

STAFF REPORT

2045 Land Use Map Amendment & Rezoning #20CZ01 Depot 499 PUD

July 21, 2020 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: 0 Kelly Rd; 1216, 1300, 1330, 1420, 1525, and 1604 S. Salem St;
0 and 6401 Apex Barbecue Rd

PINs: 0731459383, 0731554102, 0731564395, 0731641147, 0731645370, 0731646532,
0731657166, 0731676714, 0731750984, 0731761944, 0731766588, 0731873224

Applicant/Owners: Stephen Dorn, Lennar/Narendra Meka; Varya, LLC; Poe Acres Family Farm, LLC;
Carey B Hunter; Paul M Szymkiewicz & Wei Jin; Pamela Utley; Daryl & Jeanne Poe;
William Douglas & Jean S Poe; Regency International Investments, LLC

PROJECT DESCRIPTION:

Acreage: ±200.8

Current Zoning: Residential Agricultural (RA) & Neighborhood Business-Conditional Zoning (B1-CZ #09CZ01)

Proposed Zoning: Planned Unit Development-Conditional Zoning (PUD-CZ)

Current 2045 Land Use Map: Mixed Use: High Density Residential/Office Employment/Commercial Services;
Medium/High Density Residential; Office Employment; Office Employment/
Commercial Services

Proposed 2045 Land Use Map: Amendment requested for a ±5.41 acre portion of PIN 0731761944 from
Office Employment to High Density Residential

Town Limits: ETJ

Adjacent Zoning & Land Uses:

	Zoning	Land Use
North:	Residential Agricultural (RA); High Density Single-Family Residential-Conditional Zoning (HDSF-CZ #14CZ26); High Density Single-Family Residential-Conditional Use (HDSF-CU #97CU11); Medium Density Residential-Conditional Zoning (MD-CZ #07CZ14)	Scotts Ridge Elementary School; Single-Family Residential (Woodall Estates); Apex Barbecue Rd; St. Mary Magdalene Church & School; Vacant
South:	Rural Residential (RR); Residential Agricultural (RA)	NC 540 Hwy ramp; S. Salem St; Vacant
East:	Residential Agricultural (RA); Medium Density Residential (MD)	S. Salem St; Railroad; Vacant
West:	Residential Agricultural (RA); Planned Unit Development-Conditional Zoning (PUD-CZ #15CZ33)	NC 540 Hwy; Vacant; Townhomes (West Village)

EXISTING CONDITIONS: Most of the subject properties are wooded. The remaining parcels contain single-family homes and accessory structures and farm land. Two streams bisect the property generally from east to west.

NEIGHBORHOOD MEETING: The applicant conducted neighborhood meetings on December 19, 2019 and January 29, 2020. The neighborhood meeting reports are attached.

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WCPSS COORDINATION:

This rezoning was submitted prior to the agreement with the Wake County Public School System to provide a Letter of Impact for rezonings allowing residential development.

2045 LAND USE MAP:

The 2045 Land Use Map classifications for the properties subject to this rezoning are Mixed Use: High Density Residential/Office Employment/Commercial Services; Medium/High Density Residential; Office Employment; Office Employment/Commercial Services. Approximately 171.90 acres of the area to be rezoned is designated as Mixed Use of which 30% should be designated for non-residential uses. The PUD designates 51.57 acres (30%) of that area as non-residential. This rezoning is also located with the Transit-Oriented Development Context Area.

Requested amendment

The applicant is requesting an amendment for a ±5.41 acre portion of PIN 0731761944 from Office Employment to High Density Residential. This area is located near the northeast corner of the site. If the requested amendment is approved, the proposed PUD-CZ zoning district will be consistent with the 2045 Land Use Map.

PLANNED UNIT DEVELOPMENT PLAN:

The applicant has submitted a Planned Unit Development plan to regulate the uses, design, and other development features as follows:

Permitted 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. Pod locations are shown on Sheet C2.0 Preliminary Layout Plan.

