



Apex Town Council Meeting

Tuesday, October 15, 2019

Lance Olive, Mayor
Nicole L. Dozier, Mayor Pro Tempore
William S. Jensen, Wesley M. Moyer, Audra M. Killingsworth, and
Brett D. Gantt, Council Members
Drew Havens, Town Manager
Shawn Purvis, Assistant Town Manager
Marty Stone, Assistant Town Manager
Donna B. Hosch, MMC, NCCMC, Town Clerk
Laurie L. Hohe, Town Attorney

The Regular Meeting of the Apex Town Council scheduled for Tuesday, October 15, 2019, at 7:00 PM will be held in the Council Chamber of Apex Town Hall, 73 Hunter Street. The meeting will adjourn when all business is concluded or at 11:00 p.m., whichever comes first.

COMMENCEMENT

Call to Order : Invocation : Pledge of Allegiance

PRESENTATIONS

[PR1](#) Mayor Lance Olive
Presentation of Proclamation to Nicole Bernard, Western Wake Crisis Ministry

CONSENT AGENDA

All Consent Agenda items are considered routine, to be enacted by one motion with the adoption of the Consent Agenda, and without discussion. If a Council Member requests discussion of an item, the item may be removed from the Consent Agenda and considered separately. The Mayor will present the Consent Agenda to be set prior to taking action on the following items:

- [CN1](#) Amanda Grogan, Budget & Management Analyst
Motion to approve updates to the 2019/2020 Fee Schedule.
- [CN2](#) Amanda Bunce, Current Planning Manager
Motion to approve the Statement of the Apex Town Council pursuant to G.S. 160A-383 addressing action on the various Unified Development Ordinance (UDO) Amendments of October 1, 2019.
- [CN3](#) Dianne Khin, Planning Director
Motion to adopt a Resolution Directing the Town Clerk to Investigate Petition Received, to accept the Certificate of Sufficiency by the Town Clerk, and to adopt a Resolution Setting Date of Public Hearing on the Question of Annexation – Apex Town Council's intent to annex Don F. and Callie

Sorrell (single-family) property containing 22.418 acres located at 1221 Salem Church Road, Annexation #654 into the Town's corporate limits.

[CN4](#) Dianne Khin, Planning Director

Motion to adopt a Resolution Directing the Town Clerk to Investigate Petition Received, to accept the Certificate of Sufficiency by the Town Clerk, and to adopt a Resolution Setting Date of Public Hearing on the Question of Annexation – Apex Town Council's intent to annex Treva Weaver (single-family) property containing .959 acres located at 1608 Salem Church Road, Annexation #665 into the Town's corporate limits.

[CN5](#) Marty Stone, Assistant Town Manager

Motion to approve and authorize the Town Manager to execute the same for an Encroachment Agreement between the Town of Apex and Toll NC II LP, a North Carolina Limited Partnership, regarding Wake County PIN#0723-75-5956, Lot 114, Regency at White Oak Creek Phase 6, Book of Maps 2018, Page 00596, 2501 Cedar Hedge Court, Apex, NC, 27502.

[CN6](#) Mary Beth Manville, Human Resources Director

Motion to approve the addition of one position for the Permits and Inspections Department to add a Residential Field Supervisor, Grade 27.

[CN7](#) Shawn Purvis, Assistant Town Manager

Motion to approve Resolution of Intent for the partial closing of a right-of-way (ROW) between Chatham St. and Olive St. adjacent to 314 E. Chatham St. and to call for a Public Hearing at the November 19, 2019 Council Meeting

REGULAR MEETING AGENDA

Mayor Olive will call for additional Agenda items from Council or Staff and set the Agenda prior to taking action

PUBLIC FORUM

Public Forum allows the public an opportunity to address the Town Council. The speaker is requested not to address an item that appears as a Public Hearing scheduled on the Regular Agenda. The Mayor will recognize those who would like to speak at the appropriate time. Large groups are asked to select a representative to speak for the entire group. Comments must be limited to 3 minutes to allow others the opportunity to speak.

PUBLIC HEARINGS

[PH1](#) Sarah Rayfield, Senior Planner

Public Hearing and possible motion regarding an amendment to the 2045 Land Use Map and Rezoning Case #19CZ02 Morris Acres PUD. The applicant, Kaplan Residential, seeks to amend the 2045 Land Use Map from Medium Density Residential to High Density Residential and to rezone approximately ±17.4376 acres, for the properties located at 0, 7208, & 7208B Morris Acres Road (PINs 0732289587, 0732382530, & 0732382709), from Rural Residential (RR) to Planned Unit Development-Conditional Zoning (PUD-CZ).

[PH2](#) Shelly Mayo, Planner II

Public Hearing and possible motion on Rezoning Application #19CZ15 Mt. Zion Church Rd PUD. The applicant, Vaughn King, seeks to rezone approximately 11.3 acres located at 2504, 2508, 2512, 2516 & 2600 Mt. Zion Church Rd. (PINs 072143255, 0721435444, 07214355322, 0721434156 & 0721424940) from Rural Residential (RR) to Planned Unit Development-Conditional Zoning (PUD-CZ).

[PH3](#) Amanda Bunce, Current Planning Manager

The applicant has requested that this item be continued to the November 6, 2019 meeting.

Public Hearing and possible motion on Rezoning Application #19CZ16 Horton Park PUD Amendment & TF-CZ. The applicant, MFW Investments, LLC, seeks to rezone approximately 146.9 acres located at 5100, 5101, & 5220 Jessie Drive; 0 Dezola Street; and 8140 (portion of), 8252, 8306 & 8308 Smith Road from Planned Unit Development-Conditional Zoning (PUD-CZ #18CZ04) to Planned Unit Development-Conditional Zoning (PUD-CZ) and Tech/Flex-Conditional Zoning (TF-CZ).

[PH4](#) Jenna Shouse, Long Range Planner

Presentation of *Town of Apex Transit Circulator Study Draft Recommendations* with public hearing and possible motion regarding an associated amendment to Transit Plan Map of the Comprehensive Transportation Plan.

[PH5](#) Amanda Bunce, Current Planning Manager

Public Hearing and possible motion regarding various amendments to the Unified Development Ordinance.

OLD BUSINESS

UNFINISHED BUSINESS

NEW BUSINESS

CLOSED SESSION

[Laurie](#) Hohe, Town Attorney

Possible motion to go into closed session to (1) consult with the Town Attorney to protect attorney-client privilege (GS 143-318.11(a)(3)) and (2) discuss the Town's negotiation position for acquisition of real property (GS 143-318.11(a)(5)).

WORK SESSION

ADJOURNMENT

PROCLAMATION

From the Office of the Mayor



Food Insecurity Awareness Month 2019

WHEREAS, nationally, one in six older adults faces the threat of hunger and one in seven children lives with hunger; and

WHEREAS, 33% of older adults admitted to the hospital may be malnourished; and

WHEREAS, malnutrition can increase healthcare costs by 300%; and

WHEREAS, almost 604,000 North Carolina households don't have enough to eat; and

WHEREAS, North Carolina is the tenth hungriest state in the nation; and

WHEREAS, almost one in five children which is 24.6% in North Carolina faces hunger on a regular basis; and

WHEREAS, good nutrition is critical in the first years of life, and childhood food insecurity can lead to developmental, health, and behavioral problems, as well as make it more difficult to concentrate and do well in school;

NOW, THEREFORE, I, LANCE OLIVE, MAYOR OF THE TOWN OF APEX, do hereby proclaim November 2019 to be FOOD INSECURITY AWARENESS MONTH in the Town of Apex and encourage all citizens to donate food items to those agencies in our Town that are combatting food insecurity by serving this overlooked population.

IN WITNESS THEREOF, I have hereunto set my hand and
caused the Seal of the Town of Apex, North Carolina
to be affixed this the 15th day of October 2019

Lance Olive, Mayor

| Agenda Item | cover sheet

for consideration by the Apex Town Council

Item Type: PRESENTATION

Meeting Date: October 15, 2019

Item Details

Presenter(s): Mayor Lance Olive

Department(s): Governing Body

Requested Motion

Presentation of Proclamation to Nicole Bernard, Western Wake Crisis Ministry

Approval Recommended?

N/A

Item Details

N/A

Attachments

- Proclamation



| Agenda Item | cover sheet

for consideration by the Apex Town Council

Item Type: CONSENT AGENDA

Meeting Date: October 15, 2019

Item Details

Presenter(s): Amanda Grogan, Budget & Management Analyst

Department(s): Administration

Requested Motion

Motion to approve updates to the 2019/2020 Fee Schedule.

Approval Recommended?

Yes

Item Details

Damaged Water Meter/ERT Holder Replacement Fees (page 6): Water Resources Operations is experiencing more frequent requests to replace water meters and ERT hangers due to damage incurred by the builders / contractors during construction. These requests are on active building permits that have not received a CO. On average, staff replaces 10 meters and 10 ERT hangers each month. Currently, the builder is assessed the cost of a second meter on the active building permit. We are requesting two new fees be added to cover the actual cost to the Town to replace these appurtenances. These fees would only be applied to active building permits that require a replacement meter or ERT holder due to contractor damage.

- **Meter Replacement, \$53.00 plus cost of the water meter:** A water meter would be assessed in addition to this fee to cover all costs of replacement. Staff estimates an hour for water meter replacement, which includes administrative time. The fee includes \$30/hour labor (an average Operations full personnel cost) and \$23/hour equipment cost (FEMA standard rate for a service truck rounded to the nearest dollar).
- **ERT Module Holder Replacement, \$16.25:** Staff estimates 15 minutes for this replacement. Using the equipment and labor rates described for Meter Replacement, the fee includes \$7.50 for labor, \$5.75 for equipment costs, and \$3.00 in material costs.

Rain Barrel (page 9): The requested change is to adjust the fee schedule to cover the increase in the Town's cost from \$85 to \$88 per unit.

Attachments

- FY 2019-2020 Fee Schedule





Town of Apex, North Carolina Fee Schedule - Effective 7/1/2019

Schedule subject to change upon approval by Town Council

TAXES & FEES			
Tax Rate	\$ 0.415/ \$100 valuation of property	Vehicle Fee (pursuant to NCGS 20-97 (b1)	\$25/ vehicle
DOCUMENT / COPY FEES			
Copying up to 11" x 17" (black and white)	\$0.10/ sheet	Document Recording / E-Recording	At cost
Copying and maps up to 11" x 17" (color)	\$0.40/ sheet	3 ring or spiral bound documents/plans	\$35
Copying larger than 11" x 17" (black and white)	\$5/ sheet	Unified Development Ordinance	\$40
Copying larger than 11" x 17" (color)	\$20/ sheet	Design and Development Manual	\$15
Printed 24" x 36"	\$20/ sheet	DVD Copy	\$0.50/ disc
Printed 36" x 48" maps	\$40/ sheet		

Development Fees

PUBLIC RIGHT-OF-WAY CLOSURE			
<i>Submit request and fees to Administration</i>			
Right-of-Way Closure Application Fee	\$100	Right-of-Way Closure Processing Fee	\$600
Due with request/application/non-refundable		Due prior to Council considering request; refundable if request is withdrawn prior to advertising.	
DEVELOPMENT SUBMITTAL FEES			
<i>For Zoning/Subdivision/Site Activity - Calculated and collected by the Planning Department</i>			
Administrative Adjustment	\$150	Sign, Master Plan	\$100
Administrative Approval (Small Town Character Overlay)	No Charge	Sign, Permanent	\$75+\$5/add'l sign
Annexation Petition	\$200	Sign, Temporary	\$25
Appeal (Board of Adjustment)	Lesser of \$300 or ½ Original Fee	Site Inspections (Non-residential lot) ₂	\$500
		Site Inspections (Residential lot) ₃	\$35
Certificate of Zoning Compliance (CZC) ₁	\$100	Site Plan, Major	\$1000+\$5/acre
Consultant Fees	As required	Site Plan, Minor	\$800
Development Name Change	\$500	Special Use Permit	\$600
Exempt Site Plan – enlargement of a structure	\$200	Temporary Use Permits (Non - Event):	\$50
Exempt Site Plan – all other exempt site plans	\$100	Temporary Use Permits (Event):	
Home Occupation	\$25	For Profit	\$50
Land Use Map Amendment	\$700	For Profit Express Review	\$75
Late Fee – Site Plan/Subdivision Plan (and resubmittals)	\$300	Non-Profit	\$0
Master Subdivision Plans Residential & Non-Residential	\$700 + \$10/lot	Non-Profit Express Review	\$25
Planned Unit Development (PUD)	\$1500+\$10/acre	Text Amendments (UDO)	\$600
PUD not requiring full TRC Review	\$500	Transportation Impact Analysis Review ₄	
Plat, Easement & Exempt	\$100	Sites & Subdivisions	\$500
Plat, Master Subdivision Final	\$200 + \$10/lot	PUD	\$1000
Plat, Recombination	\$100	Revised Sites & Subdivisions	\$250
Plat, Site Plan Final	\$250	PUD	\$500
Pond Drainage Permit	\$100	Tree Protection Fencing Inspection (Site Plan):	
Quasi-Judicial Public Hearing	\$300	- less than 2 acres:	\$50
Re-submittal Fees –	½ Original Fee	- 2-15 acres:	\$75
Site Plans: 3 rd submittal; Master Subdivision Plans; 4 th submittal		-15 up to 25 acres:	\$150
Rezoning/Conditional Zoning	\$600/\$900	-25+ acre:	\$200
		Tree Protection Fencing Inspection (Master Subdivision Plan):	
		- up to 15 acres:	\$75
		- 15-50 acres:	\$150
		- 51+ acres:	\$300
		Tree Removal Permit	\$100
		Variance Permit	\$350
		Zoning Letter	\$100

1. No charge for the first tenant in a new building 2. Charged at Site Plan Final Plat 3. Charged at permit 4. Projects inactive for one year require new TIA and full submittal fee

RECREATION FEES ₁			
<i>For New Residential Developments Assessed after 1/1/2019 - Collected by the Planning Department</i>			
Housing Type	Fee Per Unit	Acreage Per Unit	Decimal Multiplier
Single Family Detached	\$3,395.67	1/30 acre	0.0333
Single Family Attached	\$2,273.79	1/45 acre	0.0223
Multi-Family Attached	\$2,002.00	1/51 acre	0.01964

Existing Town ordinances require either the dedication of open space for public recreation or the payment of a fee in lieu per unit. The requirement regarding land dedication or fee in lieu will be based, in large part, on the Town's adopted Parks, Recreation, Greenways, and Open Space Master Plan. Recommendations regarding the acceptance of land or fee in lieu are made to the Town Council by the Parks, Recreation, and Cultural Resources Advisory Commission. For more information, contact John M. Brown, @ 919-249-3344. 1. Annually on January 1, the fee amount shall be automatically adjusted in accordance with UDO §14.7.1(B).

VENDOR FEES			
<i>Obtain Permit from the Town of Apex Police Department</i>			
Solicitor/Peddler/Park Concessioner*		Transient/Mobile Food Vendors	
30-day Permit	\$50.00	Annual Permit	\$150.00
90-day Permit	\$100.00	* Anyone selling anything, including food, in a Town of Apex Park must obtain a Park Concessions Permit.	
180-day Permit (Park Concessions Only)	\$175.00		
<ul style="list-style-type: none"> • Solicitor - Anyone going door-to-door to take orders for products, share information or seek donations. • Peddler – Anyone transporting goods door-to-door for sale (i.e. ice cream truck). • Park Concessioner – Anyone selling merchandise, food, and or beverages in a town park. • Transient Vendor - Anyone selling goods or services from a temporary business location (i.e. parking or vacant lot). • Mobile Food Vendor - Anyone selling food and/or beverages from a readily movable food unit 			

ENCROACHMENT AGREEMENT	
<i>Submit to Development Services</i>	
Encroachment agreement preparation and recording	\$250.00

CONSTRUCTION FEES/BONDS			
<i>Calculated and collected by Development Services</i>			
Bond Administration Fee:	- Cash/check: \$100	- Surety Bond/Letter of Credit \$300	- Reduction/Amendment \$100
Fee in Lieu Administration Fee:	\$100		
Construction Plan Submittal Fees (Subdivisions)			\$500.00 + \$10.00/Lot
Construction Plan Submittal Fees (Sites, Utility Extensions, etc.)			\$500 + \$15/Sheet
Re-submittal Fees – Construction Plans (3 rd submittal and every other subsequent submittal (3 rd , 5 th , 7 th , etc.)			½ Original Fee
Late Fee – Construction Plan Submittal and Resubmittal			\$300.00
Construction Plan Revisions (after initial approval)			\$75/sheet
Water Extension Permit Application			\$200.00
Sewer Extension Permit Application			\$200.00
Water and/or Sewer Extension Permit Amendment			\$100.00 / each
Infrastructure Extension Record Drawing Review			\$200
Construction Inspection Fees:			
Water Lines	\$1.50 per linear foot	Fire Lanes	\$1.50 per linear foot
Sewer Lines	\$1.50 per linear foot	Sidewalks/Greenways	\$1.35 per linear foot
New Streets (public)	\$1.50 per linear foot per lane	Infill/Outparcel Lots	\$350.00 per lot
Curb & Gutter (All New/ replaced public)	\$0.50 per linear foot	Driveway, residential	\$100.00/ lot
Storm Drains (public)	\$1.30 per linear foot	Driveway, not ready	\$150
Pump Station Review and Inspection	\$2,500.00 each	Driveway, reinspection	\$75
Warranty Bonds	25% of cost of installed and approved Infrastructure		
Performance Bonds	125% of cost of uninstalled Improvements		
*Repairs to damages water/sewer lines caused by construction shall be billed to the responsible party and include the cost of materials + 10% and current equipment and labor rates.			

STORMWATER PLAN REVIEW FEES/BONDS	
<i>Submit to Development Services</i>	
Project Size (disturbed acres)	Stormwater Plan Review Fee
< 1 acre	\$-0-
1 - 5 acres	\$500.00
5 - 50 acres	\$500.00 + \$50.00 per additional disturbed acre
\$500 base review fee for projects disturbing up to 5 acres. Add \$50 per additional disturbed acre beyond 5 acres. Development projects that disturb less than 1 acre of land are not subject to the stormwater plan review fees since they are exempt from stormwater controls. The stormwater plan review fee will be limited to a maximum of 50 acres.	
BMP Maintenance Bond	25% of cost of installed and approved Infrastructure
BMP Performance Bond	125% of cost of uninstalled Improvements
SCM As-Built Review Fee:	\$200 per SCM

SOIL AND EROSION CONTROL FEES/GUARANTEES	
<i>Submit to Development Services</i>	
Application for S&E Plan Approval	\$500.00 per disturbed acre
Future Lot Grading*	\$50.00 per acre of remaining building lot acreage
S&E Performance Guarantee**	\$2,500.00 per disturbed acre
*The future lot grading fee provides coverage under an erosion control permit and ensures compliance with NPDES stormwater regulations. Only the additional land disturbance associated with future building lots needs to be included.	
**Performance guarantee must be in the form of a certified check, cash, or irrevocable letter of credit approved by the Town. The performance guarantee is due prior to the Town issuing a Letter of S&E Plan Approval and may be fully refunded after the issuance of the certificate of completion.	

COMMERCIAL BUILDING PERMIT FEES

Calculated and collected by Building Inspections and Permitting

NEW STRUCTURES, ADDITIONS AND ALTERATIONS (Base Fee) 1,2,3

Total Gross Building Floor Area of Construction	Fee Computation	
0 - 500	Per Trade (see schedule below)	1. Alterations to existing structures, with no footprint increase, are charged at a rate of .60 of the Permit Fee or the minimum per trade fee based upon the Single Trade Fee Schedule, whichever is greater. 2. Permits for "shell" buildings are charged at a rate of .60 of the Permit Fee, based upon a Business Occupancy, or the minimum per trade fee based upon the Single Trade Fee Schedule, whichever is greater. Area within the building shell, which is intended to be occupied, will have the permit fees for the occupied area computed per footnote #1 above. 3. Additional Miscellaneous Fees, listed below, will be added to the permit fees as applicable.
501 - 5,000	$A \times B = \text{Permit Fees}$	
5,001 - 10,000	$(A \times B \times .80) + (1,000 \times B) = \text{Permit Fee}$	
10,001 - 15,000	$(A \times B \times .70) + (3,000 \times B) = \text{Permit Fee}$	
15,001 - 20,000	$(A \times B \times .60) + (4,500 \times B) = \text{Permit Fee}$	
20,001 - above	$(A \times B \times .50) + (6,500 \times B) = \text{Permit Fee}$	

A=Total Gross Building Floor Area B= Fee Per Square Foot Based Upon Occupancy

Single Trade Fee Schedule		Fee Per Square Foot of Floor Area Based on Occupancy			
		Occupancy	Fee	Occupancy	Fee
Building	\$150	Assembly	0.55	Factory/Industrial	0.40
Electrical	\$75.00	Business	0.60	Hazardous	0.50
Mechanical	\$75.00	Educational	0.60	Institutional	0.60
Plumbing	\$75.00			Storage/Utility	0.30
Grading	\$75.00				

MISCELLANEOUS FEES

Change of General Contractor	\$50.00
Conditional Electrical Power Inspection (Apex and Duke)	Optional Inspection
Conditional Mechanical Systems Inspection	Optional Inspection
Demolition (All Trades)	\$120.00
Dumpster Enclosure	\$150.00 (Single Trade Building)
Elevator	\$50.00 per elevator
Fire Pumps, each	\$250.00
Fire Sprinkler System	\$0.03 per square feet
Fire Suppression	\$50.00
Grease/Oil Interceptor	\$50.00
Irrigation System	\$75.00 permit fee + Capital Reimbursement Fees (page 6)
Sales/Construction Trailer/Modular Classroom	Per Single Trade Fee Schedule
Sign – New	\$150.00 + \$75 if electrical needed
Sign – Replacement	\$50.00
Solar PV System	No Fee
Spray Paint Booth, each	\$150.00
Storage Tank, each	\$50.00 Plus Associated Single Trade Fees
Swimming Pool	\$50.00 Plus Associated Single Trade Fees
Temporary Power (Town of Apex)	\$125.00
Water and Sewer Capital Reimbursement Fees and Water Meters	Refer to Capital Reimbursement Fee Schedule (page 6)
Work Without a Permit	Double Permit Fees
Stop Work Order	\$150.00 (May Require Extra Trip Fee)

PLAN REVIEW FEES (Non-refundable)

Per Trade- (Not applied toward cost of permit)	\$100.00
Plan Modification (Not applied toward cost of permit)	½ Review Fee or ½ per trade fee for single trade modifications
Re-review fee (Not applied toward cost of permit)	½ Review Fee @ 3 rd , 5 th , 7 th , etc.
Re-stamp Plans, Per Trade	\$75.00

EXPRESS PLAN REVIEW (2 HOUR MINIMUM) - when service is available

First Hour	\$1,000.00	\$250.00 each additional 15 minutes
Cancellation Fee (3 days prior notice)	\$200.00	

ADMINISTRATIVE FEES

Duplicate Building Record Card	\$10.00
General Records Research, Archive Files	\$3.00/ page
General Records Research, Current Files over 10 pages	\$.50/ page

INSPECTION FEES

Water Resources Certificate of Occupancy - Water/Sewer Final	\$100.00
Standard re-inspection fee (Building, Water, and/or Sewer)	\$75.00
Job not ready for inspection or installation of tap, meter, etc.	\$150.00
Eight or more code violations / Previous violations not corrected	\$150.00
Cancelled Inspection fee (not cancelled by 8:00 am of scheduled day)	\$75.00

ONE AND TWO FAMILY DWELLING PERMIT FEES			
<i>Calculated and collected by Building Inspections and Permitting</i>			
NEW STRUCTURES (Single Family/Duplex/Townhomes)		\$/SQ.FT	MIN/ \$/UNIT
3,000 Gross SF and Less		0.35	\$500.00
>3,000 Gross SF:(3000SFx \$0.35/SF)+(Additional SF x \$0.35/SF x.75) = Permit Fee		Per Formula	
ADDITIONS /ALTERATIONS 800 SQUARE FEET AND GREATER		\$/SQ.FT	MIN/ \$/UNIT
Building	\$0.13		\$150.00
Electrical	\$0.04		\$75.00
Plumbing	\$0.04		\$75.00
Mechanical	\$0.04		\$75.00
ADDITIONS /ALTERATION LESS THAN 800 SQUARE FEET			MIN/ \$/UNIT
Building			\$100.00
Electrical			\$50.00
Plumbing			\$50.00
Mechanical			\$50.00
ACCESSORY STRUCTURES		MIN/ \$/UNIT	SINGLE TRADE FEE SCHEDULE
Decks, Sheds, Roof Additions & Detached Garages, 400 sq. ft. or less		\$60.00	Building \$150.00
Decks, Sheds, Roof Additions & Detached Garages > 400 sq. ft.		\$90.00	Electrical \$75.00
Trellis (Attached to a structure)		\$40.00	Mechanical \$75.00
			Plumbing \$75.00
			Fire (included w/ Plumbing) \$0.00
			Grading \$75.00
MISCELLANEOUS			
Change of General Contractor		\$50.00	
Change of Lot		\$50.00	
Construction Trailer		Per Single Trade Fee Schedule	
Demolition (All Trades)		\$150.00	
Driveway		\$100.00	
House Moved		\$375.00	
Irrigation		\$75.00 permit fee + capital reimbursement fee (page 6)	
Mobile Home (All Trades)		\$150.00	
Modular Home (All Trades)		\$375.00	
Solar PV System		No Fee	
Stop Work Order		\$150.00 (May Require Extra Trip Fee)	
Temporary Power (Town of Apex Only)		\$125.00	
Work Without Permit		Double Permit Fees	
PLAN REVIEW FEES (Non-refundable)			
Initial Fee For New Single Family and Townhome Construction (Not applied to cost of permit)		\$110.00	
Initial Fee All Other Construction (Not applied toward cost of permit)		\$100.00	
Plan Modification Fee (Not applied toward cost of permit)		½ Review Fee of affected trades	
Re-review Fee (Not applied toward cost of permit)		½ Review Fee @ 3 rd , 5 th , 7 th , etc.	
Re-stamp Plans		\$60.00	
ADMINISTRATIVE FEES			
Duplicate Building Record Card		\$10.00	
General Records Research, Current Files Over 10 Pages		\$0.50/ page	
General Records Research, Archive Files		\$3.00/ page	
INSPECTION FEES			
Water Resources Certificate of Occupancy - Water/Sewer Final		\$100.00	
Standard re-inspection fee (Building, Water, and/or Sewer)		\$75.00	
Job not ready for inspection or installation of tap, meter, etc.		\$150.00	
Eight or more code violations / Previous violations not corrected		\$150.00	
EXPRESS PLAN REVIEW (2 HOUR MINIMUM) – When service is available			
First Hour		\$600.00 + \$150.00 each additional 15 minutes	
Cancellation Fee without (3 days prior notice)		\$200.00	

ELECTRICAL UNDERGROUND AND SERVICE LATERAL FEES

Calculated by the Electric Department

Primary Facilities: <i>Collected by Electric Department</i> Based on cost difference of normal overhead facilities and the requested underground facilities.		Service Laterals: <i>Collected by Building Inspections Permitting</i> Charges are for the first 100 feet of service length. An excess footage charge, if applicable, is billed separately by the Electric Utilities Division at \$3.00/foot over 100 feet.	
Single-Family	467.00/ lot	Single-Family	\$497.00/ service lateral
Townhomes	467.00/ unit	Townhomes	\$497.00/ service lateral
Apartments	467.00/ point of delivery	Apartments are typically served with multiple meter bases at approved locations; service laterals are usually installed in conjunction with the primary facilities and service lateral charges do not apply.	

WATER TAPS AND METER FEES

Submit Tap fees to Water Resources and Water Meter fees to Building Inspections and Permitting

Fees are based on 60 foot right-of-way roads and lateral lengths less than 100 feet. Special cases, wider rights-of-way, special or complex boring and items not shown shall be at cost.

Size	Base Cost	Add Bore	Add Street Cut	Meter Only*
¾ inch	\$1,550.00	\$550.00	\$800.00	\$215.00
1 inch	\$1,750.00	\$550.00	\$800.00	\$325.00
1 ½ inch	N/A	N/A	N/A	\$ 650.00
2 inch	N/A	N/A	N/A	\$830.00
3 inch	N/A	N/A	N/A	\$3,255.00
4 inch	N/A	N/A	N/A	\$4,265.00

*If meter setter is not readily accessible or not functional when town staff arrives onsite, the meter will not be installed. Owner will be required to reschedule and pay fee as noted under "Inspection Fees" section (pages 3 and 4) of this document. The Town will reschedule work within 7 days of receipt of the "Inspection Fees".

SEWER TAPS

Size	Base Cost	Add Bore	Add Street Cut
4 inch	\$ 1,450.00	Not available	\$ 800.00

WATER BACTERIOLOGICAL SAMPLE FEE

Samples collected by Water Resources Department. Fees collected by Development Services \$75.00

SEWER AND STORMWATER RE-INSPECTION FEES

Submit to Water Resources Department

Sewer and Storm drain re-inspection fee \$325 remobilization fee plus \$0.25 per linear foot over 1000'

IRRIGATION METERS

*Submit to Building Inspections & Permitting (Irrigation meter **required** for ALL irrigation systems)*

	Single-Family Residential <i>(Includes duplex and townhomes)</i>	Multi-Family and Commercial
Permit Fee	\$75	\$75
Meter Fee	Based on meter size; see "Water Meter Fees" (page 6)	Based on meter size; see "Water Meter Fees," (page 6)
Meter Tap	\$800 (See condition 7 below)	See condition 6 below
Capital Reimbursement Fees	Based on meter size; see "Capital Reimbursement Fees" (page 6)	Based on meter size; see "Capital Reimbursement Fees" (page 6)

Conditions:

- All irrigation meters will require payment of capital reimbursement fees.
- NCGS requires a second meter for in-ground irrigation systems and that systems be protected by an approved backflow preventer.
- A plumbing permit is required for installation of the system from the meter to the backflow preventer.
- All associated fees will be collected by the Building Inspections & Permitting Department prior to issuance of a permit.
- All other non-single family customers (subdivision entrances and commercial sites) require a second meter.
- The Water Resources – Water & Sewer Utility Operations Division will only install the tap for meters for existing single-family customers; all other taps must be installed by a private contractor and inspected by Water Resources Infrastructure Inspections Division.
- Single family Meter Tap Fee includes installing a split tap at an existing meter. If the split tap is already installed, see "Meter Only" fees under the "Water Taps & Meter Fees."

WATER AND SEWER CAPITAL REIMBURSEMENT FEES

Calculated and collected by Inspections and Permitting & Planning

The purpose of Capital Reimbursement Fees are one-time capital charges assessed against new development as a way to provide or cover a proportional share of the costs of capital facilities. These treatment facilities provide the system capacity that each new development will demand when connected to the water and sewer systems. Additional fee assessments shall be required of nonresidential customers who, after paying a Capital Reimbursement Fees fee, expand their service requirements. A 75% grant may be available in the Central Business District.

Meter Size (inches)	Water Fee	Sewer Fee	Total Fees
3/4	\$1,783	\$3,675	\$5,458
1	\$2,972	\$6,124	\$9,096
1.5	\$5,943	\$12,249	\$18,192
2	\$9,509	\$19,598	\$29,107
3	\$19,019	\$39,195	\$58,214
4	\$29,717	\$61,243	\$90,960
6	\$59,433	\$122,486	\$181,919
8	\$95,093	\$195,977	\$291,070
10	\$249,620	\$514,439	\$764,059
12	\$314,997	\$649,173	\$964,170

Utility Rates & Fees

CUSTOMER DEPOSITS

Residential Electric Deposit	\$200	Commercial Deposit	2 times monthly average for service location or minimum of \$200.00*
Residential Water Deposit	\$50		

**NCGS 160A-314 (a); North Carolina Utilities Commission Guidelines: R8-33*

FEES

Application / Service Initiation Fee	\$15	Pretreatment Program Charges	
Returned Check / Draft Fee	\$25	- Permitted Flow (per 1,000 gallons)	\$0.33
Non-Payment Service Fee	\$25	Surcharge Rates (quarterly)	
After Hours Service Fee	\$75	- BOD	\$0.278 per lb.
Late fee for charges unpaid by the due date	1% of unpaid balance	- COD	\$0.278 per lb.
Extension fee	\$0	- TSS	\$0.051 per lb.
Reconnect Disconnected Meter	\$25	Analytical Testing Charges	
Backflow Testing	At cost	- BOD	\$20.00
Meter Tampering Fees		- TSS	\$12.00
- Electric - Reconnection of disconnected service / Altering of meter	\$100	- Ammonia	\$12.00
- Electric - Straight wiring / other un-inspected connection	\$250	- Arsenic, Cadmium, Chromium, Copper, Lead, Mercury, Molybdenum, Nickel, Selenium, Silver, Zinc	\$13.00 each
- Cut Seal	\$25		
Meter Test Fee (one test per year at no cost; additional reads are charged only if the meter read is correct)		- COD	\$20.00
- Meter Test (under 2 inch meter)	\$50	- Cyanide	\$25.00
- Meter Test (2+ inch meter)	At cost + 10 %	- Oil & Grease	\$30.00
Septic Tank Pump Fee *	At cost	- Total Phosphorus	\$16.00
(*per 1991 annexation agreements; only available in certain locations)		- Total Nitrogen	\$40.00
Damaged Water Meter	\$ 53 + plus cost of meter		
Damaged ERT Holder Replacement Fee	\$ 16.25		

** fees would only be applied to active building permits that require a replacement meter or ERT holder due to contractor damage*

SOLID WASTE FEES

Yard Waste Collection	\$7.83/ month	Dumpster Service	
Residential Roll-Out Cart	\$8.51/ month	- 4 CY Dumpster	\$125.07/ month
Commercial Roll-Out Cart	\$17.44/ month	- 6 CY Dumpster	\$147.97/ month
Recycling (Per Bin or Cart)	\$4.28/ month	- 8 CY Dumpster	\$169.08/ month
Bulk items	\$11.00/ each	Bulk Items - Half Load	\$22.00
White Goods	\$18.00/ each	Bulk Items - Full Load	\$40.00

STREET SIGN FEES

Replacement sign costs			
- Street sign only (1 blade)	\$37.00	- Street sign replacement + install	\$152.00
- Street sign only (2 blades)	\$74.00	- Stop sign replacement + install	\$105.75
- Stop Sign only	\$28.00	- Street / Stop sign combination + install	\$180.00

** Original installation of all safety, regulatory, and street signs is the responsibility of the developer prior to plat.*

WATER & SEWER RATES			
Water Rates		Inside Town Limits	Outside Town Limits
Water Base Charge		\$5.54	\$11.08
Water Volumetric Rates (per 1,000 gallons)			
Commercial		\$4.19	\$8.38
Residential	Tier 1: 0 - 6,000 gal	\$4.19	\$8.38
	Tier 2: 6,001 - 12,000 gal	\$4.82	\$9.64
	Tier 3: > 12,000 gal	\$6.49	\$12.98
Wholesale Water Base Charge	\$4.40	Wholesale Water Volumetric Rates (per 1,000 gallons) \$3.35	
Sewer Rates		Inside Town Limits	Outside Town Limits
Sewer Base Charge		\$9.46	\$18.91
Sewer Volumetric Rates (per 1,000 gallons)			
Commercial & Residential		\$6.76	\$13.52
Colvin Park*		\$12.65	N/A
<i>*Per the Alternative Sewer Agreement, "the Apex special published rate shall be based on the Cary published residential rate per thousand gallons plus an Apex charge of \$2 per thousand gallons."</i>			
Wholesale Sewer Base Charge	\$6.05	Wholesale Sewer Volumetric Rates (per 1,000 gallons) \$4.05	
Flat Rate Sewer	\$35.00/ month		
Irrigation Rates		Inside Town Limits	Outside Town Limits
Irrigation Base Charge		\$5.54	\$5.54
Irrigation Volumetric Rates (per 1,000 gallons)		\$6.49	\$12.98
Bulk Water			
Hook Up Fee (per connection)	\$12	Hydrant meter	
Volumetric Rates (per 1,000 gallons)	\$7.20	- Set up / Relocate / Pickup	\$50/ event
		- Rental Fee	\$12/ day
		- Hydrant Meter replacement and/or repair	At cost + 10%

ELECTRIC RATES				
Service	Base Charge	Energy Charge (per kWh)		
		Nov.-June (0-800)	Nov.-June (Over 800)	July-Oct. (All)
Residential	\$15.05	\$0.1029	\$0.0993	\$0.1029
Service	Base Charge	Energy Charge (per kWh) ALL		
Small General Service	\$22.07	\$0.0985		
Service	Base Charge	Energy Charge (per kW)		
Residential-Time of Use-TOU	\$15.57	On Peak	Off Peak	
		\$0.2700	\$0.0636	
Small General Service-TOU	\$22.07	\$0.1532	\$0.0623	
Service	Base Charge	Energy Charge (per kWh) ALL	Demand Charge (per kW) ALL	
Medium General Service	\$75.28	\$0.0769	\$6.75	
Medium General Service-TOU	\$75.28	\$0.0727	\$10.05	
Large General Service	\$124.60	\$0.0630	\$9.34	
Large General Service-TOU	\$124.60	\$0.0620	\$9.86	
Service	Base Charge	Energy Charge (per kWh) ALL	Demand Charge (per kW)	
Large General Service-Coincident Peak	\$311.51	\$0.0478	All Coincident Demand	All Excess Demand
			\$20.18	\$2.59
Outdoor Lighting				
Standard Lighting Service Basic Rate The basic rate does not include the monthly charges for additional facilities, outdoor lighting poles, underground service, or any contribution required under this Schedule.				
Sodium Vapor Units	Wattage	Monthly Charge	Monthly kWh	
5,800 lumen-semi	70	\$8.230/ Fixture	29/ Fixture	
9,500 lumen-semi	100	\$9.15/ Fixture	46/ Fixture	
9,500 lumen-enclosed/post/ flood	100	\$10.42/ Fixture	46/ Fixture	
27,500 lumen-enclosed	250	\$18.67/ Fixture	99/ Fixture	
27,500 lumen flood	250	\$19.86/ Fixture	109/ Fixture	
50,000 lumen-enclosed	400	\$25.17/ Fixture	152/ Fixture	
50,000 lumen flood	400	\$27.55/ Fixture	168/ Fixture	
LED Units				
Acom Fixture	51	\$15.71/ Fixture	29/ Fixture	
Shoebox – 1	61	\$11.50/ Fixture	29/ Fixture	
Shoebox – 2	151	\$19.06/ Fixture	29/ Fixture	
Area Light	51	\$7.91/ Fixture	29/ Fixture	
Cobrahead – 1	51	\$9.70/ Fixture	29/ Fixture	
Cobrahead – 2	151	\$17.72/ Fixture	29/ Fixture	
Lantern – 1 w/ Lens	51	\$12.61/ Fixture	29/ Fixture	
Lantern – 2 w/o Lens	51	\$16.09/ Fixture	29/ Fixture	
Special Contract Lights	Monthly charge	Special Area Lighting Pole	Monthly Charge	
<i>(residential dedicated public streets outside corporate limits)</i>				
100 watt HPS enclosed luminaire on approved wood pole	\$2.29/ customer	Wood	\$ 2.51/ pole	
Fiberglass pole or post w/ approved 100 watt HPS luminaire	\$2.93/ customer	Metal, fiberglass or post	\$ 3.51/ pole	
		Decorative square metal	\$13.01/ pole	
Non-standard Premium Lighting Service The following charges are in addition to Standard Lighting Service Basic Rate identified above.				
Premium Lighting Fixtures	Monthly charge	Premium Posts / Brackets	Monthly charge	
Prismatic series classic or colony top	\$3.63/ Fixture	Decorative shroud w/ standard fiberglass post	\$11.74/ post	
Prismatic series classic or colony top w/ crown & rib	\$4.36/ Fixture	Fluted direct bury post	\$18.53/ post	
Vandermore series w/o spikes	\$2.42/ Fixture	Premium Twin mounting bracket	\$4.84/ bracket	
Underground Service For Underground service, the monthly bill will be increased by \$3.50 per pole or, in lieu thereof, a one-time contribution of \$175.17 per pole. The monthly UG charge, if selected, may be terminated at any time upon payment by Customer of the one-time contribution. The UG charge will be waived if the lighting facilities are installed during the installation of the main electric facilities. The monthly pole charge defined below will also be applicable to underground service.				
Additional Facilities				
1. Multiple area lighting fixtures may be installed per pole subject to town review and approval. The monthly charge for each additional fixture will be the charge in accordance with the Monthly Rate for that fixture.				
2. For distribution transformer and/or primary conductor extension, 2% of the estimated installed cost of the excess circuit.				
3. For an underground circuit in excess of 250 feet for an area lighting pole, 2% of the estimated installed cost of the excess circuit.				
4. For a metal pole, 2% of the estimated cost of overhead or underground metal poles requiring special construction or features, which are in excess of the estimated, installed cost of standard underground metal poles.				

PARKS & RECREATION					
<i>Fees are paid to Parks & Recreation</i>					
Withdrawal₁					
- 10 + days advance notice				\$5.00	
- Less than 10 days' notice & participant can be replaced from a waiting list				70% of costs	
1. No refunds are issued when the amount is less than \$6.00. No refunds are issued when non-refundable deposits, admission fees or costs are paid in advance by the Town.					
	Resident	Non Resident		Resident	Non Resident
Fishing Licenses			Senior Exercise Pass (55+)	\$0	\$10/ 20 visits
- 12 years & under	\$0	\$10/ year	Open Gym / Pickle Ball	\$0	\$5/ visit or \$20/ 100 visits
- 13-54 years old	\$0	\$25/ year	Vessel Permits (Jan – Dec)	\$5/ year	\$40/ year
- 55 +	\$0	\$6/ year	Dog Park Passes		
- Guest Pass	\$0	\$5/ visit	- Single Dog	\$30/ year	\$50/ year
			- Multiple Dogs	\$60/ year	\$100/ year
Facility Rentals					
<i>All reservations for 100 persons or more require Director approval and may require additional attendants, police and other requirements as deemed necessary by APRCR</i>					
	Resident	Non Resident	Halle Cultural Arts Center	Resident	Non Resident
Refundable Deposit (Facility)	\$200	\$200			
After Hours Rentals ₂	\$40/ hour	\$40/ hour	- Auditorium	\$50/ hour	\$75/ hour
Community Center			- Stage & Dressing Rooms	\$50/ hour	\$75/ hour
- Summit Room	\$25/ hour	\$37.50/ hour	- Sound/Light Booth	\$50/ hour	\$75/ hour
- Pinnacle Room	\$25/ hour	\$37.50/ hour	- Overnight Storage	\$50/ night	\$75/ night
- Zenith Room	\$25/ hour	\$37.50/ hour	- Studio Gallery	\$35/ hour	\$52.50/ hour
- Catering Kitchen ₃	\$15/ hour	\$22.50/ hour	- Studio A	\$20/ hour	\$30/ hour
- Arts & Crafts Room	\$15/ hour	\$22.50/ hour	- Piano (separate \$200 deposit required)	\$25/ hour	\$37.50/ hour
Shelter Rentals			- Attendant Fees (After hours)	\$20/ hour	\$20/ hour
- Refundable Deposit (Shelter)	\$100	\$100	4 Hour Auditorium Package	\$600	\$900
- Apex Community Park – small	\$12.50/ hour	\$18.75/ hour	4 Hour Gallery Package	\$400	\$600
- Apex Community Park – large	\$17.50/ hour	\$26.25/ hour	Field & Gym Rentals₄		
- Hunter Street Park – small	\$12.50/ hour	\$18.75/ hour	Athletic Field – natural turf (no lights)	\$35/ hour	\$52.50/ hour
- Jaycee Park – small	\$12.50/ hour	\$18.75/ hour	Athletic Field – natural turf (w/ lights)	\$55/ hour	\$72.50/ hour
- Kelly Road Park small	\$12.50/ hour	\$18.75/ hour	Athletic Field – synthetic turf (no lights)*	\$70/ hour	\$105/ hour
- Nature Park – small	\$12.50/ hour	\$18.75/ hour	Athletic Field – synthetic turf (w/ lights)*	\$90/ hour	\$125/ hour
- Nature Park – large	\$12.50/ hour	\$18.75/ hour	* Synthetic Turf Fields require additional \$250 Damage Deposit		
- Seagroves Farm Park - small	\$12.50/ hour	\$18.75/ hour	Gym – Half Court	\$25/ hour	\$37.50/ hour
Other Amenity Rentals			Gym - Whole	\$50/ hour	\$75/ hour
- Tennis Courts (2 min / 4 max)	\$10/hour/ court	\$15/hour/ court			
- Sand Volleyball Court	\$10/hour/ court	\$15/ hour/ court			
- Disc Golf Course	\$35/ hour	\$52.50/ hour			
- Amphitheater (1/2 day)	\$100	\$150			
- Amphitheater (whole day)	\$200	\$300			
2. Requires additional approval by Director; 3. attached to Zenith Room 4. All rentals require a 2 hour minimum.					

FIRE DEPARTMENT FEES			
<i>Submit request and fees to Customer Service</i>			
Inspection Fees	\$0	False Alarm Fines (per Calendar Year)	
Reinspection (charged for 2nd and all subsequent reinspections)	\$75	4 false alarms	\$150
Fire Inspections Violation Fines:		5 false alarms	\$200
Imminent hazard violation	\$250	6 + false alarms	\$250 / each
Hazardous Materials Consumable Items	At Cost	Fire Flows	\$75

MISCELLANEOUS			
Rain Barrel	\$85.00 \$88.00	Cemetery	Resident Non - Resident
		- Cemetery Plots	\$800 \$1200
		- Columbarium Niches	\$600 \$600

| Agenda Item | cover sheet

for consideration by the Apex Town Council

Item Type: CONSENT AGENDA

Meeting Date: October 15, 2019

Item Details

Presenter(s): Amanda Bunce, Current Planning Manager

Department(s): Planning Department

Requested Motion

Motion to approve the Statement of the Apex Town Council pursuant to G.S. 160A-383 addressing action on the various Unified Development Ordinance (UDO) Amendments of October 1, 2019.

Approval Recommended?

The Planning Department recommends approval.

Item Details

Attachments

- Statement of the Apex Town Council



STATEMENT OF THE APEX TOWN COUNCIL PURSUANT TO G.S. 160A-383 ADDRESSING ACTION ON UNIFIED DEVELOPMENT ORDINANCE (UDO) AMENDMENTS OF OCTOBER 1, 2019

Pursuant to G.S. §160A-384 and Sec. 2.2.11.E of the Unified Development Ordinance, the Planning Director for the Town of Apex, Dianne Khin, caused proper notice to be given (by publication and posting), of public hearings on UDO Amendments before the Town Council on the 20th day of August 2019 and the 1st day of October 2019.

The Apex Town Council held public hearings on the 20th day of August 2019 and the 1st day of October 2019. Amanda Bunce, Current Planning Manager, presented the Planning Board's vote to recommend approval by a vote of 8-0 at the public hearing.

All persons who desired to present information relevant to the UDO Amendments and who were residents of Apex or its extraterritorial jurisdiction were allowed to present evidence at the public hearing before the Apex Town Council. No one who wanted to speak was turned away.

The Town Council by a vote of 4 to 1 approved the Ordinance for UDO Amendments.

The Apex Town Council finds from information and testimony provided at the public hearing that the approval of the UDO Amendments of October 1, 2019 is consistent with the Advance Apex: The 2045 Plan and reasonable and in the public interest for the following reason(s):

1. The amendments to UDO Secs. 7.5 *Required Improvements*, 8.1.2 *Resource Conservation Area*, and 13.19 *Traffic Impact Analysis Required* provide more development flexibility for North Carolina Certified Sites by reducing the amount of required Resource Conservation area, reducing the areas for which a tree survey is required, and delaying submission of the Traffic Impact Analysis and full design of water and sewer infrastructure until Site Plan submittal.

Lance Olive
Mayor

ATTEST:

Donna B. Hosch, MMC, NCCMC
Town Clerk

Date

| Agenda Item | cover sheet

for consideration by the Apex Town Council

Item Type: CONSENT AGENDA

Meeting Date: October 15, 2019

Item Details

Presenter(s): Dianne Khin, Planning Director

Department(s): Planning

Requested Motion

Motion to adopt a Resolution Directing the Town Clerk to Investigate Petition Received, to accept the Certificate of Sufficiency by the Town Clerk, and to adopt a Resolution Setting Date of Public Hearing on the Question of Annexation – Apex Town Council's intent to annex Don F. and Callie Sorrell (single-family) property containing 22.418 acres located at 1221 Salem Church Road, Annexation #654 into the Town's corporate limits.

Approval Recommended?

Planning Department recommends approval.

Item Details

The Town Clerk certifies to the investigation of said annexation. Adoption of the Resolution authorizes the Town Clerk to advertise said public hearing by electronic means and on the Town of Apex's website. The Public Hearing would be scheduled for the November 6, 2019 Town Council meeting.

Attachments

- Annexation Petition
- Legal Description
- Vicinity Map
- Resolution Directing the Town Clerk to Investigate Petition
- Certificate of Sufficiency by the Town Clerk
- Resolution Setting Date of Public Hearing



PETITION FOR VOLUNTARY ANNEXATION

This document is a public record under the North Carolina Public Records Act and may be published on the Town's website or disclosed to third parties.

Application #: 657 Submittal Date: 1/4/19
Fee Paid \$ 200 Check # 724

TO THE TOWN COUNCIL APEX, NORTH CAROLINA

1. We, the undersigned owners of real property, respectfully request that the area described in Part 4 below be annexed to the Town of Apex, Wake County, North Carolina.
2. The area to be annexed is contiguous, non-contiguous (satellite) to the Town of Apex, North Carolina and the boundaries are as contained in the metes and bounds description attached hereto.
3. If contiguous, this annexation will include all intervening rights-of-way for streets, railroads and other areas as stated in G.S. 160A-31(f), unless otherwise stated in the annexation amendment.

Owner Information

Don & Callie Sorrell 0743.19-60-2736
 Owner Name (Please Print) Property PIN or Deed Book & Page #
919 362 6446 n/a
 Phone E-mail Address

Owner Name (Please Print) Property PIN or Deed Book & Page #
 Phone E-mail Address

Owner Name (Please Print) Property PIN or Deed Book & Page #
 Phone E-mail Address

Surveyor Information

Surveyor: Smith & Smith Surveyors
 Phone: 919 362-7111 Fax: —
 E-mail Address: Staley@smithandsmithsurveyors.net

Annexation Summary Chart

Total Acreage to be annexed:	<u> </u>	Reason for annexation: (select one)	
Population of acreage to be annexed:	<u> 2 </u>	Receive Town Services	<u> ✓ </u>
Existing # of housing units:	<u> 1 </u>	Other (please specify)	<u> </u>
Zoning District*:	<u> RA </u>		

*If the property to be annexed is not within the Town of Apex's Extraterritorial Jurisdiction, the applicant must also submit a rezoning application with the petition for voluntary annexation to establish an Apex zoning designation. Please contact the Planning Department for questions.

PETITION FOR VOLUNTARY ANNEXATION

Application #: 6054

Submittal Date: 1/4/19

COMPLETE IF SIGNED BY INDIVIDUALS:

All individual owners must sign. (If additional signatures are necessary, please attach an additional sheet.)

DON SORRELL
Please Print

Don Sorrell
Signature

CALLIE SORRELL
Please Print

Callie Sorrell
Signature

Please Print

Signature

Please Print

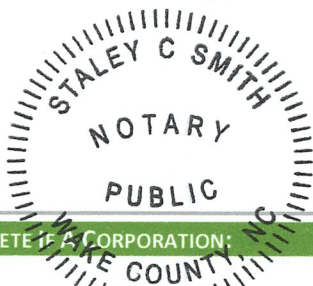
Signature

STATE OF NORTH CAROLINA
COUNTY OF WAKE

Sworn and subscribed before me, Staley C. Smith, a Notary Public for the above State and County,
this the 27th day of December, 2018.

Staley C. Smith
Notary Public

SEAL



My Commission Expires: 10-6-21

COMPLETE IF A CORPORATION:

In witness whereof, said corporation has caused this instrument to be executed by its President and attested by its Secretary by order of its Board of Directors, this the _____ day of _____, 20_____.

Corporate Name _____

SEAL

By: _____
President (Signature)

Attest:

Secretary (Signature)

STATE OF NORTH CAROLINA
COUNTY OF WAKE

Sworn and subscribed before me, _____, a Notary Public for the above State and County,
this the _____ day of _____, 20_____.

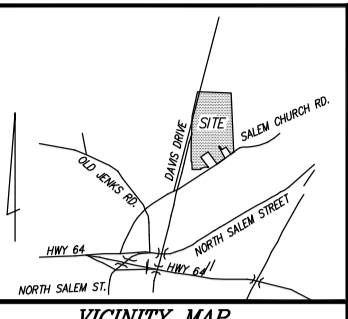
Notary Public

SEAL

My Commission Expires: _____

Lying and being in Cary Township, Wake County, North Carolina, and described as follows more fully to wit;

BEGINNING at a point in the centerline of N.C.S.R. No. 1614 (Salem Church Road) and being a common corner with Danny Ray Glover and Lawrence R. Long; thence with the centerline of N.C.S.R. No. 1614 (Salem Church Road), South 57°47'00" West, 67.38 feet to a point in the aforesaid road centerline; thence to and with the eastern property line of Don F. Sorrell, North 29°38'45" West, 163.36 feet to a point, another corner of aforesaid Sorrell; thence with the following four (4) courses and distances of Don F. Sorrell, South 62°37'10" West, 94.84 feet to a point; North 29°07'35" West, 82.95 feet to a point; South 63°17'49" West, 20.21 feet to a point; and South 25°49'58" East, 257.56 feet to a point in the centerline of N.C.S.R. No. 1614 (Salem Church Road); thence with aforesaid road centerline, South 57°47'00" West, 186.77 feet to a point in aforesaid road centerline, being the southeastern corner of Vickie L. Sorrell; thence the following three (3) courses and distances with Vickie L. Sorrell, North 33°51'20" West, 287.65 feet to a point; South 57°46'58" West, 169.52 feet to a point; and South 33°51'20" East, 252.99 feet to a point, being the northeast corner of a private cemetery; thence the following three (3) courses and distances with aforesaid cemetery, North 75°21'54" West, 60.42 feet to a point; South 75°00'00" West, 100.00 feet to a point; and South 05°00'00" West, 20.00 feet to a point in a northern property line of Salem Baptist Church Of Apex, North Carolina; thence the following four (4) courses and distances with Salem Baptist Church Of Apex, North Carolina, North 85°00'00" West, 162.96 feet to a point; North 00°03'24" West, 151.33 feet to a point; North 86°39'13" West, 13.00 feet to a point; and North 03°21'38" East, 304.74 feet to point within the CSX Transportation, Inc railroad right-of-way; thence North 05°09'00" East, 567.88 feet to a point within the western right-of-way of N.C.S.R. No. 1613 (Davis Drive); thence a line running parallel with the aforesaid road right-of-way, North 16°00'00" East, 473.00 feet to a point within the western right-of-way of N.C.S.R. No. 1613 (Davis Drive); thence to and with the southern property line of Bishops Gate Master Owners Association, Inc., South 84°55'00" East, 640.00 feet to a point, being the northwestern corner of St. James Village Homeowners Association, Inc.; thence with the western property line of St. James Village Homeowners Association, Inc. and beyond with the western property lines of lots 21, 19, 18, 17, 16, 15, 14 and 13 of the "St. James Village Subdivision – Lots 6-24", South 00°46'47" West, 1136.46 feet to the point and place of BEGINNING and containing 22.418 acres more or less. The above described tract of land being all of Wake County PIN 0743.19-60-2736.



PETER J. GRESOCK, III
JEANINE GRESOCK
 D.B. 14285, PG. 1569
 B.M. 1983, PG. 1073

BISHOPS GATE MASTER OWNERS ASSOCIATION, INC.
 D.B. 12048, PG. 1304
 B.M. 2006, PG. 651

BISHOPS GATE MASTER OWNERS ASSOCIATION, INC.
 D.B. 12506, PG. 1011
 B.M. 2006, PG. 849

ANNEXATION # _____

SURVEYORS NOTES:
 (a) THE PROPERTY SHOWN HEREON IS SUBJECT TO ALL EASEMENTS OF RECORD AFFECTING SAME.
 (b) NO TITLE SEARCH HAS BEEN PERFORMED BY THIS FIRM DURING THE COURSE OF THIS SURVEY.
 (c) THIS SURVEYOR DOES NOT CERTIFY TO THE EXISTENCE OR NON-EXISTENCE OF ANY UNDERGROUND UTILITIES, BURIAL GROUNDS, OR ANY SUBSURFACE FEATURES THAT MAY OR MAY NOT BE PRESENT ON THIS SITE.
 (d) NOT TO BE USED AS A BOUNDARY SURVEY.

GCD LAND HOLDINGS, LLC
 D.B. 16688, PG. 2100
 B.M. 2017, PG. 233

CSX TRANSPORTATION, INC (Formerly Durham & Southern Railroad)

ST. JAMES VILLAGE HOMEOWNERS ASSOCIATION, INC.
 "Open Space"
 D.B. 8148, PG. 1858
 B.M. 1998, PG. 1604

I, STALEY C. SMITH, certify that this plat was drawn under my supervision from an actual survey made under my supervision Deed Book N/A, Page N/A; that boundaries not surveyed are clearly indicated as broken lines drawn from information found in Deed Book 1709, Page 495; that the ratio of precision or positional accuracy as calculated is 1: N/A; that this plat was prepared in accordance with G.S. 47-30 as amended. Witness my original signature, license number and seal this 24th day of July, A.D., 2019.

This survey shown hereon is of another category, such as a recombination of existing parcels, a court-ordered survey, or other exception to the definition of subdivision.

PRELIMINARY
 THIS IS A PRELIMINARY DRAWING AND IS NOT TO BE USED AS A SURVEY OR TO TRANSFER ANY PROPERTY SHOWN HEREON.

Professional Land Surveyor
L-3766

ALL DISTANCES ARE HORIZONTAL GROUND MEASUREMENTS.
 AREA DETERMINED USING D.M.D. METHOD.
 REFERENCE: DEED BOOK 1709 PAGE 495

GITA PATEL VALLABH
 D.B. 16929, PG. 423
 B.M. 2017, PG. 233

WAKE COUNTY BOARD OF EDUCATION REAL ESTATE SERVICES
 D.B. 8245, PG. 828
 ANNEXATION #222
 B.M. 1997, PG. 1400

22.418 GROSS ACRES TO BE ANNEXED
 PIN 0743.19-60-2736
 PORTION OF D.B. 1709, PG. 495

NOT AN ACTUAL SURVEY ON THIS DATE - JANUARY 07, 2019

ST. JAMES VILLAGE SUBDIVISION ~ LOTS 6-24
 B.M. 1999, PG. 547
 ANNEXATION #278 - B.M. 1999, PG. 645

CASHLESS SYSTEMS, INC.
 D.B. 11469, PG. 385

MARGIE A. GOODWIN
 D.B. 6464, PG. 647
 B.M. 1995, PG. 302

MARGIE A. GOODWIN
 D.B. 6464, PG. 647

VICKIE L. SORRELL
 D.B. 10235, PG. 58
 B.M. 2003, PG. 473
 ANNEXATION #352
 B.M. 2003, PG. 1911

DANNY RAY GLOVER MARTHA S. GLOVER HEIRS ESTATE FILE # 2002-E-1478, PG. 378 (BACK REF.)

DANNY RAY GLOVER MARTHA S. GLOVER HEIRS ESTATE FILE # 2002-E-1478, PG. 378 (BACK REF.)

LAWRENCE R. LONG HELEN S. LONG
 D.B. 2056, PG. 128

SALEM BAPTIST CHURCH OF APEX, NORTH CAROLINA
 D.B. 16436, PG. 633
 ANNEXATION #431
 B.M. 2008, PG. 1190

SALEM BAPTIST CHURCH OF APEX, NORTH CAROLINA
 D.B. 6748, PG. 388
 ANNEXATION #431
 B.M. 2008, PG. 1190
 D.B. 14060, PG. 590
 ANNEXATION #631
 B.M. 2018, PG. 948

ANNEXATION # 654

I, Donna B. Hosch, MMC, NCCMC, Town Clerk, Apex, North Carolina certify this is a true and exact map of annexation adopted this the _____ day of _____, 2019, by the Town Council. I set my hand and seal of the Town of Apex, _____, 2019.

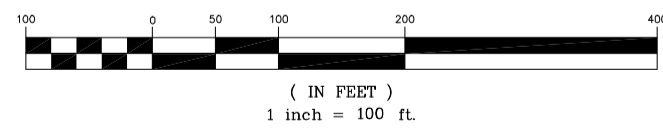
Donna B. Hosch, MMC, NCCMC, Town Clerk

LEGEND
 [XXXX] - Street Address (Typical)
 TL - Total
 R/W - Right Of Way
 --- Existing Corporate Limit Boundary
 - - - Property Line Not Surveyed

RECORDED IN BOOK OF MAPS **2019**, PAGE _____

IMPROVEMENTS NOT SHOWN HEREON

LINE	BEARING	DISTANCE
L1	S 57°47'00" W	67.38
L2	N 29°38'45" W	163.36
L3	S 62°37'10" W	94.84
L4	N 29°07'35" W	82.95
L5	S 63°17'49" W	20.21
L6	S 25°49'58" E	257.56
L7	N 75°21'54" W	60.42
L8	S 75°00'00" W	100.00
L9	S 05°00'00" W	20.00
L10	N 00°03'24" W	151.33
L11	N 86°39'13" W	13.00



ANNEXATION MAP FOR THE TOWN OF APEX

PROPERTY OWNED BY
DON F. SORRELL
CALLIE S. SORRELL
 TOWN OF APEX ETJ, CARY TOWNSHIP, WAKE COUNTY, NORTH CAROLINA

LISTED OWNER:
 NOT A TITLE VERIFICATION
DON F. SORRELL
CALLIE S. SORRELL
 1221 SALEM CHURCH ROAD
 APEX, N.C. 27523-8259
 P.I.N. 0743.19-60-2736

Smith and Smith
 surveyors
 FIRM LICENSE No. C-0155
 P.O. BOX 457
 APEX, N.C. 27502
 (919) 362-7111

PITTSBORO, N.C. 27312
 (919) 542-4321

DATE JANUARY 07, 2019
 SCALE 1" = 100'
 DRAWN BY J.A.B.
 PROJECT NO. 19-01



Annexation #654

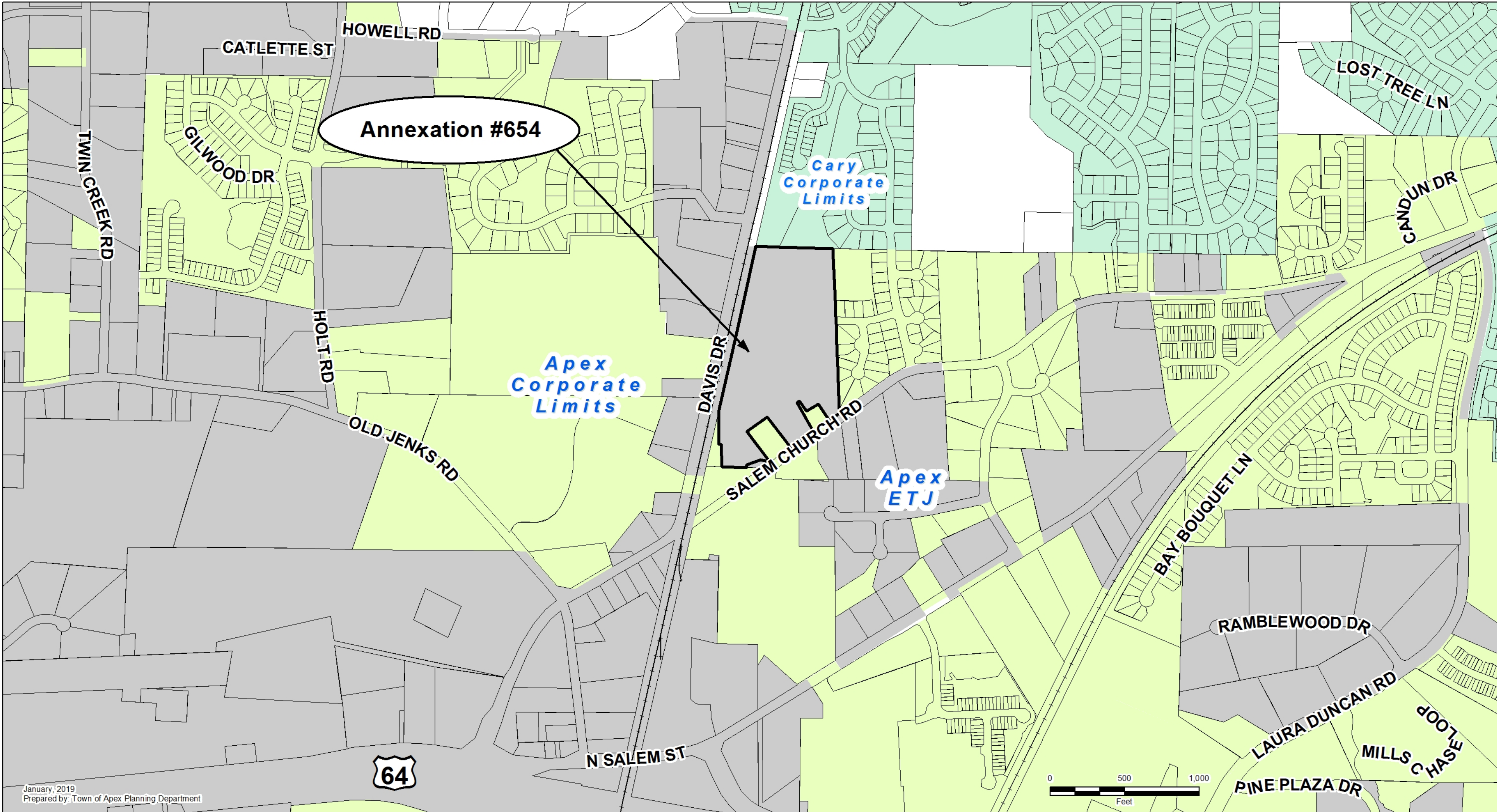
**Salem
Elementary
School**

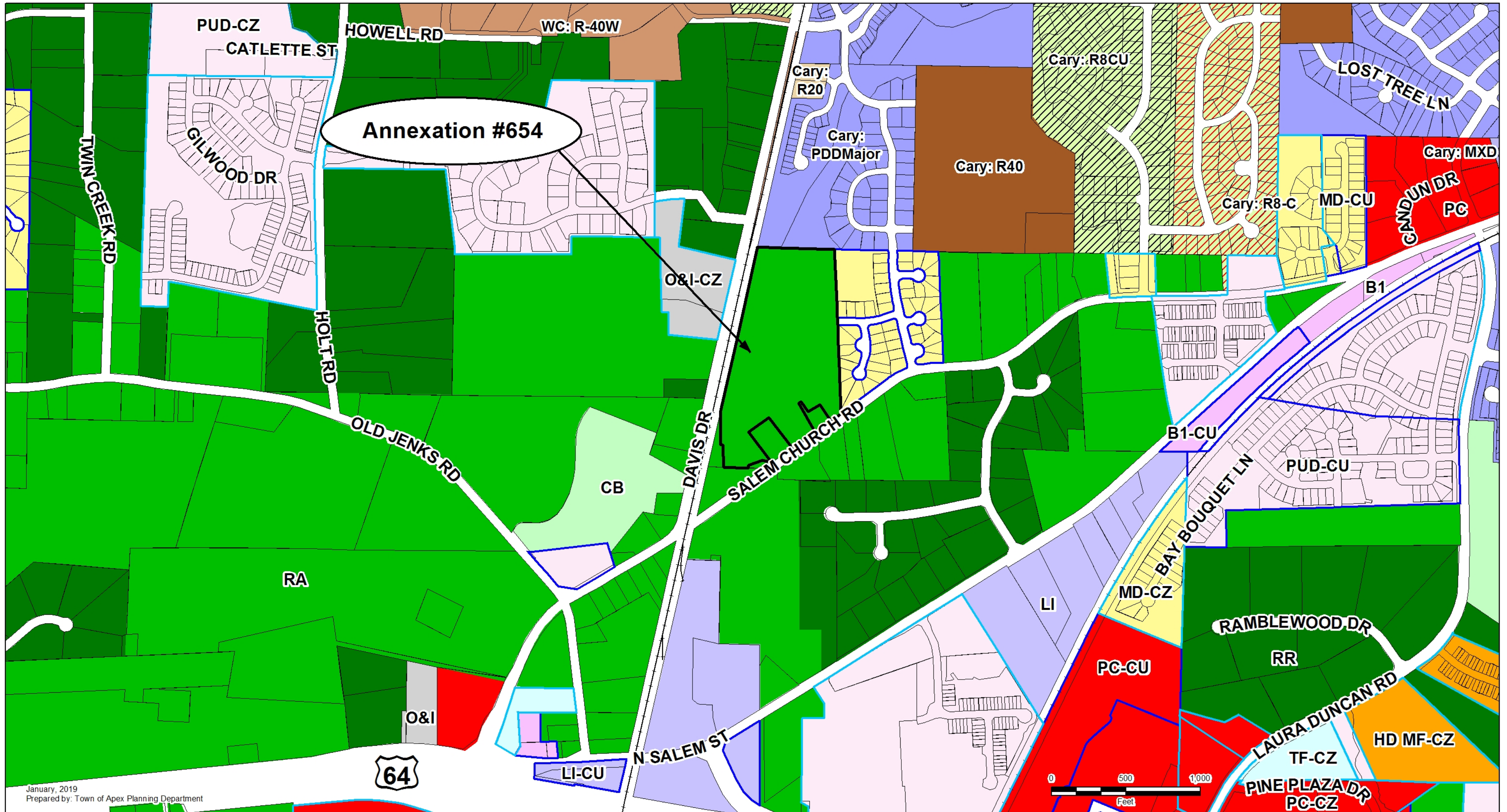
**St. James
Village**

**Salem
Woods**

0 250 500
Feet

August, 2019
January, 2019 Aerial Photography
Prepared by: Town of Apex Planning Department





Annexation #654



RESOLUTION DIRECTING THE TOWN CLERK
TO INVESTIGATE PETITION RECEIVED UNDER G.S. § 160A-31

Annexation Petition #654
Don and Callie Sorrell

WHEREAS, G.S. §160-A 31 provides that the sufficiency of the petition shall be investigated by the Town Clerk before further annexation proceedings may take place; and

WHEREAS, the Town Council of the Town of Apex deems it advisable to proceed in response to this request for annexation;

NOW, THEREFORE, BE IT RESOLVED by the Town Council of the Town of Apex, that the Town Clerk is hereby directed to investigate the sufficiency of the above-described petition and to certify to the Town Council the result of her investigation.

This the 15th day of October 2019.

Lance Olive
Mayor

ATTEST:

Donna B. Hosch, MMC, NCCMC
Town Clerk



CERTIFICATE OF SUFFICIENCY BY THE TOWN CLERK

Annexation Petition #654
Don and Callie Sorrell

To: The Town Council of the Town of Apex, North Carolina

I, Donna B. Hosch, Town Clerk, do hereby certify that I have investigated the annexation petition attached hereto, and have found, as a fact, that said petition is signed by all owners of real property lying in the area described therein, in accordance with G.S. § 160A-31, as amended.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the seal of the Town of Apex, North Carolina this 15th day of October 2019.

Donna B. Hosch, MMC, NCCMC
Town Clerk

(Seal)

PETITION FOR VOLUNTARY ANNEXATION

This document is a public record under the North Carolina Public Records Act and may be published on the Town's website or disclosed to third parties.

Application #: 657
Fee Paid \$ 200

Submittal Date: 1/4/19
Check # 724

TO THE TOWN COUNCIL APEX, NORTH CAROLINA

1. We, the undersigned owners of real property, respectfully request that the area described in Part 4 below be annexed to the Town of Apex, Wake County, North Carolina.
2. The area to be annexed is contiguous, non-contiguous (satellite) to the Town of Apex, North Carolina and the boundaries are as contained in the metes and bounds description attached hereto.
3. If contiguous, this annexation will include all intervening rights-of-way for streets, railroads and other areas as stated in G.S. 160A-31(f), unless otherwise stated in the annexation amendment.

Owner Information

<u>Don & Callie Sorrell</u> Owner Name (Please Print)	<u>0743.19-60-2736</u> Property PIN or Deed Book & Page #
<u>919 362 6446</u> Phone	<u>n/a</u> E-mail Address
_____ Owner Name (Please Print)	_____ Property PIN or Deed Book & Page #
_____ Phone	_____ E-mail Address
_____ Owner Name (Please Print)	_____ Property PIN or Deed Book & Page #
_____ Phone	_____ E-mail Address

Surveyor Information

Surveyor: Smith & Smith Surveyors
Phone: 919 362-7111 Fax: _____
E-mail Address: Staley@smithandsmithsurveyors.net

Annexation Summary Chart

Total Acreage to be annexed:	_____	Reason for annexation: (select one)	
Population of acreage to be annexed:	<u>2</u>	Receive Town Services	<input checked="" type="checkbox"/>
Existing # of housing units:	<u>1</u>	Other (please specify)	_____
Zoning District*:	<u>RA</u>		

*If the property to be annexed is not within the Town of Apex's Extraterritorial Jurisdiction, the applicant must also submit a rezoning application with the petition for voluntary annexation to establish an Apex zoning designation. Please contact the Planning Department for questions.

PETITION FOR VOLUNTARY ANNEXATION

Application #: 6054

Submittal Date: 1/4/19

COMPLETE IF SIGNED BY INDIVIDUALS:

All individual owners must sign. (If additional signatures are necessary, please attach an additional sheet.)

DON SORRELL
Please Print

Don Sorrell
Signature

CALLIE SORRELL
Please Print

Callie Sorrell
Signature

Please Print

Signature

Please Print

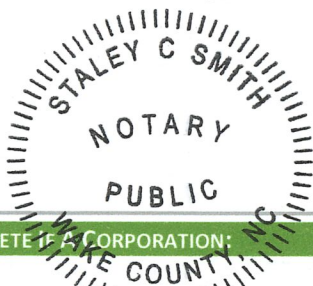
Signature

STATE OF NORTH CAROLINA
COUNTY OF WAKE

Sworn and subscribed before me, Staley C. Smith, a Notary Public for the above State and County,
this the 27th day of December, 2018.

Staley C. Smith
Notary Public

SEAL



My Commission Expires: 10-6-21

COMPLETE IF A CORPORATION:

In witness whereof, said corporation has caused this instrument to be executed by its President and attested by its Secretary by order of its Board of Directors, this the _____ day of _____, 20_____.

Corporate Name _____

SEAL

By: _____
President (Signature)

Attest:

Secretary (Signature)

STATE OF NORTH CAROLINA
COUNTY OF WAKE

Sworn and subscribed before me, _____, a Notary Public for the above State and County,
this the _____ day of _____, 20_____.

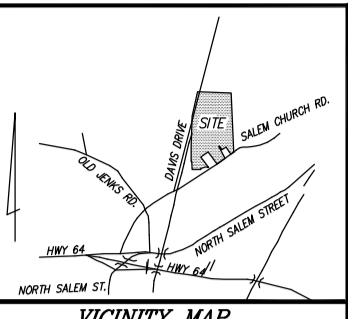
Notary Public

SEAL

My Commission Expires: _____

Lying and being in Cary Township, Wake County, North Carolina, and described as follows more fully to wit;

BEGINNING at a point in the centerline of N.C.S.R. No. 1614 (Salem Church Road) and being a common corner with Danny Ray Glover and Lawrence R. Long; thence with the centerline of N.C.S.R. No. 1614 (Salem Church Road), South 57°47'00" West, 67.38 feet to a point in the aforesaid road centerline; thence to and with the eastern property line of Don F. Sorrell, North 29°38'45" West, 163.36 feet to a point, another corner of aforesaid Sorrell; thence with the following four (4) courses and distances of Don F. Sorrell, South 62°37'10" West, 94.84 feet to a point; North 29°07'35" West, 82.95 feet to a point; South 63°17'49" West, 20.21 feet to a point; and South 25°49'58" East, 257.56 feet to a point in the centerline of N.C.S.R. No. 1614 (Salem Church Road); thence with aforesaid road centerline, South 57°47'00" West, 186.77 feet to a point in aforesaid road centerline, being the southeastern corner of Vickie L. Sorrell; thence the following three (3) courses and distances with Vickie L. Sorrell, North 33°51'20" West, 287.65 feet to a point; South 57°46'58" West, 169.52 feet to a point; and South 33°51'20" East, 252.99 feet to a point, being the northeast corner of a private cemetery; thence the following three (3) courses and distances with aforesaid cemetery, North 75°21'54" West, 60.42 feet to a point; South 75°00'00" West, 100.00 feet to a point; and South 05°00'00" West, 20.00 feet to a point in a northern property line of Salem Baptist Church Of Apex, North Carolina; thence the following four (4) courses and distances with Salem Baptist Church Of Apex, North Carolina, North 85°00'00" West, 162.96 feet to a point; North 00°03'24" West, 151.33 feet to a point; North 86°39'13" West, 13.00 feet to a point; and North 03°21'38" East, 304.74 feet to point within the CSX Transportation, Inc railroad right-of-way; thence North 05°09'00" East, 567.88 feet to a point within the western right-of-way of N.C.S.R. No. 1613 (Davis Drive); thence a line running parallel with the aforesaid road right-of-way, North 16°00'00" East, 473.00 feet to a point within the western right-of-way of N.C.S.R. No. 1613 (Davis Drive); thence to and with the southern property line of Bishops Gate Master Owners Association, Inc., South 84°55'00" East, 640.00 feet to a point, being the northwestern corner of St. James Village Homeowners Association, Inc.; thence with the western property line of St. James Village Homeowners Association, Inc. and beyond with the western property lines of lots 21, 19, 18, 17, 16, 15, 14 and 13 of the "St. James Village Subdivision – Lots 6-24", South 00°46'47" West, 1136.46 feet to the point and place of BEGINNING and containing 22.418 acres more or less. The above described tract of land being all of Wake County PIN 0743.19-60-2736.



PETER J. GRESOCK, III
JEANINE GRESOCK
 D.B. 14285, PG. 1569
 B.M. 1983, PG. 1073

BISHOPS GATE MASTER OWNERS ASSOCIATION, INC.
 D.B. 12048, PG. 1304
 B.M. 2006, PG. 651

BISHOPS GATE MASTER OWNERS ASSOCIATION, INC.
 D.B. 12506, PG. 1011
 B.M. 2006, PG. 849

ANNEXATION # _____

SURVEYORS NOTES:
 (a) THE PROPERTY SHOWN HEREON IS SUBJECT TO ALL EASEMENTS OF RECORD AFFECTING SAME.
 (b) NO TITLE SEARCH HAS BEEN PERFORMED BY THIS FIRM DURING THE COURSE OF THIS SURVEY.
 (c) THIS SURVEYOR DOES NOT CERTIFY TO THE EXISTENCE OR NON-EXISTENCE OF ANY UNDERGROUND UTILITIES, BURIAL GROUNDS, OR ANY SUBSURFACE FEATURES THAT MAY OR MAY NOT BE PRESENT ON THIS SITE.
 (d) NOT TO BE USED AS A BOUNDARY SURVEY.

GCD LAND HOLDINGS, LLC
 D.B. 16688, PG. 2100
 B.M. 2017, PG. 233

CSX TRANSPORTATION, INC (Formerly Durham & Southern Railroad)

ST. JAMES VILLAGE HOMEOWNERS ASSOCIATION, INC.
 "Open Space"
 D.B. 8148, PG. 1858
 B.M. 1998, PG. 1604

I, STALEY C. SMITH, certify that this plat was drawn under my supervision from an actual survey made under my supervision Deed Book N/A, Page N/A; that boundaries not surveyed are clearly indicated as broken lines drawn from information found in Deed Book 1709, Page 495; that the ratio of precision or positional accuracy as calculated is 1: N/A; that this plat was prepared in accordance with G.S. 47-30 as amended. Witness my original signature, license number and seal this 24th day of July, A.D., 2019.

This survey shown hereon is of another category, such as a recombination of existing parcels, a court-ordered survey, or other exception to the definition of subdivision.

PRELIMINARY
 THIS IS A PRELIMINARY DRAWING AND IS NOT TO BE USED AS A SURVEY OR TO TRANSFER ANY PROPERTY SHOWN HEREON.

Professional Land Surveyor
L-3766

ALL DISTANCES ARE HORIZONTAL GROUND MEASUREMENTS.
 AREA DETERMINED USING D.M.D. METHOD.
 REFERENCE: DEED BOOK 1709 PAGE 495

GITA PATEL VALLABH
 D.B. 16929, PG. 423
 B.M. 2017, PG. 233

WAKE COUNTY BOARD OF EDUCATION REAL ESTATE SERVICES
 D.B. 8245, PG. 828
 ANNEXATION #222
 B.M. 1997, PG. 1400

CASHLESS SYSTEMS, INC.
 D.B. 11469, PG. 385

MARGIE A. GOODWIN
 D.B. 6464, PG. 647
 B.M. 1995, PG. 302

MARGIE A. GOODWIN
 D.B. 6464, PG. 647

SALEM BAPTIST CHURCH OF APEX, NORTH CAROLINA
 D.B. 16436, PG. 633
 ANNEXATION #431
 B.M. 2008, PG. 1190

ANNEXATION # 654

I, Donna B. Hosch, MMC, NCCMC, Town Clerk, Apex, North Carolina certify this is a true and exact map of annexation adopted this the _____ day of _____, 2019, by the Town Council. I set my hand and seal of the Town of Apex, _____, 2019.

Donna B. Hosch, MMC, NCCMC, Town Clerk

LEGEND
 [XXXX] - Street Address (Typical)
 TL - Total
 R/W - Right Of Way
 --- Existing Corporate Limit Boundary
 - - - Property Line Not Surveyed

RECORDED IN BOOK OF MAPS **2019**, PAGE _____

22.418 GROSS ACRES TO BE ANNEXED
 PIN 0743.19-60-2736
 PORTION OF D.B. 1709, PG. 495

NOT AN ACTUAL SURVEY ON THIS DATE - JANUARY 07, 2019

ST. JAMES VILLAGE SUBDIVISION ~ LOTS 6-24
 B.M. 1999, PG. 547
 ANNEXATION #278 - B.M. 1999, PG. 645

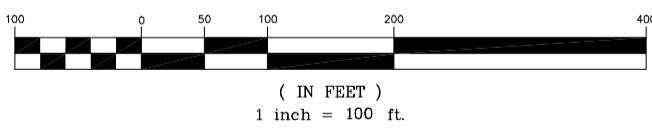
LAWRENCE R. LONG
HELEN S. LONG
 D.B. 2056, PG. 128

VICKIE L. SORRELL
 D.B. 10235, PG. 58
 B.M. 2003, PG. 473
 ANNEXATION #352
 B.M. 2003, PG. 1911

DANNY RAY GLOVER
MARTHA S. GLOVER HEIRS
 ESTATE FILE # 2002-E-
 D.B. 1478, PG. 378 (BACK REF.)

DANNY RAY GLOVER
MARTHA S. GLOVER HEIRS
 ESTATE FILE # 2002-E-

LINE	BEARING	DISTANCE
L1	S 57°47'00" W	67.38
L2	N 29°38'45" W	163.36
L3	S 62°37'10" W	94.84
L4	N 29°07'35" W	82.95
L5	S 63°17'49" W	20.21
L6	S 25°49'58" E	257.56
L7	N 75°21'54" W	60.42
L8	S 75°00'00" W	100.00
L9	S 05°00'00" W	20.00
L10	N 00°03'24" W	151.33
L11	N 86°39'13" W	13.00



ANNEXATION MAP FOR THE TOWN OF APEX

PROPERTY OWNED BY
DON F. SORRELL
CALLIE S. SORRELL
 TOWN OF APEX ETJ, CARY TOWNSHIP, WAKE COUNTY, NORTH CAROLINA

LISTED OWNER:
 NOT A TITLE VERIFICATION
DON F. SORRELL
CALLIE S. SORRELL
 1221 SALEM CHURCH ROAD
 APEX, N.C. 27523-8259
 P.I.N. 0743.19-60-2736

Smith and Smith
 surveyors
 FIRM LICENSE No. C-0155
 P.O. BOX 457
 APEX, N.C. 27502
 (919) 362-7111

PITTSBORO, N.C. 27312
 (919) 542-4321

DATE JANUARY 07, 2019
 SCALE 1" = 100'
 DRAWN BY J.A.B.
 PROJECT NO. 19-01



RESOLUTION SETTING DATE OF PUBLIC HEARING
ON THE QUESTION OF ANNEXATION PURSUANT TO G.S. § 160A-31 AS AMENDED

Annexation Petition #654
Don and Callie Sorrell

WHEREAS, a petition requesting annexation of the area described herein has been received; and

WHEREAS, the Town Council of Apex, North Carolina has by Resolution directed the Town Clerk to investigate the sufficiency thereof; and

WHEREAS, Certification by the Town Clerk as to the sufficiency of said petition has been made;

NOW, THEREFORE, BE IT RESOLVED by the Town Council of the Town of Apex, North Carolina that:

Section 1. A public hearing on the question of annexation of the area described herein will be held at the Apex Town Hall at 7:00 o'clock p.m. on the 6th day of November 2019.

Section 2. The area proposed for annexation is described as attached.

Section 3. Notice of said public hearing shall be published on the Town of Apex Website, www.apexnc.org, Public Notice, at least ten (10) days prior to the date of said public hearing.

This the 15th day of October 2019.

Lance Olive, Mayor

ATTEST:

Donna B. Hosch, MMC, NCCMC, Town Clerk

| Agenda Item | cover sheet

for consideration by the Apex Town Council

Item Type: CONSENT AGENDA

Meeting Date: October 15, 2019

Item Details

Presenter(s): Dianne Khin, Planning Director

Department(s): Planning

Requested Motion

Motion to adopt a Resolution Directing the Town Clerk to Investigate Petition Received, to accept the Certificate of Sufficiency by the Town Clerk, and to adopt a Resolution Setting Date of Public Hearing on the Question of Annexation – Apex Town Council's intent to annex Treva Weaver (single-family) property containing .959 acres located at 1608 Salem Church Road, Annexation #665 into the Town's corporate limits.

Approval Recommended?

Planning Department recommends approval.

Item Details

The Town Clerk certifies to the investigation of said annexation. Adoption of the Resolution authorizes the Town Clerk to advertise said public hearing by electronic means and on the Town of Apex's website. The Public Hearing would be scheduled for the November 6, 2019 Town Council meeting.

Attachments

- Annexation Petition
- Legal Description
- Vicinity Map
- Resolution Directing the Town Clerk to Investigate Petition
- Certificate of Sufficiency by the Town Clerk
- Resolution Setting Date of Public Hearing



PETITION FOR VOLUNTARY ANNEXATION

This document is a public record under the North Carolina Public Records Act and may be published on the Town's website or disclosed to third parties.

Application #: 665
Fee Paid: \$ 200⁰⁰

Submittal Date: 4/30/19
Check #: 6241

TO THE TOWN COUNCIL APEX, NORTH CAROLINA

1. We, the undersigned owners of real property, respectfully request that the area described in Part 4 below be annexed to the Town of Apex, Wake County, North Carolina.
2. The area to be annexed is contiguous, non-contiguous (satellite) to the Town of Apex, North Carolina and the boundaries are as contained in the metes and bounds description attached hereto.
3. If contiguous, this annexation will include all intervening rights-of-way for streets, railroads and other areas as stated in G.S. 160A-31(f), unless otherwise stated in the annexation amendment.

Owner Information

Treva Willard Weaver
Owner Name (Please Print)
919 362 4535
Phone

Property PIN or Deed Book & Page #
treva.1955@gmail.com
E-mail Address

Owner Name (Please Print)
Phone

Property PIN or Deed Book & Page #
E-mail Address

Owner Name (Please Print)
Phone

Property PIN or Deed Book & Page #
E-mail Address

Surveyor Information

Surveyor: _____
Phone: _____ Fax: _____
E-mail Address: _____

Annexation Summary Chart

Total Acreage to be annexed:	<u>0.959</u>	Reason for annexation: (select one)
Population of acreage to be annexed:	_____	Receive Town Services _____
Existing # of housing units:	_____	Other (please specify) _____
Zoning District*:	_____	<u>Require Sewage Services</u>

*If the property to be annexed is not within the Town of Apex's Extraterritorial Jurisdiction, the applicant must also submit a rezoning application with the petition for voluntary annexation to establish an Apex zoning designation. Please contact the Planning Department for questions.

PETITION FOR VOLUNTARY ANNEXATION

Application #: 665

Submittal Date: 4/30/19

COMPLETE IF SIGNED BY INDIVIDUALS:

All individual owners must sign. (If additional signatures are necessary, please attach an additional sheet.)

TREVA Willard Weaver

Please Print

Treva Willard Weaver

Signature

Please Print

Signature

Please Print

Signature

Please Print

Signature

STATE OF NORTH CAROLINA
COUNTY OF WAKE

Sworn and subscribed before me, Bonnie J. Brock, a Notary Public for the above State and County,
this the 30th day of April, 2019.

Bonnie J. Brock

Notary Public

SEAL

My Commission Expires: 7/1/2020

COMPLETE IF A CORPORATION:

In witness whereof, said corporation has caused this instrument to be executed by its President and attested by its Secretary by order of its Board of Directors, this the ____ day of _____, 20____.

Corporate Name _____

SEAL

By: _____

President (Signature)

Attest:

Secretary (Signature)

STATE OF NORTH CAROLINA
COUNTY OF WAKE

Sworn and subscribed before me, _____, a Notary Public for the above State and County,
this the ____ day of _____, 20____.

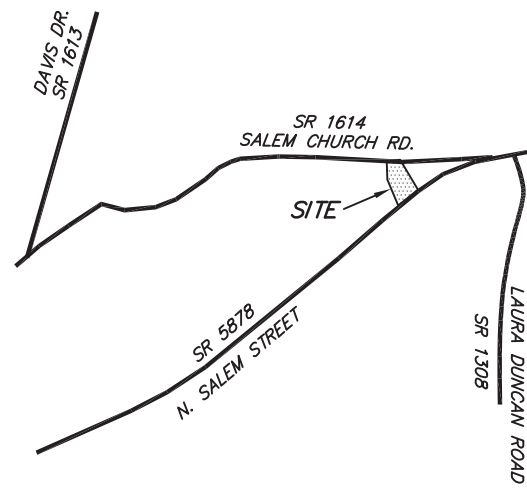
Notary Public

SEAL

My Commission Expires: _____

Lying and being in White Oak Township, Wake County, North Carolina and described more fully as follows to wit:

BEGINNING at a calculated point in the centerline of Salem Church Road (NCSR 1614), being situated South $82^{\circ} 23' 59''$ West, 39.38 feet from the southeast corner of Annexation #587; thence with a new annexation boundary line South $30^{\circ} 35' 00''$ East, 242.30 feet to a calculated point in the northern line of Annexation #188; thence along and with Annexation #188 South $51^{\circ} 39' 15''$ West, 29.48 feet to a calculated point in or near the centerline of N. Salem Street (NCSR 5878); thence South $38^{\circ} 36' 21''$ East, 30.00 feet to a calculated point being the northeastern corner of Annexation #175 in the line of Annexation #188; thence with Annexation #175 South $51^{\circ} 34' 05''$ West, 145.31 feet to a calculated point being the southeastern corner of Annexation #552 in the line of Annexation #175; thence with Annexation #552 North $38^{\circ} 55' 12''$ West, 30.22 feet to a calculated point in or near the centerline of N. Salem Street (NCSR 5878); thence with Annexation #552 North $22^{\circ} 25' 34''$ West, 193.95 feet to a calculated point; thence continuing with Annexation #552 North $02^{\circ} 12' 55''$ West, 131.86 feet to a calculated point in or near the centerline of Salem Church Road (NCSR 1614) in the line of Annexation #587; thence with Annexation #587 North $86^{\circ} 15' 19''$ East, 93.22 feet to the point and place of BEGINNING containing 1.021 total acres more or less. The above-described tract of land is all Wake County PIN 0743.20-91-5064 and a portion of land within the right-of-way of North Salem Street (NCSR 5878).



VICINITY MAP

ANNEXATION # _____
 I, Donna B. Hosch, MMC, NCCMC, Town Clerk, Apex, North Carolina certify this is a true and exact map of annexation adopted this the _____ day of _____, 2019, by the Town Council. I set my hand and seal of the Town of Apex, _____, 2019.

Donna B. Hosch, MMC, NCCMC, Town Clerk

**TOMMY C. KING
 NANCY C. KING**
 ESTATE FILE # 01-E-1609
 B.M. 2005, PG. 508 (LOT 1)
 ANNEXATION # 587 ~ B.M. 2017, PG. 476

**TRACE II HOMEOWNERS
 ASSOCIATION, INC.**
 D.B. 16254, PG. 2745 (TRACT 1)
 B.M. 2015, PGS. 431-432
 ANNEXATION # 510 ~ B.M. 2014, PG. 800

I, STALEY C. SMITH, certify that this plat was drawn under my supervision from deeds of record, that boundaries not surveyed are clearly indicated as broken lines and drawn from information found in Deed Book 4546, Page 840; that the precision as calculated is 1: N/A; that this plat meets the requirements of the standards of practice for land surveying in North Carolina 21 NCAC 56.1600.

Witness my original signature, license number and seal this 25th day of September, A.D., 2019.

PRELIMINARY

THIS IS A PRELIMINARY DRAWING AND IS NOT TO BE USED AS A SURVEY OR TO TRANSFER ANY PROPERTY SHOWN HEREON.

Professional Land Surveyor
 L-3766
 License Number

ALL DISTANCES ARE HORIZONTAL GROUND U.S. SURVEY FEET MEASUREMENTS.

AREA DETERMINED USING COORDINATE METHOD.

REFERENCE: DEED BOOK 4546, PAGE 840

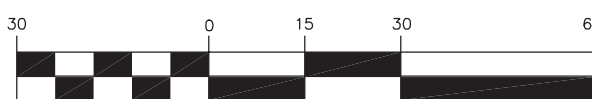
SURVEYOR NOTES:

- (a) THE PROPERTY SHOWN HEREON IS SUBJECT TO ALL EASEMENTS OF RECORD AFFECTING SAME.
- (b) NO TITLE SEARCH HAS BEEN PERFORMED BY THIS FIRM DURING THE COURSE OF THIS SURVEY.
- (c) THIS SURVEYOR DOES NOT CERTIFY TO THE EXISTENCE OR NON-EXISTENCE OF ANY UNDERGROUND UTILITIES, BURIAL GROUNDS, OR ANY SUBSURFACE FEATURES THAT MAY OR MAY NOT BE PRESENT ON THIS SITE.
- (d) NOT AN ACTUAL SURVEY ON THIS DATE.
- (e) THIS MAP OR PLAT IS EXEMPT FROM THE REQUIREMENTS OF G.S. 47-30 PURSUANT TO G.S. 47-30 (j).
- (f) THIS MAP IS PREPARED FOR THE SOLE PURPOSE OF MUNICIPAL BOUNDARY ANNEXATION.

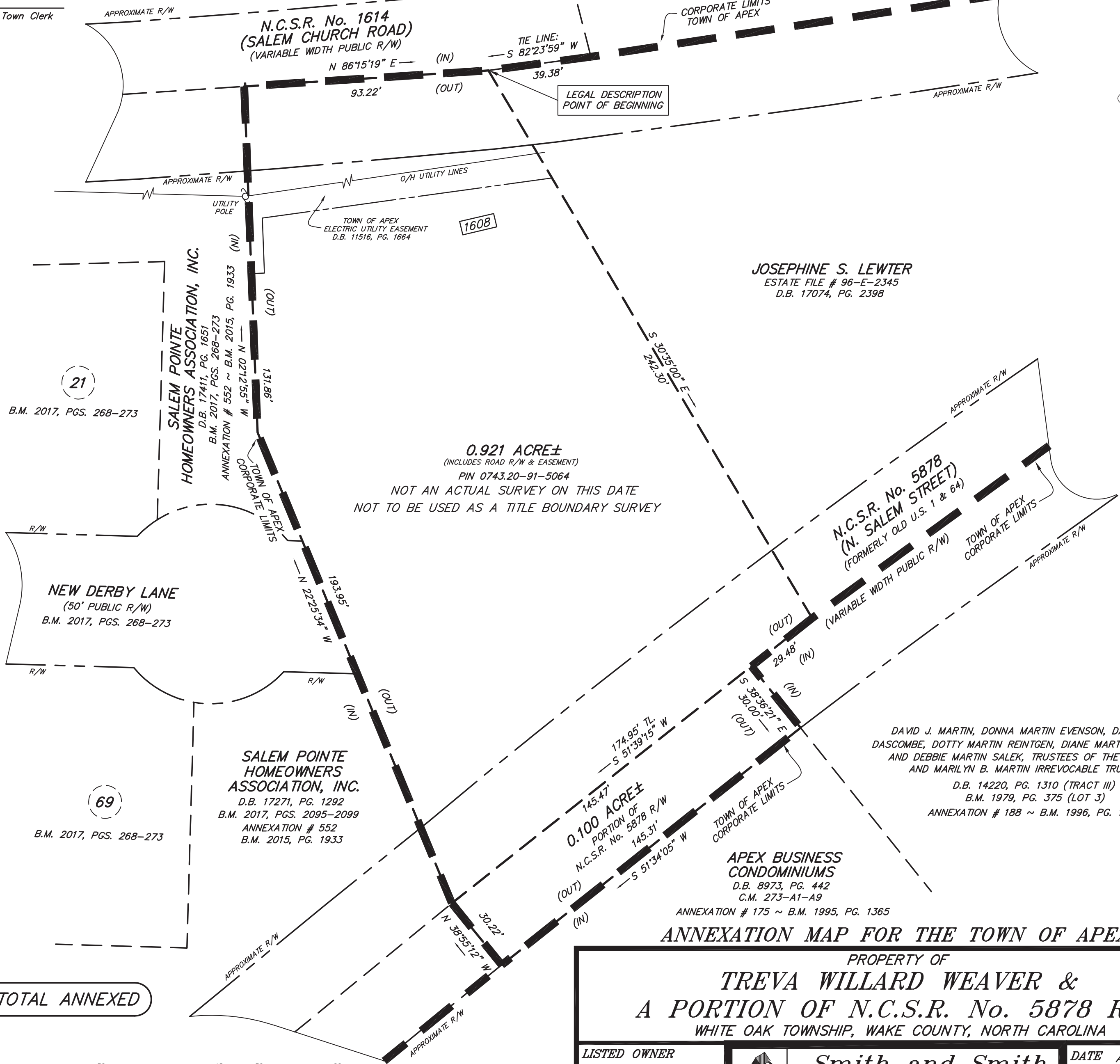
LEGEND

- XXXX - Street Address (Typical)
- TL - Total
- R/W - Right Of Way
- Existing Corporate Limit Line
- - - Right Of Way Line
- Unsurveyed Line
- - - Unsurveyed Line
- Overhead Utility Lines

1.021 ACRES± TOTAL ANNEXED



(IN FEET)
 1 inch = 30 ft.



JOSEPHINE S. LEWTER
 ESTATE FILE # 96-E-2345
 D.B. 17074, PG. 2398

0.921 ACRE±
 (INCLUDES ROAD R/W & EASEMENT)
 PIN 0743.20-91-5064
 NOT AN ACTUAL SURVEY ON THIS DATE
 NOT TO BE USED AS A TITLE BOUNDARY SURVEY

NEW DERBY LANE
 (50' PUBLIC R/W)
 B.M. 2017, PGS. 268-273

**SALEM POINTE
 HOMEOWNERS
 ASSOCIATION, INC.**
 D.B. 17271, PG. 1292
 B.M. 2017, PGS. 2095-2099
 ANNEXATION # 552
 B.M. 2015, PG. 1933

0.100 ACRE±
 PORTION OF
 N.C.S.R. No. 5878 R/W
 145.31'

**APEX BUSINESS
 CONDOMINIUMS**
 D.B. 8973, PG. 442
 C.M. 273-A1-A9
 ANNEXATION # 175 ~ B.M. 1995, PG. 1365

**N.C.S.R. No. 5878
 (N. SALEM STREET)**
 (FORMERLY OLD U.S. 1 & 64)
 (VARIABLE WIDTH PUBLIC R/W)

DAVID J. MARTIN, DONNA MARTIN EVENSON, DALE MARTIN DASCOMBE, DOTTY MARTIN REINTGEN, DIANE MARTIN STEPHENSON, AND DEBBIE MARTIN SALEK, TRUSTEES OF THE DAVID J. AND MARILYN B. MARTIN IRREVOCABLE TRUST
 D.B. 14220, PG. 1310 (TRACT III)
 B.M. 1979, PG. 375 (LOT 3)
 ANNEXATION # 188 ~ B.M. 1996, PG. 125

ANNEXATION MAP FOR THE TOWN OF APEX

PROPERTY OF
**TREVA WILLARD WEAVER &
 A PORTION OF N.C.S.R. No. 5878 R/W**
 WHITE OAK TOWNSHIP, WAKE COUNTY, NORTH CAROLINA

LISTED OWNER
 (NOT A TITLE VERIFICATION)
 TREVA WILLARD WEAVER
 1608 SALEM CHURCH ROAD
 APEX, N.C. 27523-7565

P.I.N. 0743.20-91-5064



**Smith and Smith
 surveyors**

FIRM LICENSE No. C-0155

P.O. BOX 457
 APEX, N.C. 27502
 (919) 362-7111

PITTSBORO, N.C. 27312
 (919) 542-4321

DATE AUGUST 15, 2019
 SCALE 1" = 30'
 DRAWN BY J.A.B.
 PROJECT NO. 19-50

MAGNETIC NORTH
 B.M. 2015, PG. 1933



Annexation #665

DOTSON WAY

N SALEM ST

SALEM CHURCH RD

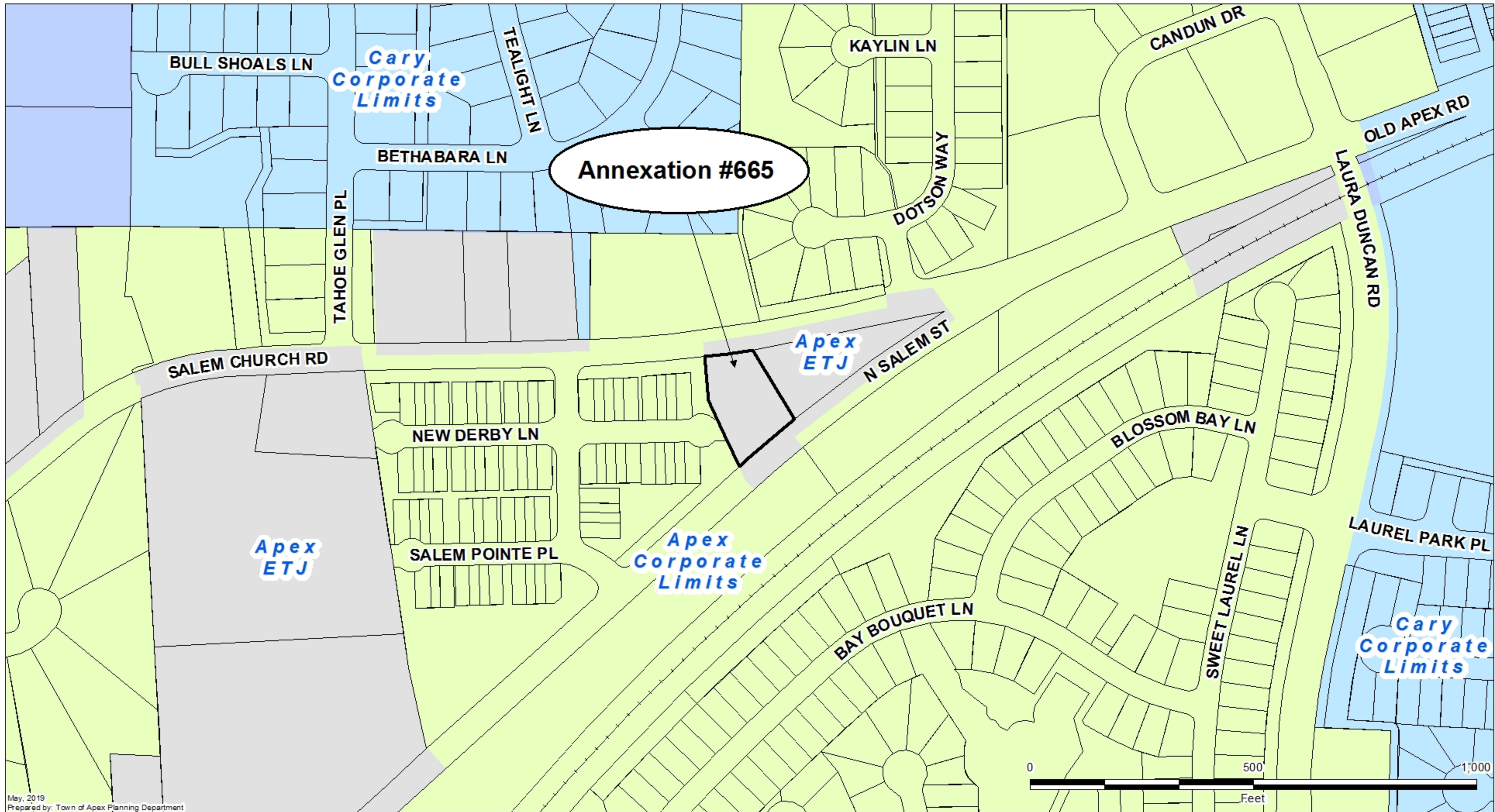
NEWDERBY LN

OLDE SALEM WAY

BLOSSOM BAY LN

SALEM POINTE PL

0 150 300
Feet



Annexation #665

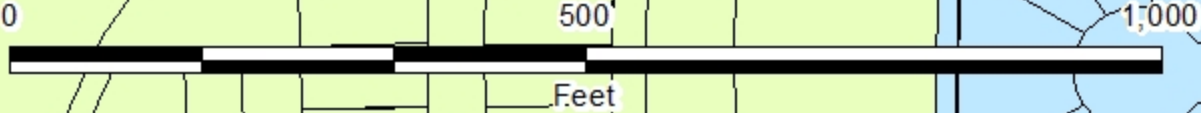
*Cary
Corporate
Limits*

*Apex
ETJ*

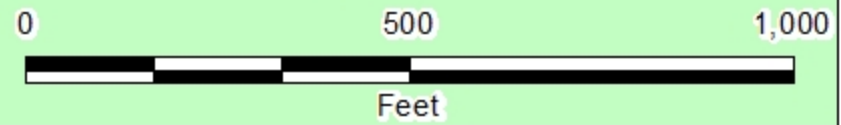
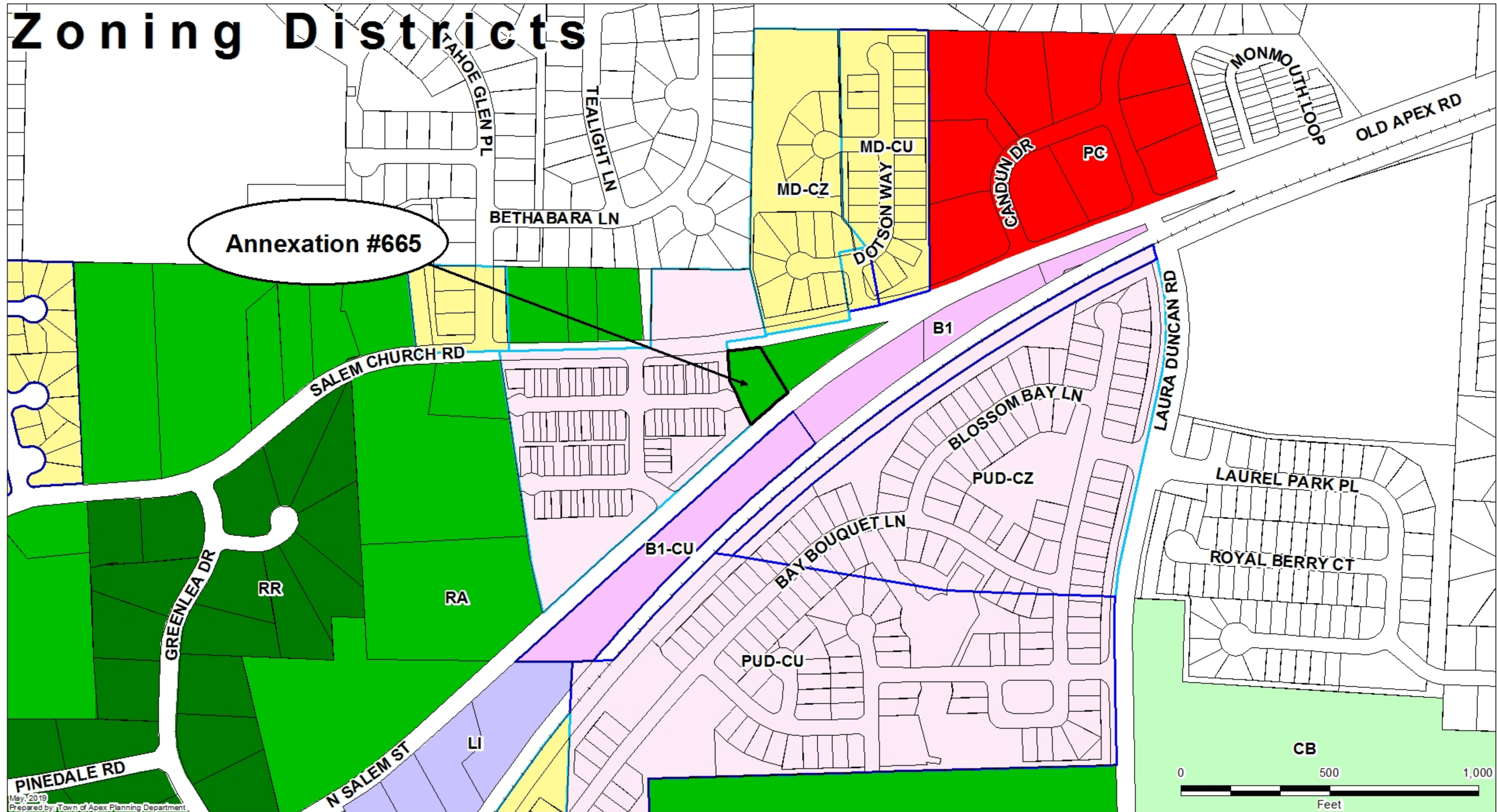
*Apex
Corporate
Limits*

*Apex
ETJ*

*Cary
Corporate
Limits*



Zoning Districts





RESOLUTION DIRECTING THE TOWN CLERK
TO INVESTIGATE PETITION RECEIVED UNDER G.S. § 160A-31

Annexation Petition #665
Treva Weaver

WHEREAS, G.S. §160-A 31 provides that the sufficiency of the petition shall be investigated by the Town Clerk before further annexation proceedings may take place; and

WHEREAS, the Town Council of the Town of Apex deems it advisable to proceed in response to this request for annexation;

NOW, THEREFORE, BE IT RESOLVED by the Town Council of the Town of Apex, that the Town Clerk is hereby directed to investigate the sufficiency of the above-described petition and to certify to the Town Council the result of her investigation.

This the 15th day of October 2019.

Lance Olive
Mayor

ATTEST:

Donna B. Hosch, MMC, NCCMC
Town Clerk



CERTIFICATE OF SUFFICIENCY BY THE TOWN CLERK

Annexation Petition #665
Treva Weaver

To: The Town Council of the Town of Apex, North Carolina

I, Donna B. Hosch, Town Clerk, do hereby certify that I have investigated the annexation petition attached hereto, and have found, as a fact, that said petition is signed by all owners of real property lying in the area described therein, in accordance with G.S. § 160A-31, as amended.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the seal of the Town of Apex, North Carolina this 15th day of October 2019.

Donna B. Hosch, MMC, NCCMC
Town Clerk

(Seal)

PETITION FOR VOLUNTARY ANNEXATION

This document is a public record under the North Carolina Public Records Act and may be published on the Town's website or disclosed to third parties.

Application #: 665
Fee Paid: \$ 200⁰⁰

Submittal Date: 4/30/19
Check #: 6241

TO THE TOWN COUNCIL APEX, NORTH CAROLINA

1. We, the undersigned owners of real property, respectfully request that the area described in Part 4 below be annexed to the Town of Apex, Wake County, North Carolina.
2. The area to be annexed is contiguous, non-contiguous (satellite) to the Town of Apex, North Carolina and the boundaries are as contained in the metes and bounds description attached hereto.
3. If contiguous, this annexation will include all intervening rights-of-way for streets, railroads and other areas as stated in G.S. 160A-31(f), unless otherwise stated in the annexation amendment.

Owner Information

Treva Willard Weaver
Owner Name (Please Print)
919 362 4535
Phone

Property PIN or Deed Book & Page #
treva.1955@gmail.com
E-mail Address

Owner Name (Please Print)
Phone

Property PIN or Deed Book & Page #
E-mail Address

Owner Name (Please Print)
Phone

Property PIN or Deed Book & Page #
E-mail Address

Surveyor Information

Surveyor: _____
Phone: _____ Fax: _____
E-mail Address: _____

Annexation Summary Chart

Total Acreage to be annexed: 0.959 Reason for annexation: (select one)
Population of acreage to be annexed: _____ Receive Town Services _____
Existing # of housing units: _____ Other (please specify) _____
Zoning District*: _____ Require Sewage Services

*If the property to be annexed is not within the Town of Apex's Extraterritorial Jurisdiction, the applicant must also submit a rezoning application with the petition for voluntary annexation to establish an Apex zoning designation. Please contact the Planning Department for questions.

PETITION FOR VOLUNTARY ANNEXATION

Application #: 665

Submittal Date: 4/30/19

COMPLETE IF SIGNED BY INDIVIDUALS:

All individual owners must sign. (If additional signatures are necessary, please attach an additional sheet.)

TREVA Willard Weaver

Please Print

Treva Willard Weaver

Signature

Please Print

Signature

Please Print

Signature

Please Print

Signature

STATE OF NORTH CAROLINA
COUNTY OF WAKE

Sworn and subscribed before me, Bonnie J. Brock, a Notary Public for the above State and County,
this the 30th day of April, 2019.

Bonnie J. Brock

Notary Public

SEAL

My Commission Expires: 7/1/2020

COMPLETE IF A CORPORATION:

In witness whereof, said corporation has caused this instrument to be executed by its President and attested by its Secretary by order of its Board of Directors, this the ____ day of _____, 20____.

Corporate Name _____

SEAL

By: _____

President (Signature)

Attest:

Secretary (Signature)

STATE OF NORTH CAROLINA
COUNTY OF WAKE

Sworn and subscribed before me, _____, a Notary Public for the above State and County,
this the ____ day of _____, 20____.

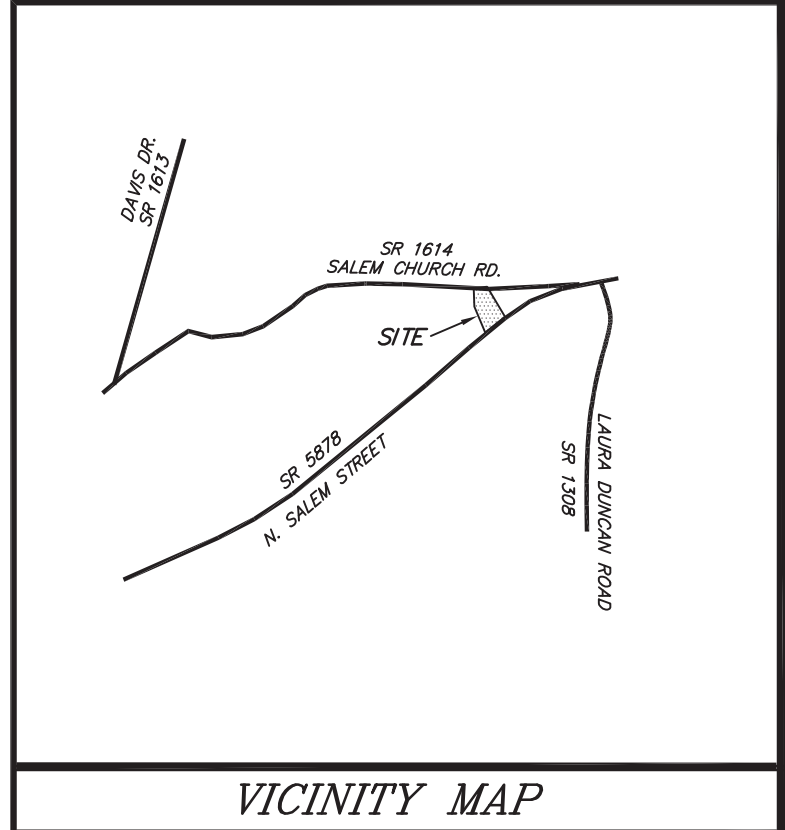
Notary Public

SEAL

My Commission Expires: _____

Lying and being in White Oak Township, Wake County, North Carolina and described more fully as follows to wit:

BEGINNING at a calculated point in the centerline of Salem Church Road (NCSR 1614), being situated South $82^{\circ} 23' 59''$ West, 39.38 feet from the southeast corner of Annexation #587; thence with a new annexation boundary line South $30^{\circ} 35' 00''$ East, 242.30 feet to a calculated point in the northern line of Annexation #188; thence along and with Annexation #188 South $51^{\circ} 39' 15''$ West, 29.48 feet to a calculated point in or near the centerline of N. Salem Street (NCSR 5878); thence South $38^{\circ} 36' 21''$ East, 30.00 feet to a calculated point being the northeastern corner of Annexation #175 in the line of Annexation #188; thence with Annexation #175 South $51^{\circ} 34' 05''$ West, 145.31 feet to a calculated point being the southeastern corner of Annexation #552 in the line of Annexation #175; thence with Annexation #552 North $38^{\circ} 55' 12''$ West, 30.22 feet to a calculated point in or near the centerline of N. Salem Street (NCSR 5878); thence with Annexation #552 North $22^{\circ} 25' 34''$ West, 193.95 feet to a calculated point; thence continuing with Annexation #552 North $02^{\circ} 12' 55''$ West, 131.86 feet to a calculated point in or near the centerline of Salem Church Road (NCSR 1614) in the line of Annexation #587; thence with Annexation #587 North $86^{\circ} 15' 19''$ East, 93.22 feet to the point and place of BEGINNING containing 1.021 total acres more or less. The above-described tract of land is all Wake County PIN 0743.20-91-5064 and a portion of land within the right-of-way of North Salem Street (NCSR 5878).



ANNEXATION # _____
 I, Donna B. Hosch, MMC, NCCMC, Town Clerk, Apex, North Carolina certify this is a true and exact map of annexation adopted this the _____ day of _____, 2019, by the Town Council. I set my hand and seal of the Town of Apex, _____, 2019.

**TOMMY C. KING
 NANCY C. KING**
 ESTATE FILE # 01-E-1609
 B.M. 2005, PG. 508 (LOT 1)
 ANNEXATION # 587 ~ B.M. 2017, PG. 476

TRACE II HOMEOWNERS ASSOCIATION, INC.
 D.B. 16254, PG. 2745 (TRACT 1)
 B.M. 2015, PGS. 431-432
 ANNEXATION # 510 ~ B.M. 2014, PG. 800

I, STALEY C. SMITH, certify that this plat was drawn under my supervision from deeds of record, that boundaries not surveyed are clearly indicated as broken lines and drawn from information found in Deed Book 4546, Page 840; that the precision as calculated is 1: N/A; that this plat meets the requirements of the standards of practice for land surveying in North Carolina 21 NCAC 56.1600.

Witness my original signature, license number and seal this 25th day of September, A.D., 2019.

PRELIMINARY
 THIS IS A PRELIMINARY DRAWING AND IS NOT TO BE USED AS A SURVEY OR TO TRANSFER ANY PROPERTY SHOWN HEREON.

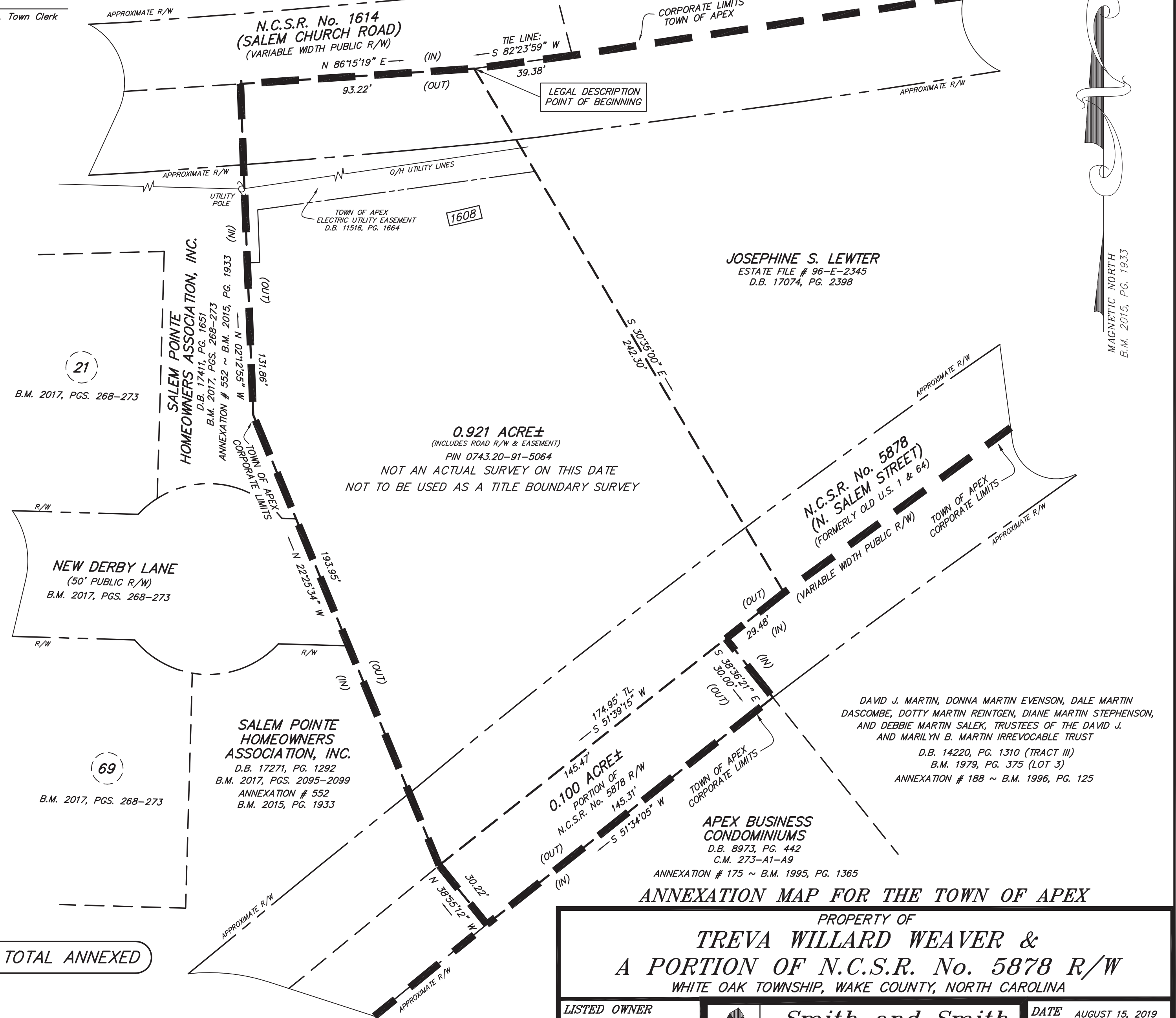
Professional Land Surveyor
 L-3766
 License Number

ALL DISTANCES ARE HORIZONTAL GROUND U.S. SURVEY FEET MEASUREMENTS.
 AREA DETERMINED USING COORDINATE METHOD.
 REFERENCE: DEED BOOK 4546, PAGE 840

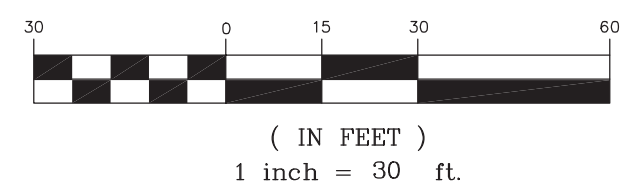
- SURVEYOR NOTES:**
- (a) THE PROPERTY SHOWN HEREON IS SUBJECT TO ALL EASEMENTS OF RECORD AFFECTING SAME.
 - (b) NO TITLE SEARCH HAS BEEN PERFORMED BY THIS FIRM DURING THE COURSE OF THIS SURVEY.
 - (c) THIS SURVEYOR DOES NOT CERTIFY TO THE EXISTENCE OR NON-EXISTENCE OF ANY UNDERGROUND UTILITIES, BURIAL GROUNDS, OR ANY SUBSURFACE FEATURES THAT MAY OR MAY NOT BE PRESENT ON THIS SITE.
 - (d) NOT AN ACTUAL SURVEY ON THIS DATE.
 - (e) THIS MAP OR PLAT IS EXEMPT FROM THE REQUIREMENTS OF G.S. 47-30 PURSUANT TO G.S. 47-30 (j).
 - (f) THIS MAP IS PREPARED FOR THE SOLE PURPOSE OF MUNICIPAL BOUNDARY ANNEXATION.

- LEGEND**
- XXXX - Street Address (Typical)
 - TL - Total
 - R/W - Right Of Way
 - — — — Existing Corporate Limit Line
 - — — — Right Of Way Line
 - — — — Unsurveyed Line
 - — — — Unsurveyed Line
 - — — — Overhead Utility Lines

Donna B. Hosch, MMC, NCCMC, Town Clerk



1.021 ACRES± TOTAL ANNEXED



ANNEXATION MAP FOR THE TOWN OF APEX

PROPERTY OF
**TREVA WILLARD WEAVER &
 A PORTION OF N.C.S.R. No. 5878 R/W**
 WHITE OAK TOWNSHIP, WAKE COUNTY, NORTH CAROLINA

LISTED OWNER (NOT A TITLE VERIFICATION) TREVA WILLARD WEAVER 1608 SALEM CHURCH ROAD APEX, N.C. 27523-7565	Smith and Smith surveyors FIRM LICENSE No. C-0155 P.O. BOX 457 APEX, N.C. 27502 (919) 362-7111	DATE AUGUST 15, 2019 SCALE 1" = 30' DRAWN BY J.A.B. PROJECT NO. 19-50
P.I.N. 0743.20-91-5064	PITTSBORO, N.C. 27312 (919) 542-4321	

MAGNETIC NORTH
 B.M. 2015, PG. 1933



RESOLUTION SETTING DATE OF PUBLIC HEARING
ON THE QUESTION OF ANNEXATION PURSUANT TO G.S. § 160A-31 AS AMENDED

Annexation Petition #665
Treva Weaver

WHEREAS, a petition requesting annexation of the area described herein has been received; and

WHEREAS, the Town Council of Apex, North Carolina has by Resolution directed the Town Clerk to investigate the sufficiency thereof; and

WHEREAS, Certification by the Town Clerk as to the sufficiency of said petition has been made;

NOW, THEREFORE, BE IT RESOLVED by the Town Council of the Town of Apex, North Carolina that:

Section 1. A public hearing on the question of annexation of the area described herein will be held at the Apex Town Hall at 7:00 o'clock p.m. on the 6th day of November 2019.

Section 2. The area proposed for annexation is described as attached.

Section 3. Notice of said public hearing shall be published on the Town of Apex Website, www.apexnc.org, Public Notice, at least ten (10) days prior to the date of said public hearing.

This the 15th day of October 2019.

Lance Olive, Mayor

ATTEST:

Donna B. Hosch, MMC, NCCMC, Town Clerk

| Agenda Item | cover sheet

for consideration by the Apex Town Council

Item Type: CONSENT AGENDA

Meeting Date: October 15, 2019

Item Details

Presenter(s): Marty Stone, Assistant Town Manager

Department(s): Administration

Requested Motion

Motion to approve and authorize the Town Manager to execute the same for an Encroachment Agreement between the Town of Apex and Toll NC II LP, a North Carolina Limited Partnership, regarding Wake County PIN#0723-75-5956, Lot 114, Regency at White Oak Creek Phase 6, Book of Maps 2018, Page 00596, 2501 Cedar Hedge Court, Apex, NC, 27502.

Approval Recommended?

Administration recommends approval

Item Details

Approve Encroachment Agreement with Toll NC II LP, (Grantee) for property described as a residential lot known as Wake County PIN#0726-75-5956, Lot 114, Regency at White Oak Creek Phase 6, Book of Maps 2018, Page 00596, 2501 Cedar Hedge Court, Apex, NC, 27502. Grantee wishes to install certain improvements, more particularly described as: **DRIVEWAY ENCROACHMENT WITHIN DRAINAGE EASEMENT. 59 S.F. (CROSSHATCHED) WHICH WILL ENCROACH UPON A PORTION OF THE PUBLIC DRAINAGE EASEMENT.**

Attachments

- Encroachment Agreement
- Exhibit A



After Recording Mail To: Development Services
Town of Apex
PO Box 250
Apex, NC 27502

STATE OF NORTH CAROLINA
COUNTY OF WAKE

ENCROACHMENT
AGREEMENT

THIS ENCROACHMENT AGREEMENT, being made this ____ day of _____
2019, by and between **TOLL NC II LP, a North Carolina Limited Partnership**, hereinafter referred to as
"Grantee," and the Town of Apex, hereinafter referred to as the "Town."

WHEREAS, the Grantee is the owner of **.39 acres** of residential land in the County of Wake, State
of North Carolina, which is described as **PIN #0723-75-5956** and more particularly described as **"LO114
Regency at White Oak Creek PH6 BM2018-00596"** as shown and recorded in **Book of Maps 2018, Page
00596, Wake County Registry**. The residential lot has a mailing address of **2501 Cedar Hedge Court,
Apex, NC, 27523**. The lot described in this paragraph is hereinafter referred to as the **"Residential Lot."**

WHEREAS, the Town is the owner of a **public drainage easement** as shown on **Book of Maps
2018, Page 00596, Wake County Registry**, as **"TOWN OF APEX PUBLIC DRAINAGE EASEMENT,"**
hereinafter referred to as the **"Public Drainage Easement."**

WHEREAS, Grantee wishes to install certain improvements, more particularly described as
NOTE: DRIVEWAY ENCROACHMENT WITHIN DRAINAGE EASEMENT. 59 S.F. (CROSSHATCHED) which
will encroach upon a portion of the **Public Drainage Easement**, hereinafter referred to as the
"Encroachment," as shown on the attached "Exhibit A." Grantee desires to make certain agreements
and covenants regarding the **Encroachment**.

6. All notices required herein shall be deemed given by depositing such in the United States mail, first class, and addressed to:

To Town: Town Manager
Town of Apex
PO Box 250
Apex, NC 27502

To Grantee: Toll NC II LP
250 Gibraltar Road
Horsham, PA 19044

7. In the event there is a dispute between the parties concerning the interpretation of the terms of this Encroachment Agreement or their respective rights and obligations hereunder, such dispute or controversy shall be adjudged pursuant to the laws of the State of North Carolina.

8. Grantee agrees to abide by all applicable laws, regulations, statutes and ordinances.

9. This Encroachment Agreement shall not divest the Town of any rights or interest in said **Public Drainage Easement** and the Town may terminate this Encroachment Agreement by giving Grantee ninety (90) days written notice of termination. Prior to the termination date, Grantee shall remove, at its own expense, all or part of the **Encroachment** as specified by the Town.

10. If the Town deems, within its sole discretion, that there is not time to give Grantee notice as provided in Paragraph 9 and that removal of the **Encroachment** is necessary in order to operate, protect, maintain, modify, replace, add-to or improve its facilities located within the **Public Drainage Easement**, then no notice shall be required and the Town may remove the **Encroachment** from the **Public Drainage Easement** without cost, risk or liability to the Town.

11. Grantee agrees to pay and reimburse the Town the entire expense and cost of removal of the Encroachment in the event that the Town removes the **Encroachment** as provided in the Paragraph 10 or if Grantee fails to remove the **Encroachment** within the time limit after receiving notice under Paragraph 9.

12. Grantee, during the life of this Encroachment Agreement, agrees to procure or cause to be procured from a responsible insurance carrier or carriers authorized under the laws of the State of North Carolina, insurance in the minimum amounts of \$300,000/\$500,000/\$300,000 covering full liability for any and all personal injury, property damage or wrongful death caused by the construction, maintenance, location, repair or visual obstruction of said **Encroachment**. Grantee shall furnish the Town, without demand, each July a certification from the insurance carrier or carriers with whom the insurance herein mentioned is carried, stating that such compensation is covered by such carrier or carriers and showing such insurance to be in full force and effect. Both Grantee and the Town shall be named as insured parties by endorsement of the policy. In the event of any change in the insurance policy, Grantee shall give the Town thirty (30) days notice of such change. Should Grantee fail to pay premiums upon said insurance or to perform any of the agreement, terms or conditions herein contained, the Town, at its option, by written notice may declare this Encroachment Agreement canceled and terminated and all rights acquired hereunder by Grantee shall thereupon terminate.

13. Notwithstanding Section 14 below, Grantee shall be released from its obligation under this Encroachment Agreement only upon the assumption of said obligations either by a successor in title to the residential Lot, or by assumption of said obligations by an incorporated party approved by the Town. The Town's consent to such assumption and release shall be required but shall not be withheld, conditioned or delayed if, as reasonably determined by the Town, the party assuming Grantee's obligations possesses adequate financial resources and ownership interest, and Grantee's delegate and proposed assignee assume and agree to fulfill, in writing, all of Grantee's duties set forth in this Encroachment Agreement.

14. The right to encroach is appurtenant to and runs with the land hereinabove referred to and shall forever be subject to the conditions above agreed on between the parties. This Encroachment Agreement is binding upon the heirs, assigns, transferees, and successors in interest of the Grantee and shall, upon execution, be recorded in the Office of the Register of Deeds of Wake County, North Carolina.

In testimony whereof, said Grantee and said Town have here unto set their hands and seals, the day and year first above written.

GRANTEE

TOLL NC II LP

a North Carolina Limited Partnership

By: Toll Southeast LP Company, Inc.
A Delaware corporation
General Partner

By: David Kelly

Print Name: DAVID KELLY

Title: DIVISION PRESIDENT

STATE OF North Carolina

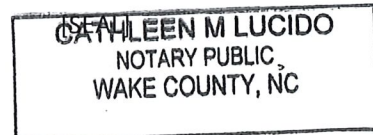
COUNTY OF Wake [county in which acknowledgement taken]

I, do hereby certify that David Kelly personally appeared before me this day and acknowledged that he/she is Division President of Toll Southeast LP Company, Inc., a General Partner of Toll NC II, LP, and that he/she as the Division President of Toll Southeast LP Company, Inc., being authorized to do so, executed the foregoing on behalf of the corporation as General Partner of Toll NC II, LP, with the authority of said limited partnership.

Witness my hand and official stamp or seal, this the 9 day of October, 2019.

Cathleen M. Lucido
[Signature of Notary Public]

My Commission Expires: 6-16-2023



TOWN OF APEX

(Corporate Seal)

Andrew L. Havens
Town Manager

ATTEST:

Donna B. Hosch, MMC, NCCMC
Town Clerk

STATE OF NORTH CAROLINA
COUNTY OF WAKE

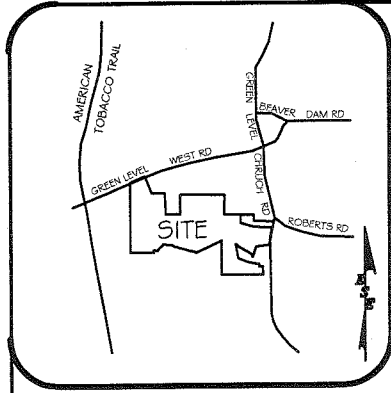
I, _____, a Notary Public of _____
County, North Carolina, certify that **Donna B. Hosch** personally came before me this day and
acknowledged that she is Town Clerk of the **Town of Apex, a North Carolina Municipal
Corporation**, and that by authority duly given and as the act of the corporation, the foregoing
instrument was signed in its name by its **Town Manager**, sealed with its corporate seal and
attested by her as its **Town Clerk**.

Witness my hand and official stamp or seal, this _____ day of _____, 2019.

[Signature of Notary Public]

(Seal)

My Commission Expires: _____



VICINITY MAP
(NOT TO SCALE)

I, CLARK E. WHITE, PLS, CERTIFY THAT THIS PLOT PLAN WAS PREPARED UNDER MY DIRECT SUPERVISION FROM DEEDS AND PLATS ON RECORD.

Clark E. White
CLARK E. WHITE, PLS

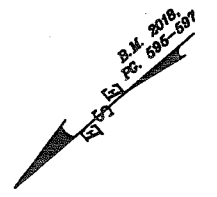
L-4588
REGISTRATION NO.

3/21/19
DATE



ESE CONSULTANTS
ENGINEERING • PLANNING • SURVEYING • ENVIRONMENTAL

LICENSE # C-2973
ESE of North Carolina, PC
2310 T.W. Alexander Dr, Suite J
Raleigh, NC 27617
TEL: 919-321-4800 FAX: 919-321-7880



LEGEND:
R/W - RIGHT OF WAY
B.M. - BOOK OF MAPS
D.B. - DEED BOOK
A/C - AIR CONDITIONING UNIT
EM - ELECTRIC METER
GM - GAS METER

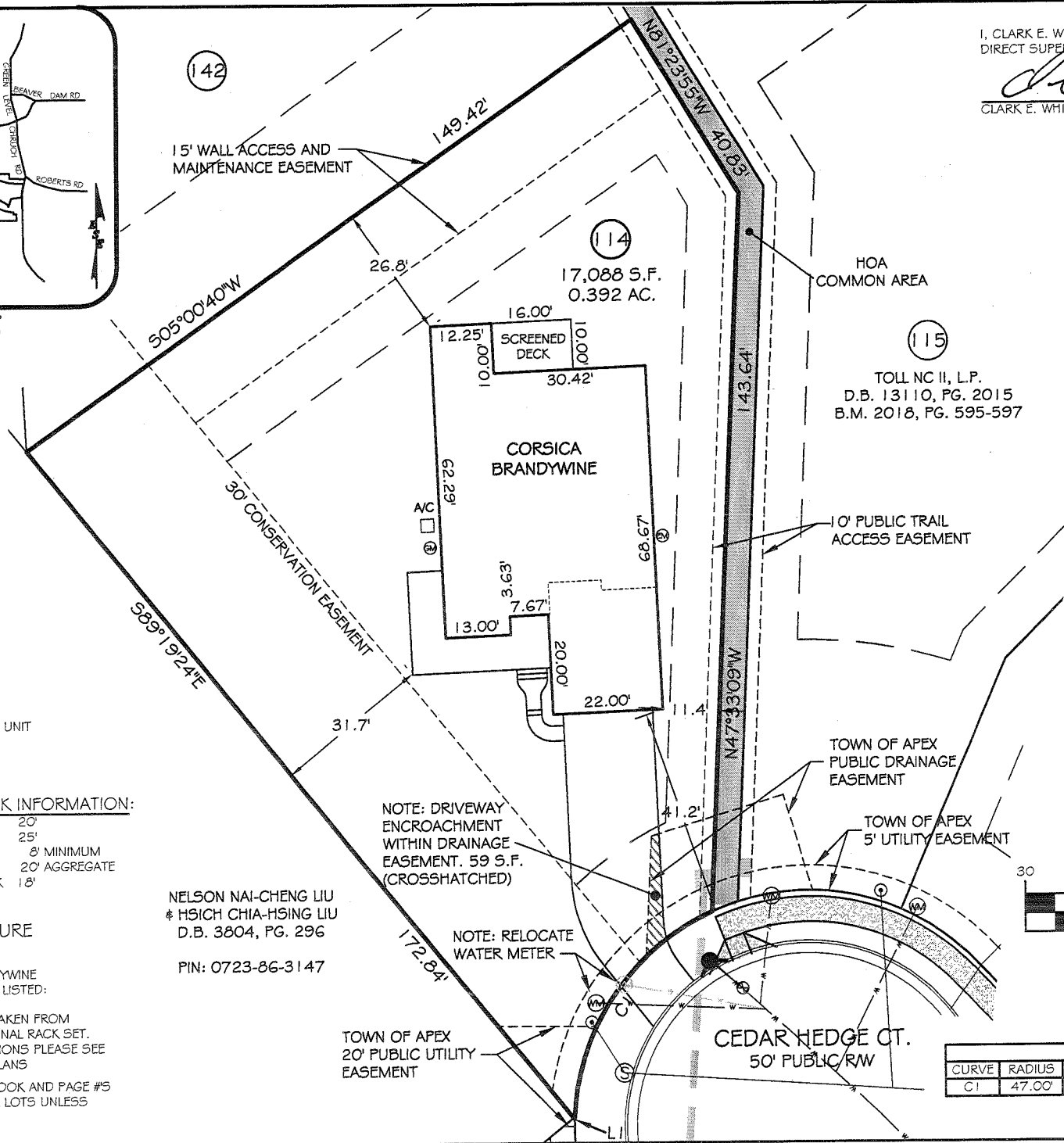
BUILDING SETBACK INFORMATION:
FRONT YARD SETBACK 20'
REAR YARD SETBACK 25'
SIDE YARD SETBACK 8' MINIMUM
20' AGGREGATE
CORNER YARD SETBACK 18'

TOLL ARCHITECTURE
ID # 189595
TYPE: CORSICA BRANDYWINE
FOUNDATION OPTIONS LISTED:

HOUSE DIMENSIONS TAKEN FROM
TOLL ARCHITECTURE FINAL RACK SET.
FOR FOUNDATION OPTIONS PLEASE SEE
TOLL ARCHITECTURE PLANS

NOTE: ESMT, DEED BOOK AND PAGE #S
ARE LISTED WITH FINAL LOTS UNLESS
OTHERWISE NOTED

NELSON NAI-CHENG LIU
& HSICH CHIA-HSING LIU
D.B. 3804, PG. 296
PIN: 0723-86-3147

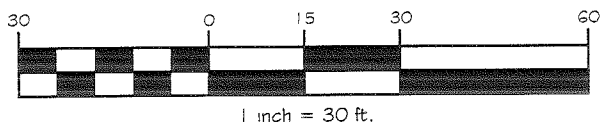


REFERENCES:

- B.M. 2011, PG. 50-52
- B.M. 2015, PG. 1517-1519
- B.M. 2015, PG. 1579-1582
- B.M. 2016, PG. 136-140
- B.M. 2016, PG. 426-428
- B.M. 2017, PG. 43-44
- B.M. 2017, PG. 1883-1885
- B.M. 2018, PG. 595-597
- D.B. 13110, PG. 2015

NOTE:

- LOCATION OF UTILITY SERVICES SHOWN ARE CONCEPTUAL ONLY. ACTUAL LOCATION OF SANITARY, WATER, ELECTRIC, GAS, ETC. SERVICING EACH LOT TO BE DETERMINED AT TIME OF CONSTRUCTION BY DEVELOPER.
- HOUSE FOUNDATION NOTE: ALL PLOT PLAN DIMENSIONS SHOULD BE CHECKED AGAINST TOLL ARCHITECTURE PLANS BY PM OR CM PRIOR TO CONSTRUCTION.
- ALL PLANIMETRICS WERE TAKEN FROM A PLAN BY CHAS. H. SELLS, INC. TITLED "BECKWITH PROPERTY GREEN LEVEL CHURCH ROAD. DATED: 03-07-2007.



LINE TABLE		
LINE	BEARING	DISTANCE
L1	S42°17'03"W	0.24'

CURVE TABLE					
CURVE	RADIUS	ARC LENGTH	CHORD LENGTH	CHORD BEARING	DELTA ANGLE
C1	47.00'	52.20'	49.56'	N15°53'48"W	63°38'18"

PLOT PLAN FOR

REGENCY AT WHITE OAK CREEK - PHASE 6
LOT 114 - 2501 CEDAR HEDGE COURT
TOWN OF APEX, WAKE COUNTY, N.C.

TOLL NC II, L.P.
D.B. 13110, PG. 2015

JOB #: 2324.L0114
DATE: 02-26-19
SCALE: 1" = 30'
DRAWN BY: CEW
REVIEWED BY: TF
REVISIONS:
REVISED BY:

| Agenda Item | cover sheet

for consideration by the Apex Town Council

Item Type: CONSENT AGENDA

Meeting Date: October 15, 2019

Item Details

Presenter(s): Mary Beth Manville, Human Resources Director

Department(s): Human Resources

Requested Motion

Motion for the addition of one position for the Permits and Inspections Department to add a Residential Field Supervisor, Grade 27.

Approval Recommended?

Yes

Item Details

This position is essential to add to the Permits and Inspections department to supervise the residential field inspectors as the department transitions towards single trade or dual trade inspections from the multi-trade model currently in place. This position will work concurrently with the other residential field supervisor to provide policies, procedures and supervision for the field inspectors which will maintain consistency with the department. This position will advise field inspectors, property owners and contactors in interpreting and applying code regulations to resolve complaints and concerns with the state building codes and local ordinance.

The position will also provide additional time for more one on one field training of new inspectors and existing inspectors on the codes. This position will allow both Residential Field Supervisors to focus on the primary trade (or dual trade) assigned to each group and allow the supervisor to provide support and guidance on code interpretations improving their knowledge and making them more efficient performing inspections.



The Residential Field Supervisor will work in the field with the other supervisor conducting inspections to assist with the workload and will be able to provide better supervision of the inspectors providing more timely feedback on inspections.

As we transition the department from the multi-trade business model to the single/dual trade business model for inspections, the supervisor will provide support and coordination of duties for their team. Having his additional supervisory resource will help provide a smoother transition from the one model to the next.

The addition of this supervisor position will provide contactors, homeowners and developers a contact person that will be able to facilitate and resolve any complaints or concerns they might have with a specific code item under the responsibility of the supervisor. The Residential Field Supervisor will develop and maintain positive working relationships with citizens, builders, developers and Town officials.

Attachments

- None



Item Type: CONSENT AGENDA

Meeting Date: October 15, 2019

Item Details

Presenter(s): Shawn Purvis, Assistant Town Manager

Department(s): Administration

Requested Motion

Motion to approve Resolution of Intent for the partial closing of a right-of-way (ROW) between Chatham St. and Olive St. adjacent to 314 E. Chatham St. and to call for a Public Hearing at the November 19, 2019 Council Meeting

Approval Recommended?

Staff recommends approval

Item Details

The ROW connects Chatham and Olive streets and is not in use as an alley, road, or other passable thoroughfare. The property owner is requesting the closure of the ROW to extend the size of all adjacent parcels. Staff has reviewed the request. The town will need to retain an easement for a public sign along Chatham Street. Staff recommends advertising the Public Hearing in order to consider the future closing.

Attachments

- Owner Request for Street (ROW) Closing
- Area Map of Request
- Resolution of Intent to Close Right of Way



Donna B Hosch
Town Clerk
73 Hunter St
Apex, NC 27502

October 3, 2019

Re: Request for ROW Closure adjacent to 314 E Chatham St

Dear Ms. Hosch,

The purpose of this letter is to request that the Town of Apex close a right of way (ROW) adjacent to 314 E Chatham St. This ROW is an existing 10' alley to the west of 314 E Chatham and at the rear property line of 101, 105, and 107 S Hughes St. The ROW is not in use except for the placement of the Apex Historic District sign which is located near the end of the ROW at Chatham street. We wish to add half the ROW (5') to our parcel at 314 E Chatham St (PIN 0742500341).

The parcel (314 E Chatham St) adjacent to the requested ROW closing is in White Oak Township, Wake County, NC, and is described in the deed as:

"All those four (4) certain Lots of Land situated in the Town of Apex and being Lots Number 10, 11, 12, and 13, in Block 2, according to a map and survey made by W.B. Trodgen, Jr. of the Lands of The Apex Land & Improvement Company, said map being of record in Book of Maps 1885, Page 95, Wake County Registry, to which reference is hereby made for a more complete and accurate description."

A map from Wake County GIS is attached. The adjoining properties belong to the following:

101 and 105 S Hughes St: James T Bennett, Marguerite Glover and Cheryl Bennett
Mailing address: PO Box 195, Apex NC 27502

107 S Hughes St: William J Carey and Robin E Carey
Mailing address: 107 S Hughes St, Apex, NC 27502

Please let me know if you need any further information in order to make a decision regarding closing this ROW and retaining an easement for the sign. I look forward to your response.

Best regards,



Deborah L Due
1005 Callowhill Ct
Apex, NC 27539
919-329-8028
ddue@nc.rr.com

Due-Silverberg parcel: 314 E Chatham St

PIN: 0742500341

PIN EXT: 000

Real Estate ID: 0013198

Map Name: 0742 19

Owner: DUE, DEBORAH LYNN SILVERBERG,
LAWRENCE MICHAEL

Mail Address 1: 1005 CALLOWHILL CT

Mail Address 2: APEX NC 27539-6215

Mail Address 3:

Deed Book: 017565

Deed Page: 00483

Deed Acres: 1.01

Deed Date: 9/5/2019

Building Value: \$16,842

Land Value: \$151,474

Total Value: \$168,316

Billing Class: Individual

Description: LO#10-13 BL2

Heated Area: 2400

Street Name: E CHATHAM ST

Site Address: 314 E CHATHAM ST

City: APEX

Planning Jurisdiction: AP

Township: White Oak

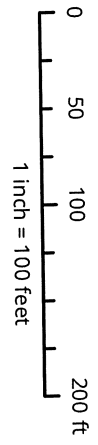
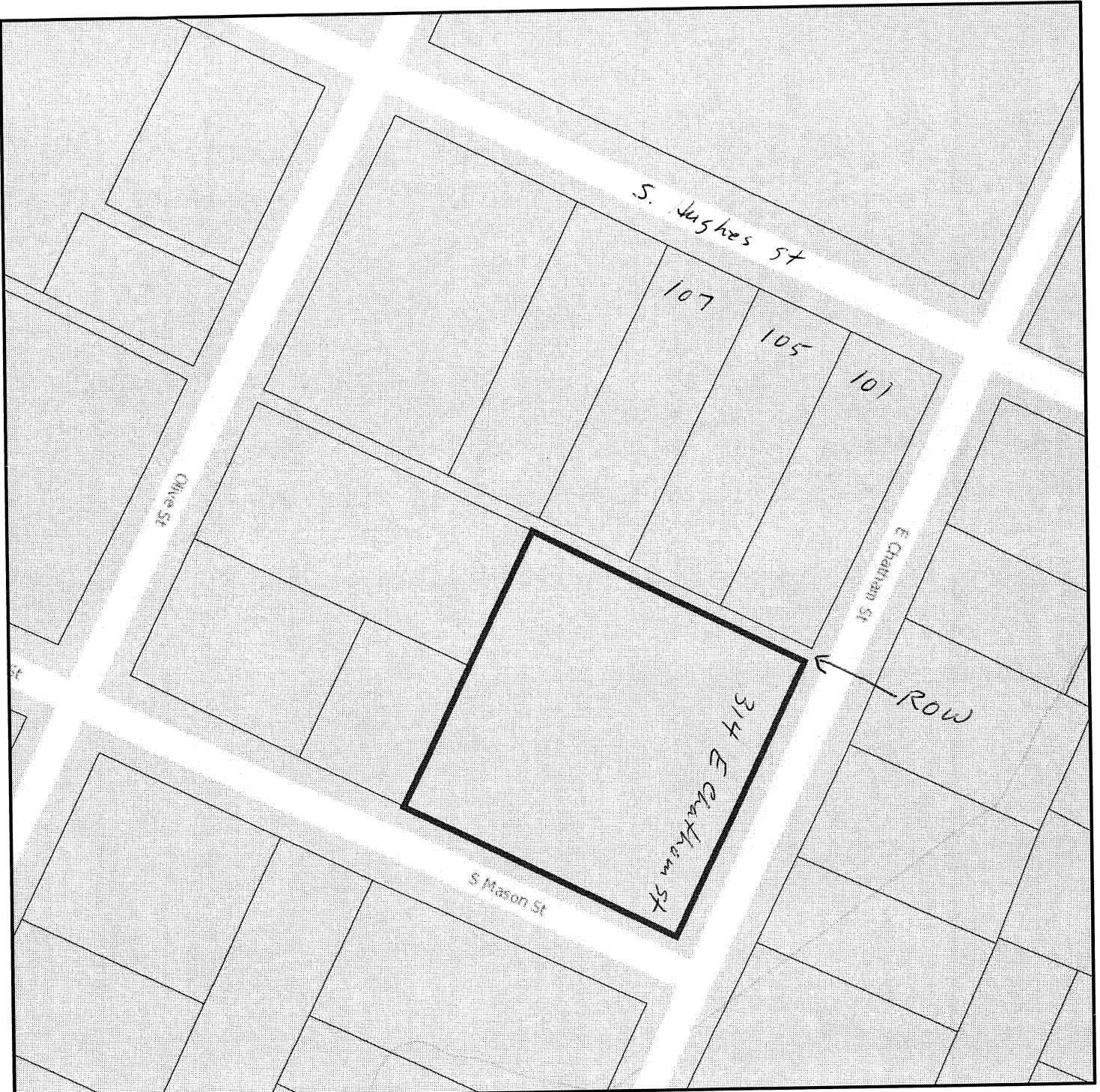
Year Built: 1951

Sale Price: \$250,000

Sale Date: 12/16/2016

Use Type: PREFAB

Design Style: Conventional



Disclaimer
IMaps makes every effort to produce and publish the most current and accurate information possible. However, the maps are produced for information purposes, and are NOT surveys. No warranties, expressed or implied, are provided for the data therein, its use, or its interpretation.

RESOLUTION NO. 19-1015-29

A RESOLUTION OF INTENT OF THE TOWN COUNCIL TO CONSIDER THE CLOSING OF A PORTION OF AN ALLEY LOCATED WEST OF 314 E. CHATHAM STREET AND AT THE REAR PROPERTY LINES OF 101, 105 AND 107 S. HUGHES STREET BETWEEN E. CHATHAM STREET AND OLIVE STREET AND RESERVING A PUBLIC SIGN EASEMENT AT THE END OF THE E. CHATHAM STREET ALLEY

WHEREAS, G.S. 160A-299 authorizes the Town Council to close public streets and alleys; and

WHEREAS, the Town Council considers it advisable to conduct a public hearing for the purpose of giving consideration to the closing of a portion of the alley between E. Chatham and Olive Street and reserving a historic district sign easement;

NOW, THEREFORE, BE IT RESOLVED by the Town Council that:

- (1) A Public Hearing will held be at 7:00 p.m. on the 19th day of November, 2019, in the Town of Apex Town Council Chambers at the Apex Town Hall to consider a resolution closing of that portion of a 10' wide alley located west of 314 E. Chatham Street and at the rear property lines of 101, 105 and 107 S. Hughes street between E. Chatham Street and Olive Street, as shown on Book of Maps 1885, Page 0095, Wake County Registry, and reserving a 10' x 16' public sign easement at the end of the E. Chatham Street alley in the name of the Town of Apex.
- (2) The Town Clerk is hereby directed to publish this Resolution of Intent once a week for four successive weeks in a newspaper of general circulation in the area.
- (3) The Town Clerk is further directed to transmit by registered or certified mail to each owner of property abutting upon that portion of said street a copy of this Resolution of Intent.
- (4) The Town Clerk is further directed to transmit by registered or certified mail to the Department of Transportation a copy of this Resolution of Intent.
- (5) The Town Clerk is further directed to cause adequate notices of this Resolution of Intent and the scheduled public hearing to be posted as required by G.S. 160A-299.
- (6) Upon motion duly made by Council Member _____, and duly seconded by Council Member _____, the above resolution was duly adopted by the Apex Town Council at the meeting held on the 15th day of October 2019, in the Town Hall.

Upon call for a vote the following Council Members voted in the affirmative:

and the following Council Members voted in the negative:

This the 15th day of October 2019.

Lance Olive, Mayor

ATTEST:

Donna B. Hosch, MMC, NCCMC, Town Clerk

Item Type: PUBLIC HEARING

Meeting Date: October 15, 2019

Item Details

Presenter(s): Sarah Rayfield, Senior Planner

Department(s): Planning Department

Requested Motion

Public Hearing and possible motion regarding an amendment to the 2045 Land Use Map and Rezoning Case #19CZ02 Morris Acres PUD. The applicant, Kaplan Residential, seeks to amend the 2045 Land Use Map from Medium Density Residential to High Density Residential and to rezone approximately ±17.4376 acres, for the properties located at 0, 7208, & 7208B Morris Acres Road (PINs 0732289587, 0732382530, & 0732382709), from Rural Residential (RR) to Planned Unit Development-Conditional Zoning (PUD-CZ).

Approval Recommended?

The Planning Department recommends approval.

Planning Board recommend approval, by a vote of 4-3, of the 2045 Land Use Map Amendment and Rezoning at the September 9, 2019 meeting.

Item Details

The Planning Board held public hearings on August 12, 2019 and September 9, 2019. The Town Council continued the public hearing at their September 17, 2019 meeting at the request of the applicant.

Note: Staff has been made aware that the applicant intends to request that the Town Council refer this rezoning to the November 12, 2019 Planning Board meeting for another public hearing as there will be substantial changes to the rezoning that the applicant desires to submit. The applicant has been made aware that a new neighborhood meeting is required to be held prior to the Planning Board meeting. If referred back to Planning Board, staff will send out new public notices for both the Planning Board and Town Council public hearings. Therefore, a continuance is not requested or required.



Attachments

- Vicinity Map
- Rezoning Application
- Staff Report



STAFF REPORT

2045 Land Use Map Amendment and Rezoning #19CZ02 Morris Acres PUD

October 15, 2019 Town Council Meeting



Note: Staff has been made aware that the applicant intends to request that the Town Council refer this rezoning to the November 12, 2019 Planning Board meeting for another public hearing as there will be substantial changes to the rezoning that the applicant desires to submit. The applicant has been made aware that a new neighborhood meeting is required to be held prior to the Planning Board meeting. If referred back to Planning Board, staff will send out new public notices for both the Planning Board and Town Council public hearings. Therefore, a continuance is not requested or required.

All property owners within three hundred (300) feet of this rezoning have been notified per UDO Sec. 2.2.11 *Public Notification*.

BACKGROUND INFORMATION:

Location: 0, 7208, 7208B Morris Acres Road
Applicant/Owner: Kaplan Residential/Edith S. Morris
Agent: Jason Barron, Morningstar Law Group

PROJECT DESCRIPTION:

Acres: 17.4376 ± acres
PINs: 0732289587, 0732382530, & 0732382709
Current Zoning: Rural Residential (RR)
Proposed Zoning: Planned Unit Development-Conditional Zoning (PUD-CZ)
Current 2045 Land Use Map: Medium Density Residential
Proposed 2045 Land Use Map: High Density Residential
Town Limits: 0732382709 is in the ETJ; 0732289587 & 0732382530 are in Town limits

Adjacent Zoning & Land Uses:

	Zoning	Land Use
North:	Rural Residential (RR); Medium Density-Conditional Use (MD-CU #94CU01)	Single-family residential; Vacant
South:	Planned Unit Development-Conditional Zoning (PUD-CZ #15CZ22)	Morris Acres Road; Multi-family (Flats @ 540); Single-family residential (Beaver Creek @ 540 Townhomes)
East:	Medium Density-Conditional Use (MD-CU #94CU01); Conservation Buffer (CB)	Single-family residential (Walden Creek); Vacant
West:	Rural Residential (RR)	Morris Acres Road; Vacant

Existing Conditions:

The subject properties are located on the north side of Morris Acres Road, just east of NC 540. There are several existing structures on the properties related to the historically rural residential setting of these properties.

Neighborhood Meeting:

The applicant conducted a neighborhood meeting on January 24, 2019. The neighborhood meeting report is attached.



2045 LAND USE MAP:

The 2045 Land Use Map identifies the properties subject to this rezoning as Medium Density Residential. The rezoning to Planned Unit Development-Conditional Zoning, as proposed, is not consistent with the Medium Density Residential classification. Therefore, the applicant is also proposing a 2045 Land Use Map amendment to change the classification to High Density Residential.

This proposed Land Use Map amendment is generally consistent with the Advance Apex staff recommendation (not adopted) for Medium/High Density Residential and High Density Residential classifications in this area. The location is appropriate for such uses due to the proximity to NC 540 Hwy, the adjacent Flats at 540 multi-family development, Beaver Creek @ 540 townhome development, and proximity to a future transit corridor. The recommended change in land use was not adopted with Advance Apex on February 5, 2019, but there was an understanding that three parcels (Morris Acres, Heelan, and Jenks/Wimberly) which remained unchanged from the 2030 Peak Plan), could be looked at in the future with a site-specific rezoning petition with conditions that could mitigate concerns.

Appropriate transitions from lesser to higher density residential can be achieved in a variety of ways, including stepping up density from lower to higher, transitioning with different housing types, or providing wider landscape buffers between multi-family to single-family homes. It is good practice to look at how an appropriate transition can be done during the rezoning stage as conditions can be added that go above UDO architectural, buffer, and/or RCA standards.

Morris Acres Road is included within Advance Apex’s Transit Oriented Development (TOD) Context Area. Transit Oriented Development calls for a mix of land uses including residential, office, retail, civic, and commercial; Medium/High Density Residential to High Density Residential land use; and a transit stop within a quarter- to half-mile radius. TOD typically dictates transit-supportive densities, which is a minimum of seven (7) units per acre for a circulator bus service and a minimum 15 units per acre for fixed route bus service. The Morris Acres PUD proposes an overall density that supports future transit.

Without the proposed 2045 Land Use Map amendment, this site could be rezoned to MD-CZ or PUD-CZ and develop as single-family residential with a likely density of four (4) dwelling units per acre and with a 20’ perimeter buffer required. Townhomes could be a permitted use with a rezoning to PUD-CZ with a density up to seven (7) units per acre (122 units). Single-family detached and townhome residential development patterns typically require increased infrastructure costs with the need for an internal street network, making it more likely that the existing pasture would be developed either with this parcel or an adjacent parcel.

PROPOSED ZONING CONDITIONS:

Limitation of Uses:

The Rezoned Lands may be used for, and only for, the uses listed immediately below. The permitted uses are subject to the limitations and regulations stated in the UDO and any additional limitations or regulations stated below. For convenience, some relevant sections of the UDO may be referenced; such references do not imply that other sections of the UDO do not apply.

Permitted Uses and Limitations:

- | | |
|---------------------------------|-------------------|
| 1. Multi-family or apartment | 4. Park, active |
| 2. Greenway | 5. Park, passive |
| 3. Recreation Facility, private | 6. Utility, minor |



Proposed Design Controls:

1. **Maximum Density**

The PUD text indicates a maximum residential density for the project of 17.0 dwelling units per acre and no more than 297 total units. Within the proposed 3-acre Medium Density Transition Area (as depicted on the PUD Preliminary Layout Plan), density shall be limited to 4.0 dwelling units per acre and no more than 12 total units within this area.

2. **Maximum Height of the Buildings and Number of Stories**

Maximum height – Four (4) stories above grade, with a basement level 5th story or 65’.

Buildings within the Medium Density Transition Area shall be no more than three (3) stories with a maximum height of 45’ and shall be townhome-style multi-family units (i.e. side-by-side residences, not flats).

3. **Minimum Building Setbacks**

- From Building to Building – 10’
- From Buffer/RCA – 10’ for Buildings; 5’ for Parking Areas
- From Walden Woods Lots – 150’ from any lot within Walden Woods containing a dwelling unit
- Within the Medium Density Transition Area, no building shall be constructed closer than 275’ from the nearest home on Flints Pond Circle.

4. **Percentage of Built Upon Area**

The UDO allows for a maximum 70% of built upon area in a PUD project and the Morris Acres PUD will not exceed that amount.

5. **Parking**

The PUD indicates that parking will be provided per the standards in the UDO which are as follows:

- 1.5 spaces per 1-2 bedroom unit (*a minimum of 50% du shall be one-bedroom units*)
- 1.8 spaces per 3+ bedroom unit (*a maximum of 10% du shall be three-bedroom units*)

6. **Resource Conservation Area**

The PUD is providing at least 29.9% (5.09 acres) of the total area for Resource Conservation Area and landscape buffers. The minimum RCA required is 20% (3.49 acres).

The PUD also sets aside 1.77 acres of passive open space in the northeast corner of the subject property in addition to the 29.9% RCA, which preserves additional land above the minimum required while providing additional separation of development from adjacent single-family residential to the east and vacant land to the north. In this area, no buildings or other structures shall be permitted, with the exception of passive recreational amenities.



7. **Buffers**

Perimeter Buffers:	Required	Proposed
Western property boundary	10' Type B	30' Type A
Eastern property boundary	20' Type B	50' Undisturbed
Eastern property boundary, abutting Town of Apex property	10' Type A	50' Type A with 8-ft solid privacy fence*
Adjacent to riparian buffers within Medium Density Transition Area	N/A	10' evergreen planting strip
Southern property boundary	30' Type B	30' Type A
Northern property boundary	20' Type B	20' Type A

*The Preliminary Layout Sheet in the PUD plan set indicates that the fence will be located further inside the subject property than the 50' buffer along a portion of the eastern property line.

Architectural Standards:

1. Vinyl siding will not be used except for vinyl windows and limited decorative element use. Residential areas will utilize brick, stone, and Hardi-plank siding.
2. Siding materials will be varied in type and/or color on 30% of each façade on each building.
3. Windows that are not recessed shall be trimmed. Windows shall vary in size and/or type.
4. Recesses and projections shall be provided for at least 50% of each facade on each building. Building facades shall have horizontal relief achieved by the use of recesses and projections.
5. Four of the following decorative features shall be used on each building: decorative shake, board and batten siding, decorative porch rails and posts, shutters, decorative functional foundation and roof vents, recessed windows, decorative windows, decorative brick or stone, decorative gables, decorative cornices, or metal roofing.
6. A varied color palette shall be utilized throughout the development to include a minimum of three color families for siding and shall include varied trim, shutter, and accent colors complementing the siding color.
7. The rear and side elevations of the units that can be seen from the right-of-way shall have trim around the windows.
8. Additionally, the following conditions shall apply to the building(s) located in the Medium Density Transition Area, as identified on the PUD Preliminary Sheet:
 - a. The roof of each unit shall be horizontally and/or vertically distinct from any adjacent unit so as to avoid the appearance of a single mass.
 - b. Front facing garage doors must have windows, decorative details, or carriage-style adornments.
 - c. Entrances for units with front-facing garage shall have a prominent covered porch/stoop area leading to the front door.
 - d. The front façade of any front-loaded garage shall not protrude farther than one foot forward of (i) the front façade of the dwelling unit, or (ii) the front porch of the dwelling unit, whichever is closer to the right-of-way from which the dwelling unit is addressed.



Additionally, the following conditions shall also apply:

1. A maximum of 297 residential units shall be permitted upon the property.
2. Along the eastern boundary of the subject property, extending from Morris Acres Road to the southern edge of the riparian buffer around the existing farm pond, the following shall be installed and maintained:
 - a. A fifty-foot (50') Type A vegetative buffer; and
 - b. An at least eight feet (8') tall solid privacy fence. The final location of the fence within the 50' Type A buffer will be determined at the time of site plan.
3. In the 3.00 acre Medium Density Residential Transition Area as depicted on the Preliminary Layout Plan, the following conditions shall apply:
 - a. The maximum height for buildings shall be three (3) stories up to a foot height of forty-five feet (45');
 - b. Only townhome style units (i.e., side-by-side rather than stacked multifamily) may be permitted; and
 - c. The maximum development density within this area shall be four (4) dwelling units per acre, and no more than 12 dwelling units in total.
4. In the area identified as "Passive Open Space" on the PUD Plan, no buildings or other structures shall be permitted, with the exception of passive recreational amenities.
5. A minimum of fifty percent (50%) of the dwelling units shall be one-bedroom units, and a maximum of ten percent (10%) of the dwelling units shall be three-bedroom units.
6. For a period of at least twenty (20) years from the date of the issuance of the certificate of occupancy, at least five percent (5%) of the units developed on the site shall be preserved as affordable housing units at 60% of Wake County's area median income.
7. All buildings constructed on the property shall provide solar conduit for the installation of rooftop solar panels.
8. A 6' x 6' Public Art easement to the Town of Apex shall be provided along the Morris Acres Road frontage of the subject property. The precise location for this easement will be determined at the time of site plan review.

Pedestrian Connectivity:

The project will provide a 10' wide side path along the north side of Morris Acres Road, consistent with Bike Apex. An internal pedestrian connection to the preserved Passive Space in the northeast corner of the site is also proposed, as conceptually depicted on the Preliminary Layout Sheet. The pedestrian network will be evaluated during site plan review and shall be consistent with the UDO.

Public Facilities:

The proposed PUD shall meet all Public Facilities requirements as set forth in UDO Section 2.3.4.F.1.f. Such facilities will be designed according to sound engineering standards, and shall comply with Town of Apex Sewer and Water Master Plan and the Town of Apex Standards and Specifications.

All units within the project will be served by the Town of Apex for water and sanitary sewer. The utility design will be finalized at the time of Major Site Plan review and approval based upon available facilities adjacent to the site at that time. A conceptual utility plan is included in the PUD plan for reference. Electricity will be provided by Apex Electric. Phone, cable, and gas will be provided by the developer and shall meet the Town of Apex standards as outlined in the UDO.



This PUD shall meet all stormwater management requirements for quality and quantity treatment in accordance with Section 6.1.7 of the UDO, such that:

- Post development peak runoff shall not exceed pre-development peak runoff conditions for the 1 year, 10 year, and 25 year 24-hour storm events.
- This PUD shall convey as much stormwater runoff from the site development as practical, including required Stormwater Control Measures (SCM's), to the existing 48" RCP culvert located in the southeastern corner of the site along Morris Acres Road. The direct storm drainage connection to the existing 48" RCP culvert is subject to final approval by the Town of Apex, NCDOT or any other regulatory agency. In the event that this direct storm drainage connection is not approved, then this PUD shall meet and exceed existing stormwater management requirements for quality and quantity treatment provided in Section 6.1.7 of the UDO, such that post development peak runoff shall not exceed pre-development peak runoff conditions for the 1 year, 10 year, 25 year, and 100 year 24-hour storm events.

APEX TRANSPORTATION PLAN/ACCESS and CIRCULATION:

The proposed PUD is consistent with the Apex Transportation Plan. The proposed PUD includes two (2) points of access onto Morris Acres Road, an existing 3-lane Thoroughfare on the *Thoroughfare and Collector Street Plan*. This project shall provide minimum frontage widening based on ½ of a 3-lane thoroughfare section with side path and public right-of-way dedication based on an eighty foot (80') right-of-way along Morris Acres Road. The site will promote connectivity to undeveloped property with a cross access easement to the north.

Roadway improvements, subject to modification and final approval by the Town of Apex and NCDOT, are part of the site plan and construction plan approval process. A traffic study has been performed as part of this PUD rezoning consistent with the Town's standards for the same. Based upon the traffic impact analysis, the traffic from this development alone will not decrease the current Level of Service (LOS) for any intersection or approach as compared to the land remaining undeveloped and does not warrant off-site road improvements based on the UDO.

Wayfinding measures at the site shall be provided by the applicant in an effort to facilitate the movement of vehicles and pedestrians to and within the development.

Town of Apex staff has requested from NCDOT that the acceleration and deceleration lanes on US 64 for Morris Acres Road be extended to improve traffic flow on and off US 64 and reduce delays, as well as for improved wayfinding signs in the vicinity of Morris Acres Road and US 64.

MARKET RATE MULTI-FAMILY AND AFFORDABLE HOUSING:

Market rate multi-family statistics in Apex were provided by the Triangle Apartment Association. Based on their most recent numbers:

- Average market rate rent in Apex is \$1,300 per month; up 5.2% since 2018.
- Average household income of those living in the units is \$122,000; more than twice as much as the Wake County AMI for an individual and 44.7% above Wake County AMI for a family of four.
- Rental units are 48% full at delivery, meaning the buildings are half full the first day the buildings can be occupied.

STAFF REPORT

2045 Land Use Map Amendment and Rezoning #19CZ02 Morris Acres PUD

October 15, 2019 Town Council Meeting



- Vacancy rate in Apex is 6.2%; a healthy vacancy rate is 7-8%.
- Highest growth in apartment dwellers in Apex by age range is 55+ at 35.6%.
- Second highest growth in apartment dwellers by age range is 20-29 at 23.8%.

This data points to the fact that there are not enough market rate apartments in Apex today. The lack of market rate housing only exacerbates the need for affordable housing as the market rate units are taken by those most able to pay rents above the fair market value of the units.

While the Town of Apex does not currently have an affordable housing policy in place, the proposed condition that 5% of the units be preserved as affordable housing at 60% of Wake County's Area Median Income (AMI) for 20 years marks the first time a market rate project proposes to provide affordable units. This type of inclusionary zoning by way of rezoning condition is allowed by state law and addresses the Peak Plan 2030 goal for "a variety of housing types available to a range of incomes" which was prioritized in the 2013 Town Council-adopted plan.

The following is recent Wake County data that frames the discussion regarding affordability:

Wake County AMI	Individual	Family of four
100%	\$59,100	\$84,300
80% (workforce)	\$47,280	\$67,440
70%	\$41,370	\$59,010
60% (affordable)	\$35,460	\$50,580

To put these numbers in perspective, the following chart gives the average annual salaries for the Raleigh area:

Job	Average Annual Salary
WCPSS school teacher ¹	\$46,178 ²
Police officer	\$41,822 ²
Entry level bookkeeper	\$34,817 ²
City planner	\$45,758 ³
Firefighter	\$44,602 ³
Administrative assistant	\$39,662 ³
Grocery store stock clerk	\$31,855 ³
Preschool teacher	\$30,698 ³

For rents to be considered affordable for a particular household, the household income is divided by 40 to get the per month rental amount.⁴ For example, a WCPSS teacher making the average salary of \$46,178 could afford \$1,154.45 in rent by themselves.

¹ Average of elementary, middle, and high school teacher salaries

² Payscale.com

³ Salary.com

⁴ Realtor.com



PARKS, RECREATION, AND CULTURAL RESOURCES ADVISORY COMMISSION:

The Parks, Recreation, and Cultural Resources Advisory Commission recommended a fee-in-lieu at their May 29, 2019 meeting. If the rezoning is approved, the fee rate will be set based on the date of PUD approval and will be applied to the number of units proposed at the time of Major Site Plan approval.

PLANNING STAFF RECOMMENDATION:

Planning staff recommends approval of the 2045 Land Use Map amendment and Rezoning #19CZ02 Morris Acres PUD with the conditions offered by the applicant.

PLANNING BOARD RECOMMENDATION:

The Planning Board held a Public Hearing on August 12, 2019 and continued their vote to September 9, 2019 where they opened up public comment on new conditions; they recommended approval of the 2045 Land Use Map Amendment and Rezoning #19CZ02 by a vote of 4-3. The Planning Board report to Town Council is attached.

ANALYSIS STATEMENT OF THE REASONABLENESS OF THE PROPOSED REZONING:

This Statement will address consistency with the Town’s comprehensive and other applicable plans, reasonableness, and effect on public interest:

2045 Land Use Map Amendment:

With the conditions offered by the applicant in the PUD document, approval of the 2045 Land Use Map amendment from Medium Density Residential to High Density Residential is reasonable. The proposed Land Use Map amendment is generally consistent with the Advance Apex staff recommendation (not previously adopted) for Medium/High Density Residential and High Density Residential classifications in this area. The location is appropriate for the proposed multi-family use and density due to the proximity of NC 540 Hwy, the adjacent Flats at 540 and Beaver Creek @ 540 Townhomes developments, and proximity to a future transit corridor. While staff’s recommendation was not adopted with Advance Apex on February 5, 2019, there was an understanding by Council at the time that a LUM amendment could be reviewed for this property in conjunction with a specific rezoning request at a later date.

The associated rezoning includes a 3-acre Medium Density Transition Area on the eastern side of the site, south of the stream and closest to existing single-family residential development. Within this transition area, the density is restricted to four (4) units per acre, building height is limited to three (3) stories (45 feet), and the units are required to be constructed to look like side-by-side townhomes, similar to the townhomes located across Morris Acres Road and on the southeast side of the adjacent single-family neighborhood. This area, along with the additional buffer and screening measures, provides the transition in density and building height for this area previously envisioned by staff during Advance Apex.

Furthermore, the Morris Acres PUD provides nearly 10% additional RCA above the required amount as well as additional passive open space, something that is not typically possible for lower density development to achieve as it spreads outward instead of upward. Without the proposed 2045 Land Use Map amendment, this site would likely develop as a single-family and/or townhome development which typically requires increased infrastructure costs with the need for an internal street network. This makes it more likely that the existing pasture would be developed either with this parcel or an adjacent parcel.

For these reasons, staff supports the proposed 2045 Land Use Map amendment provided it is done in conjunction with a rezoning offering these types of conditions.



Rezoning #19CZ02

The proposed rezoning is reasonable and in the public interest because it proposes appropriate land uses and provides an adequate transition in the height and density of the proposed multi-family use from the existing single-family residential development to the east. The provision of a Medium Density Transition Area, with limited densities and a townhome style product, provides the physical transition from the single-family detached neighborhood to the east and from the townhome and multi-family developments to the south. The PUD also sets aside nearly 10% more Resource Conservation Area (RCA) than required by the UDO plus additional passive open space.

The development potential without the provisions of the Morris Acres PUD may indeed provide a less dense product, but that could serve as a loss to the future transit corridor in this area which demands increased densities to support its existence. Typical single-family or townhome development of the site would likely not preserve the same amount of open space and would permit development utilizing all available land. This PUD provides for a combination of multi-family development and open space while offering a transition in height and density from the existing single-family to the east.

While the Town of Apex does not currently have an affordable housing policy in place, the proposed condition that 5% of the units be preserved as affordable housing at 60% of Wake County’s Area Median Income (AMI) for 20 years marks the first time a market rate project proposes to provide affordable units. This type of inclusionary zoning by way of rezoning condition is allowed by state law and addresses the Peak Plan 2030 goal for “a variety of housing types available to a range of incomes” which was prioritized in the 2013 Town Council-adopted plan. Providing 5% of the units at 60% AMI would serve the public interest by providing affordable housing for first responders, teachers, and other important workers in the community.

PLANNED UNIT DEVELOPMENT DISTRICT AND CONDITIONAL ZONING STANDARDS:

Standards

In return for greater flexibility in site design requirements, Planned Development (PD) Districts are expected to deliver exceptional quality community designs that preserve critical environmental resources; provide high quality community amenities; incorporate creative design in the layout of buildings, Resource Conservation Area and circulation; ensure compatibility with surrounding land uses and neighborhood character; provide high quality architecture; and provide greater efficiency in the layout and provision of roads, utilities, and other infrastructure. The Planned Development (PD) Districts shall not be used as a means of circumventing the Town’s adopted land development regulations for routine developments.

1) *Planned Unit Development (PUD-CZ) District*

In approving a Planned Development (PD) Zoning District designation for a PUD-CZ, the Town Council shall find the PUD-CZ district designation and PD Plan for PUD-CZ demonstrates compliance with the following standards:

a) *Development parameters*

- (i) The uses proposed to be developed in the PD Plan for PUD-CZ are those uses permitted in Sec. 4.2.2 Use Table.
- (ii) The uses proposed in the PD Plan for PUD-CZ can be entirely residential, entirely non-residential, or a mix of residential and non-residential uses, provided a minimum percentage of non-residential land area is included in certain mixed use areas as specified on the 2045 Land Use Map. The location of uses proposed by the PUD-CZ must be shown in the PD Plan



with a maximum density for each type of residential use and a maximum square footage for each type of non-residential use.

- (iii) The dimensional standards in Sec. 5.1.3 *Table of Intensity and Dimensional Standards, Planned Development Districts* may be varied in the PD Plan for PUD-CZ. The PUD-CZ shall demonstrate compliance with all other dimensional standards of the UDO, North Carolina Building Code, and North Carolina Fire Code.
 - (iv) The development proposed in the PD Plan for PUD-CZ encourages cluster and compact development to the greatest extent possible that is interrelated and linked by pedestrian ways, bikeways and other transportation systems. At a minimum, the PD Plan must show sidewalk improvements as required by the Apex Transportation Plan and the *Town of Apex Standard Specifications and Standard Details*, and greenway improvements as required by the Town of Apex Parks, Recreation, Greenways, and Open Space Plan and the Apex Transportation Plan. In addition, sidewalks shall be provided on both sides of all streets for single-family detached homes.
 - v) The design of development in the PD Plan for PUD-CZ results in land use patterns that promote and expand opportunities for walkability, connectivity, public transportation, and an efficient compact network of streets. Cul-de-sacs shall be avoided unless the design of the subdivision and the existing or proposed street system in the surrounding area indicate that a through street is not essential in the location of the proposed cul-de-sac, or where sensitive environmental areas such as streams, floodplains, and wetlands would be substantially disturbed by making road connections.
 - (vi) The development proposed in the PD Plan for PUD-CZ is compatible with the character of surrounding land uses and maintains and enhances the value of surrounding properties.
 - (vii) The development proposed in the PD Plan for PUD-CZ has architectural and design standards that are exceptional and provide higher quality than routine developments. All residential uses proposed in a PD Plan for PUD-CZ shall provide architectural elevations representative of the residential structures to be built to ensure the Standards of this Section are met.
- b) *Off-street parking and loading.* The PD Plan for PUD-CZ shall demonstrate compliance with the standards of Sec. 8.3 *Off-Street Parking and Loading*, except that variations from these standards may be permitted if a comprehensive parking and loading plan for the PUD-CZ is submitted as part of the PD Plan that is determined to be suitable for the PUD-CZ, and generally consistent with the intent and purpose of the off-street parking and loading standards.
- c) *RCA.* The PD Plan for PUD-CZ shall demonstrate compliance with Sec. 8.1.2 *Resource Conservation Area*, except that the percentage of RCA required under Sec. 8.1.2 may be reduced by the Town Council by no more than two percent (2%) provided that:
- (i) The PD Plan for PUD-CZ includes a non-residential component; or
 - (ii) The PD Plan for PUD-CZ has an overall density of 6 residential units per acre or more.



- d) *Landscaping.* The PD Plan for PUD-CZ shall demonstrate compliance with the standards of Sec. 8.2 *Landscaping, Buffering and Screening*, except that variations from these standards may be permitted where it is demonstrated that the proposed landscaping sufficiently buffers uses from each other, ensures compatibility with land uses on surrounding properties, creates attractive streetscapes and parking areas and is consistent with the character of the area. In no case shall a buffer be less than one half of the width required by Sec. 8.2 or 10 feet in width, whichever is greater.
- e) *Signs.* Signage in the PD Plan for PUD-CZ shall demonstrate compliance with Sec. 8.7 *Signs*, except that the standards can be varied if a master signage plan is submitted for review and approval concurrent with the PD plan and is determined by the Town Council to be suitable for the PUD-CZ and generally consistent with the intent and purpose of the sign standards of the UDO. The master signage plan shall have design standards that are exceptional and provide for higher quality signs than those in routine developments and shall comply with Sec. 8.7.2 *Prohibited Signs*.
- f) *Public facilities.* The improvements standards and guarantees applicable to the public facilities that will serve the site shall comply with Article 7: *Subdivision* and Article 14: *Parks, Recreation, Greenways, and Open Space*.
- (i) The PD Plan for PUD-CZ demonstrates a safe and adequate on-site transportation circulation system. The on-site transportation circulation system shall be integrated with the off-site transportation circulation system of the Town. The PD Plan for PUD-CZ shall be consistent with the Apex Transportation Plan and the *Town of Apex Standard Specifications and Standard Details* and show required right-of-way widths and road sections. A Traffic Impact Analysis (TIA) shall be required per Sec. 13.19.
- (ii) The PD Plan for PUD-CZ demonstrates a safe and adequate on-site system of potable water and wastewater lines that can accommodate the proposed development, and are efficiently integrated into off-site potable water and wastewater public improvement plans. The PD Plan shall include a proposed water and wastewater plan.
- (iii) Adequate off-site facilities for potable water supply, sewage disposal, solid waste disposal, electrical supply, fire protection and roads shall be planned and programmed for the development proposed in the PD Plan for PUD-CZ, and the development is conveniently located in relation to schools and police protection services.
- (iv) The PD Plan shall demonstrate compliance with the parks and recreation requirements of Sec. Article 14: *Parks, Recreation, Greenways, and Open Space* and Sec. 7.3.1 *Privately-owned Play Lawns* if there is a residential component in the PUD-CZ.
- g) *Natural resource and environmental protection.* The PD Plan for PUD-CZ demonstrates compliance with the current regulatory standards of this Ordinance related to natural resource and environmental protection in Sec. 6.1 *Watershed Protection Overlay District*, Sec. 6.2 *Flood Damage Prevention Overlay District*, and Sec. 8.1 *Resource Conservation*.



- h) *Storm water management.* The PD Plan shall demonstrate that the post-development rate of on-site storm water discharge from the entire site shall not exceed pre-development levels in accordance with Sec. 6.1.7 of the UDO.
- i) *Phasing.* The PD Plan for PUD-CZ shall include a phasing plan for the development. If development of the PUD-CZ is proposed to occur in more than one phase, then guarantees shall be provided that project improvements and amenities that are necessary and desirable for residents of the project, or that are of benefit to the Town, are constructed with the first phase of the project, or, if this is not possible, then as early in the project as is technically feasible.
- j) *Consistency with 2045 Land Use Map.* The PD Plan for PUD-CZ demonstrates consistency with the goals and policies established in the Town's 2045 Land Use.
- k) *Complies with the UDO.* The PD Plan for PUD-CZ demonstrates compliance with all other relevant portions of the UDO.

CONDITIONAL ZONING STANDARDS:

The Planning Board shall find the Planned Unit Development-Conditional Zoning (PUD-CZ) designation demonstrates compliance with the following standards. 2.3.3.F:

Legislative Considerations

The applicant shall propose site-specific standards and conditions that take into account the following considerations, which are considerations that are relevant to the legislative determination of whether or not the proposed conditional zoning district rezoning request is in the public interest. These considerations do not exclude the legislative consideration of any other factor that is relevant to the public interest.

- 1) *Consistency with 2045 Land Use Map.* The proposed Conditional Zoning (CZ) District use's appropriateness for its proposed location and consistency with the purposes, goals, objectives, and policies of the 2045 Land Use Map.
- 2) *Compatibility.* The proposed Conditional Zoning (CZ) District use's appropriateness for its proposed location and compatibility with the character of surrounding land uses.
- 3) *Zoning district supplemental standards.* The proposed Conditional Zoning (CZ) District use's compliance with Sec 4.4 *Supplemental Standards*, if applicable.
- 4) *Design minimizes adverse impact.* The design of the proposed Conditional Zoning (CZ) District use's minimization of adverse effects, including visual impact of the proposed use on adjacent lands; and avoidance of significant adverse impacts on surrounding lands regarding trash, traffic, service delivery, parking and loading, odors, noise, glare, and vibration and not create a nuisance.
- 5) *Design minimizes environmental impact.* The proposed Conditional Zoning District use's minimization of environmental impacts and protection from significant deterioration of water and air resources, wildlife habitat, scenic resources, and other natural resources.



6) *Impact on public facilities.* The proposed Conditional Zoning (CZ) District use's avoidance of having adverse impacts on public facilities and services, including roads, potable water and wastewater facilities, parks, schools, police, fire and EMS facilities.

7) *Health, safety, and welfare.* The proposed Conditional Zoning (CZ) District use's effect on the health, safety, or welfare of the residents of the Town or its ETJ.

8) *Detrimental to adjacent properties.* Whether the proposed Conditional Zoning (CZ) District use is substantially detrimental to adjacent properties.

9) *Not constitute nuisance or hazard.* Whether the proposed Conditional Zoning (CZ) District use constitutes a nuisance or hazard due to traffic impact or noise, or because of the number of persons who will be using the Conditional Zoning (CZ) District use.

10) *Other relevant standards of this Ordinance.* Whether the proposed Conditional Zoning (CZ) District use complies with all standards imposed on it by all other applicable provisions of this Ordinance for use, layout, and general development characteristics.



May 24, 2019

Kevin Dean, PE
Kimley-Horn and Associates, Inc.
421 Fayetteville St, Suite 600
Raleigh, NC 27601

Subject: **Staff summary and comments for The Wayforth at Apex TIA and Addendum, 04/30/2019**

Mr. Dean:

Please review the following summary of my comments and recommendations. You may schedule a meeting with me and your client to discuss at your convenience.

Study Area

The TIA proposes to study access to the development at the following two intersections.

- Morris Acres Road and Reedybrook Crossing/North Site Driveway (unsignalized)
- Morris Acres Road and South Site Driveway (unsignalized)

The following intersections were also studied in the TIA:

- Jenks Road and Morris Acres Road (unsignalized)
- Morris Acres Road and Creekside Landing Drive (signalized)
- Morris Acres Road and US 64 Westbound (unsignalized)

Trip Generation

The proposed Wayforth at Apex development is anticipated to consist of 300 apartments. The development is anticipated to generate approximately 26 new trips entering and 74 new trips exiting the site during the weekday A.M. peak hour and 77 new trips entering and 50 new trips exiting the site during the P.M. peak hour. The development is expected to add a total of 1,634 new weekday trips to the adjacent roadway network.

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Background traffic

Background traffic consists of 3% annual background traffic growth compounded to build out year 2022. Additionally 10% of site trips from the adjacent Beaver Creek Residential development (540 Townes) are included in the analysis, as the development was almost entirely built-out at the time this study was completed.

Trip Distribution and Assignment

The distribution to and from the development are as follows:

- 25% from the east on US 64
- 25% from the east on Jenks Road
- 25% from the west on Jenks Road
- 25% from the south on Creekside Landing Drive

- 50% to the east on Jenks Road
- 25% to the west on US 64
- 15% to the south on Creekside Landing Drive
- 10% to the west on Jenks Road

Traffic Capacity Analysis and Recommendations

Level of Service (LOS) is a grade of A through F assigned to an intersection, approach, or movement to describe how well or how poorly it operates. LOS A through D is considered acceptable for peak hour operation. LOS E or F describes potentially unacceptable operation and developers may be required to mitigate their anticipated traffic impact to improve LOS based on the Apex Unified Development Ordinance (UDO).

Tables 1 through 5 describe the levels of service (LOS) for the scenarios analyzed in the TIA. "NA" is shown when the scenario does not apply. The scenarios are as follows:

- **Existing 2018** - Existing year 2018 traffic.
- **No Build 2022** – Projected year (2022) with background growth, and approved development traffic from others.
- **Build 2022** – Projected year (2022) with background traffic and site build-out traffic including recommended improvements where applicable.

Morris Acres Road and Reedybrook Crossing/North Site Driveway (unsignalized)

Table 1. A.M. / P.M. Unsignalized Peak Hour Levels of Service Morris Acres Road and Reedybrook Crossing/North Site Driveway			
	Existing 2018	No Build 2022	Build 2022
<u>Overall</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
<i>Eastbound (Reedybrook Crossing)</i>	<i>A / B²</i>	<i>A / B²</i>	<i>B / B²</i>
<i>Westbound (North Site Driveway)</i>	<i>NA</i>	<i>NA</i>	<i>B / B²</i>
<i>Northbound (Morris Acres Road)</i>	<i>A / A¹</i>	<i>A / A¹</i>	<i>A / A¹</i>
<i>Southbound (Morris Acres Road)</i>	<i>NA</i>	<i>NA</i>	<i>A / A¹</i>

1. Level of service for major street left turn movements
2. Level of service for minor street stop controlled approaches

TIA recommendations:

- The TIA recommends construction of a full movement stop-controlled site driveway with one lane of ingress and one lane of egress that aligns with Reedybrook Crossing at Morris Acres Road.

Apex staff recommendations:

- Apex staff agree with the recommendation. All approaches at this intersection are projected to operate at LOS B or better with no operational issues in the build condition. Morris Acres Road already provides a left turn lane both directions at the proposed driveway since it was constructed as a three-lane road.

Morris Acres Road and South Site Driveway (unsignalized)

Table 2. A.M. / P.M. Unsignalized Peak Hour Levels of Service Morris Acres Road and South Site Driveway	
	Build 2022
<u>Overall</u>	<u>NA</u>
<i>Westbound (South Site Driveway)</i>	<i>A / B²</i>
<i>Northbound (Morris Acres Road)</i>	<i>NA</i>
<i>Southbound (Morris Acres Road)</i>	<i>A / A¹</i>

1. Level of service for major street left turn movements
2. Level of service for minor street stop controlled approaches

TIA recommendations:

- The TIA recommends construction of a full movement stop-controlled site driveway with one lane of ingress and one lane of egress approximately 500 feet south of Reedybrook Crossing.

Apex staff recommendations:

- Apex staff agree with the recommendation. All approaches at this proposed intersection are projected to operate at LOS B or better with no operational issues in the build condition. Morris Acres Road already provides a left turn lane at the proposed driveway since it was constructed as a three-lane road.

Jenks Road and Morris Acres Road (unsignalized)

Table 3. A.M. / P.M. Unsignalized Peak Hour Levels of Service Jenks Road and Morris Acres Road			
	Existing 2018	No Build 2022	Build 2022
<u>Overall</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
<i>Eastbound (Jenks Road)</i>	NA	NA	NA
<i>Westbound (Jenks Road)</i>	A / A ¹	A / A ¹	A / A ¹
<i>Northbound (Morris Acres Road)</i>	B / C ²	B / C ²	B / C ²

1. Level of service for major street left turn movements
2. Level of service for minor street stop controlled approaches

TIA recommendations:

- The TIA does not recommend any improvements at this intersection. All approaches are anticipated to operate at LOS C or better with or without the development.

Apex staff recommendations:

- Apex staff agree with the recommendation. Left turn lanes are already provided on both roadways and no additional turn lanes are recommended.

Morris Acres Road and Creekside Landing Drive (Signalized)

Table 4. A.M. / P.M. Signalized Peak Hour Levels of Service Morris Acres Road and Creekside Landing Drive			
	Existing 2018	No Build 2022	Build 2022
<u>Overall</u>	<u>A / A</u>	<u>A / A</u>	<u>A / A</u>
<i>Eastbound (Reedybrook Crossing)</i>	A / A	A / A	A / A
<i>Northbound (Morris Acres Road)</i>	A / A	A / A	A / A
<i>Southbound (Morris Acres Road)</i>	A / A	A / B	A / B

TIA recommendations:

- The TIA does not recommend any improvements at this signalized intersection. All approaches are anticipated to operate at LOS B or better with or without the development.

Apex staff recommendations:

- Apex staff agree with the recommendation. There are already left turn lanes provided on both roadways and no additional turn lanes are recommended.

Morris Acres Road and US 64 Westbound (unsignalized)

Table 5. A.M. / P.M. Unsignalized Peak Hour Levels of Service Morris Acres Road and US 64 Westbound			
	Existing 2018	No Build 2022	Build 2022
<u>Overall</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
<i>Westbound (US 64)</i>	NA	NA	NA
<i>Southbound (Morris Acres Road)</i>	D / D ¹	E / E ¹	E / E ¹

1. Level of service for minor street stop controlled approaches

TIA recommendations:

- The TIA does not recommend any improvements at this channelized intersection.

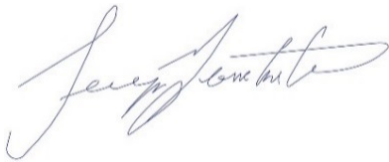
Apex staff recommendations:

- The right-out onto westbound US-64 is anticipated to operate at LOS E with average delays of over 45 seconds per vehicle and 95th percentile queues of 5 vehicles in both the A.M. and P.M. peak hours. Staff concurs with no roadway improvements being

required of this site approval according to the requirements of the UDO. However, the Town or NCDOT should consider future construction of an 800-foot long acceleration lane with a 300-foot taper on US 64 and lengthening of the right-turn deceleration lane. Town staff have already submitted these improvements to NCDOT for consideration of funding under one of their grant programs. The acceleration lane will eliminate the stop condition and the delays associated with the stop on Morris Acres Road while the longer deceleration lane will provide improved operations for the exit from US 64.

Please coordinate with the NCDOT District Engineer's Office concerning recommended improvements. Town staff will be available for meetings with NCDOT staff to discuss improvements on state maintained roadways as needed. All recommendations are subject to review by Town Council prior to approval.

Sincerely,

A handwritten signature in cursive script, appearing to read "Serge Grebenschikov".

Serge Grebenschikov
Traffic Engineer
919-372-7448

Rezoning #19CZ02

540



The Flats at 540

540 Townes

Walden Creek

CitiSide

0 250 500

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PLANNED UNIT DEVELOPMENT APPLICATION

This document is a public record under the North Carolina Public Records Act and may be published on the Town's website or disclosed to third parties.

Application #: 19CZ02
Fee Paid: \$ 2370

Submittal Date: 2/1/19
Check # _____

PETITION TO AMEND THE OFFICIAL ZONING DISTRICT MAP

Project Name: Morris Acres PUD

Address(es): 0, 7208, and 7208B Morris Acres Road

PIN(s) 0732-28-9587; 0732-38-2530; and 0732-38-2709

_____ Acreage: 16.95

Current Zoning: RR Proposed Zoning: PUD-CZ

Current 2030 LUM Designation: Medium Density Residential

Requested 2030 LUM Designation: High Density Residential

See next page for LUM amendment

If any portion of the project is shown as mixed use (3 or more stripes on the 2030 Land Use Map) provide the following:

Area classified as mixed use: Acreage: _____

Area proposed as non-residential development: Acreage: _____

Percent of mixed use area proposed as non-residential: Percent: _____

Applicant Information

Name: Kaplan Residential

Address: 1111 Kane Concourse Ste 302

City: Bay Harbor Islands State: FL Zip: 33154

Phone: 305.901.2202 E-mail: _____

Owner Information

Name: Edith S Morris

Address: 7208 Morris Acres Road

City: Apex State: NC Zip: 27523

Phone: _____ E-mail: _____

Agent Information

Name: Jason Barron

Address: 421 Fayetteville Street | Ste 530

City: Raleigh State: NC Zip: 27601

Phone: 919-590-0371 E-mail: jbarron@morningstarlawgroup.com

Other contacts: Nil Ghosh - nghosh@morningstarlawgroup.com

PLANNED UNIT DEVELOPMENT APPLICATION

Application #:

19C202

Submittal Date:

2030 LAND USE MAP AMENDMENT (if applicable)

The applicant does hereby respectfully request the Town Council amend the 2030 Land Use Map. In support of this request, the following facts are shown:

The area sought to be amended on the 2030 Land Use Map is located at:

0, 7208, and 7208B Morris Acres Road

Current 2030 Land Use Classification:

Medium Density Residential

Proposed 2030 Land Use Classification:

High Density Residential

What conditions justify the passage of the amendment to the 2030 Land Use Map? Discuss the existing use classifications of the subject area in addition to the adjacent land use classifications.

The Town of Apex currently is in the process of adopting an updated Land Use Plan with a 2045 horizon. The draft proposal for this new plan indicated that these parcels would be designated as High Density Residential. This draft already has been recommended for approval by the Town's Planning Board and is expected to be passed by Council in February. Consistent with the recommendations in the draft 2045 Land Use Plan, the applicant seeks to modify the future designation from Medium Density Residential to High Density Residential.

CERTIFIED LIST OF NEIGHBORING PROPERTY OWNERS

Application #: 19CZ02

Submittal Date: 2/1/19

Provide a certified list of property owners subject to this application and all property owners within 300' of the subject property and HOA Contacts.

	Owner's Name	PIN		Owner's Name	PIN
		0732-37-1960; 0732-37-4927; 0732-37-5626; 0732-38-0119; 0732-38-1079; 0732-38-2217		MADHVANI, VIRAT K MADHVANI, KAJAL V	0732-37-3978
1	540 TOWNES HOA, INC		32	MAGNOLIA PROPERTY MANAGEMENT LLC	0732-37-4900
2	ADDEN, NICOLE	0732-39-8073	33		
3	ALPS LP	0732-38-7152	34	MCSWAIN, CHASE ALEXANDER	0732-38-1102
4	ANKNEY, CHRISTINA L ANKNEY, JOHN ASTOR	0732-38-8153	35	MISTRY, DHANSUKH MISTRY, SHILA D	0732-38-1071
5	APEX TOWN OF	0732-38-7570; 0732-39-7559	36	MORRIS, EDITH S	0732-28-9587; 0732-38-2530; 0732-38-2709
6	BARK, GI CHAN	0732-38-1244	37	MORRIS, WILMA LEE	0732-29-5482; 0732-29-8556
7	BEAVER CREEK CROSSING LLC	0732-28-6392	38	MULCAHY, JOHN M MULCAHY, MICHELE A	0732-39-6483
8	BECKER, GARY A BECKER, BARBARA J	0732-38-9017	39	NC DOT TRNPK AUTHORITY	0732-29-5017; 0732-28-4334
9	BUTTERWORTH, JAMES D BUTTERWORTH, BARBARA A	0732-39-8254	40	PARKER, DAVID PARKER, ROBYN	0732-38-7613
10	CAUTHEN, JOHNSON JR CAUTHEN, DEBORAH	0732-39-6202	41	PETERSON, DAVID R PETERSON, GAIL C	0732-39-8344
11	CHEN, WANLING	0732-38-2191	42	PULIJALA, DHEERAJ KUMAR PULIJALA, CHAITANYA	0732-38-3061
12	CHING, LEUNG YIN	0732-38-9347	43	PYNE, CRAIG A GALIEN, KIMBERLY L	0732-39-6402
13	CHO, EUNA K CHO, REX H	0732-38-2024	44	RAJARAM, NARAYAN K UTHAMARAJAN, ARTHI	0732-38-1216
14	CITISIDE AT BEAVER CREEK CROSSING HOA INC (Charleston Mngmt)	0732-37-7766	45	RAMSEY, FRANCES B	0732-38-2147
15	DIAZ, CYNTHIA I COLON CADENA, ARGYL I RAMIREZ	0732-38-0249	46	SAFIAN, DAVID SAFIAN, MICHELLE	0732-38-8289
16	FALKANGER, JEFFREY J FALKANGER, KERRY C	0732-39-7014	47	SARTORI, JEANETTE	0732-28-9182
17	GAYLES, ANTHONY DARON	0732-38-0268	48	SIMMONS, RYAN KENNETH SIMMONS, KRYSTAL MARIE	0732-38-7292
18	GREEN ACRES OF APEX LLC	0732-39-3853	49	SINGH, ISHA	0732-38-1092
19	GROSSER, DONALD B JR GROSSER, CYNTHIA S	0732-38-9588	50	SMITH, DERMOT J SMITH, JENNIFER R	0732-38-2164
20	HARPER, PAUL MARK HARPER, RENAE KEY	0732-39-6197	51	ST AMANT, STEVEN	0732-38-1272
21	HOUSTON, MICHAEL J HOUSTON, KRISTIN A	0732-38-0310	52	STEVENS, GREGORY W STEVENS, YOKO FUSE	0732-38-7923
22	ISAACS, DANIEL J	0732-48-0708	53	V & V PROPERTY GROUP LLC	0732-37-3986
23	KAPLAN, PETER KAPLAN, ERIN B	0732-39-7472	54	VACCA, STACY ELLEN	0732-38-1121
24	KOESTER, JOHN D KOESTER, JOHANNA P	0732-38-9603	55	VOJTICEK, BRANDON M VOJTICEK, LEIGH ANN	0732-38-7723
25	LAO, TERENCE LAO, CATHERINE	0732-38-3044	56	WARD, JUDITH F	0732-48-0456

26	LAXMANA, RAJINEESH KUMAR VUMMIDISINGH LAXMANA, SREE HARSHITHA VUMMIDISINGH	0732-28-9185	57	WEISS, GEOFFREY L	0732-38-7823
27	LIN, SEN	0732-38-0174	58	WEST, DONALD EUGENE II WILLIAMS, STACEY D WILLIAMS,	0732-38-0287
28	LIU, XINGJUN XING, JUN	0732-38-2119	59	JOHN C	0732-39-8164
29	LU, HAIRONG	0732-38-1049	60	WRIGHT, STEVEN C	0732-38-3018
30	LU, XIAOYUAN WAN, PENG	0732-37-3993	61	ZHANG, DONG	0732-38-2173
31	LUO, JING OUYANG, WEN	0732-38-1281			

I, Nil Ghosh, certify that this is an accurate listing of all property owners and property owners within 300' of the subject property.

Date: 1/29/19 By: *Nil Ghosh*

Durham
COUNTY OF WAKE STATE OF NORTH CAROLINA

Sworn and subscribed before me, Terri Lee Tolley, a Notary Public for the above State and County, on this the 29th day of January, 20 19.

Terri Lee Tolley
Notary Public
Terri Lee Tolley
Print Name

SEAL



My Commission Expires: 8/25/2023

CERTIFIED LIST OF NEIGHBORING PROPERTY OWNERS

Application #: _____

Submittal Date: _____

Provide a certified list of property owners subject to this application and all property owners within 300' of the subject property and HOA Contacts.

	Owner's Name	PIN
1.	Golden Apple Tree, LLC	0732-38-1049
2.	_____	_____
3.	_____	_____
4.	_____	_____
5.	_____	_____
6.	_____	_____
7.	_____	_____
8.	_____	_____
9.	_____	_____
10.	_____	_____
11.	_____	_____
12.	_____	_____
13.	_____	_____
14.	_____	_____
15.	_____	_____

I, Nil Ghosh, certify that this is an accurate listing of all property owners and property owners within 300' of the subject property.

Date: 6/21/19
DURHAM

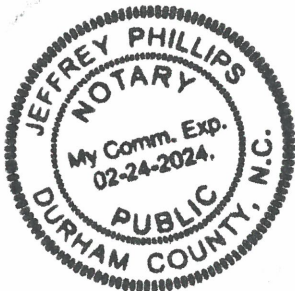
By: [Signature]

COUNTY OF ~~WAKE~~ STATE OF NORTH CAROLINA

Sworn and subscribed before me, Jeffrey Phillips, a Notary Public for the above State and County, on this the 21st day of June, 2019.

[Signature]
 Notary Public
Jeffrey Phillips
 Print Name

SEAL



My Commission Expires: 02-24-2024

DEVELOPMENT NAME APPROVAL APPLICATION

Application #: 19C202

Submittal Date: 2/1/19

Fee for Initial Submittal: No Charge

Fee for Name Change after Approval: \$500*

Purpose

To provide a consistent and clearly stated procedure for the naming of subdivisions and/or developments and entrance roadways (in conjunction with *Town of Apex Address Policy*) so as to allow developers to define and associate the theme or aesthetics of their project(s) while maintaining the Town's commitment to preserving the quality of life and safety for all residents of Apex proper and extraterritorial jurisdiction.

Guidelines

- ✓ The subdivision/development name shall not duplicate, resemble, or present confusion with an existing subdivision/development within Apex corporate limits or extraterritorial jurisdiction except for the extension of an existing subdivision/development of similar or same name that shares a continuous roadway.
- ✓ The subdivision/development name shall not resemble an existing street name within Apex corporate limits or extraterritorial jurisdiction unless the roadway is a part of the subdivision/development or provides access to the main entrance.
- ✓ The entrance roadway of a proposed subdivision/development shall contain the name of the subdivision/development where this name does not conflict with the Town of Apex *Road Name Approval Application* and *Town of Apex Address Policy* guidelines.
- ✓ The name "Apex" shall be excluded from any new subdivision/development name.
- ✓ Descriptive words that are commonly used by existing developments will be scrutinized more seriously in order to limit confusion and encourage distinctiveness. A list of commonly used descriptive words in Apex's jurisdiction is found below.
- ✓ The proposed subdivision/development name must be requested, reviewed and approved during preliminary review by the Town.
- ✓ A \$500.00 fee will be assessed to the developer if a subdivision/development name change is requested after official submittal of the project to the Town.*

*The imposed fee offsets the cost of administrative changes required to alleviate any confusion for the applicant, Planning staff, other Town departments, decision-making bodies, concerned utility companies and other interested parties. There is no charge for the initial name submittal.

Existing Development Titles, Recurring

	Residential	Non-Residential
10 or more	Creek, Farm(s), Village(s),	Center/Centre
6 to 9	Crossing(s), Park, Ridge, Wood(s)	Commons, Park
3 to 5	Acres, Estates, Glen(s), Green*, Hills	Crossing(s), Plaza, Station, Village(s)

*excludes names with Green Level

DEVELOPMENT NAME APPROVAL APPLICATION

Application #: 19C202

Submittal Date: 2/1/19

Proposed Subdivision/Development Information

Description of location: 0, 7208, and 7208B Morris Acres Rd

Nearest intersecting roads: Morris Acres Road at Reedybrook Crsg

Wake County PIN(s): 0732-28-9587; 0732-38-2530; and 0732-38-2709

Township: White Oak

Contact Information (as appropriate)

Contact person: Jason Barron

Phone number: 919-590-0371 Fax number: _____

Address: 421 Fayetteville Street | Ste 530, Raleigh, NC 27601

E-mail address: jbarron@morningstarlawgroup.com

Owner: _____

Phone number: _____ Fax number: _____

Address: _____

E-mail address: _____

Proposed Subdivision/Development Name

1st Choice: _____

2nd Choice (Optional): _____

Town of Apex Staff Approval:

Town of Apex Planning Department Staff

Date

STREET NAME APPROVAL APPLICATION

Application #: _____

Submittal Date: _____

Wake County Approval Date: _____

Guidelines:

- No names duplicating or sounding similar to existing road names
- Avoid difficult to pronounce names
- No individuals' names
- Avoid proper names of a business, e.g. Hannaford Drive
- Limit names to 14 characters in length
- No directionals, e.g. North, South, East, West
- No punctuation marks, e.g. periods, hyphens, apostrophes, etc.
- Avoid using double suffixes, e.g. Deer Path Lane
- All names must have an acceptable suffix, e.g. Street, Court, Lane, Path, etc.
- Use only suffixes which are Town of Apex approved
- Town of Apex has the right to deny any street name that is determined to be inappropriate

Information:

Description of location: 0, 7208, and 7208B Morris Acres Rd

Nearest intersecting roads: Morris Acres Road at Reedybrook Crsg

Wake County PIN(s): 0732-28-9587; 0732-38-2530; and 0732-38-2709

Township: White Oak

Contact information (as appropriate)

Contact person: Jason Barron

Phone number: 919-590-0371 Fax number: _____

Address: 421 Fayetteville Street | Ste 530, Raleigh, NC 27601

E-mail address: jbarron@morningstarlawgroup.com

Owner: Edith S Morris

Phone number: _____ Fax number: _____

Address: 0, 7208 and 7208B Morris Acres Road

E-mail address: _____

STREET NAME APPROVAL APPLICATION

Application #: _____

Submittal Date: _____

of roads to be named: _____

Please submit twice as many road names as needed, with preferred names listed first. Proposed road names should be written exactly as one would want them to appear. Town of Apex Planning Department staff will send all approved street names to the Wake County GIS Department for county approval. Please allow several weeks for approval. Upon approval Wake County GIS – Street Addressing will inform you of the approved street names.

Example: Road Name Suffix

Hunter Street

1	Nathan Drive		11	
2	_____		12	_____
3	_____		13	_____
4	_____		14	_____
5	_____		15	_____
6	_____		16	_____
7	_____		17	_____
8	_____		18	_____
9	_____		19	_____
10	_____		20	_____

TOWN OF APEX STAFF APPROVAL

Town of Apex Staff Approval

Date

WAKE COUNTY STAFF APPROVAL:

GIS certifies that _____ names indicated by checkmark are approved.
Please disregard all other names.

Comments:

Wake County GIS Staff Approval

Date

TOWN OF APEX UTILITIES OFFER AND AGREEMENT

Application #: _____ Submittal Date: _____

**Town of Apex
73 Hunter Street
P.O. Box 250 Apex, NC 27502
919-249-3400**

WAKE COUNTY, NORTH CAROLINA CUSTOMER SELECTION AGREEMENT

0, 7208, and 7208B Morris Acres Rd

(the "Premises")

The Town of Apex offers to provide you with electric utilities on the terms described in this Offer & Agreement. If you accept the Town's offer, please fill in the blanks on this form and sign and we will have an Agreement once signed by the Town.

Kaplan Residential _____, the undersigned customer ("Customer") hereby irrevocably chooses and selects the Town of Apex (the "Town") as the permanent electric supplier for the Premises. Permanent service to the Premises will be preceded by temporary service if needed.

The sale, delivery, and use of electric power by Customer at the Premises shall be subject to, and in accordance with, all the terms and conditions of the Town's service regulations, policies, procedures and the Code of Ordinances of the Town.

Customer understands that the Town, based upon this Agreement, will take action and expend funds to provide the requested service. By signing this Agreement the undersigned signifies that he or she has the authority to select the electric service provider, for both permanent and temporary power, for the Premises identified above.

Any additional terms and conditions to this Agreement are attached as Appendix 1. If no appendix is attached this Agreement constitutes the entire agreement of the parties.

Acceptance of this Agreement by the Town constitutes a binding contract to purchase and sell electric power.

Please note that under North Carolina General Statute §160A-332, you may be entitled to choose another electric supplier for the Premises.

Upon acceptance of this Agreement, the Town of Apex Electric Utilities Division will be pleased to provide electric service to the Premises and looks forward to working with you and the owner(s).

ACCEPTED:

CUSTOMER: _____

TOWN OF APEX

BY: _____
Authorized Agent

BY: _____
Authorized Agent

DATE: _____

DATE: _____

AGENT AUTHORIZATION FORM

Application #: _____ Submittal Date: _____

Edith S Morris is the owner of the property for which the attached application is being submitted:

- Land Use Amendment
- Rezoning
- Site Plan
- Subdivision
- Variance
- Other: _____

The property is located at: 0, 7208, and 7208B Morris Acres Rd

The agent for this project is: Jason Barron

I am the owner of the property and will be acting as my own agent

Agent Name: Jason Barron

Address: 421 Fayetteville Street | Ste 530, Raleigh, NC 27601

Telephone Number: 919-590-0371

Fax Number: _____

E-Mail Address: jbarron@morningstarlawgroup.com

Signature(s) of Owner(s)

Edith S. Morris

Edith S. Morris
Type or print name

1-28-2019
Date

Type or print name

Date

Type or print name

Date

Attach additional sheets if there are additional owners.

***Owner of record as shown on the latest equalized assessment rolls of Wake County. (An option to purchase does not constitute ownership). If ownership has been recently transferred, a copy of the deed must accompany this authorization.**



Please complete each section and return by email or fax to all:

WCPSS
Debra Adams
dbadams@wcpss.net

Judy Stafford
istafford1@wcpss.net

Fax: 919-431-7302

WAKE
Mike Ping
Mike.ping@wakegov.com

Fax: 919-856-6389

Developer Company Information	
Company Name	Kaplan Residential
Company Phone Number	305.901.2202
Developer Representative Name	Jason Barron
Developer Representative Phone Number	919-590-0371
Developer Representative Email	jbarron@morningstarlawgroup.com

New Residential Subdivision Information	
Date of Application for Subdivision	2/1/19
City, Town or Wake County Jurisdiction	Apex
Name of Subdivision	
Address of Subdivision (if unknown enter nearest cross streets)	Morris Acres Rd at Reedybrook Crsg
REID(s)	
PIN(s)	0732-28-9587; 0732-38-2530; and 0732-38-2709

Projected Dates Information	
Subdivision Completion Date	2021
Subdivision Projected First Occupancy Date	2020

Lot by Lot Development Information																	
Unit Type	Total # of Units	Senior Living	Studio	1 Bedroom	2 Bedroom	3 Bedroom	4 Bedroom	Square Foot Range		Price Range		Anticipated Completion Units & Dates					
								Min	Max	Low	High	Year	# Units	Year	# Units	Year	# Units
Single Family	0																
Townhomes	0																
Condos	0																
Apartments	303											2020	84	2021	219		
Other	0																

NOTICE OF NEIGHBORHOOD MEETING

This document is a public record under the North Carolina Public Records Act and may be published on the Town's website or disclosed to third parties.

1/11/19

Date

Dear Neighbor:

You are invited to a neighborhood meeting to review and discuss the development proposal at
0, 7208, 72088 Morris Acres Road (0732-28-9587; 0732-38-2530; and 0732-38-2709)
Address(es) PIN(s)

in accordance with the Town of Apex Neighborhood Meeting procedures. The Neighborhood Meeting is intended as a way for the applicant to discuss the project and review the proposed plans with adjacent neighbors and neighborhood organizations before the submittal of an application to the Town. This provides neighbors an opportunity to raise questions and discuss any concerns about the impacts of the project before it is officially submitted. Once an application has been submitted to the Town, it may be tracked using the [Interactive Development Map](#) or the [Apex Development Report](#) located on the Town of Apex website at www.apexnc.org.

A Neighborhood Meeting is required because this project includes (check all that apply):

- Rezoning (including Planned Unit Development);
- Major Site Plan;
- Master Subdivision Plan (excludes minor or exempt subdivision); or
- Special Use Permit

The following is a description of the proposal (also see attached map(s) and/or plan sheet(s)):

Rezoning to PUD is requested in order to allow the development of an approximately 300 unit multifamily development with multiple buildings, each up to 5 stories tall.

Estimated submittal date: 2/1/19

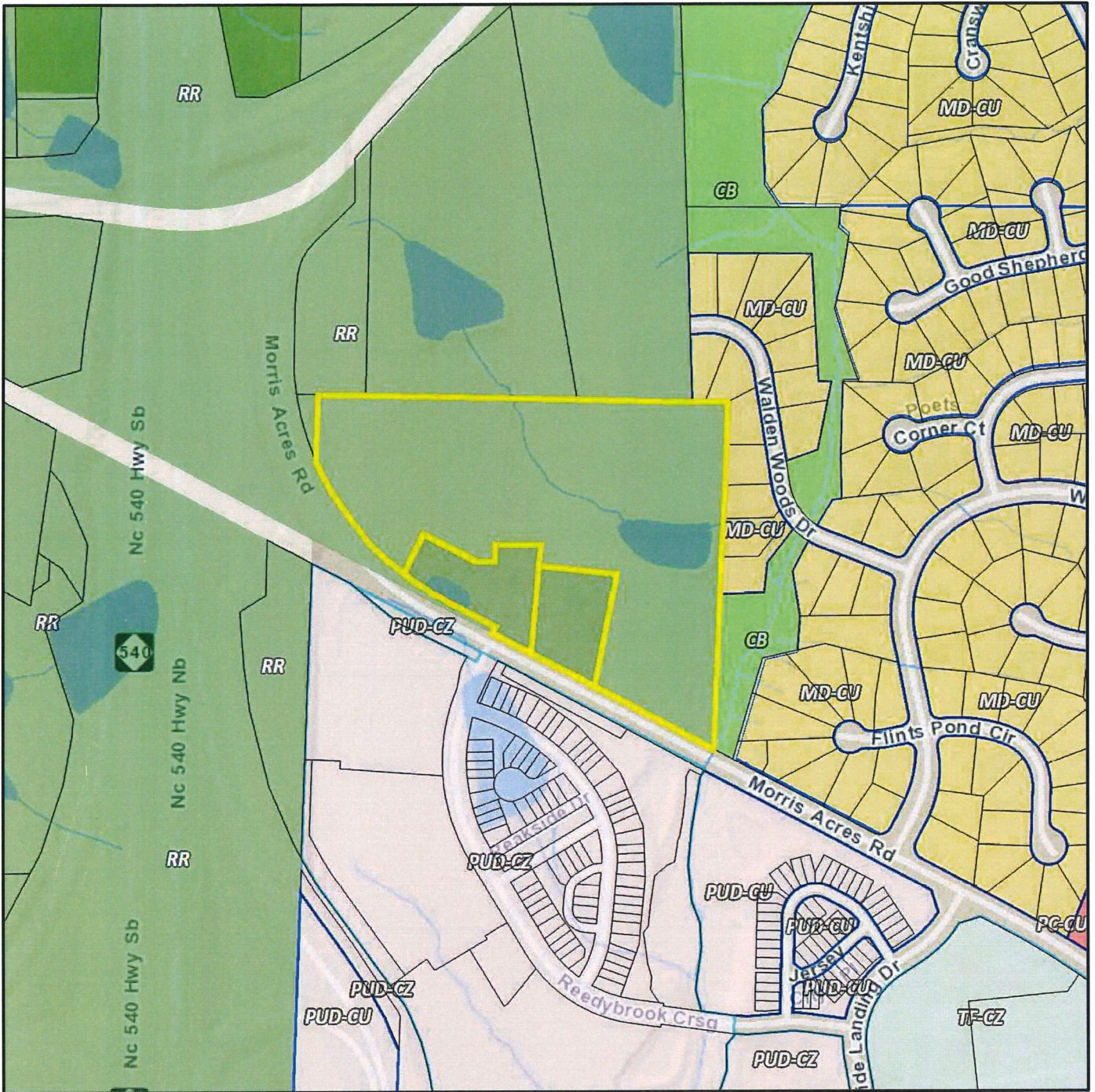
MEETING INFORMATION:

Property Owner(s) name(s):	Edith S Morris
Applicant(s):	Jason Barron - Attorney for Applicant
Contact information (email/phone):	jbarron@morningstarlawgroup.com / 919.590.0371
Meeting Address:	237 N Salem St. Apex, NC 27502
Date of meeting*:	1/24/19
Time of meeting*:	6:00pm

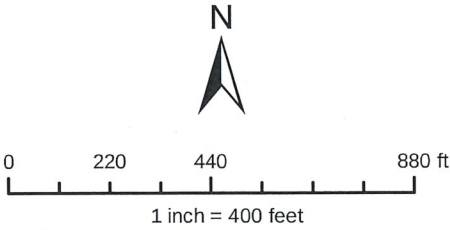
MEETING AGENDA TIMES:

Welcome:	6:00 - 6:05
Project Presentation:	6:06 - 6:15
Question & Answer:	6:15 - on

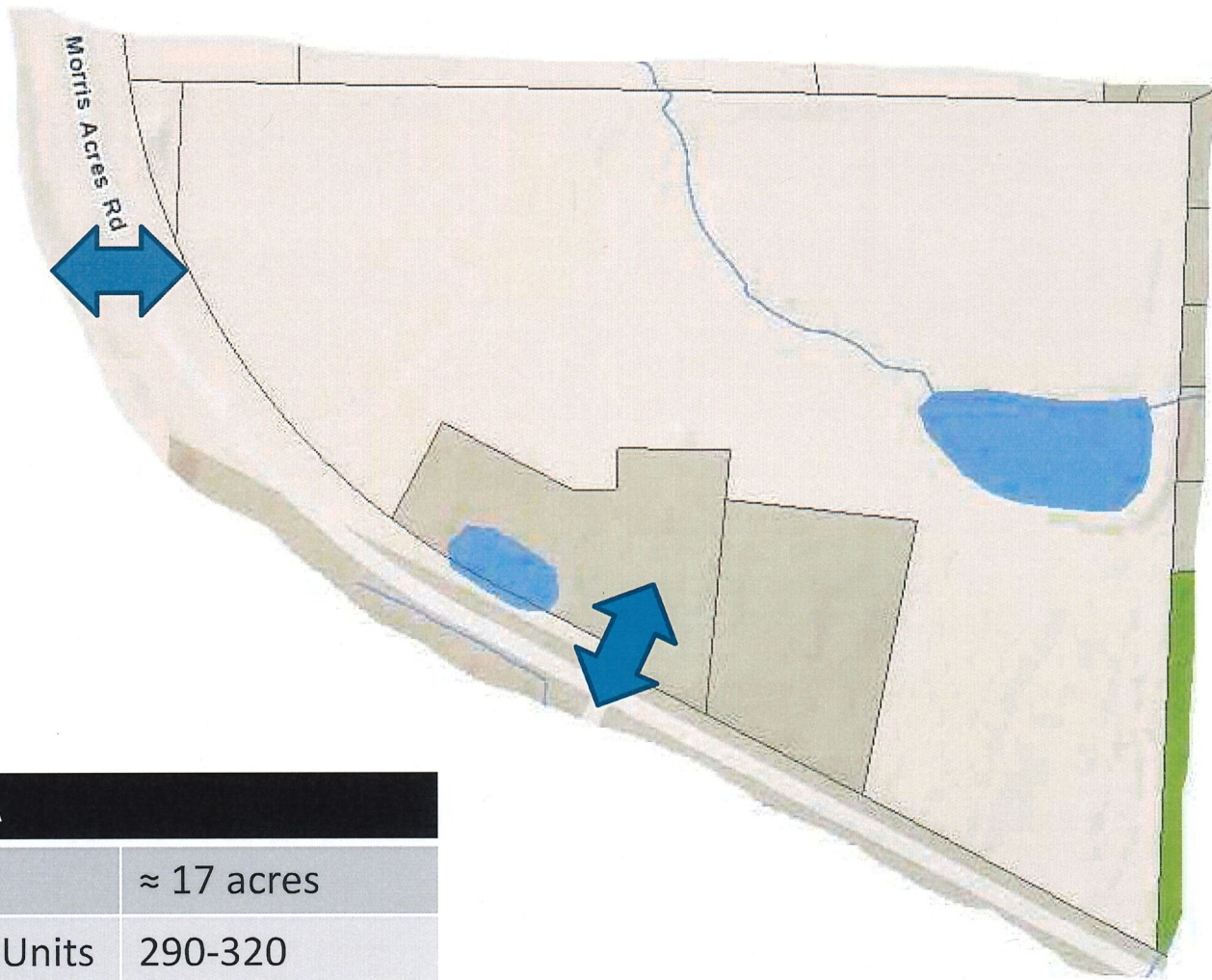
*Meetings shall occur between 5:00 p.m. - 9:00 p.m. on a Monday through Thursday (excluding Town recognized holidays). If you have questions about the general process for this application, please contact the Planning Department at 919-249-3426. You may also find information about the Apex Planning Department and on-going planning efforts at <http://www.apexnc.org/180/Planning>.



