84.4	29.6	27.4	41.5	15.8	28.2	39.2	5.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	71.7	64.8	21.9	68.9	84.4	29.6	27.4	41.5	15.8	28.2	39.2	5.8
LOS	E	E	C	E	F	C	C	D	B	C	D	A
Approach Delay		62.7			55.9			34.8			32.1	
Approach LOS		E			E			C			C	
Queue Length 50th (ft)	320	368	47	75	171	118	40	183	42	205	480	51
Queue Length 95th (ft)	428	456	77	119	#272	147	74	254	82	298	584	74
Internal Link Dist (ft)		1280			1041			978			979	
Turn Bay Length (ft)	225		225	300		250			225			150
Base Capacity (vph)	472	608	525	333	249	489	207	1140	643	570	1539	1111
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.73	0.66	0.18	0.48	0.72	0.56	0.40	0.39	0.20	0.62	0.71	0.22

Intersection Summary

Area Type: Other
Cycle Length: 150
Actuated Cycle Length: 150
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.83
Intersection Signal Delay: 43.1 Intersection LOS: D
Intersection Capacity Utilization 84.8% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: NC 86 (MLK Jr. Blvd) & Estes Drive Extension/Estes Drive

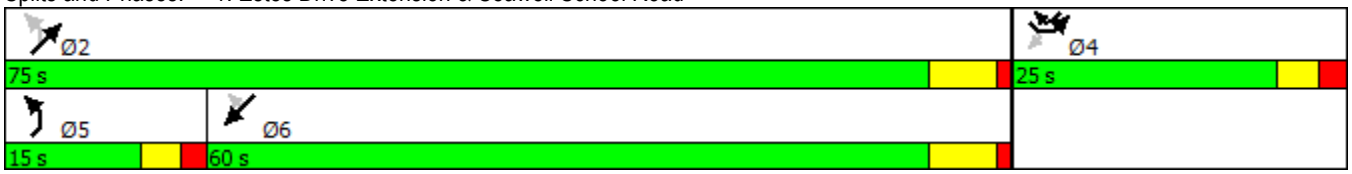


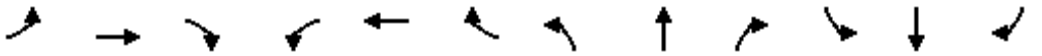
Lane Group	SEL	SER	NEL	NET	SWT	SWR
Lane Configurations						
Traffic Volume (vph)	69	79	73	356	361	63
Future Volume (vph)	69	79	73	356	361	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	-3%			2%	-3%	
Storage Length (ft)	400	0	250			75
Storage Lanes	1	1	1			1
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1779	1591	1735	1826	1872	1591
Flt Permitted	0.950		0.387			
Satd. Flow (perm)	1779	1591	707	1826	1872	1591
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	35			35	35	
Link Distance (ft)	862			645	825	
Travel Time (s)	16.8			12.6	16.1	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Adj. Flow (vph)	72	82	76	371	376	66
Shared Lane Traffic (%)						
Lane Group Flow (vph)	72	82	76	371	376	66
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	0.98	0.98	1.01	1.01	0.98	0.98
Turning Speed (mph)	15	9	15			9
Turn Type	Prot	Perm	pm+pt	NA	NA	pm+ov
Protected Phases	4		5	2	6	4
Permitted Phases		4	2			6
Detector Phase	4	4	5	2	6	4
Switch Phase						
Minimum Initial (s)	7.0	7.0	7.0	12.0	12.0	7.0
Minimum Split (s)	14.0	14.0	14.0	19.0	19.0	14.0
Total Split (s)	25.0	25.0	15.0	75.0	60.0	25.0
Total Split (%)	25.0%	25.0%	15.0%	75.0%	60.0%	25.0%
Yellow Time (s)	3.1	3.1	3.0	5.0	5.0	3.1
All-Red Time (s)	2.3	2.3	1.9	1.2	1.2	2.3
Lost Time Adjust (s)	-0.4	-0.4	0.1	-1.2	-1.2	-0.4
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None	None	None	Min	Min	None
Act Effct Green (s)	8.9	8.9	27.7	29.1	22.3	34.7

Lane Group	SEL	SER	NEL	NET	SWT	SWR
Actuated g/C Ratio	0.20	0.20	0.63	0.66	0.51	0.79
v/c Ratio	0.20	0.25	0.12	0.31	0.40	0.05
Control Delay	19.5	20.4	4.5	5.4	13.0	3.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.5	20.4	4.5	5.4	13.0	3.2
LOS	B	C	A	A	B	A
Approach Delay	20.0			5.3	11.5	
Approach LOS	B			A	B	
Queue Length 50th (ft)	17	19	7	40	80	5
Queue Length 95th (ft)	53	59	20	85	166	16
Internal Link Dist (ft)	782			565	745	
Turn Bay Length (ft)	400		250			75
Base Capacity (vph)	858	768	693	1826	1844	1450
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.11	0.11	0.20	0.20	0.05

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 44			
Natural Cycle: 50			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.40			
Intersection Signal Delay: 10.1		Intersection LOS: B	
Intersection Capacity Utilization 43.2%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 1: Estes Drive Extension & Seawell School Road





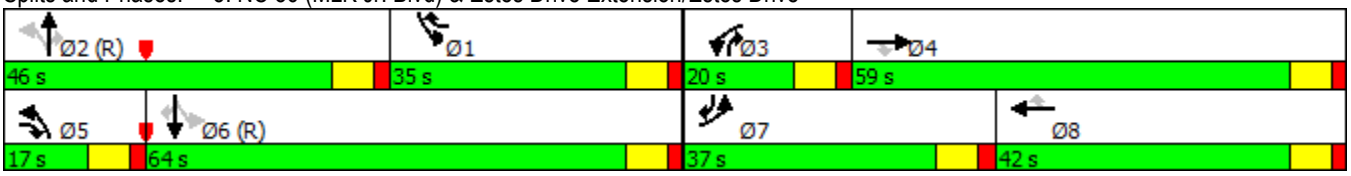
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	192	208	60	153	229	274	62	467	167	232	486	178
Future Volume (vph)	192	208	60	153	229	274	62	467	167	232	486	178
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			1%			1%			-2%	
Storage Length (ft)	225		225	300		250	0		225	0		150
Storage Lanes	1		1	2		1	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor									0.97	0.99		
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1736	1827	1553	3350	1818	1545	1694	3389	1516	1753	3506	1568
Flt Permitted	0.950			0.950			0.313			0.475		
Satd. Flow (perm)	1736	1827	1553	3350	1818	1545	558	3389	1469	871	3506	1568
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		1360			1121			1058			1059	
Travel Time (s)		26.5			21.8			20.6			20.6	
Confl. Peds. (#/hr)									4	4		
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	6%	6%	6%	4%	4%	4%
Adj. Flow (vph)	200	217	63	159	239	285	65	486	174	242	506	185
Shared Lane Traffic (%)												
Lane Group Flow (vph)	200	217	63	159	239	285	65	486	174	242	506	185
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.01	1.01	1.01	1.01	1.01	1.01	0.99	0.99	0.99
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA	pm+ov	Prot	NA	pm+ov	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4	5	3	8	1	5	2	3	1	6	7
Permitted Phases			4			8	2		2	6		6
Detector Phase	7	4	5	3	8	1	5	2	3	1	6	7
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	12.0	7.0	7.0	12.0	7.0
Minimum Split (s)	14.0	14.0	15.0	15.0	14.0	15.0	15.0	35.0	15.0	15.0	19.0	14.0
Total Split (s)	37.0	59.0	17.0	20.0	42.0	35.0	17.0	46.0	20.0	35.0	64.0	37.0
Total Split (%)	23.1%	36.9%	10.6%	12.5%	26.3%	21.9%	10.6%	28.8%	12.5%	21.9%	40.0%	23.1%
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lag	Lead	Lead	Lead	Lag	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Recall Mode	None	None	None	None	None	None	None	C-Max	None	None	C-Max	None
Act Effct Green (s)	25.4	39.7	56.0	13.9	28.3	58.3	56.4	56.4	70.3	75.0	75.0	105.4
Actuated g/C Ratio	0.16	0.25	0.35	0.09	0.18	0.36	0.35	0.35	0.44	0.47	0.47	0.66
v/c Ratio	0.73	0.48	0.12	0.55	0.74	0.51	0.23	0.41	0.27	0.42	0.31	0.18
Control Delay	78.9	53.3	32.5	77.1	76.2	24.6	41.4	42.6	17.1	37.6	29.1	12.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	78.9	53.3	32.5	77.1	76.2	24.6	41.4	42.6	17.1	37.6	29.1	12.2
LOS	E	D	C	E	E	C	D	D	B	D	C	B
Approach Delay		61.2			54.9			36.4			28.0	
Approach LOS		E			D			D			C	
Queue Length 50th (ft)	201	196	45	82	240	146	46	203	59	155	172	71
Queue Length 95th (ft)	282	250	70	123	322	157	96	294	119	265	258	127
Internal Link Dist (ft)		1280			1041			978			979	
Turn Bay Length (ft)	225		225	300		250			225			150
Base Capacity (vph)	347	616	554	314	420	562	284	1194	659	573	1644	1097
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.58	0.35	0.11	0.51	0.57	0.51	0.23	0.41	0.26	0.42	0.31	0.17

Intersection Summary

Area Type: Other
Cycle Length: 160
Actuated Cycle Length: 160
Offset: 104 (65%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.74
Intersection Signal Delay: 42.3 Intersection LOS: D
Intersection Capacity Utilization 75.5% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 5: NC 86 (MLK Jr. Blvd) & Estes Drive Extension/Estes Drive

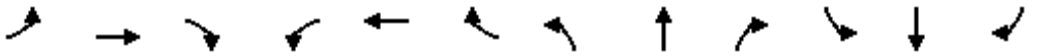


Lane Group	SEL	SER	NEL	NET	SWT	SWR
Lane Configurations						
Traffic Volume (vph)	110	181	163	411	653	163
Future Volume (vph)	110	181	163	411	653	163
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	-3%			2%	-3%	
Storage Length (ft)	400	0	250			75
Storage Lanes	1	1	1			1
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1796	1607	1752	1844	1891	1607
Flt Permitted	0.950		0.145			
Satd. Flow (perm)	1796	1607	267	1844	1891	1607
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	35			35	35	
Link Distance (ft)	862			645	825	
Travel Time (s)	16.8			12.6	16.1	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	117	193	173	437	695	173
Shared Lane Traffic (%)						
Lane Group Flow (vph)	117	193	173	437	695	173
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	0.98	0.98	1.01	1.01	0.98	0.98
Turning Speed (mph)	15	9	15			9
Turn Type	Prot	Perm	pm+pt	NA	NA	pm+ov
Protected Phases	4		5	2	6	4
Permitted Phases		4	2			6
Detector Phase	4	4	5	2	6	4
Switch Phase						
Minimum Initial (s)	7.0	7.0	7.0	12.0	12.0	7.0
Minimum Split (s)	14.0	14.0	14.0	19.0	19.0	14.0
Total Split (s)	25.0	25.0	15.0	75.0	60.0	25.0
Total Split (%)	25.0%	25.0%	15.0%	75.0%	60.0%	25.0%
Yellow Time (s)	3.1	3.1	3.0	5.0	5.0	3.1
All-Red Time (s)	2.3	2.3	1.9	1.2	1.2	2.3
Lost Time Adjust (s)	-0.4	-0.4	0.1	-1.2	-1.2	-0.4
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None	None	None	Min	Min	None
Act Effct Green (s)	14.3	14.3	49.4	49.4	34.5	54.1
Actuated g/C Ratio	0.19	0.19	0.66	0.66	0.46	0.73

Lane Group	SEL	SER	NEL	NET	SWT	SWR
v/c Ratio	0.34	0.62	0.47	0.36	0.79	0.15
Control Delay	32.3	40.1	9.4	6.5	24.3	3.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.3	40.1	9.4	6.5	24.3	3.1
LOS	C	D	A	A	C	A
Approach Delay	37.2			7.3	20.1	
Approach LOS	D			A	C	
Queue Length 50th (ft)	47	82	25	74	256	19
Queue Length 95th (ft)	115	185	58	142	428	32
Internal Link Dist (ft)	782			565	745	
Turn Bay Length (ft)	400		250			75
Base Capacity (vph)	510	456	388	1650	1441	1316
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.23	0.42	0.45	0.26	0.48	0.13

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 74.3			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.79			
Intersection Signal Delay: 18.7		Intersection LOS: B	
Intersection Capacity Utilization 62.0%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 1: Estes Drive Extension & Seawell School Road