P = Permitted Use * = Subject to limitations - see descriptions following chart.

	Residential Areas (Pods A-J & P)	Non-Residential Areas (Pods M-O & Q-T)	Mixed-Use Areas (Pods K & L)
Residential			
Single-Family	P (Pod G only)		
Accessory Apartment	p*		
Townhouse	P		
Multi-family or Apartment Units	P (Pods H, I, J, and east of proposed public road in Pod G only)		
Multi-family or Apartment Units (2nd story and above only)		P	P
Condominium (2nd story and above only)		P	P
Congregate living facility	P	P (Pods R, S, T only)	
Family care home	P		
Nursing or convalescent facility		P (Pods R, S, T only)	

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	Residential Areas (Pods A-J & P)	Non-Residential Areas (Pods M-O & Q-T)	Mixed-Use Areas (Pods K & L)
Utilities			
Utility, minor	P	P	P
Recreational Uses			
Greenway	P	P	P
Park, Active	P	P	P
Park, Passive	P	P	P
Recreation Facility, private	P		
Entertainment, Indoor		P	P
Public and Civic Uses			
Ambulatory Health-care Facility with Emergency Dept.		P (Pods R, S, T only)	
Assembly Hall, non-profit/for-profit		P (Pods R, S, T only)	
Church or place of worship		P (Pods R, S, T only)	
Day Care Facility		P (Pods R, S, T only)	
Drop-in or short-term day care		P	P
Government Services		P (Pods R, S, T only)	
Hospital		P (Pods R, S, T only)	
Veterinary Clinic or Hospital		P (Pods R, S, T only)	
School, Public or Private		P (Pods R, S, T only)	
Transportation facility		P* (Pods R, S, T only)	
Vocational School		P (Pods R, S, T only)	
Food and Beverage Service			
Restaurant, general		P	P
Restaurant, drive-through		P*	p*
Bar, nightclub, wine bar, taproom		p*	p*
Office and Research			
Medical or dental clinic or office		P	P
Office, business or professional		P	P
Publishing Office		P	P
Public Accommodation			
Hotel or Motel		P	p*
Retail Sales and Services			
Artisan Studio		P	P
Barber and Beauty Shop		P	P
Book Store		P	P
Building supplies, retail		P*	
Convenience store, with gas sales		P (excluding Pod O)	
Convenience store, without gas sales		P	P
Dry cleaners and laundry service		P	P

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	Residential Areas (Pods A-J & P)	Non-Residential Areas (Pods M-O & Q-T)	Mixed-Use Areas (Pods K & L)
Farmer's market		P	P
Financial Institution, with or without drive-through		p*	p*
Floral Shop		P	P
Funeral Home		P (Pods R, S, T only)	
Gas and fuel, retail			
Greenhouse or nursery, retail		P	
Grocery, general or specialty		P	P
Health/fitness center or spa		P	P
Newsstand or gift shop		P	P
Personal Service		P	P
Pharmacy, with or without drive-through		p*	p*
Printing and copying services, limited		P	P
Repair services, limited		P	P
Retail sales, general		P	P
Studio for art		P	P
Tailor shop		P	P
Theater		P	
Pet services		P	P
Production			
Microbrewery		P	P
Microdistillery		P	P

***Permitted Uses Subject to Limitations:**

Accessory Apartment - Homeowner Association covenants shall not restrict the construction of accessory dwelling units.

Transportation facility - Such use shall only be allowed for vehicles serving the use "School, public or private", but is permitted as either a principal or accessory use on a lot.

Drive-through facilities - Any drive-through facility (e.g. restaurant, financial institution, pharmacy) must be located within a multi-tenant building; No free standing drive-through facilities shall be allowed.

Bar, nightclub, wine bar, taproom - Hours of operation Sunday through Thursday shall close by 12 AM and hours of operation Friday through Saturday shall close by 2 AM.