Vicinity and Zoning Map



Disclaimer
 iMaps makes every effort to produce and publish the most current and accurate information possible. However, the maps are produced for information purposes, and are NOT surveys. No warranties, expressed or implied, are provided for the data therein, its use, or its interpretation.



SITE DATA	
Acreage	≈ 17 acres
Proposed Units	290-320

 - Proposed Vehicular Connection(s)

NEIGHBORHOOD MEETING SIGN-IN SHEET

This document is a public record under the North Carolina Public Records Act and may be published on the Town's website or disclosed to third parties.

Meeting Address: 237 N Salem St. Apex, NC 27502
 Date of meeting: 1/24/19 Time of meeting: 6:00 PM
 Property Owner(s) name(s): Edith S Morris
 Applicant(s): Jason Barron - Attorney for Applicant

Please print your name below, state your address and/or affiliation with a neighborhood group, and provide your phone number and email address. Providing your name below does not represent support or opposition to the project; it is for documentation purposes only.

	NAME/ORGANIZATION	ADDRESS	PHONE #	EMAIL	SEND PLANS & UPDATES
1.	Jim Lopez	Walden Creek	—	—	—
2.	Jeff Pickover	Walden Creek	—	—	—
3.	Debi Cawthon	Walden Creek			
4.	Johnson Cawthon	Walden Creek			
5.	Susan Cormier	Walden Creek			
6.	Andy Chinboukas	Walden Creek			
7.	Bosann Chinboukas	Walden Creek			
8.	Patti Edwards	Walden Creek			
9.	Diana Hanning	Walden Creek			
10.	Don Grosser	Walden Creek			
11.	Andrew Scholied	Walden Creek.			
12.	ROBERT WARNER	WALDEN CREEK			
13.	Phyllis Townsend	White Pond Ct/Walden Townes			
14.	JIM TOWNSEND	" " "			

Use additional sheets, if necessary.

NEIGHBORHOOD MEETING SIGN-IN SHEET

This document is a public record under the North Carolina Public Records Act and may be published on the Town's website or disclosed to third parties.

Meeting Address: 237 N Salem St. Apex, NC 27502

Date of meeting: 1/24/19 Time of meeting: 6:00 PM

Property Owner(s) name(s): Edith S Morris

Applicant(s): Jason Barron - Attorney for Applicant

Please print your name below, state your address and/or affiliation with a neighborhood group, and provide your phone number and email address. Providing your name below does not represent support or opposition to the project; it is for documentation purposes only.

	NAME/ORGANIZATION	ADDRESS	PHONE #	EMAIL	SEND PLANS & UPDATES
1.	BANDHOLZ	2405 RABBIT WALK			
2.	Jonathan Schisler	2006 Walden Globe Rm			
3.	Bradley Carey	2204 Oak Stream Ln			
4.	Chris Kiper	2326 Walden Creek Dr.			
5.	John + Cindy Leitzow	700 Julianney Ln			
6.	MORGAN HUNT	1611 SQUAW WALDEN, APEX			
7.	Dora Schmitt	2216 Echo Glen Ln			
8.	Gus GREEN	2500 FLINTS POND CR			
9.	Astr Ankney	2507 Flints Pond Cir			
10.	Jonathan Edwards	1901 Deveron ct			
11.	Dave Safian	2506 Flints Pond Cir			
12.	CRAIG PINE	2528 Walden Woods Dr			
13.	Mike Kilmarton	2406 Rabbit Walk Ln			
14.	Gus Carey	2306 Bristers Spring Way			

Use additional sheets, if necessary.

NEIGHBORHOOD MEETING SIGN-IN SHEET

This document is a public record under the North Carolina Public Records Act and may be published on the Town's website or disclosed to third parties.

Meeting Address: 237 N Salem St. Apex, NC 27502

Date of meeting: 1/24/19 Time of meeting: 6:00 PM

Property Owner(s) name(s): Edith S Morris

Applicant(s): Jason Barron - Attorney for Applicant

Please print your name below, state your address and/or affiliation with a neighborhood group, and provide your phone number and email address. Providing your name below does not represent support or opposition to the project; it is for documentation purposes only.

	NAME/ORGANIZATION	ADDRESS	PHONE #	EMAIL	SEND PLANS & UPDATES
1.	BURAK ERYIGIT	2208 GOOD SHEPHERD			
2.	CHRISTY HEFFELD	2219 WALDEN CREEK DR.			
3.	MIKE ROSEN AIA	2300 WALDEN CREEK			
4.	KATHERINE NUTT	2325 WALDEN CREEK DR.			
5.	JIM BUTTERWORTH	2520 WALDEN WOODS DR.			
6.	ANDREW GEORGE	2314 WALDEN CREEK DR.			
7.	JOHN KOESTER	2505 WALDEN WOODS DR.			
8.	JOHANNA KOESTER	2505 WALDEN WOODS DR.			
9.	J.J. FALKANGER	2517 WALDEN WOODS			
10.	KERRY FALKANGER	2517 WALDEN WOODS			
11.	DAN ISAACS	2502 WALDEN WOODS			
12.	JOHN WILLIAMS	2518 WALDEN WOODS DR.			
13.	MARC MULLIN	2113 ECHO GLEN LN			
14.	RYAN SIMMONS	2508 FLINTS POND			

Use additional sheets, if necessary.

NEIGHBORHOOD MEETING SIGN-IN SHEET

This document is a public record under the North Carolina Public Records Act and may be published on the Town's website or disclosed to third parties.

Meeting Address: 237 N Salem St. Apex, NC 27502

Date of meeting: 1/24/19 Time of meeting: 6:00 PM

Property Owner(s) name(s): Edith S Morris

Applicant(s): Jason Barron - Attorney for Applicant

Please print your name below, state your address and/or affiliation with a neighborhood group, and provide your phone number and email address. Providing your name below does not represent support or opposition to the project; it is for documentation purposes only.

	NAME/ORGANIZATION	ADDRESS	PHONE #	EMAIL	SEND PLANS & UPDATES
1.	CRYSTAL SIMMONS	2508 FLINTS POND CIR			
2.	Paul + Renae Harper	3519 WALDEN WOODS DRIVE			
3.	Erin Kaplan	2524 WALDEN WOODS DR			
4.	NANCY + PAT FARLEY	505 TREACONEL LN. CARY			
5.	Sharon Malley	2817 Kentshire PL			
6.	Erika Chapman	2808 Kentshire Pl.			
7.	Pamela Green	2018 WALDEN GLADE			
8.	IRENA REA	2201 HENNIKER ST			
9.	Gail Peterson	2532 Walden Way			
10.	LINDA HEBERT	2110 WHITE POND CT			
11.	BRANDON VOJTICEK	2511 WALDEN WOODS DR			
12.	Jason Morris	7208 Morris Acres Rd.			
13.	Edith Morris	7208 Morris Acres Rd.			
14.	Michael DuBrau	2503 Cranswick place			

Use additional sheets, if necessary.

NEIGHBORHOOD MEETING SIGN-IN SHEET

This document is a public record under the North Carolina Public Records Act and may be published on the Town's website or disclosed to third parties.

Meeting Address: 237 N Salem St. Apex, NC 27502

Date of meeting: 1/24/19 Time of meeting: 6:00 PM

Property Owner(s) name(s): Edith S Morris

Applicant(s): Jason Barron - Attorney for Applicant

Please print your name below, state your address and/or affiliation with a neighborhood group, and provide your phone number and email address. Providing your name below does not represent support or opposition to the project; it is for documentation purposes only.

	NAME/ORGANIZATION	ADDRESS	PHONE #	EMAIL	SEND PLANS & UPDATES
1.	ANNA COHEN	1602 SHEPHERDS GLADE	[REDACTED]	[REDACTED]	✓
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					

Use additional sheets, if necessary.



CONCEPT IMAGERY

MORRIS APEX

APEX, NORTH CAROLINA



NOVEMBER/20/2016

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SUMMARY OF DISCUSSION FROM THE NEIGHBORHOOD MEETING

This document is a public record under the North Carolina Public Records Act and may be published on the Town's website or disclosed to third parties.

Property Owner(s) name(s): Edith Morris
Applicant(s): Jason Barron - Attorney for Applicant
Contact information (email/phone): jbarron@morningstarlawgroup.com / 919-590-0371
Meeting Address: 237 N Salem St. Apex, NC
Date of meeting: 1/24/19 Time of meeting: 6:00PM

Please summarize the questions/comments and your response from the Neighborhood Meeting in the spaces below (attach additional sheets, if necessary). Please state if/how the project has been modified in response to any concerns. The response should not be "Noted" or "No Response". There has to be documentation of what consideration the neighbor's concern was given and justification for why no change was deemed warranted.

Question/Concern #1:

There was a concern raised about building height

Applicant's Response:

The notice indicated building heights of up to 5 stories, but it was explained that the buildings generally are only 4 stories. Because of the topo in some areas, a 5th "basement" story is possible, which is why the max height was listed as 5 stories. In reality, the top of each building will appear to be only 4-stories high.

Question/Concern #2:

What type of road improvements will you all be doing and when?

Applicant's Response:

A TIA has been submitted which may recommend offsite road improvements, but for now, the only thing we know for certain is that we will be required to widen Morris Acres Road to a 3-lane section for our entire frontage. That improvement, plus any others committed to as a result of the TIA, will be required to be built before we can get a CO.

Question/Concern #3:

What can be done about existing flooding problems and how will SW be handled?

Applicant's Response:

The design and engineering for stormwater controls are done at time of site plan. We will meet the Town's requirements for quantity and quality of runoff from the site. At this stage, we can look into the existing flooding issues you all experience. It may be possible for us to address some of that issue at the zoning stage, but we need to study it first.

Question/Concern #4:

What kind of buffers will you have?

Applicant's Response:

We will have a 25' wide Type A buffer around the perimeter of the property. On the southeast side, there is a Town owned parcel which creates additional separation in that area. On the northeast side, we are committing to preserving that area as passive open space which will not be developed.

SUMMARY OF DISCUSSION FROM THE NEIGHBORHOOD MEETING

This document is a public record under the North Carolina Public Records Act and may be published on the Town's website or disclosed to third parties.

Property Owner(s) name(s): Edith Morris
Applicant(s): Jason Barron - Attorney for Applicant
Contact information (email/phone): jbarron@morningstarlawgroup.com / 919-590-0371
Meeting Address: 237 N Salem St. Apex, NC
Date of meeting: 1/24/19 Time of meeting: 6:00PM

Please summarize the questions/comments and your response from the Neighborhood Meeting in the spaces below (attach additional sheets, if necessary). Please state if/how the project has been modified in response to any concerns. The response should not be "Noted" or "No Response". There has to be documentation of what consideration the neighbor's concern was given and justification for why no change was deemed warranted.

Question/Concern #1:

Why is this a quasi-judicial case? What exceptions to the UDO are you seeking?

Applicant's Response:

Our rezoning is not quasi-judicial; it is a legislative approval. We are not seeking any exception to the UDO at this time. The site plan, which will come after rezoning, is a quasi-judicial approval, but not due to any exception or variance we are seeking. In Apex, all Major Site Plans are quasi-judicial, even if not variance or exception is sought.

Question/Concern #2:

Can you put a fence along the perimeter?

Applicant's Response:

We are open to doing that, but some people have expressed that they do not want a fence. Depending on where the fence proponents are, we may be able to put a fence along a portion of the perimeter and keep it off of the areas where people do not want a fence. We will look into adding this.

Question/Concern #3:

How will this project affect our property values?

Applicant's Response:

We have not had an appraiser study that, but there are very few projects which negatively affect property value. Our expectation is that this project would not hurt your property values.

Question/Concern #4:

Do any of these examples on the concept imagery handout apply to this project?

Applicant's Response:

All of these are examples of what this developer has built elsewhere, but not all will apply to this site. Some will. We are required to include sample elevations with our rezoning submittal, so you will see some of these again as part of our submittal.

SUMMARY OF DISCUSSION FROM THE NEIGHBORHOOD MEETING

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Question/Concern #1:

What will the time line be for construction?

Applicant's Response:

From today, we would anticipate about 2 years before breaking ground. The project will most likely be developed in a single phase which may take about 18 to 24 months to complete.

Question/Concern #2:

Is there enough parking?

Applicant's Response:

Based on this developer's experience and what we are seeing in the market, we believe that Apex's standard parking ratio for multi-family will provide adequate parking for this use. Moreover, it is important that we put enough parking on this site because there is no opportunity for shared parking with any adjacent development.

Question/Concern #3:

Will there be sidewalks?

Applicant's Response:

Yes. We are required to build sidewalk along our Morris Acres Road frontage and there will be sidewalks internal to the site.

Question/Concern #4:

Applicant's Response:

AFFIDAVIT OF CONDUCTING A NEIGHBORHOOD MEETING, SIGN-IN SHEET AND ISSUES/RESPONSES SUBMITTAL

This document is a public record under the North Carolina Public Records Act and may be published on the Town's website or disclosed to third parties.

I, Nil Ghosh, do hereby declare as follows:
Print Name

1. I have conducted a Neighborhood Meeting for the proposed Rezoning, Major Site Plan, Master Subdivision Plan, or Special Use Permit in accordance with UDO Sec. 2.2.7 *Neighborhood Meeting*.
2. The meeting invitations were mailed to the Apex Planning Department, all property owners within 300 feet of the subject property and any neighborhood association that represents citizens in the area via first class mail a minimum of 10 days in advance of the Neighborhood Meeting.
3. The meeting was conducted at 237 N Salem St, Apex, NC 27502 (location/address) on 1/24/19 (date) from 6:00PM (start time) to 8:00PM (end time).
4. I have included the mailing list, meeting invitation, sign-in sheet, issue/response summary, and zoning map/reduced plans with the application.
5. I have prepared these materials in good faith and to the best of my ability.

1/29/19
Date

By: [Signature]

STATE OF NORTH CAROLINA
COUNTY OF ~~WAKE~~ Durham

Sworn and subscribed before me, Terri Lee Tolley, a Notary Public for the above State and County, on this the 29th day of January, 2019.



[Signature]
Notary Public
Terri Lee Tolley
Print Name

My Commission Expires: 8/25/2023

Morris Acres PUD

PD PLAN

APEX, NORTH CAROLINA

Submitted: February 2019

Revised: February 28, 2019

Revised: May 10, 2019

Revised: June 7, 2019

Revised: June 27, 2019

Revised: July 31, 2019

Revised: August 6, 2019

Revised: August 23, 2019

PREPARED BY:



Section 1: Table of Contents – PUD Text

Section 1: Table of Contents

Section 2: Vicinity Map

Section 3: Project Data

Section 4: Purpose Statement

Section 5: Permitted Uses

Section 6: Design Controls

Section 7: Architectural Controls

Section 8: Parking and Loading

Section 9: Signage

Section 10: Natural Resource and Environmental Data

Section 11: Stormwater Management

Section 12: Parks and Recreation

Section 13: Public Facilities

Section 14: Phasing Plan

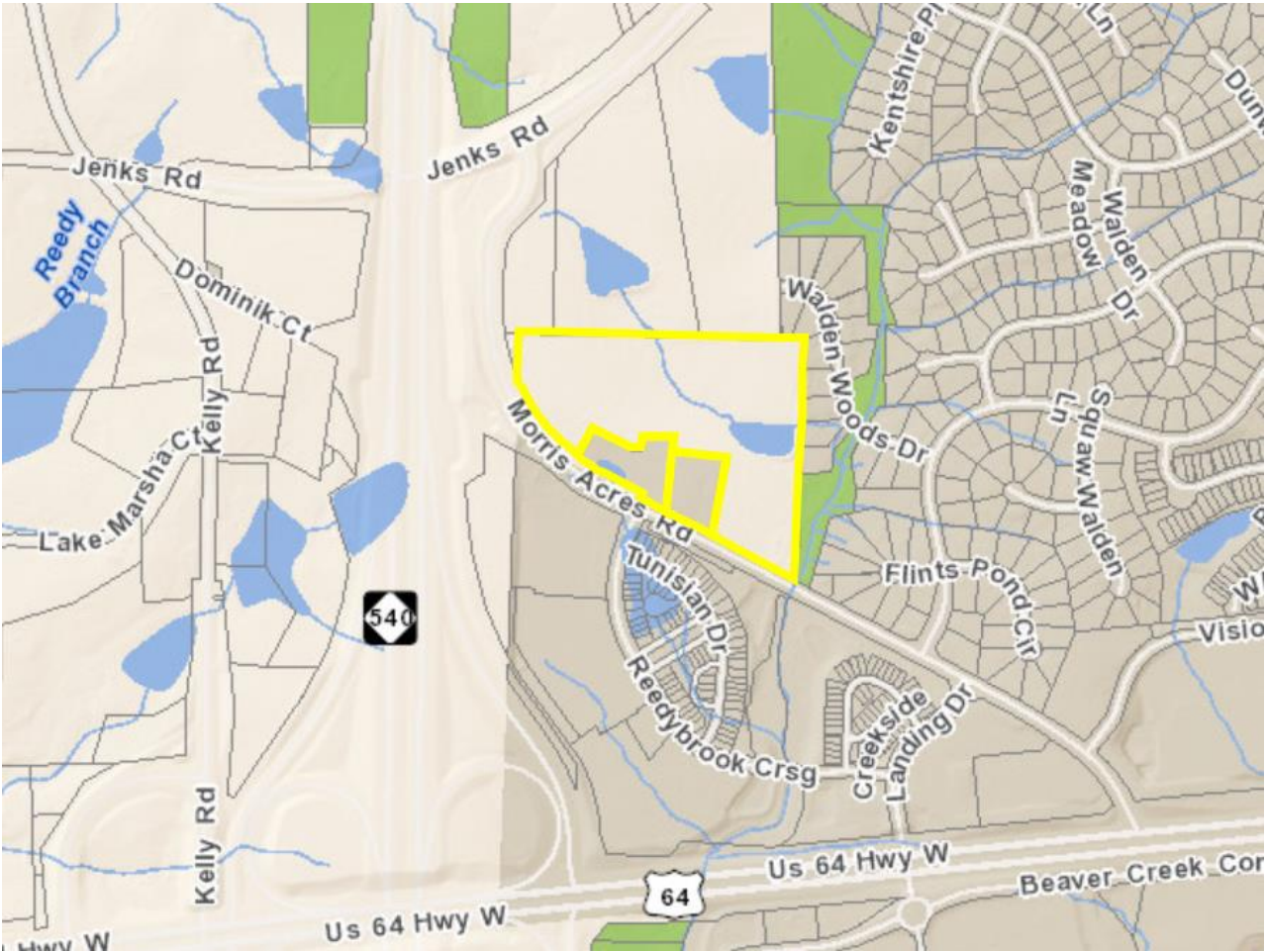
Section 15: Consistency with 2045 Land Use Plan

Section 16: Compliance with UDO

Section 17: Compliance with Apex Bicycle Plan

Section 18: Public Art

Section 2: Vicinity Map



The Morris Acres PUD is located in the Town of Apex, east of I-540, south of Jenks Road, and north of US-64. The properties are located on the north side of Morris Acres Road. To the north are large tracts of agricultural land with frontage on Jenks Road. Directly south is Morris Acres Road, and across Morris Acres Road is the 540 Townhome community. East of the project site is the large Walden Creek single-family neighborhood built in the late 90's and early 2000's. Morris Acres Road and I-540 are directly west of the project.

Section 3: Project Data

A. Name of Project:

Morris Acres PUD

B. Property Owners:

Edith S. Morris

Prepared By:

Jason Barron, Partner
Morningstar Law Group
421 Fayetteville St | Ste 530
Raleigh, NC 27601

C. Current Zoning Designation:

Rural Residential (RR)

D. Proposed Zoning Designation:

Planned Unit Development – Conditional Zoning (PUD-CZ)

E. Current 2045 Land Use Map Designation:

Medium Density Residential (< 6 units/acre)

F. Proposed 2045 Land Use Map Designation:

High Density Residential

G. Proposed Use

Up to 297 dwelling units and associated open space, recreational amenities and infrastructure.

H. Size of Project

Wake County Tax Identification Number	Acreage
0732-28-9587; 0732-38-2530; and 0732-38-2709	17.44 acres

Section 4: Purpose Statement

The Morris Acres PUD development will be a multi-building apartment community with buildings that are up to four (4) stories or less entirely above grade (i.e., where basement units are feasible, some sides of buildings may be up to five (5) stories). The maximum building height shall be sixty-five feet (65') measured to the top of any pitched roof. Given the proximity of the subject property to the existing residences in Walden Woods (located to the east of the site), there shall be a minimum building setback of one hundred fifty feet (150') from any lot within Walden Woods containing a dwelling unit, and no structures on the property can be located any closer than two hundred seventy five feet (275') from the nearest home that is located on Flints Pond Circle. Additionally, in the medium density residential transition area as shown on the PUD Preliminary Layout Plan (the "Medium Density Transition Area"), the maximum height of buildings shall be three (3) stories up to a maximum height of forty-five feet (45'), a maximum of four (4) dwelling units per acre shall be permitted, and only townhome style multifamily units (i.e., side-by-side residences rather than stacked apartments) shall be permitted. Further, a Type A buffer shall be established along the eastern boundary of the subject property from Morris Acres Road to the southern edge of the riparian buffer around the existing farm pond on the subject property, a 10' wide evergreen planting strip shall be provided adjacent to riparian areas in the southeastern portion of the site, and a solid privacy fence at least eight feet (8') in height shall be installed within the Medium Density Residential Transition Area to provide beneficial screening from the proposed use to the adjacent community. Additionally, the northeastern corner of the subject property, north and east of the existing creek and pond, is to be preserved as permanent passive open space. Lastly, at least five percent (5%) of the units shall be affordable housing units at sixty percent (60%) of Wake County AML for a period of at least twenty (20) years, and all of the buildings shall be prewired for solar.

This concept is consistent with the Town's stated PUD goal to provide site specific, high quality neighborhoods that exhibit natural feature preservation as well as compatibility with, and connectivity to, surrounding land uses. More specifically, this plan will:

- Allow uses that are compatible with Section 4.2.2, *Use Table* of the UDO
- Provide for the preservation of existing open space areas.
- Provide appropriate buffering and screening from the proposed use to the existing residential areas.
- Offer multifamily style living near interstate I-540 in an area where there are not many options for the same.
- Demonstrate dimensional standards that are consistent with the UDO, and where variations occur, said variations will be included herein and subject to Council approval.
- Provide a high quality community that is linked by a network of connected streets and pedestrian sidewalks that promotes connectivity, walkability and healthy lifestyles.
- Exhibit character and quality that is compatible with surrounding communities, which is expected to enhance the value of surrounding land uses.

- Provide significant open space and walkable trails to promote pedestrian activity, while appropriately buffering adjacent residential areas

All site-specific standards and conditions of this PUD Plan shall be consistent with all Conditional Zoning (CZ) District standards set forth in the UDO Section 2.3.3, *Conditional Zoning Districts* and UDO Section 2.3.4.F.1, *Planned Unit Development (PUD-CZ) District*. The proposed PUD will provide a development density that is consistent with principles found throughout the recently updated Advance Apex 2045. Through various policies, the Peak Plan 2030 works to ensure that there are appropriate transitions between uses. The proposed PUD Plan does just that, by transitioning from I-540 on the west to the single-family Walden Creek community east of the site. Thus, the plan is consistent with several policies contained within the Peak Plan 2030.

Section 5: Permitted Uses

The development will only include residential and supporting uses. Specifically, the permitted uses include:

- Multi-family or apartment
- Greenway
- Recreation Facility, private
- Park, active
- Park, passive
- Utility, minor

Additionally, the following conditions shall also apply:

- A. A maximum of 297 residential units shall be permitted upon the property.
- B. Along the eastern boundary of the subject property, extending from Morris Acres Road to the southern edge of the riparian buffer around the existing farm pond, the following shall be installed and maintained:
 - a. A fifty-foot (50') Type A vegetative buffer; and
 - b. An at least eight feet (8') tall solid privacy fence. The final location of the fence within the 50' Type A buffer will be determined at the time of site plan.
- C. In the 3.00 acre Medium Density Residential Transition Area as depicted on the Preliminary Layout Plan, the following conditions shall apply:
 - a. The maximum height for buildings shall be three (3) stories, up to a foot height of forty-five feet (45');
 - b. Only townhome style units (i.e., side-by-side rather than stacked multifamily) may be permitted; and
 - c. The maximum development density within this area shall be four (4) dwelling units per acre, and no more than 12 dwelling units in total.
- D. In the area identified as "Passive Open Space" on the PUD Plan, no buildings or other structures shall be permitted, with the exception of passive recreational amenities.
- E. A minimum of fifty percent (50%) of the dwelling units shall be one-bedroom units,

and a maximum of ten percent (10%) of the dwelling units shall be three-bedroom units.

- F. For a period of at least twenty (20) years from the date of the issuance of the certificate of occupancy, at least five percent (5%) of the units developed on the site shall be preserved as affordable housing units at sixty percent (60%) of Wake County's area median income.
- G. All buildings constructed on the property shall provide solar conduit for the installation of rooftop solar panels.

Section 6: Proposed Design Controls

A. Maximum Non-Residential Densities (SF per non-residential use) This PUD does not provide for any non-residential land uses (see Section 5, *Permitted Uses*).

B. Residential Densities and Design Controls

Density - The overall gross density shall not exceed 17.0 units per acre. The gross density within the Medium Density Transition Area shall not exceed 4.0 units per acre.

Design Controls – Dimensional standards below shall apply to all residential uses, and at a minimum, will comply with the following:

Maximum Density: 17.0 Units/Acre
(includes RCA and rights-of-way)

Maximum Number of Units: 297

Maximum Built-Upon Area: 70%

Minimum Lot Size: n/a

Minimum Lot Width: n/a

Maximum Building Height: Four (4) stories
above grade, with a basement level (5th story)
or 65'

Note: Porches, patios, decks and other accessory structures may encroach into building setbacks as allowed by the Town of Apex UDO.

Minimum Building Setbacks:

- From Building to Building: 10 feet
- From Buffer/RCA: 10 feet for Buildings
5 feet for Parking Areas

Additional Setback: 150 feet from any lot within Walden Woods containing a dwelling unit

Within Medium Density Transition Area:

- Max Building Height: 3 stories (45')
- Maximum Density: 4.0 units/acre
- Setback: no building shall be constructed closer than 275' from the nearest home on Flints Pond Circle

C. Buffers

Perimeter Buffers

North boundary:	20-foot Type A
South boundary (Morris Acres Road):	30-foot Type A
West boundary (along 0732-29-5017):	30-foot Type A
East boundary	
Where Abutting Town of Apex Property:	50-foot Type A with ≥8-ft solid privacy fence
Adjacent to riparian buffers within Medium Density Transition Area:	10' wide evergreen planting strip
Otherwise:	50-foot undisturbed

Note: Where perimeter buffers coincide with stream buffers or 100-year floodplain, existing vegetation will be used to meet the buffer width and opacity.

Thoroughfare Buffers

As depicted on the PD Plan, a 30' Type A Buffer shall be established along Morris Acres Road.

Section 7: Proposed Architectural Controls

The proposed development offers the following architectural controls to ensure a consistency of character throughout the development, while allowing for enough variety to create interest and avoid monotony. Changes to the exterior materials, roof, windows, doors, process, trim, etc. are allowable with administrative approval at the staff level. Further details shall be provided at the time of Site Plan submittal. The following conditions shall apply:

- A. Vinyl siding will not be used except for vinyl windows and limited decorative element use. Residential areas will utilize brick, stone, and Hardi-plank siding.
- B. Siding materials will be varied in type and/or color on 30% of each façade on each building.
- C. Windows that are not recessed shall be trimmed. Windows shall vary in size and/or type.
- D. Recesses and projections shall be provided for at least 50% of each facade on each building. Building facades shall have horizontal relief achieved by the use of recesses and projections.
- E. Four of the following decorative features shall be used on each building: decorative shake, board and batten siding, decorative porch rails and posts, shutters, decorative functional foundation and roof vents, recessed windows, decorative windows, decorative brick or stone, decorative gables, decorative cornices, or metal roofing.
- F. A varied color palette shall be utilized throughout the development to include a minimum of three color families for siding and shall include varied trim, shutter, and accent colors complementing the siding color.
- G. The rear and side elevations of the units that can be seen from the right-of-way shall have trim around the windows.
- H. Additionally, the following conditions shall apply to the building(s) located in the Medium Density Transition Area, as identified on the PUD Preliminary Sheet:
 - 1. The roof of each unit shall be horizontally and/or vertically distinct from any adjacent unit so as to avoid the appearance of a single mass.
 - 2. Front facing garage doors must have windows, decorative details, or carriage-style adornments.
 - 3. Entrances for units with front-facing garages shall have a prominent covered porch/stoop area leading to the front door.
 - 4. The front façade of any front-loaded garage shall not protrude farther than one foot forward of (i) the front façade of the dwelling unit, or (ii) the front porch of the dwelling unit, whichever is closer to the right-of-way from which the dwelling unit is addressed.

Section 8: Parking and Loading

Parking for the development shall be per Town of Apex UDO.

Section 9: Signage

All signage for this PUD shall comply with Section 8.7, *Signs*, of the Town of Apex UDO.

Section 10: Natural Resource and Environmental Data

A. River Basins and Watershed Protection Overlay Districts

The project is located within the Beaver Creek drainage basin, which is within the Cape Fear River Basin.

B. Resource Conservation Areas (RCA) – Required and Provided

This PUD will be subject to, and meet the requirements of Section 8.1.2 of the UDO, *Resource Conservation Area* and Section 2.3.4, *Planned Development Districts*.

The Site is located on the east side of the 540 corridor and therefore is required to preserve a minimum of 30% Resource Conservation Area (RCA). Designated RCA areas will be consistent with the items listed in Section 8.1.2(B) of the Town's UDO. Preserved streams, wetlands, and associated riparian buffers provide the primary RCA's throughout the site. Additional RCA area provided include stormwater management areas, perimeter buffers, and greenway trails within the walkable community.

C. Any historic structures present

As confirmed by the North Carolina State Historic Preservation Office and Capital Area Preservation, Inc. there are no historic structures present within the project boundary.

Section 11: Stormwater Management

- A. This PUD shall meet all stormwater management requirements for quality and quantity treatment in accordance with Section 6.1.7 of the UDO, such that:
 - Post development peak runoff shall not exceed pre-development peak runoff conditions for the 1 year, 10 year, and 25 year 24-hour storm events.
- B. This PUD shall convey as much stormwater runoff from the site development as practical, including required Stormwater Control Measures (SCM'), to the existing 48" RCP culvert located in the southeastern corner of the site along Morris Acres Road. The direct storm drainage connection to the existing 48" RCP culvert is subject to final approval by the Town of Apex, NCDOT or any other regulatory agency. In the event that this direct storm drainage connection is not approved, then this PUD shall meet and exceed existing stormwater management requirements for quality and quantity treatment provided in Section 6.1.7 of the UDO, such that post development peak runoff shall not exceed pre-development peak runoff conditions for the 1 year, 10 year, 25 year, and 100 year 24-hour storm events

Section 12: Parks and Recreation

The Parks, Recreation, and Cultural Resources Advisory Commission recommended a fee-in-lieu for the project at the May 29, 2019 meeting.

Section 13: Public Facilities

The proposed PUD shall meet all Public Facilities requirements as set forth in UDO Section 2.3.4(F)(1)(f) and be designed according to sound engineering standards, and shall comply with Town of Apex Sewer and Water Master Plan and the Town of Apex Standards and Specifications. Specifically, road and utility infrastructure shall be as follows:

- **General Roadway Infrastructure**

Developer shall provide minimum frontage widening based on ½ of a 3-lane thoroughfare section with side path and public right-of-way dedication based on an eighty foot (80') right-of-way along Morris Acres Road. The road network will promote connectivity wherever possible to adjacent neighborhoods and undeveloped property. Further, cul-de-sacs will be avoided except where environmental features make through streets unfeasible. Sidewalks will be provided on both sides of streets internal to the site and along street frontage.

Please refer to the concept plan of the PUD plan for proposed access points, stub streets and planned vehicular connectivity. All access and circulation is conceptual and will be finalized at the time of Major Site Plan review and approval.

- **Transportation Improvements**

5. Roadway improvements are subject to modification and final approval by the Town of Apex and NCDOT as part of the site plan and construction plan approval process. A traffic study has been performed as part of this PUD rezoning consistent with the Town's standards for the same. Based upon the traffic study, no offsite improvements are recommended for this development.

- **Wayfinding Improvements**

Wayfinding measures at the site shall be provided in an effort to facilitate the movement of vehicles and pedestrians to and within the development.

- **Water and Sanitary Sewer**

All lots within the project will be served by the Town of Apex for water and sanitary sewer. The utility design will be finalized at the time of Major Site Plan review and approval based upon available facilities adjacent to the site at that time. A conceptual utility plan is included in the PUD plan for reference.

- **Other Utilities**

Electricity will be provided by Apex Electric. Phone, cable and gas will be provided by the developer and shall meet the Town of Apex standards as outlined in the UDO.

Section 14: Phasing Plan

This PUD may be completed in up to three (3) phases, with construction anticipated to begin in 2020. Project phasing will be planned to ensure the points of access are

provided in accordance with the UDO.

Section 15: Consistency with the 2045 Land Use Map

The proposed land use is consistent with the 2045 Land Use Map, if the Land Use Map Amendment is approved.

Section 16: Compliance with the UDO

The development standards adopted for this PUD are in compliance with those set forth in the current version of the Town's Unified Development Ordinance (UDO). Any deviations from UDO requirements have been specifically defined within this document.

Section 17: Compliance with Comprehensive Transportation Plan and Bicycle Plan

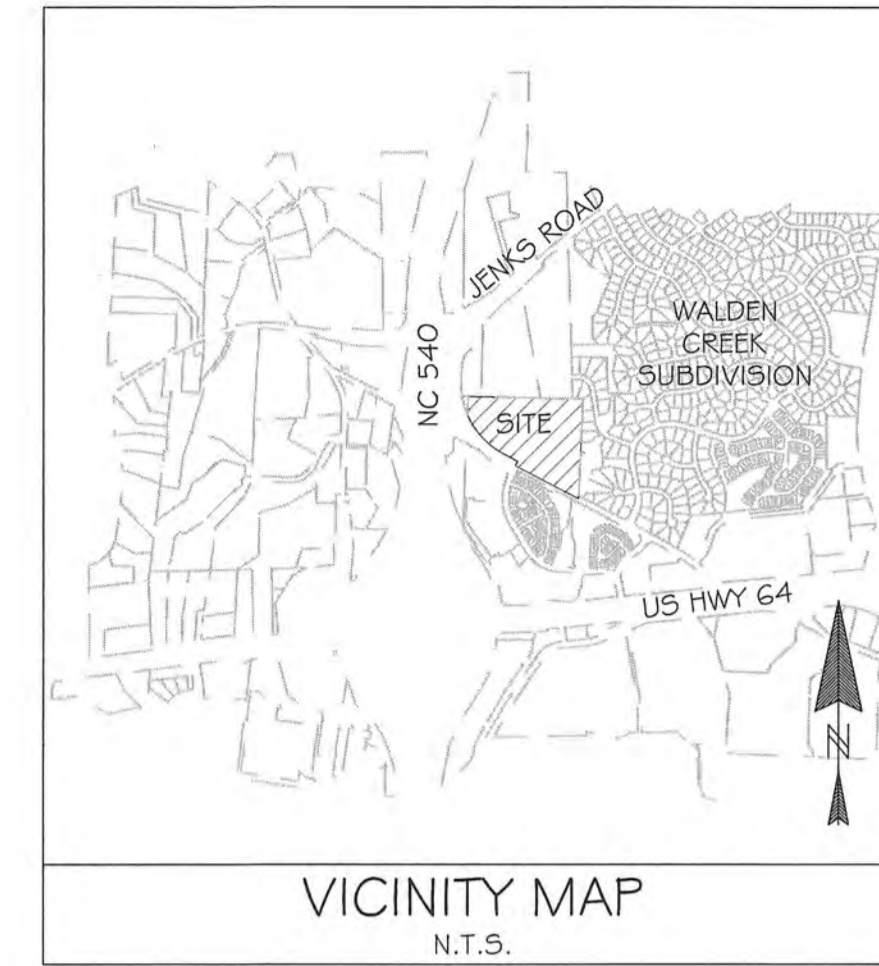
Major Site Plans for any development to be made pursuant to this amendment to the Official Zoning District Map shall comply with the adopted Comprehensive Transportation Plan in effect at the time of the Major Site Plan approval as provided for in the Unified Development Ordinance. Further, development of the Property shall be consistent with the Town's adopted Bicycle Plan.

Section 18: Public Art

The applicant shall provide a 6' x 6' Public Art easement to the Town of Apex along the Morris Acres Road frontage of the subject property. The precise location for this easement will be determined at the time of site plan review.



MORRIS TRACT PLANNED UNIT DEVELOPMENT



SITE DATA	
PROJECT NAME	MORRIS TRACT
PREPARER'S CONTACT INFORMATION	JONES & CROSSEN ENGINEERING, PLLC P.O. BOX 1062 APEX, NORTH CAROLINA 27502 PHONE - (919) 387-1174 FAX - (919) 387-3375 CONTACT PERSON - PETER D. CROSSEN
OWNER / DEVELOPER CONTACT INFORMATION	KAPLAN RESIDENTIAL 1111 KANE CONCOURSE, SUITE 302 BAY HARBOR, FLORIDA 33154 PHONE - (305) 901-2203 CONTACT PERSON - MORRIS KAPLAN
CURRENT ZONING	RR
CURRENT 2045 LAND USE MAP DESIGNATION	MEDIUM DENSITY RESIDENTIAL
PROPOSED ZONING DESIGNATION	PUD-CZ
PROPOSED 2045 LAND USE MAP DESIGNATION	HIGH DENSITY RESIDENTIAL
WAKE COUNTY PINS	0732: 38-2709, 38-2530, 28-9587
TOTAL PROJECT AREA	17.44 ACRES
AREA IN MORRIS ACRES ROAD R/W DEDICATION	0.64 ACRE
NET SITE AREA	16.80 ACRES
MAXIMUM NUMBER OF UNITS	297 UNITS (17.0 UNITS/ACRE)
PROPOSED NUMBER OF UNITS	297 UNITS (17.0 UNITS/ACRE)
REQUIRED RCA / BUFFER AREA	3.49 ACRES (20.0%)
PROVIDED RCA / BUFFER AREA	5.09 ACRES (29.9%)
MAXIMUM BUILT UPON AREA FOR PUD	70% OR 12.21 ACRES
MAXIMUM BUILDING HEIGHT	65' (4-STORIES ABOVE GRADE WITH A BASEMENT LEVEL)
OFF STREET PARKING	TOWN OF APEX UDO REQUIREMENTS
PUBLIC RECREATION REQUIREMENT	MULTI-FAMILY ATTACHED
WATERSHED INFORMATION	PRIMARY; BEAVER CREEK BASIN
HISTORIC STRUCTURE?	NO
FEMA FLOODPLAIN INFORMATION	MAP #3720073300J - PROJECT IS NOT WITHIN 100 YEAR FLOODPLAIN
MEDIUM DENSITY TRANSITION AREA	MAX. BUILDING HEIGHT - 3 STORIES (45') MAXIMUM DENSITY - 4 UNITS/ACRE

PERMITTED USE:	
·	MULTI-FAMILY OR APARTMENT
·	GREENWAY
·	RECREATION FACILITY, PRIVATE
·	PARK, ACTIVE
·	PARK, PASSIVE
·	UTILITY, MINOR

MINIMUM BUILDING SETBACKS	
FROM BUILDING TO BUILDING	10'
FROM BUFFER/RCA	10'
FROM WALDEN WOODS LOTS	150'
FROM PLINTS POND CIRCLE RESIDENTIAL STRUCTURES	275'

PD PLAN - DRAWING SHEET INDEX	
1	COVER SHEET
2	PRELIMINARY LAYOUT PLAN
3	EXISTING CONDITIONS PLAN
4	PRELIMINARY UTILITY PLAN

REVISIONS
05/22/19 RCA & SETBACKS

PRELIMINARY PLANS
NOT FOR CONSTRUCTION

THIS SHEET IS FOR
ILLUSTRATIVE PURPOSES ONLY



8/21/19

WAKE COUNTY, NORTH CAROLINA

MORRIS TRACT
PD PLANS
COVER SHEET

TOWN OF APEX

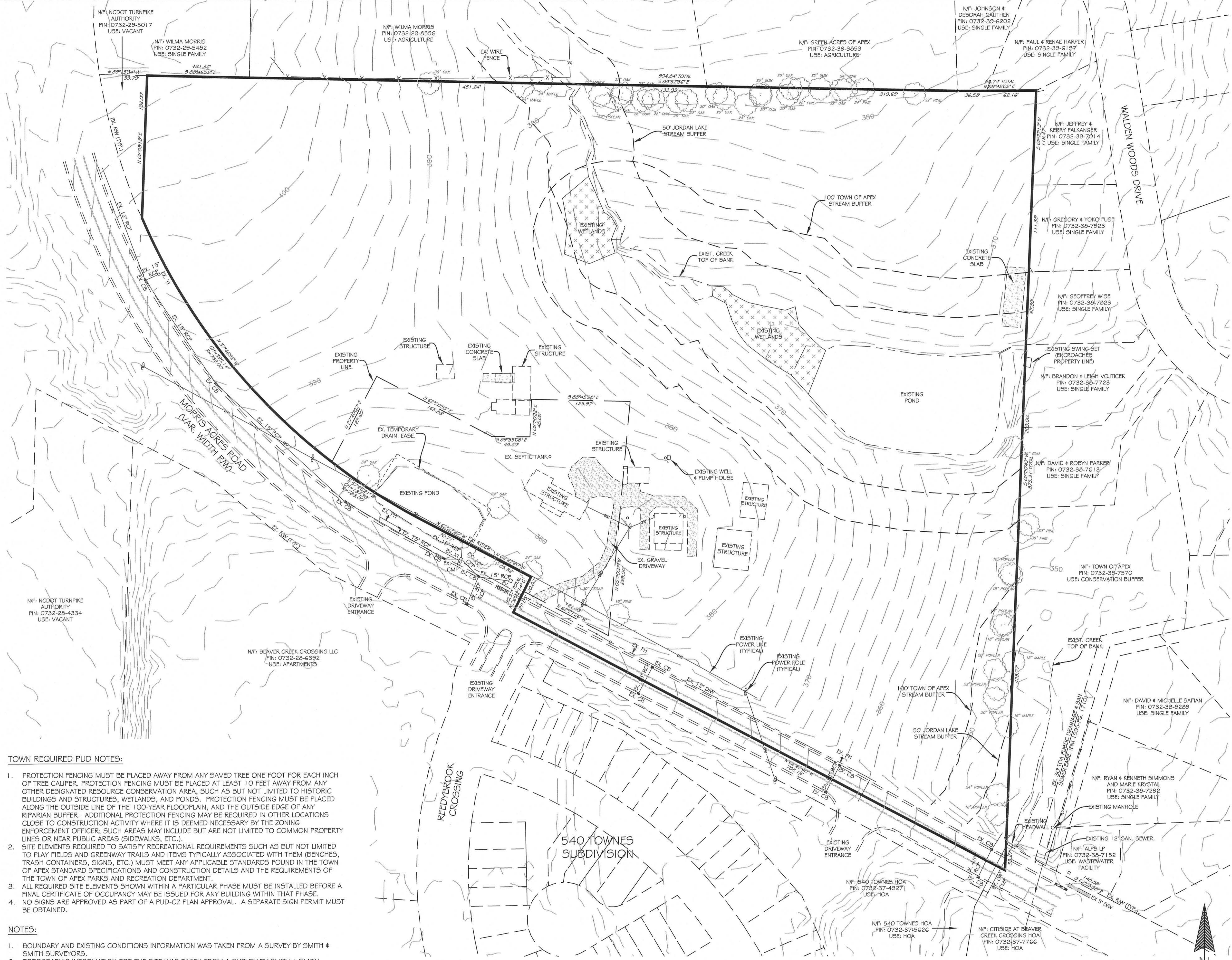
SCALE: 1" = 100'

DATE: FEBRUARY 1, 2019

REVISION	DATE	DESCRIPTION
03/07/19	1st TRC COMMENTS	
05/10/19	2nd TRC COMMENTS	
06/06/19	3rd TRC COMMENTS	
06/27/19	4th TRC COMMENTS	
07/30/19	5th TRC COMMENTS	
08/06/19	6th TRC COMMENTS	

SHEET: 1

PROJECT: 1846



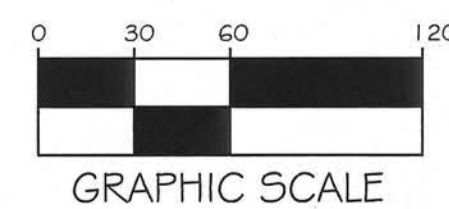
TOWN REQUIRED PUD NOTES:

1. PROTECTION FENCING MUST BE PLACED AWAY FROM ANY SAVED TREE ONE FOOT FOR EACH INCH OF TREE CALIPER. PROTECTION FENCING MUST BE PLACED AT LEAST 10 FEET AWAY FROM ANY OTHER DESIGNATED RESOURCE CONSERVATION AREA, SUCH AS BUT NOT LIMITED TO HISTORIC BUILDINGS AND STRUCTURES, WETLANDS, AND PONDS. PROTECTION FENCING MUST BE PLACED ALONG THE OUTSIDE LINE OF THE 100-YEAR FLOODPLAIN, AND THE OUTSIDE EDGE OF ANY RIPARIAN BUFFER. ADDITIONAL PROTECTION FENCING MAY BE REQUIRED IN OTHER LOCATIONS CLOSE TO CONSTRUCTION ACTIVITY WHERE IT IS DEEMED NECESSARY BY THE ZONING ENFORCEMENT OFFICER; SUCH AREAS MAY INCLUDE BUT ARE NOT LIMITED TO COMMON PROPERTY LINES OR NEAR PUBLIC AREAS (SIDEWALKS, ETC.).
2. SITE ELEMENTS REQUIRED TO SATISFY RECREATIONAL REQUIREMENTS SUCH AS BUT NOT LIMITED TO PLAY FIELDS AND GREENWAY TRAILS AND ITEMS TYPICALLY ASSOCIATED WITH THEM (BENCHES, TRASH CONTAINERS, SIGNS, ETC.) MUST MEET ANY APPLICABLE STANDARDS FOUND IN THE TOWN OF APEX STANDARD SPECIFICATIONS AND CONSTRUCTION DETAILS AND THE REQUIREMENTS OF THE TOWN OF APEX PARKS AND RECREATION DEPARTMENT.
3. ALL REQUIRED SITE ELEMENTS SHOWN WITHIN A PARTICULAR PHASE MUST BE INSTALLED BEFORE A FINAL CERTIFICATE OF OCCUPANCY MAY BE ISSUED FOR ANY BUILDING WITHIN THAT PHASE.
4. NO SIGNS ARE APPROVED AS PART OF A PUD-CZ PLAN APPROVAL. A SEPARATE SIGN PERMIT MUST BE OBTAINED.

NOTES:

1. BOUNDARY AND EXISTING CONDITIONS INFORMATION WAS TAKEN FROM A SURVEY BY SMITH & SMITH SURVEYORS.
2. TOPOGRAPHIC INFORMATION FOR THE SITE WAS TAKEN FROM A SURVEY BY SMITH & SMITH SURVEYORS. THE TOPO OUTSIDE THE SITE WAS TAKEN FROM TOWN OF APEX LIDAR WHICH WAS BLENDED WITH THE FIELD TOPO AT THE PROPERTY BOUNDARY.
3. THE SITE HAS BEEN EVALUATED FOR THE EXISTENCE OF WETLANDS AND STREAMS BY ENVIRONMENTAL SERVICES, INC. THE LOCATION OF THESE ENVIRONMENTAL FEATURES INCLUDING STREAM BUFFERS ARE SHOWN AS SURVEYED. TOWN OF APEX PROJECT ID IS APEX 18-011.
4. THE EXISTING POND AND TEMPORARY DRAINAGE EASEMENT ALONG MORRIS ACRES ROAD ARE RECORDED IN DB 14372, PG. 82.
5. NCDOT APPROVAL TO REMOVE EXISTING POND AND TEMPORARY DRAINAGE EASEMENT FROM SITE SHALL BE HANDLED AT THE TIME OF MASTER PLAN APPROVAL.

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PETER D. CROSSEN
ENGINEER
02/19

WAKE COUNTY, NORTH CAROLINA

TOWN OF APEX

**MORRIS TRACT
PD PLANS**

EXISTING CONDITIONS PLAN

SCALE	1"=60'	DRWING	PDC
DATE	FEBRUARY 1, 2019		
REVISION	03/07/19	1st TRC COMMENTS	
SHEET	3		
TOTAL	1846		

TOWN REQUIRED PUD NOTES:

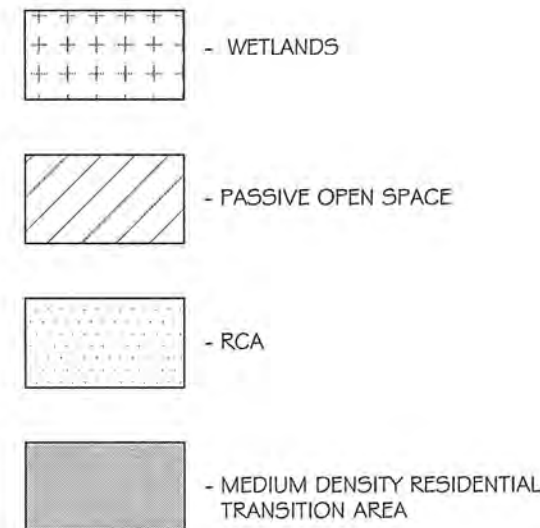
1. PROTECTION FENCING MUST BE PLACED AWAY FROM ANY SAVED TREE ONE FOOT FOR EACH INCH OF TREE CALIPER. PROTECTION FENCING MUST BE PLACED AT LEAST 10 FEET AWAY FROM ANY OTHER DESIGNATED RESOURCE CONSERVATION AREA, SUCH AS BUT NOT LIMITED TO HISTORIC BUILDINGS AND STRUCTURES, WETLANDS, AND PONDS. PROTECTION FENCING MUST BE PLACED ALONG THE OUTSIDE LINE OF THE 100-YEAR FLOODPLAIN, AND THE OUTSIDE EDGE OF ANY RIPARIAN BUFFER. ADDITIONAL PROTECTION FENCING MAY BE REQUIRED IN OTHER LOCATIONS CLOSE TO CONSTRUCTION ACTIVITY WHERE IT IS DEEMED NECESSARY BY THE ZONING ENFORCEMENT OFFICER; SUCH AREAS MAY INCLUDE BUT ARE NOT LIMITED TO COMMON PROPERTY LINES OR NEAR PUBLIC AREAS (SIDEWALKS, ETC.).
2. SITE ELEMENTS REQUIRED TO SATISFY RECREATION REQUIREMENTS SUCH AS BUT NOT LIMITED TO PLAY FIELDS AND GREENWAY TRAILS AND ITEMS TYPICALLY ASSOCIATED WITH THEM (BENCHES, TRASH CONTAINERS, SIGNS, ETC.) MUST MEET ANY APPLICABLE STANDARDS FOUND IN THE TOWN OF APEX STANDARD SPECIFICATIONS AND CONSTRUCTION DETAILS AND THE REQUIREMENTS OF THE TOWN OF APEX PARKS AND RECREATION DEPARTMENT.
3. ALL REQUIRED SITE ELEMENTS SHOWN WITHIN A PARTICULAR PHASE MUST BE INSTALLED BEFORE A FINAL CERTIFICATE OF OCCUPANCY MAY BE ISSUED FOR ANY BUILDING WITHIN THAT PHASE.
4. NO SIGNS ARE APPROVED AS PART OF A PUD-CZ PLAN APPROVAL. A SEPARATE SIGN PERMIT MUST BE OBTAINED.

PLANNING NOTES:

1. PRIMARY AND SECONDARY ENTRANCE LOCATIONS SHOWN HEREON ARE PRELIMINARY AND MAY CHANGE AT THE TIME OF MASTER PLAN APPROVAL.
2. THE RESOURCE CONSERVATION AREA (RCA) SHOWN HEREON IS PRELIMINARY AND MAY CHANGE AT THE TIME OF MASTER PLAN APPROVAL.
3. THE MAINTENANCE OF RCA, LANDSCAPE BUFFERS, PASSIVE OPEN SPACE, COMMON AREAS, AND THE STORMWATER DEVICES SHALL BE THE RESPONSIBILITY OF THE PROPERTY ASSOCIATION.
4. ALL SIGNAGE SHALL COMPLY WITH TOA UDO SECTION 8.7. SIGNS
5. THE PUD SHALL MEET TOWN OF APEX STORMWATER REQUIREMENTS OUTLINED IN TOA UDO SECTION 6.1.7 SUCH THAT POST-DEVELOPMENT RUNOFF SHALL NOT EXCEED THE PRE-DEVELOPMENT RUNOFF FOR THE 1-YEAR AND 10-YEAR, 24 HOUR STORM EVENTS.
6. THE PEDESTRIAN PATH IS FOR INTERNAL SIDEWALK CONNECTION TO ACCESS THE PASSIVE OPEN SPACE. THE LOCATION SHOWN IS PRELIMINARY AND MAY CHANGE AT THE TIME OF MASTER PLAN APPROVAL.
7. THE PEDESTRIAN PATH ACCESS TO THE PASSIVE OPEN SPACE IS PRIVATE AND SHALL BE MAINTAINED BY THE PROPERTY ASSOCIATION.
8. PERMITTING FOR THE PEDESTRIAN PATH STREAM CROSSING SHALL BE HANDLED AT THE TIME OF CONSTRUCTION DRAWING APPROVAL.

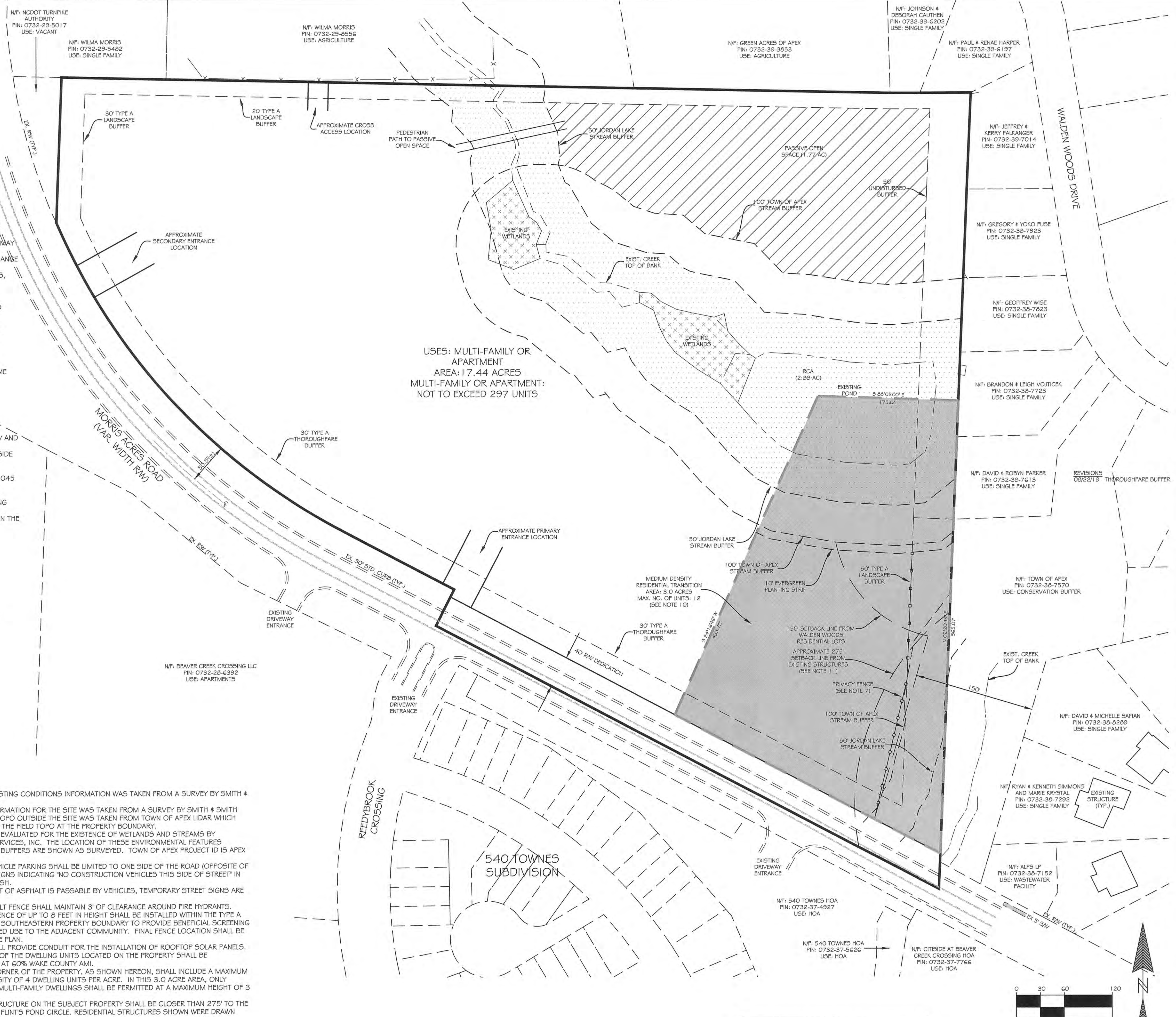
TRANSPORTATION ELEMENTS:

1. MORRIS ACRES ROAD IS A TOWN OF APEX 3-LANE THOROUGHFARE REQUIRING AN 80' RW AND 41' B-B STREET SECTION.
2. DEVELOPER SHALL DEDICATE 40' OF RW AS SHOWN HEREON AND CONSTRUCT 10' WIDE SIDE PATH ALONG THE FRONTAGE TO COMPLETE HALF OF THE 3-LANE THOROUGHFARE STREET SECTION.
3. THE 10' WIDE SIDE PATH SHALL COMPLY WITH THE TERMINOLOGY IN ADVANCE APEX THE 2045 PLAN.
4. THE PRIMARY AND SECONDARY ENTRANCE LOCATIONS SHOWN HEREON ARE FOR PRIVATE ACCESS. ENTRANCE LOCATIONS ARE PRELIMINARY AND SHALL BE AT APPROPRIATE SPACING PER TOA UDO REQUIREMENTS.
5. THE CROSS ACCESS LOCATION SHOWN HEREON IS PRELIMINARY AND MAY BE ADJUSTED ON THE SITE PLAN SUBMITTAL.



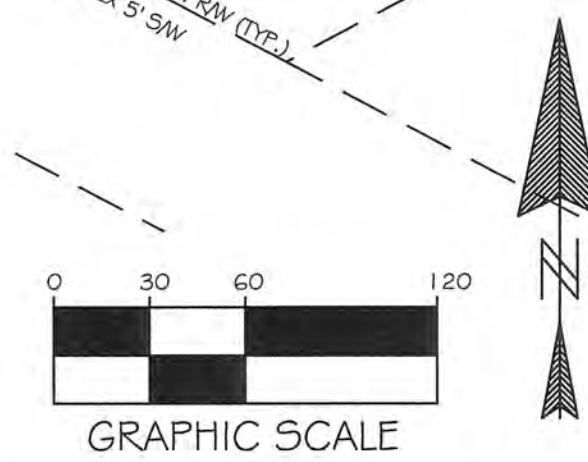
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4. CONSTRUCTION VEHICLE PARKING SHALL BE LIMITED TO ONE SIDE OF THE ROAD (OPPOSITE OF FIRE HYDRANTS). SIGNS INDICATING "NO CONSTRUCTION VEHICLES THIS SIDE OF STREET" IN ENGLISH AND SPANISH.
5. ONCE THE FIRST LIFT OF ASPHALT IS PASSABLE BY VEHICLES, TEMPORARY STREET SIGNS ARE REQUIRED.
6. INSTALLATION OF SILT FENCE SHALL MAINTAIN 3' OF CLEARANCE AROUND FIRE HYDRANTS.
7. A SOLID PRIVACY FENCE OF UP TO 8 FEET IN HEIGHT SHALL BE INSTALLED WITHIN THE TYPE A BUFFER ALONG THE SOUTHEASTERN PROPERTY BOUNDARY TO PROVIDE BENEFICIAL SCREENING FROM THE PROPOSED USE TO THE ADJACENT COMMUNITY. FINAL FENCE LOCATION SHALL BE DETERMINED AT SITE PLAN.
8. ALL BUILDINGS SHALL PROVIDE CONDUIT FOR THE INSTALLATION OF ROOFTOP SOLAR PANELS.
9. A MINIMUM OF 5% OF THE DWELLING UNITS LOCATED ON THE PROPERTY SHALL BE AFFORDABLE UNITS AT 60% WAKE COUNTY AMI.
10. THE SOUTHEAST CORNER OF THE PROPERTY, AS SHOWN HEREON, SHALL INCLUDE A MAXIMUM DEVELOPMENT DENSITY OF 4 DWELLING UNITS PER ACRE. IN THIS 3.0 ACRE AREA, ONLY TOWNHOME STYLE MULTI-FAMILY DWELLINGS SHALL BE PERMITTED AT A MAXIMUM HEIGHT OF 3 STORIES (45').
11. NO RESIDENTIAL STRUCTURE ON THE SUBJECT PROPERTY SHALL BE CLOSER THAN 275' TO THE NEAREST HOME ON FLINT'S POND CIRCLE. RESIDENTIAL STRUCTURES SHOWN WERE DRAWN USING AERIAL INFORMATION FROM IMAPS AND SHOULD BE CONSIDERED APPROXIMATE.



USES: MULTI-FAMILY OR APARTMENT
 AREA: 17.44 ACRES
 MULTI-FAMILY OR APARTMENT:
 NOT TO EXCEED 297 UNITS

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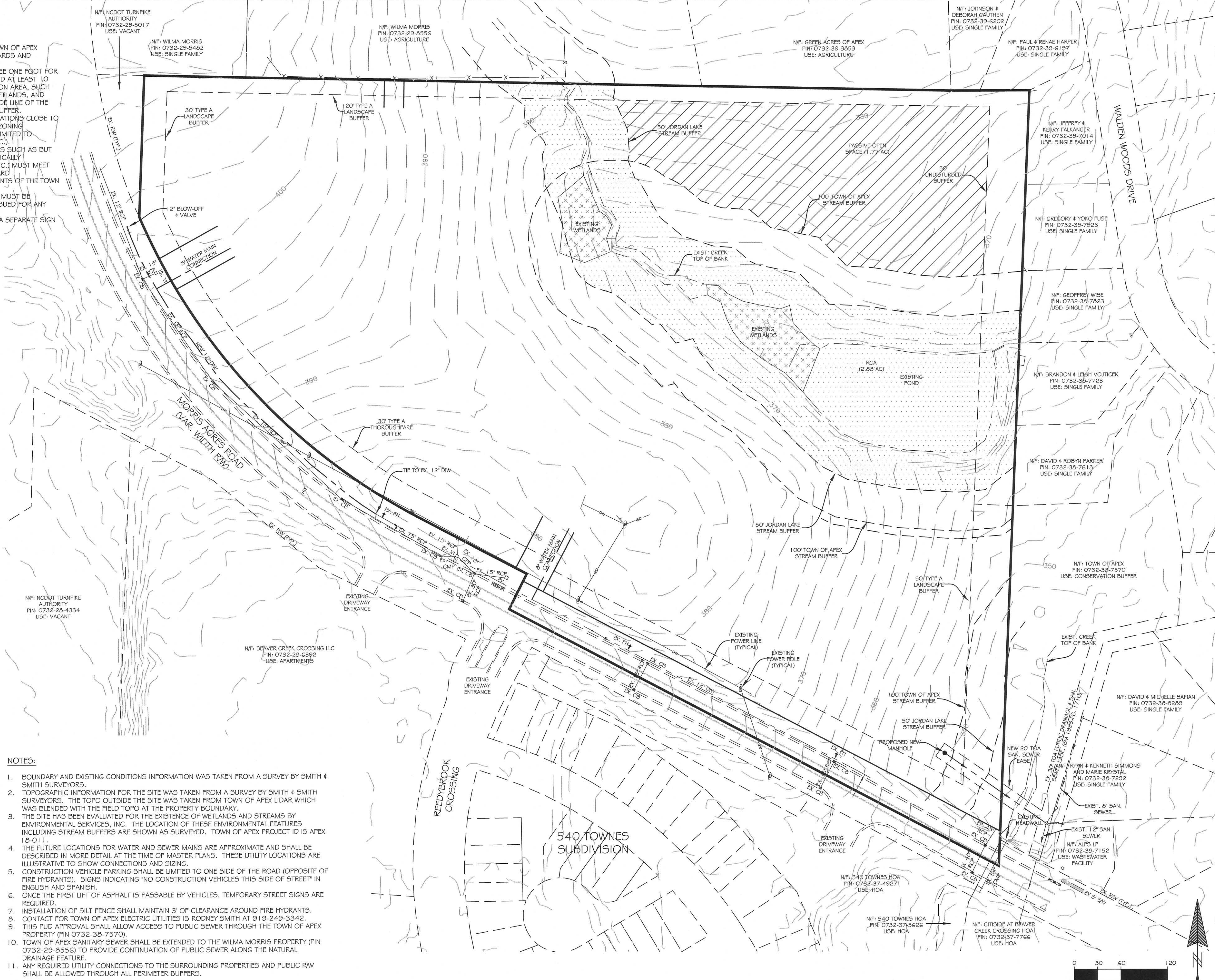
MORRIS TRACT
 PD PLANS
 PRELIMINARY LAYOUT PLAN

WAKE COUNTY, NORTH CAROLINA
 TOWN OF APEX

SCALE	1" = 60'	DRAWN	PDC
DATE	FEBRUARY 1, 2019		
REVISION	03/07/19	1st TRC COMMENTS	
	05/10/19	2nd TRC COMMENTS	
	06/06/19	3rd TRC COMMENTS	
	06/27/19	4th TRC COMMENTS	
	07/30/19	5th TRC COMMENTS	
	08/06/19	6th TRC COMMENTS	
SHEET	2		
PROJECT	1846		

TOWN REQUIRED PUD NOTES:

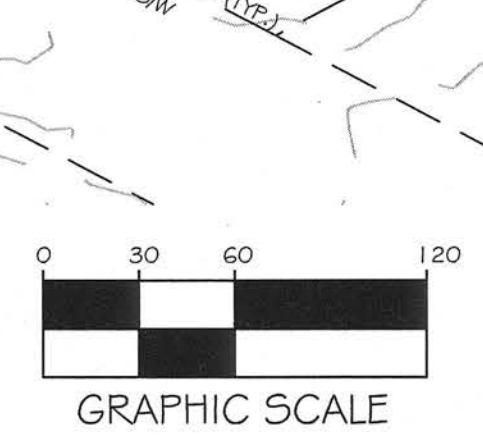
1. ALL UTILITY DESIGNS AND EXTENSIONS SHALL COMPLY WITH THE TOWN OF APEX SEWER AND WATER MASTER PLANS AND THE TOWN OF APEX STANDARDS AND SPECIFICATIONS.
2. PROTECTION FENCING MUST BE PLACED AWAY FROM ANY SAVED TREE ONE FOOT FOR EACH INCH OF TREE CALIPER. PROTECTION FENCING MUST BE PLACED AT LEAST 10 FEET AWAY FROM ANY OTHER DESIGNATED RESOURCE CONSERVATION AREA, SUCH AS BUT NOT LIMITED TO HISTORIC BUILDINGS AND STRUCTURES, WETLANDS, AND PONDS. PROTECTION FENCING MUST BE PLACED ALONG THE OUTSIDE LINE OF THE 100-YEAR FLOODPLAIN, AND THE OUTSIDE EDGE OF ANY RIPARIAN BUFFER. ADDITIONAL PROTECTION FENCING MAY BE REQUIRED IN OTHER LOCATIONS CLOSE TO CONSTRUCTION ACTIVITY WHERE IT IS DEEMED NECESSARY BY THE ZONING ENFORCEMENT OFFICER; SUCH AREAS MAY INCLUDE BUT ARE NOT LIMITED TO COMMON PROPERTY LINES OR NEAR PUBLIC AREAS (SIDEWALKS, ETC.).
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4. THE FUTURE LOCATIONS FOR WATER AND SEWER MAINS ARE APPROXIMATE AND SHALL BE DESCRIBED IN MORE DETAIL AT THE TIME OF MASTER PLANS. THESE UTILITY LOCATIONS ARE ILLUSTRATIVE TO SHOW CONNECTIONS AND SIZING.
5. CONSTRUCTION VEHICLE PARKING SHALL BE LIMITED TO ONE SIDE OF THE ROAD (OPPOSITE OF FIRE HYDRANTS). SIGNS INDICATING "NO CONSTRUCTION VEHICLES THIS SIDE OF STREET" IN ENGLISH AND SPANISH.
6. ONCE THE FIRST LIFT OF ASPHALT IS PASSABLE BY VEHICLES, TEMPORARY STREET SIGNS ARE REQUIRED.
7. INSTALLATION OF SILT FENCE SHALL MAINTAIN 3' OF CLEARANCE AROUND FIRE HYDRANTS.
8. CONTACT FOR TOWN OF APEX ELECTRIC UTILITIES IS RODNEY SMITH AT 919-249-3342.
9. THIS PUD APPROVAL SHALL ALLOW ACCESS TO PUBLIC SEWER THROUGH THE TOWN OF APEX PROPERTY (PIN 0732-38-7570).
10. TOWN OF APEX SANITARY SEWER SHALL BE EXTENDED TO THE WILMA MORRIS PROPERTY (PIN 0732-29-8556) TO PROVIDE CONTINUATION OF PUBLIC SEWER ALONG THE NATURAL DRAINAGE FEATURE.
11. ANY REQUIRED UTILITY CONNECTIONS TO THE SURROUNDING PROPERTIES AND PUBLIC RW SHALL BE ALLOWED THROUGH ALL PERIMETER BUFFERS.

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MORRIS TRACT
PD PLANS
PRELIMINARY UTILITY PLAN

SCALE	1"=60'	DRAWN	PDC
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REVISION	03/07/19	1st TRC COMMENTS	
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SHEET	4		
PROJECT	1846		

 Traffic Impact Analysis

The Wayforth at Apex Apex, NC

Prepared for:

Kaplan Residential

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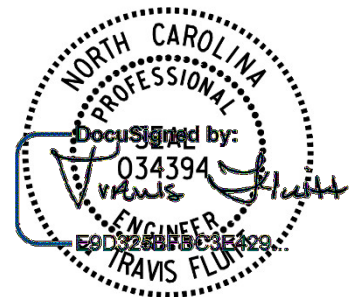
Kimley»»Horn

Traffic Impact Analysis
for
The Wayforth at Apex
Apex, North Carolina

Prepared for:
Kaplan Residential
Bay Harbor, FL

Prepared by:
Kimley-Horn and Associates, Inc.
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421 Fayetteville Street, Suite 600
Raleigh, NC 27601
(919) 677-2000

January 2019
013249000



1/21/2019

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Executive Summary

Kimley-Horn and Associates, Inc. has performed a Traffic Impact Analysis for The Wayforth at Apex, a proposed apartment project located on the east side of Morris Acres Road between Jenks Road and Walden Creek Drive in Apex, North Carolina. The property is currently occupied by a few single-family homes and as currently envisioned will consist of approximately 300 apartments. The development is proposed to be accessed via three driveways on Morris Acres Road, and build-out of the project is anticipated in the year 2022.

This report presents trip generation, distribution, traffic analyses, and recommendations for transportation improvements required to meet anticipated traffic demands in conjunction with the development. The traffic conditions studied include the existing (2018) traffic condition as well as the projected (2022) background and build-out traffic conditions.

As shown in Table ES-1, the proposed development has the potential to generate 1,634 new trips during a typical weekday with 100 new trips during the AM peak hour and 127 new trips during the PM peak hour.

Table ES-1 ITE Traffic Generation (Vehicles)									
Land Use Code	Land Use	Intensity		Daily		AM Peak Hour		PM Peak Hour	
				In	Out	In	Out	In	Out
221	Multifamily Housing (Mid-Rise)	300	d.u.	817	817	26	74	77	50

Capacity analyses were performed using Synchro Version 9.2 software. Table ES-2 summarizes the operation of the study intersections for the AM and PM peak hour traffic conditions.

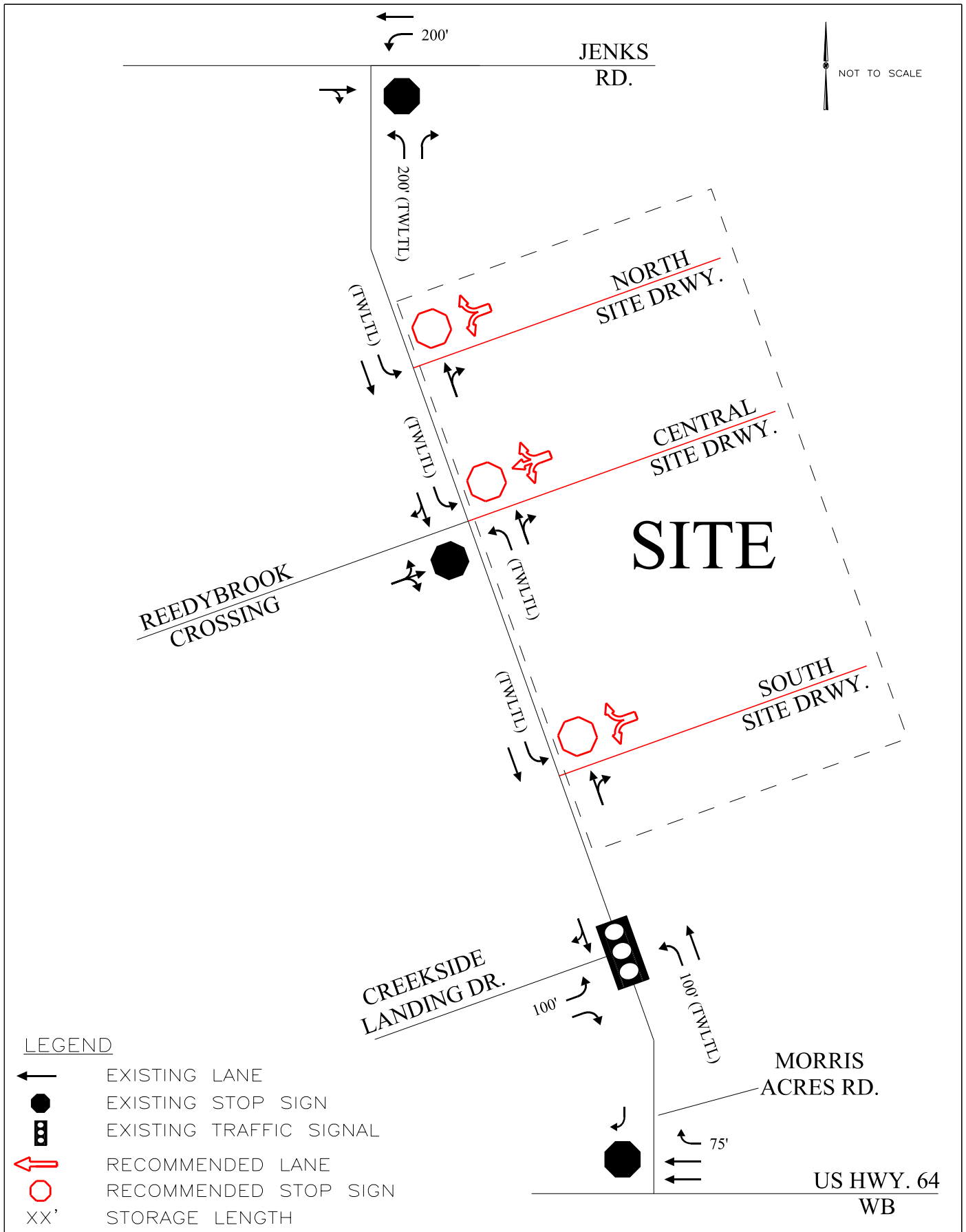
Table ES-2 Level-of-Service Summary		
Condition	AM Peak Hour LOS (Delay)	PM Peak Hour LOS (Delay)
Jenks Road at Morris Acres Road (Unsignalized)		
Existing (2018) Traffic	NB - B (11.3) WBL - A (7.8)	NB - B (14.6) WBL - A (8.1)
Background (2022) Traffic	NB - B (11.8) WBL - A (7.9)	NB - C (16.6) WBL - A (8.2)
Build-out (2022) Traffic	NB - B (11.9) WBL - A (7.9)	NB - C (17.6) WBL - A (8.3)

Table ES-2 (cont.) Level-of-Service Summary		
Condition	AM Peak Hour LOS (Delay)	PM Peak Hour LOS (Delay)
Morris Acres Road at Reedybrook Crossing/Central Site Driveway (Unsignalized)		
Existing (2018) Traffic	EB - A (9.4) NBL - A (7.3)	EB - B (10.2) NBL - A (7.6)
Background (2022) Traffic	EB - A (9.5) NBL - B (7.3)	EB - B (10.4) NBL - A (7.7)
Build-out (2022) Traffic	EB - B (10.2) WB - B (10.2) NBL - A (7.4) SBL - A (7.6)	EB - B (12.6) WB - B (12.5) NBL - A (7.7) SBL - A (8.0)
Morris Acres Road at Creekside Landing Drive (Signalized)		
Existing (2018) Traffic	A (4.6)	A (6.7)
Background (2022) Traffic	A (4.7)	A (7.1)
Build-out (2022) Traffic	A (5.0)	A (7.8)
US 64 Westbound at Morris Acres Road (Unsignalized)		
Existing (2018) Traffic	SB - D (27.9)	SB - D (28.8)
Background (2022) Traffic	SB - E (41.8)	SB - E (43.6)
Build-out (2022) Traffic	SB - E (49.4)	SB - E (48.8)
Morris Acres Road at North Site Driveway (Unsignalized)		
Build-out (2022) Traffic	WB - A (9.8) SBL - A (7.7)	WB - B (10.6) SBL - A (8.0)
Morris Acres Road at South Site Driveway (Unsignalized)		
Build-out (2022) Traffic	WB - A (9.7) SBL - A (7.6)	WB - B (10.8) SBL - A (8.0)

With the exception of southbound Morris Acres Road at US 64 Westbound, analyses indicate that all of the study intersections are expected to operate at an acceptable LOS at project build-out with only minor increases in delays and queues associated with the addition of site traffic. The intersection of US 64 Westbound at Morris Acres road is expected to operate with moderate delays on Morris Acres Road in the year 2022 with or without the proposed project in place.

No roadway improvements are recommended to be performed to accommodate projected site traffic volumes.

The build-out roadway laneage is shown on Figure ES-1.



THE WAYFORTH AT APEX
APEX, NC
TRAFFIC CAPACITY ANALYSIS

BUILD-OUT
ROADWAY LANEAGE

FIGURE
ES-1

THIS DOCUMENT, TOGETHER WITH THE CONCEPTS AND DESIGNS PRESENTED HEREIN, AS AN INSTRUMENT OF SERVICE, IS INTENDED ONLY FOR THE SPECIFIC PURPOSE AND CLIENT FOR WHICH IT WAS PREPARED. REUSE OF AND IMPROPER RELIANCE ON THIS DOCUMENT WITHOUT WRITTEN AUTHORIZATION AND ADAPTATION BY KIMLEY-HORN AND ASSOCIATES, INC. SHALL BE WITHOUT LIABILITY TO KIMLEY-HORN AND ASSOCIATES, INC.

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- B. TRIP GENERATION
- C. TRAFFIC COUNT DATA
- D. APPROVED DEVELOPMENT DATA
- E. INTERSECTION SPREADSHEETS
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1.0 Introduction

Kimley-Horn and Associates, Inc. has performed a Traffic Impact Analysis for The Wayforth at Apex, a proposed apartment project located on the east side of Morris Acres Road between Jenks Road and Walden Creek Drive in Apex, North Carolina. The property is currently occupied by a few single-family homes and as currently envisioned will consist of approximately 300 apartments. The development is proposed to be accessed via three driveways on Morris Acres Road, and build-out of the project is anticipated in the year 2022.

This report presents trip generation, distribution, traffic analyses, and recommendations for transportation improvements required to meet anticipated traffic demands in conjunction with the development. The traffic conditions studied include the existing (2018) traffic condition as well as the projected (2022) background and build-out traffic conditions.

Town of Apex and North Carolina Department of Transportation (NCDOT) transportation staff provided background data and were consulted regarding the elements to be covered in this analysis. The approved Memorandum of Understanding is included in the Appendix of this report.

2.0 Inventory

2.1 Study Area

The study area for this development includes the following intersections:

- é Jenks Road at Morris Acres Road
- é Morris Acres Road at Reedybrook Crossing/Central Site Driveway
- é Morris Acres Road at Creekside Landing Drive
- é Morris Acres Road at US 64 Westbound
- é Morris Acres Road at North Site Driveway
- é Morris Acres Road at South Site Driveway

Figure 1 shows the site location. The preliminary site plan is shown on Figure 2.

2.2 Existing Conditions

The Wayforth at Apex development is proposed to be located generally east of Morris Acres Road between Jenks Road and Walden Creek Drive in Apex, North Carolina. Roadways in the study area include US 64, Jenks Road, Creekside Landing Drive, and Morris Acres Road (formerly Green Level Church Road). The existing roadway laneage is shown in Figure 3.

US 64 is a 4-lane divided highway with a posted speed limit of 55 mph near Morris Acres Road. On US 64 Westbound, the reported 2017 average daily traffic (ADT) volume was approximately 31,000 vehicles per day (vpd) west of Morris Acres Road. US 64 is designated as a freeway on the Town of Apex Thoroughfare and Collector Street Plan.

Jenks Road is a 2-lane undivided roadway with a posted speed limit of 45 mph in the vicinity of Morris Acres Road. The estimated 2018 ADT volume is approximately 6,000 vpd west of Morris Acres Road. Jenks Road is designated to be a 3-lane thoroughfare section per the Town of Apex Thoroughfare and Collector Street Plan.

Creekside Landing Drive is a 2-lane undivided roadway with a posted speed limit of 25 mph. The estimated 2018 ADT volume is approximately 3,500 vpd. Morris Acres Road is designated to be a minor collector on the Town of Apex Thoroughfare and Collector Street Plan.

Morris Acres Road (formerly Green Level Church Road) is a 3-lane undivided roadway in the vicinity of the site with a posted speed limit of 45 mph. The estimated 2018 ADT volume is approximately 3,000 vpd at Jenks Road. Morris Acres Road has already been widened to the designated 3-lane thoroughfare per the Town of Apex Thoroughfare and Collector Street Plan.



NOT TO SCALE

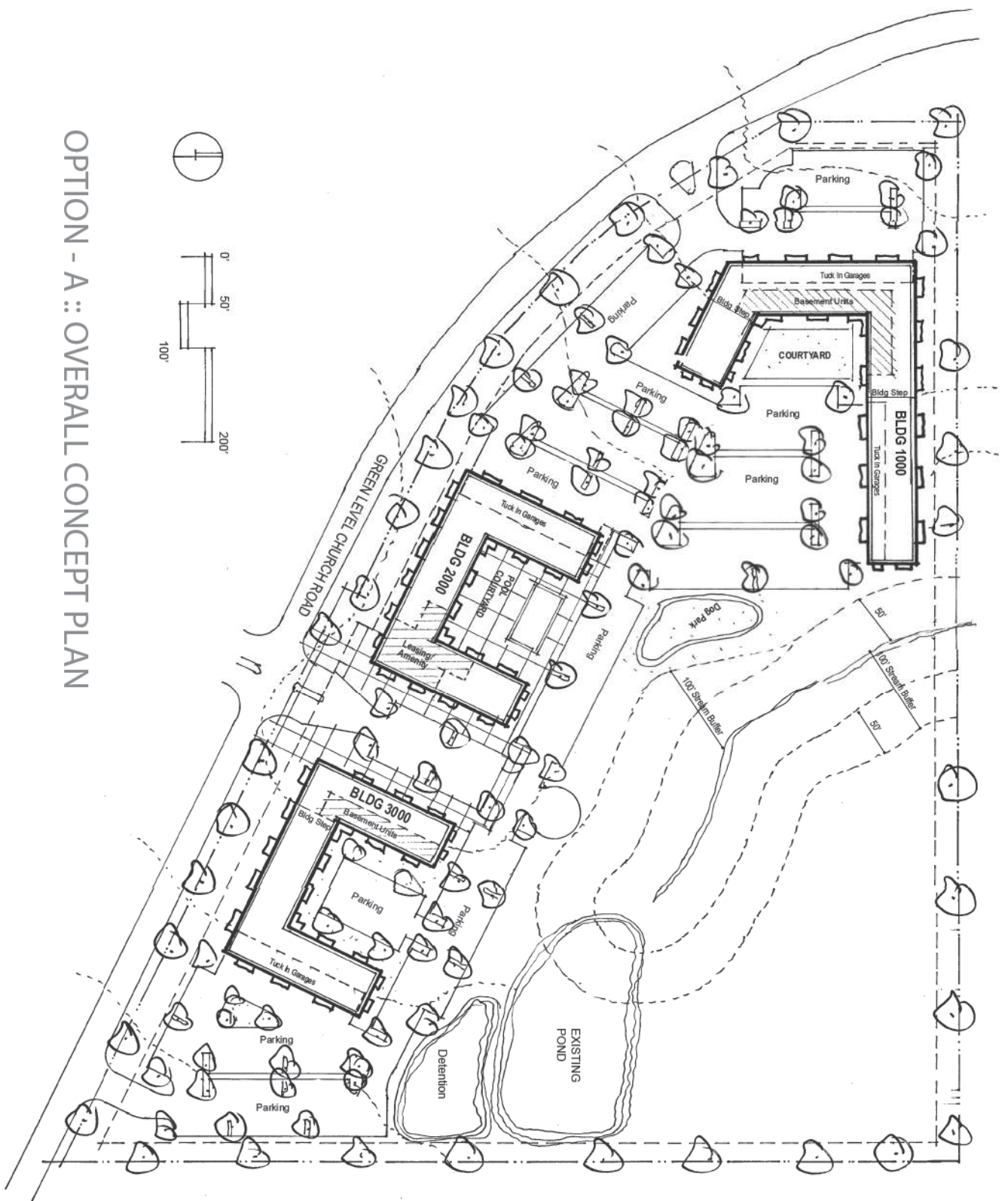


THE WAYFORTH AT APEX
APEX, NC
TRAFFIC CAPACITY ANALYSIS

SITE LOCATION

FIGURE
1

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OPTION - A :: OVERALL CONCEPT PLAN

MORRIS APEX DENSITY STUDY
APEX, NORTH CAROLINA

PROJECT DATA

RESIDENTIAL - 1,000 SF Average

BUILDING 1000	- 102 Units (4/5 Story)
BUILDING 2000	- 88 Units (4/5 Story)
BUILDING 3000	- 113 Units (4/5 Story)
TOTAL	- 303 Units

Leasing and Amenity in Bldg 2000
- 7,500 SF

PARKING

SURFACE PARKING	- 408 SPACES
TUCK UNDER GARAGES	- 47 SPACES
TOTAL	- 455 SPACES (1.5 Spaces/Unit)

Revised 10/25/18

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PAGE 1

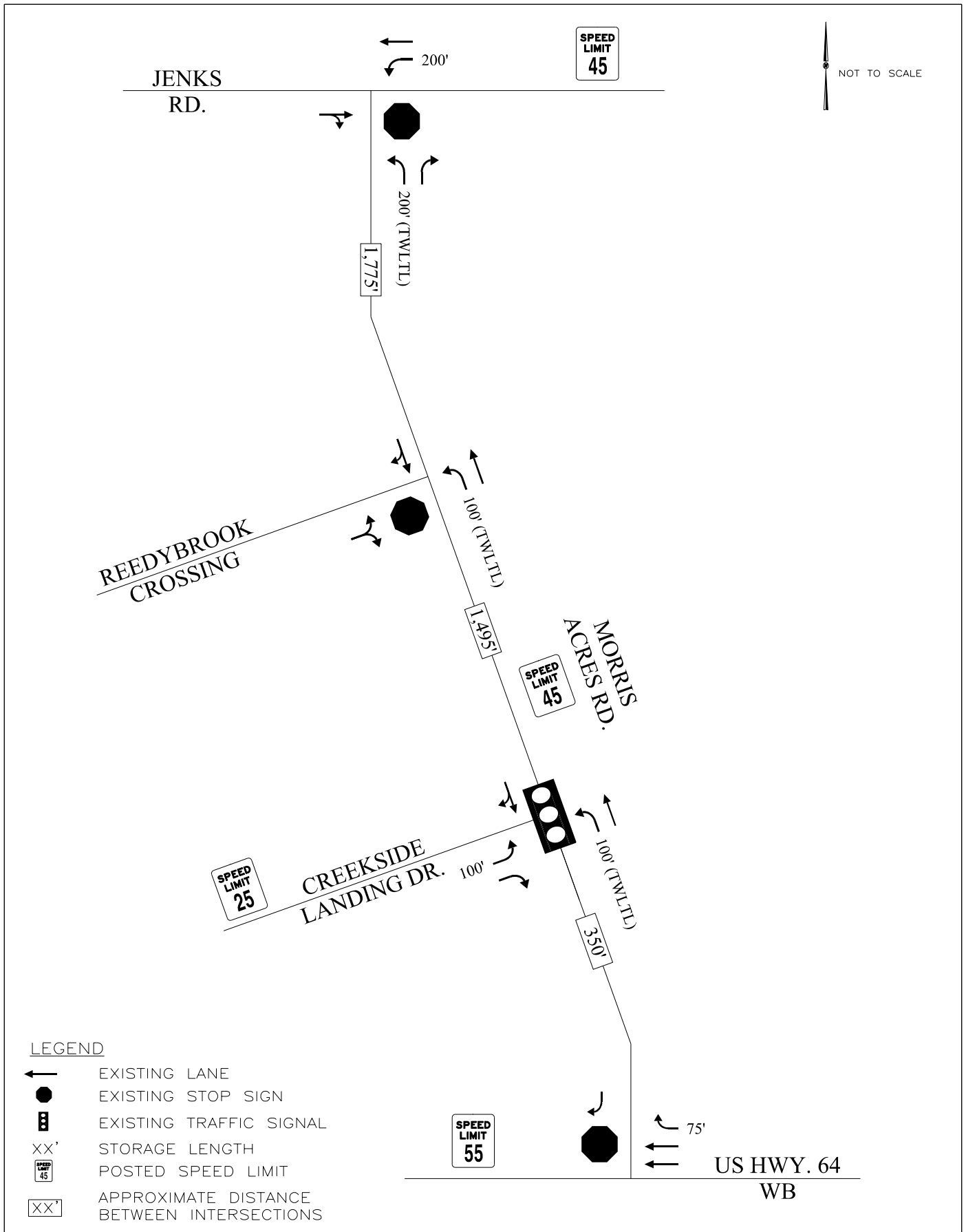
FIGURE
2

PROPOSED SITE PLAN

THE WAYFORTH AT APEX
APEX, NC
TRAFFIC CAPACITY ANALYSIS



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THE WAYFORTH AT APEX
APEX, NC
TRAFFIC CAPACITY ANALYSIS

EXISTING ROADWAY LANEAGE

FIGURE
3

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3.0 Traffic Generation

The traffic generation potential of the proposed development was determined using the traffic generation rates published in Trip Generation (Institute of Transportation Engineers, Tenth Edition, 2017). As currently envisioned the development will consist of approximately 300 apartments. Table 3.0 summarizes the estimated traffic generation for the proposed development.

Land Use Code	Land Use	Intensity		Daily		AM Peak Hour		PM Peak Hour	
				In	Out	In	Out	In	Out
221	Multifamily Housing (Mid-Rise)	300	d.u.	817	817	26	74	77	50

Table 3.0 shows the proposed development has the potential to generate 1,634 new trips during a typical weekday with 100 new trips during the AM peak hour and 127 new trips during the PM peak hour.

Detailed trip generation calculations are included in the Appendix of this report.

4.0 Site Traffic Distribution

The projected site-generated trips were assigned to the surrounding roadway network. The directional distribution and assignment for this development were based on a review of surrounding land uses and traffic patterns in the study area. As the intersection of Morris Acres Road at US 64 Westbound is limited to right-in/right-out access, separate inbound and outbound distributions were developed for the site in conjunction with Town of Apex staff to account for anticipated travel paths.

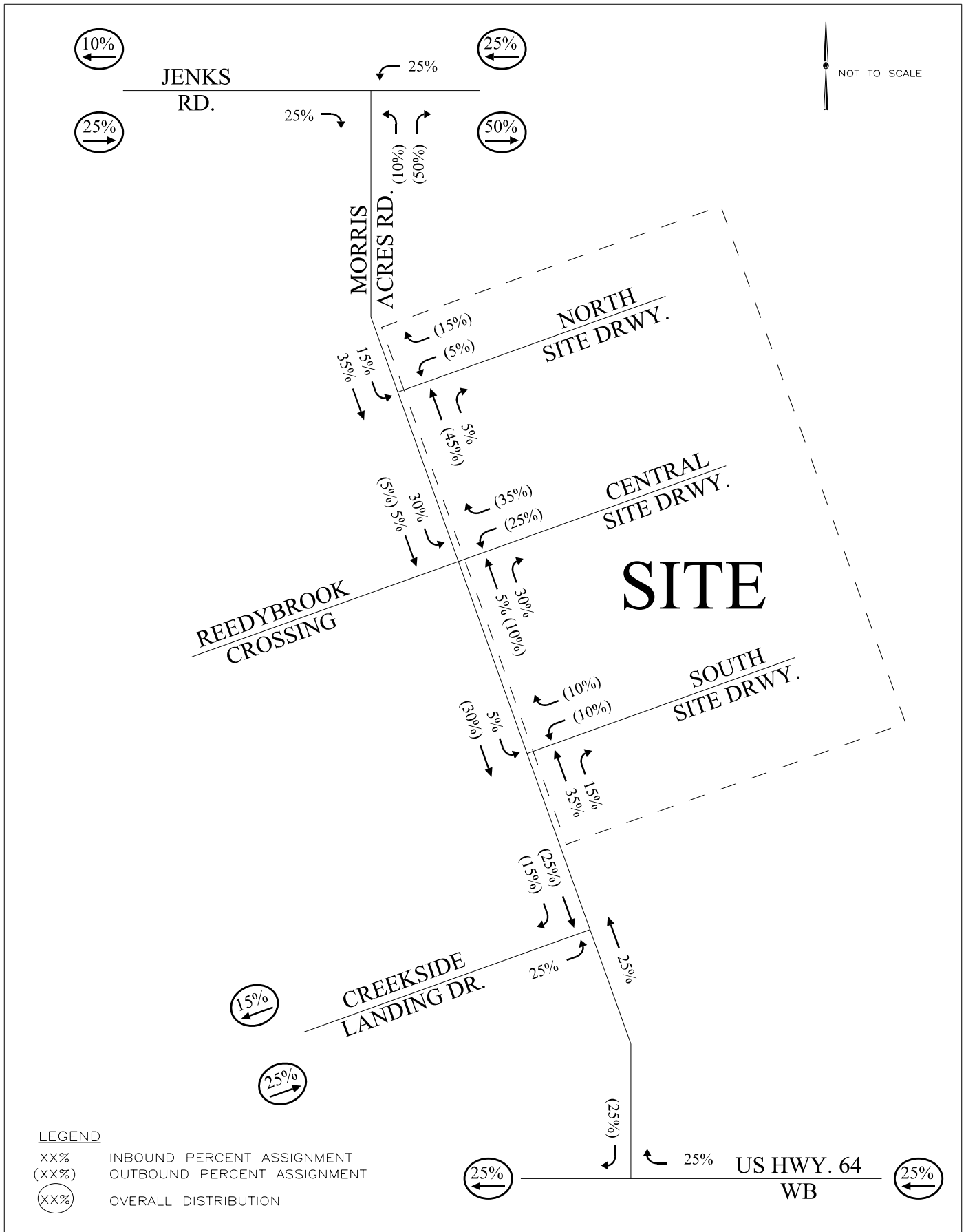
The inbound site traffic distribution used for the site was:

- é 25% from the east on US 64
- é 25% from the east on Jenks Road
- é 25% from the west on Jenks Road
- é 25% from the south on Creekside Landing Drive

The outbound site traffic distribution used for the site was:

- é 50% to the east on Jenks Road
- é 25% to the west on US 64
- é 15% to the south on Creekside Landing Drive
- é 10% to the west on Jenks Road

The site traffic distribution and percent assignment for site are shown on Figure 4.



THE WAYFORTH AT APEX
APEX, NC
TRAFFIC CAPACITY ANALYSIS

SITE TRAFFIC DISTRIBUTION
AND PERCENT ASSIGNMENT

FIGURE
4

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5.0 Projected Traffic Volumes

5.1 Existing Traffic

AM peak hour (7:00 to 9:00 AM) and PM peak hour (4:00 to 6:00 PM) turning movement counts were performed at the following intersections:

¿ Jenks Road at Morris Acres Road	October 23, 2018
¿ Morris Acres Road at Creekside Landing Drive	October 23, 2018
¿ Morris Acres Road at US 64 Westbound	October 23, 2018

The existing AM and PM peak hour traffic volumes are shown on Figures 5 and 6, and the traffic count data are included in the Appendix. No turning movement counts were performed at the intersection of Morris Acres Road at Reedybrook Crossing. However, as the development is approximately 90% occupied (discussed below), existing volumes onto/off of Reedybrook Crossing were assumed to be equal to 90% of the site traffic volume on those movements as indicated in the TIA for that project.

5.2 Historic Growth Traffic

Historic growth traffic is the increase in traffic due to usage increases and non-specific growth throughout the area. An annual growth rate of 3% was applied to the existing volumes up to the year 2022. Background growth calculations are detailed on intersection spreadsheets in the Appendix of this report.

5.3 Approved Development Traffic

Approved development traffic is generated by approved but not yet constructed projects in the vicinity of the proposed project. Based on discussions with the Town of Apex, the Beaver Creek Phase 4 Residential (540 Townes) project was the only development identified for inclusion in the analysis as background traffic.

Per the Beaver Creek Residential Development TIA (Stantec, August 2015), the project proposes the construction of approximately 300 apartments and 50 townhomes along Morris Acres Road (Green Level Church Road) north of US 64 with a build-out year of 2020. As the development was almost entirely built-out when traffic counts were performed, only 10% of site trips from this development were included at off-site intersections as background traffic.

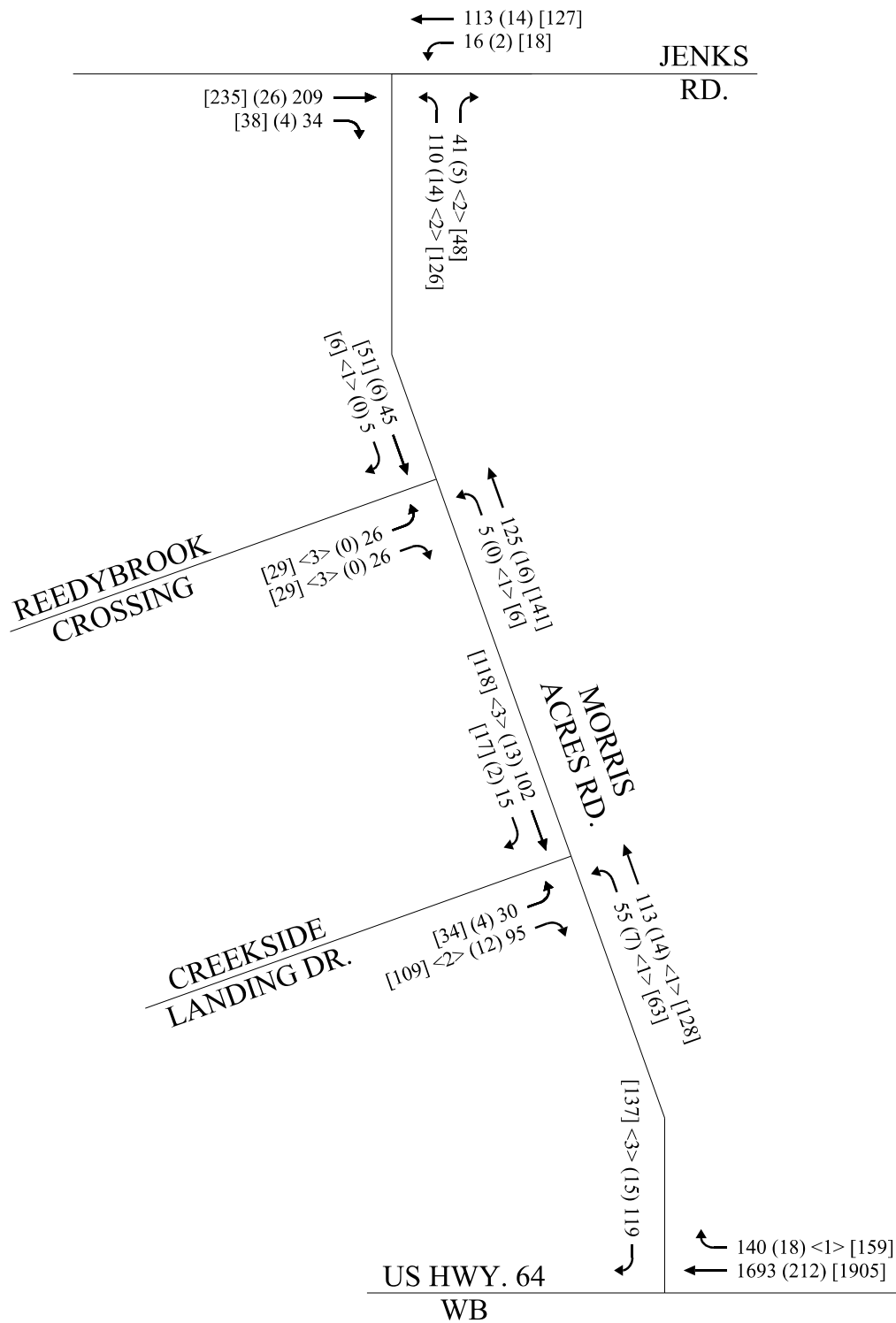
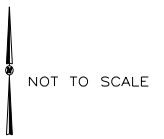
Background traffic volumes consisting of existing, historic growth, and approved development traffic, are shown on Figures 5 and 6 for the AM and PM peak hours, respectively.

5.4 Site Traffic

The projected site traffic was generated and assigned to the adjacent roadway network according to the distribution discussed previously in Section 4.0. The site traffic volumes for the AM and PM peak hours are shown in Figures 7 and 8, respectively.

5.5 Build-Out Traffic

To obtain the projected (2022) build-out traffic volumes, the projected site traffic were added to the projected (2022) background traffic. Traffic volume calculations are detailed in intersection spreadsheets in the Appendix of this report. Figures 7 and 8 show the projected (2022) AM and PM peak hour build-out traffic volumes, respectively.



LEGEND

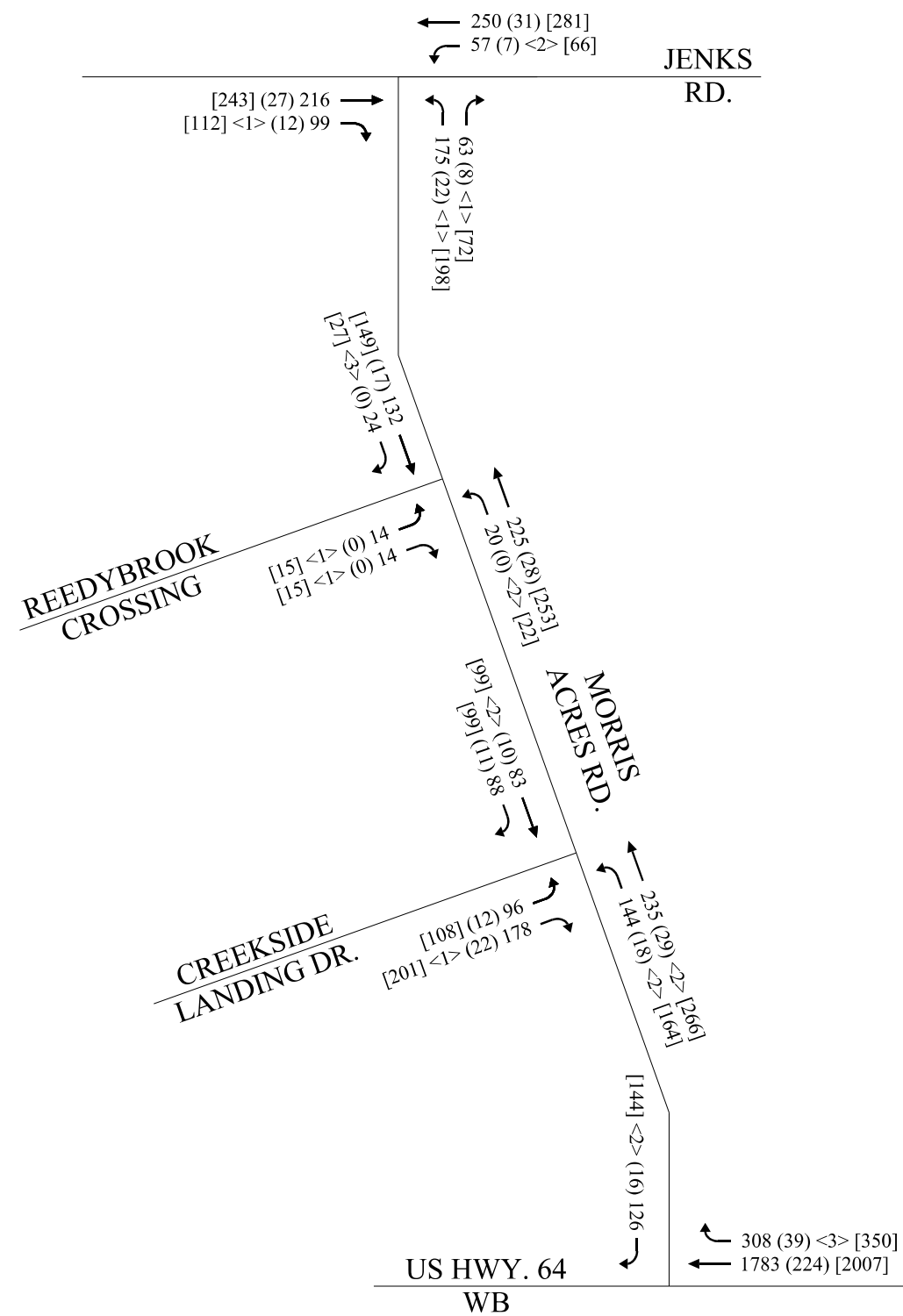
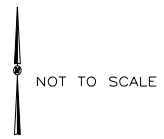
- XX EXISTING TRAFFIC
- (XX) BACKGROUND GROWTH
- <XX> APPROVED DEVELOPMENT TRAFFIC
- [XX] TOTAL BACKGROUND TRAFFIC



THE WAYFORTH AT APEX
APEX, NC
TRAFFIC CAPACITY ANALYSIS

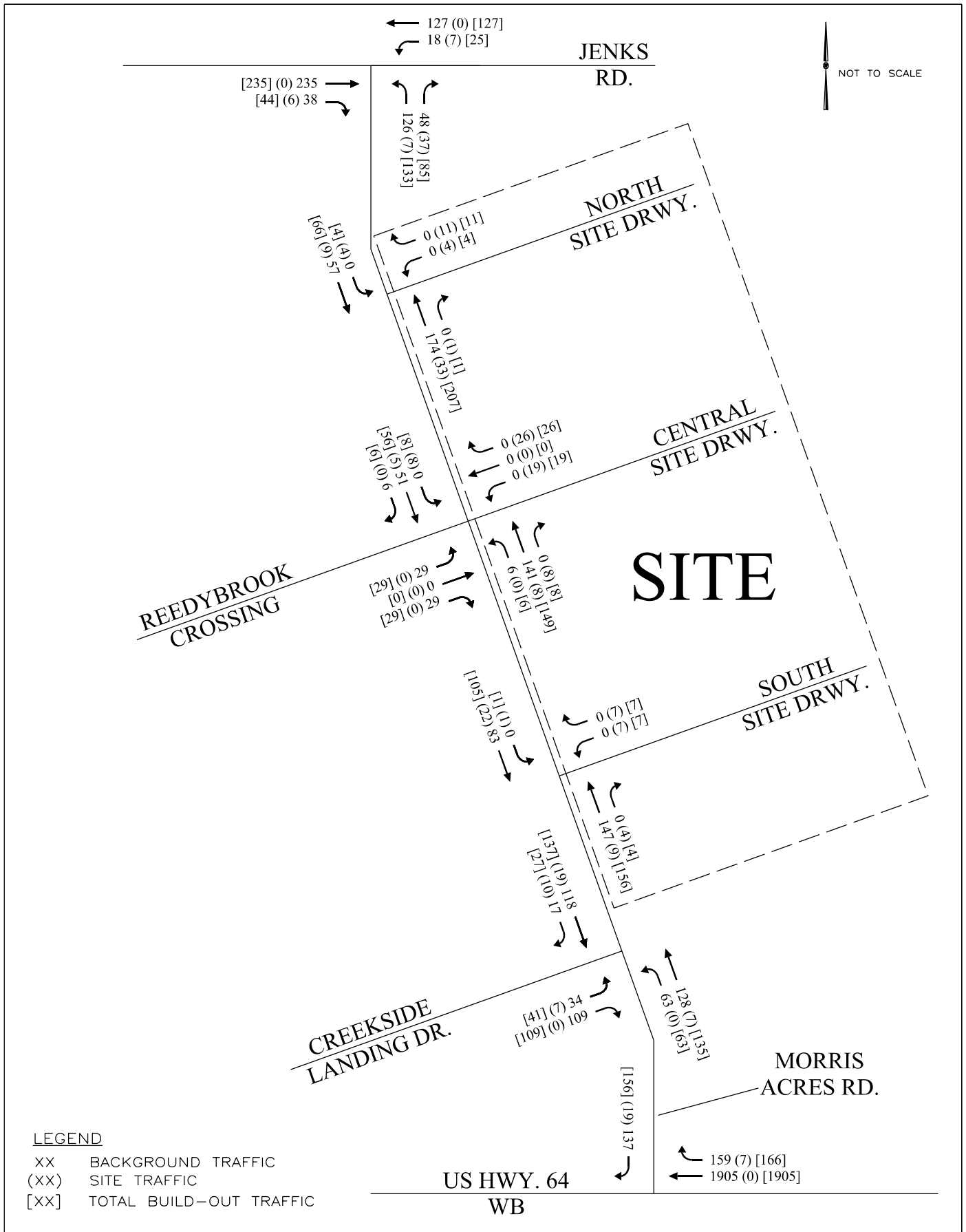
EXISTING AND PROJECTED (2022)
BACKGROUND AM PEAK HOUR
TRAFFIC VOLUMES

FIGURE
5



- LEGEND**
- XX EXISTING TRAFFIC
 - (XX) BACKGROUND GROWTH
 - <XX> APPROVED DEVELOPMENT TRAFFIC
 - [XX] TOTAL BACKGROUND TRAFFIC

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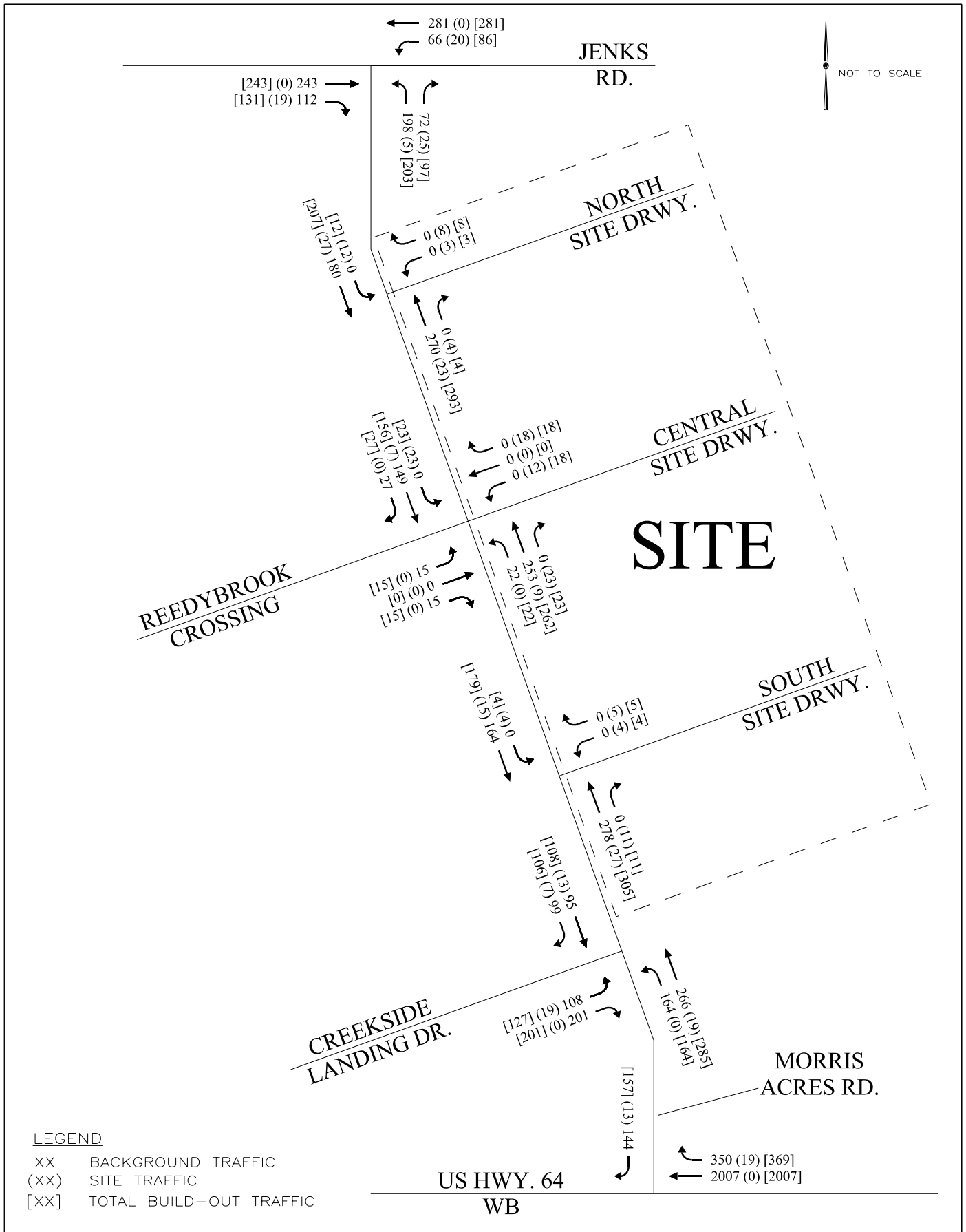


THE WAYFORTH AT APEX
APEX, NC
TRAFFIC CAPACITY ANALYSIS

PROJECTED (2022) BUILD-OUT
AM PEAK HOUR
TRAFFIC VOLUMES

FIGURE
7

THIS DOCUMENT, TOGETHER WITH THE CONCEPTS AND DESIGNS PRESENTED HEREIN, AS AN INSTRUMENT OF SERVICE, IS INTENDED ONLY FOR THE SPECIFIC PURPOSE AND CLIENT FOR WHICH IT WAS PREPARED. REUSE OF AND IMPROPER RELIANCE ON THIS DOCUMENT WITHOUT WRITTEN AUTHORIZATION AND ADAPTATION BY KIMLEY-HORN AND ASSOCIATES, INC. SHALL BE WITHOUT LIABILITY TO KIMLEY-HORN AND ASSOCIATES, INC.



THE WAYFORTH AT APEX
APEX, NC
TRAFFIC CAPACITY ANALYSIS

PROJECTED (2022) BUILD-OUT
PM PEAK HOUR
TRAFFIC VOLUMES

FIGURE
8

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6.0 Capacity Analysis

Capacity analyses (see Appendix) were performed for the AM and PM peak hours for the existing traffic condition and the projected (2022) background and build-out traffic conditions using Synchro Version 9.2 software to determine the operating characteristics of the adjacent road network and the impacts of the proposed project.

Capacity is defined as the maximum number of vehicles that can pass over a particular road segment or through a particular intersection within a set time duration. Capacity is combined with Level-of-Service (LOS) to describe the operating characteristics of a road segment or intersection. LOS is a qualitative measure that describes operational conditions and motorist perceptions within a traffic stream. The Highway Capacity Manual defines six levels of service, LOS A through LOS F, with A representing the shortest average delays and F representing the longest average delays. LOS D is the typically accepted standard for signalized intersections in urbanized areas. For signalized intersections, LOS is defined for the overall intersection operation.

For unsignalized intersections, only the movements that must yield right-of-way experience control delay. Therefore, LOS criteria for the overall intersection is not reported by Synchro Version 9.2 or computable using methodology published in the Highway Capacity Manual. It is typical for stop sign controlled side streets and driveways intersecting major streets to experience long delays during peak hours, while the majority of the traffic moving through the intersection on the major street experiences little or no delay. Table 6.0-A lists the LOS control delay thresholds published in the Highway Capacity Manual for signalized and unsignalized intersections.

Level-of-Service	Signalized Intersections - Control Delay Per Vehicle [sec/veh]	Unsignalized Intersections - Average Control Delay [sec/veh]
A	≦ 10	≦ 10
B	> 10 - 20	> 10 - 15
C	> 20 - 35	> 15 - 25
D	> 35 - 55	> 25 - 35
E	> 55 - 80	> 35 - 50
F	> 80	> 50

Existing peak hour factors (PHF) were used at all existing intersections for all conditions except at new intersections, where a PHF of 0.90 was used. The existing signal plan provided by NCDOT was referenced to obtain signal timings, which were not adjusted as part of this analysis, and right-turns on red were allowed where currently allowed.

Capacity analyses were performed for the existing (2018) traffic condition and the projected (2022) background and build-out traffic conditions for the following intersections:

- é Jenks Road at Morris Acres Road
- é Morris Acres Road at Reedybrook Crossing/Central Site Driveway
- é Morris Acres Road at Creekside Landing Drive
- é Morris Acres Road at US 64 Westbound
- é Morris Acres Road at North Site Driveway
- é Morris Acres Road at South Site Driveway

Table 6.0-B summarizes the LOS and delay (seconds per vehicle) for all of the study intersections for the existing (2018) traffic condition and the projected (2022) background and build-out traffic conditions. All capacity analyses are included in the Appendix and are briefly summarized in the following sub-sections.

Table 6.0-B Level-of-Service Summary		
Condition	AM Peak Hour LOS (Delay)	PM Peak Hour LOS (Delay)
Jenks Road at Morris Acres Road (Unsignalized)		
Existing (2018) Traffic	NB - B (11.3) WBL - A (7.8)	NB - B (14.6) WBL - A (8.1)
Background (2022) Traffic	NB - B (11.8) WBL - A (7.9)	NB - C (16.6) WBL - A (8.2)
Build-out (2022) Traffic	NB - B (11.9) WBL - A (7.9)	NB - C (17.6) WBL - A (8.3)
Morris Acres Road at Reedybrook Crossing/Central Site Driveway (Unsignalized)		
Existing (2018) Traffic	EB - A (9.4) NBL - A (7.3)	EB - B (10.2) NBL - A (7.6)
Background (2022) Traffic	EB - A (9.5) NBL - B (7.3)	EB - B (10.4) NBL - A (7.7)
Build-out (2022) Traffic	EB - B (10.2) WB - B (10.2) NBL - A (7.4) SBL - A (7.6)	EB - B (12.6) WB - B (12.5) NBL - A (7.7) SBL - A (8.0)
Morris Acres Road at Creekside Landing Drive (Signalized)		
Existing (2018) Traffic	A (4.6)	A (6.7)
Background (2022) Traffic	A (4.7)	A (7.1)
Build-out (2022) Traffic	A (5.0)	A (7.8)
US 64 Westbound at Morris Acres Road (Unsignalized)		
Existing (2018) Traffic	SB - D (27.9)	SB - D (28.8)
Background (2022) Traffic	SB - E (41.8)	SB - E (43.6)
Build-out (2022) Traffic	SB - E (49.4)	SB - E (48.8)

Table 6.0-B (cont.) Level-of-Service Summary		
Condition	AM Peak Hour LOS (Delay)	PM Peak Hour LOS (Delay)
Morris Acres Road at North Site Driveway (Unsignalized)		
Build-out (2022) Traffic	WB - A (9.8) SBL - A (7.7)	WB - B (10.6) SBL - A (8.0)
Morris Acres Road at South Site Driveway (Unsignalized)		
Build-out (2022) Traffic	WB - A (9.7) SBL - A (7.6)	WB - B (10.8) SBL - A (8.0)

6.1 Jenks Road at Morris Acres Road

Analyses indicate that the unsignalized intersection of Jenks Road at Morris Acres Road currently operates with short delays on the minor street approach (Morris Acres Road) in both the AM and PM peak hours. The intersection is expected to continue to operate with short delays and queues in the year 2022 with or without the proposed project in place, and no roadway improvements are recommended to accommodate projected site traffic.

Table 6.1 summarizes the operation of the intersection of Jenks Road at Morris Acres Road for the existing (2018) and projected (2022) background and build-out traffic conditions.

Condition	AM Peak Hour LOS (Delay)	PM Peak Hour LOS (Delay)
Existing (2018) Traffic	NB - B (11.3) WBL - A (7.8)	NB - B (14.6) WBL - A (8.1)
Background (2022) Traffic	NB - B (11.8) WBL - A (7.9)	NB - C (16.6) WBL - A (8.2)
Build-out (2022) Traffic	NB - B (11.9) WBL - A (7.9)	NB - C (17.6) WBL - A (8.3)

6.2 Morris Acres Road at Reedybrook Crossing/Central Site Driveway

Analyses indicates that the intersection of Morris Acres Road at Reedybrook Crossing currently operates with short delays on the minor street approach (Reedybrook Crossing) in both the AM and PM peak hours, and the intersection is expected to continue to operate with short delays in the background traffic condition.

The Wayforth at Apex proposes to construct a site driveway aligning with Reedybrook Crossing, providing one ingress lane and one egress lane. Analyses indicate that at project build-out both minor street approaches (Reedybrook Crossing and the Central Site Driveway) are expected to operate with short delays and queues. No roadway improvements are recommended to be performed as part of this development

Table 6.2 summarizes the operation of the intersection of Morris Acres Road at Reedybrook Crossing/Central Site Driveway for the existing (2018) and projected (2022) background and build-out traffic conditions.

Table 6.2 Level-of-Service Morris Acres Road at Reedybrook Crossing/Central Site Driveway (Unsignalized)		
Condition	AM Peak Hour LOS (Delay)	PM Peak Hour LOS (Delay)
Existing (2018) Traffic	EB - A (9.4) NBL - A (7.3)	EB - B (10.2) NBL - A (7.6)
Background (2022) Traffic	EB - A (9.5) NBL - B (7.3)	EB - B (10.4) NBL - A (7.7)
Build-out (2022) Traffic	EB - B (10.2) WB - B (10.2) NBL - A (7.4) SBL - A (7.6)	EB - B (12.6) WB - B (12.5) NBL - A (7.7) SBL - A (8.0)

6.3 Morris Acres Road at Creekside Landing Drive

Analyses indicate that the signalized intersection of Morris Acres Road at Creekside Landing Drive currently operates at LOS A in both the AM and PM peak hours. The intersection is expected to continue to operate at LOS A in the year 2022 with or without the proposed project in place, and no queuing issues are expected at this intersection. No roadway improvements are recommended to be performed at this intersection to accommodate projected site traffic volumes.

Table 6.3 summarizes the operation of the intersection of Morris Acres Road at Creekside Landing Drive for the existing (2018) and projected (2022) background and build-out traffic conditions.

Table 6.3 Level-of-Service Morris Acres Road at Creekside Landing Drive (Signalized)		
Condition	AM Peak Hour LOS (Delay)	PM Peak Hour LOS (Delay)
Existing (2018) Traffic	A (4.6)	A (6.7)
Background (2022) Traffic	A (4.7)	A (7.1)
Build-out (2022) Traffic	A (5.0)	A (7.8)

6.4 Morris Acres Road at US 64 Westbound

Analyses indicate that the unsignalized intersection of Morris Acres Road at US 64 Westbound currently operates with moderate delays on the minor street approach (Morris Acres Road) in both the AM and PM peak hours. The intersection is expected to continue to operate with moderate delays on the minor street approach in the year 2022 with or without the proposed project in place. As only slight increases in queues and delays are expected at this intersection with the addition of site traffic, no roadway improvements are recommended to be performed at this intersection.

Table 6.4 summarizes the operation of the intersection of Morris Acres Road at US 64 Westbound for the existing (2018) and projected (2022) background and build-out traffic conditions.

Table 6.4 Level-of-Service Morris Acres Road at US 64 Westbound (Unsignalized)		
Condition	AM Peak Hour LOS (Delay)	PM Peak Hour LOS (Delay)
Existing (2018) Traffic	SB - D (27.9)	SB - D (28.8)
Background (2022) Traffic	SB - E (41.8)	SB - E (43.6)
Build-out (2022) Traffic	SB - E (49.4)	SB - E (48.8)

6.5 Morris Acres Road at North Site Driveway

A full-movement site driveway is proposed to be constructed on Morris Acres Road approximately 750 feet north of Reedybrook Crossing. Analyses indicate that the intersection is expected to operate with short delays and queues on the minor street approach (North Site Driveway) at project build-out. No roadway improvements are recommended to be performed as part of this development

Table 6.5 summarizes the operation of the intersection of Morris Acres Road at North Site Driveway for the projected (2022) build-out traffic condition.

Table 6.5 Level-of-Service Morris Acres Road at North Site Driveway (Unsignalized)		
Condition	AM Peak Hour LOS (Delay)	PM Peak Hour LOS (Delay)
Build-out (2022) Traffic	WB - A (9.8) SBL - A (7.7)	WB - B (10.6) SBL - A (8.0)

6.6 Morris Acres Road at South Site Driveway

A full-movement site driveway is proposed to be constructed on Morris Acres Road approximately 500 feet south of Reedybrook Crossing. Analyses indicate that the intersection is expected to operate with short delays and queues on the minor street approach (South Site Driveway) at project build-out. No roadway improvements are recommended to be performed as part of this development

Table 6.6 summarizes the operation of the intersection of Morris Acres Road at South Site Driveway for the projected (2022) build-out traffic condition.

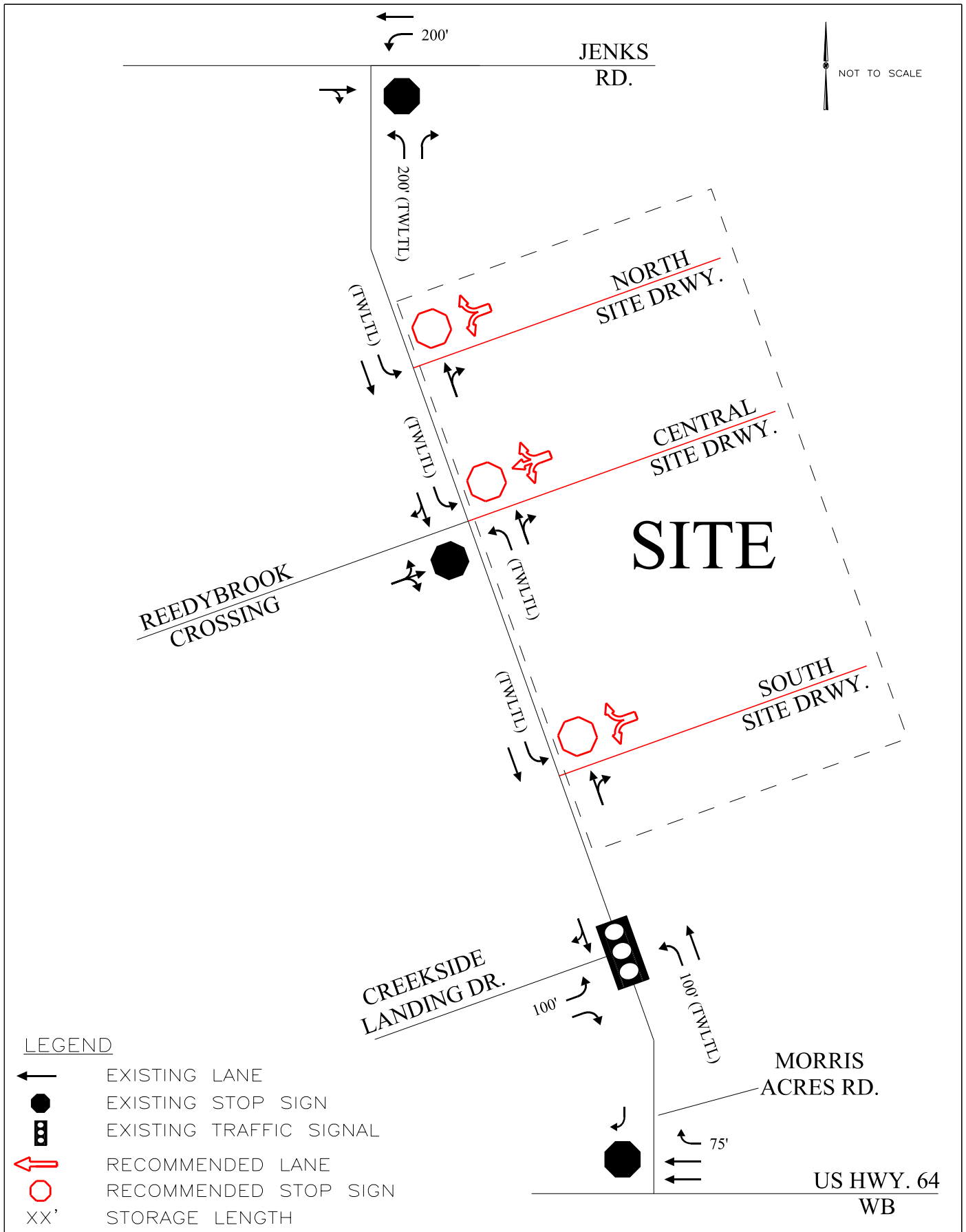
Table 6.6 Level-of-Service Morris Acres Road at South Site Driveway (Unsignalized)		
Condition	AM Peak Hour LOS (Delay)	PM Peak Hour LOS (Delay)
Build-out (2022) Traffic	WB - A (9.7) SBL - A (7.6)	WB - B (10.8) SBL - A (8.0)

7.0 Recommendations

With the exception of southbound Morris Acres Road at US 64 Westbound, analyses indicate that all of the study intersections are expected to operate at an acceptable LOS at project build-out with only minor increases in delays and queues associated with the addition of site traffic. The intersection of US 64 Westbound at Morris Acres road is expected to operate with moderate delays on Morris Acres Road in the year 2022 with or without the proposed project in place.

No roadway improvements are recommended to be performed to accommodate projected site traffic volumes.

The build-out roadway laneage is shown on Figure 9.



LEGEND

- ← EXISTING LANE
- EXISTING STOP SIGN
- ⬛ EXISTING TRAFFIC SIGNAL
- ➔ RECOMMENDED LANE
- RECOMMENDED STOP SIGN
- XX' STORAGE LENGTH



THE WAYFORTH AT APEX
APEX, NC
TRAFFIC CAPACITY ANALYSIS

BUILD-OUT
ROADWAY LANEAGE

FIGURE
9

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Appendix

Appendix A:
Assumptions Memorandum

Preliminary Assumptions
The Wayforth at Apex Apartments - Traffic Impact Analysis
Apex, North Carolina

KHA will perform analyses for The Wayforth at Apex development, a proposed apartments project located on the east side of Morris Acres Road (formerly Green Level Church Road) between Jenks Road and Creekside Landing in Apex, North Carolina. The following assumptions will be used in the analysis of the site:

The study area will consist of the following intersections:

- é Jenks Road at Morris Acres Road
- é Morris Acres Road at Creekside Landing Drive
- é US 64 at Morris Acres Road
- é Morris Acres Road at Reedybrook Crossing/Central Site Driveway
- é Morris Acres Road at North Site Driveway
- é Morris Acres Road at South Site Driveway

The study scenarios will consist of:

- ¿ Existing (2018)
- ¿ Background (2022)
- ¿ Build-out (2022)

Based on discussions with the Town of Apex and the North Carolina Department of Transportation (NCDOT), the 540 Townes development located on the west side of Morris Acres Road (which is partially built-out and occupied) was identified for inclusion in this analysis as background traffic. Traffic for this development will be obtained from the Beaver Creek Residential Development TIA (Stantec, July 2015).

In addition to the approved development traffic, an annual growth rate of 3% will also be applied to the existing traffic volumes up to the year 2022.

Separate entering and existing directional distributions will be used for the site based on a review of surrounding land uses and the existing roadway network. The following overall distribution will be used for entering traffic:

- ¿ 25% from the east on US 64
- ¿ 25% from the east on Jenks Road
- ¿ 25% from the west on Jenks Road
- ¿ 25% from the south on Creekside Landing Drive

The following overall distribution will be used for entering traffic:

- ¿ 50% to the east on Jenks Road
- ¿ 25% to the west on US 64
- ¿ 15% to the south on Creekside Landing Drive
- ¿ 10% to the west on Jenks Road

The property is currently occupied by a few single-family homes, and as currently envisioned the development will consist of approximately 305 apartments. Trips will be generated using ITE Trip Generation 10th Edition rates. See attached trip generation table.

The Wayforth at Apex
Table 1 - Trip Generation

Land Use	Intensity	Daily			AM Peak Hour			PM Peak Hour		
		Total	In	Out	Total	In	Out	Total	In	Out
221 Multifamily Housing (Mid-Rise)	305 d.u.	1,662	831	831	102	27	75	129	79	50

The Wayforth at Apex - Site Driveway Locations



Appendix B: Trip Generation

The Wayforth at Apex
Table 1 - Trip Generation

Land Use	Intensity	Daily			AM Peak Hour			PM Peak Hour		
		Total	In	Out	Total	In	Out	Total	In	Out
221 Multifamily Housing (Mid-Rise)	300 d.u.	1,634	817	817	100	26	74	127	77	50

Appendix C:
Traffic Count Data

Morris Acres Road/and Jenks Road AM and PM Peak Hour Traffic Count
 Count Performed: Tuesday, October 23, 2018

Start Time	0			Jenks Road			Morris Acres Road			Jenks Road			Intersection Volume
	Southbound			Westbound			Northbound			Eastbound			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
7:00	0	0	0	2	15	0	28	0	13	0	53	9	120
7:15	0	0	0	2	21	0	26	0	13	0	38	9	109
7:30	0	0	0	2	37	0	24	0	13	0	54	9	139
7:45	0	0	0	4	31	0	37	0	13	0	55	3	143
8:00	0	0	0	4	23	0	29	0	9	0	54	9	128
8:15	0	0	0	6	22	0	20	0	6	0	46	13	113
8:30	0	0	0	3	27	0	18	0	15	0	45	11	119
8:45	0	0	0	4	28	0	15	0	17	0	53	12	129

16:00	0	0	0	11	39	0	36	0	16	0	47	24	173
16:15	0	0	0	16	47	0	38	0	12	0	39	24	176
16:30	0	0	0	9	45	0	48	0	16	0	38	14	170
16:45	0	0	0	11	59	0	35	0	17	0	41	21	184
17:00	0	0	0	10	65	0	41	0	15	0	47	23	201
17:15	0	0	0	15	52	0	44	0	20	0	45	31	207
17:30	0	0	0	15	67	0	43	0	11	0	63	28	227
17:45	0	0	0	17	66	0	47	0	17	0	61	17	225

Peak Hour	SBL	SBT	SBR	WBL	WBT	WBR	NBL	NBT	NBR	EBL	EBT	EBR	Volume
7:00 - 8:00	0	0	0	10	104	0	115	0	52	0	200	30	511
7:15 - 8:15	0	0	0	12	112	0	116	0	48	0	201	30	519
7:30 - 8:30	0	0	0	16	113	0	110	0	41	0	209	34	523
7:45 - 8:45	0	0	0	17	103	0	104	0	43	0	200	36	503
8:00 - 9:00	0	0	0	17	100	0	82	0	47	0	198	45	489

Peak Hour	SBL	SBT	SBR	WBL	WBT	WBR	NBL	NBT	NBR	EBL	EBT	EBR	Volume
16:00 - 17:00	0	0	0	47	190	0	157	0	61	0	165	83	703
16:15 - 17:15	0	0	0	46	216	0	162	0	60	0	165	82	731
16:30 - 17:30	0	0	0	45	221	0	168	0	68	0	171	89	762
16:45 - 17:45	0	0	0	51	243	0	163	0	63	0	196	103	819
17:00 - 18:00	0	0	0	57	250	0	175	0	63	0	216	99	860

Peak-Hour Traffic Volumes													
Peak Hour	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	Volume
7:30 - 8:30	110	0	41	0	0	0	0	209	34	16	113	0	523
17:00 - 18:00	175	0	63	0	0	0	0	216	99	57	250	0	860

Peak-Hour Factor by Movement													
Peak Hour	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	PHF
7:30 - 8:30	0.743	-	0.788	-	-	-	-	0.950	0.654	0.667	0.764	-	0.914
17:00 - 18:00	0.931	-	0.788	-	-	-	0.250	0.857	0.798	0.838	0.933	-	0.947

Peak-Hour Factor by Approach					
Peak Hour	NB	SB	EB	WB	PHF
7:30 - 8:30	0.76	-	0.96	0.83	0.91
17:00 - 18:00	0.93	-	0.87	0.93	0.95

Heavy Vehicle Percentage by Movement													
Peak Hour	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	%HV
7:30 - 8:30	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
17:00 - 18:00	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Heavy Vehicle Percentage by Approach					
Peak Hour	NB	SB	EB	WB	%HV
7:30 - 8:30	0%	0%	0%	0%	0%
17:00 - 18:00	0%	0%	0%	0%	0%

Morris Acres Road and Creekside Landing Drive/ AM and PM Peak Hour Traffic Count
 Count Performed: Tuesday, October 23, 2018

Start Time	Morris Acres Road			0			Morris Acres Road			Creekside Landing Drive			Intersection Volume
	Southbound			Westbound			Northbound			Eastbound			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
7:00	0	19	5	0	0	0	11	25	0	3	0	20	83
7:15	0	25	8	0	0	0	10	26	0	4	0	28	101
7:30	0	40	3	0	0	0	10	27	0	5	0	21	106
7:45	0	17	1	0	0	0	19	28	0	15	0	23	103
8:00	0	20	3	0	0	0	16	32	0	6	0	23	100
8:15	0	31	6	0	0	0	7	18	0	2	0	31	95
8:30	0	14	8	0	0	0	14	26	0	5	0	27	94
8:45	0	18	9	0	0	0	21	21	0	8	0	24	101

16:00	0	19	20	0	0	0	35	27	0	32	0	35	168
16:15	0	26	19	0	0	0	41	42	0	21	0	42	191
16:30	0	14	12	0	0	0	35	59	0	22	0	44	186
16:45	0	17	19	0	0	0	42	44	0	19	0	43	184
17:00	0	19	16	0	0	0	37	55	0	20	0	50	197
17:15	0	29	26	0	0	0	29	59	0	31	0	43	217
17:30	0	20	23	0	0	0	39	47	0	15	0	39	183
17:45	0	15	23	0	0	0	39	74	0	30	0	46	227

Peak Hour	SBL	SBT	SBR	WBL	WBT	WBR	NBL	NBT	NBR	EBL	EBT	EBR	Volume
7:00 - 8:00	0	101	17	0	0	0	50	106	0	27	0	92	393
7:15 - 8:15	0	102	15	0	0	0	55	113	0	30	0	95	410
7:30 - 8:30	0	108	13	0	0	0	52	105	0	28	0	98	404
7:45 - 8:45	0	82	18	0	0	0	56	104	0	28	0	104	392
8:00 - 9:00	0	83	26	0	0	0	58	97	0	21	0	105	390

Peak Hour	SBL	SBT	SBR	WBL	WBT	WBR	NBL	NBT	NBR	EBL	EBT	EBR	Volume
16:00 - 17:00	0	76	70	0	0	0	153	172	0	94	0	164	729
16:15 - 17:15	0	76	66	0	0	0	155	200	0	82	0	179	758
16:30 - 17:30	0	79	73	0	0	0	143	217	0	92	0	180	784
16:45 - 17:45	0	85	84	0	0	0	147	205	0	85	0	175	781
17:00 - 18:00	0	83	88	0	0	0	144	235	0	96	0	178	824

Peak-Hour Traffic Volumes													
Peak Hour	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	Volume
7:15 - 8:15	55	113	0	0	102	15	30	0	95	0	0	0	410
17:00 - 18:00	144	235	0	0	83	88	96	0	178	0	0	0	824

Peak-Hour Factor by Movement													
Peak Hour	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	PHF
7:15 - 8:15	0.724	0.883	-	-	0.638	0.469	0.500	-	0.848	-	-	-	0.967
17:00 - 18:00	0.923	0.794	-	-	0.716	0.846	0.613	-	0.890	-	-	-	0.907

Peak-Hour Factor by Approach					
Peak Hour	NB	SB	EB	WB	PHF
7:15 - 8:15	0.88	0.68	0.82	-	0.97
17:00 - 18:00	0.84	0.78	0.90	-	0.91

Heavy Vehicle Percentage by Movement													
Peak Hour	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	%HV
7:15 - 8:15	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
17:00 - 18:00	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Heavy Vehicle Percentage by Approach					
Peak Hour	NB	SB	EB	WB	%HV
7:15 - 8:15	0%	0%	0%	0%	0%
17:00 - 18:00	0%	0%	0%	0%	0%

/Morris Acres Road and /US 64 AM and PM Peak Hour Traffic Count
 Count Performed: Tuesday, October 23, 2018

Start Time	Morris Acres Road			US 64			0			0			Intersection Volume
	Southbound			Westbound			Northbound			Eastbound			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
7:00	0	0	19	0	300	31	0	0	0	0	0	0	350
7:15	0	0	34	0	320	34	0	0	0	0	0	0	388
7:30	0	0	35	0	399	37	0	0	0	0	0	0	471
7:45	0	0	26	0	450	43	0	0	0	0	0	0	519
8:00	0	0	26	0	428	32	0	0	0	0	0	0	486
8:15	0	0	32	0	416	28	0	0	0	0	0	0	476
8:30	0	0	23	0	370	40	0	0	0	0	0	0	433
8:45	0	0	24	0	372	41	0	0	0	0	0	0	437

16:00	0	0	33	0	394	55	0	0	0	0	0	0	482
16:15	0	0	35	0	417	61	0	0	0	0	0	0	513
16:30	0	0	37	0	415	80	0	0	0	0	0	0	532
16:45	0	0	28	0	416	78	0	0	0	0	0	0	522
17:00	0	0	32	0	456	76	0	0	0	0	0	0	564
17:15	0	0	29	0	459	71	0	0	0	0	0	0	559
17:30	0	0	34	0	450	74	0	0	0	0	0	0	558
17:45	0	0	31	0	418	87	0	0	0	0	0	0	536

Peak Hour	SBL	SBT	SBR	WBL	WBT	WBR	NBL	NBT	NBR	EBL	EBT	EBR	Volume
7:00 - 8:00	0	0	114	0	1,469	145	0	0	0	0	0	0	1,728
7:15 - 8:15	0	0	121	0	1,597	146	0	0	0	0	0	0	1,864
7:30 - 8:30	0	0	119	0	1,693	140	0	0	0	0	0	0	1,952
7:45 - 8:45	0	0	107	0	1,664	143	0	0	0	0	0	0	1,914
8:00 - 9:00	0	0	105	0	1,586	141	0	0	0	0	0	0	1,832

Peak Hour	SBL	SBT	SBR	WBL	WBT	WBR	NBL	NBT	NBR	EBL	EBT	EBR	Volume
16:00 - 17:00	0	0	133	0	1,642	274	0	0	0	0	0	0	2,049
16:15 - 17:15	0	0	132	0	1,704	295	0	0	0	0	0	0	2,131
16:30 - 17:30	0	0	126	0	1,746	305	0	0	0	0	0	0	2,177
16:45 - 17:45	0	0	123	0	1,781	299	0	0	0	0	0	0	2,203
17:00 - 18:00	0	0	126	0	1,783	308	0	0	0	0	0	0	2,217

Peak-Hour Traffic Volumes													
Peak Hour	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	Volume
7:30 - 8:30	0	0	0	0	0	119	0	0	0	0	1,693	140	1,952
17:00 - 18:00	0	0	0	0	0	126	0	0	0	0	1,783	308	2,217

Peak-Hour Factor by Movement													
Peak Hour	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	PHF
7:30 - 8:30	-	-	-	-	-	0.850	-	-	-	-	0.941	0.814	0.940
17:00 - 18:00	-	-	-	-	-	0.926	-	-	-	-	0.971	0.885	0.983

Peak-Hour Factor by Approach					
Peak Hour	NB	SB	EB	WB	PHF
7:30 - 8:30	-	0.85	-	0.93	0.94
17:00 - 18:00	-	0.93	-	0.98	0.98

Heavy Vehicle Percentage by Movement													
Peak Hour	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	%HV
7:30 - 8:30	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
17:00 - 18:00	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Heavy Vehicle Percentage by Approach					
Peak Hour	NB	SB	EB	WB	%HV
7:30 - 8:30	0%	0%	0%	0%	0%
17:00 - 18:00	0%	0%	0%	0%	0%

Appendix D:
Approved Development Data

Beaver Creek Residential Development Final Traffic Impact Analysis

Green Level Church Road and US 64
Apex, NC



Prepared for:
RST Development, LLC
6110 Executive Blvd, Suite 620
Rockville, Maryland 20852

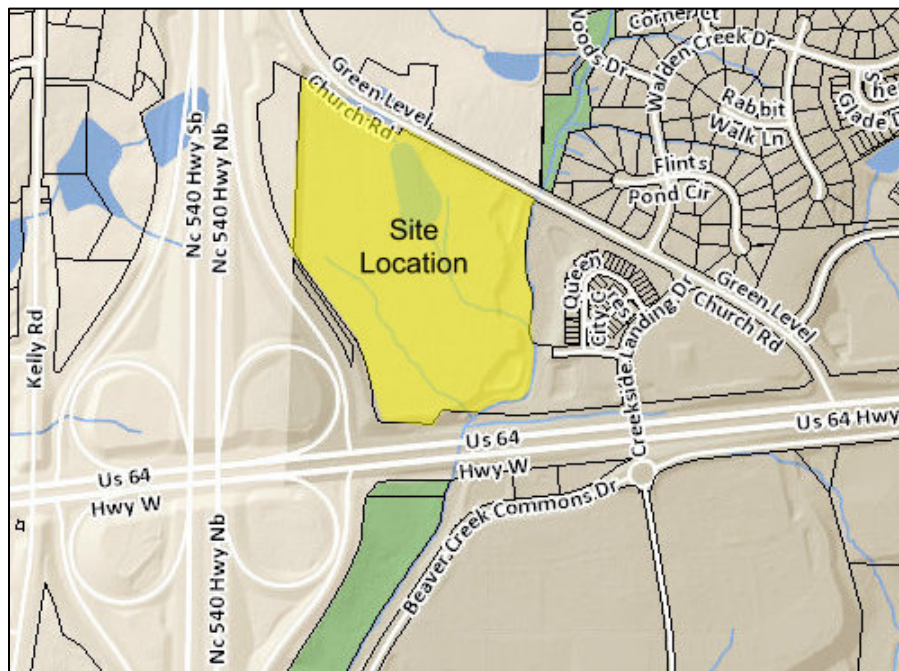
Prepared by:
Stantec Consulting Services Inc.
801 Jones Franklin Road
Suite 300
Raleigh, NC 27606

July 30, 2015
Revised August 28, 2015

1.0 INTRODUCTION

The proposed Beaver Creek Residential Development is located between US 64 and Green Level Church Road, just east of NC 540, in Apex, NC, as illustrated in Figure 1.

Figure 1: Proposed Site Location



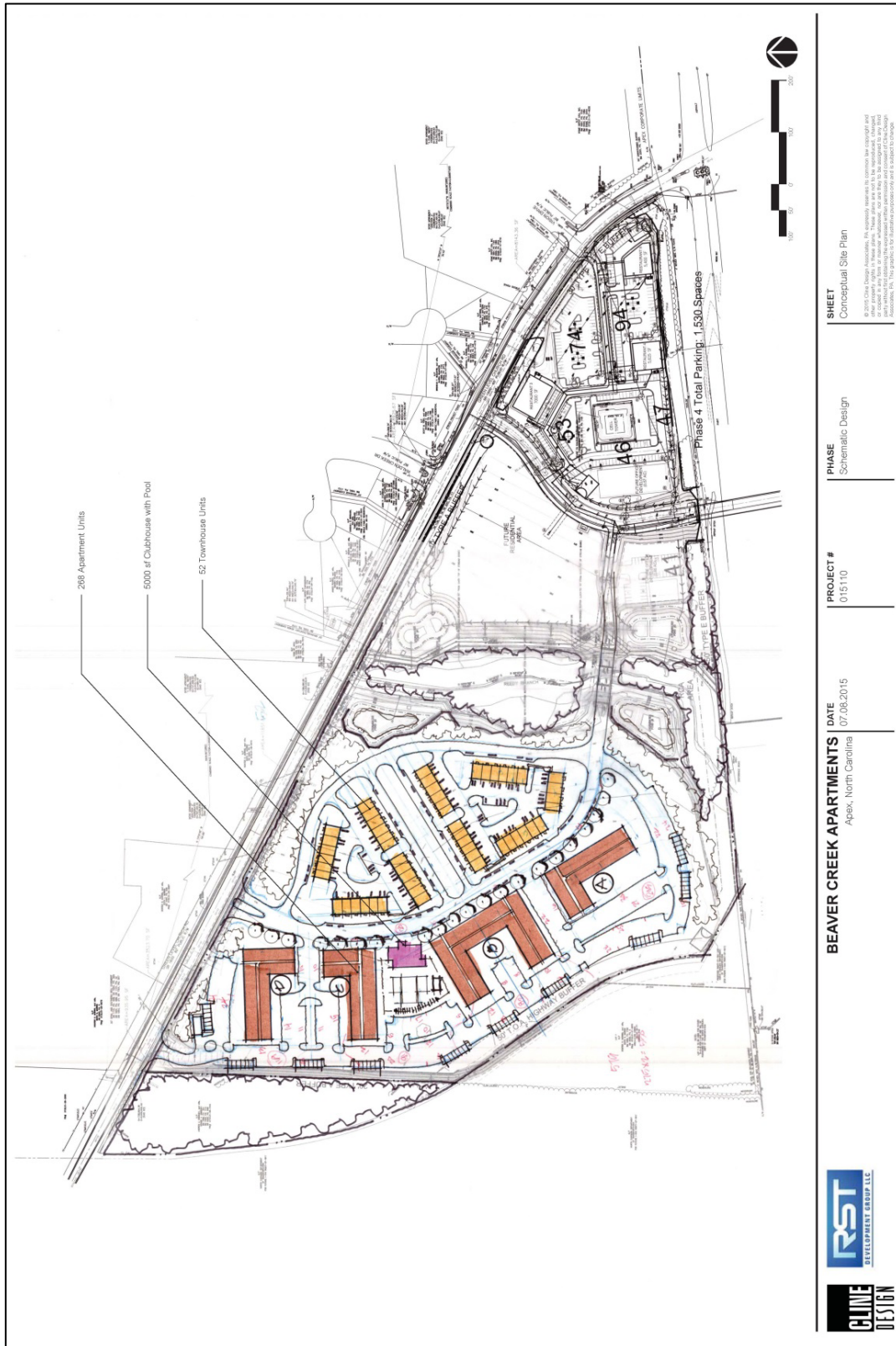
The proposed 27.5 acre site is planned to have up to 300 apartments and 50 townhomes. The proposed site is anticipated to be built-out by the year 2020. A conceptual sketch illustrating the development property and the access locations used in this study is shown on the site plan in Figure 2.

The purpose of this report is to evaluate the proposed development in terms of projected traffic conditions, evaluate the ability of the adjacent roadways to accommodate the additional traffic volumes, and to recommend transportation improvements needed to mitigate congestion that may result from the additional site traffic. This report presents trip generation, trip distribution, traffic analyses, and recommendations for transportation improvements needed to meet anticipated traffic demands. This report examines the following scenarios for both the AM and PM peak hours:

- 2015 Existing
- 2020 No-Build
- 2020 Build

BEAVER CREEK RESIDENTIAL DEVELOPMENT FINAL TRAFFIC IMPACT ANALYSIS

Figure 2: Site Plan



4.0 TRAFFIC GENERATION

The proposed Beaver Creek Residential Development will consist of up to 300 Apartments and 50 Condominiums. Table 2 below shows the number of anticipated trips entering and exiting the site during a typical week day and during the AM and PM peak hours.

Table 2: ITE Trip Generation Table

ITE Trip Generation Beaver Creek Residential Development ITE Trip Generation										
Land Use	ITE Site Code	Size		Daily	AM Peak			PM Peak		
				Total	Total	Enter	Exit	Total	Enter	Exit
Apartment	220	300	units	1942	151	30	121	183	119	64
Residential Condominium/Townhouse	230	50	units	352	30	5	25	34	23	11
Total New Trips				2293	181	35	146	217	142	75

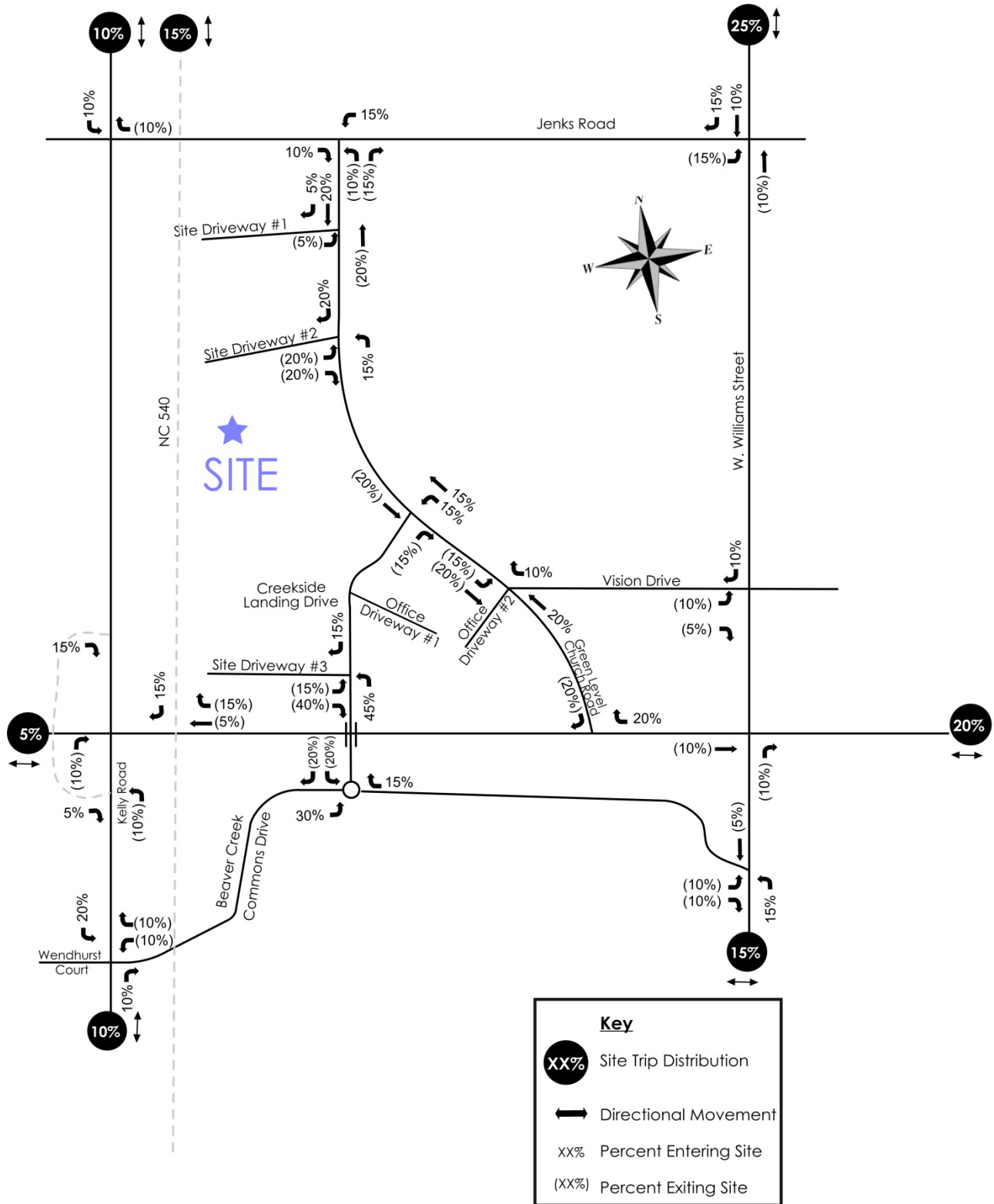
4.1 SITE TRIP DISTRIBUTION

In order to accurately determine the effect of the proposed development on the surrounding roadway network, an estimate of the expected distribution of traffic entering and exiting the site is needed. The following percentages were used in both the AM and PM peak hours.

- 5% to/from the west on US 64
- 20% to/from the east on US 64
- 25% to/from the north on W. Williams Street
- 15% to/from the south on W. Williams Street
- 10% to/from the north on Kelly Road
- 10% to/from the south on Kelly Road
- 15% to/from the north on NC 540

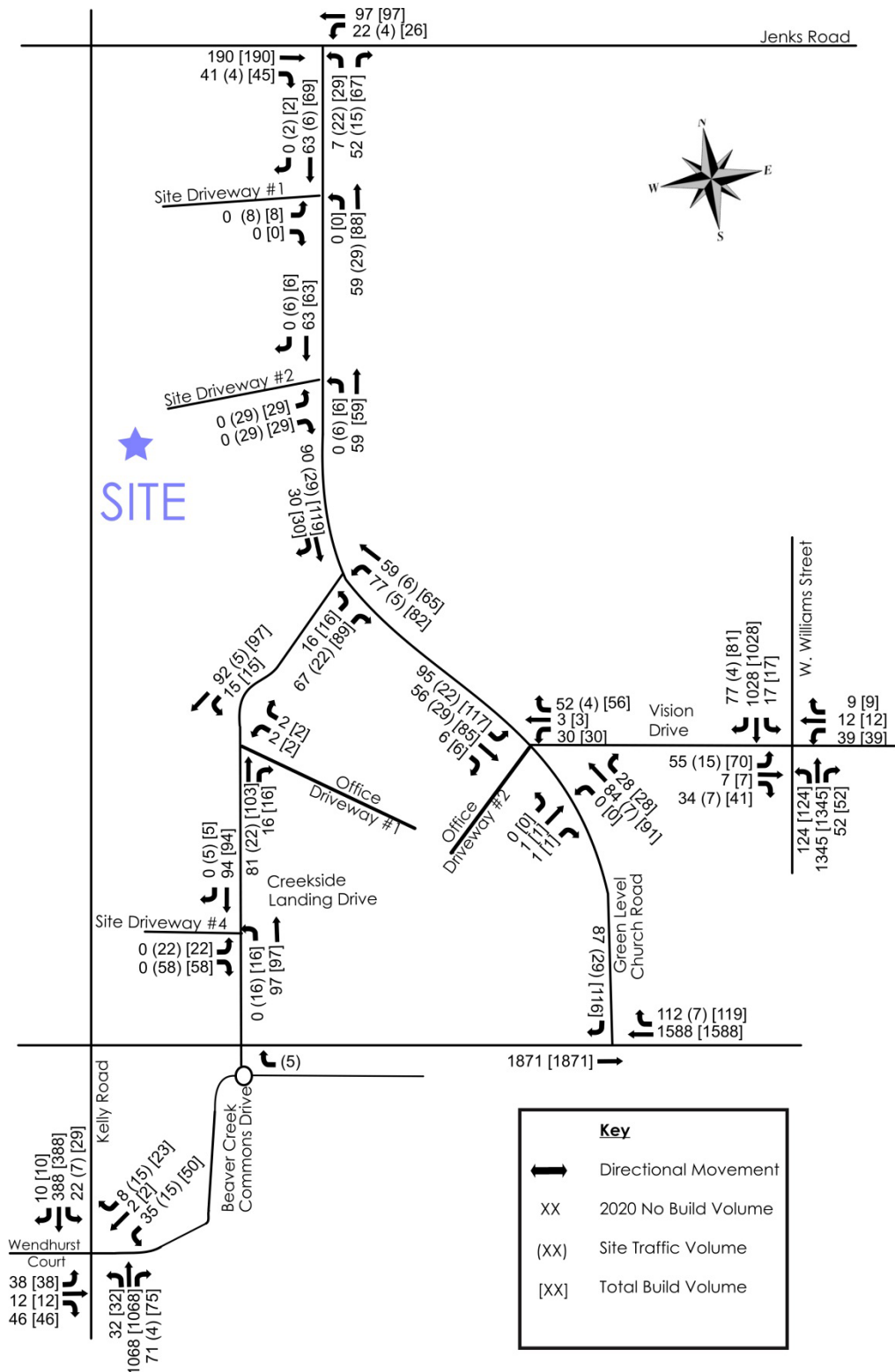
These percentages were developed using a combination of input from the Town of Apex, existing traffic volume counts, historic AADTs provided by NCDOT, and engineering judgment. Figure 8 shows the distributions described above as well as the turning movement percentages at each intersection.

Figure 8: Site Trip Distribution



BEAVER CREEK RESIDENTIAL DEVELOPMENT FINAL TRAFFIC IMPACT ANALYSIS

Figure 9: Future (2020) AM Build Out Traffic Volumes



BEAVER CREEK RESIDENTIAL DEVELOPMENT FINAL TRAFFIC IMPACT ANALYSIS

Figure 10: Future (2020) PM Build Out Traffic Volumes

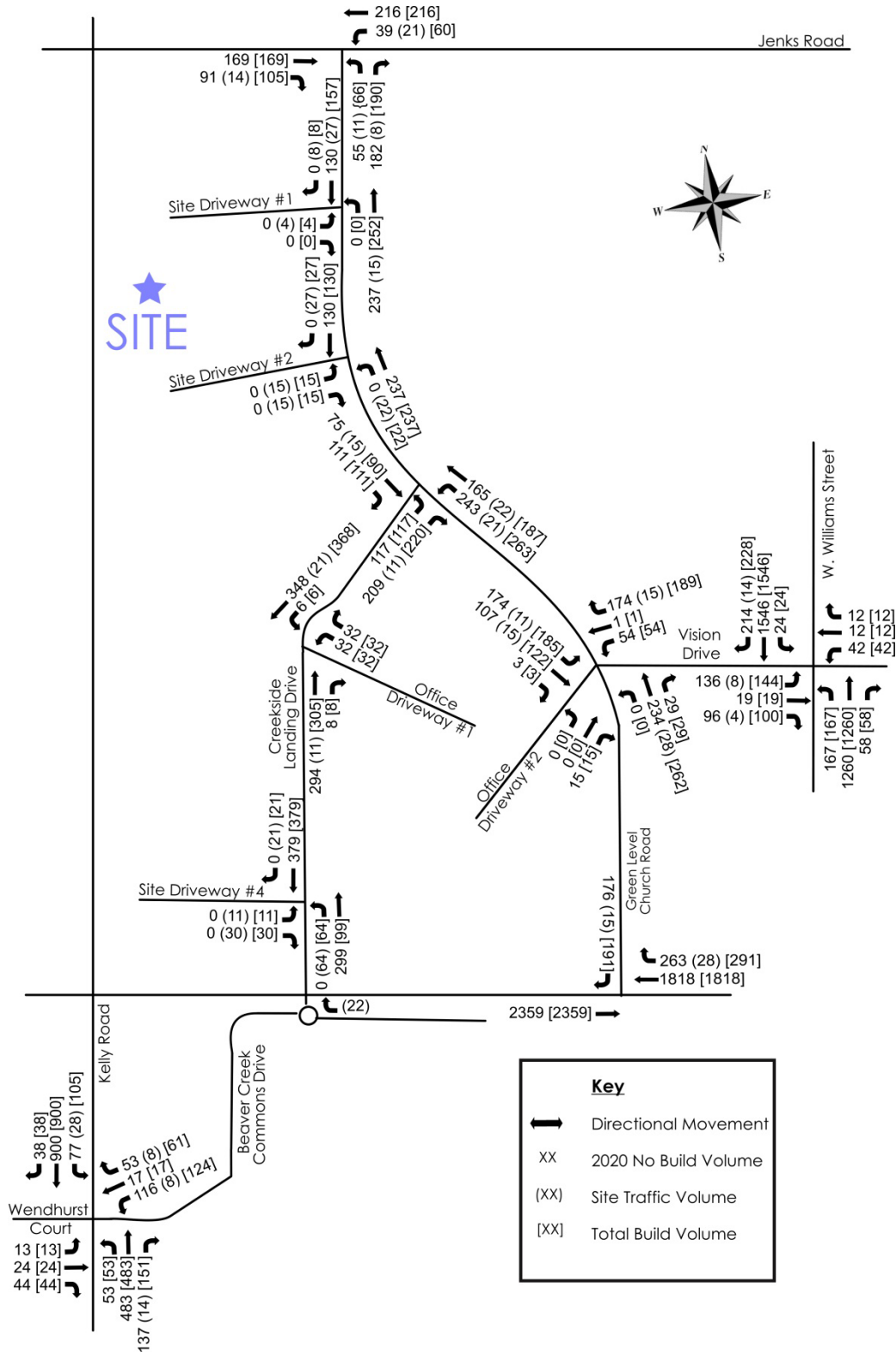
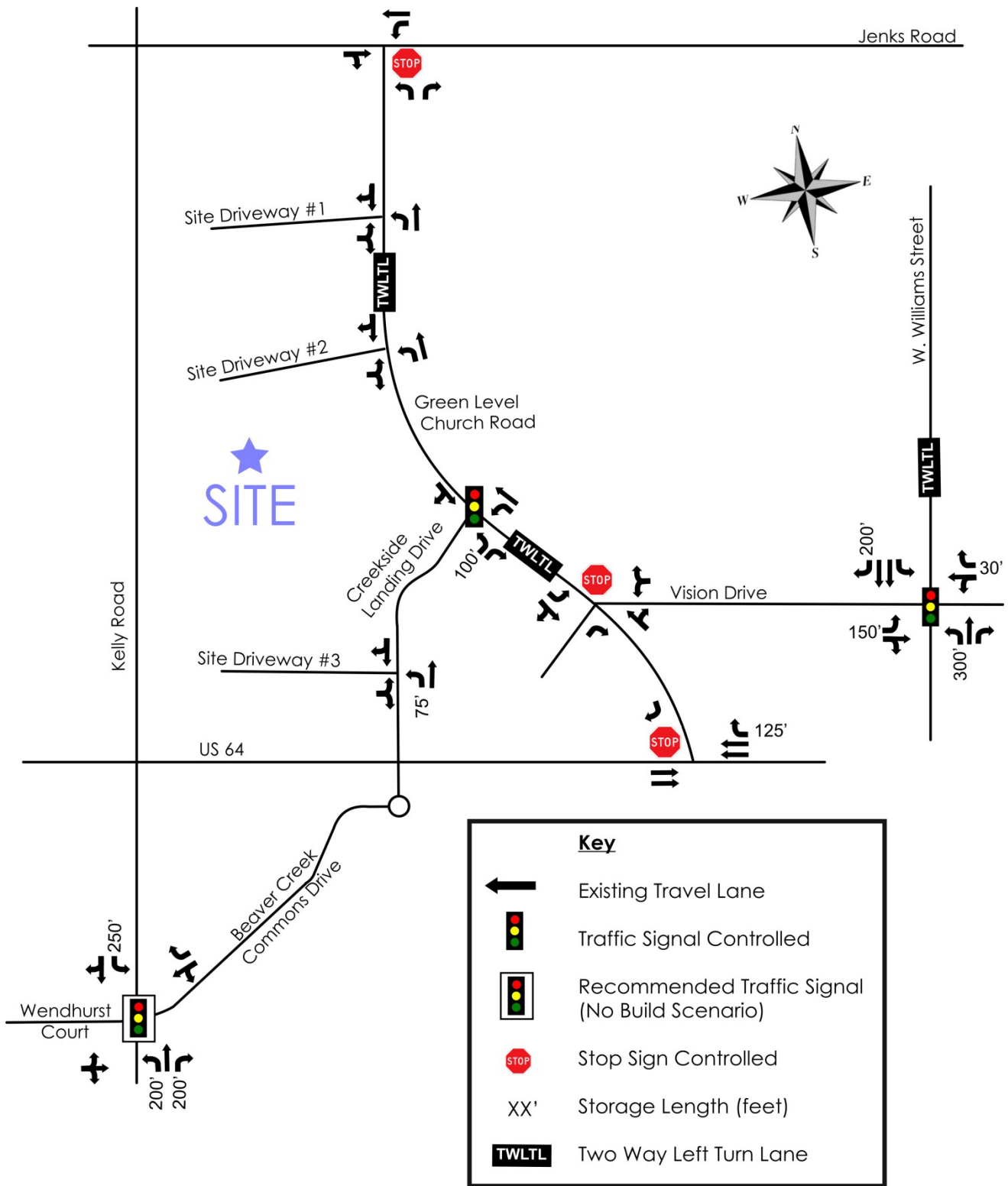


Figure 11: Recommended Geometry



Appendix E:
Intersection Spreadsheets

INTERSECTION ANALYSIS SHEET

Project: The Wayforth at Apex
 Location: Apex, NC
 Ct. Date: 10/23/2018
 N/S Street: Morris Acres Road
 E/W Street: Jenks Road

AM In AM Out PM In PM Out
 Net New Trips: 26 74 77 50

Annual Growth Rate: 3.0% Existing Year: 2018
 Growth Factor: 0.125509 Buildout Year: 2022

AM PEAK HOUR AM PHF = 0.91

Description	Jenks Road Eastbound			Jenks Road Westbound			Morris Acres Road Northbound			Morris Acres Road Southbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
2018 Traffic Count	0	209	34	16	113	0	110	0	41	0	0	0
Count Balancing	0	0	0	0	0	0	0	0	0	0	0	0
2018 Existing Traffic	0	209	34	16	113	0	110	0	41	0	0	0
Growth Factor (0.03 per year)	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126
2022 Background Growth	0	26	4	2	14	0	14	0	5	0	0	0
Committed Projects												
Beaver Creek Phase 4 Residential	0	0	0	0	0	0	2	0	2	0	0	0
Total Committed Traffic	0	0	0	0	0	0	2	0	2	0	0	0
2022 Background Traffic	0	235	38	18	127	0	126	0	48	0	0	0
Project Traffic												
Percent Assignment Inbound	0%	0%	25%	25%	0%	0%	0%	0%	0%	0%	0%	0%
Inbound Project Traffic	0	0	6	7	0	0	0	0	0	0	0	0
Percent Assignment Outbound	0%	0%	0%	0%	0%	0%	10%	0%	50%	0%	0%	0%
Outbound Project Traffic	0	0	0	0	0	0	7	0	37	0	0	0
Total Project Traffic	0	0	6	7	0	0	7	0	37	0	0	0
2022 Buildout Total	0	235	44	25	127	0	133	0	85	0	0	0
Percent Impact (Approach)		2.1%			4.6%			20.2%			-	
Overall Percent Impact	8.8%											

PM PEAK HOUR PM PHF = 0.95

Description	Jenks Road Eastbound			Jenks Road Westbound			Morris Acres Road Northbound			Morris Acres Road Southbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
2018 Traffic Count	0	216	99	57	250	0	175	0	63	0	0	0
Count Balancing	0	0	0	0	0	0	0	0	0	0	0	0
2018 Existing Traffic	0	216	99	57	250	0	175	0	63	0	0	0
Growth Factor (0.03 per year)	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126
2022 Background Growth	0	27	12	7	31	0	22	0	8	0	0	0
Committed Projects												
Beaver Creek Phase 4 Residential	0	0	1	2	0	0	1	0	1	0	0	0
Total Committed Traffic	0	0	1	2	0	0	1	0	1	0	0	0
2022 Background Traffic	0	243	112	66	281	0	198	0	72	0	0	0
Project Traffic												
Percent Assignment Inbound	0%	0%	25%	25%	0%	0%	0%	0%	0%	0%	0%	0%
Inbound Project Traffic	0	0	19	20	0	0	0	0	0	0	0	0
Percent Assignment Outbound	0%	0%	0%	0%	0%	0%	10%	0%	50%	0%	0%	0%
Outbound Project Traffic	0	0	0	0	0	0	5	0	25	0	0	0
Total Project Traffic	0	0	19	20	0	0	5	0	25	0	0	0
2022 Buildout Total	0	243	131	86	281	0	203	0	97	0	0	0
Percent Impact (Approach)		5.1%			5.4%			10.0%			-	
Overall Percent Impact	6.6%											

INTERSECTION ANALYSIS SHEET

Project: The Wayforth at Apex
 Location: Apex, NC
 Ct. Date: Balance with Jenks at Morris Acres
 N/S Street: Morris Acres Road
 E/W Street: Reedybrook Crossing/Central Site Driveway

AM In AM Out PM In PM Out
 Net New Trips: 26 74 77 50

Annual Growth Rate: 3.0% Existing Year: 2018
 Growth Factor: 0.125509 Buildout Year: 2022

AM PEAK HOUR AM PHF = 0.90

Description	Reedybrook Crossing Eastbound			Central Site Driveway Westbound			Morris Acres Road Northbound			Morris Acres Road Southbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
2018 Traffic Count	0	0	0	0	0	0	0	0	0	0	0	0
Count Balancing	26	0	26	0	0	0	5	125	0	0	45	5
2018 Existing Traffic	26	0	26	0	0	0	5	125	0	0	45	5
Growth Factor (0.03 per year)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.126	0.000	0.000	0.126	0.000
2022 Background Growth	0	0	0	0	0	0	0	16	0	0	6	0
Committed Projects												
Beaver Creek Phase 4 Residential	3	0	3	0	0	0	1	0	0	0	0	1
Total Committed Traffic	3	0	3	0	0	0	1	0	0	0	0	1
2022 Background Traffic	29	0	29	0	0	0	6	141	0	0	51	6
Project Traffic												
Percent Assignment Inbound	0%	0%	0%	0%	0%	0%	0%	5%	30%	30%	5%	0%
Inbound Project Traffic	0	0	0	0	0	0	0	1	8	8	1	0
Percent Assignment Outbound	0%	0%	0%	25%	0%	35%	0%	10%	0%	0%	5%	0%
Outbound Project Traffic	0	0	0	19	0	26	0	7	0	0	4	0
Total Project Traffic	0	0	0	19	0	26	0	8	8	8	5	0
2022 Buildout Total	29	0	29	19	0	26	6	149	8	8	56	6
Percent Impact (Approach)		0.0%			100.0%			9.8%			18.7%	
Overall Percent Impact	22.1%											

PM PEAK HOUR PM PHF = 0.90

Description	Reedybrook Crossing Eastbound			Central Site Driveway Westbound			Morris Acres Road Northbound			Morris Acres Road Southbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
2018 Traffic Count	0	0	0	0	0	0	0	0	0	0	0	0
Count Balancing	14	0	14	0	0	0	20	225	0	0	132	24
2018 Existing Traffic	14	0	14	0	0	0	20	225	0	0	132	24
Growth Factor (0.03 per year)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.126	0.000	0.000	0.126	0.000
2022 Background Growth	0	0	0	0	0	0	0	28	0	0	17	0
Committed Projects												
Beaver Creek Phase 4 Residential	1	0	1	0	0	0	2	0	0	0	0	3
Total Committed Traffic	1	0	1	0	0	0	2	0	0	0	0	3
2022 Background Traffic	15	0	15	0	0	0	22	253	0	0	149	27
Project Traffic												
Percent Assignment Inbound	0%	0%	0%	0%	0%	0%	0%	5%	30%	30%	5%	0%
Inbound Project Traffic	0	0	0	0	0	0	0	4	23	23	4	0
Percent Assignment Outbound	0%	0%	0%	25%	0%	35%	0%	10%	0%	0%	5%	0%
Outbound Project Traffic	0	0	0	12	0	18	0	5	0	0	3	0
Total Project Traffic	0	0	0	12	0	18	0	9	23	23	7	0
2022 Buildout Total	15	0	15	12	0	18	22	262	23	23	156	27
Percent Impact (Approach)		0.0%			100.0%			10.4%			14.6%	
Overall Percent Impact	16.1%											

INTERSECTION ANALYSIS SHEET

Project: The Wayforth at Apex
 Location: Apex, NC
 Ct. Date: 10/23/2018
 N/S Street: Morris Acres Road
 E/W Street: Creekside Landing Drive

AM In AM Out PM In PM Out
 Net New Trips: 26 74 77 50

Annual Growth Rate: 3.0% Existing Year: 2018
 Growth Factor: 0.125509 Buildout Year: 2022

AM PEAK HOUR
 AM PHF = 0.97

Description	Creekside Landing Drive Eastbound			- Westbound			Morris Acres Road Northbound			Morris Acres Road Southbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
2018 Traffic Count	30	0	95	0	0	0	55	113	0	0	102	15
Count Balancing	0	0	0	0	0	0	0	0	0	0	0	0
2018 Existing Traffic	30	0	95	0	0	0	55	113	0	0	102	15
Growth Factor (0.03 per year)	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126
2022 Background Growth	4	0	12	0	0	0	7	14	0	0	13	2
Committed Projects												
Beaver Creek Phase 4 Residential	0	0	2	0	0	0	1	1	0	0	3	0
Total Committed Traffic	0	0	2	0	0	0	1	1	0	0	3	0
2022 Background Traffic	34	0	109	0	0	0	63	128	0	0	118	17
Project Traffic												
Percent Assignment Inbound	25%	0%	0%	0%	0%	0%	0%	25%	0%	0%	0%	0%
Inbound Project Traffic	7	0	0	0	0	0	0	7	0	0	0	0
Percent Assignment Outbound	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	25%	15%
Outbound Project Traffic	0	0	0	0	0	0	0	0	0	0	19	10
Total Project Traffic	7	0	0	0	0	0	0	7	0	0	19	10
2022 Buildout Total	41	0	109	0	0	0	63	135	0	0	137	27
Percent Impact (Approach)		4.7%			-			3.6%			17.7%	
Overall Percent Impact	8.4%											

PM PEAK HOUR
 PM PHF = 0.91

Description	Creekside Landing Drive Eastbound			- Westbound			Morris Acres Road Northbound			Morris Acres Road Southbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
2018 Traffic Count	96	0	178	0	0	0	144	235	0	0	83	88
Count Balancing	0	0	0	0	0	0	0	0	0	0	0	0
2018 Existing Traffic	96	0	178	0	0	0	144	235	0	0	83	88
Growth Factor (0.03 per year)	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126
2022 Background Growth	12	0	22	0	0	0	18	29	0	0	10	11
Committed Projects												
Beaver Creek Phase 4 Residential	0	0	1	0	0	0	2	2	0	0	2	0
Total Committed Traffic	0	0	1	0	0	0	2	2	0	0	2	0
2022 Background Traffic	108	0	201	0	0	0	164	266	0	0	95	99
Project Traffic												
Percent Assignment Inbound	25%	0%	0%	0%	0%	0%	0%	25%	0%	0%	0%	0%
Inbound Project Traffic	19	0	0	0	0	0	0	19	0	0	0	0
Percent Assignment Outbound	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	25%	15%
Outbound Project Traffic	0	0	0	0	0	0	0	0	0	0	13	7
Total Project Traffic	19	0	0	0	0	0	0	19	0	0	13	7
2022 Buildout Total	127	0	201	0	0	0	164	285	0	0	108	106
Percent Impact (Approach)		5.8%			-			4.2%			9.4%	
Overall Percent Impact	5.9%											

INTERSECTION ANALYSIS SHEET

Project: The Wayforth at Apex
 Location: Apex, NC
 Ct. Date: 10/23/2018
 N/S Street: Morris Acres Road
 E/W Street: US 64 WB

Net New Trips:

AM In	AM Out	PM In	PM Out
26	74	77	50

Annual Growth Rate:

3.0%

 Growth Factor:

0.125509

 Existing Year:

2018

 Buildout Year:

2022

AM PEAK HOUR AM PHF = 0.94

Description	US 64 WB Eastbound			US 64 WB Westbound			Morris Acres Road Northbound			Morris Acres Road Southbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
2018 Traffic Count	0	0	0	0	1693	140	0	0	0	0	0	119
Count Balancing	0	0	0	0	0	0	0	0	0	0	0	0
2018 Existing T traffic	0	0	0	0	1693	140	0	0	0	0	0	119
Growth Factor (0.03 per year)	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126
2022 Background Growth	0	0	0	0	212	18	0	0	0	0	0	15
Committed Projects												
Beaver Creek Phase 4 Residential	0	0	0	0	0	1	0	0	0	0	0	3
Total Committed T traffic	0	0	0	0	0	1	0	0	0	0	0	3
2022 Background Traffic	0	0	0	0	1905	159	0	0	0	0	0	137
Project Traffic												
Percent Assignment Inbound	0%	0%	0%	0%	0%	25%	0%	0%	0%	0%	0%	0%
Inbound Project Traffic	0	0	0	0	0	7	0	0	0	0	0	0
Percent Assignment Outbound	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	25%
Outbound Project Traffic	0	0	0	0	0	0	0	0	0	0	0	19
Total Project Traffic	0	0	0	0	0	7	0	0	0	0	0	19
2022 Buildout T total	0	0	0	0	1905	166	0	0	0	0	0	156
Percent Impact (Approach)	-	-	-	-	0.3%	-	-	-	-	-	12.2%	-
Overall Percent Impact	1.2%											

PM PEAK HOUR PM PHF = 0.98

Description	US 64 WB Eastbound			US 64 WB Westbound			Morris Acres Road Northbound			Morris Acres Road Southbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
2018 Traffic Count	0	0	0	0	1783	308	0	0	0	0	0	126
Count Balancing	0	0	0	0	0	0	0	0	0	0	0	0
2018 Existing T traffic	0	0	0	0	1783	308	0	0	0	0	0	126
Growth Factor (0.03 per year)	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126
2022 Background Growth	0	0	0	0	224	39	0	0	0	0	0	16
Committed Projects												
Beaver Creek Phase 4 Residential	0	0	0	0	0	3	0	0	0	0	0	2
Total Committed T traffic	0	0	0	0	0	3	0	0	0	0	0	2
2022 Background Traffic	0	0	0	0	2007	350	0	0	0	0	0	144
Project Traffic												
Percent Assignment Inbound	0%	0%	0%	0%	0%	25%	0%	0%	0%	0%	0%	0%
Inbound Project Traffic	0	0	0	0	0	19	0	0	0	0	0	0
Percent Assignment Outbound	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	25%
Outbound Project Traffic	0	0	0	0	0	0	0	0	0	0	0	13
Total Project Traffic	0	0	0	0	0	19	0	0	0	0	0	13
2022 Buildout T total	0	0	0	0	2007	369	0	0	0	0	0	157
Percent Impact (Approach)	-	-	-	-	0.8%	-	-	-	-	-	8.3%	-
Overall Percent Impact	1.3%											

INTERSECTION ANALYSIS SHEET

Project: The Wayforth at Apex
 Location: Apex, NC
 Ct. Date: Balance with Jenks at Morris Acres
 N/S Street: Morris Acres Road
 E/W Street: North Site Driveway

AM In AM Out PM In PM Out
 Net New Trips:

26	74	77	50
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Annual Growth Rate:

3.0%

 Existing Year:

2018

 Growth Factor:

0.125509

 Buildout Year:

2022

AM PEAK HOUR AM PHF = 0.90

Description	North Site Driveway Eastbound			North Site Driveway Westbound			Morris Acres Road Northbound			Morris Acres Road Southbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
2018 Traffic Count	0	0	0	0	0	0	0	0	0	0	0	0
Count Balancing	0	0	0	0	0	0	0	151	0	0	50	0
2018 Existing Traffic	0	0	0	0	0	0	0	151	0	0	50	0
Growth Factor (0.03 per year)	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126
2022 Background Growth	0	0	0	0	0	0	0	19	0	0	6	0
Committed Projects												
Beaver Creek Phase 4 Residential	0	0	0	0	0	0	0	4	0	0	1	0
Total Committed Traffic	0	0	0	0	0	0	0	4	0	0	1	0
2022 Background Traffic	0	0	0	0	0	0	0	174	0	0	57	0
Project Traffic												
Percent Assignment Inbound	0%	0%	0%	0%	0%	0%	0%	0%	5%	15%	35%	0%
Inbound Project Traffic	0	0	0	0	0	0	0	0	1	4	9	0
Percent Assignment Outbound	0%	0%	0%	5%	0%	15%	0%	45%	0%	0%	0%	0%
Outbound Project Traffic	0	0	0	4	0	11	0	33	0	0	0	0
Total Project Traffic	0	0	0	4	0	11	0	33	1	4	9	0
2022 Buildout Total	0	0	0	4	0	11	0	207	1	4	66	0
Percent Impact (Approach)	-			100.0%			16.4%			18.6%		
Overall Percent Impact	21.2%											

PM PEAK HOUR PM PHF = 0.90

Description	North Site Driveway Eastbound			North Site Driveway Westbound			Morris Acres Road Northbound			Morris Acres Road Southbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
2018 Traffic Count	0	0	0	0	0	0	0	0	0	0	0	0
Count Balancing	0	0	0	0	0	0	0	238	0	0	156	0
2018 Existing Traffic	0	0	0	0	0	0	0	238	0	0	156	0
Growth Factor (0.03 per year)	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126
2022 Background Growth	0	0	0	0	0	0	0	30	0	0	20	0
Committed Projects												
Beaver Creek Phase 4 Residential	0	0	0	0	0	0	0	2	0	0	4	0
Total Committed Traffic	0	0	0	0	0	0	0	2	0	0	4	0
2022 Background Traffic	0	0	0	0	0	0	0	270	0	0	180	0
Project Traffic												
Percent Assignment Inbound	0%	0%	0%	0%	0%	0%	0%	0%	5%	15%	35%	0%
Inbound Project Traffic	0	0	0	0	0	0	0	0	4	12	27	0
Percent Assignment Outbound	0%	0%	0%	5%	0%	15%	0%	45%	0%	0%	0%	0%
Outbound Project Traffic	0	0	0	3	0	8	0	23	0	0	0	0
Total Project Traffic	0	0	0	3	0	8	0	23	4	12	27	0
2022 Buildout Total	0	0	0	3	0	8	0	293	4	12	207	0
Percent Impact (Approach)	-			100.0%			9.1%			17.8%		
Overall Percent Impact	14.6%											

INTERSECTION ANALYSIS SHEET

Project: The Wayforth at Apex
 Location: Apex, NC
 Ct. Date: Balance with Jenks at Morris Acres
 N/S Street: Morris Acres Road
 E/W Street: South Site Driveway

AM In AM Out PM In PM Out
 Net New Trips: 26 74 77 50

Annual Growth Rate: 3.0% Existing Year: 2018
 Growth Factor: 0.125509 Buildout Year: 2022

AM PEAK HOUR AM PHF = 0.90

Description	South Site Driveway Eastbound			South Site Driveway Westbound			Morris Acres Road Northbound			Morris Acres Road Southbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
2018 Traffic Count	0	0	0	0	0	0	0	0	0	0	0	0
Count Balancing	0	0	0	0	0	0	0	130	0	0	71	0
2018 Existing Traffic	0	0	0	0	0	0	0	130	0	0	71	0
Growth Factor (0.03 per year)	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126
2022 Background Growth	0	0	0	0	0	0	0	16	0	0	9	0
Committed Projects												
Beaver Creek Phase 4 Residential	0	0	0	0	0	0	0	1	0	0	3	0
Total Committed Traffic	0	0	0	0	0	0	0	1	0	0	3	0
2022 Background Traffic	0	0	0	0	0	0	0	147	0	0	83	0
Project Traffic												
Percent Assignment Inbound	0%	0%	0%	0%	0%	0%	0%	35%	15%	5%	0%	0%
Inbound Project Traffic	0	0	0	0	0	0	0	9	4	1	0	0
Percent Assignment Outbound	0%	0%	0%	10%	0%	10%	0%	0%	0%	0%	30%	0%
Outbound Project Traffic	0	0	0	7	0	7	0	0	0	0	22	0
Total Project Traffic	0	0	0	7	0	7	0	9	4	1	22	0
2022 Buildout Total	0	0	0	7	0	7	0	156	4	1	105	0
Percent Impact (Approach)	-	-	-	100.0%	-	-	8.1%	-	-	21.8%	-	-
Overall Percent Impact	17.9%											

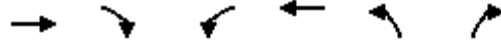
PM PEAK HOUR PM PHF = 0.90

Description	South Site Driveway Eastbound			South Site Driveway Westbound			Morris Acres Road Northbound			Morris Acres Road Southbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
2018 Traffic Count	0	0	0	0	0	0	0	0	0	0	0	0
Count Balancing	0	0	0	0	0	0	0	244	0	0	145	0
2018 Existing Traffic	0	0	0	0	0	0	0	244	0	0	145	0
Growth Factor (0.03 per year)	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126
2022 Background Growth	0	0	0	0	0	0	0	31	0	0	18	0
Committed Projects												
Beaver Creek Phase 4 Residential	0	0	0	0	0	0	0	2	0	0	1	0
Total Committed Traffic	0	0	0	0	0	0	0	2	0	0	1	0
2022 Background Traffic	0	0	0	0	0	0	0	278	0	0	164	0
Project Traffic												
Percent Assignment Inbound	0%	0%	0%	0%	0%	0%	0%	35%	15%	5%	0%	0%
Inbound Project Traffic	0	0	0	0	0	0	0	27	11	4	0	0
Percent Assignment Outbound	0%	0%	0%	10%	0%	10%	0%	0%	0%	0%	30%	0%
Outbound Project Traffic	0	0	0	4	0	5	0	0	0	0	15	0
Total Project Traffic	0	0	0	4	0	5	0	27	11	4	15	0
2022 Buildout Total	0	0	0	4	0	5	0	305	11	4	179	0
Percent Impact (Approach)	-	-	-	100.0%	-	-	12.0%	-	-	10.4%	-	-
Overall Percent Impact	13.0%											

Appendix F:
Synchro Output:
Existing (2018)

The Wayforth at Apex
 1: Morris Acres Road & Jenks Road

Existing AM
 11/16/2018



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↻		↻	↻	↻	↻
Traffic Volume (vph)	209	34	16	113	110	41
Future Volume (vph)	209	34	16	113	110	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	200		200	0
Storage Lanes		0	1		1	1
Taper Length (ft)			100		100	
Satd. Flow (prot)	1827	0	1770	1863	1770	1583
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	1827	0	1770	1863	1770	1583
Link Speed (mph)	45			45	45	
Link Distance (ft)	645			534	1006	
Travel Time (s)	9.8			8.1	15.2	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Shared Lane Traffic (%)						
Lane Group Flow (vph)	267	0	18	124	121	45
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	26.1% ICU Level of Service A
Analysis Period (min)	15

The Wayforth at Apex
1: Morris Acres Road & Jenks Road

Existing AM
11/16/2018

Intersection

Int Delay, s/veh 3.5

Movement EBT EBR WBL WBT NBL NBR

Lane Configurations	↔		↔	↑	↔	↔
Traffic Vol, veh/h	209	34	16	113	110	41
Future Vol, veh/h	209	34	16	113	110	41
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	200	-	200	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	230	37	18	124	121	45

Major/Minor Major1 Major2 Minor1

Conflicting Flow All	0	0	267	0	407	248
Stage 1	-	-	-	-	248	-
Stage 2	-	-	-	-	159	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1297	-	600	791
Stage 1	-	-	-	-	793	-
Stage 2	-	-	-	-	870	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1297	-	592	791
Mov Cap-2 Maneuver	-	-	-	-	645	-
Stage 1	-	-	-	-	793	-
Stage 2	-	-	-	-	858	-

Approach EB WB NB

HCM Control Delay, s	0	1	11.3
HCM LOS			B

Minor Lane/Major Mvmt NBLn1 NBLn2 EBT EBR WBL WBT

Capacity (veh/h)	645	791	-	-	1297	-
HCM Lane V/C Ratio	0.187	0.057	-	-	0.014	-
HCM Control Delay (s)	11.9	9.8	-	-	7.8	-
HCM Lane LOS	B	A	-	-	A	-
HCM 95th %tile Q(veh)	0.7	0.2	-	-	0	-

The Wayforth at Apex
 2: Morris Acres Road & Reedybrook Crossing

Existing AM
 11/16/2018



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	26	26	5	125	45	5
Future Volume (vph)	26	26	5	125	45	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	100			0
Storage Lanes	1	0	1			0
Taper Length (ft)	25		100			
Satd. Flow (prot)	1694	0	1770	1863	1837	0
Flt Permitted	0.976		0.950			
Satd. Flow (perm)	1694	0	1770	1863	1837	0
Link Speed (mph)	25			45	45	
Link Distance (ft)	294			470	758	
Travel Time (s)	8.0			7.1	11.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Shared Lane Traffic (%)						
Lane Group Flow (vph)	58	0	6	139	56	0
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	16.6% ICU Level of Service A
Analysis Period (min)	15

The Wayforth at Apex
2: Morris Acres Road & Reedybrook Crossing

Existing AM
11/16/2018

Intersection						
Int Delay, s/veh	2.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	26	26	5	125	45	5
Future Vol, veh/h	26	26	5	125	45	5
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	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	29	29	6	139	50	6

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	203	53	56	0	0
Stage 1	53	-	-	-	-
Stage 2	150	-	-	-	-
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	786	1014	1549	-	-
Stage 1	970	-	-	-	-
Stage 2	878	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	783	1014	1549	-	-
Mov Cap-2 Maneuver	771	-	-	-	-
Stage 1	970	-	-	-	-
Stage 2	875	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.4	0.3	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1549	-	876	-	-
HCM Lane V/C Ratio	0.004	-	0.066	-	-
HCM Control Delay (s)	7.3	-	9.4	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

The Wayforth at Apex
3: Morris Acres Road & Creekside Landing Drive

Existing AM
11/16/2018



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	30	95	55	113	102	15
Future Volume (vph)	30	95	55	113	102	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	2%			-5%	5%	
Storage Length (ft)	100	0	100			0
Storage Lanes	1	1	1			0
Taper Length (ft)	55		100			
Satd. Flow (prot)	1752	1567	1814	1909	1785	0
Flt Permitted	0.950		0.510			
Satd. Flow (perm)	1752	1567	974	1909	1785	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		98			11	
Link Speed (mph)	25			45	45	
Link Distance (ft)	396			548	1004	
Travel Time (s)	10.8			8.3	15.2	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Shared Lane Traffic (%)						
Lane Group Flow (vph)	31	98	57	116	120	0
Turn Type	Prot	pm+ov	pm+pt	NA	NA	
Protected Phases	8	1	1	6	2	
Permitted Phases		8	6			
Detector Phase	8	1	1	6	2	
Switch Phase						
Minimum Initial (s)	7.0	7.0	7.0	12.0	12.0	
Minimum Split (s)	22.7	12.2	12.2	24.0	23.1	
Total Split (s)	25.0	15.0	15.0	90.0	75.0	
Total Split (%)	21.7%	13.0%	13.0%	78.3%	65.2%	
Yellow Time (s)	3.7	3.5	3.5	5.0	4.1	
All-Red Time (s)	1.0	1.7	1.7	1.0	1.0	
Lost Time Adjust (s)	0.3	-0.2	-0.2	-1.0	-0.1	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	
Lead/Lag		Lead	Lead		Lag	
Lead-Lag Optimize?		Yes	Yes		Yes	
Recall Mode	None	None	None	Min	Min	
Act Effct Green (s)	6.8	9.2	25.8	30.0	16.8	
Actuated g/C Ratio	0.21	0.28	0.79	0.92	0.51	
v/c Ratio	0.09	0.19	0.06	0.07	0.13	
Control Delay	12.6	3.2	2.1	1.7	7.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	12.6	3.2	2.1	1.7	7.8	
LOS	B	A	A	A	A	
Approach Delay	5.4			1.8	7.8	
Approach LOS	A			A	A	
Queue Length 50th (ft)	4	0	0	0	9	
Queue Length 95th (ft)	22	16	13	22	46	
Internal Link Dist (ft)	316			468	924	
Turn Bay Length (ft)	100		100			
Base Capacity (vph)	1086	637	1027	1909	1785	

The Wayforth at Apex
 3: Morris Acres Road & Creekside Landing Drive

Existing AM
 11/16/2018

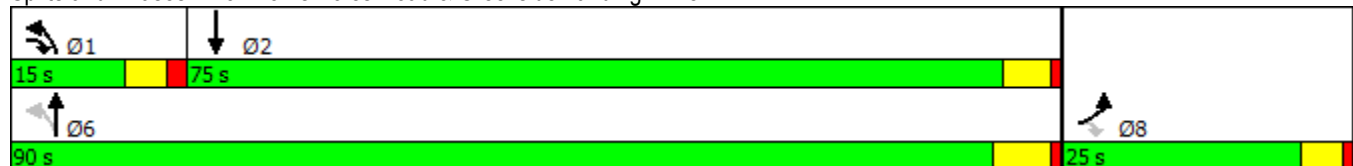


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.03	0.15	0.06	0.06	0.07	

Intersection Summary

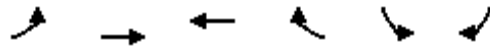
Area Type:	Other
Cycle Length:	115
Actuated Cycle Length:	32.7
Natural Cycle:	60
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.19
Intersection Signal Delay:	4.6
Intersection LOS:	A
Intersection Capacity Utilization	24.2%
ICU Level of Service	A
Analysis Period (min)	15
Description:	05-2280

Splits and Phases: 3: Morris Acres Road & Creekside Landing Drive



The Wayforth at Apex
 4: US 64 Westbound & Morris Acres Road

Existing AM
 11/16/2018



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations			↑↑	↗		↗
Traffic Volume (vph)	0	0	1693	140	0	119
Future Volume (vph)	0	0	1693	140	0	119
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0			75	0	0
Storage Lanes	0			1	0	1
Taper Length (ft)	25				25	
Satd. Flow (prot)	0	0	3539	1583	0	1611
Flt Permitted						
Satd. Flow (perm)	0	0	3539	1583	0	1611
Link Speed (mph)		55	55		45	
Link Distance (ft)		890	661		383	
Travel Time (s)		11.0	8.2		5.8	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	1801	149	0	127
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	60.8%
Analysis Period (min)	15
	ICU Level of Service B

The Wayforth at Apex
 4: US 64 Westbound & Morris Acres Road

Existing AM
 11/16/2018

Intersection

Int Delay, s/veh 1.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations			↑↑	↑		↑
Traffic Vol, veh/h	0	0	1693	140	0	119
Future Vol, veh/h	0	0	1693	140	0	119
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Stop
Storage Length	-	-	-	75	-	0
Veh in Median Storage, #	-	-	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	1801	149	0	127

Major/Minor

	Major2	Minor2
Conflicting Flow All	-	0
Stage 1	-	-
Stage 2	-	-
Critical Hdwy	-	-
Critical Hdwy Stg 1	-	-
Critical Hdwy Stg 2	-	-
Follow-up Hdwy	-	-
Pot Cap-1 Maneuver	-	-
Stage 1	-	-
Stage 2	-	-
Platoon blocked, %	-	-
Mov Cap-1 Maneuver	-	-
Mov Cap-2 Maneuver	-	-
Stage 1	-	-
Stage 2	-	-

Approach

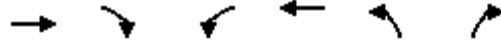
	WB	SB
HCM Control Delay, s	0	27.9
HCM LOS		D

Minor Lane/Major Mvmt

	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	281
HCM Lane V/C Ratio	-	-	0.451
HCM Control Delay (s)	-	-	27.9
HCM Lane LOS	-	-	D
HCM 95th %tile Q(veh)	-	-	2.2

The Wayforth at Apex
 1: Morris Acres Road & Jenks Road

Existing PM
 11/16/2018



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↗		↖	↖	↖	↖
Traffic Volume (vph)	216	99	57	250	175	63
Future Volume (vph)	216	99	57	250	175	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	200		200	0
Storage Lanes		0	1		1	1
Taper Length (ft)			100		100	
Satd. Flow (prot)	1785	0	1770	1863	1770	1583
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	1785	0	1770	1863	1770	1583
Link Speed (mph)	45			45	45	
Link Distance (ft)	645			534	1006	
Travel Time (s)	9.8			8.1	15.2	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Shared Lane Traffic (%)						
Lane Group Flow (vph)	331	0	60	263	184	66
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	40.4%
	ICU Level of Service A
Analysis Period (min)	15

The Wayforth at Apex
1: Morris Acres Road & Jenks Road

Existing PM
11/16/2018

Intersection

Int Delay, s/veh 4.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔		↔	↑	↔	↔
Traffic Vol, veh/h	216	99	57	250	175	63
Future Vol, veh/h	216	99	57	250	175	63
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	200	-	200	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	2	2
Mvmt Flow	227	104	60	263	184	66

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	332	0	662
Stage 1	-	-	-	-	279
Stage 2	-	-	-	-	383
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1227	-	427
Stage 1	-	-	-	-	768
Stage 2	-	-	-	-	689
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1227	-	406
Mov Cap-2 Maneuver	-	-	-	-	505
Stage 1	-	-	-	-	768
Stage 2	-	-	-	-	655

Approach	EB	WB	NB
HCM Control Delay, s	0	1.5	14.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	505	760	-	-	1227	-
HCM Lane V/C Ratio	0.365	0.087	-	-	0.049	-
HCM Control Delay (s)	16.2	10.2	-	-	8.1	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile Q(veh)	1.7	0.3	-	-	0.2	-

The Wayforth at Apex
 2: Morris Acres Road & Reedybrook Crossing

Existing PM
 11/16/2018



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	14	14	20	225	132	24
Future Volume (vph)	14	14	20	225	132	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	100			0
Storage Lanes	1	0	1			0
Taper Length (ft)	25		100			
Satd. Flow (prot)	1694	0	1770	1863	1824	0
Flt Permitted	0.976		0.950			
Satd. Flow (perm)	1694	0	1770	1863	1824	0
Link Speed (mph)	25			45	45	
Link Distance (ft)	294			470	758	
Travel Time (s)	8.0			7.1	11.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Shared Lane Traffic (%)						
Lane Group Flow (vph)	32	0	22	250	174	0
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	25.1%
Analysis Period (min)	15
	ICU Level of Service A

The Wayforth at Apex
 2: Morris Acres Road & Reedybrook Crossing

Existing PM
 11/16/2018

Intersection

Int Delay, s/veh 1

Movement EBL EBR NBL NBT SBT SBR

Lane Configurations	↔		↔	↑	↑	
Traffic Vol, veh/h	14	14	20	225	132	24
Future Vol, veh/h	14	14	20	225	132	24
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	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	16	16	22	250	147	27

Major/Minor Minor2 Major1 Major2

Conflicting Flow All	454	160	173	0	-	0
Stage 1	160	-	-	-	-	-
Stage 2	294	-	-	-	-	-
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	564	885	1404	-	-	-
Stage 1	869	-	-	-	-	-
Stage 2	756	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	555	885	1404	-	-	-
Mov Cap-2 Maneuver	614	-	-	-	-	-
Stage 1	869	-	-	-	-	-
Stage 2	744	-	-	-	-	-

Approach EB NB SB

HCM Control Delay, s	10.2	0.6	0
HCM LOS	B		

Minor Lane/Major Mvmt NBL NBT EBLn1 SBT SBR

Capacity (veh/h)	1404	-	725	-	-
HCM Lane V/C Ratio	0.016	-	0.043	-	-
HCM Control Delay (s)	7.6	-	10.2	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

The Wayforth at Apex
 3: Morris Acres Road & Creekside Landing Drive

Existing PM
 11/16/2018



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	96	178	144	235	83	88
Future Volume (vph)	96	178	144	235	83	88
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	2%			-5%	5%	
Storage Length (ft)	100	0	100			0
Storage Lanes	1	1	1			0
Taper Length (ft)	55		100			
Satd. Flow (prot)	1752	1567	1814	1909	1689	0
Flt Permitted	0.950		0.448			
Satd. Flow (perm)	1752	1567	855	1909	1689	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		196			85	
Link Speed (mph)	25			45	45	
Link Distance (ft)	396			548	1004	
Travel Time (s)	10.8			8.3	15.2	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Shared Lane Traffic (%)						
Lane Group Flow (vph)	105	196	158	258	188	0
Turn Type	Prot	pm+ov	pm+pt	NA	NA	
Protected Phases	8	1	1	6	2	
Permitted Phases		8	6			
Detector Phase	8	1	1	6	2	
Switch Phase						
Minimum Initial (s)	7.0	7.0	7.0	12.0	12.0	
Minimum Split (s)	22.7	12.2	12.2	24.0	23.1	
Total Split (s)	25.0	15.0	15.0	90.0	75.0	
Total Split (%)	21.7%	13.0%	13.0%	78.3%	65.2%	
Yellow Time (s)	3.7	3.5	3.5	5.0	4.1	
All-Red Time (s)	1.0	1.7	1.7	1.0	1.0	
Lost Time Adjust (s)	0.3	-0.2	-0.2	-1.0	-0.1	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	
Lead/Lag		Lead	Lead		Lag	
Lead-Lag Optimize?		Yes	Yes		Yes	
Recall Mode	None	None	None	Min	Min	
Act Effect Green (s)	7.3	16.8	25.1	26.4	12.3	
Actuated g/C Ratio	0.19	0.43	0.64	0.67	0.31	
v/c Ratio	0.33	0.25	0.22	0.20	0.32	
Control Delay	18.5	2.2	4.8	4.6	9.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	18.5	2.2	4.8	4.6	9.1	
LOS	B	A	A	A	A	
Approach Delay	7.9			4.7	9.1	
Approach LOS	A			A	A	
Queue Length 50th (ft)	22	0	13	22	17	
Queue Length 95th (ft)	55	21	33	51	58	
Internal Link Dist (ft)	316			468	924	
Turn Bay Length (ft)	100		100			
Base Capacity (vph)	907	872	792	1909	1689	

The Wayforth at Apex
 3: Morris Acres Road & Creekside Landing Drive

Existing PM
 11/16/2018

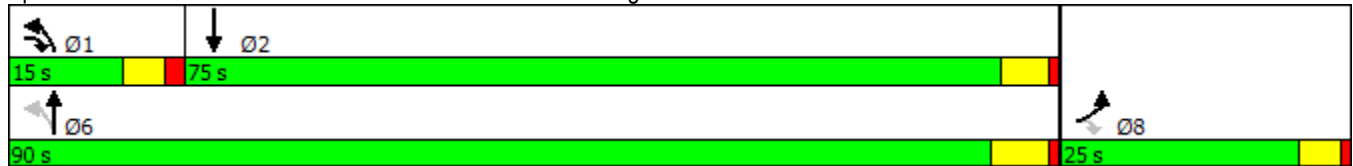


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.12	0.22	0.20	0.14	0.11	

Intersection Summary

Area Type:	Other
Cycle Length:	115
Actuated Cycle Length:	39.4
Natural Cycle:	60
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.33
Intersection Signal Delay:	6.7
Intersection LOS:	A
Intersection Capacity Utilization	36.3%
ICU Level of Service	A
Analysis Period (min)	15
Description:	05-2280

Splits and Phases: 3: Morris Acres Road & Creekside Landing Drive



The Wayforth at Apex
 4: US 64 Westbound & Morris Acres Road

Existing PM
 11/16/2018



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations			↑↑	↑		↑
Traffic Volume (vph)	0	0	1783	308	0	126
Future Volume (vph)	0	0	1783	308	0	126
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0			75	0	0
Storage Lanes	0			1	0	1
Taper Length (ft)	25				25	
Satd. Flow (prot)	0	0	3539	1583	0	1611
Flt Permitted						
Satd. Flow (perm)	0	0	3539	1583	0	1611
Link Speed (mph)		55	55		45	
Link Distance (ft)		890	661		383	
Travel Time (s)		11.0	8.2		5.8	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	1819	314	0	129
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	63.8%
	ICU Level of Service B
Analysis Period (min)	15

Intersection

Int Delay, s/veh 1.6

Movement EBL EBT WBT WBR SBL SBR

Lane Configurations			↑↑	↑		↑
Traffic Vol, veh/h	0	0	1783	308	0	126
Future Vol, veh/h	0	0	1783	308	0	126
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Stop
Storage Length	-	-	-	75	-	0
Veh in Median Storage, #	-	-	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	1819	314	0	129

Major/Minor Major2 Minor2

Conflicting Flow All	-	0	-	910
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	-	-	-	3.32
Pot Cap-1 Maneuver	-	-	0	277
Stage 1	-	-	0	-
Stage 2	-	-	0	-
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	277
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach WB SB

HCM Control Delay, s	0	28.8
HCM LOS		D

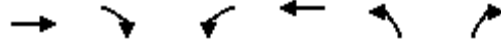
Minor Lane/Major Mvmt WBT WBR SBLn1

Capacity (veh/h)	-	-	277
HCM Lane V/C Ratio	-	-	0.464
HCM Control Delay (s)	-	-	28.8
HCM Lane LOS	-	-	D
HCM 95th %tile Q(veh)	-	-	2.3

Appendix G:
Synchro Output:
Background (2022)

The Wayforth at Apex
 1: Morris Acres Road & Jenks Road

Background AM
 11/16/2018



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↻		↻	↻	↻	↻
Traffic Volume (vph)	235	38	18	127	126	48
Future Volume (vph)	235	38	18	127	126	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	200		200	0
Storage Lanes		0	1		1	1
Taper Length (ft)			100		100	
Satd. Flow (prot)	1827	0	1770	1863	1770	1583
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	1827	0	1770	1863	1770	1583
Link Speed (mph)	45			45	45	
Link Distance (ft)	645			534	1006	
Travel Time (s)	9.8			8.1	15.2	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Shared Lane Traffic (%)						
Lane Group Flow (vph)	300	0	20	140	138	53
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	28.6%
Analysis Period (min)	15
	ICU Level of Service A

The Wayforth at Apex
1: Morris Acres Road & Jenks Road

Background AM
11/16/2018

Intersection

Int Delay, s/veh 3.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	235	38	18	127	126	48
Future Vol, veh/h	235	38	18	127	126	48
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	200	-	200	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	258	42	20	140	138	53

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	300	0	458
Stage 1	-	-	-	-	279
Stage 2	-	-	-	-	179
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1261	-	561
Stage 1	-	-	-	-	768
Stage 2	-	-	-	-	852
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1261	-	552
Mov Cap-2 Maneuver	-	-	-	-	616
Stage 1	-	-	-	-	768
Stage 2	-	-	-	-	838

Approach	EB	WB	NB
HCM Control Delay, s	0	1	11.8
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	616	760	-	-	1261	-
HCM Lane V/C Ratio	0.225	0.069	-	-	0.016	-
HCM Control Delay (s)	12.5	10.1	-	-	7.9	-
HCM Lane LOS	B	B	-	-	A	-
HCM 95th %tile Q(veh)	0.9	0.2	-	-	0	-

The Wayforth at Apex
 2: Morris Acres Road & Reedybrook Crossing

Background AM
 11/16/2018



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	29	29	6	141	51	6
Future Volume (vph)	29	29	6	141	51	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	100			0
Storage Lanes	1	0	1			0
Taper Length (ft)	25		100			
Satd. Flow (prot)	1694	0	1770	1863	1835	0
Flt Permitted	0.976		0.950			
Satd. Flow (perm)	1694	0	1770	1863	1835	0
Link Speed (mph)	25			45	45	
Link Distance (ft)	294			470	758	
Travel Time (s)	8.0			7.1	11.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Shared Lane Traffic (%)						
Lane Group Flow (vph)	64	0	7	157	64	0
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	17.5%
Analysis Period (min)	15
	ICU Level of Service A

The Wayforth at Apex
2: Morris Acres Road & Reedybrook Crossing

Background AM
11/16/2018

Intersection

Int Delay, s/veh 2.3

Movement EBL EBR NBL NBT SBT SBR

Lane Configurations	↔		↔	↑	↑	
Traffic Vol, veh/h	29	29	6	141	51	6
Future Vol, veh/h	29	29	6	141	51	6
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	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	32	32	7	157	57	7

Major/Minor Minor2 Major1 Major2

Conflicting Flow All	230	60	63	0	-	0
Stage 1	60	-	-	-	-	-
Stage 2	170	-	-	-	-	-
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	758	1005	1540	-	-	-
Stage 1	963	-	-	-	-	-
Stage 2	860	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	755	1005	1540	-	-	-
Mov Cap-2 Maneuver	751	-	-	-	-	-
Stage 1	963	-	-	-	-	-
Stage 2	856	-	-	-	-	-

Approach EB NB SB

HCM Control Delay, s	9.5	0.3	0
HCM LOS	A		

Minor Lane/Major Mvmt NBL NBT EBLn1 SBT SBR

Capacity (veh/h)	1540	-	860	-	-
HCM Lane V/C Ratio	0.004	-	0.075	-	-
HCM Control Delay (s)	7.3	-	9.5	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

The Wayforth at Apex
3: Morris Acres Road & Creekside Landing Drive

Background AM
11/16/2018



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	34	109	63	128	118	17
Future Volume (vph)	34	109	63	128	118	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	2%			-5%	5%	
Storage Length (ft)	100	0	100			0
Storage Lanes	1	1	1			0
Taper Length (ft)	55		100			
Satd. Flow (prot)	1752	1567	1814	1909	1785	0
Flt Permitted	0.950		0.497			
Satd. Flow (perm)	1752	1567	949	1909	1785	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		112			12	
Link Speed (mph)	25			45	45	
Link Distance (ft)	396			548	1004	
Travel Time (s)	10.8			8.3	15.2	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Shared Lane Traffic (%)						
Lane Group Flow (vph)	35	112	65	132	140	0
Turn Type	Prot	pm+ov	pm+pt	NA	NA	
Protected Phases	8	1	1	6	2	
Permitted Phases		8	6			
Detector Phase	8	1	1	6	2	
Switch Phase						
Minimum Initial (s)	7.0	7.0	7.0	12.0	12.0	
Minimum Split (s)	22.7	12.2	12.2	24.0	23.1	
Total Split (s)	25.0	15.0	15.0	90.0	75.0	
Total Split (%)	21.7%	13.0%	13.0%	78.3%	65.2%	
Yellow Time (s)	3.7	3.5	3.5	5.0	4.1	
All-Red Time (s)	1.0	1.7	1.7	1.0	1.0	
Lost Time Adjust (s)	0.3	-0.2	-0.2	-1.0	-0.1	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	
Lead/Lag		Lead	Lead		Lag	
Lead-Lag Optimize?		Yes	Yes		Yes	
Recall Mode	None	None	None	Min	Min	
Act Effct Green (s)	6.8	9.2	25.5	29.8	16.4	
Actuated g/C Ratio	0.21	0.28	0.79	0.92	0.51	
v/c Ratio	0.10	0.21	0.07	0.08	0.15	
Control Delay	12.6	3.2	2.1	1.7	8.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	12.6	3.2	2.1	1.7	8.0	
LOS	B	A	A	A	A	
Approach Delay	5.4			1.8	8.0	
Approach LOS	A			A	A	
Queue Length 50th (ft)	4	0	0	0	11	
Queue Length 95th (ft)	24	17	14	24	52	
Internal Link Dist (ft)	316			468	924	
Turn Bay Length (ft)	100		100			
Base Capacity (vph)	1100	652	1017	1909	1785	

The Wayforth at Apex
 3: Morris Acres Road & Creekside Landing Drive

Background AM
 11/16/2018

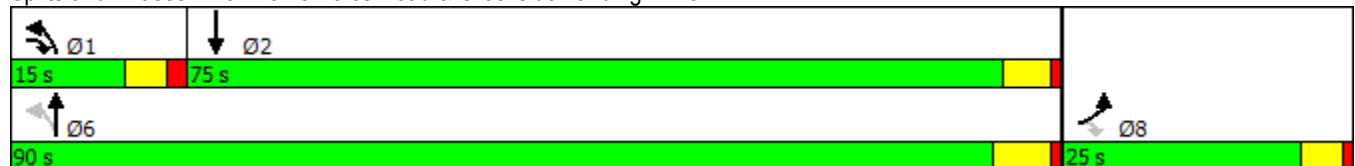


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.03	0.17	0.06	0.07	0.08	

Intersection Summary

Area Type:	Other
Cycle Length:	115
Actuated Cycle Length:	32.4
Natural Cycle:	60
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.21
Intersection Signal Delay:	4.7
Intersection LOS:	A
Intersection Capacity Utilization	34.2%
ICU Level of Service	A
Analysis Period (min)	15
Description:	05-2280

Splits and Phases: 3: Morris Acres Road & Creekside Landing Drive



The Wayforth at Apex
 4: US 64 Westbound & Morris Acres Road

Background AM
 11/16/2018



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations			↑↑	↗		↗
Traffic Volume (vph)	0	0	1905	159	0	137
Future Volume (vph)	0	0	1905	159	0	137
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0			75	0	0
Storage Lanes	0			1	0	1
Taper Length (ft)	25				25	
Satd. Flow (prot)	0	0	3539	1583	0	1611
Flt Permitted						
Satd. Flow (perm)	0	0	3539	1583	0	1611
Link Speed (mph)		55	55		45	
Link Distance (ft)		890	661		383	
Travel Time (s)		11.0	8.2		5.8	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	2027	169	0	146
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	67.8%
	ICU Level of Service C
Analysis Period (min)	15

Intersection

Int Delay, s/veh 2.6

Movement EBL EBT WBT WBR SBL SBR

Lane Configurations			↑↑	↑		↑
Traffic Vol, veh/h	0	0	1905	159	0	137
Future Vol, veh/h	0	0	1905	159	0	137
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Stop
Storage Length	-	-	-	75	-	0
Veh in Median Storage, #	-	-	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	2027	169	0	146

Major/Minor Major2 Minor2

Conflicting Flow All	-	0	-	1013
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	-	-	-	3.32
Pot Cap-1 Maneuver	-	-	0	237
Stage 1	-	-	0	-
Stage 2	-	-	0	-
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	237
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach WB SB

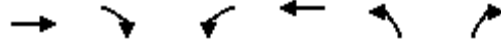
HCM Control Delay, s	0	41.8
HCM LOS		E

Minor Lane/Major Mvmt WBT WBR SBLn1

Capacity (veh/h)	-	-	237
HCM Lane V/C Ratio	-	-	0.615
HCM Control Delay (s)	-	-	41.8
HCM Lane LOS	-	-	E
HCM 95th %tile Q(veh)	-	-	3.6

The Wayforth at Apex
 1: Morris Acres Road & Jenks Road

Background PM
 11/16/2018



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↻		↻	↻	↻	↻
Traffic Volume (vph)	243	112	66	281	198	72
Future Volume (vph)	243	112	66	281	198	72
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	200		200	0
Storage Lanes		0	1		1	1
Taper Length (ft)			100		100	
Satd. Flow (prot)	1783	0	1770	1863	1770	1583
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	1783	0	1770	1863	1770	1583
Link Speed (mph)	45			45	45	
Link Distance (ft)	645			534	1006	
Travel Time (s)	9.8			8.1	15.2	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Shared Lane Traffic (%)						
Lane Group Flow (vph)	374	0	69	296	208	76
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	44.2%
	ICU Level of Service A
Analysis Period (min)	15

Intersection

Int Delay, s/veh 5.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔		↔	↑	↔	↔
Traffic Vol, veh/h	243	112	66	281	198	72
Future Vol, veh/h	243	112	66	281	198	72
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	200	-	200	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	2	2
Mvmt Flow	256	118	69	296	208	76

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	374	0	750
Stage 1	-	-	-	-	315
Stage 2	-	-	-	-	435
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1184	-	379
Stage 1	-	-	-	-	740
Stage 2	-	-	-	-	653
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1184	-	357
Mov Cap-2 Maneuver	-	-	-	-	467
Stage 1	-	-	-	-	740
Stage 2	-	-	-	-	615

Approach	EB	WB	NB
HCM Control Delay, s	0	1.6	16.6
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	467	725	-	-	1184	-
HCM Lane V/C Ratio	0.446	0.105	-	-	0.059	-
HCM Control Delay (s)	18.8	10.5	-	-	8.2	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile Q(veh)	2.3	0.3	-	-	0.2	-

The Wayforth at Apex
 2: Morris Acres Road & Reedybrook Crossing

Background PM
 11/16/2018



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	15	15	22	253	149	27
Future Volume (vph)	15	15	22	253	149	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	100			0
Storage Lanes	1	0	1			0
Taper Length (ft)	25		100			
Satd. Flow (prot)	1694	0	1770	1863	1824	0
Flt Permitted	0.976		0.950			
Satd. Flow (perm)	1694	0	1770	1863	1824	0
Link Speed (mph)	25			45	45	
Link Distance (ft)	294			470	758	
Travel Time (s)	8.0			7.1	11.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Shared Lane Traffic (%)						
Lane Group Flow (vph)	34	0	24	281	196	0
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	26.1%
Analysis Period (min)	15
	ICU Level of Service A

The Wayforth at Apex
 2: Morris Acres Road & Reedybrook Crossing

Background PM
 11/16/2018

Intersection						
Int Delay, s/veh	1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	15	15	22	253	149	27
Future Vol, veh/h	15	15	22	253	149	27
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	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	17	17	24	281	166	30

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	511	181	196	0	-	0
Stage 1	181	-	-	-	-	-
Stage 2	330	-	-	-	-	-
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	523	862	1377	-	-	-
Stage 1	850	-	-	-	-	-
Stage 2	728	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	514	862	1377	-	-	-
Mov Cap-2 Maneuver	584	-	-	-	-	-
Stage 1	850	-	-	-	-	-
Stage 2	715	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.4	0.6	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1377	-	696	-	-
HCM Lane V/C Ratio	0.018	-	0.048	-	-
HCM Control Delay (s)	7.7	-	10.4	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.2	-	-

The Wayforth at Apex
3: Morris Acres Road & Creekside Landing Drive

Background PM
11/16/2018



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	108	201	164	266	95	99
Future Volume (vph)	108	201	164	266	95	99
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	2%			-5%	5%	
Storage Length (ft)	100	0	100			0
Storage Lanes	1	1	1			0
Taper Length (ft)	55		100			
Satd. Flow (prot)	1752	1567	1814	1909	1691	0
Flt Permitted	0.950		0.438			
Satd. Flow (perm)	1752	1567	836	1909	1691	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		221			84	
Link Speed (mph)	25			45	45	
Link Distance (ft)	396			548	1004	
Travel Time (s)	10.8			8.3	15.2	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Shared Lane Traffic (%)						
Lane Group Flow (vph)	119	221	180	292	213	0
Turn Type	Prot	pm+ov	pm+pt	NA	NA	
Protected Phases	8	1	1	6	2	
Permitted Phases		8	6			
Detector Phase	8	1	1	6	2	
Switch Phase						
Minimum Initial (s)	7.0	7.0	7.0	12.0	12.0	
Minimum Split (s)	22.7	12.2	12.2	24.0	23.1	
Total Split (s)	25.0	15.0	15.0	90.0	75.0	
Total Split (%)	21.7%	13.0%	13.0%	78.3%	65.2%	
Yellow Time (s)	3.7	3.5	3.5	5.0	4.1	
All-Red Time (s)	1.0	1.7	1.7	1.0	1.0	
Lost Time Adjust (s)	0.3	-0.2	-0.2	-1.0	-0.1	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	
Lead/Lag		Lead	Lead		Lag	
Lead-Lag Optimize?		Yes	Yes		Yes	
Recall Mode	None	None	None	Min	Min	
Act Effct Green (s)	7.5	17.3	25.4	26.7	12.4	
Actuated g/C Ratio	0.19	0.43	0.64	0.67	0.31	
v/c Ratio	0.36	0.27	0.25	0.23	0.37	
Control Delay	19.1	2.2	5.1	4.8	10.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	19.1	2.2	5.1	4.8	10.3	
LOS	B	A	A	A	B	
Approach Delay	8.1			4.9	10.3	
Approach LOS	A			A	B	
Queue Length 50th (ft)	25	0	15	26	22	
Queue Length 95th (ft)	62	22	38	60	69	
Internal Link Dist (ft)	316			468	924	
Turn Bay Length (ft)	100		100			
Base Capacity (vph)	898	884	782	1909	1691	

The Wayforth at Apex
 3: Morris Acres Road & Creekside Landing Drive

Background PM
 11/16/2018



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.13	0.25	0.23	0.15	0.13	

Intersection Summary

Area Type:	Other
Cycle Length:	115
Actuated Cycle Length:	39.9
Natural Cycle:	60
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.37
Intersection Signal Delay:	7.1
Intersection LOS:	A
Intersection Capacity Utilization	38.6%
ICU Level of Service	A
Analysis Period (min)	15
Description:	05-2280

Splits and Phases: 3: Morris Acres Road & Creekside Landing Drive



The Wayforth at Apex
 4: US 64 Westbound & Morris Acres Road

Background PM
 11/16/2018



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations			↑↑	↗		↗
Traffic Volume (vph)	0	0	2007	350	0	144
Future Volume (vph)	0	0	2007	350	0	144
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0			75	0	0
Storage Lanes	0			1	0	1
Taper Length (ft)	25				25	
Satd. Flow (prot)	0	0	3539	1583	0	1611
Flt Permitted						
Satd. Flow (perm)	0	0	3539	1583	0	1611
Link Speed (mph)		55	55		45	
Link Distance (ft)		890	661		383	
Travel Time (s)		11.0	8.2		5.8	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	2048	357	0	147
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	71.1% ICU Level of Service C
Analysis Period (min)	15

Intersection						
Int Delay, s/veh	2.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations			↑↑	↑		↑
Traffic Vol, veh/h	0	0	2007	350	0	144
Future Vol, veh/h	0	0	2007	350	0	144
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Stop
Storage Length	-	-	-	75	-	0
Veh in Median Storage, #	-	-	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	2048	357	0	147

Major/Minor	Major2	Minor2
Conflicting Flow All	-	0 - 1024
Stage 1	-	- -
Stage 2	-	- -
Critical Hdwy	-	- - 6.94
Critical Hdwy Stg 1	-	- -
Critical Hdwy Stg 2	-	- -
Follow-up Hdwy	-	- - 3.32
Pot Cap-1 Maneuver	-	- 0 233
Stage 1	-	- 0 -
Stage 2	-	- 0 -
Platoon blocked, %	-	-
Mov Cap-1 Maneuver	-	- - 233
Mov Cap-2 Maneuver	-	- -
Stage 1	-	- -
Stage 2	-	- -

Approach	WB	SB
HCM Control Delay, s	0	43.6
HCM LOS		E

Minor Lane/Major Mvmt	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	233
HCM Lane V/C Ratio	-	-	0.631
HCM Control Delay (s)	-	-	43.6
HCM Lane LOS	-	-	E
HCM 95th %tile Q(veh)	-	-	3.8

Appendix H:
Synchro Output:
Build-out (2022)

The Wayforth at Apex
1: Morris Acres Road & Jenks Road

Build AM
01/21/2019



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔		↔	↔	↔	↔
Traffic Volume (vph)	235	44	25	127	133	85
Future Volume (vph)	235	44	25	127	133	85
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	200		200	0
Storage Lanes		0	1		1	1
Taper Length (ft)			100		100	
Satd. Flow (prot)	1824	0	1770	1863	1770	1583
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	1824	0	1770	1863	1770	1583
Link Speed (mph)	45			45	45	
Link Distance (ft)	645			534	1006	
Travel Time (s)	9.8			8.1	15.2	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Shared Lane Traffic (%)						
Lane Group Flow (vph)	306	0	27	140	146	93
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	34.8%
Analysis Period (min)	15
	ICU Level of Service A

Intersection						
Int Delay, s/veh	4.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑		↑	↑	↑	↑
Traffic Vol, veh/h	235	44	25	127	133	85
Future Vol, veh/h	235	44	25	127	133	85
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	200	-	200	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	258	48	27	140	146	93

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	307	0	477
Stage 1	-	-	-	-	282
Stage 2	-	-	-	-	195
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1254	-	547
Stage 1	-	-	-	-	766
Stage 2	-	-	-	-	838
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1254	-	535
Mov Cap-2 Maneuver	-	-	-	-	605
Stage 1	-	-	-	-	766
Stage 2	-	-	-	-	820

Approach	EB	WB	NB
HCM Control Delay, s	0	1.3	11.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	605	757	-	-	1254	-
HCM Lane V/C Ratio	0.242	0.123	-	-	0.022	-
HCM Control Delay (s)	12.8	10.4	-	-	7.9	-
HCM Lane LOS	B	B	-	-	A	-
HCM 95th %tile Q(veh)	0.9	0.4	-	-	0.1	-

The Wayforth at Apex
 2: Morris Acres Road & Reedybrook Crossing/Central Site Driveway

Build AM
 01/21/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↘		↗	↘	
Traffic Volume (vph)	29	4	29	19	4	26	6	149	8	8	56	6
Future Volume (vph)	29	4	29	19	4	26	6	149	8	8	56	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	100		0	100		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			100			100		
Satd. Flow (prot)	0	1703	0	0	1694	0	1770	1848	0	1770	1835	0
Flt Permitted		0.977			0.981		0.950			0.950		
Satd. Flow (perm)	0	1703	0	0	1694	0	1770	1848	0	1770	1835	0
Link Speed (mph)		25			25			45			45	
Link Distance (ft)		294			267			470			758	
Travel Time (s)		8.0			7.3			7.1			11.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	68	0	0	54	0	7	175	0	9	69	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	20.0%
Analysis Period (min)	15
	ICU Level of Service A

Intersection

Int Delay, s/veh 3.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	29	4	29	19	4	26	6	149	8	8	56	6
Future Vol, veh/h	29	4	29	19	4	26	6	149	8	8	56	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	100	-	-
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	2	2	2	2	2	2	2	2
Mvmt Flow	32	4	32	21	4	29	7	166	9	9	62	7

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	283	271	66	285	270	170	69	0	0	174	0	0
Stage 1	83	83	-	183	183	-	-	-	-	-	-	-
Stage 2	200	188	-	102	87	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
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	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	669	636	998	667	636	874	1532	-	-	1403	-	-
Stage 1	925	826	-	819	748	-	-	-	-	-	-	-
Stage 2	802	745	-	904	823	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	638	629	998	637	629	874	1532	-	-	1403	-	-
Mov Cap-2 Maneuver	638	629	-	637	629	-	-	-	-	-	-	-
Stage 1	921	821	-	815	745	-	-	-	-	-	-	-
Stage 2	767	742	-	864	818	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	10.2		10.2		0.3		0.9	
HCM LOS	B		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1532	-	-	767	743	1403	-
HCM Lane V/C Ratio	0.004	-	-	0.09	0.073	0.006	-
HCM Control Delay (s)	7.4	-	-	10.2	10.2	7.6	-
HCM Lane LOS	A	-	-	B	B	A	-
HCM 95th %tile Q(veh)	0	-	-	0.3	0.2	0	-

The Wayforth at Apex
3: Morris Acres Road & Creekside Landing Drive

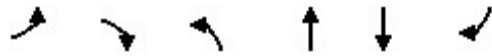
Build AM
01/21/2019



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	41	109	63	135	137	27
Future Volume (vph)	41	109	63	135	137	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	2%			-5%	5%	
Storage Length (ft)	100	0	100			0
Storage Lanes	1	1	1			0
Taper Length (ft)	55		100			
Satd. Flow (prot)	1752	1567	1814	1909	1776	0
Flt Permitted	0.950		0.484			
Satd. Flow (perm)	1752	1567	924	1909	1776	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		112			16	
Link Speed (mph)	25			45	45	
Link Distance (ft)	396			548	1004	
Travel Time (s)	10.8			8.3	15.2	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Shared Lane Traffic (%)						
Lane Group Flow (vph)	42	112	65	139	169	0
Turn Type	Prot	pm+ov	pm+pt	NA	NA	
Protected Phases	8	1	1	6	2	
Permitted Phases		8	6			
Detector Phase	8	1	1	6	2	
Switch Phase						
Minimum Initial (s)	7.0	7.0	7.0	12.0	12.0	
Minimum Split (s)	22.7	12.2	12.2	24.0	23.1	
Total Split (s)	25.0	15.0	15.0	90.0	75.0	
Total Split (%)	21.7%	13.0%	13.0%	78.3%	65.2%	
Yellow Time (s)	3.7	3.5	3.5	5.0	4.1	
All-Red Time (s)	1.0	1.7	1.7	1.0	1.0	
Lost Time Adjust (s)	0.3	-0.2	-0.2	-1.0	-0.1	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	
Lead/Lag		Lead	Lead		Lag	
Lead-Lag Optimize?		Yes	Yes		Yes	
Recall Mode	None	None	None	Min	Min	
Act Effct Green (s)	6.8	9.2	25.5	29.8	16.4	
Actuated g/C Ratio	0.21	0.28	0.79	0.92	0.51	
v/c Ratio	0.11	0.21	0.07	0.08	0.19	
Control Delay	12.7	3.2	2.1	1.7	8.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	12.7	3.2	2.1	1.7	8.0	
LOS	B	A	A	A	A	
Approach Delay	5.8			1.8	8.0	
Approach LOS	A			A	A	
Queue Length 50th (ft)	5	0	0	0	13	
Queue Length 95th (ft)	27	17	14	25	61	
Internal Link Dist (ft)	316			468	924	
Turn Bay Length (ft)	100		100			
Base Capacity (vph)	1100	652	1005	1909	1776	

The Wayforth at Apex
 3: Morris Acres Road & Creekside Landing Drive

Build AM
 01/21/2019



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
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	0.04	0.17	0.06	0.07	0.10	

Intersection Summary

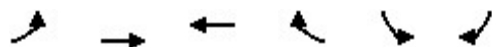
Area Type:	Other
Cycle Length:	115
Actuated Cycle Length:	32.4
Natural Cycle:	60
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.21
Intersection Signal Delay:	5.0
Intersection LOS:	A
Intersection Capacity Utilization	34.2%
ICU Level of Service	A
Analysis Period (min)	15
Description:	05-2280

Splits and Phases: 3: Morris Acres Road & Creekside Landing Drive



The Wayforth at Apex
4: US 64 Westbound & Morris Acres Road

Build AM
01/21/2019



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations			↑↑	↗		↗
Traffic Volume (vph)	0	0	1905	166	0	156
Future Volume (vph)	0	0	1905	166	0	156
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0			75	0	0
Storage Lanes	0			1	0	1
Taper Length (ft)	25				25	
Satd. Flow (prot)	0	0	3539	1583	0	1611
Flt Permitted						
Satd. Flow (perm)	0	0	3539	1583	0	1611
Link Speed (mph)		55	55		45	
Link Distance (ft)		890	661		383	
Travel Time (s)		11.0	8.2		5.8	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	2027	177	0	166
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	69.0%
Analysis Period (min)	15
	ICU Level of Service C

Intersection

Int Delay, s/veh 3.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations			↑↑	↑		↑
Traffic Vol, veh/h	0	0	1905	166	0	156
Future Vol, veh/h	0	0	1905	166	0	156
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Stop
Storage Length	-	-	-	75	-	0
Veh in Median Storage, #	-	-	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	2027	177	0	166

Major/Minor

	Major2	Minor2
Conflicting Flow All	-	0 - 1013
Stage 1	-	-
Stage 2	-	-
Critical Hdwy	-	- 6.94
Critical Hdwy Stg 1	-	-
Critical Hdwy Stg 2	-	-
Follow-up Hdwy	-	- 3.32
Pot Cap-1 Maneuver	-	0 237
Stage 1	-	0 -
Stage 2	-	0 -
Platoon blocked, %	-	-
Mov Cap-1 Maneuver	-	- 237
Mov Cap-2 Maneuver	-	-
Stage 1	-	-
Stage 2	-	-

Approach

	WB	SB
HCM Control Delay, s	0	49.4
HCM LOS		E

Minor Lane/Major Mvmt

	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	237
HCM Lane V/C Ratio	-	-	0.7
HCM Control Delay (s)	-	-	49.4
HCM Lane LOS	-	-	E
HCM 95th %tile Q(veh)	-	-	4.6

The Wayforth at Apex
 5: Morris Acres Road & North Site Driveway

Build AM
 01/21/2019



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	4	11	207	4	4	66
Future Volume (vph)	4	11	207	4	4	66
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	100	
Storage Lanes	1	0		0	1	
Taper Length (ft)	25				100	
Satd. Flow (prot)	1655	0	1859	0	1770	1863
Flt Permitted	0.988				0.950	
Satd. Flow (perm)	1655	0	1859	0	1770	1863
Link Speed (mph)	25		45			45
Link Distance (ft)	317		758			1006
Travel Time (s)	8.6		11.5			15.2
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Shared Lane Traffic (%)						
Lane Group Flow (vph)	16	0	234	0	4	73
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	21.1% ICU Level of Service A
Analysis Period (min)	15

Intersection

Int Delay, s/veh 0.6

Movement WBL WBR NBT NBR SBL SBT

Lane Configurations	↔		↔		↔	↑
Traffic Vol, veh/h	4	11	207	4	4	66
Future Vol, veh/h	4	11	207	4	4	66
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	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	12	230	4	4	73

Major/Minor Minor1 Major1 Major2

Conflicting Flow All	314	232	0	0	234	0
Stage 1	232	-	-	-	-	-
Stage 2	82	-	-	-	-	-
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	679	807	-	-	1333	-
Stage 1	807	-	-	-	-	-
Stage 2	941	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	677	807	-	-	1333	-
Mov Cap-2 Maneuver	697	-	-	-	-	-
Stage 1	807	-	-	-	-	-
Stage 2	938	-	-	-	-	-

Approach WB NB SB

HCM Control Delay, s	9.8	0	0.4
HCM LOS	A		

Minor Lane/Major Mvmt NBT NBRWBLn1 SBL SBT

Capacity (veh/h)	-	-	774	1333	-
HCM Lane V/C Ratio	-	-	0.022	0.003	-
HCM Control Delay (s)	-	-	9.8	7.7	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0.1	0	-

The Wayforth at Apex
6: Morris Acres Road & South Site Driveway

Build AM
01/21/2019



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	7	7	156	4	4	105
Future Volume (vph)	7	7	156	4	4	105
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	100	
Storage Lanes	1	0		0	1	
Taper Length (ft)	25				100	
Satd. Flow (prot)	1694	0	1857	0	1770	1863
Flt Permitted	0.976				0.950	
Satd. Flow (perm)	1694	0	1857	0	1770	1863
Link Speed (mph)	25		45			45
Link Distance (ft)	369		1004			470
Travel Time (s)	10.1		15.2			7.1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Shared Lane Traffic (%)						
Lane Group Flow (vph)	16	0	177	0	4	117
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	18.5%
Analysis Period (min)	15
	ICU Level of Service A

Intersection

Int Delay, s/veh 0.6

Movement WBL WBR NBT NBR SBL SBT

Lane Configurations	↔		↔		↔	↑
Traffic Vol, veh/h	7	7	156	4	4	105
Future Vol, veh/h	7	7	156	4	4	105
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	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	8	8	173	4	4	117

Major/Minor Minor1 Major1 Major2

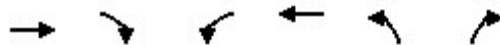
Conflicting Flow All	302	176	0	0	178	0
Stage 1	176	-	-	-	-	-
Stage 2	126	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3,518	3,318	-	-	2,218	-
Pot Cap-1 Maneuver	690	867	-	-	1398	-
Stage 1	855	-	-	-	-	-
Stage 2	900	-	-	-	-	-
Platoon blocked, %			-	-	-	-
Mov Cap-1 Maneuver	688	867	-	-	1398	-
Mov Cap-2 Maneuver	713	-	-	-	-	-
Stage 1	855	-	-	-	-	-
Stage 2	897	-	-	-	-	-

Approach WB NB SB

HCM Control Delay, s	9.7	0	0.3
HCM LOS	A		

Minor Lane/Major Mvmt NBT NBRWBLn1 SBL SBT

Capacity (veh/h)	-	-	782	1398	-
HCM Lane V/C Ratio	-	-	0.02	0.003	-
HCM Control Delay (s)	-	-	9.7	7.6	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0.1	0	-



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↻		↻	↻	↻	↻
Traffic Volume (vph)	243	131	86	281	203	97
Future Volume (vph)	243	131	86	281	203	97
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	200		200	0
Storage Lanes		0	1		1	1
Taper Length (ft)			100		100	
Satd. Flow (prot)	1775	0	1770	1863	1770	1583
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	1775	0	1770	1863	1770	1583
Link Speed (mph)	45			45	45	
Link Distance (ft)	645			534	1006	
Travel Time (s)	9.8			8.1	15.2	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Shared Lane Traffic (%)						
Lane Group Flow (vph)	394	0	91	296	214	102
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	46.8%
Analysis Period (min)	15
	ICU Level of Service A

Intersection

Int Delay, s/veh 5.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔		↔	↑	↔	↔
Traffic Vol, veh/h	243	131	86	281	203	97
Future Vol, veh/h	243	131	86	281	203	97
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	200	-	200	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	2	2
Mvmt Flow	256	138	91	296	214	102

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	394	0	802
Stage 1	-	-	-	-	325
Stage 2	-	-	-	-	477
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1165	-	353
Stage 1	-	-	-	-	732
Stage 2	-	-	-	-	624
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1165	-	325
Mov Cap-2 Maneuver	-	-	-	-	438
Stage 1	-	-	-	-	732
Stage 2	-	-	-	-	575

Approach	EB	WB	NB
HCM Control Delay, s	0	2	17.6
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	438	716	-	-	1165	-
HCM Lane V/C Ratio	0.488	0.143	-	-	0.078	-
HCM Control Delay (s)	20.8	10.9	-	-	8.3	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile Q(veh)	2.6	0.5	-	-	0.3	-

The Wayforth at Apex
 2: Morris Acres Road & Reedybrook Crossing/Central Site Driveway

Build PM
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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↘		↗	↘	
Traffic Volume (vph)	15	4	15	12	4	18	22	262	23	23	156	27
Future Volume (vph)	15	4	15	12	4	18	22	262	23	23	156	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	100		0	100		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			100			100		
Satd. Flow (prot)	0	1712	0	0	1697	0	1770	1840	0	1770	1822	0
Flt Permitted		0.978			0.983		0.950			0.950		
Satd. Flow (perm)	0	1712	0	0	1697	0	1770	1840	0	1770	1822	0
Link Speed (mph)		25			25			45			45	
Link Distance (ft)		294			267			470			758	
Travel Time (s)		8.0			7.3			7.1			11.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	38	0	0	37	0	24	317	0	26	203	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	29.1%
Analysis Period (min)	15
	ICU Level of Service A

Intersection

Int Delay, s/veh 2.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	15	4	15	12	4	18	22	262	23	23	156	27
Future Vol, veh/h	15	4	15	12	4	18	22	262	23	23	156	27
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	100	-	-
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	2	2	2	2	2	2	2	2
Mvmt Flow	17	4	17	13	4	20	24	291	26	26	173	30

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	604	605	188	603	607	304	203	0	0	317	0	0
Stage 1	239	239	-	353	353	-	-	-	-	-	-	-
Stage 2	365	366	-	250	254	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
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	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	410	412	854	411	411	736	1369	-	-	1243	-	-
Stage 1	764	708	-	664	631	-	-	-	-	-	-	-
Stage 2	654	623	-	754	697	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	384	396	854	388	395	736	1369	-	-	1243	-	-
Mov Cap-2 Maneuver	384	396	-	388	395	-	-	-	-	-	-	-
Stage 1	751	693	-	652	620	-	-	-	-	-	-	-
Stage 2	621	612	-	719	682	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	12.6	12.5	0.6	0.9
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1369	-	-	510	519	1243	-
HCM Lane V/C Ratio	0.018	-	-	0.074	0.073	0.021	-
HCM Control Delay (s)	7.7	-	-	12.6	12.5	8	-
HCM Lane LOS	A	-	-	B	B	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.2	0.2	0.1	-

The Wayforth at Apex
3: Morris Acres Road & Creekside Landing Drive

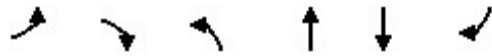
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Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	127	201	164	285	108	106
Future Volume (vph)	127	201	164	285	108	106
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	2%			-5%	5%	
Storage Length (ft)	100	0	100			0
Storage Lanes	1	1	1			0
Taper Length (ft)	55		100			
Satd. Flow (prot)	1752	1567	1814	1909	1694	0
Flt Permitted	0.950		0.432			
Satd. Flow (perm)	1752	1567	825	1909	1694	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		221			78	
Link Speed (mph)	25			45	45	
Link Distance (ft)	396			548	1004	
Travel Time (s)	10.8			8.3	15.2	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Shared Lane Traffic (%)						
Lane Group Flow (vph)	140	221	180	313	235	0
Turn Type	Prot	pm+ov	pm+pt	NA	NA	
Protected Phases	8	1	1	6	2	
Permitted Phases		8	6			
Detector Phase	8	1	1	6	2	
Switch Phase						
Minimum Initial (s)	7.0	7.0	7.0	12.0	12.0	
Minimum Split (s)	22.7	12.2	12.2	24.0	23.1	
Total Split (s)	25.0	15.0	15.0	90.0	75.0	
Total Split (%)	21.7%	13.0%	13.0%	78.3%	65.2%	
Yellow Time (s)	3.7	3.5	3.5	5.0	4.1	
All-Red Time (s)	1.0	1.7	1.7	1.0	1.0	
Lost Time Adjust (s)	0.3	-0.2	-0.2	-1.0	-0.1	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	
Lead/Lag		Lead	Lead		Lag	
Lead-Lag Optimize?		Yes	Yes		Yes	
Recall Mode	None	None	None	Min	Min	
Act Effect Green (s)	7.9	17.8	25.8	27.2	12.6	
Actuated g/C Ratio	0.19	0.44	0.63	0.67	0.31	
v/c Ratio	0.41	0.27	0.25	0.25	0.41	
Control Delay	20.1	2.2	5.3	5.1	11.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	20.1	2.2	5.3	5.1	11.6	
LOS	C	A	A	A	B	
Approach Delay	9.1			5.1	11.6	
Approach LOS	A			A	B	
Queue Length 50th (ft)	30	0	16	30	28	
Queue Length 95th (ft)	73	23	40	68	83	
Internal Link Dist (ft)	316			468	924	
Turn Bay Length (ft)	100		100			
Base Capacity (vph)	884	885	771	1909	1694	

The Wayforth at Apex
 3: Morris Acres Road & Creekside Landing Drive

Build PM
 01/21/2019

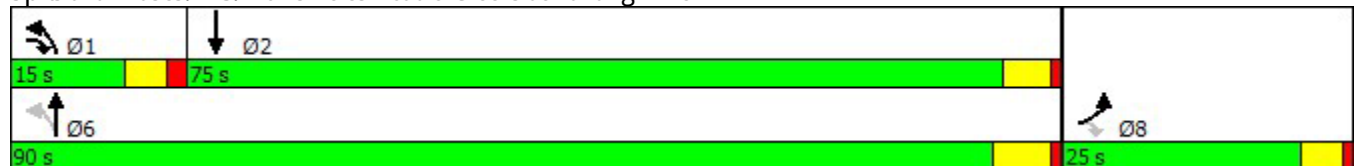


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.25	0.23	0.16	0.14	

Intersection Summary

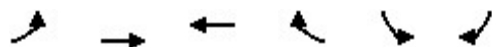
Area Type:	Other
Cycle Length:	115
Actuated Cycle Length:	40.7
Natural Cycle:	60
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.41
Intersection Signal Delay:	7.8
Intersection LOS:	A
Intersection Capacity Utilization	40.8%
ICU Level of Service	A
Analysis Period (min)	15
Description:	05-2280

Splits and Phases: 3: Morris Acres Road & Creekside Landing Drive



The Wayforth at Apex
 4: US 64 Westbound & Morris Acres Road

Build PM
 01/21/2019



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations			↑↑	↑		↑
Traffic Volume (vph)	0	0	2007	369	0	157
Future Volume (vph)	0	0	2007	369	0	157
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0			75	0	0
Storage Lanes	0			1	0	1
Taper Length (ft)	25				25	
Satd. Flow (prot)	0	0	3539	1583	0	1611
Flt Permitted						
Satd. Flow (perm)	0	0	3539	1583	0	1611
Link Speed (mph)		55	55		45	
Link Distance (ft)		890	661		383	
Travel Time (s)		11.0	8.2		5.8	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	2048	377	0	160
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	71.9%
Analysis Period (min)	15
	ICU Level of Service C

Intersection

Int Delay, s/veh 3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations			↑↑	↑		↑
Traffic Vol, veh/h	0	0	2007	369	0	157
Future Vol, veh/h	0	0	2007	369	0	157
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Stop
Storage Length	-	-	-	75	-	0
Veh in Median Storage, #	-	-	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	2048	377	0	160

Major/Minor

	Major2	Minor2
Conflicting Flow All	-	0 - 1024
Stage 1	-	-
Stage 2	-	-
Critical Hdwy	-	- 6.94
Critical Hdwy Stg 1	-	-
Critical Hdwy Stg 2	-	-
Follow-up Hdwy	-	- 3.32
Pot Cap-1 Maneuver	-	0 233
Stage 1	-	0 -
Stage 2	-	0 -
Platoon blocked, %	-	-
Mov Cap-1 Maneuver	-	- 233
Mov Cap-2 Maneuver	-	-
Stage 1	-	-
Stage 2	-	-

Approach

	WB	SB
HCM Control Delay, s	0	48.8
HCM LOS		E

Minor Lane/Major Mvmt

	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	233
HCM Lane V/C Ratio	-	-	0.688
HCM Control Delay (s)	-	-	48.8
HCM Lane LOS	-	-	E
HCM 95th %tile Q(veh)	-	-	4.4

The Wayforth at Apex
 5: Morris Acres Road & North Site Driveway

Build PM
 01/21/2019



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	4	8	293	4	12	207
Future Volume (vph)	4	8	293	4	12	207
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	100	
Storage Lanes	1	0		0	1	
Taper Length (ft)	25				100	
Satd. Flow (prot)	1664	0	1859	0	1770	1863
Flt Permitted	0.985				0.950	
Satd. Flow (perm)	1664	0	1859	0	1770	1863
Link Speed (mph)	25		45			45
Link Distance (ft)	317		758			1006
Travel Time (s)	8.6		11.5			15.2
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Shared Lane Traffic (%)						
Lane Group Flow (vph)	13	0	330	0	13	230
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	25.7%
Analysis Period (min)	15
	ICU Level of Service A

Intersection

Int Delay, s/veh 0.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔		↔	↔
Traffic Vol, veh/h	4	8	293	4	12	207
Future Vol, veh/h	4	8	293	4	12	207
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	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	9	326	4	13	230

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	585	328	0
Stage 1	328	-	-
Stage 2	257	-	-
Critical Hdwy	6.42	6.22	-
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	-
Pot Cap-1 Maneuver	473	713	-
Stage 1	730	-	-
Stage 2	786	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	468	713	-
Mov Cap-2 Maneuver	557	-	-
Stage 1	730	-	-
Stage 2	778	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.6	0	0.4
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	652	1229
HCM Lane V/C Ratio	-	-	0.02	0.011
HCM Control Delay (s)	-	-	10.6	8
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.1	0

The Wayforth at Apex
6: Morris Acres Road & South Site Driveway

Build PM
01/21/2019



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	4	5	305	11	4	179
Future Volume (vph)	4	5	305	11	4	179
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	100	
Storage Lanes	1	0		0	1	
Taper Length (ft)	25				100	
Satd. Flow (prot)	1678	0	1853	0	1770	1863
Flt Permitted	0.980				0.950	
Satd. Flow (perm)	1678	0	1853	0	1770	1863
Link Speed (mph)	25		45			45
Link Distance (ft)	369		1004			470
Travel Time (s)	10.1		15.2			7.1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Shared Lane Traffic (%)						
Lane Group Flow (vph)	10	0	351	0	4	199
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	26.7%
Analysis Period (min)	15
	ICU Level of Service A

Intersection

Int Delay, s/veh 0.3

Movement WBL WBR NBT NBR SBL SBT

Lane Configurations	W	W	T		T	T
Traffic Vol, veh/h	4	5	305	11	4	179
Future Vol, veh/h	4	5	305	11	4	179
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	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	6	339	12	4	199

Major/Minor Minor1 Major1 Major2

Conflicting Flow All	553	345	0	0	351	0
Stage 1	345	-	-	-	-	-
Stage 2	208	-	-	-	-	-
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	494	698	-	-	1208	-
Stage 1	717	-	-	-	-	-
Stage 2	827	-	-	-	-	-
Platoon blocked, %			-	-		
Mov Cap-1 Maneuver	492	698	-	-	1208	-
Mov Cap-2 Maneuver	572	-	-	-	-	-
Stage 1	717	-	-	-	-	-
Stage 2	824	-	-	-	-	-

Approach WB NB SB

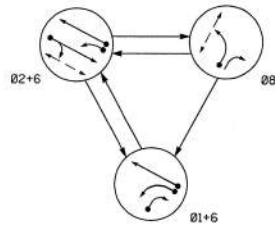
HCM Control Delay, s 10.8 0 0.2
HCM LOS B

Minor Lane/Major Mvmt NBT NBRWBLn1 SBL SBT

Capacity (veh/h)	-	-	636	1208	-
HCM Lane V/C Ratio	-	-	0.016	0.004	-
HCM Control Delay (s)	-	-	10.8	8	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0	0	-

Appendix I: Signal Plans

PHASING DIAGRAM

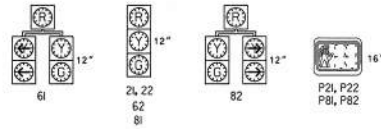


PHASING DIAGRAM DETECTION LEGEND
 ● DETECTED MOVEMENT
 ○ UNDETECTED MOVEMENT (OVERLAP)
 - UNSIGNALIZED MOVEMENT
 - PEDESTRIAN MOVEMENT

SIGNAL FACE	PHASE			
	01+6	02+6	08	01+6
21, 22	R	O	R	Y
61	G	R	Y	
62	G	R	Y	
81	R	R	G	R
82	R	R	G	R
P21, P22	DW	W	DW	DW
P81, P82	DW	DW	W	DW

SIGNAL FACE I.D.