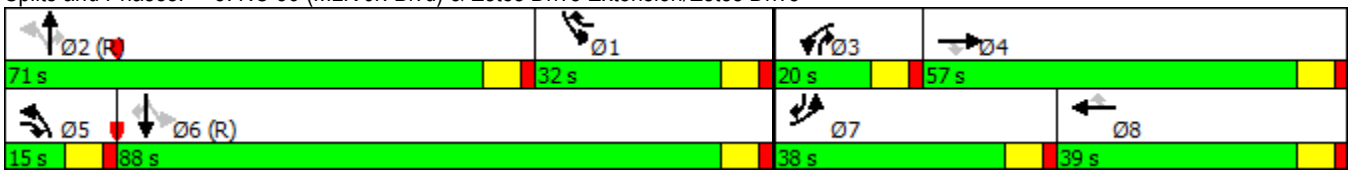
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	322	272	124	173	315	444	98	1132	180	247	700	319
Future Volume (vph)	322	272	124	173	315	444	98	1132	180	247	700	319
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			1%			1%			-2%	
Storage Length (ft)	225		225	300		250	0		225	0		150
Storage Lanes	1		1	2		1	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor									0.96			
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	3416	1853	1575	1761	3522	1575	1787	3575	1599
Flt Permitted	0.950			0.950			0.195			0.071		
Satd. Flow (perm)	1770	1863	1583	3416	1853	1575	361	3522	1519	134	3575	1599
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		1360			1121			1058			1059	
Travel Time (s)		26.5			21.8			20.6			20.6	
Confl. Peds. (#/hr)									5	5		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	339	286	131	182	332	467	103	1192	189	260	737	336
Shared Lane Traffic (%)												
Lane Group Flow (vph)	339	286	131	182	332	467	103	1192	189	260	737	336
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.01	1.01	1.01	1.01	1.01	1.01	0.99	0.99	0.99
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA	pm+ov	Prot	NA	pm+ov	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4	5	3	8	1	5	2	3	1	6	7
Permitted Phases			4			8	2		2	6		6
Detector Phase	7	4	5	3	8	1	5	2	3	1	6	7
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	12.0	7.0	7.0	12.0	7.0
Minimum Split (s)	14.0	14.0	15.0	15.0	14.0	15.0	15.0	35.0	15.0	15.0	19.0	14.0
Total Split (s)	38.0	57.0	15.0	20.0	39.0	32.0	15.0	71.0	20.0	32.0	88.0	38.0
Total Split (%)	21.1%	31.7%	8.3%	11.1%	21.7%	17.8%	8.3%	39.4%	11.1%	17.8%	48.9%	21.1%
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lag	Lead	Lead	Lead	Lag	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	None	None	C-Max	None

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effct Green (s)	33.0	52.4	67.4	14.6	34.0	61.0	66.0	66.0	80.6	83.0	83.0	121.0
Actuated g/C Ratio	0.18	0.29	0.37	0.08	0.19	0.34	0.37	0.37	0.45	0.46	0.46	0.67
v/c Ratio	1.05	0.53	0.22	0.66	0.95	0.88	0.49	0.92	0.28	0.84	0.45	0.31
Control Delay	130.5	57.8	39.8	92.2	107.8	53.4	46.8	66.8	17.8	90.9	34.0	13.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	130.5	57.8	39.8	92.2	107.8	53.4	46.8	66.8	17.8	90.9	34.0	13.2
LOS	F	E	D	F	F	D	D	E	B	F	C	B
Approach Delay		87.3			79.0			59.2			39.9	
Approach LOS		F			E			E			D	
Queue Length 50th (ft)	~432	286	106	109	393	323	82	711	84	250	308	156
Queue Length 95th (ft)	#647	390	164	155	#597	#478	132	#824	122	#404	367	212
Internal Link Dist (ft)		1280			1041			978			979	
Turn Bay Length (ft)	225		225	300		250			225			150
Base Capacity (vph)	324	542	593	284	350	533	210	1292	688	309	1648	1074
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.05	0.53	0.22	0.64	0.95	0.88	0.49	0.92	0.27	0.84	0.45	0.31

Intersection Summary

Area Type: Other
Cycle Length: 180
Actuated Cycle Length: 180
Offset: 88 (49%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 110
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.05
Intersection Signal Delay: 62.5 Intersection LOS: E
Intersection Capacity Utilization 96.1% ICU Level of Service F
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: NC 86 (MLK Jr. Blvd) & Estes Drive Extension/Estes Drive



Appendix F – Synchro Unsignalized HCM Analysis Output

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	1	621	336	8	5	0
Future Vol, veh/h	1	621	336	8	5	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	125	-	-	-	75	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	7	7	40	2
Mvmt Flow	1	690	373	9	6	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	382	0	-	0	1070	378
Stage 1	-	-	-	-	378	-
Stage 2	-	-	-	-	692	-
Critical Hdwy	4.12	-	-	-	6.8	6.22
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	2.218	-	-	-	3.86	3.318
Pot Cap-1 Maneuver	1176	-	-	-	208	669
Stage 1	-	-	-	-	617	-
Stage 2	-	-	-	-	433	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1176	-	-	-	208	669
Mov Cap-2 Maneuver	-	-	-	-	208	-
Stage 1	-	-	-	-	617	-
Stage 2	-	-	-	-	433	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	22.8
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1176	-	-	-	208	-
HCM Lane V/C Ratio	0.001	-	-	-	0.027	-
HCM Control Delay (s)	8.1	-	-	-	22.8	0
HCM Lane LOS	A	-	-	-	C	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1	-

Intersection	
Int Delay, s/veh	1.1

Movement	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations						
Traffic Vol, veh/h	25	21	744	88	12	316
Future Vol, veh/h	25	21	744	88	12	316
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	8	14	2	2	17	7
Mvmt Flow	27	23	818	97	13	347

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1240	866	0	0	914	0
Stage 1	866	-	-	-	-	-
Stage 2	374	-	-	-	-	-
Critical Hdwy	6.48	6.34	-	-	4.27	-
Critical Hdwy Stg 1	5.48	-	-	-	-	-
Critical Hdwy Stg 2	5.48	-	-	-	-	-
Follow-up Hdwy	3.572	3.426	-	-	2.353	-
Pot Cap-1 Maneuver	188	336	-	-	687	-
Stage 1	402	-	-	-	-	-
Stage 2	683	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	184	336	-	-	687	-
Mov Cap-2 Maneuver	184	-	-	-	-	-
Stage 1	402	-	-	-	-	-
Stage 2	667	-	-	-	-	-

Approach	NW	NE	SW
HCM Control Delay, s	24.8	0	0.4
HCM LOS	C		

Minor Lane/Major Mvmt	NET	NER	NWLn1	SWL	SWT
Capacity (veh/h)	-	-	232	687	-
HCM Lane V/C Ratio	-	-	0.218	0.019	-
HCM Control Delay (s)	-	-	24.8	10.3	0
HCM Lane LOS	-	-	C	B	A
HCM 95th %tile Q(veh)	-	-	0.8	0.1	-

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	3	92	77	513	1055	130
Future Vol, veh/h	3	92	77	513	1055	130
Conflicting Peds, #/hr	10	0	1	0	0	1
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	125	0	0	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	6	6	6	6	3	3
Mvmt Flow	3	99	83	552	1134	140

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1656	638	1275	0	-	0
Stage 1	1205	-	-	-	-	-
Stage 2	451	-	-	-	-	-
Critical Hdwy	6.92	7.02	4.22	-	-	-
Critical Hdwy Stg 1	5.92	-	-	-	-	-
Critical Hdwy Stg 2	5.92	-	-	-	-	-
Follow-up Hdwy	3.56	3.36	2.26	-	-	-
Pot Cap-1 Maneuver	85	410	519	-	-	-
Stage 1	239	-	-	-	-	-
Stage 2	597	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	71	410	519	-	-	-
Mov Cap-2 Maneuver	71	-	-	-	-	-
Stage 1	239	-	-	-	-	-
Stage 2	501	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	17.9	1.7	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	519	-	71	410	-	-
HCM Lane V/C Ratio	0.16	-	0.045	0.241	-	-
HCM Control Delay (s)	13.2	-	58.1	16.6	-	-
HCM Lane LOS	B	-	F	C	-	-
HCM 95th %tile Q(veh)	0.6	-	0.1	0.9	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	4	402	390	8	4	0
Future Vol, veh/h	4	402	390	8	4	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	125	-	-	-	75	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	3	3	4	4	2	2
Mvmt Flow	4	447	433	9	4	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	442	0	-	0	894	438
Stage 1	-	-	-	-	438	-
Stage 2	-	-	-	-	456	-
Critical Hdwy	4.13	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.227	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1113	-	-	-	312	619
Stage 1	-	-	-	-	651	-
Stage 2	-	-	-	-	638	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1113	-	-	-	311	619
Mov Cap-2 Maneuver	-	-	-	-	311	-
Stage 1	-	-	-	-	651	-
Stage 2	-	-	-	-	636	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	16.7
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1113	-	-	-	311	-
HCM Lane V/C Ratio	0.004	-	-	-	0.014	-
HCM Control Delay (s)	8.2	-	-	-	16.7	0
HCM Lane LOS	A	-	-	-	C	A
HCM 95th %tile Q(veh)	0	-	-	-	0	-

Intersection	
Int Delay, s/veh	0.8

Movement	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations						
Traffic Vol, veh/h	22	17	363	38	12	385
Future Vol, veh/h	22	17	363	38	12	385
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	18	6	2	8	2	3
Mvmt Flow	23	18	382	40	13	405

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	833	402	0	0	422	0
Stage 1	402	-	-	-	-	-
Stage 2	431	-	-	-	-	-
Critical Hdwy	6.58	6.26	-	-	4.12	-
Critical Hdwy Stg 1	5.58	-	-	-	-	-
Critical Hdwy Stg 2	5.58	-	-	-	-	-
Follow-up Hdwy	3.662	3.354	-	-	2.218	-
Pot Cap-1 Maneuver	318	640	-	-	1137	-
Stage 1	642	-	-	-	-	-
Stage 2	623	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	313	640	-	-	1137	-
Mov Cap-2 Maneuver	313	-	-	-	-	-
Stage 1	642	-	-	-	-	-
Stage 2	614	-	-	-	-	-

Approach	NW	NE	SW
HCM Control Delay, s	14.9	0	0.2
HCM LOS	B		

Minor Lane/Major Mvmt	NET	NER	NWLn1	SWL	SWT
Capacity (veh/h)	-	-	403	1137	-
HCM Lane V/C Ratio	-	-	0.102	0.011	-
HCM Control Delay (s)	-	-	14.9	8.2	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.3	0	-

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	20	58	74	574	591	30
Future Vol, veh/h	20	58	74	574	591	30
Conflicting Peds, #/hr	1	0	1	0	0	1
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	125	0	0	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	5	5	6	6	3	3
Mvmt Flow	22	63	80	624	642	33

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1134	339	676	0	-	0
Stage 1	660	-	-	-	-	-
Stage 2	474	-	-	-	-	-
Critical Hdwy	6.9	7	4.22	-	-	-
Critical Hdwy Stg 1	5.9	-	-	-	-	-
Critical Hdwy Stg 2	5.9	-	-	-	-	-
Follow-up Hdwy	3.55	3.35	2.26	-	-	-
Pot Cap-1 Maneuver	192	648	885	-	-	-
Stage 1	468	-	-	-	-	-
Stage 2	584	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	174	647	885	-	-	-
Mov Cap-2 Maneuver	174	-	-	-	-	-
Stage 1	468	-	-	-	-	-
Stage 2	531	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	15.7	1.1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	885	-	174	647	-	-
HCM Lane V/C Ratio	0.091	-	0.125	0.097	-	-
HCM Control Delay (s)	9.5	-	28.6	11.2	-	-
HCM Lane LOS	A	-	D	B	-	-
HCM 95th %tile Q(veh)	0.3	-	0.4	0.3	-	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	2	501	749	7	7	1
Future Vol, veh/h	2	501	749	7	7	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	125	-	-	-	75	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	28	2
Mvmt Flow	2	527	788	7	7	1

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	796	0	-	0	1324	792
Stage 1	-	-	-	-	792	-
Stage 2	-	-	-	-	532	-
Critical Hdwy	4.12	-	-	-	6.68	6.22
Critical Hdwy Stg 1	-	-	-	-	5.68	-
Critical Hdwy Stg 2	-	-	-	-	5.68	-
Follow-up Hdwy	2.218	-	-	-	3.752	3.318
Pot Cap-1 Maneuver	826	-	-	-	152	389
Stage 1	-	-	-	-	404	-
Stage 2	-	-	-	-	540	-
Platoon blocked, %			-	-		
Mov Cap-1 Maneuver	826	-	-	-	152	389
Mov Cap-2 Maneuver	-	-	-	-	152	-
Stage 1	-	-	-	-	404	-
Stage 2	-	-	-	-	539	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	28
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	826	-	-	-	152	389
HCM Lane V/C Ratio	0.003	-	-	-	0.048	0.003
HCM Control Delay (s)	9.4	-	-	-	29.9	14.3
HCM Lane LOS	A	-	-	-	D	B
HCM 95th %tile Q(veh)	0	-	-	-	0.2	0

Intersection	
Int Delay, s/veh	5.6

Movement	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations						
Traffic Vol, veh/h	106	38	476	35	6	659
Future Vol, veh/h	106	38	476	35	6	659
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	5	4	2	6	2	2
Mvmt Flow	114	41	512	38	6	709

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1253	531	0	0	549	0
Stage 1	531	-	-	-	-	-
Stage 2	722	-	-	-	-	-
Critical Hdwy	6.45	6.24	-	-	4.12	-
Critical Hdwy Stg 1	5.45	-	-	-	-	-
Critical Hdwy Stg 2	5.45	-	-	-	-	-
Follow-up Hdwy	3.545	3.336	-	-	2.218	-
Pot Cap-1 Maneuver	187	544	-	-	1021	-
Stage 1	584	-	-	-	-	-
Stage 2	476	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	185	544	-	-	1021	-
Mov Cap-2 Maneuver	185	-	-	-	-	-
Stage 1	584	-	-	-	-	-
Stage 2	471	-	-	-	-	-

Approach	NW	NE	SW
HCM Control Delay, s	50.7	0	0.1
HCM LOS	F		

Minor Lane/Major Mvmt	NET	NER	NWLn1	SWL	SWT
Capacity (veh/h)	-	-	224	1021	-
HCM Lane V/C Ratio	-	-	0.691	0.006	-
HCM Control Delay (s)	-	-	50.7	8.5	0
HCM Lane LOS	-	-	F	A	A
HCM 95th %tile Q(veh)	-	-	4.4	0	-

Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	36	44	43	1210	758	6
Future Vol, veh/h	36	44	43	1210	758	6
Conflicting Peds, #/hr	4	0	2	0	0	2
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	125	0	0	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	6	6	7	2	2	2
Mvmt Flow	38	47	46	1287	806	6