A hotel restaurant or bar with a patio or deck open to the street, shall qualify as vertical integration in mixed-use pods.

Building supplies, retail - The maximum square footage of a building supplies retail store shall be limited to 20,000 square feet.

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SCHOOLS

While Land Use Option 1 on Sheet 2.0 Preliminary Layout Plan indicates that Pods R and S are to be Schools/Non-residential, there is no guarantee that a public or private school will be located on either parcel. The purpose of providing the two land use options is to show a different road network if a school is developed on Pod R and/or Pod S.

AFFORDABLE HOUSING

The applicant has proposed the following conditions related to affordable housing:

- Wake County Public School System has expressed an interest in pursuing affordable housing on surplus property should the School Alternative be pursued. The affordable housing use is permitted in any pod, and the community has expressed interest in pursuing these projects in Apex.
- If no such affordable housing project(s) containing at least 45 units has been approved by January 1, 2025, and the Town of Apex has a fund or other mechanism in place by January 1, 2025 to receive donations to construct, subsidize, or participate in the development of affordable housing units (the "Fund"), the developer will contribute \$300,000 to this Fund. This contribution represents the approximate value of a 2.0 acre dedication at market value. In the event the Fund has not been established by the Town of Apex by January 1, 2025, the money will be conveyed to a non-profit organization participating in affordable housing. The developer will work with the Town of Apex to identify a mutually acceptable non-profit organization to receive these funds.
- Affordable housing units may be provided in any development pod within the project. Regardless of development pod, affordable housing area may be counted as non-residential for the purpose of calculating the 30% non-residential threshold within the mixed-use land designation. Affordable housing units shall only be required to comply with Residential Design Guidelines 1 and 12. For purposes of this condition, affordable housing is defined as housing that on average is affordable to a household with an annual income that is no greater than 60% of the Area Median Income for the respectively-sized household in the Raleigh, NC MSA, as determined by the United States Department of Housing and Urban Development (HUD).

Condition suggested by staff:

During the review of this rezoning, Planning staff requested that the applicant offer a condition that requires a certain number of units (townhome or apartment) to be reserved for affordable housing or that dedicates approximately two (2) acres to a non-profit affordable housing developer given that Peak Plan 2030 calls for affordable housing for older adults. The size of the dedication suggested is approximately equal to the size of a recent affordable housing development containing 42 units for seniors constructed in Cary. The applicant revised the conditions related to affordable housing after the Planning Board meeting. The revised wording now offered meets the suggestions made by staff.

PROPOSED DESIGN CONTROLS (Maximum Densities & Dimensional Regulations)

Total Project Area: 200.8 acres

Project area within Mixed-Use classification on 2045 Land Use Map: 171.9 acres

- Required 30% Non-residential land area: 51.57 acres
- Proposed Gross Non-residential land area: 51.57 acres

Mixed-Use Land Area (Pods K & L): ~1.88 acres

- Minimum Vertical Integration:
 - Residential – 24 units (over retail/office); or
 - Office – 10,000 sf (over retail)
- Maximum Residential: 120 units

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- **Building Height:**
 - Minimum: 3 stories*
 - Maximum: 80 ft
 - * Rooftop terraces that include a minimum of 1,500 sf of enclosed space for event, amenity, or other use such as a bar or restaurant shall qualify as a 3rd floor.
- **Minimum Building Setbacks:**
 - Front: 10 ft
 - Rear: 10 ft
 - Side: 10 ft
 - Corner: 15 ft

Non-residential Land Area (Pods M-O & Q-T); ~41.08 acres

- Maximum square feet: 650,000 sf
- **Building Height:**
 - Minimum: 1 story
 - Maximum: 100 ft
- **Minimum Building Setbacks:**
 - Front: 10 ft
 - Rear: 10 ft
 - Side: 10 ft
 - Corner: 15 ft