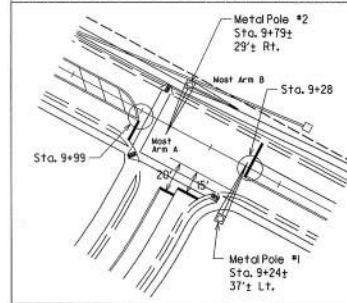
○ Denotes L.E.D.



2070L LOOP & DETECTOR INSTALLATION

INDUCTIVE LOOPS				DETECTOR PROGRAMMING								
LOOP	SIZE (FT)	TURNS	DISTANCE FROM STOPBAR (FT)	NEW LOOP	PHASE	CALLING	DIRECTION	PULL TIME (DAY)	EXTEN. LOOP	SWITCH TIME	DELAY TIME	CHG. NR
IA	6X40	2-4-2	0	Y	1	Y	Y	-	-	-	15	Y
IB	6X40	2-4-2	0	Y	1	Y	Y	-	-	-	3	Y
2A	6X6	5	300	Y	2	Y	Y	-	-	-	-	Y
6A	6X6	5	300	Y	6	Y	Y	-	-	-	-	Y
8A	6X40	2-4-2	0	Y	8	Y	Y	-	-	-	3	Y

Metal Pole and Stop Bar Locations



3 Phase Fully Actuated (Isolated)

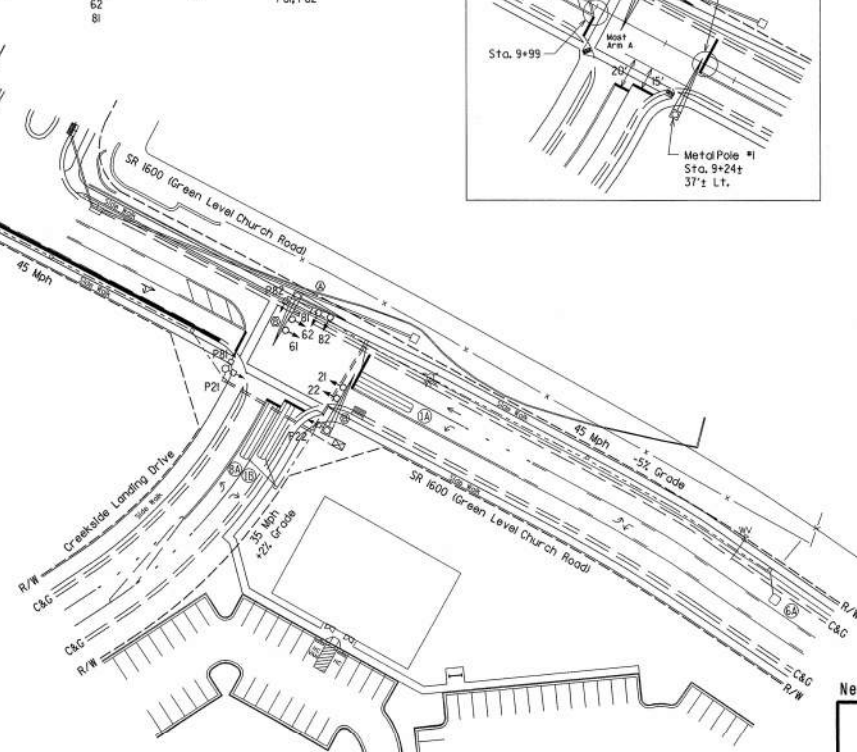
NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006, "Standard Specifications for Roads and Structures" dated July 2006 and all applicable sections of the latest version of the generic Project Special Provisions. The PSP can be accessed at the following website: <http://www.ncdot.org/doh/preconstruct/traffic/tmsbu/>
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Set all detector units to presence mode.
4. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
5. Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
6. Program pedestrian heads to countdown the flashing "Don't Walk" time only.
7. Contractor to furnish Metal Poles and Mast Arms to be black powder coated.

FEATURE	PHASE			
	1	2	6	8
Min Green 1 *	7	12	12	7
Extension 1 *	2.0	6.0	6.0	2.0
Max Green 1 *	15	90	90	25
Yellow Clearance	3.5	4.1	5.0	3.7
Red Clearance	1.7	1.0	1.0	1.0
Walk 1 *	-	7	-	7
Don't Walk 1	-	10	-	8
Seconds Per Actuation *	-	2.5	2.5	-
Max Variable Initial *	-	34	34	-
Time Before Reduction *	-	15	15	-
Time To Reduce *	-	30	30	-
Minimum Gap	-	3.0	5.0	-
Recall Mode	-	MIN RECALL	MIN RECALL	-
Vehicle Call Memory	-	YEL LOW	YEL LOW	-
Dual Entry	-	-	-	-
Simultaneous Gap	ON	ON	ON	ON

* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

PROPOSED	LEGEND	EXISTING
○	Traffic Signal Head	N/A
○	Modified Signal Head Sign	N/A
○	Pedestrian Signal Head With Push Button & Sign	N/A
○	Signal Pole with Guy	○
○	Signal Pole with Sidewalk Guy	○
□	Inductive Loop Detector Controller & Cabinet Junction Box	□
□	2-In Underground Conduit	□
-	Right of Way	-
→	Directional Arrow	→
→	Pavement Marking Arrow	→
○	Metal Pole with Mastarm	○
○	Rigid Metal Conduit	○
○	Pedestrian Signal Pedestal	○
○	Wheelchair Ramp	○
○	Green Level Church Rd	○
○	Creekside landing Dr	○



New Installation

222 N. McDowell St., Raleigh, NC 27603

RAMEY KEMP & ASSOCIATES, INC.
 TRANSPORTATION ENGINEERS

SEAL

SR 1600 (Green Level Church Rd.) at Creekside Landing Drive

Division 5 Wake County Apex

PLAN DATE: Sept 2008 REVIEWED BY: D.J. Darity

PREPARED BY: H.W. SUTCLIFF REG. PROJ. NO.: 04111 (041)

REVISIONS	INIT.	DATE

SCALE 0 40
1"=40'

SIGNATURE: DATE: 11.03.2008
 SIG. INVENTORY NO. 05-2280

MEMORANDUM

To: Mr. Sean Brennan, P.E., NCDOT
Mr. Russell Dalton, P.E., Town of Apex

From: Kevin Dean, P.E.
Kimley-Horn and Associates, Inc.

Date: April 30, 2019

Subject: The Wayforth at Apex – Traffic Analysis Addendum – Revised Site Access



Kimley-Horn has performed an addendum to the original *Wayforth at Apex TIA* (Kimley-Horn, January 2019) to determine the impacts of a revision to the site access. The original TIA for the development analyzed the site assuming three full-movement access driveways along Morris Acres Road. However, a revised development plan indicates that only two full-movement driveways will be provided, with one driveway aligning with Reedybrook Crossing and another approximately 515 feet to the south. The revised development plan is shown on the attached **Figure 1**.

As this change in access will not have impacts on any off-site intersections, it was confirmed with the Town of Apex that this addendum should only include analysis for the site driveway intersections along Morris Acres Road. It should be noted that as the previously-analyzed "North Site Driveway" is no longer proposed, the "Central Site Driveway" described in the previous analysis has been renamed to "North Site Driveway" for this addendum analysis.

This report presents trip generation, distribution, traffic analyses, and recommendations for transportation improvements required to meet anticipated traffic demands at the proposed site driveways.

Background Volume Development

AM and PM peak hour background traffic volumes were obtained from the original TIA and were not modified as part of this analysis.

Trip Generation

Trip generation data was obtained from the original TIA and was not modified as part of this analysis.

Trip Distribution and Assignment

No changes were made to the overall distribution of site traffic assumed in the original TIA. However, to account for this revised access scenario, site traffic assignment percentages were modified for this addendum. The revised site traffic assignment is shown on the attached **Figure 2**.

The attached **Figures 3 and 4** show the AM and PM peak hour site traffic and total build-out volumes at the study intersections, and volume development is detailed on the attached intersection spreadsheets.

Capacity Analysis

Consistent with the original TIA, capacity analyses were performed using Synchro Version 9.2 software. Synchro intersection level-of-service (LOS) reports are attached. The LOS for the study intersections are summarized in Table 1.

Table 2 Level-of-Service Summary		
Condition	AM Peak Hour LOS (Delay)	PM Peak Hour LOS (Delay)
Morris Acres Road at Reedybrook Crossing/North Site Driveway (Unsignalized)		
Existing (2018) Traffic	EB – A (9.4) NBL – A (7.3)	EB – B (10.2) NBL – A (7.6)
Background (2022) Traffic	EB – A (9.5) NBL – B (7.3)	EB – B (10.4) NBL – A (7.7)
Build-out (2022) Traffic	EB – B (10.2) WB – B (10.3) NBL – A (7.4) SBL – A (7.6)	EB – B (12.8) WB – B (12.6) NBL – A (7.7) SBL – A (8.0)
Morris Acres Road at South Site Driveway (Unsignalized)		
Build-out (2022) Traffic	WB – A (9.7) SBL – A (7.6)	WB – B (10.8) SBL – A (8.0)

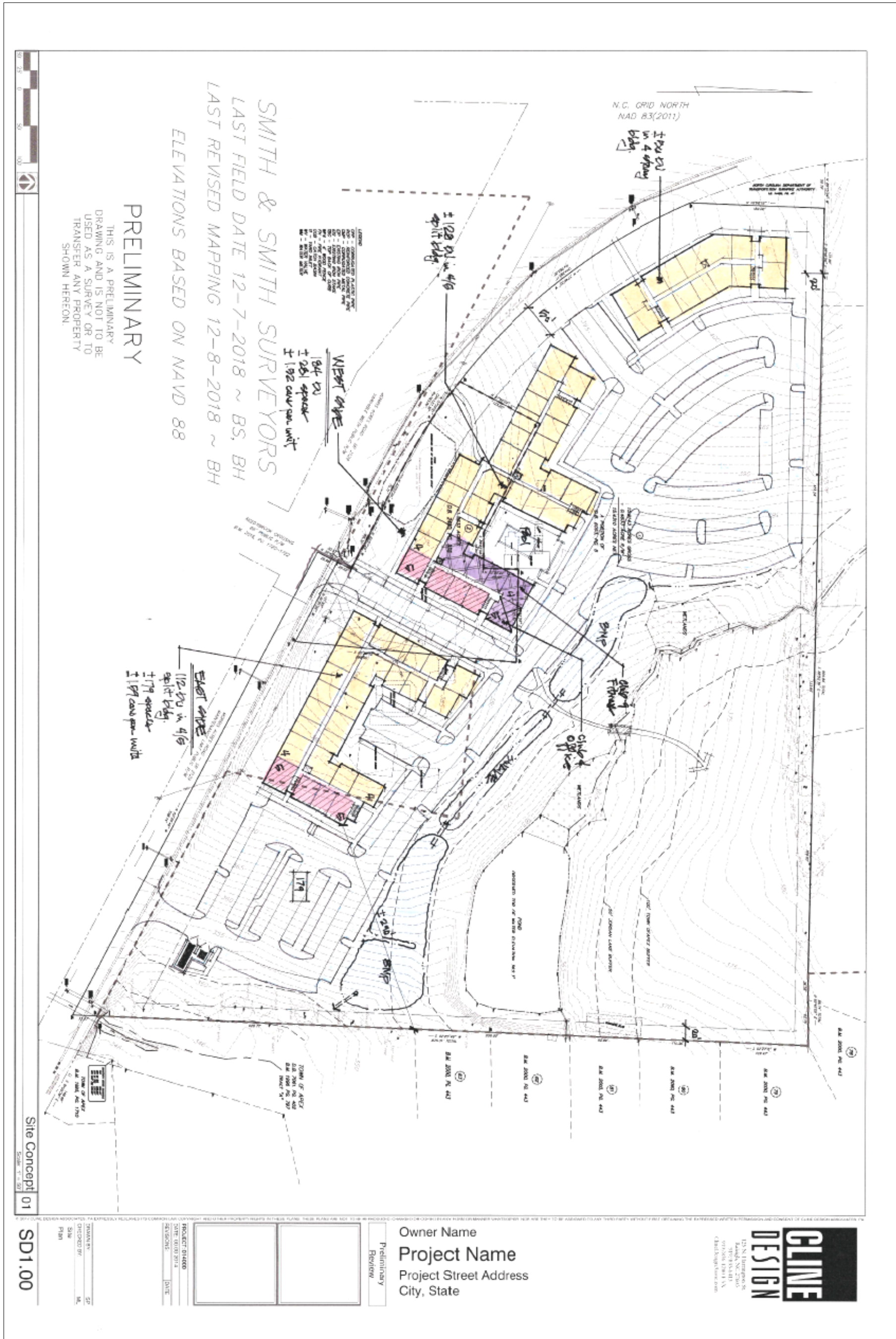
Analysis indicates that the site driveway intersections are expected to operate at an acceptable level-of-service at project build-out, and no queueing issues are expected at these intersections.

Recommendations

Based on the findings of this addendum analysis, and consistent with the original TIA, no roadway improvements are recommended to be performed to accommodate projected site traffic volumes.

The build-out roadway laneage is shown on **Figure 5**.

Should you have any questions or comments, please do not hesitate to contact me at (919) 678-4185 or kevin.dean@kimley-horn.com.

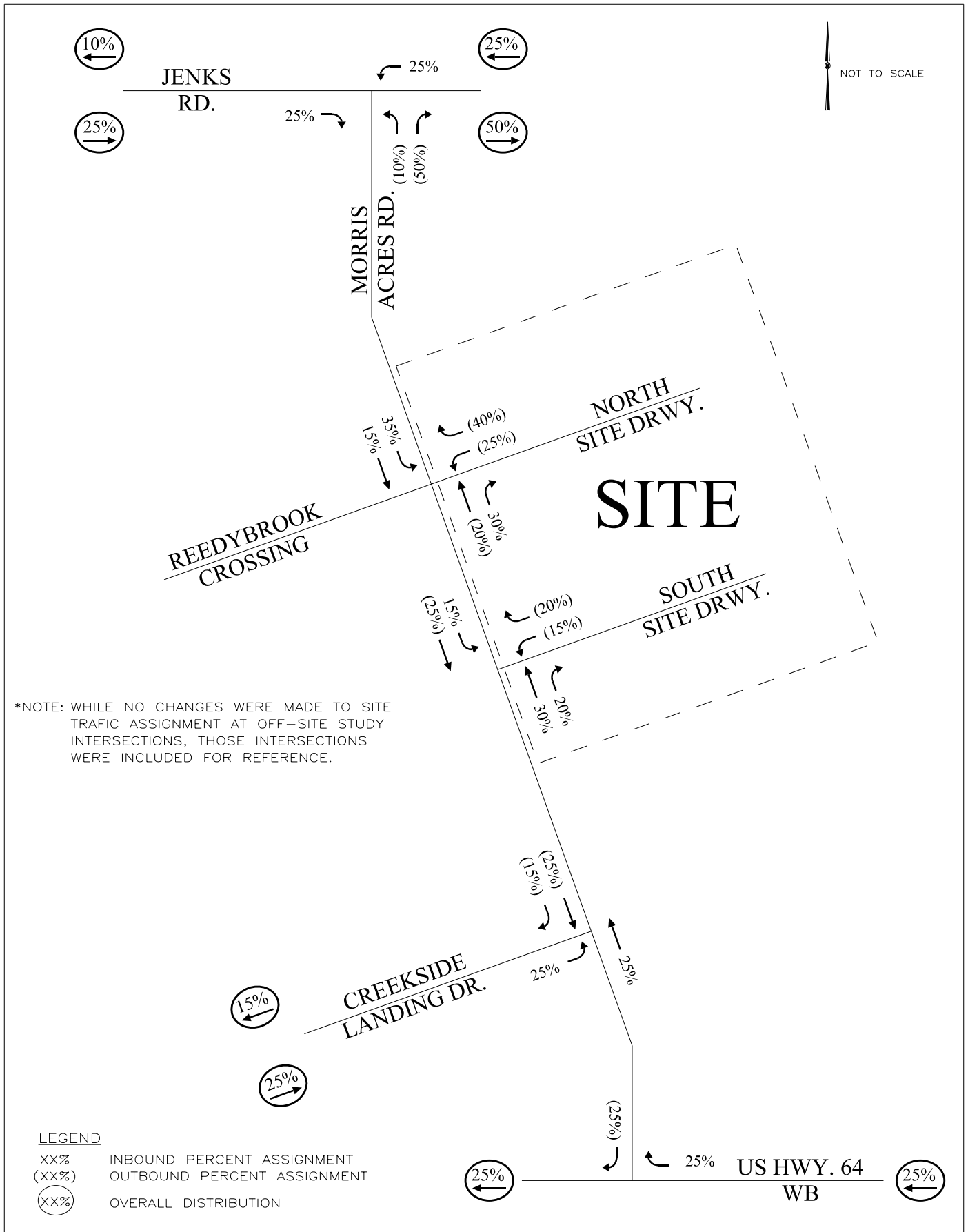


THE WAYFORTH AT APEX
 APEX, NC
 TRAFFIC CAPACITY ANALYSIS

ADDENDUM ANALYSIS –
 REVISED DEVELOPMENT PLAN

FIGURE
 1

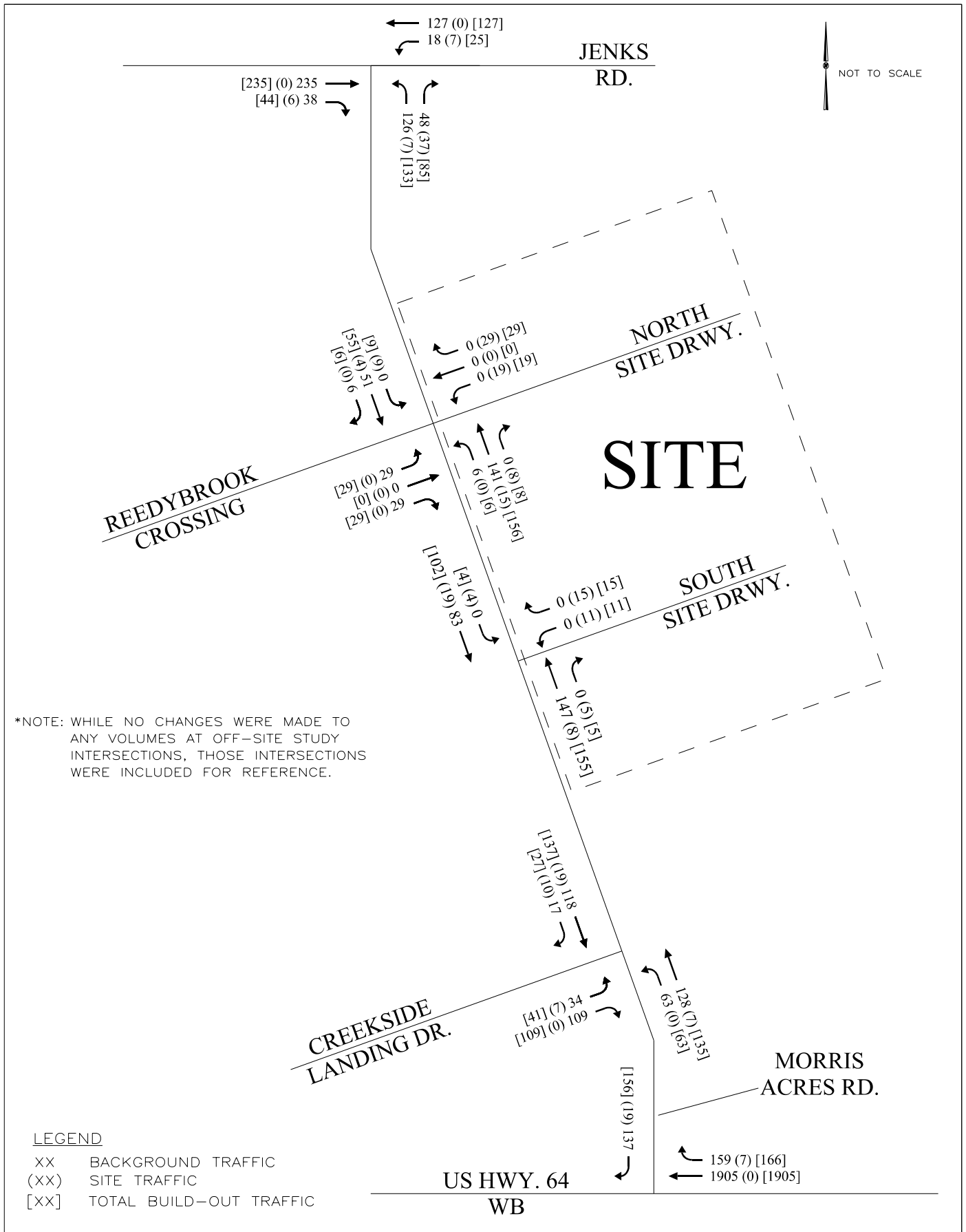
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THE WAYFORTH AT APEX
APEX, NC
TRAFFIC CAPACITY ANALYSIS

ADDENDUM ANALYSIS –
SITE TRAFFIC DISTRIBUTION
AND PERCENT ASSIGNMENT

FIGURE
2

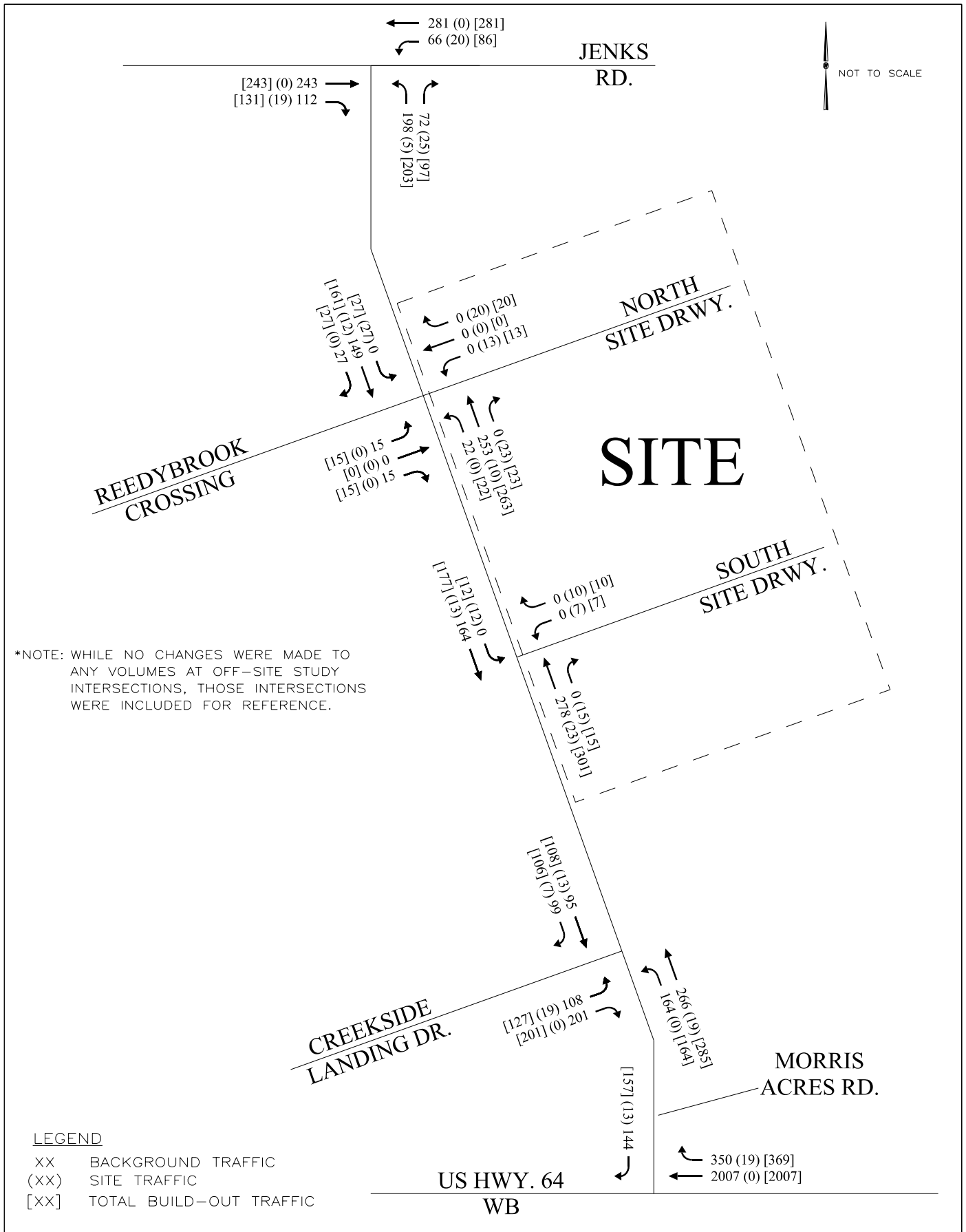


THE WAYFORTH AT APEX
APEX, NC
TRAFFIC CAPACITY ANALYSIS

ADDENDUM ANALYSIS –
PROJECTED (2022) BUILD-OUT
AM PEAK HOUR TRAFFIC VOLUMES

FIGURE
3

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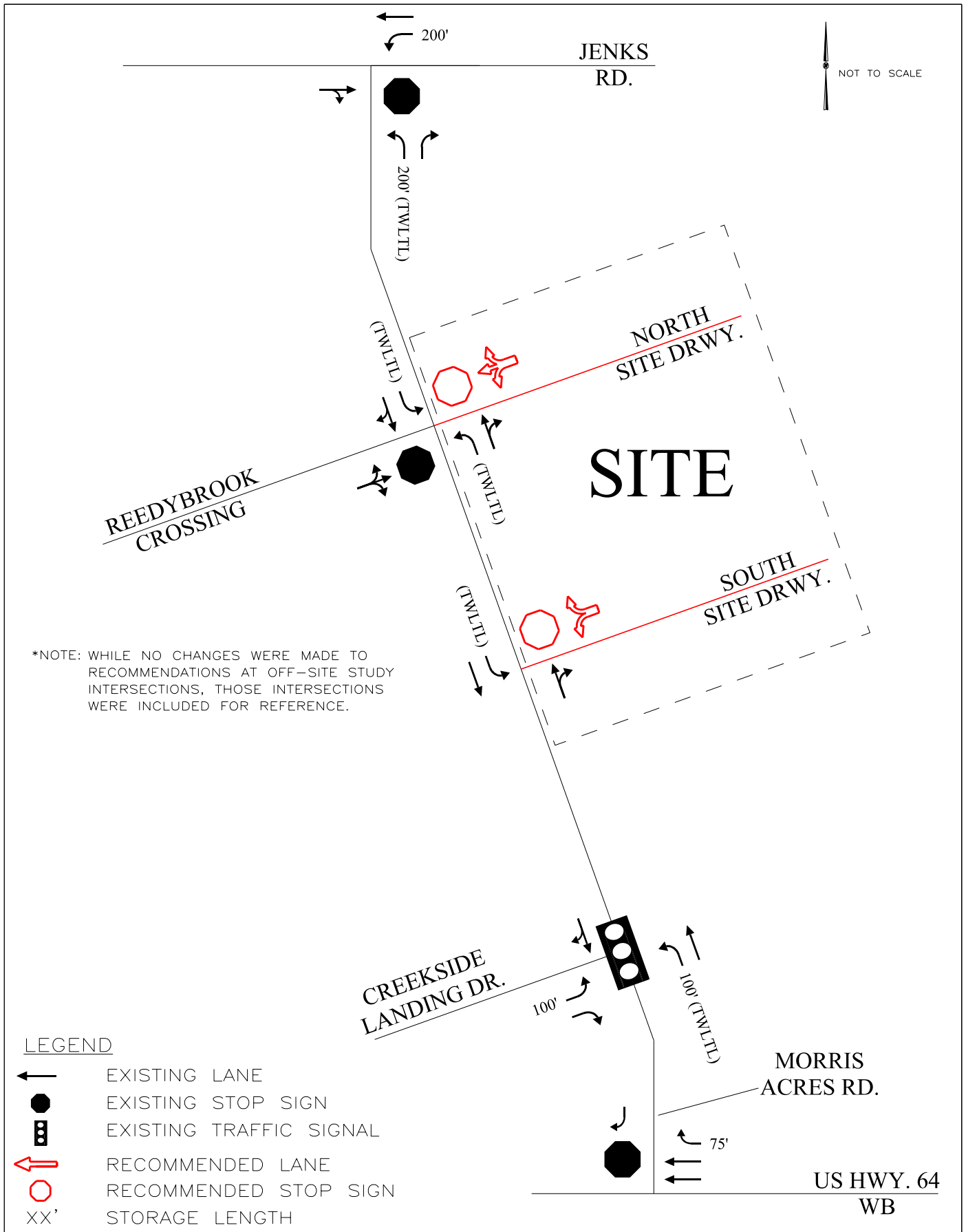


THE WAYFORTH AT APEX
 APEX, NC
 TRAFFIC CAPACITY ANALYSIS

ADDENDUM ANALYSIS –
 PROJECTED (2022) BUILD-OUT
 PM PEAK HOUR TRAFFIC VOLUMES

FIGURE
 4

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THE WAYFORTH AT APEX
 APEX, NC
 TRAFFIC CAPACITY ANALYSIS

ADDENDUM ANALYSIS –
 BUILD-OUT
 ROADWAY LANEAGE

FIGURE
 5

THIS DOCUMENT, TOGETHER WITH THE CONCEPTS AND DESIGNS PRESENTED HEREIN, AS AN INSTRUMENT OF SERVICE, IS INTENDED ONLY FOR THE SPECIFIC PURPOSE AND CLIENT FOR WHICH IT WAS PREPARED. REUSE OF AND IMPROPER RELIANCE ON THIS DOCUMENT WITHOUT WRITTEN AUTHORIZATION AND ADAPTATION BY KIMLEY-HORN AND ASSOCIATES, INC. SHALL BE WITHOUT LIABILITY TO KIMLEY-HORN AND ASSOCIATES, INC.

INTERSECTION ANALYSIS SHEET

Project:	The Wayforth at Apex
Location:	Apex, NC
Scenario:	Addendum - 2 Site Driveways
Ct. Date:	Balance with Jenks at Morris Acres
N/S Street:	Morris Acres Road
E/W Street:	Reedybrook Crossing/North Site Driveway

Net New Trips:	AM In	AM Out	PM In	PM Out
	26	74	77	50

Annual Growth Rate:	3.0%	Existing Year:	2018
Growth Factor:	0.125509	Buildout Year:	2022

AM PEAK HOUR AM PHF = 0.90

Description	Reedybrook Crossing			North Site Driveway			Morris Acres Road			Morris Acres Road		
	Eastbound			Westbound			Northbound			Southbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
2018 Traffic Count	0	0	0	0	0	0	0	0	0	0	0	0
Count Balancing	26	0	26	0	0	0	5	125	0	0	45	5
2018 Existing Traffic	26	0	26	0	0	0	5	125	0	0	45	5
Growth Factor (0.03 per year)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.126	0.000	0.000	0.126	0.000
2022 Background Growth	0	0	0	0	0	0	0	16	0	0	6	0
Committed Projects												
Beaver Creek Phase 4 Residential	3	0	3	0	0	0	1	0	0	0	0	1
Total Committed Traffic	3	0	3	0	0	0	1	0	0	0	0	1
2022 Background Traffic	29	0	29	0	0	0	6	141	0	0	51	6
Project Traffic												
Percent Assignment Inbound	0%	0%	0%	0%	0%	0%	0%	0%	30%	35%	15%	0%
Inbound Project Traffic	0	0	0	0	0	0	0	0	8	9	4	0
Percent Assignment Outbound	0%	0%	0%	25%	0%	40%	0%	20%	0%	0%	0%	0%
Outbound Project Traffic	0	0	0	19	0	29	0	15	0	0	0	0
Total Project Traffic	0	0	0	19	0	29	0	15	8	9	4	0
2022 Buildout Total	29	0	29	19	0	29	6	156	8	9	55	6
Percent Impact (Approach)	0.0%			100.0%			13.5%			18.7%		
Overall Percent Impact	24.3%											

PM PEAK HOUR PM PHF = 0.90

Description	Reedybrook Crossing			North Site Driveway			Morris Acres Road			Morris Acres Road		
	Eastbound			Westbound			Northbound			Southbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
2018 Traffic Count	0	0	0	0	0	0	0	0	0	0	0	0
Count Balancing	14	0	14	0	0	0	20	225	0	0	132	24
2018 Existing Traffic	14	0	14	0	0	0	20	225	0	0	132	24
Growth Factor (0.03 per year)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.126	0.000	0.000	0.126	0.000
2022 Background Growth	0	0	0	0	0	0	0	28	0	0	17	0
Committed Projects												
Beaver Creek Phase 4 Residential	1	0	1	0	0	0	2	0	0	0	0	3
Total Committed Traffic	1	0	1	0	0	0	2	0	0	0	0	3
2022 Background Traffic	15	0	15	0	0	0	22	253	0	0	149	27
Project Traffic												
Percent Assignment Inbound	0%	0%	0%	0%	0%	0%	0%	0%	30%	35%	15%	0%
Inbound Project Traffic	0	0	0	0	0	0	0	0	23	27	12	0
Percent Assignment Outbound	0%	0%	0%	25%	0%	40%	0%	20%	0%	0%	0%	0%
Outbound Project Traffic	0	0	0	13	0	20	0	10	0	0	0	0
Total Project Traffic	0	0	0	13	0	20	0	10	23	27	12	0
2022 Buildout Total	15	0	15	13	0	20	22	263	23	27	161	27
Percent Impact (Approach)	0.0%			100.0%			10.7%			18.2%		
Overall Percent Impact	18.0%											

INTERSECTION ANALYSIS SHEET

Project:	The Wayforth at Apex
Location:	Apex, NC
Ct. Date:	Balance with Jenks at Morris Acres
N/S Street:	Morris Acres Road
E/W Street:	South Site Driveway

AM In	AM Out	PM In	PM Out
26	74	77	50

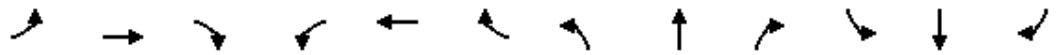
Annual Growth Rate:	3.0%	Existing Year:	2018
Growth Factor:	0.125509	Buildout Year:	2022

AM PEAK HOUR AM PHF = 0.90

Description	South Site Driveway Eastbound			South Site Driveway Westbound			Morris Acres Road Northbound			Morris Acres Road Southbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
2018 Traffic Count	0	0	0	0	0	0	0	0	0	0	0	0
Count Balancing	0	0	0	0	0	0	0	130	0	0	71	0
2018 Existing Traffic	0	0	0	0	0	0	0	130	0	0	71	0
Growth Factor (0.03 per year)	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126
2022 Background Growth	0	0	0	0	0	0	0	16	0	0	9	0
Committed Projects												
Beaver Creek Phase 4 Residential	0	0	0	0	0	0	0	1	0	0	3	0
Total Committed Traffic	0	0	0	0	0	0	0	1	0	0	3	0
2022 Background Traffic	0	0	0	0	0	0	0	147	0	0	83	0
Project Traffic												
Percent Assignment Inbound	0%	0%	0%	0%	0%	0%	0%	30%	20%	15%	0%	0%
Inbound Project Traffic	0	0	0	0	0	0	0	8	5	4	0	0
Percent Assignment Outbound	0%	0%	0%	15%	0%	20%	0%	0%	0%	0%	25%	0%
Outbound Project Traffic	0	0	0	11	0	15	0	0	0	0	19	0
Total Project Traffic	0	0	0	11	0	15	0	8	5	4	19	0
2022 Buildout Total	0	0	0	11	0	15	0	155	5	4	102	0
Percent Impact (Approach)	-	-	-	100.0%	-	-	8.1%	-	-	21.8%	-	-
Overall Percent Impact	21.3%											

PM PEAK HOUR PM PHF = 0.90

Description	South Site Driveway Eastbound			South Site Driveway Westbound			Morris Acres Road Northbound			Morris Acres Road Southbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
2018 Traffic Count	0	0	0	0	0	0	0	0	0	0	0	0
Count Balancing	0	0	0	0	0	0	0	244	0	0	145	0
2018 Existing Traffic	0	0	0	0	0	0	0	244	0	0	145	0
Growth Factor (0.03 per year)	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126
2022 Background Growth	0	0	0	0	0	0	0	31	0	0	18	0
Committed Projects												
Beaver Creek Phase 4 Residential	0	0	0	0	0	0	0	2	0	0	1	0
Total Committed Traffic	0	0	0	0	0	0	0	2	0	0	1	0
2022 Background Traffic	0	0	0	0	0	0	0	278	0	0	164	0
Project Traffic												
Percent Assignment Inbound	0%	0%	0%	0%	0%	0%	0%	30%	20%	15%	0%	0%
Inbound Project Traffic	0	0	0	0	0	0	0	23	15	12	0	0
Percent Assignment Outbound	0%	0%	0%	15%	0%	20%	0%	0%	0%	0%	25%	0%
Outbound Project Traffic	0	0	0	7	0	10	0	0	0	0	13	0
Total Project Traffic	0	0	0	7	0	10	0	23	15	12	13	0
2022 Buildout Total	0	0	0	7	0	10	0	301	15	12	177	0
Percent Impact (Approach)	-	-	-	100.0%	-	-	12.0%	-	-	13.2%	-	-
Overall Percent Impact	15.3%											



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↘		↗	↘	
Traffic Volume (vph)	29	4	29	19	4	29	6	156	8	9	55	6
Future Volume (vph)	29	4	29	19	4	29	6	156	8	9	55	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	100		0	100		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			100			100		
Satd. Flow (prot)	0	1703	0	0	1690	0	1770	1850	0	1770	1835	0
Flt Permitted		0.977			0.982		0.950			0.950		
Satd. Flow (perm)	0	1703	0	0	1690	0	1770	1850	0	1770	1835	0
Link Speed (mph)		25			25			45			45	
Link Distance (ft)		294			267			470			758	
Travel Time (s)		8.0			7.3			7.1			11.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	68	0	0	57	0	7	182	0	10	68	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	20.6%
ICU Level of Service	A
Analysis Period (min)	15

Intersection												
Int Delay, s/veh	3.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↔	↔		↔	↔	
Traffic Vol, veh/h	29	4	29	19	4	29	6	156	8	9	55	6
Future Vol, veh/h	29	4	29	19	4	29	6	156	8	9	55	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	100	-	-
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	2	2	2	2	2	2	2	2
Mvmt Flow	32	4	32	21	4	32	7	173	9	10	61	7

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	293	280	64	294	279	178	68	0	0	182	0	0
Stage 1	84	84	-	191	191	-	-	-	-	-	-	-
Stage 2	209	196	-	103	88	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
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	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	659	628	1000	658	629	865	1533	-	-	1393	-	-
Stage 1	924	825	-	811	742	-	-	-	-	-	-	-
Stage 2	793	739	-	903	822	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	625	621	1000	628	622	865	1533	-	-	1393	-	-
Mov Cap-2 Maneuver	625	621	-	628	622	-	-	-	-	-	-	-
Stage 1	920	819	-	807	739	-	-	-	-	-	-	-
Stage 2	755	736	-	863	816	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.2	10.3	0.3	1
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1533	-	-	758	741	1393	-	-
HCM Lane V/C Ratio	0.004	-	-	0.091	0.078	0.007	-	-
HCM Control Delay (s)	7.4	-	-	10.2	10.3	7.6	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.3	0.3	0	-	-

The Wayforth at Apex
 5: Morris Acres Road & South Site Driveway



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	11	15	155	5	4	102
Future Volume (vph)	11	15	155	5	4	102
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	100	
Storage Lanes	1	0		0	1	
Taper Length (ft)	25				100	
Satd. Flow (prot)	1681	0	1853	0	1770	1863
Flt Permitted	0.980				0.950	
Satd. Flow (perm)	1681	0	1853	0	1770	1863
Link Speed (mph)	25		45			45
Link Distance (ft)	369		1004			470
Travel Time (s)	10.1		15.2			7.1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Shared Lane Traffic (%)						
Lane Group Flow (vph)	29	0	178	0	4	113
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	18.5%
ICU Level of Service	A
Analysis Period (min)	15

Intersection						
Int Delay, s/veh	1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	T		T		T	T
Traffic Vol, veh/h	11	15	155	5	4	102
Future Vol, veh/h	11	15	155	5	4	102
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	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	12	17	172	6	4	113

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	297	175	0	0	178
Stage 1	175	-	-	-	-
Stage 2	122	-	-	-	-
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	694	868	-	-	1398
Stage 1	855	-	-	-	-
Stage 2	903	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	692	868	-	-	1398
Mov Cap-2 Maneuver	715	-	-	-	-
Stage 1	855	-	-	-	-
Stage 2	900	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.7	0	0.3
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	796	1398	-
HCM Lane V/C Ratio	-	-	0.036	0.003	-
HCM Control Delay (s)	-	-	9.7	7.6	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0.1	0	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↘		↗	↘	
Traffic Volume (vph)	15	4	15	13	4	20	22	263	23	27	161	27
Future Volume (vph)	15	4	15	13	4	20	22	263	23	27	161	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	100		0	100		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			100			100		
Satd. Flow (prot)	0	1712	0	0	1696	0	1770	1840	0	1770	1822	0
Flt Permitted		0.978			0.983		0.950			0.950		
Satd. Flow (perm)	0	1712	0	0	1696	0	1770	1840	0	1770	1822	0
Link Speed (mph)		25			25			45			45	
Link Distance (ft)		294			267			470			758	
Travel Time (s)		8.0			7.3			7.1			11.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	38	0	0	40	0	24	318	0	30	209	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	31.9%
ICU Level of Service	A
Analysis Period (min)	15

Intersection												
Int Delay, s/veh	2.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↔	↔		↔	↔	
Traffic Vol, veh/h	15	4	15	13	4	20	22	263	23	27	161	27
Future Vol, veh/h	15	4	15	13	4	20	22	263	23	27	161	27
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	100	-	-
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	2	2	2	2	2	2	2	2
Mvmt Flow	17	4	17	14	4	22	24	292	26	30	179	30

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	621	621	194	618	623	305	209	0	0	318	0	0
Stage 1	254	254	-	354	354	-	-	-	-	-	-	-
Stage 2	367	367	-	264	269	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
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	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	400	403	847	402	402	735	1362	-	-	1242	-	-
Stage 1	750	697	-	663	630	-	-	-	-	-	-	-
Stage 2	653	622	-	741	687	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	372	386	847	378	385	735	1362	-	-	1242	-	-
Mov Cap-2 Maneuver	372	386	-	378	385	-	-	-	-	-	-	-
Stage 1	737	680	-	651	619	-	-	-	-	-	-	-
Stage 2	618	611	-	704	670	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	12.8	12.6	0.5	1
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1362	-	-	497	514	1242	-	-
HCM Lane V/C Ratio	0.018	-	-	0.076	0.08	0.024	-	-
HCM Control Delay (s)	7.7	-	-	12.8	12.6	8	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.2	0.3	0.1	-	-

The Wayforth at Apex
 5: Morris Acres Road & South Site Driveway



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	7	10	301	15	12	177
Future Volume (vph)	7	10	301	15	12	177
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	100	
Storage Lanes	1	0		0	1	
Taper Length (ft)	25				100	
Satd. Flow (prot)	1681	0	1850	0	1770	1863
Flt Permitted	0.979				0.950	
Satd. Flow (perm)	1681	0	1850	0	1770	1863
Link Speed (mph)	25		45			45
Link Distance (ft)	369		1004			470
Travel Time (s)	10.1		15.2			7.1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Shared Lane Traffic (%)						
Lane Group Flow (vph)	19	0	351	0	13	197
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	26.8%
	ICU Level of Service A
Analysis Period (min)	15

Intersection						
Int Delay, s/veh	0.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔		↔	↔
Traffic Vol, veh/h	7	10	301	15	12	177
Future Vol, veh/h	7	10	301	15	12	177
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	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	8	11	334	17	13	197

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	566	343	0	0	351
Stage 1	343	-	-	-	-
Stage 2	223	-	-	-	-
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	486	700	-	-	1208
Stage 1	719	-	-	-	-
Stage 2	814	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	481	700	-	-	1208
Mov Cap-2 Maneuver	564	-	-	-	-
Stage 1	719	-	-	-	-
Stage 2	805	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.8	0	0.5
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	637	1208	-
HCM Lane V/C Ratio	-	-	0.03	0.011	-
HCM Control Delay (s)	-	-	10.8	8	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.1	0	-

PLANNING BOARD REPORT TO TOWN COUNCIL

Rezoning #19CZ02 Morris Acres PUD

September 9, 2019 Planning Board Meeting



Planning Board Recommendation:

Motion: To recommend approval of the 2045 Land Use Map amendment and rezoning #19CZ02

Introduced by Planning Board member: Reginald Skinner

Seconded by Planning Board member: Tommy Pate

Approval: the project is consistent with all applicable officially adopted plans and the applicable legislative considerations listed above.

Approval with conditions: the project is not consistent with all applicable officially adopted plans and/or the applicable legislative considerations as noted above, so the following conditions are recommended to be included in the project in order to make it fully consistent:

Conditions as offered by the applicant and presented by staff.

Denial: the project is not consistent with all applicable officially adopted plans.

With 4 Planning Board Member(s) voting "aye"

With 3 Planning Board Member(s) voting "no"

Reasons for dissenting votes:

- Beth Godfrey - relying on Medium Density on 2030 Land Use Map.
- Tina Sherman and Mark Steele - a) relying on Medium Density on 2030 Land Use Map and b) want more affordable housing provided.

This report reflects the recommendation of the Planning Board, this the 9th day of September 2019.

Attest:

Margo J. Bills
Margo Bills, Planning Board Chair

Dianne F. Khin
Dianne Khin, Planning Director

PLANNING BOARD REPORT TO TOWN COUNCIL

Rezoning #19CZ02 Morris Acres PUD

September 9, 2019 Planning Board Meeting



Report Requirements:

Per NCGS 160A-387, all proposed amendments to the zoning ordinance or zoning map shall have a written report provided from the Planning Board to the Town Council within 30 days of referral of the amendment to the Planning Board, or the Town Council may proceed in its consideration of the amendment without the Planning Board report. Furthermore, in no case is the Town Council bound by the recommendations, if any, of the Planning Board.

Per NCGS 160A-383, the Planning Board shall advise and comment on whether the proposed zoning amendment is consistent with all applicable officially adopted plans, and provide a written recommendation to the Town Council that addresses plan consistency and other matters as deemed appropriate by the Planning Board, but a comment by the Planning Board that a proposed amendment is inconsistent with the officially adopted plans shall not preclude consideration or approval of the proposed amendment by the Town Council.

PROJECT DESCRIPTION:

Acreage: ± 17.4376 acres
PINs: 0732289587, 0732382530, 0732382709
Current Zoning: Rural Residential (RR)
Proposed Zoning: Planned Unit Development-Conditional Zoning (PUD-CZ)
2045 Land Use Map: Medium Density Residential
Proposed 2045 Land Use Map: High Density Residential
Town Limits: 0732382709 is in the ETJ; PINs 0732289587 & 0732382530 are in Town limits

Applicable Officially Adopted Plans:

The Board must state whether the project is consistent or inconsistent with the following officially adopted plans, if applicable. Applicable plans have a check mark next to them.

2045 Land Use Map
 Consistent Inconsistent Reason: with
amendment to 2045 Land Use Map

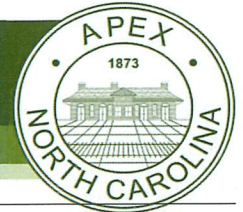
Apex Transportation Plan
 Consistent Inconsistent Reason: _____

Parks, Recreation, Open Space, and Greenways Plan
 Consistent Inconsistent Reason: _____

PLANNING BOARD REPORT TO TOWN COUNCIL

Rezoning #19CZ02 Morris Acres PUD

September 9, 2019 Planning Board Meeting



Legislative Considerations:

The applicant shall propose site-specific standards and conditions that take into account the following considerations, which are considerations that are relevant to the legislative determination of whether or not the proposed conditional zoning district rezoning request is in the public interest. These considerations do not exclude the legislative consideration of any other factor that is relevant to the public interest.

1. *Consistency with 2045 Land Use Map.* The proposed Conditional Zoning (CZ) District use's appropriateness for its proposed location and consistency with the purposes, goals, objectives, and policies of the 2045 Land Use Map.

Consistent

Inconsistent

Reason: with

amendment to 2045 Land Use Map.

2. *Compatibility.* The proposed Conditional Zoning (CZ) District use's appropriateness for its proposed location and compatibility with the character of surrounding land uses.

Consistent

Inconsistent

Reason: _____

3. *Zoning district supplemental standards.* The proposed Conditional Zoning (CZ) District use's compliance with Sec. 4.4 Supplemental Standards, if applicable.

Consistent

Inconsistent

Reason: _____

4. *Design minimizes adverse impact.* The design of the proposed Conditional Zoning (CZ) District use's minimization of adverse effects, including visual impact of the proposed use on adjacent lands; and avoidance of significant adverse impacts on surrounding lands regarding trash, traffic, service delivery, parking and loading, odors, noise, glare, and vibration and not create a nuisance.

Consistent

Inconsistent

Reason: _____

5. *Design minimizes environmental impact.* The proposed Conditional Zoning District use's minimization of environmental impacts and protection from significant deterioration of water and air resources, wildlife habitat, scenic resources, and other natural resources.

Consistent

Inconsistent

Reason: _____

PLANNING BOARD REPORT TO TOWN COUNCIL

Rezoning #19CZ02 Morris Acres PUD

September 9, 2019 Planning Board Meeting



6. *Impact on public facilities.* The proposed Conditional Zoning (CZ) District use's avoidance of having adverse impacts on public facilities and services, including roads, potable water and wastewater facilities, parks, schools, police, fire and EMS facilities.

Consistent Inconsistent Reason: _____

7. *Health, safety, and welfare.* The proposed Conditional Zoning (CZ) District use's effect on the health, safety, or welfare of the residents of the Town or its ETJ.

Consistent Inconsistent Reason: _____

8. *Detrimental to adjacent properties.* Whether the proposed Conditional Zoning (CZ) District use is substantially detrimental to adjacent properties.

Consistent Inconsistent Reason: _____

9. *Not constitute nuisance or hazard.* Whether the proposed Conditional Zoning (CZ) District use constitutes a nuisance or hazard due to traffic impact or noise, or because of the number of persons who will be using the Conditional Zoning (CZ) District use.

Consistent Inconsistent Reason: _____

10. *Other relevant standards of this Ordinance.* Whether the proposed Conditional Zoning (CZ) District use complies with all standards imposed on it by all other applicable provisions of this Ordinance for use, layout, and general development characteristics.

Consistent Inconsistent Reason: _____



2045 LAND USE MAP AMENDMENT & CONDITIONAL ZONING #19CZ02
Morris Acres PUD

Pursuant to the provisions of North Carolina General Statutes Section 160A-364 and to the Town of Apex Unified Development Ordinance (UDO) Section 2.2.11, notice is hereby given of public hearings before the Planning Board and Town Council of the Town of Apex. The purpose of these hearings is to consider the following:

- Applicant:** Kaplan Residential
- Authorized Agent:** Jason Barron, Morningstar Law Group
- Property Addresses:** 0, 7208, & 7208B Morris Acres Road
- Acreage:** ± 17.4376
- Property Identification Numbers (PINs):** 0732289587, 0732382530, & 0732382709
- Existing 2045 Land Use Map Designation:** Medium Density Residential
- Proposed 2045 Land Use Map Designation:** High Density Residential
- Existing Zoning of Property:** Rural Residential (RR)
- Proposed Zoning of Property:** Planned Unit Development-Conditional Zoning (PUD-CZ)

Public Hearing Location: Apex Town Hall
73 Hunter Street, Apex, North Carolina
Council Chambers, 2nd Floor

Planning Board Public Hearing Date and Time: ~~July 8, 2019~~ **August 12, 2019 4:30 P.M.**
Town Council Public Hearing Date and Time: ~~July 16, 2019~~ **August 20, 2019 7:00 P.M.**

Vicinity Map:



Property owners within 300 feet of the proposed conditional zoning have been sent this notice via first class mail. All interested parties may appear at the public hearing and be heard with respect to the application. Maps showing the location for the above site(s) to be considered in addition to a copy of the [2045 Land Use Map](#) can be inspected at the Apex Town Hall or call 919-249-3426, Department of Planning and Community Development for further information. To view the petition and related documents on-line: <https://www.apexnc.org/DocumentCenter/View/26285>.

Dianne F. Khin, AICP
Planning Director

Published Dates: June 21, 2019 - ~~July 17, 2019~~ **August 20, 2019**



TOWN OF APEX
POST OFFICE BOX 250
APEX, NORTH CAROLINA 27502
PHONE 919-249-3426

**PUBLIC NOTIFICATION
OF PUBLIC HEARINGS**

CONTINUED

2045 LAND USE MAP AMENDMENT &
CONDITIONAL ZONING #19CZ02
Morris Acres PUD

Pursuant to the provisions of North Carolina General Statutes Section 160A-364 and to the Town of Apex Unified Development Ordinance (UDO) Section 2.2.11, notice is hereby given of public hearings before the Planning Board and Town Council of the Town of Apex. The purpose of these hearings is to consider the following:

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Authorized Agent: Jason Barron, Morningstar Law Group
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Existing 2045 Land Use Map Designation: Medium Density Residential
Proposed 2045 Land Use Map Designation: High Density Residential
Existing Zoning of Property: Rural Residential (RR)
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Council Chambers, 2nd Floor

Planning Board Public Hearing Date and Time: ~~July 8, 2019~~ August 12, 2019 4:30 P.M.
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Property owners within 300 feet of the proposed conditional zoning have been sent this notice via first class mail. All interested parties may appear at the public hearing and be heard with respect to the application. Maps showing the location for the above site(s) to be considered in addition to a copy of the [2045 Land Use Map](#) can be inspected at the Apex Town Hall or call 919-249-3426, Department of Planning and Community Development for further information. To view the petition and related documents on-line: <https://www.apexnc.org/DocumentCenter/View/26285>.

Dianne F. Khin, AICP
Planning Director



TOWN OF APEX
POST OFFICE BOX 250
APEX, NORTH CAROLINA 27502
PHONE 919-249-3426

PUBLIC NOTIFICATION OF PUBLIC HEARINGS

2045 LAND USE MAP AMENDMENT & CONDITIONAL ZONING #19CZ02 Morris Acres PUD

Pursuant to the provisions of North Carolina General Statutes Section 160A-364 and to the Town of Apex Unified Development Ordinance (UDO) Section 2.2.11, notice is hereby given of public hearings before the Planning Board and Town Council of the Town of Apex. The purpose of these hearings is to consider the following:

Applicant: Kaplan Residential

Authorized Agent: Jason Barron, Morningstar Law Group

Property Addresses: 0, 7208, & 7208B Morris Acres Road

Acreage: ± 17.4376

Property Identification Numbers (PINs): 0732289587, 0732382530, & 0732382709

Existing 2045 Land Use Map Designation: Medium Density Residential

Proposed 2045 Land Use Map Designation: High Density Residential

Existing Zoning of Property: Rural Residential (RR)

Proposed Zoning of Property: Planned Unit Development-Conditional Zoning (PUD-CZ)

Public Hearing Location: Apex Town Hall
73 Hunter Street, Apex, North Carolina
Council Chambers, 2nd Floor

Planning Board Public Hearing Date and Time: July 8, 2019 4:30 P.M.

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Property owners within 300 feet of the proposed conditional zoning have been sent this notice via first class mail. All interested parties may appear at the public hearing and be heard with respect to the application. Maps showing the location for the above site(s) to be considered in addition to a copy of the [2045 Land Use Map](#) can be inspected at the Apex Town Hall or call 919-249-3426, Department of Planning and Community Development for further information. To view the petition and related documents on-line: <https://www.apexnc.org/DocumentCenter/View/26285>.

Dianne F. Khin, AICP
Planning Director



TOWN OF APEX
 POST OFFICE BOX 250
 APEX, NORTH CAROLINA 27502
 PHONE 919-249-3426

**PUBLIC NOTIFICATION
 OF PUBLIC HEARINGS
 CONTINUED**

**2045 LAND USE MAP AMENDMENT &
 CONDITIONAL ZONING #19CZ02
 Morris Acres PUD**

Pursuant to the provisions of North Carolina General Statutes Section 160A-364 and to the Town of Apex Unified Development Ordinance (UDO) Section 2.2.11, notice is hereby given of public hearings before the Planning Board and Town Council of the Town of Apex. The purpose of these hearings is to consider the following:

- Applicant:** Kaplan Residential
- Authorized Agent:** Jason Barron, Morningstar Law Group
- Property Addresses:** 0, 7208, & 7208B Morris Acres Road
- Acreage:** ± 17.4376
- Property Identification Numbers (PINs):** 0732289587, 0732382530, & 0732382709
- Existing 2045 Land Use Map Designation:** Medium Density Residential
- Proposed 2045 Land Use Map Designation:** High Density Residential
- Existing Zoning of Property:** Rural Residential (RR)
- Proposed Zoning of Property:** Planned Unit Development-Conditional Zoning (PUD-CZ)

Public Hearing Location: Apex Town Hall
 73 Hunter Street, Apex, North Carolina
 Council Chambers, 2nd Floor

Planning Board Public Hearing Date and Time: ~~July 8, 2019~~ **August 12, 2019 4:30 P.M.**
Town Council Public Hearing Date and Time: ~~July 16, 2019~~ **August 20, 2019 7:00 P.M.**

Vicinity Map:



Property owners within 300 feet of the proposed conditional zoning have been sent this notice via first class mail. All interested parties may appear at the public hearing and be heard with respect to the application. Maps showing the location for the above site(s) to be considered in addition to a copy of the [2045 Land Use Map](#) can be inspected at the Apex Town Hall or call 919-249-3426, Department of Planning and Community Development for further information. To view the petition and related documents on-line: <https://www.apexnc.org/DocumentCenter/View/26285>.

Dianne F. Khin, AICP
 Planning Director



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PUBLIC NOTIFICATION OF PUBLIC HEARINGS

CONTINUED

2045 LAND USE MAP AMENDMENT & CONDITIONAL ZONING #19CZ02 Morris Acres PUD

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Authorized Agent: Jason Barron, Morningstar Law Group

Property Addresses: 0, 7208, & 7208B Morris Acres Road

Acreage: ± 17.4376

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Existing 2045 Land Use Map Designation: Medium Density Residential

Proposed 2045 Land Use Map Designation: High Density Residential

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Town Council Public Hearing Date and Time: ~~July 16, 2019 August 20, 2019 September 17, 2019~~ **October 15, 2019 7:00 P.M.**

Vicinity Map:



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Dianne F. Khin, AICP
Planning Director

Published Dates: June 21, 2019 - July 17, 2019 ~~August 20, 2019 September 17, 2019~~ **October 15, 2019**



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**PUBLIC NOTIFICATION
OF PUBLIC HEARINGS
CONTINUED**

**2045 LAND USE MAP AMENDMENT &
CONDITIONAL ZONING #19CZ02
Morris Acres PUD**

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Dianne F. Khin, AICP
Planning Director

Published Dates: June 21, 2019 - ~~July 17, 2019 August 20, 2019 September 17, 2019~~ **October 15, 2019**

JENKS RD

Rezoning #19CZ02

7409

540

7208

MORRIS ACRES RD

WALDEN WOODS DR

WALDEN CREEK DR

TUNISIAN DR

FLINTS POND CIR

REDBROOK CRSG

PEAKSIDE DR

SANTORINE ALY

0 250 500

Feet

February, 2019
October 2018 Aerial Photography
Prepared by: Town of Apex Planning Department

Public Hearing Sign Posted By



Signature

2/6/19

Date



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AFFIDAVIT CERTIFYING
Public Notification – Written (Mailed) Notice
 Section 2.2.11
 Town of Apex Unified Development Ordinance

Project Name: Rezoning 19CZ02
 Project Location: 0, 7208, & 7208B Morris Acres Road
 Applicant or Authorized Agent: Jason Barron
 Firm: Morningstar Law Group

This is to certify that I, as Planning Director, mailed or caused to have mailed by first class postage for the above mentioned project **June 21, 2019**, a notice containing the time and place, location, nature and scope of the application, where additional information may be obtained, and the opportunity for interested parties to be heard, to the property owners within 300' of the land subject to notification. I further certify that I relied on information provided to me by the above-mentioned person as to accuracy and mailing addresses of property owners within 300' of the land subject to notification.

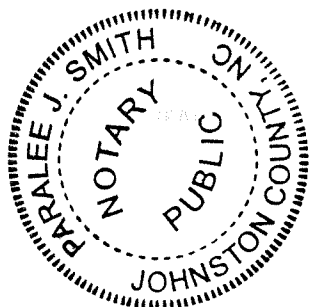
6/21/19
 Date

Stianne F. Klein
 Planning Director

STATE OF NORTH CAROLINA
 COUNTY OF WAKE

Sworn and subscribed before me, Paralee J. Smith, a Notary Public for the above State and County, this the 21 day of June, 2019.

Paralee J. Smith
 Notary Public



My Commission Expires: 9/12/2023

| Agenda Item | cover sheet

for consideration by the Apex Town Council

Item Type: PUBLIC HEARING

Meeting Date: October 15, 2019

Item Details

Presenter(s): Shelly Mayo, Planner II

Department(s): Planning Department

Requested Motion

Public Hearing and possible motion on Rezoning Application #19CZ15 Mt. Zion Church Rd PUD. The applicant, Vaughn King, seeks to rezone approximately 11.3 acres located at 2504, 2508, 2512, 2516 & 2600 Mt. Zion Church Rd. (PINs 072143255, 0721435444, 07214355322, 0721434156 & 0721424940) from Rural Residential (RR) to Planned Unit Development-Conditional Zoning (PUD-CZ).

Approval Recommended?

The Planning Department recommends approval.

Planning Board will hear this project at their October 14, 2019 meeting. Planning Staff will convey the recommendation during the Town Council meeting.

Item Details

Attachments

- Vicinity Map
- Rezoning Application
- Staff Report



STAFF REPORT

Rezoning #19CZ15 Mt. Zion Church Rd PUD

October 15, 2019 Town Council Meeting



All property owners within three hundred (300) feet of this rezoning have been notified per UDO Sec. 2.2.11 "Public Notification".

BACKGROUND INFORMATION:

Location: 2504, 2508, 2512, 2516 & 2600 Mt. Zion Church Road
Applicant: Vaughn King
Engineer: Jeff Roach, Peak Engineering & Design, PLLC
Owners: Lector Atwater & Jerome Kenneth Atwater Heirs

PROJECT DESCRIPTION:

Acreeage: +/- 11.30
PINs: 0721432558, 0721433444, 0721435322, 0721434156 & 0721424940
Current Zoning: Rural Residential (RR)
Proposed Zoning: Planned Unit Development-Conditional Zoning (PUD-CZ)
2045 Land Use Map: Medium Density Residential
Town Limits: In ETJ

ADJACENT ZONING & LAND USES:

	Zoning	Land Use
North:	Rural Residential (RR)	Single-family residential & Vacant
South:	Rural Residential (RR)	Vacant
East:	Planned Unit Development-Conditional Zoning (PUD-CZ #14CZ10)	Single-family residential
	Medium Density-Conditional Zoning (MD-CZ #15CZ10)	Single-family residential
	Rural Residential (RR)	Church or place of worship
West:	Rural Residential (RR)	Single-family residential & Vacant

EXISTING CONDITIONS:

The site consists of five (5) parcels totaling +/- 11.30 acres. It is located on the western side of Mt. Zion Church Road. The lots are mostly vacant and wooded with a few cleared areas and patches of wetlands.

NEIGHBORHOOD MEETING:

The applicant conducted a neighborhood meeting on June 26, 2019. The meeting report is attached to the staff report.

2045 LAND USE MAP:

The 2045 Land Use Map designates the site as Medium Density Residential. The applicant has proposed a rezoning to Planned Unit Development-Conditional Zoning with a maximum density of 4.1 dwelling units per acre. The density within the Medium Density Residential designation is between 3 and 7 dwelling units per acre. The proposed rezoning is a valid district within that Land Use Map designation.

PLANNED UNIT DEVELOPMENT PLAN:

The applicant is proposing a Planned Unit Development with uses and development standards as follows:

Proposed Uses:

The Rezoned Lands may be used for, and only for, the uses listed immediately below. The permitted uses are subject to the limitations and regulations stated in the UDO and any additional limitations or regulations stated below. For convenience, some relevant sections of the UDO may be referenced; such references do not imply that other sections of the UDO do not apply.

STAFF REPORT

Rezoning #19CZ15 Mt. Zion Church Rd PUD

October 15, 2019 Town Council Meeting



1. Accessory apartment
2. Single-family
3. Utility, minor
4. Recreation facility, private
5. Greenway
6. Park, active
7. Park, passive

Architectural Conditions:

Single-family residential standards:

1. Vinyl siding is not permitted; however, vinyl windows, decorative elements and trim are permitted.
2. All single-family homes shall have a crawl space or have a raised foundation which at a minimum rises at least 20 inches from average grade across the front of the house to the finished floor level at the front door, unless they provide a first floor master bedroom. Zero-entry homes without the 20 inch rise are permitted if they provide the first floor master bedroom. Lots permitted as "zero-entry" shall be noted on the Final Plat.
3. Garage doors must have windows, decorative details or carriage-style adornments.
4. Front entrances for units with front-facing single-car garages shall have a prominent covered porch/stoop area leading to the front door.
5. The garage cannot protrude more than 6 feet from the front façade or front porch. Any homes where the front entry garage protrudes more than 1 foot from the front façade or front porch shall provide one of the following additional decorative elements:
 - Window
 - Bay window
 - Decorative gable
 - Decorative cornice
 - Columns
 - Portico
 - Balcony
 - Dormer
 - Trellis
 - Arbor
6. The rear and side elevations of the units that can be seen from the right-of-way shall contain at least 3 decorative elements such as, but not limited to, the following elements:
 - Windows
 - Bay window
 - Recessed window
 - Decorative window
 - Trim around windows
 - Wrap around porch or side porch
 - Two or more building materials
 - Decorative brick/stone
 - Decorative trim
 - Decorative shake
 - Decorative air vents on gable
 - Decorative gable
 - Decorative cornice
 - Column
 - Portico
 - Balcony
 - Dormer
7. A varied color palette shall be utilized on homes throughout the subdivision to include a minimum of three color families for siding and shall include varied trim, shutter, and accent colors complementing the siding color.
8. Eaves shall project at least 12 inches from the wall of the structure.
9. Front porches shall be a minimum of 6 feet deep.
10. No more than 25% of the lots may be accessed with J-driveways. There shall be no more than 3 such homes in a row on any single block. Any lots eligible for a J-driveway home shall be identified on the Final Plat.
11. All single-family detached residential homes shall be pre-configured with conduit for a solar energy system.

STAFF REPORT

Rezoning #19CZ15 Mt. Zion Church Rd PUD

October 15, 2019 Town Council Meeting



Proposed Design Controls:	PUD Proposal
Maximum Density – Residential:	4.1 units/acre
Maximum Residential Units:	46
Minimum Lot Size:	4,000 ft ²
Maximum Building Height:	45 feet
Maximum Built-Upon Area:	70%
Building Setbacks:	
Front:	5 feet
Side:	5 feet
Rear:	20 feet
Building side to side:	10 feet

Proposed RCA & Buffers:

The project complies with the UDO requirement to preserve or establish at least 25% of the project as RCA. This application was submitted before the UDO amendment was approved to change the penalty for mass-grading single-family subdivisions from 2% to 5% RCA. The applicant could have maintained the 2% requirement, but they are proposing to follow the new 5% RCA requirement.

Buffers	PUD Proposal	UDO Requirement
North:	10' Type B	10' Type B
South:	10' Type B	10' Type B
Mt. Zion Church Rd (east):	30' Type B	10' Type A
West:	10' Type B	10' Type B

A berm will also be constructed along Mt. Zion Church Road where significant vegetation does not exist.

Public Facilities:

Mt. Zion Church Road PUD will be served by Town of Apex water, sanitary sewer, and electrical systems. The utility design will be finalized at Master Subdivision Plan Review. A conceptual plan is included in the PUD Plan for reference. Public water is currently provided by a water main in Mt. Zion Church Road. The existing sanitary sewer is located in Firenza Drive near the intersection with Mt. Zion Church Road.

Apex Transportation Plan/Access and Circulation:

The proposed development is consistent with the Apex Transportation Plan. The PUD proposes a single full-movement access to Mt. Zion Church Road, an existing two-lane Minor Collector Street on the Thoroughfare and Collector Street Plan. The PUD shall provide sidewalks along both sides of all internal streets. The PUD allows for future connectivity, as depicted on the plan sheets.

Consistent with the UDO, this proposal does not warrant a traffic study. However, this project shall provide for the following improvements, as coordinated with the NCDOT and the Town of Apex:

Mt. Zion Church Road:

The Developer shall construct the full frontage improvements along Mt. Zion Church Road per the adopted Town of Apex Transportation Plan. Mt. Zion Church Road is identified as a two (2) lane Minor Collector and will be constructed to meet the Town's standards and specifications.

Mt. Zion Church Road at Site Drive #1 (intersection with Medoc Mountain Point):

STAFF REPORT

Rezoning #19CZ15 Mt. Zion Church Rd PUD

October 15, 2019 Town Council Meeting



The developer shall construct single lane eastbound and westbound approaches with stop control from the development.

PARKS, RECREATION, AND CULTURAL RESOURCES ADVISORY COMMISSION:

Based on the Bike Apex and the Parks, Recreation, Greenways, and Open Space Master Plan Maps, greenways and parks are not identified on this property. On August 28, 2019, the Town of Apex Parks, Recreation, and Cultural Resources Advisory Commission recommended with Parks & Recreation staff support, the acceptance of a fee in lieu of public land dedication for the project. The fee-in-lieu for a single-family detached dwelling is \$3,395.67 per acre. The estimated total fee-in-lieu is:

$$46 \text{ single-family detached units} \quad \times \quad \$3,395.67 \quad = \quad \$156,200.82$$

PLANNING STAFF RECOMMENDATION:

Planning staff recommends approval of the rezoning as submitted by the applicant.

PLANNING BOARD RECOMMENDATION:

Planning Board will hear this project at their October 14, 2019 meeting. Planning Staff will convey the recommendation during the Town Council meeting scheduled for October 15, 2019.

ANALYSIS STATEMENT OF THE REASONABLENESS OF THE PROPOSED REZONING:

This Statement will address consistency with the Town's comprehensive and other applicable plans, reasonableness, and effect on public interest:

The 2045 Land Use Map designates the site as Medium Density Residential. The applicant has proposed a rezoning to Planned Unit Development-Conditional Zoning with a maximum density of 4.1 dwelling units per acre. The density within the Medium Density Residential designation is between 3 and 7 dwelling units per acre. The proposed PUD-CZ zoning district is a valid district within that Land Use Map designation.

The proposed rezoning is reasonable and in the public interest because it will allow this property to develop in a way that is consistent with the surrounding areas and provides increased perimeter buffer widths over the UDO standards and sidewalks along both sides of internal streets.

PLANNED UNIT DEVELOPMENT DISTRICT AND CONDITIONAL ZONING STANDARDS:

Standards

In return for greater flexibility in site design requirements, Planned Development (PD) Districts are expected to deliver exceptional quality community designs that preserve critical environmental resources; provide high quality community amenities; incorporate creative design in the layout of buildings, Resource Conservation Area and circulation; ensure compatibility with surrounding land uses and neighborhood character; provide high quality architecture; and provide greater efficiency in the layout and provision of roads, utilities, and other infrastructure. The Planned Development (PD) Districts shall not be used as a means of circumventing the Town's adopted land development regulations for routine developments.

1) *Planned Unit Development (PUD-CZ) District*

In approving a Planned Development (PD) Zoning District designation for a PUD-CZ, the Town Council shall find the PUD-CZ district designation and PD Plan for PUD-CZ demonstrates compliance with the following standards:

a) *Development parameters*

- (i) The uses proposed to be developed in the PD Plan for PUD-CZ are those uses permitted in Sec. 4.2.2 Use Table.**



- (ii) The uses proposed in the PD Plan for PUD-CZ can be entirely residential, entirely non-residential, or a mix of residential and non-residential uses, provided a minimum percentage of non-residential land area is included in certain mixed use areas as specified on the 2045 Land Use Map. The location of uses proposed by the PUD-CZ must be shown in the PD Plan with a maximum density for each type of residential use and a maximum square footage for each type of non-residential use.
 - (iii) The dimensional standards in Sec. 5.1.3 *Table of Intensity and Dimensional Standards, Planned Development Districts* may be varied in the PD Plan for PUD-CZ. The PUD-CZ shall demonstrate compliance with all other dimensional standards of the UDO, North Carolina Building Code, and North Carolina Fire Code.
 - (iv) The development proposed in the PD Plan for PUD-CZ encourages cluster and compact development to the greatest extent possible that is interrelated and linked by pedestrian ways, bikeways and other transportation systems. At a minimum, the PD Plan must show sidewalk improvements as required by the Apex Transportation Plan and the *Town of Apex Standard Specifications and Standard Details*, and greenway improvements as required by the Town of Apex Parks, Recreation, Greenways, and Open Space Plan and the Apex Transportation Plan. In addition, sidewalks shall be provided on both sides of all streets for single-family detached homes.
 - v) The design of development in the PD Plan for PUD-CZ results in land use patterns that promote and expand opportunities for walkability, connectivity, public transportation, and an efficient compact network of streets. Cul-de-sacs shall be avoided unless the design of the subdivision and the existing or proposed street system in the surrounding area indicate that a through street is not essential in the location of the proposed cul-de-sac, or where sensitive environmental areas such as streams, floodplains, and wetlands would be substantially disturbed by making road connections.
 - (vi) The development proposed in the PD Plan for PUD-CZ is compatible with the character of surrounding land uses and maintains and enhances the value of surrounding properties.
 - (vii) The development proposed in the PD Plan for PUD-CZ has architectural and design standards that are exceptional and provide higher quality than routine developments. All residential uses proposed in a PD Plan for PUD-CZ shall provide architectural elevations representative of the residential structures to be built to ensure the Standards of this Section are met.
- b) *Off-street parking and loading.* The PD Plan for PUD-CZ shall demonstrate compliance with the standards of Sec. 8.3 *Off-Street Parking and Loading*, except that variations from these standards may be permitted if a comprehensive parking and loading plan for the PUD-CZ is submitted as part of the PD Plan that is determined to be suitable for the PUD-CZ, and generally consistent with the intent and purpose of the off-street parking and loading standards.
- c) *RCA.* The PD Plan for PUD-CZ shall demonstrate compliance with Sec. 8.1.2 *Resource Conservation Area*, except that the percentage of RCA required under Sec. 8.1.2 may be reduced by the Town Council by no more than two percent (2%) provided that:
- (i) The PD Plan for PUD-CZ includes a non-residential component; or
 - (ii) The PD Plan for PUD-CZ has an overall density of 6 residential units per acre or more.
- d) *Landscaping.* The PD Plan for PUD-CZ shall demonstrate compliance with the standards of Sec. 8.2



- Landscaping, Buffering and Screening*, except that variations from these standards may be permitted where it is demonstrated that the proposed landscaping sufficiently buffers uses from each other, ensures compatibility with land uses on surrounding properties, creates attractive streetscapes and parking areas and is consistent with the character of the area. In no case shall a buffer be less than one half of the width required by Sec. 8.2 or 10 feet in width, whichever is greater.
- e) *Signs*. Signage in the PD Plan for PUD-CZ shall demonstrate compliance with Sec. 8.7 *Signs*, except that the standards can be varied if a master signage plan is submitted for review and approval concurrent with the PD plan and is determined by the Town Council to be suitable for the PUD-CZ and generally consistent with the intent and purpose of the sign standards of the UDO. The master signage plan shall have design standards that are exceptional and provide for higher quality signs than those in routine developments and shall comply with Sec. 8.7.2 *Prohibited Signs*.
- f) *Public facilities*. The improvements standards and guarantees applicable to the public facilities that will serve the site shall comply with Article 7: *Subdivision* and Article 14: *Parks, Recreation, Greenways, and Open Space*.
- (i) The PD Plan for PUD-CZ demonstrates a safe and adequate on-site transportation circulation system. The on-site transportation circulation system shall be integrated with the off-site transportation circulation system of the Town. The PD Plan for PUD-CZ shall be consistent with the Apex Transportation Plan and the *Town of Apex Standard Specifications and Standard Details* and show required right-of-way widths and road sections. A Traffic Impact Analysis (TIA) shall be required per Sec. 13.19.
- (ii) The PD Plan for PUD-CZ demonstrates a safe and adequate on-site system of potable water and wastewater lines that can accommodate the proposed development, and are efficiently integrated into off-site potable water and wastewater public improvement plans. The PD Plan shall include a proposed water and wastewater plan.
- (iii) Adequate off-site facilities for potable water supply, sewage disposal, solid waste disposal, electrical supply, fire protection and roads shall be planned and programmed for the development proposed in the PD Plan for PUD-CZ, and the development is conveniently located in relation to schools and police protection services.
- (iv) The PD Plan shall demonstrate compliance with the parks and recreation requirements of Sec. Article 14: *Parks, Recreation, Greenways, and Open Space* and Sec. 7.3.1 *Privately-owned Play Lawns* if there is a residential component in the PUD-CZ.
- g) *Natural resource and environmental protection*. The PD Plan for PUD-CZ demonstrates compliance with the current regulatory standards of this Ordinance related to natural resource and environmental protection in Sec. 6.1 *Watershed Protection Overlay District*, Sec. 6.2 *Flood Damage Prevention Overlay District*, and Sec. 8.1 *Resource Conservation*.
- h) *Storm water management*. The PD Plan shall demonstrate that the post-development rate of on-site storm water discharge from the entire site shall not exceed pre-development levels in accordance with Sec. 6.1.7 of the UDO.
- i) *Phasing*. The PD Plan for PUD-CZ shall include a phasing plan for the development. If development of the PUD-CZ is proposed to occur in more than one phase, then guarantees shall be provided that project improvements and amenities that are necessary and desirable for residents of the project, or that are of benefit to the Town, are constructed with the first phase of the project, or, if this is not possible, then as early in the project as is technically feasible.

STAFF REPORT

Rezoning #19CZ15 Mt. Zion Church Rd PUD

October 15, 2019 Town Council Meeting



- j) *Consistency with 2045 Land Use Map.* The PD Plan for PUD-CZ demonstrates consistency with the goals and policies established in the Town's 2045 Land Use.
- k) *Complies with the UDO.* The PD Plan for PUD-CZ demonstrates compliance with all other relevant portions of the UDO.

LEGISLATIVE CONSIDERATIONS

The Town Council shall find the Planned Unit Development–Conditional Zoning designation demonstrates compliance with the following standards. 2.3.3(F):

The applicant shall propose site-specific standards and conditions that take into account the following considerations, which are considerations that are relevant to the legislative determination of whether or not the proposed conditional zoning district rezoning request is in the public interest. These considerations do not exclude the legislative consideration of any other factor that is relevant to the public interest.

- 1) *Consistency with 2045 Land Use Map.* The proposed Conditional Zoning (CZ) District use's appropriateness for its proposed location and consistency with the purposes, goals, objectives, and policies of the 2045 Land Use Map.
- 2) *Compatibility.* The proposed Conditional Zoning (CZ) District use's appropriateness for its proposed location and compatibility with the character of surrounding land uses.
- 3) *Zoning district supplemental standards.* The proposed Conditional Zoning (CZ) District use's compliance with Sec 4.4 *Supplemental Standards*, if applicable.
- 4) *Design minimizes adverse impact.* The design of the proposed Conditional Zoning (CZ) District use's minimization of adverse effects, including visual impact of the proposed use on adjacent lands; and avoidance of significant adverse impacts on surrounding lands regarding trash, traffic, service delivery, parking and loading, odors, noise, glare, and vibration and not create a nuisance.
- 5) *Design minimizes environmental impact.* The proposed Conditional Zoning District use's minimization of environmental impacts and protection from significant deterioration of water and air resources, wildlife habitat, scenic resources, and other natural resources.
- 6) *Impact on public facilities.* The proposed Conditional Zoning (CZ) District use's avoidance of having adverse impacts on public facilities and services, including roads, potable water and wastewater facilities, parks, schools, police, fire and EMS facilities.
- 7) *Health, safety, and welfare.* The proposed Conditional Zoning (CZ) District use's effect on the health, safety, or welfare of the residents of the Town or its ETJ.
- 8) *Detrimental to adjacent properties.* Whether the proposed Conditional Zoning (CZ) District use is substantially detrimental to adjacent properties.
- 9) *Not constitute nuisance or hazard.* Whether the proposed Conditional Zoning (CZ) District use constitutes a nuisance or hazard due to traffic impact or noise, or because of the number of persons who will be using the Conditional Zoning (CZ) District use.
- 10) *Other relevant standards of this Ordinance.* Whether the proposed Conditional Zoning (CZ) District use complies with all standards imposed on it by all other applicable provisions of this Ordinance for use, layout, and general development characteristics.

Rezoning #19CZ15

Stillwater

Buckhorn Preserve

FIRENZA DR

KENNA CREEK BND

MT ZION CHURCH RD

MOUNT JEFFERSON TRL

MCRORY WAY

Parkside PUD

McKenzie Ridge

RICHARDSON RD

PINEOLABOG TRL

LOGAN VALLEY PATH

MACINTOSH WOODS DR

LAKE WACCANAW TRL

GREGOR OVERLOOK LN

Friendship Station PUD

WEYMOUTH WOODS TRL

PLANNED UNIT DEVELOPMENT APPLICATION

This document is a public record under the North Carolina Public Records Act and may be published on the Town's website or disclosed to third parties.

Application #: _____ Submittal Date: _____
Fee Paid \$ _____ Check # _____

PETITION TO AMEND THE OFFICIAL ZONING DISTRICT MAP

Project Name: Mt. Zion Church Road Assembly
Address(es): 2504, 2508, 2512, 2516 and 2600 Mt. Zion Church Road
PIN(s) 0721-43-2558, 0721-43-5444, 0721-43-5322, 0721-43-4156, 0721-42-4940
Acreage: 11.30

Current Zoning: RR - Rural Residential Proposed Zoning: PUD - CZ
Current 2045 LUM Designation: Medium Density Residential
Requested 2045 LUM Designation: no change
See next page for LUM amendment

If any portion of the project is shown as mixed use (3 or more stripes on the 2045 Land Use Map) provide the following:

Area classified as mixed use: Acreage: _____
Area proposed as non-residential development: Acreage: _____
Percent of mixed use area proposed as non-residential: Percent: _____

Applicant Information

Name: Vaughn King
Address: PO Box 1328
City: Cary State: NC Zip: 27512
Phone: (919) 367-5923 E-mail: vaughnking5@gmail.com

Owner Information

Name: See Attached List
Address: _____
City: _____ State: _____ Zip: _____
Phone: _____ E-mail: vaughnking5@gmail.com

Agent Information

Name: Peak Engineering & Design, PLLC - Jeff Roach
Address: 1125 Apex Peakway
City: Apex State: NC Zip: 27502
Phone: (919) 439-0100 E-mail: jroach@peakengineering.com
Other contacts: Jonathan Edwards (jedwards@peakengineering.com)
Daniel Woods (dwoods@peakengineering.com)



Mt. Zion Church Road PUD Assembly Property Owner Information

Lector Marie Atwater
2504 Mt. Zion Church Road
Apex, NC 27502
0721-43-2558
2.97 acres

Jerome Kenneth Atwater Heirs
ATTN: Donna Atwater
179 Arlington Avenue
Jersey City, NC 07305
0721-43-5444
1.16 acres

Jerome Kenneth Atwater Heirs
ATTN: Donna Atwater
179 Arlington Avenue
Jersey City, NC 07305
0721-43-5322
1.16 acres

Jerome Kenneth Atwater Heirs
ATTN: Donna Atwater
179 Arlington Avenue
Jersey City, NC 07305
0721-43-4156
1.41 acres

Lector Marie Atwater
2504 Mt. Zion Church Road
Apex, NC 27502
0721-42-4940
4.60 acres

CERTIFIED LIST OF NEIGHBORING PROPERTY OWNERS

Application #: _____

Submittal Date: _____

Provide a certified list of property owners subject to this application and all property owners within 300' of the subject property and HOA Contacts.

	Owner's Name	PIN
1.	SEE ATTACHED LIST	
2.	_____	_____
3.	_____	_____
4.	_____	_____
5.	_____	_____
6.	_____	_____
7.	_____	_____
8.	_____	_____
9.	_____	_____
10.	_____	_____
11.	_____	_____
12.	_____	_____
13.	_____	_____
14.	_____	_____
15.	_____	_____

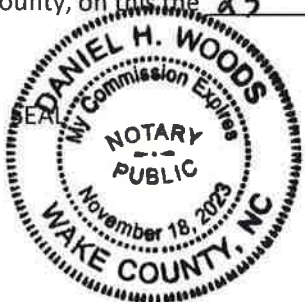
I, Jonathan Edwards, certify that this is an accurate listing of all property owners and property owners within 300' of the subject property

Date: June 24, 2019

By: *Jonathan Edwards*

COUNTY OF WAKE STATE OF NORTH CAROLINA

Sworn and subscribed before me, DANIEL WOODS, a Notary Public for the above State and County, on this the 25 day of JUNE, 2019.



Daniel H Woods
Notary Public

DANIEL H WOODS
Print Name

My Commission Expires: 11/18/23

HOLLAND, UVA R
370 M T HOLLAND RD
APEX NC 27523-5704
0721328550

HOLLAND, UVA LEE RICHARDSON
370 M T HOLLAND RD
APEX NC 27523-5704
0721328679

CALATLANTIC GROUP, INC
1100 PERIMETER PARK DR STE 112
MORRISVILLE NC 27560-9119
0721332548

CALATLANTIC GROUP, INC
1100 PERIMETER PARK DR STE 112
MORRISVILLE NC 27560-9119
0721334468

CALATLANTIC GROUP, INC
1100 PERIMETER PARK DR STE 112
MORRISVILLE NC 27560-9119
0721334510

CALATLANTIC GROUP, INC
1100 PERIMETER PARK DR STE 112
MORRISVILLE NC 27560-9119
0721334658

CALATLANTIC GROUP, INC
1100 PERIMETER PARK DR STE 112
MORRISVILLE NC 27560-9119
0721334685

CALATLANTIC GROUP, INC
1100 PERIMETER PARK DR STE 112
MORRISVILLE NC 27560-9119
0721334721

CALATLANTIC GROUP, INC
1100 PERIMETER PARK DR STE 112
MORRISVILLE NC 27560-9119
0721335407

CALATLANTIC GROUP, INC
1100 PERIMETER PARK DR STE 112
MORRISVILLE NC 27560-9119
0721335623

CALATLANTIC GROUP, INC
1100 PERIMETER PARK DR STE 112
MORRISVILLE NC 27560-9119
0721336226

CALATLANTIC GROUP, INC
1100 PERIMETER PARK DR STE 112
MORRISVILLE NC 27560-9119
0721336331

CALATLANTIC GROUP, INC
1100 PERIMETER PARK DR STE 112
MORRISVILLE NC 27560-9119
0721336346

CALATLANTIC GROUP, INC
1100 PERIMETER PARK DR STE 112
MORRISVILLE NC 27560-9119
0721336396

CALATLANTIC GROUP, INC
1100 PERIMETER PARK DR STE 112
MORRISVILLE NC 27560-9119
0721336451

CALATLANTIC GROUP, INC
1100 PERIMETER PARK DR STE 112
MORRISVILLE NC 27560-9119
0721336455

CALATLANTIC GROUP, INC
1100 PERIMETER PARK DR STE 112
MORRISVILLE NC 27560-9119
0721336459

CALATLANTIC GROUP, INC
1100 PERIMETER PARK DR STE 112
MORRISVILLE NC 27560-9119
0721336553

CALATLANTIC GROUP, INC
1100 PERIMETER PARK DR STE 112
MORRISVILLE NC 27560-9119
0721336557

CALATLANTIC GROUP, INC
1100 PERIMETER PARK DR STE 112
MORRISVILLE NC 27560-9119.
0721336651

CALATLANTIC GROUP, INC
1100 PERIMETER PARK DR STE 112
MORRISVILLE NC 27560-9119
0721336655

CALATLANTIC GROUP, INC
1100 PERIMETER PARK DR STE 112
MORRISVILLE NC 27560-9119
0721345460

WRIGHT, CHERYL RENEE WALDEN & ELTON
ROLAND
2732 RICHARDSON RD
APEX NC 27502-7879
0721422231

HOLLAND, UVA LEE RICHARDSON
370 M T HOLLAND RD
APEX NC 27523-5704
0721422742

ATWATER, LECTOR MARIE
2504 MOUNT ZION CHURCH RD
APEX NC 27502-9636
0721424940

WALDEN, JEAN HOLLOWAY
909 POWELL DR
RALEIGH NC 27606-1629
0721425141

HOLLAND, UVA R
370 M T HOLLAND RD
APEX NC 27523-5704
0721425439

WALDEN, JEAN HOLLOWAY
909 POWELL DR
RALEIGH NC 27606-1629
0721426316

BELLA CASA HOMEOWNERS ASSOCIATION, INC
OMEGA ASSOCIATION MANAGEMENT
160 NE MAYNARD RD STE 210
CARY, NC 27513-9676
0721426883

MT ZION BAPTIST CHURCH TRUSTEES
HEZZIE MORRISSON
PO BOX 10
NEW HILL NC 27562-0010
0721427697

PALMER, KENNETH & ANNA M
2829 MEDOC MOUNTAIN PT
APEX NC 27502-9682
0721427843

BARRETT, LATOSHA & JERMAINE L
2830 MEDOC MOUNTAIN PT
APEX NC 27502-9682
0721427939

MT ZION BAPTIST CHURCH
HEZZIE MORRISSON
PO BOX 10
NEW HILL NC 27562-0010
0721428401

HOLDER, KEITH A & JOY R
2825 MEDOC MOUNTAIN PT
APEX NC 27502-9682
0721428823

FALLOWS, ERIC A & SARAH
2821 MEDOC MOUNTAIN PT
APEX NC 27502-9682
0721428892

SUBBURAYALU, KRISHNARAJ & ANUSHYA
2826 MEDOC MOUNTAIN PT
APEX NC 27502-9682
0721428919

MT ZION BAPTIST CHURCH
C/O HEZZIE MORRISSON
PO BOX 10
NEW HILL NC 27562-0010
0721429486

SANDERS, GLADYS W
2813 CREECH RD
RALEIGH NC 27610-5844
0721429597

WACHHOLZ, AARON JAMES & SARA M
2815 MEDOC MOUNTAIN PT
APEX NC 27502-9682
0721429779

RASH, JOHN F & ALLISON K
2820 MEDOC MOUNTAIN PT
APEX NC 27502-9682
0721429949

RICHARDSON, CURTIS W & JEFFREY D
2713 RICHARDSON RD
APEX NC 27502-7880
0721430214

HOLLAND, UVA LEE RICHARDSON
370 M T HOLLAND RD
APEX NC 27523-5704
0721431773

ATWATER, LECTOR MARIE R
2504 MOUNT ZION CHURCH RD
APEX NC 27502-9636
0721432558

ATWATER, JEROME KENNETH HEIRS
DONNA ATWATER
179 ARLINGTON AVE
JERSEY CITY NJ 07305-4438
0721434156

ATWATER, JEROME KENNETH HEIRS
DONNA ATWATER
179 ARLINGTON AVE
JERSEY CITY NJ 07305-4438
0721435322

ATWATER, JEROME KENNETH HEIRS
DONNA ATWATER
179 ARLINGTON AVE
JERSEY CITY NJ 07305-4438
0721435444

RICHARDSON, DOROTHY MAE HEIRS CHARLES
WALDEN
2432 MT. ZION CHURCH RD
APEX NC 27502-9637
0721436885

JAKKAMPUDI, NARSIMHA K & KOPPULA, UDAYA
REKHA 2008 GOOSE CREEK TRL APEX NC
27502-8577
0721437079

BELLA CASA HOMEOWNERS ASSOCIATION, INC
OMEGA ASSOCIATION MANAGEMENT
160 NE MAYNARD RD STE 210
CARY NC 27513-9676
0721437100

ARYA, ANISH & SINGH, NUPOOR
2004 GOOSE CREEK TRL
APEX NC 27502-8577
0721437198

SCHUTTE, DANIEL E & ADRIENNE
2515 MOUNT ZION CHURCH RD
APEX NC 27502-9636
0721438248

GAVRYUCHKOV, MIKHAIL & EVGENIA
2513 MOUNT ZION CHURCH RD
APEX NC 27502-9636
0721438354

ADAMS, EDWARD PATRICK JR & APRIL
LINEBACK
2511 MOUNT ZION CHURCH RD
APEX NC 27502-9636

0721438460

DIAZ, BRIAN & TRANG NGUYEN
2509 MOUNT ZION CHURCH RD
APEX NC 27502-9636
0721438476

THOMAS, ROBERT & CAPUTO-THOMAS,
ROSANN
2507 MOUNT ZION CHURCH RD
APEX NC 27502-9636
0721438582

MASON, SCOTT A & KATHLEEN P
2505 MOUNT ZION CHURCH RD
APEX NC 27502-9636
0721438598

BELLA CASA HOMEOWNERS ASSOCIATION, INC
OMEGA ASSOCIATION MANAGEMENT
160 NE MAYNARD RD STE 210
CARY NC 27513-9676
0721438679

BELLA CASA HOMEOWNERS ASSOCIATION, INC
OMEGA ASSOCIATION MANAGEMENT
160 NE MAYNARD RD STE 210
CARY NC 27513-9676
0721439148

SANDERS, DANIEL & CHARLA
1989 FIRENZA DR
APEX NC 27502-9668
0721439619

REILLY, DANIEL THOMAS & KIMBERLY
1985 FIRENZA DR
APEX NC 27502-9668
0721439668

BELLA CASA HOMEOWNERS ASSOCIATION, INC
OMEGA ASSOCIATION MANAGEMENT
160 NE MAYNARD RD STE 210
CARY NC 27513-9676
0721439827

MASAMBA, ESPERANCE &
LUNGENI, LAMBION
1990 FIRENZA DR
APEX NC 27502-9667
0721439845

KUE, XIA & JODY
1986 FIRENZA DR
APEX NC 27502-9667
0721439894

RICHARDSON, ANTHONY & DELOIS
1825 CAR CREEK RD
SANFORD NC 27332
0721442048

BADER, DEWAN & LITA
2817 BLADEN LAKES CV
APEX NC 27502-8585
0721530405

RIEGO, DUSTIN B & BETHANY H
2816 BLADEN LAKES CV
APEX NC 27502-8585
0721530477

OTTEN, CHRISTOPHER G & CASEY C
1981 FIRENZA DR
APEX NC 27502-9668
0721530616

KRANZ, JENNIFER & TROY
1977 FIRENZA DR
APEX NC 27502-9668
0721530665

LI, JIAN & SUN, JIANWEI
1020 TIMBER MIST CT
CARY NC 27519-7510
0721530843

DEVELOPMENT NAME APPROVAL APPLICATION

Application #: _____

Submittal Date: _____

Fee for Initial Submittal: No Charge

Fee for Name Change after Approval: \$500*

Purpose

To provide a consistent and clearly stated procedure for the naming of subdivisions and/or developments and entrance roadways (in conjunction with *Town of Apex Address Policy*) so as to allow developers to define and associate the theme or aesthetics of their project(s) while maintaining the Town's commitment to preserving the quality of life and safety for all residents of Apex proper and extraterritorial jurisdiction.

Guidelines

- ✓ The subdivision/development name shall not duplicate, resemble, or present confusion with an existing subdivision/development within Apex corporate limits or extraterritorial jurisdiction except for the extension of an existing subdivision/development of similar or same name that shares a continuous roadway.
- ✓ The subdivision/development name shall not resemble an existing street name within Apex corporate limits or extraterritorial jurisdiction unless the roadway is a part of the subdivision/development or provides access to the main entrance.
- ✓ The entrance roadway of a proposed subdivision/development shall contain the name of the subdivision/development where this name does not conflict with the Town of Apex *Road Name Approval Application* and *Town of Apex Address Policy* guidelines.
- ✓ The name "Apex" shall be excluded from any new subdivision/development name.
- ✓ Descriptive words that are commonly used by existing developments will be scrutinized more seriously in order to limit confusion and encourage distinctiveness. A list of commonly used descriptive words in Apex's jurisdiction is found below.
- ✓ The proposed subdivision/development name must be requested, reviewed and approved during preliminary review by the Town.
- ✓ A \$500.00 fee will be assessed to the developer if a subdivision/development name change is requested after official submittal of the project to the Town.*

*The imposed fee offsets the cost of administrative changes required to alleviate any confusion for the applicant, Planning staff, other Town departments, decision-making bodies, concerned utility companies and other interested parties. There is no charge for the initial name submittal.

Existing Development Titles, Recurring

	Residential	Non-Residential
10 or more	Creek, Farm(s), Village(s),	Center/Centre
6 to 9	Crossing(s), Park, Ridge, Wood(s)	Commons, Park
3 to 5	Acres, Estates, Glen(s), Green*, Hills	Crossing(s), Plaza, Station, Village(s)

*excludes names with Green Level

DEVELOPMENT NAME APPROVAL APPLICATION

Application #: _____ Submittal Date: _____

Proposed Subdivision/Development Information

Description of location: north and east of Richardson Road, west side of Mt. Zion Church Road

Nearest intersecting roads: Mt. Zion Church Road and Medoc Mountain Point

Wake County PIN(s): 0721-43-2558, 0721-43-5444, 0721-43-5322, 0721-43-4156, 0721-42-4940

Township: Buckhorn

Contact Information (as appropriate)

Contact person: Peak Engineering & Design, PLLC - Jeff Roach

Phone number: (919) 439-0100 Fax number: (919) 439-6411

Address: 1125 Apex Peakway, Apex, NC 27502

E-mail address: jroach@peakengineering.com

Owner: Vaughn King

Phone number: (919) 376-5923 Fax number: _____

Address: PO Box 1328, Cary, NC 27512

E-mail address: vaughnking5@gmail.com

Proposed Subdivision/Development Name

1st Choice: Project name to be determined during Master Subdivision Plan submittal

2nd Choice (Optional): _____

Town of Apex Staff Approval:

Town of Apex Planning Department Staff

Date

TOWN OF APEX UTILITIES OFFER AND AGREEMENT

Application #: _____ Submittal Date: _____

**Town of Apex
73 Hunter Street
P.O. Box 250 Apex, NC 27502
919-249-3400**

WAKE COUNTY, NORTH CAROLINA CUSTOMER SELECTION AGREEMENT

Mt. Zion Church Road PUD Assembly

(the "Premises")

The Town of Apex offers to provide you with electric utilities on the terms described in this Offer & Agreement. If you accept the Town's offer, please fill in the blanks on this form and sign and we will have an Agreement once signed by the Town.

Vaughn King, the undersigned customer ("Customer") hereby irrevocably chooses and selects the Town of Apex (the "Town") as the permanent electric supplier for the Premises. Permanent service to the Premises will be preceded by temporary service if needed.

The sale, delivery, and use of electric power by Customer at the Premises shall be subject to, and in accordance with, all the terms and conditions of the Town's service regulations, policies, procedures and the Code of Ordinances of the Town.

Customer understands that the Town, based upon this Agreement, will take action and expend funds to provide the requested service. By signing this Agreement the undersigned signifies that he or she has the authority to select the electric service provider, for both permanent and temporary power, for the Premises identified above.

Any additional terms and conditions to this Agreement are attached as Appendix 1. If no appendix is attached this Agreement constitutes the entire agreement of the parties.

Acceptance of this Agreement by the Town constitutes a binding contract to purchase and sell electric power.

Please note that under North Carolina General Statute §160A-332, you may be entitled to choose another electric supplier for the Premises.

Upon acceptance of this Agreement, the Town of Apex Electric Utilities Division will be pleased to provide electric service to the Premises and looks forward to working with you and the owner(s).

ACCEPTED:

CUSTOMER: Vaughn King

TOWN OF APEX

BY: [Signature]
Authorized Agent

BY: _____
Authorized Agent

DATE: 6-28-19

DATE: _____

AGENT AUTHORIZATION FORM

Application #: _____

Submittal Date: _____

N/F Lector Marie Atwater _____ is the owner of the property for which the attached application is being submitted:

- Land Use Amendment
- Rezoning
- Site Plan
- Subdivision
- Variance
- Other: _____

The property address is: 2504 Mt. Zion Church Road, Apex, NC 27502 (PIN 0721-43-2558)

The agent for this project is: Peak Engineering & Design, PLLC

I am the owner of the property and will be acting as my own agent

Agent Name: Jeff Roach (Peak Engineering & Design)

Address: 1125 Apex Peakway, Apex, NC 27502

Telephone Number: (919) 439-0100

E-Mail Address: jroach@peakengineering.com

Signature(s) of Owner(s)

Douglas Brown, POA
for Lector Marie Atwater
Type or print name

06/29/2019
Date

Type or print name Date

Type or print name Date

Attach additional sheets if there are additional owners.

***Owner of record as shown on the latest equalized assessment rolls of Wake County. (An option to purchase does not constitute ownership). If ownership has been recently transferred, a copy of the deed must accompany this authorization.**

AGENT AUTHORIZATION FORM

Application #: _____

Submittal Date: _____

N/F Jerome Kenneth Atwater Heirs _____ is the owner of the property for which the attached application is being submitted:

- Land Use Amendment
- Rezoning
- Site Plan
- Subdivision
- Variance
- Other: _____

The property address is: 2508 Mt. Zion Church Road, Apex, NC 27502 (PIN 0721-43-5444)

The agent for this project is: Peak Engineering & Design, PLLC

I am the owner of the property and will be acting as my own agent

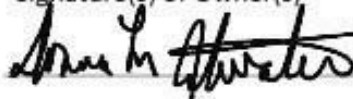
Agent Name: Jeff Roach (Peak Engineering & Design)

Address: 1125 Apex Peakway, Apex, NC 27502

Telephone Number: (919) 439-0100

E-Mail Address: jroach@peakengineering.com

Signature(s) of Owner(s)



Donna Atwater

6/28/2019

Type or print name

Date

Type or print name

Date

Type or print name

Date

Attach additional sheets if there are additional owners.

***Owner of record as shown on the latest equalized assessment rolls of Wake County. (An option to purchase does not constitute ownership). If ownership has been recently transferred, a copy of the deed must accompany this authorization.**

AGENT AUTHORIZATION FORM

Application #: _____

Submittal Date: _____

N/F Jerome Kenneth Atwater Heirs _____ is the owner of the property for which the attached application is being submitted:

- Land Use Amendment
- Rezoning
- Site Plan
- Subdivision
- Variance
- Other: _____

The property address is: 2512 Mt. Zion Church Road, Apex, NC 27502 (PIN 0721-43-5322)

The agent for this project is: Peak Engineering & Design, PLLC

I am the owner of the property and will be acting as my own agent

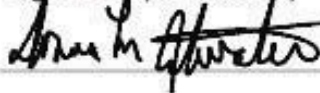
Agent Name: Jeff Roach (Peak Engineering & Design)

Address: 1125 Apex Peakway, Apex, NC 27502

Telephone Number: (919) 439-0100

E-Mail Address: jroach@peakengineering.com

Signature(s) of Owner(s)



Donna Atwater

6/28/2019

Type or print name

Date

Type or print name

Date

Type or print name

Date

Attach additional sheets if there are additional owners.

***Owner of record as shown on the latest equalized assessment rolls of Wake County. (An option to purchase does not constitute ownership). If ownership has been recently transferred, a copy of the deed must accompany this authorization.**

AGENT AUTHORIZATION FORM

Application #: _____

Submittal Date: _____

N/F Jerome Kenneth Atwater Heirs _____ is the owner of the property for which the attached application is being submitted:

- Land Use Amendment
- Rezoning
- Site Plan
- Subdivision
- Variance
- Other: _____

The property address is: 2516 Mt. Zion Church Road, Apex, NC 27502 (PIN 0721-43-4156)

The agent for this project is: Peak Engineering & Design, PLLC

I am the owner of the property and will be acting as my own agent

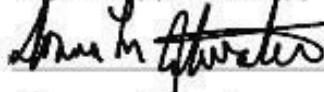
Agent Name: Jeff Roach (Peak Engineering & Design)

Address: 1125 Apex Peakway, Apex, NC 27502

Telephone Number: (919) 439-0100

E-Mail Address: jroach@peakengineering.com

Signature(s) of Owner(s)



Donna Atwater

6/28/2019

Type or print name

Date

Type or print name

Date

Type or print name

Date

Attach additional sheets if there are additional owners.

***Owner of record as shown on the latest equalized assessment rolls of Wake County. (An option to purchase does not constitute ownership). If ownership has been recently transferred, a copy of the deed must accompany this authorization.**

AGENT AUTHORIZATION FORM

Application #: _____

Submittal Date: _____

N/F Lector Marie Atwater _____ is the owner of the property for which the attached application is being submitted:

- Land Use Amendment
- Rezoning
- Site Plan
- Subdivision
- Variance
- Other: _____

The property address is: 2600 Mt. Zion Church Road, Apex, NC 27502 (PIN 0721-42-4940)

The agent for this project is: Peak Engineering & Design, PLLC

I am the owner of the property and will be acting as my own agent

Agent Name: Jeff Roach (Peak Engineering & Design)

Address: 1125 Apex Peakway, Apex, NC 27502

Telephone Number: (919) 439-0100

E-Mail Address: jroach@peakengineering.com

Signature(s) of Owner(s)

Douglas Brown, POA
for Lector Marie Atwater
Type or print name

06/29/2019
Date

Type or print name Date

Type or print name Date

Attach additional sheets if there are additional owners.

***Owner of record as shown on the latest equalized assessment rolls of Wake County. (An option to purchase does not constitute ownership). If ownership has been recently transferred, a copy of the deed must accompany this authorization.**



June 11, 2019

Dear Neighbor,

Pursuant to Town of Apex standards, you are invited to a neighborhood meeting to introduce and discuss the development of property located on the west side of Mt. Zion Church Road near the intersection with Richardson Road. The Neighborhood meeting is an opportunity to discuss the project with the neighbors and other interested parties prior to any submittals to the Town of Apex. This meeting also allows the development team to better understand the history of the property and identify possible impacts with the development.

Collectively known as “Townes at Bella”, the ~11.30 acres are currently owned by two (2) different property owners. The project proposes 65 townhomes on 11.30 acres. Initial submittal for the zoning with the Town of Apex is slated for July.

The following items will be discussed at the meeting:

1. Zoning
2. Master Subdivision Plan

Meeting Information:

Applicant: Vaughn King
Contact information: Jeff Roach; Peak Engineering & Design
jroach@peakengineering.com
Meeting date: June 26, 2019
Meeting time: 5:00 pm
Meeting address: 237 N. Salem Street, Apex, NC 27502 (Halle Cultural Art Center)

The meeting will begin at 5:00 pm and will conclude when all the questions have been answered. If you have any questions about the proposed development, do not hesitate to contact our office at (919) 439-0100 any time prior to the meeting.

NOTICE OF NEIGHBORHOOD MEETING

This document is a public record under the North Carolina Public Records Act and may be published on the Town's website or disclosed to third parties.

June 11, 2019

Date

Dear Neighbor:

You are invited to a neighborhood meeting to review and discuss the development proposal at
2504, 2508, 2512, 2516 and 2600 Mt. Zion Church Road 0721-43-2558; -5444; -5322; -4156, 0721-42-4940
Address(es) PIN(s)

in accordance with the Town of Apex Neighborhood Meeting procedures. The Neighborhood Meeting is intended as a way for the applicant to discuss the project and review the proposed plans with adjacent neighbors and neighborhood organizations before the submittal of an application to the Town. This provides neighbors an opportunity to raise questions and discuss any concerns about the impacts of the project before it is officially submitted. Once an application has been submitted to the Town, it may be tracked using the [Interactive Development Map](#) or the [Apex Development Report](#) located on the Town of Apex website at www.apexnc.org.

A Neighborhood Meeting is required because this project includes (check all that apply):

- Rezoning (including Planned Unit Development);
- Major Site Plan;
- Master Subdivision Plan (excludes minor or exempt subdivision); or
- Special Use Permit

The following is a description of the proposal (also see attached map(s) and/or plan sheet(s)):

The rezoning and the Master Residential Subdivision Plan of the five (5) properties located along the western side of Mt. Zion Church Road for the development of residential properties.

Estimated submittal date: July 1, 2019

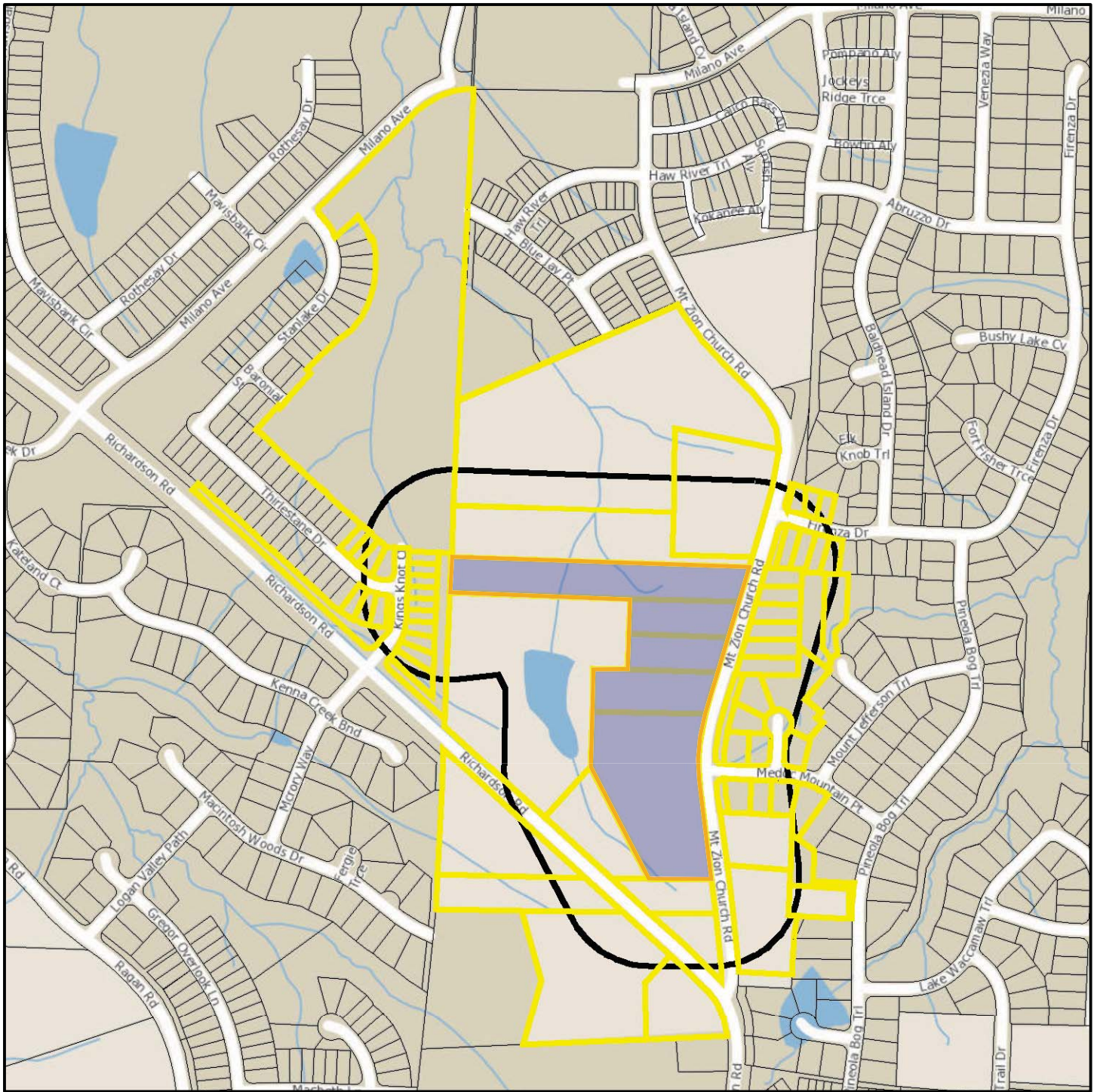
MEETING INFORMATION:

Property Owner(s) name(s):	Atwater Family and Heirs (multiple property owners)
Applicant(s):	Peak Engineering & Design, PLLC - Jeff Roach & Vaughn King
Contact information (email/phone):	(919) 439-0100 jroach@peakengineering.com
Meeting Address:	237 N. Salem Street, Apex, NC 27502, (Halle Cultural Arts Center)
Date of meeting*:	June 26, 2019
Time of meeting*:	5:00 pm -

MEETING AGENDA TIMES:

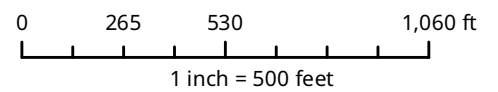
Welcome:	5:00 pm - 5:10 pm
Project Presentation:	5:10 pm - 5:30 pm
Question & Answer:	5:30 pm -

*Meetings shall occur between 5:00 p.m. - 9:00 p.m. on a Monday through Thursday (excluding Town recognized holidays). If you have questions about the general process for this application, please contact the Planning Department at 919-249-3426. You may also find information about the Apex Planning Department and on-going planning efforts at <http://www.apexnc.org/180/Planning>.



Mt. Zion Church Road - 300' Buffer

 Properties being rezoned



Disclaimer

*iMaps makes every effort to produce and publish the most current and accurate information possible. However, the maps are produced for information purposes, and are **NOT** surveys. No warranties, expressed or implied, are provided for the data therein, its use, or its interpretation.*

PROJECT CONTACT INFORMATION

This document is a public record under the North Carolina Public Records Act and may be published on the Town's website or disclosed to third parties.

Development Contacts:

Project Name: Townes at Bella (Mt. Zion Church Road PUD Assembly)
 Location: Mt. Zion Church Road north of Richardson Road, west of Medoc Mountain Point
 Property PIN: see meeting notification Acreage/Square Feet: see meeting notification
 Zoning: PUD-CZ Subdivision/Development: _____

Property Owner: Atwater Family and Heirs
 Address: _____
 City: _____ State: _____ Zip: _____
 Phone: _____ Email: _____

Developer: Vaughn King
 Address: PO Box 1328
 City: Cary State: NC Zip: 27512
 Phone: (919) 376-5923 Fax: _____ Email: vaughnking5@gmail.com

Engineer: Peak Engineering & Design, PLLC - Jeff Roach
 Address: 1125 Apex Peakway
 City: Apex State: NC Zip: 27502
 Phone: (919) 439-0100 Fax: (919) 439-6411 Email: jroach@peakengineering.com

Builder (if known): N/A
 Address: _____
 City: _____ State: _____ Zip: _____
 Phone: _____ Fax: _____ Email: _____

Town of Apex Department Contacts

Planning Department Main Number (Provide development name to be routed to correct planner)	(919) 249-3426
Parks, Recreation & Cultural Resources Department Angela Reincke, Parks Planner	(919) 249-7468
Public Works - Transportation Russell Dalton, Senior Transportation Engineer	(919) 249-3358
Water Resources Department Mike Deaton, Stormwater & Utility Engineering Manager Stan Fortier, Senior Engineer (Sedimentation & Erosion Control)	(919) 249-3413 (919) 249-1166
Electric Utilities Division Rodney Smith, Electric Technical Services Manager	(919) 249-3342



Mt. Zion Church Road PUD Assembly Property Owner Information

Lector Marie Atwater
2504 Mt. Zion Church Road
Apex, NC 27502
0721-43-2558
2.97 acres

Jerome Kenneth Atwater Heirs
ATTN: Donna Atwater
179 Arlington Avenue
Jersey City, NC 07305
0721-43-4156
1.41 acres

Jerome Kenneth Atwater Heirs
ATTN: Donna Atwater
179 Arlington Avenue
Jersey City, NC 07305
0721-43-5444
1.16 acres

Lector Marie Atwater
2504 Mt. Zion Church Road
Apex, NC 27502
0721-42-4940
4.60 acres

Jerome Kenneth Atwater Heirs
ATTN: Donna Atwater
179 Arlington Avenue
Jersey City, NC 07305
0721-43-5322
1.16 acres

NEIGHBORHOOD MEETING SIGN-IN SHEET

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Meeting Address: 227 N. Salem Street , Apex, NC 27502 (The Halle Cultural Arts Center)
 Date of meeting: June 26, 2019 Time of meeting: 5:00 pm
 Property Owner(s) name(s): see owner documents in application package
 Applicant(s): Peak Engineering & Design, PLLC

Please print your name below, state your address and/or affiliation with a neighborhood group, and provide your phone number and email address. Providing your name below does not represent support or opposition to the project; it is for documentation purposes only.

	NAME/ORGANIZATION	ADDRESS	PHONE #	EMAIL	SEND PLANS & UPDATES
1.	MARTIN BURKE	2722 Masonboro Ferry	919 609 6842		
2.	Brian Diaz	2509 Mt Zion Church Rd	860 690 2239		
3.	CHRISTACIA		919 356 5377		
4.	Anthony F. Richardson	1825 Carr St St	919 352 2219		
5.	Wayne Richardson	2713 Richardson	919-302-8248		
6.	Patrick Adams	2511 Mount Zion Church	919.422.4681		
7.	Richard Kirk	2712 Mount Jefferson Trl.	919-452-0576		
8.	Sara Hansen	2815 Medoc Mt. Pt.	919-252-7967		
9.	LaDawn Sanders	518 Hogan Farm Rd. Apex	919.924.6129		m ✓
10.	Jennifer Gregg	2809 Medoc Mountain Pt.	919-480-7036		✓
11.	Robert + Rosann Thomas	2507 Mt Zion Church Rd	919-355-2665		✓
12.	Terry Mahaffey	109 Teresian Ct	206-724-2948		✓
13.	Garrett Offen	1981 Firenze Dr.	919 943 0568		✓
14.	Cathel Brewer	8132 Hunnicutt Blvd	919-362-5838		✓

Use additional sheets, if necessary.

NEIGHBORHOOD MEETING SIGN-IN SHEET

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Please print your name below, state your address and/or affiliation with a neighborhood group, and provide your phone number and email address. Providing your name below does not represent support or opposition to the project; it is for documentation purposes only.

	NAME/ORGANIZATION	ADDRESS	PHONE #	EMAIL	SEND PLANS & UPDATES
1.	Francesca Cain	2515 Mt Zion Ln Road	919-961-5491		✓
2.	Steve Watson	2515 Mt Zion Ln Road	919-559-4778		
3.	Keith Holder	2825 Medoc MtN Pt	919-903-7004		
4.	Scott Mason	2505 Mount Zion Church	440-796-6791		✓
5.	Uva Holland/Sheila	390 Mt. Holland Rd	919-362-6851		
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					

Use additional sheets, if necessary.

SUMMARY OF DISCUSSION FROM THE NEIGHBORHOOD MEETING

This document is a public record under the North Carolina Public Records Act and may be published on the Town's website or disclosed to third parties.

Property Owner(s) name(s): See previous zoning application documentation
Applicant(s): Peak Engineering & Design - Jeff Roach
Contact information (email/phone): vaughnking5@gmail.com or jroach@peakengineering.com
Meeting Address: 227 N. Salem Street, Apex, NC 27502 (Halle Cultural Arts Center)
Date of meeting: June 26, 2019 Time of meeting: 5:00

Please summarize the questions/comments and your response from the Neighborhood Meeting in the spaces below (attach additional sheets, if necessary). Please state if/how the project has been modified in response to any concerns. The response should not be "Noted" or "No Response". There has to be documentation of what consideration the neighbor's concern was given and justification for why no change was deemed warranted.

Question/Concern #1:

SEE ATTACHED MEETING REPORT

Applicant's Response:

Question/Concern #2:

Applicant's Response:

Question/Concern #3:

Applicant's Response:

Question/Concern #4:

Applicant's Response:

SUMMARY OF DISCUSSION FROM THE NEIGHBORHOOD MEETING

This document is a public record under the North Carolina Public Records Act and may be published on the Town's website or disclosed to third parties.

Property Owner(s) name(s):	See previous zoning application documentation	
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The Mt. Zion Church Road zoning and Master Subdivision neighborhood meeting started at 5:00 pm with a brief introduction of Peak Engineering & Design, the project, the location, and general housekeeping items including the sign-in sheets and handouts. This was followed up by a discussion related to what zoning and Master Subdivision Plans are, the timing of the project, and what our role is for the project. This led into the presentation of the proposed Zoning (10 minutes) followed by discussions related to the Master Subdivision Plan (10 minutes). The floor was then opened up to questions and an open discussions with questions and answers with the group. Following are the questions and a summary of responses (some of the questions and responses were long-winded and therefore condensed for clarity/space):

1. What is the area labeled "Future Development" in the northern portion of the property?
 - A. This area is set aside for future roadway connections between properties north and south of the assembly. Final designation of this property will be coordinated with staff during the MSP process.
2. Will the trees in the buffers survive construction?
 - A. The project does not propose to remove trees within the buffers unless they are dead, dying, or diseased.
3. Can the product be single family homes instead of townhomes?
 - A. The developer/builder are looking for a townhome product in this location.
4. What do you mean by staff? Are you referring to Planning Department?
 - A. Planning, Engineering, Transportation, Public Works, Fire, and Building Inspections. These are the staff groups which attend the pre-application meetings.
5. How will the project deal with the increase in traffic?
 - A. The project proposed 65 lots or less. The project proposes to widen Mt. Zion Church Road to the Minor Collector Street standard per the adopted Apex Transportation Plan. The addition of 65 lots in this area is a minor addition to a location which is currently not experiencing heavy traffic congestion.
6. Have you ever tried to get out onto Mt. Zion Road because of the neighborhood traffic?
 - A. I have and did not have any issues. I believe there are times when traffic is heavier than normal, but to express concerns related to 65 homes on a Minor Collector (Mt. Zion Church Road) is not a heavy burden on the infrastructure.

7. Where is Friendship Station?
 - A. We showed the neighbors the location of Friendship Station on the exhibits.
8. There were comments related to the existing traffic on Richardson Road and Mt. Zion Church Road.
 - A. A question was not asked about traffic along the streets, more of a statement from the property owner related to the speed of traffic, people walking pets on Mt. Zion Church Road (on the street), and the nature of Mt. Zion Church Road today and in the future.
9. Can you change the access to the site?
 - A. The alignment of the main entrance to align with Medoc Mountain Point cannot change. The second point of access in the northern corner of the property will remain until future development extends the streets to align with Firenza Drive.
10. What does minor collector mean?
 - A. A minor collector is a street designation which specifies the street should expect more vehicles than neighborhood streets, have a slightly higher speed (possibly), and act as a funnel to the larger streets (larger streets being Major Collectors, Thoroughfares, and Interstates).
11. Is the Town of Apex proposing to take ownership of Mt. Zion Church Road from NCDOT?
 - A. That is unknown at this time. This project will be required to rezone and annex to the centerline of Mt. Zion Church Road. Maintenance of Mt. Zion Church Road in the future is unknown but the question will be asked to staff. Discussion was had concerning the 6 properties which front on Mt. Zion Church Road (2505 – 2515 Mt. Zion Church Road) and the maintenance of the minor collector.
12. What else can the property be zoned for in this area?
 - A. In general, the 2045 Land Use Map sets the future use as medium density residential. This would permit a Medium Density or PUD zoning with uses that include – but may not be limited to – single family homes, townhomes attached, townhomes detached, duplexes, family home care, church, day care, school public or private, greenway, active or passive parks, Recreation facility private (pool and clubhouse) uses.
13. Will there be apartments on the property?
 - A. No – apartments are not proposed here and the 2045 Land Use Map does not support.
14. Can you please explain Milano Avenue?
 - A. Milano Avenue is an east-west collector street that runs through Bella Casa north of this project. Mt. Zion Church Road currently extends north to Milano Avenue. Buckhorn Preserve – west of this project – is extending Milano Avenue to Richardson Road. The Town of Apex's Electrical Facility on Milano Avenue will make the final Milano Avenue connection to link up from Evans Road (east) to Richardson Road (west). Mt. Zion's connection to Milano will provide multiple options for vehicles in the area.
15. What is the width of the required frontage buffer along Mt. Zion Church Road?
 - A. Minimum buffer is 30' – and 30' is proposed (with a berm in certain areas).
16. What is the RCA? And where is it proposed?
 - A. Resource Conservation Area (RCA) as a townhome development is proposed at 25% per the UDO. Location of the RCA will be determined during the concept sketches and future MSP designs.

17. What is the maximum density for the area?
 - A. Maximum density is 6.0 units/acre per Medium Density on the 2045 Land Use Map. The project proposes 65 lots with an overall density ~5.80 units/acre.
18. How temporary is the temporary street?
 - A. This “temporary” street will be removed once the property to the north redevelops with an extension to Mt. Zion Church Road at Firenza Drive. The timing of the removal of the “temporary” drive is unknown as well.
19. Will the project be paying a fee in lieu for parks?
 - A. Most likely yes with the recent purchase of the ~23 acres on Olive Farm Road by the Town of Apex for a future park site. This project will be reviewed by the Parks, Recreation, and Cultural Resources Advisory Commission prior to the zoning hearings.
20. On widening, will there be sidewalks?
 - A. Yes, sidewalk will be added on the west side of Mt. Zion Church Road for the project’s frontage.
21. Will there be sidewalks on the other (east) side of Mt. Zion Church Road?
 - A. No. Only installation on the west side or project frontage.
22. Will you extend the sidewalk to the Richardson Road/Mt. Zion Church Road intersection?
 - A. Sidewalk is currently not proposed to extend from the project to Richardson Road. We will discuss this option with the developer to see if this is something that can be done without creating conflict in the zoning or construction/right-of-way issues.
23. Will there be a berm along Mt. Zion Church Road?
 - A. We are evaluating the existing vegetation along Mt. Zion Church Road to determine if a berm can be installed without removing significant numbers of trees or large trees. In general, the project will provide some form of a berm along Mt. Zion Church Road where feasible.
24. Is there access to Richardson Road or Buckhorn Preserve for the driveway access?
 - A. The properties do not have access to Richardson Road and Buckhorn Preserve did not provide a stub street which would benefit these properties.
25. If a signal was installed at the Richardson Road/Mt. Zion Church Road intersection, would it work?
 - A. At this time, the area does not meet warrants for a traffic signal. It is impossible to determine when/if a signal would ever be warranted at this location. A signal is more likely to be approved at Richardson/Humie Olive with either the future school construction or with the Friendship Station construction.
26. Where will the kids go to school?
 - A. The closest schools are Friendship HS, Friendship MS, and Apex Elementary/Olive Chapel Elementary. With the new Friendship ES slated for construction, all three schools will serve this area. There are currently no caps on the Friendship schools but Wake County could adjust this in the future.
27. Will the rezoning de-value current homes?
 - A. We are not experts in the appraisal of homes. Other residential townhomes projects have not de-valued existing properties but that is something that is unknown to the engineer.

28. Why can't the Town of Apex stop townhomes?
- A. Townhomes are currently a market-driven product which future homeowners are looking to purchase. There are single family homes, townhomes, apartments, and duplexes which provide living space – the market decides when there are too many of any one product.
29. Were you hired by the owner?
- A. I have been retained by the developer to represent the property owners in the zoning and future design for the properties.
30. Who will the builder be? (One neighbor asked for it NOT to be a specific building – not to be named)
- A. That is unknown.
31. Can the townhomes be limited to a 2 story homes?
- A. We have limited the height of the townhomes to 42' which is the height needed for townhomes or single family homes to construction 2 stories (18" first floor rise, 2 floors, and roof pitch/storage areas).
32. Will you be responsible for landscaping?
- A. The engineer/landscape architect will design the landscaping. The Developer will direct the design of the landscaping. The building will be responsible for the installation of the approved landscaping per plan.
33. Will this project have a higher quality landscaping?
- A. The property owner recently purchased in Parkside at Bella Casa and did not have the quality landscaping which was expected. We have asked the homeowner to send pictures of "high quality" vs "low quality" landscaping to see what the concern is. We have agreed to larger buffers along Mt. Zion Church Road with a berm where possible, the frontage of the project will be establish for higher quality landscaping. This "higher quality" will be defined in conjunction with the property owners and designed during the Master Subdivision Plan process, not zoning.
34. Will there be a stop sign at access points or internal to the project?
- A. Yes, a stop sign will be installed at the exits to Mt. Zion Church Road and there will be stop signs internal to the project.
35. Can one of the streets be moved?
- A. During zoning, we do not provide street locations. During Master Subdivision Plan, we can adjust the layout to provide the best project possible while still meeting Town of Apex standards.
36. What is the point of this meeting?
- A. This meeting is to explain the process, the project, and product while gathering information from residents which will see the development. The questions will be gathered, answers provided, and included in the zoning submittal for Planning Board and Town Council review during the zoning process.
37. Who determines the product?
- A. The builders that are interested in the property and area will direct the development group to the product which the market is requesting in this area.
38. Who can I contact about the project? Town of Apex?
- A. A list of Town of Apex contacts were provided at the meeting. Staff will know about the project but will not know details until after the July 1, 2019 zoning submittal.

39. Who approves rezoning?
A. Town Council approves the zoning request.
40. Are you willing to pre-wire homes for solar power?
A. Yes – that is a commitment in the PD Text for the project.
41. Will the electrical poles be effected by the widening on Mt. Zion Church Road?
A. We do not know at this time. The hope is to avoid relocated any existing power poles.
42. When will the project begin?
A. That is hard to tell with the zoning yet to be submitted. We will start the rezoning process on July 1, 2019 and follow the Town’s guidelines for review through zoning, MSP, and Construction Documents.
43. How long to complete the project?
A. From the initial zoning submittal to the start of construction is typically 15-18 months – but that time varies based upon review times or other administrative delays in the process.
44. Why are you putting forth the maximum density to benefit the development while only committing to the minimums for neighbors?
A. The project is following the Town’s requirements for items such as RCA, buffers, streets, density, etc. In a number of these items, we will exceed the Town’s standards but will not confirm that until the project is in MSP and CD review.
45. What are the blue lines on the map?
A. This is in reference to the cyan/blue line that was included on the meeting exhibits. This box was inadvertently left on the plan.
46. The way it is zoned, what could be developed on the property?
A. Under the current RR zoning district, the properties would each be permitted to support one (1) single family home at this time.
47. What are the 5 lots included in the development?
A. The maps were referenced to show the attendees the location of the 5 lots which are included in the current zoning/MSP request.
48. Where is the church?
A. This is in reference to the Mount Zion Baptist Church at the corner of Mt. Zion Church Road and Richardson Road. The property was identified on the meeting exhibits.
49. Who would own the land on future development along the property to the north?
A. That property will remain with the builder/developer to support future development connectivity west of this project.
50. What is to stop non-residents from jumping the fence at the Bella Casa Community pools?
A. Nothing. There is nothing to stop residents from gaining access to the pools except signage, cameras, and police support.
51. How will non-Bella Casa residents be kept out of the Bella Casa pools?
A. Lifeguards are on duty at the pools and it is their job – from other projects we deal with – to keep non-residents from using the pools.
52. What can stop someone from jumping in the surrounding ponds?
A. Nothing. The property owner to the west has a large farm pond and is concerned. This is an issue that has come up in the past and requires parental control of future residents of the development.

53. Is there a BMP (SCM)?

A. Yes – an SCM is shown on the northern side of the property. The type, size, and design standards will meet Town of Apex requirements for this location and treatment standards.

54. Will there be irrigation on berms?

A. We have not committed to berms along Mt. Zion Church Road but are looking into options. If the existing vegetation is not well established, the developer will agree to the installation of a berm with landscaping for the 30' Mt. Zion Church Road frontage. If there are existing trees to be preserved, a berm will not be installed in those locations.

55. Can we make it a requirement to have a longer warranty on landscaping?

A. This is not a zoning condition as the installation of landscaping is always covered by a 1-year warranty for installation. If the developer lets the landscaping die, they will replant the dead vegetation 12-months later.

56. Where can I find the rezoning application once it is submitted?

A. On the Town's website under the "Interactive Development" tab will be a map. After the zoning package is submitted, the documents will be updated within a week or two.

57. Can the developers buy more land and move the temporary street to align with Firenza Drive?

A. The developer has looked at the N/F Dorothy Mae Richardson Heirs (part of the Charles Walden tracts) but is unable to determine if there is a clean chain of title to the property. A number of previous developers/builders have looked at the properties only to walk away without solving the chain of title issues.

58. Who were the planners at the pre submittal meeting?

A. Answered the question with Amanda Bunce, Lauren Staudenmaier, Sarah Rayfield, Shelly Mayo, and Liz Loftin. Planning Department contact is on the hand-out from the meeting.

59. Staff doesn't live here, poor planning in town.

A. No response except to say that development patterns in Apex were recently reviewed with Advance Apex, Bike Apex, and the 2045 Land Use Plan/Map update. Clarified that some of the staff lives in Apex and may or may not live in the Bella Casa/Buckhorn/Friendship area.

60. What does Apex do to bring in businesses?

A. Explained the role of the Economic Development Director and the Chamber of Commerce in attracting new non-residential and residential developments.

61. What is the approval rate for a project like this from Town Council?

A. If a project is going to be denied, it is usually pulled from the Council's agenda before public hearings. Denials at Town Council hearings are therefore limited based upon review by staff through the application process.

62. What is your success rate on rezonings with the Town of Apex?

A. We typically do not take projects to Town Council that don't make sense and do not have staff support. With that said, our success rate is high. But to follow that up, "we work our ass off to assure the project meets Town requirements, adopted plans, and will be a contributor to the existing neighborhoods."

63. Is the multi-colored part of the zoning map?

A. This is in reference to the 2045 LUM showing Friendship Station with 3 different land use options and the Christian Chapel Church property (Humie Olive Road at Richardson Road) shown as either Commercial Services or Medium Density Residential. Explain what the different colors on the 2045 LUM represent.

64. Where is the church?

A. The location of the church was identified on the maps.

65. Will a Target be coming to the area?

A. That is a question not related to this project but a Target in the Friendship area is unknown.

66. Is this the application you will be using, how do you answer the Legislative Consideration questions with a straight face? (Garrett Otten asked the question from the back of the room)

A. Although not aware of what application Mr. Otten had, the Legislative Considerations as not part of the PUD zoning application. It appears the application that Mr. Otten had was a different zoning application – not a PUD application. To respond to the questions from other zonings, this project meets the Legislative Considerations from the other zoning documents from the Town of Apex.

67. Is the project going to be part of the Bella Casa HOA? If not, can you remove Bella from the name?

A. We have removed “Townes at Bella” at this time. Final project name will be coordinated with the development and future building group.

68. Do churches have rights? Can the Town of Apex condemn the church?

A. This is in reference to the church at Mt. Zion and Richardson Road. Yes – the church has the same rights than any private property owner has to buy and sell, on not. The Town of Apex can use condemnation powers on any property owner but that is not in the discussions for the this project.

69. On the maps, what is the “PEAK” at the bottom of the sheets?

A. Engineering company that is working with the development team to entitle the project.

70. Who is the developer?

A. The development group is represented by Vaughn King – who was in attendance at the meeting.

71. Who is the builder?

A. A builder has not be selected for the project.

72. I thought Peak was a realty company?

A. Peak Engineering & Design is not a realty company (although there is a Peak Realty in Apex).

73. Have you approached the surround lots?

A. The developer has spoken to a number of property owners in the area. There are chain of title issues with some properties which have caused people to avoid the area.

74. What’s next?

A. Zoning submittal on July 1st. Review with staff with a Planning Board/Town Council public hearing in 3-4 months.

75. What is the timing of the council meeting?

A. Discussion insued related to the zoning submittal (July 1st) through a full project design which could take 15-18 months.

At the conclusion of the group meeting, the neighbors broke up into groups, some asking questions, some talking amongst themselves, and others leaving the meeting. There were a number of clarifications provided one-on-one but nothing more related to additional conditions or concerns about the project beyond what was asking during the larger group setting. The meeting wrapped up at 6:55 pm when all the neighbors left the Halle Cultural Arts Center.

AFFIDAVIT OF CONDUCTING A NEIGHBORHOOD MEETING, SIGN-IN SHEET AND ISSUES/RESPONSES SUBMITTAL

This document is a public record under the North Carolina Public Records Act and may be published on the Town's website or disclosed to third parties.

I, Jonathan Edwards, do hereby declare as follows:
Print Name

1. I have conducted a Neighborhood Meeting for the proposed Rezoning, Major Site Plan, Master Subdivision Plan, or Special Use Permit in accordance with UDO Sec. 2.2.7 *Neighborhood Meeting*.
2. The meeting invitations were mailed to the Apex Planning Department, all property owners within 300 feet of the subject property and any neighborhood association that represents citizens in the area via first class mail a minimum of 10 days in advance of the Neighborhood Meeting.
3. The meeting was conducted at 227 N. Salem Street, Apex, NC 27502 (Halle Cultural Arts Center) (location/address) on June 26, 2019 (date) from 5:00 (start time) to 7:00 (end time).
4. I have included the mailing list, meeting invitation, sign-in sheet, issue/response summary, and zoning map/reduced plans with the application.
5. I have prepared these materials in good faith and to the best of my ability.

June 27, 2019
Date

By Jonathan Edwards

STATE OF NORTH CAROLINA
COUNTY OF WAKE

Sworn and subscribed before me, DANIEL H WOODS, a Notary Public for the above State and County, on this the 27 day of JUNE, 20 19.



Daniel H Woods
Notary Public
DANIEL H. WOODS
Print Name

My Commission Expires: 11/18/23

Project Identification and Legal Description

Mt. Zion Church Road Assembly Property

Apex, Buckhorn Township
Wake County, North Carolina

The Mt. Zion Church Road Assembly Property is identified by the following owner names and Wake County GIS PIN #'s; N/F Lector Marie Atwater (PIN 0721-43-2558), N/F Jerome Kenneth Atwater Heirs (PIN 0721-43-5444), N/F Jerome Kenneth Atwater Heirs (PIN 0721-43-5322), N/F Jerome Kenneth Atwater Heirs (PIN 0721-43-4156), N/F Lector Marie Atwater (PIN 0721-42-4940), located on the east side of Mt. Zion Church Road S.R. 1146.

The POINT OF BEGINNING is an existing point in the centerline of Mt. Zion Church Road S.R. 1146 in the northeastern corner of the property N/F Lector Marie Atwater (PIN 0721-43-2558) being the common property corner with N/F Uva Holland property (PIN 0721-43-1773);
thence S 17°05'10" W for 126.21' along the centerline to an existing point at the corner of a shared property, said property being N/F Jerome Kenneth Atwater Heirs (PIN 0721-43-5444);
thence S 17°05'10" W for 126.44' along the centerline to an existing point at the corner of a shared property, said property being N/F Jerome Kenneth Atwater Heirs (PIN 0721-43-5322);
thence S 17°05'10" W for 126.74' along the centerline to an existing point at the corner of a shared property, said property being N/F Jerome Kenneth Atwater Heirs (PIN 0721-43-4156);
thence S 17°32'19" W for 37.67' along the centerline of Mt. Zion Church Road S.R. 1146;
thence S 16°50'50" W for 106.63' along the centerline to an existing point at the corner of a shared property, said property being N/F Lector Marie Atwater (PIN 0721-42-4940);
thence S 17°21'16" W for 14.53' along the centerline of Mt. Zion Church Road S.R. 1146;
thence S 13°35'39" W for 24.45' along the centerline of Mt. Zion Church Road S.R. 1146;
thence S 12°11'19" W for 27.69' along the centerline of Mt. Zion Church Road S.R. 1146;
thence S 9°42'02" W for 25.70' along the centerline of Mt. Zion Church Road S.R. 1146;
thence S 5°58'28" W for 18.72' along the centerline of Mt. Zion Church Road S.R. 1146;
thence S 4°04'17" W for 21.04' along the centerline of Mt. Zion Church Road S.R. 1146;
thence S 0°03'44" W for 19.93' along the centerline of Mt. Zion Church Road S.R. 1146;
thence S 2°00'47" E for 17.34' along the centerline of Mt. Zion Church Road S.R. 1146;
thence S 3°01'51" E for 21.23' along the centerline of Mt. Zion Church Road S.R. 1146;
thence S 3°21'47" E for 8.69' along the centerline of Mt. Zion Church Road S.R. 1146;
thence S 3°21'56" E for 27.38' along the centerline of Mt. Zion Church Road S.R. 1146;

thence S 5°58'11" E for 33.30' along the centerline of Mt. Zion Church Road S.R. 1146;
thence S 5°24'23" E for 38.01' along the centerline of Mt. Zion Church Road S.R. 1146;
thence S 7°49'41" E for 196.19' along the centerline to an existing point at the corner of a shared property, said property being N/F Uva Holland property (PIN 0721-42-5439);
thence N 89°07'25" W for 245.17' along the shared property line, said property being N/F Uva Holland property (PIN 0721-42-5439) to a shared point with N/F Uva Holland property (PIN 0721-42-5439) and N/F Uva Holland property (PIN 0721-42-2742);
thence N 27°29'51" W for 209.55' along the shared property line; said property being N/F Uva Holland property (PIN 0721-42-2742) to a shared point with N/F Curtis Richardson property (PIN 0721-43-0214);
thence N 27°50'57" W for 224.50' along the shared property line; said property being N/F Uva Holland property (PIN 0721-42-2742) to a shared point with N/F Curtis Richardson property (PIN 0721-43-0214);
thence N 1°46'58" E for 192.84' along the shared property line; said property being N/F Curtis Richardson property (PIN 0721-43-0214) to a shared point with N/F Jerome Kenneth Atwater Heirs (PIN 0721-43-4156);
thence N 1°49'38" E for 149.07' along the shared property line; said property being N/F Curtis Richardson property (PIN 0721-43-0214) to a shared;
thence S 87°57'07" E for 117.90' along the shared property line; said property being N/F Curtis Richardson property (PIN 0721-43-0214) to a shared point said property being N/F Jerome Kenneth Atwater Heirs (PIN 0721-43-5322);
thence N 2°21'50" E for 122.20' along the shared property line; said property being N/F Curtis Richardson property (PIN 0721-43-0214) to a shared point said property being N/F Jerome Kenneth Atwater Heirs (PIN 0721-43-5444);
thence N 2°21'51" E for 122.05' along the shared property line; said property being N/F Curtis Richardson property (PIN 0721-43-0214) to a shared point said property being N/F Lector Marie Atwater (PIN 0721-43-2558);
thence N 88°04'20" W for 623.91' along the shared property line; said property being N/F Curtis Richardson property (PIN 0721-43-0214) to a shared point said property being N/F CalAtlantic Group Inc. (PIN 0721-33-6396);

thence N 2°26'52" E for 122.00' along the shared property line; said property being N/F CalAtlantic Group Inc. (PIN 0721-33-6396) to a shared point said property being N/F Uva Holland property (PIN 0721-43-1773);

thence S 88°04'22" E for 1059.89' along the common property line with N/F Uva Holland property (PIN 0721-43-1773) to a shared existing point in the centerline of Mt. Zion Church Road S.R. 1146, said point being the POINT OF BEGINNING.

Said property includes 492,224 square feet or 11.30 acres.

The property hereinabove described was acquired by the referencing Wake County GIS information.

Mt. ZION CHURCH ROAD ASSEMBLY

A PLANNED UNIT DEVELOPMENT

PD PLAN

Rezoning Case #19CZ15

July 1, 2019

Revised: August 9, 2019

Revised: September 4, 2019

Revised: October 1, 2019

Project Contact:

Vaughn King

PO Box 1328

Cary, NC 27512

vaughnking5@gmail.com

Civil Engineering & Land Planning:

Jeff Roach, P.E.

Peak Engineering & Design, PLLC

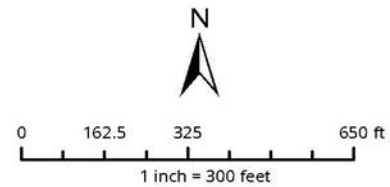
Table of Contents

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Exhibits

Section 2: Vicinity Map

Mt. Zion Church Road Assembly is a group of five (5) properties located along the western side of Mt. Zion Church Road; north of Richardson Road, south of Milano Avenue, directly east of Firenza Drive and Medoc Mountain Point. The property is bordered to the north and south by existing large lot residential properties; to the east by the Bella Casa subdivision; to the west is the Buckhorn Preserve subdivision (currently under construction).



Section 3: Project Data

Project name: Name is TBD
Mt. Zion Church Road Assembly - Planned Unit Development

Property Owners:

Lector Atwater 2504 Mt. Zion Church Road Apex, NC 27502 PIN 0721-43-2558 (2.97 acres)	Jerome Kenneth Atwater Heirs 2512 Mt. Zion Church Road Apex, NC 27502 PIN 0721-43-5322 (1.16 acres)
Jerome Kenneth Atwater Heirs 2508 Mt. Zion Church Road Apex, NC 27502 PIN 0721-43-3444 (1.16 acres)	Jerome Kenneth Atwater Heirs 2516 Mt. Zion Church Road Apex, NC 27502 PIN 0721-43-4156 (1.41 acres)
Lector Atwater 2600 Mt. Zion Church Road Apex, NC 27502 PIN 0721-42-4940 (4.6 acres)	

Project Contact:

Vaughn King
PO Box 1328
Cary, NC 27512
(919) 376-5923
vaughnking@gmail.com

Prepared by:

Jeff Roach, P.E.
Peak Engineering & Design, PLLC
1125 Apex Peakway
Apex, NC 27502
(919) 439-0100
jroach@peakengineering.com

Zoning:

Existing Zoning: Rural Residential (RR)
Proposed Zoning: Planned Unit Development – Conditional Zoning (PUD-CZ)

Land Use Map:

2045 Land Use Map Designation: Medium Density Residential
Proposed Land Use: Medium Density Residential < 6 units/acre
Total Project Area: 11.30 acres (per Wake County GIS & Deeds/Plats)

Legal descriptions for the properties being rezoned were assembled from available plats, deeds, and other Wake County GIS data. This information is public and provided within the zoning application packet.

Section 4: Purpose Statement

Mt. Zion Church Road Assembly is a proposed Planned Unit Development (PUD) located outside of the Apex corporate limits yet inside the ETJ. The project proposes:

- Forty-six (46) single-family residential lots currently

Prior to Construction Document approval, the properties will be annexed to obtain Town services. The PUD parameters are outlined per UDO Section 2.3.4(F)(1)(a)(i - vi) and answered in various locations within the PD Text document. Specifically, the PD Text and associated documents will:

- Permit uses which are compatible with the surround development pattern
- Permit uses which are compatible with Section 4.2.2 – Use Table of the UDO
- Offer additional residential options in western Apex
- Provide dimensional standards that are consistent with the UDO, and where modifications are required, said modifications will be included within the PD Text and subject to Town Council approval
- Provide a high quality residential development which is linked through a network of streets and pedestrian walkways which promote connectivity and a healthy lifestyle
- Provide high quality residential homes to enhance the value of surround properties.

All site-related standards of the PD Text and PUD documents are consistent with a Conditional Zoning (CZ) District as established by UDO section 2.3.3 – Conditional Zoning Districts. The proposed development is:

- consistent with the 2045 Land Use Map for use and density;
- assures the transition of uses from surrounding developments and vacant properties;
- vehicular connectivity is established for future developments; and
- pedestrian connectivity is provided or stubbed for future extensions.

The project is consistent with the Town’s adopted development standards including the 2045 Land Use Map, Transportation Plan, Construction Specifications and Details, the Parks, Recreation, Greenways and Open Space Master Plan, and other adopted plans as coordinated with Town staff.

Section 5: Permitted Uses

The rezoned lands may be used for, and only for, the uses listed below. The permitted uses are subject to the limitations and regulations stated in the UDO and any additional limitations or regulations stated below. For convenience, some relevant sections of the UDO may be referenced; such references do not imply that other sections of the UDO do not apply.

1. Accessory apartment
2. Single-family
3. Utility, minor
4. Recreation facility, private
5. Greenway
6. Park, active
7. Park, passive

Section 6: Description, Density and Dimensional Standards

The project will comply with the standards as established by UDO Section 5.1.3 or as noted within the PD Text for the project. The following dimensional standards are for the development of the property as **single-family detached homes**:

Single-Family Development Standards

Proposed maximum density:	4.10 units/acre (includes R/W, RCA, open space & lots)
Maximum number of lots:	46 lots
Maximum built-upon percentage:	70%
Minimum lot width:	40'
Minimum lot depth:	90'
Minimum lot size:	4,000 SF
Maximum building height:	45 feet

Building setbacks:

- Front setback: 10 feet from R/W
- Garage setback: 20 feet from back of sidewalk, or back of curb where no sidewalk exists
- Side setback: 3 feet min. (no aggregate)
- Side setback, corner: 10 feet
- Rear setback: 10 feet

Section 7: Architectural Standards

Single-family residential standards:

1. Vinyl siding is not permitted; however, vinyl windows, decorative elements and trim are permitted.
2. All single-family homes shall have a crawl space or have a raised foundation which at a minimum rises at least 20 inches from average grade across the front of the house to the finished floor level at the front door, unless they provide a first floor master bedroom. Zero-entry homes without the 20 inch rise are permitted if they provide the first floor master bedroom. Lots permitted as “zero-entry” shall be noted on the Final Plat.
3. Garage doors must have windows, decorative details or carriage-style adornments.
4. Front entrances for units with front-facing single-car garages shall have a prominent covered porch/stoop area leading to the front door.
5. The garage cannot protrude more than 6 feet from the front façade or front porch. Any homes where the front entry garage protrudes more than 1 foot from the front façade or front porch shall provide one of the following additional decorative elements:
 - Window
 - Bay window
 - Decorative gable
 - Decorative cornice
 - Columns
 - Portico
 - Balcony
 - Dormer
 - Trellis
 - Arbor
6. The rear and side elevations of the units that can be seen from the right-of-way shall contain at least 3 decorative elements such as, but not limited to, the following elements:

<ul style="list-style-type: none"> • Windows • Bay window • Recessed window • Decorative window • Trim around the windows • Wrap around porch or side porch 	<ul style="list-style-type: none"> • Two or more building materials • Decorative brick/stone • Decorative trim • Decorative shake • Decorative air vents on gable 	<ul style="list-style-type: none"> • Decorative gable • Decorative cornice • Column • Portico • Balcony • Dormer
---	--	--
7. A varied color palette shall be utilized on homes throughout the subdivision to include a minimum of three color families for siding and shall include varied trim, shutter, and accent colors complementing the siding color.
8. Eaves shall project at least 12 inches from the wall of the structure.
9. Front porches shall be a minimum of 6 feet deep.
10. No more than 25% of the lots may be accessed with J-driveways. There shall be no more than 3 such homes in a row on any single block. Any lots eligible for a J-driveway home shall be identified on the Final Plat.
11. All single-family detached residential homes shall be pre-configured with conduit for a solar energy system.

Section 8: Parking and Loading

Parking will comply with the Town of Apex UDO Section 8.3 for the single-family development. Parking may be provided within an enclosed garage, within driveways, or on a designated parking pad. For residential driveways to count as required parking, they shall be a minimum of 12 feet wide and 20 feet long as measured from the back of the sidewalk or, where no sidewalk exists, the back of the curb. Cluster Box Unit or Mail Kiosk parking shall be calculated per UDO Section 8.3 standards and provided around the appropriate device

Section 9: Resource Conservation Area (RCA)

The Mt. Zion Church Road Assembly is located south and/or west of Highway 540 and is therefore required to meet the standards of UDO Section 8.1.2 to preserve or establish a minimum of 25% Resource Conservation Area (RCA) for the project. An additional 5% RCA is required for the single-family residential project if the site is mass graded. The project will protect perimeter buffers, environmentally sensitive areas, stream buffers, wetlands, and other locations where significant trees can provide wildlife habitat. The final RCA locations and acreage will be provided during the Master Subdivision Plan review.

Section 10: Landscaping

Perimeter buffers shall be established or protected to preserve the nature of the surrounding properties. The following buffers shall apply to the project’s perimeter:

- Northern boundary (N/F Uva Holland): 10 foot Type ‘B’
- Southern Boundary (vacant): 10 foot Type ‘B’
- Western Boundary (vacant): 10 foot Type ‘B’
- Eastern Boundary (Minor Collector - Mt. Zion Church Road): 30 foot Type ‘B’

Collector Street Buffers along Mt. Zion Church Road:

The UDO requires a 10 foot Type A buffer along a Minor Collector Road. The buffer width has been increased to provide a larger buffer while maintaining existing vegetation in the Type ‘B’ buffer standards. A berm will also be constructed along Mt. Zion Church Road where significant vegetation does not exist. Where significant vegetation exists, the berm will not be installed.

Landscaping within the new lots, open space, SCMs, and along streets will comply with various UDO sections including Section 8.2 for buffers, building plantings, foundation plantings and tree preservation around the perimeter of the site and within stream buffers/environmentally sensitive site areas.

Section 11: Signage

All signage will comply with the applicable standards and requirements of UDO Section 8.7. Signage for residential developments shall be coordinated with staff during the appropriate Master Subdivision Plan and/or Master Signage Plan approval.

Section 12: Public Facilities

The project will extend existing public facilities to serve the site. All public facilities and infrastructure shall comply with the Town of Apex Sewer and Water Master Plans and the Town of Apex Standards and Specifications. Facilities include:

Water:

Water will be provided by connecting to an existing Town of Apex water main in Mt. Zion Church Road and extended throughout the project. Town water will be stubbed to adjacent properties to future connectivity. The design team will coordinate with staff to locate and size the necessary extensions during the Master Subdivision and Construction Document review phases.

Sanitary Sewer:

The existing sanitary sewer is located in Firenza Drive near the intersection with Mt. Zion Church Road. The project will evaluate the sewer connectivity for current and future development within the area for extensions as required per the UDO and Town Design Specification. The design shall be coordinated with Town of Apex staff during the Master Subdivision Plan and Construction Document phases.

Streets:

The project proposes potential access and future connections as depicted on the PUD Preliminary Layout and is subject to final determination during the Master Subdivision Plan review. The final alignment of all internal streets shown within the Master Subdivision Plans will be coordinated with staff and consistent with the UDO.

Other Utilities:

Electric service shall be provided by the Town of Apex in conjunction with the appropriate staff. Gas, telephone, and cable shall be provided by the builder as coordinated with the appropriate utility companies.

Transportation:

Per UDO Section 13.19, a Traffic Impact Analysis (TIA) is not required as the project will generate less than 1,000 daily and/or 100 peak hour vehicle trips. Based upon discussions with staff, the project has agreed to construct the following roadway improvements. Said improvements will be coordinated with NCDOT as Mt. Zion Church Road is a State Maintained road at this time. Any deviation from Town of Apex Standards for the NCDOT roadway will be coordinated with Apex prior to installation.

Mt. Zion Church Road:

1. The Developer shall construct the full frontage improvements along Mt. Zion Church Road per the adopted Town of Apex Transportation Plan. Mt. Zion Church Road is identified as a two (2) lane Minor Collector Street and will be constructed to meet the Town's standards and specifications.

Mt. Zion Church Road at Site Drive #1 (intersection with Medoc Mountain Point)

1. The development shall construct single lane eastbound and westbound approaches with stop control from the development.

Section 13: Pedestrian Circulation System and Amenities

Per UDO Section 2.3.4(F)(1), sidewalks shall be provided on both sides of all internal streets and along the frontage of any public roads which the development abuts. Per the Bike Apex Plan, a sidewalk is shown on the west side of Mt. Zion Church Road and will be installed in conjunction with the frontage improvements. Additional project amenities including open space, play lawns, greenway connections, and/or multi-use paths will be evaluated with staff to provide a walkable neighborhood

Section 14: Parks and Recreation

Based upon the Bike Apex and the Parks, Recreation, Greenways, and Open Space Master Plan Map, greenways and parks are not identified on this property. On August 28, 2019, the Town of Apex Parks, Recreation and Cultural Resources Advisory Commission recommended with Parks & Recreation staff support, the acceptance of a fee in lieu of public land dedication for the project. The final fee in lieu amount will be confirmed during the Master Subdivision Plan review and approval through Technical Review Committee (TRC).

Figure 1: Bike Apex and Advance Apex

- Existing Sidewalks*
- - - Proposed Sidewalks*
-  Existing Pedestrian/
Vehicle Bridge
-  Existing Pedestrian
Underpass
-  Existing Signalized
Pedestrian Crossing
-  Future Pedestrian Crossing
- Existing Greenway
- - - Proposed Greenway
- Existing Sidepath
- - - Proposed Sidepath
- - - Proposed Streetside Greenway
- Existing Bike Lanes
- Proposed Bike Lanes
- Proposed Paved Shoulders
- - - Proposed Bicycle Shared
Lane Markings, "Bicycle May
Use Full Lane" Signage &
Speed Limit Reduction
- Private Greenway



Section 15: Natural Resources and Environmental Protection

Mt. Zion Church Road is located within the Town’s Primary Watershed Protection Overlay District. This area is currently located in Wake County and will be annexed into Apex to obtain public utilities and Town services. The area is currently undeveloped and has a number of creeks and streams containing stream buffers and other environmentally sensitive areas. No portion of the property is located within a Special Flood Hazard areas as identified by FEMA FIRM Maps 37200721000J dated May 2, 2006. No historical structures are identified within the property boundary pursuant to the North Carolina State Historic Preservation Office’s website.

Section 16: Stormwater Management

The project will contain a new Stormwater Control Measures (SCM) per Apex standards. The site is located within the Jordan Lake drainage basin and Apex’s Primary Watershed Overlay District and is therefore required to meet applicable standards of UDO Section 6.1. The project will utilize approved structural devices (SCMs) to control stormwater and sediment laden runoff, including detention ponds, retention ponds, bioretention cells, wetlands, underground devices, or other State recognized SCMs. The design Engineer will provide SCM routing in conjunction with the Town of Apex Stormwater and Utility Engineering staff to ensure compliance with appropriate requirements.

Section 17: Phasing

The project consists of residential units, streets, utility services, landscaping, stormwater controls, and other site design features. This project is expected to be developed in a single phase, but multiple phases may be needed depending on conditions discovered during the review of the Master Subdivision Plan and Construction Drawings. Off-site roadway improvements shall be clearly delineated and identified for construction during the Master Subdivision Plan and Construction Drawing review process.

Section 18: Plan Consistency

The proposed zoning for the Mt. Zion Church Road Assemble complies with the 2045 Land Use Map designation for this area as a Medium Density Residential Development. The proposed project density does not exceed 6.0 units/acre. The project will meet the requirements of the Transportation Master Plan, Advance Apex, Bike Apex, the Parks, Recreation, Greenways, and Open Space Master Plan, along with other Town of Apex adopted plans which direct development, as amended from time-to-time.

Figure 2: 2045 Land Use Map

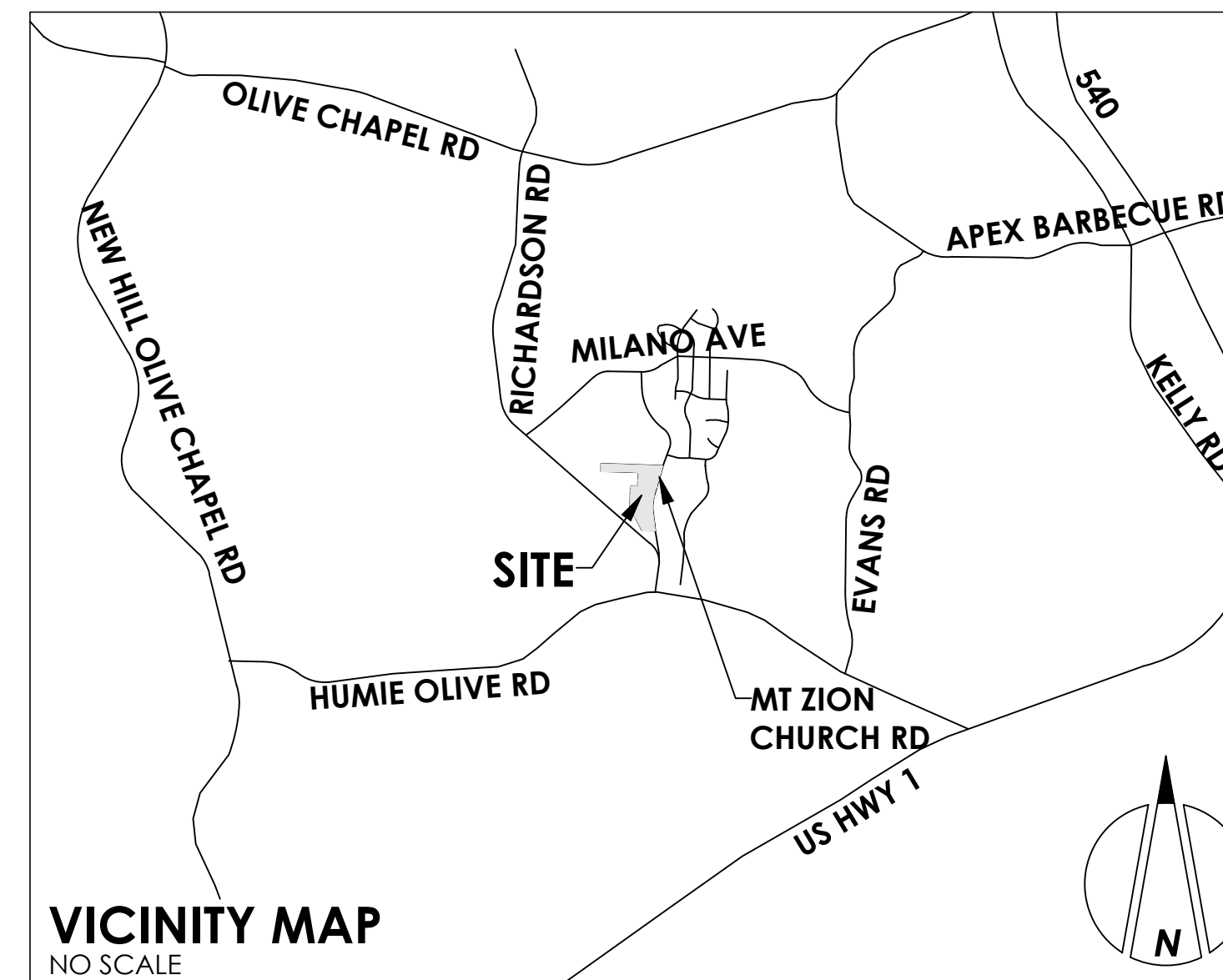


Section 19: Compliance with the Unified Development Ordinance

Mt. Zion Church Road Assembly will comply with the relevant standards of the Town of Apex’s Unified Development Ordinance and other development related standards. Any deviation from standards shall be approved by staff, Planning Board, or Town Council representatives throughout the zoning and design development processes as required.

PLANNED UNIT DEVELOPMENT MT. ZION CHURCH ROAD ASSEMBLY

2600 MT. ZION ROAD
APEX, NORTH CAROLINA
PROJECT NUMBER: 190202
DATE: JULY 1, 2019



INDEX OF DRAWINGS:

- C000 COVER SHEET
- C001 EXISTING CONDITIONS
- C002 EXISTING CONDITIONS WITH TOPO
- C100 CONCEPTUAL SITE PLAN
- C200 CONCEPTUAL UTILITY PLAN

PARKS AND RECREATION SITE DATA TABLE:

DATE REVIEWED BY PRCR ADVISORY COMMISSION: AUGUST 28, 2019

FEE-IN-LIEU:
SINGLE-FAMILY DETACHED UNITS - \$3,395.67 / UNIT
SINGLE-FAMILY ATTACHED UNITS - \$2,273.79 / UNIT
MULTI-FAMILY UNITS - \$2,002.00 / UNIT

TOTAL FEE-IN-LIEU: TBD DURING FINAL MASTER SUBDIVISION PLAN REVIEW
ACRES OF LAND DEDICATION: 0.0 ACRES
PUBLIC GREENWAY TRAIL CONSTRUCTION: YES NO

The Parks, Recreation, and Cultural Resources Advisory Commission recommended a fee-in-lieu of land dedication for the project at their August 28, 2019 meeting.

SITE INFORMATION:

Property Owner/Site Address	PIN	REID	Map Number	Deeded Acreage	Deed Book/Plat Book & Page
Lector Atwater 2504 Mt. Zion Church Road Apex, NC 27502	0721-43-2558	0002622	072103	2.97	DB 1758 PG 00143
Jerome Kenneth Atwater Heirs 2508 Mt. Zion Church Road Apex, NC 27502	0721-43-3444	0150542	072103	1.16	DB - PG -
Jerome Kenneth Atwater Heirs 2512 Mt. Zion Church Road Apex, NC 27502	0721-43-5322	0059759	072103	1.16	DB - PG -
Jerome Kenneth Atwater Heirs 2516 Mt. Zion Church Road Apex, NC 27502	0721-43-4156	0149562	072103	1.41	DB - PG -
Lector Atwater 2600 Mt. Zion Church Road Apex, NC 27502	0721-42-4940	0149560	072103	4.6	DB 3621 PG 855

Total Deeded Acreage: 11.30 acres

Each existing property owns to the centerline of Mt. Zion Church Road

Zoning:	PUD-CZ (Planned Unit Development - Conditional Zoning)
2045 Land Use Map:	Medium Density Residential
Existing Use:	Vacant & Single Family Residential
Proposed Uses:	Single-Family Detached
Township:	Buckhorn
Flood Zone Information:	Firm Panel 3720072100J dated May 2, 2006 does not show the presence of flood zones on properties.
Watershed Information:	Primary Watershed Protection Overlay District, Beaver Creek Basin, Cape Fear River Basin.
Historical:	Per the NC SHPO, no historical structures are located within the project boundary.
Annexation:	Project will be annexed prior to Construction Document approval

Single Family Development Standards

- Proposed maximum density: 4.10 units/acre (includes R/W, RCA, open space & lots)
 - Maximum number of lots: 46 lots
 - Maximum built-upon percentage: 70%
 - Minimum lot width: 40'
 - Minimum lot depth: 90'
 - Minimum lot size: 4,000 SF
 - Maximum building height: 45 feet
- Building setbacks:
- Front setback: 10 feet from R/W
 - Garage setback: 20 feet from back of sidewalk, or back of curb where no sidewalk exists
 - Side setback: 3 feet min. (no aggregate)
 - Side setback, corner: 10 feet
 - Rear setback: 10 feet

DEVELOPER/OWNER
VAUGHN KING
PO BOX 1328
CARY, NC 27512
E: VAUGHNKING5@GMAIL.COM

ENGINEER/LAND PLANNER
PEAK ENGINEERING & DESIGN, PLLC
JEFF ROACH, P.E.
1125 APEX PEAKWAY
APEX, NC 27502
Phone (919) 439-0100
www.PeakEngineering.com

ENVIRONMENTAL CONSULTANT
SOIL & ENVIRONMENTAL CONSULTANTS (S&EC)
STEVEN BALL, RF, PWS
8412 FALLS OF NEUSE ROAD SUITE 104
RALEIGH, NC 27615
Phone (919) 846-5900
www.SandEC.com

NO.	DATE	REVISION
1	August 13, 2019	Issue 100 Final Review Comments
2	September 5, 2019	Issue 102 Final Review Comments
3	October 1, 2019	Issue 103 Final Review Comments

title:

COVER SHEET

proj #:

190202

date:

July 1, 2019

dwg by: chkd by:

JE JR

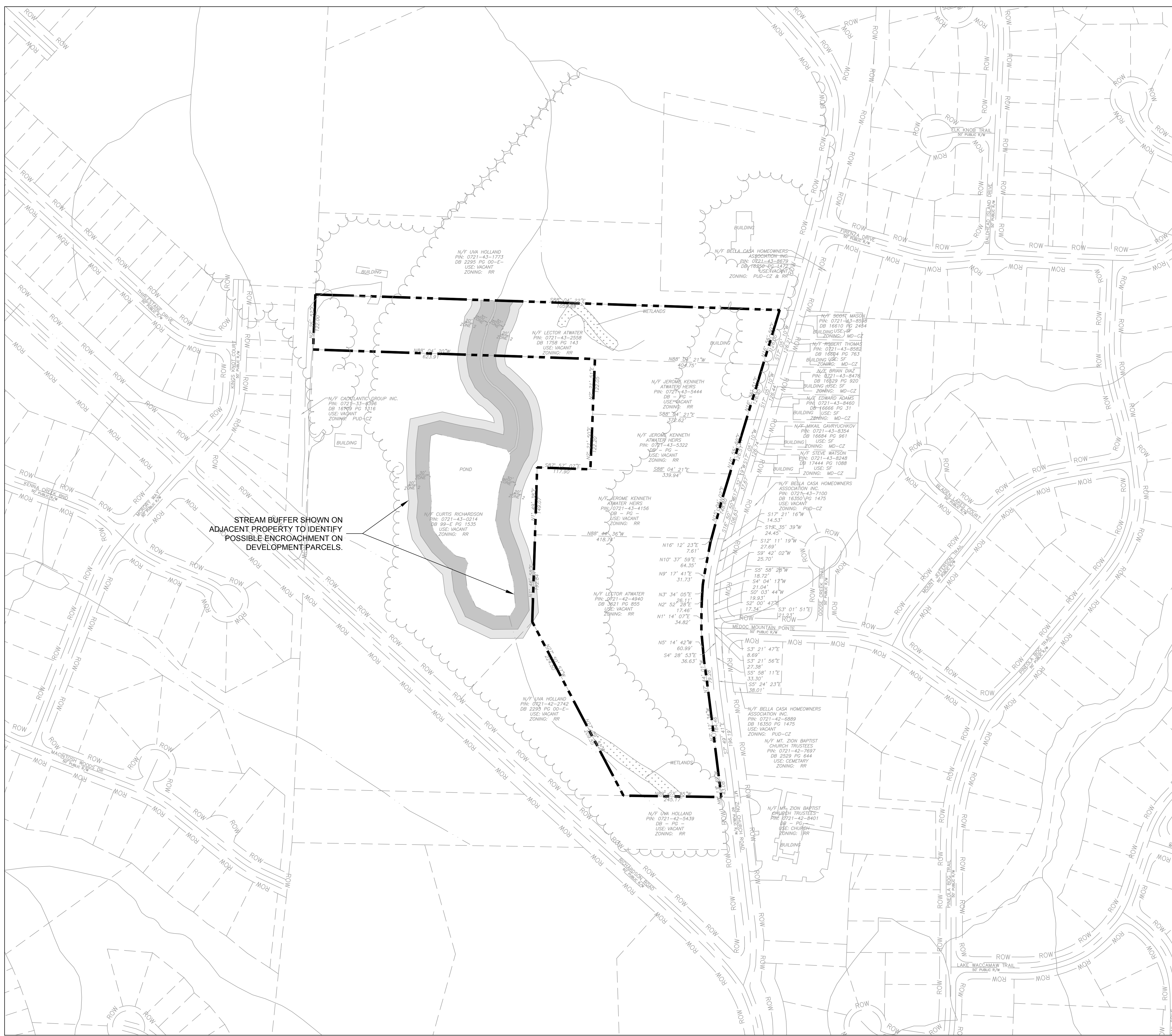
scale:

As Noted

sheet:

C000

Planned Unit Development



STREAM BUFFER SHOWN ON ADJACENT PROPERTY TO IDENTIFY POSSIBLE ENCROACHMENT ON DEVELOPMENT PARCELS.

- NOTES:**
1. THERE ARE NO CONTRIBUTING HISTORICAL STRUCTURES WITHIN THE PROJECT BOUNDARY.
 2. SUBJECT PROPERTIES KNOWN AS PARCEL IDENTIFICATION NUMBERS (PINS): AS SHOWN ON SHEET C000.
 3. ALL OFF-SITE EASEMENTS SHALL BE ACQUIRED BY THE DEVELOPER AND THESE OFF-SITE EASEMENTS SHALL BE RECORDED BY A DEED OF EASEMENT PRIOR TO UTILITY INFRASTRUCTURE CONSTRUCTION APPROVAL. THESE EASEMENTS SHALL BE DEDICATED TO THE TOWN OF APEX AND LABELED "TOWN OF APEX PUBLIC UTILITY EASEMENT".
 4. NO PERSON SHALL PLACE ANY PART OF A STRUCTURE, ANY PERMANENT EQUIPMENT, OR IMPOUNDMENT UPON TOWN OF APEX PUBLIC UTILITY EASEMENTS, PROHIBITED STRUCTURES INCLUDE, BUT ARE NOT LIMITED TO: BUILDINGS, HOUSES, AIR CONDITIONING UNITS, HEAT PUMP UNITS, DECKS, GARAGES, STORAGE/TOOL SHEDS, SWIMMING POOLS, WALLS, RETAINING WALL, MECHANISMS/APURTANCES AND FENCES. UPON PRIOR WRITTEN APPROVAL BY THE PUBLIC WORKS DEPARTMENT, FENCES MAY PERMITTED ACROSS EASEMENTS, PROVIDED THAT AN ACCESS GATE IS INSTALLED FOR THE FULL WIDTH OF THE EASEMENT.
 5. NO PERSON SHALL PLANT TREES, SHRUBS, OR OTHER PLANTS WITHIN A TOWN OF APEX PUBLIC UTILITY EASEMENT WITHOUT PRIOR WRITTEN APPROVAL FROM THE PUBLIC WORKS DEPARTMENT.
 6. ANY AND ALL STREET SIGNS SHALL ONLY BE PROVIDED AND INSTALLED BY THE TOWN OF APEX.
 7. FIRM PANEL 3720072100J EFFECTIVE 5-2-2006 DOES NOT SHOW THE PRESENCE OF FLOOD ZONES ON PROPERTIES.
 8. WATERSHED INFORMATION: PRIMARY WATERSHED PROTECTION OVERLAY DISTRICT, BEAVER CREEK BASIN, CAPE FEAR RIVER BASIN.

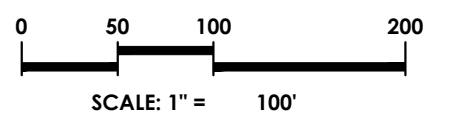
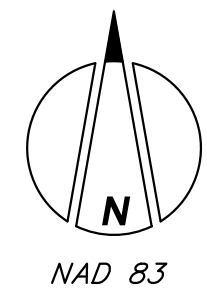
BOUNDARY INFORMATION OBTAINED FROM WAKE COUNTY GIS, DEED AND PLAT DESCRIPTIONS, APEX LIDAR, AND OTHER AVAILABLE DATA SOURCES. FINAL BOUNDARY AND SURVEY DOCUMENTS WILL BE PROVIDED DURING THE MASTER SUBDIVISION PLAN DESIGN PHASE OF THE DEVELOPMENT.

STREAM BUFFERS

- 30' ZONE 1 BUFFER
- 20' ZONE 2 BUFFER
- WETLANDS

PROJECT PERIMETER BOUNDARY

ENVIRONMENTAL FEATURES NOTE:
 STREAM BUFFERS WERE OBTAINED FROM APEX WATERSHED PROTECTION OVERLAY DISTRICT MAP, USGS MAPPING, AND WAKE COUNTY SOILS SURVEY. A FINAL JURISDICTIONAL DETERMINATION (JD) MAP WILL BE PREPARED AND PROVIDED TO STAFF FOR APPROVAL CONCURRENCE.

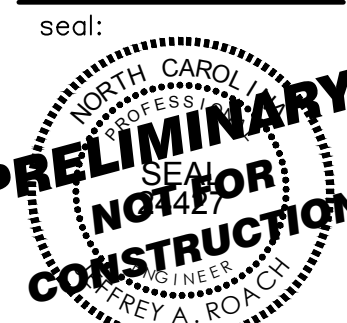


1 EXISTING CONDITIONS
 SCALE: 1" = 100'



NC License #P-0673

project: **MT. ZION CHURCH ROAD ASSEMBLY**
2600 MT. ZION CHURCH ROAD
BUCKHORN TOWNSHIP
APEX, NORTH CAROLINA 27502



NO.	DATE	BY	REVISION
1	August 13, 2019	JE	Issue 100' Plan Station Comments
2	September 5, 2019	JE	Issue 100' Plan Station Comments
3	October 1, 2019	JR	Issue 100' Plan Station Comments

title: **EXISTING CONDITIONS**

proj #: **190202**
 date: **July 1, 2019**
 dwg by: **JE**
 chkd by: **JR**
 scale: **As Noted**

sheet: **C001**
 Planned Unit Development



STREAM BUFFER SHOWN ON ADJACENT PROPERTY TO IDENTIFY POSSIBLE ENCROACHMENT ON DEVELOPMENT PARCELS.

NOTES:

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2. SUBJECT PROPERTIES KNOWN AS PARCEL IDENTIFICATION NUMBERS (PINs): AS SHOWN ON SHEET C000.
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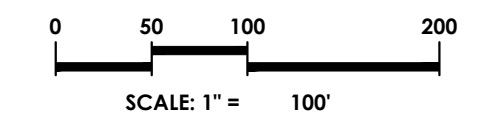
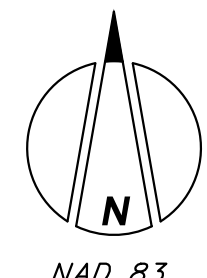
STREAM BUFFERS

30' ZONE 1 BUFFER

20' ZONE 2 BUFFER

WETLANDS

PROJECT PERIMETER BOUNDARY

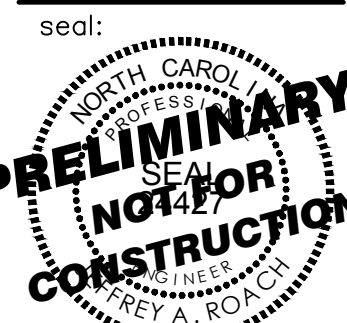


1 EXISTING CONDITIONS WITH TOPO
SCALE: 1" = 100'



NC License #P-0673

project: **MT. ZION CHURCH ROAD ASSEMBLY**
2600 MT. ZION CHURCH ROAD
BUCKHORN TOWNSHIP
APEX, NORTH CAROLINA 27502



NO.	DATE	BY	REVISION
1	August 13, 2019	JE	Issue for Public Comments
2	September 5, 2019	JE	Issue for Public Comments
3	October 1, 2019	JR	Issue for Public Comments

title:

EXISTING CONDITIONS WITH TOPO

proj #:

190202

date:

July 1, 2019

dwg by: chkd by:

JE JR

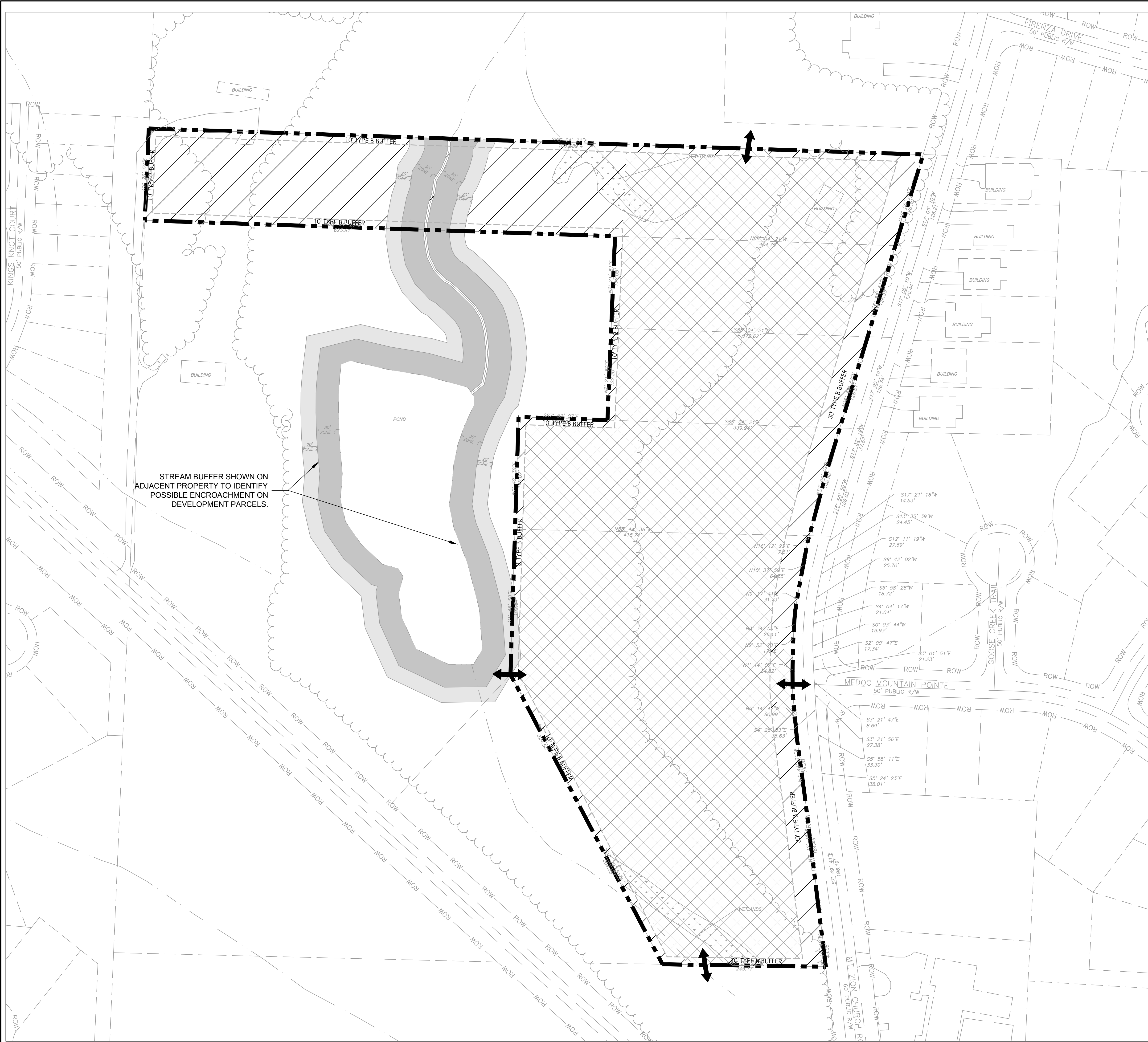
scale:

As Noted

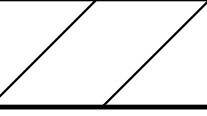


sheet:



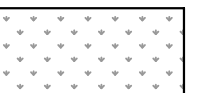
C002

Planned Unit Development



STREAM BUFFER SHOWN ON ADJACENT PROPERTY TO IDENTIFY POSSIBLE ENCROACHMENT ON DEVELOPMENT PARCELS.

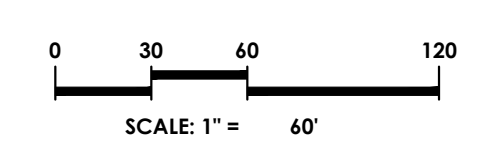
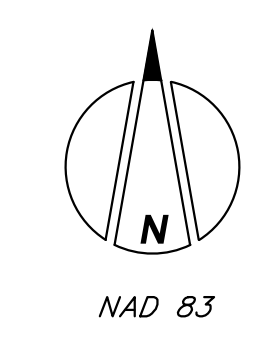
-  PRELIMINARY RESOURCE CONSERVATION AREA
-  PRELIMINARY DEVELOPMENT AREA
-  PRELIMINARY STREET CONNECTIONS

- STREAM BUFFERS
-  30' ZONE 1 BUFFER
 -  20' ZONE 2 BUFFER
 -  WETLANDS

PLAN SHEETS ARE INTENDED FOR ILLUSTRATIVE USE ONLY

 PROJECT PERIMETER BOUNDARY

ENVIRONMENTAL FEATURES NOTE:
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1 CONCEPTUAL SITE PLAN
 SCALE: 1" = 60'

NC License #P-0673

Project: **MT. ZION CHURCH ROAD ASSEMBLY**
 2600 MT. ZION CHURCH ROAD
 BUCKHORN TOWNSHIP
 APEX, NORTH CAROLINA 27502

seal:

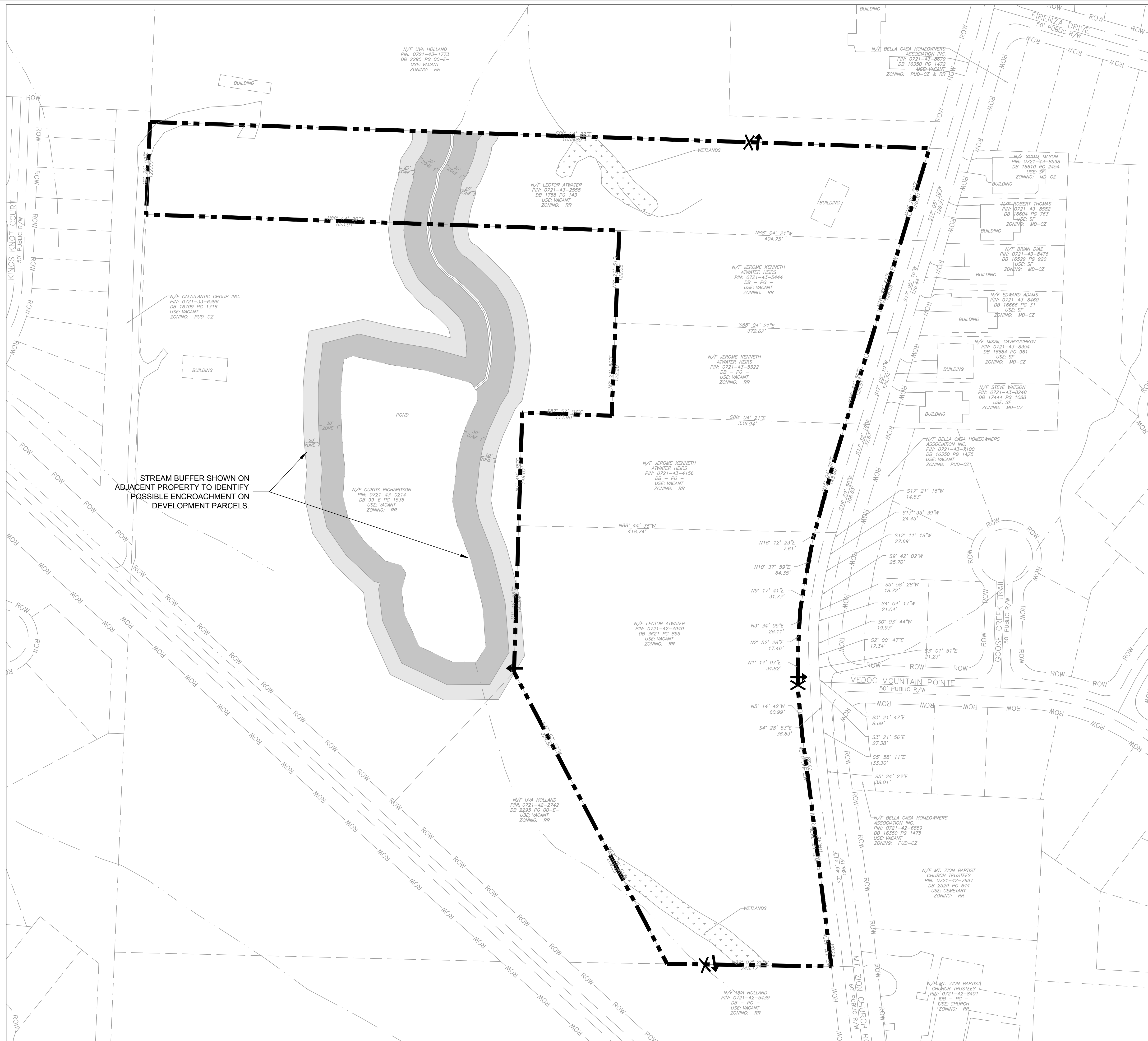


NO.	DATE	REVISION
1	August 13, 2019	Issue 10000 Plan Sheet Comments
2	September 5, 2019	Issue 10000 Plan Sheet Comments
3	October 1, 2019	Issue 10000 Plan Sheet Comments

title:
CONCEPTUAL SITE PLAN

proj #: **190202**
 date: **July 1, 2019**
 dwg by: **JE** chkd by: **JR**
 scale: **As Noted**
 sheet:

C100
 Planned Unit Development



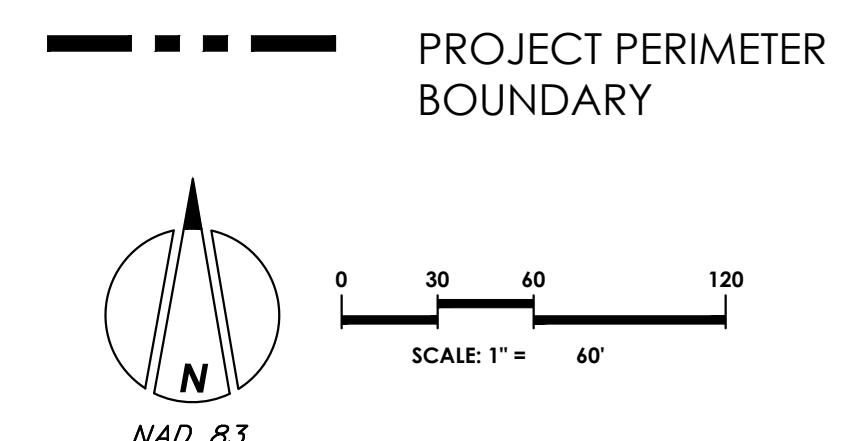
STREAM BUFFER SHOWN ON ADJACENT PROPERTY TO IDENTIFY POSSIBLE ENCROACHMENT ON DEVELOPMENT PARCELS.

- NOTES:
1. THE PROJECT IS REQUEST FULL TOWN OF APEX UTILITIES, INCLUDING WATER, SEWER AND ELECTRICAL SERVICES. THE FINAL LOCATION AND TIMING OF THE REFERENCED SERVICES SHALL BE COORDINATED WITH TOWN STAFF.
 2. THE PROJECT IS NOT PROPOSING PRIVATE SEWAGE DISPOSAL.
 3. THE LOCATION OF LOTS, STREETS, OPEN SPACE, RESOURCE CONSERVATION AREAS, STORMWATER CONTROLS, AND OTHER SITE IMPROVEMENTS ARE ILLUSTRATIVE ONLY AND WILL BE COORDINATED WITH STAFF DURING THE MASTER SUBDIVISION PLAN REVIEW PROCESS.
 4. THE PROJECT WILL COMPLY WITH TOWN OF APEX STANDARDS AND SPECIFICATIONS AS OUTLINED WITHIN THE DESIGN AND DEVELOPMENT MANUAL, THE REZONING PD TEXT, AND UNIFIED DEVELOPMENT ORDINANCE (UDO).

- ↑ PROPOSED WATER CONNECTION
- ✕ PROPOSED SEWER CONNECTION

- STREAM BUFFERS
- 30' ZONE 1 BUFFER
 - 20' ZONE 2 BUFFER
 - WETLANDS

ENVIRONMENTAL FEATURES NOTE:
 STREAM BUFFERS WERE OBTAINED FROM APEX WATERSHED PROTECTION OVERLAY DISTRICT MAP, USGS MAPPING, WAKE COUNTY SOILS SURVEY A FINAL JURISDICTIONAL DETERMINATION (JD) MAP WILL BE PREPARED AND PROVIDED TO STAFF FOR APPROVAL CONCURRENCE.

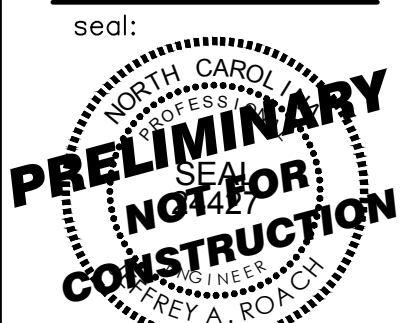


1 CONCEPTUAL UTILITY PLAN
 C200 SCALE: 1"= 60'



NC License #P-0673

project:
MT. ZION CHURCH ROAD ASSEMBLY
 2600 MT. ZION CHURCH ROAD
 BUCKHORN TOWNSHIP
 APEX, NORTH CAROLINA 27502



NO.	DATE	REVISION
1	August 13, 2019	Issue 100 Final Review Comments
2	September 5, 2019	Issue 102 Final Review Comments
3	October 1, 2019	Issue 103 Final Review Comments

title:
CONCEPTUAL UTILITY PLAN

proj #:
 190202
 date:
 July 1, 2019
 dwg by: chkd by:
 JE JR
 scale:
 As Noted



EXHIBITS

I. COVER SHEET (Sheet C000)

The Cover Sheet contains contact information, vicinity map, site design guidelines, and required Town of Apex notes and descriptions.