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1551	408	815	0	-	0
Stage 1	812	-	-	-	-	-
Stage 2	739	-	-	-	-	-
Critical Hdwy	6.92	7.02	4.24	-	-	-
Critical Hdwy Stg 1	5.92	-	-	-	-	-
Critical Hdwy Stg 2	5.92	-	-	-	-	-
Follow-up Hdwy	3.56	3.36	2.27	-	-	-
Pot Cap-1 Maneuver	100	581	777	-	-	-
Stage 1	387	-	-	-	-	-
Stage 2	423	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	94	580	777	-	-	-
Mov Cap-2 Maneuver	94	-	-	-	-	-
Stage 1	386	-	-	-	-	-
Stage 2	397	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	36.8	0.3	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	777	-	94	580	-	-
HCM Lane V/C Ratio	0.059	-	0.407	0.081	-	-
HCM Control Delay (s)	9.9	-	67.4	11.8	-	-
HCM Lane LOS	A	-	F	B	-	-
HCM 95th %tile Q(veh)	0.2	-	1.7	0.3	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	1	856	354	8	5	0
Future Vol, veh/h	1	856	354	8	5	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	125	-	-	-	75	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	7	7	40	2
Mvmt Flow	1	951	393	9	6	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	402	0	-	0	1351	398
Stage 1	-	-	-	-	398	-
Stage 2	-	-	-	-	953	-
Critical Hdwy	4.12	-	-	-	6.8	6.22
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	2.218	-	-	-	3.86	3.318
Pot Cap-1 Maneuver	1157	-	-	-	138	652
Stage 1	-	-	-	-	603	-
Stage 2	-	-	-	-	321	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	1157	-	-	-	138	652
Mov Cap-2 Maneuver	-	-	-	-	138	-
Stage 1	-	-	-	-	603	-
Stage 2	-	-	-	-	321	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	32.2
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1157	-	-	-	138	-
HCM Lane V/C Ratio	0.001	-	-	-	0.04	-
HCM Control Delay (s)	8.1	-	-	-	32.2	0
HCM Lane LOS	A	-	-	-	D	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1	-

Intersection	
Int Delay, s/veh	1.1

Movement	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations						
Traffic Vol, veh/h	26	22	776	92	12	334
Future Vol, veh/h	26	22	776	92	12	334
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	8	14	2	2	17	7
Mvmt Flow	29	24	853	101	13	367

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1296	903	0	0	954	0
Stage 1	903	-	-	-	-	-
Stage 2	393	-	-	-	-	-
Critical Hdwy	6.48	6.34	-	-	4.27	-
Critical Hdwy Stg 1	5.48	-	-	-	-	-
Critical Hdwy Stg 2	5.48	-	-	-	-	-
Follow-up Hdwy	3.572	3.426	-	-	2.353	-
Pot Cap-1 Maneuver	174	319	-	-	663	-
Stage 1	386	-	-	-	-	-
Stage 2	669	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	170	319	-	-	663	-
Mov Cap-2 Maneuver	170	-	-	-	-	-
Stage 1	386	-	-	-	-	-
Stage 2	652	-	-	-	-	-

Approach	NW	NE	SW
HCM Control Delay, s	27	0	0.4
HCM LOS	D		

Minor Lane/Major Mvmt	NET	NER	NWLn1	SWL	SWT
Capacity (veh/h)	-	-	216	663	-
HCM Lane V/C Ratio	-	-	0.244	0.02	-
HCM Control Delay (s)	-	-	27	10.5	0
HCM Lane LOS	-	-	D	B	A
HCM 95th %tile Q(veh)	-	-	0.9	0.1	-

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	3	96	80	542	1123	135
Future Vol, veh/h	3	96	80	542	1123	135
Conflicting Peds, #/hr	10	0	1	0	0	1
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	125	0	0	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	6	6	6	6	3	3
Mvmt Flow	3	103	86	583	1208	145

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1754	677	1354	0	-	0
Stage 1	1281	-	-	-	-	-
Stage 2	473	-	-	-	-	-
Critical Hdwy	6.92	7.02	4.22	-	-	-
Critical Hdwy Stg 1	5.92	-	-	-	-	-
Critical Hdwy Stg 2	5.92	-	-	-	-	-
Follow-up Hdwy	3.56	3.36	2.26	-	-	-
Pot Cap-1 Maneuver	73	386	484	-	-	-
Stage 1	217	-	-	-	-	-
Stage 2	582	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	60	386	484	-	-	-
Mov Cap-2 Maneuver	60	-	-	-	-	-
Stage 1	217	-	-	-	-	-
Stage 2	478	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	19.2	1.8	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	484	-	60	386	-	-
HCM Lane V/C Ratio	0.178	-	0.054	0.267	-	-
HCM Control Delay (s)	14	-	68.4	17.7	-	-
HCM Lane LOS	B	-	F	C	-	-
HCM 95th %tile Q(veh)	0.6	-	0.2	1.1	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	4	421	410	8	4	0
Future Vol, veh/h	4	421	410	8	4	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	125	-	-	-	75	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	3	3	4	4	2	2
Mvmt Flow	4	468	456	9	4	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	464	0	-	0	937	460
Stage 1	-	-	-	-	460	-
Stage 2	-	-	-	-	477	-
Critical Hdwy	4.13	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.227	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1092	-	-	-	294	601
Stage 1	-	-	-	-	636	-
Stage 2	-	-	-	-	624	-
Platoon blocked, %			-	-		
Mov Cap-1 Maneuver	1092	-	-	-	293	601
Mov Cap-2 Maneuver	-	-	-	-	293	-
Stage 1	-	-	-	-	636	-
Stage 2	-	-	-	-	622	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	17.5
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1092	-	-	-	293	-
HCM Lane V/C Ratio	0.004	-	-	-	0.015	-
HCM Control Delay (s)	8.3	-	-	-	17.5	0
HCM Lane LOS	A	-	-	-	C	A
HCM 95th %tile Q(veh)	0	-	-	-	0	-

Intersection	
Int Delay, s/veh	0.8

Movement	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations						
Traffic Vol, veh/h	23	18	381	40	12	404
Future Vol, veh/h	23	18	381	40	12	404
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	18	6	2	8	2	3
Mvmt Flow	24	19	401	42	13	425

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	873	422	0	0	443	0
Stage 1	422	-	-	-	-	-
Stage 2	451	-	-	-	-	-
Critical Hdwy	6.58	6.26	-	-	4.12	-
Critical Hdwy Stg 1	5.58	-	-	-	-	-
Critical Hdwy Stg 2	5.58	-	-	-	-	-
Follow-up Hdwy	3.662	3.354	-	-	2.218	-
Pot Cap-1 Maneuver	301	623	-	-	1117	-
Stage 1	629	-	-	-	-	-
Stage 2	609	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	296	623	-	-	1117	-
Mov Cap-2 Maneuver	296	-	-	-	-	-
Stage 1	629	-	-	-	-	-
Stage 2	600	-	-	-	-	-

Approach	NW	NE	SW
HCM Control Delay, s	15.5	0	0.2
HCM LOS	C		

Minor Lane/Major Mvmt	NET	NER	NWLn1	SWL	SWT
Capacity (veh/h)	-	-	385	1117	-
HCM Lane V/C Ratio	-	-	0.112	0.011	-
HCM Control Delay (s)	-	-	15.5	8.3	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	0.4	0	-

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	21	60	77	614	633	31
Future Vol, veh/h	21	60	77	614	633	31
Conflicting Peds, #/hr	1	0	1	0	0	1
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	125	0	0	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	5	5	6	6	3	3
Mvmt Flow	23	65	84	667	688	34

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1208	362	723	0	-	0
Stage 1	706	-	-	-	-	-
Stage 2	502	-	-	-	-	-
Critical Hdwy	6.9	7	4.22	-	-	-
Critical Hdwy Stg 1	5.9	-	-	-	-	-
Critical Hdwy Stg 2	5.9	-	-	-	-	-
Follow-up Hdwy	3.55	3.35	2.26	-	-	-
Pot Cap-1 Maneuver	171	626	849	-	-	-
Stage 1	443	-	-	-	-	-
Stage 2	565	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	154	625	849	-	-	-
Mov Cap-2 Maneuver	154	-	-	-	-	-
Stage 1	443	-	-	-	-	-
Stage 2	509	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	16.8	1.1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	849	-	154	625	-	-
HCM Lane V/C Ratio	0.099	-	0.148	0.104	-	-
HCM Control Delay (s)	9.7	-	32.4	11.4	-	-
HCM Lane LOS	A	-	D	B	-	-
HCM 95th %tile Q(veh)	0.3	-	0.5	0.3	-	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	2	528	783	7	7	1
Future Vol, veh/h	2	528	783	7	7	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	125	-	-	-	75	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	28	2
Mvmt Flow	2	556	824	7	7	1

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	832	0	-	0	1388	828
Stage 1	-	-	-	-	828	-
Stage 2	-	-	-	-	560	-
Critical Hdwy	4.12	-	-	-	6.68	6.22
Critical Hdwy Stg 1	-	-	-	-	5.68	-
Critical Hdwy Stg 2	-	-	-	-	5.68	-
Follow-up Hdwy	2.218	-	-	-	3.752	3.318
Pot Cap-1 Maneuver	801	-	-	-	138	371
Stage 1	-	-	-	-	388	-
Stage 2	-	-	-	-	523	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	801	-	-	-	138	371
Mov Cap-2 Maneuver	-	-	-	-	138	-
Stage 1	-	-	-	-	388	-
Stage 2	-	-	-	-	522	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	30.4
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	801	-	-	-	138	371
HCM Lane V/C Ratio	0.003	-	-	-	0.053	0.003
HCM Control Delay (s)	9.5	-	-	-	32.6	14.7
HCM Lane LOS	A	-	-	-	D	B
HCM 95th %tile Q(veh)	0	-	-	-	0.2	0

Intersection	
Int Delay, s/veh	7.1

Movement	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations						
Traffic Vol, veh/h	110	40	502	36	6	689
Future Vol, veh/h	110	40	502	36	6	689
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	5	4	2	6	2	2
Mvmt Flow	118	43	540	39	6	741

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1313	559	0	0	578	0
Stage 1	559	-	-	-	-	-
Stage 2	754	-	-	-	-	-
Critical Hdwy	6.45	6.24	-	-	4.12	-
Critical Hdwy Stg 1	5.45	-	-	-	-	-
Critical Hdwy Stg 2	5.45	-	-	-	-	-
Follow-up Hdwy	3.545	3.336	-	-	2.218	-
Pot Cap-1 Maneuver	172	525	-	-	996	-
Stage 1	567	-	-	-	-	-
Stage 2	459	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	170	525	-	-	996	-
Mov Cap-2 Maneuver	170	-	-	-	-	-
Stage 1	567	-	-	-	-	-
Stage 2	454	-	-	-	-	-

Approach	NW	NE	SW
HCM Control Delay, s	65.3	0	0.1
HCM LOS	F		

Minor Lane/Major Mvmt	NET	NER	NWLn1	SWL	SWT
Capacity (veh/h)	-	-	207	996	-
HCM Lane V/C Ratio	-	-	0.779	0.006	-
HCM Control Delay (s)	-	-	65.3	8.6	0
HCM Lane LOS	-	-	F	A	A
HCM 95th %tile Q(veh)	-	-	5.4	0	-

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	37	46	45	1291	808	6
Future Vol, veh/h	37	46	45	1291	808	6
Conflicting Peds, #/hr	4	0	2	0	0	2
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	125	0	0	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	6	6	7	2	2	2
Mvmt Flow	39	49	48	1373	860	6

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1651	435	868	0	-	0
Stage 1	865	-	-	-	-	-
Stage 2	786	-	-	-	-	-
Critical Hdwy	6.92	7.02	4.24	-	-	-
Critical Hdwy Stg 1	5.92	-	-	-	-	-
Critical Hdwy Stg 2	5.92	-	-	-	-	-
Follow-up Hdwy	3.56	3.36	2.27	-	-	-
Pot Cap-1 Maneuver	86	558	741	-	-	-
Stage 1	363	-	-	-	-	-
Stage 2	399	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	80	557	741	-	-	-
Mov Cap-2 Maneuver	80	-	-	-	-	-
Stage 1	362	-	-	-	-	-
Stage 2	372	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	45.7	0.3	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	741	-	80	557	-	-
HCM Lane V/C Ratio	0.065	-	0.492	0.088	-	-
HCM Control Delay (s)	10.2	-	87.5	12.1	-	-
HCM Lane LOS	B	-	F	B	-	-
HCM 95th %tile Q(veh)	0.2	-	2.1	0.3	-	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	862	6	19	355	8	1	0	2	5	0	0
Future Vol, veh/h	1	862	6	19	355	8	1	0	2	5	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	125	-	-	100	-	-	-	-	-	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	7	7	2	2	2	40	2	2
Mvmt Flow	1	958	7	21	394	9	1	0	2	6	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	403	0	0	964	0	0	1404	1409	961	1405	1408	399
Stage 1	-	-	-	-	-	-	963	963	-	441	441	-
Stage 2	-	-	-	-	-	-	441	446	-	964	967	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.5	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.5	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.5	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.86	4.018	3.318
Pot Cap-1 Maneuver	1156	-	-	714	-	-	117	139	311	97	139	651
Stage 1	-	-	-	-	-	-	307	334	-	528	577	-
Stage 2	-	-	-	-	-	-	595	574	-	262	333	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1156	-	-	714	-	-	114	135	311	94	135	651
Mov Cap-2 Maneuver	-	-	-	-	-	-	114	135	-	94	135	-
Stage 1	-	-	-	-	-	-	307	334	-	528	560	-
Stage 2	-	-	-	-	-	-	578	557	-	260	333	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.5	23.6	45.7
HCM LOS			C	E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	197	1156	-	-	714	-	-	94	-
HCM Lane V/C Ratio	0.017	0.001	-	-	0.03	-	-	0.059	-
HCM Control Delay (s)	23.6	8.1	-	-	10.2	-	-	45.7	0
HCM Lane LOS	C	A	-	-	B	-	-	E	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0.1	-	-	0.2	-

Intersection	
Int Delay, s/veh	0.9

Movement	NBL	NBR	NET	NER	SWL	SWT
Lane Configurations						
Traffic Vol, veh/h	1	12	863	6	95	379
Future Vol, veh/h	1	12	863	6	95	379
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	50	0	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	13	959	7	106	421

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1594	962	0	0	966	0
Stage 1	962	-	-	-	-	-
Stage 2	632	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	118	310	-	-	713	-
Stage 1	371	-	-	-	-	-
Stage 2	530	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	100	310	-	-	713	-
Mov Cap-2 Maneuver	231	-	-	-	-	-
Stage 1	371	-	-	-	-	-
Stage 2	451	-	-	-	-	-

Approach	NB	NE	SW
HCM Control Delay, s	17.4	0	2.2
HCM LOS	C		

Minor Lane/Major Mvmt	NET	NER	NBLn1	NBLn2	SWL	SWT
Capacity (veh/h)	-	-	231	310	713	-
HCM Lane V/C Ratio	-	-	0.005	0.043	0.148	-
HCM Control Delay (s)	-	-	20.7	17.1	10.9	-
HCM Lane LOS	-	-	C	C	B	-
HCM 95th %tile Q(veh)	-	-	0	0.1	0.5	-

Intersection	
Int Delay, s/veh	1.3

Movement	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations						
Traffic Vol, veh/h	51	22	787	95	12	422
Future Vol, veh/h	51	22	787	95	12	422
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	8	14	2	2	17	7
Mvmt Flow	56	24	865	104	13	464

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1407	917	0	0	969	0
Stage 1	917	-	-	-	-	-
Stage 2	490	-	-	-	-	-
Critical Hdwy	6.48	6.34	-	-	4.27	-
Critical Hdwy Stg 1	5.48	-	-	-	-	-
Critical Hdwy Stg 2	5.48	-	-	-	-	-
Follow-up Hdwy	3.572	3.426	-	-	2.353	-
Pot Cap-1 Maneuver	149	313	-	-	654	-
Stage 1	380	-	-	-	-	-
Stage 2	604	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	146	313	-	-	654	-
Mov Cap-2 Maneuver	273	-	-	-	-	-
Stage 1	380	-	-	-	-	-
Stage 2	592	-	-	-	-	-

Approach	NW	NE	SW
HCM Control Delay, s	22.6	0	0.3
HCM LOS	C		

Minor Lane/Major Mvmt	NET	NER	NWLn1	SWL	SWT
Capacity (veh/h)	-	-	284	654	-
HCM Lane V/C Ratio	-	-	0.282	0.02	-
HCM Control Delay (s)	-	-	22.6	10.6	-
HCM Lane LOS	-	-	C	B	-
HCM 95th %tile Q(veh)	-	-	1.1	0.1	-

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	4	425	4	13	414	8	4	0	13	4	0	0
Future Vol, veh/h	4	425	4	13	414	8	4	0	13	4	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	125	-	-	100	-	-	-	-	-	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	3	3	2	2	4	4	2	2	2	2	2	2
Mvmt Flow	4	472	4	14	460	9	4	0	14	4	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	469	0	0	477	0	0	976	981	474	984	979	464
Stage 1	-	-	-	-	-	-	483	483	-	493	493	-
Stage 2	-	-	-	-	-	-	493	498	-	491	486	-
Critical Hdwy	4.13	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.227	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1087	-	-	1085	-	-	230	249	590	228	250	598
Stage 1	-	-	-	-	-	-	565	553	-	558	547	-
Stage 2	-	-	-	-	-	-	558	544	-	559	551	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1087	-	-	1085	-	-	227	245	590	220	246	598
Mov Cap-2 Maneuver	-	-	-	-	-	-	227	245	-	220	246	-
Stage 1	-	-	-	-	-	-	563	551	-	556	540	-
Stage 2	-	-	-	-	-	-	551	537	-	543	549	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.2	13.8	21.7
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	429	1087	-	-	1085	-	-	220	-
HCM Lane V/C Ratio	0.044	0.004	-	-	0.013	-	-	0.02	-
HCM Control Delay (s)	13.8	8.3	-	-	8.4	-	-	21.7	0
HCM Lane LOS	B	A	-	-	A	-	-	C	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1	-

Intersection	
Int Delay, s/veh	1.4

Movement	NBL	NBR	NET	NER	SWL	SWT
Lane Configurations						
Traffic Vol, veh/h	4	63	434	4	65	440
Future Vol, veh/h	4	63	434	4	65	440
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	70	482	4	72	489

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1117	484	0	0	487	0
Stage 1	484	-	-	-	-	-
Stage 2	633	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	229	583	-	-	1076	-
Stage 1	620	-	-	-	-	-
Stage 2	529	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	214	583	-	-	1076	-
Mov Cap-2 Maneuver	347	-	-	-	-	-
Stage 1	620	-	-	-	-	-
Stage 2	494	-	-	-	-	-

Approach	NB	NE	SW
HCM Control Delay, s	12.2	0	1.1
HCM LOS	B		

Minor Lane/Major Mvmt	NET	NER	NBLn1	NBLn2	SWL	SWT
Capacity (veh/h)	-	-	347	583	1076	-
HCM Lane V/C Ratio	-	-	0.013	0.12	0.067	-
HCM Control Delay (s)	-	-	15.5	12	8.6	-
HCM Lane LOS	-	-	C	B	A	-
HCM 95th %tile Q(veh)	-	-	0	0.4	0.2	-

Intersection	
Int Delay, s/veh	0.9

Movement	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations						
Traffic Vol, veh/h	40	18	440	57	12	465
Future Vol, veh/h	40	18	440	57	12	465
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	18	6	2	8	2	3
Mvmt Flow	42	19	463	60	13	489

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1008	493	0	0	523	0
Stage 1	493	-	-	-	-	-
Stage 2	515	-	-	-	-	-
Critical Hdwy	6.58	6.26	-	-	4.12	-
Critical Hdwy Stg 1	5.58	-	-	-	-	-
Critical Hdwy Stg 2	5.58	-	-	-	-	-
Follow-up Hdwy	3.662	3.354	-	-	2.218	-
Pot Cap-1 Maneuver	249	568	-	-	1043	-
Stage 1	582	-	-	-	-	-
Stage 2	568	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	246	568	-	-	1043	-
Mov Cap-2 Maneuver	373	-	-	-	-	-
Stage 1	582	-	-	-	-	-
Stage 2	561	-	-	-	-	-

Approach	NW	NE	SW
HCM Control Delay, s	15.1	0	0.2
HCM LOS	C		

Minor Lane/Major Mvmt	NET	NER	NWLn1	SWL	SWT
Capacity (veh/h)	-	-	417	1043	-
HCM Lane V/C Ratio	-	-	0.146	0.012	-
HCM Control Delay (s)	-	-	15.1	8.5	-
HCM Lane LOS	-	-	C	A	-
HCM 95th %tile Q(veh)	-	-	0.5	0	-

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	530	2	6	791	7	8	0	23	7	0	1
Future Vol, veh/h	2	530	2	6	791	7	8	0	23	7	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	125	-	-	0	-	-	-	-	-	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	90	90	95	95	90	90	90	95	90	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	28	2	2
Mvmt Flow	2	558	2	7	833	7	9	0	26	7	0	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	840	0	0	560	0	0	1413	1416	559	1426	1414	836
Stage 1	-	-	-	-	-	-	563	563	-	850	850	-
Stage 2	-	-	-	-	-	-	850	853	-	576	564	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.38	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.38	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.38	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.752	4.018	3.318
Pot Cap-1 Maneuver	795	-	-	1011	-	-	115	137	529	99	138	367
Stage 1	-	-	-	-	-	-	511	509	-	321	377	-
Stage 2	-	-	-	-	-	-	355	376	-	460	508	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	795	-	-	1011	-	-	114	136	529	94	137	367
Mov Cap-2 Maneuver	-	-	-	-	-	-	114	136	-	94	137	-
Stage 1	-	-	-	-	-	-	510	508	-	320	374	-
Stage 2	-	-	-	-	-	-	352	373	-	437	507	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.1	20.1	42.5
HCM LOS			C	E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	273	795	-	-	1011	-	-	94	367
HCM Lane V/C Ratio	0.126	0.003	-	-	0.007	-	-	0.078	0.003
HCM Control Delay (s)	20.1	9.5	-	-	8.6	-	-	46.5	14.8
HCM Lane LOS	C	A	-	-	A	-	-	E	B
HCM 95th %tile Q(veh)	0.4	0	-	-	0	-	-	0.2	0

Intersection	
Int Delay, s/veh	1.4

Movement	NBL	NBR	NET	NER	SWL	SWT
Lane Configurations						
Traffic Vol, veh/h	8	113	558	2	29	806
Future Vol, veh/h	8	113	558	2	29	806
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	50	0	-	-	200	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	9	126	620	2	32	896

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1581	621	0	0	622	0
Stage 1	621	-	-	-	-	-
Stage 2	960	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	120	487	-	-	959	-
Stage 1	536	-	-	-	-	-
Stage 2	372	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	116	487	-	-	959	-
Mov Cap-2 Maneuver	247	-	-	-	-	-
Stage 1	536	-	-	-	-	-
Stage 2	360	-	-	-	-	-

Approach	NB	NE	SW
HCM Control Delay, s	15.2	0	0.3
HCM LOS	C		

Minor Lane/Major Mvmt	NET	NER	NBLn1	NBLn2	SWL	SWT
Capacity (veh/h)	-	-	247	487	959	-
HCM Lane V/C Ratio	-	-	0.036	0.258	0.034	-
HCM Control Delay (s)	-	-	20.1	14.9	8.9	-
HCM Lane LOS	-	-	C	B	A	-
HCM 95th %tile Q(veh)	-	-	0.1	1	0.1	-

Intersection	
Int Delay, s/veh	3.2

Movement	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations						
Traffic Vol, veh/h	118	40	607	66	6	716
Future Vol, veh/h	118	40	607	66	6	716
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	200	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	5	4	2	6	2	2
Mvmt Flow	127	43	653	71	6	770

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1471	688	0	0	724	0
Stage 1	688	-	-	-	-	-
Stage 2	783	-	-	-	-	-
Critical Hdwy	6.45	6.24	-	-	4.12	-
Critical Hdwy Stg 1	5.45	-	-	-	-	-
Critical Hdwy Stg 2	5.45	-	-	-	-	-
Follow-up Hdwy	3.545	3.336	-	-	2.218	-
Pot Cap-1 Maneuver	138	443	-	-	879	-
Stage 1	493	-	-	-	-	-
Stage 2	445	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	137	443	-	-	879	-
Mov Cap-2 Maneuver	275	-	-	-	-	-
Stage 1	493	-	-	-	-	-
Stage 2	442	-	-	-	-	-

Approach	NW	NE	SW
HCM Control Delay, s	30.9	0	0.1
HCM LOS	D		

Minor Lane/Major Mvmt	NET	NER	NWLn1	SWL	SWT
Capacity (veh/h)	-	-	304	879	-
HCM Lane V/C Ratio	-	-	0.559	0.007	-
HCM Control Delay (s)	-	-	30.9	9.1	-
HCM Lane LOS	-	-	D	A	-
HCM 95th %tile Q(veh)	-	-	3.2	0	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	862	6	19	355	8	1	0	2	5	0	0
Future Vol, veh/h	1	862	6	19	355	8	1	0	2	5	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	125	-	-	-	-	-	-	-	-	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	7	7	2	2	2	40	2	2
Mvmt Flow	1	958	7	21	394	9	1	0	2	6	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	403	0	0	964	0	0	1404	1409	961	1405	1408	399
Stage 1	-	-	-	-	-	-	963	963	-	441	441	-
Stage 2	-	-	-	-	-	-	441	446	-	964	967	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.5	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.5	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.5	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.86	4.018	3.318
Pot Cap-1 Maneuver	1156	-	-	714	-	-	117	139	311	97	139	651
Stage 1	-	-	-	-	-	-	307	334	-	528	577	-
Stage 2	-	-	-	-	-	-	595	574	-	262	333	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1156	-	-	714	-	-	114	134	311	93	134	651
Mov Cap-2 Maneuver	-	-	-	-	-	-	114	134	-	93	134	-
Stage 1	-	-	-	-	-	-	307	334	-	528	555	-
Stage 2	-	-	-	-	-	-	572	552	-	260	333	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.5	23.6	46.2
HCM LOS			C	E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	197	1156	-	-	714	-	-	93	-
HCM Lane V/C Ratio	0.017	0.001	-	-	0.03	-	-	0.06	-
HCM Control Delay (s)	23.6	8.1	-	-	10.2	0	-	46.2	0
HCM Lane LOS	C	A	-	-	B	A	-	E	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0.1	-	-	0.2	-

Intersection	
Int Delay, s/veh	1

Movement	NBL	NBR	NET	NER	SWL	SWT
Lane Configurations						
Traffic Vol, veh/h	1	12	863	6	95	379
Future Vol, veh/h	1	12	863	6	95	379
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	50	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	13	959	7	106	421

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1594	962	0	0	966	0
Stage 1	962	-	-	-	-	-
Stage 2	632	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	118	310	-	-	713	-
Stage 1	371	-	-	-	-	-
Stage 2	530	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	95	310	-	-	713	-
Mov Cap-2 Maneuver	95	-	-	-	-	-
Stage 1	371	-	-	-	-	-
Stage 2	427	-	-	-	-	-