II. EXISTING CONDITIONS (Sheet C001)

The existing conditions plan includes the base site items, zoning of adjacent properties, boundary, environmental features, and existing conditions around the property.

III. EXISTING CONDITIONS – TOPO (Sheet C002)

The existing conditions (topo) plan includes all items from the C001 sheet and adds the existing topography. The C002 sheet also reduces the scale to allow for a more detailed review.

IV. CONCEPTUAL SITE PLAN (Sheet C100)

This sheet includes standard site notes, site infrastructure, vehicular connectivity locations, buffers, areas proposed for development, and preliminary RCA designed areas.

V. CONCEPTUAL UTILITY PLAN (Sheet C200)

The Conceptual Utility Plan shows the preliminary location for connection to existing water, sewer, and stormwater as well as the existing infrastructure for said services. The final design will be completed to the Apex standards at the time of Master Subdivision submittal.

Single-family residential standards:

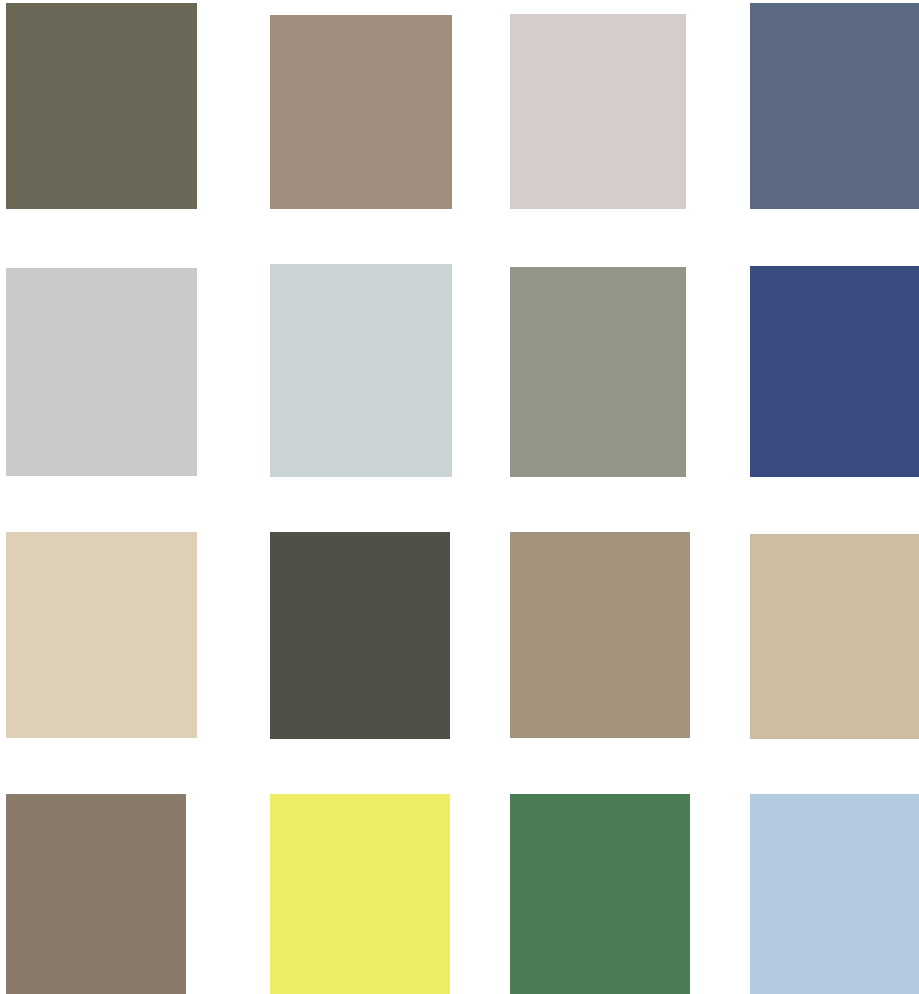
1. Vinyl siding is not permitted; however, vinyl windows, decorative elements and trim are permitted.
2. All single-family homes shall have a crawl space or have a raised foundation which at a minimum rises at least 20 inches from average grade across the front of the house to the finished floor level at the front door.
3. A maximum of 100% of the single-family detached residential units may be permitted as “zero-entry” homes without the 20 inch rise from average grade across the front of the property to the finished floor elevation. All “zero-entry” homes shall also provide first floor master bedrooms. Lots permitted as “zero-entry” shall be noted on the Final Plat.
4. Garage doors must have windows, decorative details or carriage-style adornments.
5. Front entrances for units with front-facing single-car garages shall have a prominent covered porch/stoop area leading to the front door.
6. The garage cannot protrude more than 6 feet from the front façade or front porch. Any homes where the front entry garage protrudes more than 1 foot from the front façade or front porch shall provide one of the following additional decorative elements:
 - Window
 - Bay window
 - Decorative gable
 - Decorative cornice
 - Columns
 - Portico
 - Balcony
 - Dormer
 - Trellis
 - Arbor
7. The rear and side elevations of the units that can be seen from the right-of-way shall contain at least 3 decorative elements such as, but not limited to, the following elements:

<ul style="list-style-type: none"> • Windows • Bay window • Recessed window • Decorative window • Trim around the windows • Wrap around porch or side porch 	<ul style="list-style-type: none"> • Two or more building materials • Decorative brick/stone • Decorative trim • Decorative shake • Decorative air vents on gable 	<ul style="list-style-type: none"> • Decorative gable • Decorative cornice • Column • Portico • Balcony • Dormer
---	--	--
8. A varied color palette shall be utilized on homes throughout the subdivision to include a minimum of three color families for siding and shall include varied trim, shutter, and accent colors complementing the siding color.
9. Eaves shall project at least 12 inches from the wall of the structure.
10. Front porches shall be a minimum of 6 feet deep.
11. No more than 25% of the lots may be accessed with J-driveways. There shall be no more than 3 such homes in a row on any single block. Any lots eligible for a J-driveway home shall be identified on the Final Plat.
12. All single-family detached residential homes shall be pre-configured with conduit for a solar energy system.

Single-Family Home Color Palette (Sherwin Williams)

Color selection shall generally be consistent and similar to the colors shown below.

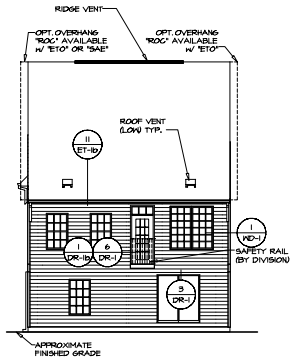
Primary Colors



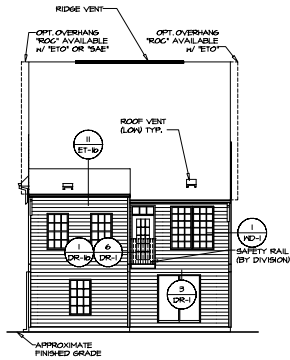
Accent Colors



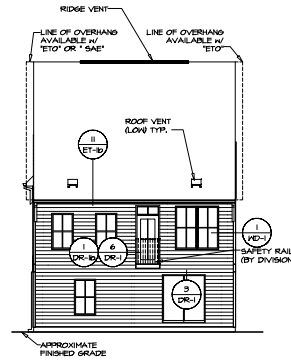
White may also be used as a primary, trim, or accent color with any palette variations



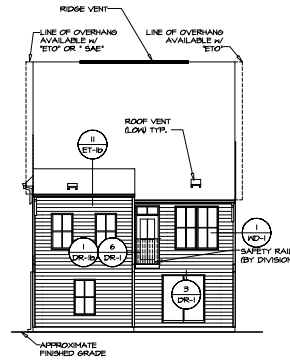
1 REAR ELEVATION
SCALE: 1/8" = 1'-0"



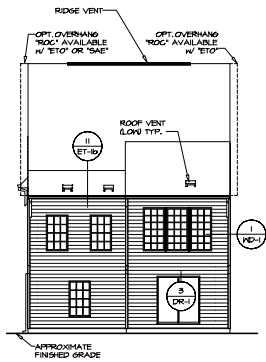
2 REAR ELEVATION
SCALE: 1/8" = 1'-0" OPT. LUXURY OWNER'S SUITE "BLB"



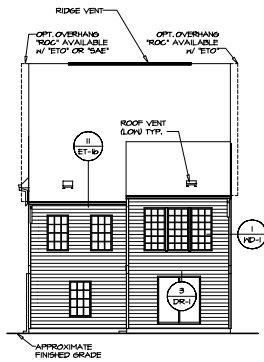
7 REAR ELEVATION
SCALE: 1/8" = 1'-0"



8 REAR ELEVATION
SCALE: 1/8" = 1'-0" OPT. SLIDING GLASS DOOR WALKOUT BASEMENT "DGC" OPT. LUXURY OWNER'S SUITE "BLB"



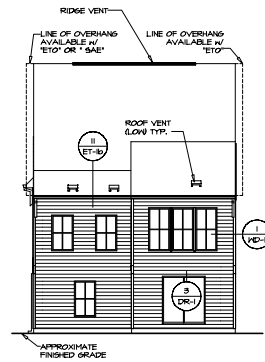
3 REAR ELEVATION
SCALE: 1/8" = 1'-0" SUNROOM "MAN" OPT. LUXURY OWNER'S SUITE "BLB"



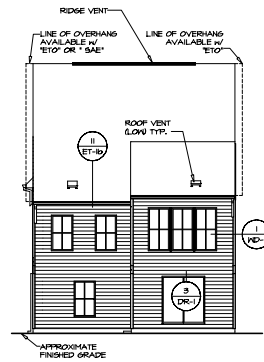
4 REAR ELEVATION
SCALE: 1/8" = 1'-0" SUNROOM "MAN"

SHOWN IN ELEVATION "A" "B" "C"

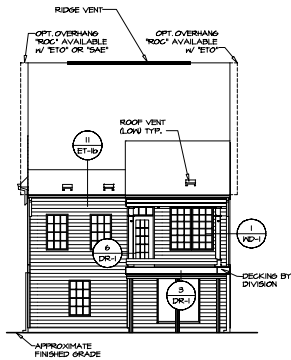
SHOWN IN ELEVATION "C" "L" "R"



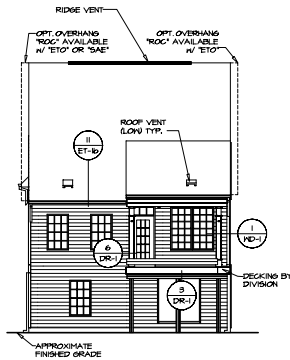
9 REAR ELEVATION
SCALE: 1/8" = 1'-0" SUNROOM "MAN" OPT. LUXURY OWNER'S SUITE "BLB"



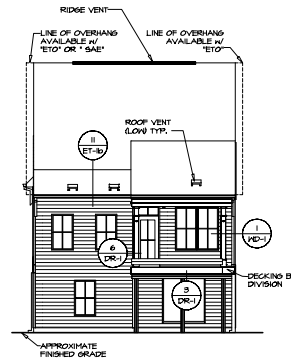
10 REAR ELEVATION
SCALE: 1/8" = 1'-0" SUNROOM "MAN"



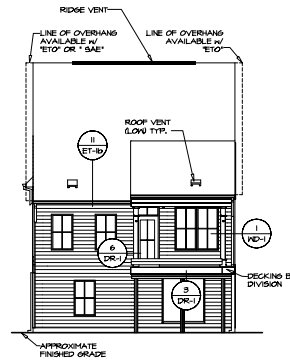
5 REAR ELEVATION
SCALE: 1/8" = 1'-0" COVERED PORCH "EP" OPT. LUXURY OWNER'S SUITE "BLB"



6 REAR ELEVATION
SCALE: 1/8" = 1'-0" COVERED PORCH "EP"



11 REAR ELEVATION
SCALE: 1/8" = 1'-0" COVERED PORCH "EP" OPT. LUXURY OWNER'S SUITE "BLB"



12 REAR ELEVATION
SCALE: 1/8" = 1'-0" OPT. COVERED PORCH "EP"

REMARKS

1. This drawing is a preliminary drawing and is not to be used for construction. It is subject to change without notice. The client is responsible for obtaining all necessary permits and approvals. The architect is not responsible for any errors or omissions in this drawing.

NVR
NVR, Inc. 100
1500 Pennsylvania Ave. N.W.
Washington, DC 20004

SET NO. 02/00
DRAWING TITLE
DATE: 11/6/2017
DRAWN BY: JAC
CHECKED BY: JAC

SHEET NO. 9
PROJECT: [REDACTED]
DRAWING TITLE: REAR ELEVATION
DATE: 11/6/2017
DRAWN BY: JAC
CHECKED BY: JAC

COVERED PORCH "EP"
OPT. LUXURY OWNER'S SUITE "BLB"

11/17/18 10:28 AM











Elevation A - Traditional



Elevation B - Farmhouse



Elevation C - Low Country



Elevation D - Craftsman



Elevation E - Cottage



Elevation F - Traditional
Enhanced



Elevation G - Farmhouse
Enhanced



Elevation H - Craftsman
Enhanced



Elevation J - Traditional
Full Brick



Elevation K - Cottage
Full Brick/Stone



TOWN OF APEX
POST OFFICE BOX 250
APEX, NORTH CAROLINA 27502
PHONE 919-249-3426

PUBLIC NOTIFICATION OF PUBLIC HEARINGS

CONDITIONAL ZONING #19CZ15 Mt. Zion Church Road PUD

Pursuant to the provisions of North Carolina General Statutes Section 160A-364 and to the Town of Apex Unified Development Ordinance (UDO) Section 2.2.11, notice is hereby given of public hearings before the Planning Board and Town Council of the Town of Apex. The purpose of these hearings is to consider the following:

Applicant: Vaughn King
Authorized Agent: Jeff Roach, Peak Engineering & Design, PLLC
Property Addresses: 2504, 2508, 2512, 2516, & 2600 Mt. Zion Church Rd.
Acreage: ± 11.3
Property Identification Numbers (PINs): 0721432558, 0721435444, 07214355322, 0721434156, & 0721424940
Existing 2045 Land Use Map Designation: Medium Density Residential
Existing Zoning of Property: Rural Residential (RR)
Proposed Zoning of Property: Planned Unit Development-Conditional Zoning (PUD-CZ)

Public Hearing Location: Apex Town Hall
73 Hunter Street, Apex, North Carolina
Council Chambers, 2nd Floor

Planning Board Public Hearing Date and Time: October 14, 2019 4:30 P.M.
Town Council Public Hearing Date and Time: October 15, 2019 7:00 P.M.

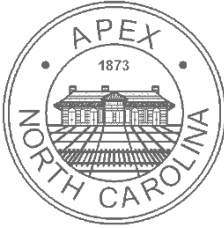
Vicinity Map:



Property owners within 300 feet of the proposed conditional zoning have been sent this notice via first class mail. All interested parties may appear at the public hearing and be heard with respect to the application. Maps showing the location for the above site(s) to be considered in addition to a copy of the [2045 Land Use Map](#) can be inspected at the Apex Town Hall or call 919-249-3426, Department of Planning and Community Development for further information. To view the petition and related documents on-line: <http://www.apexnc.org/DocumentCenter/View/28214>.

Published Dates: September 20, 2019 – October 15, 2019

Dianne F. Khin, AICP
Planning Director



TOWN OF APEX

POST OFFICE BOX 250
APEX, NORTH CAROLINA 27502
PHONE 919-249-3426

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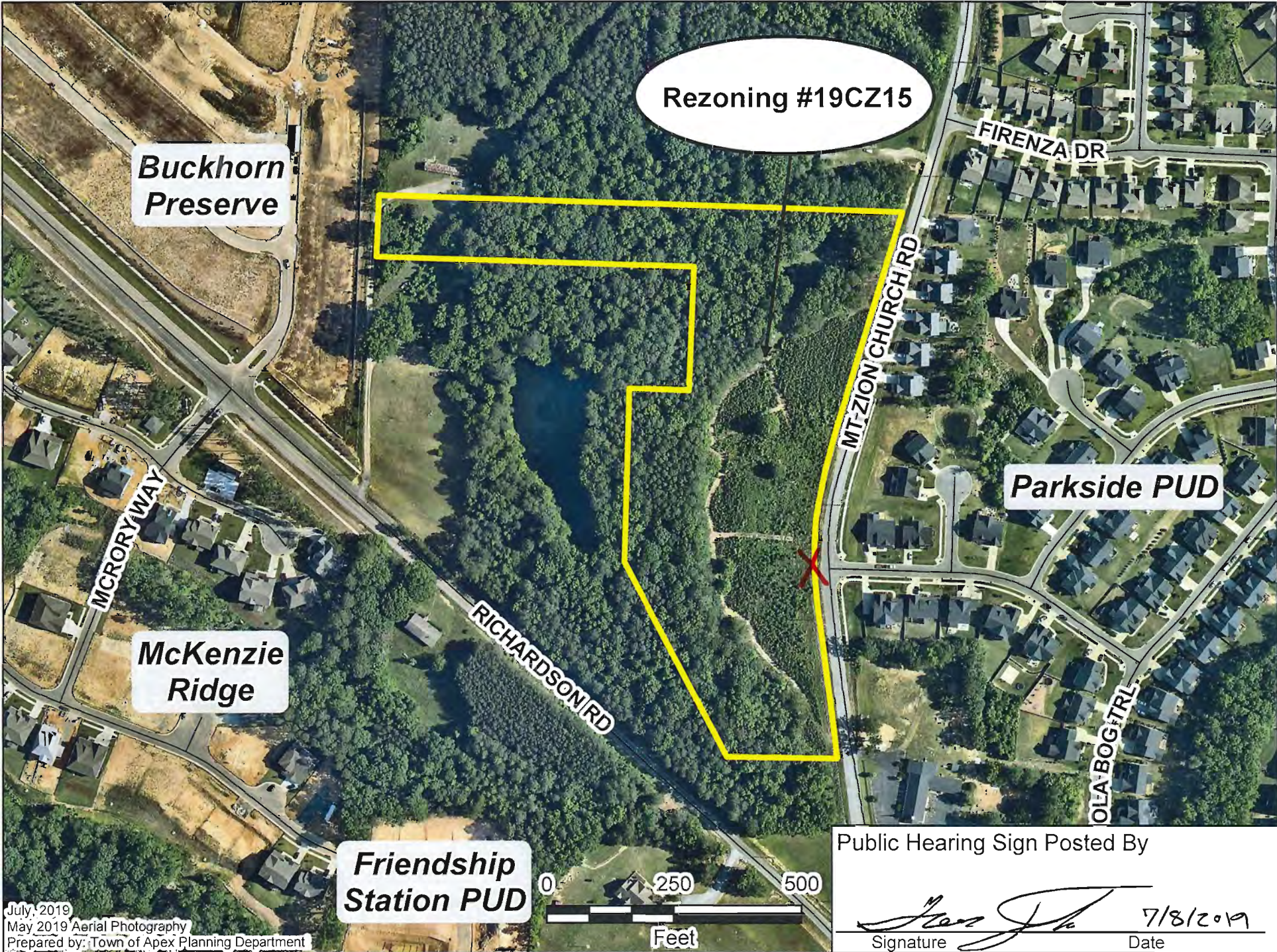
Planning Board Public Hearing Date and Time: October 14, 2019 **4:30 P.M.**

Town Council Public Hearing Date and Time: October 15, 2019 **7:00 P.M.**

Vicinity Map:



Property owners within 300 feet of the proposed conditional zoning have been sent this notice via first class mail. All interested parties may appear at the public hearing and be heard with respect to the application. Maps showing the location for the above site(s) to be considered in addition to a copy of the [2045 Land Use Map](#) can be inspected at the Apex Town Hall or call 919-249-3426, Department of Planning and Community Development for further information. To view the petition and related documents on-line: <https://www.apexnc.org/DocumentCenter/View/28214>.



Rezoning #19CZ15

Buckhorn Preserve

FIRENZA DR

MT-ZION CHURCH RD

Parkside PUD

MCRORY WAY

McKenzie Ridge

RICHARDSON RD

OLA BOG TRAIL

Friendship Station PUD



Public Hearing Sign Posted By

[Handwritten Signature]
Signature

7/8/2019
Date



TOWN OF APEX

POST OFFICE BOX 250
APEX, NORTH CAROLINA 27502
PHONE 919-249-3426

**AFFIDAVIT CERTIFYING
Public Notification – Written (Mailed) Notice**

Section 2.2.11

Town of Apex Unified Development Ordinance

Project Number and/or Name: Conditional Zoning #19CZ15
Mt. Zion Church Rd. PUD
Project Location: 2504, 2508, 2512, 2516 & 2600 Mt. Zion Church Rd.
Applicant or Authorized Agent: Jeff Roach, PE
Firm: Peak Engineering & Design, PLLC

This is to certify that I as Planning Director, mailed or caused to have mailed by first class postage for the above mentioned project on September 20, 2019, a notice containing the time and place, location, nature and scope of the application, where additional information may be obtained, and the opportunity for interested parties to be heard, to the property owners within 300' of the land subject to notification. I further certify that I relied on information provided to me by the above-mentioned person as to accuracy and mailing addresses of property owners within 300' of the land subject to notification.

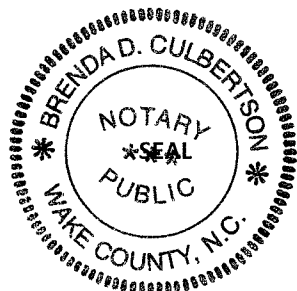
9/20/19
Date

Juanne F. Khen
Planning Director

STATE OF NORTH CAROLINA
COUNTY OF WAKE

Sworn and subscribed before me, Brenda D. Culbertson, a Notary Public for the above State and County, this the 20th day of September, 2019.

Brenda D. Culbertson
Notary Public



My Commission Expires: 8 / 15 / 2020

| Agenda Item | cover sheet

for consideration by the Apex Town Council

Item Type: PUBLIC HEARING

Meeting Date: OCTOBER 15, 2019

Item Details

Presenter(s): Amanda Bunce, Current Planning Manager

Department(s): Planning Department

Requested Motion

The applicant has requested that this item be continued to the November 6, 2019 meeting.

Public Hearing and possible motion on Rezoning Application #19CZ16 Horton Park PUD Amendment & TF-CZ. The applicant, MFW Investments, LLC, seeks to rezone approximately 146.9 acres located at 5100, 5101, & 5220 Jessie Drive; 0 Dezola Street; and 8140 (portion of), 8252, 8306 & 8308 Smith Road from Planned Unit Development-Conditional Zoning (PUD-CZ #18CZ04) to Planned Unit Development-Conditional Zoning (PUD-CZ) and Tech/Flex-Conditional Zoning (TF-CZ).

Approval Recommended?

The Planning Department recommends denial.

The Planning Board will hear this item at their October 14, 2019 meeting. Staff will present the Planning Board's recommendation at the Town Council meeting.

Item Details

The following PINs are included in this rezoning:

0751421387, 0751310079, 0751319308, 0750390993, 0751400194, 0750398682, 0750495371, 0750299342, 0750280998 (portion of), 0750270906, 0750274707, 0750278677, 0750278925

Attachments

1. Vicinity Map
2. Rezoning Application
3. Staff Report



STAFF REPORT

Rezoning #19CZ16 Horton Park PUD Amendment & TF-CZ

October 15, 2019 Town Council Meeting



All property owners and neighborhood associations within 300 feet of this rezoning have been notified per UDO Sec. 2.2.11 *Public Notification*.

BACKGROUND INFORMATION:

Location: 5100, 5101, & 5220 Jessie Drive; 0 Dezola Street; and 8140 (portion of), 8252, 8306 & 8308 Smith Road

PINs: 0751421387, 0751310079, 0751319308, 0750390993, 0751400194, 0750398682, 0750495371, 0750299342, 0750280998 (portion of), 0750270906, 0750274707, 0750278677, 0750278925

Applicant/Owners: Jeff Roach, Peak Engineering & Design / MFW Investments, LLC; Horton Park MH, LLC; Mary E. Horton; MFWIRA, LLC; Kimberly Horton & Loomis Horton III

PROJECT DESCRIPTION:

Acreage: ±146.9

Current Zoning: Planned Unit Development-Conditional Zoning (PUD-CZ #18CZ04)

Proposed Zoning: Planned Unit Development-Conditional Zoning (PUD-CZ) (127.84 acres) and Tech/Flex-Conditional Zoning (TF-CZ) (19.06 acres)

2045 Land Use Map:

Within proposed PUD-CZ area: Medium Density Residential, High Density Residential, High Density Residential/Office Employment

Within proposed TF-CZ area: Office Employment/Industrial Employment

Town Limits: ETJ

Adjacent Zoning & Land Uses:

	Zoning	Land Use
North:	Light Industrial-Conditional Zoning (LI-CZ #17CZ19); Residential Agricultural (RA)	Vacant; Single-Family Residential
South:	Medium Density Residential-Conditional Zoning (MD-CZ #15CZ24); Rural Residential (RR); Planned Unit Development-Conditional Zoning (PUD-CZ #11CZ12)	Vacant; Single-Family Residential
East:	Residential Agricultural (RA); Rural Residential (RR)	Vacant; Single Family Residential; Sorrell Landfill (closed)
West:	Rural Residential (RR); Residential Agricultural (RA)	Vacant

EXISTING CONDITIONS: The subject properties are vacant and wooded. Two streams bisect the property from east to west. The Colonial Gas pipeline bisects the property from north to south.

NEIGHBORHOOD MEETING: The applicant conducted a neighborhood meeting on June 27, 2019. The neighborhood meeting report is attached.

STAFF REPORT

Rezoning #19CZ16 Horton Park PUD Amendment & TF-CZ

October 15, 2019 Town Council Meeting



045 LAND USE MAP:

The 2045 Land Use Map classifications for the properties subject to this rezoning are as follows:

- Within proposed PUD-CZ area: Medium Density Residential, High Density Residential, High Density Residential/Office Employment
- Within proposed TF-CZ area: Office Employment/Industrial Employment

The proposed amendments to the Horton Park PUD (PUD-CZ) and the proposed TF-CZ zoning district are consistent with those classifications.

TECH/FLEX-CONDITIONAL ZONING REQUEST:

The 19.06 acres requested to be rezoned to TF-CZ is currently approved as POD 2 of the Horton Park PUD. The applicant desires to remove this area from the PUD. The uses proposed are identical to those currently allowed in POD 2 with the exception of "Church or place of worship" which has been added. The building height and architectural conditions are also identical to those that are applicable to POD 2. Condition #6 has also been added.

Proposed Zoning Conditions:

Limitation of Uses:

The Rezoned Lands may be used for, and only for, the uses listed immediately below. The permitted uses are subject to the limitations and regulations stated in the UDO and any additional limitations or regulations stated below. For convenience, some relevant sections of the UDO may be referenced; such references do not imply that other sections of the UDO do not apply.

- | | | |
|-----------------------------------|--|-------------------------------------|
| 1. Church or place of worship | 13. Restaurant, general | 26. Personal service |
| 2. Day care facility | 14. Dispatching office | 27. Pharmacy |
| 3. Drop-in or short-term day care | 15. Medical or dental office or clinic | 28. Printing and copying service |
| 4. Government services | 16. Medical or dental laboratory | 29. Real estate sales |
| 5. Veterinary clinic or hospital | 17. Office, business or professional | 30. Repair services, limited |
| 6. Vocational school | 18. Publishing office | 31. Studio for art |
| 7. Utility, minor | 19. Research facility | 32. Tailor shop |
| 8. Botanical garden | 20. Artisan studio | 33. Upholstery shop |
| 9. Entertainment, indoor | 21. Convenience store | 34. Pet services |
| 10. Greenway | 22. Convenience store with gas sales | 35. Laboratory, industrial research |
| 11. Park, active | 23. Grocery, general | 36. Microbrewery |
| 12. Park, passive | 24. Grocery, specialty | 37. Microdistillery |
| | 25. Health/fitness center or spa | |

Conditions:

1. Maximum non-residential building height is 65'.
2. Building shall be architecturally compatible through the use of similar colors and building materials. Buildings shall be consistent in scale, massing, style, and relationship to adjacent streets.
3. Building placement shall be done to maximize parking in the rear or side of buildings. Drive-thrus, pick-up windows, loading areas, trash facilities, and other accessory items for uses are encouraged to be oriented away from adjacent streets.
4. Buildings shall have vertical breaks across any facade which faces an adjacent street. Windows and other store front treatments shall be proportional to the building height and width. Horizontal and vertical setbacks shall be used to provide a visual break in the building mass. Various architectural



features shall be incorporated, including roofline changes, parapet heights, columns, piers, and material patterns to create various façade breaks.

5. Exterior materials for non-residential structures shall be a combination of materials. The primary façade (front) or any façade facing a street shall include:
 - Brick
 - Wood
 - Stacked stone or other native stone
 - Decorative block (integrally colored or textured) masonry units
 - EIFS cornices and parapet trim (EIFS or stucco shall not be used within 4 feet of ground and shall be limited to 25% of each building façade)
 - Precast concrete
6. **The developer of the Horton Park PUD or the developer of the subject property shall construct and dedicate the portion of the Collector Street as shown on the Apex Transportation Plan on the subject property.**

PLANNED UNIT DEVELOPMENT CHANGES:

The applicant is proposing changes to the approved PUD as shown below. The total number of residential units and the permitted uses are not proposed to be amended.

1. Removes POD 2 (19.06 acres) from the PUD. That area is currently approved for non-residential uses and is proposed to be rezoned to TF-CZ with the uses and conditions as described above.
2. Changes the phasing and timing of required road improvements (details in the “APEX TRANSPORTATION PLAN/ACCESS and CIRCULATION” section of this report).

PHASING OF PUD:

History of changes to phasing:

The original PUD (#17CZ19) was approved in November 2017 with two (2) options for “Residential Development Restrictions”. Option 1 included three (3) phases with thresholds for how many residential units could be developed as certain roadway improvements were made. No restriction on the non-residential sections of Horton Park was provided. Option 2 allowed all lots and units within Horton Park to be released from any development timeline restrictions identified in Option 1 with the completion of the extension of Jessie Drive from Highway 55 to Ten Ten Road as a 2-lane roadway section.

In May 2018, a PUD amendment (#18CZ04) was approved that increased the number of residential units that can be platted or permitted in Phase I from 200 to 250 units while reducing the number of residential units in Phase II from 100 to 50 units. The developer also committed to completing the east-west Major Collector to Smith Road in Phase I. The 50 units in Phase II cannot be platted or permitted prior to the completion of additional through lanes associated with the NCDOT U-5825 project (Ten Ten Road widening). The remainder of the units within the PUD (Phase III) cannot be platted or permitted until the Jessie Drive extension from Highway 55 to Ten Ten Road has been let for construction. Option 2 remained as originally approved.



Proposed phasing:

The applicant is proposing to remove references to Option 1 and Option 2 and instead divide the project into two (2) phases as follows:

Phase I:

Phase I includes the development of all single-family residential lots and townhome lots south of the PUD boundary located along the creek on the southern portion of the N/F Cash Property (PIN 0751-31-0079). This includes PODs 5–8, the East-West Major Collector Street from Smith Road to the western project boundary, and the North-South Collector Street from Colby Chase Drive to the boundary of the PUD located along the creek on the southern portion of the N/F Cash Property (PIN 0751-31-0079).

Phase II:

Phase II includes the development of the single-family, townhomes, and/or apartments along the Jessie Drive corridor. This specifically includes PODs 3 and 4. Phase II also includes the construction of the North-South Major Collector from the Phase I terminus to Jessie Drive and the construction of Jessie Drive from the current terminus to the North-South Major Collector Street.

With this proposed change in phasing, the North-South Collector would not be completely built from Colby Chase Drive to Jessie Drive and Jessie Drive would not be built and improved from the North-South Collector Street to Ten Ten Road in the first phase. Also, there are no longer any restrictions tied to the construction of the State's improvements to Ten Ten Road or the completion of Jessie Drive from Ten Ten Rd to Highway 55. Finally, this first phase includes approximately 21 more lots than in the current Option 1, Phase I.

APEX TRANSPORTATION PLAN/ACCESS and CIRCULATION:

As part of this PUD amendment, the applicant is proposing to change the phasing and therefore the timing of the road improvements that were approved in the current PUD #18CZ04. A revised TIA was completed on July 2, 2019 to account for the changes in phasing. Staff's TIA review letter is attached to the staff report.

Staff noted the following in the August 7, 2019 TIA review letter:

- The TIA assumed a build-out year of 2024 for Phase I and 2026 for Phase II.
- The TIA assumed for the Phase I build-out that the Ten Ten Road improvements would be constructed by 2024 as opposed to the 2023-2025 construction timeframe the State indicated at that time. It is now known that the construction has been delayed until 2029.
- For Phase II, the TIA assumed that the Jessie Drive east-west connection between Ten Ten Rd and NC 55 will be constructed by the Town along with geometric improvements at Jessie Drive and Ten Ten Road. It is important to note that Jessie Drive construction is not funded in the 2019-2020 Capital Improvements Plan (CIP) and is subject to reprioritization in 2020.
- **For many of the impacted intersections, Traffic Engineering staff recommended that the phasing and timing of road improvements remain the same as currently improved in #18CZ04. Please refer to the August 7, 2019 TIA review letter which follows the staff report for concerns noted by staff at each intersection.**



APPLICANT’S PROPOSED ROAD IMPROVEMENTS:

The following is the proposed version of the required Transportation Improvements as provided in the PUD text (note that staff disagrees with many of the proposed changes to timing of road improvements - please refer to the August 7, 2019 TIA review letter which follows the staff report for concerns noted by staff):

The Developer shall coordinate with NCDOT all planned improvements on state maintained roadways. In some cases, zoning conditions are subject to NCDOT review and approval and may change to conform to NCDOT approvals. Turn bay storage lengths refer to the length of full width lane provided exclusive of the 100-foot taper in each case. Jessie Drive shall continue as a state maintained roadway for all existing and proposed sections, and the developer shall dedicate the right-of-way pursuant to the current Town of Apex Transportation Plan, currently a 110-foot public right of way along all sections of Jessie Drive within the development.

The timing of the roadway improvements will be coordinated with Apex Transportation Staff during the Master Subdivision Plan and Construction Document review based upon the recommendations within the approved Traffic Impact Analysis (TIA) and according to the phasing plan provided in Section 17 - Phasing. The following recommendations are based upon the revised TIA which will supersede the TIA dated May 31, 2017, the Colby Chase Addendum dated August 30, 2017, and the TIA Update date July 2, 2019.

PHASE I TRANSPORTATION IMPROVEMENTS

US 1 Southbound Ramps / Waterford Green Drive at Center Street

- The Developer shall coordinate with NCDOT and Town staff in order to conduct a signal timing study and implement traffic signal timing modifications within the scope of the closed loop-system for Center Street/Ten-Ten Road, including this intersection, Lufkin Road and Reliance Avenue. The developer shall be obligated to pursue this effort only once during the development build-out schedule as directed by the Town of Apex Senior Transportation Engineer.
- The Developer shall provide intersection signal timing evaluation and modifications at a time to be determined by the Town of Apex Senior Transportation Engineer within the following schedule: The timing evaluation shall occur after the first Final Plat is recorded and prior to the recordation of the Final Plat for no more than 250 dwelling units of single-family and/or townhomes, or the issuance building permits for 250 apartment units, or any combination thereof.

Ten Ten Road at Smith Road

- The Developer shall extend the existing westbound left-turn lane to provide a minimum of 350 feet of storage and appropriate taper.
- The Developer shall construct the aforementioned improvements at the Ten Ten Road/Smith Road intersection at the time the East-West Collector Street is constructed and platted to Smith Road.

Smith Road at Stephenson Road/Smith Road

- The Developer shall construct an eastbound left-turn lane with a minimum of 100 feet of storage and appropriate taper.
- The Developer shall monitor this intersection for installation of all-way stop control and provide for the all-way stop conversion if warranted and permitted by NCDOT.
- The Developer shall construct the aforementioned improvements at the Smith Road/Stephenson Road intersection at the time the East-West Collector Street is constructed and platted to Smith Road.



Smith Road at East-West Collector Street

- The Developer shall construct a southbound right-turn lane with a minimum of 100 feet of storage and appropriate taper.
- The Developer shall construct a Major Collector Street from the North-South Collector Street to Smith Road on a 60-foot public right of way for the entire length.
- The Developer shall provide access to existing residential properties on Dezola Street in a manner that avoids residential driveways directly accessing any Major Collector Streets.

East Williams Street at Straywhite Avenue

- The Developer shall stripe the Straywhite Avenue approach to E. Williams Street for two lanes with 75 feet of storage.
- The Developer shall monitor the intersection and install a traffic signal if warranted and permitted by NCDOT.
- The Developer shall complete the monitoring period as directed by the Town of Apex Senior Transportation Engineer within the following schedule: The monitoring shall occur after the opening of Colby Chase Drive from the Pemberley subdivision to the Merion Subdivision but no later than the recording of the Final Plat for 250 dwelling units of single-family and/or townhomes, or the issuance of building permits for 250 apartment units, or any combination thereof.

East Williams Street at Technology Drive at NC 55

- Intersection included in the MOU. No improvements warranted per TIA.

North-South Collector Street

- The Developer shall construct the portion of the North-South Collector Street from Colby Chase Drive to the PUD boundary at the southern creek on N/F Cash Property (PIN 0751-31-0079) to a Minor Collector Street typical section on a 60-foot public right-of-way.

PHASE II TRANSPORTATION IMPROVEMENTS

The full project build-out includes the following intersections per the approved MOU.

Jessie Drive at Ten-Ten Road

- The Developer shall construct a westbound left-turn lane with a minimum of 100 feet of storage and appropriate taper prior to the pending state TIP project.
- The Developer shall construct an eastbound right-turn lane with a minimum of 200 feet of storage and appropriate taper prior to the pending state TIP project.
- The Developer shall construct a northbound right-turn lane with 100 feet of storage and appropriate taper prior to the pending state TIP project.
- The Developer shall monitor this intersection and install a traffic signal if warranted and permitted by NCDOT prior to the pending state TIP project.
- The Developer shall construct the improvements at the aforementioned Jessie Drive/Ten Ten intersection at the time Jessie Drive is extended to the Horton Park North-South Collector/Production Drive intersection.
- If the traffic signal is not warranted prior to the first Final Plat, the developer shall provide a performance bond for the signal based on an engineer’s estimate of final costs. The performance bond shall remain in place for a period of 5 years, or until the last Final Plat for the development,



whichever comes first. Once the signal is warranted, the developer shall install the signal within 6 months plus time for any delays due to right-of-way acquisition and utility relocation but not to exceed 12 months.

Jessie Drive at the North-South Collector Street

- The Developer shall construct single lane northbound and southbound approaches with stop control, and free-flow eastbound and westbound approaches with 100-foot left turn lanes both directions at both intersections.
- The Developer shall construct the portion of the North-South Collector Street from the PUD boundary on the N/F Cash property (PIN 0751-31-0079) to Jessie Drive to a Major Collector Street typical section on a 60-foot public right of way.
- The Developer shall construct the aforementioned improvements prior to recordation of the first Final Plat for single-family and/or townhomes, or the issuance of the first building permit for apartments within Phase II of the development.

Jessie Drive at Site Drive #1 (PODs 3 & 4)

- The Developer shall construct single lane northbound and southbound approaches with stop control, and free-flow eastbound and westbound approaches with 100-foot left turn lanes both directions.

Jessie Drive at Site Drive #2 (POD 4)

- The Developer shall construct single lane northbound and southbound approaches with stop control, and free-flow eastbound and westbound approaches with 100-foot left turn lanes both directions.

The following roadway improvements are internal to the project and do not require NCDOT review or approval. These improvements shall be reviewed with Apex staff to verify compliance with design standards during the zoning, master subdivision, and construction document stages of the project as appropriate. Improvements shall be constructed and platted as the connections are created for each development POD. Said improvements were identified within the Traffic Impact Analysis dated May 31, 2017 with the Colby Chase Addendum dated August 30, 2017 with no proposed modifications.

North-South Collector Street at Site Drive #2, #3, and Dezola Street

- The Developer shall construct single lane eastbound and westbound approaches with stop control, and single lane northbound and southbound free-flow approaches.

East-West Collector Street at Site Drive #4

- The Developer shall construct single lane northbound and southbound approaches with stop control, and single lane eastbound and westbound free-flow approaches. Stop control may be reversed subject to future connectivity.

North-South Collector Street at Colby Chase Drive

- The Developer shall construct the connection of Colby Chase from Pemberley Subdivision to the Merion Subdivision. The connection of Colby Chase Drive to the state-maintained portion requires NCDOT review and approval.
- The Developer shall construct the connection of the North-South Collector Street to Colby Chase Drive.
- The Developer shall evaluate with Apex staff the option for traffic calming devices along Colby Chase Drive between Pemberley and Merion subdivisions.

STAFF REPORT

Rezoning #19CZ16 Horton Park PUD Amendment & TF-CZ

October 15, 2019 Town Council Meeting



Colby Chase Drive Extension

- The Developer agrees not to open Colby Chase Drive to the Merion Subdivision until the North-South Collector Street is constructed and open to the public or at the direction of the Town of Apex Senior Transportation Engineer.

PLANNING STAFF RECOMMENDATION:

Planning staff recommends denial of the proposed Horton Park PUD amendment and TF-CZ zoning as proposed by the applicant unless the following changes are made:

1. Remove “Church or place of worship” as a permitted use in the TF-CZ zoning district.
2. Maintain phasing and transportation improvement conditions as currently approved in #18CZ04.

PLANNING BOARD RECOMMENDATION:

The Planning Board will hear this item at their October 14, 2019 meeting. Staff will present the Planning Board’s recommendation at the Town Council meeting.

ANALYSIS STATEMENT OF THE REASONABLENESS OF THE PROPOSED REZONING:

This Statement will address consistency with the Town’s comprehensive and other applicable plans, reasonableness, and effect on public interest:

The proposed rezoning is consistent with the 2045 Land Use Plan and other adopted plans in that the 2045 Land Use Map classifies the subject properties as Medium Density Residential, High Density Residential, High Density Residential/Office Employment, and Office Employment/Industrial Employment. These classifications include the PUD-CZ and TF-CZ zoning districts.

However, the proposed rezoning is not reasonable and in the public interest due to the following:

1. The use “Church or place of worship” is not currently an approved use within POD 2 of the PUD and which is now proposed to be changed to TF-CZ. This use does not help to increase the tax base of the town or contribute a significant number of jobs which is more likely to occur with the other permitted uses.
2. The proposed changes in the phasing and timing of road improvements would result in the North-South collector street not being completed in the first phase. This negatively impacts Smith Road, Stephenson Road, and to a smaller extent roads within the Pemberley and Miramonte subdivisions that connect to E. Williams Street/NC 55. These impacts are further exacerbated by the fact that the State has delayed the start of the Ten Ten Road widening project from 2023 to 2029, yet the TIA indicates build-out of Phase I in 2024 and Phase II in 2026.

PLANNED UNIT DEVELOPMENT DISTRICT AND CONDITIONAL ZONING STANDARDS:

Standards

In return for greater flexibility in site design requirements, Planned Development (PD) Districts are expected to deliver exceptional quality community designs that preserve critical environmental resources; provide high



quality community amenities; incorporate creative design in the layout of buildings, Resource Conservation Area and circulation; ensure compatibility with surrounding land uses and neighborhood character; provide high quality architecture; and provide greater efficiency in the layout and provision of roads, utilities, and other infrastructure. The Planned Development (PD) Districts shall not be used as a means of circumventing the Town's adopted land development regulations for routine developments.

1) *Planned Unit Development (PUD-CZ) District*

In approving a Planned Development (PD) Zoning District designation for a PUD-CZ, the Planning Board shall find the PUD-CZ district designation and PD Plan for PUD-CZ demonstrates compliance with the following standards:

a) *Development parameters*

- (i) The uses proposed to be developed in the PD Plan for PUD-CZ are those uses permitted in Sec. 4.2.2 *Use Table*.
- (ii) The uses proposed in the PD Plan for PUD-CZ can be entirely residential, entirely non-residential, or a mix of residential and non-residential uses, provided a minimum percentage of non-residential land area is included in certain mixed use areas as specified on the 2045 Land Use Map. The location of uses proposed by the PUD-CZ must be shown in the PD Plan with a maximum density for each type of residential use and a maximum square footage for each type of non-residential use.
- (iii) The dimensional standards in Sec. 5.1.3 *Table of Intensity and Dimensional Standards, Planned Development Districts* may be varied in the PD Plan for PUD-CZ. The PUD-CZ shall demonstrate compliance with all other dimensional standards of the UDO, North Carolina Building Code, and North Carolina Fire Code.
- (iv) The development proposed in the PD Plan for PUD-CZ encourages cluster and compact development to the greatest extent possible that is interrelated and linked by pedestrian ways, bikeways and other transportation systems. At a minimum, the PD Plan must show sidewalk improvements as required by the Apex Transportation Plan and the *Town of Apex Standard Specifications and Standard Details*, and greenway improvements as required by the Town of Apex Parks, Recreation, Greenways, and Open Space Plan and the Apex Transportation Plan. In addition, sidewalks shall be provided on both sides of all streets for single-family detached homes.
- v) The design of development in the PD Plan for PUD-CZ results in land use patterns that promote and expand opportunities for walkability, connectivity, public transportation, and an efficient compact network of streets. Cul-de-sacs shall be avoided unless the design of the subdivision and the existing or proposed street system in the surrounding area indicate that a through street is not essential in the location of the proposed cul-de-sac, or where sensitive environmental areas such as streams, floodplains, and wetlands would be substantially disturbed by making road connections.
- (vi) The development proposed in the PD Plan for PUD-CZ is compatible with the character of surrounding land uses and maintains and enhances the value of surrounding properties.



- (vii) The development proposed in the PD Plan for PUD-CZ has architectural and design standards that are exceptional and provide higher quality than routine developments. All residential uses proposed in a PD Plan for PUD-CZ shall provide architectural elevations representative of the residential structures to be built to ensure the Standards of this Section are met.

- b) *Off-street parking and loading.* The PD Plan for PUD-CZ shall demonstrate compliance with the standards of Sec. 8.3 *Off-Street Parking and Loading*, except that variations from these standards may be permitted if a comprehensive parking and loading plan for the PUD-CZ is submitted as part of the PD Plan that is determined to be suitable for the PUD-CZ, and generally consistent with the intent and purpose of the off-street parking and loading standards.

- c) *RCA.* The PD Plan for PUD-CZ shall demonstrate compliance with Sec. 8.1.2 *Resource Conservation Area*, except that the percentage of RCA required under Sec. 8.1.2 may be reduced by the Town Council by no more than two percent (2%) provided that:
 - (i) The PD Plan for PUD-CZ includes a non-residential component; or
 - (ii) The PD Plan for PUD-CZ has an overall density of 6 residential units per acre or more.

- d) *Landscaping.* The PD Plan for PUD-CZ shall demonstrate compliance with the standards of Sec. 8.2 *Landscaping, Buffering and Screening*, except that variations from these standards may be permitted where it is demonstrated that the proposed landscaping sufficiently buffers uses from each other, ensures compatibility with land uses on surrounding properties, creates attractive streetscapes and parking areas and is consistent with the character of the area. In no case shall a buffer be less than one half of the width required by Sec. 8.2 or 10 feet in width, whichever is greater.

- e) *Signs.* Signage in the PD Plan for PUD-CZ shall demonstrate compliance with Sec. 8.7 *Signs*, except that the standards can be varied if a master signage plan is submitted for review and approval concurrent with the PD plan and is determined by the Town Council to be suitable for the PUD-CZ and generally consistent with the intent and purpose of the sign standards of the UDO. The master signage plan shall have design standards that are exceptional and provide for higher quality signs than those in routine developments and shall comply with Sec. 8.7.2 *Prohibited Signs*.

- f) *Public facilities.* The improvements standards and guarantees applicable to the public facilities that will serve the site shall comply with Article 7: *Subdivision* and Article 14: *Parks, Recreation, Greenways, and Open Space*.
 - (i) The PD Plan for PUD-CZ demonstrates a safe and adequate on-site transportation circulation system. The on-site transportation circulation system shall be integrated with the off-site transportation circulation system of the Town. The PD Plan for PUD-CZ shall be consistent with the Apex Transportation Plan and the *Town of Apex Standard Specifications and Standard Details* and show required right-of-way widths and road sections. A Traffic Impact Analysis (TIA) shall be required per Sec. 13.19.



- (ii) The PD Plan for PUD-CZ demonstrates a safe and adequate on-site system of potable water and wastewater lines that can accommodate the proposed development, and are efficiently integrated into off-site potable water and wastewater public improvement plans. The PD Plan shall include a proposed water and wastewater plan.
- (iii) Adequate off-site facilities for potable water supply, sewage disposal, solid waste disposal, electrical supply, fire protection and roads shall be planned and programmed for the development proposed in the PD Plan for PUD-CZ, and the development is conveniently located in relation to schools and police protection services.
- (iv) The PD Plan shall demonstrate compliance with the parks and recreation requirements of Sec. Article 14: *Parks, Recreation, Greenways, and Open Space* and Sec. 7.3.1 *Privately-owned Play Lawns* if there is a residential component in the PUD-CZ.
- g) *Natural resource and environmental protection.* The PD Plan for PUD-CZ demonstrates compliance with the current regulatory standards of this Ordinance related to natural resource and environmental protection in Sec. 6.1 *Watershed Protection Overlay District*, Sec. 6.2 *Flood Damage Prevention Overlay District*, and Sec. 8.1 *Resource Conservation*.
- h) *Storm water management.* The PD Plan shall demonstrate that the post-development rate of on-site storm water discharge from the entire site shall not exceed pre-development levels in accordance with Sec. 6.1.7 of the UDO.
- i) *Phasing.* The PD Plan for PUD-CZ shall include a phasing plan for the development. If development of the PUD-CZ is proposed to occur in more than one phase, then guarantees shall be provided that project improvements and amenities that are necessary and desirable for residents of the project, or that are of benefit to the Town, are constructed with the first phase of the project, or, if this is not possible, then as early in the project as is technically feasible.
- j) *Consistency with 2045 Land Use Map.* The PD Plan for PUD-CZ demonstrates consistency with the goals and policies established in the Town's 2045 Land Use.
- k) *Complies with the UDO.* The PD Plan for PUD-CZ demonstrates compliance with all other relevant portions of the UDO.

Legislative Considerations

The Planning Board shall find the PUD-CZ and TF-CZ designations demonstrate compliance with the following standards. Sec. 2.3.3.F:

The applicant shall propose site-specific standards and conditions that take into account the following considerations, which are considerations that are relevant to the legislative determination of whether or not the proposed conditional zoning district rezoning request is in the public interest. These considerations do not exclude the legislative consideration of any other factor that is relevant to the public interest.

STAFF REPORT

Rezoning #19CZ16 Horton Park PUD Amendment & TF-CZ

October 15, 2019 Town Council Meeting



- 1) *Consistency with 2045 Land Use Map.* The proposed Conditional Zoning (CZ) District use's appropriateness for its proposed location and consistency with the purposes, goals, objectives, and policies of the 2045 Land Use Map.
- 2) *Compatibility.* The proposed Conditional Zoning (CZ) District use's appropriateness for its proposed location and compatibility with the character of surrounding land uses.
- 3) *Zoning district supplemental standards.* The proposed Conditional Zoning (CZ) District use's compliance with Sec. 4.4 *Supplemental Standards*, if applicable.
- 4) *Design minimizes adverse impact.* The design of the proposed Conditional Zoning (CZ) District use's minimization of adverse effects, including visual impact of the proposed use on adjacent lands; and avoidance of significant adverse impacts on surrounding lands regarding trash, traffic, service delivery, parking and loading, odors, noise, glare, and vibration and not create a nuisance.
- 5) *Design minimizes environmental impact.* The proposed Conditional Zoning District use's minimization of environmental impacts and protection from significant deterioration of water and air resources, wildlife habitat, scenic resources, and other natural resources.
- 6) *Impact on public facilities.* The proposed Conditional Zoning (CZ) District use's avoidance of having adverse impacts on public facilities and services, including roads, potable water and wastewater facilities, parks, schools, police, fire and EMS facilities.
- 7) *Health, safety, and welfare.* The proposed Conditional Zoning (CZ) District use's effect on the health, safety, or welfare of the residents of the Town or its ETJ.
- 8) *Detrimental to adjacent properties.* Whether the proposed Conditional Zoning (CZ) District use is substantially detrimental to adjacent properties.
- 9) *Not constitute nuisance or hazard.* Whether the proposed Conditional Zoning (CZ) District use constitutes a nuisance or hazard due to traffic impact or noise, or because of the number of persons who will be using the Conditional Zoning (CZ) District use.
- 10) *Other relevant standards of this Ordinance.* Whether the proposed Conditional Zoning (CZ) District use complies with all standards imposed on it by all other applicable provisions of this Ordinance for use, layout, and general development characteristics.



August 07, 2019

Joshua Reinke P.E.
Ramey Kemp & Associates, Inc.
5808 Faringdon Place, Suite 100
Raleigh, NC 27609

Subject: **Staff summary and comments for the Horton Park TIA, 07/02/2019**

Mr. Reinke:

Please review the following summary of my comments and recommendations. You may schedule a meeting with me and your client to discuss at your convenience.

Study Area

The TIA proposes to study access to the development for two phases of the project:

Phase I assumes that the Ten-Ten Road improvements proposed in TIP Project U-5825 will be constructed by 2024. However, it is important to note that the draft STIP shows construction in 2023-2025, so Phase I of Horton Park may be at or near build-out a year before road improvements are completed. For the partial build phase (Phase I) the TIA proposes to study the following intersections:

- Smith Road and Dezola Street (primary access)
- Smith Road and Stephenson Road (offsite intersection)
- Ten-Ten Road and Smith Road (offsite intersection)
- E. Williams Street and Straywhite Avenue (secondary access)
- NC 55 and Technology Drive / E. Williams Street (offsite intersection)

Phase II assumes that the Jessie Drive east-west connection between Ten-Ten Road and NC 55 will be constructed by the Town of Apex, as well as geometric improvements at the existing intersection of Jessie Drive and Ten-Ten Road. However, it is important to note that Jessie Drive construction is not funded in the 2019-2020 CIP and subject to reprioritization in 2020. The following additional intersections are included in the study for Phase II based on that assumption:

- Ten-Ten Road and Jessie Drive (primary access)
- NC 55 and Future Jessie Drive Extension (primary access)
- NC 55 and Future Jessie Drive Extension Northbound U-Turnaround (primary access)
- Jessie Drive and North-South Connector (primary access)
- Jessie Drive and Site Drive 1 (primary access)
- Jessie Drive and Site Drive 2 (primary access)

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Trip Generation

The proposed development is anticipated to be built in two phases. Phase I includes 290 single family homes and 134 townhomes. Phase I is projected to generate approximately 67 new trips entering and 207 new trips exiting the site during the weekday A.M. peak hour and 227 new trips entering and 132 new trips exiting the site during the weekday P.M. peak hour. Phase I of the development is expected to add a total of 3,740 new trips per day to the adjacent roadway network. Phase II of the development includes an additional 78 townhomes, 356 apartments, 40,000 square feet of warehouse, and 40,000 square feet of business park. Phase II is projected to generate approximately 182 new trips entering and 365 new trips exiting the site during the weekday A.M. peak hour and 379 new trips entering and 278 new trips exiting the site during the weekday P.M. peak hour. Phase II of the development is expected to add a total of 8,270 new trips per day to the adjacent roadway network.

Background traffic

Background traffic consists of 3% annual background traffic growth compounded to build out year 2024 and year 2026 for the two development phases, and the following approved development:

- Stop & Go Gas Station

Additionally, geometric improvements on Ten-Ten Road from NCDOT TIP Project U-5825 are assumed in the background and build out analysis for both phases of the project. Geometric improvements associated with the on-going Town of Apex CIP project for extending and widening Jessie Drive are also assumed in the background and build out analysis for Phase II of the project.

Trip Distribution and Assignment

Trip distribution to and from the development was evaluated under the two phasing scenarios.

Phase I includes only residential trips:

- 60% to/from the west via Ten-Ten Road
- 15% to/from the east via Ten-Ten Road
- 5% to/from the south via E. Williams Street
- 10% to/from the south via NC 55 Bypass
- 5% to/from the northwest via NC 55
- 5% to/from the south via Stephenson Road

In addition to the distribution for residential trips, Phase II includes the following distribution for industrial/commercial trips:

- 45% to/from the west via Ten-Ten Road
- 30% to/from the east via Ten-Ten Road
- 5% to/from the south via NC 55 Bypass
- 15% to/from the northwest via NC 55
- 5% to/from the south via Stephenson Road

Traffic Capacity Analysis and Recommendations

Level of Service (LOS) is a grade of A through F assigned to an intersection, approach, or movement to describe how well or how poorly it operates. LOS A through D is considered acceptable for peak hour operation. LOS E or F describes potentially unacceptable operation and developers may be required to mitigate their anticipated traffic impact to improve LOS based on the Apex Unified Development Ordinance (UDO).

Tables 1 through 11 describe the levels of service (LOS) for the scenarios analyzed in the TIA. "NA" is shown when the scenario does not apply. The scenarios are as follows:

- **Existing 2019** – Existing year 2019 traffic grown from year 2017 traffic counts.
- **No Build 2024** – Projected year (2024) traffic with background growth, approved development traffic and committed transportation improvements by others. *Additional lanes from TIP Projects U-5825 (Ten-Ten Rd Widening) are included.*
- **Build 2024** – Phase I projected year (2024) with background traffic and site build-out including recommended improvements where applicable.
- **No Build 2026** – Projected year (2026) traffic with background growth, approved development traffic and committed transportation improvements by others. *Additional lanes from TIP Projects U-5825 (Ten-Ten Rd Widening) as well as Town of Apex Jessie Drive CIP project which includes improvements at Ten-Ten Road, and the Jessie Drive Extension to NC 55 with superstreet at NC 55.*
- **Build 2026** – Phase II projected year (2026) with background traffic and site build-out including recommended improvements where applicable.

Smith Road and Dezola Street (unsignalized)

Table 1: A.M. / P.M. Peak Hour Unsignalized Levels of Service Smith Road and Dezola Street					
	Existing 2019	No Build 2024	Build 2024	No Build 2026	Build 2026
<u>Overall</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
<i>Eastbound (Dezola Street)</i>	<i>A / A²</i>	<i>A / A²</i>	<i>B / A²</i>	<i>A / A²</i>	<i>A / A²</i>
<i>Northbound (Smith Road)</i>	<i>A / A¹</i>	<i>A / A¹</i>	<i>A / A¹</i>	<i>A / A¹</i>	<i>A / A¹</i>
<i>Southbound (Smith Road)</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>

1. Level of service for major-street left turning vehicles
2. Level of service for minor-street stop controlled

TIA recommendations:

- The TIA recommends the construction of a southbound right-turn lane with a minimum of 75 feet of storage in Phase I. In Phase II the TIA recommends no additional improvements.

Apex staff recommendations:

- Per Town of Apex Transportation Plan, Dezola Street is planned as a major collector street. It's recommended that the development reconstruct the existing unpaved Dezola Street to a standard Major Collector Street typical section for future development traffic. In regard to intersection capacity, Apex staff agrees with the recommendations. Projected traffic is anticipated to experience short delays at this intersection.

Smith Road and Stephenson Road (unsignalized)

Table 2: A.M. / P.M. Peak Hour Unsignalized Levels of Service Smith Road and Stephenson Road					
	Existing 2019	No Build 2024	Build 2024	No Build 2026	Build 2026
Overall	<u>N / A</u>	<u>N / A</u>	<u>N / A</u>	<u>N / A</u>	<u>N / A</u>
Eastbound (Smith Road)	A / A ¹	B / A ¹	B / A ¹	B / A ¹	B / A ¹
Westbound (Stephenson Road)	NA	NA	NA	NA	NA
Southbound (Smith Road)	B / C ²	C / E ²	E / F ²	C / F ²	C / F ²

1. Level of service for major-street left turning vehicles
2. Level of service for minor-street stop controlled

TIA recommendations:

- The TIA recommends the construction of an eastbound left turn lane on Smith Road with minimum of 100 feet storage during Phase I of the project. The TIA evaluated a traffic signal to improve queuing and delays on the southbound approach, however the traffic volume at this intersection is not projected to be high enough in future scenarios to warrant a traffic signal. The TIA recommends no additional improvements for Phase II of the project.

Apex staff recommendations:

- In Phase I the primary access point for the development will be off Smith Road, and the development is projected to increase traffic volumes at the intersection of Smith Road and Stephenson Road by 18% in the A.M. peak and 22% in the P.M. peak hours. The addition of development traffic causes LOS to deteriorate to LOS E and LOS F in the A.M. and P.M. peak hours, respectively. Average vehicle delays and 95th percentile queues were analyzed to be heaviest in the southbound stop-controlled direction during the P.M. peak hour. Average vehicle delays were analyzed to increase from 47.1 seconds per vehicle to 172.4 seconds per vehicle and 95th percentile queues were analyzed to increase from 14 vehicles (350 feet) to 33 vehicles (825 feet) from the 2024 No Build to the 2024 Build condition. The upstream intersection of Smith Road and Ten-Ten Road is 1,000 feet to the north, therefore about 80 percent of the roadway between the intersections is projected to be blocked by traffic. The queueing creates an access issue for residents off Smith Road, as well as safety and access issues for fire and emergency services since this roadway serves as the only connection from the north to a large residential area.

Town staff evaluated several additional options to mitigate congestion associated with development traffic. Based on HCS7 analysis, it was determined that in conjunction with

the Ten-Ten Road TIP project to reduce congestion upstream at Ten-Ten Road, a single-lane roundabout would operate at LOS B during the most critical P.M. peak hour and reduce 95th percentile queues to 7 vehicles (175 ft) on the southbound approach and overall intersection delay to 10.8 seconds per vehicle. However, this relies on completion of the Ten-Ten Road TIP project prior to the anticipated date in the draft STIP. Based on this analysis and considering project schedules and funding status of Ten-Ten Road and Jessie Drive, Town staff recommend extension of Jessie Drive from Ten-Ten Road to just beyond the North-South Connector road with connection of the North-South Connector road from Jessie Drive to Colby Chase Drive, as well as providing turn lane improvements as previously committed in the approved PD Plan with Phase I of the development.

Ten-Ten Road and Smith Road (signalized)

Table 3: A.M. / P.M. Peak Hour Signalized Levels of Service Ten-Ten Road and Smith Road					
	Existing 2019	No Build 2024	Build 2024	No Build 2026	Build 2026
<u>Overall</u>	<u>D / C</u>	<u>B / B</u>	<u>B / B</u>	<u>B / B</u>	<u>B / B</u>
<i>Eastbound (Ten-Ten Road)</i>	<i>C / C</i>	<i>B / B</i>	<i>B / B</i>	<i>B / B</i>	<i>B / B</i>
<i>Westbound (Ten-Ten Road)</i>	<i>B / B</i>	<i>B / B</i>	<i>B / B</i>	<i>B / B</i>	<i>B / B</i>
<i>Northbound (Smith Road)</i>	<i>E / D</i>	<i>C / C</i>	<i>C / C</i>	<i>C / C</i>	<i>C / C</i>

TIA recommendations:

- The TIA does not recommend any improvements to the intersection by the developer. NCDOT TIP Project U-5825 is expected to widen Ten-Ten Road to a 4-lane median divided facility with left and right turn lanes at the traffic signal. The improvements are expected to be complete prior to Phase I build out of the development. With background and development traffic the signal was analyzed to operate at LOS C in both the A.M. and P.M. peak hours for both Phase I and Phase II build and no build scenarios.

Apex staff recommendations:

- As previously noted, the Ten-Ten Road TIP improvements are not anticipated to be completed by 2024. Therefore, Apex staff recommend extension of the westbound left turn lane to 350 feet when the East-West Collector Street is platted to Smith Road as previously committed in the approved PD Plan with Phase I of the development unless NCDOT recommends against the interim improvement. With the widening expected to be completed by NCDOT TIP Project U-5825, the most critical peak hour of operations that was analyzed was the P.M. peak hour in the 2024 Build scenario. Analysis showed

all approaches and movements to operate at LOS D or better during that critical peak, with overall average intersection delay of 18 seconds per vehicle.

E. Williams Street and Straywhite Avenue (unsignalized)

Table 4: A.M. / P.M. Peak Hour Unsignalized Levels of Service E. Williams Street and Straywhite Avenue					
	Existing 2019	No Build 2024	Build 2024	No Build 2026	Build 2026
Overall	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>
Westbound (Straywhite Avenue)	<i>F / C²</i>	<i>F / C²</i>	<i>F / C²</i>	<i>F / D²</i>	<i>F / D²</i>
Northbound (E. Williams Street)	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>
Southbound (E. Williams Street)	<i>B / A¹</i>	<i>C / B¹</i>	<i>C / B¹</i>	<i>C / B¹</i>	<i>C / B¹</i>

1. Level of service for major-street left turning vehicles
2. Level of service for minor-street stop controlled

TIA recommendations:

- The TIA recommends to stripe a lane line down the center of the existing 21-foot wide outbound lane of Straywhite Avenue. The pavement striping will provide the westbound approach of Straywhite Avenue with exclusive left turn and right turn lanes. A traffic signal was considered at this location, but based on traffic volumes and the residential nature of the minor street approach, it is not anticipated to meet signal warrants.

Apex staff recommendations:

- Apex staff recommend the previously approved PD Plan conditions for monitoring the intersection for a traffic signal during Phase I of the development and installing if permitted by NCDOT. Per the TIA recommendation, staff concur with striping a 75-foot long solid white lane line through the center of the westbound approach and provide stop bar and turn arrow pavement markings per NCDOT guidance. The striping will help with lane assignment at the approach, allowing right turn vehicles more gap opportunities to exit the subdivision. The operations are not anticipated to improve the LOS on the approach, however average vehicle delays are projected to decrease from 322 seconds/vehicle to 251 seconds/vehicle from the 2024 No Build to the 2024 Build condition in the critical A.M. peak hour.

NC 55 and Technology Drive / E. Williams Street (signalized)

Table 5: A.M. / P.M. Peak Hour Signalized Levels of Service NC 55 and Technology Drive / E. Williams Street					
	Existing 2019	No Build 2024	Build 2024	No Build 2026	Build 2026
<u>Overall</u>	<u>E / C</u>	<u>F / E</u>	<u>F / E</u>	<u>F / E</u>	<u>F / E</u>
<i>Eastbound (Technology Drive)</i>	<i>D / D</i>	<i>E / E</i>	<i>E / E</i>	<i>E / E</i>	<i>E / E</i>
<i>Westbound (E. Williams Street)</i>	<i>F / A</i>	<i>F / A</i>	<i>F / B</i>	<i>F / A</i>	<i>F / B</i>
<i>Northbound (NC 55)</i>	<i>C / C</i>	<i>C / C</i>	<i>C / C</i>	<i>C / C</i>	<i>C / C</i>
<i>Southbound (NC 55)</i>	<i>C / C</i>	<i>C / F</i>	<i>C / F</i>	<i>C / F</i>	<i>C / F</i>

TIA recommendations:

- The TIA does not recommend any improvements to the intersection by the developer. The development is projected to add approximately 1% of traffic to the intersection. The addition of traffic is expected to increase average intersection delays by 9 seconds per vehicle during the A.M. peak and 4 seconds per vehicle during the P.M. peak in the Build 2024 scenario, and the impacts on overall intersection delays are even less when the development is fully build out in the Build 2026 scenario, due to the assumption that a large portion of development trips will be diverted to the Jessie Drive connection.

Apex staff recommendations:

- Apex staff concurs with the recommendation. Even though this intersection is projected to operate at LOS E or F in the future build and no build scenarios, the volume of development traffic at this intersection is not high enough to meet the threshold for traffic capacity improvements based on the UDO.

Ten-Ten Road and Jessie Drive

Table 6: A.M. / P.M. Peak Hour Levels of Service Ten-Ten Road and Jessie Drive			
	Existing 2019	No Build 2026	Build 2026 Signalized
<u>Overall</u>	<u>NA</u>	<u>NA</u>	<u>B / B</u>
<i>Eastbound (Ten-Ten Road)</i>	NA	NA	B / B
<i>Westbound (Ten-Ten Road)</i>	A / B ¹	B / D ¹	B / B
<i>Northbound (Jessie Drive)</i>	C / F ²	D / F ²	C / C

1. Level of service for major-street left turning vehicles
2. Level of service for minor-street stop controlled

TIA recommendations:

- The intersection of Ten-Ten Road and Jessie Drive was analyzed under the assumption that the widening expected to be done as part of NCDOT TIP Project U-5825, and the Jessie Drive east-west connection between Ten-Ten Road and NC 55 will be constructed prior to Phase II of the development moving forward. Under these assumptions Phase II of the development has connectivity to both Ten-Ten Road and NC 55 via Jessie Drive. The intersection of Ten-Ten Road and Jessie Drive was analyzed with three through lanes and a right turn lane in the eastbound direction, two through lanes and a left turn lane in the westbound direction, and one left turn and one right turn lane in the northbound direction. Based on these assumptions, analysis showed the northbound stop-controlled approach to fail in the P.M. peak hour in the No Build condition. To improve operations, the TIA recommends to monitor this intersection for signalization, and install a signal if warranted. With the signal, this intersection is projected to operate at an overall LOS B in both peak hours of the day in the 2026 Build scenario with minimum delays.

Apex staff recommendations:

- As noted previously, Apex staff recommend extension of Jessie Drive from Ten-Ten Road to just beyond the North-South Connector road with connection of the North-South Connector road from Jessie Drive to Colby Chase Drive, as well as providing turn lane improvements as previously committed in the approved PD Plan with Phase I of the development. The Jessie Drive east-west widening and extension CIP project is currently in feasibility study stage and not yet funded for right of way or construction in the annual budget. Given recent cost estimates it is currently recommended by staff to expand the feasibility study to provide additional information in order to reconsider the project during the next budget cycle. That could result in further delays unknown at this time. The adopted CIP shows \$10,000,000 in FY '20-'21 for right of way and construction but it is anticipated to cost substantially more based on updated estimates

to be further refined in the coming months. Town staff recommend limiting the development build-out similar to the zoning conditions in Section 17 Phasing (“Option 1” and “Option 2”) of the Horton Park PD Plan, approved by Town Council on 4/17/18. Additionally, not all of the existing Jessie Drive east of Horton Park is accepted into the state-maintained system for NCDOT maintenance. The western most 300’ of the existing Jessie Drive paved roadway section is not under NCDOT maintenance. Town staff recommend that this section of Jessie Drive be improved to NCDOT standards and dedicated as a state-maintained roadway as part of any development requirement or CIP project providing connectivity to Ten-Ten Road.

NC 55 and Future Jessie Drive Extension (signalized)

Table 7: A.M. / P.M. Peak Hour Signalized Levels of Service NC 55 and Future Jessie Drive Extension		
	No Build 2026	Build 2026
<u>Overall</u>	<u>D / B</u>	<u>D / C</u>
<i>Westbound (Jessie Drive)</i>	<i>F / B</i>	<i>F / B</i>
<i>Northbound (NC 55)</i>	<i>D / B</i>	<i>D / B</i>
<i>Southbound Left (NC 55)</i>	<i>E / B</i>	<i>E / C</i>

TIA recommendations:

- The TIA assumes that the Town of Apex will construct Jessie Drive from Ten-Ten Road to NC 55 to meet the development schedule for Phase II. At the future signalized intersection of NC 55, the TIA assumes a superstreet with a single right turn lane in the westbound direction, two through lanes and a right turn lane in the northbound direction, and two through lanes and a left turn lane in the southbound direction. The TIA does not recommend any improvements at this future signalized intersection to be made by the development. Based on these assumptions, analysis showed this intersection to operate at an overall LOS D or better in both peak hours for both the 2026 No Build and Build scenarios. However the southbound and westbound approaches were analyzed to operate at LOS E or F during the A.M. peak hour, with average vehicles delays of 160 seconds per vehicle on the westbound approach and 77 seconds per vehicle for the southbound left turn.

Apex staff recommendations:

- Based on a more in-depth traffic analysis conducted during the Jessie Drive feasibility study, it was determined that on opening day, the intersection of Jessie Drive and NC 55 will need to be constructed as a superstreet with three northbound through lanes, three southbound through lanes and an exclusive southbound left turn lane with 300 feet of storage, and dual westbound right turn lanes with 200 feet of storage. With these recommendations the intersection is expected to operate at LOS C and D during the A.M. and P.M. peak hours. NCDOT staff have since recommended both the north and south U-turn bulb-outs on NC 55. Town staff recommend the construction of this

intersection per the recommendations of the Jessie Drive feasibility study if/when extended to NC 55. As recommended, a delay in the Town’s CIP project may result in a delay to a portion of Horton Park as was previously approved unless an alternative traffic scenario is presented and accepted by the Town.

NC 55 and Future Northbound U-Turn (signalized)

Table 8: A.M. / P.M. Peak Hour Signalized Levels of Service NC 55 and Future Northbound U-Turn		
	No Build 2026	Build 2026
<u>Overall</u>	<u>N/A</u>	<u>N/A</u>
<i>Northbound U-turn (NC 55)</i>	<i>C / F</i>	<i>C / F</i>
<i>Southbound (NC 55)</i>	<i>NA</i>	<i>NA</i>

TIA recommendations:

- The TIA assumes that the Town of Apex will construct Jessie Drive from Ten-Ten Road to NC 55. At the future signalized intersection of NC 55 and Jessie Drive, the TIA assumes a superstreet with a stop-controlled U-turn intersection 500 feet north of Jessie Drive. Analysis assumes two northbound through lanes, a single northbound U-turn lane and two southbound through lanes at the U-turn intersection. The TIA does not recommend any improvements at the U-turn intersection to be made by the development. Based on the assumptions, analysis showed the northbound U-turn to operate at LOS C and F in the A.M and P.M. peak hours for both the 2026 No Build and Build scenarios. The average vehicle delays for the northbound U-turn were analyzed to be 95.6 seconds per vehicle in the P.M. peak during the Build 2026 scenario.

Apex staff recommendations:

- Based on a more in-depth traffic analysis conducted during the Jessie Drive feasibility study, it was determined that on opening day, the intersection of Jessie Drive and NC 55 will need to be constructed as a superstreet with three northbound through lanes, and three southbound through lanes. The U-turn north of Jessie Drive will need to be signalized with and an exclusive northbound left turn lane with 300 feet of storage. With these recommendations the intersection is expected to operate at LOS A and B during the A.M. and P.M. peak hours. Town staff recommend the construction of this intersection per the recommendations of the Jessie Drive feasibility study.

Jessie Drive and North-South Connector (unsignalized)

Table 9: A.M. / P.M. Peak Hour Unsignalized Levels of Service Jessie Drive and North-South Connector	
	Build 2026
<u>Overall</u>	<u>N / A</u>
<i>Eastbound (Jessie Drive)</i>	<i>A / A¹</i>
<i>Westbound (Jessie Drive)</i>	<i>A / A¹</i>
<i>Northbound (North-South Connector)</i>	<i>B / B²</i>
<i>Southbound (North-South Connector)</i>	<i>B / B²</i>

1. Level of service for major-street left turning vehicles
2. Level of service for minor-street stop controlled

TIA recommendations:

- The TIA recommends construction of a new unsignalized intersection that connects the north and south sides of the development to Jessie Drive. The TIA recommends to construct the northbound and southbound approaches with stop control and a single lane of ingress and egress. The TIA assumes that Jessie Drive will be constructed by the Town of Apex with a single through lane in both the eastbound and westbound directions of travel, and recommends to construct additional left turn lanes on the eastbound and westbound approaches with 75 feet of storage and appropriate taper. With the improvements recommended in the TIA, all approaches were analyzed to operate at LOS B or better during both peak hours of the day.

Apex staff recommendations:

- Per the Advance Apex transportation plan, staff recommend Jessie Drive to be constructed on 110 feet of right-of-way and the North-South Connector road to be constructed on 60 feet of right-of-way. Apex staff recommends the northbound and southbound approaches be constructed with stop control and single left-through-right turn lanes, per the TIA recommendations; and free-flow eastbound and westbound approaches with single shared through-right lanes, and left-turn lanes with minimum 50 feet of storage and 150 feet of deceleration length and taper per 50 mph design speed. Left turn lanes should be constructed within the space of the divided median setting up future roadway widening to the outside of the roadway for the build-out of the ultimate Jessie Drive 4-lane median divided cross-section. See previous comments concerning Jessie Drive construction.

Jessie Drive and Site Drive 1 (unsignalized)

Table 10: A.M. / P.M. Peak Hour Unsignalized Levels of Service Jessie Drive and Site Drive 1	
	Build 2026
<u>Overall</u>	<u>N / A</u>
<i>Eastbound (Jessie Drive)</i>	<i>A / A¹</i>
<i>Westbound (Jessie Drive)</i>	<i>A / A¹</i>
<i>Northbound (Site Drive 1)</i>	<i>B / B²</i>
<i>Southbound (Site Drive 1)</i>	<i>C / C²</i>

1. Level of service for major-street left turning vehicles
2. Level of service for minor-street stop controlled

TIA recommendations:

- The TIA recommends construction of a new unsignalized intersection that connects the north and south sides of the development to Jessie Drive. The TIA recommends to construct the northbound and southbound approaches with stop control and single lanes of ingress and egress. The TIA assumes that Jessie Drive will be constructed by the Town of Apex with a single through lane in both the eastbound and westbound directions of travel, and recommends to construct additional left turn lanes with 50 feet of storage and appropriate taper on the eastbound approach and 75 feet of storage and appropriate taper on the westbound approach. With the improvements recommended in the TIA, all approaches were analyzed to operate at LOS C or better during both peak hours of the day.

Apex staff recommendations:

- Per the Advance Apex transportation plan, staff recommend Jessie Drive to be constructed on 110 feet of right-of-way. Apex staff recommends the northbound and southbound approaches be constructed with stop control and single left-through-right turn lanes per the TIA recommendation; and free-flow eastbound and westbound approaches with single shared through-right lanes, and left-turn lanes with minimum 50 feet of storage and 150 feet of deceleration length and taper per 50 mph design speed. Left turn lanes should be constructed within the space of the divided median setting up future roadway widening to the outside of the roadway for the build-out of the ultimate Jessie Drive 4-lane median divided cross-section. See previous comments concerning Jessie Drive construction.

Jessie Drive and Site Drive 2 (unsignalized)

Table 11: A.M. / P.M. Peak Hour Unsignalized Levels of Service Jessie Drive and Site Drive 2	
	Build (2) 2023
<u>Overall</u>	<u>N / A</u>
<i>Eastbound (Jessie Drive)</i>	<i>NA</i>
<i>Westbound (Jessie Drive)</i>	<i>A / A¹</i>
<i>Northbound (Site Drive 1)</i>	<i>B / B²</i>

1. Level of service for major-street left turning vehicles
2. Level of service for minor-street stop controlled

TIA recommendations:

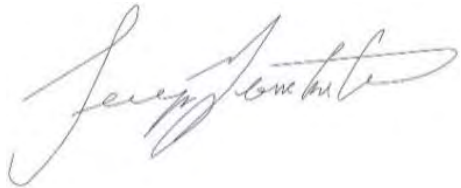
- The TIA recommends construction of a new unsignalized intersection that connects the south side of the development to Jessie Drive. The TIA recommends to construct the northbound approach with stop control and a single lane of ingress and egress. The TIA assumes that Jessie Drive will be constructed by the Town of Apex with a single through lane in both the eastbound and westbound directions of travel, and recommends to construct an additional westbound left turn lane with 50 feet of storage and appropriate taper. With the improvements recommended in the TIA, all approaches were analyzed to operate at LOS B or better during both peak hours of the day.

Apex staff recommendations:

- Per the Advance Apex transportation plan, staff recommend Jessie Drive to be constructed on 110 feet of right-of-way. Apex staff recommends the northbound approach be constructed with stop control and a single left-right turn lane per the TIA recommendation; and free-flow single-lane eastbound and westbound approaches, and a westbound left-turn lane with minimum 50 feet of storage and 150 feet of deceleration length and taper per 50 mph design speed. The left turn lane should be constructed within the space of the divided median setting up future roadway widening to the outside of the roadway for the build-out of the ultimate Jessie Drive 4-lane median divided cross-section. See previous comments concerning Jessie Drive construction.

Please coordinate with the NCDOT District Engineer's Office concerning recommended improvements. Town staff will be available for meetings with NCDOT staff to discuss improvements on state maintained roadways as needed. All recommendations are subject to review by Town Council prior to approval.

Sincerely,

A handwritten signature in cursive script, appearing to read "Serge Grebenschikov".

Serge Grebenschikov, PE
Traffic Engineer
919-372-7448

Corrections: Page 10 of 66, Table 1: Existing Roadway Inventory. Jessie Drive speed limit change to 55 mph, E. Williams Street speed limit change to 35 mph, Technology Drive change speed limit to 35 mph per NCDOT North Carolina Speed Limits Map: <http://ncdot.maps.arcgis.com/home/webmap/viewer.html?webmap=978abf2f2fe341c78f6d52636a60ebff>

Dixie Pipeline

Rezoning #19CZ16

Horton Park PUD

Myrtle Wood

Summercrest

FLIPPIN WAY

Colvin Park

Symphony Run

Harmony Glen

Merion

Colby Crossing

Pemberley

BOBBITT RD

PILSLEY RD

BASLOW DR

COLBY CHASE DR

SMITH RD

LEVERING MILL RD

DEZOLA ST

HERNDON LN

TIMPANI TRL

PONDSIDE DR

SATORI WAY

RHYTHM DR

STEPHENSON RD

TEN TEN RD

LITTLEMAN LN

SWEETGUM DR

HURDOVER RD

JESSIE DR

155 BYP

EWILLIAMS ST

TECHNOLOGY DR

0 1,000 2,000

Feet

PLANNED UNIT DEVELOPMENT APPLICATION

This document is a public record under the North Carolina Public Records Act and may be published on the Town's website or disclosed to third parties.

Application #: _____ Submittal Date: _____
Fee Paid \$ _____ Check # _____

PETITION TO AMEND THE OFFICIAL ZONING DISTRICT MAP

Project Name: _____

Address(es): _____

PIN(s) _____

_____ Acreage: _____

Current Zoning: _____ Proposed Zoning: _____

Current 2045 LUM Designation: _____

Requested 2045 LUM Designation: _____

See next page for LUM amendment

If any portion of the project is shown as mixed use (3 or more stripes on the 2045 Land Use Map) provide the following:

Area classified as mixed use: Acreage: _____

Area proposed as non-residential development: Acreage: _____

Percent of mixed use area proposed as non-residential: Percent: _____

Applicant Information

Name: _____

Address: _____

City: _____ State: _____ Zip: _____

Phone: _____ E-mail: _____

Owner Information

Name: _____

Address: _____

City: _____ State: _____ Zip: _____

Phone: _____ E-mail: _____

Agent Information

Name: _____

Address: _____

City: _____ State: _____ Zip: _____

Phone: _____ E-mail: _____

Other contacts: _____

ATTACHMENT A

Rezoning Application Parcel List
Horton Park Assembly
Apex, NC

<u>Parcel</u>	<u>Owner</u>	<u>PIN</u>
1	MFW Investments LLC	0751-42-1387
2	MFW Investments LLC	0751-31-0079 (portion)
3	Horton Park MH, LLC	0751-31-9308 (portion)
4	Mary Elizabeth Horton	0750-39-0993
5	MFWIRA, LLC	0751-40-0194
6	Kimberly Horton; Loomis Horton III	0750-39-8682
7	Kimberly Horton; Loomis Horton III	0750-49-5371
8	MFW Investments LLC	0750-29-9342
9	MFW Investments LLC	0750-28-0998 (portion)
10	MFW Investments LLC	0750-27-0906
11	Kimberly Horton; Loomis Horton III	0750-27-4707
12	MFW Investments LLC	0750-27-8677
13	MFW Investments LLC	0750-27-8925

CERTIFIED LIST OF NEIGHBORING PROPERTY OWNERS

Application #: 19CZ16

Submittal Date: 7/1/2019

Provide a certified list of property owners subject to this application and all property owners within 300' of the subject property and HOA Contacts.

	Owner's Name	PIN
1.	See attached sheets	
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		
11.		
12.		
13.		
14.		
15.		

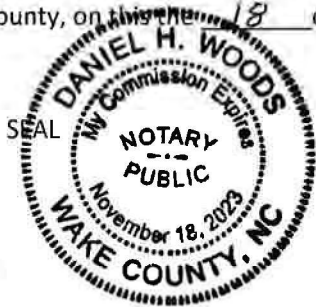
I, Jonathan Edwards, certify that this is an accurate listing of all property owners and property owners within 300' of the subject property.

Date: June 18, 2019

By: *Jonathan Edwards*

COUNTY OF WAKE STATE OF NORTH CAROLINA

Sworn and subscribed before me, DANIEL H. WOODS, a Notary Public for the above State and County, on this 18 day of JUNE, 2019.



Daniel H. Woods
Notary Public
DANIEL H. WOODS
Print Name

My Commission Expires: 11/18/23

TRINITY APEX NORTH 100 LLC
106 ISLAND VIEW DR
BEAUFORT NC 28516-9108
0750085838

PAGE TWO HOLDINGS LLC RODESSA LLC
940 SE CARY PKWY STE 102
CARY NC 27518-7417
0750095624

STEELE, GERTRUDE
1713A E WILLIAMS ST
APEX NC 27539-7706
0750096187

PEMBERLEY PROPERTY OWNERS' ASSOCIATION,
INC., CHARLESTON MGMT
PO BOX 97243
RALEIGH NC 27624-7243
0750176279

HORTON, KIMBERLY A HORTON, LOOMIS III
4801 SW 202ND AVE
SOUTHWEST RANCHES FL 33332-1033
0750184078

MFW INVESTMENTS, LLC
114 BIRKLANDS DR
CARY NC 27518-8203
0750197426

MFW INVESTMENTS LLC
114 BIRKLANDS DR
CARY NC 27518-8203
0750264926

MUSE, EDWARD MUSE, ROBIN
3305 COLBY CHASE DR
APEX NC 27539-3602
0750267955

KUNSMAN, STEVEN A KUNSMAN, SUSAN E
5408 MERION STATION DR
APEX NC 27539-3603
0750269948

MFW INVESTMENTS LLC
114 BIRKLANDS DR
CARY NC 27518-8203
0750270906

HORTON, KIMBERLY A HORTON, LOOMIS III
4801 SW 202ND AVE
SOUTHWEST RANCHES FL 33332-1033
0750274707

FELTON, TIMOTHY M FELTON, ALLISON C
3304 COLBY CHASE DR
APEX NC 27539-3601
0750278301

MFW INVESTMENTS, LLC
114 BIRKLANDS DR
CARY NC 27518-8203
0750278677

MFW INVESTMENTS, LLC
7837 SMITH RD
APEX NC 27539-8170
0750278925

FALCHI, JOHN J FALCHI, JOYCE T
3232 COLBY CHASE DR
APEX NC 27539-3620
0750279358

MFW INVESTMENTS, LLC
114 BIRKLANDS DR
CARY NC 27518-8203
0750280998

RICHARDSON, DONALD F
1630 VAN BUREN ST NW
WASHINGTON DC 20012-2838
0750286271

RICHARDSON, DONALD FELIX
1630 VAN BUREN ST NW
WASHINGTON DC 20012-2838
0750288532

RICHARDSON, ALTON RICHARDSON, TERESA
1295 WINDHAM RD
GREENVILLE NC 27834-7093
0750288880

HORTON, MATTHEW
4 ARBOR LN
BORDENTOWN NJ 08505-4807
0750299045

MFW INVESTMENTS, LLC
114 BIRKLANDS DR
CARY NC 27518-8203
0750299342

YOUNG, TODD C YOUNG, GLORIA C
3228 COLBY CHASE DR
APEX NC 27539-3620
0750370454

DALE, DENNIS DALE, ROBERTA
3224 COLBY CHASE DR
APEX NC 27539-3620
0750371540

HEISE, ROBERT H HEISE, CARY VIVIAN
2408 MERION CREEK DR
APEX NC 27539-6300
0750371996

STEWART, RICHARD J STEWART, MARY A
3220 COLBY CHASE DR
APEX NC 27539-3620
0750372555

CATHEY, ROBERT E III CATHEY, KRISTA B
3212 COLBY CHASE DR
APEX NC 27539-3620
0750373664

RHODES, AMANDA C RHODES, STEVEN A
3208 COLBY CHASE DR
APEX NC 27539-3620
0750375700

PIETZ, BRYAN PIETZ, JORDAN
2400 MERION CREEK DR
APEX NC 27539-6300
0750375774

KANODE, MARK E KANODE, LORI D
3204 COLBY CHASE DR
APEX NC 27539-3620
0750376759

PIETZ, BRYAN S PIETZ, JORDAN
2400 MERION CREEK DR
APEX NC 27539-6300
0750383293

COFFER, LANA HORTON
3113 CARRIAGE LIGHT CT
RALEIGH NC 27604-6117
0750385765

MERION HOMEOWNERS ASSOCIATION INC
OMEGA ASSOCIATION MANAGEMENT INC
160 NE MAYNARD RD STE 210
CARY NC 27513-9676
0750387004

HORTON, MARY ELIZABETH
PO BOX 306
APEX NC 27502-0306
0750390993

HORTON, CHARLES LEON, SARAH
8804 STEPHENSON RD
APEX NC 27539-8170
0750393222

HINTON, MELISSA D
5137 DEZOLA ST
APEX NC 27539-9529
0750395262

MANSFIELD, MARISA MANSFIELD, MICHAEL
5133 DEZOLA ST
APEX NC 27539-9529
0750398002

HORTON, KIMBERLY A HORTON, LOOMIS III
4801 SW 202ND AVE
SOUTHWEST RANCHES FL 33332-1033
0750398682

RYDESKY, THOMAS E RYDESKY, LINDA U
5232 LEVERING MILL RD
APEX NC 27539-3610
0750480767

HORNADA, JEFFREY MICHAEL HORNADA,
KARA LEIGH
5228 LEVERING MILL RD
APEX NC 27539-3610
0750481855

SURA, PIYUSH SURA, SMITA P
5229 LEVERING MILL RD
APEX NC 27539-3640
0750482535

POZDER, VLADIMIR POZDER, JULI W
5224 LEVERING MILL RD
APEX NC 27539-3610
0750482864

SINGLETARY, MICHAEL SINGLETARY, LAETITIA
5217 LEVERING MILL RD
APEX NC 27539-3640
0750483541

MOUSHEGIAN, KENNITH C MOUSHEGIAN,
CINDY W
5220 LEVERING MILL RD
APEX NC 27539-3610
0750483860

GREENE, WILLIAM BLAKE GREENE, LAUREN
KIRBY
5213 LEVERING MILL RD
APEX NC 27539-3640
0750484438

BACHOLZKY, RICHARD JR BACHOLZKY, KATHRYN
5216 LEVERING MILL RD
APEX NC 27539-3610
0750484775

MEHTA, RUSHIKESH J TRUSTEE RUSHIKESH J
MEHTA REVOCABLE TRUST
5209 LEVERING MILL RD
APEX NC 27539-3640
0750485424

BURNET, MARTHA SNYDER TRUSTEE BURNET,
GILBERT NEFF TRUSTEE
5208 LEVERING MILL RD
APEX NC 27539-3610
0750485688

RUSNAK, DAVID W RUSNAK, PAMELA P
5205 LEVERING MILL RD
APEX NC 27539-3640
0750486339

MADRID, RICHARD J MADRID, RENE MONIQUE
5204 LEVERING MILL RD
APEX NC 27539-3610
0750487632

KEENE, CHRISTOPHER P KEENE, ANNA E
5200 LEVERING MILL RD
APEX NC 27539-3610
0750488577

HORTON, WILLIAM JR HORTON, EDNA
8208 SMITH RD
APEX NC 27539-8176
0750488737

HORTON, WILLIAM JR
8208 SMITH RD
APEX NC 27539-8176
0750489723

HORTON, WILLIAM JR BURRIS, JULIA HORTON
8208 SMITH RD
APEX NC 27539-8176
0750489886

BECK, JOSHUA KEVIN BECK, KATHERINE
CLEMMONS
5129 DEZOLA ST
APEX NC 27539-9529
0750492134

HORTON, KIMBERLY A HORTON, LOOMIS III
4801 SW 202ND AVE
SOUTHWEST RANCHES FL 33332-1033
0750495371

WRIGHT, DWIGHT MARVIN
407 S SALEM ST
APEX NC 27502-2037
0750498888

HORTON, WILLIAM JR HORTON, EDNA
8208 SMITH RD
APEX NC 27539-8176
0750499041

HORTON, WILLIAM SR HEIRS HORTON,
LOOMIS JR HEIRS, WILLIAM HORTON JR
8208 SMITH RD
APEX NC 27539-8176
0750499710

HORTON, WILLIAM HORTON, EDNA W
8208 SMITH RD
APEX NC 27539-8176
0750582794

HORTON, WILLIAM JR HORTON, EDNA WILLIS
8205 SMITH RD
APEX NC 27539-8177
0750583990

HORTON, WILLIAM HORTON, EDNA W
8208 SMITH RD
APEX NC 27539-8176
0750591257

RICHARDSON, DONALD F
1630 VAN BUREN ST NW
WASHINGTON DC 20012-2838
0750592361

RICHARDSON, DONALD F
1630 VAN BUREN ST NW
WASHINGTON DC 20012-2838
0750592399

DOWNING, OSWALD DOWNING, DEBORAH H
8129 SMITH RD
APEX NC 27539-8175
0750594097

GANDHI, ANIL R GANDHI, NEHA A
105 BONNIEWOOD DR
CARY NC 27518-8961
0750596206

JACK 1, LLC
738 CASH ST
APEX NC 27502-1302
0751137742

WOMBLE, CHARLES H ET AL WOMBLE, GLEN
802 BELLAMY RD
NORTH MYRTLE BEACH SC 29582-2828
0751201670

MFW INVESTMENTS LLC
114 BIRKLANDS DR
CARY NC 27518-8203
0751216689

PRISTINE PARTNERS LLC
2821 JONES FRANKLIN RD
RALEIGH NC 27606-4007
0751222279

MFW INVESTMENTS LLC
114 BIRKLANDS DR
CARY NC 27518-8203
0751310079

MFW INVESTMENTS, LLC
114 BIRKLANDS DR
CARY NC 27518-8203
0751319308

TRINITY APEX NORTH 100 LLC
106 ISLAND VIEW DR
BEAUFORT NC 28516-9108
0751323228

MFW INVESTMENTS LLC
114 BIRKLANDS DR
CARY NC 27518-8203
0751328256

MFWIRA, LLC
114 BIRKLANDS DR
CARY NC 27518-8203
0751400194

KK LAND INC
2203 GOOD SHEPHERD WAY
APEX NC 27523-6947
0751400697

GRIFFIN, SIRRHAN GRIFFIN, JOSEPH A
1038 IRONGATE DR
APEX NC 27502-6505
0751407981

MFW INVESTMENTS LLC
114 BIRKLANDS DR
CARY NC 27518-8203
0751414924

HUNTER, MELVIN O HUNTER, NICOLE
5037 JESSIE DR
APEX NC 27539-8859
0751415915

MFW INVESTMENTS LLC
114 BIRKLANDS DR
CARY NC 27518-8203
0751421387

HINTON, BLANCHE W
4929 JESSIE DR
APEX NC 27539-9302
0751424433

TOOMER, JOE ELLIS TOOMER, FANNIE O
PO BOX 676
APEX NC 27502-0676
0751426099

INDUS REAL ASSOC LLC
4713 BROOK TOP CT
RALEIGH NC 27606-3100
0751426828

KK LAND INC
2203 GOOD SHEPHERD WAY
APEX NC 27523-6947
0751510857

CAREY C JONES MEMORIAL PARK INC
PO BOX 781
APEX NC 27502-0781
0751532815

Additional properties on Sweetgum Drive have been added for informational purposes

DEVELOPMENT NAME APPROVAL APPLICATION

Application #: _____

Submittal Date: _____

Fee for Initial Submittal: No Charge

Fee for Name Change after Approval: \$500*

Purpose

To provide a consistent and clearly stated procedure for the naming of subdivisions and/or developments and entrance roadways (in conjunction with *Town of Apex Address Policy*) so as to allow developers to define and associate the theme or aesthetics of their project(s) while maintaining the Town's commitment to preserving the quality of life and safety for all residents of Apex proper and extraterritorial jurisdiction.

Guidelines

- ✓ The subdivision/development name shall not duplicate, resemble, or present confusion with an existing subdivision/development within Apex corporate limits or extraterritorial jurisdiction except for the extension of an existing subdivision/development of similar or same name that shares a continuous roadway.
- ✓ The subdivision/development name shall not resemble an existing street name within Apex corporate limits or extraterritorial jurisdiction unless the roadway is a part of the subdivision/development or provides access to the main entrance.
- ✓ The entrance roadway of a proposed subdivision/development shall contain the name of the subdivision/development where this name does not conflict with the Town of Apex *Road Name Approval Application* and *Town of Apex Address Policy* guidelines.
- ✓ The name "Apex" shall be excluded from any new subdivision/development name.
- ✓ Descriptive words that are commonly used by existing developments will be scrutinized more seriously in order to limit confusion and encourage distinctiveness. A list of commonly used descriptive words in Apex's jurisdiction is found below.
- ✓ The proposed subdivision/development name must be requested, reviewed and approved during preliminary review by the Town.
- ✓ A \$500.00 fee will be assessed to the developer if a subdivision/development name change is requested after official submittal of the project to the Town.*

*The imposed fee offsets the cost of administrative changes required to alleviate any confusion for the applicant, Planning staff, other Town departments, decision-making bodies, concerned utility companies and other interested parties. There is no charge for the initial name submittal.

Existing Development Titles, Recurring

	Residential	Non-Residential
10 or more	Creek, Farm(s), Village(s),	Center/Centre
6 to 9	Crossing(s), Park, Ridge, Wood(s)	Commons, Park
3 to 5	Acres, Estates, Glen(s), Green*, Hills	Crossing(s), Plaza, Station, Village(s)

*excludes names with Green Level

DEVELOPMENT NAME APPROVAL APPLICATION

Application #: 19CZ16

Submittal Date: 7/1/2019

Proposed Subdivision/Development Information

Description of location: Properties located between Jessie Drive and Colby Chase Drive

Nearest intersecting roads: _____

Wake County PIN(s): See Attachment A

Township: White Oak

Contact Information (as appropriate)

Contact person: Peak Engineering & Design (Jeff Roach)

Phone number: (919) 439-0100

Fax number: (919) 439-6411

Address: 1125 Apex Peakway, Apex, NC 27502

E-mail address: jroach@peakengineerin.com

Owner: Michael F. Whitehead

Phone number: (919) 801-3905

Fax number: _____

Address: 114 Birklands Drive, Cary, NC 27518

E-mail address: mwhitehead@macgregordev.com

Proposed Subdivision/Development Name

1st Choice: Horton Park

2nd Choice (Optional): _____

Town of Apex Staff Approval:

Town of Apex Planning Department Staff

Date

TOWN OF APEX UTILITIES OFFER AND AGREEMENT

Application #: 19CZ16

Submittal Date: 7/1/2019

**Town of Apex
73 Hunter Street
P.O. Box 250 Apex, NC 27502
919-249-3400**

WAKE COUNTY, NORTH CAROLINA CUSTOMER SELECTION AGREEMENT

Horton Park

(the "Premises")

The Town of Apex offers to provide you with electric utilities on the terms described in this Offer & Agreement. If you accept the Town's offer, please fill in the blanks on this form and sign and we will have an Agreement once signed by the Town.

_____, the undersigned customer ("Customer") hereby irrevocably chooses and selects the Town of Apex (the "Town") as the permanent electric supplier for the Premises. Permanent service to the Premises will be preceded by temporary service if needed.

The sale, delivery, and use of electric power by Customer at the Premises shall be subject to, and in accordance with, all the terms and conditions of the Town's service regulations, policies, procedures and the Code of Ordinances of the Town.

Customer understands that the Town, based upon this Agreement, will take action and expend funds to provide the requested service. By signing this Agreement the undersigned signifies that he or she has the authority to select the electric service provider, for both permanent and temporary power, for the Premises identified above.

Any additional terms and conditions to this Agreement are attached as Appendix 1. If no appendix is attached this Agreement constitutes the entire agreement of the parties.

Acceptance of this Agreement by the Town constitutes a binding contract to purchase and sell electric power.

Please note that under North Carolina General Statute §160A-332, you may be entitled to choose another electric supplier for the Premises.

Upon acceptance of this Agreement, the Town of Apex Electric Utilities Division will be pleased to provide electric service to the Premises and looks forward to working with you and the owner(s).

ACCEPTED:

CUSTOMER:

BY:

DATE:



Michael F. Whitehead
Authorized Agent

6/28/2019

TOWN OF APEX

BY:

DATE:

Authorized Agent

AGENT AUTHORIZATION FORM

Application #: 19CZ16

Submittal Date: 7/1/2019

MFW Investments, LLC is the owner of the property for which the attached application is being submitted:

- Land Use Amendment
- Rezoning
- Site Plan
- Subdivision
- Variance
- Other: _____

The property address is: 5100 Jessie Drive, Apex, NC, PIN 0751-42-1387

The agent for this project is: Peak Engineering & Design

I am the owner of the property and will be acting as my own agent

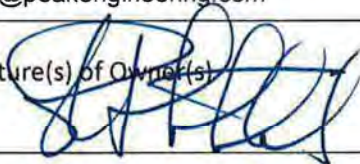
Agent Name: Jeff Roach

Address: 1125 Apex Peakway, Apex NC 27502

Telephone Number: (919) 439-0100

E-Mail Address: jroach@peakengineering.com

Signature(s) of Owner(s)



Michael G. Whitehead

Type or print name

6/28/2019

Date

Type or print name

Date

Type or print name

Date

Attach additional sheets if there are additional owners.

***Owner of record as shown on the latest equalized assessment rolls of Wake County. (An option to purchase does not constitute ownership). If ownership has been recently transferred, a copy of the deed must accompany this authorization.**

AGENT AUTHORIZATION FORM

Application #: 19CZ16 Submittal Date: 7/1/2019

Horton Park MF LLC is the owner of the property for which the attached application is being submitted:

- Land Use Amendment
- Rezoning
- Site Plan
- Subdivision
- Variance
- Other: _____

The property address is: 5101 Jessie Drive, Apex, NC PIN 0751-31-9308

The agent for this project is: Peak Engineering & Design

I am the owner of the property and will be acting as my own agent

Agent Name: Jeff Roach

Address: 1125 Apex Peakway, Apex, NC 27502

Telephone Number: (919) 439-0100

E-Mail Address: jroach@peakengineering.com

Signature(s) of Owner(s)



Thomas G. Drake
Member / Manager
Horton Park MF LLC

Type or print name

6/24/19

Date

Type or print name

Date

Type or print name

Date

Attach additional sheets if there are additional owners.

***Owner of record as shown on the latest equalized assessment rolls of Wake County. (An option to purchase does not constitute ownership). If ownership has been recently transferred, a copy of the deed must accompany this authorization.**

AGENT AUTHORIZATION FORM

Application #: 19CZ16 Submittal Date: 7/1/2019

MFW Investments, LLC is the owner of the property for which the attached application is being submitted:

- Land Use Amendment
- Rezoning
- Site Plan
- Subdivision
- Variance
- Other: _____

The property address is: 5220 Jessie Drive, Apex, NC, PIN 0751-31-0079

The agent for this project is: Peak Engineering & Design

I am the owner of the property and will be acting as my own agent

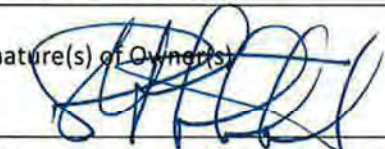
Agent Name: Jeff Roach

Address: 1125 Apex Peakway, Apex NC 27502

Telephone Number: (919) 439-0100

E-Mail Address: jroach@peakengineering.com

Signature(s) of Owner(s)



Michael F. Whitehead

Type or print name

6/28/2019

Date

Type or print name

Date

Type or print name

Date

Attach additional sheets if there are additional owners.

***Owner of record as shown on the latest equalized assessment rolls of Wake County. (An option to purchase does not constitute ownership). If ownership has been recently transferred, a copy of the deed must accompany this authorization.**

AGENT AUTHORIZATION FORM

Application #: 19CZ16 Submittal Date: 7/1/2019

Mary Elizabeth Horton is the owner of the property for which the attached application is being submitted:

- Land Use Amendment
- Rezoning
- Site Plan
- Subdivision
- Variance
- Other: _____

The property address is: 0 Dezola Street, Apex, NC, PIN 0750-39-0993

The agent for this project is: Peak Engineering & Design

I am the owner of the property and will be acting as my own agent

Agent Name: Jeff Roach

Address: 1125 Apex Peakway, Apex NC 27502

Telephone Number: (919) 439-0100

E-Mail Address: jroach@peakengineering.com

Signature(s) of Owner(s)

Mary Elizabeth Horton
Mary Elizabeth Horton
Type or print name

June 28, 2019
Date

Type or print name Date

Type or print name Date

Attach additional sheets if there are additional owners.

***Owner of record as shown on the latest equalized assessment rolls of Wake County. (An option to purchase does not constitute ownership). If ownership has been recently transferred, a copy of the deed must accompany this authorization.**

AGENT AUTHORIZATION FORM

Application #: 19CZ16

Submittal Date: 7/1/2019

MFWIRA, LLC is the owner of the property for which the attached application is being submitted:

- Land Use Amendment
- Rezoning
- Site Plan
- Subdivision
- Variance
- Other: _____

The property address is: 0 Dezola Street, Apex, NC, PIN 0751-40-0194

The agent for this project is: Peak Engineering & Design

I am the owner of the property and will be acting as my own agent


Agent Name: Jeff Roach

Address: 1125 Apex Peakway, Apex NC 27502

Telephone Number: (919) 439-0100

E-Mail Address: jroach@peakengineering.com

Signature(s) of Owner(s)


Michael F. Whitehead Type or print name 6/28/2019 Date

 _____ Type or print name _____ Date

 _____ Type or print name _____ Date

Attach additional sheets if there are additional owners.

***Owner of record as shown on the latest equalized assessment rolls of Wake County. (An option to purchase does not constitute ownership). If ownership has been recently transferred, a copy of the deed must accompany this authorization.**

AGENT AUTHORIZATION FORM

Application #: 19CZ16

Submittal Date: 7/1/2019

Kimberly Horton and Loomis A Horton III is the owner of the property for which the attached application is being submitted:

- Land Use Amendment
- Rezoning
- Site Plan
- Subdivision
- Variance
- Other: _____

The property address is: 0 Dezola Street, Apex, NC, PIN 0750-39-8682 0750-27-4707, 0750-49-5371

The agent for this project is: Peak Engineering & Design

I am the owner of the property and will be acting as my own agent

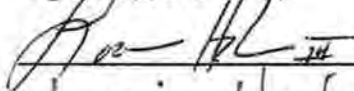
Agent Name: Jeff Roach

Address: 1125 Apex Peakway, Apex NC 27502


Telephone Number: (919) 439-0100

E-Mail Address: jroach@peakengineering.com

Signature(s) of Owner(s)


Loomis Horton III
Type or print name

6/28/19
Date


Kimberly Horton
Type or print name

6/28/19
Date

Type or print name

Date

Attach additional sheets if there are additional owners.

***Owner of record as shown on the latest equalized assessment rolls of Wake County. (An option to purchase does not constitute ownership). If ownership has been recently transferred, a copy of the deed must accompany this authorization.**

AGENT AUTHORIZATION FORM

Application #: 19CZ16

Submittal Date: 7/1/2019

Merion Investment Properties LLC is the owner of the property for which the attached application is being submitted:

- Land Use Amendment
- Rezoning
- Site Plan
- Subdivision
- Variance
- Other: _____

The property address is: 0 Dezola Street, Apex, NC, PIN 0750-29-9342

The agent for this project is: Peak Engineering & Design

I am the owner of the property and will be acting as my own agent

Agent Name: Jeff Roach

Address: 1125 Apex Peakway, Apex NC 27502

Telephone Number: (919) 439-0100

E-Mail Address: jroach@peakengineering.com

Signature(s) of Owner(s)



Michael R. Whitehead
Type or print name

6/28/2019
Date

Type or print name

Date

Type or print name

Date

Attach additional sheets if there are additional owners.

***Owner of record as shown on the latest equalized assessment rolls of Wake County. (An option to purchase does not constitute ownership). If ownership has been recently transferred, a copy of the deed must accompany this authorization.**

AGENT AUTHORIZATION FORM

Application #: 19CZ16

Submittal Date: 7/1/2019

MFW Investments, LLC is the owner of the property for which the attached application is being submitted:

- Land Use Amendment
- Rezoning
- Site Plan
- Subdivision
- Variance
- Other: _____

The property address is: 8140 Smith Road, Apex, NC, PIN 0750-28-0998

The agent for this project is: Peak Engineering & Design

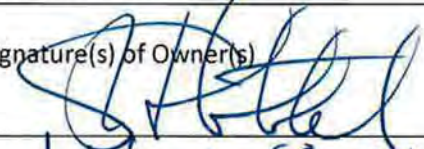
I am the owner of the property and will be acting as my own agent

Agent Name: Jeff Roach

Address: 1125 Apex Peakway, Apex NC 27502

Telephone Number: (919) 439-0100

E-Mail Address: jroach@peakengineering.com

Signature(s) of Owner(s)


Michael F. Whitehead
Type or print name

6/28/2019
Date

Type or print name

Date

Type or print name

Date

Attach additional sheets if there are additional owners.

***Owner of record as shown on the latest equalized assessment rolls of Wake County. (An option to purchase does not constitute ownership). If ownership has been recently transferred, a copy of the deed must accompany this authorization.**

AGENT AUTHORIZATION FORM

Application #: 19CZ16

Submittal Date: 7/1/2019

Merion Investments Properties, LLC is the owner of the property for which the attached application is being submitted:

- Land Use Amendment
- Rezoning
- Site Plan
- Subdivision
- Variance
- Other: _____

The property address is: 0 Dezola, Apex, NC, PIN 0750-27-8677

The agent for this project is: Peak Engineering & Design

I am the owner of the property and will be acting as my own agent

Agent Name: Jeff Roach

Address: 1125 Apex Peakway, Apex NC 27502

Telephone Number: (919) 439-0100

E-Mail Address: jroach@peakengineering.com

Signature(s) of Owner(s)



Michael F. Whitehead

Type or print name

6/28/2019

Date

Type or print name

Date

Type or print name

Date

Attach additional sheets if there are additional owners.

***Owner of record as shown on the latest equalized assessment rolls of Wake County. (An option to purchase does not constitute ownership). If ownership has been recently transferred, a copy of the deed must accompany this authorization.**

AGENT AUTHORIZATION FORM

Application #: 19CZ16

Submittal Date: 7/1/2019

MFW Investments, LLC is the owner of the property for which the attached application is being submitted:

- Land Use Amendment
- Rezoning
- Site Plan
- Subdivision
- Variance
- Other: _____

The property address is: 8252 Smith Road, Apex, NC, PIN 0750-27-8925

The agent for this project is: Peak Engineering & Design

I am the owner of the property and will be acting as my own agent

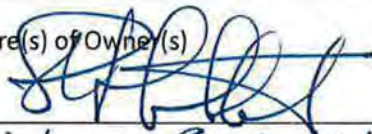
Agent Name: Jeff Roach

Address: 1125 Apex Peakway, Apex NC 27502

Telephone Number: (919) 439-0100

E-Mail Address: jroach@peakengineering.com

Signature(s) of Owner(s)



Michael G. Whitehead

Type or print name

6/28/2019

Date

Type or print name

Date

Type or print name

Date

Attach additional sheets if there are additional owners.

***Owner of record as shown on the latest equalized assessment rolls of Wake County. (An option to purchase does not constitute ownership). If ownership has been recently transferred, a copy of the deed must accompany this authorization.**



Instruction Packet and Affidavit for Neighborhood Meetings

Town of Apex
Planning Department
PO Box 250
Apex, NC 27502

T: 919-249-3426
F: 919-249-3338

This packet consists of instructions and templates for conducting a required Neighborhood Meeting. Planning Department staff are available to advise you in the preparation of these materials. Call the Planning Department at (919) 249-3426 for more information.

WHAT IS THE PURPOSE OF A NEIGHBORHOOD MEETING?

A neighborhood meeting is a required form of community outreach to receive initial feedback regarding certain project types prior to submittal to the Planning Department per the standards found in UDO Sec. 2.2.7. The intention of the meeting is to initiate neighbor communication and identify issues and concerns early on and provide the applicant an opportunity to address neighbor concerns about the potential impacts of the project prior to submitting an application. A neighborhood meeting is valid for six (6) months prior to the submission of an application; a delay in submission requires a new neighborhood meeting.

WHEN IS A NEIGHBORHOOD MEETING REQUIRED?

- Rezoning (including Planned Unit Developments);
- Major Site Plans;
- Master Subdivision Plan (excluding minor or exempt subdivisions); or
- Special Use Permits

INSTRUCTIONS

Prior to submitting a Rezoning, Major Site Plan, Master Subdivision Plan (excluding minor or exempt subdivisions), or Special Use Permits, the applicant must conduct at least one (1) Neighborhood Meeting. The applicant shall submit all forms included in this packet with their initial submittal.

The Neighborhood Meeting must be held in accordance with the following rules:

These groups and individuals must be invited to the meeting:

- The applicant is required to notify the Planning Department, all property owners within 300 feet of the subject property and any neighborhood association that represents citizens in the area via first class mail a minimum of 10 days in advance of the neighborhood meeting, not including the day of mailing. The applicant shall use their own return address on the envelopes as the meeting is a private meeting between the applicant and the neighbors.
- The applicant shall include with the meeting notice a vicinity map in addition to either the existing zoning map of the area or preliminary plans of the proposed development (see Handout requirements below).

The meeting must be held within specific timeframes and meet certain requirements:

- The meeting must be held for a minimum of two (2) hours, Monday through Thursday, during the 5:00 p.m. - 9:00 p.m. time period. The meeting cannot be held on a Town recognized holiday (which coincide with the State of North Carolina recognized holidays).
- The meeting shall be held at a place that is generally accessible to neighbors that reside in close proximity to the land subject to the application.
- A sign-in sheet must be used in order to verify attendance. Ensure each attendee signs in. Please note if any person(s) refuses to sign in. Note if no one attended.
- Handout requirements:
 - For rezonings (excluding rezonings to PUD-CZ, TND-CZ and MEC-CZ), a vicinity map and existing zoning map of the area must be provided to help facilitate discussion.
 - For rezonings to PUD-CZ, TND-CZ and MEC-CZ; Major Site Plans; Master Subdivision Plans; and Special Use Permits, preliminary plans of the proposed development must be available at the meeting to help facilitate discussion. Neighbors may request emailed/mailed copies of the maps or plans from the applicant by checking the “send plans” box on the sign-in sheet, and the applicant shall provide reduced copies upon such request.
 - Printed copies must equal the number of notices required to be sent.
 - Contact information for the applicant’s representative must be provided on the handout.
 - A copy of the handout must be included as part of the Neighborhood Meeting report.
- The agenda of the meeting shall include:
 - Explanation of all processes the meeting is being held for (rezoning, subdivision, etc.).
 - Explanation of future meetings (additional neighborhood meetings, Planning Board, Town Council, etc.).
 - Explanation of development proposal – uses and conditions for rezonings, layout for subdivision and site plans, and builder/end user if known/public knowledge.
- Questions or concerns by attendees, and responses by the applicant, if any, must be noted. Provide blank comment sheets or notecards for neighbors to submit written comments. The applicant shall also include any questions and concerns received via written correspondence (such as email) or phone call along with responses provided by the applicant.
- The applicant shall be responsible for notifying any neighbors who check the “Send Plans & Updates” box on the sign-in sheet of any additional neighborhood meetings and the actual submittal date to the Town with a link to the Town of Apex’s Interactive Development Map.

For accountability purposes, please submit the following with your application:

- A copy of the letter mailed to neighbors and neighborhood organizations (use attached invitation template);
- A list of those persons and neighborhood organizations invited to the meeting;
- A copy of the sign-in sheet (use attached sign-in sheet template);
- A summary of the meeting and a list of any changes made to the project as a result of the neighborhood comments (use attached meeting summary template);
- The affidavit, signed, dated, and notarized (use attached affidavit template); and
- One reduced copy of the maps and/or plans presented to the neighbors at the Neighborhood Meeting.



June 12, 2019

Adjacent Property Owners and Interested Parties,

RE: Horton Park Rezoning

During the design and review of Horton Park, the timing of NCDOT and Town of Apex projects are beginning to align with the Horton Park timing. For this reason, Horton Park will be submitting a rezoning on July 1st, 2019 to adjust the timing of off-site roadway improvements with three (3) major transportation improvements in mind.

1. Ten Ten Road improvements
2. Highway 55 design and future improvements
3. Jessie Drive design and future improvements/extension

The project will continue to have a mix of residential options (single family, townhomes, and apartments) and non-residential property along the future Jessie Drive corridor. This letter is to inform you that a neighborhood meeting has been scheduled to introduce the rezoning request, the overall Master Subdivision Plan and to answer any questions which you may have. You are welcome to attend the meeting, email me any questions, or call our office to discuss the project.

Meeting Information:

- Date of Neighborhood Meeting: June 27, 2019
- Meeting location: 237 N. Salem Street, Apex, NC 27502 (Halle Cultural Arts Center)
- Time of Meeting: 5:30 PM

If you have any questions concerning the rezoning request, do not hesitate to call or email me at (jroach@peakengineering.com).

Sincerely,

A handwritten signature in black ink, appearing to read "Jeffret A. Roach".

Jeffret A Roach P.E.
Peak Engineering & Design, PLLC

NOTICE OF NEIGHBORHOOD MEETING

This document is a public record under the North Carolina Public Records Act and may be published on the Town's website or disclosed to third parties.

June 12, 2019

Date

Dear Neighbor:

You are invited to a neighborhood meeting to review and discuss the development proposal at
See Attached Sheet See Attached Sheet

Address(es)

PIN(s)

in accordance with the Town of Apex Neighborhood Meeting procedures. The Neighborhood Meeting is intended as a way for the applicant to discuss the project and review the proposed plans with adjacent neighbors and neighborhood organizations before the submittal of an application to the Town. This provides neighbors an opportunity to raise questions and discuss any concerns about the impacts of the project before it is officially submitted. Once an application has been submitted to the Town, it may be tracked using the [Interactive Development Map](#) or the [Apex Development Report](#) located on the Town of Apex website at www.apexnc.org.

A Neighborhood Meeting is required because this project includes (check all that apply):

- Rezoning (including Planned Unit Development);
- Major Site Plan;
- Master Subdivision Plan (excludes minor or exempt subdivision); or
- Special Use Permit

The following is a description of the proposal (also see attached map(s) and/or plan sheet(s)):

To discuss with the adjacent property owners and other interested parties the rezoning request to adjust the phasing of the project, timing of roadway improvements, the rezoning process, and the overall Master Subdivision Plan.

Estimated submittal date: July 1, 2019

MEETING INFORMATION:

Property Owner(s) name(s):	See Attached
Applicant(s):	Peak Engineering & Design (Jeff Roach); MFW Investments, LLC
Contact information (email/phone):	(919) 439-0100, jroach@peakengineering.com
Meeting Address:	237 N. Salem Street, Apex, NC 27502 (Halle Cultural Arts Center)
Date of meeting*:	June 27, 2019
Time of meeting*:	5:30 -

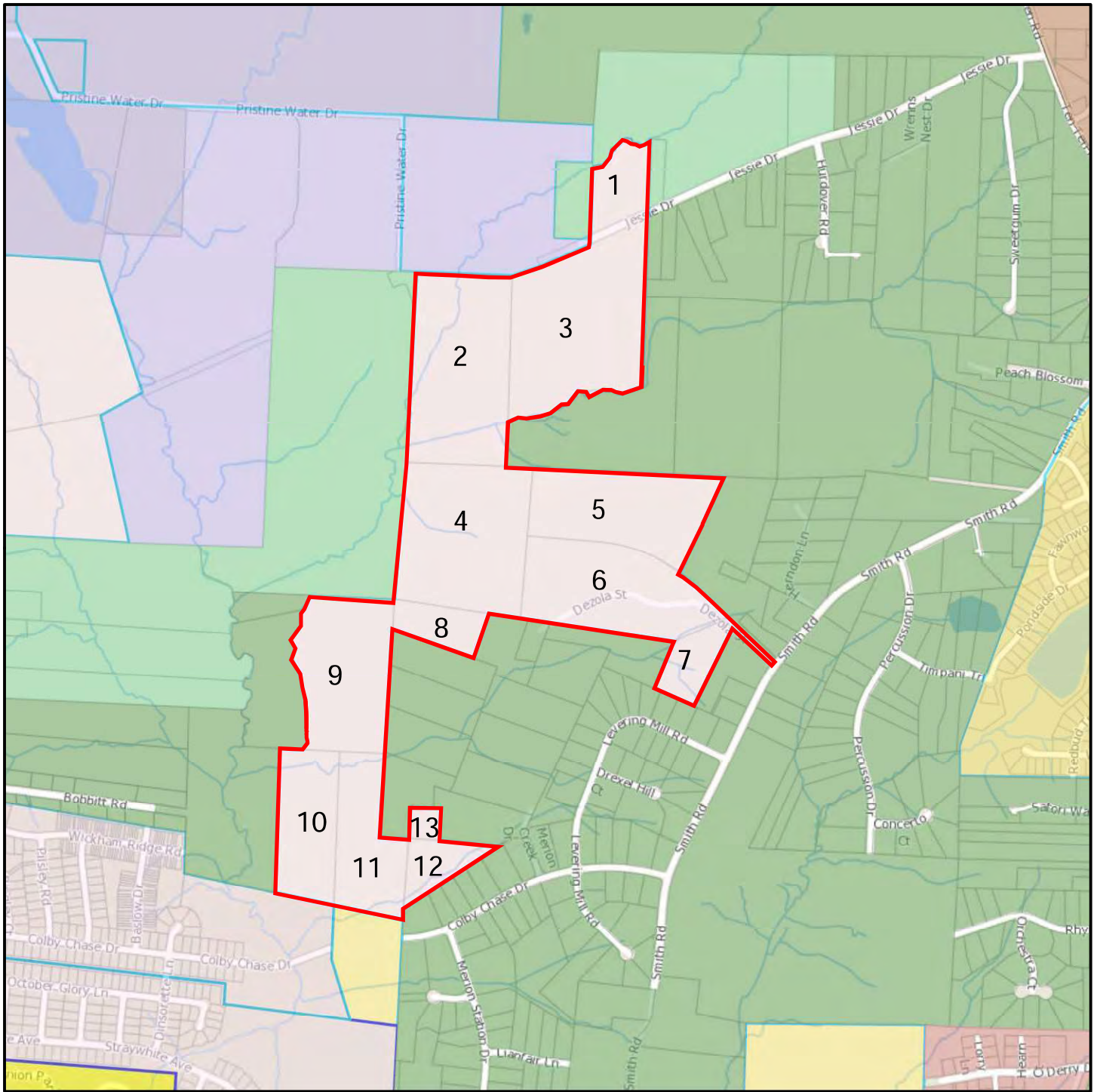
MEETING AGENDA TIMES:

Welcome:	5:30 - 5:40
Project Presentation:	5:40 - 6:00
Question & Answer:	6:00 -

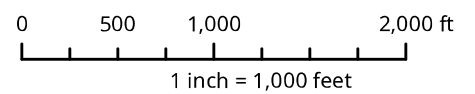
*Meetings shall occur between 5:00 p.m. - 9:00 p.m. on a Monday through Thursday (excluding Town recognized holidays). If you have questions about the general process for this application, please contact the Planning Department at 919-249-3426. You may also find information about the Apex Planning Department and on-going planning efforts at <http://www.apexnc.org/180/Planning>.

Rezoning Application Parcel List
Horton Park Assembly
Apex, NC

<u>Parcel</u>	<u>Owner</u>	<u>PIN</u>
1	MFW Investments LLC	0751-42-1387
2	MFW Investments LLC	0751-31-0079
3	Horton Park MF, LLC	0751-31-9308
4	Mary Elizabeth Horton	0750-39-0993
5	MFWIRA, LLC	0751-40-0194
6	Kimberly Horton; Loomis Horton III	0750-39-8682
7	Kimberly Horton; Loomis Horton III	0750-49-5371
8	MFW Investments LLC	0750-29-9342
9	MFW Investments LLC	0750-28-0998
10	MFW Investments LLC	0750-27-0906
11	Kimberly Horton; Loomis Horton III	0750-27-4707
12	MFW Investments LLC	0750-27-8677
13	MFW Investments LLC	0750-27-8925



Horton Park Rezoning



Disclaimer

*iMaps makes every effort to produce and publish the most current and accurate information possible. However, the maps are produced for information purposes, and are **NOT** surveys. No warranties, expressed or implied, are provided for the data therein, its use, or its interpretation.*

PROJECT CONTACT INFORMATION

This document is a public record under the North Carolina Public Records Act and may be published on the Town's website or disclosed to third parties.

Development Contacts:

Project Name: MFW Investments, LLC
 Location: Properties located between Jessie Drive and Colby Chase Drive
 Property PIN: See Attached sheet Acreage/Square Feet: _____
 Zoning: PUD - CZ Subdivision/Development: _____

Property Owner: See Attached Sheet
 Address: _____
 City: _____ State: _____ Zip: _____
 Phone: _____ Email: _____

Developer: MFW Investments, LLC
 Address: 114 Birklands Drive
 City: Cary State: NC Zip: 27518
 Phone: _____ Fax: _____ Email: mwhitehead@macgregordev.com

Engineer: Peak Engineering & Design, PLLC (Jeff Roach, P.E.)
 Address: 1125 Apex Peakway
 City: Apex State: NC Zip: 27502
 Phone: (919) 439-0100 Fax: (919) 439-6411 Email: jroach@peakengineerindesign.com

Builder (if known): _____
 Address: _____
 City: _____ State: _____ Zip: _____
 Phone: _____ Fax: _____ Email: _____

Town of Apex Department Contacts

Planning Department Main Number (Provide development name to be routed to correct planner)	(919) 249-3426
Parks, Recreation & Cultural Resources Department Angela Reincke, Parks Planner	(919) 249-7468
Public Works - Transportation Russell Dalton, Senior Transportation Engineer	(919) 249-3358
Water Resources Department Mike Deaton, Stormwater & Utility Engineering Manager Stan Fortier, Senior Engineer (Sedimentation & Erosion Control)	(919) 249-3413 (919) 249-1166
Electric Utilities Division Rodney Smith, Electric Technical Services Manager	(919) 249-3342

COMMON CONSTRUCTION ISSUES & WHO TO CALL

This document is a public record under the North Carolina Public Records Act and may be published on the Town's website or disclosed to third parties.

Noise & Hours of Construction:	Non-Emergency Police	919-362-8661
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Noise from tree removal, grading, excavating, paving, and building structures is a routine part of the construction process. The Town generally limits construction hours to 7 a.m. – 8:30 p.m. so that there are quiet times even during the construction process. Note that construction outside of these hours is allowed with special permission from the Town when it makes more sense to have the construction occur at night, often to avoid traffic issues. In addition, the Town limits hours of blasting rock to Monday through Friday from 8:00 a.m. to 5:00 p.m. Report violations of construction hours and other noise complaints to the Non-Emergency Police phone number at 919-362-8661.

Construction Traffic:	Stan Fortier	919-249-1166
------------------------------	---------------------	---------------------

Construction truck traffic will be heavy throughout the development process, including but not limited to removal of trees from site, loads of dirt coming in and/or out of the site, construction materials such as brick and wood brought to the site, asphalt and concrete trucks come in to pave, etc. The Town requires a construction entrance that is graveled to try to prevent as much dirt from leaving the site as possible. If dirt does get into the road, the Town can require they clean the street (see "Dirt in the Road" below).

Road Damage & Traffic Control:	Water Resources – Infrastructure Inspections	919-362-8166
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There can be issues with roadway damage, roadway improvements, and traffic control. Potholes, rutting, inadequate lanes/signing/stripping, poor traffic control, blocked sidewalks/paths are all common issues that should be reported to Water Resources – Infrastructure Inspections at 919-249-3427. The Town will get NCDOT involved if needed.

Parking Violations:	Non-Emergency Police	919-362-8661
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Unless a neighbor gives permission, there should be no construction parking in neighbors' driveways or on their property. Note that parking in the right-of-way is allowed, but Town regulations prohibit parking within 15 feet of driveways so as not to block sight triangles. Trespassing and parking complaints should be reported to the Non-Emergency Police phone number at 919-362-8661.

Dirt in the Road:	Stan Fortier	919-249-1166
--------------------------	---------------------	---------------------

Sediment (dirt) and mud gets into the existing roads due to rain events and/or vehicle traffic. These incidents should be reported to Stan Fortier. He will coordinate the cleaning of the roadways with the developer.

Dirt on Properties or in Streams:	Stan Fortier Danny Smith	919-249-1166 Danny.Smith@ncdenr.gov
--	---	--

Sediment (dirt) can leave the site and get onto adjacent properties or into streams and stream buffers; it is typically transported off-site by rain events. These incidents should be reported to Stan Fortier at 919-249-1166 so that he can coordinate the appropriate repairs with the developer. Impacts to the streams and stream buffers should also be reported to Danny Smith (danny.smith@ncdenr.gov) with the State.

Dust:	Stan Fortier	919-249-1166
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During dry weather dust often becomes a problem blowing into existing neighborhoods or roadways. These incidents should be reported to Stan Fortier at 919-249-1166 so that he can coordinate the use of water trucks onsite with the grading contractor to help control the dust.

Trash:	Stan Fortier	919-249-1166
---------------	---------------------	---------------------

Excessive garbage and construction debris can blow around on a site or even off of the site. These incidents should be reported to Stan Fortier at 919-249-1166. He will coordinate the cleanup and trash collection with the developer/home builder.

Temporary Sediment Basins:	Stan Fortier	919-249-1166
-----------------------------------	---------------------	---------------------

Temporary sediment basins during construction (prior to the conversion to the final stormwater pond) are often quite unattractive. Concerns should be reported to Stan Fortier at 919-249-1166 so that he can coordinate the cleaning and/or mowing of the slopes and bottom of the pond with the developer.

Stormwater Control Measures:	Mike Deaton	919-249-3413
-------------------------------------	--------------------	---------------------

Post-construction concerns related to Stormwater Control Measures (typically a stormwater pond) such as conversion and long-term maintenance should be reported to Mike Deaton at 919-249-3413.

Electric Utility Installation:	Rodney Smith	919-249-3342
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Concerns with electric utility installation can be addressed by the Apex Electric Utilities Department. Contact Rodney Smith at 919-249-3342.

NEIGHBORHOOD MEETING SIGN-IN SHEET

This document is a public record under the North Carolina Public Records Act and may be published on the Town's website or disclosed to third parties.

Meeting Address: Halle Cultural Arts Center, 237 North Salem Street, Apex, NC 27502 (Gallery Room)

Date of meeting: June 27, 2019 Time of meeting: 5:30

Property Owner(s) name(s): See Attached Sheet

Applicant(s): MFW Investments, LLC

Please print your name below, state your address and/or affiliation with a neighborhood group, and provide your phone number and email address. Providing your name below does not represent support or opposition to the project; it is for documentation purposes only.

	NAME/ORGANIZATION	ADDRESS	PHONE #	EMAIL	SEND PLANS & UPDATES
1.	Falchi	3232 Colby Chase	[REDACTED]	[REDACTED]	[REDACTED] gmail.com
2.	Jam Carter	2614 Sweetgum Dr	[REDACTED]	[REDACTED]	[REDACTED] ✓
3.	ERMA BURR	2625 Sweetgum DR	[REDACTED]	[REDACTED]	[REDACTED] ✓
4.	Donna Provance	2624 " "	[REDACTED]	[REDACTED]	[REDACTED] ✓
5.	Brian Johnson	3305 Cheswald Ct	[REDACTED]	[REDACTED]	[REDACTED] ✓
6.	JLOSS WITARS	111 ANNANDALE	[REDACTED]	[REDACTED]	[REDACTED] ✓
7.	MIKE Mansfield	5133 Dezelast	[REDACTED]	[REDACTED]	[REDACTED] ✓
8.	Judy Ward	2528 Sweetgum	[REDACTED]	[REDACTED]	[REDACTED] ✓
9.	Karen Peters	5300 Leveing Kill Rd	[REDACTED]	[REDACTED]	[REDACTED] ✓
10.	Margaret Griffin	2609 Sweetgum Dr.	[REDACTED]	[REDACTED]	[REDACTED] ✓
11.	Neilvin Hunter	5037 Jessie Dr	[REDACTED]	[REDACTED]	[REDACTED] ✓
12.	Steven Rhodes	3208 Colby Chase	[REDACTED]	[REDACTED]	[REDACTED] ✓
13.	Alton Richardson	1295 Windham Pl Greenville	[REDACTED]	[REDACTED]	[REDACTED] net ✓
14.					

Use additional sheets, if necessary.

NEIGHBORHOOD MEETING SIGN-IN SHEET

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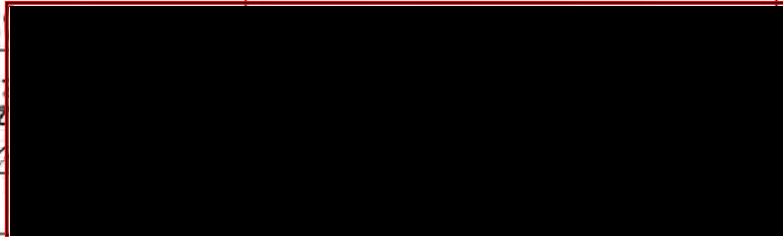
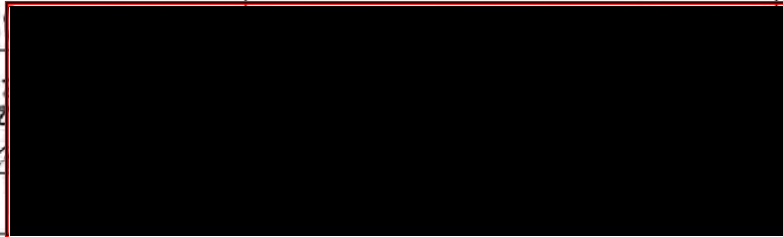
Meeting Address: Halle Cultural Arts Center, 237 North Salem Street, Apex, NC 27502 (Gallery Room)

Date of meeting: June 27, 2019 Time of meeting: 5:30

Property Owner(s) name(s): See Attached Sheet

Applicant(s): MFW Investments, LLC

Please print your name below, state your address and/or affiliation with a neighborhood group, and provide your phone number and email address. Providing your name below does not represent support or opposition to the project; it is for documentation purposes only.

	NAME/ORGANIZATION	ADDRESS	PHONE #	EMAIL	SEND PLANS & UPDATES		
1.	Buckel Bullock	2521 Sweetgum Dr. ^{Apex}			✓		
2.	Randy Mann	106 Island View Dr. ^{RESURBIT NC}					-
3.	Jerilyn Paderno	3216 Winton Ln					✓
4.	Russ & Laune Bell	5508 Merion Station Dr.					✓
5.							
6.							
7.							
8.							
9.							
10.							
11.							
12.							
13.							
14.							

Use additional sheets, if necessary.

NEIGHBORHOOD MEETING SIGN-IN SHEET

This document is a public record under the North Carolina Public Records Act and may be published on the Town's website or disclosed to third parties.

Meeting Address: Halle Cultural Arts Center, 237 North Salem Street, Apex, NC 27502 (Gallery Room)

Date of meeting: June 27, 2019 Time of meeting: 5:30

Property Owner(s) name(s): See Attached Sheet

Applicant(s): MFW Investments, LLC

Please print your name below, state your address and/or affiliation with a neighborhood group, and provide your phone number and email address. Providing your name below does not represent support or opposition to the project; it is for documentation purposes only.

	NAME/ORGANIZATION	ADDRESS	PHONE #	EMAIL	SEND PLANS & UPDATES
1.	Joyce Falchi	3232 Colby Chase Dr			x
2.	Pam Carter	2616 Sweetgum Dr			x
3.	Erma Burr	2625 Sweetgum Dr			x
4.	Donna Provance	2624 Sweetgum Dr			x
5.	Brian Johnson	3305 Chaswold Ct			x
6.	Moss Withers	111 Annadale Dr			x
7.	Mike Mansfield	5133 Dezola St			x
8.	Judy Ward	2828 Sweetgum Dr			x
9.	Karen Peters	5300 Levering Mill Rd			x
10.	Marcaret Griffin	2609 Sweetgum Dr			x
11.	Melvin O Hunter	5037 Jessie Dr			x
12.	Steven Rhodes	3208 Colby Chase Dr			x
13.	Alton Richardson	1295 Windham Pl Greenville NC			x
14.					

Use additional sheets, if necessary.

NEIGHBORHOOD MEETING SIGN-IN SHEET

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Applicant(s): MFW Investments, LLC

Please print your name below, state your address and/or affiliation with a neighborhood group, and provide your phone number and email address. Providing your name below does not represent support or opposition to the project; it is for documentation purposes only.

	NAME/ORGANIZATION	ADDRESS	PHONE #	EMAIL	SEND PLANS & UPDATES
1.	Bethel Bullock	2521 Sweetgum Dr			X
2.	Randy Mann	106 Island View Dr Beaufort NC			X
3.	Jerilyn Paolino	3216 Lianfair Ln			X
4.	Russ/Laurie Bell	5508 Merian Station Dr			X
5.					
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12.					
13.					
14.					

Use additional sheets, if necessary.

SUMMARY OF DISCUSSION FROM THE NEIGHBORHOOD MEETING

This document is a public record under the North Carolina Public Records Act and may be published on the Town's website or disclosed to third parties.

Property Owner(s) name(s): See Attached Sheet
Applicant(s): MFW Investments, LLC
Contact information (email/phone): Jeff Roach, jroach@peakengineering.com
Meeting Address: Halle Cultural Arts Center, 237 North Salem Street, Apex, NC 27502 (Gallery Room)
Date of meeting: 6-27-2019 Time of meeting: 5:30 -

Please summarize the questions/comments and your response from the Neighborhood Meeting in the spaces below (attach additional sheets, if necessary). Please state if/how the project has been modified in response to any concerns. The response should not be "Noted" or "No Response". There has to be documentation of what consideration the neighbor's concern was given and justification for why no change was deemed warranted.

Question/Concern #1:

SEE ATTACHED LIST OF QUESTIONS AND RESPONSES

Applicant's Response:

Question/Concern #2:

Applicant's Response:

Question/Concern #3:

Applicant's Response:

Question/Concern #4:

Applicant's Response:

The Horton Park rezoning and Master Subdivision neighborhood meeting started at 5:30 pm with a brief introduction of the project, the location, and general housekeeping items including the sign-in sheets and handouts. This was followed up by a discussion related to what zoning and Master Subdivision Plans are, the timing of the project, and what our role is for the project. This led into the presentation of the proposed Zoning (10 minutes) followed by discussions related to the Master Subdivision Plan (10 minutes).

The floor was then opened to a discussion with questions and answers from the group. Following are the questions and a summary of responses (some of the questions and responses were long-winded, were condensed for clarity/space, or combined with other questions to provide clarity to staff):

1. Why is the project back again? Please clarify the changes again.
 - A. Horton Park is being rezoned for three (3) reasons: (1) modify the conditions and timing associated with off-site roadway improvements; (2) incorporate timing of Phase I and Phase II development with Jessie Drive construction and alignment of the north-south collector street; and (3) removing the “Cash” property from the PUD and zoning it TF-CZ.

The Town of Apex is proposing to design and build Jessie Drive – and the zoning of Horton Park requires the adjustment of a number of zoning conditions to allow the project to start without having Jessie Drive either in place or under construction. The Town’s investment in Jessie Drive as a Major Thoroughfare is something that has been in discussions for a couple years – and Apex sees the benefit of the connection for neighbors, commuters, and life safety personnel.
2. The Sweetgum neighbors were invited to the meeting – is the zoning changing to incorporate more property near Sweetgum Drive?
 - A. No, there is no additional property being added. The property owners on Sweetgum were notified based upon their interest in the original zonings over the past 2-1/2 years.
3. Are there any changes to the design of Jessie Drive @ Ten Ten which would impact the Sweetgum property owners?
 - A. The Town is beginning the design of Jessie Drive @ Ten Ten in the next fiscal year. We are not aware of the final design at this time. Directed the property owners the Town’s website and the Interactive Development Map for upcoming projects – but not sure if Jessie Drive extension would be included until design-permitting was started.
4. Is a traffic signal proposed at Jessie Drive at Ten Ten Road?
 - A. Horton Park Phase I is not proposing to construct Jessie Drive or have any traffic directed to Jessie Drive. The Horton Park study will not evaluate Jessie Drive for a traffic signal. The Town of Apex extension of Jessie Drive “should” evaluate the intersection for the installation of a new signal. That is part of the ongoing discussions with Apex Transportation Staff related to the Jessie Drive extension project.
5. What is the timing of Jessie Drive?
 - A. Per staff discussions, the 2019-2020 budget allocated \$1MM for design and studies of the Jessie Drive corridor. 2021-2022 budget allocates \$10MM for the construction of Jessie Drive from Highway 55 to Ten Ten. This is still up for discussions with the Town of Apex but is the current status of the project.
6. How does the Jessie Drive timing align with the other projects in the area?
 - A. Explained the current schedule for Ten Ten (start in 2023); Highway 55 (unknown at this time); and Jessie Drive (budget \$10mm for 2022 start). This will be reviewed annually to coordinate with NCDOT and other grants or alternate funding sources as soon as possible (per discussions with staff).

7. What is the plan for the barricade at Colby Crossing and the Merion Subdivision?
 - A. Horton Park continues to have the zoning condition to install the barriers on the western edge of Merion on Colby Chase Drive until the Town of Apex determines the connection is needed. No change to this condition worked out with Merion HOA during the previous zoning requests.
8. Are there other conditions which are changing?
 - A. We assured the neighbors that the rezoning is about timing of improvements – not about modification of any of the conditions which were worked on for months through two previous rezonings.
9. What is the Middle Creek pump station? What is a pump station? And where is it located?
 - A. The Middle Creek Regional Pump Station (aka Middle Creek north) is a pump station that is required to pump sewage from Horton Park and other upstream properties to the Town's Water Reclamation Facility on Pristine Water Drive. This pump station is approximately \$4MM in costs for the developer of Horton Park. The pump station is currently planned for the northeastern corner of the intersection of Middle Creek and Colby Chase Drive (same location that it has been in since the initial zoning and Master Subdivision Plan).
10. What do you mean by staff? Are you referring to Planning Department?
 - A. Planning, Engineering, Transportation, Public Works, Fire, and Building Inspections. These are the staff groups which attend the pre-application meetings and we work with on every project.
11. What does minor collector mean?
 - A. A minor collector is a street designation which specifies the street should expect more vehicles than neighborhood streets, have a slightly higher speed (possibly), and act as a funnel to the larger streets (larger streets being Major Collectors, Thoroughfares, and Interstates).
12. Is the Town of Apex proposing to take ownership of Jessie Drive after completion of the extension?
 - A. That is unknown at this time. Current plan is for Jessie Drive to be constructed to Town of Apex standard but retained within the NCDOT maintenance system. That will be determined later.
13. In showing the 2045 Land Use Map, can you explain the different colors and what they mean?
 - A. Went into the definition of medium density (light yellow), medium-high density (light orange), high density (dark orange), light blue (office employment), purple (industrial employment), and green (park). Then explained the difference between the existing ZONING MAP, 2045 LAND USE MAP, and the WAKE GIS.
14. What is the RCA? And where is it proposed?
 - A. Resource Conservation Area (RCA) is the preservation of existing vegetation and environmentally sensitive areas including trees, wetlands, floodplains, steep slopes, and animal habitat. RCA is proposed to be around the property in various locations including those listed above (current MSP was used to identify current RCA locations).
15. How many lots are proposed with the project?
 - A. The number of lots from the original zoning has not changed. In general, approximately 350 single family or townhomes plus the apartment area and Tech-Flex area along Jessie Drive.
16. What is Tech-Flex? And what are the uses permitted?
 - A. Tech-Flex is an office or business zoning with a number of uses. The uses have been limited for this project to included (as an example) day care, vet, entertainment area (indoor or outdoor), restaurants, offices, convenience store, grocery store, repair services, and others. All the uses will be identified in the zoning application on Interactive Development Map once submitted to the Town.

17. What is the development timing?

A. **Phase I** is the residential portion south of the existing landfill and “N/F Cash Property” which has access to Smith Road and Colby Chase Drive – the property was identified on the maps at the meeting. This section is hoped to be approved in early 2020; construction start in Spring of 2020; full construction build-out of homes in 2024-2025. This timing is based upon the success of the project and any financial changes. **Phase II** of the project is the section along Jessie Drive including PODs 2,3 and 4 which all rely upon Jessie Drive for access – this timing is based upon the timing of Jessie Drive, Ten Ten, and Highway 55 projects.

18. What is the timing of the review by Apex and the Town Council meetings?

A. Submittal of the rezoning request is July 1, 2019. This will start a 3-4 month process prior to Town Council public hearings. Assuming approval of the zoning, the Master Subdivision Plan (which has previously been approved) will be modified to reflect the changes associated with the rezoning. Construction Documents will then follow for the contractor and permitting. Apex will send out a notification of future Public Hearings based upon the list of contacts we provided (including the Sweetgum Drive property owners).

19. What is the plan for the greenway and connection to surrounding properties?

A. The Middle Creek Greenway was discussed at length. Middle Creek Greenway is major connection from the Town of Apex to Holly Springs’ greenway system. These projects include Middle Creek Phase I and II (Town of Apex projects), Reunion Pointe, Horton Park, and future projects north of Jessie Drive. Future connection to Lufkin Road and the Town of Cary greenway system in Regency Park.

20. Who will the builder be?

A. The construction team may be a couple of builders. Final builder team is TBD.

21. In summary, what is the meeting for?

A. This meeting is to explain the process, the project, and product while gathering information from residents in the area. The questions will be gathered, answers provided, and included in the zoning submittal for Planning Board and Town Council review during the zoning process. Changes to the design documents or the zoning application may be made from comments received.

22. Who can I contact about the project? Town of Apex?

A. A list of Town of Apex contacts were provided at the meeting. Staff will know about the project but will not know details until after the July 1, 2019 zoning submittal.

23. Who approves the revised rezoning request?

A. Town Council reviews and ultimately provides final zoning determination.

24. Where can I find the rezoning application once it is submitted?

A. On the Town’s website under the “Interactive Development” tab is the map of projects. After the zoning package is submitted, the documents will be updated within a week or two.

25. In reviewing the Master Subdivision Plan provided, how is the zoning changing the design?

A. The zoning will require the modification of the Master Subdivision Plan to remove the connection to Jessie Drive as part of the Phase I development. This will be done in conjunction with staff input to clarify the improvements on the property.

The Horton Park rezoning neighborhood meeting was very different from a majority of neighborhood meetings as the neighbors were well informed about the project. This is the 3rd zoning for this project based upon the size and complexity of the project. Most of the discussions were centered on previous items committed to or discussed with property owners. The questions asked were more process or overall

“why are you rezoning again” type questions. For this reason, the number of questions from the meeting were limited. It was difficult to track all the discussions.

At the conclusion of the meeting, the neighbors broke up into groups, some asking questions, some talking, and others leaving the meeting. There were a number of clarifications provided one-on-one but no additional conditions or concerns about the project beyond what was asking during the larger group setting. The meeting completed at 7:30 when all questions were answered.

AFFIDAVIT OF CONDUCTING A NEIGHBORHOOD MEETING, SIGN-IN SHEET AND ISSUES/RESPONSES SUBMITTAL

This document is a public record under the North Carolina Public Records Act and may be published on the Town's website or disclosed to third parties.

I, Jonathan Edwards, do hereby declare as follows:
Print Name

1. I have conducted a Neighborhood Meeting for the proposed Rezoning, Major Site Plan, Master Subdivision Plan, or Special Use Permit in accordance with UDO Sec. 2.2.7 *Neighborhood Meeting*.
2. The meeting invitations were mailed to the Apex Planning Department, all property owners within 300 feet of the subject property and any neighborhood association that represents citizens in the area via first class mail a minimum of 10 days in advance of the Neighborhood Meeting.
3. The meeting was conducted at Halle Cultural Arts Center, 237 North Salem Street, Apex, NC 27502 (Gallery Room) (location/address) on 6-27-2019 (date) from 5:30 (start time) to 7:30 (end time).
4. I have included the mailing list, meeting invitation, sign-in sheet, issue/response summary, and zoning map/reduced plans with the application.
5. I have prepared these materials in good faith and to the best of my ability.

6-28-2019

Date

By: Jonathan Edwards

STATE OF NORTH CAROLINA
COUNTY OF WAKE

Sworn and subscribed before me, DANIEL WOODS, a Notary Public for the above State and County, on this the 28 day of JUNE, 2019.



Daniel H. Woods

Notary Public

DANIEL H WOODS

Print Name

My Commission Expires: 11/18/23

Project Identification and Legal Description

Horton Park PUD

Apex, White Oak Township
Wake County, North Carolina
Revised July 1, 2019

Horton Park property with the following Wake County Property Identification Numbers (PINs): 0751-42-1387, 0751-31-9308, 0751-31-0079, 0750-39-0993, 0751-40-0194, 0750-39-8682, 0750-49-5371, 0750-29-9342, 0750-28-0998, 0750-27-0906, 0750-27-4707, 0750-27-8677, and 0750-27-8925 located in the Apex's ETJ, between Jessie Drive and Colby Chase Drive, Apex, NC.

Commencing at an existing iron pipe at the northwest corner of N/F MFW Investments, LLC property (PIN# 0751-31-9308), said point intersects with southern line of N/F Trinity Apex North 100, LLC property (PIN# 0751-32-3228), and the northeast corner of N/F Fred Cash Jr. (PIN # 0751-31-0079), said point being the POINT OF BEGINNING;

thence N 01°34'29" E for 36.51' to an existing iron pipe at the northern Jessie Drive;

thence N 01°34'29" E for 30.22' to an existing iron pipe at the southern corner of N/F Trinity Apex North 100, LLC (PIN# 0751-42-1387);

thence N 01°34'29" W for 472.23' to a point along the N/F Blanche Hinton (PIN# 0751-32-8256) property line;

thence N 75°28'14" E for 47.89' to a point along the N/F Indus Real Associates LLC property (PIN# 0751-42-6828);

thence S 70°56'43" E for 19.41' to a point along the N/F Indus Real Associates LLC property (PIN# 0751-42-6828);

thence N 35°58'42" E for 29.34' to a point along the N/F Indus Real Associates LLC property (PIN# 0751-42-6828);

thence N 64°47'45" E for 28.00' to a point along the N/F Indus Real Associates LLC property (PIN# 0751-42-6828);

thence N 35°16'15" E for 29.31' to a point along the N/F Indus Real Associates LLC property (PIN# 0751-42-6828);

thence N 00°20'08" E for 28.40' to a point along the N/F Indus Real Associates LLC property (PIN# 0751-42-6828);

thence N 62°27'55" E for 32.05' to a point along the N/F Indus Real Associates LLC property (PIN# 0751-42-6828);

thence N 10°59'28" W for 21.69' to a point along the N/F Indus Real Associates LLC property (PIN# 0751-42-6828);

thence N 49°05'39" E for 103.19' to a point along the N/F Indus Real Associates LLC property (PIN# 0751-42-6828);

thence S 76°41'38" E for 45.82' to a point along the N/F Indus Real Associates LLC property (PIN# 0751-42-6828);

thence S 10°05'29" E for 28.71' to a point along the N/F Indus Real Associates LLC property (PIN# 0751-42-6828);

thence N 83°54'46" E for 28.00' to a point along the N/F Indus Real Associates LLC property (PIN# 0751-42-6828);

thence S 65°07'03" E for 45.42' to a point along the N/F Indus Real Associates LLC property (PIN# 0751-42-6828);

thence N 75°33'41" E for 27.20' to a point along the N/F Indus Real Associates LLC property (PIN# 0751-42-6828);

thence N 26°33'47" E for 42.52' to a point along the N/F Indus Real Associates LLC property (PIN# 0751-42-6828);

thence N 89°35'33" E for 13.97' to a point along the N/F Indus Real Associates LLC property (PIN# 0751-42-6828);

thence S 01°50'31" W for 476.05' to a point along the N/F Blanche Hinton property (PIN# 0751-42-4433) ending at a point on the Jessie Drive northern Right of Way line;

thence S 01°50'31" W for 66.76' to a point along the Jessie Drive southern Right of Way line;

thence S 01°50'31" W for 426.99' to a point along the N/F Blanche Hinton property (PIN# 0751-41-4924);

thence S 01°54'49" W for 118.52' to a point along the N/F KK Land Inc. property (PIN# 0751-41-0857);

thence S 01°49'17" W for 625.99' to a point along the N/F KK Land Inc. property (PIN# 0751-40-0697);

thence N 89°11'21" W for 2.52' to a point along the N/F KK Land Inc. property (PIN# 0751-40-0697);

thence S 72°37'10" W for 92.98' to a point along the N/F KK Land Inc. property (PIN# 0751-40-0697);

thence S 73°45'10" W for 80.25' to a point along the N/F KK Land Inc. property (PIN# 0751-40-0697);

thence N 60°10'47" W for 49.51' to a point along the N/F KK Land Inc. property (PIN# 0751-40-0697);

thence N 81°52'01" W for 67.16' to a point along the N/F KK Land Inc. property (PIN# 0751-40-0697);

thence S 40°49'23" W for 22.21' to a point along the N/F KK Land Inc. property (PIN# 0751-40-0697);

thence S 70°25'32" W for 99.01' to a point along the N/F KK Land Inc. property (PIN# 0751-40-0697);

thence N 24°18'53" W for 34.03' to a point along the N/F KK Land Inc. property (PIN# 0751-40-0697);

thence N 77°13'16" W for 50.45' to a point along the N/F KK Land Inc. property (PIN# 0751-40-0697);

thence S 37°21'11" W for 127.24' to a point along the N/F KK Land Inc. property (PIN# 0751-40-0697);

thence S 84°47'45" W for 53.66' to a point along the N/F KK Land Inc. property (PIN# 0751-40-0697);

thence S 48°53'39" W for 94.23' to a point along the N/F KK Land Inc. property (PIN# 0751-40-0697);

thence S 79°54'53" W for 164.77' to a point along the N/F KK Land Inc. property (PIN# 0751-40-0697);

thence N 79°57'29" W for 36.14' to a point along the N/F KK Land Inc. property (PIN# 0751-40-0697);

thence S 87°46'00" W for 14.26' to a point along the N/F KK Land Inc. property (PIN# 0751-40-0697);

thence S 66°52'27" W for 76.36' to a point along the N/F KK Land Inc. property (PIN# 0751-40-0697) said point intersects with N/F Fred Cash Jr. property (PIN# 0751-31-0079);

thence S 07°14'12" E for 317.37' to a point along the N/F KK Land Inc. property (PIN# 0751-40-0697) said point intersects with N/F Mary Elizabeth Horton property (PIN# 0750-39-0993);

thence S 83°27'48" E for 187.41' to a point along the N/F KK Land Inc. property (PIN# 0751-40-0697) said point intersects with the northwest corner of the N/F MFWIRA, LLC property (PIN# 0751-40-0194);

thence S 83°27'48" E for 973.40' to a point in the southeast corner of the N/F KK Land Inc. property (PIN# 0751-40-0697) and the southwest corner of the N/F Sirrhan Griffin property (PIN# 0751-40-7981);

thence S 83°27'48" E for 337.45' to a point along the N/F Sirrhan Griffin property line (PIN# 0751-40-7981);

thence S 83°31'08" E for 16.61' to a point along the N/F Sirrhan Griffin property (PIN# 0751-40-7981 and the northwest corner of the N/F Dwight Wright property (PIN # 0750-49-8888);

thence S 28°37'14" W for 730.70' along the N/F Dwight Wright property (PIN# 0750-49-8888) to the southwest corner of said Wright property;

thence along a curve S 45°33'02" E with a radius 1,097.99' and chord length 144.18' to a point along the N/F Dwight Wright property (PIN# 0750-49-8888);

thence S 41°47'10" E for 763.27' to a point along the N/F Dwight Wright property (PIN# 0750-49-8888); said point being the centerline of Smith Road;

thence S 39°45'17" W for 30.00' to a point along the centerline of Smith Road;

thence N 41°47'45" W for 390.80 to a point along the N/F William Horton property (PIN# 0750-49-9041);

thence S 30°04'18" W for 604.83' to a point along the N/F William Horton property (PIN# 0750-49-9041) said point intersects with N/F Martha Burnet (PIN# 0750-48-5688);

thence N 62°26'59" W for 306.49 to a point along the N/F Martha Burnet property (PIN# 0750-48-5688), the N/F Richard Bacholzky property (PIN# 0750-48-4775) and N/F Kenneth Moushegian property (PIN# 0750-48-3860) said point intersects with N/F Joshua Beck property (PIN# 0750-49-2134);

thence N 26°52'23" E for 354.32' to a point along the N/F Joshua Beck property (PIN# 0750-49-2134);

thence N 77°31'26" W for 861.72' to a point along the N/F Joshua Beck property (PIN# 0750-49-2134) said point intersects with N/F Melissa Hinton property (PIN# 0750-39-5262);

thence N 77°28'29" W for 149.98' to a point along the N/F Melissa Hinton property (PIN# 0750-39-5262) said point intersects with N/F Mary Elizabeth Horton property (PIN# 0750-39-0993);
thence N 77°33'04" W for 275.75' to a point along the N/F Eugene Horton Heirs property (PIN# 0750-39-3222) said point intersects with N/F Merion Investment Properties LLC property (PIN# 0750-29-9342);
thence S 23°52'03" W for 340.31' to a point along the N/F Eugene Horton Heirs property (PIN# 0750-39-3222) said point intersects with N/F Matt Horton property (PIN# 0750-29-9045);
thence N 66°07'57" W for 585.43' to a point along the N/F Matt Horton property (PIN# 0750-29-9045) said point intersects with N/F MFW Investments LLC property (PIN# 0750-29-2070);
thence S 07°36'44" W for 246.69' to a point along the N/F Matt Horton property (PIN# 0750-29-9045) said point intersects with N/F Alton Richardson property (PIN# 0750-28-8880);
thence S 07°36'44" W for 274.24' to a point along the N/F Alton Richardson property (PIN# 0750-28-8880) said point intersects with N/F Donald Richardson property (PIN# 0750-28-8532);
thence S 07°36'44" W for 313.79' to a point along the N/F Donald Richardson property (PIN# 0750-28-8532) said point intersects with N/F Donald Richardson property (PIN# 0750-28-6271);
thence S 07°36'44" W for 9.43' to a point along the N/F Donald Richardson property (PIN# 0750-28-6271) said point intersects with N/F Loomis Horton Heirs property (PIN# 0750-27-4707);
thence S 07°00'15" W for 588.50' to a point along the N/F Donald Richardson property (PIN# 0750-28-6271);
thence S 85°42'32" E for 165.00' to a point on the southeast corner of the N/F Donald Richardson property (PIN# 0750-28-6271) said point intersects with N/F Merion Investments LLC property (PIN# 0750-27-8677);
thence S 85°42'32" E for 40.00' to a point along the N/F Merion Investments LLC property (PIN# 0750-27-8677) said point in the southwest corner of the N/F Virginia Stewart property (PIN# 0750-27-8925);
thence N 04°17'28" E for 210.00' to a point which in the northwest corner of the N/F Virginia Horton Stewart parcel (PIN# 0750-27-8677);
thence S 85°42'32" E for 164.54' along the N/F Virginia Horton Stewart parcel (PIN# 0750-27-8677);
thence S 85°42'32" E for 45.46' to a point which is the northeast corner of the N/F Virginia Horton Stewart parcel (PIN# 0750-27-8677);

thence S 04°17'28" W for 210.00' to a point which in the southeast corner of the N/F Virginia Horton Stewart parcel (PIN# 0750-27-8677) and an existing iron pin in the southwest corner of the N/R Robert Heise property (PIN# 0750-37-1996);

4thence S 81°29'17" E for 436.45' to a point along the N/F Merion Investments LLC property (PIN# 0750-27-8677) said point intersects with N/F Robert Cathey property (PIN# 0750-37-3664);

thence S 60°32'28" W for 824.16' to a point along the N/F Merion Investments LLC property (PIN# 0750-27-8677) said point intersects with N/F Robert Cathey property (PIN# 0750-37-3664), N/F Richard Stewart property (PIN# 0750-37-2555), N/F Dennis Dale property (PIN# 0750-37-1540), N/F Todd Young property (PIN# 0750-37-0454), N/F John Falchi property (PIN# 0750-27-9358) and George King property (PIN# 0750-27-8301), said point intersects with N/F Loomis Horton Heirs property (PIN# 0750-27-4707);

thence S 02°56'47" W for 73.32' to a point along the N/F Loomis Horton Heirs property (PIN# 0750-27-4707) said point intersects with N/F MFW Investments LLC property (PIN# 0750-26-4926);

thence N 77°50'29" W for 487.73' to a point along the N/F MFW Investments LLC property (PIN# 0750-26-4926) said point intersects with N/F Patricia Jones property (PIN# 0750-27-0906) and N/F Pemberley Property Owners' Association, Inc. property (PIN# 0750-17-6279);

thence N 77°50'39" W for 8.51' along the southern boundary of N/F Patricia Jones (PIN# 0750-27-0906);

thence N 77°50'39" W for 424.69' to the southwest corner of the N/F Patricia Jones property (PIN# 0750-27-0906) along the N/F Pemberley Property Owners' Association, Inc. property (PIN# 0750-17-6279);

thence N 06°15'00" E 997.21' to a point in the northwest corner of the N/F Patricia Jones property (PIN# 0750-27-0906);

thence S 83°40'10" E for 162.45' to a point along the N/F Patricia Jones property (PIN# 0750-27-0906) said point intersects with N/F MFW Investments LLC property (PIN# 0750-19-7053 and 0750-29-2070);

thence N 45°39'39" E for 56.43' to a point along the N/F MFW Investments LLC property (PIN# 0750-19-7053);

thence N 01°01'01" E for 301.17' to a point along the N/F MFW Investments LLC property (PIN# 0750-19-7053);

thence N 07°47'37" W for 187.77' to a point along the N/F MFW Investments LLC property (PIN# 0750-19-7053);

thence N 24°12'03" W for 113.39' to a point along the N/F MFW Investments LLC property (PIN# 0750-19-7053);

thence N 24°46'59" E for 71.19' to a point along the N/F MFW Investments LLC property (PIN# 0750-19-7053);

thence N 26°33'54" W for 64.44' to a point along the N/F MFW Investments LLC property (PIN# 0750-19-7053);

thence N 37°00'06" E for 121.55' to a point along the N/F MFW Investments LLC property (PIN# 0750-19-7053);

thence N 07°08'18" E for 106.61' to a point along the N/F MFW Investments LLC property (PIN# 0750-19-7053);

thence N 52°04'00" E for 50.09' to a point along the N/F MFW Investments LLC property (PIN# 0750-19-7053);

thence N 26°44'55" E for 75.53' to a point along the N/F MFW Investments LLC property (PIN# 0750-19-7053), said point intersects with N/F Charles Womble property (PIN# 0750-29-0721);

thence S 83°33'51" E for 583.20' to a point along the N/F Charles Womble property (PIN# 0750-29-0721) said point intersects with the N/F Mary Elizabeth Horton property (PIN# 0750-39-0993) and the N/F Merion Investment Properties LLC property (PIN# 0750-29-9342);

thence N 08°41'45" E for 946.00' to a point along the N/F Charles Womble property (PIN# 0750-29-0721) said point intersects with N/F Fred Cash Jr. property (PIN# 0751-31-0079);

thence N 03°13'00" E for 1316.79' to a point along the N/F Charles Womble property (PIN# 0750-29-0721) said point intersects with N/F Trinity Apex North 100 LLC property (PIN# 0751-32-3228);

thence S 87°52'51" E for 659.44 to a point along the N/F Trinity Apex North 100 LLC property (PIN# 0751-32-3228), said point intersects with N/F MFW Investments LLC property (PIN# 0751-31-9308)

thence N 71°52'08" E for 205.23 to a point along N/F Trinity Apex North 100 LLC property (PIN# 0751-32-3228);

thence N 65°28'18" E for 379.18' to an existing iron pipe along the N/F Trinity Apex North 100, LLC (PIN# 0751-32-3228) property line, said point being the POINT OF BEGINNING.

Said property includes approximately 6,405,520 square feet or 146.899 acres.

List of Plats referenced to complete legal description.

- Recombination Survey Property of Trinity Apex North 100, LLC BM 2016 PG 1901
- Exempt Plat Property of Trinity Apex North 100, LLC Subdivision BM 2016 PG 1677
- Horton Heirs Properties BM 2015 PG 1973
- Map of Carcillar Horton “Estate Division” BM 1988 PG 754
- Division of E.L. Horton BM 1942 PG 114
- C.O. Heavner, Heirs and Joseph Ira Lee, Et Ux BM 2006 Pg 0172
- Exempt Division Survey Property of MFW Investments, LLC – BM 2017 Pg 1067
- Exempt Recombination Plat – Tract 2A and Tract 2B Horton Heirs Properties BM2017 Pg2004
- Estate Division – Carcillar Horton – BM1988 Pg754
- Patricia Jones property Deed – DB 2900 Pg 698

PETITION TO AMEND THE OFFICIAL ZONING MAP & 2045 LAND USE MAP

This document is a public record under the North Carolina Public Records Act and may be published on the Town's website or disclosed to third parties.

Application #: 19CZ16 Submittal Date: 7/1/19
2045 LUM Amendment: _____ Fee Paid: _____

Project Information

Project Name: Horton Park - TF-CZ district
Address(es): 5220 Jessie Drive
PIN(s): 0751-31-0079 (north of the southern creek) and 0751-31-9308 (west of the Colonial pipeline easement)
Acreage: 19.06 acres
Current Zoning: PUD-CZ Proposed Zoning: TF-CZ
Current 2045 LUM Designation: Office Employment/Industrial Employment
Proposed 2045 LUM Designation: Office Employment/Industrial Employment

See next page for LUM Amendment.

If any portion of the project is shown as mixed use (3 or more stripes on the 2045 Land Use Map) provide the following:

Area classified as mixed use:	Acreage:	<u>N/A</u>
Area proposed as non-residential development:	Acreage:	<u>N/A</u>
Percent of mixed use area proposed as non-residential:	Percent:	<u>N/A</u>

Applicant Information

Name: Mike Whitehead - MFW Investments, LLC
Address: 114 Birklands Drive
City: Cary State: NC Zip: 27518
Phone: (919) 801-3905 E-mail: mwhitehead@macgregordev.com

Owner Information

Name: same
Address: _____
City: _____ State: _____ Zip: _____
Phone: _____ E-mail: _____

Agent Information

Name: Peak Engineering & Design, PLLC - Jeff Roach
Address: 1125 Apex Peakway
City: Apex State: NC Zip: 27502
Phone: (919) 439-0100 E-mail: jroach@peakengineering.com

Other contacts: Fred Spinnenweber (fspinnenweber@peakengineering.com)

PETITION TO AMEND THE OFFICIAL ZONING MAP & 2045 LAND USE MAP

Application #: _____ Submittal Date: _____

2045 LAND USE MAP AMENDMENT (IF APPLICABLE)

The applicant does hereby respectfully request the Town Council amend the 2045 Land Use Map. In support of this request, the following facts are shown:

The area sought to be amended on the 2045 Land Use Map is located at:

N/A

Current 2045 Land Use Classification: Office Employment/Industrial Employment

Proposed 2045 Land Use Classification: _____

What condition(s) justifies the passage of the amendment to the 2045 Land Use Map? Discuss the existing use classifications of the subject area in addition to the adjacent land use classifications. Use additional pages as needed.

NO CHANGES TO THE LAND USE DESIGNATION IS PROPOSED

PETITION INFORMATION

Application #: _____

Submittal Date: _____

An application has been duly filed requesting that the property described in this application be rezoned from PUD-CZ to TF-CZ. It is understood and acknowledged that if the property is rezoned as requested, the property described in this request will be perpetually bound to the use(s) authorized and subject to such conditions as imposed, unless subsequently changed or amended as provided for in the Unified Development Ordinance. It is further understood and acknowledged that final plans for any specific development to be made pursuant to any such Conditional Zoning shall be submitted for site or subdivision plan approval. Use additional pages as needed.

PROPOSED USES:

The Rezoned Lands may be used for, and only for, the uses listed immediately below. The permitted uses are subject to the limitations and regulations stated in the UDO and any additional limitations or regulations stated below. For convenience, some relevant sections of the UDO may be referenced; such references do not imply that other sections of the UDO do not apply.

1	<u>Church or place of worship</u>	21	<u>Artisan studio</u>
2	<u>Day care facility</u>	22	<u>Convenience store</u>
3	<u>Drop-in or short-term day care</u>	23	<u>Convenience store with gas sales</u>
4	<u>Government service</u>	24	<u>Grocery, general</u>
5	<u>Veterinary clinic or hospital</u>	25	<u>Grocery, specialty</u>
6	<u>Vocational school</u>	26	<u>Health/fitness center or spa</u>
7	<u>Utility, minor</u>	27	<u>Personal service</u>
8	<u>Botanical garden</u>	28	<u>Pharmacy</u>
9	<u>Entertainment, indoor</u>	29	<u>Printing and copying service</u>
10	<u></u>	30	<u>Real estate sales</u>
11	<u>Greenway</u>	31	<u>Repair services, limited</u>
12	<u>Park, active</u>	32	<u>Studio for art</u>
13	<u>Park, passive</u>	33	<u>Tailor shop</u>
14	<u>Restaurant, general</u>	34	<u>Upholstery shop</u>
15	<u>Dispatching office</u>	35	<u>Pet services</u>
16	<u>Medical or dental office or clinic</u>	36	<u>Laboratory, industrial research</u>
17	<u>Medical or dental laboratory</u>	37	<u>Microbrewery</u>
18	<u>Office, business or professional</u>	38	<u>Microdistillery</u>
19	<u>Publishing office</u>	39	<u></u>
20	<u>Research facility</u>	40	<u></u>

PETITION INFORMATION

Application #: _____

Submittal Date: _____

3) Zoning district supplemental standards. The proposed Conditional Zoning (CZ) District use's compliance with Sec 4.4, Supplemental Standards, if applicable.

The proposed uses will meet the required Supplemental Standards per UDO section 4.4 as applicable.

4) *Design minimizes adverse impact.* The design of the proposed Conditional Zoning (CZ) District use's minimization of adverse effects, including visual impact of the proposed use on adjacent lands; and avoidance of significant adverse impacts on surrounding lands regarding trash, traffic, service delivery, parking and loading, odors, noise, glare, and vibration and not create a nuisance.

The design provides for perimeter buffers, architectural controls, access, and utility connections to avoid adverse impacts on the surrounding residential and non-residential properties.

5) *Design minimizes environmental impact.* The proposed Conditional Zoning District use's minimization of environmental impacts and protection from significant deterioration of water and air resources, wildlife habitat, scenic resources, and other natural resources.

The is proposed to meeting UDO standards for design controls, including minimization and avoidance of environmentally sensitive areas, limited site impacts, and reduction in removal of perimeter vegetation.

6) *Impact on public facilities.* The proposed Conditional Zoning (CZ) District use's avoidance of having adverse impacts on public facilities and services, including roads, potable water and wastewater facilities, parks, schools, police, fire and EMS facilities.

The site is located in close proximity or will be extending public facilities to the property in conjunction with the Horton Park project. This includes water, sewer, stormwater, streets, gas, electric, telephone, and cable services. The site is located south of Jessie Drive (Major Thoroughfare) and will have excellent access for emergency vehicles and personnel.

7) *Health, safety, and welfare.* The proposed Conditional Zoning (CZ) District use's effect on the health, safety, or welfare of the residents of the Town or its ETJ.

The proposed uses on the property will not be detrimental to the health, safety, and welfare of Apex and Wake County residents. The uses will provide services to the surrounding property owners.

PETITION INFORMATION

Application #: _____ Submittal Date: _____

8) *Detrimental to adjacent properties.* Whether the proposed Conditional Zoning (CZ) District use is substantially detrimental to adjacent properties.

The uses are in keeping with the Town of Apex's standards for non-residential/Tech-Flex zoning sounded by Light Industrial, Horton Park's residential parcels, and the major street network.

9) *Not constitute nuisance or hazard.* Whether the proposed Conditional Zoning (CZ) District use constitutes a nuisance or hazard due to traffic impact or noise, or because of the number of persons who will be using the Conditional Zoning (CZ) District use.

The list of uses permitted on the property do not constitute a nuisance or hazard based upon anticipate traffic numbers, noise, or number of persons expected to utilize the properties.

10) *Other relevant standards of this Ordinance.* Whether the proposed Conditional Zoning (CZ) District use complies with all standards imposed on it by all other applicable provisions of this Ordinance for use, layout, and general development characteristics.

The proposed zoning and future Minor Site Plan for each use will comply with the standards established by the UDO, adopted plans, and details/specifications. The designs will meet standard development patterns and use requirements.

Horton Park
Tech/Flex – Conditional Zoning (TF-CZ) District
Architectural Standards for Non-Residential Structures

1. Maximum non-residential building height is 65'.
2. Building shall be architecturally compatible through the use of similar colors and building materials. Buildings shall be consistent in scale, massing, style, and relationship to adjacent streets.
3. Building placement shall be done to maximize parking in the rear or side of buildings. Drive-thrus, pick-up windows, loading areas, trash facilities, and other accessory items for uses are encouraged to be oriented away from adjacent streets.
4. Buildings shall have vertical breaks across any facade which faces an adjacent street. Windows and other store front treatments shall be proportional to the building height and width. Horizontal and vertical setbacks shall be used to provide a visual break in the building mass. Various architectural features shall be incorporated, including roofline changes, parapet heights, columns, piers, and material patterns to create various façade breaks.
5. Exterior materials for non-residential structures shall be a combination of materials. The primary façade (front) or any façade facing a street shall include:
 - Brick
 - Wood
 - Stacked stone or other native stone
 - Decorative block (integrally colored or textured) masonry units
 - EIFS cornices and parapet trim (EIFS or stucco shall not be used within 4 feet of ground and shall be limited to 25% of each building façade)
 - Precast concrete
6. The developer of the Horton Park PUD or the developer of the subject property shall construct and dedicate the portion of the Collector Street as shown on the Apex Transportation Plan on the subject property.

CERTIFIED LIST OF NEIGHBORING PROPERTY OWNERS

Application #: _____

Submittal Date: _____

Provide a certified list of property owners subject to this application and all property owners within 300' of the subject property and HOA Contacts.

	Owner's Name	PIN
1.	SEE ATTACHED LIST	
2.		
3.	LIST IS PART OF THE HORTON PARK NEIGHBORHOOD	
4.	MEETING LIST AND OTHER DOCUMENTS	
5.		
6.		
7.		
8.		
9.		
10.		
11.		
12.		
13.		
14.		
15.		

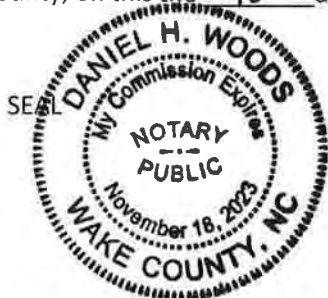
I, JEFFREY A. ROACH, certify that this is an accurate listing of all property owners and property owners within 300' of the subject property.

Date: 6/28/2019

By: *[Signature]*

COUNTY OF WAKE STATE OF NORTH CAROLINA

Sworn and subscribed before me, DANIEL H. WOODS, a Notary Public for the above State and County, on this the 28 day of JUNE, 2019.



Daniel H. Woods
Notary Public
DANIEL H. WOODS
Print Name

My Commission Expires: 11/18/23

TRINITY APEX NORTH 100 LLC
106 ISLAND VIEW DR
BEAUFORT NC 28516-9108
0750085838

PAGE TWO HOLDINGS LLC RODESSA LLC
940 SE CARY PKWY STE 102
CARY NC 27518-7417
0750095624

STEELE, GERTRUDE
1713A E WILLIAMS ST
APEX NC 27539-7706
0750096187

PEMBERLEY PROPERTY OWNERS' ASSOCIATION,
INC., CHARLESTON MGMT
PO BOX 97243
RALEIGH NC 27624-7243
0750176279

HORTON, KIMBERLY A HORTON, LOOMIS III
4801 SW 202ND AVE
SOUTHWEST RANCHES FL 33332-1033
0750184078

MFW INVESTMENTS, LLC
114 BIRKLANDS DR
CARY NC 27518-8203
0750197426

MFW INVESTMENTS LLC
114 BIRKLANDS DR
CARY NC 27518-8203
0750264926

MUSE, EDWARD MUSE, ROBIN
3305 COLBY CHASE DR
APEX NC 27539-3602
0750267955

KUNSMAN, STEVEN A KUNSMAN, SUSAN E
5408 MERION STATION DR
APEX NC 27539-3603
0750269948

MFW INVESTMENTS LLC
114 BIRKLANDS DR
CARY NC 27518-8203
0750270906

HORTON, KIMBERLY A HORTON, LOOMIS III
4801 SW 202ND AVE
SOUTHWEST RANCHES FL 33332-1033
0750274707

FELTON, TIMOTHY M FELTON, ALLISON C
3304 COLBY CHASE DR
APEX NC 27539-3601
0750278301

MFW INVESTMENTS, LLC
114 BIRKLANDS DR
CARY NC 27518-8203
0750278677

MFW INVESTMENTS, LLC
7837 SMITH RD
APEX NC 27539-8170
0750278925

FALCHI, JOHN J FALCHI, JOYCE T
3232 COLBY CHASE DR
APEX NC 27539-3620
0750279358

MFW INVESTMENTS, LLC
114 BIRKLANDS DR
CARY NC 27518-8203
0750280998

RICHARDSON, DONALD F
1630 VAN BUREN ST NW
WASHINGTON DC 20012-2838
0750286271

RICHARDSON, DONALD FELIX
1630 VAN BUREN ST NW
WASHINGTON DC 20012-2838
0750288532

RICHARDSON, ALTON RICHARDSON, TERESA
1295 WINDHAM RD
GREENVILLE NC 27834-7093
0750288880

HORTON, MATTHEW
4 ARBOR LN
BORDENTOWN NJ 08505-4807
0750299045

MFW INVESTMENTS, LLC
114 BIRKLANDS DR
CARY NC 27518-8203
0750299342

YOUNG, TODD C YOUNG, GLORIA C
3228 COLBY CHASE DR
APEX NC 27539-3620
0750370454

DALE, DENNIS DALE, ROBERTA
3224 COLBY CHASE DR
APEX NC 27539-3620
0750371540

HEISE, ROBERT H HEISE, CARY VIVIAN
2408 MERION CREEK DR
APEX NC 27539-6300
0750371996

STEWART, RICHARD J STEWART, MARY A
3220 COLBY CHASE DR
APEX NC 27539-3620
0750372555

CATHEY, ROBERT E III CATHEY, KRISTA B
3212 COLBY CHASE DR
APEX NC 27539-3620
0750373664

RHODES, AMANDA C RHODES, STEVEN A
3208 COLBY CHASE DR
APEX NC 27539-3620
0750375700

PIETZ, BRYAN PIETZ, JORDAN
2400 MERION CREEK DR
APEX NC 27539-6300
0750375774

KANODE, MARK E KANODE, LORI D
3204 COLBY CHASE DR
APEX NC 27539-3620
0750376759

PIETZ, BRYAN S PIETZ, JORDAN
2400 MERION CREEK DR
APEX NC 27539-6300
0750383293

COFFER, LANA HORTON
3113 CARRIAGE LIGHT CT
RALEIGH NC 27604-6117
0750385765

MERION HOMEOWNERS ASSOCIATION INC
OMEGA ASSOCIATION MANAGEMENT INC
160 NE MAYNARD RD STE 210
CARY NC 27513-9676
0750387004

HORTON, MARY ELIZABETH
PO BOX 306
APEX NC 27502-0306
0750390993

HORTON, CHARLES LEON, SARAH
8804 STEPHENSON RD
APEX NC 27539-8170
0750393222

HINTON, MELISSA D
5137 DEZOLA ST
APEX NC 27539-9529
0750395262

MANSFIELD, MARISA MANSFIELD, MICHAEL
5133 DEZOLA ST
APEX NC 27539-9529
0750398002

HORTON, KIMBERLY A HORTON, LOOMIS III
4801 SW 202ND AVE
SOUTHWEST RANCHES FL 33332-1033
0750398682

RYDESKY, THOMAS E RYDESKY, LINDA U
5232 LEVERING MILL RD
APEX NC 27539-3610
0750480767

HORNADA, JEFFREY MICHAEL HORNADA,
KARA LEIGH
5228 LEVERING MILL RD
APEX NC 27539-3610
0750481855

SURA, PIYUSH SURA, SMITA P
5229 LEVERING MILL RD
APEX NC 27539-3640
0750482535

POZDER, VLADIMIR POZDER, JULI W
5224 LEVERING MILL RD
APEX NC 27539-3610
0750482864

SINGLETARY, MICHAEL SINGLETARY, LAETITIA
5217 LEVERING MILL RD
APEX NC 27539-3640
0750483541

MOUSHEGIAN, KENNITH C MOUSHEGIAN,
CINDY W
5220 LEVERING MILL RD
APEX NC 27539-3610
0750483860

GREENE, WILLIAM BLAKE GREENE, LAUREN
KIRBY
5213 LEVERING MILL RD
APEX NC 27539-3640
0750484438

BACHOLZKY, RICHARD JR BACHOLZKY, KATHRYN
5216 LEVERING MILL RD
APEX NC 27539-3610
0750484775

MEHTA, RUSHIKESH J TRUSTEE RUSHIKESH J
MEHTA REVOCABLE TRUST
5209 LEVERING MILL RD
APEX NC 27539-3640
0750485424

BURNET, MARTHA SNYDER TRUSTEE BURNET,
GILBERT NEFF TRUSTEE
5208 LEVERING MILL RD
APEX NC 27539-3610
0750485688

RUSNAK, DAVID W RUSNAK, PAMELA P
5205 LEVERING MILL RD
APEX NC 27539-3640
0750486339

MADRID, RICHARD J MADRID, RENE MONIQUE
5204 LEVERING MILL RD
APEX NC 27539-3610
0750487632

KEENE, CHRISTOPHER P KEENE, ANNA E
5200 LEVERING MILL RD
APEX NC 27539-3610
0750488577

HORTON, WILLIAM JR HORTON, EDNA
8208 SMITH RD
APEX NC 27539-8176
0750488737

HORTON, WILLIAM JR
8208 SMITH RD
APEX NC 27539-8176
0750489723

HORTON, WILLIAM JR BURRIS, JULIA HORTON
8208 SMITH RD
APEX NC 27539-8176
0750489886

BECK, JOSHUA KEVIN BECK, KATHERINE
CLEMMONS
5129 DEZOLA ST
APEX NC 27539-9529
0750492134

HORTON, KIMBERLY A HORTON, LOOMIS III
4801 SW 202ND AVE
SOUTHWEST RANCHES FL 33332-1033
0750495371

WRIGHT, DWIGHT MARVIN
407 S SALEM ST
APEX NC 27502-2037
0750498888

HORTON, WILLIAM JR HORTON, EDNA
8208 SMITH RD
APEX NC 27539-8176
0750499041

HORTON, WILLIAM SR HEIRS HORTON,
LOOMIS JR HEIRS, WILLIAM HORTON JR
8208 SMITH RD
APEX NC 27539-8176
0750499710

HORTON, WILLIAM HORTON, EDNA W
8208 SMITH RD
APEX NC 27539-8176
0750582794

HORTON, WILLIAM JR HORTON, EDNA WILLIS
8205 SMITH RD
APEX NC 27539-8177
0750583990

HORTON, WILLIAM HORTON, EDNA W
8208 SMITH RD
APEX NC 27539-8176
0750591257

RICHARDSON, DONALD F
1630 VAN BUREN ST NW
WASHINGTON DC 20012-2838
0750592361

RICHARDSON, DONALD F
1630 VAN BUREN ST NW
WASHINGTON DC 20012-2838
0750592399

DOWNING, OSWALD DOWNING, DEBORAH H
8129 SMITH RD
APEX NC 27539-8175
0750594097

GANDHI, ANIL R GANDHI, NEHA A
105 BONNIEWOOD DR
CARY NC 27518-8961
0750596206

JACK 1, LLC
738 CASH ST
APEX NC 27502-1302
0751137742

WOMBLE, CHARLES H ET AL WOMBLE, GLEN
802 BELLAMY RD
NORTH MYRTLE BEACH SC 29582-2828
0751201670

MFW INVESTMENTS LLC
114 BIRKLANDS DR
CARY NC 27518-8203
0751216689

PRISTINE PARTNERS LLC
2821 JONES FRANKLIN RD
RALEIGH NC 27606-4007
0751222279

MFW INVESTMENTS LLC
114 BIRKLANDS DR
CARY NC 27518-8203
0751310079

MFW INVESTMENTS, LLC
114 BIRKLANDS DR
CARY NC 27518-8203
0751319308

TRINITY APEX NORTH 100 LLC
106 ISLAND VIEW DR
BEAUFORT NC 28516-9108
0751323228

MFW INVESTMENTS LLC
114 BIRKLANDS DR
CARY NC 27518-8203
0751328256

MFWIRA, LLC
114 BIRKLANDS DR
CARY NC 27518-8203
0751400194

KK LAND INC
2203 GOOD SHEPHERD WAY
APEX NC 27523-6947
0751400697

GRIFFIN, SIRRHAN GRIFFIN, JOSEPH A
1038 IRONGATE DR
APEX NC 27502-6505
0751407981

MFW INVESTMENTS LLC
114 BIRKLANDS DR
CARY NC 27518-8203
0751414924

HUNTER, MELVIN O HUNTER, NICOLE
5037 JESSIE DR
APEX NC 27539-8859
0751415915

MFW INVESTMENTS LLC
114 BIRKLANDS DR
CARY NC 27518-8203
0751421387

HINTON, BLANCHE W
4929 JESSIE DR
APEX NC 27539-9302
0751424433

TOOMER, JOE ELLIS TOOMER, FANNIE O
PO BOX 676
APEX NC 27502-0676
0751426099

INDUS REAL ASSOC LLC
4713 BROOK TOP CT
RALEIGH NC 27606-3100
0751426828

KK LAND INC
2203 GOOD SHEPHERD WAY
APEX NC 27523-6947
0751510857

CAREY C JONES MEMORIAL PARK INC
PO BOX 781
APEX NC 27502-0781
0751532815

AGENT AUTHORIZATION FORM

Application #: _____

Submittal Date: _____

MFW Investments, LLC (Mike Whitehead - Manager) is the owner of the property for which the attached application is being submitted:

- Land Use Amendment
- Rezoning
- Site Plan
- Subdivision
- Variance
- Other: _____

The property address is: 5220 Jessie Drive, Apex, NC (Wake PIN 0751-31-0079) (a portion of the property)

The agent for this project is: Peak Engineering & Design, PLLC (Jeff Roach)

I am the owner of the property and will be acting as my own agent

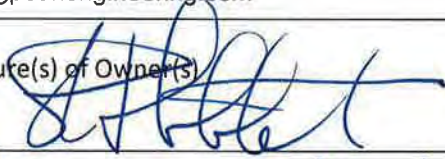
Agent Name: Jeff Roach, P.E. (for Peak Engineering & Design, PLLC)

Address: 1125 Apex Peakway, Apex, NC 27502

Telephone Number: (919) 439-0100

E-Mail Address: jroach@peakengineering.com

Signature(s) of Owner(s)



Michael F. Whitehead

Type or print name

_____ Date

_____ Type or print name

_____ Date

_____ Type or print name

_____ Date

Attach additional sheets if there are additional owners.

***Owner of record as shown on the latest equalized assessment rolls of Wake County. (An option to purchase does not constitute ownership). If ownership has been recently transferred, a copy of the deed must accompany this authorization.**

AGENT AUTHORIZATION FORM

Application #: _____ Submittal Date: _____

Horton Park MF LLC _____ is the owner of the property for which the attached application is being submitted:

- Land Use Amendment
- Rezoning
- Site Plan
- Subdivision
- Variance
- Other: _____

The property address is: 5101 Jessie Drive, Apex, NC PIN 0751-31-9308 (portion of the property west of the Colonial Pipeline easement)

The agent for this project is: Peak Engineering & Design

I am the owner of the property and will be acting as my own agent

Agent Name: Jeff Roach

Address: 1125 Apex Peakway, Apex, NC 27502

Telephone Number: (919) 439-0100

E-Mail Address: jroach@peakengineering.com

Signature(s) of Owner(s)

Thomas G. Drake
Member / Manager
Horton Park MF LLC

Type or print name

6/24/19

Date

Type or print name

Date

Type or print name

Date

Attach additional sheets if there are additional owners.

***Owner of record as shown on the latest equalized assessment rolls of Wake County. (An option to purchase does not constitute ownership). If ownership has been recently transferred, a copy of the deed must accompany this authorization.**



Instruction Packet and Affidavit for Neighborhood Meetings

Town of Apex
Planning Department
PO Box 250
Apex, NC 27502

T: 919-249-3426
F: 919-249-3338

This packet consists of instructions and templates for conducting a required Neighborhood Meeting. Planning Department staff are available to advise you in the preparation of these materials. Call the Planning Department at (919) 249-3426 for more information.

WHAT IS THE PURPOSE OF A NEIGHBORHOOD MEETING?

A neighborhood meeting is a required form of community outreach to receive initial feedback regarding certain project types prior to submittal to the Planning Department per the standards found in UDO Sec. 2.2.7. The intention of the meeting is to initiate neighbor communication and identify issues and concerns early on and provide the applicant an opportunity to address neighbor concerns about the potential impacts of the project prior to submitting an application. A neighborhood meeting is valid for six (6) months prior to the submission of an application; a delay in submission requires a new neighborhood meeting.

WHEN IS A NEIGHBORHOOD MEETING REQUIRED?

- Rezoning (including Planned Unit Developments);
- Major Site Plans;
- Master Subdivision Plan (excluding minor or exempt subdivisions); or
- Special Use Permits

INSTRUCTIONS

Prior to submitting a Rezoning, Major Site Plan, Master Subdivision Plan (excluding minor or exempt subdivisions), or Special Use Permits, the applicant must conduct at least one (1) Neighborhood Meeting. The applicant shall submit all forms included in this packet with their initial submittal.

The Neighborhood Meeting must be held in accordance with the following rules:

These groups and individuals must be invited to the meeting:

- The applicant is required to notify the Planning Department, all property owners within 300 feet of the subject property and any neighborhood association that represents citizens in the area via first class mail a minimum of 10 days in advance of the neighborhood meeting, not including the day of mailing. The applicant shall use their own return address on the envelopes as the meeting is a private meeting between the applicant and the neighbors.
- The applicant shall include with the meeting notice a vicinity map in addition to either the existing zoning map of the area or preliminary plans of the proposed development (see Handout requirements below).

The meeting must be held within specific timeframes and meet certain requirements:

- The meeting must be held for a minimum of two (2) hours, Monday through Thursday, during the 5:00 p.m. - 9:00 p.m. time period. The meeting cannot be held on a Town recognized holiday (which coincide with the State of North Carolina recognized holidays).
- The meeting shall be held at a place that is generally accessible to neighbors that reside in close proximity to the land subject to the application.
- A sign-in sheet must be used in order to verify attendance. Ensure each attendee signs in. Please note if any person(s) refuses to sign in. Note if no one attended.
- Handout requirements:
 - For rezonings (excluding rezonings to PUD-CZ, TND-CZ and MEC-CZ), a vicinity map and existing zoning map of the area must be provided to help facilitate discussion.
 - For rezonings to PUD-CZ, TND-CZ and MEC-CZ; Major Site Plans; Master Subdivision Plans; and Special Use Permits, preliminary plans of the proposed development must be available at the meeting to help facilitate discussion. Neighbors may request emailed/mailed copies of the maps or plans from the applicant by checking the “send plans” box on the sign-in sheet, and the applicant shall provide reduced copies upon such request.
 - Printed copies must equal the number of notices required to be sent.
 - Contact information for the applicant’s representative must be provided on the handout.
 - A copy of the handout must be included as part of the Neighborhood Meeting report.
- The agenda of the meeting shall include:
 - Explanation of all processes the meeting is being held for (rezoning, subdivision, etc.).
 - Explanation of future meetings (additional neighborhood meetings, Planning Board, Town Council, etc.).
 - Explanation of development proposal – uses and conditions for rezonings, layout for subdivision and site plans, and builder/end user if known/public knowledge.
- Questions or concerns by attendees, and responses by the applicant, if any, must be noted. Provide blank comment sheets or notecards for neighbors to submit written comments. The applicant shall also include any questions and concerns received via written correspondence (such as email) or phone call along with responses provided by the applicant.
- The applicant shall be responsible for notifying any neighbors who check the “Send Plans & Updates” box on the sign-in sheet of any additional neighborhood meetings and the actual submittal date to the Town with a link to the Town of Apex’s Interactive Development Map.

For accountability purposes, please submit the following with your application:

- A copy of the letter mailed to neighbors and neighborhood organizations (use attached invitation template);
- A list of those persons and neighborhood organizations invited to the meeting;
- A copy of the sign-in sheet (use attached sign-in sheet template);
- A summary of the meeting and a list of any changes made to the project as a result of the neighborhood comments (use attached meeting summary template);
- The affidavit, signed, dated, and notarized (use attached affidavit template); and
- One reduced copy of the maps and/or plans presented to the neighbors at the Neighborhood Meeting.



June 12, 2019

Adjacent Property Owners and Interested Parties,

RE: Horton Park Rezoning

During the design and review of Horton Park, the timing of NCDOT and Town of Apex projects are beginning to align with the Horton Park timing. For this reason, Horton Park will be submitting a rezoning on July 1st, 2019 to adjust the timing of off-site roadway improvements with three (3) major transportation improvements in mind.

1. Ten Ten Road improvements
2. Highway 55 design and future improvements
3. Jessie Drive design and future improvements/extension

The project will continue to have a mix of residential options (single family, townhomes, and apartments) and non-residential property along the future Jessie Drive corridor. This letter is to inform you that a neighborhood meeting has been scheduled to introduce the rezoning request, the overall Master Subdivision Plan and to answer any questions which you may have. You are welcome to attend the meeting, email me any questions, or call our office to discuss the project.

Meeting Information:

- Date of Neighborhood Meeting: June 27, 2019
- Meeting location: 237 N. Salem Street, Apex, NC 27502 (Halle Cultural Arts Center)
- Time of Meeting: 5:30 PM

If you have any questions concerning the rezoning request, do not hesitate to call or email me at (jroach@peakengineering.com).

Sincerely,

A handwritten signature in black ink, appearing to read "Jeffret A. Roach".

Jeffret A Roach P.E.
Peak Engineering & Design, PLLC

NOTICE OF NEIGHBORHOOD MEETING

This document is a public record under the North Carolina Public Records Act and may be published on the Town's website or disclosed to third parties.

The TF-CZ neighborhood meeting was noticed with the overall Horton Park rezoning meeting below.

June 12, 2019

Date

Dear Neighbor:

You are invited to a neighborhood meeting to review and discuss the development proposal at

See Attached Sheet

See Attached Sheet

Address(es)

PIN(s)

in accordance with the Town of Apex Neighborhood Meeting procedures. The Neighborhood Meeting is intended as a way for the applicant to discuss the project and review the proposed plans with adjacent neighbors and neighborhood organizations before the submittal of an application to the Town. This provides neighbors an opportunity to raise questions and discuss any concerns about the impacts of the project before it is officially submitted. Once an application has been submitted to the Town, it may be tracked using the [Interactive Development Map](#) or the [Apex Development Report](#) located on the Town of Apex website at www.apexnc.org.

A Neighborhood Meeting is required because this project includes (check all that apply):

- Rezoning (including Planned Unit Development);
- Major Site Plan;
- Master Subdivision Plan (excludes minor or exempt subdivision); or
- Special Use Permit

The following is a description of the proposal (also see attached map(s) and/or plan sheet(s)):

To discuss with the adjacent property owners and other interested parties the rezoning request to adjust the phasing of the project, timing of roadway improvements, the rezoning process, and the overall Master Subdivision Plan.

Estimated submittal date: July 1, 2019

MEETING INFORMATION:

Property Owner(s) name(s):	See Attached
Applicant(s):	Peak Engineering & Design (Jeff Roach); MFW Investments, LLC
Contact information (email/phone):	(919) 439-0100, jroach@peakengineering.com
Meeting Address:	237 N. Salem Street, Apex, NC 27502 (Halle Cultural Arts Center)
Date of meeting*:	June 27, 2019
Time of meeting*:	5:30 -


MEETING AGENDA TIMES:

Welcome:	5:30 - 5:40
Project Presentation:	5:40 - 6:00
Question & Answer:	6:00 -

*Meetings shall occur between 5:00 p.m. - 9:00 p.m. on a Monday through Thursday (excluding Town recognized holidays). If you have questions about the general process for this application, please contact the Planning Department at 919-249-3426. You may also find information about the Apex Planning Department and on-going planning efforts at <http://www.apexnc.org/180/Planning>.

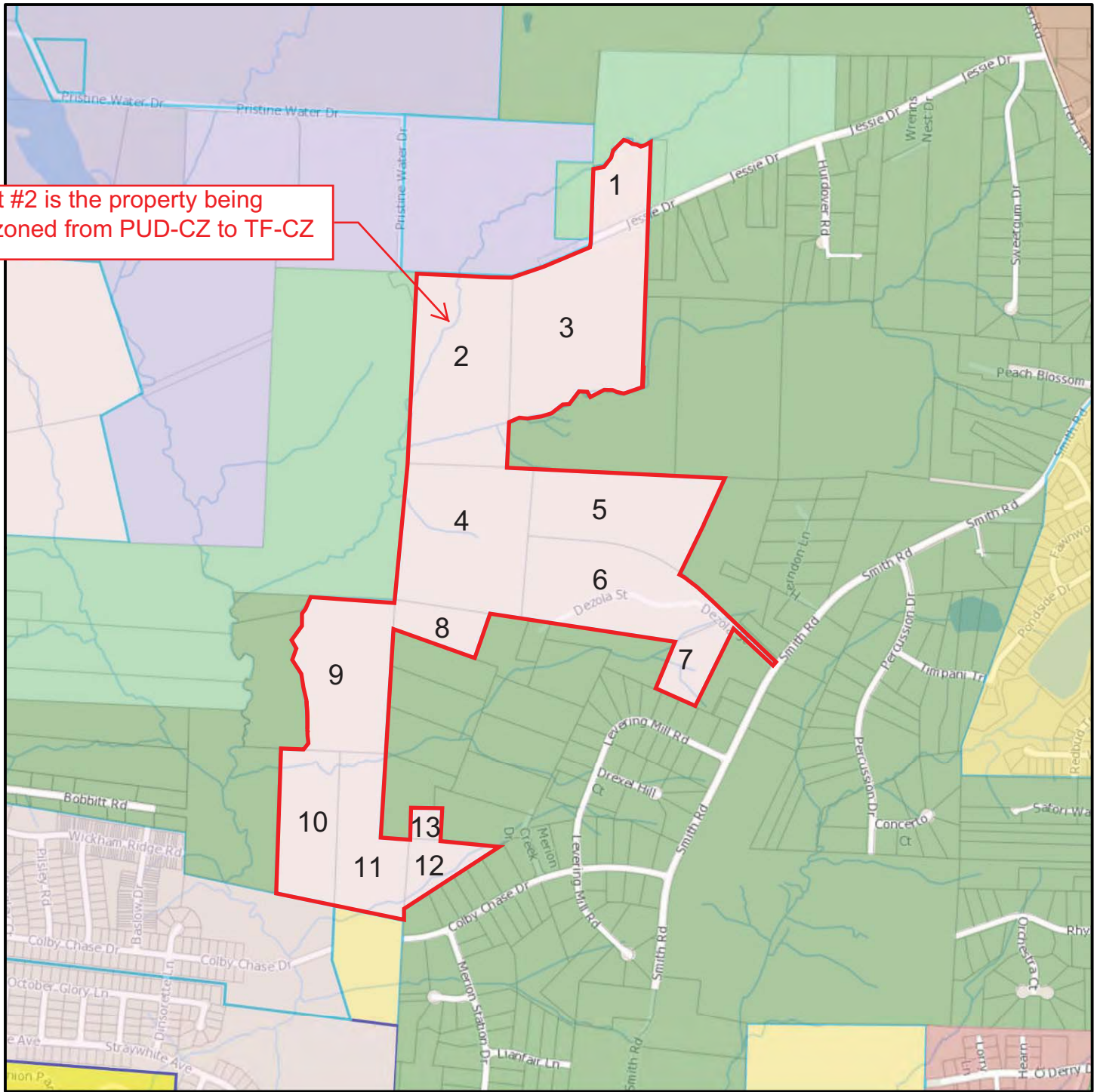
Rezoning Application Parcel List
Horton Park Assembly
Apex, NC

A portion of these properties
is being rezoned from PUD-
CZ to TF-CZ

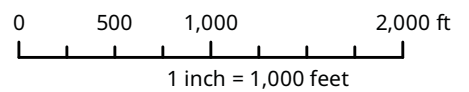


<u>Parcel</u>	<u>Owner</u>	<u>PIN</u>
1	MFW Investments LLC	0751-42-1387
2	MFW Investments LLC	0751-31-0079
3	Horton Park MF, LLC	0751-31-9308
4	Mary Elizabeth Horton	0750-39-0993
5	MFWIRA, LLC	0751-40-0194
6	Kimberly Horton; Loomis Horton III	0750-39-8682
7	Kimberly Horton; Loomis Horton III	0750-49-5371
8	MFW Investments LLC	0750-29-9342
9	MFW Investments LLC	0750-28-0998
10	MFW Investments LLC	0750-27-0906
11	Kimberly Horton; Loomis Horton III	0750-27-4707
12	MFW Investments LLC	0750-27-8677
13	MFW Investments LLC	0750-27-8925

Lot #2 is the property being rezoned from PUD-CZ to TF-CZ



Horton Park Rezoning



Disclaimer

*iMaps makes every effort to produce and publish the most current and accurate information possible. However, the maps are produced for information purposes, and are **NOT** surveys. No warranties, expressed or implied, are provided for the data therein, its use, or its interpretation.*

COMMON CONSTRUCTION ISSUES & WHO TO CALL

This document is a public record under the North Carolina Public Records Act and may be published on the Town's website or disclosed to third parties.

Noise & Hours of Construction:	Non-Emergency Police	919-362-8661
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Noise from tree removal, grading, excavating, paving, and building structures is a routine part of the construction process. The Town generally limits construction hours to 7 a.m. – 8:30 p.m. so that there are quiet times even during the construction process. Note that construction outside of these hours is allowed with special permission from the Town when it makes more sense to have the construction occur at night, often to avoid traffic issues. In addition, the Town limits hours of blasting rock to Monday through Friday from 8:00 a.m. to 5:00 p.m. Report violations of construction hours and other noise complaints to the Non-Emergency Police phone number at 919-362-8661.

Construction Traffic:	Stan Fortier	919-249-1166
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Construction truck traffic will be heavy throughout the development process, including but not limited to removal of trees from site, loads of dirt coming in and/or out of the site, construction materials such as brick and wood brought to the site, asphalt and concrete trucks come in to pave, etc. The Town requires a construction entrance that is graveled to try to prevent as much dirt from leaving the site as possible. If dirt does get into the road, the Town can require they clean the street (see "Dirt in the Road" below).

Road Damage & Traffic Control:	Water Resources – Infrastructure Inspections	919-362-8166
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There can be issues with roadway damage, roadway improvements, and traffic control. Potholes, rutting, inadequate lanes/signing/stripping, poor traffic control, blocked sidewalks/paths are all common issues that should be reported to Water Resources – Infrastructure Inspections at 919-249-3427. The Town will get NCDOT involved if needed.

Parking Violations:	Non-Emergency Police	919-362-8661
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Unless a neighbor gives permission, there should be no construction parking in neighbors' driveways or on their property. Note that parking in the right-of-way is allowed, but Town regulations prohibit parking within 15 feet of driveways so as not to block sight triangles. Trespassing and parking complaints should be reported to the Non-Emergency Police phone number at 919-362-8661.

Dirt in the Road:	Stan Fortier	919-249-1166
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Sediment (dirt) and mud gets into the existing roads due to rain events and/or vehicle traffic. These incidents should be reported to Stan Fortier. He will coordinate the cleaning of the roadways with the developer.

Dirt on Properties or in Streams:	Stan Fortier Danny Smith	919-249-1166 Danny.Smith@ncdenr.gov
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Sediment (dirt) can leave the site and get onto adjacent properties or into streams and stream buffers; it is typically transported off-site by rain events. These incidents should be reported to Stan Fortier at 919-249-1166 so that he can coordinate the appropriate repairs with the developer. Impacts to the streams and stream buffers should also be reported to Danny Smith (danny.smith@ncdenr.gov) with the State.

Dust:	Stan Fortier	919-249-1166
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During dry weather dust often becomes a problem blowing into existing neighborhoods or roadways. These incidents should be reported to Stan Fortier at 919-249-1166 so that he can coordinate the use of water trucks onsite with the grading contractor to help control the dust.

Trash:	Stan Fortier	919-249-1166
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Excessive garbage and construction debris can blow around on a site or even off of the site. These incidents should be reported to Stan Fortier at 919-249-1166. He will coordinate the cleanup and trash collection with the developer/home builder.

Temporary Sediment Basins:	Stan Fortier	919-249-1166
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Temporary sediment basins during construction (prior to the conversion to the final stormwater pond) are often quite unattractive. Concerns should be reported to Stan Fortier at 919-249-1166 so that he can coordinate the cleaning and/or mowing of the slopes and bottom of the pond with the developer.

Stormwater Control Measures:	Mike Deaton	919-249-3413
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Post-construction concerns related to Stormwater Control Measures (typically a stormwater pond) such as conversion and long-term maintenance should be reported to Mike Deaton at 919-249-3413.

Electric Utility Installation:	Rodney Smith	919-249-3342
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Concerns with electric utility installation can be addressed by the Apex Electric Utilities Department. Contact Rodney Smith at 919-249-3342.

NEIGHBORHOOD MEETING SIGN-IN SHEET

This document is a public record under the North Carolina Public Records Act and may be published on the Town's website or disclosed to third parties.

Meeting Address: Halle Cultural Arts Center, 237 North Salem Street, Apex, NC 27502 (Gallery Room)

Date of meeting: June 27, 2019 Time of meeting: 5:30

Property Owner(s) name(s): See Attached Sheet

Applicant(s): MFW Investments, LLC

Please print your name below, state your address and/or affiliation with a neighborhood group, and provide your phone number and email address. Providing your name below does not represent support or opposition to the project; it is for documentation purposes only.

	NAME/ORGANIZATION	ADDRESS	PHONE #	EMAIL	SEND PLANS & UPDATES
1.	Falchi	3222 Colby Chase	919		oil.com ✓
2.	Jam Carter	2614 Sweetgum dr	919 749 130		✓
3.	ERMA BURR	2625 Sweetgum DR	919-335-6286		✓
4.	Donna Provance	2624 "	919/335-89		✓
5.	Brian Johnson	3305 Cheswold CT	(919) 602-0542		✓
6.	Moss Wittars	111 ANNANDALE	919-810-24		✓
7.	MIKE MANSFIELD	5133 DEZOLA ST	919-353-518		✓
8.	Suecy Ward	2528 Sweetgum	919-931-19		✓
9.	Karen Peters	5300 Levee Hill Rd			✓
10.	Margaret Griffin	2609 Sweetgum Dr.			✓
11.	Maevyn Hunter	5037 JESSIE DR	919-277-624		✓
12.	Steven Rhodes	3208 Colby Chase			✓
13.	Alton Richardson	1795 Windham Rd Greenville NC	252-757-3044		✓
14.					

Use additional sheets, if necessary.

NEIGHBORHOOD MEETING SIGN-IN SHEET

This document is a public record under the North Carolina Public Records Act and may be published on the Town's website or disclosed to third parties.

Meeting Address: Halle Cultural Arts Center, 237 North Salem Street, Apex, NC 27502 (Gallery Room)

Date of meeting: June 27, 2019 Time of meeting: 5:30

Property Owner(s) name(s): See Attached Sheet

Applicant(s): MFV Investments, LLC

Please print your name below, state your address and/or affiliation with a neighborhood group, and provide your phone number and email address. Providing your name below does not represent support or opposition to the project; it is for documentation purposes only.

	NAME/ORGANIZATION	ADDRESS	PHONE #	EMAIL	SEND PLANS & UPDATES
1.	Bushel Black	2521 Sweetgum Dr. Apex	(919) 602-83	[REDACTED]	✓
2.	RANDY MANN	106 ISLAND VIEW DR PESQUERA	252-723-06 28516	[REDACTED]	✓
3.	Jordyn Paderno	3216 WINDHAM LN	919 36373	[REDACTED]	✓
4.	Russell Laurie Bell	5508 Merion Station Dr.	919 303 85	[REDACTED]	✓
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					

Use additional sheets, if necessary.

SUMMARY OF DISCUSSION FROM THE NEIGHBORHOOD MEETING

This document is a public record under the North Carolina Public Records Act and may be published on the Town's website or disclosed to third parties.

Property Owner(s) name(s): See Attached Sheet
Applicant(s): MFW Investments, LLC
Contact information (email/phone): Jeff Roach, jroach@peakengineering.com
Meeting Address: Halle Cultural Arts Center, 237 North Salem Street, Apex, NC 27502 (Gallery Room)
Date of meeting: 6-27-2019 Time of meeting: 5:30 -

Please summarize the questions/comments and your response from the Neighborhood Meeting in the spaces below (attach additional sheets, if necessary). Please state if/how the project has been modified in response to any concerns. The response should not be "Noted" or "No Response". There has to be documentation of what consideration the neighbor's concern was given and justification for why no change was deemed warranted.

Question/Concern #1:

SEE ATTACHED LIST OF QUESTIONS AND RESPONSES

Applicant's Response:

Question/Concern #2:

Applicant's Response:

Question/Concern #3:

Applicant's Response:

Question/Concern #4:

Applicant's Response:

The Horton Park rezoning and Master Subdivision neighborhood meeting started at 5:30 pm with a brief introduction of the project, the location, and general housekeeping items including the sign-in sheets and handouts. This was followed up by a discussion related to what zoning and Master Subdivision Plans are, the timing of the project, and what our role is for the project. This led into the presentation of the proposed Zoning (10 minutes) followed by discussions related to the Master Subdivision Plan (10 minutes).

The floor was then opened to a discussion with questions and answers from the group. Following are the questions and a summary of responses (some of the questions and responses were long-winded, were condensed for clarity/space, or combined with other questions to provide clarity to staff):

1. Why is the project back again? Please clarify the changes again.
 - A. Horton Park is being rezoned for three (3) reasons: (1) modify the conditions and timing associated with off-site roadway improvements; (2) incorporate timing of Phase I and Phase II development with Jessie Drive construction and alignment of the north-south collector street; and (3) removing the “Cash” property from the PUD and zoning it TF-CZ.

The Town of Apex is proposing to design and build Jessie Drive – and the zoning of Horton Park requires the adjustment of a number of zoning conditions to allow the project to start without having Jessie Drive either in place or under construction. The Town’s investment in Jessie Drive as a Major Thoroughfare is something that has been in discussions for a couple years – and Apex sees the benefit of the connection for neighbors, commuters, and life safety personnel.
2. The Sweetgum neighbors were invited to the meeting – is the zoning changing to incorporate more property near Sweetgum Drive?
 - A. No, there is no additional property being added. The property owners on Sweetgum were notified based upon their interest in the original zonings over the past 2-1/2 years.
3. Are there any changes to the design of Jessie Drive @ Ten Ten which would impact the Sweetgum property owners?
 - A. The Town is beginning the design of Jessie Drive @ Ten Ten in the next fiscal year. We are not aware of the final design at this time. Directed the property owners the Town’s website and the Interactive Development Map for upcoming projects – but not sure if Jessie Drive extension would be included until design-permitting was started.
4. Is a traffic signal proposed at Jessie Drive at Ten Ten Road?
 - A. Horton Park Phase I is not proposing to construct Jessie Drive or have any traffic directed to Jessie Drive. The Horton Park study will not evaluate Jessie Drive for a traffic signal. The Town of Apex extension of Jessie Drive “should” evaluate the intersection for the installation of a new signal. That is part of the ongoing discussions with Apex Transportation Staff related to the Jessie Drive extension project.
5. What is the timing of Jessie Drive?
 - A. Per staff discussions, the 2019-2020 budget allocated \$1MM for design and studies of the Jessie Drive corridor. 2021-2022 budget allocates \$10MM for the construction of Jessie Drive from Highway 55 to Ten Ten. This is still up for discussions with the Town of Apex but is the current status of the project.
6. How does the Jessie Drive timing align with the other projects in the area?
 - A. Explained the current schedule for Ten Ten (start in 2023); Highway 55 (unknown at this time); and Jessie Drive (budget \$10mm for 2022 start). This will be reviewed annually to coordinate with NCDOT and other grants or alternate funding sources as soon as possible (per discussions with staff).

7. What is the plan for the barricade at Colby Crossing and the Merion Subdivision?
 - A. Horton Park continues to have the zoning condition to install the barriers on the western edge of Merion on Colby Chase Drive until the Town of Apex determines the connection is needed. No change to this condition worked out with Merion HOA during the previous zoning requests.
8. Are there other conditions which are changing?
 - A. We assured the neighbors that the rezoning is about timing of improvements – not about modification of any of the conditions which were worked on for months through two previous rezonings.
9. What is the Middle Creek pump station? What is a pump station? And where is it located?
 - A. The Middle Creek Regional Pump Station (aka Middle Creek north) is a pump station that is required to pump sewage from Horton Park and other upstream properties to the Town's Water Reclamation Facility on Pristine Water Drive. This pump station is approximately \$4MM in costs for the developer of Horton Park. The pump station is currently planned for the northeastern corner of the intersection of Middle Creek and Colby Chase Drive (same location that it has been in since the initial zoning and Master Subdivision Plan).
10. What do you mean by staff? Are you referring to Planning Department?
 - A. Planning, Engineering, Transportation, Public Works, Fire, and Building Inspections. These are the staff groups which attend the pre-application meetings and we work with on every project.
11. What does minor collector mean?
 - A. A minor collector is a street designation which specifies the street should expect more vehicles than neighborhood streets, have a slightly higher speed (possibly), and act as a funnel to the larger streets (larger streets being Major Collectors, Thoroughfares, and Interstates).
12. Is the Town of Apex proposing to take ownership of Jessie Drive after completion of the extension?
 - A. That is unknown at this time. Current plan is for Jessie Drive to be constructed to Town of Apex standard but retained within the NCDOT maintenance system. That will be determined later.
13. In showing the 2045 Land Use Map, can you explain the different colors and what they mean?
 - A. Went into the definition of medium density (light yellow), medium-high density (light orange), high density (dark orange), light blue (office employment), purple (industrial employment), and green (park). Then explained the difference between the existing ZONING MAP, 2045 LAND USE MAP, and the WAKE GIS.
14. What is the RCA? And where is it proposed?
 - A. Resource Conservation Area (RCA) is the preservation of existing vegetation and environmentally sensitive areas including trees, wetlands, floodplains, steep slopes, and animal habitat. RCA is proposed to be around the property in various locations including those listed above (current MSP was used to identify current RCA locations).
15. How many lots are proposed with the project?
 - A. The number of lots from the original zoning has not changed. In general, approximately 350 single family or townhomes plus the apartment area and Tech-Flex area along Jessie Drive.
16. What is Tech-Flex? And what are the uses permitted?
 - A. Tech-Flex is an office or business zoning with a number of uses. The uses have been limited for this project to included (as an example) day care, vet, entertainment area (indoor or outdoor), restaurants, offices, convenience store, grocery store, repair services, and others. All the uses will be identified in the zoning application on Interactive Development Map once submitted to the Town.

17. What is the development timing?

A. **Phase I** is the residential portion south of the existing landfill and “N/F Cash Property” which has access to Smith Road and Colby Chase Drive – the property was identified on the maps at the meeting. This section is hoped to be approved in early 2020; construction start in Spring of 2020; full construction build-out of homes in 2024-2025. This timing is based upon the success of the project and any financial changes. **Phase II** of the project is the section along Jessie Drive including PODs 2,3 and 4 which all rely upon Jessie Drive for access – this timing is based upon the timing of Jessie Drive, Ten Ten, and Highway 55 projects.

18. What is the timing of the review by Apex and the Town Council meetings?

A. Submittal of the rezoning request is July 1, 2019. This will start a 3-4 month process prior to Town Council public hearings. Assuming approval of the zoning, the Master Subdivision Plan (which has previously been approved) will be modified to reflect the changes associated with the rezoning. Construction Documents will then follow for the contractor and permitting. Apex will send out a notification of future Public Hearings based upon the list of contacts we provided (including the Sweetgum Drive property owners).

19. What is the plan for the greenway and connection to surrounding properties?

A. The Middle Creek Greenway was discussed at length. Middle Creek Greenway is major connection from the Town of Apex to Holly Springs’ greenway system. These projects include Middle Creek Phase I and II (Town of Apex projects), Reunion Pointe, Horton Park, and future projects north of Jessie Drive. Future connection to Lufkin Road and the Town of Cary greenway system in Regency Park.

20. Who will the builder be?

A. The construction team may be a couple of builders. Final builder team is TBD.

21. In summary, what is the meeting for?

A. This meeting is to explain the process, the project, and product while gathering information from residents in the area. The questions will be gathered, answers provided, and included in the zoning submittal for Planning Board and Town Council review during the zoning process. Changes to the design documents or the zoning application may be made from comments received.

22. Who can I contact about the project? Town of Apex?

A. A list of Town of Apex contacts were provided at the meeting. Staff will know about the project but will not know details until after the July 1, 2019 zoning submittal.

23. Who approves the revised rezoning request?

A. Town Council reviews and ultimately provides final zoning determination.

24. Where can I find the rezoning application once it is submitted?

A. On the Town’s website under the “Interactive Development” tab is the map of projects. After the zoning package is submitted, the documents will be updated within a week or two.

25. In reviewing the Master Subdivision Plan provided, how is the zoning changing the design?

A. The zoning will require the modification of the Master Subdivision Plan to remove the connection to Jessie Drive as part of the Phase I development. This will be done in conjunction with staff input to clarify the improvements on the property.

The Horton Park rezoning neighborhood meeting was very different from a majority of neighborhood meetings as the neighbors were well informed about the project. This is the 3rd zoning for this project based upon the size and complexity of the project. Most of the discussions were centered on previous items committed to or discussed with property owners. The questions asked were more process or overall

“why are you rezoning again” type questions. For this reason, the number of questions from the meeting were limited. It was difficult to track all the discussions.

At the conclusion of the meeting, the neighbors broke up into groups, some asking questions, some talking, and others leaving the meeting. There were a number of clarifications provided one-on-one but no additional conditions or concerns about the project beyond what was asking during the larger group setting. The meeting completed at 7:30 when all questions were answered.

AFFIDAVIT OF CONDUCTING A NEIGHBORHOOD MEETING, SIGN-IN SHEET AND ISSUES/RESPONSES SUBMITTAL

This document is a public record under the North Carolina Public Records Act and may be published on the Town's website or disclosed to third parties.

I, Jonathan Edwards, do hereby declare as follows:

 Print Name

1. I have conducted a Neighborhood Meeting for the proposed Rezoning, Major Site Plan, Master Subdivision Plan, or Special Use Permit in accordance with UDO Sec. 2.2.7 *Neighborhood Meeting*.
2. The meeting invitations were mailed to the Apex Planning Department, all property owners within 300 feet of the subject property and any neighborhood association that represents citizens in the area via first class mail a minimum of 10 days in advance of the Neighborhood Meeting.
3. The meeting was conducted at Halle Cultural Arts Center, 237 North Salem Street, Apex, NC 27502 (Gallery Room) (location/address) on 6-27-2019 (date) from 5:30 (start time) to 7:30 (end time).
4. I have included the mailing list, meeting invitation, sign-in sheet, issue/response summary, and zoning map/reduced plans with the application.
5. I have prepared these materials in good faith and to the best of my ability.

6-28-2019


 Date

By: 

STATE OF NORTH CAROLINA
 COUNTY OF WAKE

Sworn and subscribed before me, DANIEL WOODS, a Notary Public for the above State and County, on this the 28 day of JUNE, 2019.





 Notary Public
DANIEL H WOODS

 Print Name

My Commission Expires: 11/18/23

Legal Description for
Tech/Flex – Conditional Zoning
Revised August 1, 2019

Boundary description of the proposed Tech/Flex-Conditional Zoning area includes portions of property identified by Wake County GIS as PIN 0751-31-9308 (partial) and 0751-31-0079 (partial). The properties are located south of the future Jessie Drive extension in the Apex ETJ, White Oak Township, and Wake County.

BEING a portion of multiple properties bounded on the North by property N/F Trinity Apex North 100, LLC (BM 2006 Page 360, Wake County Registry); on the south by property of N/F KK Land, Inc (BM 1987 Page 1199, Wake County Registry) and N/F Mary Horton (BM2015 Pg1973, Wake County Registry); and west by property of N/F Womble et al. (DB4443 Pg949, Wake County Registry), more particularly described as follows:

Commencing at an existing iron pipe at the northwest corner of N/F MFW Investments, LLC property (PIN# 0751-31-9308) and the northeast corner of the N/F Fred Cash, Jr. property (PIN 0751-31-0079) as shown on the "Recombination Survey, property of Trinity Apex North 100, LLC" by Riley Surveying, P.A. recorded in Wake County Register of Deeds office Book of Maps 2016 Page 1902, said point being the POINT OF BEGINNING; **thence** N 71°52'08" E for 120.03' to the western edge of the Colonial Pipeline gas easement; **thence** S 05°16'12" W for 1,031.68' to a theoretical point along the southern property line of the N/F MFW Investments, LLC property (PIN 0751-31-9308); **thence** S 66°52'27" W for 52.20' to an existing iron pipe being in the southwest corner of the N/F MFW Investments, LLC property (PIN 0751-31-9308); **thence** S 03°17'44" W for 29.64' to a theoretical point along the eastern boundary of the N/F Fred Cash, Jr. property (PIN 0751-31-0079); **thence** S 77°11'09" W for 688.96' along the south side of an existing creek to a theoretical point along the western boundary of the N/F Fred Cash, Jr. property (PIN 0751-31-0079); **thence** N 02°00'13" E for 1,218.43' to the existing iron pipe in the northwest corner of the N/F Fred Cash, Jr. property (PIN 0751-31-0079); **thence** S 87°50'35" E for 659.92' to an existing iron pipe along the northern property line of the N/F Fred Cash, Jr. property (PIN 0751-31-0079), said point being the POINT AND PLACE OF BEGINNING.

Said property includes approximately 830,332.87 square feet or 19.06 acres.