Approach	NB	NE	SW
HCM Control Delay, s	19.1	0	2.2
HCM LOS	C		

Minor Lane/Major Mvmt	NET	NER	NBLn1	NBLn2	SWL	SWT
Capacity (veh/h)	-	-	95	310	713	-
HCM Lane V/C Ratio	-	-	0.012	0.043	0.148	-
HCM Control Delay (s)	-	-	43.3	17.1	10.9	0
HCM Lane LOS	-	-	E	C	B	A
HCM 95th %tile Q(veh)	-	-	0	0.1	0.5	-

Intersection	
Int Delay, s/veh	2.3

Movement	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations						
Traffic Vol, veh/h	51	22	787	95	12	422
Future Vol, veh/h	51	22	787	95	12	422
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	8	14	2	2	17	7
Mvmt Flow	56	24	865	104	13	464

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1407	917	0	0	969	0
Stage 1	917	-	-	-	-	-
Stage 2	490	-	-	-	-	-
Critical Hdwy	6.48	6.34	-	-	4.27	-
Critical Hdwy Stg 1	5.48	-	-	-	-	-
Critical Hdwy Stg 2	5.48	-	-	-	-	-
Follow-up Hdwy	3.572	3.426	-	-	2.353	-
Pot Cap-1 Maneuver	149	313	-	-	654	-
Stage 1	380	-	-	-	-	-
Stage 2	604	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	145	313	-	-	654	-
Mov Cap-2 Maneuver	145	-	-	-	-	-
Stage 1	380	-	-	-	-	-
Stage 2	588	-	-	-	-	-

Approach	NW	NE	SW
HCM Control Delay, s	42.6	0	0.3
HCM LOS	E		

Minor Lane/Major Mvmt	NET	NER	NWLn1	SWL	SWT
Capacity (veh/h)	-	-	173	654	-
HCM Lane V/C Ratio	-	-	0.464	0.02	-
HCM Control Delay (s)	-	-	42.6	10.6	0
HCM Lane LOS	-	-	E	B	A
HCM 95th %tile Q(veh)	-	-	2.2	0.1	-

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	3	99	105	580	1128	135
Future Vol, veh/h	3	99	105	580	1128	135
Conflicting Peds, #/hr	10	0	1	0	0	1
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	125	0	0	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	6	6	6	6	3	3
Mvmt Flow	3	106	113	624	1213	145

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1834	680	1359	0	-	0
Stage 1	1286	-	-	-	-	-
Stage 2	548	-	-	-	-	-
Critical Hdwy	6.92	7.02	4.22	-	-	-
Critical Hdwy Stg 1	5.92	-	-	-	-	-
Critical Hdwy Stg 2	5.92	-	-	-	-	-
Follow-up Hdwy	3.56	3.36	2.26	-	-	-
Pot Cap-1 Maneuver	65	384	481	-	-	-
Stage 1	216	-	-	-	-	-
Stage 2	532	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	50	384	481	-	-	-
Mov Cap-2 Maneuver	50	-	-	-	-	-
Stage 1	216	-	-	-	-	-
Stage 2	407	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	19.8	2.3	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	481	-	50	384	-	-
HCM Lane V/C Ratio	0.235	-	0.065	0.277	-	-
HCM Control Delay (s)	14.8	-	81.9	17.9	-	-
HCM Lane LOS	B	-	F	C	-	-
HCM 95th %tile Q(veh)	0.9	-	0.2	1.1	-	-

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	4	425	4	13	414	8	4	0	13	4	0	0
Future Vol, veh/h	4	425	4	13	414	8	4	0	13	4	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	125	-	-	-	-	-	-	-	-	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	3	3	2	2	4	4	2	2	2	2	2	2
Mvmt Flow	4	472	4	14	460	9	4	0	14	4	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	469	0	0	477	0	0	976	981	474	984	979	464
Stage 1	-	-	-	-	-	-	483	483	-	493	493	-
Stage 2	-	-	-	-	-	-	493	498	-	491	486	-
Critical Hdwy	4.13	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.227	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1087	-	-	1085	-	-	230	249	590	228	250	598
Stage 1	-	-	-	-	-	-	565	553	-	558	547	-
Stage 2	-	-	-	-	-	-	558	544	-	559	551	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1087	-	-	1085	-	-	226	244	590	219	245	598
Mov Cap-2 Maneuver	-	-	-	-	-	-	226	244	-	219	245	-
Stage 1	-	-	-	-	-	-	563	551	-	556	538	-
Stage 2	-	-	-	-	-	-	549	535	-	543	549	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.2	13.8	21.8
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	428	1087	-	-	1085	-	-	219	-
HCM Lane V/C Ratio	0.044	0.004	-	-	0.013	-	-	0.02	-
HCM Control Delay (s)	13.8	8.3	-	-	8.4	0	-	21.8	0
HCM Lane LOS	B	A	-	-	A	A	-	C	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1	-

Intersection	
Int Delay, s/veh	1.4

Movement	NBL	NBR	NET	NER	SWL	SWT
Lane Configurations						
Traffic Vol, veh/h	4	63	434	4	65	440
Future Vol, veh/h	4	63	434	4	65	440
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	70	482	4	72	489

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1117	484	0	0	487	0
Stage 1	484	-	-	-	-	-
Stage 2	633	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	229	583	-	-	1076	-
Stage 1	620	-	-	-	-	-
Stage 2	529	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	208	583	-	-	1076	-
Mov Cap-2 Maneuver	208	-	-	-	-	-
Stage 1	620	-	-	-	-	-
Stage 2	480	-	-	-	-	-

Approach	NB	NE	SW
HCM Control Delay, s	12.6	0	1.1
HCM LOS	B		

Minor Lane/Major Mvmt	NET	NER	NBLn1	NBLn2	SWL	SWT
Capacity (veh/h)	-	-	208	583	1076	-
HCM Lane V/C Ratio	-	-	0.021	0.12	0.067	-
HCM Control Delay (s)	-	-	22.7	12	8.6	0
HCM Lane LOS	-	-	C	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0.4	0.2	-

Intersection	
Int Delay, s/veh	1.2

Movement	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations						
Traffic Vol, veh/h	40	18	440	57	12	465
Future Vol, veh/h	40	18	440	57	12	465
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	18	6	2	8	2	3
Mvmt Flow	42	19	463	60	13	489

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1008	493	0	0	523	0
Stage 1	493	-	-	-	-	-
Stage 2	515	-	-	-	-	-
Critical Hdwy	6.58	6.26	-	-	4.12	-
Critical Hdwy Stg 1	5.58	-	-	-	-	-
Critical Hdwy Stg 2	5.58	-	-	-	-	-
Follow-up Hdwy	3.662	3.354	-	-	2.218	-
Pot Cap-1 Maneuver	249	568	-	-	1043	-
Stage 1	582	-	-	-	-	-
Stage 2	568	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	245	568	-	-	1043	-
Mov Cap-2 Maneuver	245	-	-	-	-	-
Stage 1	582	-	-	-	-	-
Stage 2	558	-	-	-	-	-

Approach	NW	NE	SW
HCM Control Delay, s	20.2	0	0.2
HCM LOS	C		

Minor Lane/Major Mvmt	NET	NER	NWLn1	SWL	SWT
Capacity (veh/h)	-	-	298	1043	-
HCM Lane V/C Ratio	-	-	0.205	0.012	-
HCM Control Delay (s)	-	-	20.2	8.5	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	0.8	0	-

Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	21	77	94	640	658	31
Future Vol, veh/h	21	77	94	640	658	31
Conflicting Peds, #/hr	1	0	1	0	0	1
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	125	0	0	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	5	5	6	6	3	3
Mvmt Flow	23	84	102	696	715	34

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1286	375	750	0	-	0
Stage 1	733	-	-	-	-	-
Stage 2	553	-	-	-	-	-
Critical Hdwy	6.9	7	4.22	-	-	-
Critical Hdwy Stg 1	5.9	-	-	-	-	-
Critical Hdwy Stg 2	5.9	-	-	-	-	-
Follow-up Hdwy	3.55	3.35	2.26	-	-	-
Pot Cap-1 Maneuver	152	614	829	-	-	-
Stage 1	428	-	-	-	-	-
Stage 2	532	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	133	613	829	-	-	-
Mov Cap-2 Maneuver	133	-	-	-	-	-
Stage 1	428	-	-	-	-	-
Stage 2	466	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	17.3	1.3	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	829	-	133	613	-	-
HCM Lane V/C Ratio	0.123	-	0.172	0.137	-	-
HCM Control Delay (s)	10	-	37.6	11.8	-	-
HCM Lane LOS	A	-	E	B	-	-
HCM 95th %tile Q(veh)	0.4	-	0.6	0.5	-	-

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	530	2	6	791	7	8	0	23	7	0	1
Future Vol, veh/h	2	530	2	6	791	7	8	0	23	7	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	125	-	-	-	-	-	-	-	-	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	90	90	95	95	90	90	90	95	90	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	28	2	2
Mvmt Flow	2	558	2	7	833	7	9	0	26	7	0	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	840	0	0	560	0	0	1413	1416	559	1426	1414	836
Stage 1	-	-	-	-	-	-	563	563	-	850	850	-
Stage 2	-	-	-	-	-	-	850	853	-	576	564	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.38	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.38	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.38	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.752	4.018	3.318
Pot Cap-1 Maneuver	795	-	-	1011	-	-	115	137	529	99	138	367
Stage 1	-	-	-	-	-	-	511	509	-	321	377	-
Stage 2	-	-	-	-	-	-	355	376	-	460	508	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	795	-	-	1011	-	-	113	135	529	93	136	367
Mov Cap-2 Maneuver	-	-	-	-	-	-	113	135	-	93	136	-
Stage 1	-	-	-	-	-	-	510	508	-	320	372	-
Stage 2	-	-	-	-	-	-	349	371	-	437	507	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.1	20.2	43
HCM LOS			C	E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	271	795	-	-	1011	-	-	93	367
HCM Lane V/C Ratio	0.127	0.003	-	-	0.007	-	-	0.079	0.003
HCM Control Delay (s)	20.2	9.5	-	-	8.6	0	-	47	14.8
HCM Lane LOS	C	A	-	-	A	A	-	E	B
HCM 95th %tile Q(veh)	0.4	0	-	-	0	-	-	0.3	0

Intersection	
Int Delay, s/veh	1.5

Movement	NBL	NBR	NET	NER	SWL	SWT
Lane Configurations						
Traffic Vol, veh/h	8	113	558	2	29	806
Future Vol, veh/h	8	113	558	2	29	806
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	50	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	9	126	620	2	32	896

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1581	621	0	0	622	0
Stage 1	621	-	-	-	-	-
Stage 2	960	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	120	487	-	-	959	-
Stage 1	536	-	-	-	-	-
Stage 2	372	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	112	487	-	-	959	-
Mov Cap-2 Maneuver	112	-	-	-	-	-
Stage 1	536	-	-	-	-	-
Stage 2	347	-	-	-	-	-

Approach	NB	NE	SW
HCM Control Delay, s	16.6	0	0.3
HCM LOS	C		

Minor Lane/Major Mvmt	NET	NER	NBLn1	NBLn2	SWL	SWT
Capacity (veh/h)	-	-	112	487	959	-
HCM Lane V/C Ratio	-	-	0.079	0.258	0.034	-
HCM Control Delay (s)	-	-	39.9	14.9	8.9	0
HCM Lane LOS	-	-	E	B	A	A
HCM 95th %tile Q(veh)	-	-	0.3	1	0.1	-

Intersection	
Int Delay, s/veh	13.7

Movement	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations						
Traffic Vol, veh/h	118	40	607	66	6	716
Future Vol, veh/h	118	40	607	66	6	716
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	5	4	2	6	2	2
Mvmt Flow	127	43	653	71	6	770

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1471	688	0	0	724	0
Stage 1	688	-	-	-	-	-
Stage 2	783	-	-	-	-	-
Critical Hdwy	6.45	6.24	-	-	4.12	-
Critical Hdwy Stg 1	5.45	-	-	-	-	-
Critical Hdwy Stg 2	5.45	-	-	-	-	-
Follow-up Hdwy	3.545	3.336	-	-	2.218	-
Pot Cap-1 Maneuver	138	443	-	-	879	-
Stage 1	493	-	-	-	-	-
Stage 2	445	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	136	443	-	-	879	-
Mov Cap-2 Maneuver	136	-	-	-	-	-
Stage 1	493	-	-	-	-	-
Stage 2	440	-	-	-	-	-

Approach	NW	NE	SW
HCM Control Delay, s	134.3	0	0.1
HCM LOS	F		

Minor Lane/Major Mvmt	NET	NER	NWLn1	SWL	SWT
Capacity (veh/h)	-	-	165	879	-
HCM Lane V/C Ratio	-	-	1.03	0.007	-
HCM Control Delay (s)	-	-	134.3	9.1	0
HCM Lane LOS	-	-	F	A	A
HCM 95th %tile Q(veh)	-	-	8.3	0	-

Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	37	76	53	1302	853	6
Future Vol, veh/h	37	76	53	1302	853	6
Conflicting Peds, #/hr	4	0	2	0	0	2
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	125	0	0	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	6	6	7	2	2	2
Mvmt Flow	39	81	56	1385	907	6

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1722	459	916	0	-	0
Stage 1	913	-	-	-	-	-
Stage 2	809	-	-	-	-	-
Critical Hdwy	6.92	7.02	4.24	-	-	-
Critical Hdwy Stg 1	5.92	-	-	-	-	-
Critical Hdwy Stg 2	5.92	-	-	-	-	-
Follow-up Hdwy	3.56	3.36	2.27	-	-	-
Pot Cap-1 Maneuver	77	538	710	-	-	-
Stage 1	342	-	-	-	-	-
Stage 2	388	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	71	537	710	-	-	-
Mov Cap-2 Maneuver	71	-	-	-	-	-
Stage 1	341	-	-	-	-	-
Stage 2	357	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	43.4	0.4	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	710	-	71	537	-	-
HCM Lane V/C Ratio	0.079	-	0.554	0.151	-	-
HCM Control Delay (s)	10.5	-	106.1	12.9	-	-
HCM Lane LOS	B	-	F	B	-	-
HCM 95th %tile Q(veh)	0.3	-	2.3	0.5	-	-

Appendix G – Signal Warrant Analysis

Warrants Summary

Information			
Analyst	CRS	Intersection	Estes Dr Ext & Airport Dr
Agency/Co	HNTB North Carolina, PC	Jurisdiction	Chapel Hill, NC
Date Performed	12/21/2017	Units	U.S. Customary
Project ID	CH Municipal Services Campus	Time Period Analyzed	2021 With Site Scenario
East/West Street	Estes Drive Extension	North/South Street	Airport Dr
File Name	Estes & Airport.xhy	Major Street	East-West

Project Description *CH Municipal Services Campus*

General				Roadway Network	
Major Street Speed (mph)	35	☐	Population < 10,000	Two Major Routes	☐
Nearest Signal (ft)	0	☐	Coordinated Signal System	Weekend Count	☐
Crashes (per year)	0	☐	Adequate Trials of Alternatives	5-yr Growth Factor	0

Geometry and Traffic	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N	0	1	0	0	1	0	0	0	0	0	0	0
Lane usage		TR			LT			LR				
Vehicle Volume Averages (vph)	0	152	18	2	133	0	17	0	6	0	0	0
Peds (ped/h) / Gaps (gaps/h)	--	0 / 0	--	--	0 / 0	--	--	0 / 0	--	--	0 / 0	--
Delay (s/veh) / (veh-hr)	--	0 / 0	--	--	0.0 / 0	--	--	16.4 / 0.6	--	--	0 / 0	--

Warrant 1: Eight-Hour Vehicular Volume	☐
1 A. Minimum Vehicular Volumes (Both major approaches --and-- higher minor approach) --or--	☐
1 B. Interruption of Continuous Traffic (Both major approaches --and-- higher minor approach) --or--	☐
1 (80%) Vehicular --and-- Interruption Volumes (Both major approaches --and-- higher minor approach)	☐
Warrant 2: Four-Hour Vehicular Volume	☐
2 A. Four-Hour Vehicular Volumes (Both major approaches --and-- higher minor approach)	☐
Warrant 3: Peak Hour	☑
3 A. Peak-Hour Conditions (Minor delay --and-- minor volume --and-- total volume) --or--	☑
3 B. Peak- Hour Vehicular Volumes (Both major approaches --and-- higher minor approach)	☑
Warrant 4: Pedestrian Volume	☐
4 A. Four Hour Volumes --or--	☐
4 B. One-Hour Volumes	☐
Warrant 5: School Crossing	☐
5. Student Volumes --and--	☐
5. Gaps Same Period	☐
Warrant 6: Coordinated Signal System	☐
6. Degree of Platooning (Predominant direction or both directions)	☐
Warrant 7: Crash Experience	☐
7 A. Adequate trials of alternatives, observance and enforcement failed --and--	☐
7 B. Reported crashes susceptible to correction by signal (12-month period) --and--	☐

7 C. (80%) Volumes for Warrants 1A, 1B --or-- 4 are satisfied	☐
Warrant 8: Roadway Network	☐
8 A. Weekday Volume (Peak hour total --and-- projected warrants 1, 2 or 3) --or--	☐
8 B. Weekend Volume (Five hours total)	☐
Warrant 9: Grade Crossing	☐
9 A. Grade Crossing within 140 ft --and--	☐
9 B. Peak-Hour Vehicular Volumes	☐

Warrants Volume

Information

Analyst	CRS	Intersection	Estes Dr Ext & Airport Dr
Agency/Co	HNTB North Carolina, PC	Jurisdiction	Chapel Hill, NC
Date Performed	12/21/2017	Units	U.S. Customary
Project ID	CH Municipal Services Campus	Time Period Analyzed	2021 With Site Scenario
East/West Street	Estes Drive Extension	North/South Street	Airport Dr
File Name	Estes & Airport.xhy	Major Street	East-West

Project Description *CH Municipal Services Campus*

Warrant 1

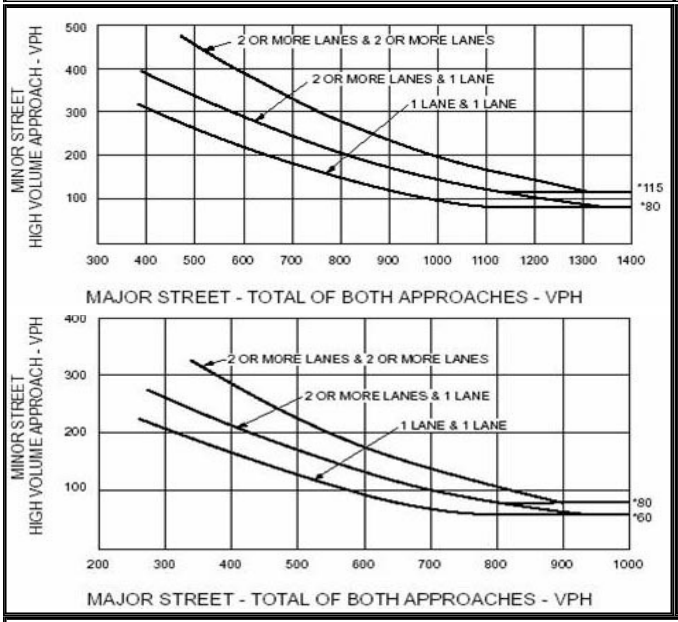
Condition A—Minimum Vehicular Volume

Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)				Vehicles per hour on higher-volume minor-street approach (one direction only)			
Major Street	Minor Street	100%	80%	70%	56%	100%	80%	70%	56%
1	1	500	400	350	280	150	120	105	84
2 or more	1	600	480	420	336	150	120	105	84
2 or more	2 or more	600	480	420	336	200	160	140	112
1	2 or more	500	400	350	280	200	160	140	112

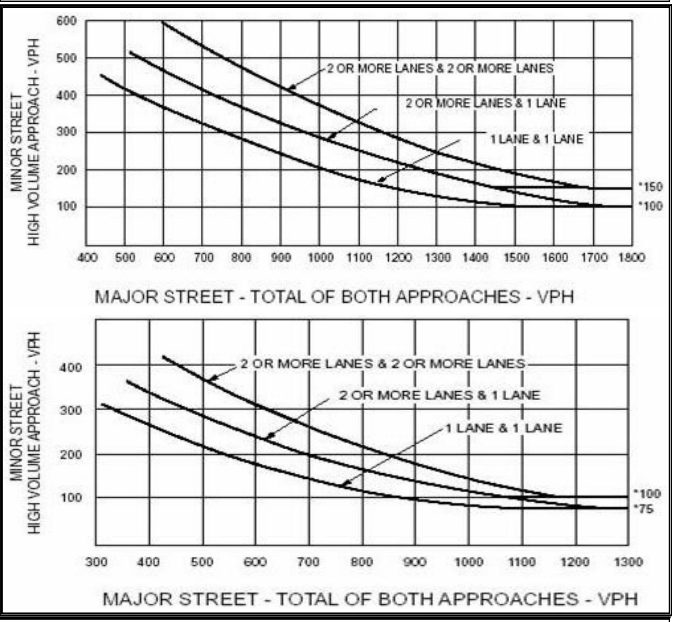
Condition B—Interruption of Continuous Traffic

Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)				Vehicles per hour on higher-volume minor-street approach (one direction only)			
Major Street	Minor Street	100%	80%	70%	56%	100%	80%	70%	56%
1	1	750	600	525	420	75	60	53	42
2 or more	1	900	720	630	504	75	60	53	42
2 or more	2 or more	900	720	630	504	100	80	70	56
1	2 or more	750	600	525	420	100	80	70	56

Warrant 2



Warrant 3



Volume Summary

Major Street Lanes 1 **Minor Street Lanes** 1 **Speed** 35 **Population** 10000+

Hours	Major Volume	Minor Volume	Total Volume	1A (100%)	1A (80%)	1B (100%)	1B (80%)	2 (100%)	3A (100%)	3B (100%)
07-08	1316	73	1389	No	No	No	Yes	No	No	No
08-09	0	0	0	No	No	No	No	No	No	No
09-10	0	0	0	No	No	No	No	No	No	No
10-11	0	0	0	No	No	No	No	No	No	No
11-12	0	0	0	No	No	No	No	No	No	No
12-13	974	58	1032	No	No	No	No	No	No	No
13-14	0	0	0	No	No	No	No	No	No	No
14-15	0	0	0	No	No	No	No	No	No	No
15-16	0	0	0	No	No	No	No	No	No	No
16-17	0	0	0	No	No	No	No	No	No	No
17-18	1395	158	1553	Yes	Yes	Yes	Yes	Yes	Yes	Yes
18-19	0	0	0	No	No	No	No	No	No	No
Totals	3685	289	3974	1	1	1	2	1	1	1

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Warrants Summary

Information			
Analyst	CRS	Intersection	NC 86 & Airport Dr
Agency/Co	HNTB North Carolina, PC	Jurisdiction	Chapel Hill, NC
Date Performed	12/21/2017	Units	U.S. Customary
Project ID	CH Municipal Services Campus	Time Period Analyzed	2021 With Site Scenario
East/West Street	Airport Drive	North/South Street	NC 86 (MLK Jr Blvd)
File Name	NC 86 & Airport.xhy	Major Street	North-South

Project Description *CH Municipal Services Campus*

General				Roadway Network	
Major Street Speed (mph)	35	☐	Population < 10,000	Two Major Routes	☐
Nearest Signal (ft)	0	☐	Coordinated Signal System	Weekend Count	☐
Crashes (per year)	0	☐	Adequate Trials of Alternatives	5-yr Growth Factor	0

Geometry and Traffic	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N	1	0	1	0	0	0	1	2	0	0	2	0
Lane usage	L		R				L	T			TR	
Vehicle Volume Averages (vph)	5	0	21	0	0	0	21	210	0	0	219	14
Peds (ped/h) / Gaps (gaps/h)	--	0 / 0	--	--	0 / 0	--	--	0 / 0	--	--	0 / 0	--
Delay (s/veh) / (veh-hr)	--	6.7 / 0.2	--	--	0 / 0	--	--	0.3 / 0.1	--	--	0 / 0	--

Warrant 1: Eight-Hour Vehicular Volume	☐
1 A. Minimum Vehicular Volumes (Both major approaches --and-- higher minor approach) --or--	☐
1 B. Interruption of Continuous Traffic (Both major approaches --and-- higher minor approach) --or--	☐
1 (80%) Vehicular --and-- Interruption Volumes (Both major approaches --and-- higher minor approach)	☐
Warrant 2: Four-Hour Vehicular Volume	☐
2 A. Four-Hour Vehicular Volumes (Both major approaches --and-- higher minor approach)	☐
Warrant 3: Peak Hour	☐
3 A. Peak-Hour Conditions (Minor delay --and-- minor volume --and-- total volume) --or--	☐
3 B. Peak- Hour Vehicular Volumes (Both major approaches --and-- higher minor approach)	☐
Warrant 4: Pedestrian Volume	☐
4 A. Four Hour Volumes --or--	☐
4 B. One-Hour Volumes	☐
Warrant 5: School Crossing	☐
5. Student Volumes --and--	☐
5. Gaps Same Period	☐
Warrant 6: Coordinated Signal System	☐
6. Degree of Platooning (Predominant direction or both directions)	☐
Warrant 7: Crash Experience	☐
7 A. Adequate trials of alternatives, observance and enforcement failed --and--	☐
7 B. Reported crashes susceptible to correction by signal (12-month period) --and--	☐

7 C. (80%) Volumes for Warrants 1A, 1B --or-- 4 are satisfied	☐
Warrant 8: Roadway Network	☐
8 A. Weekday Volume (Peak hour total --and-- projected warrants 1, 2 or 3) --or--	☐
8 B. Weekend Volume (Five hours total)	☐
Warrant 9: Grade Crossing	☐
9 A. Grade Crossing within 140 ft --and--	☐
9 B. Peak-Hour Vehicular Volumes	☐

 HCS 2010™ Version 6.90 Generated: 12/21/2017 2:33 PM

Warrants Volume

Information

Analyst	CRS	Intersection	NC 86 & Airport Dr
Agency/Co	HNTB North Carolina, PC	Jurisdiction	Chapel Hill, NC
Date Performed	12/21/2017	Units	U.S. Customary
Project ID	CH Municipal Services Campus	Time Period Analyzed	2021 With Site Scenario
East/West Street	Airport Drive	North/South Street	NC 86 (MLK Jr Blvd)
File Name	NC 86 & Airport.xhy	Major Street	North-South