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Exhibits

Building Elevations

Section 2: Vicinity Map

Horton Park is a property assembly located along the western terminus of Jessie Drive on the north; Colby Chase Drive on the south; Middle Creek on the west; and Smith Road on the east. A Tech-Flex area was part of the original PUD and is now proposed to be removed from the PUD with a request to change the zoning to Tech/Flex-Conditional Zoning (TF-CZ) (a portion of PIN 0751-31-0079 and a portion of 0751-31-9308)





Executive Summary:

Horton Park was rezoned in October 2017 (case #17CZ19) and May 2018 (case #18CZ04). The original zoning cases included 146.899 acres (121.109 acres PUD-CZ and 27.92 acres LI-CZ). This zoning case is to modify zoning conditions previously approved, modify the zoning on 19.06 acres from PUD-CZ to TF-CZ, remove all reference to the LI-CZ area (north of Jessie Drive) and clarify the timing of the improvements associated with the development. The following information is related to the overall project description and development opportunities.

Section 3: Project Data

Project name: Horton Park

Applicant/Developer: MFW Investments, LLC
114 Birklands Drive
Cary, NC 27518-8203
mwhitehead@macgregordev.com

Prepared by: Peak Engineering & Design, PLLC
5448 Apex Peakway #368
Apex, NC 27502
(919) 439-0100
jroach@peakengineering.com

Zoning:

Existing Zoning: Planned Unit Development-Conditional Zoning (PUD-CZ)

Proposed Zoning: Planned Unit Development-Conditional Zoning (PUD-CZ)

2045 Land Use Map

Existing Land Use Designation: Medium Density Residential, High Density Residential, High Density Residential/Office Employment

Proposed Land Use: Medium Density Residential, High-Density Residential, High Density Residential/Office Employment (no change proposed)

Total Property: PUD-CZ area: 127.84 acres

Property Data (PINs):

0751-42-1387	0750-39-8682	0751-40-0194
0751-31-9308 (portion)	0750-29-9342	0750-27-0906
0751-31-0079 (portion)	0750-28-0998 (portion)	0750-27-8925
0750-39-0993	0750-27-4707	
0750-49-5371	0750-27-8677	

Legal descriptions of the properties are based upon surveys, recorded maps, plats, or deeds. This information is all public and provided within the zoning application packet.

Section 4: Purpose Statement

Horton Park is a proposed mixed-use development that is comprised of single family homes, townhomes, and apartments. The 127.84 acre assemblage is located in an underserved portion of Apex due to the lack of adequate road, water and sewer infrastructure. The PUD parameters are outlined in UDO Section 2.3.4(F)(1)(a)(i - vi) and addressed in various locations within the PD text document which will control the overall Horton Park development as previously described.

The PUD section of the property assemblage is comprised of thirteen (13) parcels, or portions thereof, which total 127.84 acres located along Jessie Drive, west of Smith Road, north of Colby Chase Drive, and east of Middle Creek. The properties are all currently zoned PUD-CZ. The Town of Apex's 2045 Land Use Map designates the properties as Medium Density Residential, High Density Residential, and High Density Residential/Office Employment. An amendment to the 2045 Land Use Map is not required for the current zoning request. Additional information related to the 2045 Land Use Map is provided in Section 18 – 2045 Land Use Map - within the PD Text document and with additional exhibits within the rezoning application.

The purpose of the PUD-CZ rezoning application is to modify conditions agreed to under Zoning #18CZ04. These modifications are summarized below:

1. Modify the timing of off-site roadway improvements to align with major NCDOT and Town of Apex projects including the Ten Ten Road widening; Jessie Drive construction between Ten Ten Road and Highway 55; and Highway 55 corridor improvements from Technology Drive to US 1.
2. Showing portion of PINs 0751-31-0079 and 0751-31-9308 proposed to be removed from the PUD and rezoned to TF-CZ on the official zoning map improves marketability of the site for long-term success.

The higher density residential portion of the property, including apartments and townhomes, will be clustered along Jessie Drive (a major thoroughfare), the North-South Collector Street (a major collector street), and the East-West Collector Street (a major collector street). As the site transitions from north to south, the residential density of Horton Park will reduce and the lot sizes increase. Infrastructure – including roads, water, and sewer – will extend from Smith Road west to the North-South Collector Street and south to Colby Chase Drive in Phase I. Phase II includes the development of the properties clustered along Jessie Drive, including PODs 3 and 4. The extension of the N-S Collector from the Phase I terminus to Jessie Drive is required with development of the adjacent N/F Cash Property (PIN 0751-31-0079) or by the developer of Horton Park PUD per the adopted Transportation Plan. This phasing aligns with the timing of connections of current and future major transportation corridors within NCDOT's and the Town of Apex's long-range plans.

The residential areas, along with the surrounding non-residentially zoned properties, will support the live-work environment which has been stressed by staff and elected officials for years. Greenways will provide pedestrian and bicycle connectivity to surrounding developments, future Apex trail connections, and adjacent municipal connections. In the greenways section of the PD text, the extension of the Middle Creek greenway will be analyzed as discussions have been ongoing with Parks & Recreation staff related to long-term connectivity within the basin.

The transportation systems associated with the project will construct various off-site improvements. Ramey Kemp & Associates has updated the Traffic Impact Analysis with input from NCDOT and Town of Apex staff. Those improvements are clarified in PD Text Section 12 – Public Facilities.

Phasing is covered in Section 17 of the PD Text and in summary, the project expects development to occur in a number of phases, including apartments, townhomes, and single family areas. The final construction phasing will be coordinated with Apex staff during the Master Subdivision Plan and Site Plan design stages. Section 17 provides additional phasing details.

The rezoning of the properties to PUD-CZ in conjunction with the proposed TF-CZ zoning adjacent to this PUD will provide a high quality project for the live-work option in southeast Apex, preserve significant environmentally sensitive areas, provide greenway connections and play lawns, ensure compatibility with the surrounding developments, provide major infrastructure upgrades, and add significant employment zoned areas in southeast Apex.

Section 5: Permitted Use Table

The rezoned lands may be used as listed below. The chart provided is a reference to UDO Section 4.2.2 – Use Table – which lists the uses which are permitted within the proposed Planned Unit Development (PUD-CZ).

Horton Park PUD		
Permitted Use Table – PUD-CZ		
"P" permitted; "S" special use permit; " " not permitted; "%" percentage of gross square footage		
Use Type	Residential PODs 3, 5 - 8	High Density Residential POD 4
Residential Uses (UDO 4.3.1)		
Accessory apartment	P	P
Family care home	P	P
Multi-family or apartment		P
Single-family	P	
Townhouse	P	P
Townhouse, detached	P	P
Utilities (UDO 4.3.3)		
Utility, minor	P	P
Recreation Uses (UDO 4.3.4)		
Greenway	P	P
Park, active	P	P
Park, passive	P	P
Recreation facility, private	P	P

Section 6: Description, Density and Dimensional Standards

The project is broken down into six (6) PODs, numbered 3-8, to explain the proposed uses, dimensional standards, density and other UDO standards. The PODs are shown on the project exhibit – identified as “EX-1: Proposed Site Exhibit” – included in the rezoning package. The density of the property is identified per POD, access shown per POD, and overall site configuration shown for future roadway extensions.

**** If additional property is included in the project boundary prior to any single family homes or townhomes being occupied in an adjacent POD/Phase, the design buffer may be shifted to the new project boundary in coordination with Apex staff. The design buffer may also be crossed by future public streets based upon review and approval by Apex staff.**

PODs 3 & 5 Medium/Medium-High

- POD 3 site area: 4.55 acres
- POD 5 site area: 19.71 acres
- Proposed zoning: PUD-CZ
- Maximum density: Townhomes (6 units / acre) or single family homes (4 units / acre)
 - POD 3 Density: 27 townhomes or 18 single family homes
 - POD 5 Density: 118 townhomes or 78 single family homes
- Maximum building height: 40 feet
- Maximum Built-Upon percentage: 70%

PODs 3 & 5 are proposed for Medium/Medium-High Residential uses, including townhomes, single-family homes, or a mix of products. All development of the residential portions of Horton Park shall submit for Master Subdivision Plan approval through the Town of Apex. Townhomes will be a mix of one (1), two (2), and three (3) bedroom units with various garage and surface parking options to meet current UDO standards (parking standards are referenced in Section 8 of the PD Text).

Individual lot driveway access from POD 5 to the North-South Major Collector Street shall not be permitted.

Type T-1 Townhomes: front entry units

- Minimum lot width: 20 feet
- Minimum lot depth: 80 feet
- Front entry townhomes
- Setbacks:
 - o Front setback: 20 feet from R/W
 - o Side setback: 0 feet
 - o Garage setback: 20 feet from back of sidewalk or back of curb where no SW exists
 - o End unit side & corner lot setback: 3 ft
 - o Rear setback: 10 feet

Type T-2 Townhomes: rear or alley entry units fronting on public streets

- Minimum lot width: 20 feet
- Minimum lot depth: 80 feet
- Rear or alley entry townhomes
- Setbacks:
 - o Front setback: 10 feet from R/W
 - o Side setback: 0 feet
 - o End unit side & corner lot setback: 3 ft
 - o Rear setback: 5 feet from alley easement or right-of-way

Type S-1, S-2, S-3, and S-4 single family lots in PODs 3 & 5 shall match the standards established in PODs 6, 7, & 8 within the PD Text document.

Perimeter buffers POD 3 & 5:

All perimeter buffers for PODs 3 & 5 are noted in the table included at the end of Section 6.

POD 4 **High Density Residential**

Site Area: 20.99 acres
 Proposed zoning: PUD-CZ (Planned Unit Development – Conditional Zoning)

POD 4 is proposed for High Density Residential uses, including apartments, townhomes or a mix of both housing types. The final product will depend upon market conditions as the project progresses. POD 4 will have direct access to Jessie Drive and shall obtain approval from NCDOT and the Town of Apex.

The following parameters will control future apartment and/or townhome development within POD 4 as the required PUD-CZ standards apply:

POD 4 Apartments:

POD 4 site area: 20.99 acres
 Proposed density: 314 apartments (maximum of 15 units/acre)
 Maximum built-upon percentage: 70%
 Maximum building height: 65 feet; 4-stories (not including basement level)

Apartments will be a mix of one (1), two (2), and three (3) bedroom units with the option for various parking standards, including surface, garage, and/or basement level parking.

Proposed minimum building setbacks:

- Front, side and rear: 50 feet (perimeter of the apartment site only)

POD 4 Townhomes:

- POD 4 site area: 20.99 acres
- Proposed density: 125 townhomes (max of 6 units/acre)
- Maximum built-upon percentage: 70%
- Maximum building height: 40 feet

If POD 4 is developed as townhomes, there may be a mix of two (2) car garage units, one (1) car garage units, and units without garages. Various types of parking shall be provided to meet current UDO standards (parking standard noted in Section 8 of the PD Text).

Type T-1 Townhomes: front entry units

- Minimum lot width: 18 feet
- Minimum lot depth: 80 feet
- Minimum building separation: 8 feet
- Front entry townhomes
- Setbacks:
 - o Front setback: 20 feet from R/W
 - o Garage setback: 20 feet from back of sidewalk or back of curb where no SW exists
 - o Side setback: 0 feet
 - o End unit side & corner lot setback: 3 ft
 - o Rear setback: 10 feet

Type T-2 Townhomes: rear or alley entry units

- Minimum lot width: 18 feet
- Minimum lot depth: 80 feet
- Minimum building separation: 8 feet
- Rear or alley entry townhomes
- Setbacks:
 - o Front setback: 10 feet from R/W
 - o Side setback: 0 feet
 - o End unit side & corner lot setback: 3 ft
 - o Rear setback: 5 feet from alley right-of-way limits

Perimeter buffers POD 4:

All perimeter buffers for POD 4 are noted in the table included at the end of Section 6.

The project will comply with other standards established by UDO Section 5.1.3 related to setbacks and density requirements or as proposed throughout the rezoning process and noted within the PD Text document.

PODs 6, 7, & 8 Medium Density Residential

PODs 6, 7, and 8 are proposed Medium Density Residential uses per Section 5 of the PD text – Permitted Use table.

POD 6	39.01 acres
POD 7	19.37 acres
POD 8	24.21 acres
Total area:	82.59 acres
Proposed density:	227 single family lots (2.75 units / acre – medium density)
Maximum Built Upon Percentage:	70%
Maximum Building height:	40 feet

82.59 acres are proposed within the Medium Density Residential PODs (PODs 6, 7 & 8). The overall lot count for this area has not increased from the previous zoning (case #18CZ04). Single family lots will be a mix of various sizes to create different options for future residents, including:

Type S-1 single family lots

- Minimum lot width: 70 feet
- Minimum lot depth: 100 feet
- Minimum lot size: 7,700 SF
- Average lot size: 8,500 SF
- Lots shall be front, side, or rear entry garage homes
- Proposed minimum setbacks:
 - o Front setback: 15 feet from R/W
 - o Garage setback: 20 feet from back of sidewalk, or back of curb where no SW exists
 - o Side setback: 5' min. (no aggregate)
 - o Corner side setback: 10 feet minimum
 - o Rear setback: 10 feet
 - o Rear entry setback: 5 feet (garage setback for driveway parking standards from alley)

Type S-2 single family lots

- Minimum lot width: 60 feet
- Minimum lot depth: 100 feet
- Minimum lot size: 6,600 SF
- Average lot size: 7,200 SF
- Lots shall be front, side, or rear entry garage homes
- Proposed minimum setbacks:
 - o Front setback: 15 feet from R/W
 - o Garage setback: 20 feet from back of sidewalk, or back of curb where no SW exists
 - o Side setback: 5' min. (no aggregate)
 - o Corner side setback: 8 feet minimum
 - o Rear setback: 10 feet
 - o Rear entry setback: 5 feet (garage setback for driveway parking standards from alley)

Type S-3 single family lots

- Minimum lot width: 50 feet
- Minimum lot depth: 100 feet
- Minimum lot size: 5,500 SF
- Average lot size: 6,000 SF
- Lots shall be front, side, or rear entry garage homes
- Building setbacks:
 - o Front setback: 10 feet from R/W
 - o Garage setback: 20 feet from back of sidewalk, or back of curb where no SW exists
 - o Side setback: 5' min. (no aggregate)
 - o Corner side setback: 5 feet
 - o Rear setback: 5 feet
 - o Rear entry setback: 5 feet (garage setback for driveway parking standards from alley)

Type S-4 single family lots

S-4 single family lots are not permitted in POD 8 and are only permitted along the collector streets within POD 6 and 7.

- Minimum lot width: 40 feet
- Minimum lot depth: 100 feet
- Minimum lot size: 4,000 SF
- Average lot size: 4,500 SF
- Front entry units may have 1 car garage or no garage for each unit
- Rear entry units may have 2 car garage for each unit
- Building setbacks:
 - o Front setback: 10 feet from R/W
 - o Garage setback: 20 feet from back of sidewalk, or back of curb where no SW exists
 - o Side setback: 5' min. (no aggregate)
 - o Corner side setback: 5 feet
 - o Rear setback: 5 feet
 - o Rear entry setback: 5 feet (garage setback for driveway parking standards from alley)

Perimeter buffers PODs 6, 7 & 8:

All perimeter buffers for PODs 6, 7 & 8 are noted in the table included at the end of Section 6.

Horton Park PUD Proposed Buffer Table				
POD #	North	East	South	West
3	20' Type B	20' Type B	30' Type B (50' Type A/B if disturbed per UDO)	20' Type B
4	30' Type B (50' Type A/B if disturbed per UDO)	25' Type B-residential and landfill	25' Type B – stream buffer next to landfill	0' - adjacent to gas easement
5	20' Type B	25' Type B–next to landfill 0' between POD 5&6	10' Type A-major collector * (type 'D' for alley loaded)	20' Type B
6	25' Type B – landfill 20' Type B- residential	20' Type B	10' Type A-major collector * (type 'D' for alley loaded) 20' Type B-residential 30' Type B-Beck property	0' - adjacent to gas easement
7	10' Type A-major collector *	10' Type D-collector OR 20' Type B-residential	None; internal to project (stream buffer)	10' Type B-floodplain
8	0' – internal 20' Type B-residential	20' Type B-stream buffer 20' Type B – residential 10' Type B – eastern boundary of Virginia Horton Stewart property	10' Type B-Colby Crossing & stream buffer	10' Type B floodplain

Buffers along roads shall be provided as shown on Sheet EX-1 or the PUD Plan Sheet Packet. Per UDO 8.2.6, within residential developments, no streetfront buffer is required on minor collectors or residential streets.

* Where alley-loaded homes face a major collector, a Type 'D' buffer shall be required.

Section 7: Architectural Standards

The following Architectural Standards shall apply for the multi-family/apartments, townhomes and single family homes as applicable to the following sections.

Apartment standards:

1. Vinyl siding is not permitted; however, vinyl windows, decorative elements and trim are permitted.
2. Siding materials shall be varied in type and/or color on 30% of each façade on each building.
3. Windows must vary in size and/or type.
4. Windows that are not recessed must be trimmed.
5. Recesses and projections shall be provided for at least 50% of each façade on each building.
6. Rooflines cannot be a single mass; they must be varied with the use of gables or parapets.
7. Garage doors must have windows, decorative details or carriage-style adornments.
8. At least three of the following decorative features shall be used on each building:
 - Decorative shake
 - Board and batten
 - Decorative porch railing/posts
 - Shutters
 - Decorative/functional air vents on roof or foundation
 - Recessed windows
 - Decorative windows
 - Decorative brick/stone
 - Decorative gables
 - Decorative cornices
 - Tin/metal roof
9. A varied color palette shall be utilized for the apartment buildings throughout the development. With garden style apartments, a minimum of three color families for siding shall be provided and will include varied trim, shutter, and accent colors complementing the siding color. For a single mass apartment structure, the color shall vary with accent colors or architectural features to provide building relief.
10. Breezeway(s) for the four story apartment elevation is to be enclosed for additional mechanical equipment or elevators.

Townhome standards:

1. Vinyl siding is not permitted; however, vinyl windows, decorative elements and trim are permitted.
2. All townhomes shall have a crawl space or raised foundation which at a minimum rises at least 12 inches from average grade across the front of the house to the finished floor level at the front door.
3. Roofline cannot be a single mass; it must be broken up horizontally and vertically between units.
4. Garage doors must have windows, decorative details or carriage-style adornments.
5. House entrances for units with front-facing single-car garages shall have a prominent covered porch/stoop area leading to the front door.
6. The garage cannot protrude more than 1 foot out from the front façade or front porch.
7. The visible side of a townhome on a corner lot facing the public street shall contain at least 2 decorative elements such as, but not limited to, the following elements:
 - Windows
 - Bay window
 - Recessed window
 - Decorative window
 - Trim around the windows
 - Wrap around porch or side porch

- Two or more building materials
 - Decorative brick/stone
 - Decorative trim
 - Decorative shake
 - Decorative air vents on gable
 - Decorative gable
 - Decorative cornice
 - Column
 - Portico
 - Balcony
 - Dormer
8. Building facades shall have horizontal relief achieved by the use of recesses and projections.
 9. A varied color palette shall be utilized on homes throughout the subdivision to include a minimum of three color families for siding and shall include varied trim, shutter, and accent colors complementing the siding color.
 10. The rear and side elevations of the units that can be seen from the right-of-way shall have trim around the windows.
 11. Minor elevation adjustments may be accommodated with staff approval – including limiting clipped dormers on no more than 25% of the proposed townhome building designs.
 12. Side entry, end unit townhomes in highly visible locations shall provide a covered entry feature for each unit. Highly visible locations shall include the end of a series of buildings, and adjacent to public or private rights-of-ways, recreation areas, open space, buffers, or adjacent properties.

Single-family residential standards:

1. Vinyl siding is not permitted; however, vinyl windows, decorative elements and trim are permitted.
2. All single-family homes shall have a crawl space or have a raised foundation which at a minimum rises at least 20 inches from average grade across the front of the house to the finished floor level at the front door.
3. Garage doors must have windows, decorative details or carriage-style adornments.
4. The garage cannot protrude more than 1 foot out from the front façade or front porch.
5. The roof shall be pitched at 5:12 or greater for 50% of the building designs.
6. Garages on the front façade of a home that faces the street shall not exceed 40% of the total width of the house and garage together.
7. Eaves shall project at least 12 inches from the wall of the structure.
8. The visible side of a home on a corner lot facing the public street shall contain at least 3 decorative elements such as, but not limited to, the following elements:
 - Windows
 - Bay window
 - Recessed window
 - Decorative window
 - Trim around the windows
 - Wrap around porch or side porch
 - Two or more building materials
 - Decorative brick/stone
 - Decorative trim
 - Decorative shake
 - Decorative air vents on gable
 - Decorative gable
 - Decorative cornice
 - Column
 - Portico
 - Balcony
 - Dormer
9. A varied color palette shall be utilized on homes throughout the subdivision to include a minimum of three color families for siding and shall include varied trim, shutter, and accent colors complementing the siding color.

10. House entrances for units with front-facing single-car garages shall have a prominent covered porch/stoop area leading to the front door.
11. The rear and side elevations of the units that can be seen from the right-of-way shall have trim around the windows.
12. Front porches shall be a minimum of 6 feet deep.
13. No more than 25% of lots may be accessed with J-driveways. There shall be no more than 3 such homes in a row on any single block. Any lots eligible for a J-driveway home shall be identified on the Final Plat.
14. A maximum of 100% of the single family detached residential units within POD 6 shall be permitted as “zero-entry” homes without the 20 inch rise from average grade across the front of the property to the finished floor elevation. All “zero-entry” homes shall also provide first floor master bedrooms. Lots permitted as “zero-entry” shall be noted on the Final Plat.
15. All single family detached residential homes are to be pre-configured with conduit for a solar energy system.
16. No less than 10 single family detached homes out of the first 100 homes within POD 6 will be installed with a minimum of a 4 kW solar PV system.

Section 8: Parking and Loading

Parking will be provided for each product type in accordance with Apex UDO Section 8.3 standards or as noted below.

Apartments:

Parking shall be provided by surface, garage, underground parking, or a mix of parking types. Parking shall be provided per UDO Section 8.3 standards in conjunction with staff reviews.

Townhomes:

Townhome parking shall be provided pursuant to standards established in Section 8.3 of the UDO with the following clarification:

- 2 parking space/townhome required, including garage or driveway spaces, plus
- 0.50 parking spaces/bedroom over 2 bedrooms/unit, plus
- 0.25 parking spaces/unit for guest spaces
- Garages and driveways shall be counted for overall parking standards if they meet dimensional standards

Single Family detached:

Parking for single family homes will be provided in garages and concrete driveways on each lot which meet Apex UDO standards. CBU or Mail Kiosk parking shall be calculated per UDO Section 8.3 standards and provided around the appropriate device.

Residential driveways shall have a minimum width of 12' and 20' in length as measured from the back of the sidewalk or, where no sidewalk exists, a minimum of 20' as measured from the back of the curb, to count as required parking.

Section 9: Resource Conservation Area (RCA)

Horton Park PUD (127.84 acres) is located north and east of 540 and is therefore required to meet the standards of UDO Section 8.1.2 to preserve or establish a minimum of 20% Resource Conservation Area (RCA) for the project. The project is proposing to mass grade the single-family portions of the project and is therefore required to provide an additional 2% RCA for the single family, mass graded sections. The project will provide an overall RCA of no less than 20% (25.568 acres) of the project's total gross acreage if the site is stage-graded, with an additional 2% RCA for any single family sections within Horton Park which are mass graded.

With large portions of floodplain along the western boundary of the site, development patterns may adjust to accommodate required RCA standards. RCA for the project may include stream buffers, floodplains, wetlands, steep slope areas, perimeter buffers, street and roadway buffers, a portion of storm water devices, community amenity areas, play lawns and other designated areas. The final location and calculations for RCA shall be finalized during the Master Subdivision Plan and Construction Document reviews.

Section 10: Landscaping

Internal landscaping will comply with various UDO sections including Section 8.2 for buffers, street tree plantings, foundation plantings, and tree preservation (as proposed) or as noted within Section 6 of the PD Text or as shown on EX-1: Proposed Site Exhibit attached with the rezoning request. With the variety of uses in and around the property, variable width and variable opacity buffers will be provided throughout the project.

The residential buffers will follow UDO standards for perimeter plantings, Jessie Drive frontage (thoroughfare), collector streets, and residential properties adjacent to developed or undeveloped property. Proposed buffers are labeled within Section 6 – Description, Density, and Dimensional Standards for each POD and shown on Exhibit 1 to assist in the identification of the buffer classifications.

Section 11: Signage

All signage will comply with the applicable standards and requirements of UDO Section 8.7.

Signage for the residential developments, whether apartments, townhome or single family PODs, shall be coordinated with staff during the appropriate Master Subdivision Plan and/or Master Signage Plan approval. Each section of the development will provide sign easements along perimeter street infrastructure for appropriate signage.

Section 12: Public Facilities

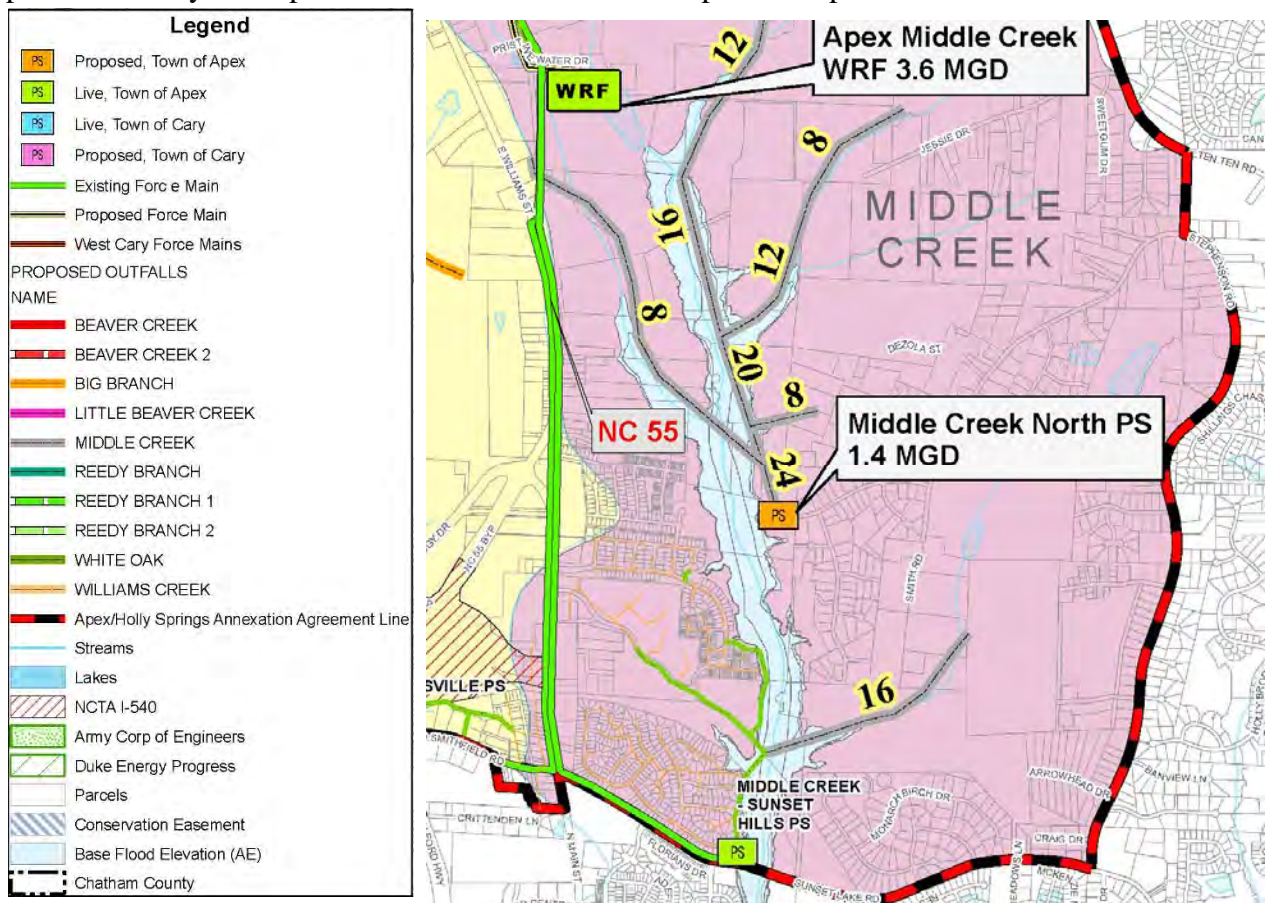
The project’s construction will consist of the extension of public facilities to serve the site. All public facilities and infrastructure shall be designed per the current Town of Apex standards and specifications. Facilities include:

Water

Water will be extended from Pemberley subdivision (south) and Smith Road (east) for Phase I; and from Jessie Drive (north) for Phase II. Various extensions will be provided within the Horton Park phasing study to confirm sufficient pressure and flows to all portions of the project during any phased portion of the development.

Sanitary Sewer

The Middle Creek North Pump Station is proposed to provide sanitary sewer service to the Middle Creek drainage basin north of Colby Chase Drive. This pump station will be constructed by the development team, including design, land acquisition, construction, and commissioning. Costs associated with the pump station will be reimbursed through separate developers’ agreements with the Town of Apex that are outside the scope of the PUD process. The new regional pump station is required as the existing Middle Creek – Sunset Hills pump station is currently at capacity and cannot accept significant flows from development within the Middle Creek drainage basin. This new pump station will alleviate capacity concerns for the existing pump station and provide a public sewer system option for Horton Park and other parts of Apex.



Streets

A number of future collector streets and a future 4-lane thoroughfare are shown on the Apex Transportation Plan – Thoroughfare and Collector Street Map within the boundary of the PUD. These streets include Jessie Drive (major thoroughfare); an east-west major collector (within the vicinity of Dezola Street); an east-west minor collector (connection from Percussion Drive to the north-south connector); a north-south minor collector (Colby Chase Drive to the east-west major collector), and a north-south major collector from the east-west major collector to Jessie Drive). The final alignment of any collectors or thoroughfares will be coordinated with staff during the Master Subdivision Plan or Site Plans. The ultimate right-of-way for each of the collectors and thoroughfares shall be provided during the time of Master Subdivision Plan review. The roadway sections which are installed are based upon the traffic capacity evaluations, the Traffic Impact Analysis, standards, and discussions with staff at the time of submittal of the Horton Park design documents. Modifications to the alignment of the collectors and thoroughfares will be reviewed with staff at the appropriate time to ensure compliance with Town standards that certain connections are made. The final alignment of all streets shown within the Master Subdivision Plans will be coordinated with staff.

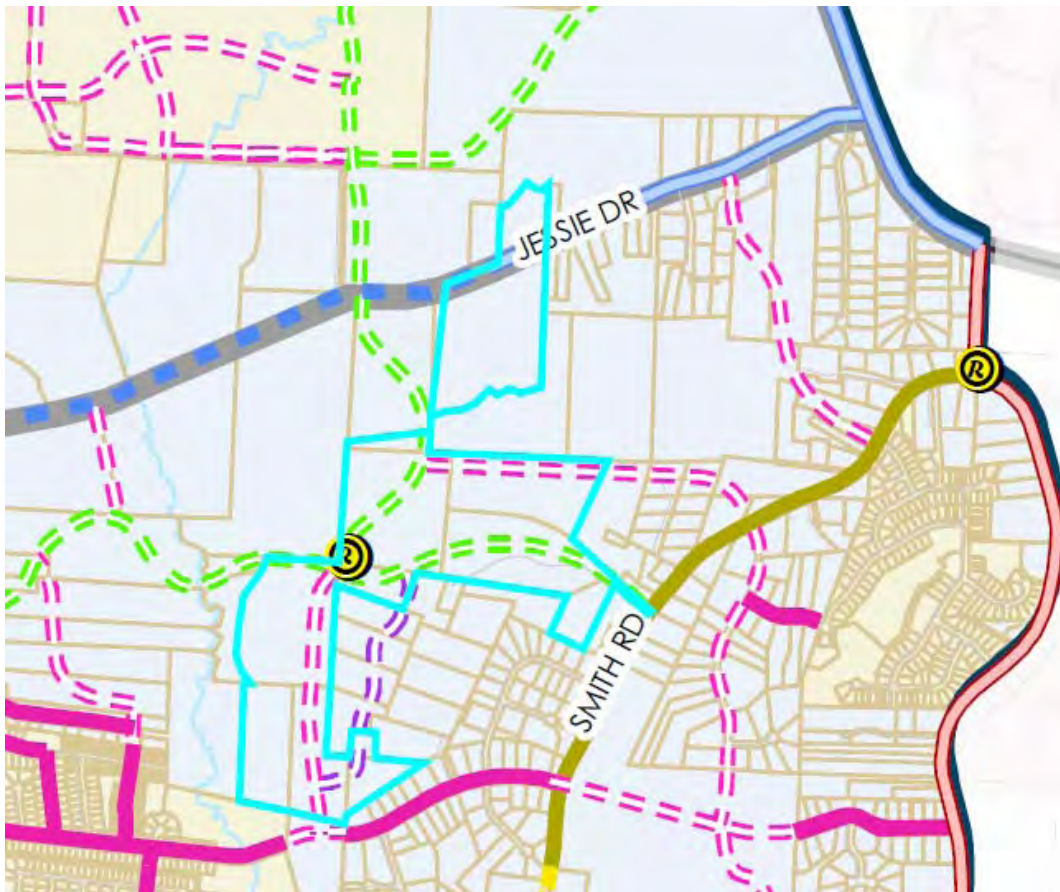


Figure 1 – Apex
Transportation Map
PUD outlined in Cyan

Transportation:

Following are the Traffic Capacity Zoning Conditions for the project pursuant to the MOU dated June 21, 2019 coordinated between NCDOT, the Town of Apex Transportation Engineering staff, and the project Transportation Engineer (Ramey Kemp & Associates).

The Developer shall coordinate with NCDOT all planned improvements on state maintained roadways. In some cases, zoning conditions are subject to NCDOT review and approval and may change to conform to NCDOT approvals. Turn bay storage lengths refer to the length of full width lane provided exclusive of the 100-foot taper in each case. Jessie Drive shall continue as a state maintained roadway for all existing and proposed sections, and the developer shall dedicate the right-of-way pursuant to the current Town of Apex Transportation Plan, currently a 110-foot public right of way along all sections of Jessie Drive within the development.

The timing of the roadway improvements will be coordinated with Apex Transportation Staff during the Master Subdivision Plan and Construction Document review based upon the recommendations within the approved Traffic Impact Analysis (TIA) and according to the phasing plan provided in Section 17 - Phasing. The following recommendations are based upon the revised TIA which will supersede the TIA dated May 31, 2017, the Colby Chase Addendum dated August 30, 2017, and the TIA Update date July 2, 2019.

PHASE I TRANSPORTATION IMPROVEMENTS

US 1 Southbound Ramps / Waterford Green Drive at Center Street

- The Developer shall coordinate with NCDOT and Town staff in order to conduct a signal timing study and implement traffic signal timing modifications within the scope of the closed loop-system for Center Street/Ten-Ten Road, including this intersection, Lufkin Road and Reliance Avenue. The developer shall be obligated to pursue this effort only once during the development build-out schedule as directed by the Town of Apex Senior Transportation Engineer.
- The Developer shall provide intersection signal timing evaluation and modifications at a time to be determined by the Town of Apex Senior Transportation Engineer within the following schedule: The timing evaluation shall occur after the first Final Plat is recorded and prior to the recordation of the Final Plat for no more than 250 dwelling units of single-family and/or townhomes, or the issuance building permits for 250 apartment units, or any combination thereof.

Ten Ten Road at Smith Road

- The Developer shall extend the existing westbound left-turn lane to provide a minimum of 350 feet of storage and appropriate taper.
- The Developer shall construct the aforementioned improvements at the Ten Ten Road/Smith Road intersection at the time the East-West Collector Street is constructed and platted to Smith Road.

Smith Road at Stephenson Road/Smith Road

- The Developer shall construct an eastbound left-turn lane with a minimum of 100 feet of storage and appropriate taper.
- The Developer shall monitor this intersection for installation of all-way stop control and provide for the all-way stop conversion if warranted and permitted by NCDOT.
- The Developer shall construct the aforementioned improvements at the Smith Road/Stephenson Road intersection at the time the East-West Collector Street is constructed and platted to Smith Road.

Smith Road at East-West Collector Street

- The Developer shall construct a southbound right-turn lane with a minimum of 100 feet of storage and appropriate taper.
- The Developer shall construct a Major Collector Street from the North-South Collector Street to Smith Road on a 60-foot public right of way for the entire length.
- The Developer shall provide access to existing residential properties on Dezola Street in a manner that avoids residential driveways directly accessing any Major Collector Streets.

East Williams Street at Straywhite Avenue

- The Developer shall stripe the Straywhite Avenue approach to E. Williams Street for two lanes with 75 feet of storage.
- The Developer shall monitor the intersection and install a traffic signal if warranted and permitted by NCDOT.
- The Developer shall complete the monitoring period as directed by the Town of Apex Senior Transportation Engineer within the following schedule: The monitoring shall occur after the opening of Colby Chase Drive from the Pemberley subdivision to the Merion Subdivision but no later than the recording of the Final Plat for 250 dwelling units of single-family and/or townhomes, or the issuance of building permits for 250 apartment units, or any combination thereof.

East Williams Street at Technology Drive at NC 55

- Intersection included in the MOU. No improvements warranted per TIA.

North-South Collector Street

- The Developer shall construct the portion of the North-South Collector Street from Colby Chase Drive to the PUD boundary at the southern creek on N/F Cash Property (PIN 0751-31-0079) to a Minor Collector Street typical section on a 60-foot public right-of-way.

PHASE II TRANSPORTATION IMPROVEMENTS

The full project build-out includes the following intersections per the approved MOU.

Jessie Drive at Ten-Ten Road

- The Developer shall construct a westbound left-turn lane with a minimum of 100 feet of storage and appropriate taper prior to the pending state TIP project.
- The Developer shall construct an eastbound right-turn lane with a minimum of 200 feet of storage and appropriate taper prior to the pending state TIP project.
- The Developer shall construct a northbound right-turn lane with 100 feet of storage and appropriate taper prior to the pending state TIP project.
- The Developer shall monitor this intersection and install a traffic signal if warranted and permitted by NCDOT prior to the pending state TIP project.
- The Developer shall construct the improvements at the aforementioned Jessie Drive/Ten Ten intersection at the time Jessie Drive is extended to the Horton Park North-South Collector/Production Drive intersection.
- If the traffic signal is not warranted prior to the first Final Plat, the developer shall provide a performance bond for the signal based on an engineer's estimate of final costs. The performance bond shall remain in place for a period of 5 years, or until the last Final Plat for the development, whichever comes first. Once the signal is warranted, the developer shall install the signal within 6 months plus time for any delays due to right-of-way acquisition and utility relocation but not to exceed 12 months.

Jessie Drive at the North-South Collector Street

- The Developer shall construct single lane northbound and southbound approaches with stop control, and free-flow eastbound and westbound approaches with 100-foot left turn lanes both directions at both intersections.
- The Developer shall construct the portion of the North-South Collector Street from the PUD boundary on the N/F Cash property (PIN 0751-31-0079) to Jessie Drive to a Major Collector Street typical section on a 60-foot public right of way.
- The Developer shall construct the aforementioned improvements prior to recordation of the first Final Plat for single-family and/or townhomes, or the issuance of the first building permit for apartments within Phase II of the development.

Jessie Drive at Site Drive #1 (POD 3 & 4)

- The Developer shall construct single lane northbound and southbound approaches with stop control, and free-flow eastbound and westbound approaches with 100-foot left turn lanes both directions.

Jessie Drive at Site Drive #2 (POD 4)

- The Developer shall construct single lane northbound and southbound approaches with stop control, and free-flow eastbound and westbound approaches with 100-foot left turn lanes both directions.

The following roadway improvements are internal to the project and do not require NCDOT review or approval. These improvements shall be reviewed with Apex staff to verify compliance with design standards during the zoning, master subdivision, and construction document stages of the project as appropriate. Improvements shall be constructed and platted as the connections are created for each development POD. Said improvements were identified within the Traffic Impact Analysis dated May 31, 2017 with the Colby Chase Addendum dated August 30, 2017 with no proposed modifications.

North-South Collector Street at Site Drive #2, #3, and Dezola Street

- The Developer shall construct single lane eastbound and westbound approaches with stop control, and single lane northbound and southbound free-flow approaches.

East-West Collector Street at Site Drive #4

- The Developer shall construct single lane northbound and southbound approaches with stop control, and single lane eastbound and westbound free-flow approaches. Stop control may be reversed subject to future connectivity.

North-South Collector Street at Colby Chase Drive

- The Developer shall construct the connection of Colby Chase from Pemberley Subdivision to the Merion Subdivision. The connection of Colby Chase Drive to the state-maintained portion requires NCDOT review and approval.
- The Developer shall construct the connection of the North-South Collector Street to Colby Chase Drive.
- The Developer shall evaluate with Apex staff the option for traffic calming devices along Colby Chase Drive between Pemberley and Merion subdivisions.

Colby Chase Drive Extension

- The Developer agrees not to open Colby Chase Drive to the Merion Subdivision until the North-South Collector Street is constructed and open to the public or at the direction of the Town of Apex Senior Transportation Engineer.

Sidewalks

Sidewalks will be installed in accordance with the UDO standards along all streets within the residential development and along the public rights-of-ways.

Greenways

Greenways and multi-use paths will be provided within the development per the PRGOS Master Plan and as an additional project amenity. Location of said greenways and multi-use paths is being and will continue to be coordinated with staff through the rezoning process and future MSPs. Additional detail will be provided at the appropriate time including the Parks & Recreation Advisory Commission meeting, MSP review and construction document submittals. Additional information is contained in Section 16 – Parks & Recreation.

Section 13: Pedestrian Circulation System and Amenities

The pedestrian circulation system will include sidewalks along internal streets, perimeter roadways, Jessie Drive, Dezola Street and other named and unnamed collectors, residential streets, alleys or as appropriate in discussion with staff for each Phase of the project. Various greenways and multi-use paths are shown within the Apex Master Plans and will be coordinated with staff for the design and installation as appropriate during Master Subdivision Plan review.

The developer has agreed to work with staff to find a location which can accommodate a future transit easement along Jessie Drive for Phase II of the project. Any final agreements and location shall be coordinated during the design of Jessie Drive. This commitment is not a commitment to construct – this is a commitment to work with staff to find an appropriate location only.

Section 14: Natural Resources and Environmental Protection

The site is located within the Town's Secondary Watershed Protection Overlay District including Middle Creek and the large floodplain associated with this feature. This part of Apex is currently undeveloped and has a number of creeks and streams containing a large amount of wetlands, floodplains, stream buffers and other environmentally sensitive areas. The site is shown within Specials Flood Hazard areas as identified by FEMA FIRM Maps 3720075100J and 3720075000J dated May 2, 2006.

Impacts to some of these environmentally sensitive areas will be unavoidable during the design and permitting for the project. Impacts will be identified and permitted through the appropriate local, State and/or Federal review agencies as required for construction of the project. Major creek crossings will be required and adjusted to minimize environmental impacts associated with the development.

A full review of the flora, fauna, endangered species, and historical data has been completed and all areas identified within the previously approved Master Subdivision Plans. Environmentally sensitive areas and impact maps have been prepared through the rezoning, Master Subdivision Plan, and construction documents for impacts. The creeks, streams, and buffers which are currently shown were provided by S&EC, Inc. and from the current USGS map and Wake County soils

survey. An onsite review with the US Army Corps of Engineers and NC-DNR has been completed. Any additional buffers or streams have been coordinated with NCDWR staff and the site adjusted per the final concurrence calls. Immediately adjoining land uses would extend into the newly available development area with additional building square footage or additional lots not to exceed the zoning approval conditions.

Based upon the North Carolina State Historic Preservation Office website (HPOWEB GIS Service) and Apex UDO Section 12.2 – Historic Structures – there are no historic homes or contributory structures within the boundary of the properties.

Section 15: Storm Water Management

The project will contain a number of proposed storm water SCMs. The site is located within the Middle Creek basin and Apex’s Secondary Watershed Overlay District and is therefore required to meet the standards of UDO Section 6.1 as applicable. Horton Park will utilize approved structural devices to control storm water and sediment runoff including detention ponds, retention ponds, bioretention cells, wetlands, underground devices, and/or other State recognized storm water management devices. Storm water control devices shall blend into the surrounding developments or be used as possible amenities depending upon their design, aesthetics, size, and location. Final routing of the SCMs will be done in conjunction with the Apex Environmental Services staff to assure compliance with appropriate guidelines.

Section 16: Parks and Recreation

The Parks, Recreation, Greenways and Open Space Master Plan shows the development of the Middle Creek greenway from the Holly Springs greenway system at Sunset Lake Road extending north to Lufkin Road Middle School and the Town of Cary’s greenway system north of Ten Ten Road. The greenway and multi-use paths shall be a mix of asphalt, concrete, sidewalk, boardwalk, and pedestrian bridges which will be identified with Apex staff during the Master Subdivision Plan review. Horton Park has been in discussions with Parks & Recreation staff to determine the best routing to serve the most residents and possible commuters as practical. This routing would involve greenways along Middle Creek, unnamed creeks and streams, floodplain boundaries and other natural areas as well as multi-use paths along residential streets, minor collectors, and major collectors.

Horton Park was reviewed at the August 30, 2017 PRCR Advisory Commission meeting and was approved consistent with Staff’s recommendation for a fee-in-lieu for the project with the flexibility for both parties to continue to work to find a way to implement the Middle Creek Greenway plan. In the event a solution can be reached, which may involve adjusting the corridor, the developer would build the connection and receive credit against the fees owed. All other sections of the UDO pertaining to the construction of public greenway would then be applicable.

A Public Art Easement shall be provided at the intersection of Jessie Drive and the North-South Collector with a second location within the roundabout at the intersection of the North-South Collector and the East-West Collector streets.

Section 17: Phasing

Lot Development Phasing:

The project will consist of as many as seven (7) development phases. These phases will be broken into the following categories, although development will vary in timing and order of POD development based upon market conditions and off-site roadway improvements at the time of approval:

1. one (1) phase of single-family and/or townhomes north of Jessie Drive (POD 3);
2. one (1) phase of townhomes and/or apartments south of Jessie Drive (POD 4);
3. two (2) townhome phases south of Jessie Drive (POD 5); and
4. three (3) medium density, single family phases south of Jessie Drive to Colby Chase Drive and east to Smith Road (PODs 6, 7 & 8).

The development of Horton Park will also be broken down into two (2) larger phases – as identified in the Traffic Impact Analysis (TIA). The two phases within the TIA are described as:

Phase I:

Phase I includes the development of all single-family residential lots and townhome lots south of the PUD boundary located along the creek on the southern portion of the N/F Cash Property (PIN 0751-31-0079). This includes PODs 5 – 8, the East-West Major Collector Street from Smith Road to the western project boundary and the North-South Collector Street from Colby Chase Drive to the boundary of the PUD located along the creek on the southern portion of the N/F Cash Property (PIN 0751-31-0079).

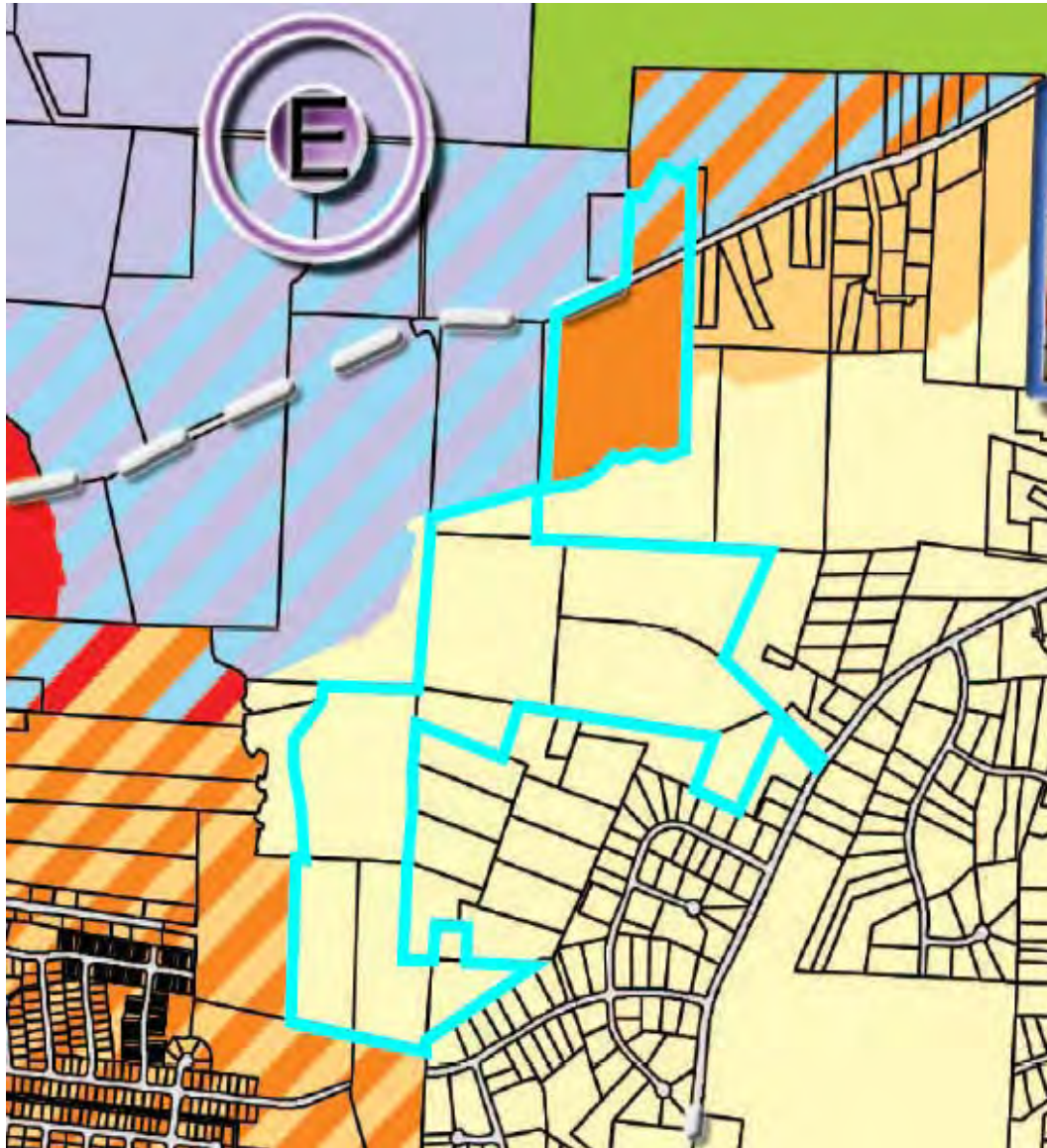
Phase II:

Phase II includes the development of the single-family, townhomes, and/or apartments along the Jessie Drive corridor. This specifically includes PODs 3 and 4. Phase II also includes the construction of the North-South Major Collector from the Phase I terminus to Jessie Drive; and the construction of Jessie Drive from the current terminus to the North-South Major Collector Street.

Section 18: 2045 Land Use Map

The Horton Park PUD development encompasses 127.84 acres of property including multiple residential types (PODs 3-8). The rezoning request is in keeping with the land use designations identified on the current 2045 Land Use Map. The 2045 Land Use Map has been included for reference in this section although there are no requested changes.

NO CHANGES TO THE CURRENT 2045 LAND USE MAP ARE PROPOSED WITH THE HORTON PARK REZONING.



2045 Land Use Map Boundary of PUD-CZ district is shown in CYAN.

Future Land Classifications

- | | |
|--|---|
|  Protected Open Space |  Park—Public or Private |
|  Rural Density Residential
<small>One dwelling unit per five acres</small> |  School |
|  Low Density Residential
<small>Single-family homes or a mix of single-family homes with duplexes and/or townhomes</small> |  Sanitary Landfill |
|  Medium Density Residential
<small>Single-family homes, duplexes, and townhomes</small> |  Right-of-Way |
|  Medium/High Density Residential
<small>Single-family homes, duplexes, triplexes, quadplexes, and townhomes*</small> |  Mixed Use
<small>80% Non-residential</small> |
|  High Density Residential
<small>Townhomes, triplexes, quadplexes, and apartments</small> |  Property Lines |
|  Office Employment |  Duke Energy Land |
|  Commercial Services |  Proposed Thoroughfares |
|  Industrial Employment | |

*Apartments allowed within the Town Center and Transit-Oriented Development context areas

Potential Activity Centers

-  **Neighborhood Mixed Use (NMU)**
Economic development potential estimated to be, but not limited to:
• Up to 100,000 ft² of commercial
• 1 to 2-mile trade area
-  **Employment Mixed Use (EMU)**
Economic development potential estimated to be, but not limited to:
• Office, warehousing, tech/flex
• Same commercial
-  **Community Mixed Use (CMU)**
Economic development potential estimated to be, but not limited to:
• Up to 350,000 ft² of commercial
• 4 to 6-mile trade area
-  **Regional Mixed Use (RMU)**
Economic development potential estimated to be, but not limited to:
• Over 350,000 ft² of commercial
• 10 to 25-mile trade area
-  **Recreational Mixed Use (XMU)**
Economic development anchored by a recreational amenity
• Size of businesses and services dependent upon amenity size
• Pedestrian and bicycle mobility preserved

Section 19: Compliance with the Unified Development Ordinance

With any specific items previously identified within the PD Text addressed, the project – including the Residential Master Subdivision Plans, non-residential Site Plans, and Construction Documents – shall comply with the applicable Apex Unified Development Ordinance sections. Any deviation from these standards shall be approved by staff, Planning Board or Town Council representatives through the design and approval for the project as appropriate.

EXHIBITS

The following exhibits/drawings are attached as part of the required PUD-CZ. Any reference to the LI-CZ parcels is for information purposes only and does not constitute control or additional standards on the LI-CZ parcel.

COVER SHEET (Sheet C000)

The Cover Sheet contains contact information, a vicinity map, the site design guidelines and required Town of Apex site notes and descriptions.

EXISTING CONDITIONS (Sheet C001)

The C001 Existing Conditions sheet is the overall boundary of the property including land owners, property line calls, creek data, adjacent property owner's information, land uses, PIN reference, deed and/or plat information, and surrounding roadway networks.

EXISTING CONDITIONS - TOPO (Sheet C002)

The C002 Existing Conditions sheet includes the data on sheet C001 along with LIDAR topographic information referenced into the drawing.

EXISTING CONDITIONS – TREE SURVEY (C003)

The C003 Tree Survey sheet contains the location, size and tree data. The trees were identified per requirements of UDO Section 8.1.2(B)(2) including perimeter site locations, anticipated RCA, and a general notation for internal tree samplings. This information was provided by Ellen & Associates, registered NC forester #565.

CONCEPTUAL SITE PLAN (Sheet C100)

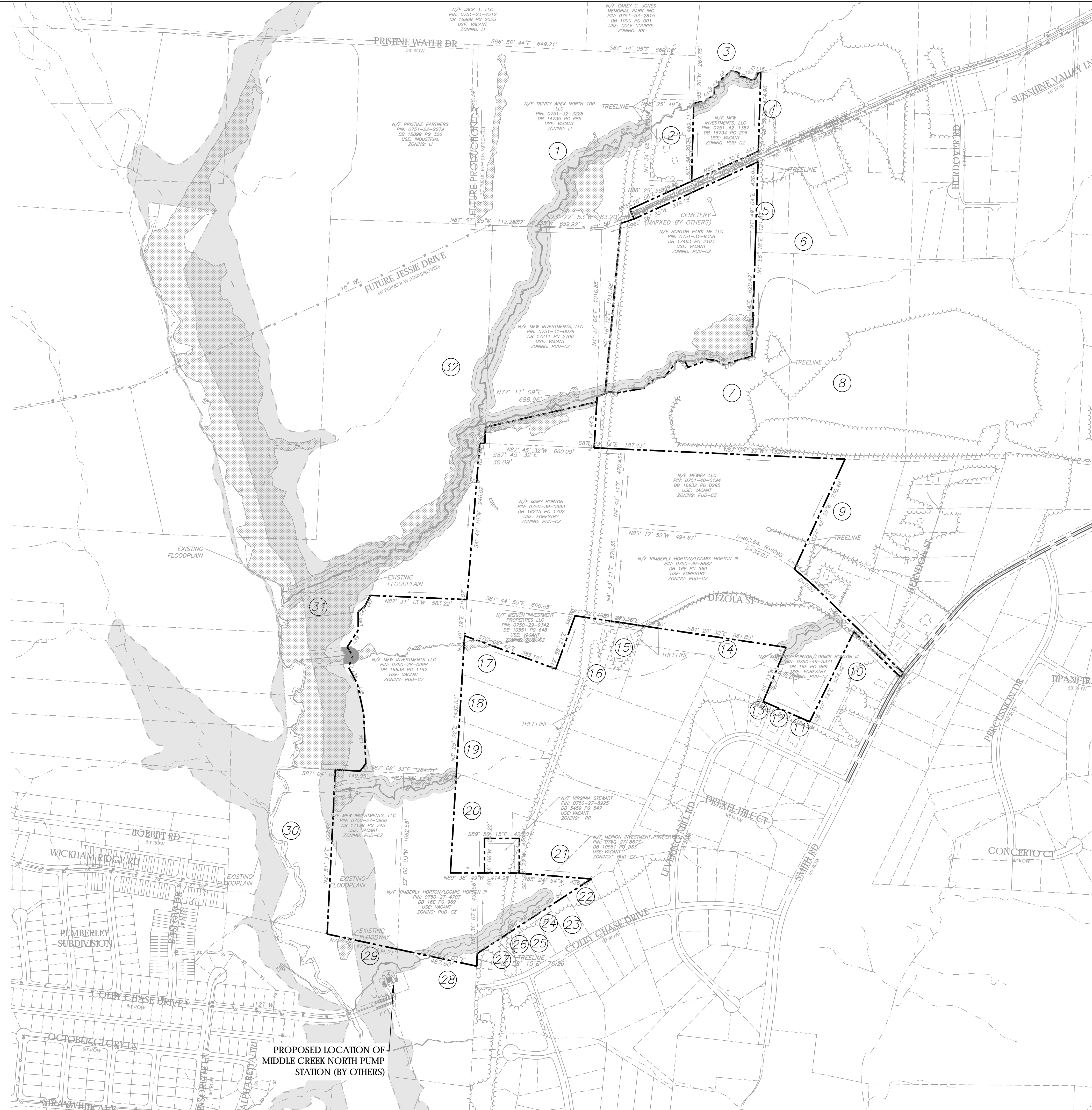
The Conceptual Site Plan includes the required base items per the PUD checklist, standard site notes, access points, existing street network, and identification of specific uses. The townhome and apartment areas, as well as the single family residential areas, are all identified on the plan. Items to point out are the locations of Jessie Drive, the gas easement and creek locations based upon surveys, LIDAR and FEMA mapping information.

CONCEPTUAL UTILITY PLAN (Sheet C200)

The Conceptual Utility Plan shows the location of existing water and sewer infrastructure in the area. Although there is no sewer in the area, we have still set up the drawing to reflect existing conditions and location of the connections and Middle Creek North Pump Station.

PROPOSED SITE EXHIBIT (Sheet EX-1)

The Proposed Site Exhibit shows the location of the different uses within the project boundary. This includes; high density residential (townhomes and/or apartments); medium/high density residential (townhomes); and medium density residential (single family homes). Each section is broken into PODs for each use and summarized in the PD Text document.



NOTES:

1. THERE ARE NO CONTRIBUTING HISTORICAL STRUCTURES WITHIN THE PROJECT BOUNDARY.
2. SUBJECT PROPERTIES KNOWN AS PARCEL IDENTIFICATION NUMBERS, AS SHOWN ON SHEET C000.
3. ALL OFF-SITE EASEMENTS SHALL BE ACQUIRED BY THE DEVELOPER AND THESE OFF-SITE EASEMENTS SHALL BE RECORDED BY A DEED OF EASEMENT PRIOR TO UTILITY INFRASTRUCTURE CONSTRUCTION APPROVAL. THESE EASEMENTS SHALL BE DEDICATED TO THE TOWN OF APEX AND LABELED "TOWN OF APEX PUBLIC UTILITY EASEMENT".
4. NO PERSON SHALL PLACE ANY PART OF A STRUCTURE, ANY PERMANENT EQUIPMENT, OR IMPOUNDMENT UPON TOWN OF APEX PUBLIC UTILITY EASEMENTS. PROHIBITED STRUCTURES INCLUDE, BUT ARE NOT LIMITED TO: BUILDINGS, HOUSES, AIR CONDITIONING UNITS, HEAT PUMP UNITS, DECKS, GARAGES, STORAGE/TOOL SHEDS, SWIMMING POOLS, WALLS, RETAINING WALL MECHANISMS/APURTENANCES AND FENCES, UPON PRIOR WRITTEN APPROVAL BY THE PUBLIC WORKS DEPARTMENT. FENCES MAY BE PERMITTED ACROSS EASEMENTS, PROVIDED THAT AN ACCESS GATE IS INSTALLED FOR THE FULL WIDTH OF THE EASEMENT.
5. NO PERSON SHALL PLANT TREES, SHRUBS, OR OTHER PLANTS WITHIN A TOWN OF APEX PUBLIC UTILITY EASEMENT WITHOUT PRIOR WRITTEN APPROVAL FROM THE PUBLIC WORKS DEPARTMENT.
6. ANY AND ALL STREET SIGNS SHALL ONLY BE PROVIDED AND INSTALLED BY THE TOWN OF APEX.
7. THE PROPERTY SHOWN HEREON IS IN THE TOWN OF APEX SECONDARY WATERSHED PROTECTION AREA.
8. FIRM PANEL 3720075100J AND 3720075000J SHOWS THE PRESENCE OF FLOOD ZONES ON PROPERTY.

BOUNDARY INFORMATION OBTAINED FROM WAKE COUNTY GIS, DEED AND PLAT DESCRIPTIONS, APEX LAND AND OTHER AVAILABLE DATA SOURCES. FINAL BOUNDARY AND SURVEY DOCUMENT WILL BE PROVIDED DURING THE SITE PLAN DESIGN PHASE OF THE DEVELOPMENT.

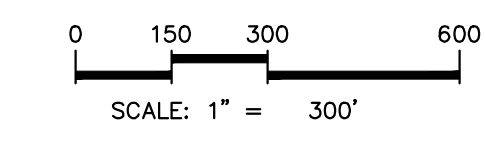
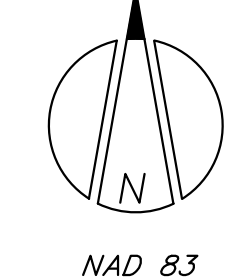
NUMBER	N/F OWNER	PIN	DEED BOOK	DEED PAGE	USE	ZONING
1	Trinity Apex North 100 LLC	0751-32-3228	14735	685	Vacant	RA
2	MFV INVESTMENTS, LLC	0751-32-8256	17311	557	SINGLE FAMILY	RA
3	INDUS REAL ASSOCIATION LLC	0751-42-6828	12215	930	SINGLE FAMILY	RA
4	BLANCHE HINTON	0751-42-4433	12-E	1476	SINGLE FAMILY	RA
5	MFV INVESTMENTS, LLC	0751-41-4924	17311	557	SINGLE FAMILY	RR
6	KK LAND INC	0751-51-0857	13881	629	VACANT	RR
7	KK LAND INC	0751-40-0697	13881	629	VACANT	RR
8	SIRRHAN GRIFFIN	0751-40-7981	8778	2496	VACANT	RR
9	DWIGHT WRIGHT	0750-49-8888	16215	1702	SINGLE FAMILY	RR
10	DAVID & MARILYN MARTIN	0750-59-0018	17467	358	SINGLE FAMILY	RR
11	MARTHA BURNET	0750-48-5688	13519	1893	SINGLE FAMILY	RR
12	RICHARD BACHOLZKY	0750-48-4775	16444	1976	SINGLE FAMILY	RR
13	KENNETH MOUSHEGIAN	0750-48-3860	12784	2062	SINGLE FAMILY	RR
14	JOSHUA BECK	0750-49-2134	15284	1727	SINGLE FAMILY	RR
15	MELISSA HINTON	0750-39-5262	8281	225	MOBILE	RR
16	EUGENE HORTON HEIRS	0750-39-3222	15-E	1859	VACANT	RR
17	MATTHEW HORTON	0750-29-9045	5861	59	VACANT	RR
18	ALTON RICHARDSON	0750-28-8880	7245	786	VACANT	RR
19	DONALD RICHARDSON	0750-28-8532	11858	2707	VACANT	RR
20	DONALD RICHARDSON	0750-28-6271	7275	654	VACANT	RR
21	ROBERT HEISE	0750-37-1996	16444	2524	SINGLE FAMILY	RR
22	ROBERT CATHEY	0750-37-3664	11988	1801	SINGLE FAMILY	RR
23	RICHARD STEWART	0750-37-2555	11012	2141	SINGLE FAMILY	RR
24	DENNIS DALE	0750-37-1540	11800	97	SINGLE FAMILY	RR
25	TODD YOUNG	0750-37-0454	11069	476	SINGLE FAMILY	RR
26	JOHN FALCHI	0750-27-9358	10836	2123	SINGLE FAMILY	RR
27	TIMOTHY FELTON	0750-27-8301	17376	1337	SINGLE FAMILY	RR
28	MFV INVESTMENTS, LLC	0750-26-4926	16554	2295	SINGLE FAMILY	RR
29	PEMBERLEY PROPERTY OWNERS ASSOCIATION, INC.	0750-17-6279	16533	1996	VACANT	PUD-CZ
30	HORTON, KIMBERLY A	0750-18-4078	16E	969	VACANT	RR
31	MFV INVESTMENTS, LLC	0750-19-7426	16638	1192	VACANT	RR
32	CHARLES WOMBLE	0751-20-1670	4443	94	VACANT	RA

- ON-SITE STREAM BUFFERS
- ON-SITE WETLANDS
- FLOODWAY
- FLOOD FRINGE

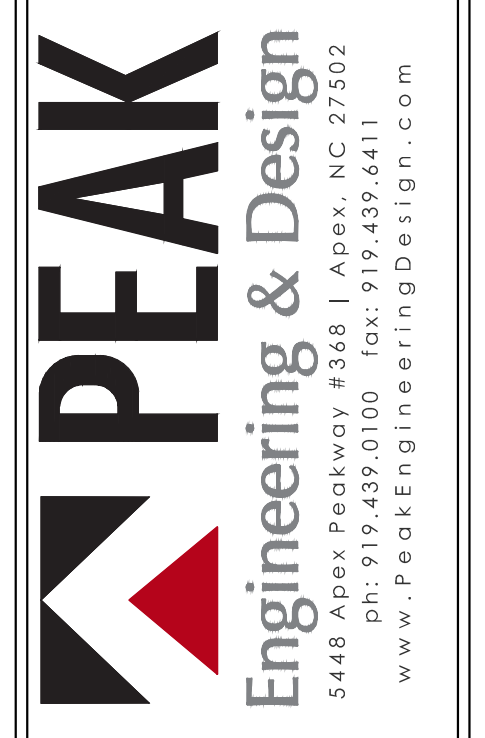
*OFF-SITE STREAM BUFFERS ARE NOT SHOWN

--- PROJECT'S PERIMETER BOUNDARY

ENVIRONMENTAL FEATURES NOTE:
 STREAM BUFFERS WERE OBTAINED FROM APEX WATERSHED PROTECTION OVERLAY DISTRICT MAP, USGS MAPPING, WAKE COUNTY SOILS SURVEY AND AN ONSITE DELINEATION BY SOIL & ENVIRONMENTAL CONSULTANTS (S&C). A FINAL JURISDICTIONAL DETERMINATION (JD) MAP WILL BE PREPARED FOR APPROVAL.



1 EXISTING CONDITIONS
 SCALE: 1" = 300'



NC License #P-0673

Project: **HORTON PARK**
JESSIE DRIVE
WHITE OAK TOWNSHIP
APEX, NORTH CAROLINA 27502



NOT FOR CONSTRUCTION

NO.	DATE	REVISION
1	7/1/2019	ISSUED FOR PERMITS
2	7/1/2019	REVISED FOR COMMENTS

title:
EXISTING CONDITIONS

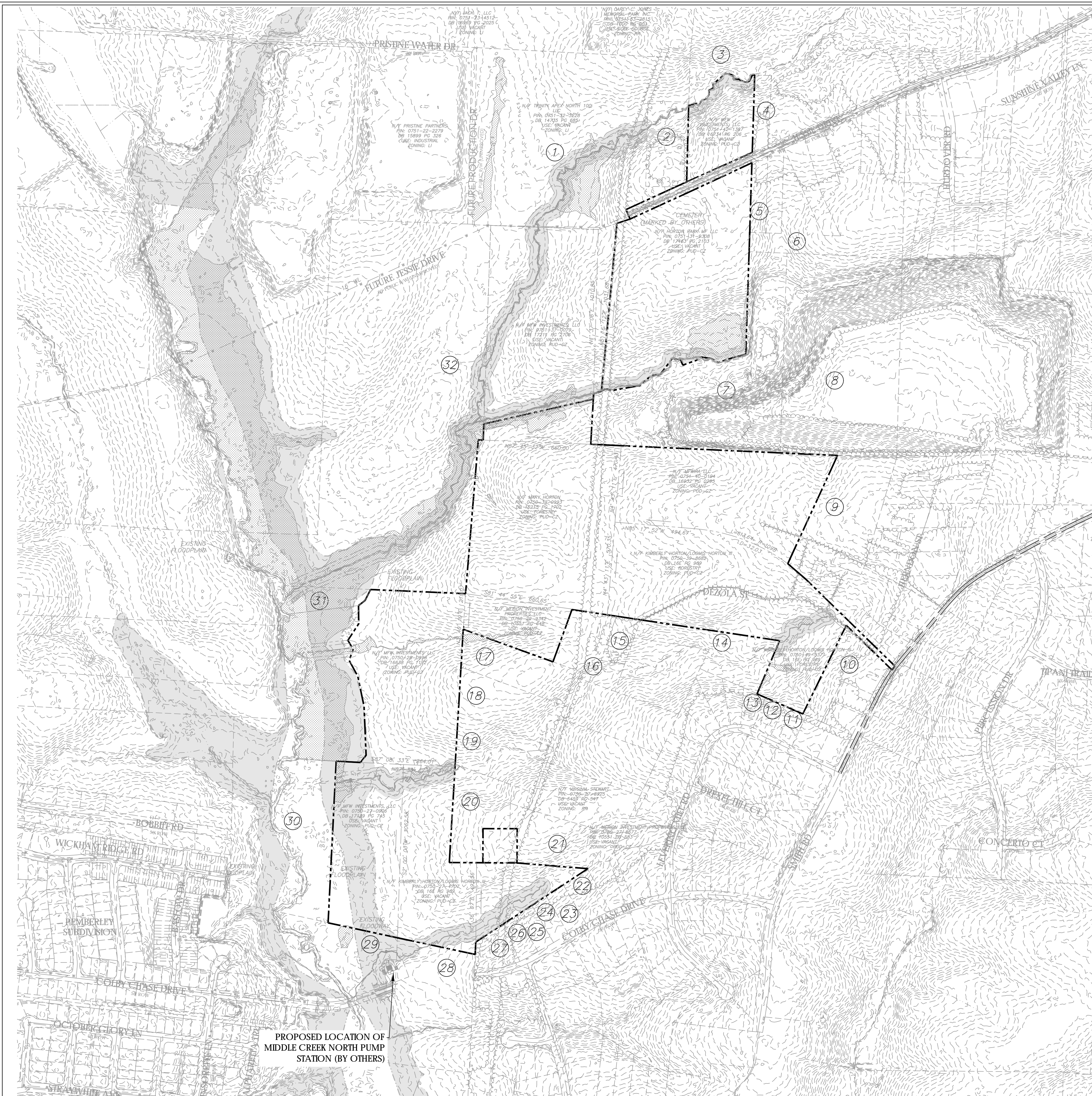
proj #:
161201

date:
July 1, 2019

dwg by: **JE**
 chkd by: **JR**

scale:
1" = 300'

sheet:
C001
 Planned Unit Development Plan



ENVIRONMENTAL FEATURES NOTE:
 STREAM BUFFERS WERE OBTAINED FROM APEX WATERSHED PROTECTION OVERLAY DISTRICT MAP, USGS MAPPING, WAKE COUNTY SOILS SURVEY AND AN ONSITE DELINEATION BY SOIL & ENVIRONMENTAL CONSULTANTS (S&EC). A FINAL JURISDICTIONAL DETERMINATION (JD) MAP WILL BE PREPARED FOR APPROVAL.

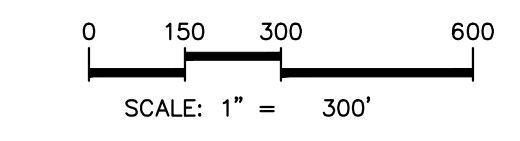
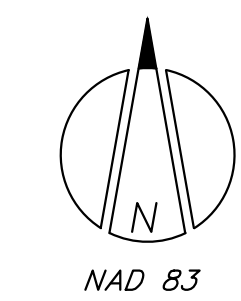
- PROJECT'S PERIMETER BOUNDARY
- ON-SITE STREAM BUFFERS
- ▨ ON-SITE WETLANDS
- ▧ FLOODWAY
- ▩ FLOOD FRINGE

*OFF-SITE STREAM BUFFERS ARE NOT SHOWN

NUMBER	N/F OWNER	PIN	DEED BOOK	DEED PAGE	USE	ZONING
1	Trinity Apex North 100 LLC	0751-32-3228	14735	685	Vacant	RA
2	MFW INVESTMENTS, LLC	0751-32-8256	17311	557	SINGLE FAMILY	RA
3	INDUS REAL ASSOCIATION LLC	0751-42-6828	12215	930	SINGLE FAMILY	RA
4	BLANCHE HINTON	0751-42-4433	12-E	1476	SINGLE FAMILY	RA
5	MFW INVESTMENTS, LLC	0751-41-4924	17311	557	SINGLE FAMILY	RR
6	KK LAND INC	0751-51-0857	13881	629	VACANT	RR
7	KK LAND INC	0751-40-0697	13881	629	VACANT	RR
8	SIRRHAN GRIFFIN	0751-40-7981	8778	2496	VACANT	RR
9	DWIGHT WRIGHT	0750-49-8888	16215	1702	SINGLE FAMILY	RR
10	DAVID & MARILYN MARTIN	0750-59-0018	17467	358	SINGLE FAMILY	RR
11	MARTHA BURNET	0750-48-5688	13519	1893	SINGLE FAMILY	RR
12	RICHARD BACHOLZKY	0750-48-4775	16444	1976	SINGLE FAMILY	RR
13	KENNETH MOUSHEGIAN	0750-48-3860	12784	2062	SINGLE FAMILY	RR
14	JOSHUA BECK	0750-49-2134	15284	1727	SINGLE FAMILY	RR
15	MELISSA HINTON	0750-39-5262	8281	225	MOBILE	RR
16	EUGENE HORTON HEIRS	0750-39-3222	15-E	1859	VACANT	RR
17	MATTHEW HORTON	0750-29-9045	5861	59	VACANT	RR
18	ALTON RICHARDSON	0750-28-8880	7245	786	VACANT	RR
19	DONALD RICHARDSON	0750-28-8532	11858	2707	VACANT	RR
20	DONALD RICHARDSON	0750-28-6271	7275	654	VACANT	RR
21	ROBERT HEISE	0750-37-1996	16444	2524	SINGLE FAMILY	RR
22	ROBERT CATHEY	0750-37-3664	11988	1801	SINGLE FAMILY	RR
23	RICHARD STEWART	0750-37-2555	11012	2141	SINGLE FAMILY	RR
24	DENNIS DALE	0750-37-1540	11800	97	SINGLE FAMILY	RR
25	TODD YOUNG	0750-37-0454	11069	476	SINGLE FAMILY	RR
26	JOHN FALCHI	0750-27-9358	10836	2123	SINGLE FAMILY	RR
27	TIMOTHY FELTON	0750-27-8301	17376	1337	SINGLE FAMILY	RR
28	MFW INVESTMENTS, LLC	0750-26-4926	16554	2295	SINGLE FAMILY	RR
29	PEMBERLY PROPERTY OWNERS ASSOCIATION, INC.	0750-17-6279	16533	1996	VACANT	PUD-CZ
30	HORTON, KIMBERLY A	0750-18-4078	16E	969	VACANT	RR
31	MFW INVESTMENTS, LLC	0750-19-7426	16638	1192	VACANT	RR
32	CHARLES WOMBLE	0751-20-1670	4443	94	VACANT	RA

LINE	DIRECTION	DISTANCE
L1	N 75°28'14" E	47.89'
L2	S 70°56'43" E	19.41'
L3	N 30°56'42" E	29.34'
L4	N 64°47'46" E	28.00'
L5	N 35°16'15" E	29.31'
L6	N 40°20'08" E	28.40'
L7	N 62°27'55" E	32.05'
L8	N 10°59'28" W	21.69'
L9	N 49°00'39" E	103.79'
L10	S 24°14'18" E	45.85'
L11	S 10°00'29" E	28.71'
L12	N 63°54'46" E	28.00'
L13	S 62°07'03" E	45.45'
L14	N 75°33'41" E	27.70'
L15	N 65°33'42" E	42.52'
L16	N 80°35'53" E	13.97'
L17	N 89°11'21" W	2.52'
L18	S 72°37'10" W	92.98'
L19	S 71°45'10" W	82.35'
L20	N 60°10'42" W	49.51'
L21	N 87°52'01" W	87.18'
L22	S 49°46'23" W	22.21'
L23	S 70°25'32" W	99.01'
L24	N 24°18'53" W	34.03'
L25	N 77°13'16" W	50.45'
L26	S 37°21'11" W	122.24'
L27	S 84°41'45" W	53.64'
L28	S 48°53'39" W	94.23'
L29	S 70°54'53" W	164.77'
L30	N 79°52'29" W	36.14'
L31	S 87°46'00" W	14.28'
L32	S 86°52'29" W	76.35'
L33	N 45°39'39" E	56.43'
L34	N 01°01'01" E	301.17'
L35	N 07°43'57" W	187.77'
L36	N 24°12'03" W	113.39'
L37	N 24°46'59" E	71.19'
L38	N 26°33'54" W	84.44'
L39	N 37°00'06" E	121.55'
L40	N 07°08'18" E	106.61'
L41	N 02°06'02" E	50.90'
L42	N 26°44'55" E	75.53'

CURVE	ARC LENGTH	ARC RADIUS	CHORD BEARING	CHORD LENGTH
C1	613.63'	1,097.99'	S 65°19'32" E	605.68'
C2	144.28'	1,097.99'	S 45°33'02" E	144.18'



1 EXISTING CONDITIONS
 C002 SCALE: 1" = 300'



NC License #P-0673

Project: **HORTON PARK**
JESSIE DRIVE
WHITE OAK TOWNSHIP
APEX, NORTH CAROLINA 27502



NOT FOR CONSTRUCTION

NO.	DATE	BY	REVISION

title:

EXISTING CONDITIONS (TOPO)

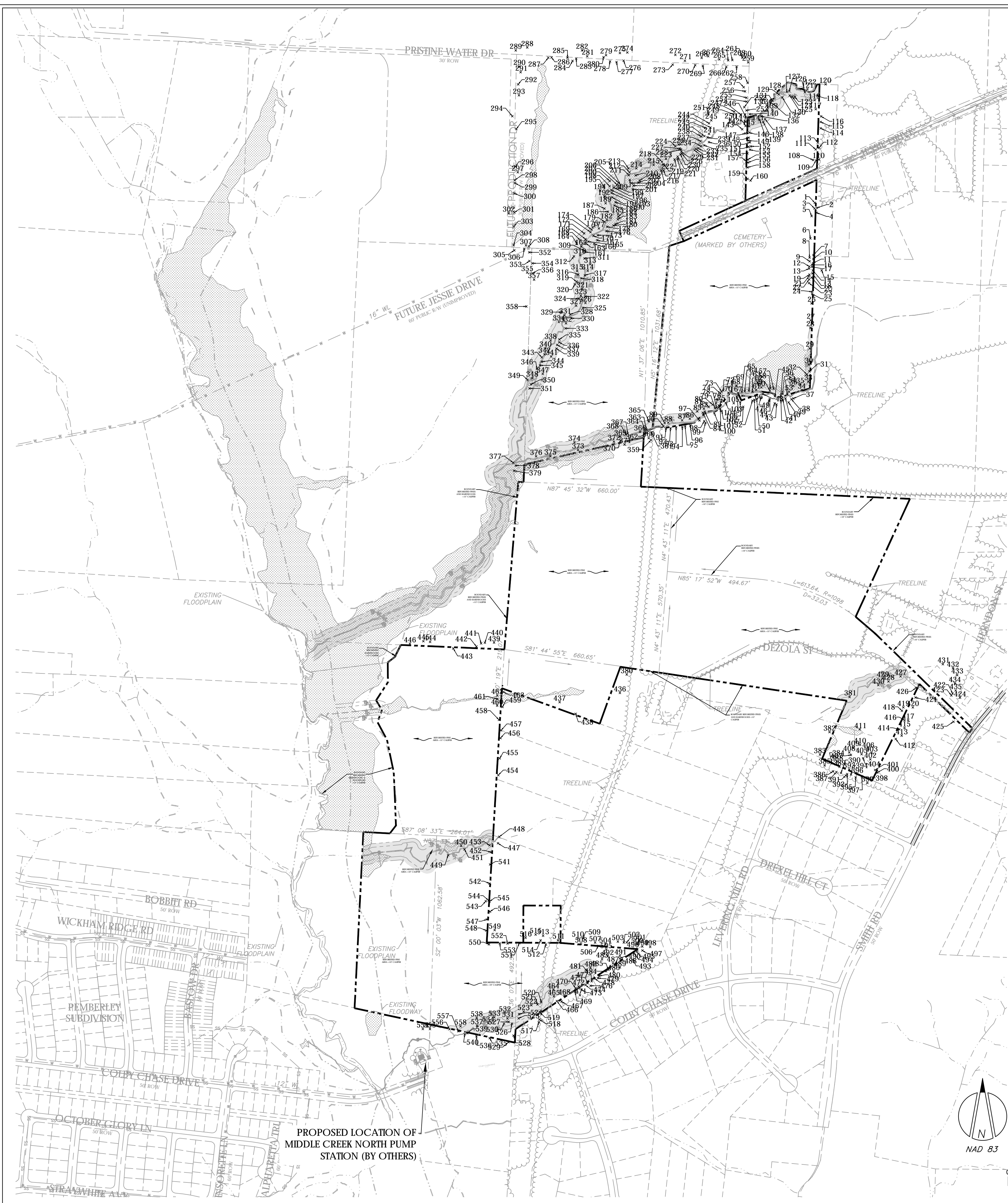
proj #: **161201**

date: **July 1, 2019**

dwg by: **chkd by: JE JR**

scale: **1" = 300'**

sheet: **C002**
 Planned Unit Development Plan



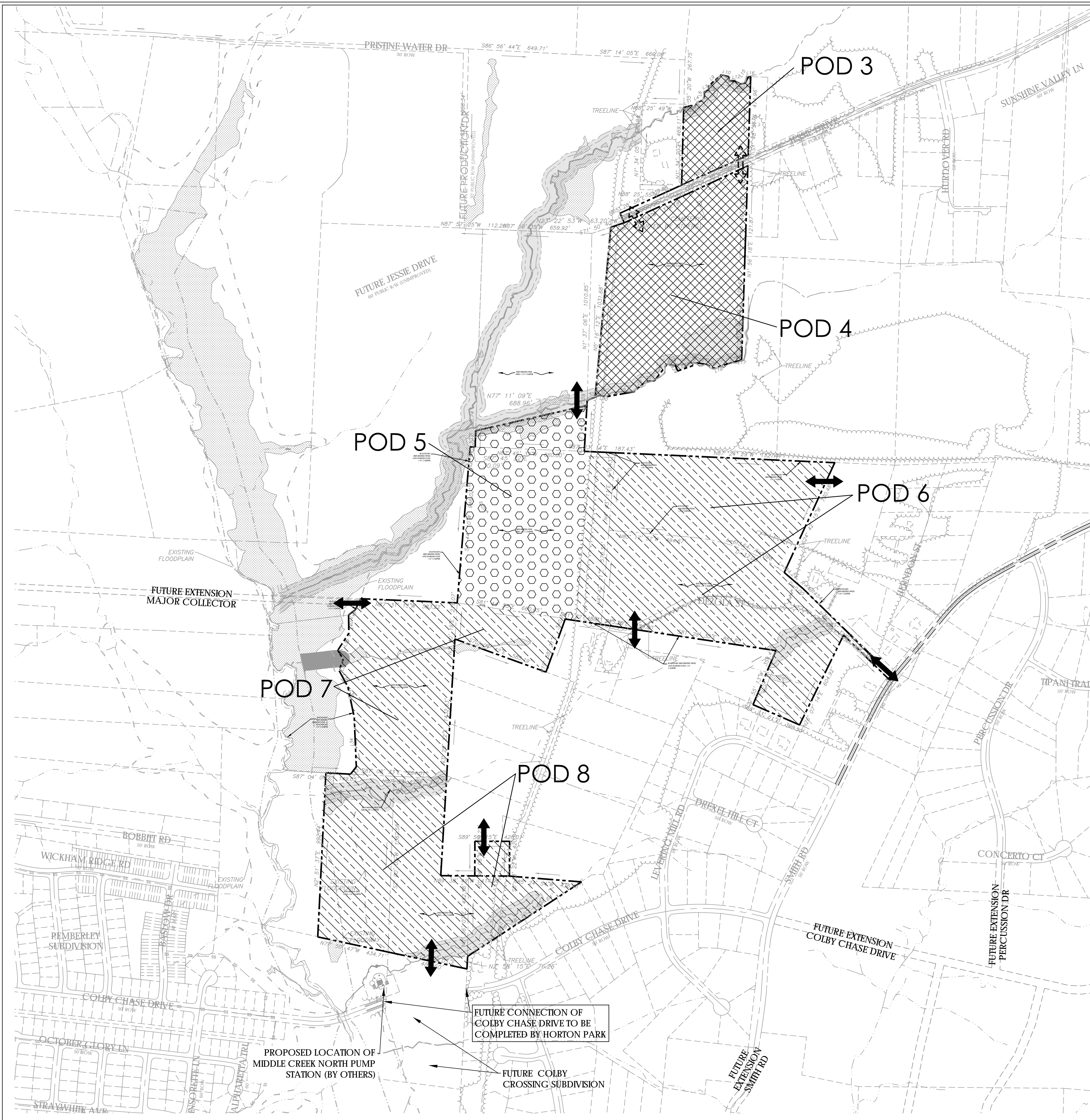
EXISTING TREE TABLE	TREE NUMBER	SPECIES
1	18" SWEET GUM	
2	18" SWEET GUM	
3	18" SWEET GUM	
4	18" SWEET GUM	
5	18" SWEET GUM	
6	19" PINE	
7	25" SWEET GUM	
8	20" PINE	
9	18" PINE	
10	19" PINE	
11	18" PINE	
12	18" PINE	
13	19" PINE	
14	21" PINE	
15	23" WHITE OAK	
16	20" PINE	
17	19" PINE	
18	21" PINE	
19	20" PINE	
20	29" RED OAK	
21	19" PINE	
22	22" PINE	
23	22" PINE	
24	21" SWEET GUM	
25	22" SWEET GUM	
26	21" PINE	
27	22" POPLAR	
28	22" PINE	
29	19" SWEET GUM	
30	21" SWEET GUM	
31	18" POPLAR	
32	19" SWEET GUM	
33	23" PINE	
34	19" SWEET GUM	
35	18" SWEET GUM	
36	20" POPLAR	
37	19" RED OAK	
38	20" POPLAR	
39	26" POPLAR	
40	23" WHITE OAK	
41	21" PINE	
42	19" PINE	
43	21" WHITE OAK	
44	20" PINE	
45	20" SWEET GUM	
46	18" POPLAR	
47	23" RED MAPLE	
48	35" PINE	
49	21" POPLAR	
50	23" POPLAR	
51	20" POPLAR	
52	21" WHITE OAK	
53	22" CHESTNUT OAK	
54	19" POPLAR	
55	27" SWEET GUM	
56	20" SWEET GUM	
57	19" PINE	
58	20" BLACK OAK	
59	19" POPLAR	
60	21" RED APPLE	
61	21" PINE	
62	26" PINE	
63	27" PINE	
64	18" POPLAR	
65	23" POPLAR	
66	23" RED OAK	
67	19" CHESTNUT OAK	
68	23" WHITE OAK	
69	22" PINE	
70	25" POPLAR	
71	20" POPLAR	
72	28" PINE	
73	23" PINE	
74	23" WHITE OAK	
75	24" POPLAR	
76	25" CHESTNUT OAK	
77	21" CHESTNUT OAK	
78	22" POPLAR	
79	18" CHESTNUT OAK	
80	18" CHESTNUT OAK	
81	20" POPLAR	
82	24" POPLAR	
83	26" CHESTNUT OAK	
84	22" POPLAR	
85	53" CHESTNUT OAK	
86	20" POPLAR	
87	19" POPLAR	
88	19" SWEET GUM	
89	22" RED OAK	
90	21" PINE	
91	20" POPLAR	
92	22" RED OAK	
93	24" POPLAR	
94	20" RED OAK	
95	20" SWEET GUM	
96	25" PINE	
97	18" POPLAR	
98	18" POPLAR	
99	20" POPLAR	
100	23" POPLAR	

EXISTING TREE TABLE	TREE NUMBER	SPECIES
101	22" RED OAK	
102	22" RED OAK	
103	20" POPLAR	
104	21" PINE	
105	19" SWEET GUM	
106	20" SWEET GUM	
107	21" POPLAR	
108	20" PINE	
109	24" SWEET GUM	
110	28" PINE	
111	20" PINE	
112	18" PINE	
113	40" WHITE OAK	
114	36" WHITE OAK	
115	23" POPLAR	
116	20" SWEET GUM	
117	22" WHITE OAK	
118	20" PINE	
119	21" PINE	
120	20" POPLAR	
121	20" POPLAR	
122	23" PINE	
123	20" SWEET GUM	
124	18" PINE	
125	18" RED OAK	
126	19" RED OAK	
127	21" PINE	
128	18" SWEET GUM	
129	18" POPLAR	
130	18" RED OAK	
131	24" PINE	
132	18" POPLAR	
133	19" POPLAR	
134	23" POPLAR	
135	19" POPLAR	
136	18" SWEET GUM	
137	21" PINE	
138	21" WHITE OAK	
139	21" POPLAR	
140	20" RED OAK	
141	28" POPLAR	
142	20" POPLAR	
143	18" PINE	
144	20" PINE	
145	20" POPLAR	
146	21" POPLAR	
147	23" PINE	
148	21" WHITE OAK	
149	22" PINE	
150	19" WHITE OAK	
151	25" POPLAR	
152	20" SWEET GUM	
153	20" RED OAK	
154	25" SWEET GUM	
155	18" SWEET GUM	
156	21" WHITE OAK	
157	19" PINE	
158	25" TWIN SWEET GUM	
159	48" TWIN WHITE OAK	
160	18" SWEET GUM	
161	20" HICKORY	
162	19" WHITE OAK	
163	22" WHITE OAK	
164	20" WHITE OAK	
165	19" WHITE OAK	
166	20" WHITE OAK	
167	20" WHITE OAK	
168	18" PINE	
169	19" POPLAR	
170	18" POPLAR	
171	19" WHITE OAK	
172	19" BLACK GUM	
173	19" BLACK GUM	
174	20" POPLAR	
175	20" POPLAR	
176	28" WILLOW OAK	
177	19" WHITE OAK	
178	22" POPLAR	
179	21" PINE	
180	30" WHITE OAK	
181	18" WILLOW OAK	
182	19" BLACK GUM	
183	32" WILLOW OAK	
184	21" WILLOW OAK	
185	23" WILLOW OAK	
186	20" WHITE OAK	
187	24" PINE	
188	20" POPLAR	
189	18" PINE	
190	20" WHITE OAK	
191	19" POPLAR	
192	18" PINE	
193	28" WILLOW OAK	
194	26" WHITE OAK	
195	18" POPLAR	
196	20" PINE	
197	20" WILLOW OAK	
198	19" PINE	
199	19" PINE	
200	20" POPLAR	

EXISTING TREE TABLE	TREE NUMBER	SPECIES
201	21" BLACK GUM	
202	21" ELM	
203	20" WILLOW OAK	
204	20" POPLAR TWINS	
205	20" BLACK GUM	
206	20" WHITE OAK	
207	38" RED MAPLE	
208	21" POPLAR	
209	20" WHITE OAK	
210	23" POPLAR	
211	20" WILLOW OAK	
212	19" POPLAR	
213	40" WHITE OAK	
214	20" PINE	
215	21" RED MAPLE	
216	19" POPLAR	
217	19" POPLAR	
218	26" PINE	
219	21" PINE	
220	24" POPLAR	
221	25" POPLAR	
222	19" POPLAR	
223	23" PINE	
224	19" POPLAR	
225	21" PINE	
226	22" PINE	
227	20" PINE	
228	22" PINE	
229	21" PINE	
230	22" PINE	
231	20" WILLOW OAK	
232	18" POPLAR	
233	20" SWEET GUM	
234	22" POPLAR	
235	22" POPLAR	
236	24" PINE	
237	25" PINE	
238	21" PINE	
239	19" POPLAR	
240	22" PINE	
241	25" POPLAR	
242	19" PINE	
243	18" PINE	
244	18" WHITE OAK	
245	21" PINE	
246	28" RED OAK	
247	18" RED OAK	
248	18" RED OAK	
249	23" PINE	
250	26" PINE	
251	19" WHITE OAK	
252	20" PINE	
253	18" PINE	
254	18" POPLAR	
255	22" PINE	
256	18" WHITE OAK	
257	21" POPLAR	
258	18" WHITE OAK	
259	20" POPLAR	
260	21" PINE	
261	21" PINE	
262	19" PINE	
263	22" POPLAR	
264	18" POPLAR	
265	18" PINE	
266	18" WHITE OAK	
267	23" RED OAK	
268	40" POPLAR	
269	18" RED OAK	
270	19" SWEET GUM	
271	23" WHITE OAK	
272	20" PINE	
273	20" WHITE OAK	
274	22" RED OAK	
275	18" WHITE OAK	
276	23" RED OAK	
277	18" RED OAK	
278	18" RED OAK	
279	20" RED OAK	
280	20" WHITE OAK	
281	18" PINE	
282	18" WHITE OAK	
283	20" PINE	
284	21" PINE	
285	18" WHITE OAK	
286	19" PINE	
287	20" RED OAK	
288	18" PINE	
289	20" SWEET GUM	
290	19" POPLAR	
291	19" PINE	
292	19" PINE	
293	18" PINE	
294	19" POPLAR	
295	18" PINE	
296	18" PINE	
297	19" WHITE OAK	
298	19" PINE	
299	19" PINE	
300	21" WILLOW OAK	

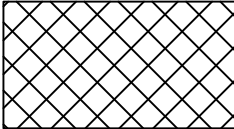
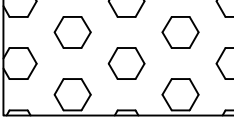
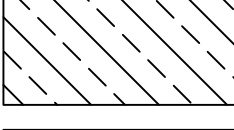



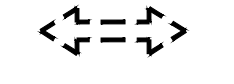
EXISTING TREE TABLE	TREE NUMBER	SPECIES
301	19" SWEET GUM	
302	20" RED MAPLE	
303	32" WILLOW OAK	
304	28" PINE	
305	18" WHITE OAK	
306	19" WILLOW OAK	
307	20" WHITE OAK	
308	18" SWEET GUM	
309	18" WHITE OAK	
310	19" SWEET GUM	
311	29" WILLOW OAK	
312	19" RED MAPLE	
313	18" POPLAR	
314	21" POPLAR	
315	19" PINE	
316	20" ELM	
317	19" POPLAR	
318	21" POPLAR	
319	26" SWEET GUM	
320	21" WILLOW OAK	
321	20" SWEET GUM	
322	27" WHITE OAK	
323	20" POPLAR	
324	21" WILLOW OAK	
325	21" HICKORY	
327	19" RED MAPLE	
328	20" WILLOW OAK	
329	20" RED OAK	
330	19" RED OAK	
331	19" SWEET GUM	
332	19" WHITE OAK	
333	19" POPLAR	
334	18" PINE	
335	18" PINE	
336	19" RED MAPLE	
337	19" WILLOW OAK	
338	25" RED MAPLE	
339	20" RED MAPLE	
340	18" PINE	
341	21" BLACK GUM	
342	20" WHITE OAK	
343	22" SWEET GUM	
344	20" POPLAR	
345	19" SWEET GUM	
346	35" WILLOW OAK	
347	20" POPLAR	
348	33" SYCAMORE	
349	33" WILLOW OAK	
350	22" POPLAR	
351	28" POPLAR	
352	24" WILLOW OAK	
353	21" WILLOW OAK	
354	21" RED OAK	
355	18" WILLOW OAK	
356	19" WHITE OAK	
357	18" WHITE OAK	
358	18" WHITE OAK	
359	19" RED MAPLE	
360	25" RED OAK	
361	19" WHITE OAK	
362	20" RED MAPLE	
363	30" RED MAPLE	
364	21" RED OAK	
365	26" POPLAR	
366	22" SWEET GUM	
367	18" RED MAPLE	
368	18" RED MAPLE	
369	26" GREEN ASH	
370	21" POPLAR	
371	40" POPLAR	
372	18" CHESTNUT OAK	
373	22" POPLAR	
374	24" CHESTNUT OAK	
375	18" WHITE OAK	
376	18" POPLAR	
377	19" GREEN ASH	
378	20" GREEN ASH	
379	19" WILLOW OAK	
380	22" WHITE OAK	
381	19" WHITE OAK	
382	18" POPLAR	
383	19" PINE	
384	20" PINE	
385	23" POPLAR	
386	24" POPLAR	
387	22" WHITE OAK	
388	21" POPLAR	
389	20" PINE	
390	21" RED OAK	
391	20" PINE	
392	19" POPLAR	
393	19" PINE	
394	18" PINE	
395	19" PINE	
396	19" PINE	
397	18" POPLAR	
398	19" PINE	
399	20" PINE	
400	18" PINE	

EXISTING TREE TABLE	TREE NUMBER	SPECIES
401	19" PINE	
402	20" PINE	
403	25" PINE	
404	21" POPLAR	
405	20" POPLAR	
406	19" WHITE OAK	
407	20" POPLAR	
408	23" RED OAK	
409	18" WHITE OAK	
410	23" WHITE OAK	
411	19" SWEET GUM	
412	22" POPLAR	
413	24" PINE	
414	18" SWEET GUM	
415	19" PINE	
416	18" PINE	
417	18" PINE	
418	18" PINE	
419	19" PINE	
420	28" SWEET GUM	
421	43" SWEET GUM	
422	19" PINE	
423	19" PINE	
424	22" PINE	
425	30" BASSWOOD	

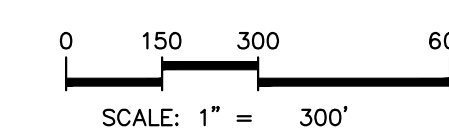
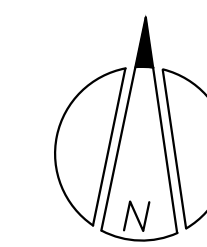


POD SUMMARY			
POD #	DWELLING TYPE	ACREAGE	MAXIMUM ALLOWED
3	Single Family	4.55	18*
3	Townhomes	4.55	27**
4	Apartments	20.99	314***
4	Townhomes	20.99	125**
5	Single Family	19.71	78*
5	Townhomes	19.71	118**
6, 7 & 8	Single Family	82.59	227

PODs 6, 7 & 8 are limited by the number of lots - not density

-  APARTMENTS AND/OR TOWNHOUSES
-  TOWNHOUSES
-  SINGLE FAMILY
-  ON-SITE STREAM BUFFERS
-  PROJECT PERIMETER BOUNDARY
-  POTENTIAL ACCESS POINTS (PHASE 1)
-  POTENTIAL ACCESS POINTS (PHASE 2)

PLAN SHEETS ARE INTENDED FOR ILLUSTRATIVE USE ONLY



1 CONCEPTUAL SITE PLAN
C100 SCALE: 1" = 100'

NOTE: STREAM BUFFERS BASED UPON AN ON-SITE EVALUATION BY S&E.C. INC. IN CONJUNCTION WITH THE U.S. ARMY CORPS OF ENGINEERS, NC-DWR, AND THE TOWN OF APEX.

NC License #P-0673

Project:
HORTON PARK
JESSIE DRIVE
WHITE OAK TOWNSHIP
APEX, NORTH CAROLINA 27502

Seal:



NOT FOR CONSTRUCTION

NO.	DATE	REVISION	BY
1	11/15/2018	S&E.C. Comments & Plan Revisions	JE
2	1/24/2019	S&E.C. Comments & Plan Revisions	JR

title:
CONCEPTUAL SITE PLAN

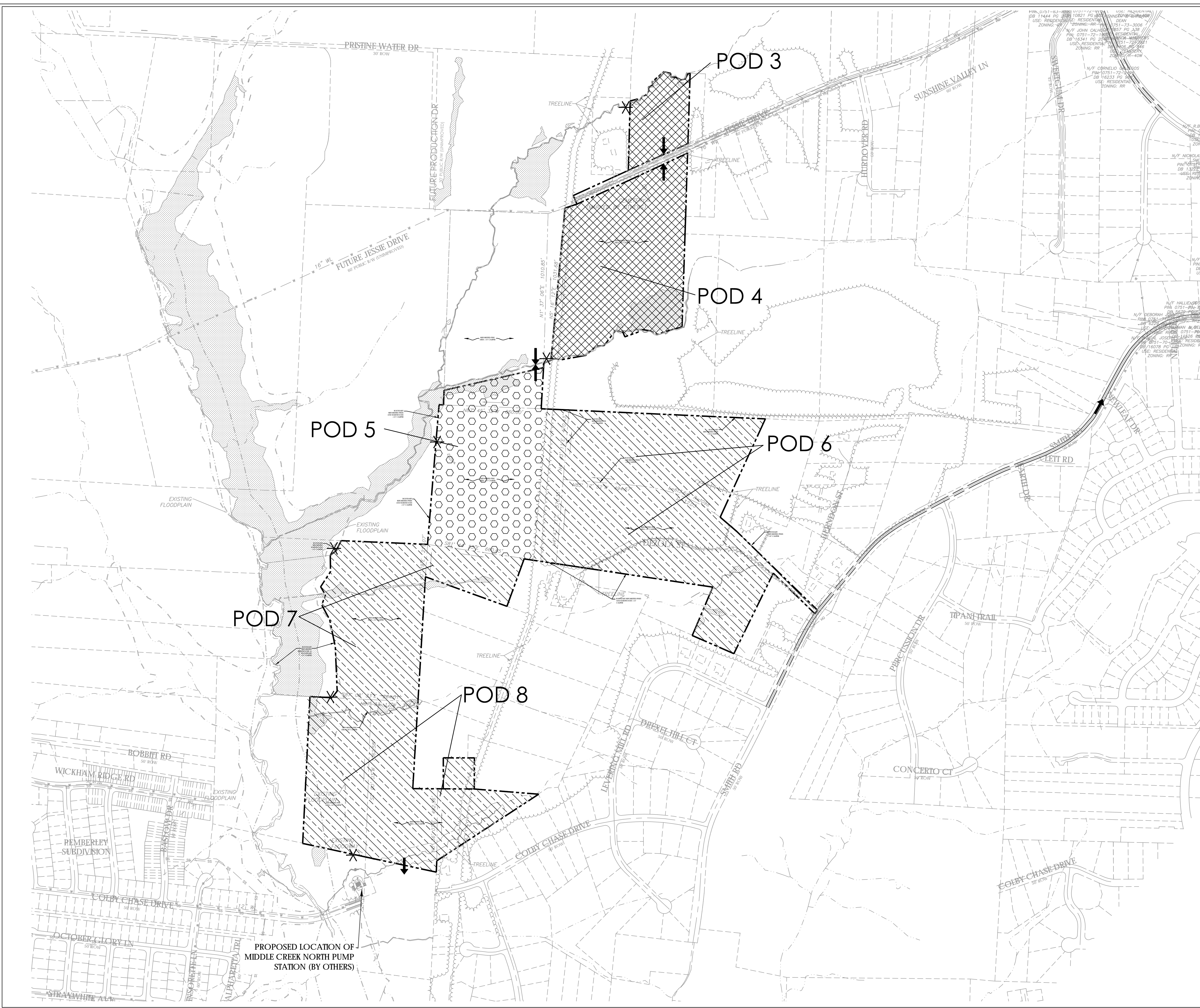
proj #:
161201

date:
July 1, 2019

dwg by: chkd by:
JE JR

scale:
1" = 100'

sheet:
C100
Planned Unit
Development Plan

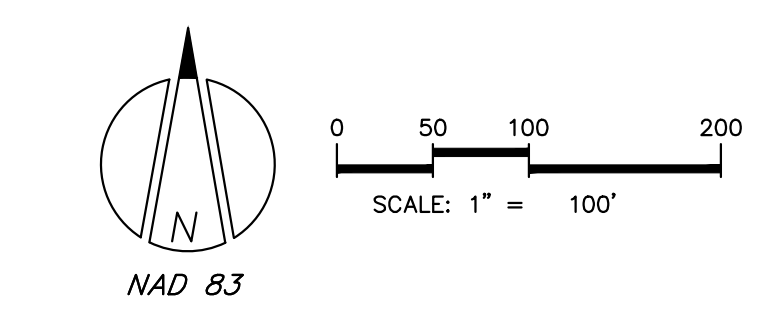


↑ PROPOSED WATER CONNECTIONS
 ✕ PROPOSED SEWER CONNECTIONS

FINAL LOCATION AND TIMING OF WATER CONNECTIONS SHALL BE COORDINATED WITH THE TOWN OF APEX PUBLIC WORKS AND PLANNING DEPARTMENT DURING THE MASTER SUBDIVISION PLAN OR SITE PLAN SUBMITTALS.

- UTILITY NOTES:**
1. THE SITE IS REQUESTING FULL TOWN SERVICES - WATER, SEWER AND ELECTRICITY
 2. THIS SITE WILL NOT UTILIZE PRIVATE SEWAGE DISPOSAL.
 3. NEW SANITARY SEWER WILL BE PROVIDED WITH THE MIDDLE CREEK NORTH REGIONAL PUMP STATION.

--- PROJECT PERIMETER BOUNDARY

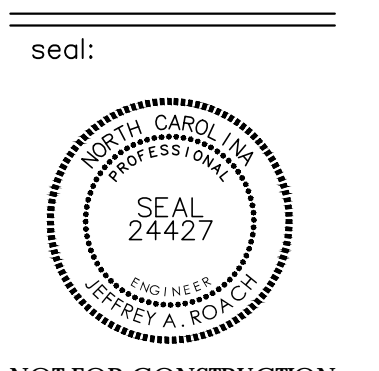


1 CONCEPTUAL UTILITY PLAN
 SCALE: 1" = 100'



NC License #P-0673

Project:
HORTON PARK
JESSIE DRIVE
WHITE OAK TOWNSHIP
APEX, NORTH CAROLINA 27502



NOT FOR CONSTRUCTION

NO.	DATE	REVISION	BY
1	7/1/2019	PROPOSED	JE
2	7/1/2019	REVISION	JR

title:
CONCEPTUAL UTILITY PLAN

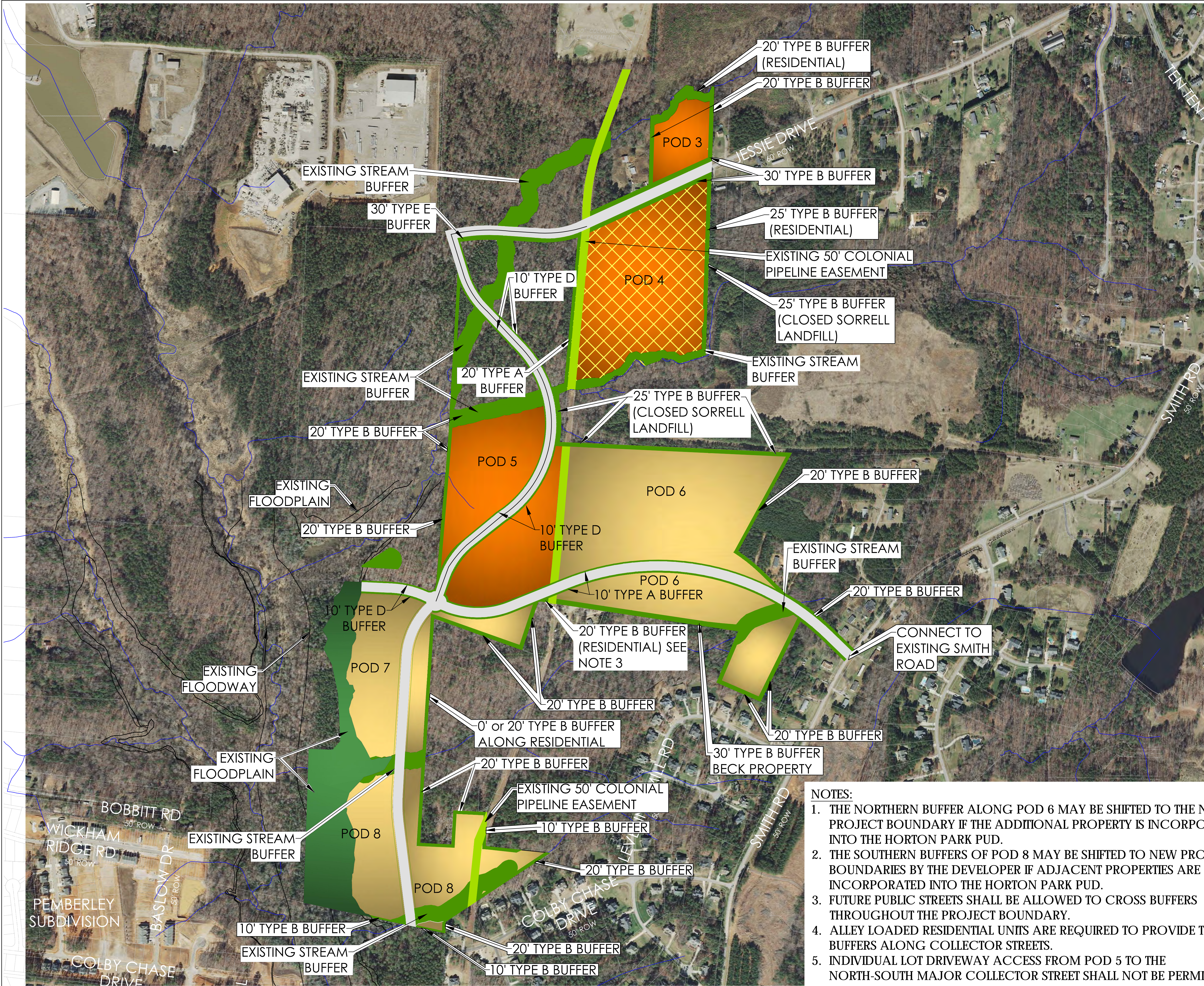
proj #:
161201

date:
July 1, 2019

dwg by: **JE** chkd by: **JR**

scale:
1" = 100'

sheet:
C200
 Planned Unit Development Plan



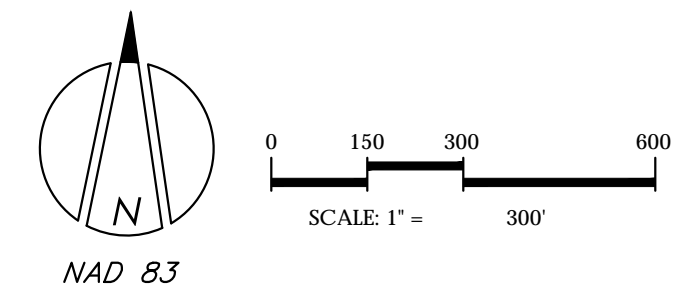
POD SUMMARY			
POD #	DWELLING TYPE	ACREAGE	MAXIMUM ALLOWED
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3	Townhomes	4.55	27**
4	Apartments	20.99	314***
4	Townhomes	20.99	125**
5	Single Family	19.71	78*
5	Townhomes	19.71	118**
6, 7 & 8	Single Family	82.59	227

PODs 6, 7 & 8 are limited by the number of lots - not density

- * 4 UNITS PER ACRE
- ** 6 UNITS PER ACRE
- *** 15 UNITS PER ACRE

- APARTMENTS AND/OR TOWNHOUSES
- TOWNHOUSES AND/OR SINGLE FAMILY
- SINGLE FAMILY
- FLOODPLAIN OR BUFFERS
- PROPOSED STREETS

- NOTES:**
1. THE NORTHERN BUFFER ALONG POD 6 MAY BE SHIFTED TO THE NEW PROJECT BOUNDARY IF THE ADDITIONAL PROPERTY IS INCORPORATED INTO THE HORTON PARK PUD.
 2. THE SOUTHERN BUFFERS OF POD 8 MAY BE SHIFTED TO NEW PROJECT BOUNDARIES BY THE DEVELOPER IF ADJACENT PROPERTIES ARE INCORPORATED INTO THE HORTON PARK PUD.
 3. FUTURE PUBLIC STREETS SHALL BE ALLOWED TO CROSS BUFFERS THROUGHOUT THE PROJECT BOUNDARY.
 4. ALLEY LOADED RESIDENTIAL UNITS ARE REQUIRED TO PROVIDE TYPE 'D' BUFFERS ALONG COLLECTOR STREETS.
 5. INDIVIDUAL LOT DRIVEWAY ACCESS FROM POD 5 TO THE NORTH-SOUTH MAJOR COLLECTOR STREET SHALL NOT BE PERMITTED.



1	August 9, 2019	TBC COMMENTS & PLAN REVISIONS	JR
2	September 13, 2019	TBC COMMENTS & PLAN REVISIONS	JR
No.	DATE	REVISION	BY

Designer:	JE	Scale:	1" = 300'
Drawn By:	JE	Date:	7-01-2019
Checked By:	JR	Job No.:	161201

HORTON PARK
APEX, NORTH CAROLINA

PROPOSED SITE EXHIBIT

5448 Apex Peakway #368 | Apex, NC 27502
 ph: 919.439.0100 fax: 919.439.8411
 www.PeakEngineeringDesign.com

SINGLE FAMILY BUILDING ELEVATIONS

Single-family residential standards:

1. Vinyl siding is not permitted; however, vinyl windows, decorative elements and trim are permitted.
2. All single-family homes shall have a crawl space or have a raised foundation which at a minimum rises at least 20 inches from average grade across the front of the house to the finished floor level at the front door.
3. Garage doors must have windows, decorative details or carriage-style adornments.
4. The garage cannot protrude more than 1 foot out from the front façade or front porch.
5. The roof shall be pitched at 5:12 or greater for 50% of the building designs.
6. Garages on the front façade of a home that faces the street shall not exceed 40% of the total width of the house and garage together.
7. Eaves shall project at least 12 inches from the wall of the structure.
8. The visible side of a home on a corner lot facing the public street shall contain at least 3 decorative elements such as, but not limited to, the following elements:
 - Windows
 - Bay window
 - Recessed window
 - Decorative window
 - Trim around the windows
 - Wrap around porch or side porch
 - Two or more building materials
 - Decorative brick/stone
 - Decorative trim
 - Decorative shake
 - Decorative air vents on gable
 - Decorative gable
 - Decorative cornice
 - Column
 - Portico
 - Balcony
 - Dormer
9. A varied color palette shall be utilized on homes throughout the subdivision to include a minimum of three color families for siding and shall include varied trim, shutter, and accent colors complementing the siding color.
10. House entrances for units with front-facing single-car garages shall have a prominent covered porch/stoop area leading to the front door.
11. The rear and side elevations of the units that can be seen from the right-of-way shall have trim around the windows.
12. Front porches shall be a minimum of 6 feet deep.
13. No more than 25% of the lots may be accessed with J-driveways. There shall be no more than 3 such homes in a row on any single block. Any lots eligible for a J-driveway home shall be identified on the Final Plat.
14. A maximum of 100% of the single family detached residential units within POD 6 shall be permitted as “zero-entry” homes without the 20 inch rise from average grade across the front of the property to the finished floor elevation. All “zero-entry” homes shall also provide first floor master bedrooms. Lots permitted as “zero-entry” shall be noted on the Final Plat.
15. All single family detached residential homes are to be pre-configured with conduit for a solar energy system.
16. No less than 10 single family detached homes out of the first 100 homes within POD 6 will be installed with a minimum of a 4 kW solar PV system.

Townhome and Single Family Home Color Palette (Sherwin Williams)

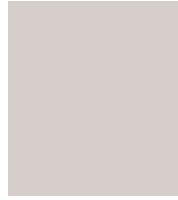
All colors are Primary with the exception of those noted



SW 6166
ECLIPSE



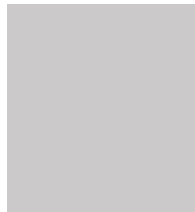
SW 7502
DRY ROCK



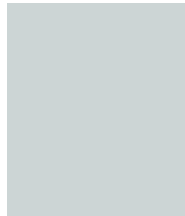
SW 6008
INDIVIDUAL
AZURITE



SW 9148
SMOKEY



SW 6260
UNIQUE GRAY



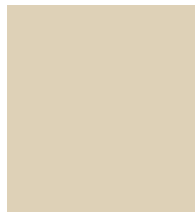
SW 9136
LULLABY
SLATE



SW 9131
CORNWALL
GREEN



SW 6524
COMMODORE



SW 9119
DIRTY
MARTINI



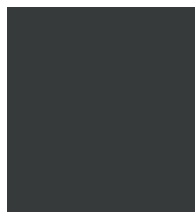
SW 6188
SHADE
GROWN



SW 9117
URBAN
JUNGLE



SW 6156
RAMIE



SW 6994
GREENBLACK
ACCENT



SW 6717
LIME RICKEY
ACCENT



SW 7589
HABANERO
CHILE
ACCENT



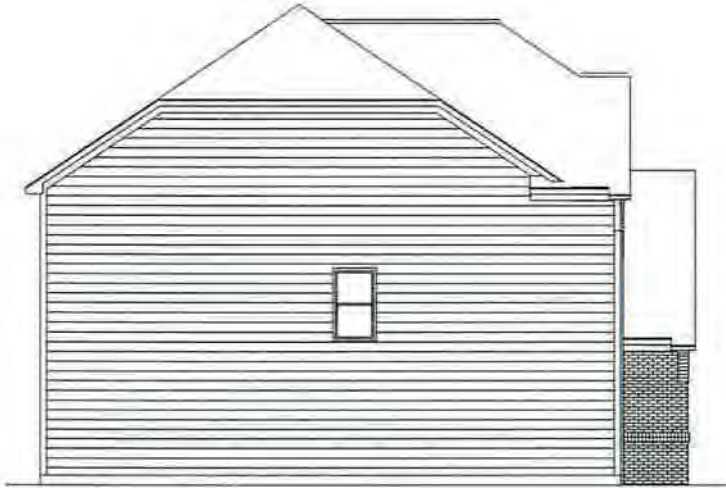
SW 70399148
VIRTUAL
TAUPE

White may also be used as a primary, trim, or accent color with any palette variations



Wakefield

**BUILDING ELEVATIONS FOR
ILLUSTRATIVE PURPOSES ONLY**



Left Elevation



Rear Elevation



Right Elevation

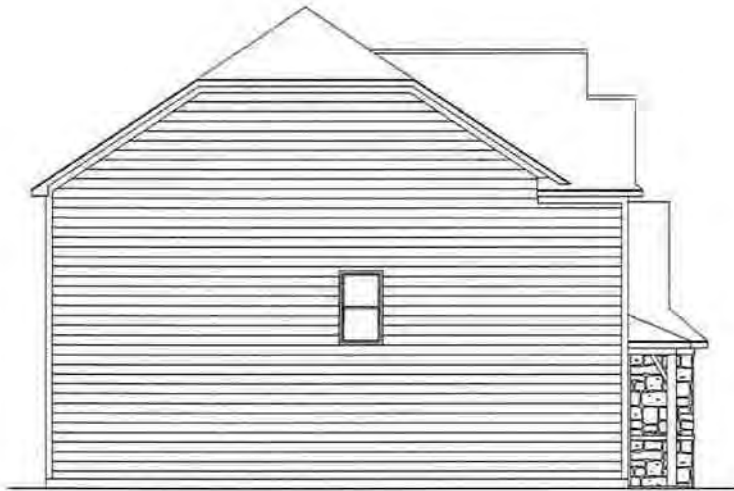
Wakefield - French Country

BUILDING ELEVATIONS FOR
ILLUSTRATIVE PURPOSES ONLY



Wakefield

BUILDING ELEVATIONS FOR
ILLUSTRATIVE PURPOSES ONLY



Left Elevation



Right Elevation



Rear Elevation

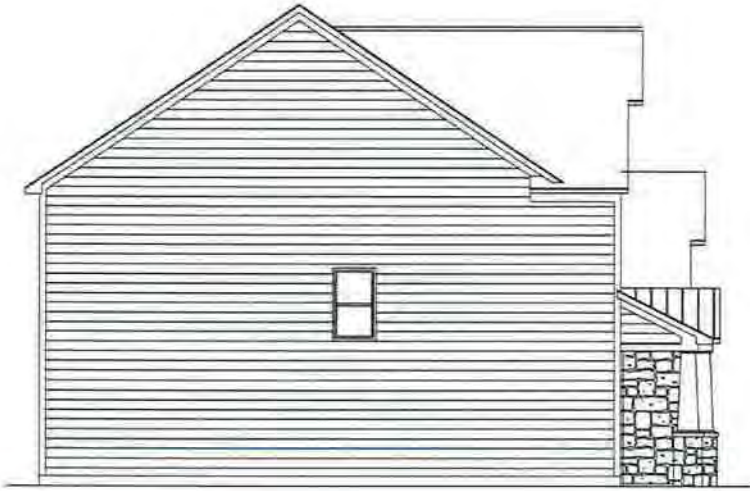
Wakefield - Low Country

BUILDING ELEVATIONS FOR
ILLUSTRATIVE PURPOSES ONLY



Wakefield

**BUILDING ELEVATIONS FOR
ILLUSTRATIVE PURPOSES ONLY**



Left Elevation



Right Elevation



Rear Elevation

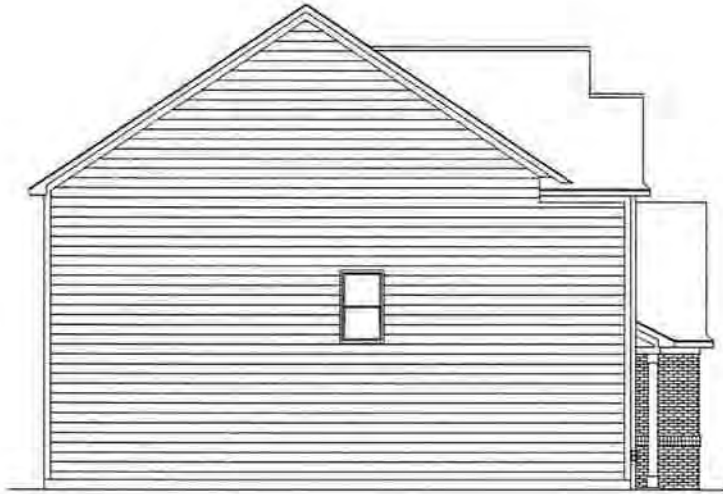
Wakefield - Craftsman

BUILDING ELEVATIONS FOR
ILLUSTRATIVE PURPOSES ONLY



Wakefield

BUILDING ELEVATIONS FOR
ILLUSTRATIVE PURPOSES ONLY



Left Elevation



Right Elevation



Rear Elevation

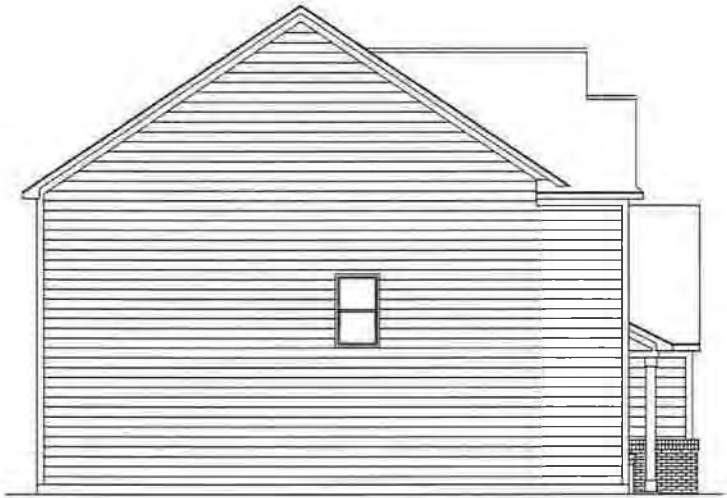
Wakefield - Federal - Brick

BUILDING ELEVATIONS FOR
ILLUSTRATIVE PURPOSES ONLY

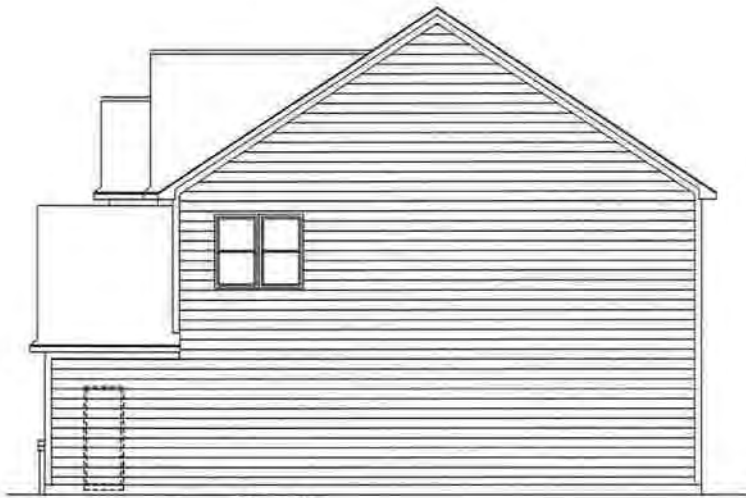


Wakefield

BUILDING ELEVATIONS FOR
ILLUSTRATIVE PURPOSES ONLY



Left Elevation



Right Elevation



Rear Elevation

Wakefield - Federal - Siding

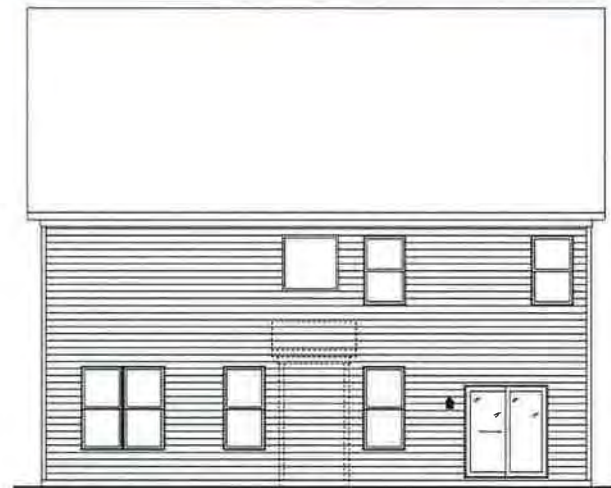
BUILDING ELEVATIONS FOR
ILLUSTRATIVE PURPOSES ONLY



Left Elevation



Right Elevation



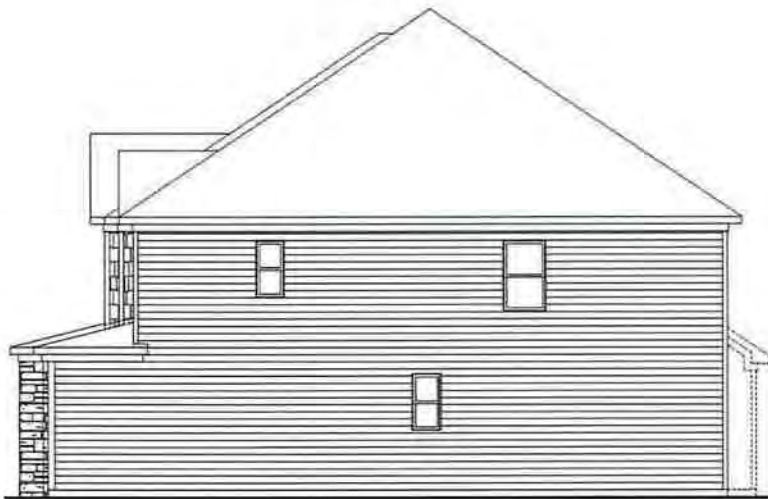
Rear Elevation

Dorset - Craftsman

BUILDING ELEVATIONS FOR
ILLUSTRATIVE PURPOSES ONLY



Left Elevation



Right Elevation



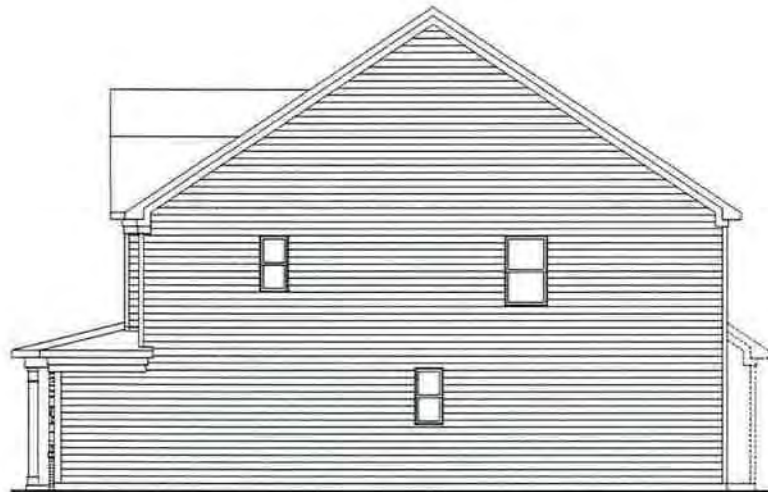
Rear Elevation

Dorset - French Country

BUILDING ELEVATIONS FOR
ILLUSTRATIVE PURPOSES ONLY



Left Elevation



Right Elevation



Rear Elevation

Dorset - Low Country

BUILDING ELEVATIONS FOR
ILLUSTRATIVE PURPOSES ONLY



Left Elevation



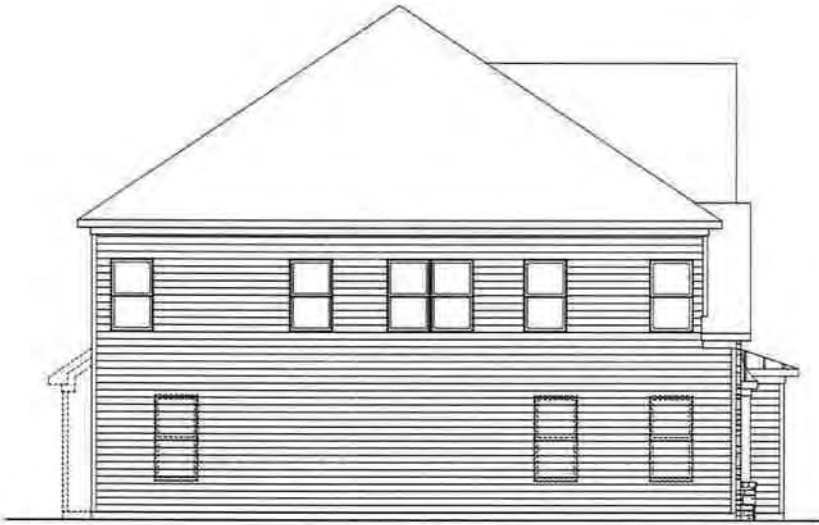
Right Elevation



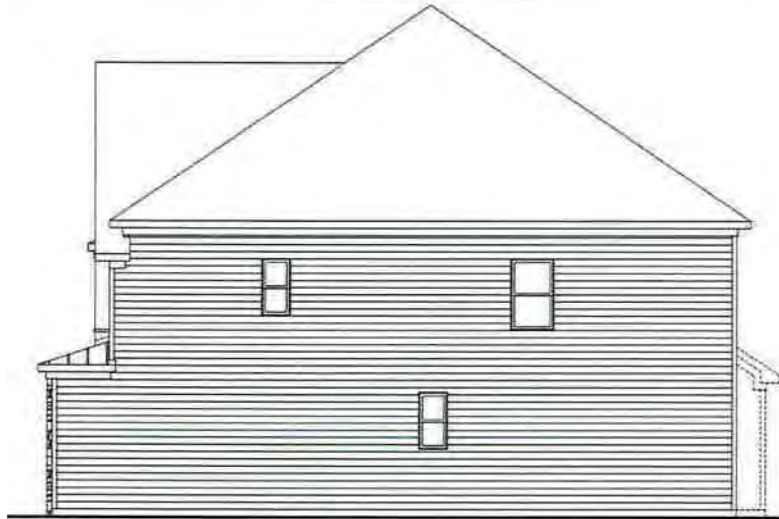
Rear Elevation

Dorset - Arts and Crafts

BUILDING ELEVATIONS FOR
ILLUSTRATIVE PURPOSES ONLY



Left Elevation



Right Elevation



Rear Elevation

Dorset - European

BUILDING ELEVATIONS FOR
ILLUSTRATIVE PURPOSES ONLY



Left Elevation



Right Elevation



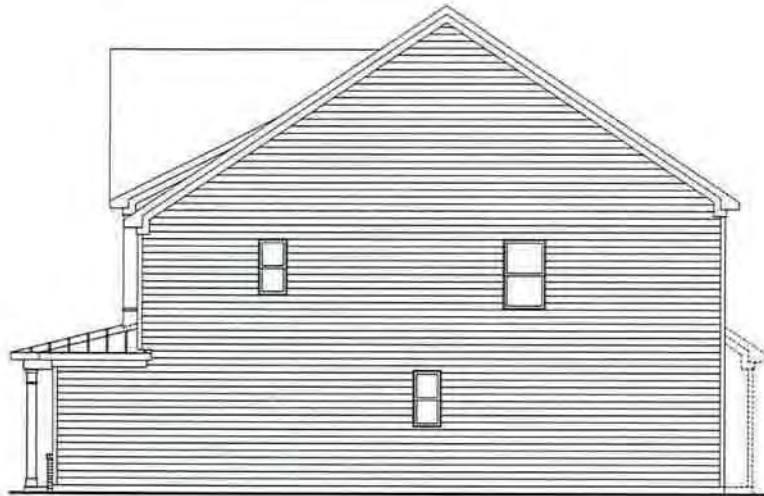
Rear Elevation

Dorset - Federal - Brick

BUILDING ELEVATIONS FOR
ILLUSTRATIVE PURPOSES ONLY



Left Elevation



Right Elevation



Rear Elevation

Dorset - Federal - Siding

BUILDING ELEVATIONS FOR
ILLUSTRATIVE PURPOSES ONLY



Essex II

**BUILDING ELEVATIONS FOR
ILLUSTRATIVE PURPOSES ONLY**



Essex II

BUILDING ELEVATIONS FOR
ILLUSTRATIVE PURPOSES ONLY



Essex II

**BUILDING ELEVATIONS FOR
ILLUSTRATIVE PURPOSES ONLY**



Essex II

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ILLUSTRATIVE PURPOSES ONLY**



Essex II

**BUILDING ELEVATIONS FOR
ILLUSTRATIVE PURPOSES ONLY**



Essex II

BUILDING ELEVATIONS FOR
ILLUSTRATIVE PURPOSES ONLY



Low Country

**BUILDING ELEVATIONS FOR
ILLUSTRATIVE PURPOSES ONLY**



Essex II

**BUILDING ELEVATIONS FOR
ILLUSTRATIVE PURPOSES ONLY**



Essex II

BUILDING ELEVATIONS FOR
ILLUSTRATIVE PURPOSES ONLY



Essex II

BUILDING ELEVATIONS FOR
ILLUSTRATIVE PURPOSES ONLY



Essex II

**BUILDING ELEVATIONS FOR
ILLUSTRATIVE PURPOSES ONLY**



Essex II

**BUILDING ELEVATIONS FOR
ILLUSTRATIVE PURPOSES ONLY**

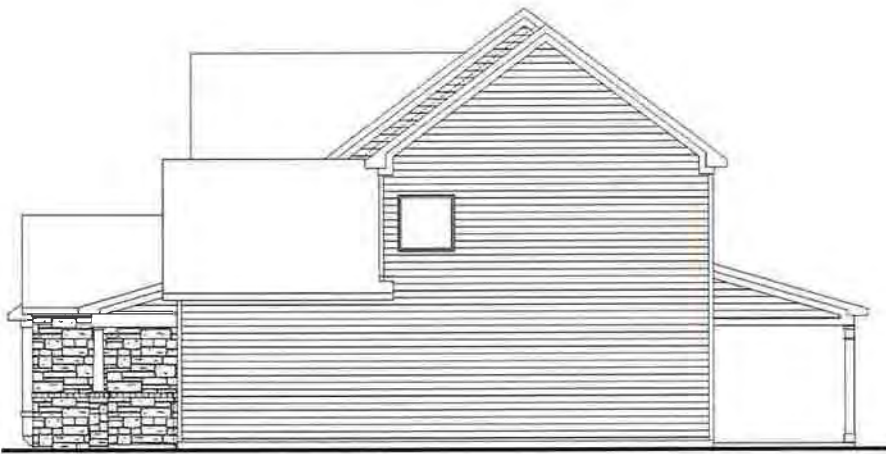


Essex II

**BUILDING ELEVATIONS FOR
ILLUSTRATIVE PURPOSES ONLY**



Left Elevation



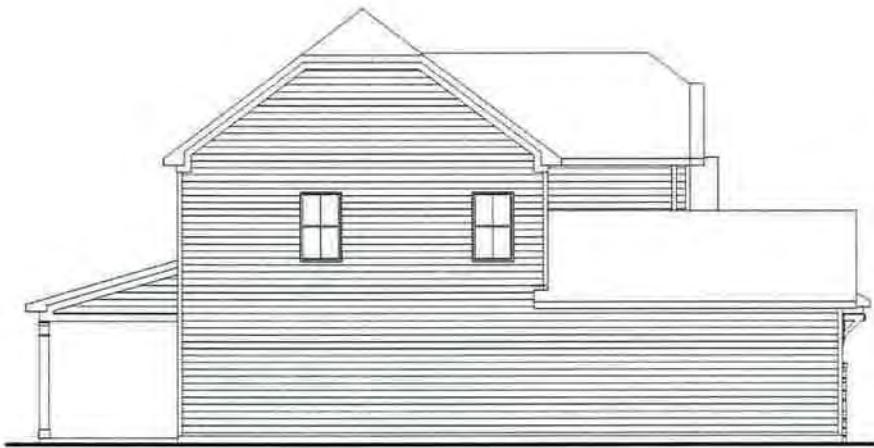
Right Elevation



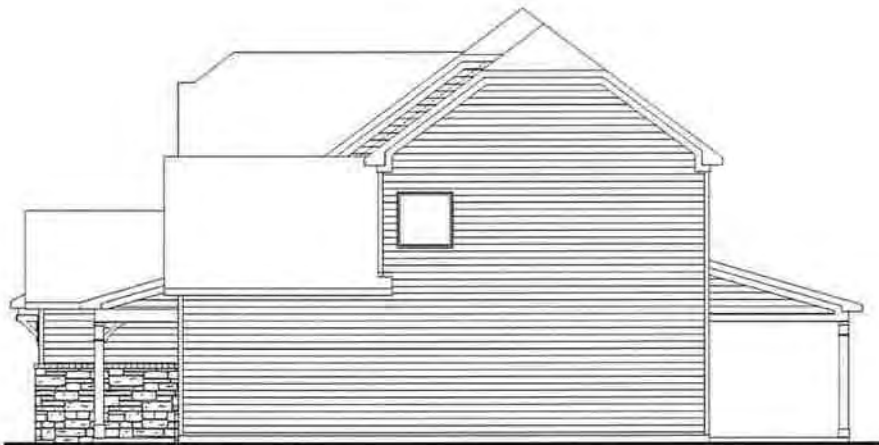
Rear Elevation

Brighton - Craftsman

BUILDING ELEVATIONS FOR
ILLUSTRATIVE PURPOSES ONLY



Left Elevation



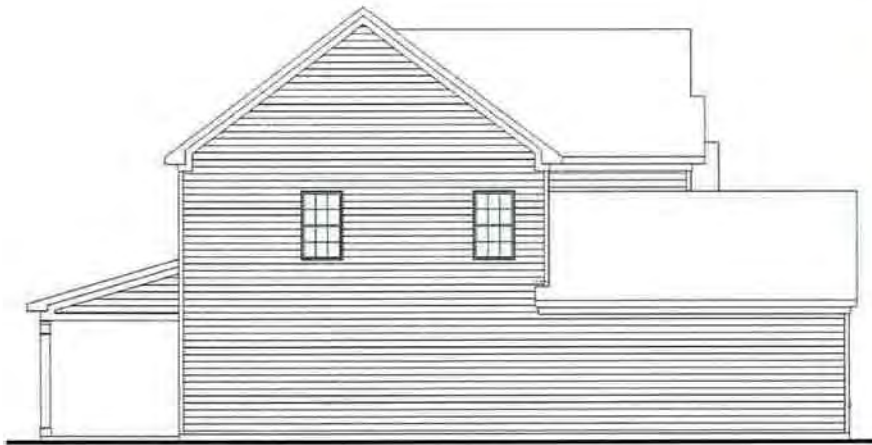
Right Elevation



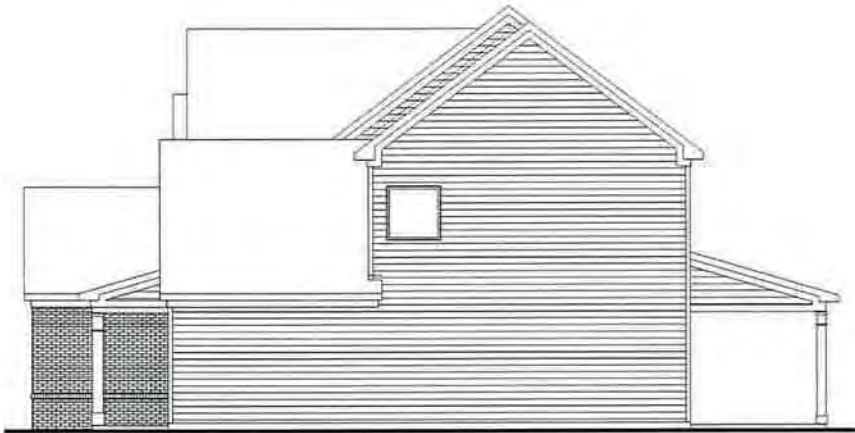
Rear Elevation

Brighton - Farmhouse

BUILDING ELEVATIONS FOR
ILLUSTRATIVE PURPOSES ONLY



Left Elevation



Right Elevation



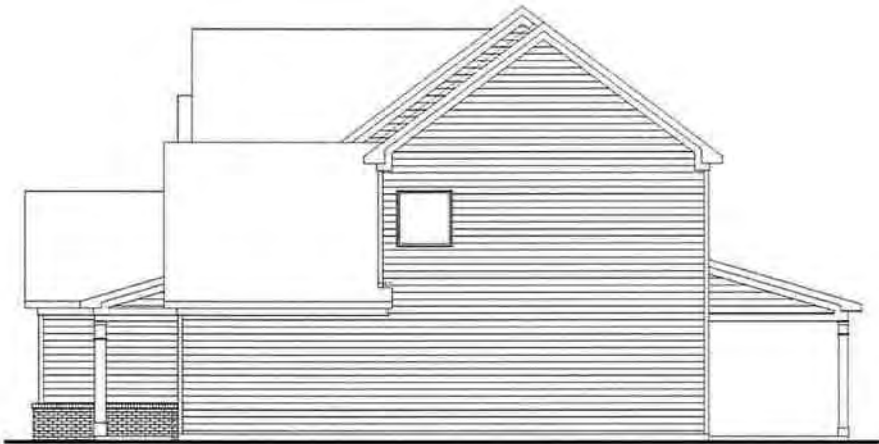
Rear Elevation

Brighton - Federal - Brick

BUILDING ELEVATIONS FOR
ILLUSTRATIVE PURPOSES ONLY



Left Elevation



Right Elevation



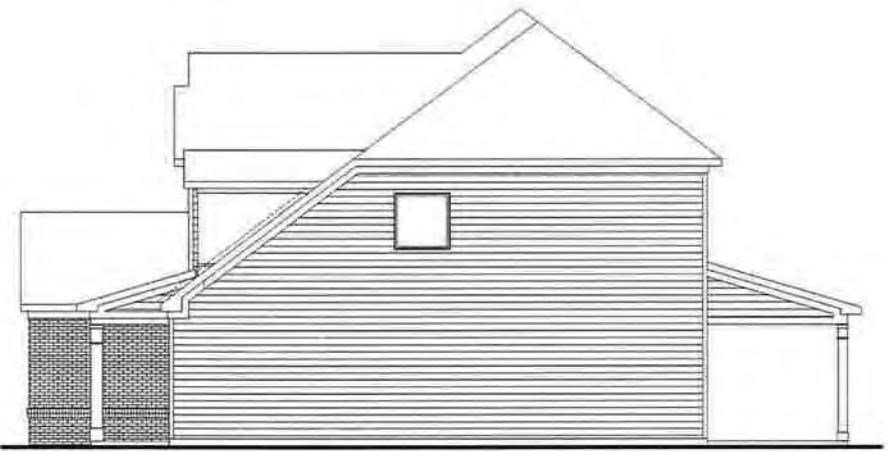
Rear Elevation

Brighton - Federal - Siding

BUILDING ELEVATIONS FOR
ILLUSTRATIVE PURPOSES ONLY



Left Elevation



Right Elevation



Rear Elevation

Brighton - Traditional

BUILDING ELEVATIONS FOR
ILLUSTRATIVE PURPOSES ONLY



Left Elevation



Right Elevation



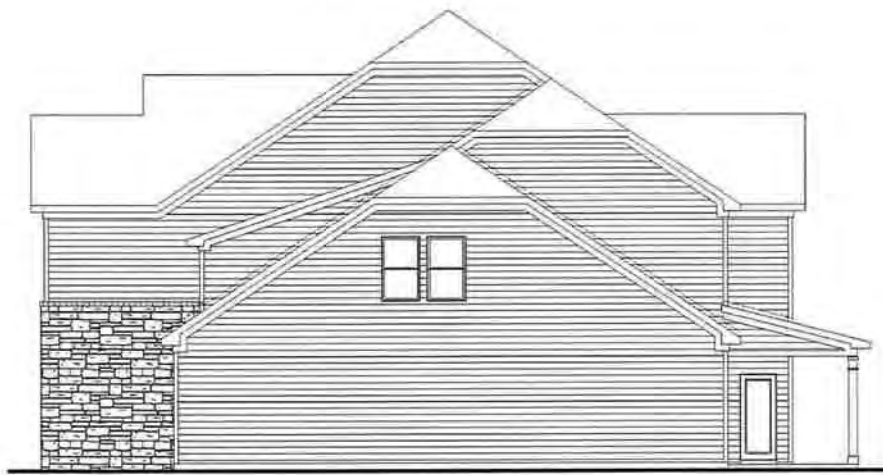
Rear Elevation

Highland - Craftsman

BUILDING ELEVATIONS FOR
ILLUSTRATIVE PURPOSES ONLY



Left Elevation



Right Elevation



Rear Elevation

Highland - Farmhouse

BUILDING ELEVATIONS FOR
ILLUSTRATIVE PURPOSES ONLY



Left Elevation



Right Elevation



Rear Elevation

Highland - Federal - Brick

BUILDING ELEVATIONS FOR
ILLUSTRATIVE PURPOSES ONLY



Left Elevation



Right Elevation



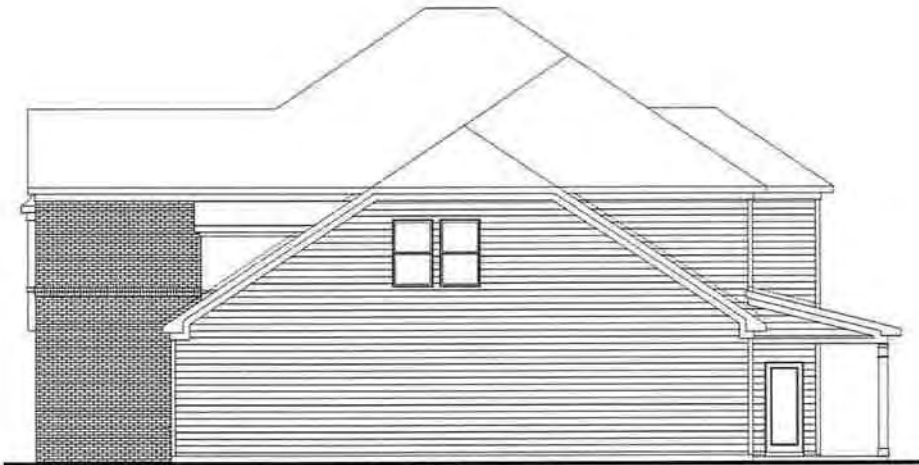
Rear Elevation

Highland - Federal - Siding

BUILDING ELEVATIONS FOR
ILLUSTRATIVE PURPOSES ONLY



Left Elevation



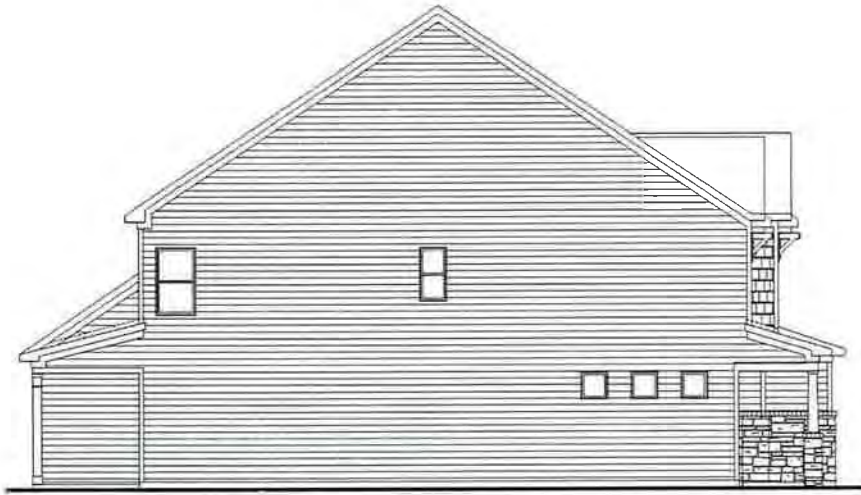
Right Elevation



Rear Elevation

Highland - Traditional

BUILDING ELEVATIONS FOR
ILLUSTRATIVE PURPOSES ONLY



Left Elevation



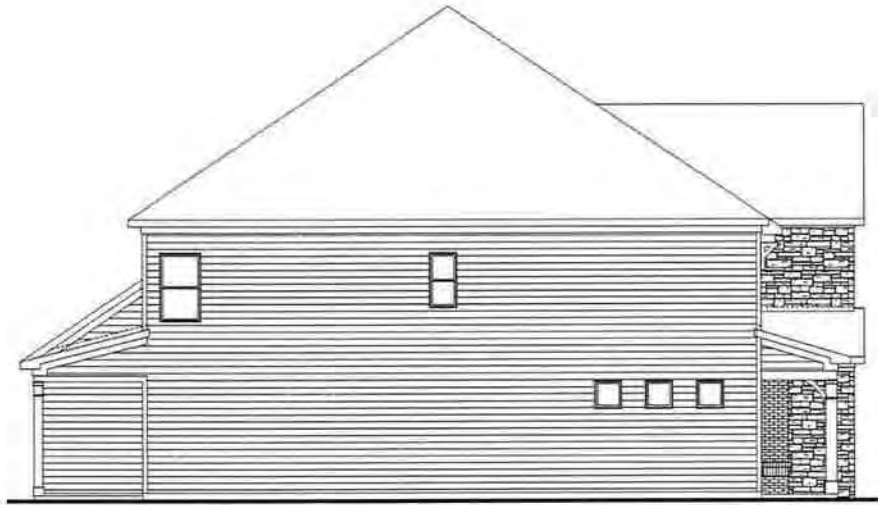
Right Elevation



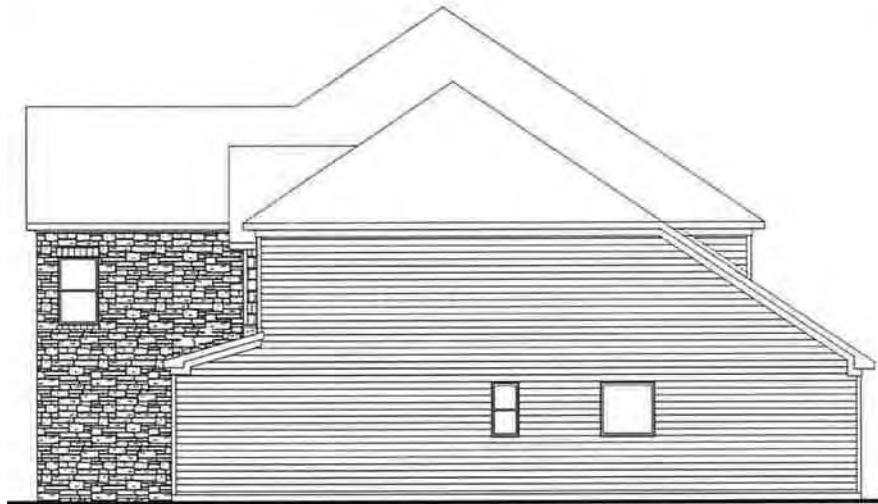
Rear Elevation

Kendyll - Craftsman

BUILDING ELEVATIONS FOR
ILLUSTRATIVE PURPOSES ONLY



Left Elevation



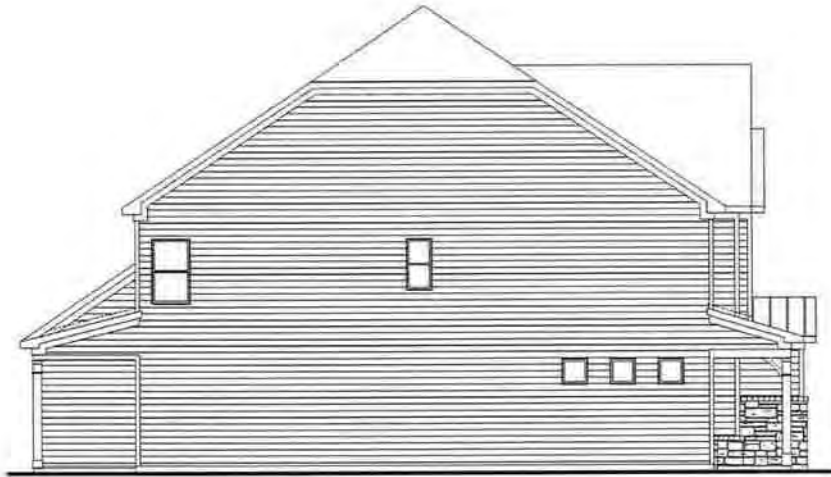
Right Elevation



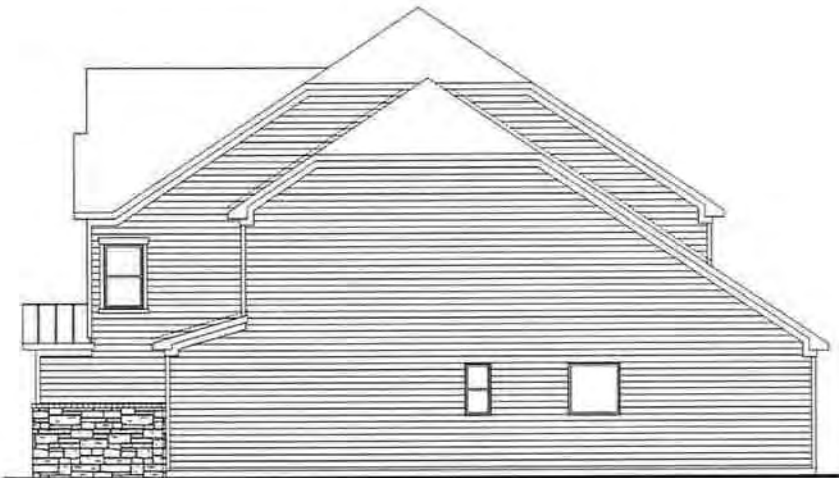
Rear Elevation

Kendyll - European

BUILDING ELEVATIONS FOR
ILLUSTRATIVE PURPOSES ONLY



Left Elevation



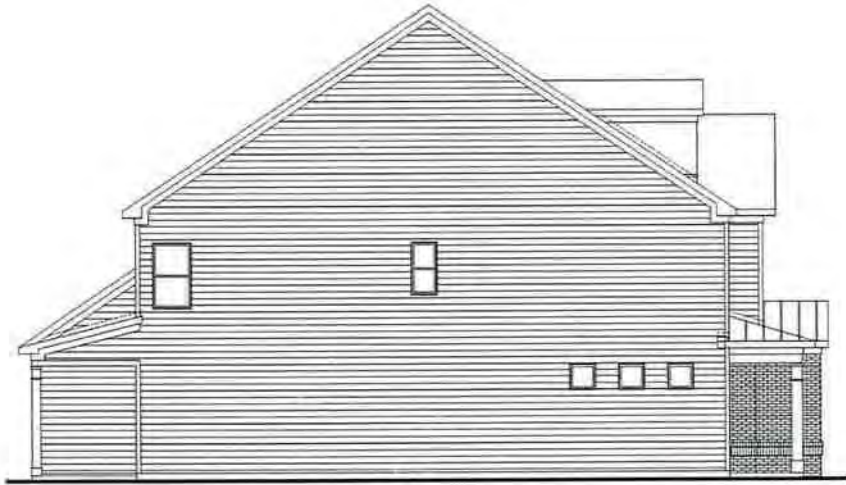
Right Elevation



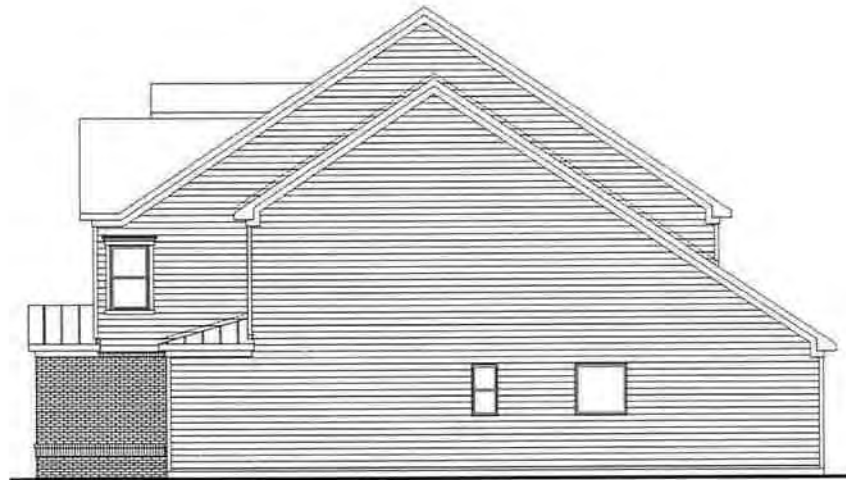
Rear Elevation

Kendyll - Farmhouse

BUILDING ELEVATIONS FOR
ILLUSTRATIVE PURPOSES ONLY



Left Elevation



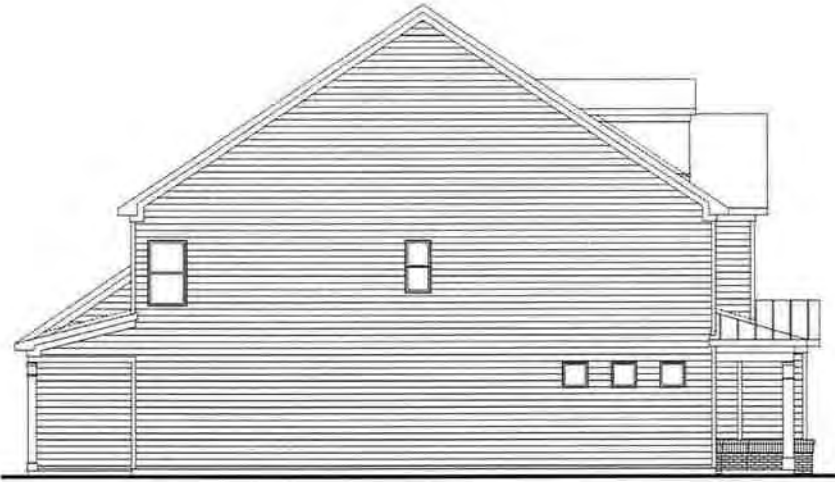
Right Elevation



Rear Elevation

Kendyll - Federal - Brick

BUILDING ELEVATIONS FOR
ILLUSTRATIVE PURPOSES ONLY



Left Elevation



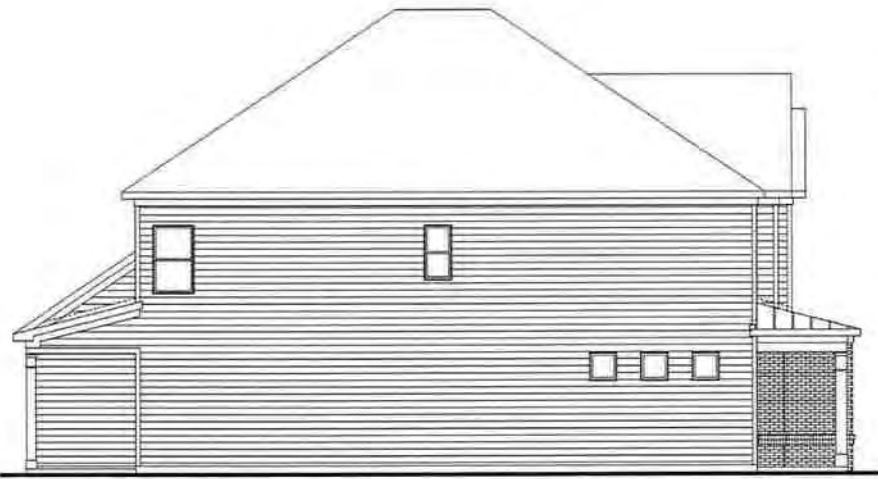
Right Elevation



Rear Elevation

Kendyll - Federal - Siding

BUILDING ELEVATIONS FOR
ILLUSTRATIVE PURPOSES ONLY



Left Elevation



Right Elevation



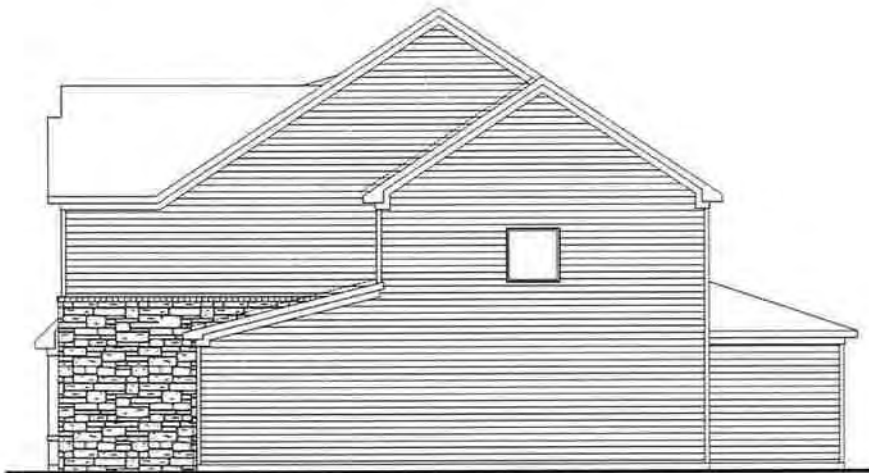
Rear Elevation

Kendyll - Traditional

BUILDING ELEVATIONS FOR
ILLUSTRATIVE PURPOSES ONLY



Left Elevation



Right Elevation



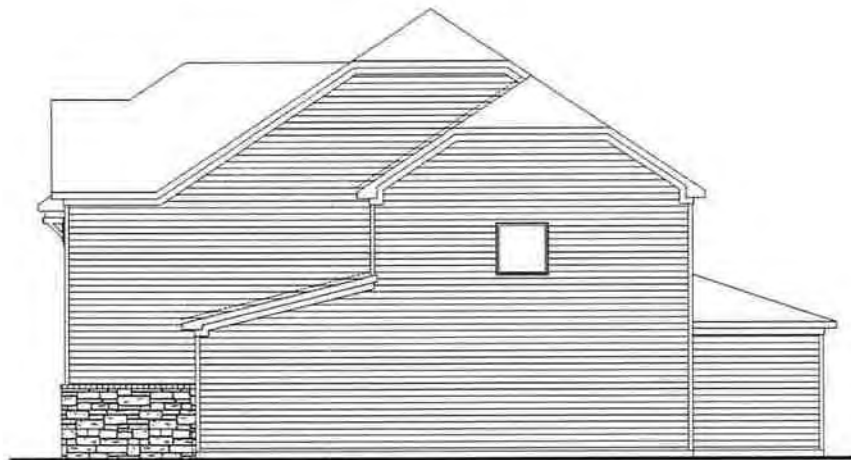
Rear Elevation

London - Craftsman

BUILDING ELEVATIONS FOR
ILLUSTRATIVE PURPOSES ONLY



Left Elevation



Right Elevation



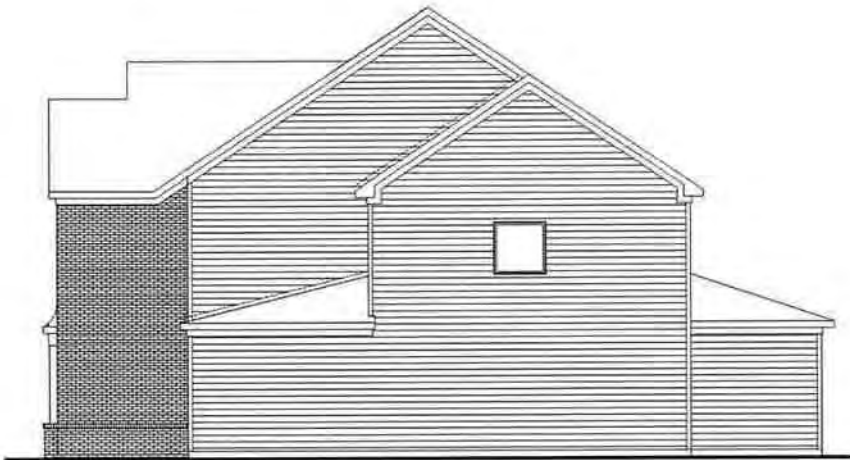
Rear Elevation

London - Farmhouse

BUILDING ELEVATIONS FOR
ILLUSTRATIVE PURPOSES ONLY



Left Elevation



Right Elevation



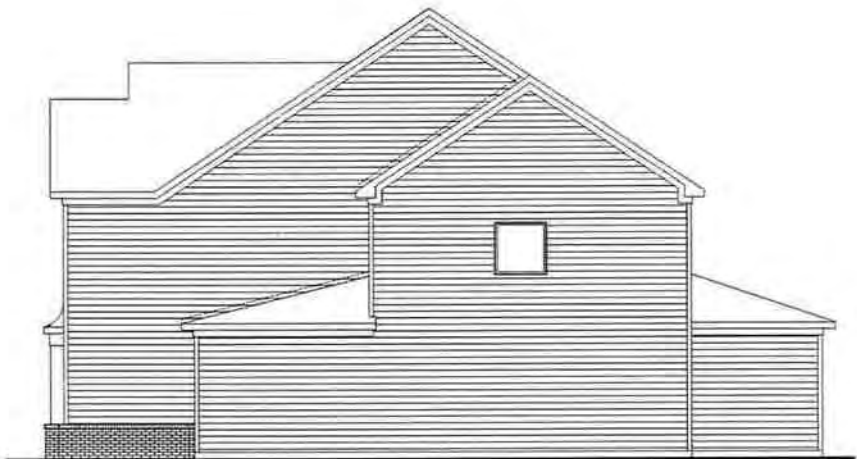
Rear Elevation

London - Federal - Brick

BUILDING ELEVATIONS FOR
ILLUSTRATIVE PURPOSES ONLY



Left Elevation



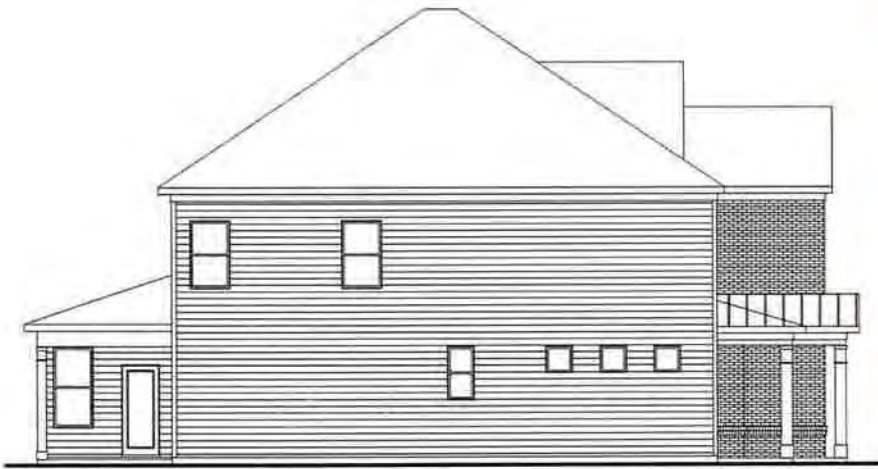
Right Elevation



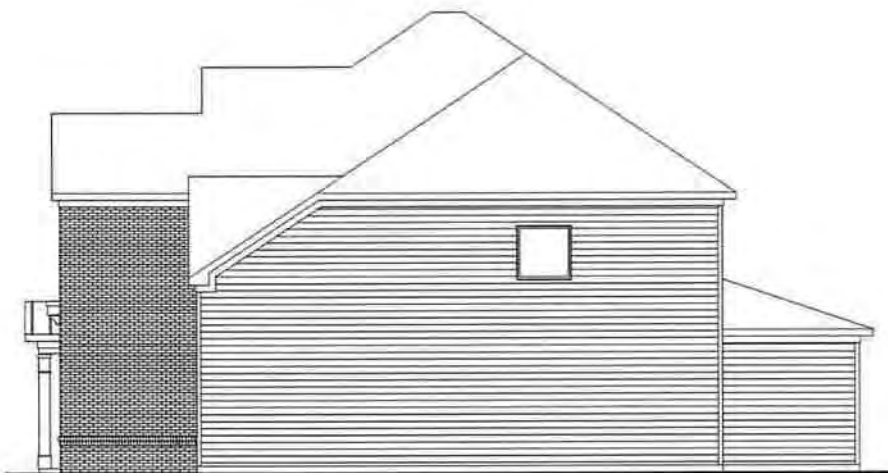
Rear Elevation

London - Federal - Siding

BUILDING ELEVATIONS FOR
ILLUSTRATIVE PURPOSES ONLY



Left Elevation



Right Elevation



Rear Elevation

London - Traditional

BUILDING ELEVATIONS FOR
ILLUSTRATIVE PURPOSES ONLY



Livingston

BUILDING ELEVATIONS FOR
ILLUSTRATIVE PURPOSES ONLY



Livingston

**BUILDING ELEVATIONS FOR
ILLUSTRATIVE PURPOSES ONLY**



Livingston

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Livingston

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Waverly

BUILDING ELEVATIONS FOR
ILLUSTRATIVE PURPOSES ONLY



Waverly

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Waverly

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Somerset

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ILLUSTRATIVE PURPOSES ONLY**

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Somerset

**BUILDING ELEVATIONS FOR
ILLUSTRATIVE PURPOSES ONLY**



Somerset

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Somerset

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Prescott II

**BUILDING ELEVATIONS FOR
ILLUSTRATIVE PURPOSES ONLY**



Prescott II

BUILDING ELEVATIONS FOR
ILLUSTRATIVE PURPOSES ONLY



Pescott II

**BUILDING ELEVATIONS FOR
ILLUSTRATIVE PURPOSES ONLY**



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Prescott II

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Prescott II

BUILDING ELEVATIONS FOR
ILLUSTRATIVE PURPOSES ONLY

Game Changer

3,037 square feet

3 Bedrooms | 2.5 Bathrooms



BUILDING ELEVATIONS FOR
ILLUSTRATIVE PURPOSES ONLY

Massey

2,883 square feet

4 Bedrooms | 3.5 Bathrooms | Game Room



BUILDING ELEVATIONS FOR
ILLUSTRATIVE PURPOSES ONLY

Barrett

3,147 square feet

4 Bedrooms | 3 Bathrooms | Study



BUILDING ELEVATIONS FOR
ILLUSTRATIVE PURPOSES ONLY

Stratton

3,217 square feet

4 Bedrooms | 3.5 Bathrooms



BUILDING ELEVATIONS FOR
ILLUSTRATIVE PURPOSES ONLY

Bliss

2,056 square feet

3 Bedrooms | 2.5 Bathrooms



Elevation C



Elevation A



Elevation B

BUILDING ELEVATIONS FOR
ILLUSTRATIVE PURPOSES ONLY

Sanctuary

2,580 square feet

4 Bedrooms | 3.5 Bathrooms



Elevation B



Elevation A



Elevation C

BUILDING ELEVATIONS FOR
ILLUSTRATIVE PURPOSES ONLY

Braxton

2,935 square feet

4 Bedrooms | 2.5 Bathrooms | Loft



BUILDING ELEVATIONS FOR
ILLUSTRATIVE PURPOSES ONLY

House Party

3,015 square feet

4 Bedrooms | 2.5 Bathrooms



Elevation C



Elevation A



Elevation B

BUILDING ELEVATIONS FOR
ILLUSTRATIVE PURPOSES ONLY

TOWNHOME BUILDING ELEVATIONS

Townhome Standards:

1. Vinyl siding is not permitted; however, vinyl windows, decorative elements and trim are permitted.
2. All townhomes shall have a crawl space or raised foundation which at a minimum rises at least 12 inches from average grade across the front of the house to the finished floor level at the front door.
3. Roofline cannot be a single mass; it must be broken up horizontally and vertically between units.
4. Garage doors must have windows, decorative details or carriage-style adornments.
5. House entrances for units with front-facing single-car garages shall have a prominent covered porch/stoop area leading to the front door.
6. The garage cannot protrude more than 1 foot out from the front façade or front porch.
7. The visible side of a townhome on a corner lot facing the public street shall contain at least 2 decorative elements such as, but not limited to, the following elements:
 - Windows
 - Bay window
 - Recessed window
 - Decorative window
 - Trim around the windows
 - Wrap around porch or side porch
 - Two or more building materials
 - Decorative brick/stone
 - Decorative trim
 - Decorative shake
 - Decorative air vents on gable
 - Decorative gable
 - Decorative cornice
 - Column
 - Portico
 - Balcony
 - Dormer
8. Building facades shall have horizontal relief achieved by the use of recesses and projections.
9. A varied color palette shall be utilized on homes throughout the subdivision to include a minimum of three color families for siding and shall include varied trim, shutter, and accent colors complementing the siding color.
10. The rear and side elevations of the units that can be seen from the right-of-way shall have trim around the windows.
11. Minor elevation adjustments may be accommodated with staff approval – including limiting clipped dormers on no more than 25% of the proposed townhome building designs.
12. Side entry, end unit townhomes in highly visible locations shall provide a covered entry feature for each unit. Highly visible locations shall include the end of a series of buildings, and adjacent to public or private rights-of-ways, recreation areas, open space, buffers, or adjacent properties.

Townhome and Single Family Home Color Palette (Sherwin Williams)

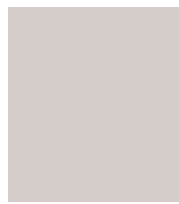
All colors are Primary with the exception of those noted



SW 6166
ECLIPSE



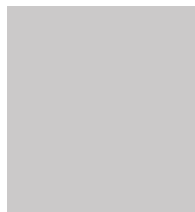
SW 7502
DRY ROCK



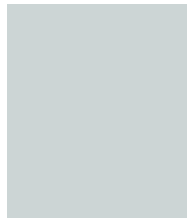
SW 6008
INDIVIDUAL
AZURITE



SW 9148
SMOKEY



SW 6260
UNIQUE GRAY



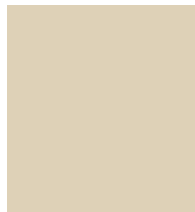
SW 9136
LULLABY
SLATE



SW 9131
CORNWALL
GREEN



SW 6524
COMMODORE



SW 9119
DIRTY
MARTINI



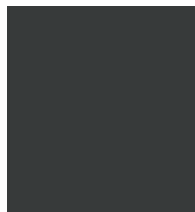
SW 6188
SHADE
GROWN



SW 9117
URBAN
JUNGLE



SW 6156
RAMIE



SW 6994
GREENBLACK
ACCENT



SW 6717
LIME RICKEY
ACCENT



SW 7589
HABANERO
CHILE
ACCENT



SW 70399148
VIRTUAL
TAUPE

White may also be used as a primary, trim, or accent color with any palette variations



Elevation A1-R



Elevation A2



Elevation A3-R



BUILDING ELEVATIONS FOR
ILLUSTRATIVE PURPOSES ONLY



Elevation B1



Elevation B2



Elevation B3-R



Elevation B4



Elevation B5 - R



BUILDING ELEVATIONS FOR
ILLUSTRATIVE PURPOSES ONLY



Elevation C1



Elevation C2



BUILDING ELEVATIONS FOR
ILLUSTRATIVE PURPOSES ONLY



Elevation D1



Elevation D2



BUILDING ELEVATIONS FOR
ILLUSTRATIVE PURPOSES ONLY



Elevation E1



Elevation E2



Elevation E3 R



BUILDING ELEVATION FOR
ILLUSTRATIVE PURPOSES ONLY



Elevation F1



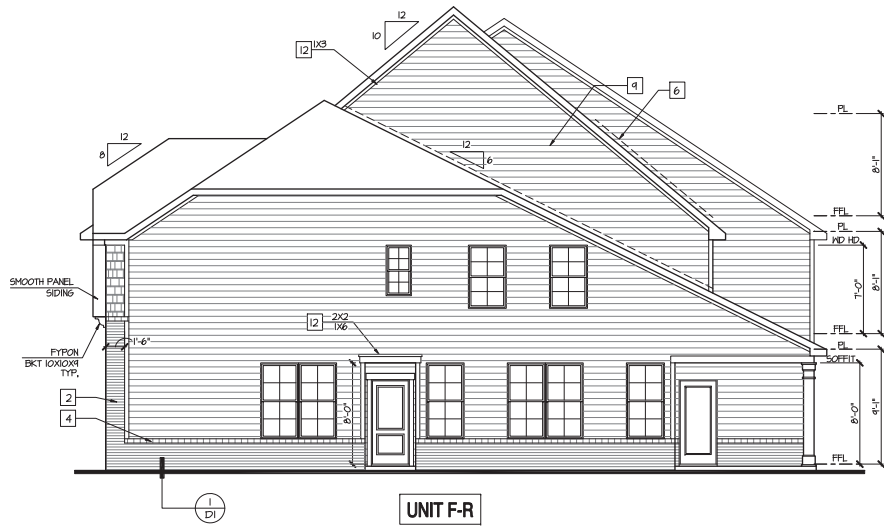
Elevation F2-R



Elevation F3

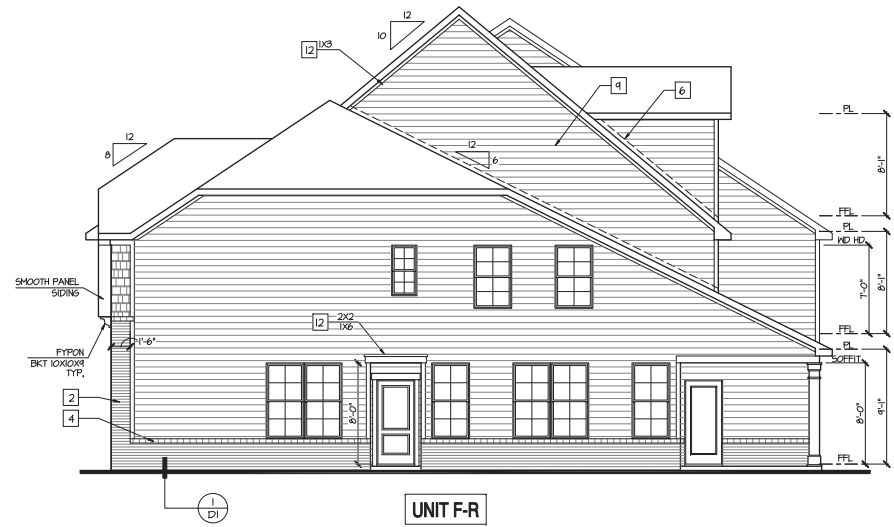


BUILDING ELEVATIONS FOR
ILLUSTRATIVE PURPOSES ONLY



UNIT F-R
Right Elevation 5-Plex 'A'

SCALE: 3/16"=1'-0" AT 22"X34" LAYOUT



UNIT F-R
Right Elevation 5-Plex 'A'

SCALE: 3/16"=1'-0" AT 22"X34" LAYOUT

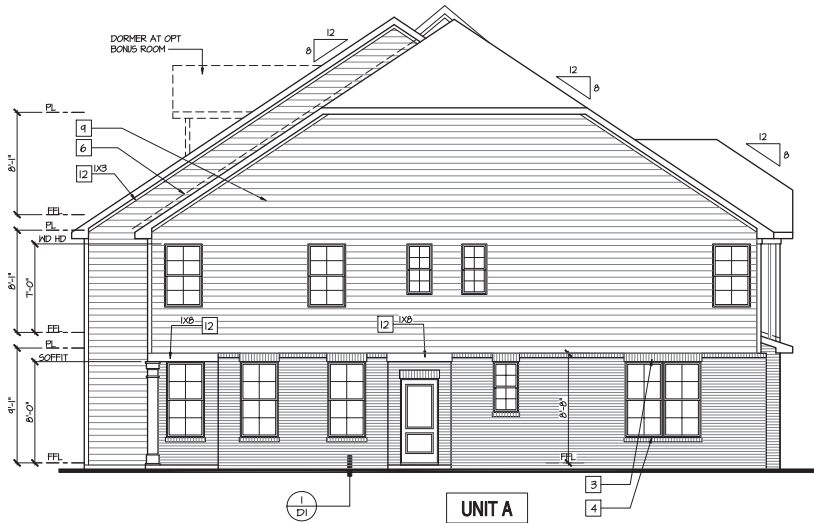


UNIT F-R **UNIT B2-R** **UNIT D2** **UNIT E3-R** **UNIT A**
Rear Elevation 5-Plex 'A'

SCALE: 3/16"=1'-0" AT 22"X34" LAYOUT

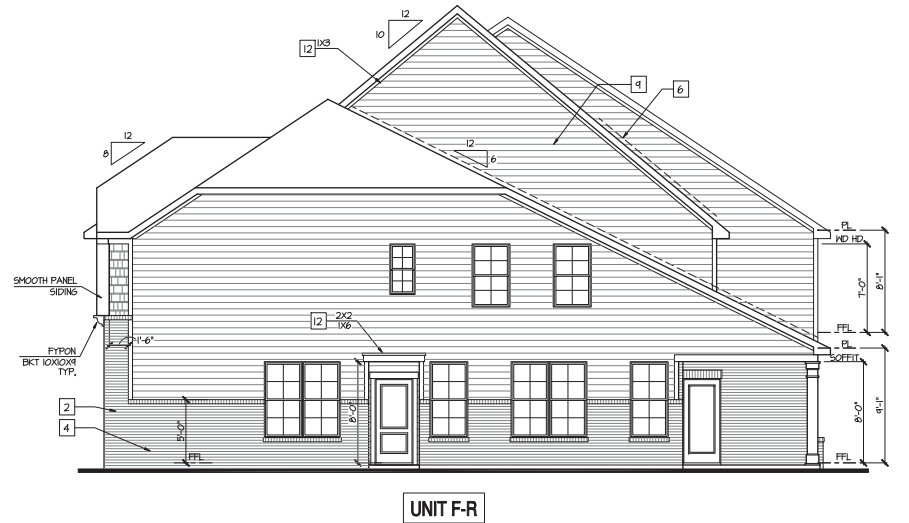


Rear Elevation 5-Plex 'A'
SCALE: 3/16"=1'-0" AT 22'X34" LAYOUT



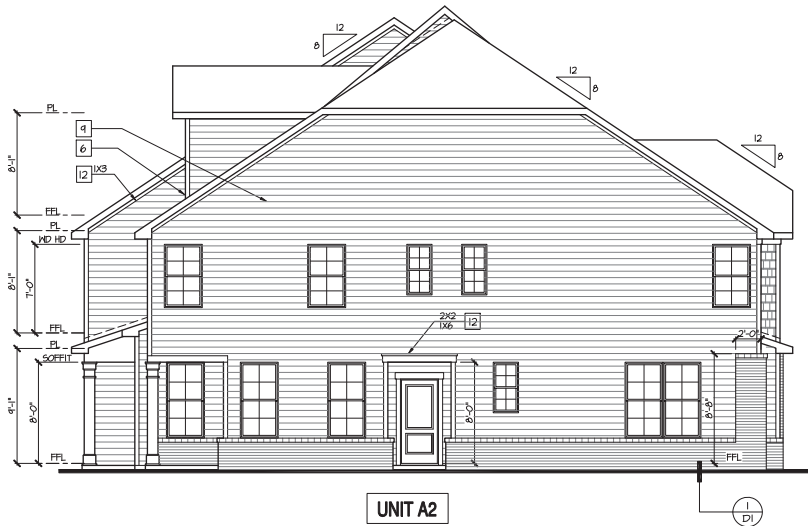
Left Elevation 5-Plex 'A'

SCALE: 3/16"=1'-0" AT 22'X34" LAYOUT



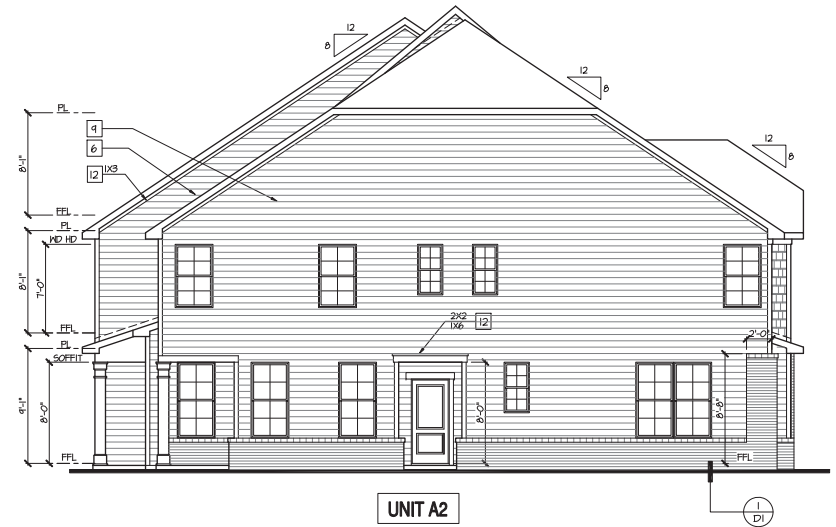
Right Elevation 5-Plex 'A'

SCALE: 3/16"=1'-0" AT 22'X34" LAYOUT



UNIT A2
Left Elevation 5-Plex 'B'

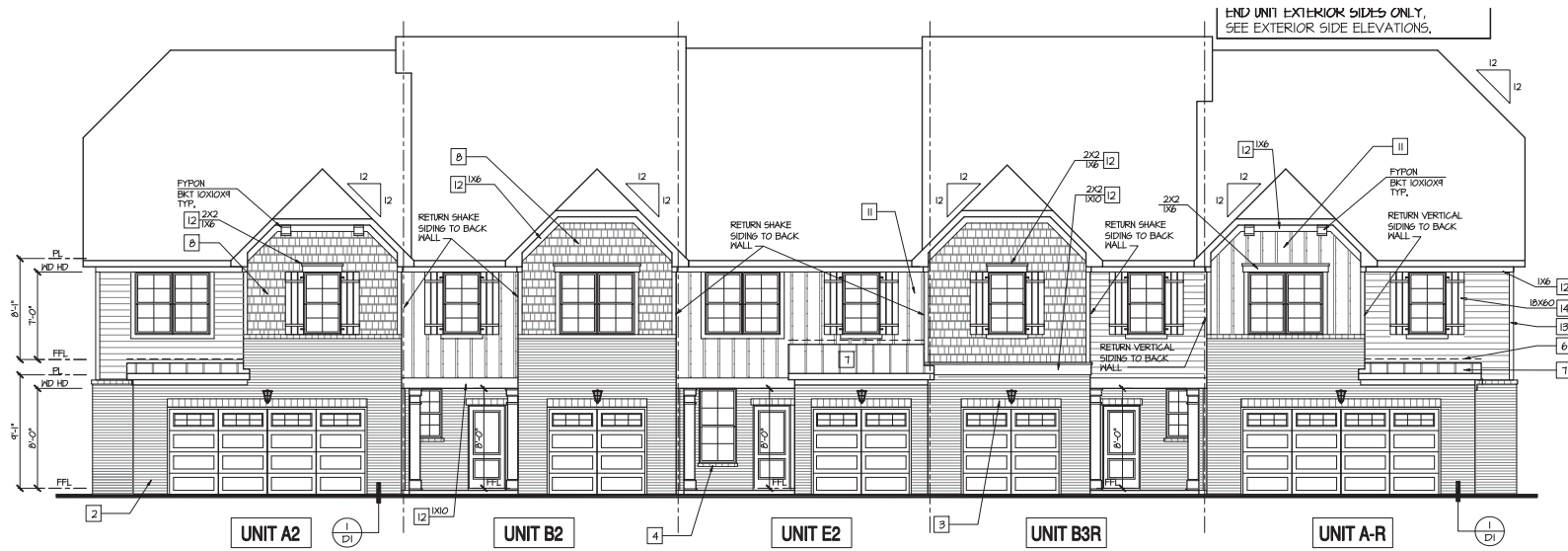
SCALE: 3/16"=1'-0" AT 22"X34" LAYOUT



UNIT A2
Left Elevation 5-Plex 'B'

SCALE: 3/16"=1'-0" AT 22"X34" LAYOUT

NOTES:	
-	GRADE CONDITIONS MAY VARY FOR INDIVIDUAL SITE FROM THAT SHOWN. BUILDER SHALL VERIFY AND COORDINATE PER ACTUAL SITE CONDITIONS.
-	WINDOW HEAD HEIGHTS: 1ST FLOOR = 8'-0" UNO, ON ELEVATIONS, 2ND FLOOR = 7'-0" UNO, ON ELEVATIONS.
-	ROOFING: PITCHED SHINGLES PER DEVELOPER.
-	WINDOWS: MANUFACTURER PER DEVELOPER, DIVIDED LITES AS SHOWN ON THE EXTERIOR ELEVATIONS.
-	ENTRY DOOR: AS SELECTED BY DEVELOPER.
-	GARAGE DOORS: AS SELECTED BY DEVELOPER, RAISED PANEL AS SHOWN.
-	ALL EXTERIOR MATERIALS TO BE INSTALLED PER MANUFACTURER'S WRITTEN INSTRUCTIONS.
KEY NOTES:	
MASONRY:	
[1]	ADHERED STONE VENER AS SELECTED BY DEVELOPER, HEIGHT AS NOTED.
[2]	MASONRY FULL BRICK AS SELECTED BY DEVELOPER, HEIGHT AS NOTED.
[3]	8" SOLDIER COURSE.
[4]	ROCKLOCK COURSE
TYPICALS:	
[5]	CORROSION RESISTANT SCREEN LOUVERED VENTS, SIZE AS NOTED.
[6]	CORROSION RESISTANT ROOF TO WALL FLASHING, CODE COMPLIANT FLASHING MUST BE INSTALLED AT ALL ROOF/WALL INTERSECTIONS.
[7]	STANDING SEAM METAL ROOF, INSTALL PER MANUFACTURER'S WRITTEN INSTRUCTIONS.
SIDING:	
[8]	VINYL SHAKE SIDING PER DEVELOPER W/ VINYL CORNER.
[9]	VINYL LAP SIDING PER DEVELOPER W/ VINYL CORNER.
[10]	VINYL BATT AND BOARD SIDING PER DEVELOPER W/ VINYL CORNER.
[11]	VINYL VERTICAL SIDING PER DEVELOPER W/ VINYL CORNER.
[12]	1x SYMBEARD TRIM OR EQUAL, UNO, SIZE AS NOTED
[13]	3 1/2" VINYL TRIM (WINDOW JAMBES AND EXTERIOR CORNERS.)
[14]	VINYL SHUTTERS, TYPE AS SHOWN, SIZE AS NOTED.

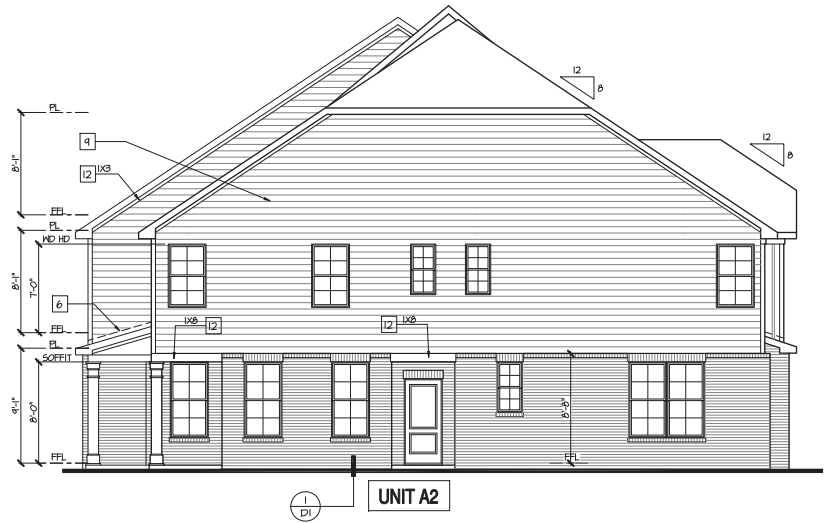


UNIT A2 UNIT B2 UNIT E2 UNIT B3R UNIT A-R
Front Elevation 5-Plex 'B'

SCALE: 3/16"=1'-0" AT 22"X34" LAYOUT

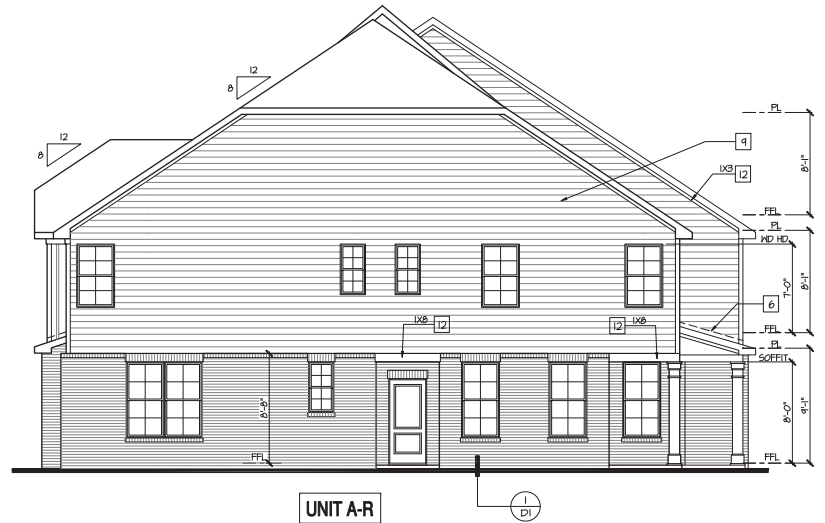


Rear Elevation 5-Plex 'B'
SCALE: 3/16"=1'-0" AT 22"x34" LAYOUT



Left Elevation 5-Plex 'B'

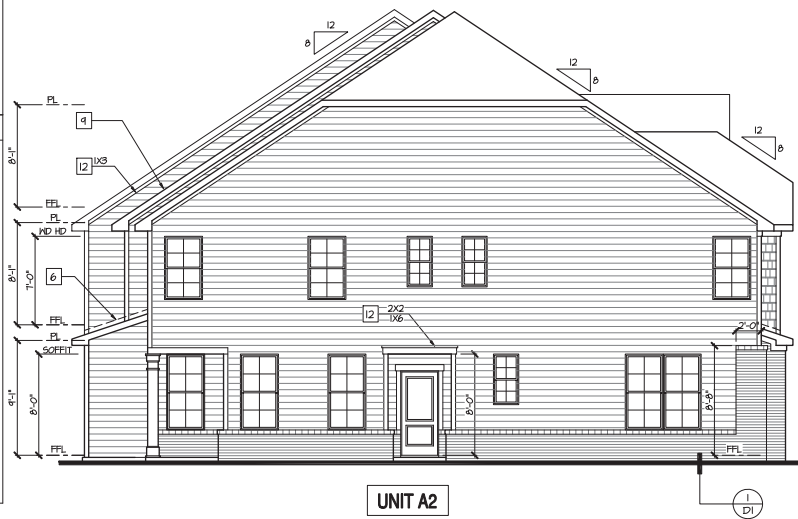
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Right Elevation 5-Plex 'B'

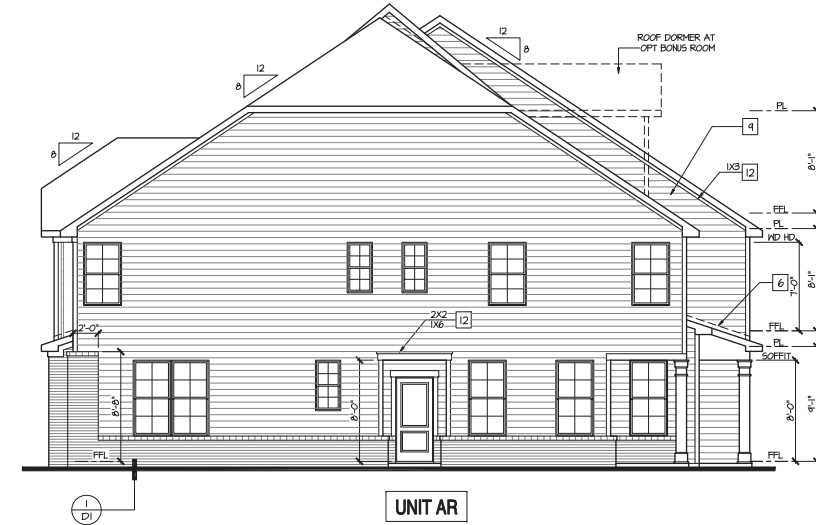
SCALE: 3/16"=1'-0" AT 22"x34" LAYOUT

- NOTES:**
- GRADE CONDITIONS MAY VARY FOR INDIVIDUAL SITE FROM THAT SHOWN. BUILDER SHALL VERIFY AND COORDINATE PER ACTUAL SITE CONDITIONS.
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2ND FLOOR = 7'-0" UNO, ON ELEVATIONS.
 - ROOFING: PITCHED SHINGLES PER DEVELOPER.
 - WINDOWS: MANUFACTURER PER DEVELOPER, DIVIDED LITES AS SHOWN ON THE EXTERIOR ELEVATIONS
 - ENTRY DOORS: AS SELECTED BY DEVELOPER.
 - GARAGE DOORS: AS SELECTED BY DEVELOPER, RAISED PANEL AS SHOWN.
 - ALL EXTERIOR MATERIALS TO BE INSTALLED PER MANUFACTURER'S WRITTEN INSTRUCTIONS.
- KEY NOTES:**
- MASONRY:**
- [1] ADHERED STONE VENEER AS SELECTED BY DEVELOPER, HEIGHT AS NOTED.
 - [2] MASONRY FULL BRICK AS SELECTED BY DEVELOPER, HEIGHT AS NOTED.
 - [3] 8" SOLDIER COURSE.
 - [4] RAINLOCK COURSE
- TYPICALS:**
- [5] CORROSION RESISTANT SCREEN COVERED VENTS, SIZE AS NOTED.
 - [6] CORROSION RESISTANT ROOF TO WALL FLASHING, CODE COMPLIANT FLASHING MUST BE INSTALLED AT ALL ROOF/WALL INTERSECTIONS.
 - [7] STANDING SEAM METAL ROOF, INSTALL PER MANUFACTURER'S WRITTEN INSTRUCTIONS.
- SIDING:**
- [8] VINYL SHAKE SIDING PER DEVELOPER
W/ VINYL CORNER.
 - [9] VINYL LAP SIDING PER DEVELOPER
W/ VINYL CORNER.
 - [10] VINYL BATT AND BOARD SIDING PER DEVELOPER
W/ VINYL CORNER.
 - [11] VINYL VERTICAL SIDING PER DEVELOPER
W/ VINYL CORNER.
 - [12] 1X SYNBOARD TRIM OR EQUAL, UNO, SIZE AS NOTED
 - [13] 3 1/2" VINYL TRIM (WINDOW JAMBS AND EXTERIOR CORNERS)
 - [14] VINYL SHUTTERS, TYPE AS SHOWN, SIZE AS NOTED.



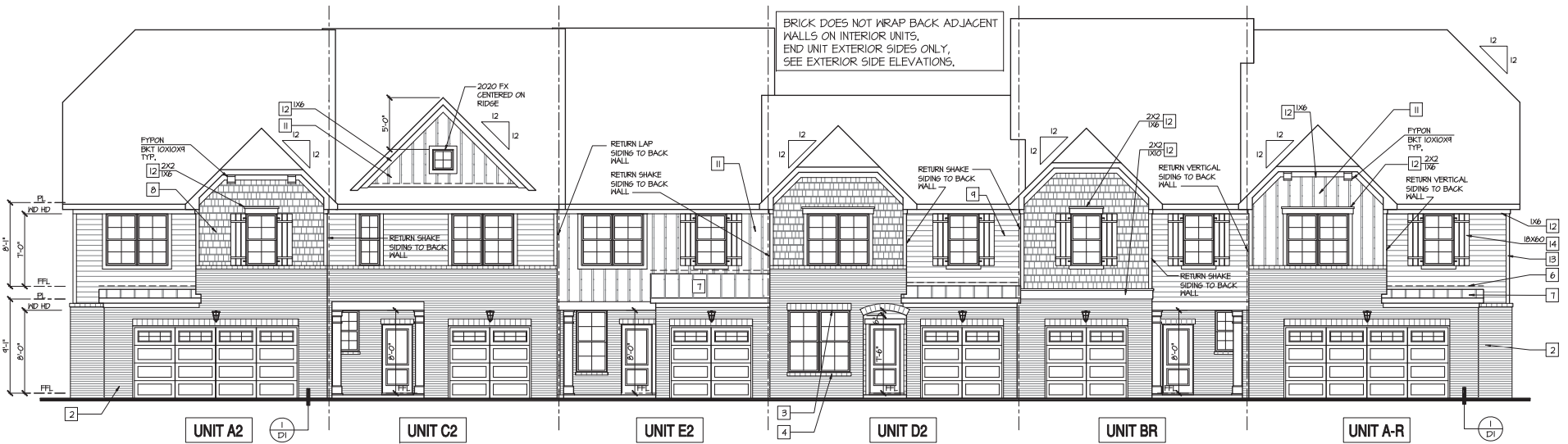
UNIT A2
Left Elevation 6-Plex 'A'

SCALE: 3/16"=1'-0" AT 22"x34" LAYOUT



UNIT AR
Right Elevation 6-Plex 'A'

SCALE: 3/16"=1'-0" AT 22"x34" LAYOUT



Front Elevation 6-Plex 'A'

SCALE: 3/16"=1'-0" AT 22"x34" LAYOUT



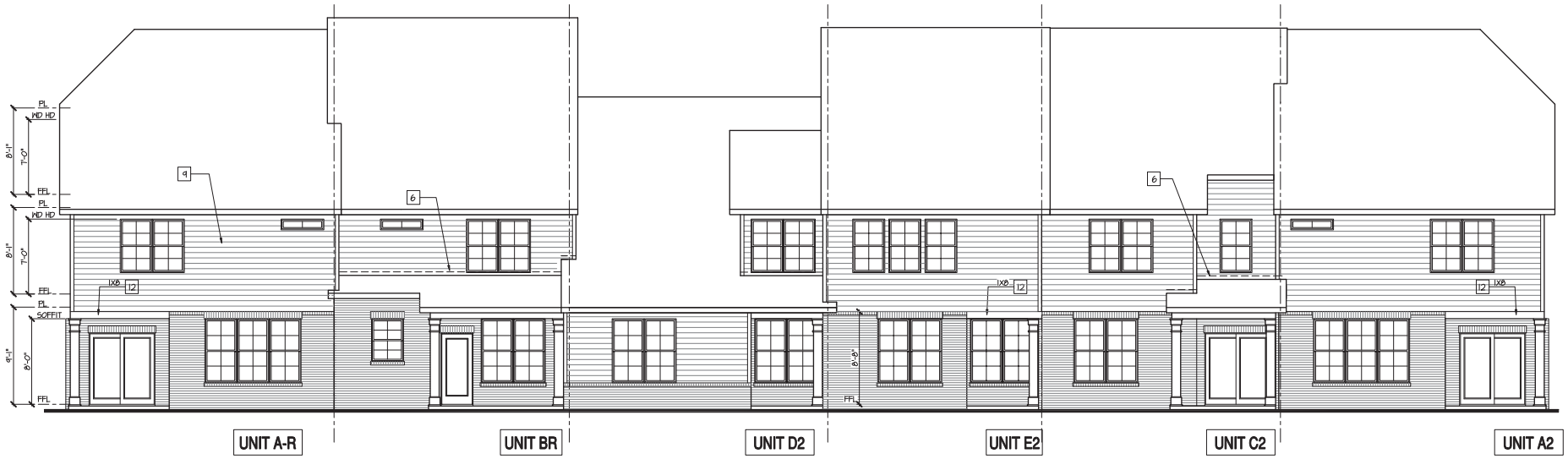
Rear Elevation

SCALE: 3/16"=1'-0" AT 22"X34" LAYOUT



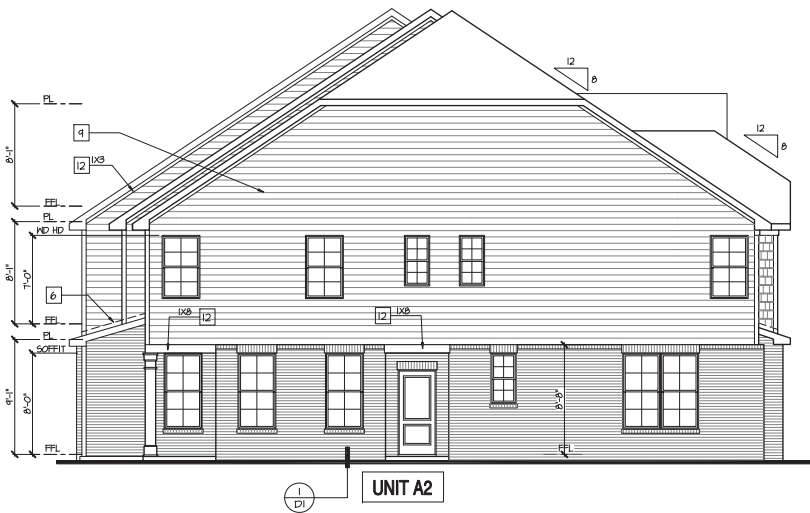
Rear Elevation 6-Plex 'A'

SCALE: 3/16"=1'-0" AT 22"X34" LAYOUT



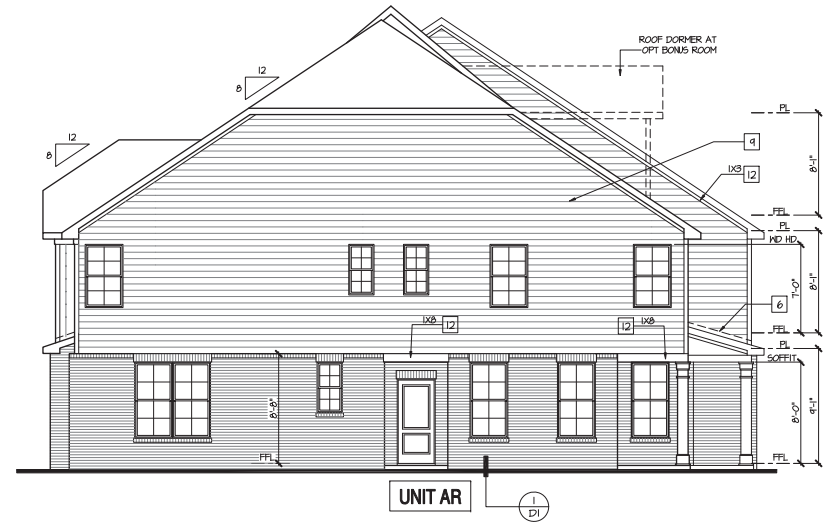
Rear Elevation 6-Plex 'A'

SCALE: 3/16"=1'-0" AT 22'x34' LAYOUT



Left Elevation 6-Plex 'A'

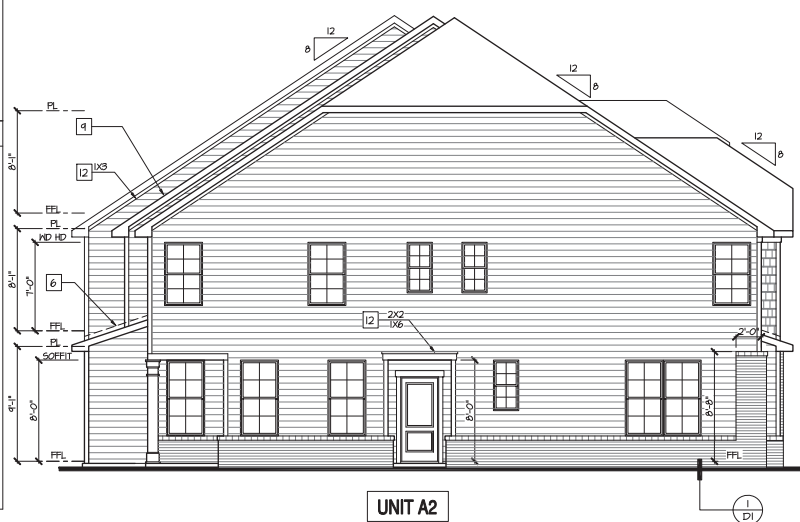
SCALE: 3/16"=1'-0" AT 22'x34' LAYOUT



Right Elevation 6-Plex 'A'

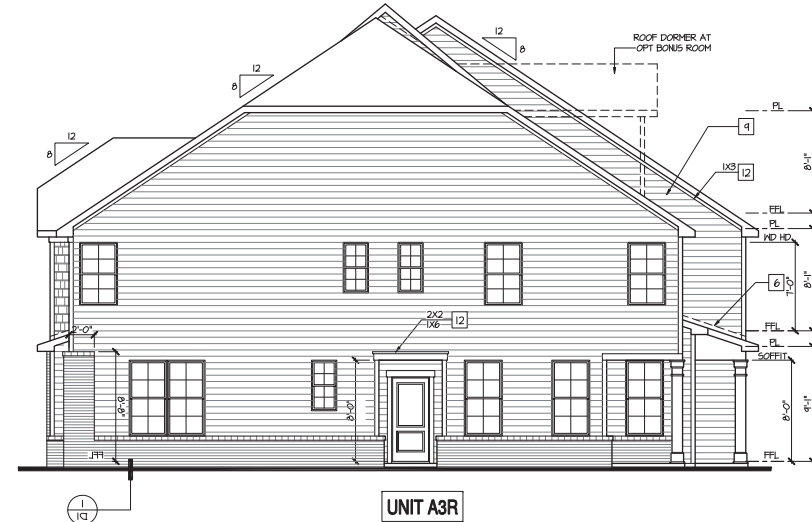
SCALE: 3/16"=1'-0" AT 22'x34' LAYOUT

- NOTES:**
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 - [7] STANDING SEAM METAL ROOF, INSTALL PER MANUFACTURER'S WRITTEN INSTRUCTIONS.
- SIDING:**
- [8] VINYL SHAKE SIDING PER DEVELOPER
 - [9] VINYL CORNER,
 - [10] VINYL LAP SIDING PER DEVELOPER
 - [11] VINYL CORNER,
 - [12] VINYL BATT AND BOARD SIDING PER DEVELOPER
 - [13] VINYL CORNER,
 - [14] VINYL VERTICAL SIDING PER DEVELOPER
 - [15] VINYL CORNER,
 - [16] 1X SYNBORD TRIM OR EQUAL, UNO, SIZE AS NOTED
 - [17] 3 1/2" VINYL TRIM (WINDOW JAMBS AND EXTERIOR CORNERS)
 - [18] VINYL SHUTTERS, TYPE AS SHOWN, SIZE AS NOTED.



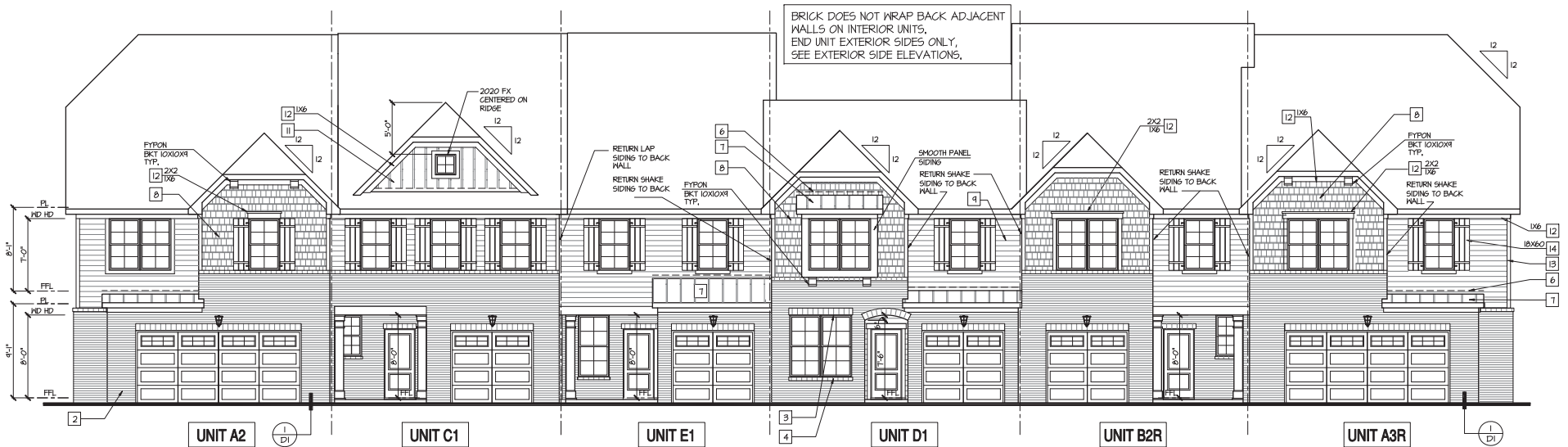
UNIT A2
Left Elevation 6-Plex 'B'

SCALE: 3/16"=1'-0" AT 22"X34" LAYOUT



UNIT A3R
Right Elevation 6-Plex 'B'

SCALE: 3/16"=1'-0" AT 22"X34" LAYOUT



Front Elevation 6-Plex 'B'

SCALE: 3/16"=1'-0" AT 22"X34" LAYOUT



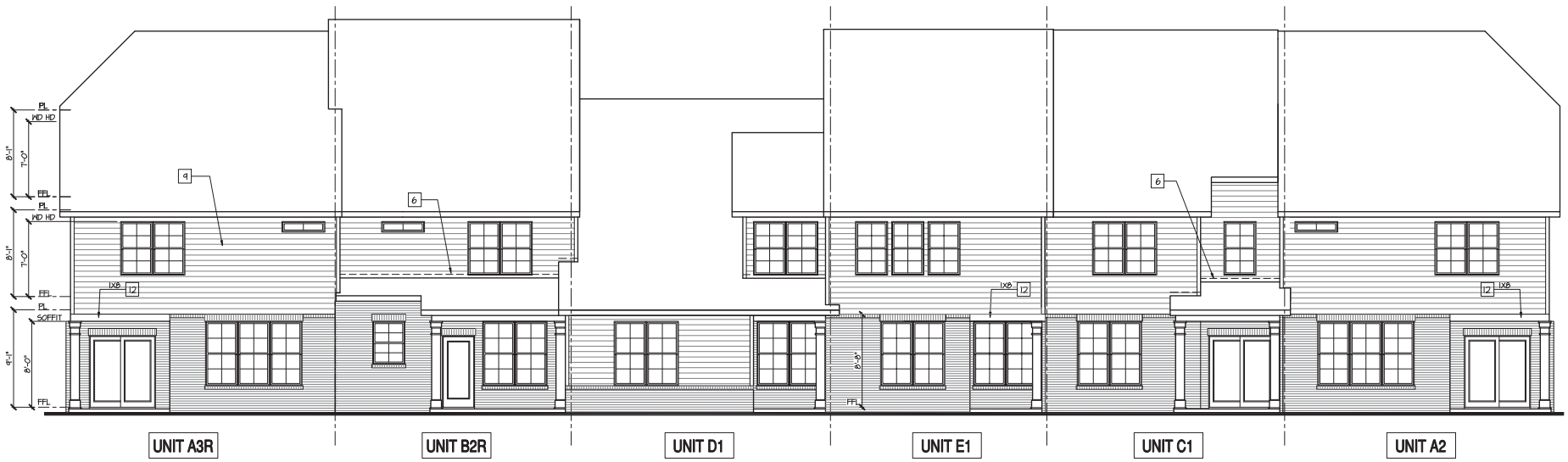
Rear Elevation

SCALE: 3/16"=1'-0" AT 22"X34" LAYOUT



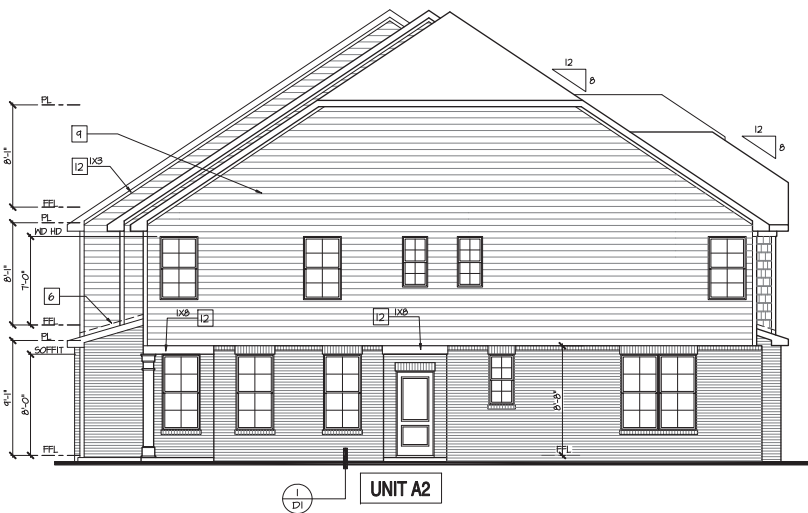
Rear Elevation 6-Plex 'B'

SCALE: 3/16"=1'-0" AT 22"X34" LAYOUT



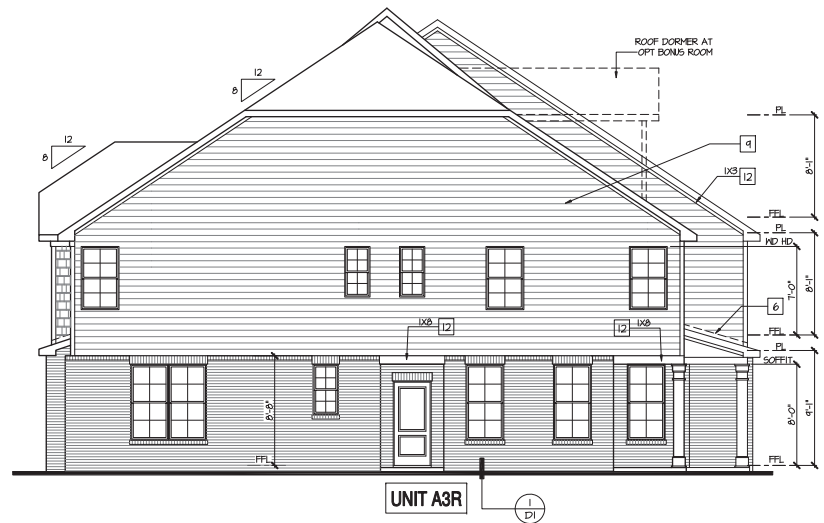
Rear Elevation 6-Plex 'B'

SCALE: 3/16"=1'-0" AT 22"X34" LAYOUT



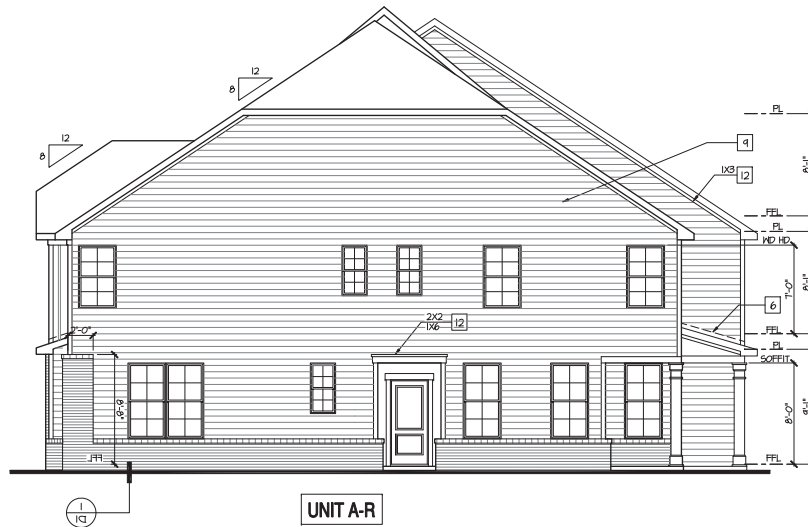
Left Elevation 6-Plex 'B'

SCALE: 3/16"=1'-0" AT 22"X34" LAYOUT



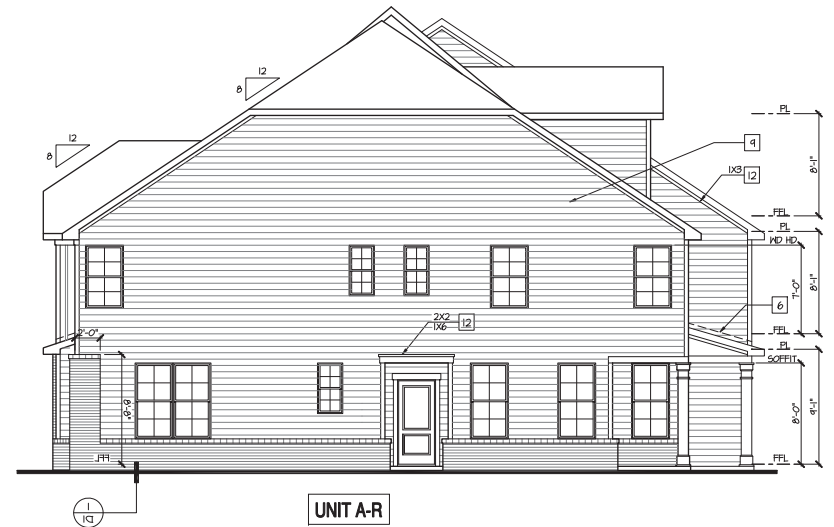
Right Elevation 6-Plex 'B'

SCALE: 3/16"=1'-0" AT 22"X34" LAYOUT



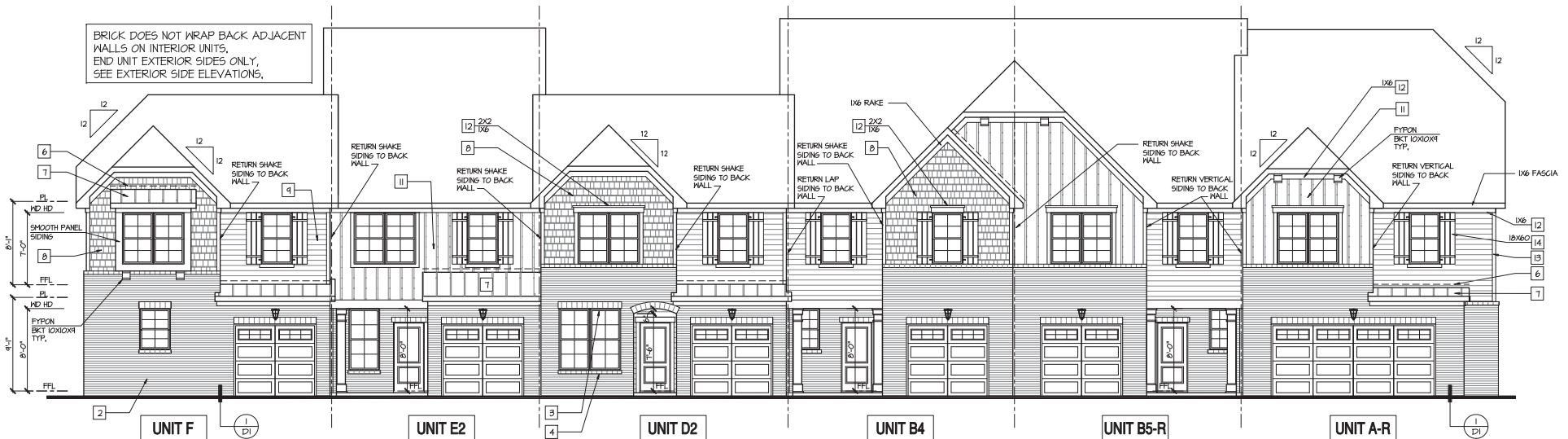
UNIT A-R
Right Elevation 6-Plex 'C'

SCALE: 3/16"=1'-0" AT 22"X34" LAYOUT



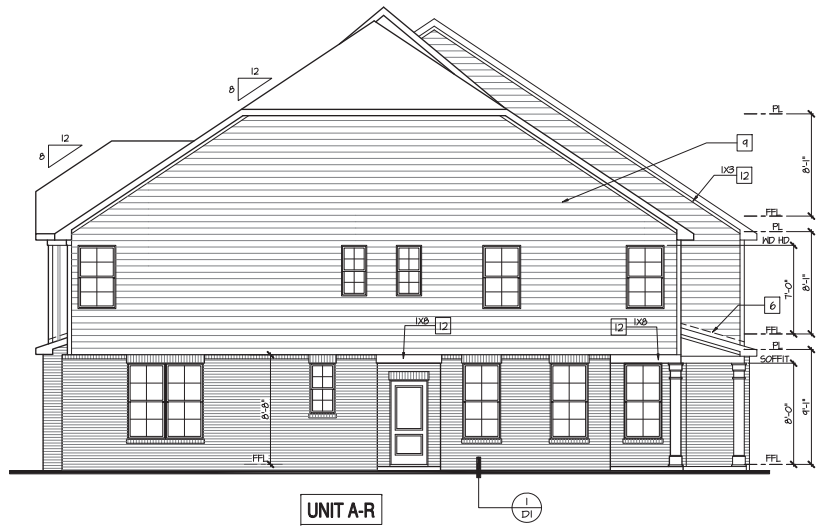
UNIT A-R
Right Elevation 6-Plex 'C'

SCALE: 3/16"=1'-0" AT 22"X34" LAYOUT



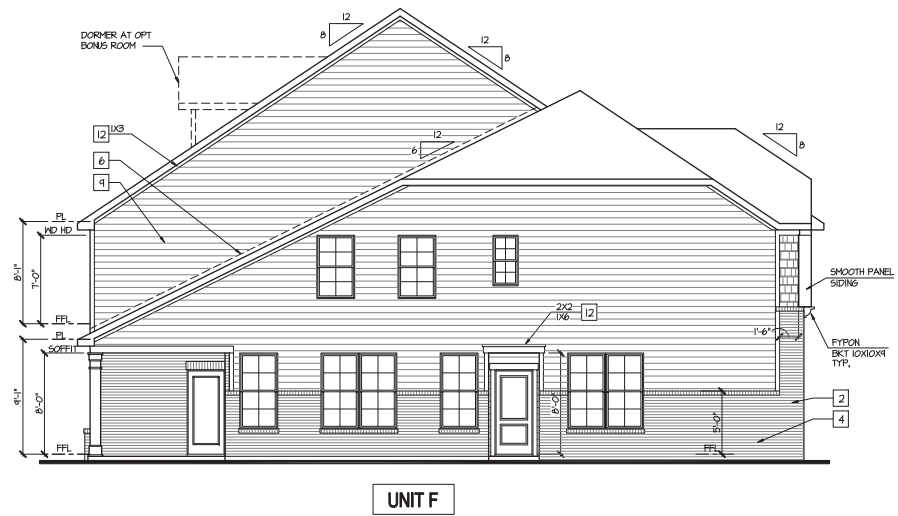
Front Elevation 6-Plex 'C'

SCALE: 3/16"=1'-0" AT 22"X34" LAYOUT



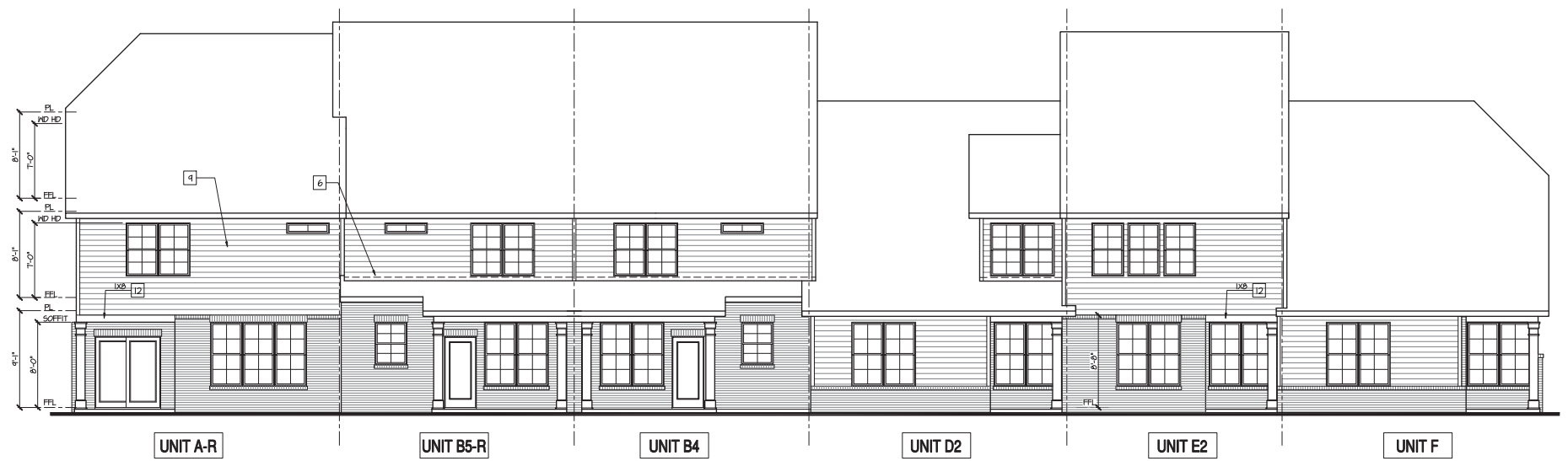
UNIT A-R
Right Elevation 6-Plex 'C'

SCALE: 3/16"=1'-0" AT 22'x34" LAYOUT



UNIT F
Left Elevation 6-Plex 'C'

SCALE: 3/16"=1'-0" AT 22'x34" LAYOUT



Rear Elevation 6-Plex 'C'

SCALE: 3/16"=1'-0" AT 22'x34" LAYOUT

APARTMENT BUILDING ELEVATIONS

Apartment standards:

1. Vinyl siding is not permitted; however, vinyl windows, decorative elements and trim are permitted.
2. Siding materials shall be varied in type and/or color on 30% of each façade on each building.
3. Windows must vary in size and/or type.
4. Windows that are not recessed must be trimmed.
5. Recesses and projections shall be provided for at least 50% of each façade on each building.
6. Rooflines cannot be a single mass; they must be varied with the use of gables or parapets.
7. Garage doors must have windows, decorative details or carriage-style adornments.
8. At least three of the following decorative features shall be used on each building:
 - Decorative shake
 - Board and batten
 - Decorative porch railing/posts
 - Shutters
 - Decorative/functional air vents on roof or foundation
 - Recessed windows
 - Decorative windows
 - Decorative brick/stone
 - Decorative gables
 - Decorative cornices
 - Tin/metal roof
9. A varied color palette shall be utilized for the apartment buildings throughout the development. With garden style apartments, a minimum of three color families for siding shall be provided and will include varied trim, shutter, and accent colors complementing the siding color. For a single mass apartment structure, the color shall vary with accent colors or architectural features to provide building relief.
10. Breezeway(s) for the four story apartment elevation is to be enclosed for additional mechanical equipment or elevators.

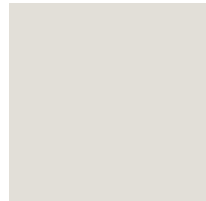
Apartment Color Palette (Sherwin Williams)
All colors are Primary with the exception of those noted



SW 6117
SMOKEY
TOPAZ



SW 7019
GAUNTLET
GRAY



SW 7014
ELDER WHITE



SW 7024
FUNCTIONAL GRAY



SW 6242
BRACING BLUE



SW 6524
COMMODORE



SW 6761
THERMAL
SPRING
(ACCENT)



SW 6871
POSITIVE
RED
(ACCENT)

White may also be used as a primary, trim, or accent color with any palette variations



PRELIMINARY BUILDING ELEVATION
FOR ILLUSTRATIVE PURPOSES ONLY

PRELIMINARY BUILDING ELEVATIONS
FOR ILLUSTRATIVE PURPOSES ONLY



Front Elevation



Rear Elevation



Typ. Side Elevation



ARCHITECTURAL CLASS
EXTERIOR MATERIALS
• ASPHALT SHINGLE ROOF
• STANDING SEAM METAL ROOF
• FIBER CEMENT SIDING
• FIBER CEMENT PANELS
• BRICK PER BUILDER
• BRICK ROLL-LOCK/SOLDER PER BUILDER
• CULTURED STONE VENEER

1 FRONT ELEVATION
Scale: 1/8" = 1'-0"

PRELIMINARY BUILDING ELEVATIONS FOR ILLUSTRATIVE PURPOSES ONLY



2 TYPICAL SIDE ELEVATION
Scale: 1/8" = 1'-0"

PRELIMINARY BUILDING ELEVATIONS
FOR ILLUSTRATIVE PURPOSES ONLY



Traffic Impact Analysis Update Horton Park Apex, NC



TRAFFIC IMPACT ANALYSIS UPDATE

FOR

HORTON PARK

LOCATED

IN

APEX, NORTH CAROLINA

Prepared For:
MFW Investments, LLC

Prepared By:
Ramey Kemp & Associates, Inc.
5808 Faringdon Place, Suite 100
Raleigh, NC 27609
License #C-0910

July 2019

RKA Project No. 19203



Prepared By: NAB

Reviewed By: JTR

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- Appendix C: Signal Plans
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TRAFFIC IMPACT ANALYSIS UPDATE
HORTON PARK
APEX, NORTH CAROLINA

1. INTRODUCTION

The contents of this report present the findings of the Traffic Impact Analysis (TIA) Update conducted for the proposed Horton Park development to be located between Smith Road and E. Williams Street, south of Ten-Ten Road in Apex, North Carolina. The purpose of this study is to determine the potential impacts to the surrounding transportation system created by traffic generated by the proposed development, as well as recommend improvements to mitigate the impacts. Phase 1 of the development is expected to provide site access via connections to Dezola Street to the east and Colby Chase Drive to the west. Under Full Buildout, the development is expected to provide additional site access via three (3) full movement driveways on Jessie Drive Extension.

The proposed development is expected to be constructed in two (2) phases with Phase 1 anticipated to be completed in 2024 and Full Buildout in 2026. Phase 1 of the development is assumed to consist of the following uses:

- 290 single-family detached homes
- 134 townhomes

Full Buildout of the development is assumed to consist of the following uses:

- 290 single-family detached homes
- 212 townhomes
- 356 apartments
- 40,000 square feet (s.f.) of warehouse
- 40,000 s.f. of business park

The study analyzes traffic conditions during the weekday AM and PM peak hours for the following scenarios:

- Existing (2019) Traffic Conditions

- Background (2024) Traffic Conditions
- Background (2026) Traffic Conditions
- Combined (2024) Traffic Conditions – Phase 1
- Combined (2026) Traffic Conditions – Full Buildout

1.1. Site Location and Study Area

The development is proposed to be located between Smith Road and E. Williams Street, south of Ten-Ten Road in Apex, North Carolina. Refer to Figure 1 for the site location map.

The study area for the TIA was determined through coordination with the North Carolina Department of Transportation (NCDOT) and the Town of Apex (Town) and consists of the following existing intersections:

- Ten-Ten Road and Smith Road
- Smith Road and Stephenson Road
- Smith Road and Dezola Street
- E. Williams Street and Straywhite Avenue
- NC 55 and Technology Drive / E. Williams Street
- Ten-Ten Road and Jessie Drive (Full Buildout scenarios only)
- NC 55 and Jessie Drive Extension (Full Buildout scenarios only)
- NC 55 and Jessie Drive Extension Northbound U-Turn Location (Full Buildout scenarios only)

Refer to Appendix A for the Memorandum of Understanding (MOU) approved by NCDOT and the Town.

1.2. Proposed Land Use and Site Access

The proposed development is expected to be constructed in two (2) phases with Phase 1 anticipated to be completed in 2024 and Full Buildout in 2026. Phase 1 of the development is assumed to consist of the following uses:

- 290 single-family detached homes
- 134 townhomes

Full Buildout of the development is assumed to consist of the following uses:

- 290 single-family detached homes
- 212 townhomes
- 356 apartments
- 40,000 square feet (s.f.) of warehouse
- 40,000 s.f. of business park

Phase 1 of the development is expected to provide site access via connections to Dezola Street to the east and Colby Chase Drive to the west. Under Full Buildout, the development is expected to provide additional site access via three (3) full movement driveways on Jessie Drive Extension.

Refer to Figure 2 for a copy of the most recent preliminary site plan.

1.3. Adjacent Land Uses

The proposed development is located in an area consisting primarily of undeveloped land, residential, and industrial developments.

1.4. Existing Roadways

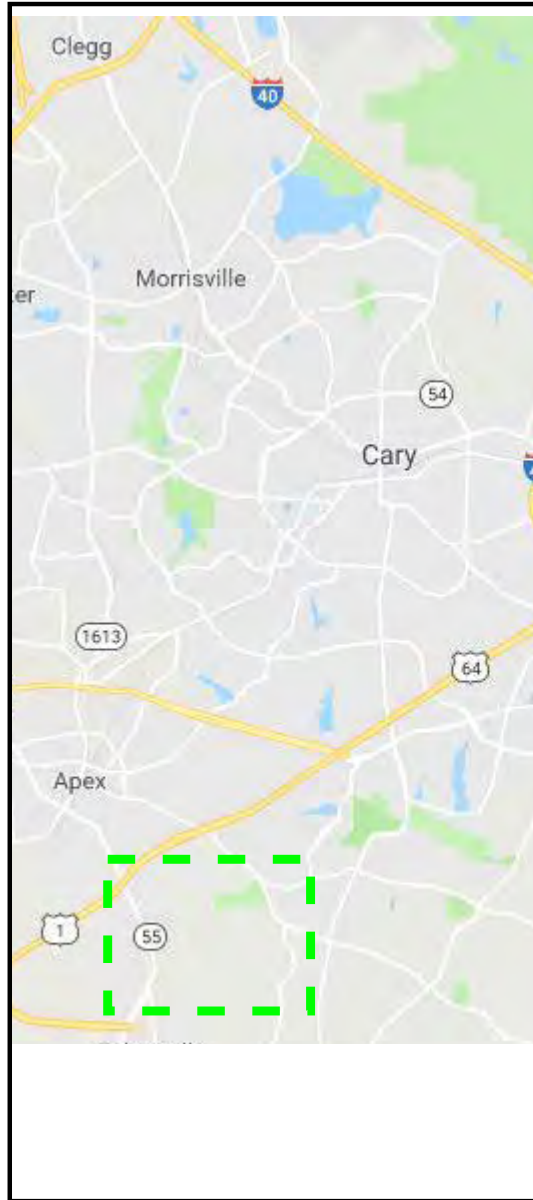
Existing lane configurations (number of traffic lanes on each intersection approach), lane widths, storage capacities, and other intersection and roadway information was collected through field reconnaissance by Ramey Kemp & Associates, Inc. (RKA). Table 1 provides a summary of the field data collected. Refer to Figure 3 for an illustration of the existing lane configurations within the study area.

Table 1: Existing Roadway Inventory

Road Name	Route Number	Typical Cross Section	Speed Limit	Maintained By	2017 AADT (vpd)
Ten-Ten Road	SR 1010	2-lane undivided	45 mph	NCDOT	22,000
Smith Road	SR 1303	2-lane undivided	35 mph	NCDOT	8,200*
Stephenson Road	SR 1302	2-lane undivided	35 mph	NCDOT	4,900**
Dezola Street	N/A	2-lane undivided	25 mph (assumed)	Private	100*
Jessie Drive	SR 1304	2-lane undivided	35 mph	NCDOT	300*
Straywhite Avenue	N/A	2-lane undivided	25 mph	Town	1,700*
E. Williams Street	NC-55	2-lane undivided	45 mph	NCDOT	13,000
NC 55	NC 55	4-lane divided	45 mph	NCDOT	43,000
NC 55 Bypass	NC 55 Byp	4-lane divided	55 mph	NCDOT	29,000
Technology Drive	SR 1191	2-lane undivided	45 mph (assumed)	NCDOT	1,500*

* ADT based on the existing (2019) peak hour traffic volumes and assuming the weekday PM peak hour volume is 10% of the average daily traffic.

**2015 ADT data from NCDOT.



LEGEND

- - - Proposed Site Location
- - - Study Area
- Study Intersection



Horton Park Update
Apex, NC

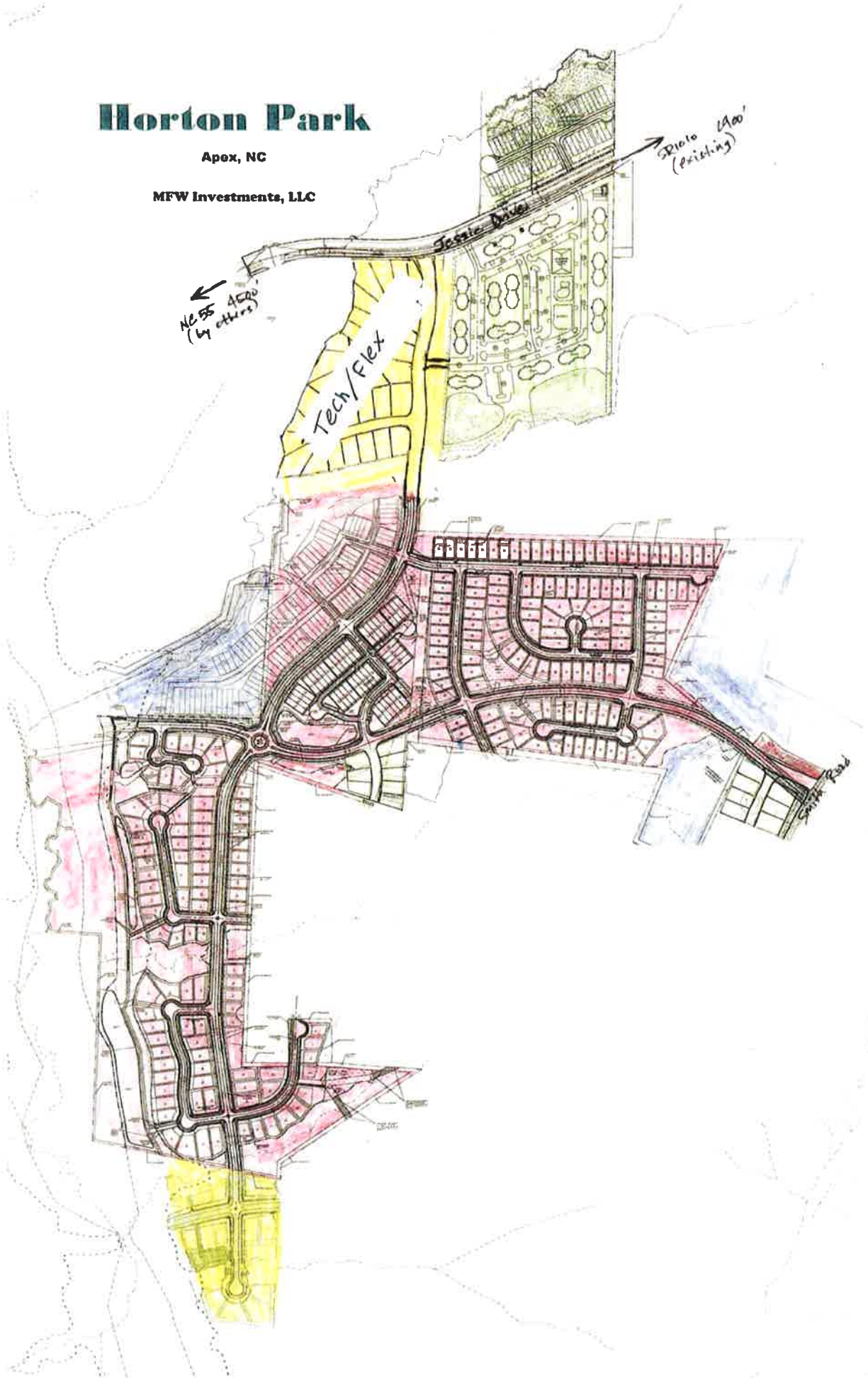
Site Location Map

Scale: Not to Scale	Figure 1
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Horton Park

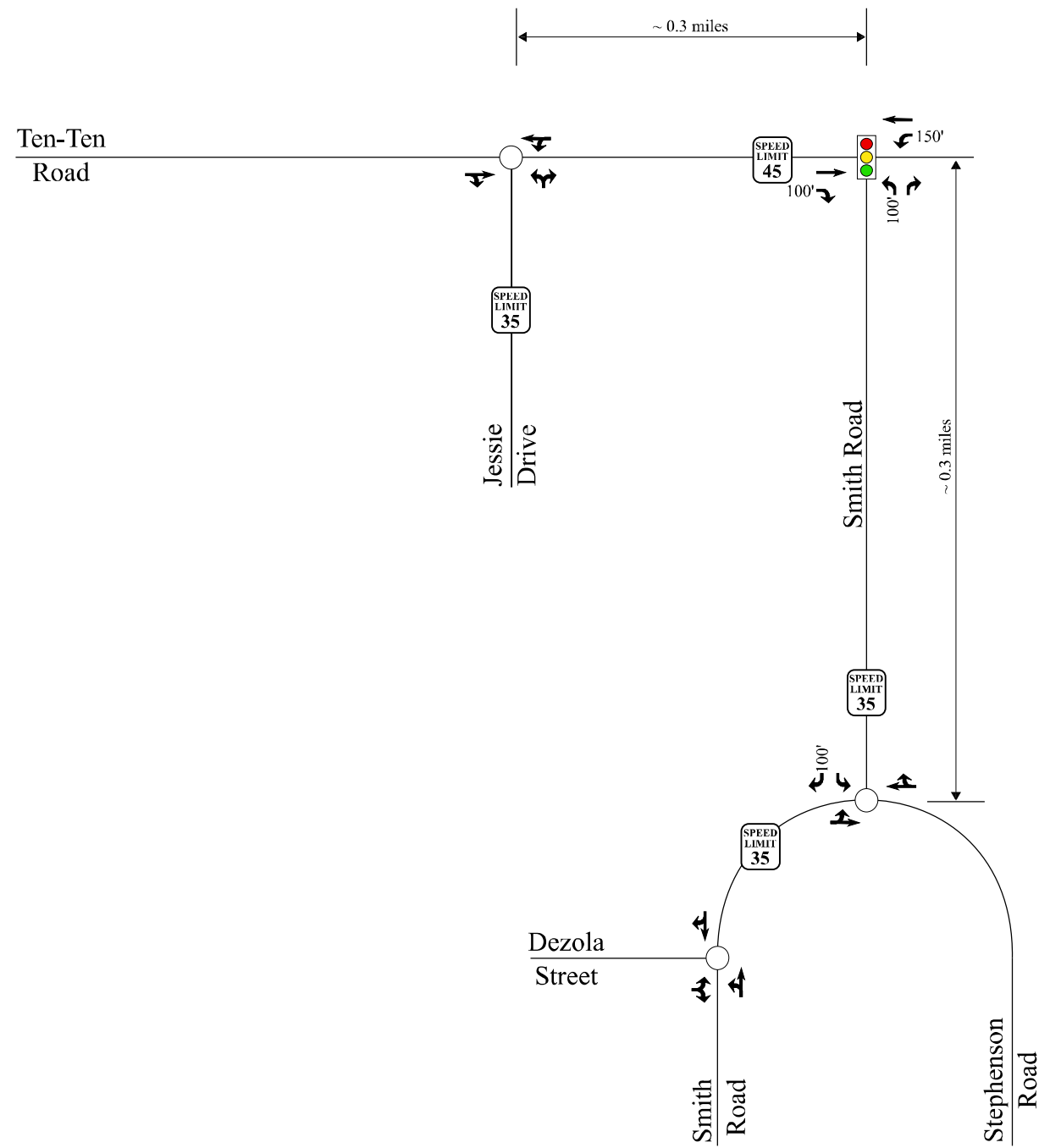
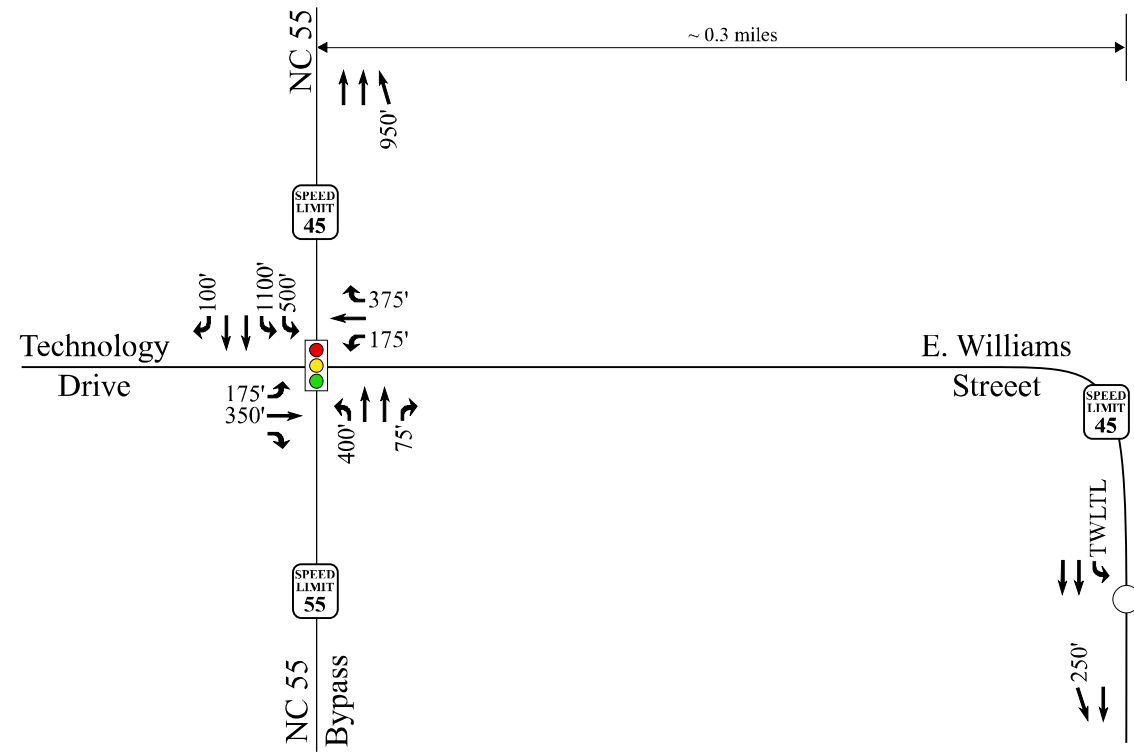
Apex, NC

MFW Investments, LLC



LEGEND

- Unsignalized Intersection
- 🚦 Signalized Intersection
- ➔ Existing Lane
- TWLTL Two-Way Left-Turn Lane
- X' Storage (In Feet)
- 🚫
SPEED LIMIT XX Posted Speed Limit



	<p>Horton Park Update Apex, NC</p>		<p>Existing Lane Configurations</p>	
	<p>Scale: Not to Scale</p>		<p>Figure 3</p>	

2. EXISTING (2019) PEAK HOUR CONDITIONS

2.1. Existing (2019) Peak Hour Traffic

Existing peak hour traffic volumes were determined based on traffic counts conducted at the study intersections listed below, in May of 2017 and March of 2016 by RKA and Gannet Flemming during a typical weekday AM (7:00 AM – 9:00 AM) and PM (4:00 PM – 6:00 PM) peak periods:

- Ten-Ten Road and Jessie Drive
- Ten-Ten Road and Smith Road
- Smith Road and Stephenson Road
- Smith Road and Dezola Street
- Technology Drive / E. Williams Street and NC 55

The traffic volumes at the intersection of E. Williams Street and Straywhite Avenue were determined via trip generation and through volumes were pulled from the Bobbit Road and E. Williams Street intersection, per the methodology included in the original Horton Park TIA and TIA Addendums.

In order to project the 2016 and 2017 traffic counts to 2019 conditions, a 3% annually compounded growth rate was used to grow these volumes 3 and 2 years, respectively. The count methodology above was reviewed and approved by NCDOT and the Town.

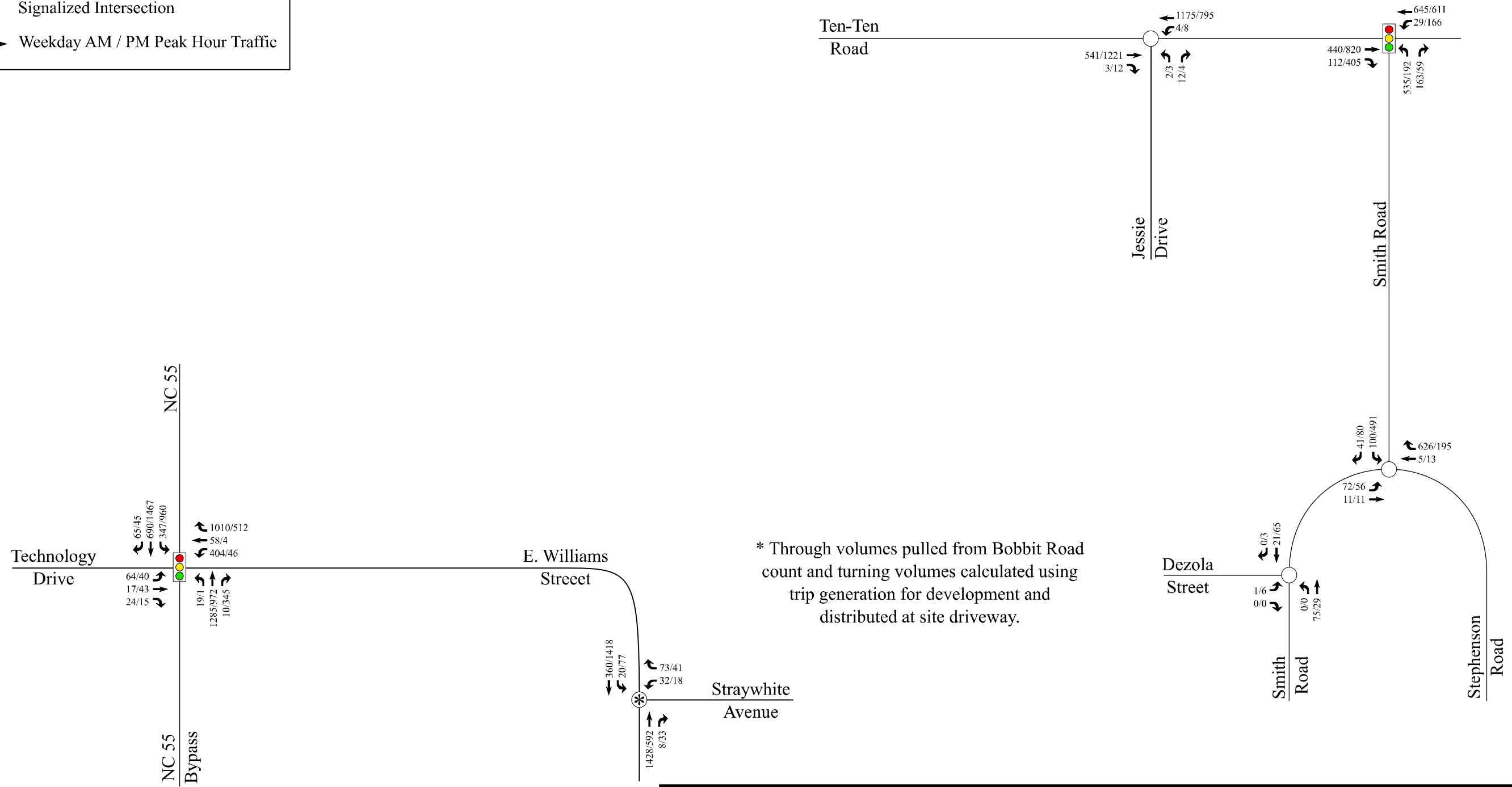
Traffic volumes were balanced between study intersections, where appropriate. Refer to Figure 4 for existing (2019) weekday AM and PM peak hour traffic volumes. A copy of the count data is located in Appendix B of this report.

2.2. Analysis of Existing (2019) Peak Hour Traffic

The existing (2019) weekday AM and PM peak hour traffic volumes were analyzed to determine the current levels of service at the study intersections under existing roadway conditions. Signal information was obtained from NCDOT and field reconnaissance and is included in Appendix C. The results of the analysis are presented in Section 7 of this report.

LEGEND

- Unsignalized Intersection
- 🚦 Signalized Intersection
- X/Y → Weekday AM / PM Peak Hour Traffic



	<p>Horton Park Update Apex, NC</p>	Existing (2019) Peak Hour Traffic Volumes	
		Scale: Not to Scale	Figure 4

3. BACKGROUND (2024/2026) PEAK HOUR CONDITIONS

In order to account for growth of traffic and subsequent traffic conditions at a future year, background traffic projections are needed. Background traffic is the component of traffic due to the growth of the community and surrounding area that is anticipated to occur regardless of whether or not the proposed development is constructed. Background traffic is comprised of existing traffic growth within the study area and additional traffic created as a result of adjacent approved developments.

3.1. Ambient Traffic Growth

Through coordination with the Town and NCDOT, it was determined that an annually compounded growth rate of 3% would be used to generate projected (2024 and 2026) weekday AM and PM peak hour traffic volumes. Refer to Figures 5A and 5B for projected (2024) and projected (2026) peak hour traffic, respectively.

3.2. Adjacent Development Traffic

Through coordination with the Town, Empire Estates at Apex 55 (Stop & Go Gas Station) was identified to be included as an adjacent development in this study. This development is summarized below.

Empire Estates at Apex 55 (Stop & Go Gas Station) is a commercial development expected to consist of approximately 1,800 s.f. of retail and a gas station with 16 fueling positions with an anticipated buildout year of 2017. An approved TIA was conducted by Timmons Group in November 2015. The Empire Estates at Apex 55 development is located in the southeast quadrant of the intersection of E. Williams Street and NC 55 / NC 55 Bypass in Apex, NC.

Adjacent development trips are shown in Figure 6. Additional adjacent development information can be found in Appendix D.

3.3. Future Roadway Improvements

Based on coordination with the NCDOT and the Town, it was determined that the Jessie Drive Extension would be included in the background (2026) and combined (2026) analysis because this improvement is expected to apply for LAPP funding in 2021 and be constructed in 2024.

Phase 1 of the development is not expected to have any connection to Jessie Drive; therefore, this improvement / intersections are only included under Full Buildout conditions. As this roadway is not yet designed, laneage was assumed per coordination with Town staff. It was assumed that Jessie Drive will be constructed as a two-lane roadway with turn-lanes on both the northern (Ten-Ten Road) and southern (NC 55) extents. To account for the background traffic volumes that are expected to be shifted to this roadway with completion of its extension, assumptions were made similar to the original Horton Park TIA and diverted traffic was calculated.

The NCDOT TIP project U-5825B is expected to be completed along Ten-Ten Road between Reliance Avenue and Kildaire Farm Road by the buildout of Phase 1 of the Horton Park development. This project is currently in the design phase; however, preliminary design concepts were utilized for background laneage assumptions.

Refer to Figure 7 for the diverted traffic volumes due to the Jessie Drive Extension. Appendix D provides additional information pertaining to the background roadway improvements included in this study.

3.4. Background (2024/2026) Peak Hour Traffic Volumes

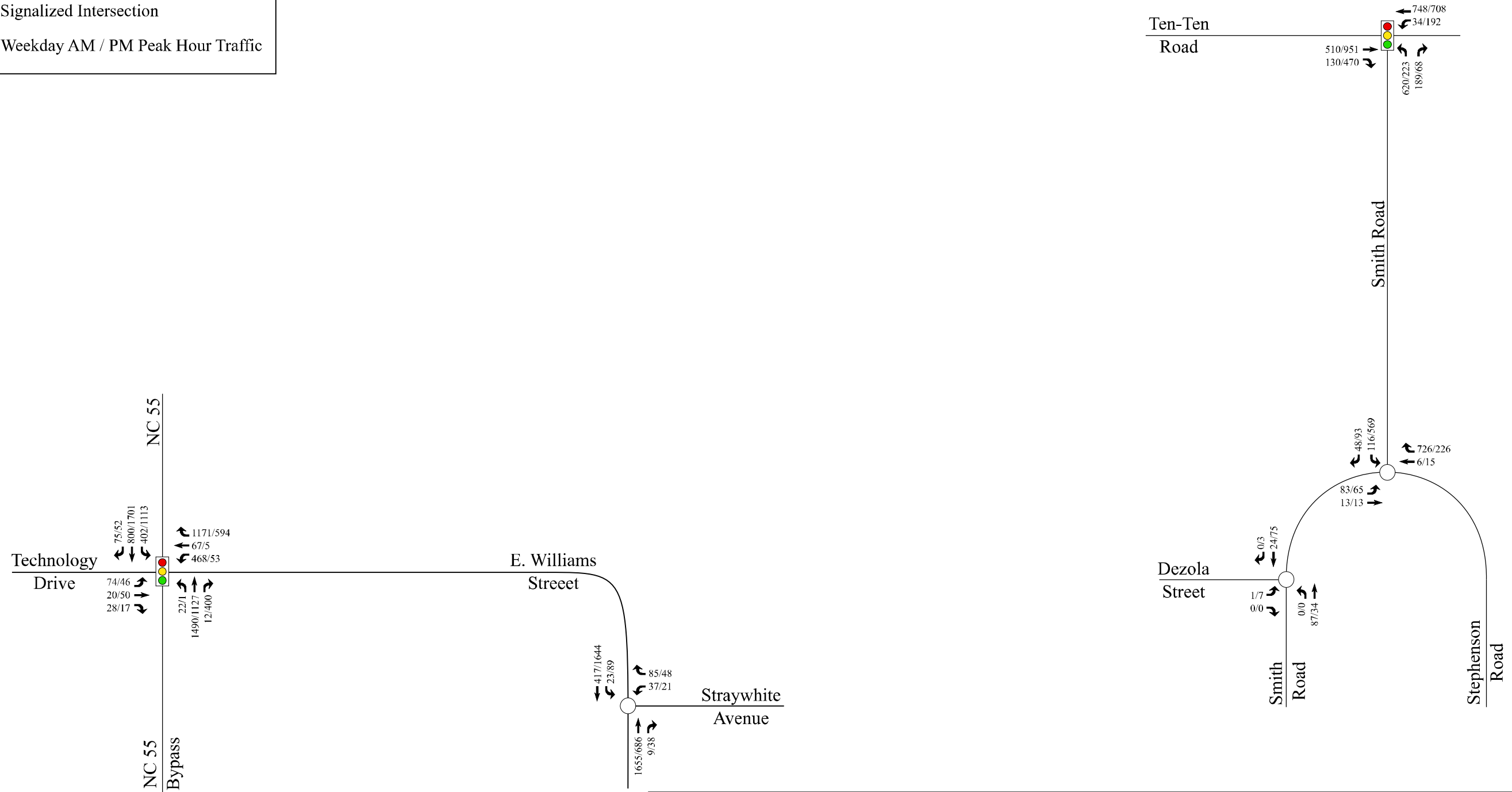
The background (2024/2026) traffic volumes were determined by projecting the existing (2019) peak hour traffic to the year 2024 and 2026, respectively, and adding the adjacent development trips and diverted traffic volumes (for 2026 conditions only). Refer to Figures 8a and 8b for illustrations of the background (2024) and background (2026) peak hour traffic volumes at the study intersections.


3.5. Analysis of Background (2024/2026) Peak Hour Traffic Conditions

The background (2024/2026) AM and PM peak hour traffic volumes at the study intersections were analyzed with future geometric roadway conditions and traffic control. The analysis results are presented in Section 7 of this report.



LEGEND

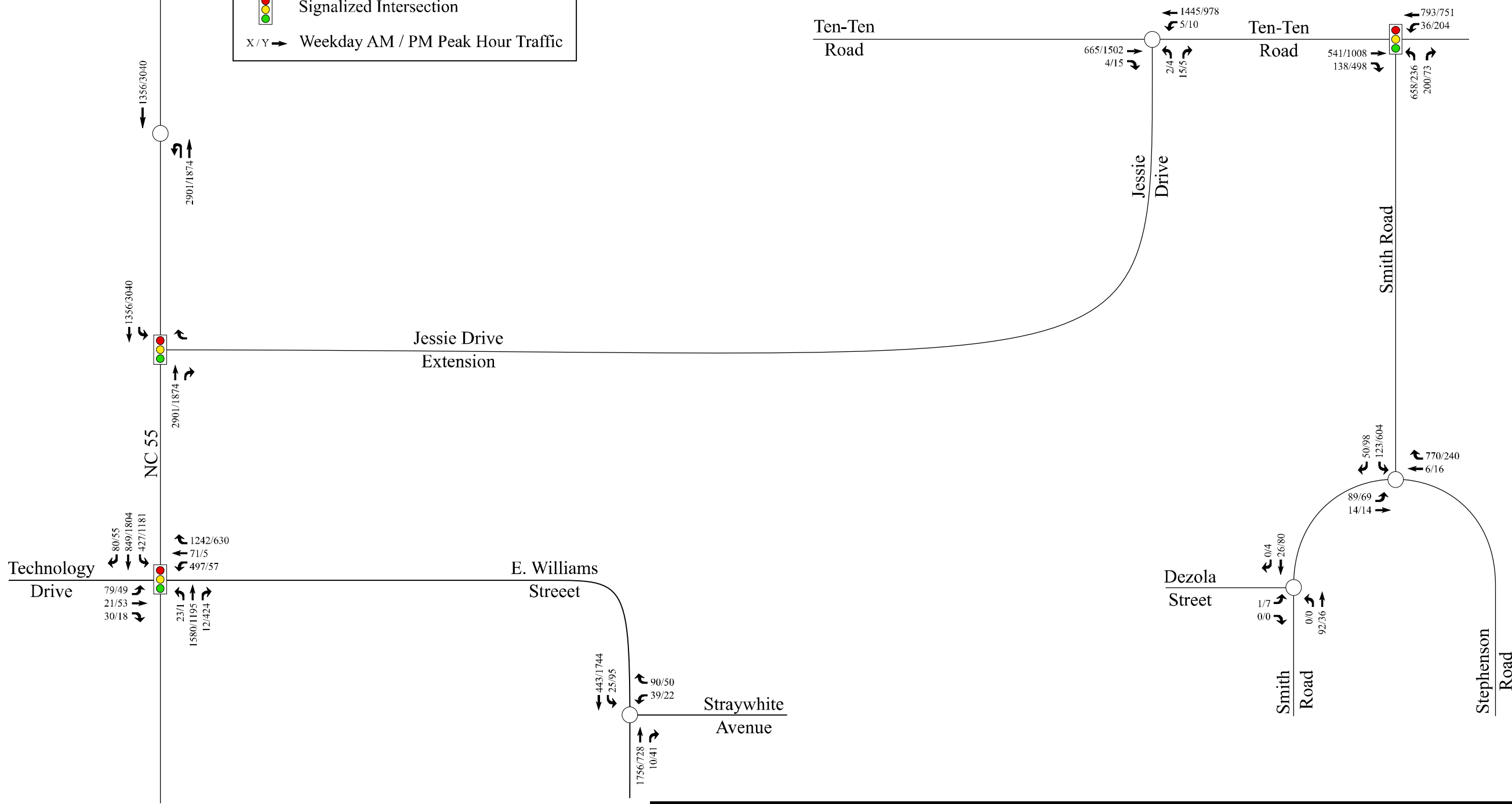
- Unsignalized Intersection
- ◫ Signalized Intersection
- X/Y → Weekday AM / PM Peak Hour Traffic




	<p>Horton Park Update Apex, NC</p>	<p>Projected (2024) Peak Hour Traffic Volumes</p>
	<p>Scale: Not to Scale</p>	<p>Figure 5A</p>

LEGEND

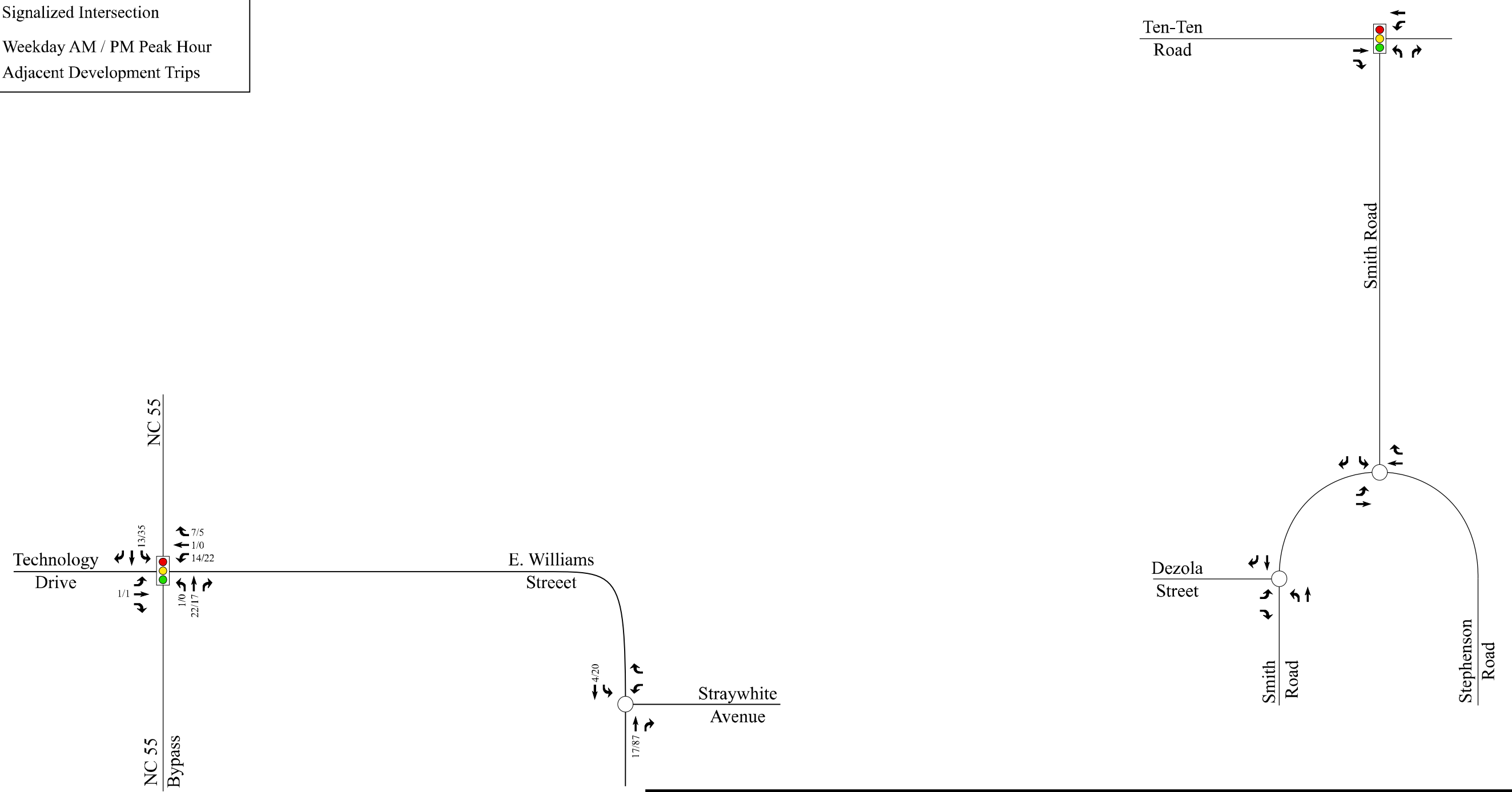
-  Unsignalized Intersection
-  Signalized Intersection
- $x/y \rightarrow$ Weekday AM / PM Peak Hour Traffic




 <p>RAMEY KEMP & ASSOCIATES TRANSPORTATION ENGINEERS</p>	<p>Horton Park Update Apex, NC</p>	<p>Projected (2026) Peak Hour Traffic Volumes</p>
	<p>Scale: Not to Scale</p>	<p>Figure 5B</p>

LEGEND

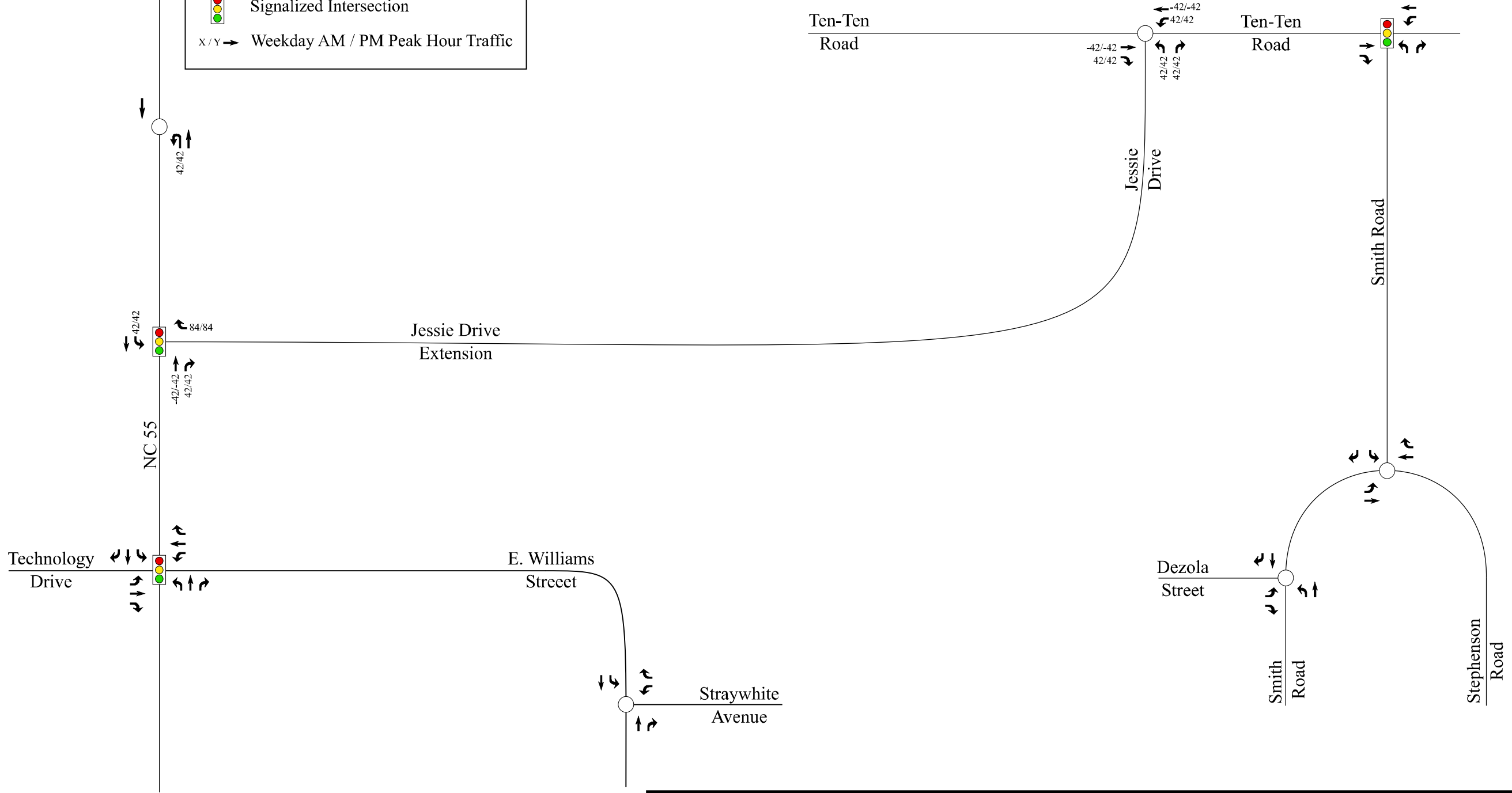
- Unsignalized Intersection
- 🚦 Signalized Intersection
- X/Y → Weekday AM / PM Peak Hour Adjacent Development Trips




	Horton Park Update Apex, NC		Peak Hour Adjacent Development Trips	
	Scale: Not to Scale		Figure 6	

LEGEND

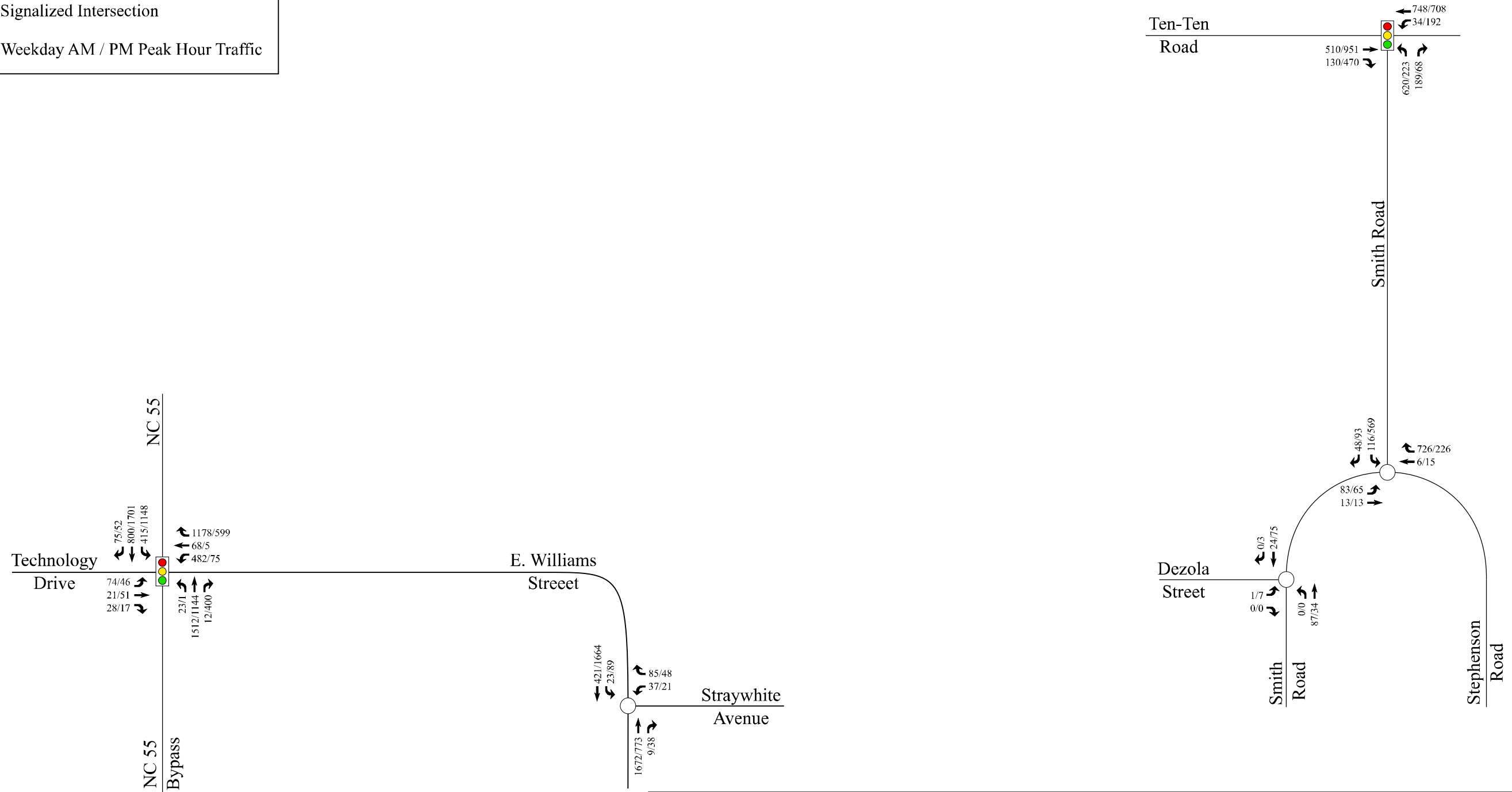
- Unsignalized Intersection
- ◫ Signalized Intersection
- x / y → Weekday AM / PM Peak Hour Traffic




 <p>RAMEY KEMP & ASSOCIATES TRANSPORTATION ENGINEERS</p>	<p>Horton Park Update Apex, NC</p>		<p>Jessie Drive Extension Diverted Traffic - Full Buildout</p>	
	<p>Scale: Not to Scale</p>		<p>Figure 7</p>	



LEGEND

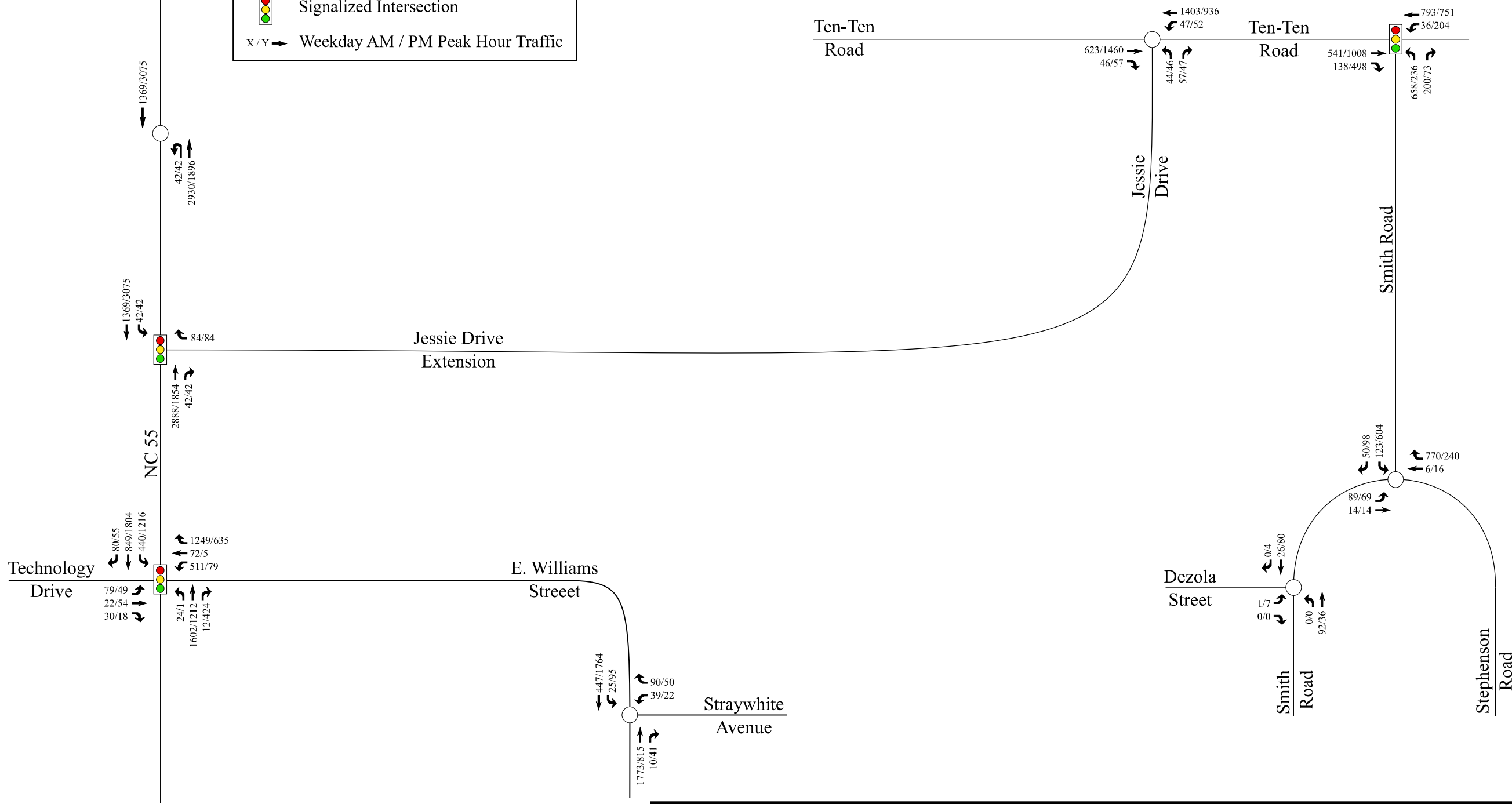
- Unsignalized Intersection
- ◫ Signalized Intersection
- x/y → Weekday AM / PM Peak Hour Traffic




	<p>Horton Park Update Apex, NC</p>	<p>Background (2024) Peak Hour Traffic Volumes</p>
	<p>Scale: Not to Scale</p>	<p>Figure 8A</p>

LEGEND

-  Unsignalized Intersection
-  Signalized Intersection
- x / y → Weekday AM / PM Peak Hour Traffic



 <p>RAMEY KEMP & ASSOCIATES TRANSPORTATION ENGINEERS</p>	<p>Horton Park Update Apex, NC</p>	<p>Background (2026) Peak Hour Traffic Volumes</p>
	<p>Scale: Not to Scale</p>	<p>Figure 8B</p>

4. SITE TRIP GENERATION AND DISTRIBUTION

4.1. Trip Generation

The proposed development is expected to be constructed in two phases. Phase 1 is assumed to consist of approximately 290 single-family homes and 134 townhomes. Full Buildout is assumed to consist of approximately 290 single-family homes, 212 townhomes, 356 apartments, a 40,000 sq. ft. warehouse, and a 40,000 sq. ft. business park. Average weekday daily, AM peak hour, and PM peak hour trips for the proposed development were estimated using methodology contained within the *ITE Trip Generation Manual*, 10th Edition. Per the ITE land uses, townhomes and apartments were both analyzed as multifamily housing (low-rise). It should be noted that these land uses have the potential for internal capture between the industrial land uses and residential. In order to present a conservative analysis, this internal capture was not included within the study. Table 2 provides a summary of the trip generation potential for the site under Phase 1 conditions and Table 3 provides a summary of the Full Buildout trip generation potential.

Table 2: Trip Generation Summary – Phase 1

Land Use (ITE Code)	Intensity	Daily Traffic (vpd)	Weekday AM Peak Hour Trips (vph)		Weekday PM Peak Hour Trips (vph)	
			Enter	Exit	Enter	Exit
Single Family Detached Housing (210)	290 Units	2,770	53	158	178	104
Multifamily Housing (Low-Rise) (220)	134 Units	970	14	49	49	28
Total Trips		3,740	67	207	227	132

It is estimated that Phase 1 of the proposed development will generate approximately 3,740 total site trips on the roadway network during a typical 24-hour weekday period. Of the daily traffic volume, it is anticipated that 274 trips (67 entering and 207 exiting) will occur during the weekday AM peak hour and 359 (227 entering and 132 exiting) will occur during the weekday PM peak hour.

Table 3: Trip Generation Summary – Full Buildout

Land Use (ITE Code)	Intensity	Daily Traffic (vpd)	Weekday AM Peak Hour Trips (vph)		Weekday PM Peak Hour Trips (vph)	
			Enter	Exit	Enter	Exit
Single Family Detached Housing (210)	290 Units	2,770	53	158	178	104
Multifamily Housing (Low-Rise) (220)	568 Units	4,250	57	191	175	102
Warehouse (150)	40,000 s.f.	110	23	7	9	24
Business Park (770)	40,000 s.f.	1,140	49	9	17	48
Total Trips		8,270	182	365	379	278

It is estimated that Full Buildout of the proposed development will generate approximately 8,270 total site trips on the roadway network during a typical 24-hour weekday period. Of the daily traffic volume, it is anticipated that 547 trips (182 entering and 365 exiting) will occur during the weekday AM peak hour and 657 (379 entering and 278 exiting) will occur during the weekday PM peak hour. It should be noted that this Full Buildout density includes the land uses proposed as part of Phase 1 of the development.

4.2. Site Trip Distribution and Assignment

Trip distribution percentages used in assigning site traffic for this development were estimated based on a combination of existing traffic patterns, population centers adjacent to the study area, and engineering judgment. The trip distribution has been reviewed and approved by the Town and NCDOT. It is estimated that the Phase 1 and Full Buildout residential trips will be distributed as follows:

- 60% to/from the west via Ten-Ten Road
- 15% to/from the east via Ten-Ten Road
- 5% to/from the south via E. Williams Street
- 10% to/from the south via NC 55 Bypass

- 5% to/from the northwest via NC 55
- 5% to/from the south via Stephenson Road

It is estimated that the industrial trips will be distributed as follows:

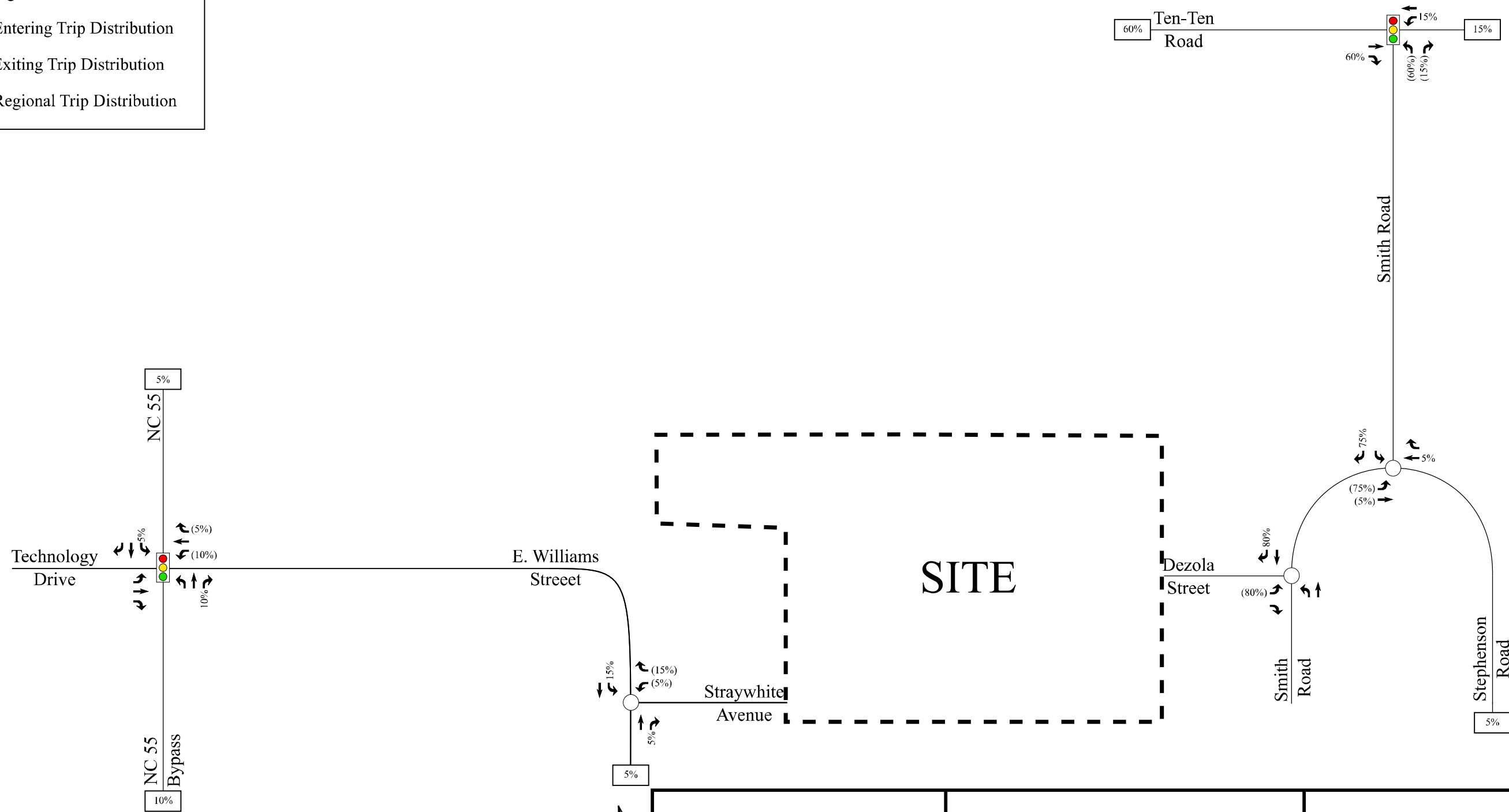
- 45% to/from the west via Ten-Ten Road
- 30% to/from the east via Ten-Ten Road
- 5% to/from the south via NC 55 Bypass
- 15% to/from the northwest via NC 55
- 5% to/from the south via Stephenson Road

The residential site trip distributions are shown for Phase 1 and Full Buildout in Figures 9A and 9B, respectively. Refer to Figure 10 for the industrial site trip distributions.

Figures 11A and 11B provide the Phase 1 and Full Buildout residential site trip assignments, respectively. Figure 12 provides the Full Buildout industrial site trip assignments. Refer to Figure 13 for the Full Buildout total site trip volumes.

LEGEND

- Unsignalized Intersection
- 🚦 Signalized Intersection
- x% → Entering Trip Distribution
- (y%) → Exiting Trip Distribution
- ☐ XX% Regional Trip Distribution



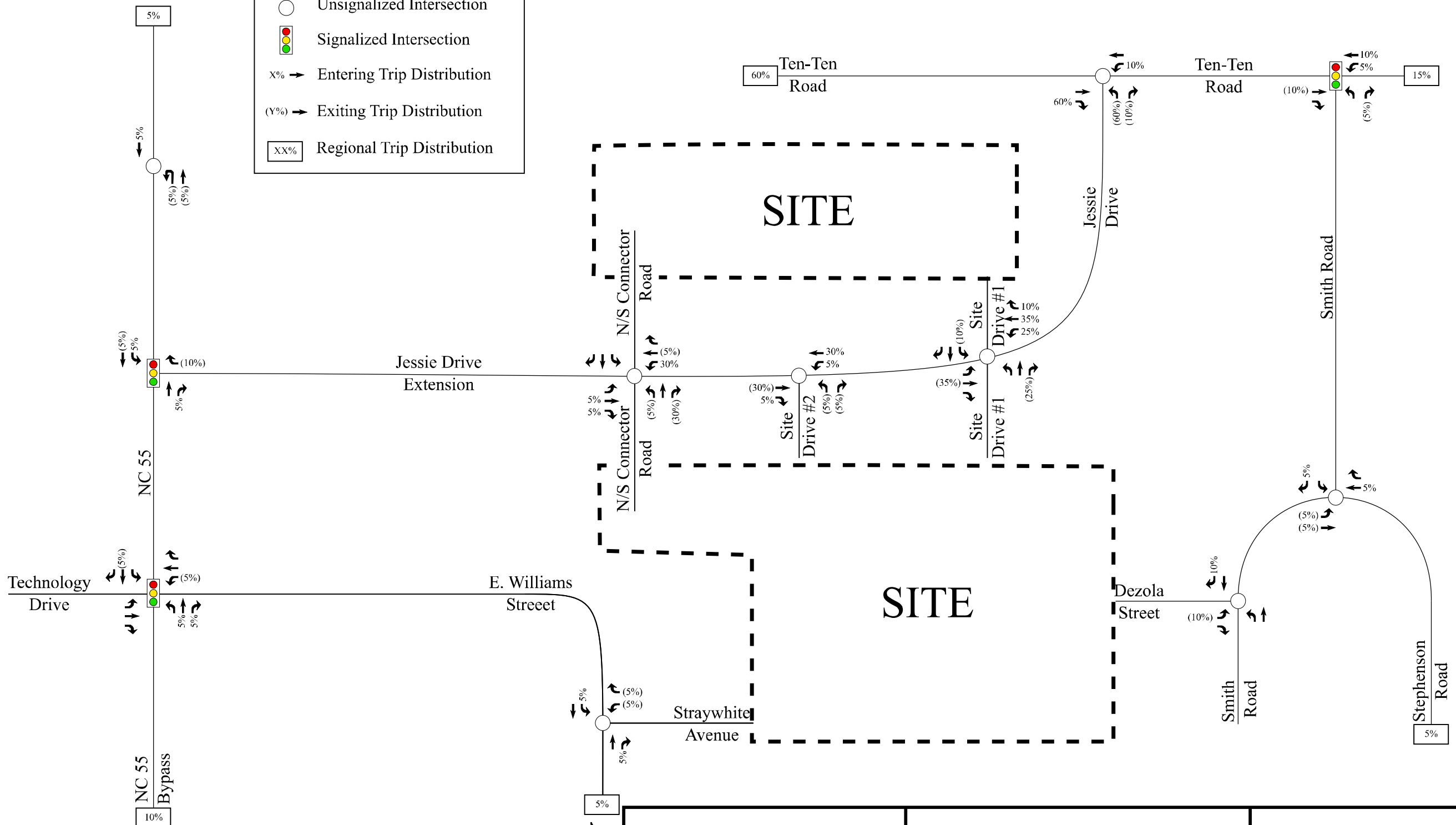
Horton Park Update
Apex, NC

Residential Site Trip
Distribution - Phase 1

Scale: Not to Scale Figure 9A

LEGEND

- Unsignalized Intersection
- ◫ Signalized Intersection
- x% → Entering Trip Distribution
- (Y%) → Exiting Trip Distribution
- ◻ XX% Regional Trip Distribution



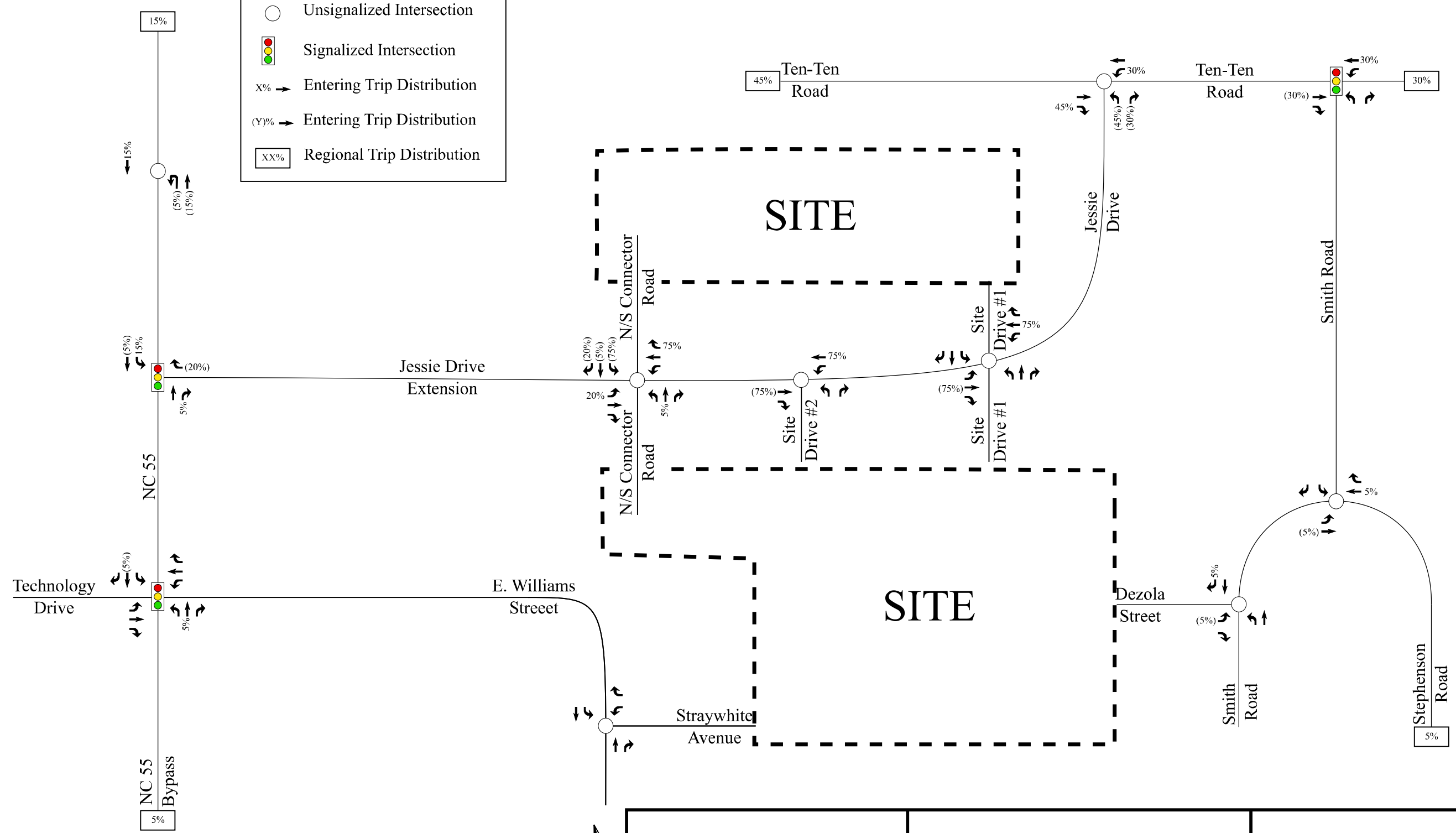
Horton Park Update
Apex, NC

Residential Site Trip Distribution
- Full Buildout

Scale: Not to Scale Figure 9B

LEGEND

- Unsignalized Intersection
- ◫ Signalized Intersection
- x% → Entering Trip Distribution
- (Y)% → Entering Trip Distribution
- ◻ xx% Regional Trip Distribution



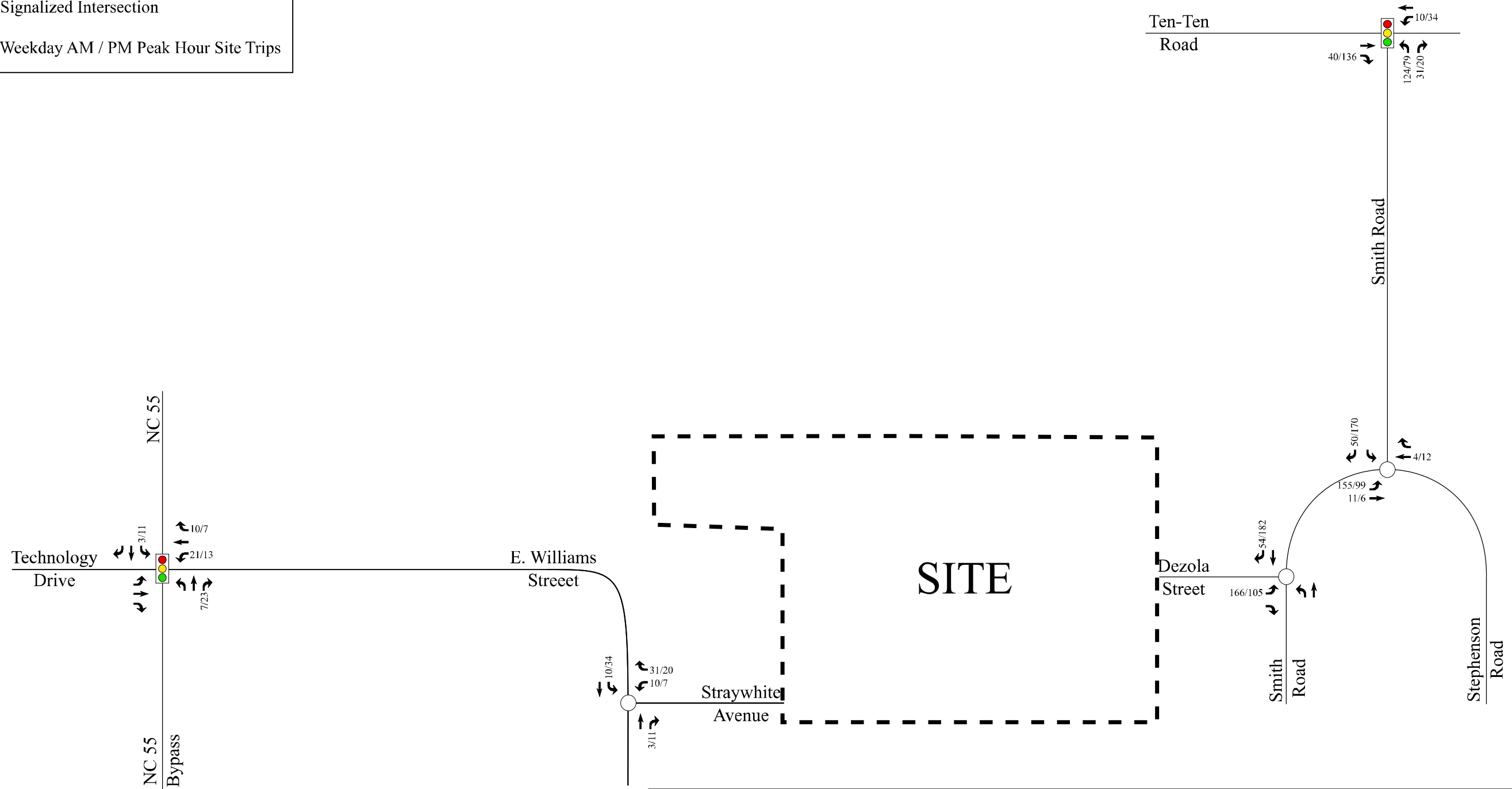
Horton Park Update
Apex, NC

Industrial Site Trip Distribution
- Full Buildout

Scale: Not to Scale Figure 10

LEGEND

- Unsignalized Intersection
- 🚦 Signalized Intersection
- X/Y → Weekday AM / PM Peak Hour Site Trips



Horton Park Update
Apex, NC

Residential Site Trip
Assignment - Phase 1

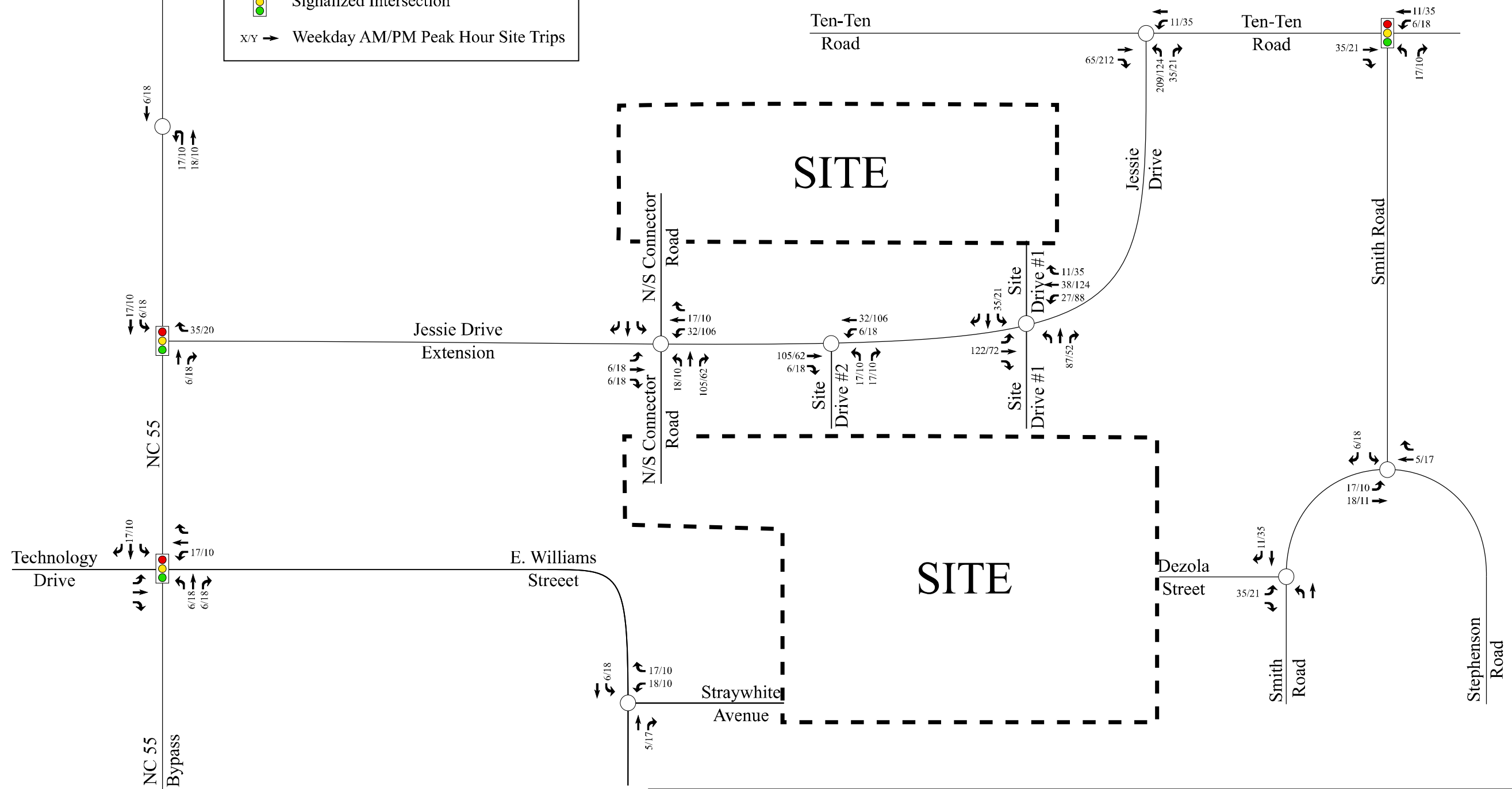
Scale: Not to Scale Figure 11A

LEGEND

○ Unsignalized Intersection

◫ Signalized Intersection

x/y → Weekday AM/PM Peak Hour Site Trips



Horton Park Update
Apex, NC

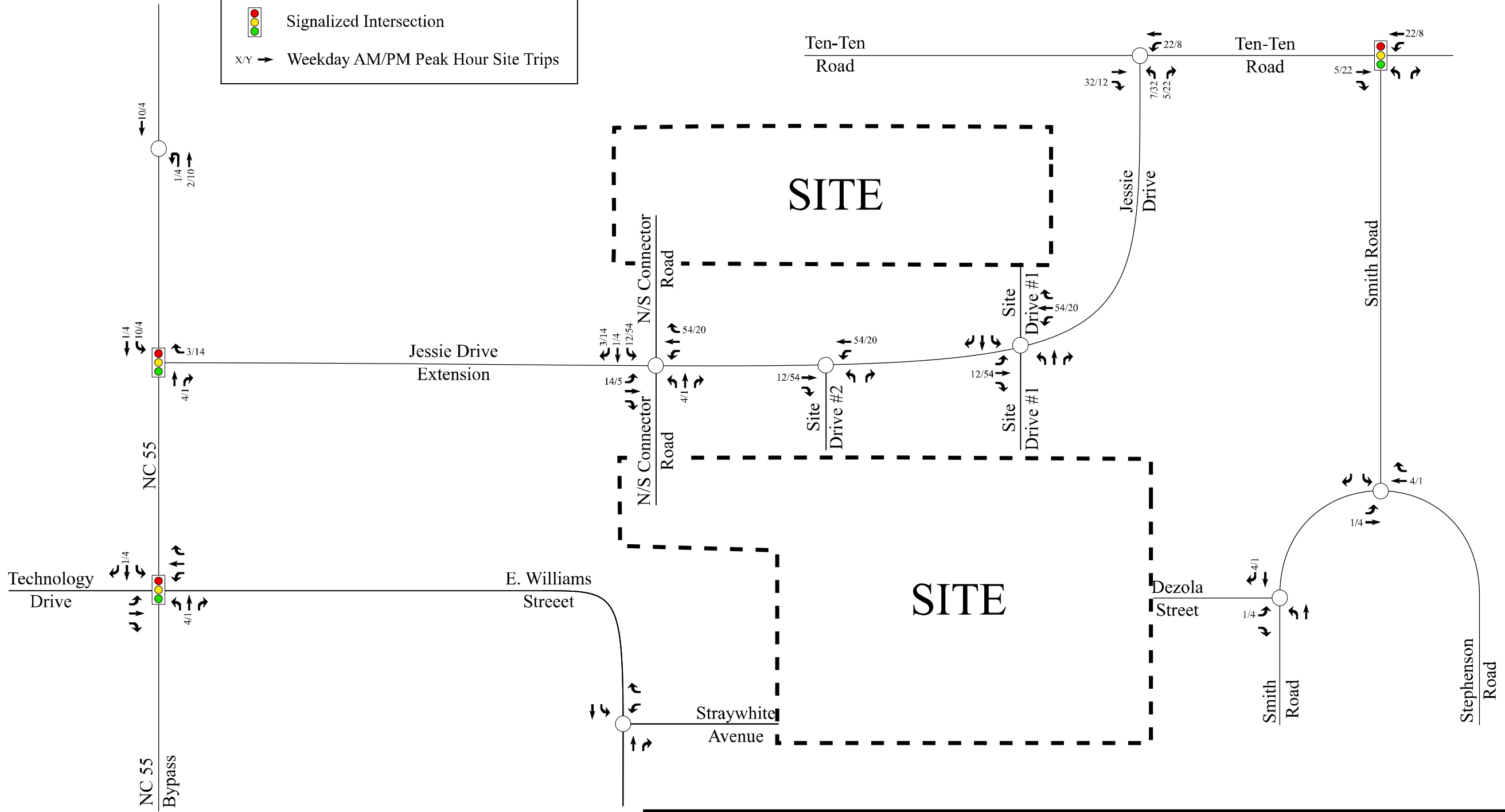
Residential Site Trip Assignment
- Full Buildout

Scale: Not to Scale

Figure 11B

LEGEND

- Unsignalized Intersection
- ◫ Signalized Intersection
- X/Y → Weekday AM/PM Peak Hour Site Trips



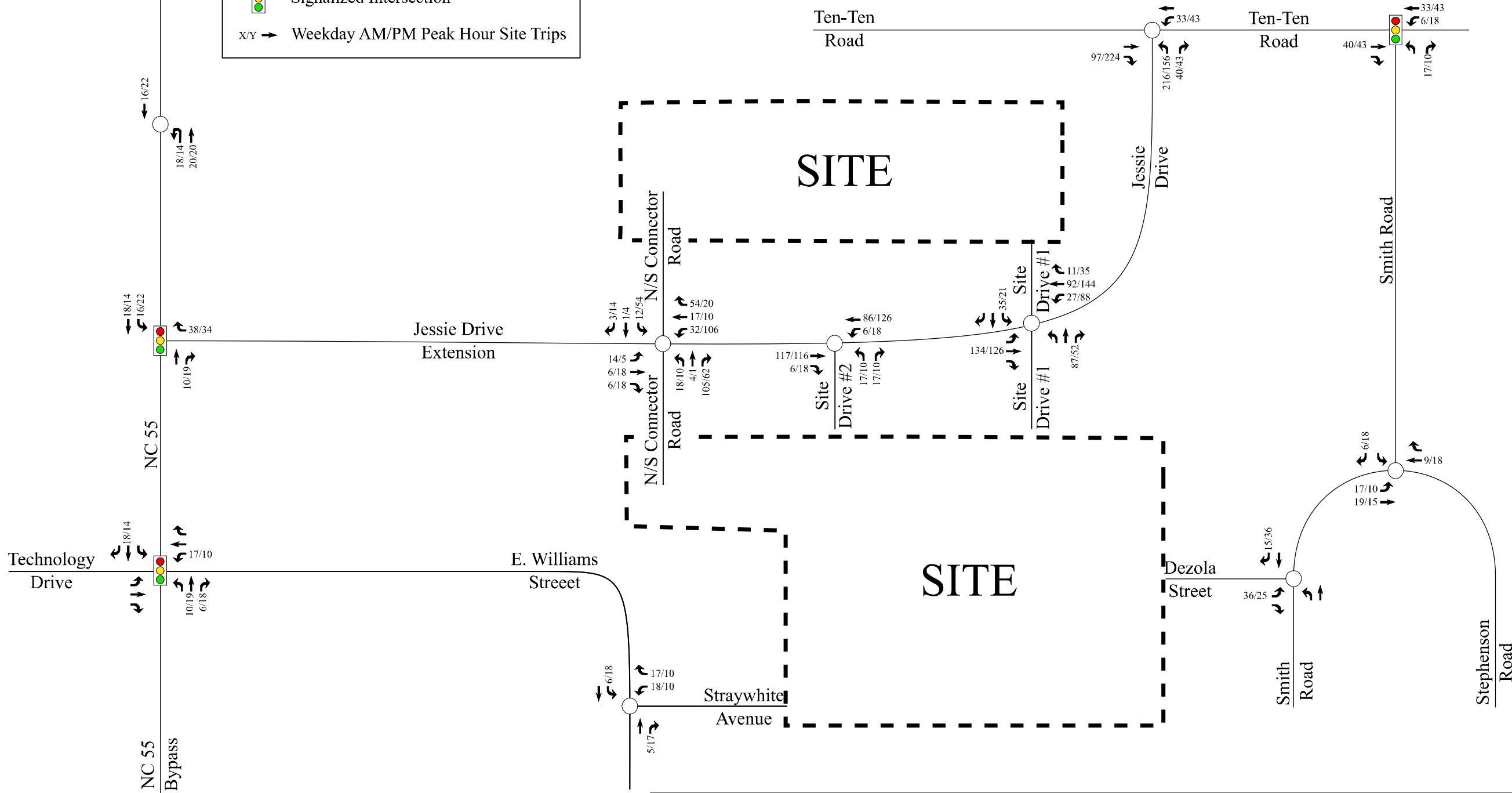
Horton Park Update
Apex, NC

Industrial Site Trip Assignment - Full Buildout

Scale: Not to Scale Figure 12

LEGEND

- Unsignalized Intersection
- ◫ Signalized Intersection
- x/y → Weekday AM/PM Peak Hour Site Trips



Horton Park Update
Apex, NC

Total Site Trip Assignment
- Full Buildout

Scale: Not to Scale Figure 13

5. COMBINED (2024/2026) TRAFFIC CONDITIONS

5.1. Combined (2024/2026) Peak Hour Traffic Volumes

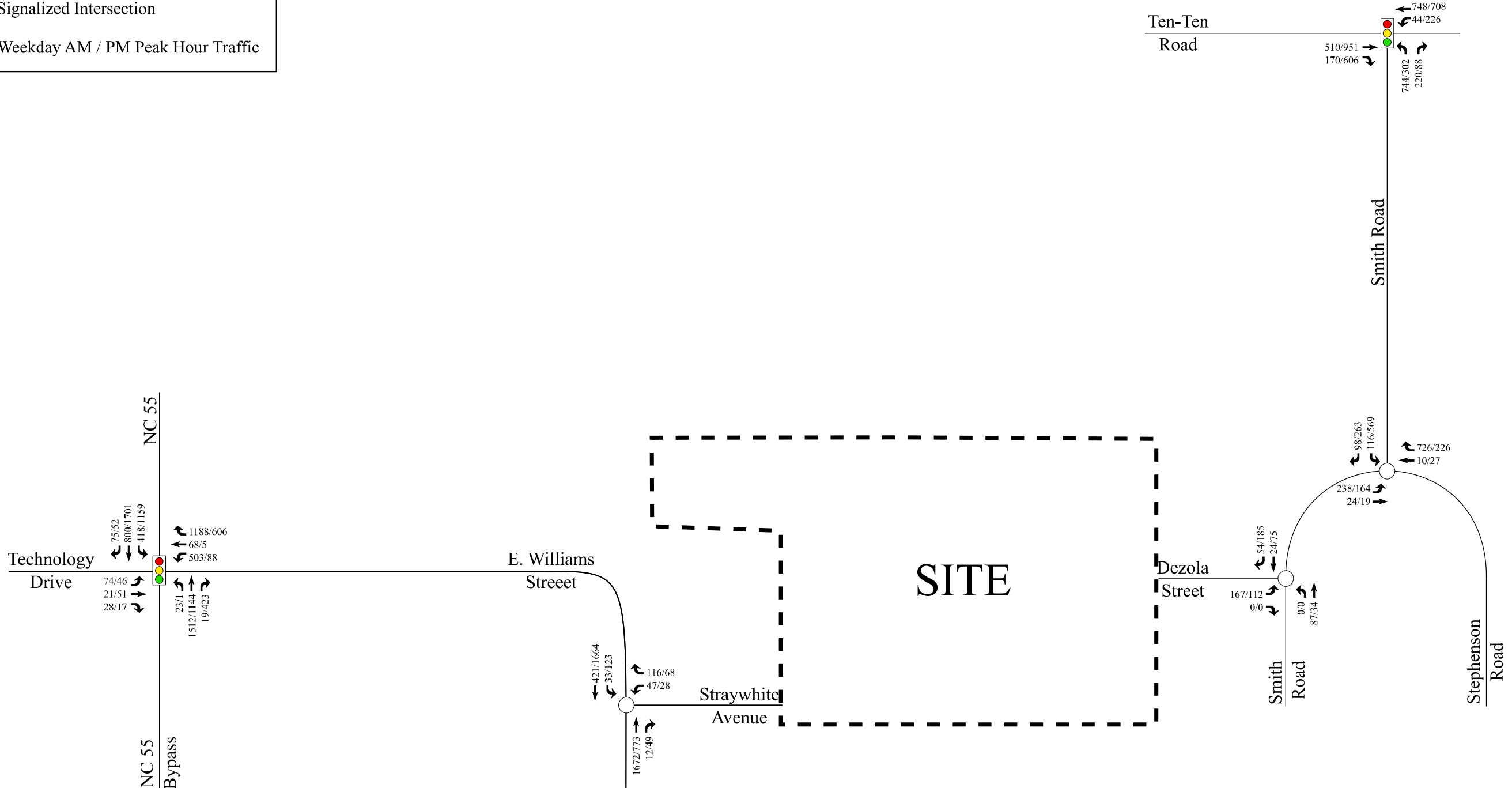
To estimate traffic conditions with Phase 1 and Full Buildout conditions of the site fully built-out, the total site trips for each scenario were added to the background (2024/2026) traffic volumes to determine the combined (2024) – Phase 1 and combined (2026) – Full Buildout traffic volumes. Refer to Figure 14A for an illustration of the combined (2024) – Phase 1 peak hour traffic volumes and Figure 14B for the combined (2026) - Full Buildout peak hour traffic volumes with the proposed site fully developed.


5.2. Analysis of Combined (2024/2026) Peak Hour Traffic

Study intersections were analyzed with the combined (2024) – Phase 1 and combined (2026) – Full Buildout traffic volumes using the same methodology previously discussed for existing and background traffic conditions. Intersections were analyzed with improvements necessary to accommodate future traffic volumes. The results of the capacity analysis for each intersection are presented in Section 7 of this report.

LEGEND

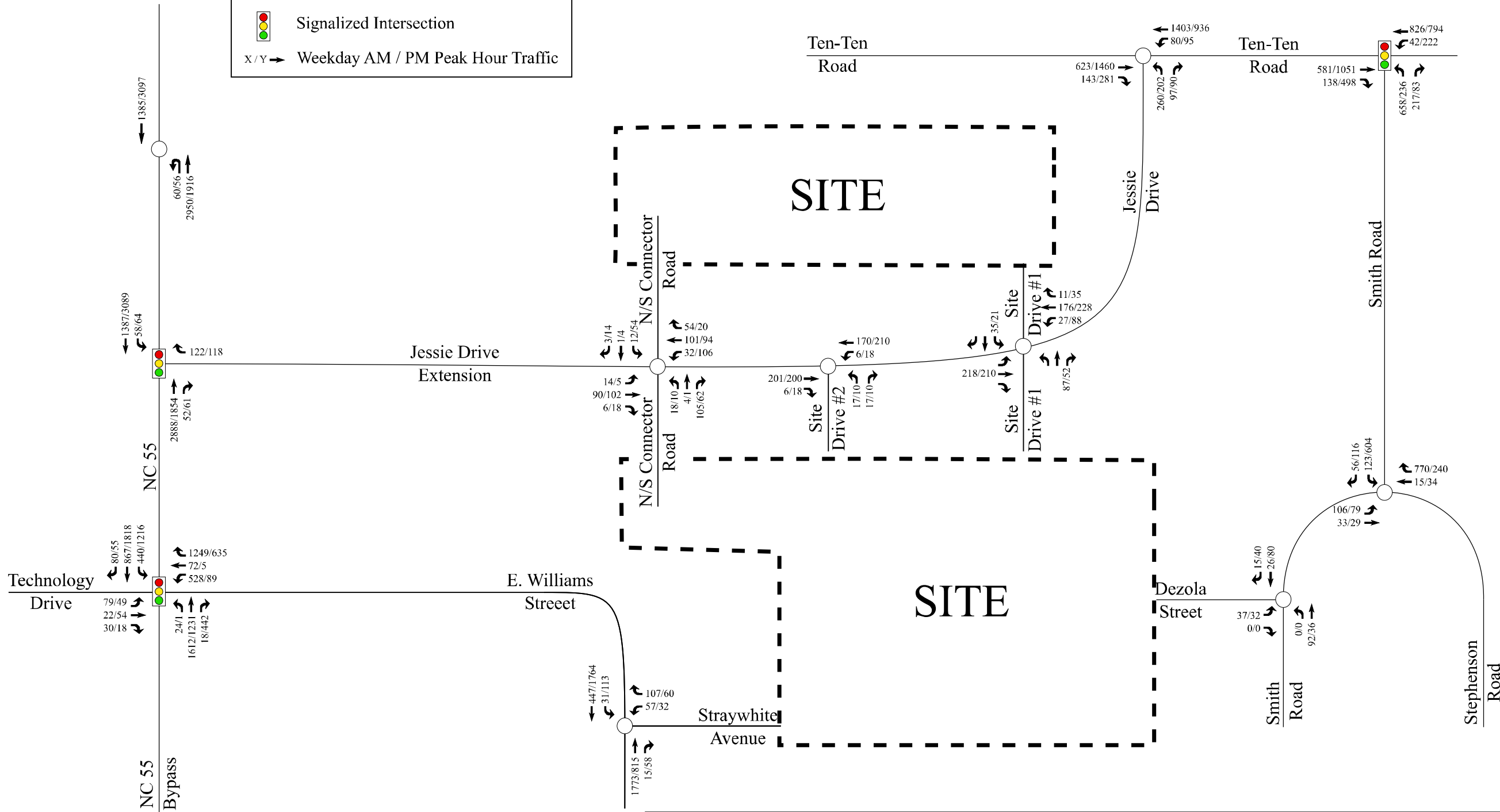
- Unsignalized Intersection
- ◫ Signalized Intersection
- X/Y → Weekday AM / PM Peak Hour Traffic



 <p>RAMEY KEMP & ASSOCIATES TRANSPORTATION ENGINEERS</p>	<p>Horton Park Update Apex, NC</p>	<p>Combined (2024) Peak Hour Traffic Volumes - Phase 1</p>	
		<p>Scale: Not to Scale</p>	<p>Figure 14A</p>

LEGEND

- Unsignalized Intersection
- ⬆️⬆️⬆️ Signalized Intersection
- x/y → Weekday AM / PM Peak Hour Traffic



Horton Park Update
Apex, NC

Combined (2026)
Peak Hour Traffic Volumes

Scale: Not to Scale

Figure 14B

6. TRAFFIC ANALYSIS PROCEDURE

Study intersections were analyzed using the methodology outlined in the *Highway Capacity Manual* (HCM), 6th Edition, published by the Transportation Research Board. Capacity and level of service are the design criteria for this traffic study. A computer software package, Synchro (Version 10.3), was used to complete the analyses for most of the study area intersections. Please note that the unsignalized capacity analysis does not provide an overall level of service for an intersection; only delay for an approach with a conflicting movement.

The HCM defines capacity as “the maximum hourly rate at which persons or vehicles can reasonably be expected to traverse a point or uniform section of a lane or roadway during a given time period under prevailing roadway, traffic, and control conditions.” Level of service (LOS) is a term used to represent different driving conditions, and is defined as a “qualitative measure describing operational conditions within a traffic stream, and their perception by motorists and/or passengers.” Level of service varies from Level “A” representing free flow, to Level “F” where breakdown conditions are evident. Refer to Table 4 for HCM levels of service and related average control delay per vehicle for both signalized and unsignalized intersections. Control delay as defined by the HCM includes “initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay”. An average control delay of 50 seconds at a signalized intersection results in LOS “D” operation at the intersection.

Table 4: Highway Capacity Manual – Levels-of-Service and Delay

UNSIGNALIZED INTERSECTION		SIGNALIZED INTERSECTION	
LEVEL OF SERVICE	AVERAGE CONTROL DELAY PER VEHICLE (SECONDS)	LEVEL OF SERVICE	AVERAGE CONTROL DELAY PER VEHICLE (SECONDS)
A	0-10	A	0-10
B	10-15	B	10-20
C	15-25	C	20-35
D	25-35	D	35-55
E	35-50	E	55-80
F	>50	F	>80

6.1. Adjustments to Analysis Guidelines

Capacity analysis at all study intersections was completed according to the NCDOT Congestion Management Guidelines and the Town of Apex UDO, with the exception of the following items:

- The Jessie Drive extension project is currently an unfunded project with the Town currently planning on LAPP funding in 2021 and construction in 2024. As Full Buildout / driveway access points along Jessie Drive are not feasible prior to the Town constructing this roadway, this project was included as a background improvement under Full Buildout conditions. This assumption was approved by the Town and NCDOT during the scoping process. Laneage was assumed per feedback from the Town of Apex staff regarding the anticipated cross-section (two-lane roadway with turn-lanes at Ten-Ten Road and at NC 55) and the desired superstreet configuration at NC 55, which will require a northbound U-turn movement north of the future connection.

7. CAPACITY ANALYSIS

7.1. Ten-Ten Road and Smith Road

The existing signalized intersection of Ten-Ten Road and Smith Road was analyzed under existing (2019), background (2024), background (2026), combined (2024) - Phase 1, and combined (2026) – Full Buildout traffic conditions with the lane configurations shown in Table 5. Refer to Table 5 for a summary of the analysis results. Refer to Appendix E for the Synchro capacity analysis reports.

Table 5: Analysis Summary of Ten-Ten Road and Smith Road

ANALYSIS SCENARIO	A P P R O A C H	LANE CONFIGURATIONS	WEEKDAY AM PEAK HOUR LEVEL OF SERVICE		WEEKDAY PM PEAK HOUR LEVEL OF SERVICE	
			Approach	Overall (seconds)	Approach	Overall (seconds)
Existing (2019) Conditions	EB WB NB	1 TH, 1 RT 1 LT, 1 TH 1 LT, 1 RT	C B E	D (35)	C B D	C (22)
Background (2024) Conditions	EB WB NB	<u>1 UT, 2 TH, 1 RT</u> 1 LT, <u>2 TH</u> <u>2 LT</u> , 1 RT	B B C	B (16)	B B C	B (16)
Background (2026) Conditions	EB WB NB	<u>1 UT, 2 TH, 1 RT</u> 1 LT, <u>2 TH</u> <u>2 LT</u> , 1 RT	B B C	B (17)	B B C	B (16)
Combined (2024) Conditions – Phase 1	EB WB NB	<u>1 UT, 2 TH, 1 RT</u> 1 LT, <u>2 TH</u> <u>2 LT</u> , 1 RT	B B C	B (18)	B B C	B (18)
Combined (2026) Conditions – Full Buildout	EB WB NB	<u>1 UT, 2 TH, 1 RT</u> 1 LT, <u>2 TH</u> <u>2 LT</u> , 1 RT	B B C	B (17)	B B C	B (17)

Expected TIP Improvements are underlined.

Capacity analysis of existing (2019) conditions indicate that the intersection of Ten-Ten Road and Smith Road currently operates at an overall LOS D or better during the weekday AM and PM peak hours. Under all background and combined analysis conditions, the intersection is expected to operate at LOS B, with all approaches operating at LOS C or better during the weekday AM and PM peak hours. This improvement in operations is expected due to the NCDOT U-5825B project to widen Ten-Ten Road to a four-lane median divided roadway. The proposed development is expected to have a larger impact at this intersection under Phase 1

conditions with the operations improving under Full Buildout due to the additional site accesses that will be opened up to Jessie Drive and the Jessie Drive Extension. These additional accesses are expected to reduce the number of site trips that will use this intersection. It should also be noted that the NCDOT TIP improvements (U-5825B) were modeled according to the most current conceptual drawings available. These plans are expected to change slightly throughout the design process. Additionally, signal phasing was assumed according to NCDOT Congestion Management standards for analysis of new intersections with protected only phasing. Protected/permitted phasing, or Dallas protected/permitted phasing may be possible and will be determined during design of the TIP project. These signal phasing's, if possible, will likely present improvements to the signal operations over the protected only phasing that was analyzed.

7.2. NC 55 / NC 55 Bypass and Technology Drive / E. Williams Street

The existing signalized intersection of NC 55 / NC 55 Bypass and Technology Drive / E. Williams Street was analyzed under existing (2019), background (2024), background (2026), combined (2024) - Phase 1, and combined (2026) – Full Buildout traffic conditions with the lane configurations shown in Table 6. Refer to Table 6 for a summary of the analysis results. Refer to Appendix F for the Synchro capacity analysis reports.

Table 6: Analysis Summary of NC 55 / NC 55 Bypass and Technology Drive / E. Williams Street

ANALYSIS SCENARIO	A P P R O A C H	LANE CONFIGURATIONS	WEEKDAY AM PEAK HOUR LEVEL OF SERVICE		WEEKDAY PM PEAK HOUR LEVEL OF SERVICE	
			Approach	Overall (seconds)	Approach	Overall (seconds)
Existing (2019) Conditions	EB WB NB SB	1 LT, 1 TH, 1 RT 1 LT, 1 TH, 1 RT 1 LT, 2 TH, 1 RT 2 LT, 2 TH, 1 RT	D F C C	E (62)	D A C C	C (23)
Background (2024) Conditions	EB WB NB SB	1 LT, 1 TH, 1 RT 1 LT, 1 TH, 1 RT 1 LT, 2 TH, 1 RT 2 LT, 2 TH, 1 RT	E F C C	F (108)	E A C F	E (57)
Background (2026) Conditions	EB WB NB SB	1 LT, 1 TH, 1 RT 1 LT, 1 TH, 1 RT 1 LT, 2 TH, 1 RT 2 LT, 2 TH, 1 RT	E F C C	F (129)	E A C F	E (72)
Combined (2024) Conditions – Phase 1	EB WB NB SB	1 LT, 1 TH, 1 RT 1 LT, 1 TH, 1 RT 1 LT, 2 TH, 1 RT 2 LT, 2 TH, 1 RT	E F C C	F (117)	E B C F	E (61)
Combined (2024) Conditions – Phase 1 – with Signal Timing Modifications	EB WB NB SB	1 LT, 1 TH, 1 RT 1 LT, 1 TH, 1 RT 1 LT, 2 TH, 1 RT 2 LT, 2 TH, 1 RT	D E E E	E (62)	E B E C	D (37)
Combined (2026) Conditions – Full Buildout	EB WB NB SB	1 LT, 1 TH, 1 RT 1 LT, 1 TH, 1 RT 1 LT, 2 TH, 1 RT 2 LT, 2 TH, 1 RT	E F C C	F (137)	E B C F	E (76)
Combined (2026) Conditions – Full Buildout – with Signal Timing Modifications	EB WB NB SB	1 LT, 1 TH, 1 RT 1 LT, 1 TH, 1 RT 1 LT, 2 TH, 1 RT 2 LT, 2 TH, 1 RT	C E F E	E (77)	F B E C	D (41)

Capacity analysis of existing (2019) conditions indicate the intersection of E. Williams Street / Technology Drive and NC 55 / NC 55 Bypass operates at an overall LOS E during the weekday AM peak hour and LOS C during the weekday PM peak hour. Under background (2024), background (2026), combined (2024) – Phase 1, and combined (2026) – Full Buildout conditions the intersection is expected to operate to an overall LOS F during the weekday AM peak hour and LOS E during the weekday PM peak hour. Under Phase 1 conditions, the proposed development is expected to increase the overall intersection delay by 9 seconds during the weekday AM peak hour and 4 seconds during the weekday PM peak hour.

Under Full Buildout conditions, the proposed development is expected to increase the overall intersection delay by 8 seconds during the weekday AM peak hour and 4 seconds during the weekday PM peak hour. The proposed development is expected to have a larger impact at this intersection under Phase 1 conditions with the operations improving under full buildout due to the additional site accesses that will be opened up to Jessie Drive and the Jessie Drive Extension. These additional accesses are expected to reduce the number of site trips that will use this intersection. Per the Town UDO, if background conditions are expected to operate at an overall LOS E or worse the development must improve the intersection if the development's traffic is greater than or equal to 10% of the weekday AM or PM peak hour traffic when compared to the background traffic conditions. It should be noted that the development is expected to add approximately 1% of traffic to the intersection during the weekday AM and PM peak hours in Phase 1 and Full Buildout conditions.

Despite the minor impact at the subject intersection, signal timing improvements were considered to improve the intersection to an overall LOS E or better under all analysis conditions. These improvements will likely be implemented periodically by NCDOT and are therefore not recommended for the subject development.

7.3. Smith Road and Stephenson Road

The existing unsignalized intersection of Smith Road and Stephenson Road was analyzed under existing (2019), background (2024), background (2026), combined (2024) - Phase 1, and combined (2026) – Full Buildout traffic conditions with the lane configurations and traffic control shown in Table 7. Refer to Table 7 for a summary of the analysis results. Refer to Appendix G for the Synchro capacity analysis reports.

Table 7: Analysis Summary of Smith Road and Stephenson Road

ANALYSIS SCENARIO	A P P R O A C H	LANE CONFIGURATIONS	WEEKDAY AM PEAK HOUR LEVEL OF SERVICE		WEEKDAY PM PEAK HOUR LEVEL OF SERVICE	
			Approach	Overall (seconds)	Approach	Overall (seconds)
Existing (2019) Conditions	EB WB SB	1 LT-TH 1 TH-RT 1 LT, 1 RT	A ¹ -- B ²	N/A	A ¹ -- C ²	N/A
Background (2024) Conditions	EB WB SB	1 LT-TH 1 TH-RT <u>1 LT, 1 RT</u>	A ¹ -- C ²	N/A	A ¹ -- E ²	N/A
Background (2026) Conditions	EB WB SB	1 LT-TH 1 TH-RT <u>1 LT, 1 RT</u>	B ¹ -- C ²	N/A	A ¹ -- F ²	N/A
Combined (2024) Conditions – Phase 1	EB WB SB	1 LT-TH 1 TH-RT <u>1 LT, 1 RT</u>	B ¹ -- E ²	N/A	A ¹ -- F ²	N/A
Combined (2024) Conditions – Phase 1- with Improvements	EB WB SB	1 LT, 1 TH 1 TH-RT <u>1 LT, 1 RT</u>	B ¹ -- E ²	N/A	A ¹ -- F ²	N/A
Combined (2026) Conditions – Full Buildout	EB WB SB	1 LT-TH 1 TH-RT <u>1 LT, 1 RT</u>	B ¹ -- C ²	N/A	A ¹ -- F ²	N/A
Combined (2026) Conditions – Full Buildout - with Improvements	EB WB SB	1 LT, 1 TH 1 TH-RT <u>1 LT, 1 RT</u>	B ¹ -- C ²	N/A	A ¹ -- F ²	N/A

1. Level of service for major-street left-turn movement.
 2. Level of service for minor-street approach.
 Improvements by Developer in **Bold**.
 Expected TIP Improvements are underlined.

Capacity analysis of existing (2019) conditions indicates the major-street left-turn movement and minor-street approaches operate at LOS C or better during the weekday AM and PM peak

hour. Under background (2026), combined (2024) – Scenario 1, and combined (2026) – Full Buildout conditions the minor-street approach is expected to operate at LOS F during the weekday PM peak hour. Although not necessary from a level-of-service perspective, an eastbound left-turn lane is recommended to accommodate the additional eastbound traffic at the intersection. NCDOT’s U-5825B Ten-Ten Road widening project is expected to widen Smith Road to a three-lane section from Ten-Ten Road to Stephenson Road. These improvements are not expected to affect the capacity at the intersection of Stephenson Road and Smith Road but are included in all future year analyses.

It should be noted that a signal was considered according to the methodology contained within the *Manual on Uniform Traffic Control Devices* (MUTCD) and the intersection is expected to only meet the weekday PM peak hour warrants for a signal under combined (2023) – Scenario 1 and combined (2023) – Scenario 2 conditions. Due to the residential nature of this area, it is not expected that the intersection would meet the 4 or 8-hour warrants for a signal, which the NCDOT typically require. Based on the short duration of heavy traffic expected at this intersection, signalization is not recommended as part of this study.

7.4. Smith Road and Dezola Street

The existing unsignalized intersection of Smith Road and Dezola Street was analyzed under existing (2019), background (2024), background (2026), combined (2024) - Phase 1, and combined (2026) – Full Buildout traffic conditions with the lane configurations and traffic control shown in Table 8. Refer to Table 8 for a summary of the analysis results. Refer to Appendix H for the Synchro capacity analysis reports.

Table 8: Analysis Summary of Smith Road and Dezola Street

ANALYSIS SCENARIO	A P P R O A C H	LANE CONFIGURATIONS	WEEKDAY AM PEAK HOUR LEVEL OF SERVICE		WEEKDAY PM PEAK HOUR LEVEL OF SERVICE	
			Approach	Overall (seconds)	Approach	Overall (seconds)
Existing (2019) Conditions	EB NB SB	1 LT-RT 1 LT-TH 1 TH-RT	A ² A ¹ --	N/A	A ² A ¹ --	N/A
Background (2024) Conditions	EB NB SB	1 LT-RT 1 LT-TH 1 TH-RT	A ² A ¹ --	N/A	A ² A ¹ --	N/A
Background (2026) Conditions	EB NB SB	1 LT-RT 1 LT-TH 1 TH-RT	A ² A ¹ --	N/A	A ² A ¹ --	N/A
Combined (2024) Conditions – Phase 1	EB NB SB	1 LT-RT 1 LT-TH 1 TH-RT	B ² A ¹ --	N/A	B ² A ¹ --	N/A
Combined (2024) Conditions – Phase 1 – with Improvements	EB NB SB	1 LT-RT 1 LT-TH 1 TH, 1 RT	B ² A ¹ --	N/A	A ² A ¹ --	N/A
Combined (2026) Conditions – Full Buildout	EB NB SB	1 LT-RT 1 LT-TH 1 TH-RT	A ² A ¹ --	N/A	A ² A ¹ --	N/A
Combined (2026) Conditions – Full Buildout – with Improvements	EB NB SB	1 LT-RT 1 LT-TH 1 TH, 1 RT	A ² A ¹ --	N/A	A ² A ¹ --	N/A

1. Level of service for major-street left-turn movement.
 2. Level of service for minor-street approach.
 Improvements by Developer in **Bold**.

Capacity analysis of all analysis conditions indicates that the minor-street approach and major-street left-turn movement at the intersection of Smith Road and Dezola Street are expected to

operate at LOS B or better during both weekday AM and PM peak hours. Although not necessary to meet the level-of-service requirements, a southbound right-turn lane is recommended to accommodate the additional site traffic at the intersection. This turn-lane was recommended based on the NCDOT Driveway Manual *Warrant for left and Right-Turn Lanes* chart.

7.5. E. Williams Street and Straywhite Avenue

The existing unsignalized intersection of E. Williams Street and Straywhite Avenue was analyzed existing (2019), background (2024), background (2026), combined (2024) - Phase 1, and combined (2026) – Full Buildout traffic conditions with the lane configurations and traffic control shown in Table 9. Refer to Table 9 for a summary of the analysis results. Refer to Appendix I for the Synchro capacity analysis reports.

Table 9: Analysis Summary of E. Williams Street and Straywhite Avenue

ANALYSIS SCENARIO	A P P R O A C H	LANE CONFIGURATIONS	WEEKDAY AM PEAK HOUR LEVEL OF SERVICE		WEEKDAY PM PEAK HOUR LEVEL OF SERVICE	
			Approach	Overall (seconds)	Approach	Overall (seconds)
Existing (2019) Conditions	WB NB SB	1 LT-RT 1 TH, 1 RT 1 LT, 1 TH	F ² -- B ¹	N/A	C ² -- A ¹	N/A
Background (2024) Conditions	WB NB SB	1 LT-RT 1 TH, 1 RT 1 LT, 1 TH	F ² -- C ¹	N/A	C ² -- B ¹	N/A
Background (2026) Conditions	WB NB SB	1 LT-RT 1 TH, 1 RT 1 LT, 1 TH	F ² -- C ¹	N/A	D ² -- B ¹	N/A
Combined (2024) Conditions – Phase 1	WB NB SB	1 LT-RT 1 TH, 1 RT 1 LT, 1 TH	F ² -- C ¹	N/A	D ² -- B ¹	N/A
Combined (2024) Conditions – Phase 1 – with Improvements	WB NB SB	1 LT, 1 RT 1 TH, 1 RT 1 LT, 1 TH	F ² -- C ¹	N/A	C ² -- B ¹	N/A
Combined (2026) Conditions – Full Buildout	WB NB SB	1 LT-RT 1 TH, 1 RT 1 LT, 1 TH	F ² -- C ¹	N/A	D ² -- B ¹	N/A
Combined (2026) Conditions – Full Buildout – with Improvements	WB NB SB	1 LT, 1 RT 1 TH, 1 RT 1 LT, 1 TH	F ² -- C ¹	N/A	D ² -- B ¹	N/A

- 1. Level of service for major-street left-turn movement.
 - 2. Level of service for minor-street approach.
- Improvements by Developer in **Bold**.

Capacity analysis of all analysis conditions indicates the minor-street approach at the intersection of E. Williams Street and Straywhite Avenue is expected to operate at LOS F

during the weekday AM peak hour. During the weekday PM peak hour, the minor-street approach is expected to operate at LOS D or better under all analysis conditions. The major-street left-turn movement is expected to operate at LOS C or better during the weekday AM and PM peak hours under all analysis conditions.

Although it is not uncommon to experience significant delay for a minor-street approach during the peak hour with a high volume of through traffic on the mainline, a signal was considered according to methodology contained in the MUTCD. The intersection is expected to only meet peak hour warrants for signalization during the weekday AM peak hour under Phase 1 and Full Buildout conditions. Due to the residential nature of this area, it is not expected that the intersection would meet the 4 or 8-hour warrants for a signal, which the NCDOT typically require. Due to this, signalization of this intersection is not recommended by the subject development. Additionally, the intersection of E. Williams Street / Technology Drive and NC 55 / NC 55 Bypass is located approximately 1,400 feet north of this intersection. Per SimTraffic simulations of the weekday AM peak hour under existing (2019) conditions, the westbound approach at this upstream signal (E. Williams Street), queues beyond the Straywhite Avenue intersection. Due to this, signalization would likely not be desirable to NCDOT. Traffic exiting Straywhite Avenue during the weekday AM peak hour would likely be given courtesy gaps by motorists on E. Williams Street, allowing for egress with significantly less delay than modeled by Synchro.

The subject development is expected to account for approximately 2% of the traffic at this intersection during the weekday AM peak hour and 3% during the weekday PM peak hour under combined (2024) – Phase 1 conditions. Due to the additional site access provided to Jessie Drive under Full Buildout conditions, Phase 1 conditions are expected to reduce the number of site trips added to this intersection by the proposed Horton Park development.

The westbound approach of Straywhite Avenue at E. Williams Street is approximately 21 feet in width. Due to this available pavement, it is recommended that Straywhite Avenue be restriped to provide an exclusive left and right-turn lane at E. Williams Street.

7.6. Ten-Ten Road and Jessie Drive

The existing unsignalized intersection of Ten-Ten Road and Jessie Drive was analyzed under existing (2019), background (2026), and combined (2026) – Full Buildout traffic conditions with the lane configurations shown in Table 10. Refer to Table 10 for a summary of the analysis results. Refer to Appendix J for the Synchro capacity analysis reports.

Table 10: Analysis Summary of Ten-Ten Road and Jessie Drive

ANALYSIS SCENARIO	A P P R O A C H	LANE CONFIGURATIONS	WEEKDAY AM PEAK HOUR LEVEL OF SERVICE		WEEKDAY PM PEAK HOUR LEVEL OF SERVICE	
			Approach	Overall (seconds)	Approach	Overall (seconds)
Existing (2019) Conditions	EB WB NB	1 TH-RT 1 LT-TH 1 LT-RT	-- A ¹ C ²	N/A	-- B ¹ F ²	N/A
Background (2026) Conditions	EB WB NB	<u>3 TH, 1 RT</u> <u>1 LT, 2 TH</u> 1 LT, 1 RT	-- B ¹ D ²	N/A	-- D ¹ F ²	N/A
Combined (2026) Conditions – Full Buildout	EB WB NB	<u>3 TH, 1 RT</u> <u>1 LT, 2 TH</u> 1 LT, 1 RT	-- B ¹ F ²	N/A	-- F ¹ F ²	N/A
Combined (2026) Conditions – Full Buildout – with Signalization	EB WB NB	<u>3 TH, 1 RT</u> <u>1 LT, 2 TH</u> 1 LT, 1 RT	B B C	B (18)	B B C	B (18)

1. Level of service for major-street left-turn movement.
 2. Level of service for minor-street approach.
 Improvements by Developer in **Bold**.
 Expected TIP Improvements are underlined.
 Expected Town Improvements are in **red**. (Potential LAPP project)

Capacity analysis of existing (2019) and background (2026) conditions indicates that the major-street left-turn movement is expected to operate at LOS D or better during the weekday AM and PM peak hour. The minor-street approach is expected to operate at LOS D or better during the weekday AM peak hour and LOS F during the weekday PM peak hour under existing (2019) and background (2026) conditions. Under combined (2026) – Full Buildout conditions the minor-street approach is expected to degrade to LOS F during the weekday AM peak hour and the major-street left-turn movement is expected to degrade to LOS F during the weekday PM peak hour. Due to the poor level of service expected under combined (2026) –

Full Buildout conditions, a signal was considered according to the methodology contained within the *Manual on Uniform Traffic Control Devices* (MUTCD). The intersection is expected to meet the weekday AM and PM peak hour warrants for a signal under combined (2026) – Full Build conditions. Ten-Ten Road is expected to undergo widening as part of the U-5825B project, prior to full buildout of the proposed development. These improvements are not full designed; therefore, laneage was included in this study according to the most recent conceptual design available. Additional improvements are expected with the Town’s LAPP funded project to extend Jessie Drive to NC 55. Per coordination with the Town, this project is expected to provide a two-lane roadway with turn-lanes at NC 55 and at Ten-Ten Road. At the time of this TIA, signalization of this intersection is not currently planned as part of the NCDOT or Town projects. With signalization in place, the intersection is expected to operate at an overall LOS C or better under combined (2026) – Full Buildout conditions. Due to the operational benefits of the signal, it is recommended that the intersection be monitored for signalization by proposed development after buildout of the Jessie Drive site access.

7.7. Jessie Drive Extension and NC 55

The proposed signalized intersection of Jessie Drive and NC 55 was analyzed under background (2026) and combined (2026) – Full Buildout traffic conditions with proposed lane configurations and traffic control. Refer to Table 11 for a summary of the analysis results. Refer to Appendix K for the Synchro capacity analysis reports.

Table 11: Analysis Summary of Jessie Drive Extension and NC 55

ANALYSIS SCENARIO	A P P R O A C H	LANE CONFIGURATIONS	WEEKDAY AM PEAK HOUR LEVEL OF SERVICE		WEEKDAY PM PEAK HOUR LEVEL OF SERVICE	
			Approach	Overall (seconds)	Approach	Overall (seconds)
Background (2026) Conditions	WB NB SB	1 RT 2 TH, 1 RT 1 LT, 2 TH	E F D*	D (47)	B B B*	B (15)
Combined (2026) Conditions – Full Buildout	WB NB SB	1 RT 2 TH, 1 RT 1 LT, 2 TH	E F D*	D (53)	B B C*	C (21)

*Due to the limited capabilities of Synchro, the southbound left-turn movement was analyzed as an eastbound through movement.
Expected Town Improvements are in red.

Capacity analysis of background (2026) and combined (2026) – Full Buildout traffic conditions indicate the intersection of Jessie Drive Extension and NC 55 is expected to operate at an overall LOS D or better during the weekday AM and PM peak hours. This intersection is expected to be constructed by the Town of Apex via a LAPP funded project to construct the Jessie Drive extension in 2024. As this project is not currently designed, the location, laneage, and superstreet configuration were determined through coordination with Town staff. Jessie Drive Extension is expected to provide a two-lane roadway with turn-lanes at NC 55 and at Ten-Ten Road. Full buildout of the proposed development is expected to account for approximately 6 seconds of additional delay during the weekday AM peak hour and 6 seconds of additional delay during the weekday PM peak hour.

7.8. Northbound U-Turn and NC 55

The proposed unsignalized intersection of Northbound U-Turn and NC 55 was analyzed under background (2026) and combined (2026) – Full Buildout traffic conditions with proposed lane configurations and traffic control. Refer to Table 12 for a summary of the analysis results. Refer to Appendix L for the Synchro capacity analysis reports.

Table 12: Analysis Summary of Northbound U-Turn and NC 55

ANALYSIS SCENARIO	A P P R O A C H	LANE CONFIGURATIONS	WEEKDAY AM PEAK HOUR LEVEL OF SERVICE		WEEKDAY PM PEAK HOUR LEVEL OF SERVICE	
			Approach	Overall (seconds)	Approach	Overall (seconds)
Background (2026) Conditions	NB SB	1 UT, 2 TH 2 TH	C* ¹ --	N/A	F* ¹ --	N/A
Combined (2026) Conditions – Full Buildout	NB SB	1 UT, 2 TH 2 TH	C* ¹ --	N/A	F* ¹ --	N/A

*Due to the limited capabilities of Synchro, the northbound U-turn was analyzed as a westbound left-turn.

1. Level of service for major-street U-turn movement.

Expected Town Improvements are in red.

Capacity analysis of background (2026) and combined (2026) – Full Buildout traffic conditions indicate the unsignalized Northbound U-turn movement, north of the proposed Jessie Drive Extension, is expected to operate at LOS C during the weekday AM peak hour and LOS F during the weekday PM peak hour. A signal was considered according to the methodology contained within the *Manual on Uniform Traffic Control Devices (MUTCD)* and the intersection is not expected to meet the weekday AM or PM peak hour warrants for a signal under combined (2026) – Full Buildout conditions. Additionally, due to the upstream signals, sufficient gaps in traffic are expected to allow for U-turn maneuvers during times of heavy traffic (weekday PM peak hour). This intersection is expected to be constructed by the Town of Apex via a LAPP funded project to construct the Jessie Drive extension in 2024. As this project is not currently designed, the location, and laneage for this intersection was assumed based on coordination with Town staff.

7.9. Jessie Drive and North-South Connector

The proposed unsignalized intersection of Jessie Drive and North-South Connector was analyzed under combined (2026) – Full Buildout traffic conditions with proposed lane configurations and traffic control. Refer to Table 13 for a summary of the analysis results. Refer to Appendix M for the Synchro capacity analysis reports.

Table 13: Analysis Summary of Jessie Drive and North-South Connector

ANALYSIS SCENARIO	A P P R O A C H	LANE CONFIGURATIONS	WEEKDAY AM PEAK HOUR LEVEL OF SERVICE		WEEKDAY PM PEAK HOUR LEVEL OF SERVICE	
			Approach	Overall (seconds)	Approach	Overall (seconds)
Combined (2026) Conditions – Full Buildout	EB WB NB SB	1 LT, 1 TH-RT 1 LT, 1 TH-RT 1 LT-TH-RT 1 LT-TH-RT	A ¹ A ¹ B ² B ²	N/A	A ¹ A ¹ B ² B ²	N/A

- 1. Level of service for major-street left-turn movement.
 - 2. Level of service for minor-street approach.
- Improvements by Developer in **Bold**.
Expected Town Improvements are in **red**.

Capacity analysis of combined (2026) – Full Buildout traffic conditions indicate that the minor-street approaches and major-street left-turn movements at the intersection of Jessie Drive and North-South Connector are expected to operate at LOS B or better during both weekday AM and PM peak hours. Although not needed from a level of service standpoint, left-turn lanes are recommended for the eastbound and westbound approaches according to the *Warrant for Left and Right-Turn Lanes* chart included in the NCDOT Driveway Manual.

7.10. Jessie Drive and Site Drive #1

The proposed unsignalized intersection of Jessie Drive and Site Drive #1 was analyzed under combined (2026) – Full Buildout traffic conditions with the lane configurations shown in Table 14. Refer to Table 14 for a summary of the analysis results. Refer to Appendix N for the Synchro capacity analysis reports.

Table 14: Analysis Summary of Jessie Drive and Site Drive #1

ANALYSIS SCENARIO	A P P R O A C H	LANE CONFIGURATIONS	WEEKDAY AM PEAK HOUR LEVEL OF SERVICE		WEEKDAY PM PEAK HOUR LEVEL OF SERVICE	
			Approach	Overall (seconds)	Approach	Overall (seconds)
Combined (2026) Conditions – Full Buildout	EB WB NB SB	1 LT, 1 TH-RT 1 LT, 1 TH-RT 1 LT-TH-RT 1 LT-TH-RT	A ¹ A ¹ B ² C ²	N/A	A ¹ A ¹ B ² C ²	N/A

1. Level of service for major-street left-turn movement.

2. Level of service for minor-street approach.

Improvements by Developer in **Bold**.

Expected Town Improvements are in **red**.

Capacity analysis of combined (2026) – Full Buildout traffic conditions indicate that the minor-street approaches and major-street left-turn movements at the intersection of Jessie Drive and Site Drive #1 are expected to operate at LOS C or better during both weekday AM and PM peak hours. Although not needed from a level of service standpoint, left-turn lanes are recommended for the eastbound and westbound approaches according to the *Warrant for Left and Right-Turn Lanes* chart included in the NCDOT Driveway Manual.

7.11. Jessie Drive and Site Drive #2

The proposed unsignalized intersection of Jessie Drive and Site Drive #2 was analyzed under combined (2026) – Full Buildout traffic conditions with the lane configurations shown in Table 15. Refer to Table 15 for a summary of the analysis results. Refer to Appendix O for the Synchro capacity analysis reports.

Table 15: Analysis Summary of Jessie Drive and Site Drive #2

ANALYSIS SCENARIO	A P P R O A C H	LANE CONFIGURATIONS	WEEKDAY AM PEAK HOUR LEVEL OF SERVICE		WEEKDAY PM PEAK HOUR LEVEL OF SERVICE	
			Approach	Overall (seconds)	Approach	Overall (seconds)
Combined (2026) Conditions – Full Buildout	EB WB NB	1 TH-RT 1 LT, 1 TH 1 LT-RT	-- A ¹ B ²	N/A	-- A ¹ B ²	N/A

1. Level of service for major-street left-turn movement.

2. Level of service for minor-street approach.

Improvements by Developer in **Bold**.

Expected Town Improvements are in **red**.

Capacity analysis of combined (2026) – Full Buildout traffic conditions indicate that the minor-street approach and major-street left-turn movement at the intersection of Jessie Drive and Site Drive #2 are expected to operate at LOS B or better during both weekday AM and PM peak hours. Although not needed from a level of service standpoint, a left-turn lane is recommended for the westbound approach according to the *Warrant for Left and Right-Turn Lanes* chart included in the NCDOT Driveway Manual.

8. CONCLUSIONS

This Traffic Impact Analysis Update was conducted to determine the potential traffic impacts of the proposed Horton Park development, located between E. Williams Street and Smith Road and south of Ten-Ten Road in Apex, North Carolina. The proposed development is expected to be a mixed-use development and be built out in phases, with completion of Phase 1 expected in 2024 and Full Buildout in 2026. Phase 1 of the development is expected to provide site access via connections to Dezola Street to the east and Colby Chase Drive to the west. Under Full Buildout, the development is expected to provide additional site access via three (3) full movement driveways on Jessie Drive Extension.

The study analyzes traffic conditions during the weekday AM and PM peak hours for the following scenarios:

- Existing (2019) Traffic Conditions
- Background (2024) Traffic Conditions
- Background (2026) Traffic Conditions
- Combined (2024) Traffic Conditions – Phase 1
- Combined (2026) Traffic Conditions – Full Buildout

Trip Generation

It is estimated that Phase 1 of the proposed development will generate approximately 3,740 total site trips on the roadway network during a typical 24-hour weekday period. Of the daily traffic volume, it is anticipated that 274 trips (67 entering and 207 exiting) will occur during the weekday AM peak hour and 359 (227 entering and 132 exiting) will occur during the weekday PM peak hour.

Full Buildout of the proposed development is estimated to generate approximately 8,270 total site trips on the roadway network during a typical 24-hour weekday period. Of the daily traffic volume, it is anticipated that 547 trips (182 entering and 365 exiting) will occur during the AM peak hour and 657 (379 entering and 278 exiting) will occur during the PM peak hour.

Adjustments to Analysis Guidelines

Capacity analysis at all study intersections was completed according to the Town’s UDO and NCDOT Congestion Management Guidelines. Refer to section 6.1 of this report for a detailed description of any adjustments to these guidelines made throughout the analysis.

Intersection Capacity Analysis Summary

All the study area intersections (including the proposed site driveways) are expected to operate at acceptable levels-of-service under existing and future year conditions with the exception of the intersections listed below. A summary of the study area intersections that are expected to need improvements are as follows:

Ten-Ten Road and Jessie Drive

The intersection of Ten-Ten Road and Jessie Drive is expected to be improved by widening along Ten-Ten Road as part of the U-5825B project and turn-lane improvements as part of the Town’s LAPP funded project to extend Jessie Drive from Ten-Ten Road to NC 55. These projects do not have finalized designs, therefore laneage was assumed per coordination with NCDOT and Town staff. Under full buildout conditions, when the proposed development is expected to provide access to Jessie Drive Extension, a signal was considered according to methodology contained in the MUTCD and is expected to meet the weekday AM and PM peak hour warrants for signalization. Under combined (2026) – Full Buildout conditions with signalization, the intersection is expected to operate at an overall LOS B during the weekday AM and PM peak hours. It is recommended that the proposed development monitor this intersection for signalization after construction of the first Site Driveway onto Jessie Drive / Jessie Drive Extension.

Smith Road and Stephenson Road

The unsignalized intersection of Smith Road and Stephenson Road is expected to operate at LOS F on the minor-street approach during the weekday PM peak hour under background (2024), background (2026), combined (2024) – Phase 1, and combined (2026) – Full Buildout conditions. A signal was considered at the intersection according to the methodology contained in the MUTCD but is only expected to meet the weekday PM peak hour warrants for

a signal. An eastbound left-turn lane is recommended to accommodate the additional eastbound traffic expected at the intersection.

Technology Drive / E. Williams Street and NC 55 / NC 55 Bypass

The intersection of Technology Drive / E. Williams Street and NC 55 / NC 55 Bypass is expected to operate at an overall LOS F during the weekday AM peak hour and LOS E during the weekday PM peak hour under background (2024), background (2026), combined (2024) – Phase 1, and combined (2026) – Full Buildout conditions.

Under Full Buildout conditions, the proposed development is expected to increase the overall intersection delay by 8 seconds during the weekday AM peak hour and 4 seconds during the weekday PM peak hour. The proposed development is expected to have a larger impact at this intersection under Phase 1 conditions with the operations improving under full buildout due to the additional site accesses that will be opened up to Jessie Drive and the Jessie Drive Extension. These additional accesses are expected to reduce the number of site trips that will use this intersection. Per the Town UDO, if background conditions are expected to operate at an overall LOS E or worse the development must improve the intersection if the development's traffic is greater than or equal to 10% of the weekday AM or PM peak hour traffic when compared to the background traffic conditions. It should be noted that the development is expected to add approximately 1% of traffic to the intersection during the weekday AM and PM peak hours in Phase 1 and Full Buildout conditions. Signal timing modifications were

Despite the minor impact at the subject intersection, signal timing improvements were considered to improve the intersection to an overall LOS E or better under all analysis conditions. These improvements will likely be implemented periodically by NCDOT and are therefore not recommended for the subject development.

E. Williams Street and Straywhite Avenue

The minor-street approach of Straywhite Avenue at E. Williams Street is expected to operate at LOS F under all analysis conditions. Although it is not uncommon for a minor-street approach to operate with significant delay with a high volume of through traffic on the

mainline, a signal was considered according to methodology contained in the MUTCD. The intersection is expected to only meet peak hour warrants for signalization during the weekday AM peak hour under Phase 1 and Full Buildout conditions. Due to the residential nature of this area, it is not expected that the intersection would meet the 4 or 8-hour warrants for a signal, which the NCDOT typically require. Additionally, the intersection of E. Williams Street / Technology Drive and NC 55 / NC 55 Bypass is located approximately 1,400 feet north of this intersection. Per SimTraffic simulations of the weekday AM peak hour under existing (2019) conditions, the westbound approach at this upstream signal (E. Williams Street), queues beyond the Straywhite Avenue intersection. Due to these reasons, signalization is not recommended by the proposed development. Additionally, traffic exiting Straywhite Avenue during the weekday AM peak hour would likely be given courtesy gaps by motorists on E. Williams Street, allowing for egress with significantly less delay than modeled by Synchro.

The subject development is expected to account for approximately 2% of the traffic at this intersection during the weekday AM peak hour and 3% during the weekday PM peak hour under combined (2024) – Phase 1 conditions. Despite the relatively low impact expected by the proposed development, it is recommended that the proposed Horton Park development monitor this intersection for signalization through buildout of Phase 1 of the development and install a signal when warranted and approved by NCDOT. Due to the additional site access provided to Jessie Drive under Full Buildout conditions, if signalization is not warranted under Phase 1 conditions, it is recommended that this requirement be eliminated.

The westbound approach of Straywhite Avenue at E. Williams Street is approximately 21 feet in width. Due to this available pavement, it is recommended that Straywhite Avenue be restriped to provide an exclusive left and right-turn lane at E. Williams Street.

9. RECOMMENDATIONS

Based on the findings of this study, specific geometric improvements have been identified and are recommended to accommodate future traffic conditions. See a more detailed description of the recommended improvements below. Refer to Figure 15A for an illustration of the Phase 1 recommended lane configuration for the proposed development and 15B for the Full Buildout recommended lane configurations.

Recommended Improvements by TIP U-5825B

- Widen Ten-Ten Road to a minimum four lane, median divided, cross-section throughout the study area.

Ten-Ten Road and Jessie Drive

- Provide three (3) eastbound through lanes and two (2) westbound through lanes on Ten-Ten Road with full length storage.
- Provide an exclusive westbound left-turn lane on Ten-Ten Road with a minimum of 400 feet of storage and appropriate taper.

Ten-Ten Road and Smith Road

- Provide two (2) eastbound through lanes and two (2) westbound through lanes on Ten-Ten Road with full length storage.
- Provide an exclusive westbound left-turn lane on Ten-Ten Road with a minimum of 400 feet of storage and appropriate taper.
- Provide an exclusive eastbound U-turn lane on Ten-Ten Road with a minimum of 400 feet of storage and appropriate taper.
- Provide an exclusive eastbound right-turn lane on Ten-Ten Road with full length storage.
- Provide exclusive dual northbound left-turn lanes on Smith Road, one as a two-way left-turn lane extending to Stephenson Road and one with full length storage.
- Provide an exclusive northbound right-turn lane on Smith Road with a minimum of 250 feet of storage and appropriate taper.

Recommended Improvements by Town (Jessie Drive Extension)

- Extend Jessie Drive from NC 55 to Ten-Ten Road with a two-lane cross-section.

Ten-Ten Road and Jessie Drive

- Construct an exclusive northbound right-turn lane on Jessie Drive with a minimum of 200 feet of storage and appropriate taper.
- Construct an exclusive eastbound right-turn lane on Ten-Ten Road with a minimum of 100 feet of storage and appropriate taper.

NC 55 and Jessie Drive Extension

- Construct a left-over intersection with a median on NC 55 restricting westbound left-turn movements from Jessie Drive Extension.
- Monitor for signalization and install once warranted and approved by NCDOT.
- Construct an exclusive northbound right-turn lane on NC 55 with a minimum of 150 feet of storage and appropriate taper.
- Construct an exclusive southbound left-turn lane on NC 55 with a minimum of 250 feet of storage and appropriate taper.

NC 55 and Jessie Drive Extension

- Construct a U-turn intersection and bulb-out on NC 55, north of Jessie Drive Extension.
- Construct an exclusive northbound U-turn lane on NC 55 with a minimum of 250 feet of storage and appropriate taper.

Recommended Improvements by Developer – Phase 1

Smith Road and Stephenson Road

- Construct an eastbound left-turn lane on Smith Road with a minimum of 100 feet of storage and appropriate taper.

Smith Road and Dezola Street

- Construct a southbound right-turn lane on Smith Road with a minimum of 75 feet of storage and appropriate taper.

E. Williams Street and Straywhite Avenue

- Restripe the westbound approach on Straywhite Avenue to provide two (2) westbound egress lanes, an exclusive left-turn lane with full length storage and an exclusive right-turn lane with a minimum of 200 feet of storage and appropriate taper.

Recommended Improvements by Developer – Full Buildout

Ten-Ten Road and Jessie Drive

- Monitor for signalization and install if warranted and approved by NCDOT after site driveway connections to Jessie Drive / Jessie Drive Extension are constructed.

Jessie Drive / Jessie Drive Extension and North-South Connector

- Construct a stop controlled northbound approach with one (1) ingress and one (1) egress lane.
- Construct a stop controlled southbound approach with one (1) ingress and one (1) egress lane.
- Construct an exclusive eastbound left-turn lane on Jessie Drive Extension with a minimum of 75 feet of storage and appropriate taper.
- Construct an exclusive westbound left-turn lane on Jessie Drive with a minimum of 75 feet of storage and appropriate taper.

Jessie Drive and Site Drive #1

- Construct a stop controlled northbound approach with one (1) ingress and one (1) egress lane.
- Construct a stop controlled southbound approach with one (1) ingress and one (1) egress lane.

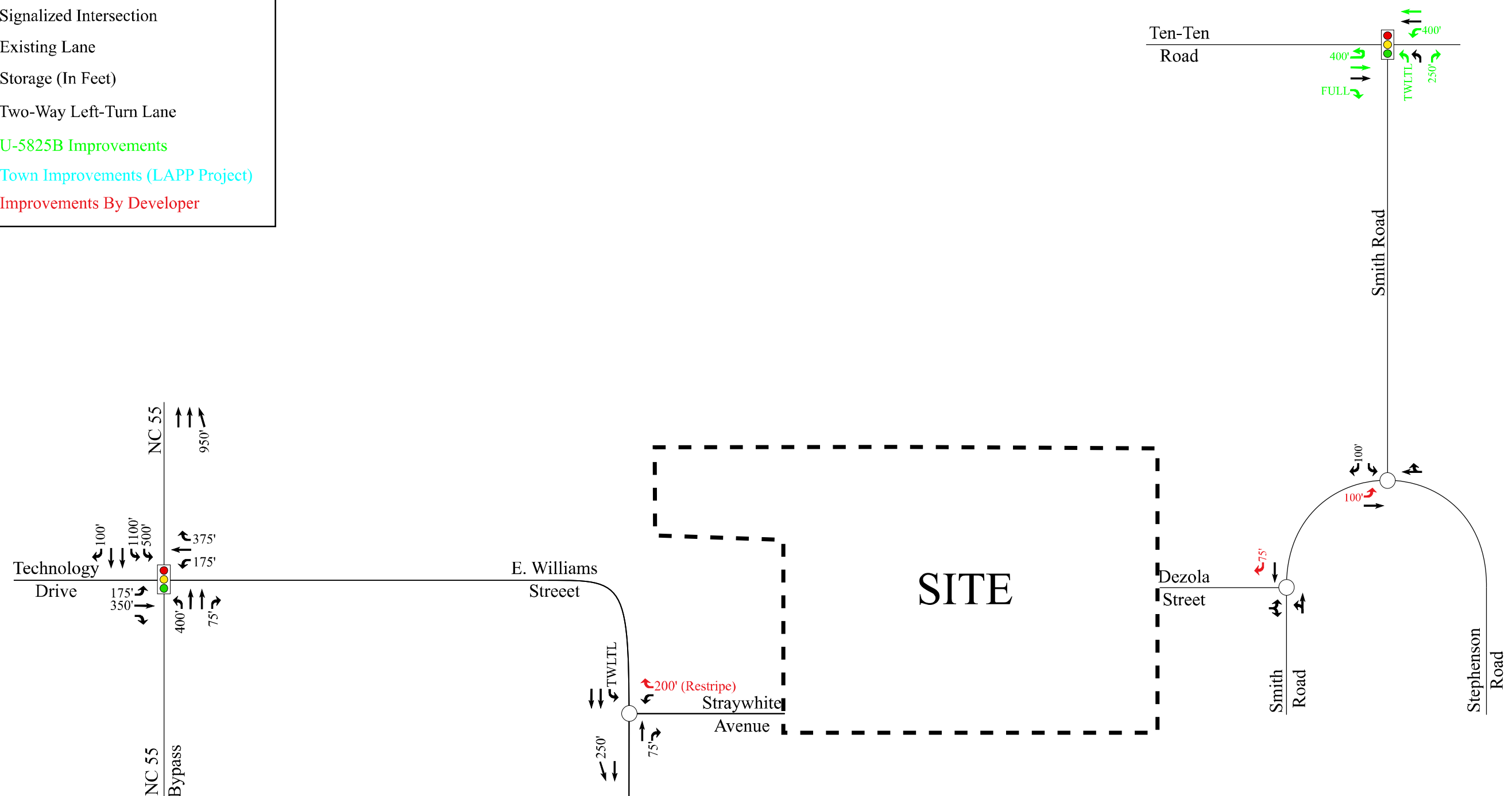
- Construct an exclusive eastbound left-turn lane on Jessie Drive with a minimum of 50 feet of storage and appropriate taper.
- Construct an exclusive westbound left-turn lane on Jessie Drive with a minimum of 75 feet of storage and appropriate taper.

Jessie Drive and Site Drive #2

- Construct a stop controlled northbound approach with one (1) ingress and one (1) egress lane.
- Construct an exclusive westbound left-turn lane on Jessie Drive with a minimum of 50 feet of storage and appropriate taper.

LEGEND

- Unsignalized Intersection
- ◫ Signalized Intersection
- Existing Lane
- x' Storage (In Feet)
- TWLTL Two-Way Left-Turn Lane
- U-5825B Improvements
- Town Improvements (LAPP Project)
- Improvements By Developer

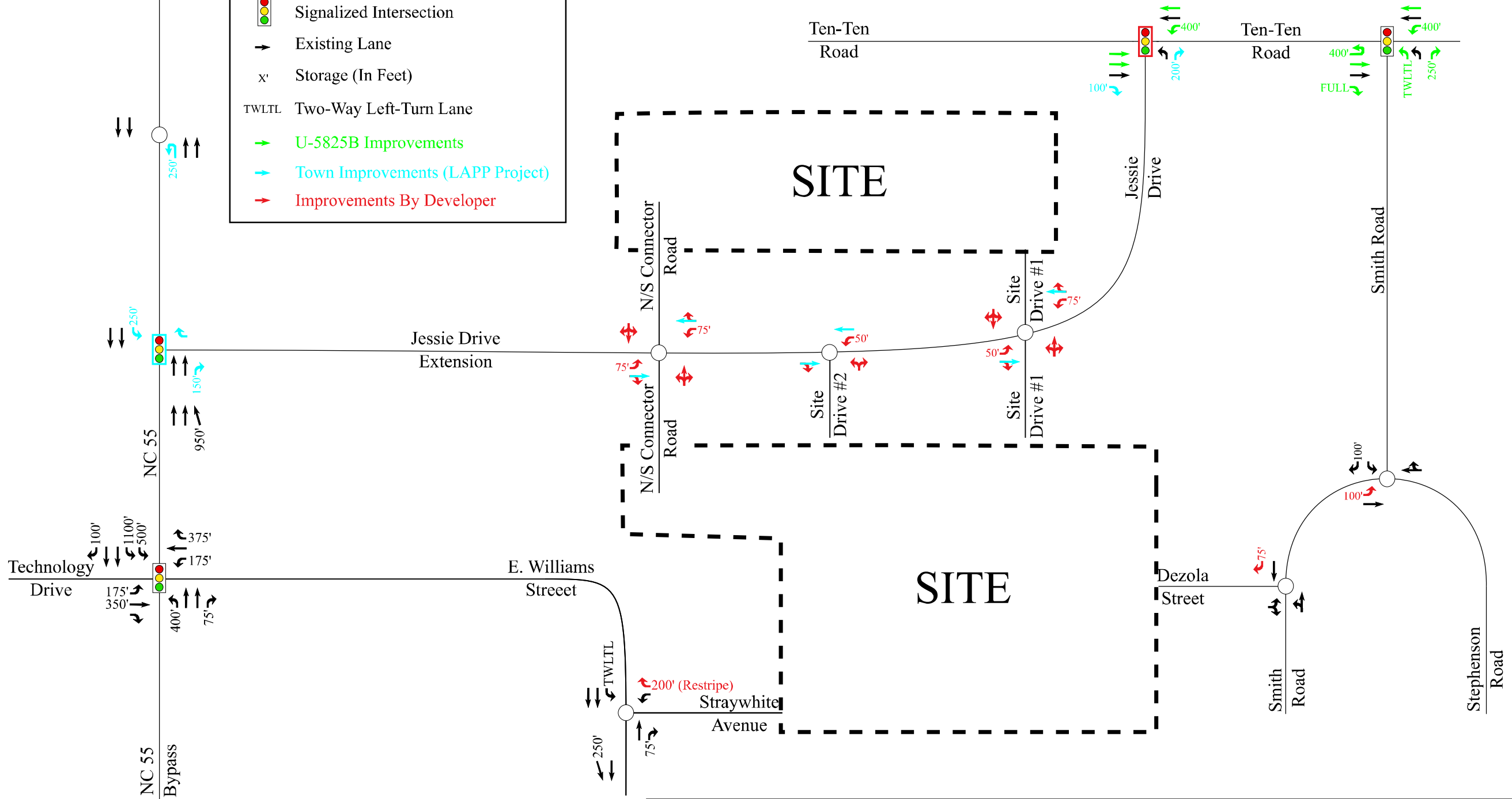



Horton Park Update
Apex, NC

Recommended Improvements - Phase 1	
Scale: Not to Scale	Figure 15A

LEGEND

- Unsignalized Intersection
- ◫ Signalized Intersection
- Existing Lane
- x' Storage (In Feet)
- TWLTL Two-Way Left-Turn Lane
- U-5825B Improvements
- Town Improvements (LAPP Project)
- Improvements By Developer



	<p>Horton Park Update Apex, NC</p>	<p>Recommended Improvements - Full Buildout</p>
	<p>Scale: Not to Scale Figure 15B</p>	



Charleston, SC - Charlotte, NC - Columbia, SC - Raleigh, NC - Richmond, VA - Winston-Salem, NC

TECHNICAL APPENDIX

APPENDIX A

MEMORANDUM OF UNDERSTANDING (MOU)

Nate Bouquin

From: Serge Grebenschikov <Serge.Grebenschikov@apexnc.org>
Sent: Friday, June 21, 2019 1:49 PM
To: Nate Bouquin; Brennan, Sean P; Wheeler, Millard S; Russell Dalton
Cc: Ishak, Doumit Y; Bunting, Clarence B; Walker, Braden M; Joshua Reinke
Subject: RE: Horton Park TIA Update MOU
Attachments: MOU - Horton Park TIA Update 6.21.19.pdf

Hi Nate,

Please see my comments attached. I would like to ask you to revise your trip distribution and assignment for the residential piece to more closely match the distribution in the original TIA and the TIA addendum completed in 2017. I don't believe that 15% of traffic will come to/from northwest NC 55, considering improvements on Ten Ten will make that a preferred route over the congested NC 55, (especially considering the tricky left turn movement from NC 55 onto E Williams St at Technology Drive, and the hassle of weaving through the Straywhite neighborhood).

Also please consider 5% coming from the south Via Stephenson Road as you did previously.

- 60% to/from the west via Ten-Ten Road
- 5% to/from the south via E. Williams Street
- 10% to/from the south via NC 55 Bypass
- 5% ← • ~~15%~~ to/from the northwest via NC 55
- 15% ← • ~~10%~~ to/from the east via Ten-Ten Road
- 5% to/from the south via Stephenson Road

Thank you

Serge Grebenschikov, PE
Traffic Engineer
Public Works & Transportation – Traffic
73 Hunter Street, 3rd Fl
PO Box 250
Apex, NC 27502
P: (919) 372-7448
E: Serge.Grebenschikov@apexnc.org

From: Nate Bouquin [mailto:nbouquin@rameykemp.com]
Sent: Friday, June 21, 2019 10:16 AM
To: Brennan, Sean P <spbrennan@ncdot.gov>; Wheeler, Millard S <mwheeler@ncdot.gov>; Russell Dalton <Russell.Dalton@apexnc.org>; Serge Grebenschikov <Serge.Grebenschikov@apexnc.org>
Cc: Ishak, Doumit Y <dishak@ncdot.gov>; Bunting, Clarence B <cbunting@ncdot.gov>; Walker, Braden M <bmwalker1@ncdot.gov>; Joshua Reinke <jreinke@rameykemp.com>
Subject: Horton Park TIA Update MOU

Gentlemen,

Per our meeting last week, attached is a MOU for the Horton Park TIA Update. This should have addressed everything discussed during our scoping meeting. We are hoping to have a quick turnaround on this project, so if we could get MOU comments back within the next couple business days we would really appreciate it.

A couple brief items that we would like to request for this:

- Town: TIA for the Stop & Go Gas Station
- NCDOT: 25% plans for U-5825B

Please let me know if there are any questions.

Have a great weekend everyone!

Nate Bouquin, EI
Transportation Associate



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919-987-1301 (Direct)

Proudly serving the Southeast since 1992.



Nate Bouquin

From: Brennan, Sean P <spbrennan@ncdot.gov>
Sent: Tuesday, June 25, 2019 11:43 AM
To: Nate Bouquin; Wheeler, Millard S; Russell Dalton; Serge Grebenschikov
Cc: Ishak, Doumit Y; Bunting, Clarence B; Walker, Braden M; Joshua Reinke
Subject: RE: [External] Horton Park TIA Update MOU

Follow Up Flag: Follow up
Flag Status: Flagged

Nate,

I'm okay with the MOU.

Regards,

Sean Brennan, PE
Senior Assistant District Engineer
Division 5/District 1
Department of Transportation

919-733-3213 office
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Email correspondence to and from this address is subject to the North Carolina Public Records Law and may be disclosed to third parties.

From: Nate Bouquin <nbouquin@rameykemp.com>
Sent: Friday, June 21, 2019 10:16 AM
To: Brennan, Sean P <spbrennan@ncdot.gov>; Wheeler, Millard S <mwheeler@ncdot.gov>; Russell Dalton <Russell.Dalton@apexnc.org>; Serge Grebenschikov <Serge.Grebenschikov@apexnc.org>
Cc: Ishak, Doumit Y <dishak@ncdot.gov>; Bunting, Clarence B <cbunting@ncdot.gov>; Walker, Braden M <bmwalker1@ncdot.gov>; Joshua Reinke <jreinke@rameykemp.com>
Subject: [External] Horton Park TIA Update MOU

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Gentlemen,

Per our meeting last week, attached is a MOU for the Horton Park TIA Update. This should have addressed everything discussed during our scoping meeting. We are hoping to have a quick turnaround on this project, so if we could get MOU comments back within the next couple business days we would really appreciate it.

A couple brief items that we would like to request for this:

- Town: TIA for the Stop & Go Gas Station
- NCDOT: 25% plans for U-5825B

Please let me know if there are any questions.

Have a great weekend everyone!

Nate Bouquin, EI
Transportation Associate



5808 Faringdon Place, Suite 100
Raleigh, NC 27609
919-872-5115 (Office)
919-987-1301 (Direct)

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June 21, 2019

Russell Dalton, PE
Town of Apex, Public Works & Transportation
919-249-3358
Russell.Dalton@apexnc.org

Reference: Horton Park TIA Update
Apex, North Carolina

Subject: Memorandum of Understanding for TIA Report

Dear Mr. Dalton:

The following is a Memorandum of Understanding (MOU) outlining the proposed scope of work and assumptions related to the Updated Traffic Impact Analysis (TIA) for the proposed Horton Park mixed use development, to be located west of Smith Road and north of Colby Chase Drive in Apex, North Carolina. Refer to the attached site location map. The development is expected to be phased with Phase 1 site access being provided via one (1) full movement intersection on Smith Road (at existing Dezola Street) and one (1) full movement intersection on Colby Chase Drive. Under Full Buildout conditions, the Jessie Drive extension to NC Highway 55 is assumed to be completed and the development is expected to connect to Jessie Drive. Full buildout site access will add two (2) full movement driveway connections to Jessie Drive. Phase 1 is expected to be built out in 2024 and full buildout is expected in 2026. The proposed site is expected to consist of approximately 290 single family homes and 134 townhomes under Phase 1 conditions. Full Buildout is expected to consist of a total of 290 single family homes, 212 townhomes, 356 apartments, 40,000 square feet (s.f.) of warehouse, and 40,000 s.f. of business park. A preliminary site plan is attached.

The contents of this MOU were determined during the TIA scoping meeting on June 10, 2019 attended by NCDOT District staff, NCDOT Congestion Management Staff, Town of Apex Staff, RKA, and Peak Engineering.

Study Area

Based on coordination with the Town of Apex (Town) and the North Carolina Department of Transportation (NCDOT), the study area is proposed to consist of the following intersections:

Phase 1:

- Ten-Ten Road and Smith Road
- Smith Road and Stephenson Road / Smith Road

- Smith Road and Dezola Street
- E. Williams Street and Straywhite Avenue
- E. Williams Street / Technology Drive and NC 55

Full Buildout:

- Ten-Ten Road and Smith Road
- Smith Road and Stephenson Road / Smith Road
- Smith Road and Dezola Street
- E. Williams Street and Straywhite Avenue
- E. Williams Street / Technology Drive and NC 55
- Jessie Drive Extension and NC 55
- Ten-Ten Road and Jessie Drive
- Jessie Drive and Proposed Site Driveway(s)

Existing Traffic Volumes

Peak hour turning movement counts utilized in the original Horton Park TIA will be utilized and grown to 2019 according to a 3% average annual growth rate for existing conditions. These traffic counts were conducted by RKA in May 2017 and March 2016 during the weekday AM (7:00 to 9:00) and weekday PM (4:00 to 6:00) peak hours while schools were in session. It should be noted that the counts at the intersection of E. Williams Street and Straywhite Avenue were determined according to a trip generation for the existing development and through volumes were pulled from the Bobbitt Road and E. Williams Street intersection. The traffic counts at the intersection of Technology Drive / E. Williams Street and NC 55 were determined according to the 2017 TIA conducted by Gannett Fleming for the Trinity Apex Development. Signal information was obtained from the NCDOT. Refer to the attached existing (2019) traffic volumes figure.

Trip Generation

Average weekday daily, AM peak hour, and PM peak hour trips for the proposed development were estimated using methodology contained within the ITE *Trip Generation Manual*, 10th Edition. Refer to Table 1 for a detailed breakdown of the proposed site trip generation under Phase 1 conditions and Table 2 for the site trip generation under Full Buildout conditions. In order to present a conservative analysis of Full Buildout conditions, internal capture was not included in this analysis.

Table 1: Trip Generation Summary – Phase 1

Land Use (ITE Code)	Intensity	Daily Traffic (vpd)	AM Peak Hour Trips (vph)		PM Peak Hour Trips (vph)	
			Enter	Enter	Enter	Exit
Single-Family Detached Housing (210)	290 Units	2,770	53	158	178	104
Multifamily Housing (Low-Rise) (220)	134 Units	970	14	49	49	28
Total Trips		3,740	67	207	227	132

It is estimated that Phase 1 of the proposed development will generate approximately 3,740 total site trips on the roadway network during a typical 24-hour weekday period. Of the daily traffic volume, it is anticipated that 274 trips (67 entering and 207 exiting) will occur during the AM peak hour and 359 (227 entering and 132 exiting) will occur during the PM peak hour.

Table 2: Trip Generation Summary – Full Buildout

Land Use (ITE Code)	Intensity	Daily Traffic (vpd)	AM Peak Hour Trips (vph)		PM Peak Hour Trips (vph)	
			Enter	Enter	Enter	Exit
Single-Family Detached Housing (210)	290 Units	2,770	53	158	178	104
Multifamily Housing (Low-Rise) (220)	568 Units	4,250	57	191	175	102
Warehouse (150)	40,000 s.f.	110	23	7	9	24
Business Park (770)	40,000 s.f.	1,140	49	9	17	48
Total Trips		8,270	182	365	379	278

It is estimated that the proposed development will generate approximately 8,270 total site trips on the roadway network during a typical 24-hour weekday period. Of the daily traffic volume, it is anticipated that 547 trips (182 entering and 365 exiting) will occur during the AM peak hour and 657 (379 entering and 278 exiting) will occur during the PM peak hour.

Trip Distribution and Assignment

The primary site trips are distributed based on the locations of existing traffic patterns, population centers adjacent to the study area, and engineering judgment. A summary of the overall residential distributions (Phase 1 and Full Buildout) is below:

- 60% to/from the west via Ten-Ten Road
- 5% to/from the south via E. Williams Street
- 10% to/from the south via NC 55 Bypass
- 15% to/from the northwest via NC 55
- 10% to/from the east via Ten-Ten Road

A summary of the overall industrial distribution is below:

- 45% to/from the west via Ten-Ten Road
- 5% to/from the south via Stephenson Road
- 5% to/from the south via NC 55 Bypass
- 15% to/from the northwest via NC 55
- 30% to/from the east via Ten-Ten Road

Refer to the attached trip distribution figure for a more detailed visualization of the proposed trip distribution.

Analysis Scenarios

All capacity analyses will be performed utilizing Synchro (Version 10.3). All study intersections will be analyzed during the weekday AM and PM peak hours under the following proposed traffic scenarios:

- Existing (2019)
- Background (2024)
- Background (2026)
- Combined (2024)
- Combined (2026)

Background Traffic Volumes

Based on a review of traffic growth patterns and adjacent development information, background traffic volumes will be determined by projecting existing (2019) traffic volumes to the build-out year using a proposed 3% annually compounded growth rate. It was also determined, through coordination with the Town and NCDOT that the following adjacent development would be included under background and combined conditions according to the approved TIA for the development:

- Stop & Go Gas Station

U-5825B is a funded NCDOT roadway project, expected to widen Ten-Ten Road to a four-lane median divided roadway from US Highway 1 to Kildaire Farm Road. This project is expected to begin construction in 2023. Per coordination with NCDOT and the Town, these improvements will be assumed complete under all future conditions and will be included according to the 25% concept plans provided by NCDOT.

NC-540 extension was also considered but is not expected to be completed by Full Buildout of the Horton Park development. Due to this, NC-540 extension will not be assumed in this analysis.

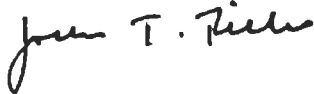
Report

The TIA report will be prepared based on the Town and NCDOT requirements.

If you find this memorandum of understanding acceptable, please let me know so that we may include it in the TIA report. If you have any questions or concerns, please do not hesitate to contact me.

Sincerely,

Ramey Kemp & Associates, Inc.



Joshua Reinke, P.E.
Transportation Engineer

Attachments: Site Location Map
Preliminary Site Plan
Existing (2019) Traffic Volumes Figure
Primary Site Trip Distribution Figures

Cc: Serge Grebenshikov, Town of Apex
Sean Brennan, NCDOT
Scott Wheeler, NCDOT
NCDOT Congestion Management

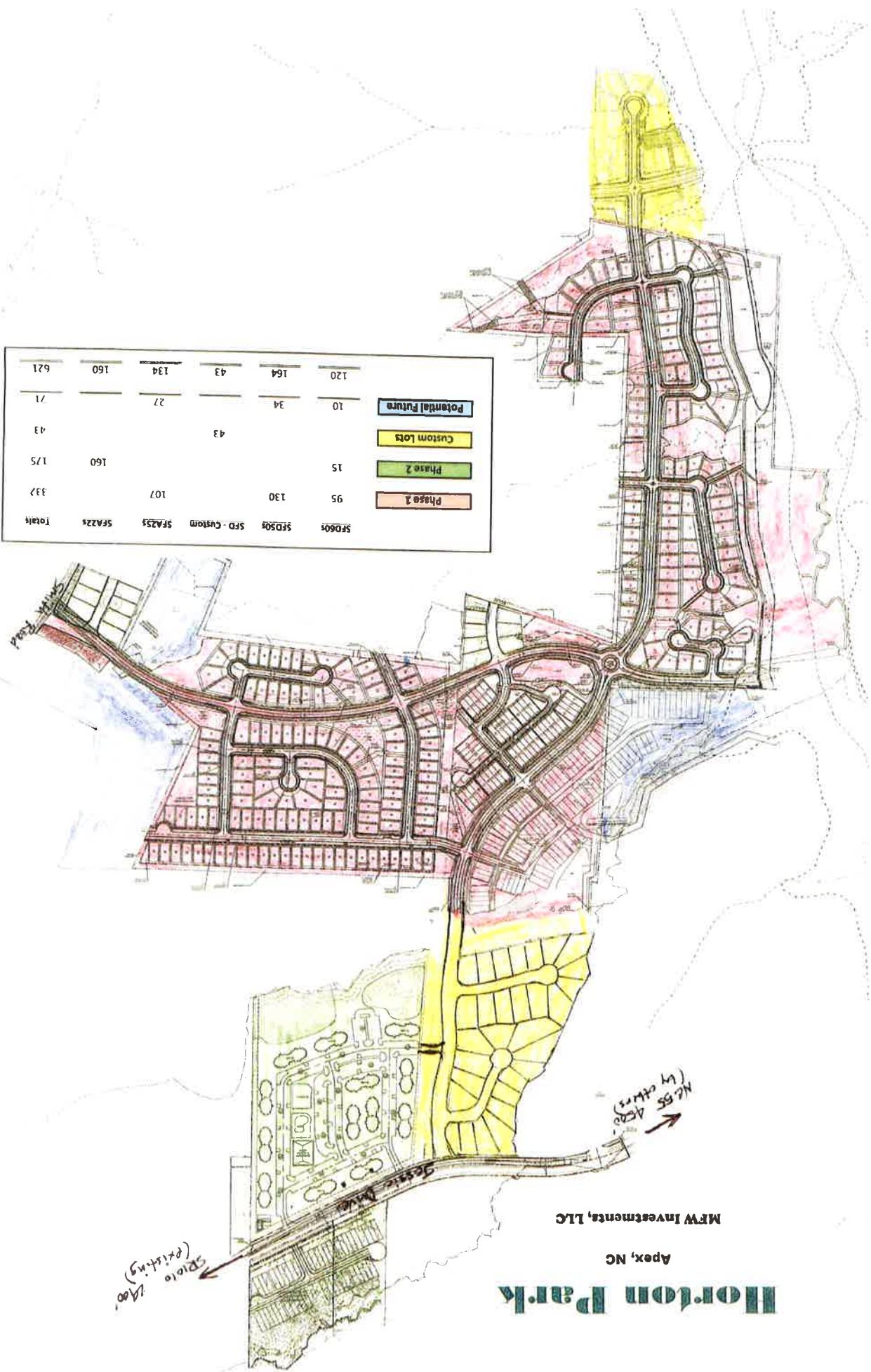
Horton Park

Apex, NC

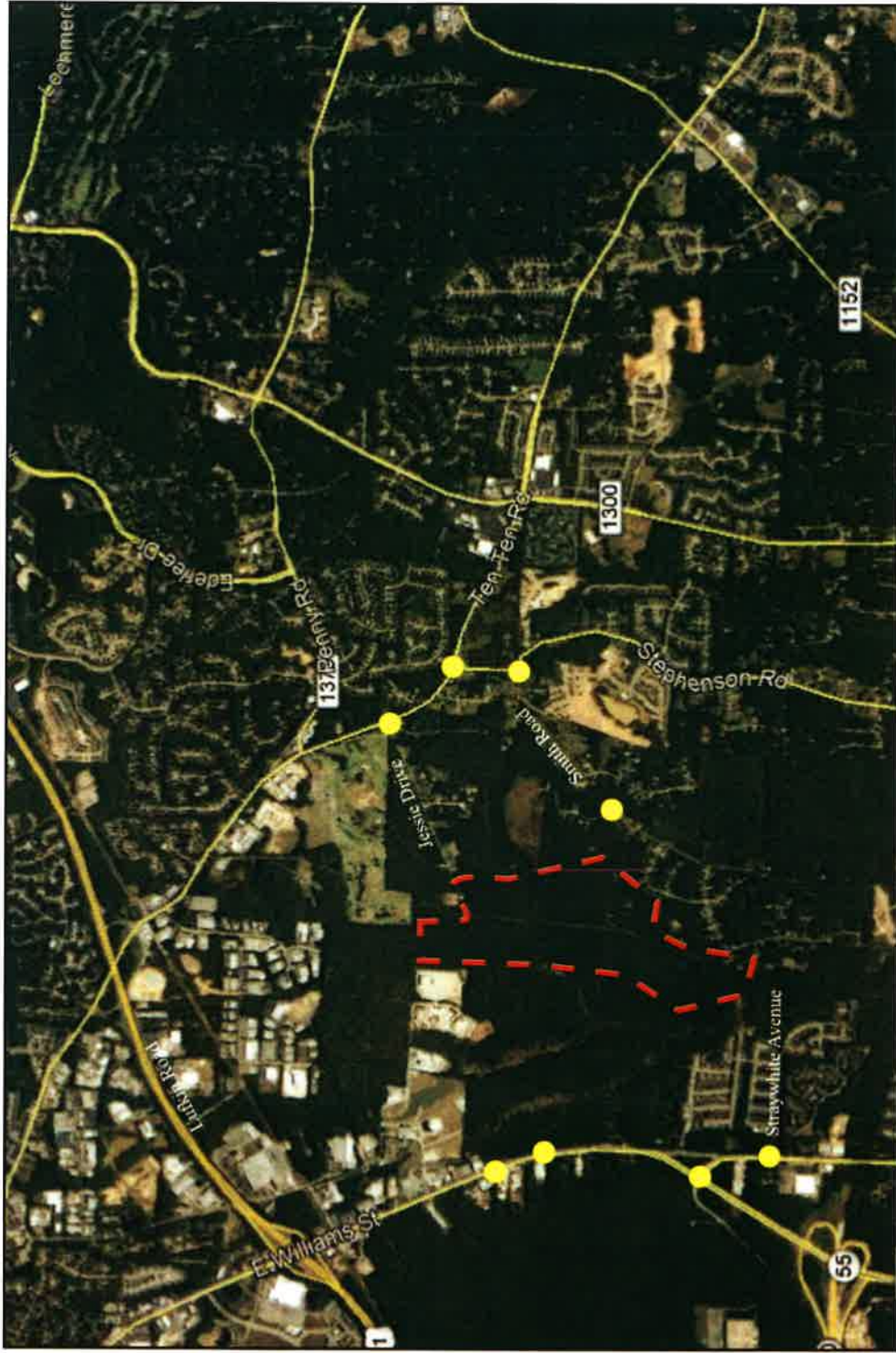
MFW Investments, LLC

NC 55 Ave
(by others)

Spiole (existing)
1A00



	SFD504	SFD - Custom	SFA255	SFA225	Totals
Potential Future	10	34	27	71	621
Custom Lots	15	160	175	337	160
Phase 2	95	130	107	332	134
Phase 3	120	164	43	327	43
Totals	220	428	311	959	621



LEGEND

- - - Proposed Site Location
- - - Study Area
- Study Intersection



Horton Park Update Apex, NC

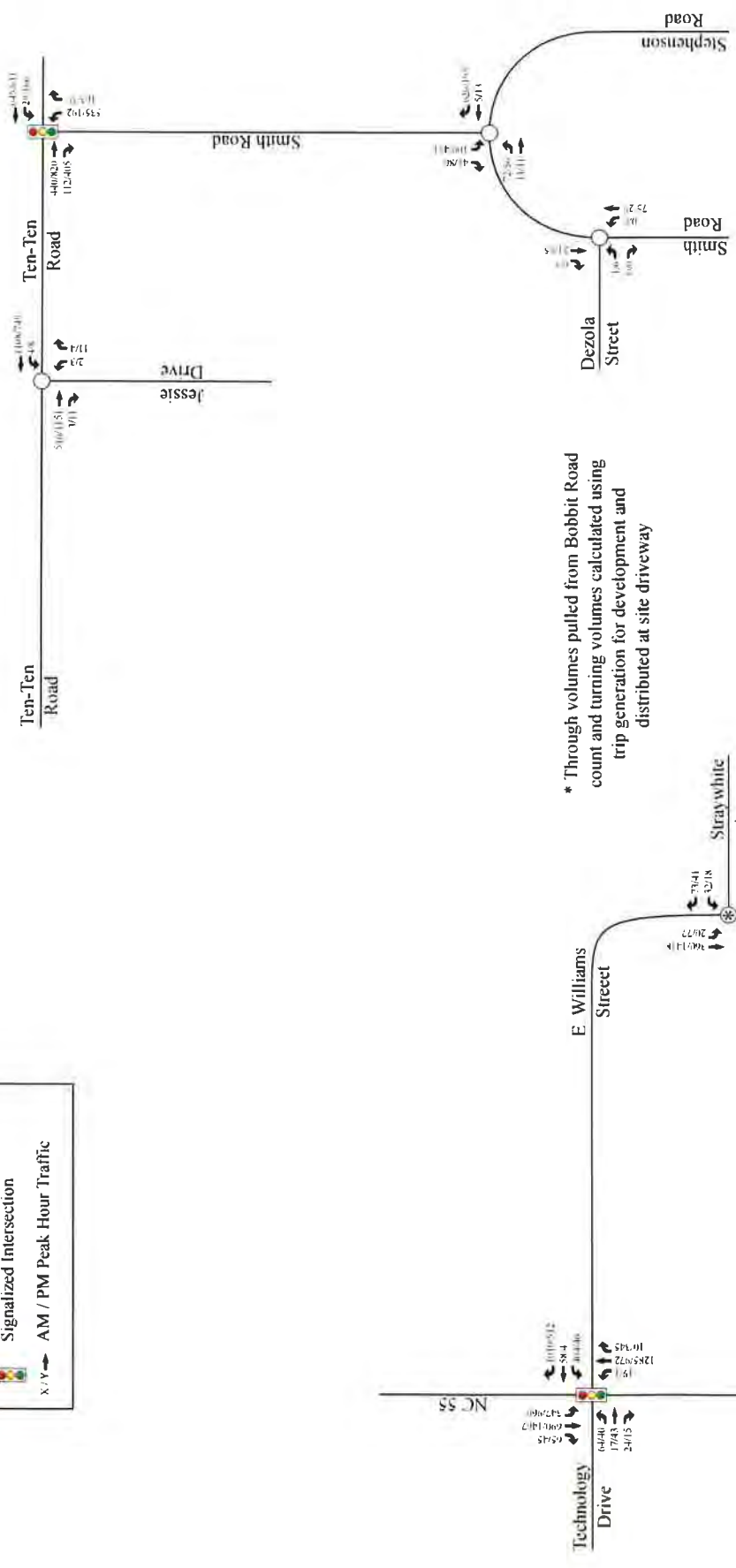
Site Location Map

Scale: Not to Scale

Figure 1

LEGEND

- Unsignalized Intersection
- ◫ Signalized Intersection
- X:Y → AM / PM Peak Hour Traffic



* Through volumes pulled from Bobbit Road count and turning volumes calculated using trip generation for development and distributed at site driveway



Horton Park Update
Apex, NC

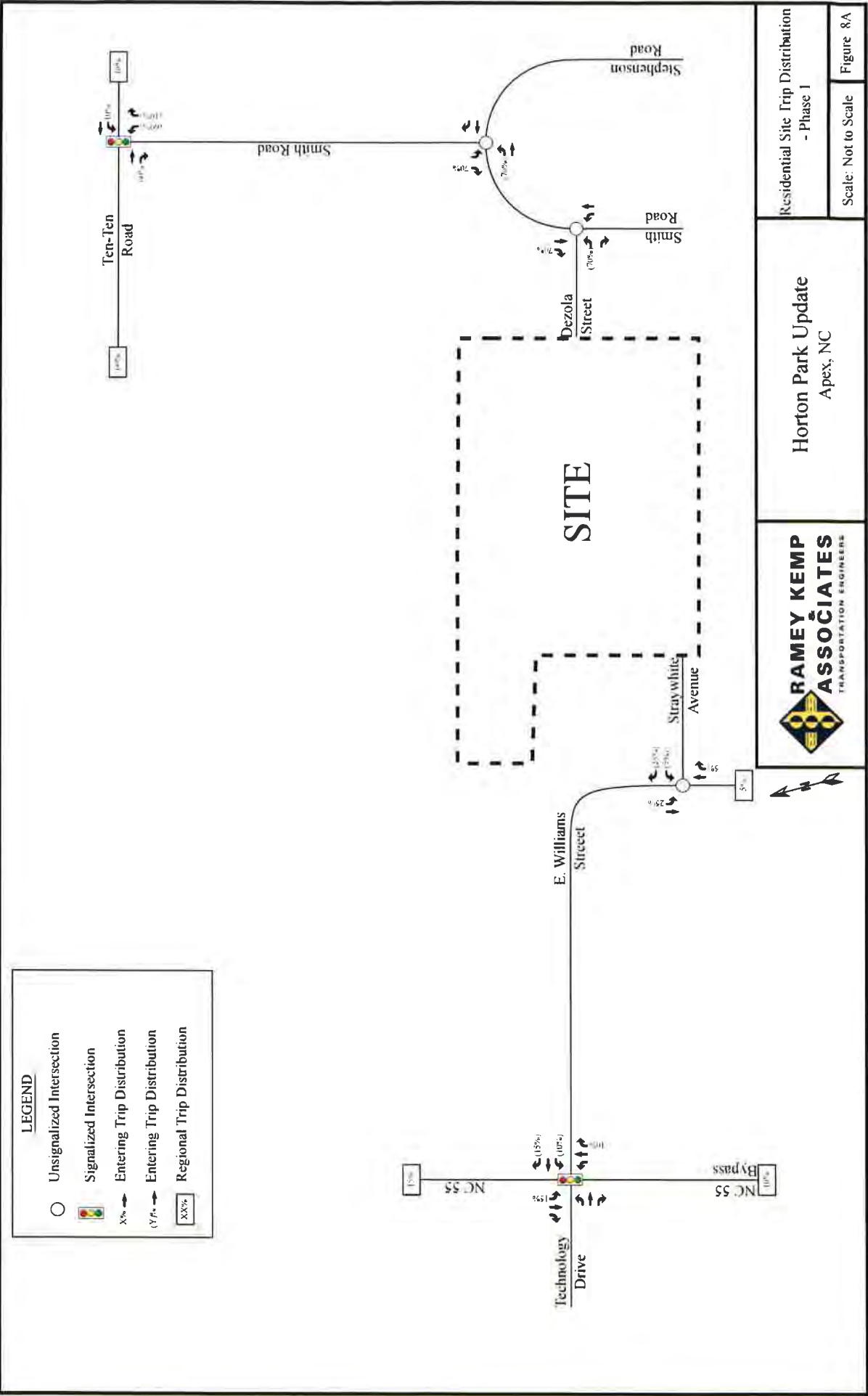
Existing (2019)
Peak Hour Traffic Volumes

Scale: Not to Scale

Figure 4

LEGEND

- Unsignalized Intersection
- 🚦 Signalized Intersection
- X% Entering Trip Distribution
- (Y%) Entering Trip Distribution
- XX% Regional Trip Distribution

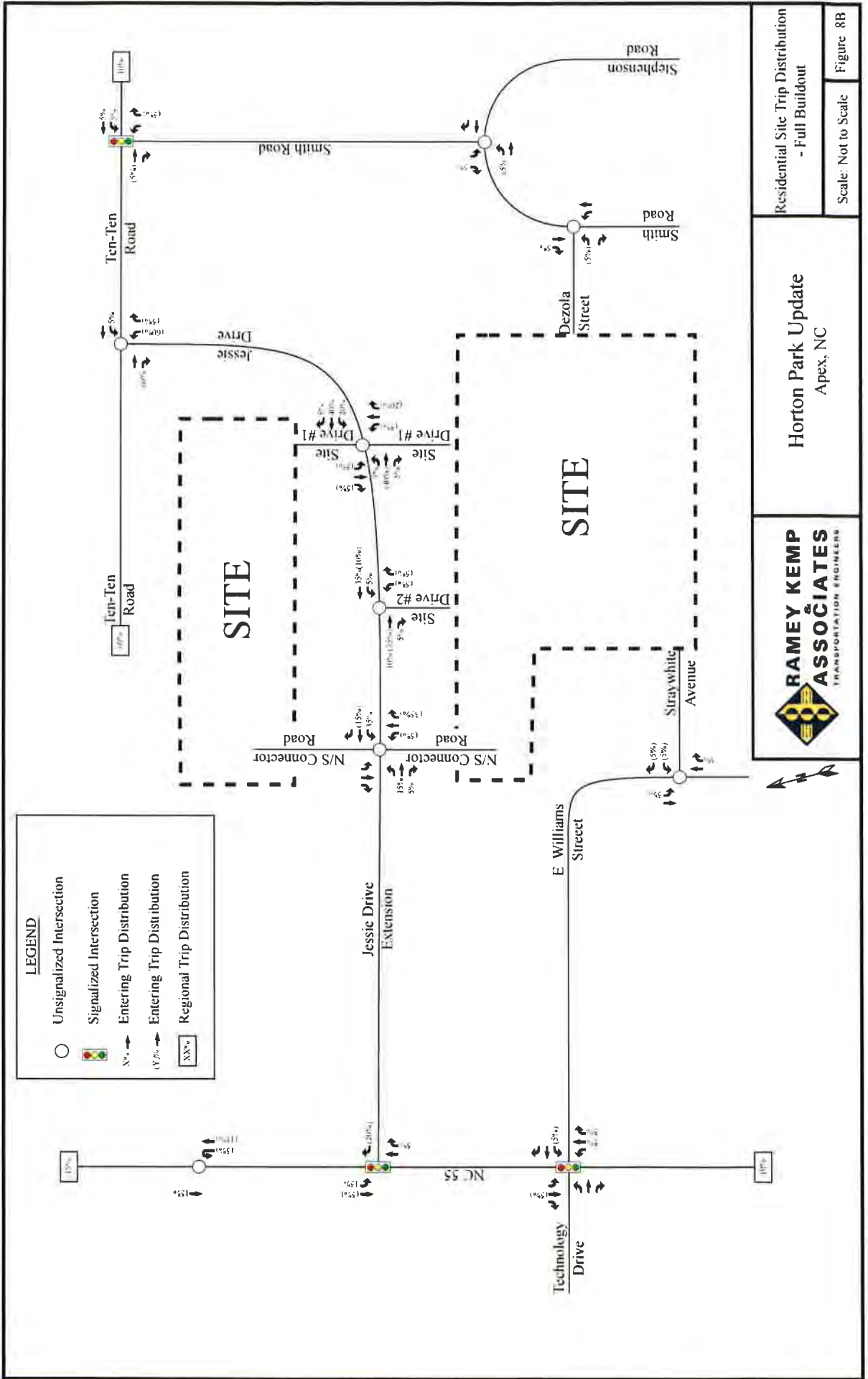


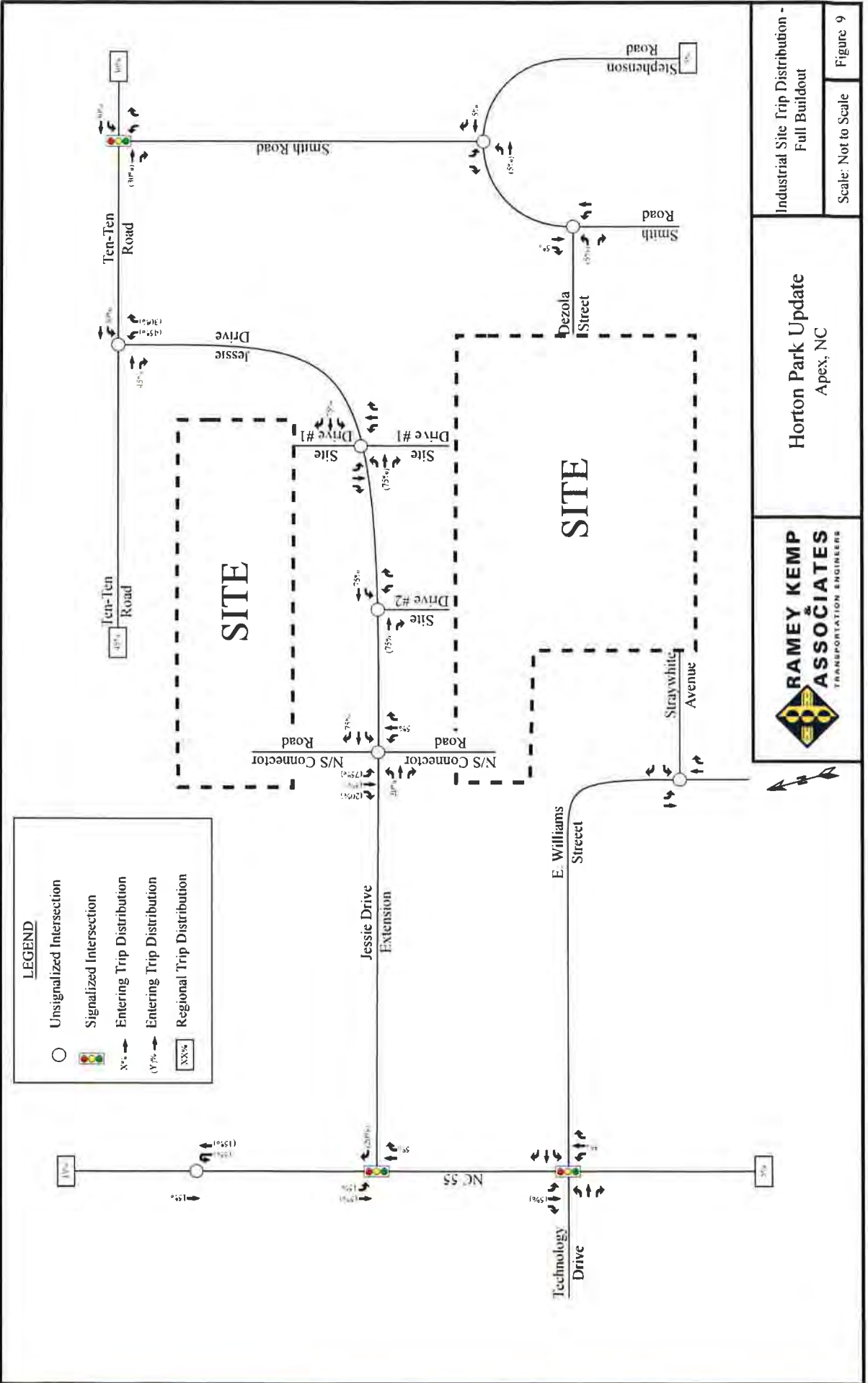
RAMEY KEMP ASSOCIATES
TRANSPORTATION ENGINEERS

Horton Park Update
Apex, NC

Residential Site Trip Distribution - Phase 1

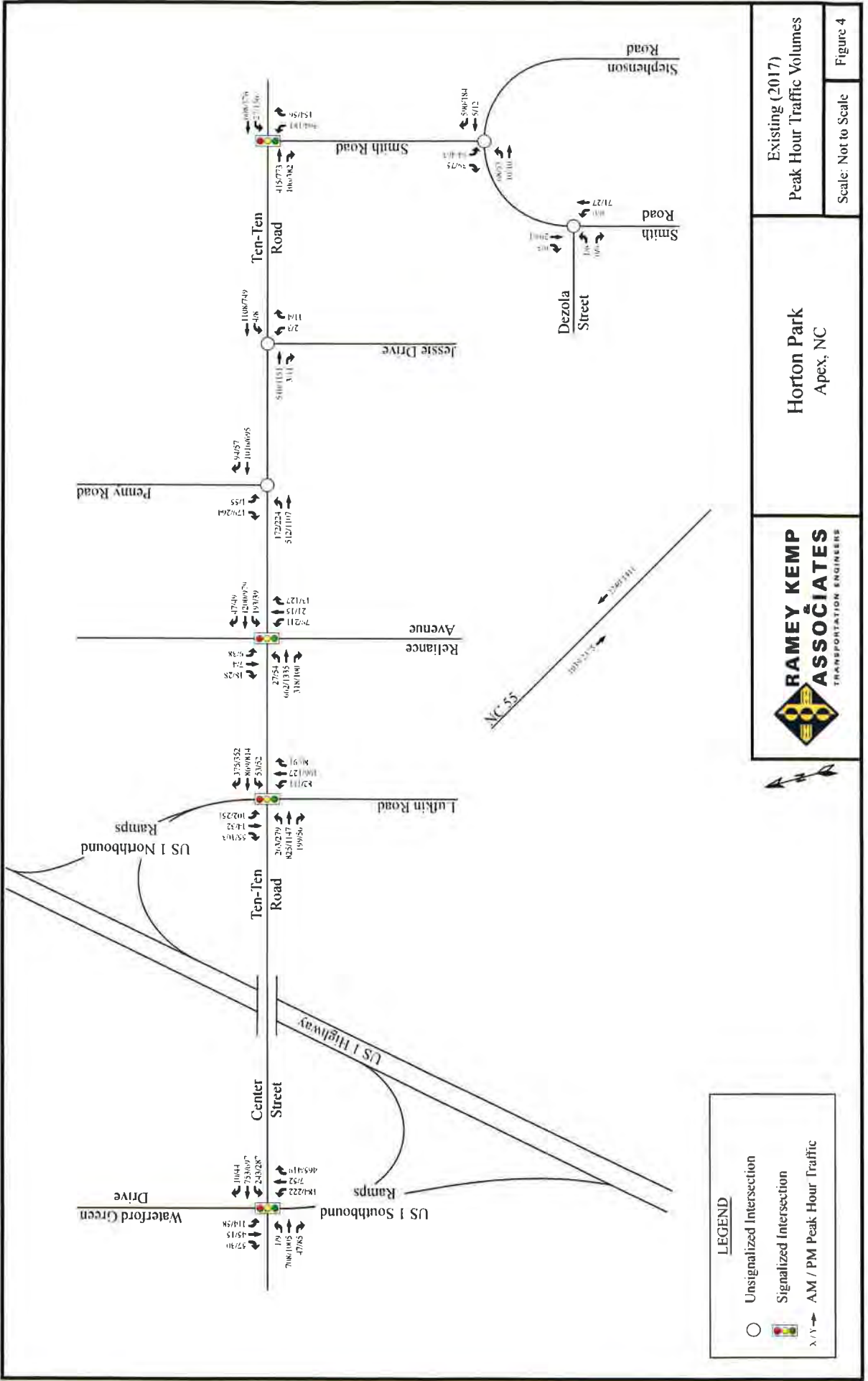
Scale: Not to Scale
Figure 8A

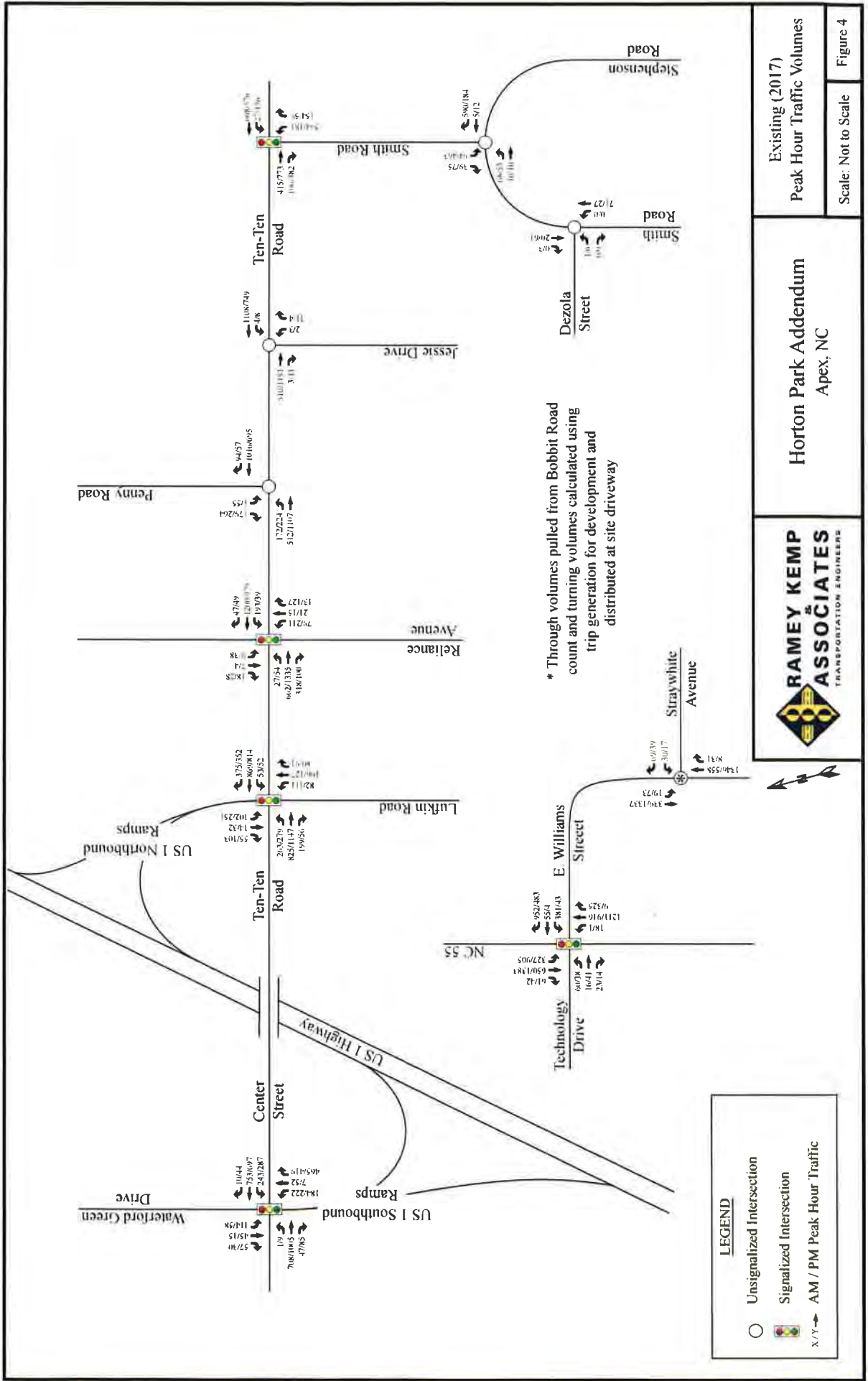




APPENDIX B

TRAFFIC COUNTS







RAMEY KEMP & ASSOCIATES

TRANSPORTATION ENGINEERS

5808 Faringdon Place, Suite 100
Raleigh, NC 27609
PH: 919 872-5115
FX: 919 878-5416

File Name : 8 Smith rd @ Dezola St
Site Code : 00000008
Start Date : 5/3/2017
Page No : 1

Groups Printed- Cars & - Trucks & - Semis

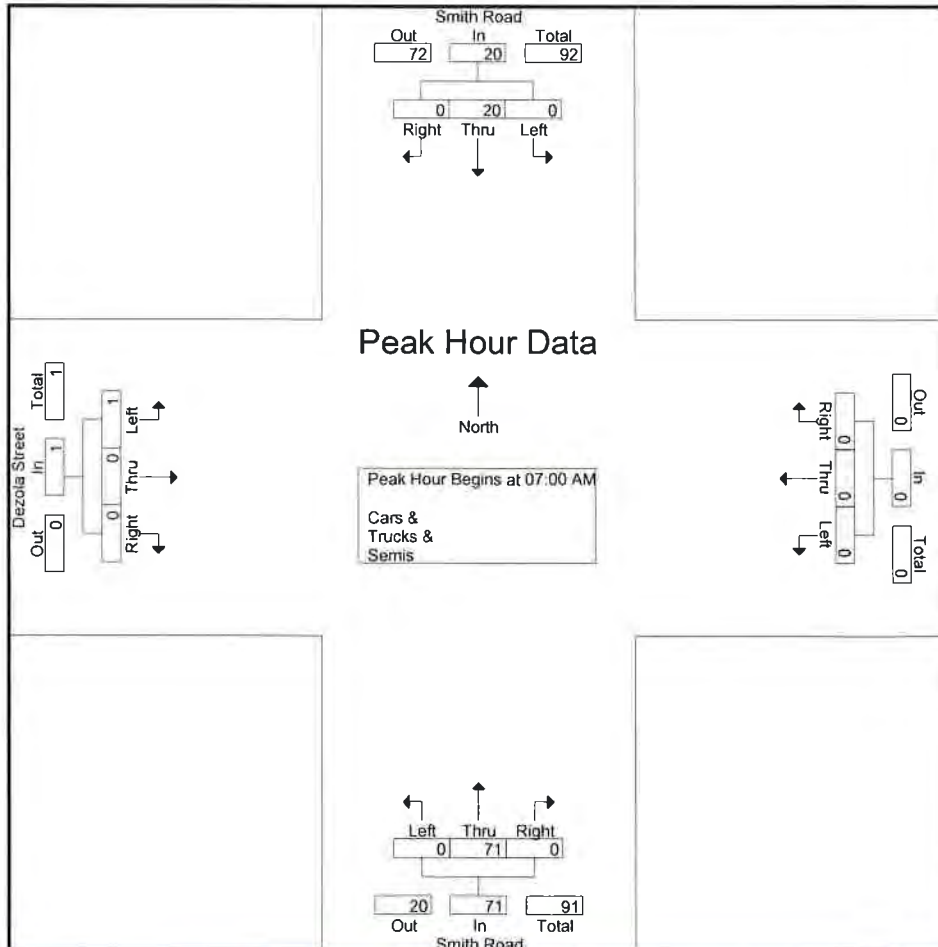
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	Right	Thru	Left	App Total	Right	Thru	Left	App Total	Right	Thru	Left	App Total	Right	Thru	Left	App Total	
07:00 AM	0	2	0	2	0	0	0	0	0	24	0	24	0	0	1	1	27
07:15 AM	0	5	0	5	0	0	0	0	0	17	0	17	0	0	0	0	22
07:30 AM	0	6	0	6	0	0	0	0	0	22	0	22	0	0	0	0	28
07:45 AM	0	7	0	7	0	0	0	0	0	8	0	8	0	0	0	0	15
Total	0	20	0	20	0	0	0	0	0	71	0	71	0	0	1	1	92
08:00 AM	0	6	0	6	0	0	0	0	0	15	0	15	0	0	0	0	21
08:15 AM	0	5	0	5	0	0	0	0	0	20	0	20	0	0	0	0	25
08:30 AM	0	5	0	5	0	0	0	0	0	14	0	14	0	0	0	0	19
08:45 AM	0	6	0	6	0	0	0	0	0	14	0	14	0	0	0	0	20
Total	0	22	0	22	0	0	0	0	0	63	0	63	0	0	0	0	85
BREAK																	
04:00 PM	0	7	0	7	0	0	0	0	0	8	0	8	0	0	0	0	15
04:15 PM	0	20	0	20	0	0	0	0	0	7	0	7	0	0	0	0	27
04:30 PM	1	16	0	17	0	0	0	0	0	9	0	9	0	0	6	6	32
04:45 PM	2	15	0	17	0	0	0	0	0	5	0	5	0	0	0	0	22
Total	3	58	0	61	0	0	0	0	0	29	0	29	0	0	6	6	96
05:00 PM	0	10	0	10	0	0	0	0	0	6	0	6	0	0	0	0	16
05:15 PM	0	9	0	9	0	0	0	0	0	7	0	7	0	0	0	0	16
05:30 PM	0	10	0	10	0	0	0	0	0	11	0	11	0	0	1	1	22
05:45 PM	1	7	0	8	0	0	0	0	0	12	0	12	0	0	0	0	20
Total	1	36	0	37	0	0	0	0	0	36	0	36	0	0	1	1	74
Grand Total	4	136	0	140	0	0	0	0	0	199	0	199	0	0	8	8	347
Apprch %	2.9	97.1	0		0	0	0		0	100	0		0	0	100		
Total %	1.2	39.2	0	40.3	0	0	0	0	0	57.3	0	57.3	0	0	2.3	2.3	
Cars &	4	121	0	125	0	0	0	0	0	185	0	185	0	0	8	8	318
% Cars &	100	89	0	89.3	0	0	0	0	0	93	0	93	0	0	100	100	91.6
Trucks &	0	14	0	14	0	0	0	0	0	13	0	13	0	0	0	0	27
% Trucks &	0	10.3	0	10	0	0	0	0	0	6.5	0	6.5	0	0	0	0	7.8
Semis	0	1	0	1	0	0	0	0	0	1	0	1	0	0	0	0	2
% Semis	0	0.7	0	0.7	0	0	0	0	0	0.5	0	0.5	0	0	0	0	0.6



5808 Faringdon Place, Suite 100
 Raleigh, NC 27609
 PH: 919 872-5115
 FX: 919 878-5416

File Name : 8 Smith rd @ Dezola St
 Site Code : 00000008
 Start Date : 5/3/2017
 Page No : 2

Start Time	Smith Road Southbound				Westbound				Smith Road Northbound				Dezola Street Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	27
07:15 AM	0	5	0	5	0	0	0	0	0	17	0	17	0	0	0	0	22
07:30 AM	0	6	0	6	0	0	0	0	0	22	0	22	0	0	0	0	28
07:45 AM	0	7	0	7	0	0	0	0	0	8	0	8	0	0	0	0	15
Total Volume	0	20	0	20	0	0	0	0	0	71	0	71	0	0	1	1	92
% App. Total	0	100	0		0	0	0		0	100	0		0	0	100		
PHF	.000	.714	.000	.714	.000	.000	.000	.000	.000	.740	.000	.740	.000	.000	.250	.250	.821

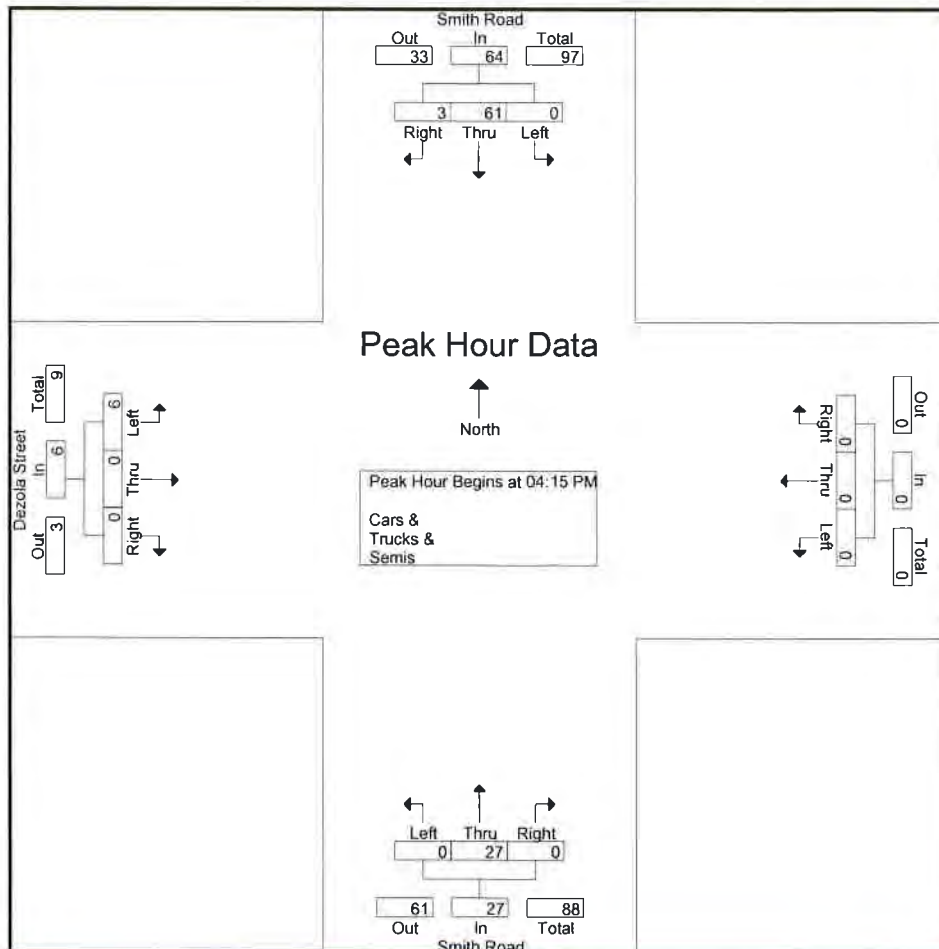




5808 Faringdon Place, Suite 100
 Raleigh, NC 27609
 PH: 919 872-5115
 FX: 919 878-5416

File Name : 8 Smith rd @ Dezola St
 Site Code : 00000008
 Start Date : 5/3/2017
 Page No : 3

Start Time	Smith Road Southbound				Westbound				Smith Road Northbound				Dezola Street Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	0	16	0	16	0	0	0	0	0	7	0	7	0	0	0	0	27
04:30 PM	1	16	0	17	0	0	0	0	0	0	0	0	0	0	6	6	32
04:45 PM	2	15	0	17	0	0	0	0	0	5	0	5	0	0	0	0	22
05:00 PM	0	10	0	10	0	0	0	0	0	6	0	6	0	0	0	0	16
Total Volume	3	61	0	64	0	0	0	0	0	27	0	27	0	0	6	6	97
% App. Total	4.7	95.3	0		0	0	0		0	100	0		0	0	100		
PHF	.375	.763	.000	.800	.000	.000	.000	.000	.000	.750	.000	.750	.000	.000	.250	.250	.758





**RAMEY KEMP
&
ASSOCIATES**
TRANSPORTATION ENGINEERS

5808 Faringdon Place, Suite 100
Raleigh, NC 27609
PH: 919 872-5115
FX: 919 878-5416

File Name : 7 Smith rd @ Stepenson
Site Code : 00000007
Start Date : 5/3/2017
Page No : 1

Groups Printed- Cars & - Trucks & - Semis

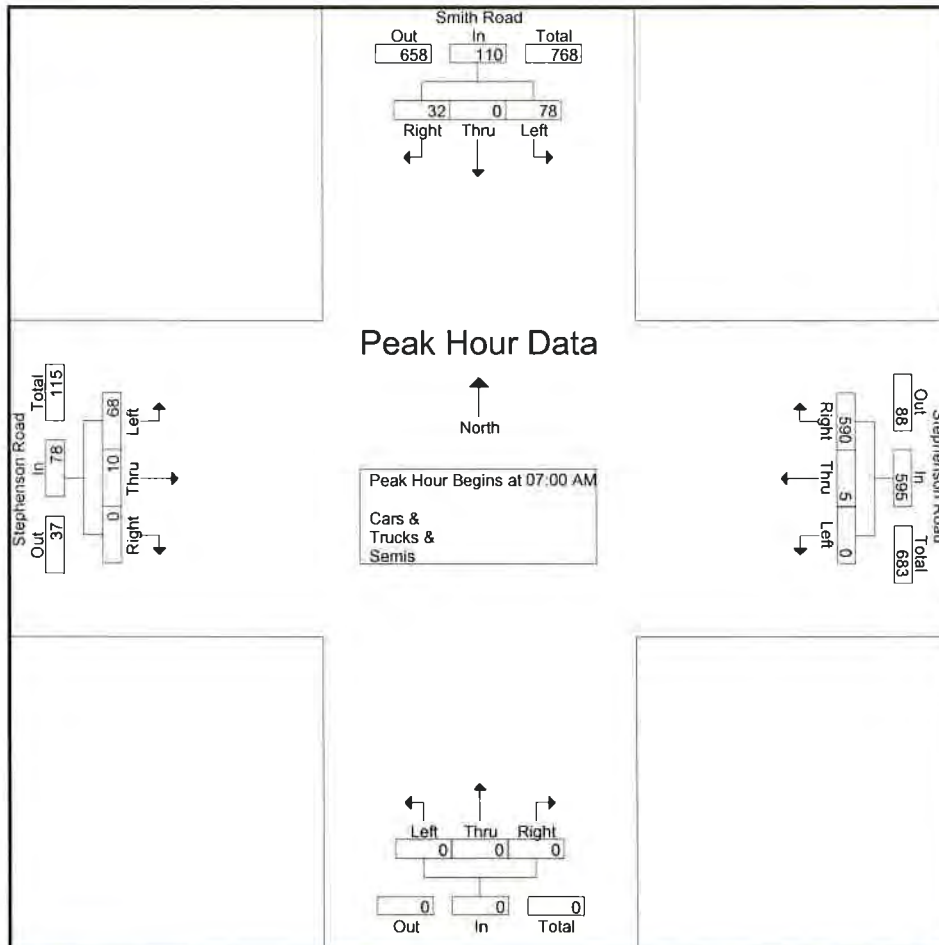
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07:15 AM	7	0	17	24	169	0	0	169	0	0	0	0	0	3	20	23	216
07:30 AM	10	0	19	29	157	0	0	157	0	0	0	0	0	3	12	15	201
07:45 AM	9	0	28	37	112	4	0	116	0	0	0	0	0	1	21	22	175
Total	32	0	78	110	590	5	0	595	0	0	0	0	0	10	68	78	783
08:00 AM	12	0	41	53	100	1	0	101	0	0	0	0	0	3	22	25	179
08:15 AM	11	0	29	40	92	4	0	96	0	0	0	0	0	4	27	31	167
08:30 AM	12	0	32	44	124	2	0	126	0	0	0	0	0	7	18	25	195
08:45 AM	6	0	28	34	135	4	0	139	0	0	0	0	0	5	25	30	203
Total	41	0	130	171	451	11	0	462	0	0	0	0	0	19	92	111	744
BREAK																	
04:00 PM	12	0	98	110	41	5	0	46	0	0	0	0	0	5	11	16	172
04:15 PM	23	0	90	113	35	8	0	43	0	0	0	0	0	3	21	24	180
04:30 PM	19	0	98	117	58	2	0	60	0	0	0	0	0	3	11	14	191
04:45 PM	19	0	107	126	38	4	0	42	0	0	0	0	0	6	11	17	185
Total	73	0	393	466	172	19	0	191	0	0	0	0	0	17	54	71	728
05:00 PM	18	0	101	119	37	0	0	37	0	0	0	0	0	2	9	11	167
05:15 PM	18	0	132	150	41	1	0	42	0	0	0	0	0	0	16	16	208
05:30 PM	20	0	123	143	56	7	0	63	0	0	0	0	0	2	17	19	225
05:45 PM	9	0	87	96	48	4	0	52	0	0	0	0	0	5	19	24	172
Total	65	0	443	508	182	12	0	194	0	0	0	0	0	9	61	70	772
Grand Total	211	0	1044	1255	1395	47	0	1442	0	0	0	0	0	55	275	330	3027
Apprch %	16.8	0	83.2		96.7	3.3	0		0	0	0		0	16.7	83.3		
Total %	7	0	34.5	41.5	46.1	1.6	0	47.6	0	0	0	0	0	1.8	9.1	10.9	
Cars &	196	0	1039	1235	1384	42	0	1426	0	0	0	0	0	47	261	308	2969
% Cars &	92.9	0	99.5	98.4	99.2	89.4	0	98.9	0	0	0	0	0	85.5	94.9	93.3	98.1
Trucks &	14	0	4	18	7	5	0	12	0	0	0	0	0	8	12	20	50
% Trucks &	6.6	0	0.4	1.4	0.5	10.6	0	0.8	0	0	0	0	0	14.5	4.4	6.1	1.7
Semis	1	0	1	2	4	0	0	4	0	0	0	0	0	0	2	2	8
% Semis	0.5	0	0.1	0.2	0.3	0	0	0.3	0	0	0	0	0	0	0.7	0.6	0.3



5808 Faringdon Place, Suite 100
 Raleigh, NC 27609
 PH: 919 872-5115
 FX: 919 878-5416

File Name : 7 Smith rd @ Stepenson
 Site Code : 00000007
 Start Date : 5/3/2017
 Page No : 2

Start Time	Smith Road Southbound				Stephenson Road Westbound				Northbound				Stephenson Road Eastbound				Int. Total
	Right	Thru	Left	App Total	Right	Thru	Left	App Total	Right	Thru	Left	App Total	Right	Thru	Left	App Total	
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	6	0	14	20	152	1	0	153	0	0	0	0	0	3	15	18	191
07:15 AM	7	0	17	24	157	0	0	157	0	0	0	0	0	3	20	23	216
07:30 AM	10	0	19	29	157	0	0	157	0	0	0	0	0	3	12	15	201
07:45 AM	9	0	28	37	112	4	0	116	0	0	0	0	0	1	21	22	175
Total Volume	32	0	78	110	590	5	0	595	0	0	0	0	0	10	68	78	783
% App. Total	29.1	0	70.9		99.2	0.8	0		0	0	0		0	12.8	87.2		
PHF	.800	.000	.696	.743	.873	.313	.000	.880	.000	.000	.000	.000	.000	.833	.810	.848	.906

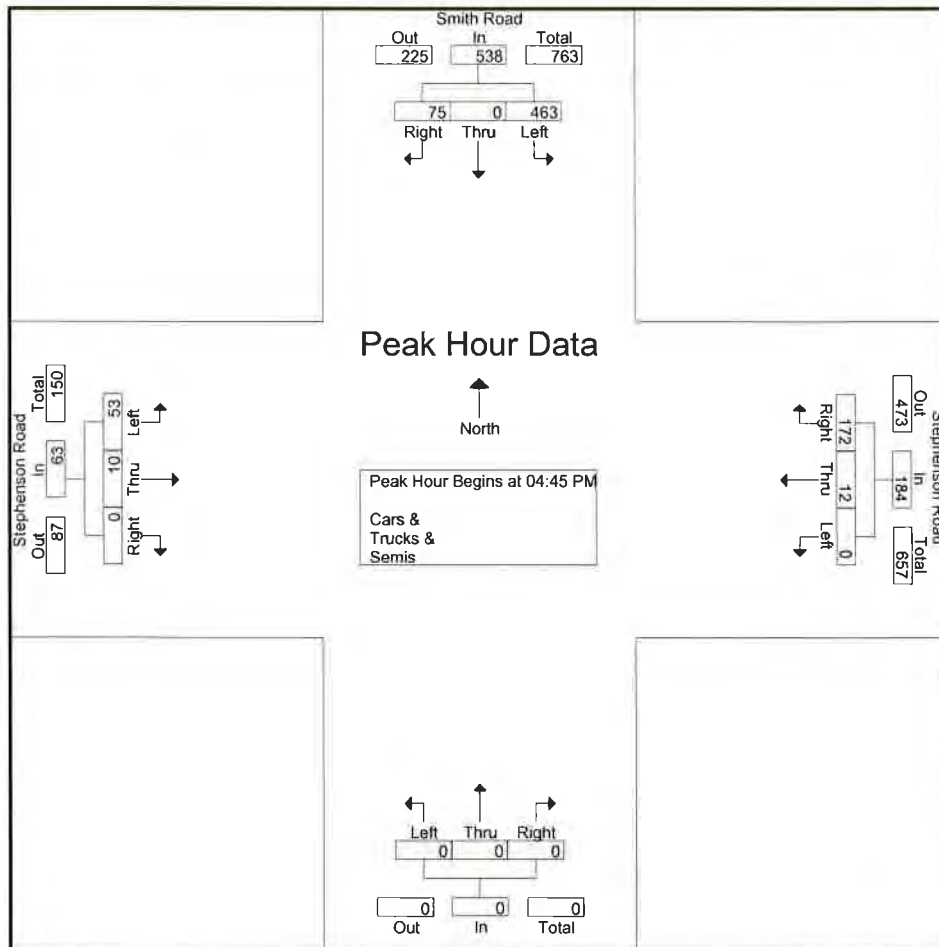




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File Name : 7 Smith rd @ Stepenson
 Site Code : 00000007
 Start Date : 5/3/2017
 Page No : 3

Start Time	Smith Road Southbound				Stephenson Road Westbound				Northbound				Stephenson Road Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	19	0	107	126	38	4	0	42	0	0	0	0	0	0	11	17	185
05:00 PM	18	0	101	119	37	0	0	37	0	0	0	0	0	2	9	11	167
05:15 PM	18	0	132	150	41	1	0	42	0	0	0	0	0	0	16	16	208
05:30 PM	20	0	123	143	56	7	0	63	0	0	0	0	0	2	17	19	225
Total Volume	75	0	463	538	172	12	0	184	0	0	0	0	0	10	53	63	785
% App. Total	13.9	0	86.1		93.5	6.5	0		0	0	0		0	15.9	84.1		
PHF	.938	.000	.877	.897	.768	.429	.000	.730	.000	.000	.000	.000	.000	.417	.779	.829	.872





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File Name : 5 Ten Ten @ Jessie
Site Code : 00000005
Start Date : 5/3/2017
Page No : 1

Groups Printed- Cars & - Trucks & - Semis

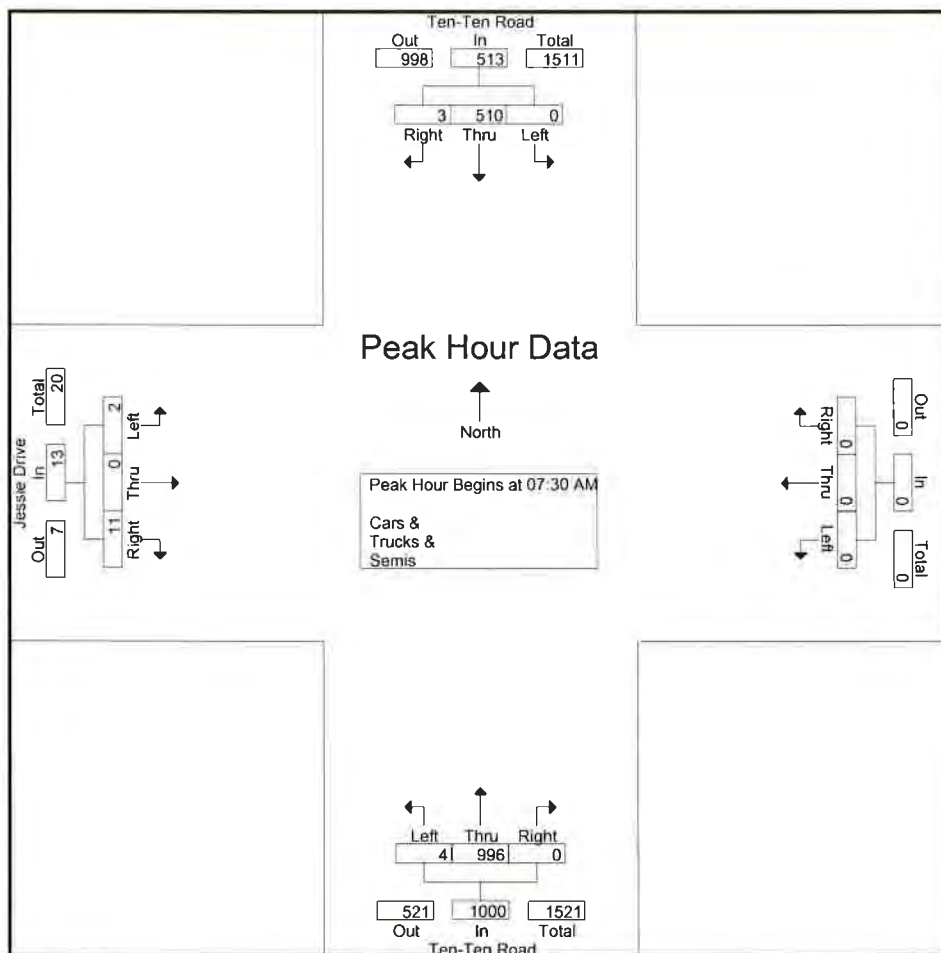
Start Time	Ten-Ten Road Southbound				Westbound				Ten-Ten Road Northbound				Jessie Drive Eastbound				Int. Total
	Right	Thru	Left	App Total	Right	Thru	Left	App Total	Right	Thru	Left	App Total	Right	Thru	Left	App Total	
07:00 AM	1	69	0	70	0	0	0	0	0	334	2	336	2	0	3	5	411
07:15 AM	0	101	0	101	0	0	0	0	0	286	0	286	1	0	0	1	388
07:30 AM	1	107	0	108	0	0	0	0	0	254	2	256	4	0	0	4	368
07:45 AM	1	111	0	112	0	0	0	0	0	272	2	274	4	0	2	6	392
Total	3	388	0	391	0	0	0	0	0	1146	6	1152	11	0	5	16	1559
08:00 AM	1	138	0	139	0	0	0	0	0	238	0	238	0	0	0	0	377
08:15 AM	0	154	0	154	0	0	0	0	0	232	0	232	3	0	0	3	389
08:30 AM	1	137	0	138	0	0	0	0	0	272	0	272	0	0	3	3	413
08:45 AM	0	141	0	141	0	0	0	0	0	278	0	278	1	0	3	4	423
Total	2	570	0	572	0	0	0	0	0	1020	0	1020	4	0	6	10	1602
BREAK																	
04:00 PM	6	288	0	294	0	0	0	0	0	148	1	149	0	0	1	1	444
04:15 PM	1	269	0	270	0	0	0	0	0	138	2	140	1	0	0	1	411
04:30 PM	1	231	0	232	0	0	0	0	0	179	2	181	3	0	0	3	416
04:45 PM	5	277	0	282	0	0	0	0	0	151	1	152	1	0	3	4	438
Total	13	1065	0	1078	0	0	0	0	0	616	6	622	5	0	4	9	1709
05:00 PM	0	284	0	284	0	0	0	0	0	177	1	178	1	0	1	2	464
05:15 PM	5	284	0	289	0	0	0	0	0	148	4	152	0	0	2	2	443
05:30 PM	3	240	0	243	0	0	0	0	0	193	2	195	2	0	0	2	440
05:45 PM	3	237	0	240	0	0	0	0	0	200	1	201	1	0	0	1	442
Total	11	1045	0	1056	0	0	0	0	0	718	8	726	4	0	3	7	1789
Grand Total	29	3068	0	3097	0	0	0	0	0	3500	20	3520	24	0	18	42	6659
Apprch %	0.9	99.1	0		0	0	0		0	99.4	0.6		57.1	0	42.9		
Total %	0.4	46.1	0	46.5	0	0	0	0	0	52.6	0.3	52.9	0.4	0	0.3	0.6	
Cars &	28	2962	0	2990	0	0	0	0	0	3392	19	3411	24	0	17	41	6442
% Cars &	96.6	96.5	0	96.5	0	0	0	0	0	96.9	95	96.9	100	0	94.4	97.6	96.7
Trucks &	0	95	0	95	0	0	0	0	0	93	1	94	0	0	1	1	190
% Trucks &	0	3.1	0	3.1	0	0	0	0	0	2.7	5	2.7	0	0	5.6	2.4	2.9
Semis	1	11	0	12	0	0	0	0	0	15	0	15	0	0	0	0	27
% Semis	3.4	0.4	0	0.4	0	0	0	0	0	0.4	0	0.4	0	0	0	0	0.4



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File Name : 5 Ten Ten @ Jessie
 Site Code : 00000005
 Start Date : 5/3/2017
 Page No : 2

Start Time	Ten-Ten Road Southbound				Westbound				Ten-Ten Road Northbound				Jessie Drive Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour Analysis From 07:15 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	1	107	0	108	0	0	0	0	0	254	2	256	4	0	0	4	368
07:45 AM	1	111	0	112	0	0	0	0	0	274	2	274	4	0	2	6	392
08:00 AM	1	138	0	139	0	0	0	0	0	238	0	238	0	0	0	0	377
08:15 AM	0	154	0	154	0	0	0	0	0	232	0	232	3	0	0	3	389
Total Volume	3	510	0	513	0	0	0	0	0	996	4	1000	11	0	2	13	1526
% App. Total	0.6	99.4	0		0	0	0		0	99.6	0.4		84.6	0	15.4		
PHF	750	828	000	833	000	000	000	000	000	915	500	912	688	000	250	542	973





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File Name : 5 Ten Ten @ Jessie
 Site Code : 00000005
 Start Date : 5/3/2017
 Page No : 3

Start Time	Ten-Ten Road Southbound				Westbound				Ten-Ten Road Northbound				Jessie Drive Eastbound				Int. Total
	Right	Thru	Left	App Total	Right	Thru	Left	App Total	Right	Thru	Left	App Total	Right	Thru	Left	App Total	
Peak Hour Analysis From 04:45 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	0	284	0	284	0	0	0	0	0	177	1	178	1	0	1	2	
05:15 PM	3	284	0	289	0	0	0	0	0	148	4	152	0	0	2	2	
05:30 PM	3	240	0	243	0	0	0	0	0	193	2	195	2	0	0	2	
05:45 PM	3	237	0	240	0	0	0	0	0	200	1	201	1	0	0	1	
Total Volume	11	1045	0	1056	0	0	0	0	0	718	8	726	4	0	3	7	
% App. Total	1	99	0		0	0	0		0	98.9	1.1		57.1	0	42.9		
PHF	.550	.920	.000	.913	.000	.000	.000	.000	.000	.898	.500	.903	.500	.000	.375	.875	



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TRANSPORTATION ENGINEERS

5808 Faringdon Place, Suite 100
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File Name : 6 Ten Ten @ Smith
Site Code : 00000006
Start Date : 5/3/2017
Page No : 1

Groups Printed- Cars & - Trucks & - Semis

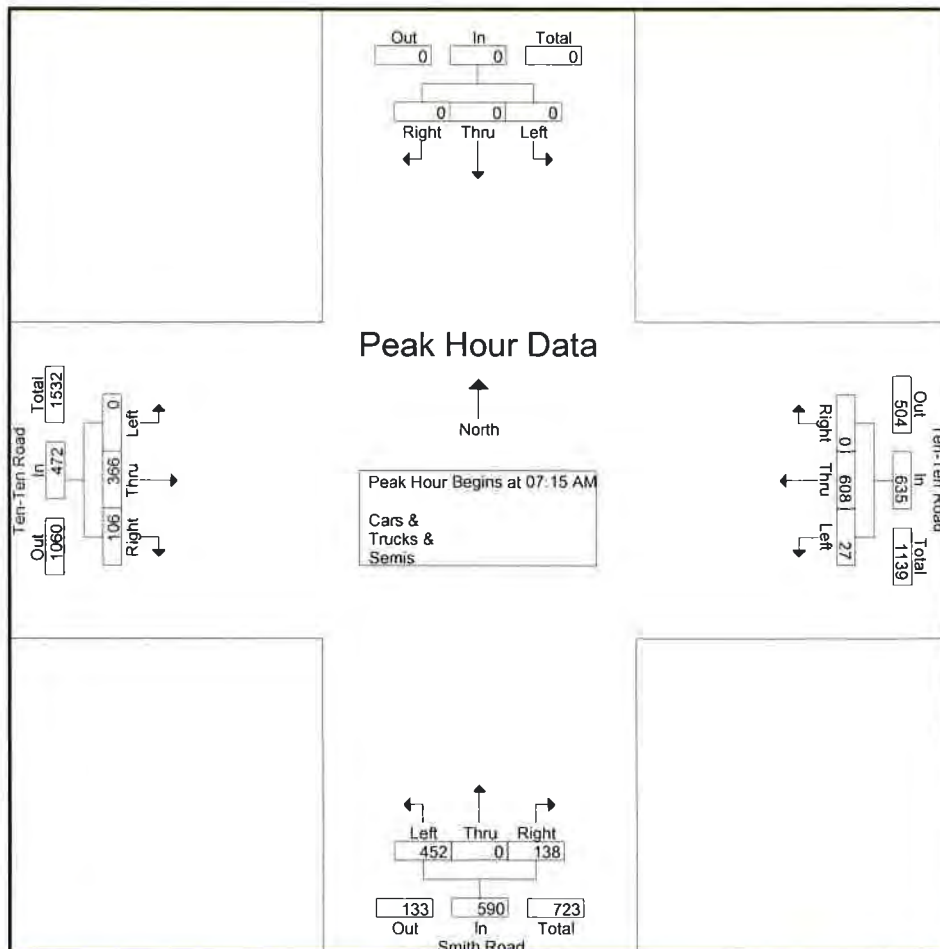
Start Time	Southbound				Ten-Ten Road Westbound				Smith Road Northbound				Ten-Ten Road Eastbound				Int. Total
	Right	Thru	Left	App Total	Right	Thru	Left	App Total	Right	Thru	Left	App Total	Right	Thru	Left	App Total	
07:00 AM	0	0	0	0	0	211	3	214	22	0	135	157	11	58	0	69	440
07:15 AM	0	0	0	0	0	165	6	171	42	0	128	170	20	81	0	101	442
07:30 AM	0	0	0	0	0	156	5	161	43	0	127	170	22	95	0	117	448
07:45 AM	0	0	0	0	0	157	7	164	30	0	93	123	34	81	0	115	402
Total	0	0	0	0	0	689	21	710	137	0	483	620	87	315	0	402	1732
08:00 AM	0	0	0	0	0	130	9	139	23	0	104	127	30	109	0	139	405
08:15 AM	0	0	0	0	0	137	9	146	17	0	94	111	39	122	0	161	418
08:30 AM	0	0	0	0	0	141	7	148	27	0	101	128	19	125	0	144	420
08:45 AM	0	0	0	0	0	165	6	171	33	0	110	143	19	121	0	140	454
Total	0	0	0	0	0	573	31	604	100	0	409	509	107	477	0	584	1697
BREAK																	
04:00 PM	0	0	0	0	0	110	18	128	13	0	27	40	77	219	0	296	464
04:15 PM	0	0	0	0	0	101	20	121	23	0	36	59	95	173	0	268	448
04:30 PM	0	0	0	0	0	124	31	155	12	0	53	65	90	166	0	256	476
04:45 PM	0	0	0	0	0	107	28	135	13	0	34	47	92	186	0	278	460
Total	0	0	0	0	0	442	97	539	61	0	150	211	354	744	0	1098	1848
05:00 PM	0	0	0	0	0	136	28	164	10	0	41	51	100	201	0	301	516
05:15 PM	0	0	0	0	0	111	52	163	19	0	41	60	97	195	0	292	515
05:30 PM	0	0	0	0	0	149	41	190	20	0	48	68	91	202	0	293	551
05:45 PM	0	0	0	0	0	160	26	186	7	0	51	58	73	175	0	248	492
Total	0	0	0	0	0	556	147	703	56	0	181	237	361	773	0	1134	2074
Grand Total	0	0	0	0	0	2260	296	2556	354	0	1223	1577	909	2309	0	3218	7351
Apprch %	0	0	0	0	0	88.4	11.6		22.4	0	77.6		28.2	71.8	0		
Total %	0	0	0	0	0	30.7	4	34.8	4.8	0	16.6	21.5	12.4	31.4	0	43.8	
Cars &	0	0	0	0	0	2219	290	2509	342	0	1206	1548	888	2264	0	3152	7209
% Cars &	0	0	0	0	0	98.2	98	98.2	96.6	0	98.6	98.2	97.7	98.1	0	97.9	98.1
Trucks &	0	0	0	0	0	32	5	37	12	0	14	26	20	35	0	55	118
% Trucks &	0	0	0	0	0	1.4	1.7	1.4	3.4	0	1.1	1.6	2.2	1.5	0	1.7	1.6
Semis	0	0	0	0	0	9	1	10	0	0	3	3	1	10	0	11	24
% Semis	0	0	0	0	0	0.4	0.3	0.4	0	0	0.2	0.2	0.1	0.4	0	0.3	0.3



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File Name : 6 Ten Ten @ Smith
 Site Code : 00000006
 Start Date : 5/3/2017
 Page No : 2

Start Time	Southbound				Ten-Ten Road Westbound				Smith Road Northbound				Ten-Ten Road Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour Analysis From 07:15 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	0	0	0	0	0	165	6	171	42	0	128	170	20	81	0	101	442
07:30 AM	0	0	0	0	0	156	5	161	43	0	127	170	22	95	0	117	448
07:45 AM	0	0	0	0	0	157	7	164	30	0	93	123	34	81	0	115	402
08:00 AM	0	0	0	0	0	130	9	139	23	0	104	127	30	109	0	139	405
Total Volume	0	0	0	0	0	608	27	635	138	0	452	590	106	366	0	472	1697
% App. Total	0	0	0	0	0	95.7	4.3		23.4	0	76.6		22.5	77.5	0		
PHF	.000	.000	.000	.000	.000	.921	.750	.928	.802	.000	.883	.868	.779	.839	.000	.849	.947

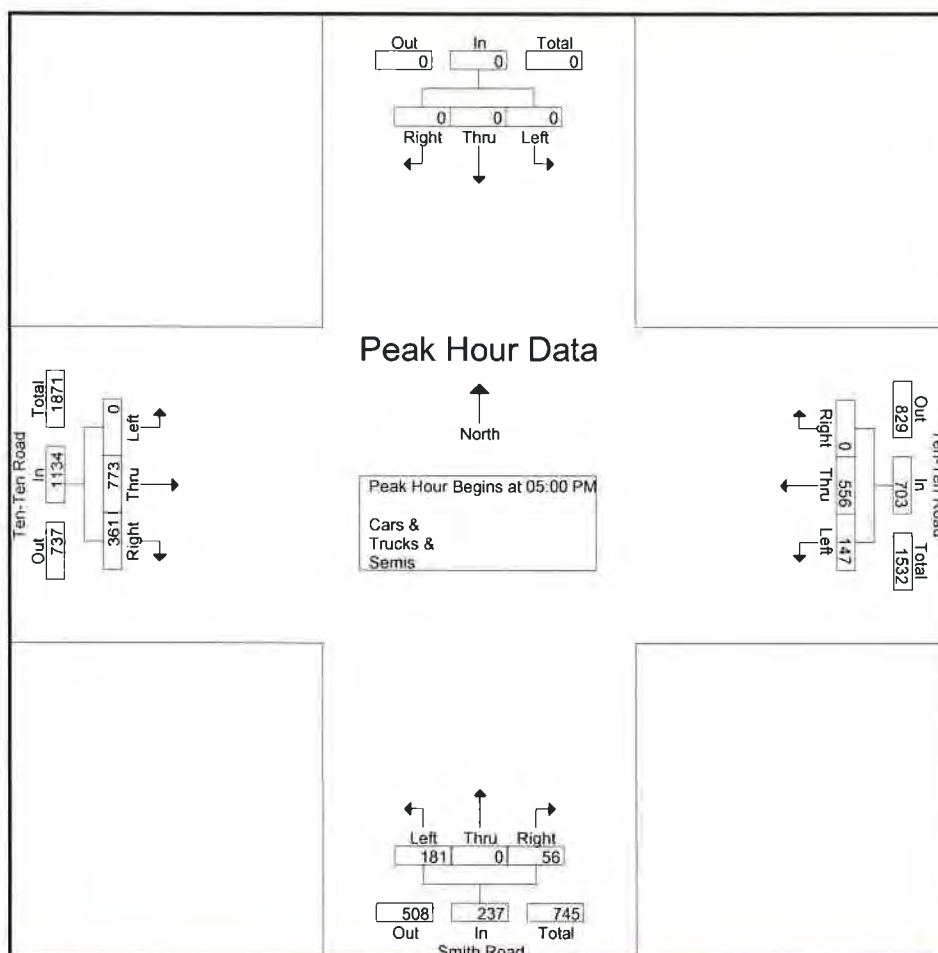




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File Name : 6 Ten Ten @ Smith
 Site Code : 00000006
 Start Date : 5/3/2017
 Page No : 3

Start Time	Southbound				Ten-Ten Road Westbound				Smith Road Northbound				Ten-Ten Road Eastbound				Int. Total
	Right	Thru	Left	App Total	Right	Thru	Left	App Total	Right	Thru	Left	App Total	Right	Thru	Left	App Total	
Peak Hour Analysis From 04:45 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	0	0	0	0	0	136	28	164	10	0	41	51	90	201	0	301	516
05:15 PM	0	0	0	0	0	111	22	133	19	0	41	60	97	195	0	292	515
05:30 PM	0	0	0	0	0	149	41	190	20	0	48	68	91	202	0	293	551
05:45 PM	0	0	0	0	0	160	26	186	7	0	51	58	73	175	0	248	492
Total Volume	0	0	0	0	0	556	147	703	56	0	181	237	361	773	0	1134	2074
% App. Total	0	0	0	0	0	79.1	20.9		23.6	0	76.4		31.8	68.2	0		
PHF	.000	.000	.000	.000	.000	.869	.707	.925	.700	.000	.887	.871	.903	.957	.000	.942	.941



APPENDIX C

SIGNAL PLANS

5 Phase Fully Actuated (Isolated)

NOTES

1. Refer to "Roadway Standard Drawings NC001" dated January 2012 and "Standard Specifications for Roads and Structures" dated January 2012. Do not program signal for late night finishing operation unless otherwise directed by Phas 1 order phase 5 may be lagged.
2. Set all detector units to presence mode.
3. Pavement markings are existing unless otherwise shown.