Project Description *CH Municipal Services Campus*

Warrant 1

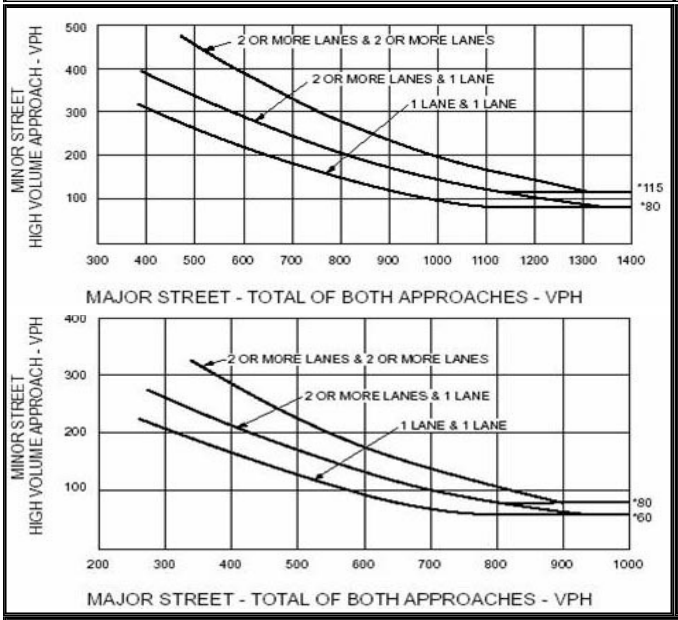
Condition A—Minimum Vehicular Volume

Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)				Vehicles per hour on higher-volume minor-street approach (one direction only)			
Major Street	Minor Street	100%	80%	70%	56%	100%	80%	70%	56%
1	1	500	400	350	280	150	120	105	84
2 or more	1	600	480	420	336	150	120	105	84
2 or more	2 or more	600	480	420	336	200	160	140	112
1	2 or more	500	400	350	280	200	160	140	112

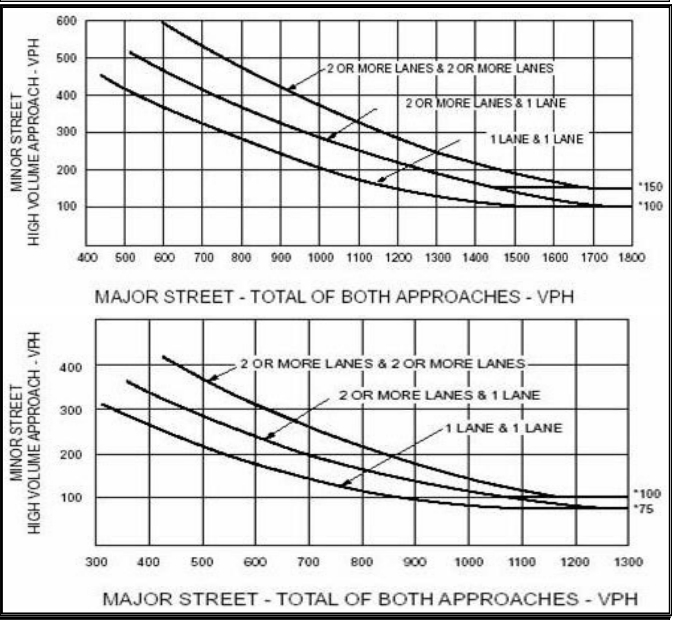
Condition B—Interruption of Continuous Traffic

Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)				Vehicles per hour on higher-volume minor-street approach (one direction only)			
Major Street	Minor Street	100%	80%	70%	56%	100%	80%	70%	56%
1	1	750	600	525	420	75	60	53	42
2 or more	1	900	720	630	504	75	60	53	42
2 or more	2 or more	900	720	630	504	100	80	70	56
1	2 or more	750	600	525	420	100	80	70	56

Warrant 2



Warrant 3



Volume Summary

Major Street Lanes 2+ **Minor Street Lanes** 2+ **Speed** 35 **Population** 10000+

Hours	Major Volume	Minor Volume	Total Volume	1A (100%)	1A (80%)	1B (100%)	1B (80%)	2 (100%)	3A (100%)	3B (100%)
07-08	1948	102	2050	No	No	Yes	Yes	No	No	No
08-09	0	0	0	No	No	No	No	No	No	No
09-10	0	0	0	No	No	No	No	No	No	No
10-11	0	0	0	No	No	No	No	No	No	No
11-12	0	0	0	No	No	No	No	No	No	No
12-13	1423	98	1521	No	No	No	Yes	No	No	No
13-14	0	0	0	No	No	No	No	No	No	No
14-15	0	0	0	No	No	No	No	No	No	No
15-16	0	0	0	No	No	No	No	No	No	No
16-17	0	0	0	No	No	No	No	No	No	No
17-18	2214	113	2327	No	No	Yes	Yes	No	No	No
18-19	0	0	0	No	No	No	No	No	No	No
Totals	5585	313	5898	0	0	2	3	0	0	0

Appendix H – Crash Data

North Carolina Department of Transportation
Traffic Engineering Accident Analysis System
Strip Analysis Report

Study Criteria Summary

County: ORANGE **City:** All and Rural
Date: 11/1/2012 **to** 10/31/2017 **Study:** ESTESDREXTSTRIP
Location: SR 1780 (Estes Dr Ext) from SR 1843 (Seawell School Rd) to NC 86 (Martin Luther King Jr. Blvd)

Report Details

Acc No	Crash ID	Milepost	Date	Accident Type	Total Damage	Injuries F	A	B	C	Condition R	L	W	Road Ch	Ci	Trfc Ctl Dv	Op
1	**103707110**	0.950	03/13/2013 08:15	RAN OFF ROAD - RIGHT	$ 1500	0	0	0	0	1	1	1	1	0	3	1
Unit	**1 :** 1	**Alchl/Drgs:** 0	**Speed:** 35 MPH	**Dir:** N	**Veh Mnvr/Ped Actn:** 8	**Obj Strk:** 42										
2	**104012507**	0.950	03/01/2014 06:35	RAN OFF ROAD - RIGHT	$ 3000	1	0	0	0	1	3	2	7	0	13	1
Unit	**1 :** 20	**Alchl/Drgs:** 1	**Speed:** 55 MPH	**Dir:** SW	**Veh Mnvr/Ped Actn:** 4	**Obj Strk:** 64										
3	**103632486**	0.964	12/06/2012 17:20	ANIMAL	$ 2000	0	0	0	0	1	5	2	3	0	0	
Unit	**1 :** 1	**Alchl/Drgs:** 0	**Speed:** 35 MPH	**Dir:** E	**Veh Mnvr/Ped Actn:** 4	**Obj Strk:** 17										
4	**104364723**	1.070	04/28/2015 19:15	ANIMAL	$ 500	0	0	0	0	1	1	1	7	0	13	2
Unit	**1 :** 1	**Alchl/Drgs:** 0	**Speed:** 35 MPH	**Dir:** N	**Veh Mnvr/Ped Actn:** 4	**Obj Strk:** 17										
5	**103714748**	1.250	03/24/2013 18:31	RAN OFF ROAD - LEFT	$ 8000	0	0	0	0	2	4	2	5	0		
Unit	**1 :** 1	**Alchl/Drgs:** 1	**Speed:** 35 MPH	**Dir:** E	**Veh Mnvr/Ped Actn:** 4	**Obj Strk:** 58										
6	**103954240**	1.461	12/15/2013 17:38	ANIMAL	$ 1000	0	0	0	0	1	4	1	1	0	0	
Unit	**1 :** 1	**Alchl/Drgs:** 0	**Speed:** 30 MPH	**Dir:** S	**Veh Mnvr/Ped Actn:** 4	**Obj Strk:** 17										
7	**103998877**	1.467	01/21/2014 16:57	RAN OFF ROAD - RIGHT	$ 8000	0	0	0	0	1	2	2	3	0	0	2
Unit	**1 :** 2	**Alchl/Drgs:** 0	**Speed:** 45 MPH	**Dir:** E	**Veh Mnvr/Ped Actn:** 4	**Obj Strk:** 34										
8	**103628509**	1.476	12/10/2012 07:03	REAR END, SLOW OR STOP	$ 4400	0	0	0	1	2	1	2	1	1		
Unit	**1 :** 1	**Alchl/Drgs:** 0	**Speed:** 45 MPH	**Dir:** W	**Veh Mnvr/Ped Actn:** 4	**Obj Strk:**										
Unit	**2 :** 1	**Alchl/Drgs:** 0	**Speed:** 0 MPH	**Dir:** W	**Veh Mnvr/Ped Actn:** 11	**Obj Strk:**										
9	**104599113**	1.500	12/14/2015 20:37	RAN OFF ROAD - RIGHT	$ 4000	0	0	1	0	1	4	1	3	0	13	1
Unit	**1 :** 1	**Alchl/Drgs:** 0	**Speed:** 50 MPH	**Dir:** W	**Veh Mnvr/Ped Actn:** 4	**Obj Strk:** 33										
10	**104685929**	1.677	03/17/2016 07:54	REAR END, SLOW OR STOP	$ 2800	0	0	0	0	1	1	1	3	0	3	1
Unit	**1 :** 2	**Alchl/Drgs:** 0	**Speed:** 30 MPH	**Dir:** E	**Veh Mnvr/Ped Actn:** 1	**Obj Strk:**										

Acc No	Crash ID	Milepost	Date	Accident Type	Total Damage	Injuries F	A	B	C	Condition R	L	W	Road Ch	Ci	Trfc Ctl Dv	Op
Unit	**2 :** 1	**Alchl/Drgs:**	0	**Speed:** 30 MPH	**Dir:** E	**Veh Mnvr/Ped Actn:**				4			**Obj Strk:**			
11	**104977435**	1.692	12/19/2016 20:43	RAN OFF ROAD - LEFT	$ 10000	0	0	1	0	1	4	1	5	0	0	
Unit	**1 :** 2	**Alchl/Drgs:**	0	**Speed:** 40 MPH	**Dir:** S	**Veh Mnvr/Ped Actn:**				4			**Obj Strk:**		17	
12	**104924595**	1.724	10/24/2016 14:53	REAR END, SLOW OR STOP	$ 1000	0	0	0	0	1	1	1	1	0	3	1
Unit	**1 :** 1	**Alchl/Drgs:**	1	**Speed:** 0 MPH	**Dir:** E	**Veh Mnvr/Ped Actn:**				11			**Obj Strk:**			
Unit	**2 :** 4	**Alchl/Drgs:**	0	**Speed:** 0 MPH	**Dir:** E	**Veh Mnvr/Ped Actn:**				11			**Obj Strk:**			
13	**103647661**	1.730	12/20/2012 22:43	OTHER COLLISION WITH VEHICLE	$ 10000	0	0	0	3	2	4	3	1	7	3	2
Unit	**1 :** 1	**Alchl/Drgs:**	0	**Speed:** 10 MPH	**Dir:** W	**Veh Mnvr/Ped Actn:**				4			**Obj Strk:**			
Unit	**2 :** 1	**Alchl/Drgs:**	0	**Speed:** 35 MPH	**Dir:** S	**Veh Mnvr/Ped Actn:**				4			**Obj Strk:**			
14	**103654207**	1.730	12/21/2012 17:20	REAR END, SLOW OR STOP	$ 2000	0	0	0	0	2	1	3	1	0	3	1
Unit	**1 :** 7	**Alchl/Drgs:**	0	**Speed:** 5 MPH	**Dir:** E	**Veh Mnvr/Ped Actn:**				4			**Obj Strk:**			
Unit	**2 :** 1	**Alchl/Drgs:**	0	**Speed:** 0 MPH	**Dir:** E	**Veh Mnvr/Ped Actn:**				11			**Obj Strk:**			
15	**103659727**	1.730	01/01/2013 17:26	LEFT TURN, DIFFERENT ROADWAYS	$ 2500	0	0	0	1	2	2	3	1	0	3	1
Unit	**1 :** 4	**Alchl/Drgs:**	0	**Speed:** 35 MPH	**Dir:** NE	**Veh Mnvr/Ped Actn:**				8			**Obj Strk:**			
Unit	**2 :** 1	**Alchl/Drgs:**	0	**Speed:** 0 MPH	**Dir:** S	**Veh Mnvr/Ped Actn:**				1			**Obj Strk:**			
Unit	**3 :** 4	**Alchl/Drgs:**	0	**Speed:** 15 MPH	**Dir:** SE	**Veh Mnvr/Ped Actn:**				8			**Obj Strk:**			
16	**103678294**	1.730	02/08/2013 12:12	LEFT TURN, SAME ROADWAY	$ 10000	0	0	0	0	1	1	2	1	0	3	1
Unit	**1 :** 1	**Alchl/Drgs:**	0	**Speed:** 20 MPH	**Dir:** E	**Veh Mnvr/Ped Actn:**				4			**Obj Strk:**			
Unit	**2 :** 1	**Alchl/Drgs:**	0	**Speed:** 20 MPH	**Dir:** W	**Veh Mnvr/Ped Actn:**				8			**Obj Strk:**			
17	**103761905**	1.730	05/20/2013 15:56	LEFT TURN, SAME ROADWAY	$ 8500	0	0	1	0	2	1	3	3	0	3	1
Unit	**1 :** 1	**Alchl/Drgs:**	0	**Speed:** 30 MPH	**Dir:** S	**Veh Mnvr/Ped Actn:**				4			**Obj Strk:**			
Unit	**2 :** 1	**Alchl/Drgs:**	0	**Speed:** 15 MPH	**Dir:** S	**Veh Mnvr/Ped Actn:**				8			**Obj Strk:**			
18	**103787091**	1.730	06/16/2013 18:23	LEFT TURN, SAME ROADWAY	$ 6000	0	0	0	0	1	1	1	1	0	3	1
Unit	**1 :** 2	**Alchl/Drgs:**	0	**Speed:** 35 MPH	**Dir:** S	**Veh Mnvr/Ped Actn:**				4			**Obj Strk:**			
Unit	**2 :** 17	**Alchl/Drgs:**	0	**Speed:** 15 MPH	**Dir:** E	**Veh Mnvr/Ped Actn:**				8			**Obj Strk:**			
19	**103892317**	1.730	10/21/2013 19:13	SIDESWIPE, OPPOSITE DIRECTION	$ 3500	0	0	0	0	1	2	1	1	0	3	1
Unit	**1 :** 1	**Alchl/Drgs:**	0	**Speed:** 10 MPH	**Dir:** W	**Veh Mnvr/Ped Actn:**				8			**Obj Strk:**			
Unit	**2 :** 1	**Alchl/Drgs:**	0	**Speed:** 25 MPH	**Dir:** E	**Veh Mnvr/Ped Actn:**				4			**Obj Strk:**			