2070L LOOP & DETECTOR INSTALLATION

LOOP	INDUCTIVE LAYOUT		DETECTOR PROGRAMMING	
	WAVELENGTH (ft)	NUMBER OF DETECTORS	PHASE	DETECTOR TYPE
1A	540	2	1	Y
1B	540	2	2	Y
2A	540	2	3	Y
2B	540	2	4	Y
3A	540	2	5	Y
3B	540	2	6	Y
4A	540	2	7	Y
4B	540	2	8	Y
5A	540	2	9	Y
5B	540	2	10	Y
6A	540	2	11	Y
6B	540	2	12	Y
7A	540	2	13	Y
7B	540	2	14	Y
8A	540	2	15	Y
8B	540	2	16	Y
9A	540	2	17	Y
9B	540	2	18	Y

SIGNAL FACE I.D.

ALL SIGNS 12" X 12"

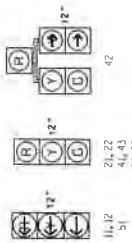
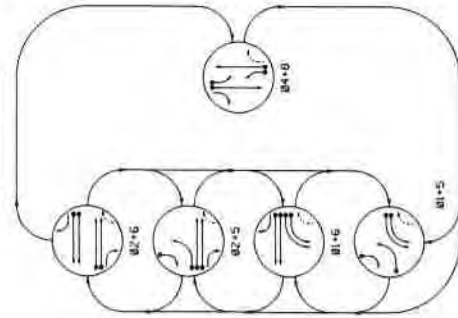


TABLE OF OPERATION

SIGNAL FACE	PHASE			
	PHASE 1	PHASE 2	PHASE 3	PHASE 4
1A, 12	Y	Y	Y	Y
2A, 2B	Y	Y	Y	Y
3A, 3B	Y	Y	Y	Y
4A, 4B	Y	Y	Y	Y
5A, 5B	Y	Y	Y	Y
6A, 6B	Y	Y	Y	Y
7A, 7B	Y	Y	Y	Y
8A, 8B	Y	Y	Y	Y
9A, 9B	Y	Y	Y	Y



PHASING DIAGRAM



OASIS 2070L TIMING CHART

SEQUENCE	PHASE			
	PHASE 1	PHASE 2	PHASE 3	PHASE 4
Green Time (s)	1.0	6.0	2.5	1.0
Yellow Time (s)	4.0	4.0	3.0	2.0
Red Time (s)	3.0	3.0	3.0	3.0
Start of Yellow (s)	3.5	3.2	2.5	1.5
Start of Green (s)	4.5	4.5	4.5	4.5
Start of Red (s)	4.5	4.5	4.5	4.5
Start of Yellow (s)	4.5	4.5	4.5	4.5
Start of Green (s)	4.5	4.5	4.5	4.5
Start of Red (s)	4.5	4.5	4.5	4.5
Start of Yellow (s)	4.5	4.5	4.5	4.5
Start of Green (s)	4.5	4.5	4.5	4.5
Start of Red (s)	4.5	4.5	4.5	4.5
Start of Yellow (s)	4.5	4.5	4.5	4.5
Start of Green (s)	4.5	4.5	4.5	4.5
Start of Red (s)	4.5	4.5	4.5	4.5
Start of Yellow (s)	4.5	4.5	4.5	4.5
Start of Green (s)	4.5	4.5	4.5	4.5
Start of Red (s)	4.5	4.5	4.5	4.5
Start of Yellow (s)	4.5	4.5	4.5	4.5
Start of Green (s)	4.5	4.5	4.5	4.5
Start of Red (s)	4.5	4.5	4.5	4.5
Start of Yellow (s)	4.5	4.5	4.5	4.5
Start of Green (s)	4.5	4.5	4.5	4.5
Start of Red (s)	4.5	4.5	4.5	4.5
Start of Yellow (s)	4.5	4.5	4.5	4.5
Start of Green (s)	4.5	4.5	4.5	4.5
Start of Red (s)	4.5	4.5	4.5	4.5
Start of Yellow (s)	4.5	4.5	4.5	4.5
Start of Green (s)	4.5	4.5	4.5	4.5
Start of Red (s)	4.5	4.5	4.5	4.5
Start of Yellow (s)	4.5	4.5	4.5	4.5
Start of Green (s)	4.5	4.5	4.5	4.5
Start of Red (s)	4.5	4.5	4.5	4.5
Start of Yellow (s)	4.5	4.5	4.5	4.5
Start of Green (s)	4.5	4.5	4.5	4.5
Start of Red (s)	4.5	4.5	4.5	4.5
Start of Yellow (s)	4.5	4.5	4.5	4.5
Start of Green (s)	4.5	4.5	4.5	4.5
Start of Red (s)	4.5	4.5	4.5	4.5
Start of Yellow (s)	4.5	4.5	4.5	4.5
Start of Green (s)	4.5	4.5	4.5	4.5
Start of Red (s)	4.5	4.5	4.5	4.5
Start of Yellow (s)	4.5	4.5	4.5	4.5
Start of Green (s)	4.5	4.5	4.5	4.5
Start of Red (s)	4.5	4.5	4.5	4.5
Start of Yellow (s)	4.5	4.5	4.5	4.5
Start of Green (s)	4.5	4.5	4.5	4.5
Start of Red (s)	4.5	4.5	4.5	4.5
Start of Yellow (s)	4.5	4.5	4.5	4.5
Start of Green (s)	4.5	4.5	4.5	4.5
Start of Red (s)	4.5	4.5	4.5	4.5
Start of Yellow (s)	4.5	4.5	4.5	4.5
Start of Green (s)	4.5	4.5	4.5	4.5
Start of Red (s)	4.5	4.5	4.5	4.5
Start of Yellow (s)	4.5	4.5	4.5	4.5
Start of Green (s)	4.5	4.5	4.5	4.5
Start of Red (s)	4.5	4.5	4.5	4.5
Start of Yellow (s)	4.5	4.5	4.5	4.5
Start of Green (s)	4.5	4.5	4.5	4.5
Start of Red (s)	4.5	4.5	4.5	4.5
Start of Yellow (s)	4.5	4.5	4.5	4.5
Start of Green (s)	4.5	4.5	4.5	4.5
Start of Red (s)	4.5	4.5	4.5	4.5
Start of Yellow (s)	4.5	4.5	4.5	4.5
Start of Green (s)	4.5	4.5	4.5	4.5
Start of Red (s)	4.5	4.5	4.5	4.5
Start of Yellow (s)	4.5	4.5	4.5	4.5
Start of Green (s)	4.5	4.5	4.5	4.5
Start of Red (s)	4.5	4.5	4.5	4.5
Start of Yellow (s)	4.5	4.5	4.5	4.5
Start of Green (s)	4.5	4.5	4.5	4.5
Start of Red (s)	4.5	4.5	4.5	4.5
Start of Yellow (s)	4.5	4.5	4.5	4.5
Start of Green (s)	4.5	4.5	4.5	4.5
Start of Red (s)	4.5	4.5	4.5	4.5
Start of Yellow (s)	4.5	4.5	4.5	4.5
Start of Green (s)	4.5	4.5	4.5	4.5
Start of Red (s)	4.5	4.5	4.5	4.5
Start of Yellow (s)	4.5	4.5	4.5	4.5
Start of Green (s)	4.5	4.5	4.5	4.5
Start of Red (s)	4.5	4.5	4.5	4.5
Start of Yellow (s)	4.5	4.5	4.5	4.5
Start of Green (s)	4.5	4.5	4.5	4.5
Start of Red (s)	4.5	4.5	4.5	4.5
Start of Yellow (s)	4.5	4.5	4.5	4.5
Start of Green (s)	4.5	4.5	4.5	4.5
Start of Red (s)	4.5	4.5	4.5	4.5
Start of Yellow (s)	4.5	4.5	4.5	4.5
Start of Green (s)	4.5	4.5	4.5	4.5
Start of Red (s)	4.5	4.5	4.5	4.5
Start of Yellow (s)	4.5	4.5	4.5	4.5
Start of Green (s)	4.5	4.5	4.5	4.5
Start of Red (s)	4.5	4.5	4.5	4.5
Start of Yellow (s)	4.5	4.5	4.5	4.5
Start of Green (s)	4.5	4.5	4.5	4.5
Start of Red (s)	4.5	4.5	4.5	4.5
Start of Yellow (s)	4.5	4.5	4.5	4.5
Start of Green (s)	4.5	4.5	4.5	4.5
Start of Red (s)	4.5	4.5	4.5	4.5
Start of Yellow (s)	4.5	4.5	4.5	4.5
Start of Green (s)	4.5	4.5	4.5	4.5
Start of Red (s)	4.5	4.5	4.5	4.5
Start of Yellow (s)	4.5	4.5	4.5	4.5
Start of Green (s)	4.5	4.5	4.5	4.5
Start of Red (s)	4.5	4.5	4.5	4.5
Start of Yellow (s)	4.5	4.5	4.5	4.5
Start of Green (s)	4.5	4.5	4.5	4.5
Start of Red (s)	4.5	4.5	4.5	4.5
Start of Yellow (s)	4.5	4.5	4.5	4.5
Start of Green (s)	4.5	4.5	4.5	4.5
Start of Red (s)	4.5	4.5	4.5	4.5
Start of Yellow (s)	4.5	4.5	4.5	4.5
Start of Green (s)	4.5	4.5	4.5	4.5
Start of Red (s)	4.5	4.5	4.5	4.5
Start of Yellow (s)	4.5	4.5	4.5	4.5
Start of Green (s)	4.5	4.5	4.5	4.5
Start of Red (s)	4.5	4.5	4.5	4.5
Start of Yellow (s)	4.5	4.5	4.5	4.5
Start of Green (s)	4.5	4.5	4.5	4.5
Start of Red (s)	4.5	4.5	4.5	4.5
Start of Yellow (s)	4.5	4.5	4.5	4.5
Start of Green (s)	4.5	4.5	4.5	4.5
Start of Red (s)	4.5	4.5	4.5	4.5
Start of Yellow (s)	4.5	4.5	4.5	4.5
Start of Green (s)	4.5	4.5	4.5	4.5
Start of Red (s)	4.5	4.5	4.5	4.5
Start of Yellow (s)	4.5	4.5	4.5	4.5
Start of Green (s)	4.5	4.5	4.5	4.5
Start of Red (s)	4.5	4.5	4.5	4.5
Start of Yellow (s)	4.5	4.5	4.5	4.5
Start of Green (s)	4.5	4.5	4.5	4.5
Start of Red (s)	4.5	4.5	4.5	4.5
Start of Yellow (s)	4.5	4.5	4.5	4.5
Start of Green (s)	4.5	4.5	4.5	4.5
Start of Red (s)	4.5	4.5	4.5	4.5
Start of Yellow (s)	4.5	4.5	4.5	4.5
Start of Green (s)	4.5	4.5	4.5	4.5
Start of Red (s)	4.5	4.5	4.5	4.5
Start of Yellow (s)	4.5	4.5	4.5	4.5
Start of Green (s)	4.5	4.5	4.5	4.5
Start of Red (s)	4.5	4.5	4.5	4.5
Start of Yellow (s)	4.5	4.5	4.5	4.5
Start of Green (s)	4.5	4.5	4.5	4.5
Start of Red (s)	4.5	4.5	4.5	4.5
Start of Yellow (s)	4.5	4.5	4.5	4.5
Start of Green (s)	4.5	4.5	4.5	4.5
Start of Red (s)	4.5	4.5	4.5	4.5
Start of Yellow (s)	4.5	4.5	4.5	4.5
Start of Green (s)	4.5	4.5	4.5	4.5
Start of Red (s)	4.5	4.5	4.5	4.5
Start of Yellow (s)	4.5	4.5	4.5	4.5
Start of Green (s)	4.5	4.5	4.5	4.5
Start of Red (s)	4.5	4.5	4.5	4.5
Start of Yellow (s)	4.5	4.5	4.5	4.5
Start of Green (s)	4.5	4.5	4.5	4.5
Start of Red (s)	4.5	4.5	4.5	4.5
Start of Yellow (s)	4.5	4.5	4.5	4.5
Start of Green (s)	4.5	4.5	4.5	4.5
Start of Red (s)	4.5	4.5	4.5	4.5
Start of Yellow (s)	4.5	4.5	4.5	4.5
Start of Green (s)	4.5	4.5	4.5	4.5
Start of Red (s)	4.5	4.5	4.5	4.5
Start of Yellow (s)	4.5	4.5	4.5	4.5
Start of Green (s)	4.5	4.5	4.5	4.5
Start of Red (s)	4.5	4.5	4.5	4.5
Start of Yellow (s)	4.5	4.5	4.5	4.5
Start of Green (s)	4.5	4.5	4.5	4.5
Start of Red (s)	4.5	4.5	4.5	4.5
Start of Yellow (s)	4.5	4.5	4.5	4.5
Start of Green (s)	4.5	4.5	4.5	4.5
Start of Red (s)	4.5	4.5	4.5	4.5
Start of Yellow (s)	4.5	4.5	4.5	4.5
Start of Green (s)	4.5	4.5	4.5	4.5
Start of Red (s)	4.5	4.5	4.5	4.5
Start of Yellow (s)	4.5	4.5	4.5	4.5
Start of Green (s)	4.5	4.5	4.5	4.5
Start of Red (s)	4.5	4.5	4.5	4.5
Start of Yellow (s)	4.5	4.5	4.5	4.5
Start of Green (s)	4.5	4.5	4.5	4.5
Start of Red (s)	4.5	4.5	4.5	4.5
Start of Yellow (s)	4.5	4.5	4.5	4.5
Start of Green (s)	4.5	4.5	4.5	4.5
Start of Red (s)	4.5	4.5	4.5	4.5
Start of Yellow (s)	4.5	4.5	4.5	4.5
Start of Green (s)	4.5	4.5	4.5	4.5
Start of Red				

3 Phase Fully Actuated (Isolated)

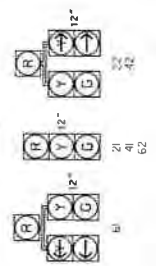
ONASIS 2070L LOOP & DETECTOR INSTALLATION CHART

LOOP	INDUCTIVE LOOP	DETECTOR PROGRAMMING				ENTER TIME	DELAY TIME
		PHASE	TRIGGER	TRIGGER	TRIGGER		
1A	6X60	15	2-4-2	1	1	15	
1B	6X60	15	2-4-2	1	1	15	
2A	6X60	30	4	2	1	1.5	
30	6X60	30	5	2	1	1.5	
4L	6X60	30	5	2	1	1.5	
4R	6X60	30	5	2	1	1.5	
5L	6X60	30	5	2	1	1.5	
5R	6X60	30	5	2	1	1.5	

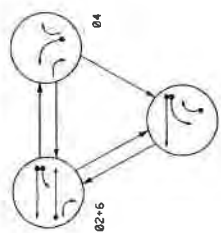
TABLE OF OPERATION

SIGNAL FACE	PHASE			
	0	1	2	3
21	R	L	Y	Y
41	R	L	Y	Y
61	R	L	Y	Y
81	R	L	Y	Y

SIGNAL FACE I.D.

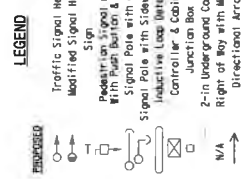
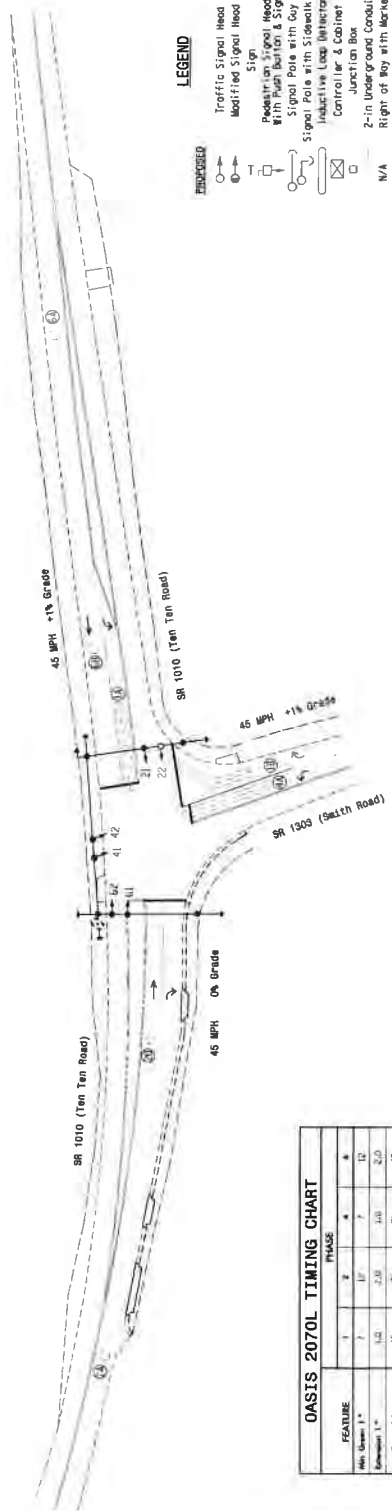


PHASING DIAGRAM



NOTES

- Refer to "Roadway Standard Drawings MCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Phase 1 may be lagged.
- Reposition existing signal head number 21.
- Set all detector units to presence mode.
- In the event of loop replacement, refer to the current ATIS and Signal Design Manual to submit a Plan of Record to the Signal Design Section.
- Pavement markings are existing.



ONASIS 2070L TIMING CHART

FEATURE	PHASE			
	1	2	3	4
Min Green 1"	7	17	7	12
Extension 1"	1-2	2-3	1-0	2-0
Max Green 1"	15	46	25	45
Yellow Clearance	3.0	4.5	3.0	4.4
Red Clearance	1.8	1.2	2.4	1.1
Red Start	2.0	2.0	2.0	2.0
Walk 1"	-	-	-	-
Clear Walk 1"	-	-	-	-
Minimum Per Activation *	-	-	-	-
Max Variable Interval *	-	-	-	-
Time Before Retraction *	-	-	-	-
Time To Indication *	-	-	-	-
Minimum Lead	-	-	-	-
Redall Walk	-	-	-	-
Vehicle Call Memory	-	-	-	-
Dual Entry	-	-	-	-
Simultaneous Ops	ON	ON	ON	ON

* These values may be field adjusted. Do not set Min Green and Extension times for phases 2 and 4 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

Signal Upgrade

SR 1010 (Ten Ten Road) at SR 1303 (Smith Road)

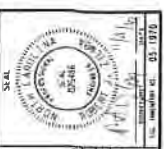
Division 5

DATE: DECEMBER 2010

DESIGNED BY: M. RAJESH

CHECKED BY: M. RAJESH

SCALE: 1" = 40'



APPENDIX D

ADJACENT DEVELOPMENT / BACKGROUND IMPROVEMENT INFORMATION

Empire Estates at Apex 55

Traffic Impact Analysis

Apex, North Carolina

November 6, 2015



11/6/15

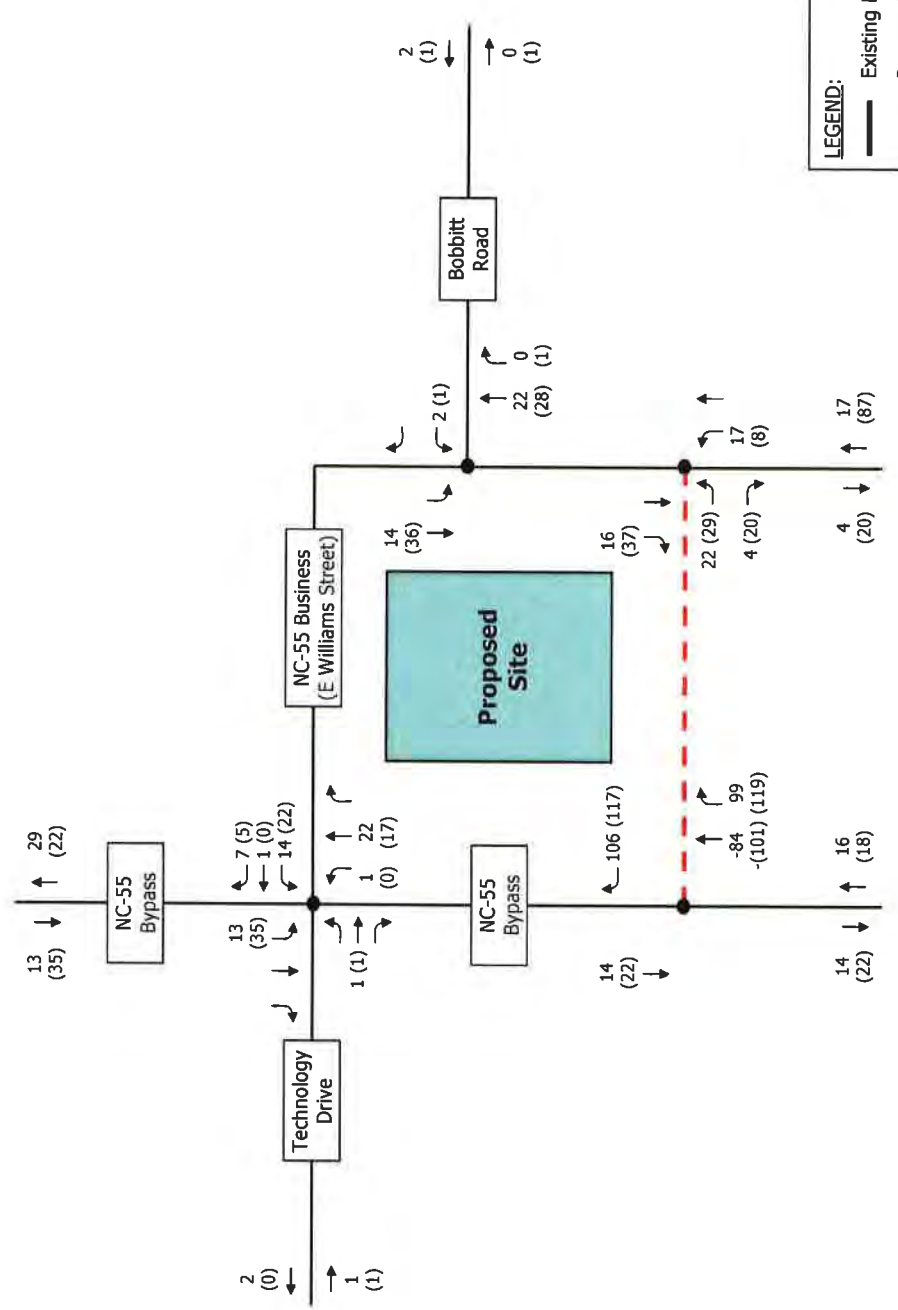
Prepared for:

Empire Estate, LLC

TIMMONS GROUP
YOUR VISION ACHIEVED THROUGH OURS.

Contact: Jeff Hochanadel, PE

5410 Trinity Road, Suite 102 • Raleigh, NC 27607
(919) 866-4951 phone • (919) 859-5663 fax
www.timmons.com



LEGEND:

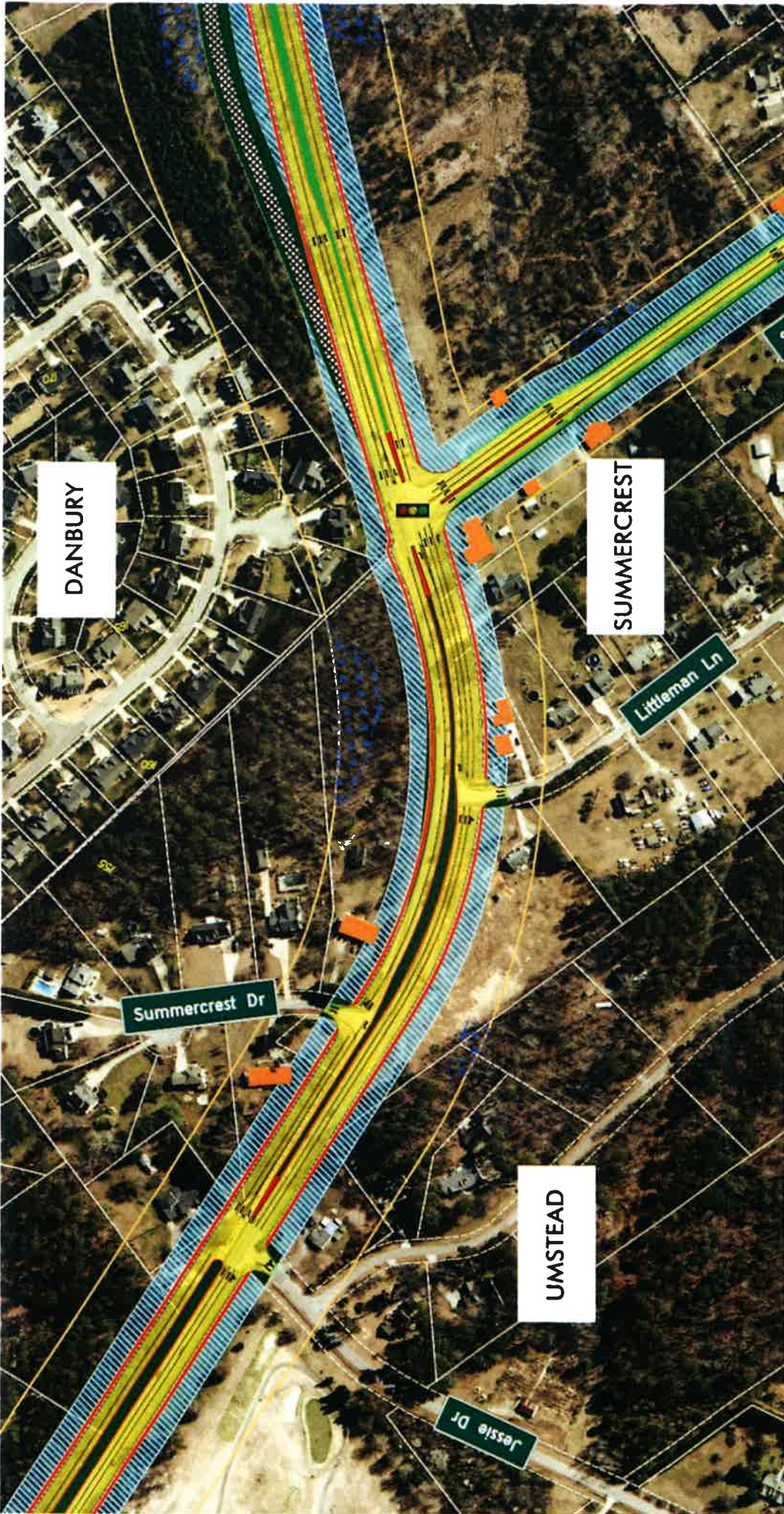
- Existing Road
- - - Proposed Road
- XX AM Peak Hour Volume (vph)
- (XX) PM Peak Hour Volume (vph)

NOT TO SCALE



**Empire Estates @ Apex 55 TIA
2017 Total Trip Distribution Volumes**

**Figure
4-4**





PUBLIC MEETING MAP
 PROJECT # 2010-001

WAKE COUNTY

APPLICANT: WAKE COUNTY
 PROJECT: WAKE COUNTY
 ADDRESS: 2010-001 (100)

DATE: 04/21/10

SCALE: 1" = 100'

DATE: 04/21/10

SCALE: 1" = 100'



EXHIBIT PLAN



APPENDIX E

CAPACITY ANALYSIS CALCULATIONS

TEN-TEN ROAD

&

SMITH ROAD

1: Smith Road & Ten-Ten Road
Horton Park - Apex, NC

Existing (2019) AM
06/28/2019

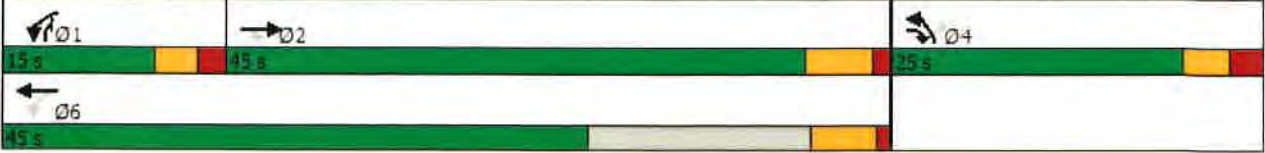
	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↙	↑	↙	↗
Traffic Volume (vph)	440	112	29	645	535	163
Future Volume (vph)	440	112	29	645	535	163
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		100	150		100	0
Storage Lanes		1	1		1	1
Taper Length (ft)			100		100	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1863	1583	1770	1863	1770	1583
Flt Permitted			0.183		0.950	
Satd. Flow (perm)	1863	1583	341	1863	1770	1583
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	45			45	35	
Link Distance (ft)	1511			1269	1107	
Travel Time (s)	22.9			19.2	21.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	489	124	32	717	594	181
Shared Lane Traffic (%)						
Lane Group Flow (vph)	489	124	32	717	594	181
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	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Number of Detectors	2	0	1	2	1	1
Detector Template						
Leading Detector (ft)	306	0	65	306	65	65
Trailing Detector (ft)	90	0	5	90	5	5
Detector 1 Position(ft)	90	0	5	90	5	5
Detector 1 Size(ft)	6	20	60	6	60	60
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	15.0	0.0	3.0	15.0
Detector 2 Position(ft)	300			300		
Detector 2 Size(ft)	6			6		
Detector 2 Type	CI+Ex			CI+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	1.6			1.6		
Turn Type	NA	pm+ov	pm+pt	NA	Prot	pm+ov
Protected Phases	2	4	1	6	4	1
Permitted Phases		2	6			4

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Detector Phase	2	4	1	6	4	1
Switch Phase						
Minimum Initial (s)	12.0	7.0	7.0	12.0	7.0	7.0
Minimum Split (s)	17.8	12.4	11.8	17.5	12.4	11.8
Total Split (s)	45.0	25.0	15.0	45.0	25.0	15.0
Total Split (%)	52.9%	29.4%	17.6%	52.9%	29.4%	17.6%
Maximum Green (s)	39.2	19.6	10.2	39.5	19.6	10.2
Yellow Time (s)	4.5	3.0	3.0	4.4	3.0	3.0
All-Red Time (s)	1.3	2.4	1.8	1.1	2.4	1.8
Lost Time Adjust (s)	-0.8	-0.4	0.2	-0.5	-0.4	0.2
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lag		Lead			Lead
Lead-Lag Optimize?	Yes		Yes			Yes
Vehicle Extension (s)	2.0	1.0	1.0	2.0	1.0	1.0
Recall Mode	Min	None	None	Min	None	None
Act Effct Green (s)	20.9	46.1	32.8	32.8	20.2	32.1
Actuated g/C Ratio	0.33	0.73	0.52	0.52	0.32	0.51
v/c Ratio	0.79	0.11	0.10	0.74	1.05	0.22
Control Delay	29.0	2.5	7.4	16.9	78.0	11.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.0	2.5	7.4	16.9	78.0	11.3
LOS	C	A	A	B	E	B
Approach Delay	23.6			16.5	62.4	
Approach LOS	C			B	E	
Queue Length 50th (ft)	165	10	5	194	~255	36
Queue Length 95th (ft)	260	20	15	305	#526	92
Internal Link Dist (ft)	1431			1189	1027	
Turn Bay Length (ft)		100	150		100	
Base Capacity (vph)	1192	1157	406	1636	566	886
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	0.41	0.11	0.08	0.44	1.05	0.20

Intersection Summary

Area Type: Other
 Cycle Length: 85
 Actuated Cycle Length: 63.1
 Natural Cycle: 75
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 1.05
 Intersection Signal Delay: 35.2
 Intersection Capacity Utilization 71.9%
 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: 1: Smith Road & Ten-Ten Road



1: Smith Road & Ten-Ten Road
Horton Park - Apex, NC

Existing (2019) PM
06/28/2019

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↘	↑	↘	↗
Traffic Volume (vph)	820	405	166	611	192	59
Future Volume (vph)	820	405	166	611	192	59
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		100	150		100	0
Storage Lanes		1	1		1	1
Taper Length (ft)			100		100	
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)	1863	1583	1770	1863	1770	1583
Flt Permitted			0.090		0.950	
Satd. Flow (perm)	1863	1583	168	1863	1770	1583
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	45			45	35	
Link Distance (ft)	1511			1269	1107	
Travel Time (s)	22.9			19.2	21.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	911	450	184	679	213	66
Shared Lane Traffic (%)						
Lane Group Flow (vph)	911	450	184	679	213	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	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Number of Detectors	2	0	1	2	1	1
Detector Template						
Leading Detector (ft)	306	0	65	306	65	65
Trailing Detector (ft)	90	0	5	90	5	5
Detector 1 Position(ft)	90	0	5	90	5	5
Detector 1 Size(ft)	6	20	60	6	60	60
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	15.0	0.0	3.0	15.0
Detector 2 Position(ft)	300			300		
Detector 2 Size(ft)	6			6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	1.6			1.6		
Turn Type	NA	pm+ov	pm+pt	NA	Prot	pm+ov
Protected Phases	2	4	1	6	4	1
Permitted Phases		2	6			4

1: Smith Road & Ten-Ten Road
Horton Park - Apex, NC

Existing (2019) PM
06/28/2019

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Detector Phase	2	4	1	6	4	1
Switch Phase						
Minimum Initial (s)	12.0	7.0	7.0	12.0	7.0	7.0
Minimum Split (s)	17.8	12.4	11.8	17.5	12.4	11.8
Total Split (s)	45.0	25.0	15.0	45.0	25.0	15.0
Total Split (%)	52.9%	29.4%	17.6%	52.9%	29.4%	17.6%
Maximum Green (s)	39.2	19.6	10.2	39.5	19.6	10.2
Yellow Time (s)	4.5	3.0	3.0	4.4	3.0	3.0
All-Red Time (s)	1.3	2.4	1.8	1.1	2.4	1.8
Lost Time Adjust (s)	-0.8	-0.4	0.2	-0.5	-0.4	0.2
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lag		Lead			Lead
Lead-Lag Optimize?	Yes		Yes			Yes
Vehicle Extension (s)	2.0	1.0	1.0	2.0	1.0	1.0
Recall Mode	Min	None	None	Min	None	None
Act Effct Green (s)	40.2	58.0	53.0	53.0	12.8	25.7
Actuated g/C Ratio	0.53	0.76	0.70	0.70	0.17	0.34
v/c Ratio	0.92	0.37	0.65	0.52	0.71	0.12
Control Delay	35.2	4.0	23.0	7.9	43.4	17.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	35.2	4.0	23.0	7.9	43.4	17.2
LOS	D	A	C	A	D	B
Approach Delay	24.9			11.2	37.2	
Approach LOS	C			B	D	
Queue Length 50th (ft)	352	47	29	123	94	21
Queue Length 95th (ft)	#752	97	107	264	168	46
Internal Link Dist (ft)	1431			1189	1027	
Turn Bay Length (ft)		100	150		100	
Base Capacity (vph)	986	1361	329	1356	468	582
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	0.92	0.33	0.56	0.50	0.46	0.11

Intersection Summary















Area Type: Other
 Cycle Length: 85
 Actuated Cycle Length: 75.9
 Natural Cycle: 80
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.92
 Intersection Signal Delay: 21.5
 Intersection Capacity Utilization 75.5%
 Analysis Period (min) 15
 Intersection LOS: C
 ICU Level of Service D
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 1: Smith Road & Ten-Ten Road



1: Smith Road & Ten-Ten Road
Horton Park - Apex, NC

Background (2024) AM
06/28/2019

							
Lane Group	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations							
Traffic Volume (vph)	4	510	130	34	748	620	189
Future Volume (vph)	4	510	130	34	748	620	189
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	400		0	400		600	250
Storage Lanes	1		1	1		1	1
Taper Length (ft)	100			100		100	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.97	1.00
Frt			0.850				0.850
Flt Protected	0.950			0.950		0.950	
Satd. Flow (prot)	1770	3539	1583	1770	3539	3433	1583
Flt Permitted	0.950			0.950		0.950	
Satd. Flow (perm)	1770	3539	1583	1770	3539	3433	1583
Right Turn on Red			No				No
Satd. Flow (RTOR)							
Link Speed (mph)		45			45	35	
Link Distance (ft)		1511			1269	1107	
Travel Time (s)		22.9			19.2	21.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	4	567	144	38	831	689	210
Shared Lane Traffic (%)							
Lane Group Flow (vph)	4	567	144	38	831	689	210
Enter Blocked Intersection	No	No	No	No	No	No	No
Lane Alignment	R NA	Left	Right	Left	Left	Left	Right
Median Width(ft)		16			16	24	
Link Offset(ft)		0			0	0	
Crosswalk Width(ft)		16			16	16	
Two way Left Turn Lane						Yes	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9		9	15		15	9
Number of Detectors	1	2	0	1	2	1	1
Detector Template	Left						
Leading Detector (ft)	20	306	0	65	306	65	65
Trailing Detector (ft)	0	90	0	5	90	5	5
Detector 1 Position(ft)	0	90	0	5	90	5	5
Detector 1 Size(ft)	20	6	20	60	6	60	60
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel							
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	15.0	0.0	3.0	15.0
Detector 2 Position(ft)		300			300		
Detector 2 Size(ft)		6			6		
Detector 2 Type		CI+Ex			CI+Ex		
Detector 2 Channel							
Detector 2 Extend (s)		1.6			1.6		
Turn Type	Prot	NA	pm+ov	Prot	NA	Prot	pm+ov
Protected Phases	5	2	4	1	6	4	1
Permitted Phases			2				4

1: Smith Road & Ten-Ten Road
Horton Park - Apex, NC

Background (2024) AM
06/28/2019

Lane Group	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Detector Phase	5	2	4	1	6	4	1
Switch Phase							
Minimum Initial (s)	7.0	12.0	7.0	7.0	12.0	7.0	7.0
Minimum Split (s)	14.0	17.8	12.4	11.8	17.5	12.4	11.8
Total Split (s)	15.0	52.0	49.0	19.0	56.0	49.0	19.0
Total Split (%)	12.5%	43.3%	40.8%	15.8%	46.7%	40.8%	15.8%
Maximum Green (s)	8.0	46.2	43.6	14.2	50.5	43.6	14.2
Yellow Time (s)	5.0	4.5	3.0	3.0	4.4	3.0	3.0
All-Red Time (s)	2.0	1.3	2.4	1.8	1.1	2.4	1.8
Lost Time Adjust (s)	-2.0	-0.8	-0.4	0.2	-0.5	-0.4	0.2
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes
Vehicle Extension (s)	3.0	2.0	1.0	1.0	2.0	1.0	1.0
Recall Mode	None	Min	None	None	Min	None	None
Act Effct Green (s)	9.4	17.5	38.7	7.2	28.0	16.0	28.4
Actuated g/C Ratio	0.17	0.31	0.69	0.13	0.50	0.28	0.50
v/c Ratio	0.01	0.52	0.13	0.17	0.47	0.71	0.26
Control Delay	27.2	17.8	2.9	29.4	12.3	23.2	10.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.2	17.8	2.9	29.4	12.3	23.2	10.4
LOS	C	B	A	C	B	C	B
Approach Delay		14.9			13.0	20.2	
Approach LOS		B			B	C	
Queue Length 50th (ft)	1	75	12	10	74	92	31
Queue Length 95th (ft)	11	145	23	48	234	212	111
Internal Link Dist (ft)		1431			1189	1027	
Turn Bay Length (ft)	400			400		600	250
Base Capacity (vph)	328	3057	1552	460	3202	2805	1007
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.19	0.09	0.08	0.26	0.25	0.21

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 56.4
 Natural Cycle: 60
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.71
 Intersection Signal Delay: 16.2
 Intersection Capacity Utilization 54.3%
 Analysis Period (min) 15















Intersection LOS: B
 ICU Level of Service A

Splits and Phases: 1: Smith Road & Ten-Ten Road










1: Smith Road & Ten-Ten Road
Horton Park - Apex, NC

Background (2024) PM
06/28/2019

							
Lane Group	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations							
Traffic Volume (vph)	4	951	470	192	708	223	68
Future Volume (vph)	4	951	470	192	708	223	68
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	400		0	400		600	250
Storage Lanes	1		1	1		1	1
Taper Length (ft)	100			100		100	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.97	1.00
Frnt			0.850				0.850
Flt Protected	0.950			0.950		0.950	
Satd. Flow (prot)	1770	3539	1583	1770	3539	3433	1583
Flt Permitted	0.950			0.950		0.950	
Satd. Flow (perm)	1770	3539	1583	1770	3539	3433	1583
Right Turn on Red			No				No
Satd. Flow (RTOR)							
Link Speed (mph)		45			45	35	
Link Distance (ft)		1511			1269	1107	
Travel Time (s)		22.9			19.2	21.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	4	1057	522	213	787	248	76
Shared Lane Traffic (%)							
Lane Group Flow (vph)	4	1057	522	213	787	248	76
Enter Blocked Intersection	No	No	No	No	No	No	No
Lane Alignment	R NA	Left	Right	Left	Left	Left	Right
Median Width(ft)		16			16	24	
Link Offset(ft)		0			0	0	
Crosswalk Width(ft)		16			16	16	
Two way Left Turn Lane						Yes	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9		9	15		15	9
Number of Detectors	1	2	0	1	2	1	1
Detector Template	Left						
Leading Detector (ft)	20	306	0	65	306	65	65
Trailing Detector (ft)	0	90	0	5	90	5	5
Detector 1 Position(ft)	0	90	0	5	90	5	5
Detector 1 Size(ft)	20	6	20	60	6	60	60
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel							
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	15.0	0.0	3.0	15.0
Detector 2 Position(ft)		300			300		
Detector 2 Size(ft)		6			6		
Detector 2 Type		Cl+Ex			Cl+Ex		
Detector 2 Channel							
Detector 2 Extend (s)		1.6			1.6		
Turn Type	Prot	NA	pm+ov	Prot	NA	Prot	pm+ov
Protected Phases	5	2	4	1	6	4	1
Permitted Phases			2				4

1: Smith Road & Ten-Ten Road
Horton Park - Apex, NC

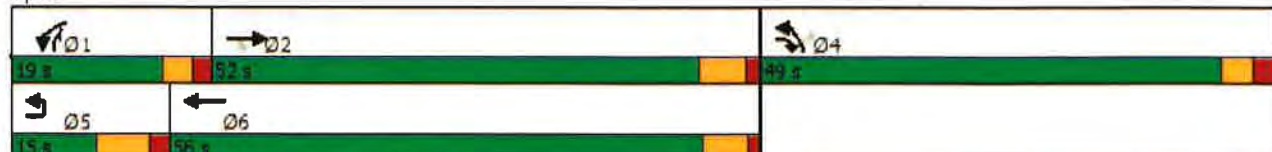
Background (2024) PM
06/28/2019

							
Lane Group	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Detector Phase	5	2	4	1	6	4	1
Switch Phase							
Minimum Initial (s)	7.0	12.0	7.0	7.0	12.0	7.0	7.0
Minimum Split (s)	14.0	17.8	12.4	11.8	17.5	12.4	11.8
Total Split (s)	15.0	52.0	49.0	19.0	56.0	49.0	19.0
Total Split (%)	12.5%	43.3%	40.8%	15.8%	46.7%	40.8%	15.8%
Maximum Green (s)	8.0	46.2	43.6	14.2	50.5	43.6	14.2
Yellow Time (s)	5.0	4.5	3.0	3.0	4.4	3.0	3.0
All-Red Time (s)	2.0	1.3	2.4	1.8	1.1	2.4	1.8
Lost Time Adjust (s)	-2.0	-0.8	-0.4	0.2	-0.5	-0.4	0.2
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes
Vehicle Extension (s)	3.0	2.0	1.0	1.0	2.0	1.0	1.0
Recall Mode	None	Min	None	None	Min	None	None
Act Effct Green (s)	9.1	27.2	42.0	14.2	44.2	9.7	29.0
Actuated g/C Ratio	0.14	0.41	0.63	0.21	0.67	0.15	0.44
v/c Ratio	0.02	0.73	0.52	0.56	0.33	0.50	0.11
Control Delay	29.8	19.7	8.5	33.0	6.3	30.9	13.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.8	19.7	8.5	33.0	6.3	30.9	13.5
LOS	C	B	A	C	A	C	B
Approach Delay		16.0			12.0	26.9	
Approach LOS		B			B	C	
Queue Length 50th (ft)	1	178	98	76	50	47	17
Queue Length 95th (ft)	11	262	156	#191	155	93	50
Internal Link Dist (ft)		1431			1189	1027	
Turn Bay Length (ft)	400			400		600	250
Base Capacity (vph)	270	2545	1583	379	2762	2311	691
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.42	0.33	0.56	0.28	0.11	0.11

Intersection Summary















Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 66.4
 Natural Cycle: 60
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.73
 Intersection Signal Delay: 15.8
 Intersection Capacity Utilization 55.8%
 Analysis Period (min) 15
 Intersection LOS: B
 ICU Level of Service B
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 1: Smith Road & Ten-Ten Road










1: Smith Road & Ten-Ten Road
Horton Park - Apex, NC

Background (2026) AM
06/28/2019

							
Lane Group	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations							
Traffic Volume (vph)	4	541	138	36	793	658	200
Future Volume (vph)	4	541	138	36	793	658	200
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	400		0	400		600	250
Storage Lanes	1		1	1		1	1
Taper Length (ft)	100			100		100	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.97	1.00
Frt			0.850				0.850
Flt Protected	0.950			0.950		0.950	
Satd. Flow (prot)	1770	3539	1583	1770	3539	3433	1583
Flt Permitted	0.950			0.950		0.950	
Satd. Flow (perm)	1770	3539	1583	1770	3539	3433	1583
Right Turn on Red			No				No
Satd. Flow (RTOR)							
Link Speed (mph)		45			45	35	
Link Distance (ft)		1511			1269	1107	
Travel Time (s)		22.9			19.2	21.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	4	601	153	40	881	731	222
Shared Lane Traffic (%)							
Lane Group Flow (vph)	4	601	153	40	881	731	222
Enter Blocked Intersection	No	No	No	No	No	No	No
Lane Alignment	R NA	Left	Right	Left	Left	Left	Right
Median Width(ft)		16			16	24	
Link Offset(ft)		0			0	0	
Crosswalk Width(ft)		16			16	16	
Two way Left Turn Lane						Yes	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9		9	15		15	9
Number of Detectors	1	2	0	1	2	1	1
Detector Template	Left						
Leading Detector (ft)	20	306	0	65	306	65	65
Trailing Detector (ft)	0	90	0	5	90	5	5
Detector 1 Position(ft)	0	90	0	5	90	5	5
Detector 1 Size(ft)	20	6	20	60	6	60	60
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel							
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	15.0	0.0	3.0	15.0
Detector 2 Position(ft)		300			300		
Detector 2 Size(ft)		6			6		
Detector 2 Type		Cl+Ex			Cl+Ex		
Detector 2 Channel							
Detector 2 Extend (s)		1.6			1.6		
Turn Type	Prot	NA	pm+ov	Prot	NA	Prot	pm+ov
Protected Phases	5	2	4	1	6	4	1
Permitted Phases			2				4

1: Smith Road & Ten-Ten Road
Horton Park - Apex, NC

Background (2026) AM
06/28/2019

							
Lane Group	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Detector Phase	5	2	4	1	6	4	1
Switch Phase							
Minimum Initial (s)	7.0	12.0	7.0	7.0	12.0	7.0	7.0
Minimum Split (s)	14.0	17.8	12.4	11.8	17.5	12.4	11.8
Total Split (s)	15.0	52.0	49.0	19.0	56.0	49.0	19.0
Total Split (%)	12.5%	43.3%	40.8%	15.8%	46.7%	40.8%	15.8%
Maximum Green (s)	8.0	46.2	43.6	14.2	50.5	43.6	14.2
Yellow Time (s)	5.0	4.5	3.0	3.0	4.4	3.0	3.0
All-Red Time (s)	2.0	1.3	2.4	1.8	1.1	2.4	1.8
Lost Time Adjust (s)	-2.0	-0.8	-0.4	0.2	-0.5	-0.4	0.2
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes
Vehicle Extension (s)	3.0	2.0	1.0	1.0	2.0	1.0	1.0
Recall Mode	None	Min	None	None	Min	None	None
Act Effct Green (s)	9.5	18.6	41.5	7.3	29.4	17.5	30.2
Actuated g/C Ratio	0.16	0.31	0.70	0.12	0.49	0.29	0.51
v/c Ratio	0.01	0.54	0.14	0.18	0.50	0.72	0.28
Control Delay	29.8	18.8	2.9	31.7	13.2	24.0	11.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.8	18.8	2.9	31.7	13.2	24.0	11.0
LOS	C	B	A	C	B	C	B
Approach Delay		15.7			14.0	21.0	
Approach LOS		B			B	C	
Queue Length 50th (ft)	1	84	13	11	85	103	34
Queue Length 95th (ft)	12	168	25	53	268	242	125
Internal Link Dist (ft)		1431			1189	1027	
Turn Bay Length (ft)	400			400		600	250
Base Capacity (vph)	315	2946	1558	441	3108	2764	1003
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.20	0.10	0.09	0.28	0.26	0.22

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 59.4

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.72

Intersection Signal Delay: 17.0

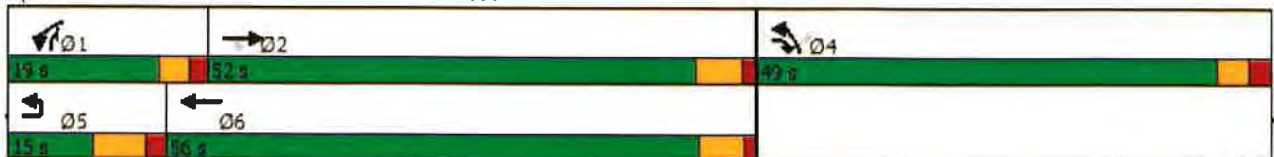
Intersection Capacity Utilization 57.0%

Analysis Period (min) 15

Intersection LOS: B















ICU Level of Service B

Splits and Phases: 1: Smith Road & Ten-Ten Road



1: Smith Road & Ten-Ten Road
Horton Park - Apex, NC

Background (2026) PM
06/28/2019

							
Lane Group	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations							
Traffic Volume (vph)	4	1008	498	204	751	236	73
Future Volume (vph)	4	1008	498	204	751	236	73
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	400		0	400		600	250
Storage Lanes	1		1	1		1	1
Taper Length (ft)	100			100		100	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.97	1.00
Friction			0.850				0.850
Fit Protected	0.950			0.950		0.950	
Satd. Flow (prot)	1770	3539	1583	1770	3539	3433	1583
Fit Permitted	0.950			0.950		0.950	
Satd. Flow (perm)	1770	3539	1583	1770	3539	3433	1583
Right Turn on Red			No				No
Satd. Flow (RTOR)							
Link Speed (mph)		45			45	35	
Link Distance (ft)		1511			1269	1107	
Travel Time (s)		22.9			19.2	21.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	4	1120	553	227	834	262	81
Shared Lane Traffic (%)							
Lane Group Flow (vph)	4	1120	553	227	834	262	81
Enter Blocked Intersection	No	No	No	No	No	No	No
Lane Alignment	R NA	Left	Right	Left	Left	Left	Right
Median Width(ft)		16			16	24	
Link Offset(ft)		0			0	0	
Crosswalk Width(ft)		16			16	16	
Two way Left Turn Lane						Yes	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9		9	15		15	9
Number of Detectors	1	2	0	1	2	1	1
Detector Template	Left						
Leading Detector (ft)	20	306	0	65	306	65	65
Trailing Detector (ft)	0	90	0	5	90	5	5
Detector 1 Position(ft)	0	90	0	5	90	5	5
Detector 1 Size(ft)	20	6	20	60	6	60	60
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel							
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	15.0	0.0	3.0	15.0
Detector 2 Position(ft)		300			300		
Detector 2 Size(ft)		6			6		
Detector 2 Type		Cl+Ex			Cl+Ex		
Detector 2 Channel							
Detector 2 Extend (s)		1.6			1.6		
Turn Type	Prot	NA	pm+ov	Prot	NA	Prot	pm+ov
Protected Phases	5	2	4	1	6	4	1
Permitted Phases			2				4

1: Smith Road & Ten-Ten Road
Horton Park - Apex, NC

Background (2026) PM
06/28/2019

Lane Group	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Detector Phase	5	2	4	1	6	4	1
Switch Phase							
Minimum Initial (s)	7.0	12.0	7.0	7.0	12.0	7.0	7.0
Minimum Split (s)	14.0	17.8	12.4	11.8	17.5	12.4	11.8
Total Split (s)	15.0	52.0	49.0	19.0	56.0	49.0	19.0
Total Split (%)	12.5%	43.3%	40.8%	15.8%	46.7%	40.8%	15.8%
Maximum Green (s)	8.0	46.2	43.6	14.2	50.5	43.6	14.2
Yellow Time (s)	5.0	4.5	3.0	3.0	4.4	3.0	3.0
All-Red Time (s)	2.0	1.3	2.4	1.8	1.1	2.4	1.8
Lost Time Adjust (s)	-2.0	-0.8	-0.4	0.2	-0.5	-0.4	0.2
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes
Vehicle Extension (s)	3.0	2.0	1.0	1.0	2.0	1.0	1.0
Recall Mode	None	Min	None	None	Min	None	None
Act Effct Green (s)	9.2	29.8	45.0	14.2	46.8	10.1	29.5
Actuated g/C Ratio	0.13	0.43	0.65	0.20	0.67	0.15	0.43
v/c Ratio	0.02	0.74	0.54	0.63	0.35	0.52	0.12
Control Delay	31.5	19.8	8.5	37.4	6.3	32.8	14.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.5	19.8	8.5	37.4	6.3	32.8	14.9
LOS	C	B	A	D	A	C	B
Approach Delay		16.1			13.0	28.6	
Approach LOS		B			B	C	
Queue Length 50th (ft)	2	198	106	88	56	53	20
Queue Length 95th (ft)	11	285	167	#225	167	102	56
Internal Link Dist (ft)		1431			1189	1027	
Turn Bay Length (ft)	400			400		600	250
Base Capacity (vph)	259	2438	1583	363	2664	2214	672
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.46	0.35	0.63	0.31	0.12	0.12

Intersection Summary















Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 69.4
 Natural Cycle: 60
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.74
 Intersection Signal Delay: 16.4
 Intersection Capacity Utilization 58.4%
 Analysis Period (min) 15
 Intersection LOS: B
 ICU Level of Service B
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 1: Smith Road & Ten-Ten Road



Lanes, Volumes, Timings
1: Smith Road & Ten-Ten Road

Combined (2024) AM - Phase 1
06/28/2019

							
Lane Group	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations							
Traffic Volume (vph)	4	510	170	44	748	744	220
Future Volume (vph)	4	510	170	44	748	744	220
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	400		0	400		600	250
Storage Lanes	1		1	1		1	1
Taper Length (ft)	100			100		100	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.97	1.00
Frt			0.850				0.850
Flt Protected	0.950			0.950		0.950	
Satd. Flow (prot)	1770	3539	1583	1770	3539	3433	1583
Flt Permitted	0.950			0.950		0.950	
Satd. Flow (perm)	1770	3539	1583	1770	3539	3433	1583
Right Turn on Red			No				No
Satd. Flow (RTOR)							
Link Speed (mph)		45			45	35	
Link Distance (ft)		1511			1269	1107	
Travel Time (s)		22.9			19.2	21.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	4	567	189	49	831	827	244
Shared Lane Traffic (%)							
Lane Group Flow (vph)	4	567	189	49	831	827	244
Enter Blocked Intersection	No	No	No	No	No	No	No
Lane Alignment	R NA	Left	Right	Left	Left	Left	Right
Median Width(ft)		16			16	24	
Link Offset(ft)		0			0	0	
Crosswalk Width(ft)		16			16	16	
Two way Left Turn Lane						Yes	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9		9	15		15	9
Number of Detectors	1	2	0	1	2	1	1
Detector Template	Left						
Leading Detector (ft)	20	306	0	65	306	65	65
Trailing Detector (ft)	0	90	0	5	90	5	5
Detector 1 Position(ft)	0	90	0	5	90	5	5
Detector 1 Size(ft)	20	6	20	60	6	60	60
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel							
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	15.0	0.0	3.0	15.0
Detector 2 Position(ft)		300			300		
Detector 2 Size(ft)		6			6		
Detector 2 Type		Cl+Ex			Cl+Ex		
Detector 2 Channel							
Detector 2 Extend (s)		1.6			1.6		
Turn Type	Prot	NA	pm+ov	Prot	NA	Prot	pm+ov
Protected Phases	5	2	4	1	6	4	1
Permitted Phases			2				4

Lanes, Volumes, Timings
1: Smith Road & Ten-Ten Road

Combined (2024) AM - Phase 1
06/28/2019

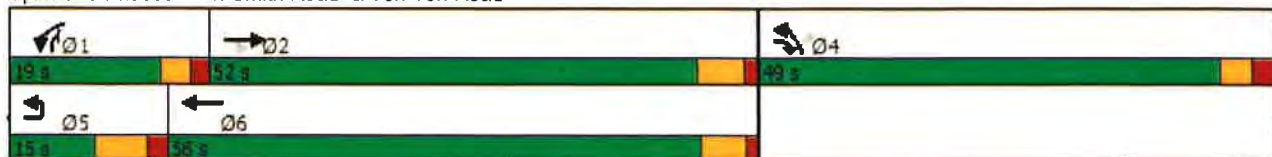
	↶	→	↷	↶	←	↶	↷
Lane Group	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Detector Phase	5	2	4	1	6	4	1
Switch Phase							
Minimum Initial (s)	7.0	12.0	7.0	7.0	12.0	7.0	7.0
Minimum Split (s)	14.0	17.8	12.4	11.8	17.5	12.4	11.8
Total Split (s)	15.0	52.0	49.0	19.0	56.0	49.0	19.0
Total Split (%)	12.5%	43.3%	40.8%	15.8%	46.7%	40.8%	15.8%
Maximum Green (s)	8.0	46.2	43.6	14.2	50.5	43.6	14.2
Yellow Time (s)	5.0	4.5	3.0	3.0	4.4	3.0	3.0
All-Red Time (s)	2.0	1.3	2.4	1.8	1.1	2.4	1.8
Lost Time Adjust (s)	-2.0	-0.8	-0.4	0.2	-0.5	-0.4	0.2
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes
Vehicle Extension (s)	3.0	2.0	1.0	1.0	2.0	1.0	1.0
Recall Mode	None	Min	None	None	Min	None	None
Act Effct Green (s)	9.5	18.5	43.5	7.4	29.4	19.7	32.4
Actuated g/C Ratio	0.15	0.30	0.71	0.12	0.48	0.32	0.53
v/c Ratio	0.01	0.53	0.17	0.23	0.49	0.75	0.29
Control Delay	31.0	20.1	3.0	33.2	14.2	24.2	10.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.0	20.1	3.0	33.2	14.2	24.2	10.5
LOS	C	C	A	C	B	C	B
Approach Delay		15.9			15.3	21.1	
Approach LOS		B			B	C	
Queue Length 50th (ft)	1	83	16	15	86	121	38
Queue Length 95th (ft)	13	169	32	63	263	274	131
Internal Link Dist (ft)		1431			1189	1027	
Turn Bay Length (ft)	400			400		600	250
Base Capacity (vph)	304	2863	1538	426	3040	2602	1024
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.20	0.12	0.12	0.27	0.32	0.24

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 61.5
 Natural Cycle: 60
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.75
 Intersection Signal Delay: 17.8
 Intersection Capacity Utilization 60.2%
 Analysis Period (min) 15















Intersection LOS: B
 ICU Level of Service B

Splits and Phases: 1: Smith Road & Ten-Ten Road



Lanes, Volumes, Timings
1: Smith Road & Ten-Ten Road

Combined (2024) PM - Phase 1
06/28/2019

							
Lane Group	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations							
Traffic Volume (vph)	4	951	606	226	708	302	88
Future Volume (vph)	4	951	606	226	708	302	88
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	400		0	400		600	250
Storage Lanes	1		1	1		1	1
Taper Length (ft)	100			100		100	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.97	1.00
Fr			0.850				0.850
Flt Protected	0.950			0.950		0.950	
Satd. Flow (prot)	1770	3539	1583	1770	3539	3433	1583
Flt Permitted	0.950			0.950		0.950	
Satd. Flow (perm)	1770	3539	1583	1770	3539	3433	1583
Right Turn on Red			No				No
Satd. Flow (RTOR)							
Link Speed (mph)		45			45	35	
Link Distance (ft)		1511			1269	1107	
Travel Time (s)		22.9			19.2	21.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	4	1057	673	251	787	336	98
Shared Lane Traffic (%)							
Lane Group Flow (vph)	4	1057	673	251	787	336	98
Enter Blocked Intersection	No	No	No	No	No	No	No
Lane Alignment	R NA	Left	Right	Left	Left	Left	Right
Median Width(ft)		16			16	24	
Link Offset(ft)		0			0	0	
Crosswalk Width(ft)		16			16	16	
Two way Left Turn Lane						Yes	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9		9	15		15	9
Number of Detectors	1	2	0	1	2	1	1
Detector Template	Left						
Leading Detector (ft)	20	306	0	65	306	65	65
Trailing Detector (ft)	0	90	0	5	90	5	5
Detector 1 Position(ft)	0	90	0	5	90	5	5
Detector 1 Size(ft)	20	6	20	60	6	60	60
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel							
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	15.0	0.0	3.0	15.0
Detector 2 Position(ft)		300			300		
Detector 2 Size(ft)		6			6		
Detector 2 Type		Cl+Ex			Cl+Ex		
Detector 2 Channel							
Detector 2 Extend (s)		1.6			1.6		
Turn Type	Prot	NA	pm+ov	Prot	NA	Prot	pm+ov
Protected Phases	5	2	4	1	6	4	1
Permitted Phases			2				4

Lanes, Volumes, Timings
1: Smith Road & Ten-Ten Road

Combined (2024) PM - Phase 1
06/28/2019

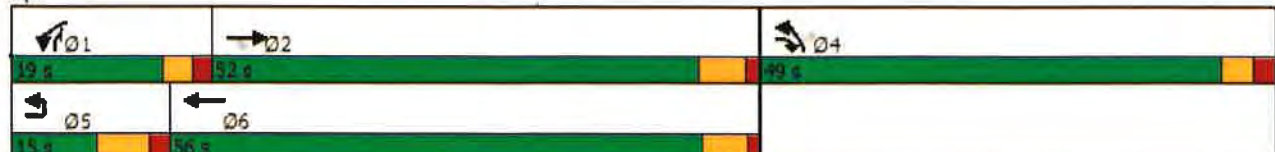
Lane Group	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Detector Phase	5	2	4	1	6	4	1
Switch Phase							
Minimum Initial (s)	7.0	12.0	7.0	7.0	12.0	7.0	7.0
Minimum Split (s)	14.0	17.8	12.4	11.8	17.5	12.4	11.8
Total Split (s)	15.0	52.0	49.0	19.0	56.0	49.0	19.0
Total Split (%)	12.5%	43.3%	40.8%	15.8%	46.7%	40.8%	15.8%
Maximum Green (s)	8.0	46.2	43.6	14.2	50.5	43.6	14.2
Yellow Time (s)	5.0	4.5	3.0	3.0	4.4	3.0	3.0
All-Red Time (s)	2.0	1.3	2.4	1.8	1.1	2.4	1.8
Lost Time Adjust (s)	-2.0	-0.8	-0.4	0.2	-0.5	-0.4	0.2
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes
Vehicle Extension (s)	3.0	2.0	1.0	1.0	2.0	1.0	1.0
Recall Mode	None	Min	None	None	Min	None	None
Act Effct Green (s)	9.2	28.4	45.6	14.3	45.6	12.0	31.4
Actuated g/C Ratio	0.13	0.41	0.65	0.20	0.65	0.17	0.45
v/c Ratio	0.02	0.74	0.65	0.70	0.34	0.57	0.14
Control Delay	32.5	21.1	10.6	41.3	7.3	31.7	13.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.5	21.1	10.6	41.3	7.3	31.7	13.9
LOS	C	C	B	D	A	C	B
Approach Delay		17.1			15.5	27.7	
Approach LOS		B			B	C	
Queue Length 50th (ft)	2	191	147	99	58	68	23
Queue Length 95th (ft)	12	287	233	#266	173	125	63
Internal Link Dist (ft)		1431			1189	1027	
Turn Bay Length (ft)	400			400		600	250
Base Capacity (vph)	258	2426	1583	361	2638	2203	710
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.44	0.43	0.70	0.30	0.15	0.14

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 70.1
 Natural Cycle: 55
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.74
 Intersection Signal Delay: 18.0
 Intersection Capacity Utilization 59.9%
 Analysis Period (min) 15
 Intersection LOS: B
 ICU Level of Service B















95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 1: Smith Road & Ten-Ten Road



1: Smith Road & Ten-Ten Road
Horton Park - Apex, NC

Combined (2026) AM - Full Buildout
06/28/2019

							
Lane Group	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations							
Traffic Volume (vph)	4	581	138	42	826	658	217
Future Volume (vph)	4	581	138	42	826	658	217
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	400		0	400		600	250
Storage Lanes	1		1	1		1	1
Taper Length (ft)	100			100		100	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.97	1.00
Frt			0.850				0.850
Flt Protected	0.950			0.950		0.950	
Satd. Flow (prot)	1770	3539	1583	1770	3539	3433	1583
Flt Permitted	0.950			0.950		0.950	
Satd. Flow (perm)	1770	3539	1583	1770	3539	3433	1583
Right Turn on Red			No				No
Satd. Flow (RTOR)							
Link Speed (mph)		45			45	35	
Link Distance (ft)		1511			1269	1107	
Travel Time (s)		22.9			19.2	21.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	4	646	153	47	918	731	241
Shared Lane Traffic (%)							
Lane Group Flow (vph)	4	646	153	47	918	731	241
Enter Blocked Intersection	No	No	No	No	No	No	No
Lane Alignment	R NA	Left	Right	Left	Left	Left	Right
Median Width(ft)		16			16	24	
Link Offset(ft)		0			0	0	
Crosswalk Width(ft)		16			16	16	
Two way Left Turn Lane						Yes	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9		9	15		15	9
Number of Detectors	1	2	0	1	2	1	1
Detector Template	Left						
Leading Detector (ft)	20	306	0	65	306	65	65
Trailing Detector (ft)	0	90	0	5	90	5	5
Detector 1 Position(ft)	0	90	0	5	90	5	5
Detector 1 Size(ft)	20	6	20	60	6	60	60
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel							
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	15.0	0.0	3.0	15.0
Detector 2 Position(ft)		300			300		
Detector 2 Size(ft)		6			6		
Detector 2 Type		Cl+Ex			Cl+Ex		
Detector 2 Channel							
Detector 2 Extend (s)		1.6			1.6		
Turn Type	Prot	NA	pm+ov	Prot	NA	Prot	pm+ov
Protected Phases	5	2	4	1	6	4	1
Permitted Phases			2				4

1: Smith Road & Ten-Ten Road
Horton Park - Apex, NC

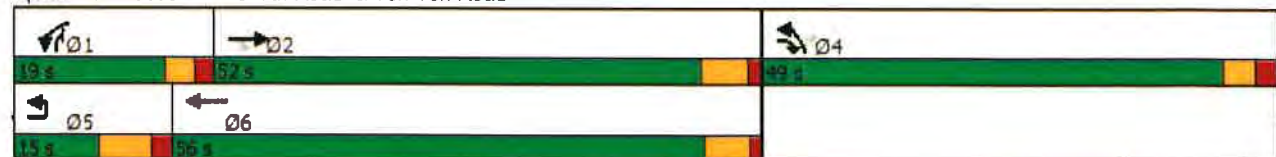
Combined (2026) AM - Full Buildout
06/28/2019

Lane Group	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Detector Phase	5	2	4	1	6	4	1
Switch Phase							
Minimum Initial (s)	7.0	12.0	7.0	7.0	12.0	7.0	7.0
Minimum Split (s)	14.0	17.8	12.4	11.8	17.5	12.4	11.8
Total Split (s)	15.0	52.0	49.0	19.0	56.0	49.0	19.0
Total Split (%)	12.5%	43.3%	40.8%	15.8%	46.7%	40.8%	15.8%
Maximum Green (s)	8.0	46.2	43.6	14.2	50.5	43.6	14.2
Yellow Time (s)	5.0	4.5	3.0	3.0	4.4	3.0	3.0
All-Red Time (s)	2.0	1.3	2.4	1.8	1.1	2.4	1.8
Lost Time Adjust (s)	-2.0	-0.8	-0.4	0.2	-0.5	-0.4	0.2
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes
Vehicle Extension (s)	3.0	2.0	1.0	1.0	2.0	1.0	1.0
Recall Mode	None	Min	None	None	Min	None	None
Act Effct Green (s)	9.6	19.7	43.0	7.4	30.6	18.1	30.8
Actuated g/C Ratio	0.16	0.32	0.70	0.12	0.50	0.30	0.50
v/c Ratio	0.01	0.57	0.14	0.22	0.52	0.72	0.30
Control Delay	31.0	19.3	2.8	33.0	13.5	24.5	11.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.0	19.3	2.8	33.0	13.5	24.5	11.6
LOS	C	B	A	C	B	C	B
Approach Delay		16.2			14.4	21.3	
Approach LOS		B			B	C	
Queue Length 50th (ft)	1	93	13	14	93	109	42
Queue Length 95th (ft)	12	185	26	61	285	248	138
Internal Link Dist (ft)		1431			1189	1027	
Turn Bay Length (ft)	400			400		600	250
Base Capacity (vph)	307	2874	1552	430	3045	2625	990
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.22	0.10	0.11	0.30	0.28	0.24

Intersection Summary















Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 61.1
 Natural Cycle: 60
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.72
 Intersection Signal Delay: 17.4
 Intersection Capacity Utilization 59.9%
 Analysis Period (min) 15
 Intersection LOS: B
 ICU Level of Service B

Splits and Phases: 1: Smith Road & Ten-Ten Road










1: Smith Road & Ten-Ten Road
Horton Park - Apex, NC

Combined (2026) PM - Full Buildout
06/28/2019

							
Lane Group	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations							
Traffic Volume (vph)	4	1051	498	222	794	236	83
Future Volume (vph)	4	1051	498	222	794	236	83
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	400		0	400		600	250
Storage Lanes	1		1	1		1	1
Taper Length (ft)	100			100		100	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.97	1.00
Frt			0.850				0.850
Flt Protected	0.950			0.950		0.950	
Satd. Flow (prot)	1770	3539	1583	1770	3539	3433	1583
Flt Permitted	0.950			0.950		0.950	
Satd. Flow (perm)	1770	3539	1583	1770	3539	3433	1583
Right Turn on Red			No				No
Satd. Flow (RTOR)							
Link Speed (mph)		45			45	35	
Link Distance (ft)		1511			1269	1107	
Travel Time (s)		22.9			19.2	21.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	4	1168	553	247	882	262	92
Shared Lane Traffic (%)							
Lane Group Flow (vph)	4	1168	553	247	882	262	92
Enter Blocked Intersection	No	No	No	No	No	No	No
Lane Alignment	R NA	Left	Right	Left	Left	Left	Right
Median Width(ft)		16			16	24	
Link Offset(ft)		0			0	0	
Crosswalk Width(ft)		16			16	16	
Two way Left Turn Lane						Yes	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9		9	15		15	9
Number of Detectors	1	2	0	1	2	1	1
Detector Template	Left						
Leading Detector (ft)	20	306	0	65	306	65	65
Trailing Detector (ft)	0	90	0	5	90	5	5
Detector 1 Position(ft)	0	90	0	5	90	5	5
Detector 1 Size(ft)	20	6	20	60	6	60	60
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel							
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	15.0	0.0	3.0	15.0
Detector 2 Position(ft)		300			300		
Detector 2 Size(ft)		6			6		
Detector 2 Type		Cl+Ex			Cl+Ex		
Detector 2 Channel							
Detector 2 Extend (s)		1.6			1.6		
Turn Type	Prot	NA	pm+ov	Prot	NA	Prot	pm+ov
Protected Phases	5	2	4	1	6	4	1
Permitted Phases			2				4

1: Smith Road & Ten-Ten Road
Horton Park - Apex, NC

Combined (2026) PM - Full Buildout
06/28/2019

							
Lane Group	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Detector Phase	5	2	4	1	6	4	1
Switch Phase							
Minimum Initial (s)	7.0	12.0	7.0	7.0	12.0	7.0	7.0
Minimum Split (s)	14.0	17.8	12.4	11.8	17.5	12.4	11.8
Total Split (s)	15.0	52.0	49.0	19.0	56.0	49.0	19.0
Total Split (%)	12.5%	43.3%	40.8%	15.8%	46.7%	40.8%	15.8%
Maximum Green (s)	8.0	46.2	43.6	14.2	50.5	43.6	14.2
Yellow Time (s)	5.0	4.5	3.0	3.0	4.4	3.0	3.0
All-Red Time (s)	2.0	1.3	2.4	1.8	1.1	2.4	1.8
Lost Time Adjust (s)	-2.0	-0.8	-0.4	0.2	-0.5	-0.4	0.2
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes
Vehicle Extension (s)	3.0	2.0	1.0	1.0	2.0	1.0	1.0
Recall Mode	None	Min	None	None	Min	None	None
Act Effct Green (s)	9.2	31.9	47.2	14.3	48.9	10.2	29.5
Actuated g/C Ratio	0.13	0.45	0.66	0.20	0.68	0.14	0.41
v/c Ratio	0.02	0.74	0.53	0.70	0.36	0.54	0.14
Control Delay	33.0	19.6	8.2	42.4	6.3	34.2	16.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.0	19.6	8.2	42.4	6.3	34.2	16.1
LOS	C	B	A	D	A	C	B
Approach Delay		15.9			14.2	29.5	
Approach LOS		B			B	C	
Queue Length 50th (ft)	2	212	106	101	61	55	24
Queue Length 95th (ft)	12	300	166	#264	178	106	66
Internal Link Dist (ft)		1431			1189	1027	
Turn Bay Length (ft)	400			400		600	250
Base Capacity (vph)	251	2365	1583	352	2610	2148	653
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.49	0.35	0.70	0.34	0.12	0.14

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 71.6
 Natural Cycle: 55
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.74
 Intersection Signal Delay: 16.8
 Intersection Capacity Utilization 60.6%
 Analysis Period (min) 15
 Intersection LOS: B
 ICU Level of Service B

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 1: Smith Road & Ten-Ten Road



APPENDIX F

CAPACITY ANALYSIS CALCULATIONS

NC 55 / NC 55 BYPASS

&

TECHNOLOGY DRIVE / E. WILLIAMS STREET

Queuing and Blocking Report
Existing (2019) AM

06/29/2019

Intersection: 5: NC 55 & Technology Drive/E. Williams Street

























Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB
Directions Served	L	T	R	L	T	R	L	T	T	R	L	L
Maximum Queue (ft)	82	56	103	275	1369	475	48	369	389	174	240	210
Average Queue (ft)	47	18	26	273	1359	475	17	206	224	8	154	127
95th Queue (ft)	84	53	70	279	1370	475	37	321	326	62	231	199
Link Distance (ft)			1592		1354			4075	4075			
Upstream Blk Time (%)					31							
Queuing Penalty (veh)					464							
Storage Bay Dist (ft)	263	263		175		375	400			75	800	800
Storage Blk Time (%)				91					33			
Queuing Penalty (veh)				975					3			

Intersection: 5: NC 55 & Technology Drive/E. Williams Street

Movement	SB	SB	SB
Directions Served	T	T	R
Maximum Queue (ft)	183	203	200
Average Queue (ft)	80	80	27
95th Queue (ft)	152	166	94
Link Distance (ft)	894	894	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			100
Storage Blk Time (%)		4	
Queuing Penalty (veh)		3	













5: NC 55 & Technology Drive/E. Williams Street
Horton Park - Apex, NC

Existing (2019) AM
06/28/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	64	17	24	404	58	1010	19	1285	10	347	690	65
Future Volume (vph)	64	17	24	404	58	1010	19	1285	10	347	690	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	263		0	175		375	400		75	800		100
Storage Lanes	2		1	1		1	1		1	2		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frnt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	3539	1583	3433	3539	1583
Flt Permitted	0.715			0.745			0.950			0.950		
Satd. Flow (perm)	1332	1863	1583	1388	1863	1583	1770	3539	1583	3433	3539	1583
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			55			45	
Link Distance (ft)		1661			1452			4132			954	
Travel Time (s)		25.2			22.0			51.2			14.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	71	19	27	449	64	1122	21	1428	11	386	767	72
Shared Lane Traffic (%)												
Lane Group Flow (vph)	71	19	27	449	64	1122	21	1428	11	386	767	72
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)		16			16			36			36	
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	pm+ov	Perm	NA	Free	Prot	NA	Perm	Prot	NA	Perm
Protected Phases		4	5		8		5	2		1	6	
Permitted Phases	4		4	8		Free			2			6

5: NC 55 & Technology Drive/E. Williams Street
Horton Park - Apex, NC

Existing (2019) AM
06/28/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	5	8	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0		7.0	14.0	14.0	7.0	14.0	14.0
Minimum Split (s)	13.6	13.6	13.3	13.4	13.4		13.3	20.3	20.3	13.3	20.5	20.5
Total Split (s)	25.0	25.0	20.0	25.0	25.0		20.0	120.0	120.0	40.0	120.0	120.0
Total Split (%)	13.5%	13.5%	10.8%	13.5%	13.5%		10.8%	64.9%	64.9%	21.6%	64.9%	64.9%
Maximum Green (s)	18.4	18.4	13.7	18.6	18.6		13.7	113.7	113.7	33.7	113.5	113.5
Yellow Time (s)	4.2	4.2	3.0	4.6	4.6		3.0	5.1	5.1	3.0	5.3	5.3
All-Red Time (s)	2.4	2.4	3.3	1.8	1.8		3.3	1.2	1.2	3.3	1.2	1.2
Lost Time Adjust (s)	-1.6	-1.6	-1.3	-1.4	-1.4		-1.3	-1.3	-1.3	-1.3	-1.5	-1.5
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
Lead/Lag			Lead				Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?			Yes				Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	6.0	6.0	3.0	6.0	6.0
Minimum Gap (s)	2.0	2.0	2.0	2.0	2.0		2.0	3.4	3.4	3.0	3.4	3.4
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	20.0	20.0	0.0	20.0	20.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	30.0	30.0	0.0	30.0	30.0
Recall Mode	None	None	None	None	None		None	Min	Min	None	Min	Min
Act Effct Green (s)	20.4	20.4	34.2	20.4	20.4	118.1	8.7	61.9	61.9	20.4	76.9	76.9
Actuated g/C Ratio	0.17	0.17	0.29	0.17	0.17	1.00	0.07	0.52	0.52	0.17	0.65	0.65
v/c Ratio	0.31	0.06	0.06	1.87	0.20	0.71	0.16	0.77	0.01	0.65	0.33	0.07
Control Delay	52.8	48.9	37.5	437.3	49.7	2.7	61.3	25.5	13.5	52.5	9.7	8.1
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	52.8	48.9	37.5	437.3	49.7	2.7	61.3	25.5	13.5	52.5	9.7	8.1
LOS	D	D	D	F	D	A	E	C	B	D	A	A
Approach Delay		48.7			123.9			26.0			23.1	
Approach LOS		D			F			C			C	
Queue Length 50th (ft)	47	12	15	~511	41	0	15	430	4	139	133	20
Queue Length 95th (ft)	115	43	48	#914	103	0	49	579	14	229	169	37
Internal Link Dist (ft)		1581			1372			4052			874	
Turn Bay Length (ft)	263			175		375	400		75	800		100
Base Capacity (vph)	230	322	547	240	322	1583	229	3317	1483	1039	3489	1560
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	0.31	0.06	0.05	1.87	0.20	0.71	0.09	0.43	0.01	0.37	0.22	0.05

Intersection Summary

Area Type: Other

Cycle Length: 185

Actuated Cycle Length: 118.1

Natural Cycle: 110

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.87

Intersection Signal Delay: 61.9

Intersection LOS: E

Intersection Capacity Utilization 87.0%

ICU Level of Service E

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

5: NC 55 & Technology Drive/E. Williams Street
 Horton Park - Apex, NC

Existing (2019) AM
 06/28/2019

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 5: NC 55 & Technology Drive/E. Williams Street















5: NC 55 & Technology Drive/E. Williams Street
Horton Park - Apex, NC

Existing (2019) PM
06/28/2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	43	15	46	4	512	1	972	345	960	1467	45
Future Volume (vph)	40	43	15	46	4	512	1	972	345	960	1467	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	263		0	175		375	400		75	800		100
Storage Lanes	2		1	1		1	1		1	2		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frnt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	3539	1583	3433	3539	1583
Flt Permitted	0.755			0.726			0.950			0.950		
Satd. Flow (perm)	1406	1863	1583	1352	1863	1583	1770	3539	1583	3433	3539	1583
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			55			45	
Link Distance (ft)		1661			1452			4132			954	
Travel Time (s)		25.2			22.0			51.2			14.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	44	48	17	51	4	569	1	1080	383	1067	1630	50
Shared Lane Traffic (%)												
Lane Group Flow (vph)	44	48	17	51	4	569	1	1080	383	1067	1630	50
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)		16			16			36			36	
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	pm+ov	Perm	NA	Free	Prot	NA	Perm	Prot	NA	Perm
Protected Phases		4	5		8		5	2		1	6	
Permitted Phases	4		4	8		Free			2			6

5: NC 55 & Technology Drive/E. Williams Street
Horton Park - Apex, NC

Existing (2019) PM
06/28/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	5	8	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0		7.0	14.0	14.0	7.0	14.0	14.0
Minimum Split (s)	13.6	13.6	13.3	13.4	13.4		13.3	20.3	20.3	13.3	20.5	20.5
Total Split (s)	25.0	25.0	20.0	25.0	25.0		20.0	120.0	120.0	40.0	120.0	120.0
Total Split (%)	13.5%	13.5%	10.8%	13.5%	13.5%		10.8%	64.9%	64.9%	21.6%	64.9%	64.9%
Maximum Green (s)	18.4	18.4	13.7	18.6	18.6		13.7	113.7	113.7	33.7	113.5	113.5
Yellow Time (s)	4.2	4.2	3.0	4.6	4.6		3.0	5.1	5.1	3.0	5.3	5.3
All-Red Time (s)	2.4	2.4	3.3	1.8	1.8		3.3	1.2	1.2	3.3	1.2	1.2
Lost Time Adjust (s)	-1.6	-1.6	-1.3	-1.4	-1.4		-1.3	-1.3	-1.3	-1.3	-1.5	-1.5
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
Lead/Lag			Lead				Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?			Yes				Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	6.0	6.0	3.0	6.0	6.0
Minimum Gap (s)	2.0	2.0	2.0	2.0	2.0		2.0	3.4	3.4	3.0	3.4	3.4
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	20.0	20.0	0.0	20.0	20.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	30.0	30.0	0.0	30.0	30.0
Recall Mode	None	None	None	None	None		None	Min	Min	None	Min	Min
Act Effct Green (s)	11.1	11.1	21.2	11.0	11.0	106.6	8.5	48.0	48.0	35.7	85.4	85.4
Actuated g/C Ratio	0.10	0.10	0.20	0.10	0.10	1.00	0.08	0.45	0.45	0.33	0.80	0.80
v/c Ratio	0.30	0.25	0.05	0.37	0.02	0.36	0.01	0.68	0.54	0.93	0.58	0.04
Control Delay	53.7	51.0	36.7	56.1	47.8	0.6	53.0	26.2	25.3	50.7	7.6	4.9
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	53.7	51.0	36.7	56.1	47.8	0.6	53.0	26.2	25.3	50.7	7.6	4.9
LOS	D	D	D	E	D	A	D	C	C	D	A	A
Approach Delay		49.8			5.5			26.0			24.3	
Approach LOS		D			A			C			C	
Queue Length 50th (ft)	29	31	9	33	3	0	1	308	191	367	158	5
Queue Length 95th (ft)	72	75	32	81	14	0	7	414	304	#662	440	25
Internal Link Dist (ft)		1581			1372			4052			874	
Turn Bay Length (ft)	263			175		375	400		75	800		100
Base Capacity (vph)	269	356	416	258	356	1583	254	3468	1551	1150	3539	1583
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	0.16	0.13	0.04	0.20	0.01	0.36	0.00	0.31	0.25	0.93	0.46	0.03

Intersection Summary

Area Type: Other

Cycle Length: 185

Actuated Cycle Length: 106.6

Natural Cycle: 80

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.93

Intersection Signal Delay: 23.0

Intersection Capacity Utilization 76.0%

Analysis Period (min) 15

Intersection LOS: C

ICU Level of Service D

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 5: NC 55 & Technology Drive/E. Williams Street















5: NC 55 & Technology Drive/E. Williams Street
Horton Park - Apex, NC

Background (2024) AM
06/28/2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	74	21	28	482	68	1178	23	1512	12	415	800	75
Future Volume (vph)	74	21	28	482	68	1178	23	1512	12	415	800	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	263		0	175		375	400		75	800		100
Storage Lanes	2		1	1		1	1		1	2		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frnt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	3539	1583	3433	3539	1583
Flt Permitted	0.686			0.742			0.950			0.950		
Satd. Flow (perm)	1278	1863	1583	1382	1863	1583	1770	3539	1583	3433	3539	1583
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			55			45	
Link Distance (ft)		1661			1452			4132			954	
Travel Time (s)		25.2			22.0			51.2			14.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	82	23	31	536	76	1309	26	1680	13	461	889	83
Shared Lane Traffic (%)												
Lane Group Flow (vph)	82	23	31	536	76	1309	26	1680	13	461	889	83
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)		16			16			36			36	
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	pm+ov	Perm	NA	Free	Prot	NA	Perm	Prot	NA	Perm
Protected Phases		4	5		8		5	2		1	6	
Permitted Phases	4		4	8		Free			2			6

5: NC 55 & Technology Drive/E. Williams Street
Horton Park - Apex, NC

Background (2024) AM
06/28/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	5	8	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0		7.0	14.0	14.0	7.0	14.0	14.0
Minimum Split (s)	13.6	13.6	13.3	13.4	13.4		13.3	20.3	20.3	13.3	20.5	20.5
Total Split (s)	25.0	25.0	20.0	25.0	25.0		20.0	120.0	120.0	40.0	120.0	120.0
Total Split (%)	13.5%	13.5%	10.8%	13.5%	13.5%		10.8%	64.9%	64.9%	21.6%	64.9%	64.9%
Maximum Green (s)	18.4	18.4	13.7	18.6	18.6		13.7	113.7	113.7	33.7	113.5	113.5
Yellow Time (s)	4.2	4.2	3.0	4.6	4.6		3.0	5.1	5.1	3.0	5.3	5.3
All-Red Time (s)	2.4	2.4	3.3	1.8	1.8		3.3	1.2	1.2	3.3	1.2	1.2
Lost Time Adjust (s)	-1.6	-1.6	-1.3	-1.4	-1.4		-1.3	-1.3	-1.3	-1.3	-1.5	-1.5
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
Lead/Lag			Lead				Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?			Yes				Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	6.0	6.0	3.0	6.0	6.0
Minimum Gap (s)	2.0	2.0	2.0	2.0	2.0		2.0	3.4	3.4	3.0	3.4	3.4
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	20.0	20.0	0.0	20.0	20.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	30.0	30.0	0.0	30.0	30.0
Recall Mode	None	None	None	None	None		None	Min	Min	None	Min	Min
Act Effct Green (s)	20.6	20.6	34.9	20.6	20.6	147.2	9.2	84.8	84.8	26.4	105.4	105.4
Actuated g/C Ratio	0.14	0.14	0.24	0.14	0.14	1.00	0.06	0.58	0.58	0.18	0.72	0.72
v/c Ratio	0.46	0.09	0.08	2.79	0.29	0.83	0.24	0.82	0.01	0.75	0.35	0.07
Control Delay	74.7	66.0	53.0	839.7	67.4	5.1	79.7	29.0	13.4	67.4	8.4	6.7
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	74.7	66.0	53.0	839.7	67.4	5.1	79.7	29.0	13.4	67.4	8.4	6.7
LOS	E	E	D	F	E	A	E	C	B	E	A	A
Approach Delay		68.3			240.4			29.6			27.3	
Approach LOS		E			F			C			C	
Queue Length 50th (ft)	72	19	23	~862	65	0	24	646	5	214	162	23
Queue Length 95th (ft)	164	59	66	#1406	148	0	69	837	16	341	204	41
Internal Link Dist (ft)		1581			1372			4052			874	
Turn Bay Length (ft)	263			175		375	400		75	800		100
Base Capacity (vph)	178	260	442	192	260	1583	185	2839	1270	838	3199	1430
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	0.46	0.09	0.07	2.79	0.29	0.83	0.14	0.59	0.01	0.55	0.28	0.06

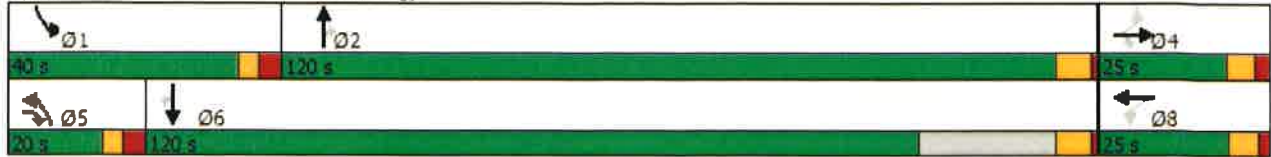
Intersection Summary

Area Type: Other
 Cycle Length: 185
 Actuated Cycle Length: 147.2
 Natural Cycle: 140
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 2.79
 Intersection Signal Delay: 107.7
 Intersection Capacity Utilization 99.5%
 Analysis Period (min) 15
 Intersection LOS: F
 ICU Level of Service F

~ 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 55 & Technology Drive/E. Williams Street



5: NC 55 & Technology Drive/E. Williams Street
Horton Park - Apex, NC

Background (2024) PM
06/28/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	46	51	17	75	5	599	1	1144	400	1148	1701	52
Future Volume (vph)	46	51	17	75	5	599	1	1144	400	1148	1701	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	263		0	175		375	400		75	800		100
Storage Lanes	2		1	1		1	1		1	2		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.97	0.95	1.00
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	1770	1863	1583	1770	3539	1583	3433	3539	1583
Flt Permitted	0.754			0.720			0.950			0.950		
Satd. Flow (perm)	1405	1863	1583	1341	1863	1583	1770	3539	1583	3433	3539	1583
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			55			45	
Link Distance (ft)		1661			1452			4132			954	
Travel Time (s)		25.2			22.0			51.2			14.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	51	57	19	83	6	666	1	1271	444	1276	1890	58
Shared Lane Traffic (%)												
Lane Group Flow (vph)	51	57	19	83	6	666	1	1271	444	1276	1890	58
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)		16			16			36			36	
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	pm+ov	Perm	NA	Free	Prot	NA	Perm	Prot	NA	Perm
Protected Phases		4	5		8		5	2		1	6	
Permitted Phases	4		4	8		Free			2			6

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	5	8	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0		7.0	14.0	14.0	7.0	14.0	14.0
Minimum Split (s)	13.6	13.6	13.3	13.4	13.4		13.3	20.3	20.3	13.3	20.5	20.5
Total Split (s)	25.0	25.0	20.0	25.0	25.0		20.0	120.0	120.0	40.0	120.0	120.0
Total Split (%)	13.5%	13.5%	10.8%	13.5%	13.5%		10.8%	64.9%	64.9%	21.6%	64.9%	64.9%
Maximum Green (s)	18.4	18.4	13.7	18.6	18.6		13.7	113.7	113.7	33.7	113.5	113.5
Yellow Time (s)	4.2	4.2	3.0	4.6	4.6		3.0	5.1	5.1	3.0	5.3	5.3
All-Red Time (s)	2.4	2.4	3.3	1.8	1.8		3.3	1.2	1.2	3.3	1.2	1.2
Lost Time Adjust (s)	-1.6	-1.6	-1.3	-1.4	-1.4		-1.3	-1.3	-1.3	-1.3	-1.5	-1.5
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
Lead/Lag			Lead				Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?			Yes				Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	6.0	6.0	3.0	6.0	6.0
Minimum Gap (s)	2.0	2.0	2.0	2.0	2.0		2.0	3.4	3.4	3.0	3.4	3.4
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	20.0	20.0	0.0	20.0	20.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	30.0	30.0	0.0	30.0	30.0
Recall Mode	None	None	None	None	None		None	Min	Min	None	Min	Min
Act Effct Green (s)	14.4	14.4	28.0	14.4	14.4	127.3	8.5	61.8	61.8	35.7	95.3	95.3
Actuated g/C Ratio	0.11	0.11	0.22	0.11	0.11	1.00	0.07	0.49	0.49	0.28	0.75	0.75
v/c Ratio	0.32	0.27	0.05	0.55	0.03	0.42	0.01	0.74	0.58	1.33	0.71	0.05
Control Delay	61.4	58.6	44.4	70.5	55.8	0.8	66.0	28.9	26.6	190.4	12.1	5.9
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	61.4	58.6	44.4	70.5	55.8	0.8	66.0	28.9	26.6	190.4	12.1	5.9
LOS	E	E	D	E	E	A	E	C	C	F	B	A
Approach Delay		57.6			8.9			28.3			82.6	
Approach LOS		E			A			C			F	
Queue Length 50th (ft)	38	43	12	64	4	0	1	431	255	~697	485	14
Queue Length 95th (ft)	94	100	41	140	21	0	8	541	375	#1101	634	29
Internal Link Dist (ft)		1581			1372			4052			874	
Turn Bay Length (ft)	263			175		375	400		75	800		100
Base Capacity (vph)	225	298	433	214	298	1583	212	3177	1421	963	3433	1536
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	0.23	0.19	0.04	0.39	0.02	0.42	0.00	0.40	0.31	1.33	0.55	0.04

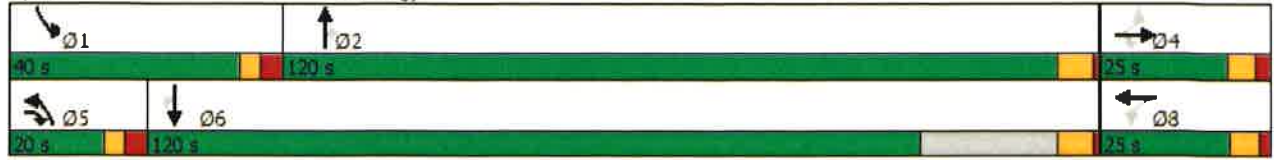
Intersection Summary

Area Type: Other
 Cycle Length: 185
 Actuated Cycle Length: 127.3
 Natural Cycle: 90
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 1.33
 Intersection Signal Delay: 56.5
 Intersection Capacity Utilization 87.7%
 Analysis Period (min) 15
 Intersection LOS: E
 ICU Level of Service E

~ 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 55 & Technology Drive/E. Williams Street















5: NC 55 & Technology Drive/E. Williams Street
Horton Park - Apex, NC

Background (2026) AM
06/28/2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	79	22	30	511	72	1249	24	1602	12	440	849	80
Future Volume (vph)	79	22	30	511	72	1249	24	1602	12	440	849	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	263		0	175		375	400		75	800		100
Storage Lanes	2		1	1		1	1		1	2		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Flt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	3539	1583	3433	3539	1583
Flt Permitted	0.653			0.742			0.950			0.950		
Satd. Flow (perm)	1216	1863	1583	1382	1863	1583	1770	3539	1583	3433	3539	1583
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			55			45	
Link Distance (ft)		1661			1452			4132			954	
Travel Time (s)		25.2			22.0			51.2			14.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	88	24	33	568	80	1388	27	1780	13	489	943	89
Shared Lane Traffic (%)												
Lane Group Flow (vph)	88	24	33	568	80	1388	27	1780	13	489	943	89
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)		16			16			36			36	
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	pm+ov	Perm	NA	Free	Prot	NA	Perm	Prot	NA	Perm
Protected Phases		4	5		8		5	2		1	6	
Permitted Phases	4		4	8		Free			2			6

5: NC 55 & Technology Drive/E. Williams Street
Horton Park - Apex, NC

Background (2026) AM
06/28/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	5	8	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0		7.0	14.0	14.0	7.0	14.0	14.0
Minimum Split (s)	13.6	13.6	13.3	13.4	13.4		13.3	20.3	20.3	13.3	20.5	20.5
Total Split (s)	25.0	25.0	20.0	25.0	25.0		20.0	120.0	120.0	40.0	120.0	120.0
Total Split (%)	13.5%	13.5%	10.8%	13.5%	13.5%		10.8%	64.9%	64.9%	21.6%	64.9%	64.9%
Maximum Green (s)	18.4	18.4	13.7	18.6	18.6		13.7	113.7	113.7	33.7	113.5	113.5
Yellow Time (s)	4.2	4.2	3.0	4.6	4.6		3.0	5.1	5.1	3.0	5.3	5.3
All-Red Time (s)	2.4	2.4	3.3	1.8	1.8		3.3	1.2	1.2	3.3	1.2	1.2
Lost Time Adjust (s)	-1.6	-1.6	-1.3	-1.4	-1.4		-1.3	-1.3	-1.3	-1.3	-1.5	-1.5
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
Lead/Lag			Lead				Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?			Yes				Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	6.0	6.0	3.0	6.0	6.0
Minimum Gap (s)	2.0	2.0	2.0	2.0	2.0		2.0	3.4	3.4	3.0	3.4	3.4
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	20.0	20.0	0.0	20.0	20.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	30.0	30.0	0.0	30.0	30.0
Recall Mode	None	None	None	None	None		None	Min	Min	None	Min	Min
Act Effct Green (s)	20.5	20.5	34.9	20.5	20.5	159.0	9.3	94.4	94.4	28.8	117.3	117.3
Actuated g/C Ratio	0.13	0.13	0.22	0.13	0.13	1.00	0.06	0.59	0.59	0.18	0.74	0.74
v/c Ratio	0.56	0.10	0.10	3.19	0.33	0.88	0.26	0.85	0.01	0.79	0.36	0.08
Control Delay	85.8	71.5	58.3	1023.2	74.0	7.3	86.0	31.0	13.4	73.8	8.0	6.3
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	85.8	71.5	58.3	1023.2	74.0	7.3	86.0	31.0	13.4	73.8	8.0	6.3
LOS	F	E	E	F	E	A	F	C	B	E	A	A
Approach Delay		77.2			293.3			31.6			29.1	
Approach LOS		E			F			C			C	
Queue Length 50th (ft)	88	23	28	~1037	77	0	28	764	5	252	175	24
Queue Length 95th (ft)	#187	61	70	#1489	156	0	71	935	16	362	220	44
Internal Link Dist (ft)		1581			1372			4052			874	
Turn Bay Length (ft)	263			175		375	400		75	800		100
Base Capacity (vph)	156	240	408	178	240	1583	171	2622	1173	774	3045	1362
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	0.56	0.10	0.08	3.19	0.33	0.88	0.16	0.68	0.01	0.63	0.31	0.07

Intersection Summary

Area Type: Other

Cycle Length: 185

Actuated Cycle Length: 159

Natural Cycle: 140

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 3.19

Intersection Signal Delay: 128.6

Intersection Capacity Utilization 104.3%

Analysis Period (min) 15

Intersection LOS: F

ICU Level of Service G

~ Volume exceeds capacity, queue is theoretically infinite.

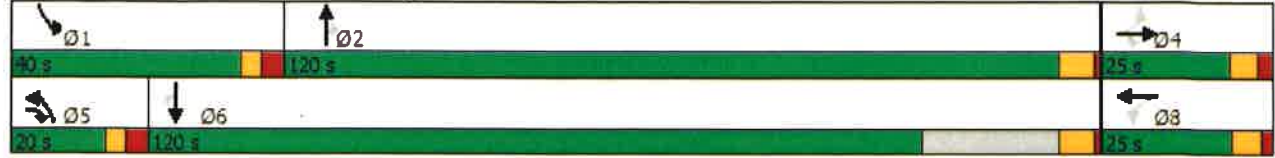
Queue shown is maximum after two cycles.

5: NC 55 & Technology Drive/E. Williams Street
Horton Park - Apex, NC

Background (2026) AM
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95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: NC 55 & Technology Drive/E. Williams Street



5: NC 55 & Technology Drive/E. Williams Street
Horton Park - Apex, NC

Background (2026) PM
06/28/2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	49	54	18	79	5	635	1	1212	424	1216	1804	55
Future Volume (vph)	49	54	18	79	5	635	1	1212	424	1216	1804	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	263		0	175		375	400		75	800		100
Storage Lanes	2		1	1		1	1		1	2		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Flt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	3539	1583	3433	3539	1583
Flt Permitted	0.754			0.718			0.950			0.950		
Satd. Flow (perm)	1405	1863	1583	1337	1863	1583	1770	3539	1583	3433	3539	1583
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			55			45	
Link Distance (ft)		1661			1452			4132			954	
Travel Time (s)		25.2			22.0			51.2			14.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	54	60	20	88	6	706	1	1347	471	1351	2004	61
Shared Lane Traffic (%)												
Lane Group Flow (vph)	54	60	20	88	6	706	1	1347	471	1351	2004	61
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)		16			16			36			36	
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	pm+ov	Perm	NA	Free	Prot	NA	Perm	Prot	NA	Perm
Protected Phases		4	5		8		5	2		1	6	
Permitted Phases	4		4	8		Free			2			6

5: NC 55 & Technology Drive/E. Williams Street
Horton Park - Apex, NC

Background (2026) PM
06/28/2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	5	8	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0		7.0	14.0	14.0	7.0	14.0	14.0
Minimum Split (s)	13.6	13.6	13.3	13.4	13.4		13.3	20.3	20.3	13.3	20.5	20.5
Total Split (s)	25.0	25.0	20.0	25.0	25.0		20.0	120.0	120.0	40.0	120.0	120.0
Total Split (%)	13.5%	13.5%	10.8%	13.5%	13.5%		10.8%	64.9%	64.9%	21.6%	64.9%	64.9%
Maximum Green (s)	18.4	18.4	13.7	18.6	18.6		13.7	113.7	113.7	33.7	113.5	113.5
Yellow Time (s)	4.2	4.2	3.0	4.6	4.6		3.0	5.1	5.1	3.0	5.3	5.3
All-Red Time (s)	2.4	2.4	3.3	1.8	1.8		3.3	1.2	1.2	3.3	1.2	1.2
Lost Time Adjust (s)	-1.6	-1.6	-1.3	-1.4	-1.4		-1.3	-1.3	-1.3	-1.3	-1.5	-1.5
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
Lead/Lag			Lead				Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?			Yes				Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	6.0	6.0	3.0	6.0	6.0
Minimum Gap (s)	2.0	2.0	2.0	2.0	2.0		2.0	3.4	3.4	3.0	3.4	3.4
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	20.0	20.0	0.0	20.0	20.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	30.0	30.0	0.0	30.0	30.0
Recall Mode	None	None	None	None	None		None	Min	Min	None	Min	Min
Act Effct Green (s)	15.2	15.2	28.8	15.2	15.2	134.4	8.5	68.2	68.2	35.7	101.7	101.7
Actuated g/C Ratio	0.11	0.11	0.21	0.11	0.11	1.00	0.06	0.51	0.51	0.27	0.76	0.76
v/c Ratio	0.34	0.29	0.06	0.58	0.03	0.45	0.01	0.75	0.59	1.48	0.75	0.05
Control Delay	65.3	62.1	47.6	76.0	59.0	0.9	69.0	29.0	26.3	258.1	13.1	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	65.3	62.1	47.6	76.0	59.0	0.9	69.0	29.0	26.3	258.1	13.1	5.8
LOS	E	E	D	E	E	A	E	C	C	F	B	A
Approach Delay		61.2			9.6			28.3			109.8	
Approach LOS		E			A			C			F	
Queue Length 50th (ft)	43	48	14	73	5	0	1	480	281	~834	567	15
Queue Length 95th (ft)	100	107	43	151	22	0	8	588	404	#1223	720	31
Internal Link Dist (ft)		1581			1372			4052			874	
Turn Bay Length (ft)	263			175		375	400		75	800		100
Base Capacity (vph)	213	282	419	203	282	1583	201	3038	1359	911	3358	1502
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	0.25	0.21	0.05	0.43	0.02	0.45	0.00	0.44	0.35	1.48	0.60	0.04

Intersection Summary

Area Type: Other

Cycle Length: 185

Actuated Cycle Length: 134.4

Natural Cycle: 110

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.48

Intersection Signal Delay: 71.8

Intersection Capacity Utilization 91.7%

Analysis Period (min) 15

Intersection LOS: E

ICU Level of Service F

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

5: NC 55 & Technology Drive/E. Williams Street
Horton Park - Apex, NC

Background (2026) PM
06/28/2019

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: NC 55 & Technology Drive/E. Williams Street



Lanes, Volumes, Timings
 5: NC 55 & Technology Drive/E. Williams Street

Combined (2024) AM - Phase 1
 06/28/2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	74	21	28	503	68	1188	23	1512	19	418	800	75
Future Volume (vph)	74	21	28	503	68	1188	23	1512	19	418	800	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	263		0	175		375	400		75	800		100
Storage Lanes	2		1	1		1	1		1	2		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frnt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	3539	1583	3433	3539	1583
Flt Permitted	0.685			0.742			0.950			0.950		
Satd. Flow (perm)	1276	1863	1583	1382	1863	1583	1770	3539	1583	3433	3539	1583
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			55			45	
Link Distance (ft)		1661			1452			4132			954	
Travel Time (s)		25.2			22.0			51.2			14.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	82	23	31	559	76	1320	26	1680	21	464	889	83
Shared Lane Traffic (%)												
Lane Group Flow (vph)	82	23	31	559	76	1320	26	1680	21	464	889	83
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)		16			16			36			36	
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	pm+ov	Perm	NA	Free	Prot	NA	Perm	Prot	NA	Perm
Protected Phases		4	5		8		5	2		1	6	
Permitted Phases	4		4	8		Free			2			6

Lanes, Volumes, Timings
 5: NC 55 & Technology Drive/E. Williams Street

Combined (2024) AM - Phase 1
 06/28/2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	5	8	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0		7.0	14.0	14.0	7.0	14.0	14.0
Minimum Split (s)	13.6	13.6	13.3	13.4	13.4		13.3	20.3	20.3	13.3	20.5	20.5
Total Split (s)	25.0	25.0	20.0	25.0	25.0		20.0	120.0	120.0	40.0	120.0	120.0
Total Split (%)	13.5%	13.5%	10.8%	13.5%	13.5%		10.8%	64.9%	64.9%	21.6%	64.9%	64.9%
Maximum Green (s)	18.4	18.4	13.7	18.6	18.6		13.7	113.7	113.7	33.7	113.5	113.5
Yellow Time (s)	4.2	4.2	3.0	4.6	4.6		3.0	5.1	5.1	3.0	5.3	5.3
All-Red Time (s)	2.4	2.4	3.3	1.8	1.8		3.3	1.2	1.2	3.3	1.2	1.2
Lost Time Adjust (s)	-1.6	-1.6	-1.3	-1.4	-1.4		-1.3	-1.3	-1.3	-1.3	-1.5	-1.5
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
Lead/Lag			Lead				Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?			Yes				Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	6.0	6.0	3.0	6.0	6.0
Minimum Gap (s)	2.0	2.0	2.0	2.0	2.0		2.0	3.4	3.4	3.0	3.4	3.4
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	20.0	20.0	0.0	20.0	20.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	30.0	30.0	0.0	30.0	30.0
Recall Mode	None	None	None	None	None		None	Min	Min	None	Min	Min
Act Effct Green (s)	20.5	20.5	34.9	20.5	20.5	147.6	9.2	85.1	85.1	26.5	105.9	105.9
Actuated g/C Ratio	0.14	0.14	0.24	0.14	0.14	1.00	0.06	0.58	0.58	0.18	0.72	0.72
v/c Ratio	0.46	0.09	0.08	2.91	0.29	0.83	0.24	0.82	0.02	0.75	0.35	0.07
Control Delay	75.1	66.1	53.2	896.4	67.7	5.3	79.9	29.0	13.5	67.6	8.4	6.7
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	75.1	66.1	53.2	896.4	67.7	5.3	79.9	29.0	13.5	67.6	8.4	6.7
LOS	E	E	D	F	E	A	E	C	B	E	A	A
Approach Delay		68.6			262.5			29.6			27.4	
Approach LOS		E			F			C			C	
Queue Length 50th (ft)	72	19	23	-909	66	0	24	648	8	216	162	23
Queue Length 95th (ft)	164	59	66	#1467	148	0	69	837	22	343	204	41
Internal Link Dist (ft)		1581			1372			4052			874	
Turn Bay Length (ft)	263			175		375	400		75	800		100
Base Capacity (vph)	177	259	440	192	259	1583	184	2830	1266	835	3196	1429
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	0.46	0.09	0.07	2.91	0.29	0.83	0.14	0.59	0.02	0.56	0.28	0.06

Intersection Summary

Area Type: Other
 Cycle Length: 185
 Actuated Cycle Length: 147.6
 Natural Cycle: 150
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 2.91
 Intersection Signal Delay: 116.7
 Intersection Capacity Utilization 100.8%
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.

Intersection LOS: F
 ICU Level of Service G

Lanes, Volumes, Timings
5: NC 55 & Technology Drive/E. Williams Street

Combined (2024) AM - Phase 1
 06/28/2019

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.



























Splits and Phases: 5: NC 55 & Technology Drive/E. Williams Street



Lanes, Volumes, Timings
 5: NC 55 & Technology Drive/E. Williams Street

Combined (2024) PM - Phase 1

06/28/2019

													
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	46	51	17	88	5	606	1	1144	423	1159	1701	52	
Future Volume (vph)	46	51	17	88	5	606	1	1144	423	1159	1701	52	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Storage Length (ft)	263		0	175		375	400		75	800		100	
Storage Lanes	2		1	1		1	1		1	2		1	
Taper Length (ft)	100			100			100			100			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.97	0.95	1.00	
Frnt			0.850			0.850			0.850			0.850	
Flt Protected	0.950			0.950			0.950			0.950			
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	3539	1583	3433	3539	1583	
Flt Permitted	0.754			0.720			0.950			0.950			
Satd. Flow (perm)	1405	1863	1583	1341	1863	1583	1770	3539	1583	3433	3539	1583	
Right Turn on Red			No			No			No			No	
Satd. Flow (RTOR)													
Link Speed (mph)		45			45			55			45		
Link Distance (ft)		1661			1452			4132			954		
Travel Time (s)		25.2			22.0			51.2			14.5		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	
Adj. Flow (vph)	51	57	19	98	6	673	1	1271	470	1288	1890	58	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	51	57	19	98	6	673	1	1271	470	1288	1890	58	
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)		16			16			36			36		
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Turning Speed (mph)	15		9	15		9	15		9	15		9	
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20	
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	20	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel													
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94		
Detector 2 Size(ft)		6			6			6			6		
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex		
Detector 2 Channel													
Detector 2 Extend (s)		0.0			0.0			0.0			0.0		
Turn Type	Perm	NA	pm+ov	Perm	NA	Free	Prot	NA	Perm	Prot	NA	Perm	
Protected Phases		4	5		8		5	2		1	6		
Permitted Phases	4		4	8		Free			2			6	

Lanes, Volumes, Timings
 5: NC 55 & Technology Drive/E. Williams Street

Combined (2024) PM - Phase 1
 06/28/2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	5	8	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0		7.0	14.0	14.0	7.0	14.0	14.0
Minimum Split (s)	13.6	13.6	13.3	13.4	13.4		13.3	20.3	20.3	13.3	20.5	20.5
Total Split (s)	25.0	25.0	20.0	25.0	25.0		20.0	120.0	120.0	40.0	120.0	120.0
Total Split (%)	13.5%	13.5%	10.8%	13.5%	13.5%		10.8%	64.9%	64.9%	21.6%	64.9%	64.9%
Maximum Green (s)	18.4	18.4	13.7	18.6	18.6		13.7	113.7	113.7	33.7	113.5	113.5
Yellow Time (s)	4.2	4.2	3.0	4.6	4.6		3.0	5.1	5.1	3.0	5.3	5.3
All-Red Time (s)	2.4	2.4	3.3	1.8	1.8		3.3	1.2	1.2	3.3	1.2	1.2
Lost Time Adjust (s)	-1.6	-1.6	-1.3	-1.4	-1.4		-1.3	-1.3	-1.3	-1.3	-1.5	-1.5
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
Lead/Lag			Lead				Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?			Yes				Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	6.0	6.0	3.0	6.0	6.0
Minimum Gap (s)	2.0	2.0	2.0	2.0	2.0		2.0	3.4	3.4	3.0	3.4	3.4
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	20.0	20.0	0.0	20.0	20.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	30.0	30.0	0.0	30.0	30.0
Recall Mode	None	None	None	None	None		None	Min	Min	None	Min	Min
Act Effct Green (s)	15.9	15.9	29.4	15.9	15.9	130.0	8.5	63.2	63.2	35.6	96.6	96.6
Actuated g/C Ratio	0.12	0.12	0.23	0.12	0.12	1.00	0.07	0.49	0.49	0.27	0.74	0.74
v/c Ratio	0.30	0.25	0.05	0.60	0.03	0.43	0.01	0.74	0.61	1.37	0.72	0.05
Control Delay	60.6	58.2	44.5	72.8	55.8	0.8	66.0	29.5	28.1	209.6	12.8	6.2
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	60.6	58.2	44.5	72.8	55.8	0.8	66.0	29.5	28.1	209.6	12.8	6.2
LOS	E	E	D	E	E	A	E	C	C	F	B	A
Approach Delay		57.1			10.3			29.1				91.0
Approach LOS		E			B			C				F
Queue Length 50th (ft)	39	44	13	79	5	0	1	447	287	~753	521	15
Queue Length 95th (ft)	94	100	41	161	21	0	8	541	405	#1113	634	29
Internal Link Dist (ft)		1581			1372			4052			874	
Turn Bay Length (ft)	263			175		375	400		75	800		100
Base Capacity (vph)	219	291	441	209	291	1583	207	3119	1395	941	3419	1529
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	0.23	0.20	0.04	0.47	0.02	0.43	0.00	0.41	0.34	1.37	0.55	0.04

Intersection Summary

Area Type: Other
 Cycle Length: 185
 Actuated Cycle Length: 130
 Natural Cycle: 90
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 1.37
 Intersection Signal Delay: 61.3
 Intersection Capacity Utilization 88.7%
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.

Intersection LOS: E
 ICU Level of Service E

Lanes, Volumes, Timings
 5: NC 55 & Technology Drive/E. Williams Street

Combined (2024) PM - Phase 1
 06/28/2019

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 5: NC 55 & Technology Drive/E. Williams Street



5: NC 55 & Technology Drive/E. Williams Street Combined (2024) AM - Phase 1 - with Improvements
 Horton Park - Apex, NC

06/28/2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	74	21	28	503	68	1188	23	1512	19	418	800	75
Future Volume (vph)	74	21	28	503	68	1188	23	1512	19	418	800	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	263		0	175		375	400		75	800		100
Storage Lanes	2		1	1		1	1		1	2		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Flt Protected	0.950		0.850	0.950		0.850	0.950		0.850	0.950		0.850
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	3539	1583	3433	3539	1583
Flt Permitted	0.700			0.742			0.950			0.950		
Satd. Flow (perm)	1304	1863	1583	1382	1863	1583	1770	3539	1583	3433	3539	1583
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			55			45	
Link Distance (ft)		1661			1452			4132			954	
Travel Time (s)		25.2			22.0			51.2			14.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	82	23	31	559	76	1320	26	1680	21	464	889	83
Shared Lane Traffic (%)												
Lane Group Flow (vph)	82	23	31	559	76	1320	26	1680	21	464	889	83
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)		16			16			36			36	
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	pm+ov	Perm	NA	Free	Prot	NA	Perm	Prot	NA	Perm
Protected Phases		4	5		8		5	2		1	6	
Permitted Phases	4		4	8		Free			2			6

5: NC 55 & Technology Drive/E. Williams Street Combined (2024) AM - Phase 1 - with Improvements
 Horton Park - Apex, NC 06/28/2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	5	8	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0		7.0	14.0	14.0	7.0	14.0	14.0
Minimum Split (s)	13.6	13.6	13.3	13.4	13.4		13.3	20.3	20.3	13.3	20.5	20.5
Total Split (s)	63.0	63.0	15.0	63.0	63.0		15.0	94.0	94.0	28.0	107.0	107.0
Total Split (%)	34.1%	34.1%	8.1%	34.1%	34.1%		8.1%	50.8%	50.8%	15.1%	57.8%	57.8%
Maximum Green (s)	56.4	56.4	8.7	56.6	56.6		8.7	87.7	87.7	21.7	100.5	100.5
Yellow Time (s)	4.2	4.2	3.0	4.6	4.6		3.0	5.1	5.1	3.0	5.3	5.3
All-Red Time (s)	2.4	2.4	3.3	1.8	1.8		3.3	1.2	1.2	3.3	1.2	1.2
Lost Time Adjust (s)	-1.6	-1.6	-1.3	-1.4	-1.4		-1.3	-1.3	-1.3	-1.3	-1.5	-1.5
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
Lead/Lag			Lead				Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?			Yes				Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	6.0	6.0	3.0	6.0	6.0
Minimum Gap (s)	2.0	2.0	2.0	2.0	2.0		2.0	3.4	3.4	3.0	3.4	3.4
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	20.0	20.0	0.0	20.0	20.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	30.0	30.0	0.0	30.0	30.0
Recall Mode	None	None	None	None	None		None	Min	Min	None	Min	Min
Act Effct Green (s)	58.0	58.0	71.9	58.0	58.0	185.0	8.9	89.0	89.0	23.0	105.7	105.7
Actuated g/C Ratio	0.31	0.31	0.39	0.31	0.31	1.00	0.05	0.48	0.48	0.12	0.57	0.57
v/c Ratio	0.20	0.04	0.05	1.29	0.13	0.83	0.31	0.99	0.03	1.09	0.44	0.09
Control Delay	48.2	44.6	35.4	195.8	46.3	5.3	94.3	65.7	25.5	141.4	24.1	19.3
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	48.2	44.6	35.4	195.8	46.3	5.3	94.3	65.7	25.5	141.4	24.1	19.3
LOS	D	D	D	F	D	A	F	E	C	F	C	B
Approach Delay		44.7			61.4			65.6			61.7	
Approach LOS		D			E			E			E	
Queue Length 50th (ft)	74	20	24	~861	67	0	31	1052	13	~324	327	46
Queue Length 95th (ft)	124	45	49	#1110	113	0	69	#1227	32	#446	389	78
Internal Link Dist (ft)		1581			1372			4052			874	
Turn Bay Length (ft)	263			175		375	400		75	800		100
Base Capacity (vph)	408	584	624	433	584	1583	95	1702	761	426	2022	904
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	0.20	0.04	0.05	1.29	0.13	0.83	0.27	0.99	0.03	1.09	0.44	0.09

Intersection Summary

Area Type: Other
 Cycle Length: 185
 Actuated Cycle Length: 185
 Natural Cycle: 150
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 1.29
 Intersection Signal Delay: 62.4
 Intersection Capacity Utilization 100.8%
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.

Intersection LOS: E
 ICU Level of Service G

5: NC 55 & Technology Drive/E. Williams Street Combined (2024) AM - Phase 1 - with Improvements
 Horton Park - Apex, NC 06/28/2019

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 5: NC 55 & Technology Drive/E. Williams Street



5: NC 55 & Technology Drive/E. Williams Street Combined (2024) PM - Phase 1 - with Improvements
 Horton Park - Apex, NC

06/28/2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	46	51	17	88	5	606	1	1144	423	1159	1701	52
Future Volume (vph)	46	51	17	88	5	606	1	1144	423	1159	1701	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	263		0	175		375	400		75	800		100
Storage Lanes	2		1	1		1	1		1	2		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frnt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	3539	1583	3433	3539	1583
Flt Permitted	0.754			0.712			0.950			0.950		
Satd. Flow (perm)	1405	1863	1583	1326	1863	1583	1770	3539	1583	3433	3539	1583
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			55			45	
Link Distance (ft)		1661			1452			4132			954	
Travel Time (s)		25.2			22.0			51.2			14.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	51	57	19	98	6	673	1	1271	470	1288	1890	58
Shared Lane Traffic (%)												
Lane Group Flow (vph)	51	57	19	98	6	673	1	1271	470	1288	1890	58
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)		16			16			36			36	
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	pm+ov	Perm	NA	Free	Prot	NA	Perm	Prot	NA	Perm
Protected Phases		4	5		8		5	2		1	6	
Permitted Phases	4		4	8		Free			2			6

5: NC 55 & Technology Drive/E. Williams Street Combined (2024) PM - Phase 1 - with Improvements
 Horton Park - Apex, NC

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	5	8	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0		7.0	14.0	14.0	7.0	14.0	14.0
Minimum Split (s)	13.6	13.6	13.3	13.4	13.4		13.3	20.3	20.3	13.3	20.5	20.5
Total Split (s)	26.0	26.0	16.0	26.0	26.0		16.0	78.0	78.0	81.0	143.0	143.0
Total Split (%)	14.1%	14.1%	8.6%	14.1%	14.1%		8.6%	42.2%	42.2%	43.8%	77.3%	77.3%
Maximum Green (s)	19.4	19.4	9.7	19.6	19.6		9.7	71.7	71.7	74.7	136.5	136.5
Yellow Time (s)	4.2	4.2	3.0	4.6	4.6		3.0	5.1	5.1	3.0	5.3	5.3
All-Red Time (s)	2.4	2.4	3.3	1.8	1.8		3.3	1.2	1.2	3.3	1.2	1.2
Lost Time Adjust (s)	-1.6	-1.6	-1.3	-1.4	-1.4		-1.3	-1.3	-1.3	-1.3	-1.5	-1.5
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
Lead/Lag			Lead				Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?			Yes				Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	6.0	6.0	3.0	6.0	6.0
Minimum Gap (s)	2.0	2.0	2.0	2.0	2.0		2.0	3.4	3.4	3.0	3.4	3.4
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	20.0	20.0	0.0	20.0	20.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	30.0	30.0	0.0	30.0	30.0
Recall Mode	None	None	None	None	None		None	Min	Min	None	Min	Min
Act Effct Green (s)	17.5	17.5	30.9	17.5	17.5	173.3	8.4	70.2	70.2	70.5	138.2	138.2
Actuated g/C Ratio	0.10	0.10	0.18	0.10	0.10	1.00	0.05	0.41	0.41	0.41	0.80	0.80
v/c Ratio	0.36	0.30	0.07	0.74	0.03	0.43	0.01	0.89	0.73	0.92	0.67	0.05
Control Delay	83.0	79.4	63.1	108.4	73.6	0.8	85.0	57.4	53.2	60.9	10.3	5.0
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	83.0	79.4	63.1	108.4	73.6	0.8	85.0	57.4	53.2	60.9	10.3	5.0
LOS	F	E	E	F	E	A	F	E	D	E	B	A
Approach Delay		78.4			15.0			56.3				30.3
Approach LOS		E			B			E				C
Queue Length 50th (ft)	58	64	19	116	7	0	1	757	485	748	546	15
Queue Length 95th (ft)	109	117	48	#196	24	0	8	873	645	864	633	29
Internal Link Dist (ft)		1581			1372			4052			874	
Turn Bay Length (ft)	263			175		375	400		75	800		100
Base Capacity (vph)	172	228	307	162	228	1583	113	1507	674	1522	2916	1304
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	0.30	0.25	0.06	0.60	0.03	0.43	0.01	0.84	0.70	0.85	0.65	0.04

Intersection Summary

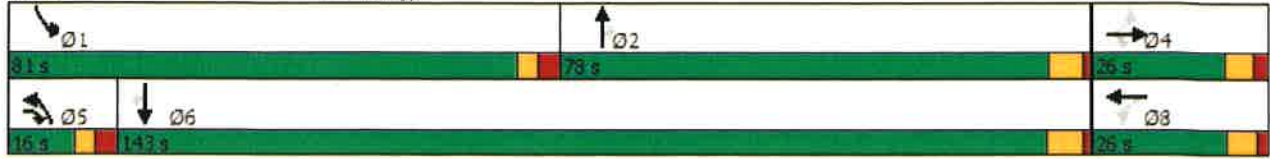
Area Type: Other
 Cycle Length: 185
 Actuated Cycle Length: 173.3
 Natural Cycle: 90
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.92
 Intersection Signal Delay: 37.0
 Intersection Capacity Utilization 88.7%
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Intersection LOS: D
 ICU Level of Service E

5: NC 55 & Technology Drive/E. Williams Street Combined (2024) PM - Phase 1 - with Improvements
 Horton Park - Apex, NC

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Splits and Phases: 5: NC 55 & Technology Drive/E. Williams Street



5: NC 55 & Technology Drive/E. Williams Street
Horton Park - Apex, NC

Combined (2026) AM - Full Buildout
06/28/2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	79	22	30	528	72	1249	24	1612	18	440	867	80
Future Volume (vph)	79	22	30	528	72	1249	24	1612	18	440	867	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	263		0	175		375	400		75	800		100
Storage Lanes	2		1	1		1	1		1	2		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Flt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	3539	1583	3433	3539	1583
Flt Permitted	0.652			0.742			0.950			0.950		
Satd. Flow (perm)	1215	1863	1583	1382	1863	1583	1770	3539	1583	3433	3539	1583
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			55			45	
Link Distance (ft)		1661			1452			4132			954	
Travel Time (s)		25.2			22.0			51.2			14.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	88	24	33	587	80	1388	27	1791	20	489	963	89
Shared Lane Traffic (%)												
Lane Group Flow (vph)	88	24	33	587	80	1388	27	1791	20	489	963	89
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)		16			16			36			36	
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	pm+ov	Perm	NA	Free	Prot	NA	Perm	Prot	NA	Perm
Protected Phases		4	5		8		5	2		1	6	
Permitted Phases	4		4	8		Free			2			6

5: NC 55 & Technology Drive/E. Williams Street
Horton Park - Apex, NC

Combined (2026) AM - Full Buildout
06/28/2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	5	8	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0		7.0	14.0	14.0	7.0	14.0	14.0
Minimum Split (s)	13.6	13.6	13.3	13.4	13.4		13.3	20.3	20.3	13.3	20.5	20.5
Total Split (s)	25.0	25.0	20.0	25.0	25.0		20.0	120.0	120.0	40.0	120.0	120.0
Total Split (%)	13.5%	13.5%	10.8%	13.5%	13.5%		10.8%	64.9%	64.9%	21.6%	64.9%	64.9%
Maximum Green (s)	18.4	18.4	13.7	18.6	18.6		13.7	113.7	113.7	33.7	113.5	113.5
Yellow Time (s)	4.2	4.2	3.0	4.6	4.6		3.0	5.1	5.1	3.0	5.3	5.3
All-Red Time (s)	2.4	2.4	3.3	1.8	1.8		3.3	1.2	1.2	3.3	1.2	1.2
Lost Time Adjust (s)	-1.6	-1.6	-1.3	-1.4	-1.4		-1.3	-1.3	-1.3	-1.3	-1.5	-1.5
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
Lead/Lag			Lead				Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?			Yes				Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	6.0	6.0	3.0	6.0	6.0
Minimum Gap (s)	2.0	2.0	2.0	2.0	2.0		2.0	3.4	3.4	3.0	3.4	3.4
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	20.0	20.0	0.0	20.0	20.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	30.0	30.0	0.0	30.0	30.0
Recall Mode	None	None	None	None	None		None	Min	Min	None	Min	Min
Act Effct Green (s)	20.5	20.5	34.9	20.5	20.5	159.5	9.3	94.8	94.8	28.8	117.8	117.8
Actuated g/C Ratio	0.13	0.13	0.22	0.13	0.13	1.00	0.06	0.59	0.59	0.18	0.74	0.74
v/c Ratio	0.57	0.10	0.10	3.32	0.33	0.88	0.26	0.85	0.02	0.79	0.37	0.08
Control Delay	86.3	71.6	58.5	1077.2	74.2	7.3	86.2	31.2	13.4	74.0	8.1	6.2
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	86.3	71.6	58.5	1077.2	74.2	7.3	86.2	31.2	13.4	74.0	8.1	6.2
LOS	F	E	E	F	E	A	F	C	B	E	A	A
Approach Delay		77.5			315.5			31.8			28.9	
Approach LOS		E			F			C			C	
Queue Length 50th (ft)	88	23	28	~1086	78	0	28	775	8	254	180	24
Queue Length 95th (ft)	#187	61	70	#1540	156	0	71	947	22	362	226	44
Internal Link Dist (ft)		1581			1372			4052			874	
Turn Bay Length (ft)	263			175		375	400		75	800		100
Base Capacity (vph)	155	239	406	177	239	1583	170	2612	1168	771	3036	1358
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	0.57	0.10	0.08	3.32	0.33	0.88	0.16	0.69	0.02	0.63	0.32	0.07

Intersection Summary

Area Type: Other

Cycle Length: 185

Actuated Cycle Length: 159.5

Natural Cycle: 150

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 3.32

Intersection Signal Delay: 136.7

Intersection LOS: F

Intersection Capacity Utilization 105.5%

ICU Level of Service G

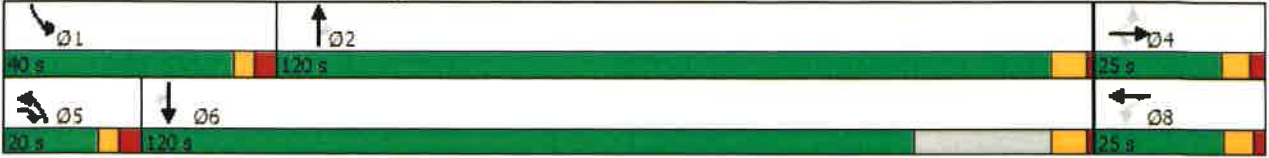
Analysis Period (min) 15

~ 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 55 & Technology Drive/E. Williams Street



5: NC 55 & Technology Drive/E. Williams Street
Horton Park - Apex, NC

Combined (2026) PM - Full Buildout
06/28/2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	49	54	18	89	5	635	1	1231	442	1216	1818	55
Future Volume (vph)	49	54	18	89	5	635	1	1231	442	1216	1818	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	263		0	175		375	400		75	800		100
Storage Lanes	2		1	1		1	1		1	2		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.97	0.95	1.00
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	1770	1863	1583	1770	3539	1583	3433	3539	1583
Flt Permitted	0.754			0.718			0.950			0.950		
Satd. Flow (perm)	1405	1863	1583	1337	1863	1583	1770	3539	1583	3433	3539	1583
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			55			45	
Link Distance (ft)		1661			1452			4132			954	
Travel Time (s)		25.2			22.0			51.2			14.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	54	60	20	99	6	706	1	1368	491	1351	2020	61
Shared Lane Traffic (%)												
Lane Group Flow (vph)	54	60	20	99	6	706	1	1368	491	1351	2020	61
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)		16			16			36			36	
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	pm+ov	Perm	NA	Free	Prot	NA	Perm	Prot	NA	Perm
Protected Phases		4	5		8		5	2		1	6	
Permitted Phases	4		4	8		Free			2			6

5: NC 55 & Technology Drive/E. Williams Street
Horton Park - Apex, NC

Combined (2026) PM - Full Buildout
06/28/2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	5	8	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0		7.0	14.0	14.0	7.0	14.0	14.0
Minimum Split (s)	13.6	13.6	13.3	13.4	13.4		13.3	20.3	20.3	13.3	20.5	20.5
Total Split (s)	25.0	25.0	20.0	25.0	25.0		20.0	120.0	120.0	40.0	120.0	120.0
Total Split (%)	13.5%	13.5%	10.8%	13.5%	13.5%		10.8%	64.9%	64.9%	21.6%	64.9%	64.9%
Maximum Green (s)	18.4	18.4	13.7	18.6	18.6		13.7	113.7	113.7	33.7	113.5	113.5
Yellow Time (s)	4.2	4.2	3.0	4.6	4.6		3.0	5.1	5.1	3.0	5.3	5.3
All-Red Time (s)	2.4	2.4	3.3	1.8	1.8		3.3	1.2	1.2	3.3	1.2	1.2
Lost Time Adjust (s)	-1.6	-1.6	-1.3	-1.4	-1.4		-1.3	-1.3	-1.3	-1.3	-1.5	-1.5
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
Lead/Lag			Lead				Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?			Yes				Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	6.0	6.0	3.0	6.0	6.0
Minimum Gap (s)	2.0	2.0	2.0	2.0	2.0		2.0	3.4	3.4	3.0	3.4	3.4
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	20.0	20.0	0.0	20.0	20.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	30.0	30.0	0.0	30.0	30.0
Recall Mode	None	None	None	None	None		None	Min	Min	None	Min	Min
Act Effct Green (s)	16.4	16.4	30.0	16.4	16.4	138.1	8.5	70.8	70.8	35.7	104.2	104.2
Actuated g/C Ratio	0.12	0.12	0.22	0.12	0.12	1.00	0.06	0.51	0.51	0.26	0.75	0.75
v/c Ratio	0.32	0.27	0.06	0.63	0.03	0.45	0.01	0.75	0.61	1.52	0.76	0.05
Control Delay	65.7	62.8	48.6	79.2	60.2	0.9	71.0	29.4	27.1	277.2	13.6	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	65.7	62.8	48.6	79.2	60.2	0.9	71.0	29.4	27.1	277.2	13.6	5.8
LOS	E	E	D	E	E	A	E	C	C	F	B	A
Approach Delay		61.8			10.9			28.8			117.2	
Approach LOS		E			B			C			F	
Queue Length 50th (ft)	45	49	14	85	5	0	1	508	308	~884	613	16
Queue Length 95th (ft)	102	108	44	169	22	0	8	602	426	#1246	731	31
Internal Link Dist (ft)		1581			1372			4052			874	
Turn Bay Length (ft)	263			175		375	400		75	800		100
Base Capacity (vph)	207	274	421	197	274	1583	195	2971	1329	886	3318	1484
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	0.26	0.22	0.05	0.50	0.02	0.45	0.01	0.46	0.37	1.52	0.61	0.04

Intersection Summary

Area Type: Other

Cycle Length: 185

Actuated Cycle Length: 138.1

Natural Cycle: 120

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.52

Intersection Signal Delay: 75.8

Intersection Capacity Utilization 92.8%

Analysis Period (min) 15

Intersection LOS: E

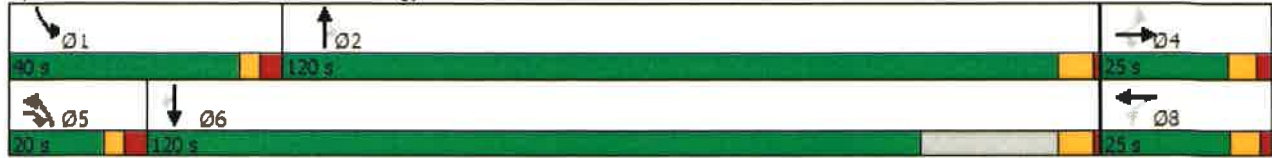
ICU Level of Service F

~ 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 55 & Technology Drive/E. Williams Street



5: NC 55 & Technology Drive/E. Williams Street (2026) AM - Full Buildout - with Improvements
 Horton Park - Apex, NC

06/28/2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	79	22	30	528	72	1249	24	1612	18	440	867	80
Future Volume (vph)	79	22	30	528	72	1249	24	1612	18	440	867	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	263		0	175		375	400		75	800		100
Storage Lanes	2		1	1		1	1		1	2		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frnt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	3539	1583	3433	3539	1583
Flt Permitted	0.705			0.742			0.950			0.950		
Satd. Flow (perm)	1313	1863	1583	1382	1863	1583	1770	3539	1583	3433	3539	1583
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			55			45	
Link Distance (ft)		1661			1452			4132			954	
Travel Time (s)		25.2			22.0			51.2			14.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	88	24	33	587	80	1388	27	1791	20	489	963	89
Shared Lane Traffic (%)												
Lane Group Flow (vph)	88	24	33	587	80	1388	27	1791	20	489	963	89
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)		16			16			36			36	
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	pm+ov	Perm	NA	Free	Prot	NA	Perm	Prot	NA	Perm
Protected Phases		4	5		8		5	2		1	6	
Permitted Phases	4		4	8		Free			2			6

5: NC 55 & Technology Drive/E. Williams Street (2026) AM - Full Buildout - with Improvements
 Horton Park - Apex, NC

06/28/2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	5	8	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0		7.0	14.0	14.0	7.0	14.0	14.0
Minimum Split (s)	13.6	13.6	13.3	13.4	13.4		13.3	20.3	20.3	13.3	20.5	20.5
Total Split (s)	56.0	56.0	15.0	56.0	56.0		15.0	71.0	71.0	23.0	79.0	79.0
Total Split (%)	37.3%	37.3%	10.0%	37.3%	37.3%		10.0%	47.3%	47.3%	15.3%	52.7%	52.7%
Maximum Green (s)	49.4	49.4	8.7	49.6	49.6		8.7	64.7	64.7	16.7	72.5	72.5
Yellow Time (s)	4.2	4.2	3.0	4.6	4.6		3.0	5.1	5.1	3.0	5.3	5.3
All-Red Time (s)	2.4	2.4	3.3	1.8	1.8		3.3	1.2	1.2	3.3	1.2	1.2
Lost Time Adjust (s)	-1.6	-1.6	-1.3	-1.4	-1.4		-1.3	-1.3	-1.3	-1.3	-1.5	-1.5
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
Lead/Lag			Lead				Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?			Yes				Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	6.0	6.0	3.0	6.0	6.0
Minimum Gap (s)	2.0	2.0	2.0	2.0	2.0		2.0	3.4	3.4	3.0	3.4	3.4
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	20.0	20.0	0.0	20.0	20.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	30.0	30.0	0.0	30.0	30.0
Recall Mode	None	None	None	None	None		None	Min	Min	None	Min	Min
Act Effct Green (s)	51.0	51.0	64.8	51.0	51.0	150.0	8.8	66.0	66.0	18.0	77.9	77.9
Actuated g/C Ratio	0.34	0.34	0.43	0.34	0.34	1.00	0.06	0.44	0.44	0.12	0.52	0.52
v/c Ratio	0.20	0.04	0.05	1.25	0.13	0.88	0.26	1.15	0.03	1.19	0.52	0.11
Control Delay	36.6	33.5	24.9	170.9	34.9	7.5	73.8	114.0	24.1	161.6	25.8	20.0
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	36.6	33.5	24.9	170.9	34.9	7.5	73.8	114.0	24.1	161.6	25.8	20.0
LOS	D	C	C	F	C	A	E	F	C	F	C	C
Approach Delay		33.4			55.3			112.5			68.6	
Approach LOS		C			E			F			E	
Queue Length 50th (ft)	61	16	19	~714	54	0	26	~1081	11	~295	330	45
Queue Length 95th (ft)	108	38	40	#952	95	0	60	#1217	28	#411	404	80
Internal Link Dist (ft)		1581			1372			4052			874	
Turn Bay Length (ft)	263			175		375	400		75	800		100
Base Capacity (vph)	446	633	696	469	633	1583	118	1557	696	411	1837	821
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	0.20	0.04	0.05	1.25	0.13	0.88	0.23	1.15	0.03	1.19	0.52	0.11

Intersection Summary

Area Type: Other
 Cycle Length: 150
 Actuated Cycle Length: 150
 Natural Cycle: 150
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 1.25
 Intersection Signal Delay: 77.2
 Intersection Capacity Utilization 105.5%
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.

Intersection LOS: E
 ICU Level of Service G

5: NC 55 & Technology Drive/E. Williams Street (2026) AM - Full Buildout - with Improvements
 Horton Park - Apex, NC

06/28/2019

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 5: NC 55 & Technology Drive/E. Williams Street















5: NC 55 & Technology Drive/E. William Street (2026) PM - Full Buildout - with Improvements
 Horton Park - Apex, NC

06/28/2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	49	54	18	89	5	635	1	1231	442	1216	1818	55
Future Volume (vph)	49	54	18	89	5	635	1	1231	442	1216	1818	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	263		0	175		375	400		75	800		100
Storage Lanes	2		1	1		1	1		1	2		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frnt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	3539	1583	3433	3539	1583
Flt Permitted	0.754			0.689			0.950			0.950		
Satd. Flow (perm)	1405	1863	1583	1283	1863	1583	1770	3539	1583	3433	3539	1583
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			55			45	
Link Distance (ft)		1661			1452			4132			954	
Travel Time (s)		25.2			22.0			51.2			14.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	54	60	20	99	6	706	1	1368	491	1351	2020	61
Shared Lane Traffic (%)												
Lane Group Flow (vph)	54	60	20	99	6	706	1	1368	491	1351	2020	61
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)		16			16			36			36	
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	pm+ov	Perm	NA	Free	Prot	NA	Perm	Prot	NA	Perm
Protected Phases		4	5		8		5	2		1	6	
Permitted Phases	4		4	8		Free			2			6

5: NC 55 & Technology Drive/E. William Street (2026) PM - Full Buildout - with Improvements
 Horton Park - Apex, NC

06/28/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	5	8	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0		7.0	14.0	14.0	7.0	14.0	14.0
Minimum Split (s)	13.6	13.6	13.3	13.4	13.4		13.3	20.3	20.3	13.3	20.5	20.5
Total Split (s)	25.0	25.0	15.0	25.0	25.0		15.0	80.0	80.0	80.0	145.0	145.0
Total Split (%)	13.5%	13.5%	8.1%	13.5%	13.5%		8.1%	43.2%	43.2%	43.2%	78.4%	78.4%
Maximum Green (s)	18.4	18.4	8.7	18.6	18.6		8.7	73.7	73.7	73.7	138.5	138.5
Yellow Time (s)	4.2	4.2	3.0	4.6	4.6		3.0	5.1	5.1	3.0	5.3	5.3
All-Red Time (s)	2.4	2.4	3.3	1.8	1.8		3.3	1.2	1.2	3.3	1.2	1.2
Lost Time Adjust (s)	-1.6	-1.6	-1.3	-1.4	-1.4		-1.3	-1.3	-1.3	-1.3	-1.5	-1.5
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
Lead/Lag			Lead				Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?			Yes				Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	6.0	6.0	3.0	6.0	6.0
Minimum Gap (s)	2.0	2.0	2.0	2.0	2.0		2.0	3.4	3.4	3.0	3.4	3.4
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	20.0	20.0	0.0	20.0	20.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	30.0	30.0	0.0	30.0	30.0
Recall Mode	None	None	None	None	None		None	Min	Min	None	Min	Min
Act Effct Green (s)	17.8	17.8	31.1	17.8	17.8	181.1	8.3	74.6	74.6	73.8	145.5	145.5
Actuated g/C Ratio	0.10	0.10	0.17	0.10	0.10	1.00	0.05	0.41	0.41	0.41	0.80	0.80
v/c Ratio	0.39	0.33	0.07	0.79	0.03	0.45	0.01	0.94	0.75	0.97	0.71	0.05
Control Delay	85.8	81.6	64.1	118.3	74.4	0.9	85.0	64.2	54.9	69.4	11.1	4.8
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	85.8	81.6	64.1	118.3	74.4	0.9	85.0	64.2	54.9	69.4	11.1	4.8
LOS	F	F	E	F	E	A	F	E	D	E	B	A
Approach Delay		80.7			15.8			61.8			33.9	
Approach LOS		F			B			E			C	
Queue Length 50th (ft)	62	68	20	118	7	0	1	848	514	829	642	16
Queue Length 95th (ft)	114	122	49	#213	25	0	8	#998	674	#985	714	29
Internal Link Dist (ft)		1581			1372			4052			874	
Turn Bay Length (ft)	263			175		375	400		75	800		100
Base Capacity (vph)	155	206	286	141	206	1583	97	1467	656	1423	2843	1272
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	0.35	0.29	0.07	0.70	0.03	0.45	0.01	0.93	0.75	0.95	0.71	0.05

Intersection Summary

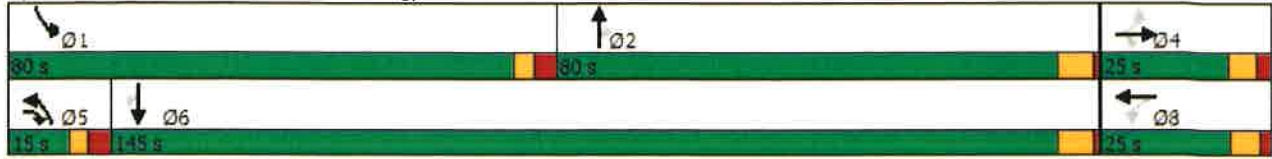
Area Type: Other
 Cycle Length: 185
 Actuated Cycle Length: 181.1
 Natural Cycle: 120
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.97
 Intersection Signal Delay: 40.9
 Intersection Capacity Utilization 92.8%
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Intersection LOS: D
 ICU Level of Service F

5: NC 55 & Technology Drive/E. Williams Street (2026) PM - Full Buildout - with Improvements
 Horton Park - Apex, NC

06/28/2019

Splits and Phases: 5: NC 55 & Technology Drive/E. Williams Street



APPENDIX G

CAPACITY ANALYSIS CALCULATIONS

SMITH ROAD

&

STEPHENSON ROAD

2: Smith Road & Stephenson Road
Horton Park - Apex, NC

Existing (2019) AM
06/28/2019

Intersection

Int Delay, s/veh	3.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	↕
Traffic Vol, veh/h	72	11	5	626	100	41
Future Vol, veh/h	72	11	5	626	100	41
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	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	80	12	6	696	111	46

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	702	0	-	0	526
Stage 1	-	-	-	-	354
Stage 2	-	-	-	-	172
Critical Hdwy	4.12	-	-	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	2.218	-	-	-	3.518
Pot Cap-1 Maneuver	895	-	-	-	512
Stage 1	-	-	-	-	710
Stage 2	-	-	-	-	858
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	895	-	-	-	466
Mov Cap-2 Maneuver	-	-	-	-	466
Stage 1	-	-	-	-	646
Stage 2	-	-	-	-	858

Approach	EB	WB	SB
HCM Control Delay, s	8.2	0	13.8
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	895	-	-	-	466	690
HCM Lane V/C Ratio	0.089	-	-	-	0.238	0.066
HCM Control Delay (s)	9.4	0	-	-	15.1	10.6
HCM Lane LOS	A	A	-	-	C	B
HCM 95th %tile Q(veh)	0.3	-	-	-	0.9	0.2

2: Smith Road & Stephenson Road
Horton Park - Apex, NC

Existing (2019) PM
06/28/2019

Intersection

Int Delay, s/veh	16.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↖	↗		↖	↗
Traffic Vol, veh/h	56	11	13	195	491	80
Future Vol, veh/h	56	11	13	195	491	80
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	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	62	12	14	217	546	89

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	231	0	-	0	259
Stage 1	-	-	-	-	123
Stage 2	-	-	-	-	136
Critical Hdwy	4.12	-	-	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	2.218	-	-	-	3.518
Pot Cap-1 Maneuver	1337	-	-	-	730
Stage 1	-	-	-	-	902
Stage 2	-	-	-	-	890
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	1337	-	-	-	696
Mov Cap-2 Maneuver	-	-	-	-	696
Stage 1	-	-	-	-	860
Stage 2	-	-	-	-	890

Approach	EB	WB	SB
HCM Control Delay, s	6.5	0	23.9
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1337	-	-	-	696	928
HCM Lane V/C Ratio	0.047	-	-	-	0.784	0.096
HCM Control Delay (s)	7.8	0	-	-	26.3	9.3
HCM Lane LOS	A	A	-	-	D	A
HCM 95th %tile Q(veh)	0.1	-	-	-	7.7	0.3

2: Smith Road & Stephenson Road
Horton Park - Apex, NC

Background (2024) AM
06/28/2019

Intersection

Int Delay, s/veh	3.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↖	↗		↘	↙
Traffic Vol, veh/h	83	13	6	726	116	48
Future Vol, veh/h	83	13	6	726	116	48
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	100	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	92	14	7	807	129	53

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	814	0	-	0	609 411
Stage 1	-	-	-	-	411 -
Stage 2	-	-	-	-	198 -
Critical Hdwy	4.12	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	2.218	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	813	-	-	-	458 641
Stage 1	-	-	-	-	669 -
Stage 2	-	-	-	-	835 -
Platoon blocked, %	-	-	-	-	- -
Mov Cap-1 Maneuver	813	-	-	-	406 641
Mov Cap-2 Maneuver	-	-	-	-	406 -
Stage 1	-	-	-	-	593 -
Stage 2	-	-	-	-	835 -

Approach	EB	WB	SB
HCM Control Delay, s	8.6	0	15.9
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	813	-	-	-	406	641
HCM Lane V/C Ratio	0.113	-	-	-	0.317	0.083
HCM Control Delay (s)	10	0	-	-	17.9	11.1
HCM Lane LOS	A	A	-	-	C	B
HCM 95th %tile Q(veh)	0.4	-	-	-	1.3	0.3

2: Smith Road & Stephenson Road
Horton Park - Apex, NC

Background (2024) PM
06/28/2019

Intersection

Int Delay, s/veh	32.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	↕
Traffic Vol, veh/h	65	13	15	226	569	93
Future Vol, veh/h	65	13	15	226	569	93
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	100	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	72	14	17	251	632	103

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	268	0	-	0	301 143
Stage 1	-	-	-	-	143 -
Stage 2	-	-	-	-	158 -
Critical Hdwy	4.12	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	2.218	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	1296	-	-	-	691 905
Stage 1	-	-	-	-	884 -
Stage 2	-	-	-	-	871 -
Platoon blocked, %	-	-	-	-	- -
Mov Cap-1 Maneuver	1296	-	-	-	652 905
Mov Cap-2 Maneuver	-	-	-	-	652 -
Stage 1	-	-	-	-	834 -
Stage 2	-	-	-	-	871 -

Approach	EB	WB	SB
HCM Control Delay, s	6.6	0	47.1
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1296	-	-	-	652	905
HCM Lane V/C Ratio	0.056	-	-	-	0.97	0.114
HCM Control Delay (s)	7.9	0	-	-	53.3	9.5
HCM Lane LOS	A	A	-	-	F	A
HCM 95th %tile Q(veh)	0.2	-	-	-	14.2	0.4

2: Smith Road & Stephenson Road
Horton Park - Apex, NC

Background (2026) AM
06/28/2019

Intersection

Int Delay, s/veh	3.7					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	↕
Traffic Vol, veh/h	89	14	6	770	123	50
Future Vol, veh/h	89	14	6	770	123	50
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	100	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	99	16	7	856	137	56

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	863	0	-	0	649 435
Stage 1	-	-	-	-	435 -
Stage 2	-	-	-	-	214 -
Critical Hdwy	4.12	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	2.218	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	779	-	-	-	434 621
Stage 1	-	-	-	-	653 -
Stage 2	-	-	-	-	822 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	779	-	-	-	378 621
Mov Cap-2 Maneuver	-	-	-	-	378 -
Stage 1	-	-	-	-	569 -
Stage 2	-	-	-	-	822 -

Approach	EB	WB	SB
HCM Control Delay, s	8.9	0	17.4
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	779	-	-	-	378	621
HCM Lane V/C Ratio	0.127	-	-	-	0.362	0.089
HCM Control Delay (s)	10.3	0	-	-	19.8	11.4
HCM Lane LOS	B	A	-	-	C	B
HCM 95th %tile Q(veh)	0.4	-	-	-	1.6	0.3

2: Smith Road & Stephenson Road
Horton Park - Apex, NC

Background (2026) PM
06/28/2019

Intersection

Int Delay, s/veh	47.4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	↕
Traffic Vol, veh/h	69	14	16	240	604	98
Future Vol, veh/h	69	14	16	240	604	98
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	100	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	77	16	18	267	671	109

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	285	0	-	0	322 152
Stage 1	-	-	-	-	152 -
Stage 2	-	-	-	-	170 -
Critical Hdwy	4.12	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	2.218	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	1277	-	-	-	672 894
Stage 1	-	-	-	-	876 -
Stage 2	-	-	-	-	860 -
Platoon blocked, %	-	-	-	-	- -
Mov Cap-1 Maneuver	1277	-	-	-	~ 631 894
Mov Cap-2 Maneuver	-	-	-	-	~ 631 -
Stage 1	-	-	-	-	823 -
Stage 2	-	-	-	-	860 -

Approach	EB	WB	SB
HCM Control Delay, s	6.6	0	69.5
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1277	-	-	-	631	894
HCM Lane V/C Ratio	0.06	-	-	-	1.064	0.122
HCM Control Delay (s)	8	0	-	-	79.2	9.6
HCM Lane LOS	A	A	-	-	F	A
HCM 95th %tile Q(veh)	0.2	-	-	-	18.6	0.4

Notes

~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

HCM 6th TWSC
2: Smith Road & Stephenson Road

Combined (2024) AM - Phase 1
06/28/2019

Intersection

Int Delay, s/veh	8.8					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	↕
Traffic Vol, veh/h	238	24	10	726	116	98
Future Vol, veh/h	238	24	10	726	116	98
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	100	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	264	27	11	807	129	109

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	818	0	-	0	970
Stage 1	-	-	-	-	415
Stage 2	-	-	-	-	555
Critical Hdwy	4.12	-	-	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	2.218	-	-	-	3.518
Pot Cap-1 Maneuver	810	-	-	-	281
Stage 1	-	-	-	-	666
Stage 2	-	-	-	-	575
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	810	-	-	-	188
Mov Cap-2 Maneuver	-	-	-	-	188
Stage 1	-	-	-	-	446
Stage 2	-	-	-	-	575

Approach	EB	WB	SB
HCM Control Delay, s	10.5	0	36.8
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	810	-	-	-	188	637
HCM Lane V/C Ratio	0.326	-	-	-	0.686	0.171
HCM Control Delay (s)	11.6	0	-	-	57.9	11.8
HCM Lane LOS	B	A	-	-	F	B
HCM 95th %tile Q(veh)	1.4	-	-	-	4.2	0.6

HCM 6th TWSC
2: Smith Road & Stephenson Road

Combined (2024) PM - Phase 1
06/28/2019

Intersection

Int Delay, s/veh 114.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	↕
Traffic Vol, veh/h	164	19	27	226	569	263
Future Vol, veh/h	164	19	27	226	569	263
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	100	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	182	21	30	251	632	292

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	281	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.12	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.218	-	-
Pot Cap-1 Maneuver	1282	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1282	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	7.4	0	173.5
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1282	-	-	-	430	890
HCM Lane V/C Ratio	0.142	-	-	-	1.47	0.328
HCM Control Delay (s)	8.3	0	-	-	248.6	11
HCM Lane LOS	A	A	-	-	F	B
HCM 95th %tile Q(veh)	0.5	-	-	-	32.6	1.4

Notes

~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

2: Smith Road & Stephenson Road
Horton Park - Apex, NC

Combined (2024) AM - Phase 1 - with Improvements

06/28/2019

Intersection

Int Delay, s/veh	8.7					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↙	↑	↘		↙	↘
Traffic Vol, veh/h	238	24	10	726	116	98
Future Vol, veh/h	238	24	10	726	116	98
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	100	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	264	27	11	807	129	109

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	818	0	-	0	970
Stage 1	-	-	-	-	415
Stage 2	-	-	-	-	555
Critical Hdwy	4.12	-	-	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	2.218	-	-	-	3.518
Pot Cap-1 Maneuver	810	-	-	-	281
Stage 1	-	-	-	-	666
Stage 2	-	-	-	-	575
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	810	-	-	-	189
Mov Cap-2 Maneuver	-	-	-	-	189
Stage 1	-	-	-	-	449
Stage 2	-	-	-	-	575

Approach	EB	WB	SB
HCM Control Delay, s	10.5	0	36.4
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	810	-	-	-	189	637
HCM Lane V/C Ratio	0.326	-	-	-	0.682	0.171
HCM Control Delay (s)	11.6	-	-	-	57.2	11.8
HCM Lane LOS	B	-	-	-	F	B
HCM 95th %tile Q(veh)	1.4	-	-	-	4.1	0.6

Intersection

Int Delay, s/veh 114.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↘	↑	↗		↘	↗
Traffic Vol, veh/h	164	19	27	226	569	263
Future Vol, veh/h	164	19	27	226	569	263
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	100	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	182	21	30	251	632	292

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	281	0	0
Stage 1	-	-	156
Stage 2	-	-	385
Critical Hdwy	4.12	-	6.42
Critical Hdwy Stg 1	-	-	5.42
Critical Hdwy Stg 2	-	-	5.42
Follow-up Hdwy	2.218	-	3.518
Pot Cap-1 Maneuver	1282	-	~ 502
Stage 1	-	-	872
Stage 2	-	-	688
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1282	-	~ 431
Mov Cap-2 Maneuver	-	-	~ 431
Stage 1	-	-	748
Stage 2	-	-	688

Approach	EB	WB	SB
HCM Control Delay, s	7.4	0	172.4
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1282	-	-	-	431	890
HCM Lane V/C Ratio	0.142	-	-	-	1.467	0.328
HCM Control Delay (s)	8.3	-	-	-	247	11
HCM Lane LOS	A	-	-	-	F	B
HCM 95th %tile Q(veh)	0.5	-	-	-	32.5	1.4

Notes

~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

2: Smith Road & Stephenson Road
Horton Park - Apex, NC

Combined (2026) AM - Full Buildout
06/28/2019

Intersection

Int Delay, s/veh	4.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↖	↗		↖	↗
Traffic Vol, veh/h	106	33	15	770	123	56
Future Vol, veh/h	106	33	15	770	123	56
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	100	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	118	37	17	856	137	62

Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	873	0	-	0	718	445
Stage 1	-	-	-	-	445	-
Stage 2	-	-	-	-	273	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	773	-	-	-	396	613
Stage 1	-	-	-	-	646	-
Stage 2	-	-	-	-	773	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	773	-	-	-	334	613
Mov Cap-2 Maneuver	-	-	-	-	334	-
Stage 1	-	-	-	-	545	-
Stage 2	-	-	-	-	773	-

Approach	EB	WB	SB
HCM Control Delay, s	8	0	19.4
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	773	-	-	-	334	613
HCM Lane V/C Ratio	0.152	-	-	-	0.409	0.102
HCM Control Delay (s)	10.5	0	-	-	23	11.5
HCM Lane LOS	B	A	-	-	C	B
HCM 95th %tile Q(veh)	0.5	-	-	-	1.9	0.3

2: Smith Road & Stephenson Road
Horton Park - Apex, NC

Combined (2026) PM - Full Buildout
06/28/2019

Intersection

Int Delay, s/veh	64.7					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	↕
Traffic Vol, veh/h	79	29	34	240	604	116
Future Vol, veh/h	79	29	34	240	604	116
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	100	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	88	32	38	267	671	129

Major/Minor	Major1	Major2		Minor2	
Conflicting Flow All	305	0	-	0	380
Stage 1	-	-	-	-	172
Stage 2	-	-	-	-	208
Critical Hdwy	4.12	-	-	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	2.218	-	-	-	3.518
Pot Cap-1 Maneuver	1256	-	-	-	~622
Stage 1	-	-	-	-	858
Stage 2	-	-	-	-	827
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	1256	-	-	-	~578
Mov Cap-2 Maneuver	-	-	-	-	~578
Stage 1	-	-	-	-	797
Stage 2	-	-	-	-	827

Approach	EB	WB	SB
HCM Control Delay, s	5.9	0	98.1
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1256	-	-	-	578	872
HCM Lane V/C Ratio	0.07	-	-	-	1.161	0.148
HCM Control Delay (s)	8.1	0	-	-	115.1	9.8
HCM Lane LOS	A	A	-	-	F	A
HCM 95th %tile Q(veh)	0.2	-	-	-	22.7	0.5

Notes

-: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

2: Smith Road & Stephenson Road Combined (2026) AM - Full Buildout - with Improvements
 Horton Park - Apex, NC

06/28/2019

Intersection

Int Delay, s/veh	4.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↙	↑	↘		↙	↘
Traffic Vol, veh/h	106	33	15	770	123	56
Future Vol, veh/h	106	33	15	770	123	56
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	100	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	118	37	17	856	137	62

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	873	0	0	718	445
Stage 1	-	-	-	445	-
Stage 2	-	-	-	273	-
Critical Hdwy	4.12	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	3.518	3.318
Pot Cap-1 Maneuver	773	-	-	396	613
Stage 1	-	-	-	646	-
Stage 2	-	-	-	773	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	773	-	-	335	613
Mov Cap-2 Maneuver	-	-	-	335	-
Stage 1	-	-	-	547	-
Stage 2	-	-	-	773	-

Approach	EB	WB	SB
HCM Control Delay, s	8	0	19.4
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	773	-	-	-	335	613
HCM Lane V/C Ratio	0.152	-	-	-	0.408	0.102
HCM Control Delay (s)	10.5	-	-	-	23	11.5
HCM Lane LOS	B	-	-	-	C	B
HCM 95th %tile Q(veh)	0.5	-	-	-	1.9	0.3

2: Smith Road & Stephenson Road Combined (2026) PM - Full Buildout - with Improvements
 Horton Park - Apex, NC

06/28/2019

Intersection

Int Delay, s/veh	64.7					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↘	↑	↘		↘	↗
Traffic Vol, veh/h	79	29	34	240	604	116
Future Vol, veh/h	79	29	34	240	604	116
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	100	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	88	32	38	267	671	129

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	305	0	-	0	380
Stage 1	-	-	-	-	172
Stage 2	-	-	-	-	208
Critical Hdwy	4.12	-	-	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	2.218	-	-	-	3.518
Pot Cap-1 Maneuver	1256	-	-	-	~622
Stage 1	-	-	-	-	858
Stage 2	-	-	-	-	827
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	1256	-	-	-	~578
Mov Cap-2 Maneuver	-	-	-	-	~578
Stage 1	-	-	-	-	798
Stage 2	-	-	-	-	827

Approach	EB	WB	SB
HCM Control Delay, s	5.9	0	98.1
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1256	-	-	-	578	872
HCM Lane V/C Ratio	0.07	-	-	-	1.161	0.148
HCM Control Delay (s)	8.1	-	-	-	115.1	9.8
HCM Lane LOS	A	-	-	-	F	A
HCM 95th %tile Q(veh)	0.2	-	-	-	22.7	0.5

Notes

∞: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

APPENDIX H

CAPACITY ANALYSIS CALCULATIONS

SMITH ROAD

&

DEZOLA STREET

3: Smith Road & Dezola Street
Horton Park - Apex, NC

Existing (2019) AM
06/28/2019

Intersection

Int Delay, s/veh	0.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			W	W	
Traffic Vol, veh/h	1	4	4	75	21	4
Future Vol, veh/h	1	4	4	75	21	4
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	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	4	4	83	23	4

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	116	25	27	0	0
Stage 1	25	-	-	-	-
Stage 2	91	-	-	-	-
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	880	1051	1587	-	-
Stage 1	998	-	-	-	-
Stage 2	933	-	-	-	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	877	1051	1587	-	-
Mov Cap-2 Maneuver	877	-	-	-	-
Stage 1	995	-	-	-	-
Stage 2	933	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.6	0.4	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1587	-	1011	-	-
HCM Lane V/C Ratio	0.003	-	0.005	-	-
HCM Control Delay (s)	7.3	0	8.6	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

3: Smith Road & Dezola Street
Horton Park - Apex, NC

Existing (2019) PM
06/28/2019

Intersection

Int Delay, s/veh	1.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	WT			WT	WT	
Traffic Vol, veh/h	6	4	4	29	65	3
Future Vol, veh/h	6	4	4	29	65	3
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	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	7	4	4	32	72	3

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	114	74	75	0	0
Stage 1	74	-	-	-	-
Stage 2	40	-	-	-	-
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	882	988	1524	-	-
Stage 1	949	-	-	-	-
Stage 2	982	-	-	-	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	879	988	1524	-	-
Mov Cap-2 Maneuver	879	-	-	-	-
Stage 1	946	-	-	-	-
Stage 2	982	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9	0.9	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1524	-	920	-	-
HCM Lane V/C Ratio	0.003	-	0.012	-	-
HCM Control Delay (s)	7.4	0	9	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

3: Smith Road & Dezola Street
Horton Park - Apex, NC

Background (2024) AM
06/28/2019

Intersection

Int Delay, s/veh	0.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y			↑	↑	
Traffic Vol, veh/h	1	4	4	87	24	4
Future Vol, veh/h	1	4	4	87	24	4
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	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	4	4	97	27	4

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	134	29	31	0	-	0
Stage 1	29	-	-	-	-	-
Stage 2	105	-	-	-	-	-
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	860	1046	1582	-	-	-
Stage 1	994	-	-	-	-	-
Stage 2	919	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	857	1046	1582	-	-	-
Mov Cap-2 Maneuver	857	-	-	-	-	-
Stage 1	991	-	-	-	-	-
Stage 2	919	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.6	0.3	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1582	-	1002	-	-
HCM Lane V/C Ratio	0.003	-	0.006	-	-
HCM Control Delay (s)	7.3	0	8.6	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

3: Smith Road & Dezola Street
Horton Park - Apex, NC

Background (2024) PM
06/28/2019

Intersection

Int Delay, s/veh

1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			W	W	
Traffic Vol, veh/h	7	4	4	34	75	3
Future Vol, veh/h	7	4	4	34	75	3
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	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	8	4	4	38	83	3

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	131	85	86	0	-	0
Stage 1	85	-	-	-	-	-
Stage 2	46	-	-	-	-	-
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	863	974	1510	-	-	-
Stage 1	938	-	-	-	-	-
Stage 2	976	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	860	974	1510	-	-	-
Mov Cap-2 Maneuver	860	-	-	-	-	-
Stage 1	935	-	-	-	-	-
Stage 2	976	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.1	0.8	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1510	-	898	-	-
HCM Lane V/C Ratio	0.003	-	0.014	-	-
HCM Control Delay (s)	7.4	0	9.1	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

3: Smith Road & Dezola Street
Horton Park - Apex, NC

Background (2026) AM
06/28/2019

Intersection

Int Delay, s/veh	0.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			W	W	
Traffic Vol, veh/h	1	4	4	92	26	4
Future Vol, veh/h	1	4	4	92	26	4
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	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	4	4	102	29	4

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	141	31	33	0	-	0
Stage 1	31	-	-	-	-	-
Stage 2	110	-	-	-	-	-
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	852	1043	1579	-	-	-
Stage 1	992	-	-	-	-	-
Stage 2	915	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	849	1043	1579	-	-	-
Mov Cap-2 Maneuver	849	-	-	-	-	-
Stage 1	989	-	-	-	-	-
Stage 2	915	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.6	0.3	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1579	-	997	-	-
HCM Lane V/C Ratio	0.003	-	0.006	-	-
HCM Control Delay (s)	7.3	0	8.6	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

3: Smith Road & Dezola Street
Horton Park - Apex, NC

Background (2026) PM
06/28/2019

Intersection

Int Delay, s/veh	0.9					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			W	W	
Traffic Vol, veh/h	7	4	4	36	80	4
Future Vol, veh/h	7	4	4	36	80	4
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	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	8	4	4	40	89	4

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	139	91	93	0	-	0
Stage 1	91	-	-	-	-	-
Stage 2	48	-	-	-	-	-
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	854	967	1501	-	-	-
Stage 1	933	-	-	-	-	-
Stage 2	974	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	851	967	1501	-	-	-
Mov Cap-2 Maneuver	851	-	-	-	-	-
Stage 1	930	-	-	-	-	-
Stage 2	974	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.1	0.7	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1501	-	890	-	-
HCM Lane V/C Ratio	0.003	-	0.014	-	-
HCM Control Delay (s)	7.4	0	9.1	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

HCM 6th TWSC
3: Smith Road & Dezola Street

Combined (2024) AM - Phase 1
06/28/2019

Intersection

Int Delay, s/veh	5.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y			↑	↑	
Traffic Vol, veh/h	167	4	4	87	24	54
Future Vol, veh/h	167	4	4	87	24	54
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	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	186	4	4	97	27	60

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	162	57	87	0	0
Stage 1	57	-	-	-	-
Stage 2	105	-	-	-	-
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	829	1009	1509	-	-
Stage 1	966	-	-	-	-
Stage 2	919	-	-	-	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	827	1009	1509	-	-
Mov Cap-2 Maneuver	827	-	-	-	-
Stage 1	963	-	-	-	-
Stage 2	919	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.6	0.3	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1509	-	831	-	-
HCM Lane V/C Ratio	0.003	-	0.229	-	-
HCM Control Delay (s)	7.4	0	10.6	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.9	-	-

HCM 6th TWSC
3: Smith Road & Dezola Street

Combined (2024) PM - Phase 1
06/28/2019

Intersection

Int Delay, s/veh	3.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			U	U	
Traffic Vol, veh/h	112	4	4	34	75	185
Future Vol, veh/h	112	4	4	34	75	185
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	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	124	4	4	38	83	206

Major/Minor	Minor2	Major1	Major2		
Conflicting Flow All	232	186	289	0	0
Stage 1	186	-	-	-	-
Stage 2	46	-	-	-	-
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	756	856	1273	-	-
Stage 1	846	-	-	-	-
Stage 2	976	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	754	856	1273	-	-
Mov Cap-2 Maneuver	754	-	-	-	-
Stage 1	843	-	-	-	-
Stage 2	976	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.7	0.8	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1273	-	757	-	-
HCM Lane V/C Ratio	0.003	-	0.17	-	-
HCM Control Delay (s)	7.8	0	10.7	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.6	-	-

3: Smith Road & Dezola Street
Horton Park - Apex, NC

Combined (2024) AM - Phase 1 - with Improvements

06/28/2019

Intersection

Int Delay, s/veh	5.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			U	U	U
Traffic Vol, veh/h	167	4	4	87	24	54
Future Vol, veh/h	167	4	4	87	24	54
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	-	-	-	-	75
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	186	4	4	97	27	60

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	132	27	87	0	-	0
Stage 1	27	-	-	-	-	-
Stage 2	105	-	-	-	-	-
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	862	1048	1509	-	-	-
Stage 1	996	-	-	-	-	-
Stage 2	919	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	859	1048	1509	-	-	-
Mov Cap-2 Maneuver	859	-	-	-	-	-
Stage 1	993	-	-	-	-	-
Stage 2	919	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.3	0.3	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1509	-	863	-	-
HCM Lane V/C Ratio	0.003	-	0.22	-	-
HCM Control Delay (s)	7.4	0	10.3	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.8	-	-

Intersection

Int Delay, s/veh	2.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			W	W	W
Traffic Vol, veh/h	112	4	4	34	75	185
Future Vol, veh/h	112	4	4	34	75	185
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	-	-	-	-	75
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	124	4	4	38	83	206

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	129	83	289	0	-	0
Stage 1	83	-	-	-	-	-
Stage 2	46	-	-	-	-	-
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	865	976	1273	-	-	-
Stage 1	940	-	-	-	-	-
Stage 2	976	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	862	976	1273	-	-	-
Mov Cap-2 Maneuver	862	-	-	-	-	-
Stage 1	937	-	-	-	-	-
Stage 2	976	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.9	0.8	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1273	-	865	-	-
HCM Lane V/C Ratio	0.003	-	0.149	-	-
HCM Control Delay (s)	7.8	0	9.9	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.5	-	-

Intersection

Int Delay, s/veh	2.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			↑	↑	
Traffic Vol, veh/h	37	4	4	92	26	15
Future Vol, veh/h	37	4	4	92	26	15
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	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	41	4	4	102	29	17

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	148	38	46	0	0
Stage 1	38	-	-	-	-
Stage 2	110	-	-	-	-
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	844	1034	1562	-	-
Stage 1	984	-	-	-	-
Stage 2	915	-	-	-	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	841	1034	1562	-	-
Mov Cap-2 Maneuver	841	-	-	-	-
Stage 1	981	-	-	-	-
Stage 2	915	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.4	0.3	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1562	-	857	-	-
HCM Lane V/C Ratio	0.003	-	0.053	-	-
HCM Control Delay (s)	7.3	0	9.4	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

3: Smith Road & Dezola Street
Horton Park - Apex, NC

Combined (2026) PM - Full Buildout
06/28/2019

Intersection

Int Delay, s/veh	1.9					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			W	W	
Traffic Vol, veh/h	32	4	4	36	80	40
Future Vol, veh/h	32	4	4	36	80	40
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	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	36	4	4	40	89	44

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	159	111	133	0	0
Stage 1	111	-	-	-	-
Stage 2	48	-	-	-	-
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	832	942	1452	-	-
Stage 1	914	-	-	-	-
Stage 2	974	-	-	-	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	830	942	1452	-	-
Mov Cap-2 Maneuver	830	-	-	-	-
Stage 1	911	-	-	-	-
Stage 2	974	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.5	0.7	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1452	-	841	-	-
HCM Lane V/C Ratio	0.003	-	0.048	-	-
HCM Control Delay (s)	7.5	0	9.5	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

3: Smith Road & Dezola Street
Horton Park - Apex, NC

Combined (2026) AM - Full Buildout - with Improvements

06/28/2019

Intersection

Int Delay, s/veh	2.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			U	U	W
Traffic Vol, veh/h	37	4	4	92	26	15
Future Vol, veh/h	37	4	4	92	26	15
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	-	-	-	-	75
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	41	4	4	102	29	17

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	139	29	46	0	0
Stage 1	29	-	-	-	-
Stage 2	110	-	-	-	-
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	854	1046	1562	-	-
Stage 1	994	-	-	-	-
Stage 2	915	-	-	-	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	851	1046	1562	-	-
Mov Cap-2 Maneuver	851	-	-	-	-
Stage 1	991	-	-	-	-
Stage 2	915	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.4	0.3	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1562	-	867	-	-
HCM Lane V/C Ratio	0.003	-	0.053	-	-
HCM Control Delay (s)	7.3	0	9.4	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

3: Smith Road & Dezola Street
Horton Park - Apex, NC

Combined (2026) PM - Full Buildout - with Improvements

06/28/2019

Intersection

Int Delay, s/veh	1.9					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			U	U	U
Traffic Vol, veh/h	32	4	4	36	80	40
Future Vol, veh/h	32	4	4	36	80	40
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	-	-	-	-	75
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	36	4	4	40	89	44

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	137	89	133	0	0
Stage 1	89	-	-	-	-
Stage 2	48	-	-	-	-
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	856	969	1452	-	-
Stage 1	934	-	-	-	-
Stage 2	974	-	-	-	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	853	969	1452	-	-
Mov Cap-2 Maneuver	853	-	-	-	-
Stage 1	931	-	-	-	-
Stage 2	974	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.4	0.7	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1452	-	864	-	-
HCM Lane V/C Ratio	0.003	-	0.046	-	-
HCM Control Delay (s)	7.5	0	9.4	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

APPENDIX I

CAPACITY ANALYSIS CALCULATIONS

E. WILLIAMS STREET

&

STRAYWHITE AVENUE

4: E. Williams Street & Straywhite Avenue
Horton Park - Apex, NC

Existing (2019) AM
06/28/2019

Intersection

Int Delay, s/veh	5.7					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↘↗		↑	↗	↘	↑↑
Traffic Vol, veh/h	32	73	1428	8	20	360
Future Vol, veh/h	32	73	1428	8	20	360
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	-	-	75	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	36	81	1587	9	22	400

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	1831	1587	0	0	1596
Stage 1	1587	-	-	-	-
Stage 2	244	-	-	-	-
Critical Hdwy	6.63	6.23	-	-	4.13
Critical Hdwy Stg 1	5.43	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-
Follow-up Hdwy	3.519	3.319	-	-	2.219
Pot Cap-1 Maneuver	75	132	-	-	409
Stage 1	184	-	-	-	-
Stage 2	775	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	71	132	-	-	409
Mov Cap-2 Maneuver	153	-	-	-	-
Stage 1	184	-	-	-	-
Stage 2	733	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	101.8	0	0.8
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	138	409
HCM Lane V/C Ratio	-	-	0.845	0.054
HCM Control Delay (s)	-	-	101.8	14.3
HCM Lane LOS	-	-	F	B
HCM 95th %tile Q(veh)	-	-	5.4	0.2

4: E. Williams Street & Straywhite Avenue
Horton Park - Apex, NC

Existing (2019) PM
06/28/2019

Intersection

Int Delay, s/veh	0.8					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		↑	↑	↓	↑↑
Traffic Vol, veh/h	18	41	592	33	77	1418
Future Vol, veh/h	18	41	592	33	77	1418
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	-	-	75	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	20	46	658	37	86	1576

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	1618	658	0	0	695
Stage 1	658	-	-	-	-
Stage 2	960	-	-	-	-
Critical Hdwy	6.63	6.23	-	-	4.13
Critical Hdwy Stg 1	5.43	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-
Follow-up Hdwy	3.519	3.319	-	-	2.219
Pot Cap-1 Maneuver	103	463	-	-	899
Stage 1	514	-	-	-	-
Stage 2	333	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	93	463	-	-	899
Mov Cap-2 Maneuver	212	-	-	-	-
Stage 1	514	-	-	-	-
Stage 2	301	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	18.1	0	0.5
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	340	899
HCM Lane V/C Ratio	-	-	0.193	0.095
HCM Control Delay (s)	-	-	18.1	9.4
HCM Lane LOS	-	-	C	A
HCM 95th %tile Q(veh)	-	-	0.7	0.3

4: E. Williams Street & Straywhite Avenue
Horton Park - Apex, NC

Background (2024) AM
06/28/2019

Intersection

Int Delay, s/veh	16.9					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W	W	T	T	T	T
Traffic Vol, veh/h	37	85	1672	9	23	421
Future Vol, veh/h	37	85	1672	9	23	421
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	-	-	75	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	41	94	1858	10	26	468

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	2144	1858	0	0	1868
Stage 1	1858	-	-	-	-
Stage 2	286	-	-	-	-
Critical Hdwy	6.63	6.23	-	-	4.13
Critical Hdwy Stg 1	5.43	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-
Follow-up Hdwy	3.519	3.319	-	-	2.219
Pot Cap-1 Maneuver	47	~ 91	-	-	320
Stage 1	135	-	-	-	-
Stage 2	738	-	-	-	-
Platoon blocked, %					
Mov Cap-1 Maneuver	43	~ 91	-	-	320
Mov Cap-2 Maneuver	113	-	-	-	-
Stage 1	135	-	-	-	-
Stage 2	678	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	\$ 308.6	0	0.9
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	97	320
HCM Lane V/C Ratio	-	-	1.397	0.08
HCM Control Delay (s)	-	-	\$ 308.6	17.2
HCM Lane LOS	-	-	F	C
HCM 95th %tile Q(veh)	-	-	9.9	0.3

Notes

~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

4: E. Williams Street & Straywhite Avenue
Horton Park - Apex, NC

Background (2024) PM
06/28/2019

Intersection

Int Delay, s/veh	1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↘↗		↑	↗	↘	↑↑
Traffic Vol, veh/h	21	48	773	38	89	1664
Future Vol, veh/h	21	48	773	38	89	1664
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	-	-	75	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	23	53	859	42	99	1849

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	1982	859	0	0	901
Stage 1	859	-	-	-	-
Stage 2	1123	-	-	-	-
Critical Hdwy	6.63	6.23	-	-	4.13
Critical Hdwy Stg 1	5.43	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-
Follow-up Hdwy	3.519	3.319	-	-	2.219
Pot Cap-1 Maneuver	60	355	-	-	752
Stage 1	414	-	-	-	-
Stage 2	273	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	52	355	-	-	752
Mov Cap-2 Maneuver	159	-	-	-	-
Stage 1	414	-	-	-	-
Stage 2	237	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	24.7	0	0.5
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	258	752
HCM Lane V/C Ratio	-	-	0.297	0.132
HCM Control Delay (s)	-	-	24.7	10.5
HCM Lane LOS	-	-	C	B
HCM 95th %tile Q(veh)	-	-	1.2	0.5

4: E. Williams Street & Straywhite Avenue
Horton Park - Apex, NC

Background (2026) AM
06/28/2019

Intersection

Int Delay, s/veh	25					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↘↘		↑	↗	↘	↑↑
Traffic Vol, veh/h	39	90	1773	10	25	447
Future Vol, veh/h	39	90	1773	10	25	447
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	-	-	75	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	43	100	1970	11	28	497

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	2275	1970	0	0	1981
Stage 1	1970	-	-	-	-
Stage 2	305	-	-	-	-
Critical Hdwy	6.63	6.23	-	-	4.13
Critical Hdwy Stg 1	5.43	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-
Follow-up Hdwy	3.519	3.319	-	-	2.219
Pot Cap-1 Maneuver	~ 39	~ 78	-	-	289
Stage 1	118	-	-	-	-
Stage 2	722	-	-	-	-
Platoon blocked, %					
Mov Cap-1 Maneuver	~ 35	~ 78	-	-	289
Mov Cap-2 Maneuver	99	-	-	-	-
Stage 1	118	-	-	-	-
Stage 2	652	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	\$ 457.8	0	1
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	83	289
HCM Lane V/C Ratio	-	-	1.727	0.096
HCM Control Delay (s)	-	-	\$ 457.8	18.8
HCM Lane LOS	-	-	F	C
HCM 95th %tile Q(veh)	-	-	12	0.3

Notes

~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

4: E. Williams Street & Straywhite Avenue
Horton Park - Apex, NC

Background (2026) PM
06/28/2019

Intersection

Int Delay, s/veh	1.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↑	↗	↘	↕
Traffic Vol, veh/h	22	50	815	41	95	1764
Future Vol, veh/h	22	50	815	41	95	1764
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	-	-	75	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	24	56	906	46	106	1960

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	2098	906	0	0	952
Stage 1	906	-	-	-	-
Stage 2	1192	-	-	-	-
Critical Hdwy	6.63	6.23	-	-	4.13
Critical Hdwy Stg 1	5.43	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-
Follow-up Hdwy	3.519	3.319	-	-	2.219
Pot Cap-1 Maneuver	51	334	-	-	720
Stage 1	393	-	-	-	-
Stage 2	251	-	-	-	-
Platoon blocked, %					
Mov Cap-1 Maneuver	44	334	-	-	720
Mov Cap-2 Maneuver	145	-	-	-	-
Stage 1	393	-	-	-	-
Stage 2	214	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	27.5	0	0.6
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	239	720
HCM Lane V/C Ratio	-	-	0.335	0.147
HCM Control Delay (s)	-	-	27.5	10.9
HCM Lane LOS	-	-	D	B
HCM 95th %tile Q(veh)	-	-	1.4	0.5

HCM 6th TWSC
 4: E. Williams Street & Straywhite Avenue

Combined (2024) AM - Phase 1
 06/28/2019

Intersection						
Int Delay, s/veh	36.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↘↗		↑	↗	↘	↗↘
Traffic Vol, veh/h	47	116	1672	12	33	421
Future Vol, veh/h	47	116	1672	12	33	421
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	-	-	75	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	52	129	1858	13	37	468

Major/Minor	Minor1	Major1	Major2	Major3	Major4
Conflicting Flow All	2166	1858	0	0	1871
Stage 1	1858	-	-	-	-
Stage 2	308	-	-	-	-
Critical Hdwy	6.63	6.23	-	-	4.13
Critical Hdwy Stg 1	5.43	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-
Follow-up Hdwy	3.519	3.319	-	-	2.219
Pot Cap-1 Maneuver	~ 46	~ 91	-	-	320
Stage 1	135	-	-	-	-
Stage 2	719	-	-	-	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	~ 41	~ 91	-	-	320
Mov Cap-2 Maneuver	112	-	-	-	-
Stage 1	135	-	-	-	-
Stage 2	636	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	\$ 509.6	0	1.3
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	96	320
HCM Lane V/C Ratio	-	-	1.887	0.115
HCM Control Delay (s)	-	-	\$ 509.6	17.7
HCM Lane LOS	-	-	F	C
HCM 95th %tile Q(veh)	-	-	15.1	0.4

Notes
 ~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

HCM 6th TWSC
 4: E. Williams Street & Straywhite Avenue

Combined (2024) PM - Phase 1
 06/28/2019

Intersection						
Int Delay, s/veh	1.6					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↘↗		↑	↗	↘	↑↑
Traffic Vol, veh/h	28	68	773	49	123	1664
Future Vol, veh/h	28	68	773	49	123	1664
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	-	-	75	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	31	76	859	54	137	1849

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	2058	859	0	0	913
Stage 1	859	-	-	-	-
Stage 2	1199	-	-	-	-
Critical Hdwy	6.63	6.23	-	-	4.13
Critical Hdwy Stg 1	5.43	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-
Follow-up Hdwy	3.519	3.319	-	-	2.219
Pot Cap-1 Maneuver	54	355	-	-	744
Stage 1	414	-	-	-	-
Stage 2	249	-	-	-	-
Platoon blocked, %					
Mov Cap-1 Maneuver	44	355	-	-	744
Mov Cap-2 Maneuver	142	-	-	-	-
Stage 1	414	-	-	-	-
Stage 2	203	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	30.2	0	0.8
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	247	744
HCM Lane V/C Ratio	-	-	0.432	0.184
HCM Control Delay (s)	-	-	30.2	10.9
HCM Lane LOS	-	-	D	B
HCM 95th %tile Q(veh)	-	-	2	0.7

4: E. Williams Street & Straywhite Avenue Combined (2024) AM - Phase 1 - with Improvements
 Horton Park - Apex, NC

07/01/2019

Intersection

Int Delay, s/veh	17.8					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↘	↗	↑	↗	↘	↑↑
Traffic Vol, veh/h	47	116	1672	12	33	421
Future Vol, veh/h	47	116	1672	12	33	421
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	-	75	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	52	129	1858	13	37	468

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	2166	1858	0	0	1871
Stage 1	1858	-	-	-	-
Stage 2	308	-	-	-	-
Critical Hdwy	6.63	6.23	-	-	4.13
Critical Hdwy Stg 1	5.43	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-
Follow-up Hdwy	3.519	3.319	-	-	2.219
Pot Cap-1 Maneuver	~ 46	~ 91	-	-	320
Stage 1	135	-	-	-	-
Stage 2	719	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	~ 41	~ 91	-	-	320
Mov Cap-2 Maneuver	112	-	-	-	-
Stage 1	135	-	-	-	-
Stage 2	636	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	247.6	0	1.3
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	112	91	320	-
HCM Lane V/C Ratio	-	-	0.466	1.416	0.115	-
HCM Control Delay (s)	-	-	62.5	322.6	17.7	-
HCM Lane LOS	-	-	F	F	C	-
HCM 95th %tile Q(veh)	-	-	2.1	9.7	0.4	-

Notes

~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

4: E. Williams Street & Straywhite Avenue Combined (2024) PM - Phase 1 - with Improvements
 Horton Park - Apex, NC

07/01/2019

Intersection

Int Delay, s/veh	1.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↘	↗	↑	↗	↘	↑↑
Traffic Vol, veh/h	28	68	773	49	123	1664
Future Vol, veh/h	28	68	773	49	123	1664
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	-	75	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	31	76	859	54	137	1849

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	2058	859	0	0	913
Stage 1	859	-	-	-	-
Stage 2	1199	-	-	-	-
Critical Hdwy	6.63	6.23	-	-	4.13
Critical Hdwy Stg 1	5.43	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-
Follow-up Hdwy	3.519	3.319	-	-	2.219
Pot Cap-1 Maneuver	54	355	-	-	744
Stage 1	414	-	-	-	-
Stage 2	249	-	-	-	-
Platoon blocked, %					
Mov Cap-1 Maneuver	44	355	-	-	744
Mov Cap-2 Maneuver	142	-	-	-	-
Stage 1	414	-	-	-	-
Stage 2	203	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	23.6	0	0.8
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	142	355	744	-
HCM Lane V/C Ratio	-	-	0.219	0.213	0.184	-
HCM Control Delay (s)	-	-	37.3	17.9	10.9	-
HCM Lane LOS	-	-	E	C	B	-
HCM 95th %tile Q(veh)	-	-	0.8	0.8	0.7	-

4: E. Williams Street & Straywhite Avenue
Horton Park - Apex, NC

Combined (2026) AM - Full Buildout
06/28/2019

Intersection

Int Delay, s/veh	43.7					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↘		↑	↑	↘	↑↑
Traffic Vol, veh/h	57	107	1773	15	31	447
Future Vol, veh/h	57	107	1773	15	31	447
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	-	-	75	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	63	119	1970	17	34	497

Major/Minor	Minor1	Major1	Major2	Major2	Major2
Conflicting Flow All	2287	1970	0	0	1987
Stage 1	1970	-	-	-	-
Stage 2	317	-	-	-	-
Critical Hdwy	6.63	6.23	-	-	4.13
Critical Hdwy Stg 1	5.43	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-
Follow-up Hdwy	3.519	3.319	-	-	2.219
Pot Cap-1 Maneuver	~ 38	~ 78	-	-	288
Stage 1	118	-	-	-	-
Stage 2	712	-	-	-	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	~ 34	~ 78	-	-	288
Mov Cap-2 Maneuver	98	-	-	-	-
Stage 1	118	-	-	-	-
Stage 2	628	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	644.2	0	1.2
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	84	288
HCM Lane V/C Ratio	-	-	2.169	0.12
HCM Control Delay (s)	-	-	644.2	19.2
HCM Lane LOS	-	-	F	C
HCM 95th %tile Q(veh)	-	-	16.4	0.4

Notes

-: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

4: E. Williams Street & Straywhite Avenue
Horton Park - Apex, NC

Combined (2026) PM - Full Buildout

06/28/2019

Intersection

Int Delay, s/veh	1.6					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W	W	T	T	T	T
Traffic Vol, veh/h	32	60	815	58	113	1764
Future Vol, veh/h	32	60	815	58	113	1764
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	-	-	75	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	36	67	906	64	126	1960

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	2138	906	0	0	970
Stage 1	906	-	-	-	-
Stage 2	1232	-	-	-	-
Critical Hdwy	6.63	6.23	-	-	4.13
Critical Hdwy Stg 1	5.43	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-
Follow-up Hdwy	3.519	3.319	-	-	2.219
Pot Cap-1 Maneuver	48	334	-	-	708
Stage 1	393	-	-	-	-
Stage 2	239	-	-	-	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	39	334	-	-	708
Mov Cap-2 Maneuver	135	-	-	-	-
Stage 1	393	-	-	-	-
Stage 2	196	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	34.6	0	0.7
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	221	708
HCM Lane V/C Ratio	-	-	0.463	0.177
HCM Control Delay (s)	-	-	34.6	11.2
HCM Lane LOS	-	-	D	B
HCM 95th %tile Q(veh)	-	-	2.2	0.6

4: E. Williams Street & Straywhite Avenue Combined (2026) AM - Full Buildout - with Improvements
 Horton Park - Apex, NC

07/01/2019

Intersection

Int Delay, s/veh	19.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↘	↗	↑	↗	↘	↑↑
Traffic Vol, veh/h	57	107	1773	15	31	447
Future Vol, veh/h	57	107	1773	15	31	447
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	-	75	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	63	119	1970	17	34	497

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	2287	1970	0	0	1987
Stage 1	1970	-	-	-	-
Stage 2	317	-	-	-	-
Critical Hdwy	6.63	6.23	-	-	4.13
Critical Hdwy Stg 1	5.43	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-
Follow-up Hdwy	3.519	3.319	-	-	2.219
Pot Cap-1 Maneuver	~ 38	~ 78	-	-	288
Stage 1	118	-	-	-	-
Stage 2	712	-	-	-	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	~ 34	~ 78	-	-	288
Mov Cap-2 Maneuver	98	-	-	-	-
Stage 1	118	-	-	-	-
Stage 2	628	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	281.8	0	1.2
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	98	78	288	-
HCM Lane V/C Ratio	-	-	0.646	1.524	0.12	-
HCM Control Delay (s)	-	-	92.6	382.6	19.2	-
HCM Lane LOS	-	-	F	F	C	-
HCM 95th %tile Q(veh)	-	-	3.2	9.7	0.4	-

Notes

~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

4: E. Williams Street & Straywhite Avenue Combined (2026) PM - Full Buildout - with Improvements
 Horton Park - Apex, NC

07/01/2019

Intersection

Int Delay, s/veh	1.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↘	↗	↑	↗	↘	↑↑
Traffic Vol, veh/h	32	60	815	58	113	1764
Future Vol, veh/h	32	60	815	58	113	1764
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	-	75	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	36	67	906	64	126	1960

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	2138	906	0	0	970
Stage 1	906	-	-	-	-
Stage 2	1232	-	-	-	-
Critical Hdwy	6.63	6.23	-	-	4.13
Critical Hdwy Stg 1	5.43	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-
Follow-up Hdwy	3.519	3.319	-	-	2.219
Pot Cap-1 Maneuver	48	334	-	-	708
Stage 1	393	-	-	-	-
Stage 2	239	-	-	-	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	39	334	-	-	708
Mov Cap-2 Maneuver	135	-	-	-	-
Stage 1	393	-	-	-	-
Stage 2	196	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	26.2	0	0.7
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	135	334	708
HCM Lane V/C Ratio	-	-	0.263	0.2	0.177
HCM Control Delay (s)	-	-	40.9	18.4	11.2
HCM Lane LOS	-	-	E	C	B
HCM 95th %tile Q(veh)	-	-	1	0.7	0.6

APPENDIX J

CAPACITY ANALYSIS CALCULATIONS

TEN-TEN ROAD

&

JESSIE DRIVE

6: Jessie Drive & Ten-Ten Road
Horton Park - Apex, NC

Existing (2019) AM
06/28/2019

Intersection

Int Delay, s/veh	0.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↗			↖	↘	↙
Traffic Vol, veh/h	541	3	4	1175	2	12
Future Vol, veh/h	541	3	4	1175	2	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	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	601	3	4	1306	2	13

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	604	0	1917 603
Stage 1	-	-	-	-	603 -
Stage 2	-	-	-	-	1314 -
Critical Hdwy	-	-	4.12	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	-	-	2.218	-	3.518 3.318
Pot Cap-1 Maneuver	-	-	974	-	74 499
Stage 1	-	-	-	-	546 -
Stage 2	-	-	-	-	251 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	974	-	73 499
Mov Cap-2 Maneuver	-	-	-	-	73 -
Stage 1	-	-	-	-	546 -
Stage 2	-	-	-	-	247 -

Approach	EB	WB	NB
HCM Control Delay, s	0	0	19
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	272	-	-	974	-
HCM Lane V/C Ratio	0.057	-	-	0.005	-
HCM Control Delay (s)	19	-	-	8.7	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Intersection

Int Delay, s/veh	0.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↖			↗	↘	↙
Traffic Vol, veh/h	1221	12	8	795	3	4
Future Vol, veh/h	1221	12	8	795	3	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	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	1357	13	9	883	3	4

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	1370	0	2265 1364
Stage 1	-	-	-	-	1364 -
Stage 2	-	-	-	-	901 -
Critical Hdwy	-	-	4.12	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	-	-	2.218	-	3.518 3.318
Pot Cap-1 Maneuver	-	-	501	-	45 181
Stage 1	-	-	-	-	238 -
Stage 2	-	-	-	-	396 -
Platoon blocked, %	-	-	-	-	- -
Mov Cap-1 Maneuver	-	-	501	-	43 181
Mov Cap-2 Maneuver	-	-	-	-	43 -
Stage 1	-	-	-	-	238 -
Stage 2	-	-	-	-	382 -

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	57.7
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	76	-	-	501	-
HCM Lane V/C Ratio	0.102	-	-	0.018	-
HCM Control Delay (s)	57.7	-	-	12.3	0
HCM Lane LOS	F	-	-	B	A
HCM 95th %tile Q(veh)	0.3	-	-	0.1	-

6: Jessie Drive & Ten-Ten Road
Horton Park - Apex, NC

Background (2026) AM
06/28/2019

Intersection

Int Delay, s/veh 1.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑	↑	↓	↑↑	↓	↑
Traffic Vol, veh/h	623	46	47	1403	44	57
Future Vol, veh/h	623	46	47	1403	44	57
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	400	-	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	692	51	52	1559	49	63

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	743	0	1576
Stage 1	-	-	-	-	692
Stage 2	-	-	-	-	884
Critical Hdwy	-	-	5.34	-	6.29
Critical Hdwy Stg 1	-	-	-	-	6.64
Critical Hdwy Stg 2	-	-	-	-	5.84
Follow-up Hdwy	-	-	3.12	-	3.67
Pot Cap-1 Maneuver	-	-	520	-	126
Stage 1	-	-	-	-	382
Stage 2	-	-	-	-	355
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	520	-	113
Mov Cap-2 Maneuver	-	-	-	-	113
Stage 1	-	-	-	-	382
Stage 2	-	-	-	-	320

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	32.7
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	113	555	-	-	520	-
HCM Lane V/C Ratio	0.433	0.114	-	-	0.1	-
HCM Control Delay (s)	59.2	12.3	-	-	12.7	-
HCM Lane LOS	F	B	-	-	B	-
HCM 95th %tile Q(veh)	1.9	0.4	-	-	0.3	-

Intersection

Int Delay, s/veh	10.6					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑	↑	↓	↑↑	↓	↑
Traffic Vol, veh/h	1460	57	52	936	46	47
Future Vol, veh/h	1460	57	52	936	46	47
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	400	-	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	1622	63	58	1040	51	52

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	1685	0	2258
Stage 1	-	-	-	-	1622
Stage 2	-	-	-	-	636
Critical Hdwy	-	-	5.34	-	6.29
Critical Hdwy Stg 1	-	-	-	-	6.64
Critical Hdwy Stg 2	-	-	-	-	5.84
Follow-up Hdwy	-	-	3.12	-	3.67
Pot Cap-1 Maneuver	-	-	180	-	~ 49
Stage 1	-	-	-	-	101
Stage 2	-	-	-	-	475
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	180	-	~ 33
Mov Cap-2 Maneuver	-	-	-	-	~ 33
Stage 1	-	-	-	-	101
Stage 2	-	-	-	-	322

Approach	EB	WB	NB
HCM Control Delay, s	0	1.8	277.6
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	33	277	-	-	180	-
HCM Lane V/C Ratio	1.549	0.189	-	-	0.321	-
HCM Control Delay (s)	\$ 539.7	21	-	-	34.2	-
HCM Lane LOS	F	C	-	-	D	-
HCM 95th %tile Q(veh)	5.7	0.7	-	-	1.3	-

Notes

~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection

Int Delay, s/veh 108.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑	↑	↓	↑↑	↓	↑
Traffic Vol, veh/h	623	143	80	1403	260	97
Future Vol, veh/h	623	143	80	1403	260	97
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	400	-	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	692	159	89	1559	289	108

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	851	0	1650
Stage 1	-	-	-	-	692
Stage 2	-	-	-	-	958
Critical Hdwy	-	-	5.34	-	6.29
Critical Hdwy Stg 1	-	-	-	-	6.64
Critical Hdwy Stg 2	-	-	-	-	5.84
Follow-up Hdwy	-	-	3.12	-	3.67
Pot Cap-1 Maneuver	-	-	462	-	~ 113
Stage 1	-	-	-	-	382
Stage 2	-	-	-	-	325
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	462	-	~ 91
Mov Cap-2 Maneuver	-	-	-	-	~ 91
Stage 1	-	-	-	-	382
Stage 2	-	-	-	-	~ 262

Approach	EB	WB	NB
HCM Control Delay, s	0	0.8	\$ 788.5
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	91	555	-	-	462	-
HCM Lane V/C Ratio	3.175	0.194	-	-	0.192	-
HCM Control Delay (s)	\$ 1077.8	13	-	-	14.6	-
HCM Lane LOS	F	B	-	-	B	-
HCM 95th %tile Q(veh)	28.5	0.7	-	-	0.7	-

Notes

-: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

6: Jessie Drive & Ten-Ten Road
Horton Park - Apex, NC

Combined (2026) PM - Full Buildout
06/28/2019

Intersection

Int Delay, s/veh 766.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑	↑	↓	↑↑	↓	↑
Traffic Vol, veh/h	1460	281	95	936	202	90
Future Vol, veh/h	1460	281	95	936	202	90
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	400	-	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	1622	312	106	1040	224	100

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	1934
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	5.34	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	3.12	-
Pot Cap-1 Maneuver	-	135	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	135	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	8.4	\$ 8017.9
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	9	277	-	-	135	-
HCM Lane V/C Ratio	24.938	0.361	-	-	0.782	-
HCM Control Delay (s)	\$ 11579	25.2	-	-	91.2	-
HCM Lane LOS	F	D	-	-	F	-
HCM 95th %tile Q(veh)	29.8	1.6	-	-	4.7	-

Notes

~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

6: Jessie Drive & Ten-Ten Road
Horton Park - Apex, NC

Combined (2026) AM - Full Buildout - with Improvements

06/28/2019

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑	↑	↘	↑↑	↘	↑
Traffic Volume (vph)	623	143	80	1403	260	97
Future Volume (vph)	623	143	80	1403	260	97
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		100	400		0	200
Storage Lanes		1	1		1	1
Taper Length (ft)			100		100	
Lane Util. Factor	0.91	1.00	1.00	0.95	1.00	1.00
Frnt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	5085	1583	1770	3539	1770	1583
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	5085	1583	1770	3539	1770	1583
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	45			45	35	
Link Distance (ft)	1089			1511	1690	
Travel Time (s)	16.5			22.9	32.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	692	159	89	1559	289	108
Shared Lane Traffic (%)						
Lane Group Flow (vph)	692	159	89	1559	289	108
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	16			16	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Number of Detectors	2	1	1	2	1	1
Detector Template	Thru	Right	Left	Thru	Left	Right
Leading Detector (ft)	100	20	20	100	20	20
Trailing Detector (ft)	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0
Detector 1 Size(ft)	6	20	20	6	20	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)	94			94		
Detector 2 Size(ft)	6			6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA	pm+ov	Prot	NA	Prot	pm+ov
Protected Phases	2	8	1	6	8	1
Permitted Phases		2				8

6: Jessie Drive & Ten-Ten Road
Horton Park - Apex, NC

Combined (2026) AM - Full Buildout - with Improvements

06/28/2019

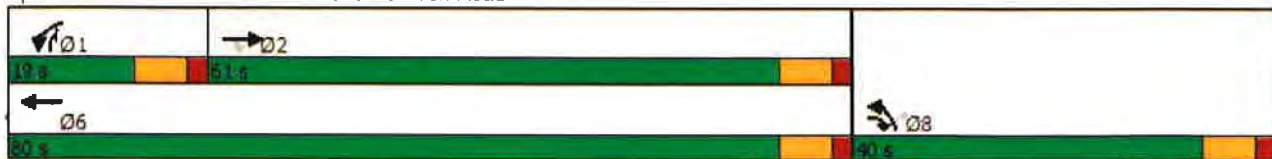
	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Detector Phase	2	8	1	6	8	1
Switch Phase						
Minimum Initial (s)	12.0	7.0	7.0	12.0	7.0	7.0
Minimum Split (s)	19.0	14.0	14.0	19.0	14.0	14.0
Total Split (s)	61.0	40.0	19.0	80.0	40.0	19.0
Total Split (%)	50.8%	33.3%	15.8%	66.7%	33.3%	15.8%
Maximum Green (s)	54.0	33.0	12.0	73.0	33.0	12.0
Yellow Time (s)	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
Lost Time Adjust (s)	-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
Lead/Lag	Lag		Lead			Lead
Lead-Lag Optimize?	Yes		Yes			Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	Min	None	None	Min	None	None
Act Effct Green (s)	31.2	58.4	12.0	48.6	21.9	39.3
Actuated g/C Ratio	0.38	0.72	0.15	0.60	0.27	0.48
v/c Ratio	0.35	0.14	0.34	0.74	0.61	0.14
Control Delay	18.2	3.5	41.6	14.4	34.4	15.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.2	3.5	41.6	14.4	34.4	15.0
LOS	B	A	D	B	C	B
Approach Delay	15.4			15.9	29.1	
Approach LOS	B			B	C	
Queue Length 50th (ft)	84	19	39	253	121	27
Queue Length 95th (ft)	145	37	117	467	277	83
Internal Link Dist (ft)	1009			1431	1610	
Turn Bay Length (ft)		100	400			200
Base Capacity (vph)	3716	1429	327	3134	818	823
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	0.19	0.11	0.27	0.50	0.35	0.13

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 81.2
 Natural Cycle: 50
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.74
 Intersection Signal Delay: 17.6
 Intersection Capacity Utilization 61.5%
 Analysis Period (min) 15

Intersection LOS: B
 ICU Level of Service B

Splits and Phases: 6: Jessie Drive & Ten-Ten Road



6: Jessie Drive & Ten-Ten Road
Horton Park - Apex, NC

Combined (2026) PM - Full Buildout - with Improvements

06/28/2019

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑	↑	↓	↑↑	↓	↑
Traffic Volume (vph)	1460	281	95	936	202	90
Future Volume (vph)	1460	281	95	936	202	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		100	400		0	200
Storage Lanes		1	1		1	1
Taper Length (ft)			100		100	
Lane Util. Factor	0.91	1.00	1.00	0.95	1.00	1.00
Frnt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	5085	1583	1770	3539	1770	1583
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	5085	1583	1770	3539	1770	1583
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	45			45	35	
Link Distance (ft)	1089			1511	1690	
Travel Time (s)	16.5			22.9	32.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	1622	312	106	1040	224	100
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1622	312	106	1040	224	100
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	16			16	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Number of Detectors	2	1	1	2	1	1
Detector Template	Thru	Right	Left	Thru	Left	Right
Leading Detector (ft)	100	20	20	100	20	20
Trailing Detector (ft)	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0
Detector 1 Size(ft)	6	20	20	6	20	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)				94		
Detector 2 Size(ft)				6		
Detector 2 Type				Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA	pm+ov	Prot	NA	Prot	pm+ov
Protected Phases	2	8	1	6	8	1
Permitted Phases		2				8

6: Jessie Drive & Ten-Ten Road
Horton Park - Apex, NC

Combined (2026) PM - Full Buildout - with Improvements

06/28/2019

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Detector Phase	2	8	1	6	8	1
Switch Phase						
Minimum Initial (s)	12.0	7.0	7.0	12.0	7.0	7.0
Minimum Split (s)	19.0	14.0	14.0	19.0	14.0	14.0
Total Split (s)	64.0	34.0	22.0	86.0	34.0	22.0
Total Split (%)	53.3%	28.3%	18.3%	71.7%	28.3%	18.3%
Maximum Green (s)	57.0	27.0	15.0	79.0	27.0	15.0
Yellow Time (s)	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
Lost Time Adjust (s)	-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
Lead/Lag	Lag		Lead		Lead	
Lead-Lag Optimize?	Yes		Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	Min	None	None	Min	None	None
Act Effct Green (s)	43.0	67.9	13.1	61.4	19.6	37.9
Actuated g/C Ratio	0.47	0.74	0.14	0.67	0.21	0.41
v/c Ratio	0.68	0.27	0.42	0.44	0.59	0.15
Control Delay	20.8	4.4	45.7	7.9	41.5	19.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.8	4.4	45.7	7.9	41.5	19.3
LOS	C	A	D	A	D	B
Approach Delay	18.2		11.4		34.7	
Approach LOS	B		B		C	
Queue Length 50th (ft)	249	46	55	124	114	34
Queue Length 95th (ft)	385	84	134	218	233	84
Internal Link Dist (ft)	1009		1431		1610	
Turn Bay Length (ft)	100		400		200	
Base Capacity (vph)	3433	1361	344	3087	587	737
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	0.47	0.23	0.31	0.34	0.38	0.14

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 91.4
 Natural Cycle: 60
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.68
 Intersection Signal Delay: 17.5
 Intersection Capacity Utilization 57.7%
 Analysis Period (min) 15

Intersection LOS: B
 ICU Level of Service B

Splits and Phases: 6: Jessie Drive & Ten-Ten Road



APPENDIX K

CAPACITY ANALYSIS CALCULATIONS













JESSIE DRIVE EXTENSION

&

NC 55

7: NC 55 & Jessie Drive Extension
Horton Park - Apex, NC

Background (2026) AM
06/28/2019

Lane Group												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑				↗		↑↑	↗			
Traffic Volume (vph)	0	42	0	0	0	84	0	2888	42	0	0	0
Future Volume (vph)	0	42	0	0	0	84	0	2888	42	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0			150	0		0
Storage Lanes	0		0	0		1			1	0		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Friction						0.865			0.850			
Flt Protected												
Satd. Flow (prot)	0	1863	0	0	0	1611	0	3539	1583	0	0	0
Flt Permitted												
Satd. Flow (perm)	0	1863	0	0	0	1611	0	3539	1583	0	0	0
Right Turn on Red	No		No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			45			25	
Link Distance (ft)		152			4482			770			465	
Travel Time (s)		3.0			87.3			11.7			12.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	47	0	0	0	93	0	3209	47	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	47	0	0	0	93	0	3209	47	0	0	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)		0			0			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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		2				1		2	1			
Detector Template		Thru				Right		Thru	Right			
Leading Detector (ft)		100				20		100	20			
Trailing Detector (ft)		0				0		0	0			
Detector 1 Position(ft)		0				0		0	0			
Detector 1 Size(ft)		6				20		6	20			
Detector 1 Type		CI+Ex				CI+Ex		CI+Ex	CI+Ex			
Detector 1 Channel												
Detector 1 Extend (s)		0.0				0.0		0.0	0.0			
Detector 1 Queue (s)		0.0				0.0		0.0	0.0			
Detector 1 Delay (s)		0.0				0.0		0.0	0.0			
Detector 2 Position(ft)		94						94				
Detector 2 Size(ft)		6						6				
Detector 2 Type		CI+Ex						CI+Ex				
Detector 2 Channel												
Detector 2 Extend (s)		0.0						0.0				
Turn Type		NA				Perm		NA	Perm			
Protected Phases		4						2				
Permitted Phases						8			2			

7: NC 55 & Jessie Drive Extension
Horton Park - Apex, NC

Background (2026) AM
06/28/2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase		4				8		2	2			
Switch Phase												
Minimum Initial (s)		7.0				7.0		12.0	12.0			
Minimum Split (s)		14.0				14.0		19.0	19.0			
Total Split (s)		16.0				16.0		134.0	134.0			
Total Split (%)		10.7%				10.7%		89.3%	89.3%			
Maximum Green (s)		9.0				9.0		127.0	127.0			
Yellow Time (s)		5.0				5.0		5.0	5.0			
All-Red Time (s)		2.0				2.0		2.0	2.0			
Lost Time Adjust (s)		-2.0				-2.0		-2.0	-2.0			
Total Lost Time (s)		5.0				5.0		5.0	5.0			
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0				3.0		3.0	3.0			
Recall Mode		None				None		Min	Min			
Act Effct Green (s)		10.6				11.0		129.0	129.0			
Actuated g/C Ratio		0.07				0.07		0.86	0.86			
v/c Ratio		0.36				0.79		1.05	0.03			
Control Delay		74.3				107.9		45.5	1.6			
Queue Delay		0.0				0.0		0.0	0.0			
Total Delay		74.3				107.9		45.5	1.6			
LOS		E				F		D	A			
Approach Delay		74.3			107.9			44.8				
Approach LOS		E			F			D				
Queue Length 50th (ft)		45				91		~1801	5			
Queue Length 95th (ft)		89				#193		#1897	10			
Internal Link Dist (ft)		72			4402			690			385	
Turn Bay Length (ft)									150			
Base Capacity (vph)		136				118		3043	1361			
Starvation Cap Reductn		0				0		0	0			
Spillback Cap Reductn		0				0		0	0			
Storage Cap Reductn		0				0		0	0			
Reduced v/c Ratio		0.35				0.79		1.05	0.03			

Intersection Summary

Area Type: Other
 Cycle Length: 150
 Actuated Cycle Length: 150
 Natural Cycle: 150
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 1.05
 Intersection Signal Delay: 47.0
 Intersection Capacity Utilization 130.2%
 Analysis Period (min) 15
 Intersection LOS: D
 ICU Level of Service H













~ 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: 7: NC 55 & Jessie Drive Extension















7: NC 55 & Jessie Drive Extension
Horton Park - Apex, NC

Background (2026) PM
06/28/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑				↗		↑↑	↗			
Traffic Volume (vph)	0	42	0	0	0	84	0	1854	42	0	0	0
Future Volume (vph)	0	42	0	0	0	84	0	1854	42	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	0		150	0		0
Storage Lanes	0		0	0		1	0		1	0		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Frnt						0.865			0.850			
Flt Protected												
Satd. Flow (prot)	0	1863	0	0	0	1611	0	3539	1583	0	0	0
Flt Permitted												
Satd. Flow (perm)	0	1863	0	0	0	1611	0	3539	1583	0	0	0
Right Turn on Red	No		No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			45			25	
Link Distance (ft)		152			4482			770			465	
Travel Time (s)		3.0			87.3			11.7			12.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	47	0	0	0	93	0	2060	47	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	47	0	0	0	93	0	2060	47	0	0	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)		0			0			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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		2				1		2	1			
Detector Template		Thru				Right		Thru	Right			
Leading Detector (ft)		100				20		100	20			
Trailing Detector (ft)		0				0		0	0			
Detector 1 Position(ft)		0				0		0	0			
Detector 1 Size(ft)		6				20		6	20			
Detector 1 Type		Cl+Ex				Cl+Ex		Cl+Ex	Cl+Ex			
Detector 1 Channel												
Detector 1 Extend (s)		0.0				0.0		0.0	0.0			
Detector 1 Queue (s)		0.0				0.0		0.0	0.0			
Detector 1 Delay (s)		0.0				0.0		0.0	0.0			
Detector 2 Position(ft)		94						94				
Detector 2 Size(ft)		6						6				
Detector 2 Type		Cl+Ex						Cl+Ex				
Detector 2 Channel												
Detector 2 Extend (s)		0.0						0.0				
Turn Type		NA				Perm		NA	Perm			
Protected Phases		4						2				
Permitted Phases						8			2			

7: NC 55 & Jessie Drive Extension
Horton Park - Apex, NC

Background (2026) PM
06/28/2019

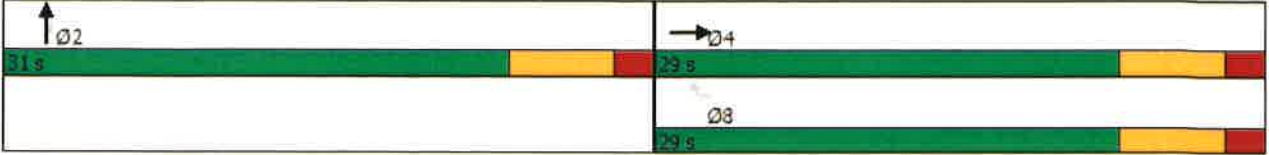
												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase		4				8		2	2			
Switch Phase												
Minimum Initial (s)		7.0				7.0		12.0	12.0			
Minimum Split (s)		14.0				14.0		19.0	19.0			
Total Split (s)		29.0				29.0		31.0	31.0			
Total Split (%)		48.3%				48.3%		51.7%	51.7%			
Maximum Green (s)		22.0				22.0		24.0	24.0			
Yellow Time (s)		5.0				5.0		5.0	5.0			
All-Red Time (s)		2.0				2.0		2.0	2.0			
Lost Time Adjust (s)		-2.0				-2.0		-2.0	-2.0			
Total Lost Time (s)		5.0				5.0		5.0	5.0			
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0				3.0		3.0	3.0			
Recall Mode		None				None		Min	Min			
Act Effct Green (s)		10.2				10.3		34.2	34.2			
Actuated g/C Ratio		0.22				0.22		0.73	0.73			
v/c Ratio		0.12				0.26		0.80	0.04			
Control Delay		15.0				16.9		14.8	5.0			
Queue Delay		0.0				0.0		0.0	0.0			
Total Delay		15.0				16.9		14.8	5.0			
LOS		B				B		B	A			
Approach Delay		15.0			16.9			14.6				
Approach LOS		B			B			B				
Queue Length 50th (ft)		10				21		~268	5			
Queue Length 95th (ft)		29				49		#487	17			
Internal Link Dist (ft)		72			4402			690			385	
Turn Bay Length (ft)									150			
Base Capacity (vph)		957				827		2584	1156			
Starvation Cap Reductn		0				0		0	0			
Spillback Cap Reductn		0				0		0	0			
Storage Cap Reductn		0				0		0	0			
Reduced v/c Ratio		0.05				0.11		0.80	0.04			

Intersection Summary

Area Type: Other
 Cycle Length: 60
 Actuated Cycle Length: 46.8
 Natural Cycle: 60
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.80
 Intersection Signal Delay: 14.7
 Intersection Capacity Utilization 148.8%
 Analysis Period (min) 15
 Intersection LOS: B
 ICU Level of Service H













~ 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: 7: NC 55 & Jessie Drive Extension



7: NC 55 & Jessie Drive Extension
Horton Park - Apex, NC

Combined (2026) AM - Full Buildout
06/28/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑				↗		↑↑	↗			
Traffic Volume (vph)	0	58	0	0	0	122	0	2888	52	0	0	0
Future Volume (vph)	0	58	0	0	0	122	0	2888	52	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	0		150	0		0
Storage Lanes	0		0	0		1	0		1	0		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Friction						0.865			0.850			
Flt Protected												
Satd. Flow (prot)	0	1863	0	0	0	1611	0	3539	1583	0	0	0
Flt Permitted												
Satd. Flow (perm)	0	1863	0	0	0	1611	0	3539	1583	0	0	0
Right Turn on Red	No		No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			45			25	
Link Distance (ft)		152			3684			770			465	
Travel Time (s)		3.0			71.8			11.7			12.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	64	0	0	0	136	0	3209	58	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	64	0	0	0	136	0	3209	58	0	0	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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		2				1		2	1			
Detector Template		Thru				Right		Thru	Right			
Leading Detector (ft)		100				20		100	20			
Trailing Detector (ft)		0				0		0	0			
Detector 1 Position(ft)		0				0		0	0			
Detector 1 Size(ft)		6				20		6	20			
Detector 1 Type		Cl+Ex				Cl+Ex		Cl+Ex	Cl+Ex			
Detector 1 Channel												
Detector 1 Extend (s)		0.0				0.0		0.0	0.0			
Detector 1 Queue (s)		0.0				0.0		0.0	0.0			
Detector 1 Delay (s)		0.0				0.0		0.0	0.0			
Detector 2 Position(ft)		94						94				
Detector 2 Size(ft)		6						6				
Detector 2 Type		Cl+Ex						Cl+Ex				
Detector 2 Channel												
Detector 2 Extend (s)		0.0						0.0				
Turn Type		NA				Perm		NA	Perm			
Protected Phases		4						2				
Permitted Phases						8			2			

7: NC 55 & Jessie Drive Extension
Horton Park - Apex, NC

Combined (2026) AM - Full Buildout
06/28/2019

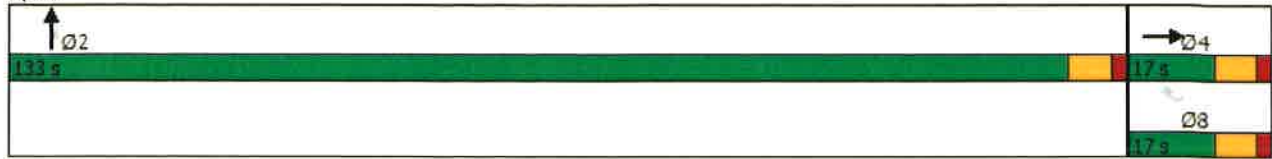
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase		4				8		2	2			
Switch Phase												
Minimum Initial (s)		7.0				7.0		12.0	12.0			
Minimum Split (s)		14.0				14.0		19.0	19.0			
Total Split (s)		17.0				17.0		133.0	133.0			
Total Split (%)		11.3%				11.3%		88.7%	88.7%			
Maximum Green (s)		10.0				10.0		126.0	126.0			
Yellow Time (s)		5.0				5.0		5.0	5.0			
All-Red Time (s)		2.0				2.0		2.0	2.0			
Lost Time Adjust (s)		-2.0				-2.0		-2.0	-2.0			
Total Lost Time (s)		5.0				5.0		5.0	5.0			
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0				3.0		3.0	3.0			
Recall Mode		None				None		Min	Min			
Act Effct Green (s)		11.4				12.0		128.0	128.0			
Actuated g/C Ratio		0.08				0.08		0.85	0.85			
v/c Ratio		0.45				1.06		1.06	0.04			
Control Delay		76.6				160.2		49.3	1.8			
Queue Delay		0.0				0.0		0.0	0.0			
Total Delay		76.6				160.2		49.3	1.8			
LOS		E				F		D	A			
Approach Delay		76.6			160.2			48.4				
Approach LOS		E			F			D				
Queue Length 50th (ft)		61				~145		~1813	7			
Queue Length 95th (ft)		112				#289		#1910	13			
Internal Link Dist (ft)		72			3604			690			385	
Turn Bay Length (ft)									150			
Base Capacity (vph)		149				128		3019	1350			
Starvation Cap Reductn		0				0		0	0			
Spillback Cap Reductn		0				0		0	0			
Storage Cap Reductn		0				0		0	0			
Reduced v/c Ratio		0.43				1.06		1.06	0.04			

Intersection Summary

Area Type: Other
 Cycle Length: 150
 Actuated Cycle Length: 150
 Natural Cycle: 150
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 1.06
 Intersection Signal Delay: 53.3
 Intersection Capacity Utilization 132.4%
 Analysis Period (min) 15
 Intersection LOS: D
 ICU Level of Service H

~ 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: 7: NC 55 & Jessie Drive Extension



7: NC 55 & Jessie Drive Extension
Horton Park - Apex, NC













Combined (2026) PM - Full Buildout

06/28/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑				↗		↑↑	↗			
Traffic Volume (vph)	0	64	0	0	0	118	0	1854	61	0	0	0
Future Volume (vph)	0	64	0	0	0	118	0	1854	61	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	0		150	0		0
Storage Lanes	0		0	0		1	0		1	0		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Flt Protected						0.865			0.850			
Satd. Flow (prot)	0	1863	0	0	0	1611	0	3539	1583	0	0	0
Flt Permitted												
Satd. Flow (perm)	0	1863	0	0	0	1611	0	3539	1583	0	0	0
Right Turn on Red	No		No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			45			25	
Link Distance (ft)		152			3684			770			465	
Travel Time (s)		3.0			71.8			11.7			12.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	71	0	0	0	131	0	2060	68	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	71	0	0	0	131	0	2060	68	0	0	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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		2				1		2	1			
Detector Template		Thru				Right		Thru	Right			
Leading Detector (ft)		100				20		100	20			
Trailing Detector (ft)		0				0		0	0			
Detector 1 Position(ft)		0				0		0	0			
Detector 1 Size(ft)		6				20		6	20			
Detector 1 Type		CI+Ex				CI+Ex		CI+Ex	CI+Ex			
Detector 1 Channel												
Detector 1 Extend (s)		0.0				0.0		0.0	0.0			
Detector 1 Queue (s)		0.0				0.0		0.0	0.0			
Detector 1 Delay (s)		0.0				0.0		0.0	0.0			
Detector 2 Position(ft)		94						94				
Detector 2 Size(ft)		6						6				
Detector 2 Type		CI+Ex						CI+Ex				
Detector 2 Channel												
Detector 2 Extend (s)		0.0						0.0				
Turn Type		NA				Perm		NA	Perm			
Protected Phases		4						2				
Permitted Phases						8			2			

7: NC 55 & Jessie Drive Extension
Horton Park - Apex, NC

Combined (2026) PM - Full Buildout
06/28/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase		4				8		2	2			
Switch Phase												
Minimum Initial (s)		7.0				7.0		12.0	12.0			
Minimum Split (s)		14.0				14.0		19.0	19.0			
Total Split (s)		29.0				29.0		31.0	31.0			
Total Split (%)		48.3%				48.3%		51.7%	51.7%			
Maximum Green (s)		22.0				22.0		24.0	24.0			
Yellow Time (s)		5.0				5.0		5.0	5.0			
All-Red Time (s)		2.0				2.0		2.0	2.0			
Lost Time Adjust (s)		-2.0				-2.0		-2.0	-2.0			
Total Lost Time (s)		5.0				5.0		5.0	5.0			
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0				3.0		3.0	3.0			
Recall Mode		None				None		Min	Min			
Act Effct Green (s)		11.2				11.3		30.2	30.2			
Actuated g/C Ratio		0.24				0.24		0.63	0.63			
v/c Ratio		0.16				0.34		0.92	0.07			
Control Delay		15.0				17.5		22.4	6.0			
Queue Delay		0.0				0.0		0.0	0.0			
Total Delay		15.0				17.5		22.4	6.0			
LOS		B				B		C	A			
Approach Delay		15.0			17.5			21.8				
Approach LOS		B			B			C				
Queue Length 50th (ft)		15				30		~340	7			
Queue Length 95th (ft)		39				65		#516	24			
Internal Link Dist (ft)		72			3604			690			385	
Turn Bay Length (ft)									150			
Base Capacity (vph)		941				813		2244	1003			
Starvation Cap Reductn		0				0		0	0			
Spillback Cap Reductn		0				0		0	0			
Storage Cap Reductn		0				0		0	0			
Reduced v/c Ratio		0.08				0.16		0.92	0.07			

Intersection Summary

Area Type: Other
 Cycle Length: 60
 Actuated Cycle Length: 47.6
 Natural Cycle: 60
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.92
 Intersection Signal Delay: 21.4
 Intersection Capacity Utilization 150.6%
 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: 7: NC 55 & Jessie Drive Extension



APPENDIX L

CAPACITY ANALYSIS CALCULATIONS

NORTHBOUND U-TURN

&

NC 55

Intersection

Int Delay, s/veh	0.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↘					↑↑
Traffic Vol, veh/h	42	0	0	0	0	1369
Future Vol, veh/h	42	0	0	0	0	1369
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	-	16974	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	47	0	0	0	0	1521

Major/Minor	Minor1	Major2	
Conflicting Flow All	761	-	-
Stage 1	0	-	-
Stage 2	761	-	-
Critical Hdwy	6.84	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	5.84	-	-
Follow-up Hdwy	3.52	-	-
Pot Cap-1 Maneuver	342	0	0
Stage 1	-	0	-
Stage 2	422	0	-
Platoon blocked, %			-
Mov Cap-1 Maneuver	342	-	-
Mov Cap-2 Maneuver	342	-	-
Stage 1	-	-	-
Stage 2	422	-	-

Approach	WB	SB
HCM Control Delay, s	17.2	0
HCM LOS	C	

Minor Lane/Major Mvmt	WBLn1	SBT
Capacity (veh/h)	342	-
HCM Lane V/C Ratio	0.136	-
HCM Control Delay (s)	17.2	-
HCM Lane LOS	C	-
HCM 95th %tile Q(veh)	0.5	-

10: NC 55 & NB U-Turn
Horton Park - Apex, NC

Background (2026) PM
06/28/2019

Intersection

Int Delay, s/veh	1.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↘					↑↑
Traffic Vol, veh/h	42	0	0	0	0	3075
Future Vol, veh/h	42	0	0	0	0	3075
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	-	16974	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	47	0	0	0	0	3417

Major/Minor	Minor1	Major2
Conflicting Flow All	1709	-
Stage 1	0	-
Stage 2	1709	-
Critical Hdwy	6.84	-
Critical Hdwy Stg 1	-	-
Critical Hdwy Stg 2	5.84	-
Follow-up Hdwy	3.52	-
Pot Cap-1 Maneuver	82	0
Stage 1	-	0
Stage 2	132	0
Platoon blocked, %	-	-
Mov Cap-1 Maneuver	82	-
Mov Cap-2 Maneuver	82	-
Stage 1	-	-
Stage 2	132	-

Approach	WB	SB
HCM Control Delay, s	95.6	0
HCM LOS	F	

Minor Lane/Major Mvmt	WBLn1	SBT
Capacity (veh/h)	82	-
HCM Lane V/C Ratio	0.569	-
HCM Control Delay (s)	95.6	-
HCM Lane LOS	F	-
HCM 95th %tile Q(veh)	2.5	-

Intersection

Int Delay, s/veh	0.8					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖					↗↗
Traffic Vol, veh/h	60	0	0	0	0	1385
Future Vol, veh/h	60	0	0	0	0	1385
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	-	16974	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	67	0	0	0	0	1539

Major/Minor	Minor1		Major2	
Conflicting Flow All	770	-	-	-
Stage 1	0	-	-	-
Stage 2	770	-	-	-
Critical Hdwy	6.84	-	-	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-
Follow-up Hdwy	3.52	-	-	-
Pot Cap-1 Maneuver	337	0	0	-
Stage 1	-	0	0	-
Stage 2	417	0	0	-
Platoon blocked, %				
Mov Cap-1 Maneuver	337	-	-	-
Mov Cap-2 Maneuver	337	-	-	-
Stage 1	-	-	-	-
Stage 2	417	-	-	-

Approach	WB	SB
HCM Control Delay, s	18.3	0
HCM LOS	C	

Minor Lane/Major Mvmt	WBLn1	SBT
Capacity (veh/h)	337	-
HCM Lane V/C Ratio	0.198	-
HCM Control Delay (s)	18.3	-
HCM Lane LOS	C	-
HCM 95th %tile Q(veh)	0.7	-

10: NC 55 & NB U-Turn
Horton Park - Apex, NC

Intersection

Int Delay, s/veh	2.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↘					↑↑
Traffic Vol, veh/h	56	0	0	0	0	3097
Future Vol, veh/h	56	0	0	0	0	3097
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	-	16974	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	62	0	0	0	0	3441

Major/Minor	Minor1		Major2	
Conflicting Flow All	1721	-	-	-
Stage 1	0	-	-	-
Stage 2	1721	-	-	-
Critical Hdwy	6.84	-	-	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-
Follow-up Hdwy	3.52	-	-	-
Pot Cap-1 Maneuver	80	0	0	-
Stage 1	-	0	0	-
Stage 2	130	0	0	-
Platoon blocked, %				
Mov Cap-1 Maneuver	80	-	-	-
Mov Cap-2 Maneuver	80	-	-	-
Stage 1	-	-	-	-
Stage 2	130	-	-	-

Approach	WB	SB
HCM Control Delay, s	135.1	0
HCM LOS	F	

Minor Lane/Major Mvmt	WBLn1	SBT
Capacity (veh/h)	80	-
HCM Lane V/C Ratio	0.778	-
HCM Control Delay (s)	135.1	-
HCM Lane LOS	F	-
HCM 95th %tile Q(veh)	3.8	-

APPENDIX M

CAPACITY ANALYSIS CALCULATIONS

JESSIE DRIVE

&

NORTH-SOUTH CONNECTOR

Intersection												
Int Delay, s/veh	4.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↙	↘		↙	↘			↕			↕	
Traffic Vol, veh/h	14	90	6	32	101	54	18	4	105	12	1	3
Future Vol, veh/h	14	90	6	32	101	54	18	4	105	12	1	3
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	75	-	-	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	2	2	2	2	2	2	2	2
Mvmt Flow	16	100	7	36	112	60	20	4	117	13	1	3

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	172	0	0	107	0	0	352	380	104	410	353	142
Stage 1	-	-	-	-	-	-	136	136	-	214	214	-
Stage 2	-	-	-	-	-	-	216	244	-	196	139	-
Critical Hdwy	4.12	-	-	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	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1405	-	-	1484	-	-	603	552	951	552	572	906
Stage 1	-	-	-	-	-	-	867	784	-	788	725	-
Stage 2	-	-	-	-	-	-	786	704	-	806	782	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1405	-	-	1484	-	-	584	533	951	468	552	906
Mov Cap-2 Maneuver	-	-	-	-	-	-	584	533	-	468	552	-
Stage 1	-	-	-	-	-	-	857	775	-	779	708	-
Stage 2	-	-	-	-	-	-	763	687	-	695	773	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1	1.3	10	12.2
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	854	1405	-	-	1484	-	-	520
HCM Lane V/C Ratio	0.165	0.011	-	-	0.024	-	-	0.034
HCM Control Delay (s)	10	7.6	-	-	7.5	-	-	12.2
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.6	0	-	-	0.1	-	-	0.1

Intersection

Int Delay, s/veh	5.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔		↔	↔			↔			↔	↔
Traffic Vol, veh/h	5	102	18	106	94	20	10	1	62	54	4	14
Future Vol, veh/h	5	102	18	106	94	20	10	1	62	54	4	14
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	75	-	-	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	2	2	2	2	2	2	2	2
Mvmt Flow	6	113	20	118	104	22	11	1	69	60	4	16

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	126	0	0	133	0	0	496	497	123	521	496	115
Stage 1	-	-	-	-	-	-	135	135	-	351	351	-
Stage 2	-	-	-	-	-	-	361	362	-	170	145	-
Critical Hdwy	4.12	-	-	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	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1460	-	-	1452	-	-	484	475	928	466	475	937
Stage 1	-	-	-	-	-	-	868	785	-	666	632	-
Stage 2	-	-	-	-	-	-	657	625	-	832	777	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1460	-	-	1452	-	-	441	435	928	403	435	937
Mov Cap-2 Maneuver	-	-	-	-	-	-	441	435	-	403	435	-
Stage 1	-	-	-	-	-	-	865	782	-	663	581	-
Stage 2	-	-	-	-	-	-	589	574	-	766	774	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.3			3.7			10			14.6		
HCM LOS							B			B		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	795	1460	-	-	1452	-	-	455
HCM Lane V/C Ratio	0.102	0.004	-	-	0.081	-	-	0.176
HCM Control Delay (s)	10	7.5	-	-	7.7	-	-	14.6
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.3	0	-	-	0.3	-	-	0.6

APPENDIX N

CAPACITY ANALYSIS CALCULATIONS

JESSIE DRIVE

&

SITE DRIVE #1

12: Site Drive #1 & Jessie Drive Extension/Jessie Drive Combined (2026) AM - Full Buildout
 Horton Park - Apex, NC 06/28/2019

Intersection

Int Delay, s/veh	3.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗			↕			↕	
Traffic Vol, veh/h	4	218	4	27	176	11	4	4	87	35	4	4
Future Vol, veh/h	4	218	4	27	176	11	4	4	87	35	4	4
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	50	-	-	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	2	2	2	2	2	2	2	2
Mvmt Flow	4	242	4	30	196	12	4	4	97	39	4	4

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	208	0	0	246	0	0	518	520	244	565	516	202
Stage 1	-	-	-	-	-	-	252	252	-	262	262	-
Stage 2	-	-	-	-	-	-	266	268	-	303	254	-
Critical Hdwy	4.12	-	-	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	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1363	-	-	1320	-	-	468	461	795	436	463	839
Stage 1	-	-	-	-	-	-	752	698	-	743	691	-
Stage 2	-	-	-	-	-	-	739	687	-	706	697	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1363	-	-	1320	-	-	453	449	795	373	451	839
Mov Cap-2 Maneuver	-	-	-	-	-	-	453	449	-	373	451	-
Stage 1	-	-	-	-	-	-	750	696	-	741	675	-
Stage 2	-	-	-	-	-	-	714	671	-	614	695	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	1	10.6	15.2
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	747	1363	-	-	1320	-	-	400
HCM Lane V/C Ratio	0.141	0.003	-	-	0.023	-	-	0.119
HCM Control Delay (s)	10.6	7.7	-	-	7.8	-	-	15.2
HCM Lane LOS	B	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.5	0	-	-	0.1	-	-	0.4

12: Site Drive #1 & Jessie Drive Extension/Jessie Drive Combined (2026) PM - Full Buildout
 Horton Park - Apex, NC 06/28/2019

Intersection

Int Delay, s/veh 2.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↙	↘		↙	↘			↕			↕	
Traffic Vol, veh/h	4	210	4	88	228	35	4	4	52	21	4	4
Future Vol, veh/h	4	210	4	88	228	35	4	4	52	21	4	4
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	50	-	-	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	2	2	2	2	2	2	2	2
Mvmt Flow	4	233	4	98	253	39	4	4	58	23	4	4

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	292	0	0	237
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	4.12	-	-	4.12
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	2.218	-	-	2.218
Pot Cap-1 Maneuver	1270	-	-	1330
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	1270	-	-	1330
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	2	11	17.5
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	669	1270	-	-	1330	-	-	319
HCM Lane V/C Ratio	0.1	0.003	-	-	0.074	-	-	0.101
HCM Control Delay (s)	11	7.8	-	-	7.9	-	-	17.5
HCM Lane LOS	B	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.3	0	-	-	0.2	-	-	0.3

APPENDIX O

CAPACITY ANALYSIS CALCULATIONS

JESSIE DRIVE

&

SITE DRIVE #2

13: Site Drive #2 & Jessie Drive Extension
Horton Park - Apex, NC

Combined (2026) AM - Full Buildout
06/28/2019

Intersection

Int Delay, s/veh 1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↗		↘	↑	↖	
Traffic Vol, veh/h	201	6	6	170	17	17
Future Vol, veh/h	201	6	6	170	17	17
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
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	223	7	7	189	19	19

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	230	0	430
Stage 1	-	-	-	-	227
Stage 2	-	-	-	-	203
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1338	-	582
Stage 1	-	-	-	-	811
Stage 2	-	-	-	-	831
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1338	-	579
Mov Cap-2 Maneuver	-	-	-	-	579
Stage 1	-	-	-	-	811
Stage 2	-	-	-	-	827

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	10.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	676	-	-	1338	-
HCM Lane V/C Ratio	0.056	-	-	0.005	-
HCM Control Delay (s)	10.6	-	-	7.7	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0	-

13: Site Drive #2 & Jessie Drive Extension
Horton Park - Apex, NC

Combined (2026) PM - Full Buildout
06/28/2019

Intersection

Int Delay, s/veh	0.8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔		↔	↑	↔	
Traffic Vol, veh/h	200	18	18	210	10	10
Future Vol, veh/h	200	18	18	210	10	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
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	222	20	20	233	11	11

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	242	0	505 232
Stage 1	-	-	-	-	232 -
Stage 2	-	-	-	-	273 -
Critical Hdwy	-	-	4.12	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	-	-	2.218	-	3.518 3.318
Pot Cap-1 Maneuver	-	-	1324	-	527 807
Stage 1	-	-	-	-	807 -
Stage 2	-	-	-	-	773 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1324	-	519 807
Mov Cap-2 Maneuver	-	-	-	-	519 -
Stage 1	-	-	-	-	807 -
Stage 2	-	-	-	-	761 -

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	10.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	632	-	-	1324	-
HCM Lane V/C Ratio	0.035	-	-	0.015	-
HCM Control Delay (s)	10.9	-	-	7.8	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-



TOWN OF APEX
 POST OFFICE BOX 250
 APEX, NORTH CAROLINA 27502
 PHONE 919-249-3426

**PUBLIC NOTIFICATION
 OF PUBLIC HEARINGS**

**CONDITIONAL ZONING #19CZ16
 Horton Park PUD Amendment & TF-CZ**

Pursuant to the provisions of North Carolina Statutes Section 160A-364 and to the Town of Apex Unified Development Ordinance (UDO) Section 2.2.11, notice is hereby given of public hearings before the Planning Board and Town Council of the Town of Apex. The purpose of these hearings is to consider the following:

Applicant: MFW Investments, LLC

Authorized Agent: Jeff Roach, Peak Engineering & Design

Property Addresses: 5100, 5101, & 5220 Jessie Drive; 0 Dezola Street; and
 8140 (portion of), 8252, 8306 & 8308 Smith Road

Acreage: ±146.9 Acres (total)

Property Identification Numbers (PINs): 0751421387, 0751310079, 0751319308, 0750390993, 0751400194, 0750398682, 0750495371, 0750299342, 0750280998 (portion of), 0750270906, 0750274707, 0750278677, 0750278925

Existing 2045 Land Use Map Designations:

Within proposed PUD-CZ area (127.84 acres): Medium Density Residential, High Density Residential,
 High Density Residential/Office Employment

Within proposed TF-CZ area (19.06 acres): Office Employment/Industrial Employment

Existing Zoning of Properties: Planned Unit Development-Conditional Zoning (PUD-CZ #18CZ04)

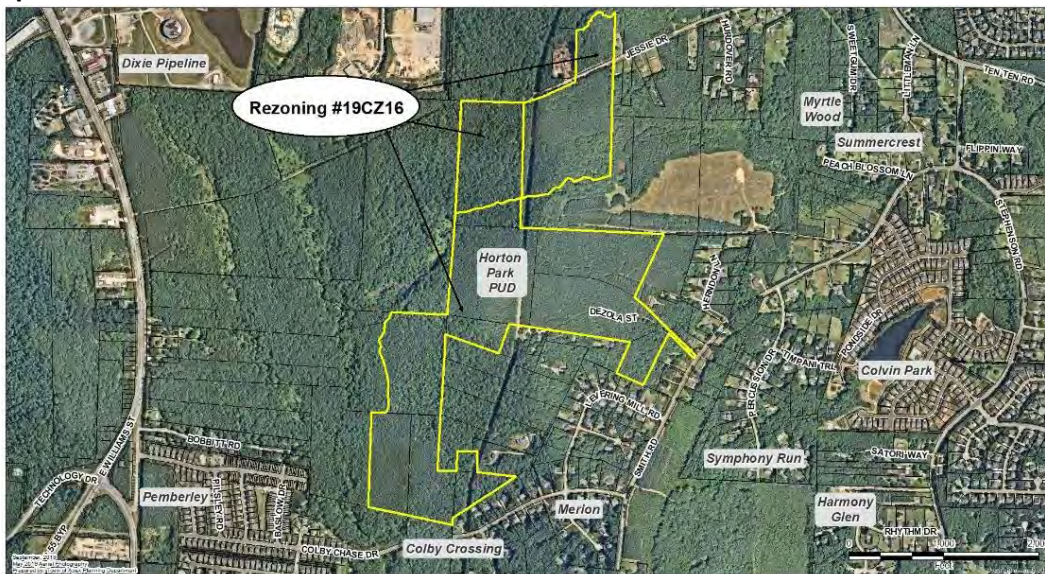
Proposed Zoning of Properties: Planned Unit Development-Conditional Zoning (PUD-CZ) &
 Tech/Flex-Conditional Zoning (TF-CZ)

Public Hearing Location: Apex Town Hall
 73 Hunter Street, Apex, North Carolina
 Council Chambers, 2nd Floor

Planning Board Public Hearing Date and Time: October 14, 2019 4:30 P.M.

Town Council Public Hearing Date and Time: October 15, 2019 7:00 P.M.

Vicinity Map:



Property owners within 300 feet of the proposed conditional zoning have been sent this notice via first class mail. All interested parties may appear at the public hearing and be heard with respect to the application. Maps showing the location for the above site(s) to be considered in addition to a copy of the [2045 Land Use Map](#) can be inspected at the Apex Town Hall or call 919-249-3426, Department of Planning and Community Development, for further information. To view the petition and related documents on-line: <https://www.apexnc.org/DocumentCenter/View/28218>.



TOWN OF APEX
POST OFFICE BOX 230
APEX, NORTH CAROLINA 27502
PHONE 919-249-3426

**PUBLIC NOTIFICATION
OF PUBLIC HEARINGS**

**CONDITIONAL ZONING #19CZ16
Horton Park PUD Amendment & TF-CZ**

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Applicant: MFW Investments, LLC

Authorized Agent: Jeff Roach, Peak Engineering & Design

Property Addresses: 5100, 5101, & 5220 Jessie Drive; 0 Dezola Street; and
8140 (portion of), 8252, 8306 & 8308 Smith Road

Acreage: ±146.9 Acres (total)

Property Identification Numbers (PINs): 0751421387, 0751310079, 0751319308, 0750390993, 0751400194,
0750398682, 0750495371, 0750299342, 0750280998 (portion of), 0750270906, 0750274707, 0750278677,
0750278925

Existing 2045 Land Use Map Designations:

Within proposed PUD-CZ area (127.84 acres): Medium Density Residential, High Density Residential,
High Density Residential/Office Employment

Within proposed TF-CZ area (19.06 acres): Office Employment/Industrial Employment

Existing Zoning of Properties: Planned Unit Development-Conditional Zoning (PUD-CZ #18C204)

Proposed Zoning of Properties: Planned Unit Development-Conditional Zoning (PUD-CZ) &
Tech/Flex-Conditional Zoning (TF-CZ)

Public Hearing Location: Apex Town Hall
73 Hunter Street, Apex, North Carolina
Council Chambers, 2nd Floor

Planning Board Public Hearing Date and Time: October 14, 2019 4:30 P.M.

Town Council Public Hearing Date and Time: October 15, 2019 7:00 P.M.

Vicinity Map:



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Published Dates: September 23-October 15, 2019

Dianne F. Khin, AICP
Planning Director



TOWN OF APEX
 POST OFFICE BOX 250
 APEX, NORTH CAROLINA 27502
 PHONE 919-249-3426

**AFFIDAVIT CERTIFYING
 Public Notification – Written (Mailed) Notice**
 Section 2.2.11
 Town of Apex Unified Development Ordinance

Project Number and/or Name: Conditional Rezoning #19CZ16
 Project Location: 5100, 5101, & 5220 Jessie Drive; 0 Dezola Street; and 8140 (portion of), 8252, 8306 & 8308 Smith Road
 Applicant or Authorized Agent: Jeff Roach
 Firm: Peak Engineering & Design

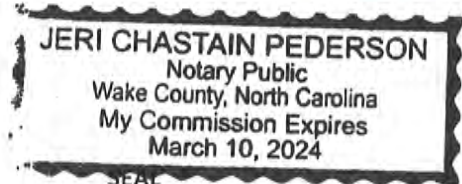
This is to certify that I as Planning Director, mailed or caused to have mailed by first class postage for the above mentioned project on September 23, 2019, a notice containing the time and place, location, nature and scope of the application, where additional information may be obtained, and the opportunity for interested parties to be heard, to the property owners within 300' of the land subject to notification. I further certify that I relied on information provided to me by the above-mentioned person as to accuracy and mailing addresses of property owners within 300' of the land subject to notification.

9/23/19
 Date

Jeanne Fkhun
 Planning Director

STATE OF NORTH CAROLINA
 COUNTY OF WAKE

Sworn and subscribed before me, Jeri Chastain Pederson, a Notary Public for the above State and County, this the 23 day of September, 2019.



Jeri Chastain Pederson
 Notary Public

My Commission Expires: 03/10/2024

| Agenda Item | cover sheet

for consideration by the Apex Town Council

Item Type: PUBLIC HEARING

Meeting Date: October 15, 2019

Item Details

Presenter(s): Jenna Shouse, Long Range Planner

Department(s): Planning

Requested Motion

Presentation of *Town of Apex Transit Circulator Study Draft Recommendations* with public hearing and possible motion regarding an associated amendment to Transit Plan Map of the Comprehensive Transportation Plan.

Approval Recommended?

The Planning Department recommends approval.

The Planning Board will hear these amendments at their October 14, 2019 meeting. Staff will present the Planning Board's recommendation at the Town Council meeting.

Item Details

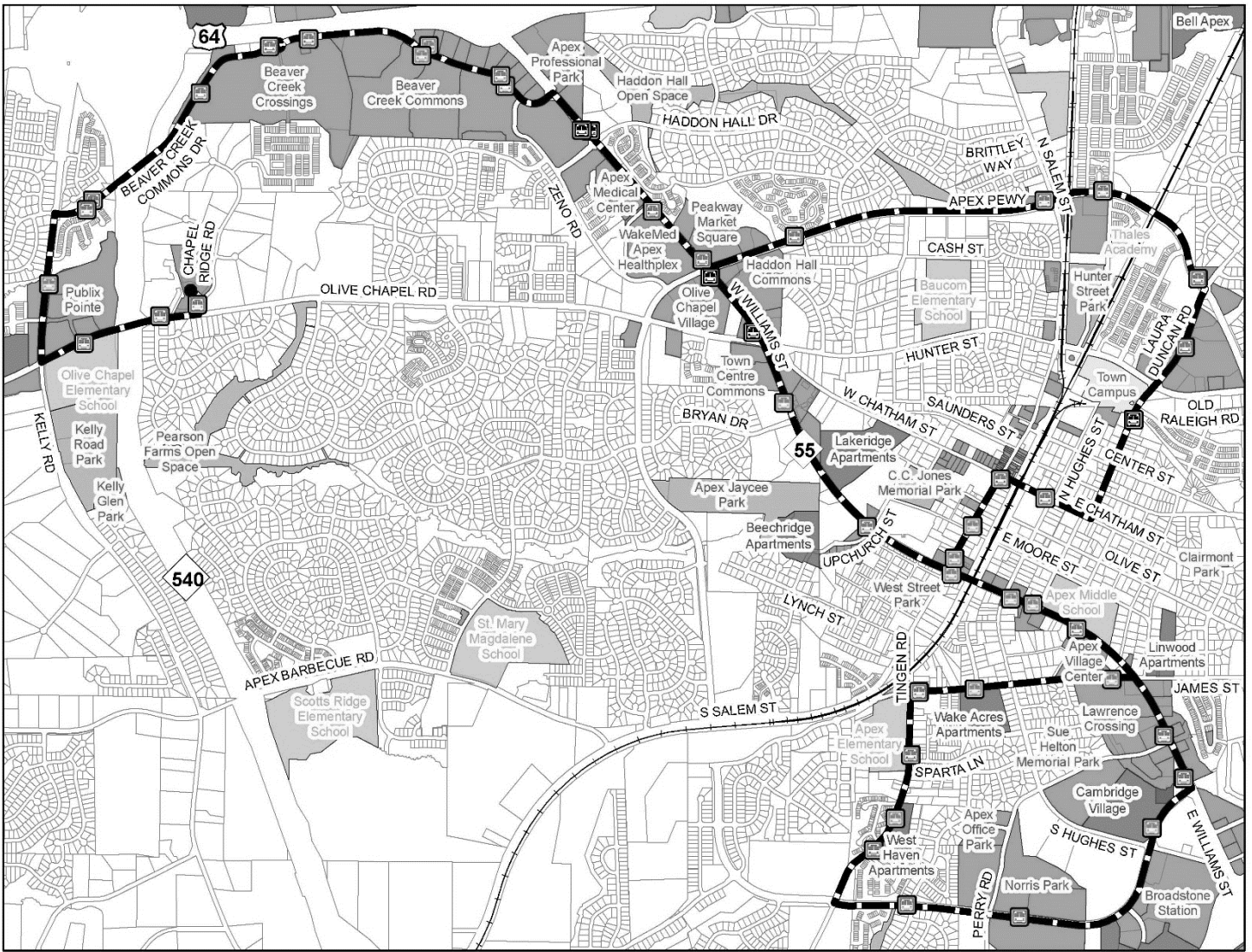
Draft recommendations from the Town of Apex Transit Circulator Study will be presented. Study recommendations include revisions to the highest-priority local bus route in Apex. The purpose of this hearing is to consider the following amendment to the Transit Plan Map of the Comprehensive Transportation Plan:

Revise the Future Circulator Route to extend planned local bus service along South Salem Street, East Chatham Street, North Mason Street, Laura Duncan Road, Apex Peakway, Beaver Creek Commons Drive, Kelly Road, Olive Chapel Road, and Chapel Ridge Road.

Attachments

- Staff report
- *Town of Apex Transit Circulator Study Draft Recommendations*





Town of Apex

Transit Circulator Study Draft Recommendations

October 2019

Prepared by
The Town of Apex Planning Department with the Town of Cary



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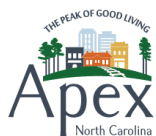


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EXECUTIVE SUMMARY

The Town of Apex, with assistance from the Town of Cary, has prepared draft recommendations for the highest-priority bus route in Apex, called GoApex Route 1. This report includes draft recommendations for: bus route, bus stops, schedule, fares, paratransit service, and a potential financial plan. The results of this study are intended to inform possible implementation of the first local bus serving Apex.

Bus Route

GoApex Route 1 is planned to provide residents and visitors with access to local destinations and connections to regional transit. The proposed route would provide connections to key destinations such as downtown Apex, Beaver Creek Commons, Publix Pointe, WakeMed Healthplex, the NC 55 Corridor, and Walmart. The proposed service would provide transit connections from Apex to Raleigh, Cary, Holly Springs, and the Research Triangle Park. The route was designed to serve the areas with the highest propensity to use transit in Apex. Figure 1 displays the proposed bus route and bus stops. Figure 2 displays the route map with directions. Start at Town Campus, and follow the blue arrows to understand the proposed route of the bus.

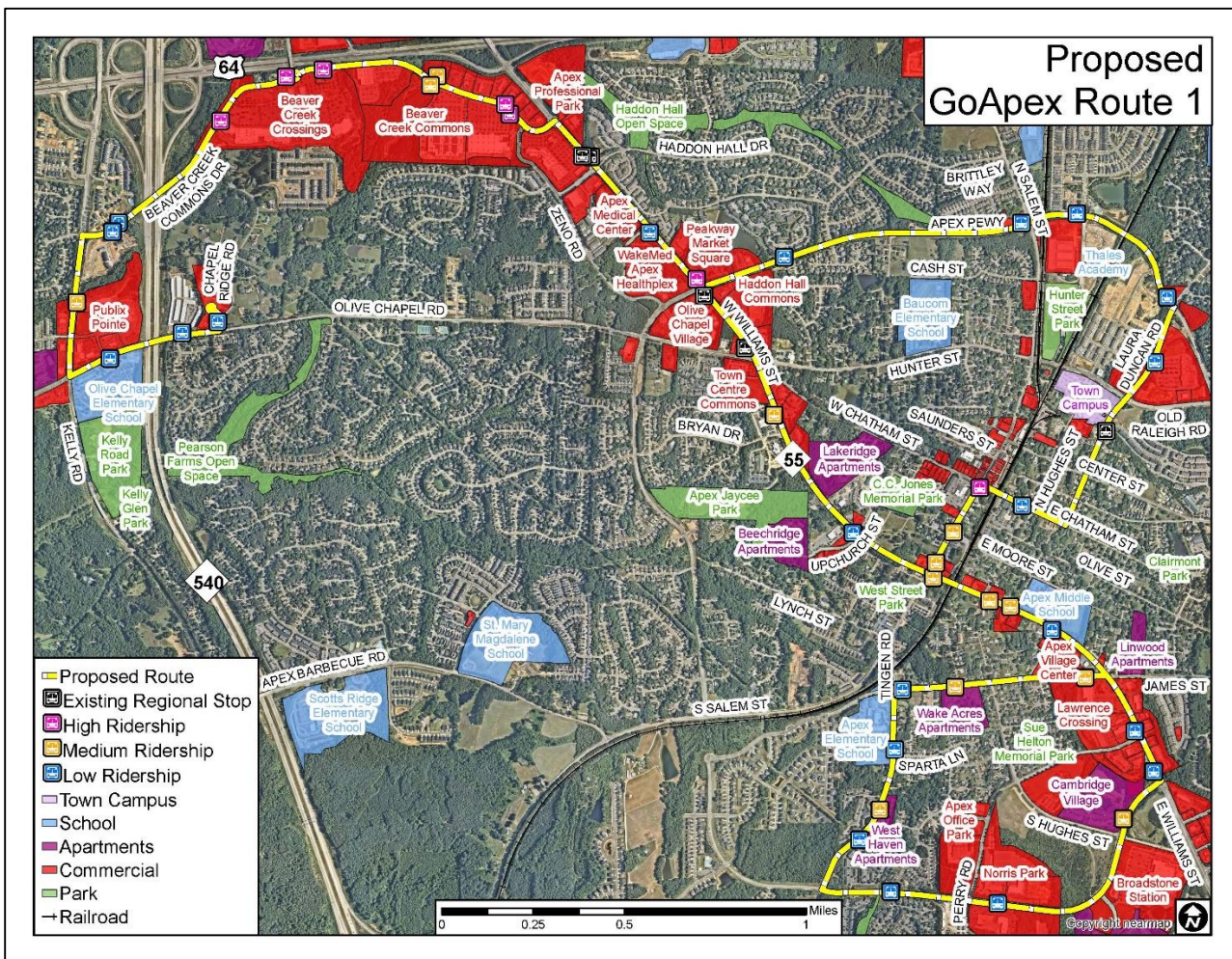


Figure 1. GoApex Route 1 shown with stops

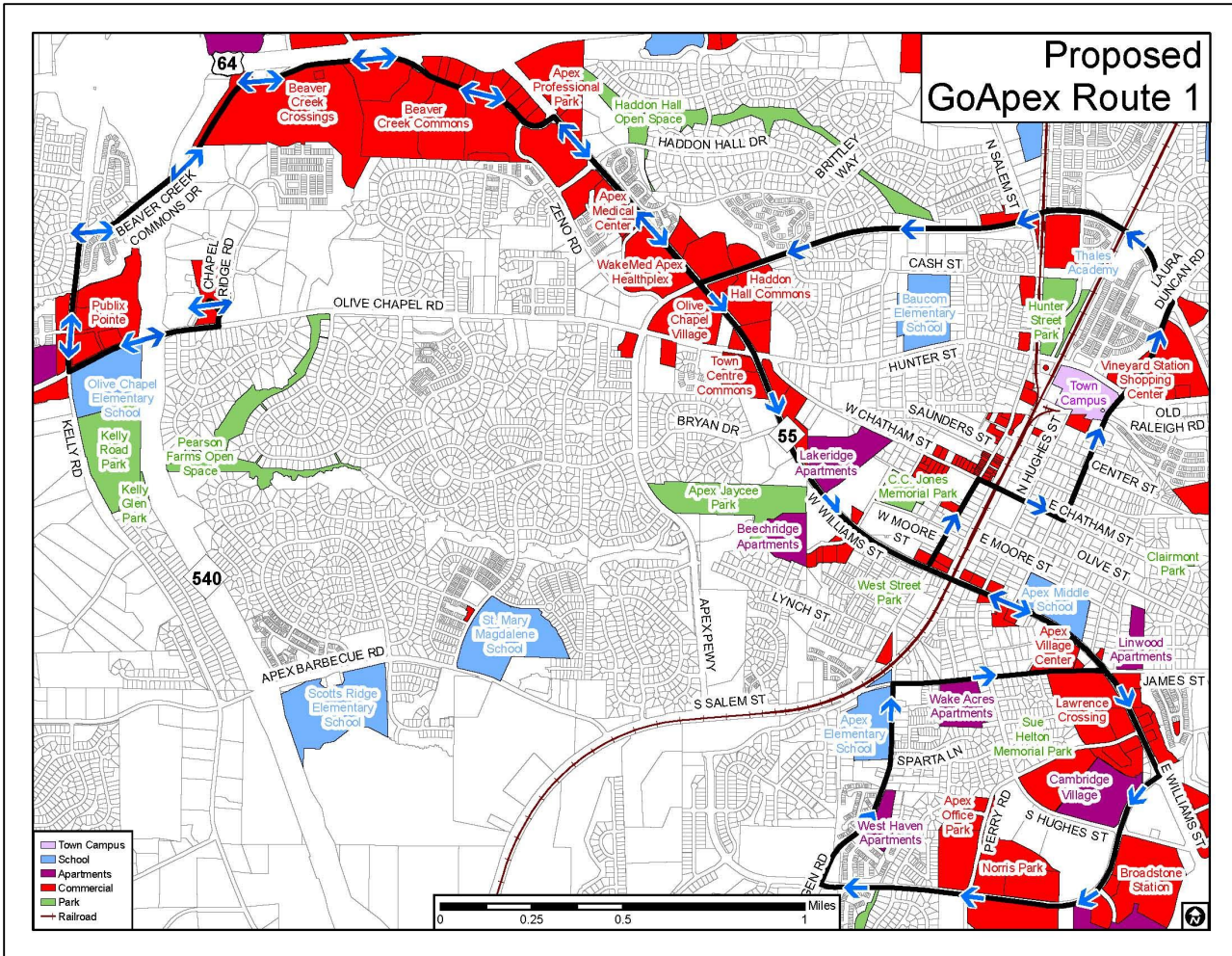


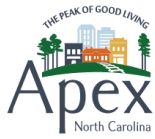
Figure 2. GoApex Route 1 with directions

Bus Stops

Proposed bus stop locations were selected based on input gathered during the public engagement process, existing regional bus stops, existing bus stop facilities, planned regional transfer points, and an assessment of infrastructure needs. All new bus stops are required to have accessible pedestrian facilities, an accessible landing pad, lighting, and a bus stop sign. Recommended bus stop improvements beyond the minimum requirements correspond with anticipated ridership.

Service Scenarios

Multiple schedule alternatives, paratransit eligibility alternatives, and fare options are evaluated in the report. Table 1 summarizes the advantages and disadvantages for four fare and paratransit service scenarios. The four scenarios in the table are under Schedule Alternative 3 (60-minute, all-day service, and no service on Sundays). The regional fare option and a fare free option are considered in this study. Two paratransit eligibility alternatives are explored in this study – one where paratransit service is only offered to individuals with a disability, referred to as the FTA-minimum model, and



a second where service is expanded to include individuals over age 60, referred to as the GoCary model. The cost to provide paratransit service may decrease substantially if the Town implements an alternative paratransit service delivery model such as a taxi voucher program or a potential partnership with GoWake Access.

Table 1. Comparison of advantages and disadvantages for four fare and paratransit service scenarios under schedule Alternative 3

Factors	Regional Fare + FTA- Minimum Paratransit	Regional Fare + GoCary Paratransit	Fare Free + FTA Minimum Paratransit	Fare Free + GoCary Paratransit
Estimated Annual Revenues	\$19,576	\$23,520	\$0	\$0
Estimated Annual Operating Expenses	\$815,958	\$815,958	\$815,958	\$815,958
Estimated Total Annual Net Costs	\$796,382	\$792,438	\$815,958	\$815,958
Estimated Annual Fixed-Route Ridership	30,285	28,005	39,437	37,157
Estimated Annual Paratransit Ridership	2,280	4,560	2,583	9,120
Reliability to make a Paratransit reservation	High	Average	Average	Low
Convenience for Riders	Low	Average	Average	High
Public Expectations	Low	Average	High	High

Next Steps

Study recommendations may be used to inform a Wake Transit Community Funding Area Program Capital and Operating funding application. Items for further investigation include: alternative paratransit service delivery models, a customer service plan, and integration of GoApex Route 1 GPS tracking into regional mobile application and Google Maps.



INTRODUCTION

The Apex Circulator Study is intended to provide the details necessary to implement the Town of Apex's priority local transit route. The study was completed by the Town of Apex, in partnership with the Town of Cary, and with funding support from the Wake Transit Community Funding Area Program. The priority route was recommended in the Western Wake Comprehensive Operational Analysis and *Advance Apex: The 2045 Transportation Plan*. The goal of the Apex Circulator is to provide a transportation service that connects the community to local destinations and provides access to regional transit services. This report includes a summary of public input received throughout the study, and detailed recommendations for: capital needs, bus operations, paratransit service, vehicles, fare structure, marketing, and a financial plan. These draft recommendations include necessary next steps for further investigation. The intent of this study is to inform a potential application for capital and operating funds available through the Wake Transit Community Funding Area Program. The Town of Cary was a partner in this study as it is anticipated GoCary would operate the Apex Circulator service. The Town of Apex Transit Committee provided guidance and review of recommendations throughout the study process.



PUBLIC INPUT SUMMARY

A thorough public outreach process was conducted as part of the Apex Circulator Study. The overall outreach strategy, and a summary of input received through that process is provided in this section.

Public Engagement Plan

The public input strategy was guided by a Public Engagement Plan (see Appendix A) reviewed by the Wake Transit Public Engagement Subcommittee, the Town of Apex Transit Committee, and partners with the Town of Cary. The purpose of outreach for the Circulator Study was to specifically engage people along the proposed route to gather input on the following topics:

1. Proposed route alignment
2. Bus stop locations
3. Route schedule
4. Bus stop amenities
5. Bus fare
6. Deviated fixed-route service versus on-demand service for persons with disabilities
7. Trip purpose

Nine targeted outreach events were held along the proposed transit corridor as shown in Table 2.

Table 2. Locations and dates of targeted outreach events

Location	Date
Compare Foods/S. Hughes Bus Stop	Tuesday, July 9 th
WakeMed Healthplex	Thursday, July 11 th
Chick-fil-A	Thursday, July 11 th
Lake Pine Plaza Park-and-Ride	Thursday, July 11 th
Hunter Street Park	Monday, July 15 th
Apex Community Center	Friday, July 19 th (AM & PM)
Apex Farmers Market	Saturday, July 20 th
Walmart	Saturday, July 20 th

An online public survey was conducted from July 8, 2019 through August 9, 2019. The survey questions were designed to gather the same types of input as the targeted outreach events.

The following steps were taken to spread the word about opportunities to participate in the Apex Circulator Study:

- A flyer was distributed at a public open house held for the Town of Apex Downtown Master Plan and Parking Study.
- Updates were made to the Town of Apex transit web page with public outreach event details – day, time, and location.
- English and Spanish versions of a flyer advertising outreach events and the online survey were distributed to the following locations: Apex Jaycee Park, Compare Foods, S Hughes Street Park-and-Ride, Downtown Apex Ambassador Garden, Town Hall, Cambridge Village, Lakeridge Apartments, WakeMed Healthplex, Target,



Walmart, Beechridge Apartments, Wake Acres Apartments, West Haven Apartments, Apex Community Center, Lake Pine Park-and-Ride, and Eva Perry Library.

- Online survey link was available at in-person engagement events.
- Online survey link and the Town of Apex transit web page link were posted on the Town’s Facebook page.
- Transit committee members were asked to distribute information about the study and survey.
- The Western Wake Crisis Ministry encouraged clients to participate in the survey.

The public engagement plan identified three performance measures to gauge the success of the outreach phase of the Apex Circulator Study. The measures and outcomes are described in Table 3.

Table 3. Public engagement performance measures and outcomes

Performance Measure	Outcome
Online survey completed by a minimum of 50 stakeholders	484 individuals participated in the online survey
Pop-up booths visited by a minimum of 50 stakeholder	At least 100 stakeholders visited the pop-up booths
Pop-up booths held at a minimum of three locations	Pop-up booths were held at eight locations

Public Input Results

Public input gathered at all targeted outreach events and through the online survey is compiled and summarized in Appendix B. Key takeaways and similar comments made with high frequency across all topic areas are summarized briefly below:

- Most online survey respondents never ride a bus.
- Most online survey respondents own a car or have access to a car.
- 18% of online survey respondents prefer to use a mode of transportation other than a personal vehicle.
- 45% of online survey respondents would use the proposed bus service.
- Top 5 proposed alignment comments:
 - Serve Downtown Apex
 - Provide service along Apex Peakway
 - Provide service to the west (Olive Chapel Road / Kelly Road)
 - Connect to regional transit services (GoTriangle service to Raleigh and RTP)
 - Connect to Cary / GoCary system
- Top 10 suggested bus stop locations:
 - Beaver Creek Commons
 - Downtown Apex
 - Walmart
 - Town Campus
 - Eva Perry Library
 - Beaver Creek Crossings
 - S Salem Street and NC 55
 - S Hughes Street Park-and-Ride



- Post Office
- Haddon Hall Commons
- Online survey respondents and pop-up booth participants are more likely to use the proposed bus service on weekdays and Saturdays.
- Online survey respondents and pop-up booth participants would use the proposed bus service throughout the day on weekdays.
- Online survey respondents and pop-up booth participants are more likely to use the proposed bus service between 11:00 am – 4:00 pm on weekends.
- There were multiple requests for 30-minute frequency.
- Top bus stop amenity preferences include: shelter, bench, route information signage, and trash receptacle.
- 17% of online survey respondents and pop-up booth participants prefer a fare-free service.
- 35% of online survey respondents and pop-up booth participants would pay up to \$2 for a one-way trip on the proposed bus service.
- Most online survey respondents and pop-up booth participants prefer a separate, on-demand paratransit service compared to allowing the bus to deviate from its regular route.
- Most pop-up booth participants prefer to expand paratransit service beyond requirements to include all seniors.
- 33% of online survey respondents and pop-up booth participants would use the proposed bus service for a shopping trip.



CAPITAL AND OPERATIONS PLAN

The capital and operations plan component of the Apex Circulator Study addresses the bus route and schedule, stop locations and needs, initial paratransit recommendations, vehicles, and fare structure.

Bus Route

The Apex Circulator is a priority local bus route that is planned to provide residents and visitors with access to local destinations and connections to regional transit. As the first local bus route in Apex, from this point forward, the Apex Circulator will be referred to as GoApex Route 1.

The proposed route would operate within the Town of Apex, providing mobility between employment, health care, retail, commercial, and recreational destinations. This proposed service would provide transit connections from Apex to Raleigh, Cary, Holly Springs, and the Research Triangle Park.

GoApex Route 1 was identified as a priority recommendation in *Advance Apex: The 2045 Transportation Plan* and in the Western Wake Comprehensive Operations Analysis. The conceptual route was shown along NC 55 from Beaver Creek Commons to Walmart. This route was designed to serve the areas with the highest propensity to use transit in Apex.

As part of study recommendations, the original route has been extended to include Downtown Apex and destinations in the western part of Apex in response to input gathered through a comprehensive public engagement process. The route was designed to maximize service coverage area and maintain at least hourly frequency with one bus in operation. Figure 3 displays the proposed bus route and bus stops. Figure 4 displays the route map with directions. Start at Town Campus, and follow the blue arrows to understand the proposed route of the bus.

Bus Stops and Needs

Proposed bus stop locations were selected based on input gathered during the public engagement process, existing regional bus stops, existing bus stop facilities, planned regional transfer points, and an analysis of infrastructure needs. A determination of needs at each proposed bus stop was made based on an analysis of existing conditions, anticipated ridership, frequency of similar public comments, land uses, and demographics.

The bus stops shown in Figure 3 are designated as Regional, Low, Medium, and High. These designations correspond with the level of improvements recommended for each stop. Regional stops are those bus stops serving GoApex Route 1 that also serve regional routes. Recommendations for improvements to these stops are made as part of this study; however, those needs are not anticipated to be funded by a capital improvement project sponsored by the Town of Apex. Improvements for these stops are anticipated to be funded by regional providers through the Wake Transit Plan. All new bus stops are required to have accessible pedestrian facilities, an accessible landing pad, lighting, and a bus stop

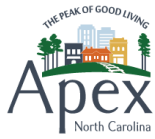
GoApex Route 1 Key Destinations and Connections

Key Destinations

- Downtown Apex
- Town Campus
- Beaver Creek Commons
- Beaver Creek Crossings
- Publix Pointe
- Western Wake Crisis Ministry
- WakeMed Healthplex
- Apex Jaycee Park
- Apex Middle School
- NC 55 Corridor
- Walmart

Transit Connections

- GoTriangle Route 305 (Lake Pine – Cary – Raleigh)
- GoTriangle Route 311 (Apex – Regional Transit Center)
- Future GoCary Route HSX (Holly Springs – Apex – Cary Express)



sign. Only these required improvements were recommended for new local bus stops anticipated to have low ridership, with the exception of a few benches recommended for bus stops in areas where riders are more likely to have a disability, such as near medical facilities. In addition to the required improvements, benches are recommended at bus stops anticipated to have medium ridership on a case-by-case basis. Finally, most stops anticipated to have high ridership are recommended to have additional amenities such as benches, trash receptacles, bicycle parking, and car parking. In an effort to control costs, and to allow for evaluation of needs based on actual ridership, shelters are not recommended for installation as part of the start of service; however, potential locations for future installation of shelters are identified. Finally, recommendations for wayfinding signage are included to inform a separate wayfinding study and implementation project. A table of bus stop needs with cost estimates can be found in Appendix C.

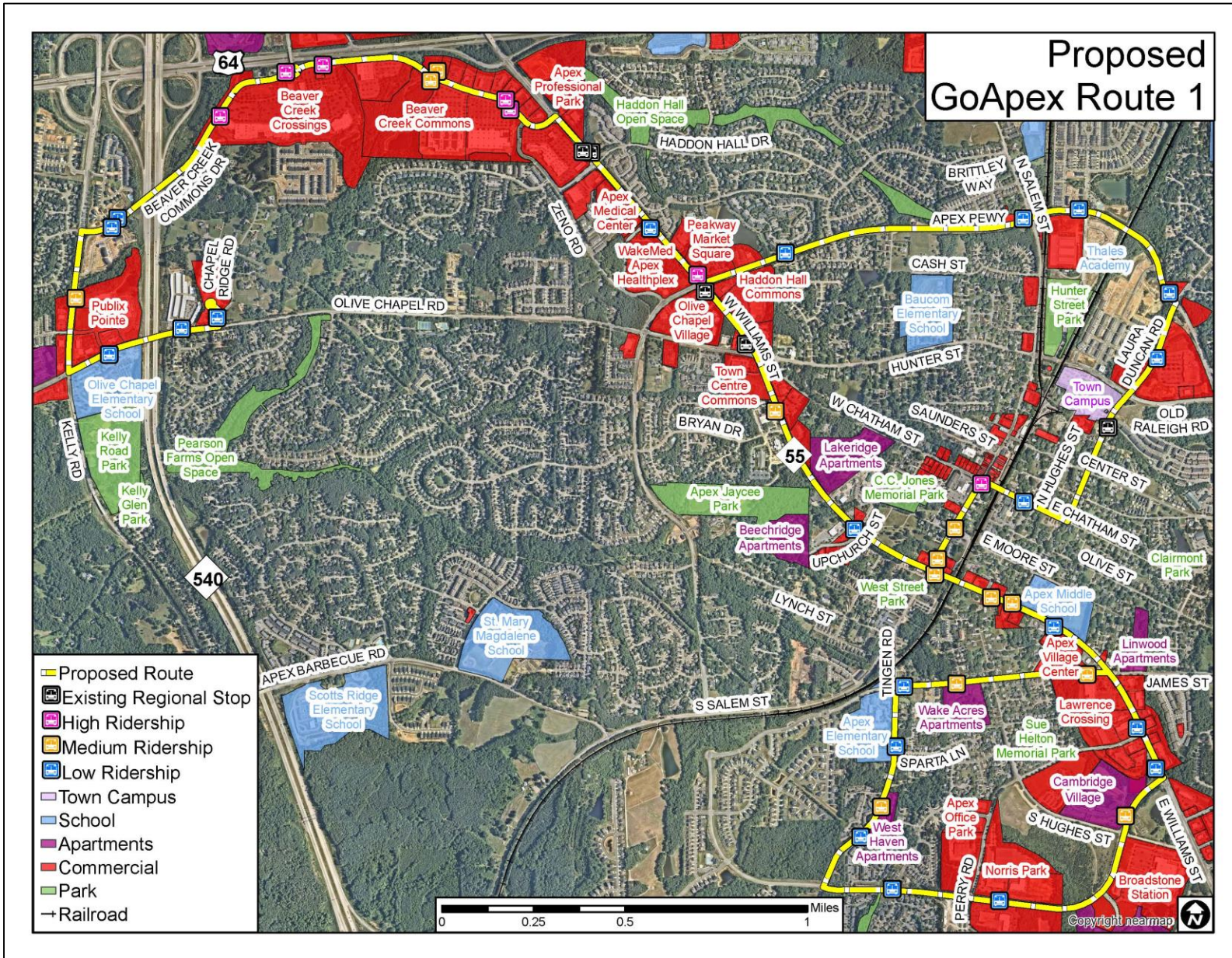


Figure 3. GoApex Route 1 shown with stops



Bus Schedule

Three bus schedule alternatives are considered in this study:

- **Alternative 1** - Provide 60-minute all-day service Monday through Saturday from 6:00am to 10:00pm and 60-minute all day service on Sunday from 7:00am to 9:00pm, as recommended in the Western Wake Comprehensive Operations Analysis.
- **Alternative 2** - Provide 30-minute service Monday through Friday during peak periods of 6:00am to 9:00am and 4:00pm to 7:00pm, 60-minute service Monday through Friday from 9:00am to 4:00pm and 7:00pm to 10:00pm, 60-minute all-day service on Saturday from 6:00am to 10:00pm, and 60-minute all-day service on Sunday from 7:00am to 9:00pm. The second alternative is presented in response to public comments that 60-minute frequency is not enough to provide convenient transit service in Apex.
- **Alternative 3** – Provide 60-minute, all-day service Monday through Saturday from 6:00 am to 10:00 pm. This third alternative, which is similar to Alternative 1 but eliminates service on Sunday, was evaluated in an effort to control the cost of providing the new transit service. Based on public input, Sunday is the day people indicated they are least likely to use transit.

While costs are provided in this report for each alternative, there is no way to accurately predict an increase/decrease in ridership for Alternative 2 and Alternative 3, so ridership projections are not shown.

An example schedule based on timings done both in person and using the transit planning platform Remix is provided in Table 4.

- Red times indicate trips that would not run on Sundays under Alternative 1 and 2 (there would be no Sunday service with Alternative 3).
- Bold times indicate transfers are available to GoCary Holly Springs Express and GoTriangle Route 311 at the S Hughes Street Park-and-Ride (Compare Foods).
- If a 30-minute peak period option is desired, trips would run beginning at 6:30, 7:30, and 8:30 AM, as well as 4:30, 5:30, and 6:30 PM.

Actual times would be refined continuously based on on-time performance and traffic conditions.



Table 4. GoApex Route 1 60-Minute All Day Option

Apex Community Center	Peakway Market Square	Beaver Creek Commons (Chick Fil A)	Olive Chapel Professional Park	Beaver Creek Commons (Target)	WakeMed Apex	S Hughes Park-and-Ride (eastbound)	James St at Tingen Rd	S Hughes Park-and-Ride (westbound)	Apex Community Center
6:00 AM	6:07 AM	6:10 AM	6:18 AM	6:26 AM	6:29 AM	6:34 AM	6:44 AM	6:48 AM	6:53 AM
7:00 AM	7:07 AM	7:10 AM	7:18 AM	7:26 AM	7:29 AM	7:34 AM	7:44 AM	7:48 AM	7:53 AM
8:00 AM	8:07 AM	8:10 AM	8:18 AM	8:26 AM	8:29 AM	8:34 AM	8:44 AM	8:48 AM	8:53 AM
9:00 AM	9:07 AM	9:10 AM	9:18 AM	9:26 AM	9:29 AM	9:34 AM	9:44 AM	9:48 AM	9:53 AM
10:00 AM	10:07 AM	10:10 AM	10:18 AM	10:26 AM	10:29 AM	10:34 AM	10:44 AM	10:48 AM	10:53 AM
11:00 AM	11:07 AM	11:10 AM	11:18 AM	11:26 AM	11:29 AM	11:34 AM	11:44 AM	11:48 AM	11:53 AM
12:00 PM	12:07 PM	12:10 PM	12:18 PM	12:26 PM	12:29 PM	12:34 PM	12:44 PM	12:48 PM	12:53 PM
1:00 PM	1:07 PM	1:10 PM	1:18 PM	1:26 PM	1:29 PM	1:34 PM	1:44 PM	1:48 PM	1:53 PM
2:00 PM	2:07 PM	2:10 PM	2:18 PM	2:26 PM	2:29 PM	2:34 PM	2:44 PM	2:48 PM	2:53 PM
3:00 PM	3:07 PM	3:10 PM	3:18 PM	3:26 PM	3:29 PM	3:34 PM	3:44 PM	3:48 PM	3:53 PM
4:00 PM	4:07 PM	4:10 PM	4:18 PM	4:26 PM	4:29 PM	4:34 PM	4:44 PM	4:48 PM	4:53 PM
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7:00 PM	7:07 PM	7:10 PM	7:18 PM	7:26 PM	7:29 PM	7:34 PM	7:44 PM	7:48 PM	7:53 PM
8:00 PM	8:07 PM	8:10 PM	8:18 PM	8:26 PM	8:29 PM	8:34 PM	8:44 PM	8:48 PM	8:53 PM
9:00 PM	9:07 PM	9:10 PM	9:18 PM	9:26 PM	9:29 PM	9:34 PM	9:44 PM	9:48 PM	9:53 PM



Service Delivery Model

Most ADA paratransit service is delivered in a door-to-door or curb-to-curb model. This means that a passenger is picked up by a separate vehicle dedicated to paratransit service directly at the nearest curb to their origin and dropped off at the nearest curb to their destination. Curb-to-curb means that a passenger is picked up at the nearest curb to their origin and dropped off at the nearest curb to their destination. Door-to-door means that the driver assists the passenger from the door of their origin, past the curb to the vehicle, or from the vehicle, past the curb to the door of their destination. Most transit agencies establish curb-to-curb service as their baseline, with the provision that assistance beyond the curb will be provided as needed. If a system establishes door-to-door as the baseline, this means that the driver must assist the passenger past the curb for every trip, whether or not the assistance is needed.

There are no set bus stops in paratransit service, and vehicles can enter private driveways, parking lots, and drop-off locations. Thus, vehicles for paratransit service are usually no larger than passenger vans that can fit into tight driveways. In some instances, smaller “cutaway” buses can be used for trips where there is a higher number of expected riders.

Another delivery model, allowing the regular bus to deviate from its fixed route to pick up customers with disabilities, was initially investigated as part of this study. Based on strong public feedback that this model would not provide the reliability expected for the fixed route service, nor the customer service needed for passengers with disabilities, this service option was eliminated from further study.

Paratransit service is usually by reservation-only. GoCary Door-to-Door rides can be scheduled as much as 14 days in advance and must be scheduled at least one day in advance. Rides are scheduled on a first-come, first-serve basis. However, efficiencies can often be achieved by having multiple riders use one vehicle. For example, Passenger A is picked up at location A, then Passenger B is picked up at location B, then Passenger A is dropped off at location C, and finally Passenger B is dropped off at location D.

FTA regulations state that paratransit service must be available for all hours that the corresponding fixed route is in service, including nights, weekends, and holidays. Furthermore, the fare for a paratransit trip may be no more than twice the cost of a trip on the corresponding fixed route. Therefore, if GoApex Route 1 is priced at \$1.25 for a full fare, the paratransit service can cost no more than \$2.50 per trip. If GoApex Route 1 is fare free, the corresponding paratransit service must also be fare free as well.

All paratransit vehicles are required to be equipped to handle mobility devices such as wheelchairs and walkers.

Paratransit Service Ridership Projections

GoCary’s Tier I Door-to-Door service is an approximate peer to a potential Apex paratransit service. This service is available to anyone with a disability that prevents them from using fixed route service, or any Cary resident age 60 and older. Both towns have similar demographics and density within their transit service areas to make comparisons. In FY19, Tier I ridership on GoCary Door-to-Door averaged 1,265 riders per month. Trips were split relatively evenly between ADA-eligible passengers and seniors at 47.5% and 48.7%, respectively. The remainder of trips were made by courtesy riders or personal care attendants.

The $\frac{3}{4}$ mile Tier I radius covers approximately 32.9 miles in the Town of Cary, averaging out to 38 monthly passengers per mile served. The proposed mileage served by GoApex Route 1 is approximately 10 miles. Using the same passengers



per mile standard as GoCary Door-to-Door Tier I, the Apex Paratransit service will average approximately 380 passengers per month, or about 12-16 per weekday and 6-10 per weekend day. This number would be roughly cut in half if trips are limited only to ADA-eligible boardings.

If GoApex Route 1 is fare free, then the paratransit service must also be fare free per FTA regulations. This is projected to at least double the ridership on the paratransit service, as there would be no incentive to use the circulator for anyone paratransit-eligible. For comparison, GoCary’s fixed-route senior ridership is about equal to its Tier I ridership, meaning if seniors are eligible for paratransit, most of those boardings would move from the circulator to the paratransit service. Furthermore, almost all disabled individuals would opt for the more convenient, curb-to-curb service. Disabled boardings count for about 1% of GoCary fixed route ridership. Ultimately, the fare-free scenario would greatly impact the utility of the circulator.

Comparison of anticipated ridership between four potential service delivery and fare combinations is provided in Table 5. More information about the fare scenarios is provided in the next section.

Table 5. Paratransit ridership comparison for different service and fare scenarios

Paratransit Service Model	Anticipated Annual Ridership - Regional Fare Scenario	Anticipated Annual Ridership - Fare-Free Scenario
FTA-minimum model	2,280	2,624
GoCary model	4,560	9,120

Paratransit Vehicle and Staffing Needs

Under all scenarios, a dedicated Apex paratransit vehicle will allow for greater scheduling efficiency and distinguish Apex paratransit service from Cary paratransit service, which may have its own eligibility requirements. Operationally, Apex paratransit service will be incorporated into the larger GoCary Door-to-Door operations, using the same dispatchers and reservationists as GoCary Door-to-Door. The Town of Apex would be billed by the Town of Cary for the all-day use of the paratransit vehicle, as well as overhead costs that are incorporated into the hourly rate. If this vehicle is out of service for maintenance or any other reason, a normal GoCary-branded vehicle could be used until the dedicated Apex vehicle is back in service.

Alternative Paratransit Service Delivery Models

Alternative paratransit service delivery models will be considered to reduce paratransit operating costs. While there are advantages to having a designated, Apex-branded vehicle for paratransit service that is incorporated into the larger GoCary Door-to-Door operations, the cost may become prohibitive. Alternative options to consider include taxi vouchers or a partnership with GoWake Access. GoRaleigh uses taxi vouchers to meet FTA paratransit requirements. GoWake Access is an existing paratransit service in Wake County. Additional information about these two options will be gathered and provided as an update to this report.

Taxi Voucher Model

The Wake Forest Loop is a weekday local circulator service that is operated by GoRaleigh and uses the taxi voucher model to provide complementary paratransit service to the fixed-route service. The Wake Forest Loop paratransit service is incorporated into the larger GoRaleigh taxi voucher program. The Wake Forest Loop is a fare-free service and the associated paratransit service is also fare free. The taxi voucher model would not require a dedicated paratransit vehicle to serve the GoApex Route 1 Paratransit Service Area during all fixed-route service revenue hours. Instead, a taxi



would only be dispatched when an eligible resident makes a trip reservation. Based on initial information provided by the City of Raleigh, the average cost per ADA paratransit trip is approximately \$21. Based on this information, this option has the potential to drastically reduce the costs to provide complementary paratransit service for GoApex Route 1.

GoWake Access Model

GoWake Access is an existing door-to-door, shared ride service in Wake County that provides service to those in the general public who: are age 60 or older, have a disability, need work-related transportation, reside in rural service zones of Wake County, or participate in a sponsored eligible service. As a follow-up to the initial GoApex Route 1 study recommendations provided in this report, additional investigation of a potential partnership with GoWake Access will be conducted to determine potential applicability to the Town of Apex paratransit needs.

Fare Structure

Prior to starting service, the Town of Apex will need to determine whether to charge a fare for boarding GoApex Route 1. Two alternative scenarios will be explored in this section: a fare structure identical to most other regional transit providers, and a fare-free structure similar to the Wake Forest Loop operated by GoRaleigh. These two fare structures and their anticipated impacts on ridership, overall revenues, and overall costs are explained in this section.

Regional Fare Structure Scenario

In 2018 the regional fare structure was adopted by the transit agencies in Wake County (GoRaleigh, GoTriangle, and GoCary). The basic regional fare structure is detailed in Table 6.

Table 6. Regional fare structure adopted in 2018

Fares/Multipliers	Local Routes	Regional/Express Routes
Base	\$1.25	\$2.50
Day Pass	\$2.50	\$5.00
7-Day Pass	\$12.00	\$24.00
31-Day Pass	\$40.00	\$80.00
Base Discount*	\$0.60	\$1.25
Discount Day Pass	\$1.25	\$2.50
Discount 7-Day Pass	\$6.00	\$12.00
Discount 31-Day Pass	\$20.00	\$40.00
Seniors (over age 65)	Free	Free
Youth (under age 18)	Free	Free

*Mainly applies to disabled passengers

If the Town of Apex charges a fare, it is recommended that Apex adopt the local fare structure shown in Table 4. It is anticipated that this fare system would result in ridership similar to GoCary fixed route services, which averaged 5.61 passengers per revenue hour in FY 2019. Revenue hours are a measurement of time the bus is in operation serving customers. It does not include hours in maintenance or other time out of service traveling to and from the operations base (“deadhead”). Assuming an hourly operating schedule for 16 hours on weekdays and 14 hours on Sundays over 363 days of the year (excluding Thanksgiving and Christmas), this fare structure would likely result in an estimated 32,089 boardings per fiscal year if paratransit service is extended to seniors, and 34,369 if paratransit is limited to disabled-only, and seniors will then use the circulator in greater numbers.



FTA-minimum Paratransit: 5.61 average boardings/hour * 5,720 annual revenue hours + average senior-only paratransit boardings = 34,369 boardings/year

GoCary Paratransit: 5.61 average boardings/hour 5,720 annual revenue hours = 32,089 boardings/year

Figure 6. Regional Fare Scenario Anticipated Fixed-Route Ridership under Schedule Alternative 1

FTA-minimum Paratransit: 5.61 average boardings/hour * 4,992 annual revenue hours + average senior-only paratransit boardings = 30,285 boardings/year

GoCary Paratransit: 5.61 average boardings/hour 4,992 annual revenue hours = 28,005 boardings/year

Figure 7. Regional Fare Scenario Anticipated Fixed-Route Ridership under Schedule Alternative 3 (No Sunday service)

For the two months of data available since GoCary adopted the regional fare structure (July-August 2019), the average fare per boarding totaled 48 cents per customer (revenue of \$18,961.35 divided by 40,342 passengers). Using the estimated total of 32,089 annual boardings for the GoCary paratransit scenario and 34,369 for the FTA-Minimum paratransit scenario, this would result in annual fare revenue of approximately \$15,403 and \$16,497, respectively.

Under the regional-fare scenario, the required paratransit service would cost \$2.50 as a base fare (twice the fixed route rate). In July 2019, GoCary Door-to-Door Tier I service averaged a fare of \$2.21 per customer (revenue of \$2,782.50 divided by 1,257 passengers). Based on the analysis of paratransit ridership using the two paratransit models, GoCary and FTA-Minimum, this would result in annual paratransit fare revenue of approximately \$10,078 and \$5,039 respectively. The total projected revenue under the regional-fare scenario is provided in Table 7.

Table 7. Projected revenue for regional fare scenario under Schedule Alternative 1

Revenue Source	FTA-Minimum Paratransit Model	GoCary Paratransit Model
Fixed Route Revenue	\$16,497	\$15,403
Paratransit Fare Revenue	\$5,039	\$10,078
TOTALS	\$21,536	\$25,480

Table 8. Projected revenue for regional fare scenario under Schedule Alternative 3 (No Sunday service)

Revenue Source	FTA-Minimum Paratransit Model	GoCary Paratransit Model
Fixed Route Revenue	\$14,537	\$13,442
Paratransit Fare Revenue	\$5,039	\$10,078
TOTALS	\$19,576	\$23,520



Revenues are collected using GFI Odyssey fareboxes, which are on all fixed route vehicles. Paratransit fares are currently collected via ticket books, which can be purchased from the Town of Cary, as there are no fareboxes on paratransit vehicles. GoCary hopes to move to a prepaid debit/credit card fare system for Door-to-Door in FY21.

Looking ahead, the regional transit partners also hope to implement a mobile ticketing application in 2020 that will allow for bus fares to be purchased online and scanned on buses using validators. Furthermore, the mobile application will allow for fare capping, where frequent riders can turn individual trips into daily, weekly, and monthly passes based on the number of trips taken, so that riders are never paying more than they need to.

Fare Free Scenario

Under a fare-free scenario, the Town of Apex would not receive any fare revenue from either fixed route or paratransit service. Currently, Wake County has one other fare-free fixed route transit service: The Wake Forest Loop, operated by GoRaleigh. In July 2019, this route averaged 8.2 riders per revenue hour, 46% higher than GoCary fixed routes. However, this number is slightly skewed because the Loop only operates on weekdays, when ridership is higher. Revised to include weekend service, the projected ridership rate is 7.9 riders per revenue hour (based on the difference between GoCary weekday and weekend ridership). Thus, the estimated annual ridership for GoApex Route 1 under a fare-free scenario would be 45,188 using the ADA-only paratransit model, and 42,908 using the GoCary paratransit model, as seniors and disabled will opt to use paratransit if fares are free on both modes (assuming 5,720 annual revenue hours). In this scenario, paratransit costs do not change since the paratransit vehicle is dispatched to Apex all day in both scenarios. However, there is no paratransit revenue to help make up part of the difference.



Figure 8. Fare-Free Scenario Anticipated Fixed-Route Ridership under Schedule Alternative 1

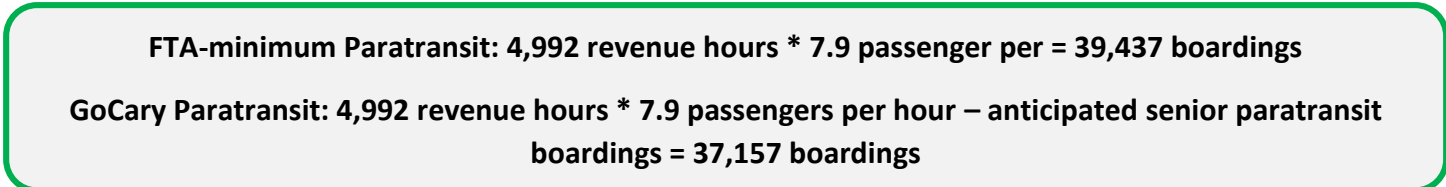


Figure 9. Fare-Free Scenario Anticipated Fixed-Route Ridership under Schedule Alternative 3 (No Sunday service)

Side-by-Side Comparison

Table 9 and Table 10 detail the pertinent changes in revenue and expenses between the four fare and paratransit service scenario combinations for schedule Alternative 1 and Alternative 3, respectively.



Table 9. Comparison of revenues and expenses for two fare scenarios under Schedule Alternative 1

	Regional Fare + FTA- Minimum Paratransit	Regional Fare + GoCary Paratransit	Fare Free + FTA- Minimum Paratransit	Fare Free + GoCary Paratransit
Fixed Route Expenses (\$85/revenue hour)	\$506,311	\$506,311	\$506,311	\$506,311
Fixed Route Revenue (fares)	\$16,497	\$15,403	\$0	\$0
Paratransit Expenses(\$75/revenue hour)	\$429,000	\$429,000	\$429,000	\$429,000
Paratransit Revenue (fares)	\$5,039	\$10,078	\$0	\$0
TOTAL ANNUAL NET COSTS	\$913,775	\$909,831	\$935,311	\$935,311

Table 10. Comparison of revenues and expenses for two fare scenarios under Schedule Alternative 3 (No Sunday service)

	Regional Fare + FTA- Minimum Paratransit	Regional Fare + GoCary Paratransit	Fare Free + FTA- Minimum Paratransit	Fare Free + GoCary Paratransit
Fixed Route Expenses (\$85/revenue hour)	\$441,558	\$441,558	\$441,558	\$441,558
Fixed Route Revenue (fares)	\$14,537	\$13,442	\$0	\$0
Paratransit Expenses(\$75/revenue hour)	\$374,400	\$374,400	\$374,400	\$374,400
Paratransit Revenue (fares)	\$5,039	\$10,078	\$0	\$0
TOTAL ANNUAL NET COSTS	\$796,382	\$792,438	\$815,958	\$815,958

There are advantages and disadvantages to both the regional-fare and fare-free scenarios, as well as the two paratransit models. Those are summarized in Table 11. Town of Cary’s recommendation is to use the regional fare structure and FTA-Minimum paratransit model, potentially paired with an initial service marketing period where no fare is charged to familiarize the service with potential users.

Under a 30-minute peak period scenario, additional costs would total \$192,748 per fiscal year (6 revenue hours per weekday over a 260-day weekday schedule). This is due to six additional revenue service hours per weekday, plus deadhead time to and from GoCary’s operations base in both the AM and PM (since the contractor is paid for deadhead time, keeping the vehicle in Apex all day is unadvisable). Furthermore, the additional vehicle needed would increase the base hourly rate.



Table 11. Comparison of advantages and disadvantages for four fare and paratransit service scenarios under schedule Alternative 1

Factors	Regional Fare + FTA-Minimum Paratransit	Regional Fare + GoCary Paratransit	Fare Free + FTA Minimum Paratransit	Fare Free + GoCary Paratransit
Estimated Annual Revenues	\$21,536	\$25,480	\$0	\$0
Estimated Annual Operating Expenses	\$935,311	\$935,311	\$935,311	\$935,311
Estimated Total Annual Net Costs	\$913,775	\$909,831	\$935,311	\$935,311
Estimated Annual Fixed-Route Ridership	34,369	32,089	45,188	42,908
Estimated Annual Paratransit Ridership	2,280	4,560	2,624	9,120
Reliability to make a Paratransit reservation	High - Paratransit trips will be easiest to schedule due to both the fare charged and the limiting to ADA-only trips.	Average – Paratransit trips may be more difficult to schedule due to ADA and senior trips, but double the base fixed-route fare will dampen demand somewhat.	Average – Paratransit trips may be more difficult to schedule due to not being charged a fare, but limiting trips to ADA-only will dampen demand somewhat.	Low – High demand for free paratransit trips from both disabled and senior may result in trip denials.
Convenience for Riders	Low – Required to purchase a ticket, bring cash, or pay using mobile technology and seniors would be required to use the circulator.	Average – Required to purchase a ticket, bring cash, or pay using mobile technology, but provides door-to-door service for seniors.	Average – No need to pay, but seniors would be required to use the circulator.	High – No need to pay, and provides door to door service for seniors.
Public Expectations	Low – Sets the expectation from the outset that there is a fee to ride the bus, and that seniors would use the circulator to travel. If demand is shown, customers may react favorably to future increases in service.	Average – Sets the expectation from the outset that there is a fee to ride the bus, and that there is a premium service for seniors. May cause pushback if paratransit eligibility rules are tightened to coincide with Wake County Coordinated Human Service Plan objectives.	High – Sets the expectation from the outset that it is free to ride the bus, and that seniors would use the circulator to travel, but can potentially cause pushback during economic or other downturns if service needs to be decreased or fares need to be instituted.	High – Sets the expectation from the outset that it is free to ride the bus, and that there is a premium service for seniors. Can potentially cause pushback during economic or other downturns if service needs to be decreased or fares need to be instituted.



Table 12. Comparison of advantages and disadvantages for four fare and paratransit service scenarios under schedule Alternative 3 (No Sunday service)

Factors	Regional Fare + FTA-Minimum Paratransit	Regional Fare + GoCary Paratransit	Fare Free + FTA Minimum Paratransit	Fare Free + GoCary Paratransit
Estimated Annual Revenues	\$19,576	\$23,520	\$0	\$0
Estimated Annual Operating Expenses	\$815,958	\$815,958	\$815,958	\$815,958
Estimated Total Annual Net Costs	\$796,382	\$792,438	\$815,958	\$815,958
Estimated Annual Fixed-Route Ridership	30,285	28,005	39,437	37,157
Estimated Annual Paratransit Ridership	2,280	4,560	2,583	9,120
Reliability to make a Paratransit reservation	High - Paratransit trips will be easiest to schedule due to both the fare charged and the limiting to ADA-only trips.	Average – Paratransit trips may be more difficult to schedule due to ADA and senior trips, but double the base fixed-route fare will dampen demand somewhat.	Average – Paratransit trips may be more difficult to schedule due to not being charged a fare, but limiting trips to ADA-only will dampen demand somewhat.	Low – High demand for free paratransit trips from both disabled and senior may result in trip denials.
Convenience for Riders	Low – Required to purchase a ticket, bring cash, or pay using mobile technology and seniors would be required to use the circulator.	Average – Required to purchase a ticket, bring cash, or pay using mobile technology, but provides door-to-door service for seniors.	Average – No need to pay, but seniors would be required to use the circulator.	High – No need to pay, and provides door to door service for seniors.
Public Expectations	Low – Sets the expectation from the outset that there is a fee to ride the bus, and that seniors would use the circulator to travel. If demand is shown, customers may react favorably to future increases in service.	Average – Sets the expectation from the outset that there is a fee to ride the bus, and that there is a premium service for seniors. May cause pushback if paratransit eligibility rules are tightened to coincide with Wake County Coordinated Human Service Plan objectives.	High – Sets the expectation from the outset that it is free to ride the bus, and that seniors would use the circulator to travel, but can potentially cause pushback during economic or other downturns if service needs to be decreased or fares need to be instituted.	High – Sets the expectation from the outset that it is free to ride the bus, and that there is a premium service for seniors. Can potentially cause pushback during economic or other downturns if service needs to be decreased or fares need to be instituted.



Vehicles

This section addresses the potential types, technical specifications, maintenance, and quantity of vehicles for the proposed service.

Current GoCary Vehicle Inventory

All vehicles in the GoCary fixed route inventory are owned or leased by MV Transportation, GoCary’s service contractor. Fixed route vehicles are cycled through different routes and service days in order to comply with FTA Title VI regulations regarding service standards and policies. However, some lesser-traveled routes, such as Routes 1 and 2, typically use the 19-seat Fixed Route Cutaways exclusively. The Town of Cary retains options to request more vehicles for usage in fixed route service at any point in the contract, but this does increase the hourly rate on both fixed-route and paratransit.

Vehicle Technical Specifications

Transit vehicles typically include multiple technology solutions in order to achieve efficient operation of services, collect data, and enhance passenger safety and comfort. These technologies include Computer Aided Dispatch/Automated Vehicle Locators (CAD/AVL), fareboxes, Automatic Passenger Counters (APCs), security cameras, Wi-Fi routers, two-way communication, and variable electronic signage. GoCary vehicles are equipped with the devices described in Table 13.

Table 13. GoCary Fleet Technology

Technology Type	Technology	Vendor
Voice Communications	Push-to-talk radios	Nextel/Verizon
Data Communications	Ranger tablet	Tripspark
Fare Collection*	GFI Odyssey farebox	Genfare
CAD/AVL	Fixed-route management software and Automatic vehicle locator systems	Tripspark
CAD	Pre-trip inspections	Zonar
Security	Camera surveillance system/Drive Cam	Seon
Passenger Wi-Fi	Local Wi-Fi hotspot router	Verizon
Passenger Information Display (route and stop information, special messages i.e. “Happy Holidays”, etc.)	Digital Signage Hardware (interior and exterior)	Twinvision and Luminator
Automatic Vehicle Annunciation (stop and route announcements)	T-Box	Tripspark

*GoCary anticipates mobile ticketing capabilities to be implemented on buses in 2020.

All vehicles are equipped with kneeling wheelchair ramps. The ramps must be in good working order for the vehicle to be placed into revenue service. If the ramp malfunctions during revenue service, the vehicle must be swapped for a working vehicle immediately.



Number of Vehicles

In the transit industry, a vehicle assignment for one day is called a “block.” The GoApex Route 1 turn-by-turn plan indicates that the route is designed to be completed in an hour, including time for recovery (driver break + catching up for any unexpected delays). Thus, one vehicle block would be needed to run all-day service under this scenario.

If more frequent service is desired (for example, 30-minute service during peak periods), one additional vehicle block would need to be implemented. However, this would include bringing the vehicle back to the operations base at the conclusion of the AM peak period service (“deadheading”) and deadheading back to Apex for the start of PM peak period service. Our contractor is paid for deadhead time, so this would be incorporated into the Financial Plan for GoApex Route 1.

Vehicle needs for both scenarios are included in Table 14.

Table 14. GoApex Vehicle Needs by Service Scenario

Vehicle	All-Day Hourly Service	Midday and Evening Hourly Service Plus Peak-Period 30-minute service
Vehicles Needed	One (1)	One (1) in hourly service, one (1) additional in peak period service
Spare Vehicle Needed	One (1)	One (1)
TOTAL VEHICLES NEEDED	Two (2)	Three (3)

This total does not include any vehicles that would be needed to operate the required ¾ mile paratransit service.

Vehicle Type Recommendation

Due to its low cost relative to other vehicles in the fleet, ability to better navigate tight intersections (such as in Downtown Apex), and lack of need for additional capacity, the GoCary 19-seat Ford E450 Cutaways are the recommended revenue vehicles for GoApex Route 1.



Figure 10. Images of Recommended Vehicle Type



Vehicle Maintenance Plan

The vehicles chosen for GoApex Route 1 will be maintained in accordance with the Town of Cary's services contract with MV Transportation (or any other service contractor going forward). As a recipient of Federal funds, GoCary is required to comply with FTA regulations regarding vehicle maintenance. Below are some highlights of the preventative maintenance plan:

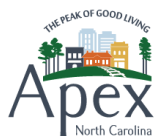
Gas engines (Cutaways)

- Every 5,000 miles or 90 days: complete vehicle inspection with oil change and lube
- Every 30,000 miles: complete inspection, oil change, air filter, and transmission service
- Every 60,000 miles: same as above with rear end fluid change, wheel bearing service.

Diesel engines (larger buses)

- Every 3,000 miles or 90 days: inspection and lube only
- Every 6,000 miles: complete inspection, oil change, oil filter, and lube
- Every 12,000 miles: complete inspection, oil change, and oil filter
- Every 60,000 miles: same as above with air filter and transmission service

The Town of Cary vehicle contract does not include an option for using alternative fuel vehicles.



MARKETING AND BRANDING

Purpose

A thorough marketing process is needed to share information about the service and encourage ridership. The Apex Circulator bus service will be branded as GoApex for consistency with the GoTransit branding system as it illustrates an integrated transit network among the transit providers in the region. The marketing plan includes strategies intended to ensure information is available to the entire Apex community and that targeted efforts are made to promote GoApex bus service to audiences most likely to use the proposed transit service. Target audiences, a marketing strategy, budget, and performance measures are described in this section. The Transfort 2014-2016 Marketing Plan was used as a resource to develop marketing recommendations.

Target Audiences and Messages

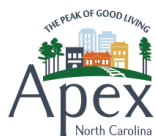
Based on feedback during public outreach, the following targeted audiences have been identified as the most promising sector for GoApex ridership:

- Persons with low incomes
- Persons with disabilities
- Seniors
- Teenagers
- Festival go-ers
- Young families (overlap with Festival go-ers)
- Major employers and businesses along the route

Specific marketing messages and tools, tools are organized by target audience in Table 15.

Table 15. Target audiences and marketing messages

Target Audience	Marketing Messages	Tools
Persons with low incomes	<ul style="list-style-type: none"> • Expand opportunities • Connect to regional transit routes • Ride the bus to everyday destinations – work, shops, medical facilities, restaurants, and recreational facilities • Discounts available for regular riders 	<ul style="list-style-type: none"> • Pop-up events at existing park-and-ride bus stops, Western Wake Crisis Ministry, St. Mary’s AME Church Food Pantry, Walmart, and Dunkin’ Donuts • Posters and flyers at apartments, restaurants, parks, and businesses • Utility bill mailer
Persons with disabilities	<ul style="list-style-type: none"> • Door-to-door or curb-to-curb service available for eligible riders • Expand travel opportunities • Connect to regional bus services • Ride the bus to everyday destinations – work, shops, medical facilities, restaurants, and recreational facilities 	<ul style="list-style-type: none"> • Pop-up events at WakeMed Healthplex and Apex Medical Center • Distribution of information to medical providers who can connect their patients with transit • Utility bill mailer • Paratransit service flyer



Target Audience	Marketing Messages	Tools
Seniors	<ul style="list-style-type: none"> • Expand travel opportunities • Reduce dependency on cars • Free fare for 65+ 	<ul style="list-style-type: none"> • Pop-up events during Town sponsored senior events at Apex Community Center and Apex Senior Center (future) • Posters in restaurants, retail, businesses, apartments, and Town facilities • Presentations at service groups • Town event program ads
Teenagers	<ul style="list-style-type: none"> • Easy trip planning with travel tools • Ride the bus from home or school to the movies, parks, downtown, shopping, and restaurants • Reduce dependency on parents • Free fare with Youth GoPass 	<ul style="list-style-type: none"> • Pop-up events at Hunter Street Park and Apex Community Center during open gym • Sharing information with local middle and high schools • Share information in Parks and Recreation Program Guide
Festival go-ers	<ul style="list-style-type: none"> • Viable transportation option to downtown • Easy trip planning with travel tools • Avoid parking hassles • Avoid drinking and driving 	<ul style="list-style-type: none"> • Posters in retail, restaurants, and businesses • Advertise park-and-ride locations on festival websites and flyers • Info table at downtown festivals and Finally Friday events • Social media • Print Publication - Chamber of Commerce Map
Young families (overlap with Festival go-ers)	<ul style="list-style-type: none"> • Viable transportation option • Easy trip planning with travel tools • Kids love to ride the bus! • Ride GoApex to a variety of family-oriented attractions and activities 	<ul style="list-style-type: none"> • Pop-up events at Villages of Apex amenity center, Old Mill Village amenity center, Apex Farmers Market, Chick-fil-A, and Publix Pointe • Partnerships with local breweries, beer dispensaries, and wine shops • Print publications – <i>Be Local</i> magazine and <i>Cary Magazine</i> • Social media • Town event program ads and email notifications
Major employers and businesses along the route	<ul style="list-style-type: none"> • Customers and employees are riding GoApex • New visibility due to GoApex route • Easy trip planning with travel tools 	<ul style="list-style-type: none"> • Pop-up events at Walmart, Beaver Creek Commons, and Downtown Apex • Posters and brochures at major employers and Downtown Apex businesses • Long-term transit passes (regional fare scenario only) • Wi-Fi on bus



Target Audience	Marketing Messages	Tools
	<ul style="list-style-type: none"> • Offer bus passes as an employee benefit • Reduce commuting hassles - sit back and relax or work 	<ul style="list-style-type: none"> • Seek partnership and assistant from Triangle Transportation Demand Management program

Marketing Strategy

The overall marketing strategy includes a campaign motto, materials, online resources, ads, targeted events, promotional items, and fare incentives. The Town of Apex will use a variety of paid, low-cost, partnership-leveraged, and free marketing tools to shape its campaign. With this strategy, GoApex will be visible in numerous venues – meeting the targeted audiences where they are. Strategically placing promotions and materials helps create positive experience for riders – before, during, and after their contact with GoApex.

The following strategies will be used to engage the targeted audiences:

- Marketing material development & distribution
- Online resources
- Print & online advertisements
- Events
- Promotional material distribution
- Fare Incentives (Regional Fare Scenario Only)

Campaign

Connecting the community! Ride GoApex to shop, work, and play!

GoApex’s main competition is the car, especially when considering choice riders. This campaign will illustrate that GoApex provides convenient connections to local destinations and regional transit services. The campaign will be incorporated into all of the marketing materials.

Marketing Material Development

A variety of marketing materials will be developed to spread awareness about GoApex and to provide education about how to use this new service. Most of the materials will be developed in Fall 2020 by the Apex Planning Department, with support from other departments and agencies as noted in Table 16.

Table 16. Marketing materials and anticipated assignments

Deliverable	Task	Partners
Bus map brochure	Develop a bus map brochure (Spanish and English) with bus fares, service hours, holiday schedule, regular schedule, route map, real-time online tracking info and QR code, and bike on bus info.	Apex Communications staff, Town of Cary, and translation service



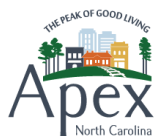
Deliverable	Task	Partners
Bus map poster	Develop a poster (Spanish and English) with similar information as the bus map brochure.	Apex Communications staff, Town of Cary, and translation service
Paratransit service brochure	Develop a paratransit service brochure (Spanish and English) with a service area map (3/4 mile buffer), fare information, service hours, holiday schedule, how to schedule a trip, and fare payment.	Apex Communications staff, Town of Cary, and translation service
Bus route information signage	Develop an 8.5"x11" sign with the bus route, stops, and schedule for each bus stop. Integrate GoCary and GoTriangle bus route and schedule information at locations where transfers are available. Coordinate with GoTriangle and GoCary to update signs as needed.	Apex Public Works and Transportation, GoCary, and GoTriangle
Transit 101 brochure	Develop a Transit 101 brochure (Spanish and English) with information regarding service hours, contact information, bikes on buses, online bus tracking, and how to ride. Use GoCary's Transit 101 brochure as a template.	Apex Communications and translation service
Utility bill mailer	Develop a utility bill mailer with a service description and links to the website and real-time online tracking application.	Apex Communications

Marketing Material Distribution

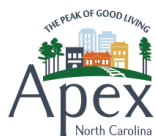
Recommendations for the distribution of informational and promotional materials are provided in Table 17, including target audiences for each location. While the Town of Apex Planning Department would lead distribution of materials, possible partners are also noted in the table.

Table 17. Distribution recommendations for marketing materials

Material	Description	Partners	Audience
Bus map brochure	Distribute on buses that provide service to GoApex, GoCary Route HSX, and GoTriangle Routes 305 and 311.	GoCary GoTriangle	All
Bus map poster and brochure Paratransit service brochure	Distribute information to apartment residences including move-in packets and common areas at: Colonial Village at Beaver Creek Lake Ridge Apartments Wake Acres Apartments West Haven Apartments Linwood Apartments Beechridge Apartments Bell Apex Village at Broadstone Station Apartments Cambridge Village	Apex Newcomers and Friends Organization	All



Material	Description	Partners	Audience
Bus map brochure	Include in the Town of Apex new employee packet.	Apex Human Resources	Major Employers and Businesses
Bus map brochure	Include in new church member packets. (If Sunday service is provided) for: Apex Baptist Church Apex United Methodist Church St. Mary's AME Church Apex First Baptist Church Sovereign Grace Church The Church of Jesus Christ of Latter Day Saints Potter's Hand Bible Church Jordan Lutheran (future)	Apex Communications	All
Bus map brochure Paratransit service brochure	Distribute to medical facilities along the route and ask staff to share transit brochures with patients: WakeMed Healthplex Apex Medical Center UNC Rex Rehabilitation and Nursing Care Center	Apex Communication	Persons with Disabilities
Bus map brochure and Youth GoPass form (if applicable)	Distribute brochure and Youth GoPass form to middle and high schools and request they share them with students	Wake County Public School System GoTriangle	Youth
Bus map poster and brochure	Meet with HR or operations manager of major employers and businesses along the route to add a transit pass into employee benefits package (for regional fare scenario). Display bus map poster and distribute bus map brochure. Town of Apex Target Bland Landscaping Walmart Wake County Public School System Harris Teeter Lowes Foods Publix Food Lion	Apex Communications Triangle Transportation Demand Management Program	Major Employers and Businesses
Bus map poster and brochure	Display posters and distribute brochures at shops and restaurants in the following locations: Downtown Apex Beaver Creek Commons Beaver Creek Crossings Haddon Hall Commons Olive Chapel Village Peakway Market Square	Apex Communications, Downtown Coordinator	All



Material	Description	Partners	Audience
	Apex Village Center Lawrence Crossings		
Bus map poster	Display at Apex Jaycee Park, Hunter Street Park, and Apex Community Center, Apex Senior Center (future), and Halle Cultural Arts Center.	Apex Parks, Recreation, and Cultural Resources Department	Teenagers, Seniors, Young Families
Bus route information signage	Display at every bus stop. Display GoCary and GoTriangle bus route information at locations where transfers are available.	GoCary GoTriangle	All
Utility bill mailer	Distribute GoApex information to all Apex residents.	Apex Communications	All
Canvas tote bag	Use at retail pop-up events	Apex Communications	All
Reusable water bottle	Use at amenity center, park, and medical pop-up events	Apex Communications	All
Hat	Use at all pop-up events	Apex Communications	All
USB stick	Use at all pop-up events	Apex Communications	All
Coffee mugs	Use at downtown events	Apex Communications	All
Pint glass	Use at brewery, dispensary, and wine bar events	Apex Communications	Festival go-ers, Young Families

Online Resources

In addition to printed marketing material, online resources will be used extensively to share information about GoApex. Marketing recommendations for GoApex using online resources are provided in Table 18.

Table 18. Recommendations for marketing GoApex using online resources

Resource	Description	Partners	Audience
GoApex.org	Post all print marketing materials online. Provide an online trip planner application. Use a format consistent with the other “Go” transit websites.	Apex Communications	All
Regional transit agency websites	Incorporate GoApex information into regional transit websites.	GoCary GoTriangle GoRaleigh	All
Bus tracking application	Provide real-time bus tracking information through an online application. Integrate GoApex tracking information into the online platform that regional transit systems use.	GoCary	Teenagers, Festival Go-ers, Young Families, Major Employers and Businesses



Resource	Description	Partners	Audience
Google Transit integration	Share transit information with Google to incorporate into Google Maps application.	GoCary	Teenagers, Festival Go-ers, Young Families, Major Employers and Businesses
Social media updates and notifications	Post information and updates on Facebook, Twitter, Instagram, and Nextdoor.	Apex Communications	Festival Go-ers, Young Families
How to ride the bus video	Produce a video that shows and describes the process of riding a GoApex bus.	Apex Communications Video production company	All
Bike on bus video	Produce a video that shows and describes how to load and unload a bike onto the bus. Alternatively, GoCary's bike on bus video may be used.	Apex Communications Video production company	All

Print & Online Advertisements

Recommendations for print and online advertisements in local publications and websites are provided in Table 19. It is anticipated that each ad will include the *Ride GoApex!* logo with website URL and mobile application QR code.

Table 19. Print and online advertisement recommendations

Publication	Partners	Audience
Chamber of Commerce Map	Apex Communications	Seniors, Young Families, and Major Employers and Businesses
<i>Cary Magazine</i>	Apex Communications	Young Families, Festival Go-ers, Seniors
<i>Be Local</i>	Apex Communications	Young Families
Downtown event web pages, flyers, and social media outlets	Apex Downtown Coordinator Downtown Business Association	Festival Go-ers



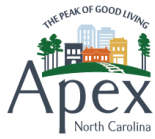
Publication	Partners	Audience
Halle Cultural Arts Center event programs and email notifications	Apex Communications Apex Parks, Recreation, and Cultural Resources	Seniors, Festival Go-ers, Young Families
Apex Parks & Rec Program Guide and Senior Program Guide	Apex Communications Apex Parks, Recreation, and Cultural Resources	Seniors, Young Families
Apex Farmers Market website email notification	Apex Downtown Coordinator	Young Families, Festival Go-ers
Downtown Apex restaurant and shop websites	Apex Downtown Coordinator	Major Employers and Businesses, Young Families, Festival-Go-ers
Apex breweries, beer dispensaries, and wine shop websites	Apex Communications	Festival Go-ers, Young Families

Events

In addition to print and online material, it will be important for knowledgeable staff and GoApex representatives to get out and talk with people. Recommendations for possible events to target are included in Table 20.

Table 20. Possible events to share information about GoApex

Event	Venue	Details	Partners	Audience
Chamber of Commerce After Hours Event	Local wine bar, brewery, or beer dispensary.	Meet up via GoApex for happy hour.	Apex Downtown Coordinator and Chamber of Commerce	Major Employers and Businesses
Pop-up events along the corridor	Lake Pine Plaza Park-and-Ride S Hughes Street Park-and-Ride Western Wake Crisis Ministry St. Mary's AME Church Food Pantry Dunkin' Donuts WakeMed Healthplex Apex Medical Center Apex Community Center / Apex Senior Center (future) Hunter Street Park	Staffed tables at popular destinations in order to meet people where they are and put a face to GoApex. Display posters and distribute marketing materials and promotional items. Locations are specific to each target audience.	GoTriangle Apex Communications	All



Event	Venue	Details	Partners	Audience
	Villages of Apex Amenity Center Old Mill Village amenity center Chick-fil-A Publix Walmart Beaver Creek Commons			
Info tables Downtown	Finally Friday Downtown festivals Apex Farmers Market	Staffed tables at Finally Friday, Downtown festivals, and Apex Farmers Markets in order to meet people where they are and put a face to GoApex. Display posters and distribute marketing materials and promotional items.	Apex Communications, Apex Downtown Coordinator, and GoTriangle	Festival Go-ers, Young Families, All
Provide discounts for GoApex riders during a promotional period and pop-up events.	Apex breweries, beer dispensaries, and wine shops: Southern Peak Apex Beer Dispensary Peak of the Vine Brueprint Tap Station Brewery (future)	Riders collect a voucher on the bus and return it to the business to receive a beverage discount during a promotional period. Pop-up event during an event such as Run Club, Pizza Night, craft class, or Wine Down Wednesday.	GoTriangle staff	Festival Go-ers, Young Families
Presentations to local service groups.	Apex service groups: Apex Lions Club Apex Rotary Club	Presentations to local service groups to share information on GoApex and free regional service for seniors.		Seniors
Presentation to Apex Downtown Business Association	Apex Chamber of Commerce board room	Presentation to the Apex Downtown Business Association to share information and encourage business owners and employees to ride GoApex.	Apex Downtown Coordinator	Major Employers and Businesses

Fare Incentives (Regional Fare Scenario Only)

If the Town of Apex proceeds with the regional fare scenario option, temporary fare free service may be considered during the first six months following the launch of GoApex. This incentive would target all transit audiences. Information about the fare-free period would be included in the overall marketing strategy.



Marketing and Branding Budget

The marketing and branding budget will be higher for the initial year of service compared to following years. During the first year of service, the Town of Apex would develop materials and make a substantial effort to spread awareness about the new service. Based on the recommendations in this plan and comparison to similar marketing efforts, a \$25,000 marketing budget is recommended for the initial year of service, with \$10,000 on a recurring annual basis.

Marketing Measurement and Reporting

Every six months, a marketing report will be prepared sharing information from a number of tools. This report will include the following data:

- Website hits and other website data
- Social media interactions and trends
- Ridership numbers
- Customer survey responses
- Number of new partnerships
- Event attendees

The marketing report will be shared with the Apex Transit Advisory Committee. This report will be used to inform the Wake Transit Plan Community Funding Area Program Quarterly Progress Report.



FINANCIAL PLAN

Estimated costs, revenues, and potential funding sources are provided in this section. For all service scenarios considered, the Town should anticipate an initial an ongoing expenditure of local funds that will not be recovered by anticipated revenues or possible grant funding. A detailed summary of estimated expenses, revenues, ridership, and assumptions is provided in Appendix D.

Anticipated Expenses

Implementation of GoApex Route 1 includes operating, capital, and marketing expenses.

Capital Expenses

Capital expenses include construction of improvements at 41 proposed new local bus stops as described in the Bus Stop Needs section and shown in detail in Appendix C. Capital expenses for bus stop improvements are the same for all alternatives considered in this study and are provided in Table 21.

Table 21. Anticipated Capital Costs for GoApex Route 1

Item	Initial Year Cost	Annual Costs
Bus stop improvements at 41 new local bus stops	\$460,000	\$0

Marketing Expenses

As part of implementing GoApex Route 1, the Town will undertake a marketing campaign using the recommendations described in detail in the Marketing and Branding section. It is anticipated that initial costs to prepare for and market the first year of service will be higher than recurring annual costs. Cost estimates for marketing GoApex Route 1 are the same for all alternatives considered in this study and are provided in Table 22.

Table 22. Anticipated Marketing Costs for GoApex Route 1

Item	Initial Year Cost	Annual Costs
Marketing	\$25,000	\$10,000

Operating Expenses

Operating expenses include fixed-route service along proposed GoApex Route 1, complementary paratransit service within ¼ mile of the fixed-route, a potential park-and-ride lease, and maintenance of bus stops. Tables 22 and 23 outline the costs and revenue of four service scenarios.

Table 23. Annual Operating Costs under Schedule Alternative 1

Factors	Regional Fare + FTA-Minimum	Regional Fare + GoCary Model	Fare-Free+ FTA-Minimum	Fare-Free + GoCary Model
Estimated Annual Revenues	\$21,536	\$25,480	\$0	\$0
Estimated Annual Operating Expenses	\$950,890	\$950,890	\$950,890	\$950,890



Factors	Regional Fare + FTA- Minimum	Regional Fare + GoCary Model	Fare-Free+ FTA- Minimum	Fare-Free + GoCary Model
Estimated Total Net Annual Costs	\$929,354	\$925,410	\$950,890	\$950,890

Table 24. Annual Operating Costs under Schedule Alternative 3 (No Sunday service)

Factors	Regional Fare + FTA- Minimum	Regional Fare + GoCary Model	Fare-Free+ FTA- Minimum	Fare-Free + GoCary Model
Estimated Annual Revenues	\$19,576	\$23,520	\$0	\$0
Estimated Annual Operating Expenses	\$831,537	\$831,537	\$831,537	\$831,537
Estimated Total Net Annual Costs	\$811,961	\$808,017	\$831,537	\$831,537

Funding Opportunities

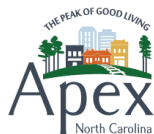
There are several competitive grant opportunities that the Town of Apex may leverage in combination with local funds to implement GoApex. These are briefly described in this section.

Locally Administered Projects Program

The [Locally Administered Projects Program \(LAPP\)](#) is used by the Capital Area Metropolitan Planning Organization (CAMPO) to prioritize transportation projects for federal funding. LAPP can be used for roadway, bicycle and pedestrian, or transit projects. The funding available through LAPP varies from year to year, as does the target percentage allocated to transit projects. For the upcoming fiscal year, it is anticipated that about \$2,000,000 is available for transit projects. LAPP is intended to fund up to 80 percent of a locally-administered project, with increased points awarded for higher local match percentages. Other funding sources, such as the Community Funding Area Program, can be used toward the local match. There is an annual application process for LAPP funding. Typically applications are due October 31st, funding awards are announced in February, and agreements are in place by the start of the following federal fiscal year (October 1st). Since the LAPP program involves federal funding, using this grant program would substantially complicate the implementation requirements for GoApex Route 1 including required training, reporting, environmental documentation, review by the North Carolina Department of Transportation (NCDOT) and Federal Highway Administration (FHWA), and adherence to a specific implementation schedule. If this funding source is pursued, it is only recommended for the capital improvement portion of the GoApex Route 1 project.

Community Funding Area Program

The [Community Funding Area Program \(CFAP\)](#) of the overall Wake Transit Plan, makes funding available to communities like Apex to implement local transit projects. The CFAP is guided by a specific Program Management Plan. The Town of Apex was successful in acquiring funding through CFAP for this planning study. Funding is also available through a competitive process for capital and operating projects. The application cycle typically opens in November and closes in January. Funding agreements are in place by the start of the following fiscal year (July 1st). The CFAP is intended to fund up to 50% of a locally-administered transit planning, capital, or operating project; with increased points awarded for



higher local match percentages. Other funding sources, such as LAPP, can be used toward the local match. The program management plan limits the annual funding available to a single CFAP applicant to 30 percent of the annual funding allocation. For the upcoming, 2021 fiscal year, it is anticipated that the maximum possible award for a single applicant will be approximately \$326,000.

AARP offers a competitive annual [Community Challenge Grant](#) for projects intended to make communities livable for people of all ages. This grant source is typically for smaller projects, but may help to fund items such as benches, lighting, and signage at new local bus stops. The application process typically opens in April, with awards granted the following fall.

Potential Financial Scenario

Different possible combinations of service scenarios, funding opportunities, and ridership will determine the ultimate initial and recurring annual costs to the Town. One possible financial scenario is depicted in Table 25 for consideration. This scenario is based on the following scenario:

- Schedule: Alternative 3 (60-minute, all-day service, no service on Sundays)
- Fare: Regional model
- Paratransit: FTA-Minimum (ADA eligible passengers only)

Assumptions are provided for the percentage of costs that may be covered by LAPP and CFAP. The AARP grant is nominal and is not included in the example scenario. Further investigation of paratransit service options, in particular, could substantially change this scenario. Updates to this report will be made once further information is available about possible alternative paratransit service delivery options.

Table 25. Example Financial Plan for one Service Delivery Scenario

Item	Local	LAPP (Assume 60%)	CFAP (assume \$326K cap)	Total
Initial Year – Assumes 6 months of capital improvements (October 2020 through March 2021) and 3 months of operations (April 2021 through June 2021)				
Capital	\$58,000*	\$276,000	\$126,000	\$460,000
Operations	\$0	\$0	\$200,000	\$200,000
Marketing	\$25,000	\$0	\$0	\$25,000
TOTAL – First Year	\$83,000	\$276,000	\$326,000	\$685,000
Recurring Annual Costs – Assumes 12 months of operations (July 2021 through June 2022)				
Capital	\$0	\$0	\$0	\$0
Operations**	\$485,961	\$0	\$326,000	\$811,961
Marketing	\$10,000	\$0	\$0	\$10,000
TOTAL – Annual	\$495,961	\$0	\$326,000	\$821,961

*Construction expenses only, does not include Preliminary Engineering & Design or Right of Way.

**Includes anticipated costs of one park-and-ride lease

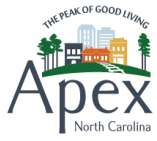


CONCLUSION AND NEXT STEPS

Study recommendations may be used to inform a Wake Transit Community Funding Area Program Capital and Operating funding application. This application may be submitted in partnership with the Town of Cary as it is anticipated GoCary would operate GoApex Route 1 fixed-route service. Items for further investigation include: alternative paratransit service delivery models, a customer service plan, and integration of GoApex Route 1 GPS tracking into regional mobile application and Google Maps.

Next steps include:

- Consider alternative paratransit service delivery models including the Taxi Voucher Model and GoWake Access Model
- Prepare a Customer Service memo
- Develop a plan to integrate GPS tracking into regional mobile application and Google Maps
- Potentially submit a LAPP application for transit funds to construct bus stops
- Potentially submit a Wake Transit Community Funding Area Program funding application for capital and operating funds
- Potentially apply for an AARP Community Challenge Grant to fund a small capital project
- Continue coordination with the Apex Transit Advisory Committee



APPENDIX A: PUBLIC ENGAGEMENT PLAN



Public Engagement Plan

The goal of GoApex Route 1 is to provide a transportation service that connects the community to local destinations and provides access to regional transit services. The success of GoApex Route 1 is dependent upon its ability to meet the needs of the community. A thorough public outreach process is needed to ensure that the local circulator achieves these goals.

The purpose of the Apex Circulator Study Public Engagement Plan is to guide how the Town will share information about a proposed transit circulator, and gather and use public input on the proposed alignment, stop locations, and schedule to ensure that the proposed circulator will meet the community's needs. Town staff will also ask community members about their anticipated trip purpose, preferences regarding alternative approaches to accommodate ADA requirements, and priorities among bus stop amenities. The public engagement plan includes strategies intended to ensure information is available to the entire Apex community and that targeted efforts are made to engage with populations along the proposed corridor who are most likely to use future transit service.

Town of Apex staff will hold targeted outreach events along the proposed GoApex Route 1 and release an online public survey to gather public input on the following topics:

1. Proposed route alignment
2. Bus stop locations
3. Bus stop amenities
4. Route schedule
5. Bus fare
6. Deviated fixed-route service versus on-demand service for persons with disabilities
7. Trip purpose

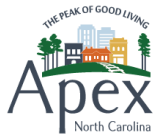
Marketing/Public Awareness

The following steps will be taken to spread the word about opportunities to participate in the Apex Circulator Study:

- Update Town of Apex transit webpage with public outreach event details – day, time, location.
- Post flyers (Spanish and English) advertising outreach events and online survey on at Target, Chick-fil-a, WakeMed, Walmart, Wake Acres Apartments, Cambridge Village of Apex, Beechridge Apartments, Lakeridge Apartments, Linwood Apartments, West Haven Apartments, Apex Community Center, Apex Town Hall, Downtown Apex Ambassador Garden, Compare Foods, Apex Jaycee Park, and the park-and-ride stops at Compare Foods and Lake Pine Plaza.
- Circulate online survey link (in English and Spanish) and opportunities for in-person engagement to those who sign up for notifications on the Town of Apex transit webpage.
- Post online survey link and opportunities for engagement on multiple social media platforms including Facebook, Instagram, and Twitter.

Public Input Strategy

Public input will be gathered through interactive engagement activities at pop-up events and through a survey available in both online and paper formats. The following table outlines the types of activities and questions that will be used to



gather community input. A draft version of the survey is provided as Attachment 1. A draft list of materials necessary for the pop-up events is provided as Attachment 2.

We need input on...	Outreach Event	Comment Form/Online Survey
Proposed alignment	Write comments on mini sticky notes and place on poster-size route alignment map.	Provide comments at the end of the survey.
Bus stop locations	Mark locations on the poster-size map and add a tally if you agree.	Provide the intersection or address of suggested bus stop locations.
Bus stop amenities	Place allocated poker chips in the bucket(s) labeled with different amenities to indicate preferences.	Rank a list of preferred transit amenities at bus stops.
Bus schedule	Use a dot-voting board with stickers to indicate which times of day and days of the week you would use the bus.	Answer questions regarding day of the week and time of day that you would use the proposed bus service.
Bus fare	Use a dot-voting board with stickers to indicate the highest fare you would pay for a one-way trip.	Answer question regarding willingness to pay a fare to use the proposed bus service.
Deviated fixed-route vs. on-demand service	Read a poster that clearly describes each type of service with a map showing a ¼ mile buffer along the proposed route. Use a dot-voting board with stickers to indicate preferred service type.	Read text describing the different types of transit service and answer question regarding service type preference.
Trip purpose	Use a dot-voting board with stickers to indicate how you would most likely use the proposed service.	Answer question regarding how you would most likely use the proposed service.

Outreach Schedule

Public input gathering activities will mainly take place during the month of July. Updates to the Town’s Transit Committee and Town Council will take place at several milestones throughout the study.

Event	Date	Purpose	Stakeholders	Staff (Anticipated)
Downtown Plan Public Open House	Thursday, May 9	Distribute initial information about study	Downtown residents, visitors, employees, and business owners	Jenna Shannon
Discussion topic at Downtown Plan Design Charrette	June 17-20	Gather input regarding need for transit serving downtown Apex	Downtown residents, visitors, employees, and business owners	Jenna Shannon



Event	Date	Purpose	Stakeholders	Staff (Anticipated)
Online survey	July 1 – July 31	Provide a low-effort, low-touch way for a broad audience to provide input on the Apex Circulator study	Apex residents, downtown residents, residents of apartments along the proposed route, and employees and patrons of businesses along the proposed route	Administered by Town of Apex
Pop-up booths at S Hughes Street Park-and-Ride and Compare Foods	Tuesday, July 9	Provide information about the study and gather input from current and potential transit users and transit dependent populations.	Current transit users and residents of neighborhoods in the James Street, Tingen Road, and Lynch Street vicinity	Jenna Shannon Spanish translator (contracted)
Apex Transit Advisory Committee Meeting	Wednesday, July 10	Share input gathered from the community. Provide committee with project updates.	Apex Transit Advisory Committee	Jenna Shannon
Pop-up booths at Lake Pine Plaza Park-and-Ride, WakeMed, and Beaver Creek Commons or Crossings	Thursday, July 11	Provide information about the study and gather input from transit users and members of the community along the proposed route	Current transit users, WakeMed HealthPlex visitors and employees, and Beaver Creek Commons patrons and employees	Jenna Steering Committee member
Pop-up booths at Apex Community Center Open Gym, Senior Activity, and Hunter Street Park	Friday, July 19	Provide information about the study and gather input from the youth and senior communities	Youth and senior populations in the Apex Town Center	Jenna Steering Committee member
Pop-up booths at Apex Farmers Market and Walmart	Saturday, July 20	Provide information about the study and gather input from downtown stakeholders and members of the community along the proposed route	Downtown residents, visitors, employees, and business owners, and members of the community in the southeast section of the corridor	Jenna Steering Committee member(s)
Town Council Update	Tuesday, August 20	Share input gathered from the community. Provide Town Council with project updates.	Town Council	Jenna Shannon
Town Council Update	Tuesday, September 17	Share input gathered from the community. Provide Town Council with project updates.	Town Council	Jenna Shannon



Event	Date	Purpose	Stakeholders	Staff (Anticipated)
Apex Transit Advisory Committee Meeting	Weekday in September	Share input gathered from the community. Provide committee with project updates.	Apex Transit Advisory Committee	Jenna Shannon Kevin
Present final recommendations to Town Council	Tuesday, October 15	Present final recommendations to Town Council with potential support from the Apex Transit Advisory Committee	Apex Town Council	Jenna Shannon Kevin

Reporting and Using Input

All materials and recommendations will be vetted through the Apex Transit Advisory Committee. Committee responsibilities include: participation in public outreach efforts, review of materials throughout the project, review of the Wake Transit Plan Community Funding Area Program Capital and Operating funding application, and a potential recommendation to the Mayor and Town Council regarding the Capital and Operating application.

Input gathered throughout the public engagement process will guide recommendations in the Apex Circulator Study and a potential Capital and Operating funding application. An input summary will be prepared following public outreach events and the survey. All engagement materials and summaries will be shared with the Town of Cary, whose transit staff is partnering with the Town of Apex in this study. Town of Apex and Town of Cary staff will use the public input that is provided from members of the community, Apex Transit Advisory Committee, and Apex Town Council when developing recommendations. Recommendations will be presented to the Apex Transit Advisory Committee and the Apex Town Council. All input and comments will be considered in the final recommendations.

Evaluation – Performance Measures

- Online survey completed by a minimum of 50 stakeholders
- Pop-up booths visited by a minimum of 50 stakeholders
- Pop-up booths held at a minimum of three locations
- Majority of Apex Transit Committee members support recommendations made to Town Council
- Clear connections are made between input gathered and final study recommendations



ATTACHMENT 1: Draft Survey (Available online and in paper format)

General Transit Preference Questions

The following questions will help planners to understand your general interest in using transit and do not refer to a specific service or route.

1. How often do you currently ride a bus?
 - a. *Daily*
 - b. *2-3 times per week*
 - c. *Weekly*
 - d. *2-3 times per month*
 - e. *Monthly*
 - f. *2-3 times per year*
 - g. *Never*
2. Do you own a car or have access to a car?
 - a. *Yes*
 - b. *No*
3. What is your preferred mode of travel?
 - a. *Personal vehicle*
 - b. *Car/van pool*
 - c. *Bus*
 - d. *Uber/Lyft/other ride share service*
 - e. *Taxi*
 - f. *Bicycle*
 - g. *Walk*
 - h. *Other: _____*
4. If a car is not available, what type of transportation do you use?
 - a. *Bus*
 - b. *Uber/Lyft/other ride share service*
 - c. *Taxi*
 - d. *Bicycle*
 - e. *Walk*
 - f. *Other: _____*
5. Where are you usually going when you ride a bus? (Select all that apply)
 - a. *Not applicable – I never ride the bus*
 - b. *Work*
 - c. *Shopping*
 - d. *Dining*
 - e. *School*
 - f. *Church*
 - g. *Medical/Dental*
 - h. *Visit Friends/Relatives*



- i. *Recreation*
 - j. *Connect to other (regional) transit service*
 - k. *Other: _____*
6. Rank the following bus stop amenities:
- a. *Bench*
 - b. *Shelter*
 - c. *Trash receptacle*
 - d. *Bike parking*
 - e. *Park-and-ride spaces*
 - f. *Landscaping*
 - g. *Route information signage*
 - h. *Other: _____*

Apex Circulator Questions

The following questions refer specifically to the proposed Apex Circulator, shown in the map below.

[INSERT MAP]

7. How often would you use the proposed bus service?
- a. *Daily*
 - b. *2-3 times per week*
 - c. *Weekly*
 - d. *2-3 times per month*
 - e. *Monthly*
 - f. *2-3 times per year*
 - g. *Never*
8. Which days of the week would you use the proposed bus service? *(Select all that apply)*
- a. *Weekdays*
 - b. *Saturdays*
 - c. *Sundays*
 - d. *Never*
9. At what time of day would you use the proposed bus service on **weekdays**? *(Select all that apply)*
- a. *Morning (6:00am – 11:00am)*
 - b. *Midday (11:00am – 4:00pm)*
 - c. *Evening (4:00pm – 9:00pm)*
 - d. *Late night (9:00pm – 12:00am)*
 - e. *Never*
10. At what time of day would you use the proposed bus service on **weekends**? *(Select all that apply)*
- a. *Morning (6:00am – 11:00am)*
 - b. *Midday (11:00am – 4:00pm)*
 - c. *Evening (4:00pm – 9:00pm)*
 - d. *Late night (9:00pm – 12:00am)*
 - e. *Never*



11. What would be the main purpose of your trips using the proposed bus service? (Select all that apply)

- a. *Work*
- b. *Shopping*
- c. *Dining*
- d. *School*
- e. *Church*
- f. *Medical/Dental*
- g. *Visit Friends/Relatives*
- h. *Recreation*
- i. *Connect to other (regional) transit service*
- j. *Other: _____*

12. On the map below, mark locations where you would recommend bus stops along the proposed bus route (Use the Public Input interactive mapping tool)

[Insert Map]

13. What is the highest dollar amount you would pay for a one-way trip on this service?

- a. *\$0*
- b. *\$1*
- c. *\$2*
- d. *\$3*
- e. *\$4*
- f. *\$5*
- g. *More than \$5*

14. Which type of service would you prefer to accommodate bus riders with a disability?

- a. *Fixed-route service that can deviate up to ¼ mile from the established route*
- b. *A separate, on-demand transit service*

[Note: Insert map showing a ¼ mile buffer around the proposed alignment. Describe the two types of services and the advantages and disadvantages of each.]

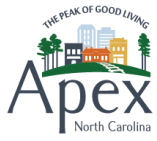
15. Do you have any comments on or suggested changes to the proposed route alignment?

16. Additional Comments/Suggestions:



ATTACHMENT 2: Check list of Materials for Pop-up Events

- Tent with Apex Planning Department logo
- Table, chairs, and easels
- Table cloth
- Small, round stickers
- Mini sticky notes
- Pens and markers
- Tape and scissors
- Three foam core boards
- 8.5"x11" display cases
- Paper surveys
- Basket to collect paper surveys
- Candy
- Apex Circulator Study flyers
- Downtown Plan flyers
- Poster-size map of the proposed alignment with key destinations labeled. Also include Routes 305, 311, and HSX.
- Metal buckets with transit amenities labels
- Voting chips
- Informational board



APPENDIX B: PUBLIC INPUT SUMMARY



Public Input Summary

The Town of Apex, in partnership with the Town of Cary and with funding support from Wake Transit, is completing the planning process for the Town’s priority transit circulator route, as recommended in the Western Wake Comprehensive Operations Analysis and Advance Apex: The 2045 Transportation Plan (Advance Apex). The goal of GoApex Route1 is to provide a transportation service that connects the community to local destinations and provides access to regional transit services. The success of GoApex Route 1 is dependent upon its ability to meet the needs of the community. A thorough public outreach process was conducted to ensure that the local circulator achieves these goals. A summary of input received through that process is provided in this document.

Public Input Strategy

The public input strategy was guided by a Public Engagement Plan reviewed by the Wake Transit Public Engagement Subcommittee, the Town of Apex Transit Committee, and partners with the Town of Cary. The purpose of outreach for the Circulator Study was to specifically engage people along the proposed route to gather input on the following topics:

1. Proposed route alignment
2. Bus stop locations
3. Route schedule
4. Bus stop amenities
5. Bus fare
6. Deviated fixed-route service versus on-demand service for persons with disabilities
7. Trip purpose

Nine targeted outreach events were held along the proposed transit corridor at the locations and dates shown in Table 1.

Table 1. Locations and dates of targeted outreach events

Location	Date
Compare Foods/S. Hughes Bus Stop	Tuesday, July 9 th
WakeMed Healthplex	Thursday, July 11 th
Chick-fil-A	Thursday, July 11 th
Lake Pine Plaza Park-and-Ride	Thursday, July 11 th
Hunter Street Park	Monday, July 15 th
Apex Community Center	Friday, July 19 th (AM & PM)
Apex Farmers Market	Saturday, July 20 th
Walmart	Saturday, July 20 th

An online public survey was conducted from July 8, 2019 through August 9, 2019. The survey questions were designed to gather the same types of input as the targeted outreach events.

The following steps were taken to spread the word about opportunities to participate in the Apex Circulator Study:



- A flyer was distributed at a public open house held for the Town of Apex Downtown Master Plan and Parking Study.
- Updates were made to the Town of Apex transit web page with public outreach event details – day, time, and location.
- English and Spanish versions of a flyer advertising outreach events and the online survey were distributed to the following locations: Apex Jaycee Park, Compare Foods, S Hughes Street Park-and-Ride, Downtown Apex Ambassador Garden, Town Hall, Cambridge Village, Lakeridge Apartments, WakeMed Healthplex, Target, Walmart, Beechridge Apartments, Wake Acres Apartments, West Haven Apartments, Apex Community Center, Lake Pine Park-and-Ride, and Eva Perry Library.
- Online survey link was available at in-person engagement events.
- Online survey link and the Town of Apex transit web page link were posted on the Town’s Facebook page.
- Transit committee members were asked to distribute information about the study and survey.
- The Western Wake Crisis Ministry encouraged clients to participate in the survey.

The public engagement plan identified three performance measures to gauge the success of the outreach phase of the Apex Circulator Study. The measures and outcomes are described in Table 2.

Table 2. Public engagement performance measures and outcomes

Performance Measure	Outcome
Online survey completed by a minimum of 50 stakeholders	484 individuals participated in the online survey
Pop-up booths visited by a minimum of 50 stakeholder	At least 100 stakeholders visited the pop-up booths
Pop-up booths held at a minimum of three locations	Pop-up booths were held at eight locations

Public Input Results

Public input gathered at all targeted outreach events and through the online survey is compiled and summarized in this section. Information about general transit preferences are provided first, followed by input specific to the proposed Apex Circulator.

Input Highlights

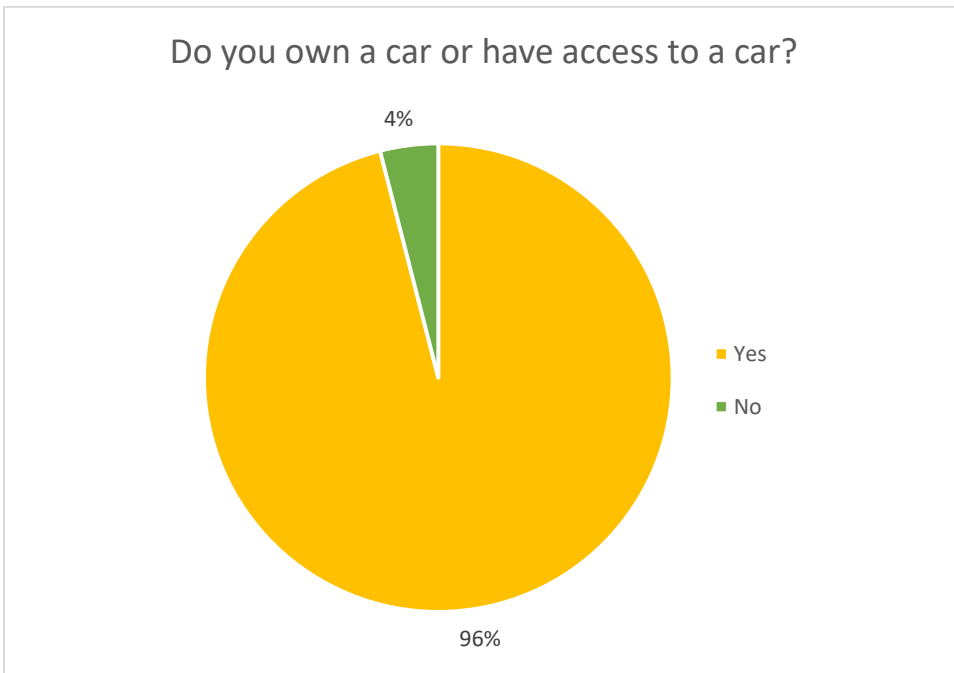
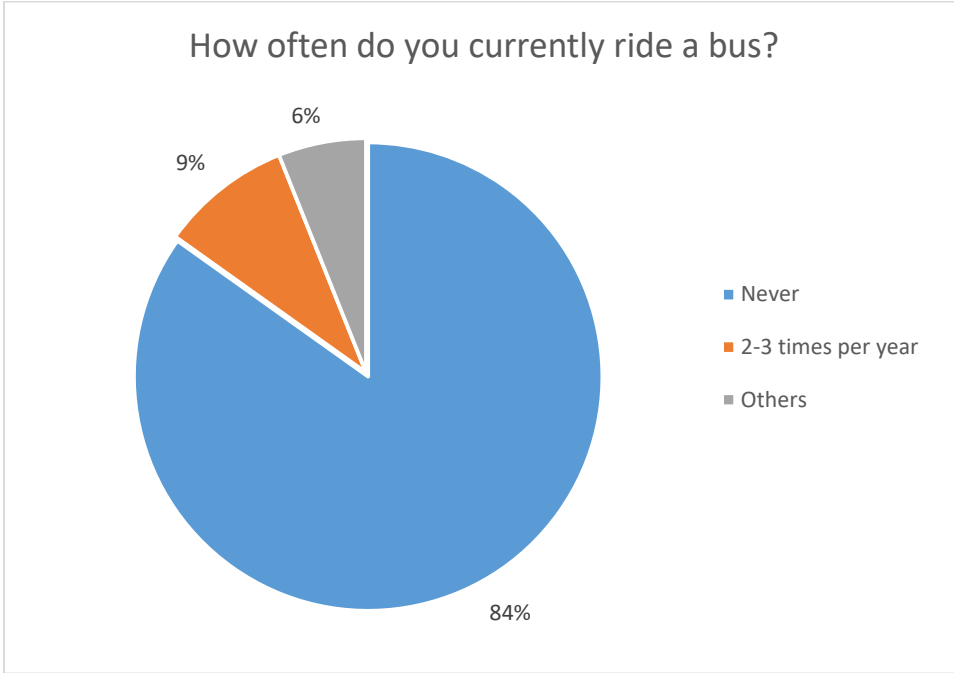
- Detailed information about the input received is provided in the next two sections. Key takeaways and comments made with high frequency across all topic areas is summarized briefly below:
- Most online survey respondents never ride a bus.
- Most online survey respondents own a car or have access to a car.
- 18% of online survey respondents prefer to use a mode of transportation other than a personal vehicle.
- 45% of online survey respondents would use the proposed bus service.
- Top 5 proposed alignment comments:
 - Serve Downtown Apex
 - Provide service along Apex Peakway
 - Provide service to the west (Olive Chapel Road / Kelly Road)



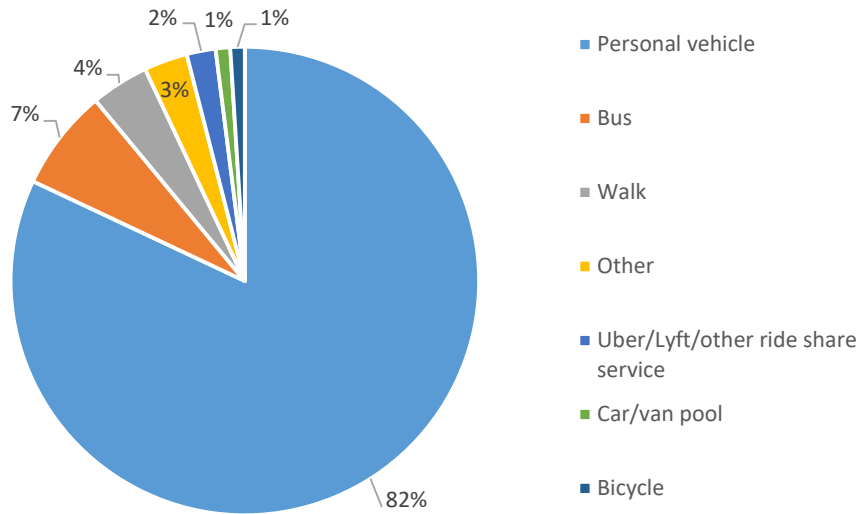
- Connect to regional transit services (GoTriangle service to Raleigh and RTP)
- Connect to Cary / GoCary system
- Top 10 suggested bus stop locations:
 - Beaver Creek Commons
 - Downtown Apex
 - Walmart
 - Town Campus
 - Eva Perry Library
 - Beaver Creek Crossings
 - S Salem Street and NC 55
 - S Hughes Street Park-and-Ride
 - Post Office
 - Haddon Hall Commons
- Online survey respondents and pop-up booth participants are more likely to use the proposed bus service on weekdays and Saturdays.
- Online survey respondents and pop-up booth participants would use the proposed bus service throughout the day on weekdays.
- Online survey respondents and pop-up booth participants are more likely to use the proposed bus service between 11:00 am – 4:00 pm on weekends.
- There were multiple requests for 30-minute frequency.
- Top bus stop amenity preferences include: shelter, bench, route information signage, and trash receptacle.
- 17% of online survey respondents and pop-up booth participants prefer a fare-free service.
- 35% of online survey respondents and pop-up booth participants would pay up to \$2 for a one-way trip on the proposed bus service.
- Most online survey respondents and pop-up booth participants prefer a separate, on-demand paratransit service.
- Most pop-up booth participants prefer to expand paratransit service beyond requirements to include all seniors.
- 33% of online survey respondents and pop-up booth participants would use the proposed bus service for a shopping trip.

Input Regarding General Transit Usage and Preferences

The following input on general transit preferences was gathered through the online survey.

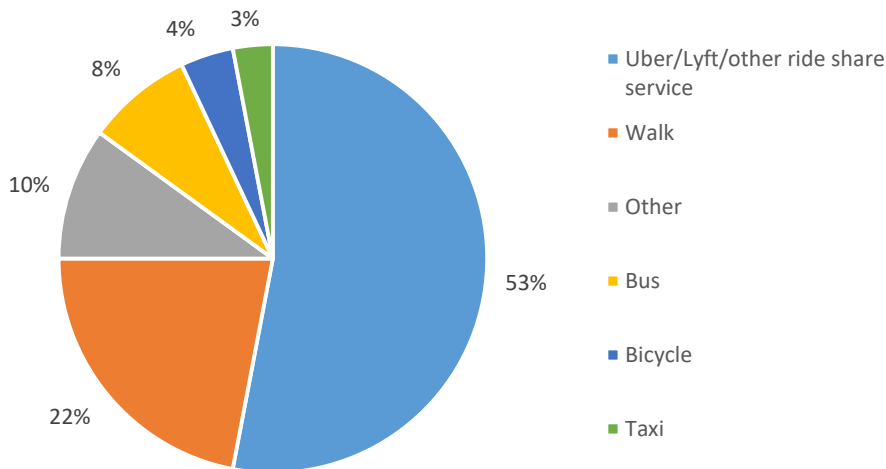


What is your preferred mode of travel?



'Other' Responses	Votes
Trail or Light Rail	2

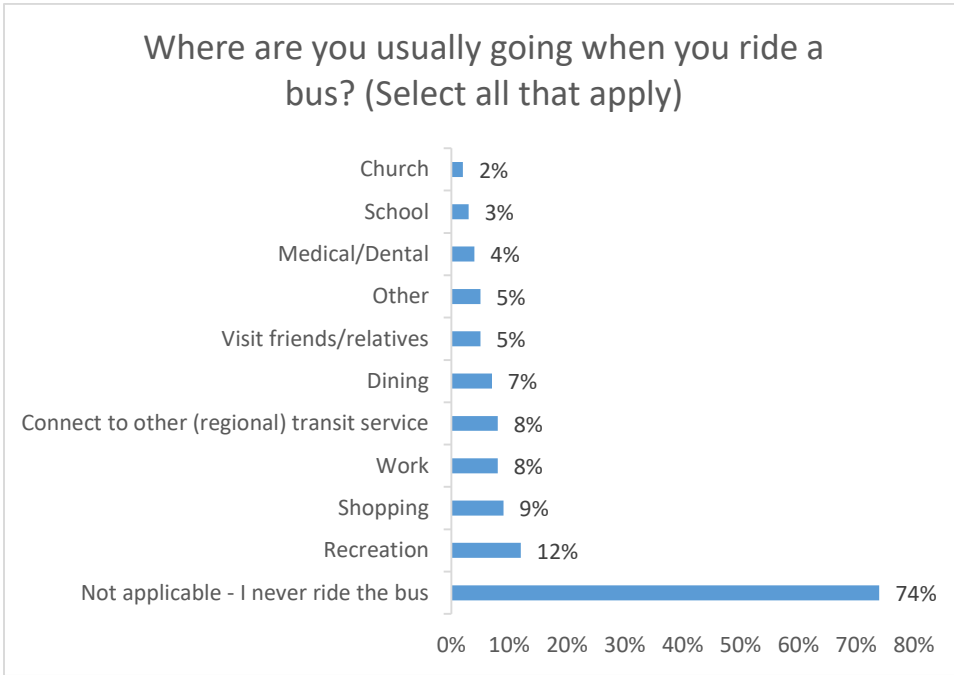
If a car is not available, what type of transportation do you use?



'Other' Responses	Votes
Ride with friend / family / coworker	26



'Other' Responses	Votes
Rent a car	1



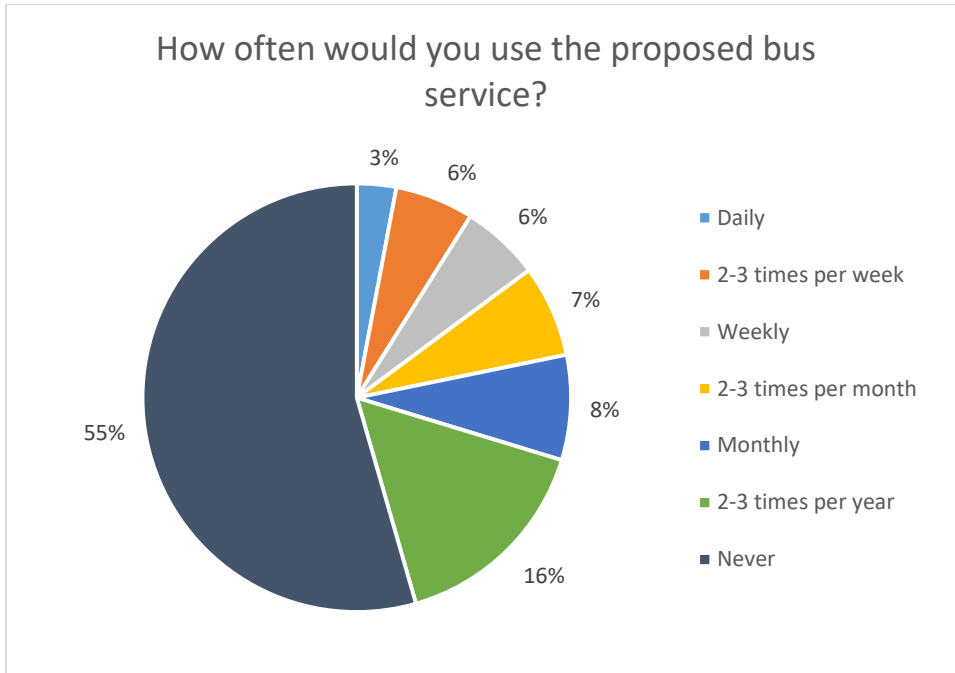
'Other' Comments	Votes
Ride a bus while travelling	7
Airport	2
Shuttle for special events	2
Car dealership	1
State Fair	1



Input Specific to the Apex Circulator

Anticipated Usage

The following input on anticipated usage was gathered through the online survey.



Proposed Route Alignment

The following comments regarding the proposed alignment were submitted at in-person engagement events and through the online survey.

Proposed Alignment Comments	Votes
Serve Downtown Apex	27
Provide service along Apex Peakway	18
Provide service to the west (Olive Chapel Road / Kelly Road)	17
Connect to regional transit services (GoTriangle service to Raleigh and RTP)	14
Connect to Cary / GoCary system	13
Connect to Raleigh	13
Serve Town Campus	12
Connect to major attractions / shopping areas	12
Extend north to Jenks Road	11
Connect to Holly Springs	8
Support proposed alignment	8
Serve the library	7
Connect to park-and-ride lots (Beaver Creek Commons, Walmart, Ting Park in Holly Springs, Walgreens at Olive Chapel Road and W Williams Street, Apex Town Hall)	7



Proposed Alignment Comments	Votes
Provide service to the east - Hunter Street / Old Raleigh Road	6
Serve Hunter Street Park	6
Connect to airport	6
Don't use NC 55	6
Provide service along Apex Barbecue Road	4
Connect to schools	4
Provide service to Laura Duncan Road / US 64	4
Extend south along E Williams Street	3
Serve mobile homes at S Salem Street and Apex Peakway	3
Do not support proposed alignment	3
Connect to Wake Tech South Campus	3
Serve more areas within Apex	3
Provide Service along Ten Ten Road / Center Street	2
Extend north to High House Road	2
Connect to Fuquay-Varina	2
Serve mobile homes off Markham Street	2
Serve seniors in the Golden View and Perry Hills area off Tingen Road	1
Connect to Morrisville	1
Only use NC 55	1
Provide service along NC 55 and Davis Drive	1
Allow slight 1-2 mile deviations off NC 55	1
Connect to areas of affordable housing	1
Account for disabled ridership	1

Bus Stop Locations

The following bus stop locations were suggested at in-person engagement events and through the online survey.

Proposed Bus Stop Locations	Votes
Beaver Creek Commons	62
S Salem Street / Downtown Apex	46
Walmart	42
Town Campus	36
Eva Perry Library	32
Beaver Creek Crossings	27
S Salem Street and NC 55	24
S Hughes Street Park-and-Ride	15
Post Office	15
Haddon Hall Commons	14
Town Centre Commons (Olive Chapel Road and NC 55)	14
WakeMed Apex Healthplex	14
Peakway Market Square	13



Proposed Bus Stop Locations	Votes
NC 55 and Hunter Street	13
NC 55 and James Street	13
Olive Chapel Village	10
Apex Jaycee Park	10
Hunter Street Park	8
Publix Pointe	7
NC 55 and Haddon Hall Drive (west side of NC 55)	7
Kelly Road and Olive Chapel Road	7
Apex High School	7
S Salem Street and Chatham Street	6
NC 55 and Apex Peakway (East Williams vs West Williams unspecified)	6
Apex Community Park	6
Apex Peakway and Tingen Road	6
E Williams Street and Apex Peakway	6
Olive Chapel Road & NC 540 (Western Wake Crisis Ministry)	6
Cambridge Village	6
NC 55 and Upchurch Street	5
N Salem Street and Center Street area	5
NC 55 and Haddon Hall Drive (east side of NC 55)	5
NC 55 and Old Jenks Road / Jenks Road	5
Apex Middle School	5
Costco Area	5
S Salem Street and Apex Peakway	4
NC 55 and James Street (east side of NC 55)	4
West Haven Apartments	4
NC 55 and Perry Road	4
Vineyard Station Shopping Center	4
Markham Street (mobile homes)	3
Wake Acres Apartments	3
Olive Chapel Road and Apex Peakway	3
Apex Peakway and Perry Road	3
Village at Broadstone Station	3
Old Raleigh Road and Laura Duncan Road	3
W Williams Street and Apex Peakway	3
Salem Street and W Chatham Street	3
Beaver Creek Apartments and Townhomes	3
Aldi	3
Tingen Road and James Street	3
Apex Nature Park	3
Duke Health (Orchard Villas Avenue)	3
Apex Middle School (west side of NC 55)	2
NC 55 and Vision Drive (Apex Crossing)	2



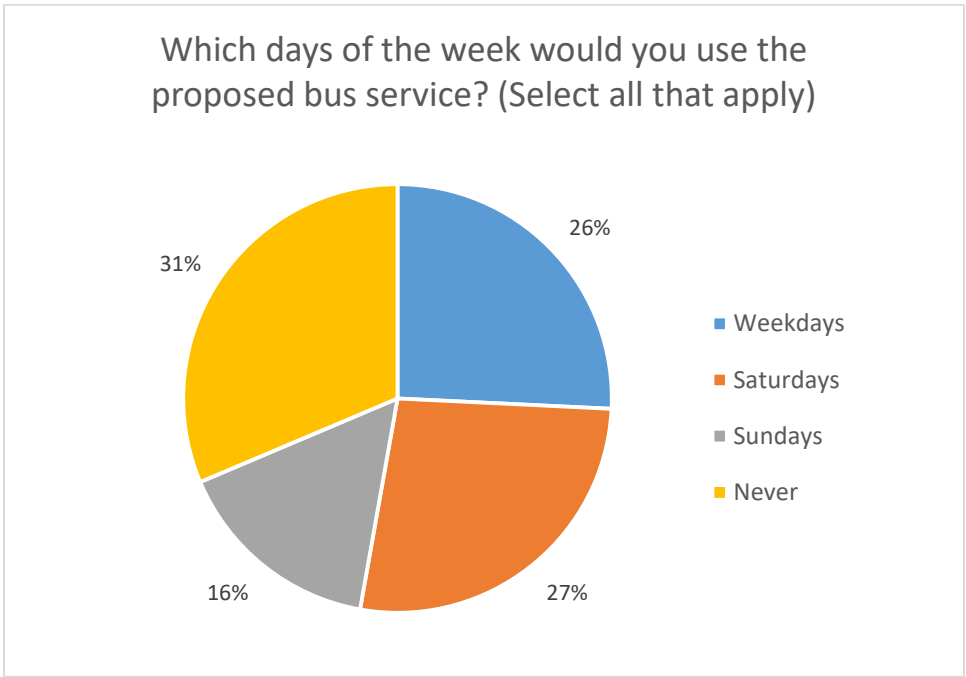
Proposed Bus Stop Locations	Votes
Pizza Hut	2
S Hughes Street and Apex Peakway	2
James Street and S Hughes Street	2
Cary Depot	2
NC 55 and White Dogwood Road	2
NC 55 and US 1 area	2
Lake Pine Plaza	2
Laura Duncan Road and Apex Peakway	2
Peak Plaza Shopping Center	2
Apex Elementary	2
Perry Road and S Hughes Street	2
N Salem Street and Apex Peakway	2
Kelly Road and Beaver Creek Commons Drive	1
Molly Maid (534 E Williams Street)	1
NC 55 and First Street	1
Seagrove's Farm	1
Apex Professional Park	1
Haddon Hall Drive and Zeno Road	1
Chelsea Run subdivision	1
Scotts Mill	1
Old Raleigh Road and Apex Peakway (NW corner)	1
Lake Ridge Apartments at NC 55	1
Apex Village Center	1
Skipper's area off NC 55	1
Kelly Road and Apex Barbecue Road	1
N Salem Street and Saunders Street	1
Preserves at White Oak neighborhood	1
NC 55 and Lufkin Road	1
NC 55 and S Mason Street	1
Hunter Street and N Salem Street	1
NC 55 and US 64	1
Lake Cameron Apartments	1
NC 55 and Bryan Drive	1
Apex Peakway and Old Mill Village	1
Tingen Road and Peace Haven Place	1
Salem Street and Apex Peakway (north vs south side of Salem Street unspecified)	1
Senior community under construction near Apex Community Park on Laura Duncan Road	1
Daniel's Restaurant	1
GoTriangle Route 311 Stop 1446 at NC 55 at Vision Dr (southbound)	1
Richardson Road and Olive Chapel Road	1
Humie Olive Road and Evans Road	1
Apex Barbecue Road and Old US 1	1



Proposed Bus Stop Locations	Votes
Peak UMC	1
Apex UMC	1
Morris Acres Road	1
Spring Arbor	1
Rex Nursing Care & Rehabilitation	1
Orchard Villas	1
Car dealerships / rental car places	1
James Street and Briarcliff Street once Apex Peakway is complete	1

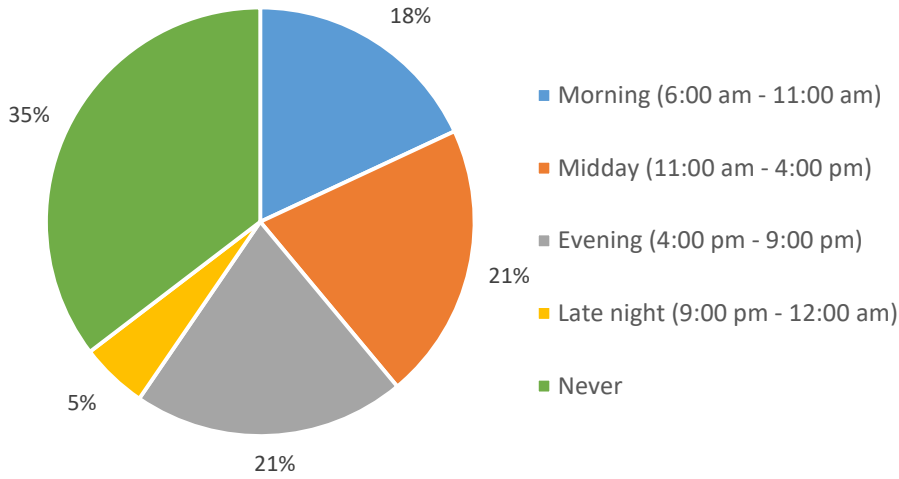
Bus Schedule

The following input on the bus schedule was gathered at in-person engagement activities and through the online survey.

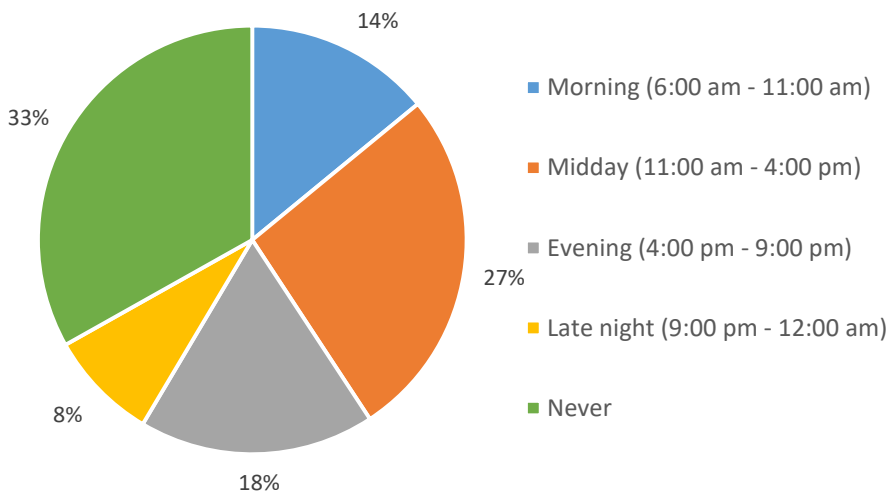




At what time of day would you use the proposed bus service on **weekdays**? (Select all that apply)



At what time of day would you use the proposed bus service on **weekends**? (Select all that apply)



The following comments regarding bus schedule were submitted at in-person engagement events and through the online survey.

Bus Schedule Comments	Votes
Provide 30-minute frequency	Multiple at in-person events
Include some evening hours to return home after dinner	1



Bus Schedule Comments	Votes
Serve Western Wake Crisis Ministry at least once during the hours between 11am – 2pm	1
Provide service from 6am – 9 pm	1

Bus Stop Amenities

The following input on bus stop amenities was gathered through the online survey. Survey respondents were asked to rank bus the following stop amenities.

Amenity	Rank
Shelter	1
Route information signage	2
Bench	3
Trash receptacle	4
Car parking	5
Wayfinding signage	6
Bike parking	7
Landscaping	8
Other	9

The following comments regarding bus stop amenities were submitted through the online survey.

Bus Stop Amenities Comments	Votes
Adequate lighting	3
Public art	2
Restrooms	1
Emergency call box	1
Digital bus schedule	1
Accessible bus stops	1
Parking lot with adequate lighting	1

The following input on bus stop amenities was gathered at in-person engagement events.

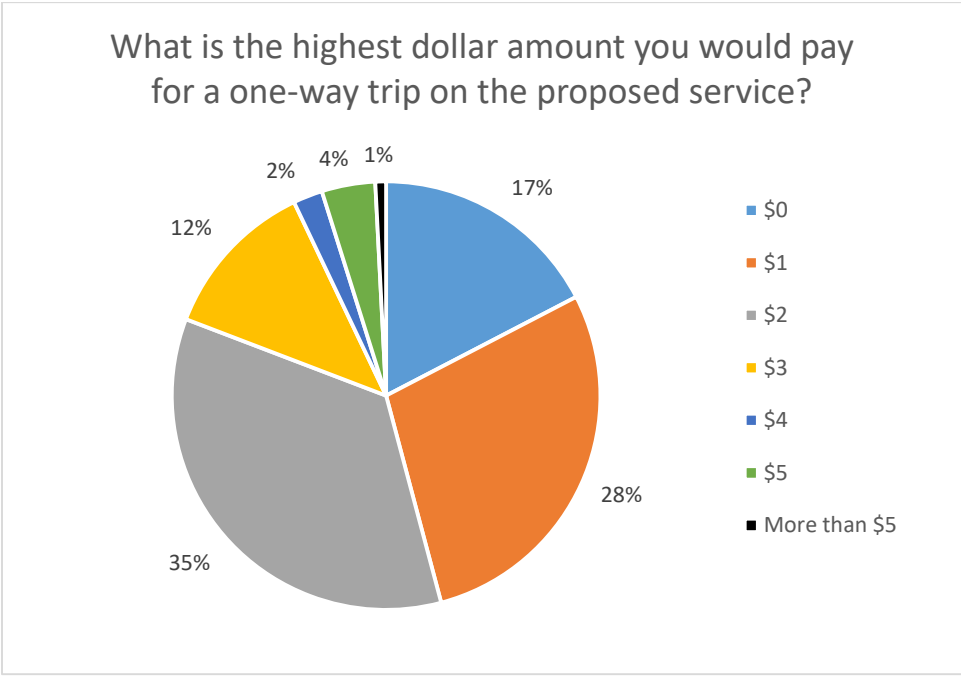
Amenity	Votes
Shelter	67
Bench	60
Route information signage	42
Trash receptacle	30
Landscaping	24
Wayfinding signage	19
Park-and-ride spaces	15



Amenity	Votes
Bike parking	14
Other: Transloc (mobile application with real-time information)	1

Bus Fare

The following input on bus fare was gathered at in-person engagement events and through the online survey.

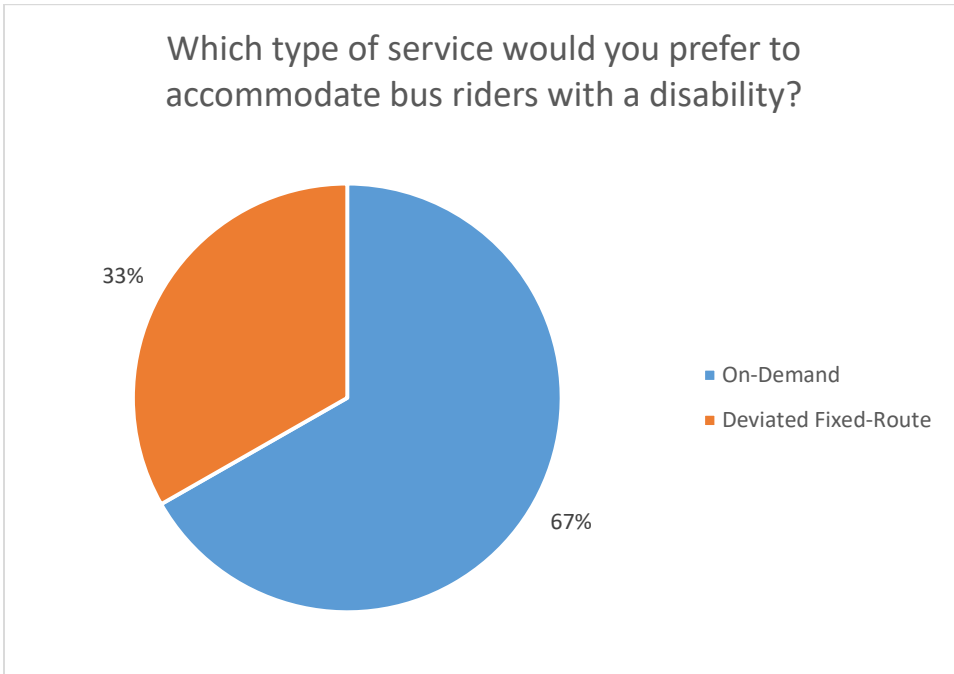


The following comments regarding bus fare were submitted at in-person engagement events and through the online survey.

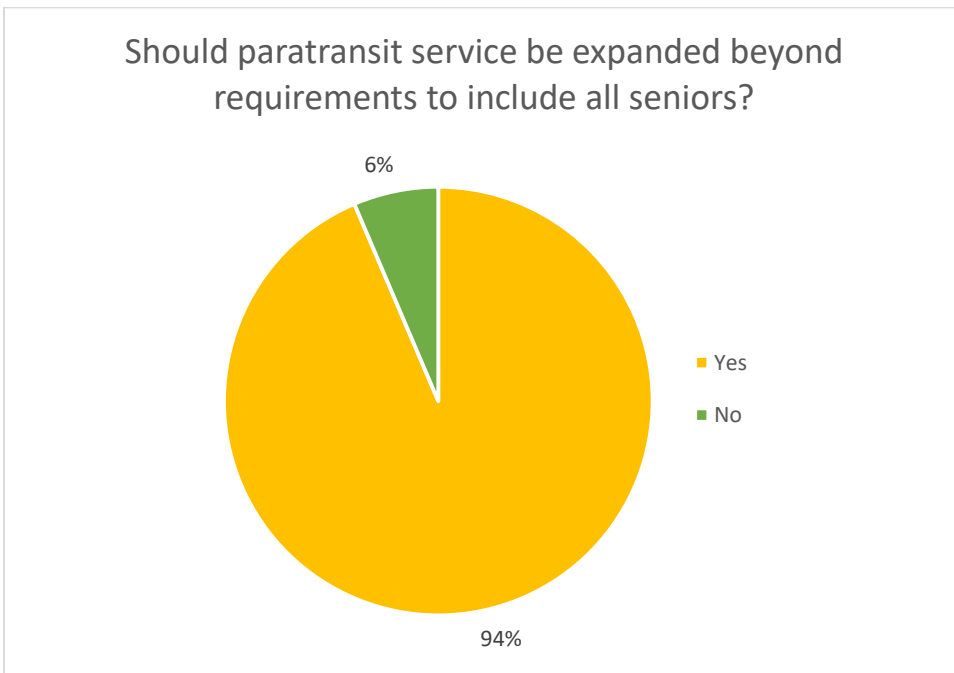
Bus Fare Comment	Votes
Provide a monthly / long-term pass	4
Provide discounted passes for people on a fixed income	3
Provide fare-free service	2
Provide a student pass	2
Provide a senior pass	2
Would pay \$2.5 for a one-way trip	2
Provide the option to purchase several rides at once	1
Would pay up to \$8 each way for a trip to RDU airport	1
Provide fare-free service for young children	1

Paratransit Service

The following input on paratransit service was gathered at in-person engagement activities and through the online survey.



The following input on paratransit service was gathered at in-person engagement activities.



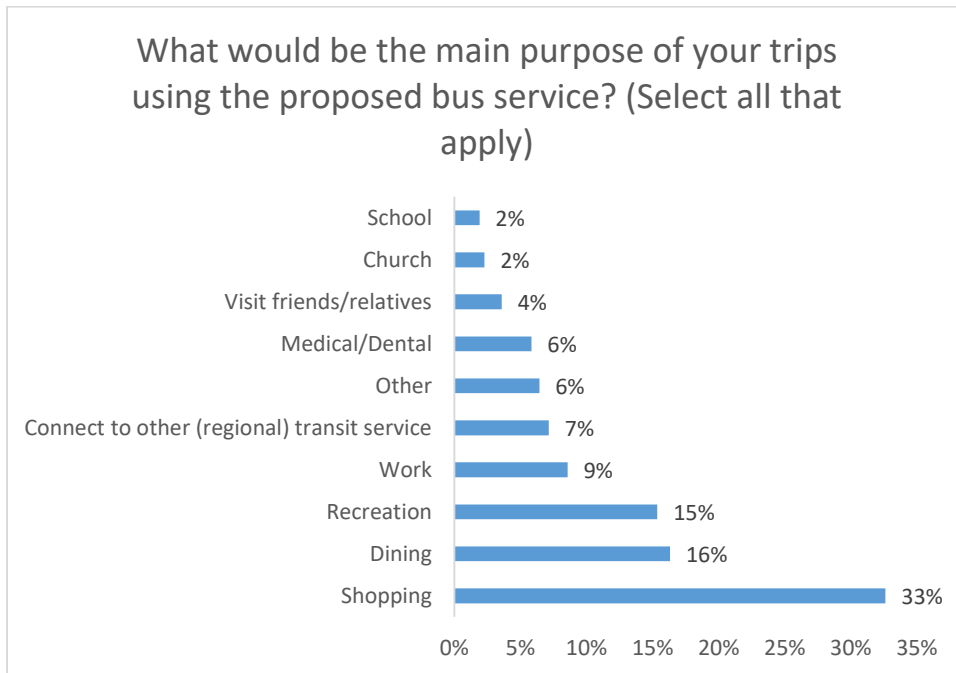


The following comments regarding paratransit service were submitted at in-person engagement events and through the online survey.

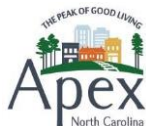
Paratransit Comments	Votes
Deviated fixed-route service could delay service	2
Consider loading/unloading time for people with disabilities	2
A separate, on-demand service is the best fit for riders with disabilities and elderly residents	2
Provide service similar to GoCary	2
Existing paratransit service does not meet current needs	2
Partner with GoTriangle for comprehensive area transportation	1
Paratransit service is already available	1
A separate, on-demand service would serve many clients at Western Wake Crisis Ministry	1
Provide paratransit service with connections to GoTriangle	1
Allow people with disabilities to call and schedule a ride	1
On-demand service should be a high priority as the community ages	1

Trip Purpose

The following input on trip purpose was gathered at in-person engagement events and through the online survey.



The following comments regarding trip purpose were submitted through the online survey.



Trip Purpose Comments	Votes
Would not use the proposed bus service	30
Downtown shopping / dining	4
Public library	2
Downtown events	1
Auto repair shop	1

Additional Comments

The following transit comments (paraphrased) were submitted at in-person engagement events and through the online survey.

Additional Comments	Votes
Do not support the proposed bus service	20
Provide bicycle / pedestrian connections	17
Concerned about traffic	14
Support the proposed bus service	13
Proposed bus service is not worth the cost	12
Proposed service is a lower priority than other projects	12
Improve existing regional service	10
Anticipate low ridership	6
Provide commuter rail / light rail	4
Provide microtransit / use a small vehicle	4
Provide rideshare service	3
Add an east-west connector route	2
Prioritize safety at bus stops	2
Provide a mobile tracking application	2
Provide additional transit connections to Lake Pine Plaza Park-and-Ride	2
Provide trolley / shuttle service	2
Would not use the proposed bus service	2
Provide space on bus for shopping bags	2
Do not currently ride the bus because there are not car seats for kids	1
Improve bus stop maintenance	1
Incorporate the Town's history in the bus name or design	1
Not a good investment at this time	1
Prefer an on-demand service over fixed-route service	1
Prefer an on-demand service for senior and handicapped residents over fixed-route service	1
Provide neighborhood bus stops	1
Provide sufficient bike parking on the bus	1
Stop on demand anywhere feasible along the route via smart-phone request	1



APPENDIX C: BUS STOP NEEDS

GoApex Route 1 Bus Stop Needs Cost Estimates

Stop ID	Bus Stop Name	Roadway	Direction	Votes	Anticipated Ridership	Existing stop?	Concrete pad extension needed?	Pedestrian improvements needed?	Detailed pedestrian improvements	Lighting needed? Can be street lighting or stop-specific	Signage needed?	Route information signage?	Additional recommended improvements?	Amenity Pad?	Shelter?	Bench?	Trash receptacle?	Car parking?	Wayfinding signage?	Bike parking?	Apex total capital cost estimate - without pedestrian improvement contingency and NCDOT oversight	Apex total operating cost estimate	Regional total capital cost estimate	Regional total operating cost estimate	Anticipated Transit Easement?
1	Olive Chapel Professional Park	Olive Chapel Ridge Road	SB	0	Low	No	Yes	No		Yes	Yes	Yes	No	No	No	No	No	No	No	No	\$ 4,700.25	\$ -	\$ -	\$ -	No
2	Western Wake Crisis Ministry	Olive Chapel Road	WB	6	Low	No	Yes	Yes	Complete sidewalk gap along the north side of Olive Chapel Road from Ashley Downs to west of Chapel Ridge Road.	No	Yes	Yes	Yes	Yes	No	Yes	No	No	No	No	\$ 32,620.51	\$ -	\$ -	\$ -	No
3	Olive Chapel Elementary School	Olive Chapel Road	EB	7	Low	No	Yes	No		Yes	Yes	Yes	No	No	No	No	No	No	No	No	\$ 4,700.25	\$ -	\$ -	\$ -	Yes
4	Kelly Road at Publix Pointe	Kelly Road	NB	7	Medium	No	No	No		Yes	Yes	Yes	Yes	Yes	No	Yes	No	No	No	No	\$ 15,300.25	\$ -	\$ -	\$ -	No
5	BC Commons Dr at Diamond Dove Ln	Beaver Creek Commons Drive	EB	1	Low	No	Yes	No		No	Yes	Yes	No	No	No	No	No	No	No	No	\$ 3,600.25	\$ -	\$ -	\$ -	No
6	BC Commons Dr at Diamond Dove Ln	Beaver Creek Commons Drive	WB	1	Low	No	Yes	No		Yes	Yes	Yes	No	No	No	No	No	No	No	No	\$ 4,700.25	\$ -	\$ -	\$ -	No
7	BC Commons Dr West	Beaver Creek Commons Drive	EB	27	High	No	Yes	Yes	Detectable surfaces (4) at the driveway to the north and the driveway to the south.	No	Yes	Yes	Yes	No	No	No	Yes	No	No	No	\$ 8,600.25	\$ -	\$ -	\$ -	Yes
8	BC Commons Dr at Creekside Landing	Beaver Creek Commons Drive	WB	27	High	No	Yes	Yes	Sidewalk extension along the north side of Beaver Creek Commons Drive to the west	Yes	Yes	Yes	No	No	No	No	No	No	No	No	\$ 7,882.23	\$ -	\$ -	\$ -	No
9	BC Commons Dr at Regal Cinemas	Beaver Creek Commons Drive	EB	27	High	No	Yes	No		No	Yes	Yes	Yes	Yes	No	Yes	Yes	No	No	No	\$ 19,700.25	\$ -	\$ -	\$ -	Yes
10	BC Commons Dr at BC Greenway EB	Beaver Creek Commons Drive	EB	62	Medium	No	Yes	No		No	Yes	Yes	No	No	No	No	No	No	No	No	\$ 3,600.25	\$ -	\$ -	\$ -	No
11	BC Commons Dr at BC Greenway WB	Beaver Creek Commons Drive	WB	62	Medium	No	Yes	No		Yes	Yes	Yes	Yes	No	No	No	No	No	No	No	\$ 4,700.25	\$ -	\$ -	\$ -	No
12	BC Commons Dr at Chick-fil-A	Beaver Creek Commons Drive	WB	62	High	No	Yes	No		Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	No	No	Yes	\$ 22,300.25	\$ -	\$ -	\$ -	Yes
13	BC Commons Dr at Lowe's	Beaver Creek Commons Drive	EB	62	High	No	No	No		No	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No	\$ 16,700.25	\$ 15,579.00	\$ -	\$ -	No
14	W Williams St at Beaver Creek Commons	W Williams Street	SB	7	Low	Yes	Yes	Yes	Detectable surface (1) at the intersection of W Williams Street and Haddon Hall Drive. Crosswalks across the west and south legs of the intersection of W Williams Street and Haddon Hall Drive. Signal upgrade and ped signals required if crosswalks are striped (\$50,000).	No	No	Yes	No	No	No	No	No	No	No	No	\$ -	\$ -	\$ 3,632.75	\$ -	No

GoApex Route 1 Bus Stop Needs Cost Estimates

Stop ID	Bus Stop Name	Roadway	Direction	Votes	Anticipated Ridership	Existing stop?	Concrete pad extension needed?	Pedestrian improvements needed?	Detailed pedestrian improvements	Lighting needed? Can be street lighting or stop-specific	Signage needed?	Route information signage?	Additional recommended improvements?	Amenity Pad?	Shelter?	Bench?	Trash receptacle?	Car parking?	Wayfinding signage?	Bike parking?	Apex total capital cost estimate - without pedestrian improvement contingency and NCDOT oversight	Apex total operating cost estimate	Regional total capital cost estimate	Regional total operating cost estimate	Anticipated Transit Easement?
15	W Williams St at Haddon Hall	W Williams Street	NB	5	Low	Yes	Yes	Yes	Detectable surfaces (2) at the intersection of W Williams Street and Haddon Hall Drive. Detectable surfaces (2) at the intersection of W Williams Street and Pemberton Hill Road. Crosswalk on the south and east legs of the intersection of W Williams Street Pemberton Hill Road. Signal upgrade and ped signals required if crosswalks are striped (\$50,000).	No	No	Yes	No	No	No	No	No	No	No	No	\$ -	\$ -	\$ 5,132.75	\$ -	No
16	W Williams St at Healthplex Way	W Williams Street	SB	14	Low	No	Yes	No		Yes	Yes	Yes	Yes	Yes	No	Yes	No	No	Yes	No	\$ 17,800.25	\$ -	\$ -	\$ -	Yes
17	W Williams St at Apex Peakway	W Williams Street	NB	50	High	No	Yes	No		No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Yes	\$ 25,700.25	\$ -	\$ -	\$ -	Yes
18	W Williams St at Apex Peakway	W Williams Street	SB	50	High	Yes	Yes	Yes	Detectable surfaces (2) at the right-in/right-out access to Olive Chapel Village off W Williams Street. Detectable surfaces (2) at the Shell gas station driveway off W Williams Street.	Yes	No	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	\$ -	\$ -	\$ 28,582.75	\$ -	Yes
19	W Williams St at Olive Chapel Rd	W Williams Street	SB	27	Medium	Yes	Yes	No		Yes	No	Yes	No	No	No	No	No	No	No	No	\$ -	\$ -	\$ 4,232.75	\$ -	No
20	W Williams St at Bryan Dr / Post Office	W Williams Street	SB	16	Medium	No	Yes	Yes	Detectable surfaces at Post Office driveway (2), Bryan Drive (2), and Jayce Park driveway (2). Sidewalk along W Williams Street, fronting the post office needs repair (Public Works complete this repair separately).	No	Yes	Yes	Yes	Yes	No	Yes	No	No	Yes	No	\$ 19,700.25	\$ -	\$ -	\$ -	Yes
21	W Williams St at Upchurch St	W Williams Street	SB	5	Low	No	Yes	Yes	Sidewalk extension along the west side of W Williams St from Upchurch Street. Accessible ramp at the intersection of W Williams St an Upchurch Street.	Yes	Yes	Yes	No	No	No	No	No	No	No	No	\$ 22,523.60	\$ -	\$ -	\$ -	No
22	E Williams St at Salem St	E Williams Street	SB	24	Medium	No	Yes	Yes	Sidewalk extension along the south/west side of W Williams St from S Salem St at the intersection ramp.	No	Yes	Yes	Yes	No	No	No	No	No	Yes	No	\$ 7,903.03	\$ -	\$ -	\$ -	No
23	E Williams St at Hughes St / Park and Ride	E Williams Street	EB	17	Medium	No	Yes	Yes	Sidewalk extension along the south / west side of E Williams Street from the intersection ramp.	Yes	Yes	Yes	No	No	No	No	No	No	No	No	\$ 10,363.59	\$ -	\$ -	\$ -	No
24	E Williams St at S Mason St / Apex Middle School	E Williams Street	NB	21	Medium	No	Yes	Yes	Sidewalk repair along the north / east side of E Williams Street close to the intersection with S Mason Street. This may wait until NC 55 Widening Project. Public Works can repair the sidewalk.	Yes	Yes	Yes	No	No	No	No	No	No	No	No	\$ 5,200.25	\$ -	\$ -	\$ -	No
25	E Williams St at Apex Village Center	E Williams Street	SB	2	Low	No	Yes	Yes	Sidewalk extension along the south / west side of E Williams Street to Apex Village Center driveway	No	Yes	Yes	No	No	No	No	No	No	No	No	\$ 9,572.51	\$ -	\$ -	\$ -	No
26	E Williams St at Perry Rd	E Williams Street	SB	4	Low	No	Yes	No		Yes	Yes	Yes	No	No	No	No	No	No	No	No	\$ 5,200.25	\$ -	\$ -	\$ -	No
27	E Williams St at Apex Peakway	E Williams Street	SB	6	Low	No	Yes	No		Yes	Yes	Yes	No	No	No	No	No	No	No	No	\$ 5,200.25	\$ -	\$ -	\$ -	No
28	Apex Peakway at Cambridge Village	Apex Peakway	SB	48	Medium	No	Yes	No		No	Yes	Yes	Yes	Yes	No	Yes	No	No	No	No	\$ 16,700.25	\$ -	\$ -	\$ -	Yes
29	Apex Peakway at Norris Park	Apex Peakway	WB	3	Low	No	Yes	Yes	Sidewalk extension along the north side of Apex Peakway. Detectable surfaces (2) at the driveway to the east.	No	Yes	Yes	No	No	No	No	No	No	No	No	\$ 8,903.03	\$ -	\$ -	\$ -	No
30	Apex Peakway at Shackleton Rd	Apex Peakway	WB	0	Low	No	Yes	Yes	Sidewalk extension along the north side of Apex Peakway. Detectable surfaces (2) at Shackleton Rd.	Yes	Yes	Yes	No	No	No	No	No	No	No	No	\$ 10,003.03	\$ -	\$ -	\$ -	No

GoApex Route 1 Bus Stop Needs Cost Estimates

Stop ID	Bus Stop Name	Roadway	Direction	Votes	Anticipated Ridership	Existing stop?	Concrete pad extension needed?	Pedestrian improvements needed?	Detailed pedestrian improvements	Lighting needed? Can be street lighting or stop-specific	Signage needed?	Route information signage?	Additional recommended improvements?	Amenity Pad?	Shelter?	Bench?	Trash receptacle?	Car parking?	Wayfinding signage?	Bike parking?	Apex total capital cost estimate - without pedestrian improvement contingency and NCDOT oversight	Apex total operating cost estimate	Regional total capital cost estimate	Regional total operating cost estimate	Anticipated Transit Easement?
31	Tingen Rd at Baberton Dr	Tingen Road	NB	4	Low	No	Yes	No		Yes	Yes	Yes	No	No	No	No	No	No	No	No	\$ 4,700.25	\$ -	\$ -	\$ -	No
32	Tingen Rd at Peace Haven Pl	Tingen Rd	NB	4	Medium	No	Yes	No		Yes	Yes	Yes	Yes	Yes	No	Yes	No	No	No	No	\$ 17,800.25	\$ -	\$ -	\$ -	Yes
33	Tingen Rd at Spara Ln	Tingen Rd	NB	3	Low	No	Yes	No		Yes	Yes	Yes	No	No	No	No	No	No	No	No	\$ 5,200.25	\$ -	\$ -	\$ -	No
34	James St at Tingen Rd	James St	EB	5	Low	No	Yes	No		Yes	Yes	Yes	No	No	No	No	No	No	No	No	\$ 4,700.25	\$ -	\$ -	\$ -	No
35	James St at Germaine St	James St	EB	3	Medium	No	Yes	Yes	Detectable surfaces at Wake Acres Apartments driveways (4) and S Hughes Street (2).	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No	No	No	\$ 20,800.25	\$ -	\$ -	\$ -	No
36	James St at E Williams St	James St	EB	22	Medium	No	Yes	Yes	Detectable surfaces on the commercial driveway to the east (1) and on the commercial driveway to the west (2).	No	Yes	Yes	No	No	No	No	No	No	No	No	\$ 5,100.25	\$ -	\$ -	\$ -	No
37	S Salem St at Williams St	S Salem St	NB	24	Medium	No	Yes	No		No	Yes	Yes	Yes	Yes	No	Yes	No	No	Yes	No	\$ 16,700.25	\$ -	\$ -	\$ -	Yes
38	S Salem St at Moore St	S Salem St	NB	46	Medium	No	Yes	No		No	Yes	Yes	Yes	No	No	No	No	No	Yes	No	\$ 3,600.25	\$ -	\$ -	\$ -	No
39	S Salem St at W Chatham St	S Salem St	NB	55	High	No	Yes	Yes	Detectable surfaces (4) at the intersection of N Salem Street and Chatham Street.	No	Yes	Yes	Yes	No	No	No	No	No	Yes	No	\$ 5,600.25	\$ -	\$ -	\$ -	No
40	E Chatham St at S Hughes St	E Chatham St	EB	1	Low	No	Yes	No		Yes	Yes	Yes	Yes	No	No	No	No	No	Yes	No	\$ 5,200.25	\$ -	\$ -	\$ -	No
41	N Mason St at Old Mill Village Dr / Town Hall	N Mason St	NB	36	High	Yes	Yes	No	ADA improvements are not required as this is an existing stop. Sidewalk extension along the east side of N Mason Street from Old Mill Village Drive. Crosswalk across N Mason Street at Old Mill Village Drive/Town Campus driveway.	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	\$ -	\$ -	\$ 25,232.75	\$ -	No
42	Laura Duncan Rd at Vineyard Station	Laura Duncan Road	NB	7	Low	No	Yes	Yes	Detectable surfaces (2) at the Vineyard Station driveway.	No	Yes	Yes	No	No	No	No	No	No	No	No	\$ 4,600.25	\$ -	\$ -	\$ -	No
43	Apex Peakway at Laura Duncan Rd	Apex Peakway	WB	2	Low	No	Yes	No		No	Yes	Yes	No	No	No	No	No	No	No	No	\$ 3,600.25	\$ -	\$ -	\$ -	No
44	Apex Peakway at Ambergate Station	Apex Peakway	WB	0	Low	No	Yes	No		No	Yes	Yes	No	No	No	No	No	No	No	No	\$ 3,600.25	\$ -	\$ -	\$ -	No
45	Apex Peakway at N Salem St	Apex Peakway	WB	2	Low	No	Yes	No		No	Yes	Yes	Yes	No	No	No	No	No	Yes	No	\$ 3,600.25	\$ -	\$ -	\$ -	No
46	Apex Peakway at Portobello Rd	Apex Peakway	WB	0	Low	No	Yes	Yes	Detectable surfaces at the intersection of Apex Peakway and Brittle Way (2), Portobello Road (2), and commercial driveways to the west (4).	No	Yes	Yes	No	No	No	No	No	No	No	No	\$ 7,600.25	\$ -	\$ -	\$ -	No

GoApex Route 1 Bus Stop Cost Estimates and Assumptions

BUS STOP NEEDS	COST
Apex Total Capital Costs	\$453,351.16
Apex Total Operating Costs	\$15,579.00
Regional Total Capital Costs	\$66,813.75
Regional Total Operating Costs	\$0.00

COST ASSUMPTIONS	PER UNIT
Shelter	\$4,500.00
Shelter Solar Lighting (Panel plus light fixture)	\$1,350.00
Cobra style lighting	\$1,600.00
Pedestrian style lighting (acorn lighting)	\$1,100.00
Bench	\$3,100.00
Trash Receptacle	\$3,000.00
Bicycle Rack	\$1,500.00
Concrete Landing Pad (between curb and sidewalk)	\$3,000.00
Amenity Pad (concrete pad for shelter, etc.)	\$10,000.00
Stop Signage (background)*	\$37.50
Stop Signage (Route and info decals)	\$2.75
Stop Sign Post	\$430.00
Template design for bus stop signs	\$5,000.00
Route Information Signage	\$130.00
Detectable surface	\$500.00

Cost of wayfinding signage is not included

ASSUMPTIONS	MULTIPLIER
Pedestrian improvement contingency	1.3
Pedestrian improvement NCDOT oversight	1.05

Transit Easement Criteria

Transit Easement Criteria	
Posted Speed Limit	ROW from back of curb
25 mph roadway	12'
35 mph roadway	14'
45 mph roadway	16'



APPENDIX D: DETAILED CALCULATIONS

**GoApex Route 1 Operating Costs and Ridership Projections
Schedule Alternative 1**

	Regional Fare + FTA-Minimum	Regional Fare + GoCary Model	Fare Free + FTA- Minimum	Fare Free + GoCary Model
Paratransit Ridership	2,280	4,560	2,624	9,120
Fixed Route Ridership	34,369	32,089	45,188	42,908
TOTAL ANNUAL RIDERSHIP	36,649	36,649	47,812	52,028
Fixed Route Expenses	\$ 506,311	\$ 506,311	\$ 506,311	\$ 506,311
Paratransit Expenses	\$ 429,000	\$ 429,000	\$ 429,000	\$ 429,000
TOTAL ANNUAL OPERATING EXPENSES	\$ 935,311	\$ 935,311	\$ 935,311	\$ 935,311
Fixed Route Fare Revenue	\$ 16,497	\$ 15,403	\$ -	\$ -
Paratransit Fare Revenue	\$ 5,039	\$ 10,078	\$ -	\$ -
TOTAL ANNUAL REVENUE	\$ 21,536	\$ 25,480	\$ -	\$ -
TOTAL ANNUAL NET COSTS	\$ 913,775	\$ 909,831	\$ 935,311	\$ 935,311
TOTAL ANNUAL NET COST/RIDER	\$ 25	\$ 25	\$ 20	\$ 18
Additional 30-minute peak period	1,898	1,898	1,898	1,898
Additional Fixed Route Expenses (bus 2)	\$ 168,922	\$ 168,922	\$ 168,922	\$ 168,922
Additional Fixed Route Expenses (bus 1)	\$ 23,826	\$ 23,826	\$ 23,826	\$ 23,826
Total additional Fixed Route Expenses	\$ 192,748	\$ 192,748	\$ 192,748	\$ 192,748

ASSUMPTIONS	
Weekday revenue hours	16
Weekday revenue hours + deadhead	16.65
Weekdays days and Saturday days per year	312
Sunday revenue hours	14
Sunday revenue hours + deadhead	14.65
Sunday days per year	52
Total Annual Fixed Route Revenue Hours	5,720
Total Annual Fixed Route Revenue Hours + Deadhead	5,957
Total Annual Paratransit Revenue Hours	5,720
Fixed Route Cost/Revenue Hour + Deadhead	\$ 85
Paratransit Cost/Revenue Hour	\$ 75
GoCary Door-to-Door Total Avg Monthly Passengers/Mile Served	38
GoCary Average Fixed Route Boardings/Revenue Hour	5.61

**GoApex Route 1 Operating Costs and Ridership Projections
Schedule Alternative 1**

ASSUMPTIONS	
Wake Forest Loop Average Boardings/Revenue Hour	7.9
Percentage of GoCary Door-to-Door Senior Riders/Month	50%
GoCary Door-to-Door Disabled Riders/Month	50%
GoApex Miles Served	10
GoCary Average Revenue per Fixed Route Passenger	\$ 0.48
GoCary Average Revenue per Paratransit Passenger	\$ 2.21
Percentage of Disabled Passengers using GoCary Fixed	1%
Anticipated multiplier of senior riders if paratransit is fare free	2

30-Minute Peak Period Service Assumptions	
Weekday peak period revenue hours + deadhead	7.3
Weekday days per year	260
Fixed Route Cost/Revenue Hour + Deadhead - 2nd Bus	\$ 89
Fixed Route Cost/Revenue Hour + Deadhead - Additional cost applied to first bus	\$ 4

**GoApex Route 1 Operating Costs and Ridership Projections
Schedule Alternative 3 (No Sunday Service)**

	Regional Fare + FTA-Minimum	Regional Fare + GoCary Model	Fare Free + FTA- Minimum	Fare Free + GoCary Model
Paratransit Ridership	2,280	4,560	2,583	9,120
Fixed Route Ridership	30,285	28,005	39,437	37,157
TOTAL ANNUAL RIDERSHIP	32,565	32,565	42,020	46,277
Fixed Route Expenses	\$ 441,558	\$ 441,558	\$ 441,558	\$ 441,558
Paratransit Expenses	\$ 374,400	\$ 374,400	\$ 374,400	\$ 374,400
TOTAL ANNUAL OPERATING EXPENSES	\$ 815,958	\$ 815,958	\$ 815,958	\$ 815,958
Fixed Route Fare Revenue	\$ 14,537	\$ 13,442	\$ -	\$ -
Paratransit Fare Revenue	\$ 5,039	\$ 10,078	\$ -	\$ -
TOTAL ANNUAL REVENUE	\$ 19,576	\$ 23,520	\$ -	\$ -
TOTAL ANNUAL NET COSTS	\$ 796,382	\$ 792,438	\$ 815,958	\$ 815,958
TOTAL ANNUAL NET COST/RIDER	\$ 24	\$ 24	\$ 19	\$ 18
Additional 30-minute peak period	1,898	1,898	1,898	1,898
Additional Fixed Route Expenses (bus 2)	\$ 168,922	\$ 168,922	\$ 168,922	\$ 168,922
Additional Fixed Route Expenses (bus 1)	\$ 20,779	\$ 20,779	\$ 20,779	\$ 20,779
Total additional Fixed Route Expenses	\$ 189,701	\$ 189,701	\$ 189,701	\$ 189,701

ASSUMPTIONS	
Weekday revenue hours	16
Weekday revenue hours + deadhead	16.65
Weekdays days and Saturday days per year	312
Sunday revenue hours	0
Sunday revenue hours + deadhead	0
Sunday days per year	52
Total Annual Fixed Route Revenue Hours	4,992
Total Annual Fixed Route Revenue Hours + Deadhead	5,195
Total Annual Paratransit Revenue Hours	4,992
Fixed Route Cost/Revenue Hour + Deadhead	\$ 85
Paratransit Cost/Revenue Hour	\$ 75
GoCary Door-to-Door Total Avg Monthly Passengers/Mile Served	38
GoCary Average Fixed Route Boardings/Revenue Hour	5.61
Wake Forest Loop Average Boardings/Revenue Hour	7.9

**GoApex Route 1 Operating Costs and Ridership Projections
Schedule Alternative 3 (No Sunday Service)**

ASSUMPTIONS	
Percentage of GoCary Door-to-Door Senior Riders/Month	50%
GoCary Door-to-Door Disabled Riders/Month	50%
GoApex Miles Served	10
GoCary Average Revenue per Fixed Route Passenger	\$ 0.48
GoCary Average Revenue per Paratransit Passenger	\$ 2.21
Percentage of Disabled Passengers using GoCary Fixed Route	1%
Anticipated multiplier of senior riders if paratransit is fare free	2

30-Minute Peak Period Service Assumptions	
Weekday peak period revenue hours + deadhead	7.3
Weekday days per year	260
Fixed Route Cost/Revenue Hour + Deadhead - 2nd Bus	\$ 89
Fixed Route Cost/Revenue Hour + Deadhead - Additional cost applied to first bus	\$ 4

STAFF REPORT

Transportation Plan Amendment

October 15, 2019 Town Council Meeting



The Transit Plan Map of the Comprehensive Transportation Plan represents a network of current and future transit services that provide guidance on what is likely to be suitable for long term growth. The Comprehensive Transportation Plan does not require a schedule for implementation nor does it set aside funding for improvements. Instead, it helps the Town establish long term priorities. The Transit Plan Map was last amended in August 2019.

The proposed amendment to the Future Circulator Route on the Transit Plan Map is based on draft recommendations from the Transit Circulator Study (see attached report). The Transit Circulator Study is an implementation plan for the Town's highest-priority local bus route. The study is being completed by the Town of Apex, in partnership with the Town of Cary, and with funding support from the Wake Transit Community Funding Area Program. The Transit Circulator Study Draft Recommendations report includes a summary of public input and detailed recommendations for: bus route, stop locations, capital needs, bus operations, paratransit service, vehicles, fare structure, marketing, and a financial plan.

The intent of the study is to inform a potential application for capital and operating funds available through the Wake Transit Community Funding Area Program. The proposed amendment to the Transit Plan Map is the first step toward implementation of study recommendations.

Comprehensive Transportation Plan Amendment:

Planning staff request the following change to the Transit Plan Map in the Comprehensive Transportation Plan:

Revise the Future Circulator Route to extend planned local bus service along South Salem Street, East Chatham Street, North Mason Street, Laura Duncan Road, Apex Peakway, Beaver Creek Commons Drive, Kelly Road, Olive Chapel Road, and Chapel Ridge Road.

The proposed amendment reflects input received from the Town of Cary. The original route has been extended to include Downtown Apex and destinations in the western part of Apex in response to public input gathered through the Transit Circulator Study. The route was designed to maximize service coverage area, maintain at least hourly frequency with one bus in operation, serve existing and anticipated bus stops, and minimize at-grade railroad crossings.

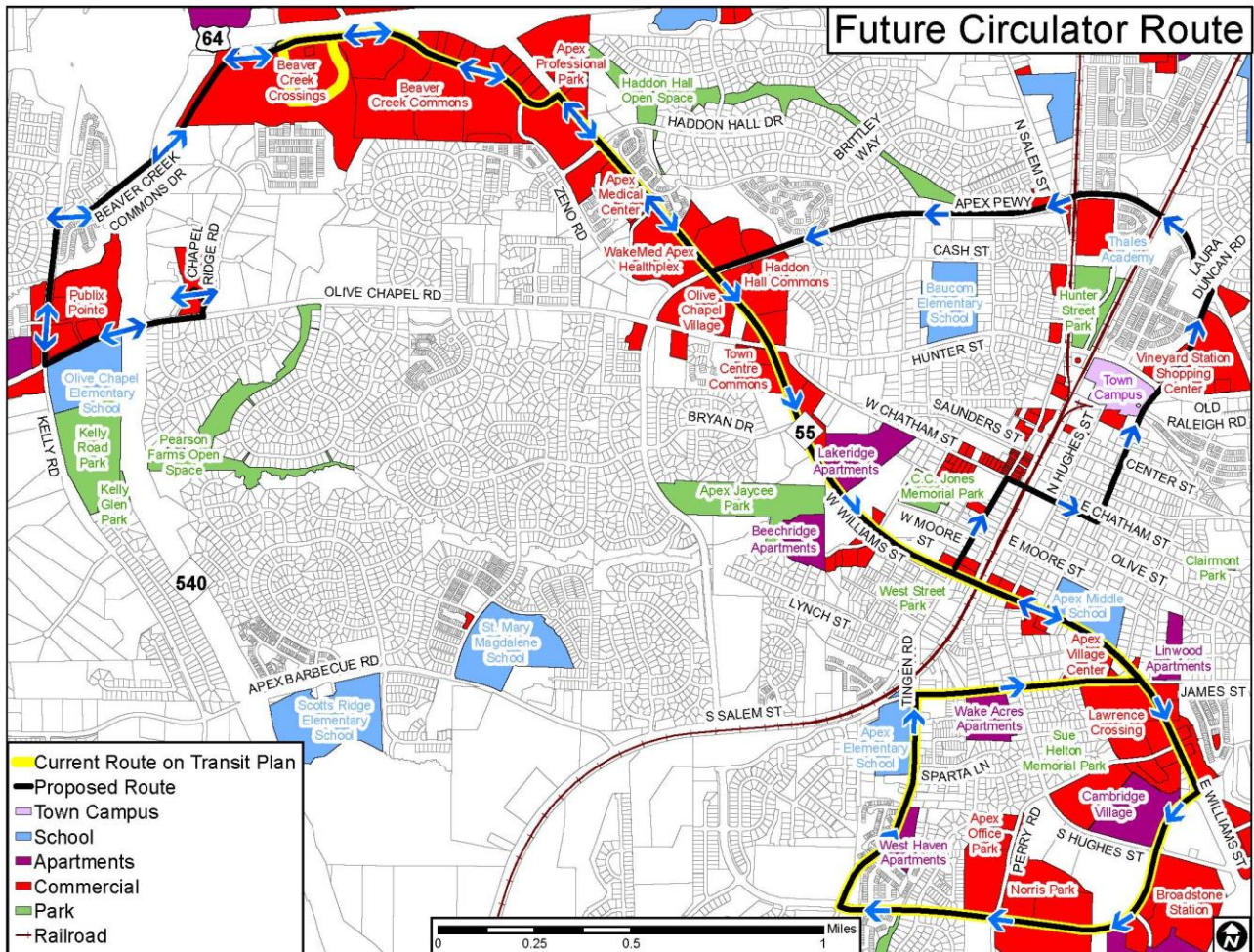


Figure 1. Proposed amendments to the Transit Plan Map

Staff Recommendation:

Planning staff recommend approval of the proposed amendment to be shown on the Transit Plan Map of the Comprehensive Transportation Plan.

The Senior Traffic Engineer reviewed the proposed route and has no concerns.

The Town of Apex Transit Committee has reviewed the proposed route and also recommends approval.

Planning Board Recommendation:

The Planning Board considered the proposed amendment at their October 14, 2019 meeting. The Planning Board recommendation will be presented by staff at the Town Council presentation and public hearing.

Attachments:

Town of Apex Transit Circulator Study Draft Recommendations

Item Type: PUBLIC HEARING

Meeting Date: October 15, 2019

Item Details

Presenter(s): Amanda Bunce, Current Planning Manager

Department(s): Planning Department

Requested Motion

Public Hearing and possible motion regarding various amendments to the Unified Development Ordinance.

Approval Recommended?

The Planning Department recommends approval.

The Planning Board will hear these amendments at their October 14, 2019 meeting. Staff will present the Planning Board's recommendation at the Town Council meeting.

Item Details

UDO Amendment Summary:

Requested by Planning Staff:

1. Amendments to Sec. 2.3.7.F.1 *Master Subdivision Final Plat, General* in order to allow fewer than 15 lots to be platted before the last phase with the approval of the Planning Director, Public Works & Transportation Director, and Water Resources Director.
2. Amendment to Sec. 4.6.1.B *Temporary Uses and Structures, General Regulations* in order to require that all temporary uses and structures not jeopardize the health, safety, or general welfare, or be injurious or detrimental to properties adjacent to, or in the vicinity of, the proposed temporary use or structure.
3. Amendments to Sec. 2.3.5.B *Special Use and Sec. 4.6.1.C Temporary Uses and Structures, Uses Allowed* in order to repeal subsection 7 "Temporary Use Permits issued under a Special Use Permit" and to remove the reference to Planning Board reviewing Special Use Permits.
4. Amendments to Sec. 8.3 *Off-Street Parking and Loading* in order to add that parking for uses associated with Landmark and other historic structures or properties may be gravel with the exception of handicap parking spaces.
5. Amendments to Sec. 8.7.1.A.13 *Menu Board* in order to set the minimum distance between two menu boards on the same drive-through lane.

Attachments

- Staff Report
- Ordinance



STAFF REPORT

Amendments to the Unified Development Ordinance

October 15, 2019 Town Council Meeting



Requested by Planning staff:

- 1. Amendments to Sec. 2.3.7.F.1 *Master Subdivision Final Plat, General* in order to allow fewer than 15 lots to be platted before the last phase with the approval of the Planning Director, the Public Works and Transportation Director, and Water Resources Director.**

2.3.7 Subdivision

...

F) Master Subdivision Final Plat

1) *General*

...

- b)** The Master Subdivision Final Plat shall constitute only that portion of the Master Subdivision Plan that the subdivider proposes to record and develop at the time. The Master Subdivision Final Plat shall contain no fewer than 15 lots except **in the case of one of the following:**

- (i)** ~~w~~**Where** there is a phase to be completed with fewer than 15 lots remaining or where the development contains fewer than 15 lots, in which case the application for Final Plat must contain all remaining lots;
- (ii)** **When the lots are located in a nonresidential subdivision; or**
- (iii)** **When approved by the Planning Director, with the consent of the Public Works and Transportation Director and Water Resources Director.**

- 2. Amendments to Sec. 4.6.1.B *Temporary Uses and Structures, General Regulations* in order to require that all temporary uses and structures not jeopardize the health, safety, or general welfare, or be injurious or detrimental to properties adjacent to, or in the vicinity of, the proposed temporary use or structure.**

4.6.1 Temporary Uses and Structures

...

B) General Regulations

The general regulations of this subsection shall apply to all allowed temporary uses unless otherwise expressly stated.

- 1) *Temporary signs.*** No temporary signs shall be permitted in a public right-of-way or off-premises of the temporary use. All temporary signs associated with the temporary use shall be displayed no sooner than one week prior to the commencement of the temporary use and shall be removed no later than two

days after the end of the temporary use. All temporary signs shall meet the requirements of 8.7.1 *Signs, Permitted Signs: Location, Size, and Number*.

- 2) *Conditions of approval.* Temporary uses shall not violate any applicable conditions of approval that apply to the principal use on the site.
- 3) *Obtain all other applicable permits.* The operator must obtain all other required permits applicable to the temporary use.
- 4) *Not located in public right-of-way.* Temporary uses shall not be located within a public right-of-way.
- 5) **Temporary uses and activities or special events shall not jeopardize the public health or safety, or be injurious or detrimental to properties adjacent to, or in the vicinity of, the proposed location of the activity.**

3. Amendments to Sec. 2.3.5.B *Special Use* and Sec. 4.6.1.C *Temporary Uses and Structures, Uses Allowed* in order to repeal subsection 7 “Temporary Use Permits issued under a Special Use Permit” and to remove the reference to Planning Board reviewing Special Use Permits.

2.3.5 Special Use

...

B) Authorization

Only those uses authorized as special uses in Sec. 4.2.2; *Use Table* and temporary uses as set forth in ~~Section 4.6.1(C)(7) *Temporary Use Permits issued under a Special Use Permit*~~, may be approved as special uses. The designation of a use as a special use in Sec. 4.2.2; *Use Table*, does not constitute an authorization that such use shall be approved as a special use pursuant to this Section. Rather, each proposed special use shall be evaluated by the ~~Planning Board and~~ Town Council for compliance with the standards set forth in this Section, **and** applicable supplementary standards for the use in Sec. 4.4; *Supplemental Standards*, and standards for requested Special Use Permits set forth in ~~Section 4.6.1(C)(7) *Temporary Use Permits issued under a Special Use Permit*~~.

4.6.1 Temporary Uses and Structures

...

C) Uses Allowed

...

~~7) *Temporary Use Permits issued under a Special Use Permit.* A Special Use Permit may include up to twelve (12) Temporary Use Permits per calendar year and may include any of the Temporary Use Permits as described in Section 4.6.1(C) *Uses Allowed*. The Temporary Use Permit shall be limited by the number and consecutive days established in the individual Special Use Permit, not as described in the applicable section. An application for a Temporary Use Permit shall be accompanied by a copy of the approved Special Use Permit and the Planning Department shall maintain a record of the number and type of permits granted each calendar year.~~

4. Amendments to Sec. 8.3 *Off-Street Parking and Loading* in order to add that parking for uses associated with Landmark and other historic structures may be gravel with the exception of handicap parking spaces.

8.3.6 Parking Lot Design Standards

...

D) Surfacing and Maintenance

All off-street parking areas shall be paved and kept in a dust-free condition at all times. Permeable pavement, if used, shall comply with the North Carolina Department of Environmental Quality's Minimum Design Criteria in the NCDEQ Stormwater Design Manual.

1) Exceptions

Parking for the following shall be gravel or paved and kept in a dust-free condition at all times:

a) ~~shall apply in the~~ **All uses in the** CB Conservation Buffer zoning district; ~~or for~~

b) Athletic Fields only under the category of Entertainment, Outdoor where allowed; ~~and in other zoning districts where parking areas shall be gravel or paved and kept in a dust-free condition at all times.~~

c) **Uses associated with Landmark and other historic structures. Exposed aggregate concrete, or similar, may be used for paving.**

2) Gravel parking shall at a minimum meet the following specifications:

1) **a)** Compacted Subgrade;

2) **b)** 6 Inches Aggregate Base Course;

3) **c)** 1.5 Inches #78M Stone; and

4) **d)** Drive aisles must be repaired or replaced with #78M Stone every six (6) months.

5. Amendments to Sec. 8.7.1.A.13 *Menu Boards* in order to set a minimum distance between two menu boards on the same drive-through lane.

8.7.1.A Permitted Signs: Location, Size, and Number

...

13) *Menu Board*

An accessory sign providing items and price associated with a drive-thru window or walk-up window and meets the conditions below:

Changeable menu boards shall be allowed provided that:

a) Such signs shall not exceed 32 square feet in area, except as provided in subsection c. below, and six (6) feet in height.

- b) Except as provided in subsection c. below, two (2) signs shall be permitted per drive-through lane not to exceed 64 combined square feet. **The two (2) menu boards shall be no closer than eight (8) feet at any point.**
- c) One (1) menu board sign up to 40 square feet in area and six (6) feet in height shall be allowed, as opposed to two (2) menu board signs as referenced in subsections a. and b. above.
- ...

PLANNING STAFF RECOMMENDATION:

Planning staff recommends approval of the proposed UDO amendments.

PLANNING BOARD RECOMMENDATION:

The Planning Board will hear these amendments at their October 14, 2019 meeting. Staff will present the Planning Board's recommendation at the Town Council meeting.



TOWN OF APEX

POST OFFICE BOX 250
APEX, NORTH CAROLINA 27502
PHONE 919-249-3426

PUBLIC NOTIFICATION OF PUBLIC HEARING

AMENDMENTS TO THE UNIFIED DEVELOPMENT ORDINANCE (UDO)

Notice is hereby given of a public hearing before the Town Council of the Town of Apex for the purpose of soliciting comments relative to the following amendment(s) to the Unified Development Ordinance:

Requested by Planning Staff:

1. Amendments to Sec. 2.3.7.F.1 *Master Subdivision Final Plat, General* in order to allow fewer than 15 lots to be platted before the last phase with the approval of the Planning Director, Public Works & Transportation Director, and Water Resources Director.
2. Amendment to Sec. 4.6.1.B *Temporary Uses and Structures, General Regulations* in order to require that all temporary uses and structures not jeopardize the health, safety, or general welfare, or be injurious or detrimental to properties adjacent to, or in the vicinity of, the proposed temporary use or structure.
3. Amendments to **Sec. 2.3.5.B *Special Use and*** Sec. 4.6.1.C *Temporary Uses and Structures, Uses Allowed* in order to repeal subsection 7 "Temporary Use Permits issued under a Special Use Permit" **and to remove the reference to Planning Board reviewing Special Use Permits.**
4. Amendments to Sec. 8.3 *Off-Street Parking and Loading* in order to add that parking for uses associated with Landmark and other historic structures or properties may be gravel with the exception of handicap parking spaces.
5. Amendments to Sec. 8.7.1.A.13 *Menu Board* in order to set the minimum distance between two menu boards on the same drive-through lane.

Public Hearing Location: Apex Town Hall
73 Hunter Street, Apex, North Carolina
Council Chambers, 2nd Floor

Town Council Public Hearing Date and Time: October 15, 2019 7:00 PM

The UDO can be accessed online at: <http://www.apexnc.org/233>.

Dianne F. Khin, AICP
Planning Director



TOWN OF APEX

POST OFFICE BOX 250
APEX, NORTH CAROLINA 27502
PHONE 919-249-3426

**PUBLIC NOTIFICATION
OF PUBLIC HEARING**

**AMENDMENTS TO THE
UNIFIED DEVELOPMENT
ORDINANCE (UDO)**

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2. Amendment to Sec. 4.6.1.B *Temporary Uses and Structures, General Regulations* in order to require that all temporary uses and structures not jeopardize the health, safety, or general welfare, or be injurious or detrimental to properties adjacent to, or in the vicinity of, the proposed temporary use or structure.
3. Amendments to **Sec. 2.3.5.B *Special Use* and Sec. 4.6.1.C *Temporary Uses and Structures, Uses Allowed*** in order to repeal subsection 7 "Temporary Use Permits issued under a Special Use Permit" **and to remove the reference to Planning Board reviewing Special Use Permits.**
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Public Hearing Location: Apex Town Hall
73 Hunter Street, Apex, North Carolina
Council Chambers, 2nd Floor

Town Council Public Hearing Date and Time: October 15, 2019 7:00 PM

The UDO can be accessed online at: <http://www.apexnc.org/233>.

Dianne F. Khin, AICP
Planning Director

Published Dates: September 29-October 15, 2019

AN ORDINANCE TO AMEND CERTAIN SECTIONS OF THE UNIFIED DEVELOPMENT ORDINANCE

BE IT ORDAINED by the Town Council of the Town of Apex as follows:

Section 1. Section 2.3.7.F.1 of the Unified Development Ordinance is amended to read as follows with additions shown as bold underlined text and deletions shown as struck-through text:

2.3.7 Subdivision

...

F) Master Subdivision Final Plat

1) *General*

...

b) The Master Subdivision Final Plat shall constitute only that portion of the Master Subdivision Plan that the subdivider proposes to record and develop at the time. The Master Subdivision Final Plat shall contain no fewer than 15 lots except **in the case of one of the following:**

(i) ~~w~~**Where** there is a phase to be completed with fewer than 15 lots remaining or where the development contains fewer than 15 lots, in which case the application for Final Plat must contain all remaining lots;

(ii) **When the lots are located in a nonresidential subdivision; or**

(iii) **When approved by the Planning Director, with the consent of the Public Works and Transportation Director and Water Resources Director.**

Section 2. Section 4.6.1.B of the Unified Development Ordinance is amended to read as follows with additions shown as bold underlined text and deletions shown as struck-through text:

4.6.1 Temporary Uses and Structures

...

B) General Regulations

The general regulations of this subsection shall apply to all allowed temporary uses unless otherwise expressly stated.

1) *Temporary signs.* No temporary signs shall be permitted in a public right-of-way or off-premises of the temporary use. All temporary signs associated with the temporary use shall be displayed no sooner than one week prior to the commencement of the temporary use and shall be removed no later than two days after the end of the temporary use. All temporary signs shall meet the requirements of 8.7.1 *Signs, Permitted Signs: Location, Size, and Number.*

- 2) *Conditions of approval.* Temporary uses shall not violate any applicable conditions of approval that apply to the principal use on the site.
- 3) *Obtain all other applicable permits.* The operator must obtain all other required permits applicable to the temporary use.
- 4) *Not located in public right-of-way.* Temporary uses shall not be located within a public right-of-way.
- 5) **Temporary uses and activities or special events shall not jeopardize the public health or safety, or be injurious or detrimental to properties adjacent to, or in the vicinity of, the proposed location of the activity.**

Section 3. Sections 2.3.5.B and 4.6.1.C of the Unified Development Ordinance are amended to read as follows with additions shown as bold underlined text and deletions shown as struck-through text:

2.3.5 Special Use

...

B) Authorization

Only those uses authorized as special uses in Sec. 4.2.2, *Use Table* and ~~temporary uses as set forth in Section 4.6.1(C)(7) *Temporary Use Permits issued under a Special Use Permit*,~~ may be approved as special uses. The designation of a use as a special use in Sec. 4.2.2, *Use Table*, does not constitute an authorization that such use shall be approved as a special use pursuant to this Section. Rather, each proposed special use shall be evaluated by the ~~Planning Board and~~ Town Council for compliance with the standards set forth in this Section, **and** applicable supplementary standards for the use in Sec. 4.4, *Supplemental Standards*, ~~and standards for requested Special Use Permits set forth in Section 4.6.1(C)(7) *Temporary Use Permits issued under a Special Use Permit*.~~

4.6.1 Temporary Uses and Structures

...

C) Uses Allowed

...

~~7) *Temporary Use Permits issued under a Special Use Permit.*~~ A Special Use Permit may include up to twelve (12) Temporary Use Permits per calendar year and may include any of the Temporary Use Permits as described in Section 4.6.1(C) *Uses Allowed*. The Temporary Use Permit shall be limited by the number and consecutive days established in the individual Special Use Permit, not as described in the applicable section. An application for a Temporary Use Permit shall be accompanied by a copy of the approved Special Use Permit and the Planning Department shall maintain a record of the number and type of permits granted each calendar year.

Section 4. Section 8.3 of the Unified Development Ordinance is amended to read as follows with additions shown as bold underlined text and deletions shown as struck-through text:

8.3.6 Parking Lot Design Standards

...

D) Surfacing and Maintenance

All off-street parking areas shall be paved and kept in a dust-free condition at all times. Permeable pavement, if used, shall comply with the North Carolina Department of Environmental Quality's Minimum Design Criteria in the NCDEQ Stormwater Design Manual.

1) Exceptions

Parking for the following shall be gravel or paved and kept in a dust-free condition at all times:

a) shall apply in the **All uses in the** CB Conservation Buffer zoning district; ~~or for~~

b) Athletic Fields only under the category of Entertainment, Outdoor where allowed; **and** ~~in other zoning districts where parking areas shall be gravel or paved and kept in a dust-free condition at all times.~~

c) Uses associated with Landmark and other historic structures. Exposed aggregate concrete, or similar, may be used for paving.

2) Gravel parking shall at a minimum meet the following specifications:

~~1) a)~~ **a)** Compacted Subgrade;

~~2) b)~~ **b)** 6 Inches Aggregate Base Course;

~~3) c)~~ **c)** 1.5 Inches #78M Stone; and

~~4) d)~~ **d)** Drive aisles must be repaired or replaced with #78M Stone every six (6) months.

Section 5. Section 8.7.1.A.13 of the Unified Development Ordinance is amended to read as follows with additions shown as bold underlined text and deletions shown as struck-through text:

8.7.1.A *Permitted Signs: Location, Size, and Number, Conditions*

...

13) *Menu Board*

An accessory sign providing items and price associated with a drive-thru window or walk-up window and meets the conditions below:

Changeable menu boards shall be allowed provided that:

- a) Such signs shall not exceed 32 square feet in area, except as provided in subsection c. below, and six (6) feet in height.
 - b) Except as provided in subsection c. below, two (2) signs shall be permitted per drive-through lane not to exceed 64 combined square feet. **The two (2) menu boards shall be no closer than eight (8) feet at any point.**
 - c) One (1) menu board sign up to 40 square feet in area and six (6) feet in height shall be allowed, as opposed to two (2) menu board signs as referenced in subsections a. and b. above.
- ...

Section 6. The Planning Director and/or Town Manager are hereby authorized to renumber, revise formatting, correct typographic errors, to verify and correct cross references, indexes and diagrams as necessary to codify, publish, and/or accomplish the provisions of this ordinance or future amendments as long as doing so does not alter the terms of this ordinance.

Section 7. All ordinances or parts of ordinances in conflict with this ordinance are hereby repealed. If any section, paragraph, subdivision, clause or provision of this ordinance shall be adjudged invalid, such adjudication shall apply only to such section, paragraph, subdivision, clause or provision so adjudged and the remainder of the ordinance shall be deemed valid and effective.

Section 8. The ordinance shall be effective upon enactment on the _____ day of October 2019.

Introduced by Council Member _____

Seconded by Council Member _____

Attest: TOWN OF APEX

Donna Hosch, MMC, NCCMC
Town Clerk

Lance Olive
Mayor

Approved As To Form:

Laurie L. Hohe
Town Attorney

| Agenda Item | cover sheet

for consideration by the Apex Town Council

Item Type: CLOSED SESSION

Meeting Date: October 15, 2019

Item Details

Presenter(s): Laurie Hohe, Town Attorney

Department(s): Legal

Requested Motion

Possible motion to go into closed session to (1) consult with the Town Attorney to protect attorney-client privilege (GS 143-318.11(a)(3)) and (2) discuss the Town's negotiation position for acquisition of real property (GS 143-318.11(a)(5)).

Approval Recommended?

N/A

Item Details

N/A

Attachments

- N/A