North Carolina Department of Transportation
Traffic Engineering Accident Analysis System
Strip Analysis Report

Acc No	Crash ID	Milepost	Date	Accident Type	Total Damage	Injuries F	A	B	C	Condition R	L	W	Road Ch	Ci	Trfc Ctl Dv	Op
20	**103961747**	1.730	12/09/2013 18:08	SIDESWIPE, SAME DIRECTION	$ 1800	0	0	0	0	2	4	3	1	0	3	2
Unit	**1 :** 1	**Alchl/Drgs:** 0	**Speed:** 20 MPH	**Dir:** N	**Veh Mnvr/Ped Actn:** 7	**Obj Strk:**										
Unit	**2 :** 4	**Alchl/Drgs:** 0	**Speed:** 20 MPH	**Dir:** N	**Veh Mnvr/Ped Actn:** 8	**Obj Strk:**										
21	**104005855**	1.730	02/01/2014 12:32	LEFT TURN, DIFFERENT ROADWAYS	$ 7000	0	0	0	0	1	1	2	1	0	3	1
Unit	**1 :** 1	**Alchl/Drgs:** 0	**Speed:** 35 MPH	**Dir:** W	**Veh Mnvr/Ped Actn:** 4	**Obj Strk:**										
Unit	**2 :** 1	**Alchl/Drgs:** 0	**Speed:** 15 MPH	**Dir:** E	**Veh Mnvr/Ped Actn:** 8	**Obj Strk:**										
22	**104002496**	1.730	02/14/2014 14:52	RIGHT TURN, DIFFERENT ROADWAYS	$ 1550	0	0	0	0	1	1	1	1	0	3	1
Unit	**1 :** 1	**Alchl/Drgs:** 0	**Speed:** 30 MPH	**Dir:** S	**Veh Mnvr/Ped Actn:** 4	**Obj Strk:**										
Unit	**2 :** 1	**Alchl/Drgs:** 0	**Speed:** 10 MPH	**Dir:** E	**Veh Mnvr/Ped Actn:** 7	**Obj Strk:**										
23	**104068211**	1.730	05/16/2014 15:42	ANGLE	$ 2800	0	0	0	0	1	1	1	1	0	3	1
Unit	**1 :** 1	**Alchl/Drgs:** 0	**Speed:** 5 MPH	**Dir:** SE	**Veh Mnvr/Ped Actn:** 8	**Obj Strk:**										
Unit	**2 :** 2	**Alchl/Drgs:** 0	**Speed:** 15 MPH	**Dir:** N	**Veh Mnvr/Ped Actn:** 4	**Obj Strk:**										
24	**104582812**	1.730	11/22/2015 01:42	ANGLE	$ 12000	0	0	0	0	1	4	1	1	0	3	1
Unit	**1 :** 4	**Alchl/Drgs:** 0	**Speed:** 40 MPH	**Dir:** S	**Veh Mnvr/Ped Actn:** 4	**Obj Strk:**										
Unit	**2 :** 5	**Alchl/Drgs:** 0	**Speed:** 10 MPH	**Dir:** E	**Veh Mnvr/Ped Actn:** 8	**Obj Strk:**										
25	**105064389**	1.730	04/03/2017 20:46	LEFT TURN, SAME ROADWAY	$ 6700	0	0	0	0	2	4	2	3	0	3	1
Unit	**1 :** 4	**Alchl/Drgs:** 0	**Speed:** 30 MPH	**Dir:** W	**Veh Mnvr/Ped Actn:** 4	**Obj Strk:**										
Unit	**2 :** 1	**Alchl/Drgs:** 0	**Speed:** 30 MPH	**Dir:** E	**Veh Mnvr/Ped Actn:** 8	**Obj Strk:**										
Unit	**3 :** 4	**Alchl/Drgs:** 0	**Speed:** 35 MPH	**Dir:** S	**Veh Mnvr/Ped Actn:** 1	**Obj Strk:**										

Legend for Report Details:

Acc No - Accident Number
Injuries: F - Fatal, A - Class A, B - Class B, C - Class C
Condition: R - Road Surface, L - Ambient Light, W - Weather
Rd Ch - Road Character
Rd Ci - Roadway Contributing Circumstances
Trfc Ctl - Traffic Control: Dv - Device, Op - Operating
Alchl/Drgs - Alcohol Drugs Suspected
Veh Mnvr/Ped Actn - Vehicle Maneuver/Pedestrian Action
Obj Strk - Object Struck

Summary Statistics

High Level Crash Summary

Crash Type	Number of Crashes	Percent of Total
Total Crashes	25	100.00
Fatal Crashes	1	4.00
Non-Fatal Injury Crashes	6	24.00
Total Injury Crashes	7	28.00
Property Damage Only Crashes	18	72.00
Night Crashes	9	36.00
Wet Crashes	8	32.00
Alcohol/Drugs Involvement Crashes	3	12.00

Crash Severity Summary

Crash Type	Number of Crashes	Percent of Total
Total Crashes	25	100.00
Fatal Crashes	1	4.00
Class A Crashes	0	0.00
Class B Crashes	3	12.00
Class C Crashes	3	12.00
Property Damage Only Crashes	18	72.00

Vehicle Exposure Statistics

Annual ADT = 12400

Total Length = 0.78 (Miles) **1.255 (Kilometers)**

Total Vehicle Exposure = 17.66 (MVMT) **28.42 (MVKMT)**

Crash Rate	Crashes Per 100 Million Vehicle Miles	Crashes Per 100 Million Vehicle Kilometers
Total Crash Rate	141.55	87.96
Fatal Crash Rate	5.66	3.52
Non Fatal Crash Rate	33.97	21.11
Night Crash Rate	50.96	31.66
Wet Crash Rate	45.30	28.15
EPDO Rate	822.15	510.86

Miscellaneous Statistics

Severity Index =	5.81
EPDO Crash Index =	145.20
Estimated Property Damage Total = $	120550.00

Accident Type Summary

Accident Type	Number of Crashes	Percent of Total
ANGLE	2	8.00
ANIMAL	3	12.00
LEFT TURN, DIFFERENT ROADWAYS	2	8.00
LEFT TURN, SAME ROADWAY	4	16.00
OTHER COLLISION WITH VEHICLE	1	4.00
RAN OFF ROAD - LEFT	2	8.00
RAN OFF ROAD - RIGHT	4	16.00
REAR END, SLOW OR STOP	4	16.00
RIGHT TURN, DIFFERENT ROADWAYS	1	4.00
SIDESWIPE, OPPOSITE DIRECTION	1	4.00
SIDESWIPE, SAME DIRECTION	1	4.00

Injury Summary

Injury Type	Number of Injuries	Percent of Total
Fatal Injuries	1	11.11
Class A Injuries	0	0.00
Class B Injuries	3	33.33
Class C Injuries	5	55.56
Total Non-Fatal Injuries	8	88.89
Total Injuries	9	100.00

Monthly Summary

Month	Number of Crashes	Percent of Total
Jan	2	8.00
Feb	3	12.00
Mar	4	16.00
Apr	2	8.00
May	2	8.00
Jun	1	4.00
Jul	0	0.00
Aug	0	0.00
Sep	0	0.00
Oct	2	8.00
Nov	1	4.00
Dec	8	32.00

Daily Summary

Day	Number of Crashes	Percent of Total
Mon	8	32.00
Tue	3	12.00
Wed	1	4.00
Thu	3	12.00
Fri	4	16.00
Sat	2	8.00
Sun	4	16.00

Hourly Summary

Hour	Number of Crashes	Percent of Total
0000-0059	0	0.00
0100-0159	1	4.00
0200-0259	0	0.00
0300-0359	0	0.00
0400-0459	0	0.00
0500-0559	0	0.00
0600-0659	1	4.00
0700-0759	2	8.00
0800-0859	1	4.00
0900-0959	0	0.00
1000-1059	0	0.00
1100-1159	0	0.00
1200-1259	2	8.00
1300-1359	0	0.00
1400-1459	2	8.00
1500-1559	2	8.00
1600-1659	1	4.00
1700-1759	4	16.00
1800-1859	3	12.00
1900-1959	2	8.00
2000-2059	3	12.00
2100-2159	0	0.00
2200-2259	1	4.00
2300-2359	0	0.00

Light and Road Conditions Summary

Condition	Dry	Wet	Other	Total
Day	9	3	0	12
Dark	5	4	0	9
Other	3	1	0	4
Total	17	8	0	25

Object Struck Summary

Object Type	Times Struck	Percent of Total
ANIMAL	4	44.44
DITCH	1	11.11
GUARDRAIL FACE ON SHOULDER	1	11.11
OTHER FIXED OBJECT	1	11.11
TREE	1	11.11
UTILITY POLE	1	11.11

Vehicle Type Summary

Vehicle Type	Number Involved	Percent of Total
MOTORCYCLE	1	2.33
PASSENGER CAR	27	62.79
PICKUP	5	11.63
SCHOOL BUS	1	2.33
SPORT UTILITY	7	16.28
TAXICAB	1	2.33
VAN	1	2.33

Yearly Totals Summary

Accident Totals

Year	Total Accidents	Fatal Accidents	Injury Accidents	Property Damage Only Accidents
2012	4	0	2	2
2013	9	0	2	7
2014	5	1	0	4
2015	3	0	1	2
2016	3	0	1	2
2017	1	0	0	1
Total	25	1	6	18

Injury Totals

Year	Fatal Injuries	Class A, B, or C Injuries
2012	0	4
2013	0	2
2014	1	0
2015	0	1
2016	0	1
2017	0	0
Total	1	8

Miscellaneous Totals

Year	Property Damage	EPDO Index
2012	$ 18400	18.80
2013	$ 42800	23.80
2014	$ 22350	80.80
2015	$ 16500	10.40
2016	$ 13800	10.40
2017	$ 6700	1.00
Total	$ 120550	145.20

Type of Accident Totals

Year	Left Turn	Right Turn	Rear End	Run Off Road & Fixed Object	Angle	Side Swipe	Other
2012	0	0	2	0	0	0	2
2013	4	0	0	2	0	2	1
2014	1	1	0	2	1	0	0

Year	Left Turn	Right Turn	Rear End	Run Off Road & Fixed Object	Angle	Side Swipe	Other
2015	0	0	0	1	1	0	1
2016	0	0	2	1	0	0	0
2017	1	0	0	0	0	0	0
Total	6	1	4	6	2	2	4

Strip Diagram

Features	Milepost	Crash IDs
SR 1843 | SEWELL SCHOOL	0.95	103707110 | 104012507
	0.96	103632486
	0.97	
	0.98	
	0.99	
	1.00	
	1.01	
	1.02	
	1.03	
	1.04	
	1.05	
	1.06	
	1.07	104364723
	1.08	
	1.09	
	1.10	
RR LOT ENTRANCE	1.11	
	1.12	
	1.13	
	1.14	
	1.15	
	1.16	
	1.17	
	1.18	
	1.19	
	1.20	
	1.21	
	1.22	
	1.23	
	1.24	
	1.25	103714748
	1.26	
	1.27	
	1.28	
	1.29	
	1.30	
	1.31	
	1.32	
	1.33	
	1.34	
	1.35	
	1.36	
	1.37	
	1.38	

Features	Milepost	Crash IDs
	1.39	
	1.40	
	1.41	
	1.42	
	1.43	
	1.44	
	1.45	
	1.46	103954240
AIRPORT	1.47	103998877
	1.48	103628509
	1.49	
	1.50	104599113
	1.51	
	1.52	
	1.53	
	1.54	
	1.55	
	1.56	
	1.57	
	1.58	
	1.59	
FACILITIES DR	1.60	
	1.61	
	1.62	
	1.63	
	1.64	
	1.65	
	1.66	
	1.67	
	1.68	104685929
	1.69	104977435
	1.70	
	1.71	
	1.72	104924595
NC 86 | SR 1750 | MARTIN LUTHER KING	1.73	103647661 | 103654207 | 103659727 | 103678294 | 103761905 | 103787091 | 103892317 | 103961747 | 104005855 | 104002496 | 104068211 | 104582812 | 105064389

Study Criteria

Study Name	Log No.	PH No.	TIP No.	K/A Cf.	B/C Cf.	ADT	ADT Route
ESTESDREXTSTRIP				76.8	8.4	12400	40001780

Request Date	Courier Service	Phone No.	Ext.	Fax No.

County			Municipality					
Name	Code	Div.	Name	Code	Y-Line Ft.	Begin Date	End Date	Years
ORANGE	68	7	All and Rural		0	11/1/2012	10/31/2017	5.00

Location Text

SR 1780 (Estes Dr Ext) from SR 1843 (Seawell School Rd) to NC 86 (Martin Luther King Jr. Blvd)

Requestor

Included Accidents	Old MP	New MP	Type
103998877	1.531	1.467	R
104977435	1.294	1.692	R

Excluded Accidents

103683324
103691001
103703630
103716916
103774745
103828029
103939566
104020946
104262198
104355424
104369919
104490927
104628361
104667241
104687062
104741442
104811851
105061198
105070133
105214438

Fiche Roads

Name	Code
SR 1780	40001780
ESTES DR EXT	50009903
SR 1750	40001750
HILLCREST	50014034

Strip Road

Name	Code	Begin MP	End MP	Miles	Kilometers
SR 1780	40001780	0.950	1.730	0.780	1.255