Residential Land Area (Pods A-J & P): ~93.99 acres

- Maximum number of apartments: 850
- Maximum number of townhomes/single-family: 650 (50 single-family max)
- Maximum number of units: 1,500
- **Single-Family Design Controls:**
 - Minimum Lot Size: 2,550 sf
 - Minimum Lot Width: 36 ft
 - Minimum Lot Depth: 85 ft
 - Maximum Building Height: 45 feet (In Pod G, the first row of lots immediately adjacent to the Woodall subdivision shall not exceed 2 stories unless buffer is increased to a 50' Type A buffer)
 - **Minimum Building Setbacks:**
 - Front: 20 ft to garage;
8 ft to building façade
 - Side: 5 ft
 - Rear: 15 ft
 - Alley: 5 ft
 - Corner: 8 ft
- **Townhome Design Controls:**
 - Minimum Lot Width: 16 ft (alley loaded); 18 ft (front loaded)
 - Minimum Lot Depth: 65 ft
 - Maximum Building Height: 45 feet (In Pod G, the first row of lots immediately adjacent to the Woodall subdivision shall not exceed 2 stories unless buffer is increased to a 50' Type A buffer)
 - **Minimum Building Setbacks – Front Loaded:**
 - Front: 20 ft to garage;
5 ft to building façade
 - Building Separation: 10 ft
 - Rear: 10 ft
 - Corner: 8 ft
 - **Minimum Building Setbacks – Alley Loaded:**
 - Front: 5 ft
 - Building Separation: 10 ft
 - Rear/Alley: 5 ft
 - Corner: 8 ft

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- Apartment/Condominium Design Controls:
 - Minimum Building Height:
 - S. Salem Street: 4 stories; a maximum of 25% of buildings along this frontage may be 3 stories
 - Apex Barbecue Road: 4 stories; a maximum of 25% of buildings along this frontage may be 3 stories
 - Maximum Building Height:
 - S. Salem Street: 6 stories or 90 ft
 - Apex Barbecue Road: 6 stories or 90 ft; the first row of buildings along this frontage shall not exceed 4 stories
 - Minimum Building Setbacks:
 - Front: 10 ft
 - Building Separation: 30 ft
 - Rear: 10 ft
 - Corner: 10 ft

Buffers:

The table below shows the buffers proposed as shown on Sheet 2.0 Preliminary Layout Plan.

Location	Required by UDO	Proposed in PUD
S. Salem St	30' Type B	15' Streetscape Buffer
Apex Barbecue Rd	30' Type B	30' Streetscape Buffer
Northern boundary (adjacent to school and Woodall Estates)	15' Type A	100' Riparian Buffer
Western boundary (adjacent to Woodall Estates)	15' Type A (townhomes) or 10' Type B (single-family)	30' Type A
NC 540 Hwy	Residential: 100' Type A Non-residential: 100' Type A or 50' Type A	Pods C, D, & T: 100' Type A Pods R & S: 50' Type A
Along internal Major and Minor Collectors	10' Type A or D or 30' Type D (depends on proposed land use and land use across the street)	10' Type A or D or 30' Type D as required by UDO*

*The 10' Type D Streetfront Buffer shall not be required along minor or major collectors where street trees are provided at a rate equivalent to 1 tree per 1,000 sf of the area that would otherwise be provided as buffer.

Streetscape Buffer: The proposed Streetscape Buffer along S. Salem Street and Apex Barbecue Road will meet the standards provided for the pedestrian oriented streetscape buffer allowed by the UDO as follows:

“Pedestrian oriented streetscape buffers shall be allowed in lieu of standard landscaped thoroughfare buffers when such buffers are located inside the Apex Peakway. Pedestrian oriented streetscape buffer shall contain both hardscape elements (such as but not limited to sidewalks, decorative lighting, street furniture, and fountains) and street tree plantings which do not have to meet typical minimum island widths or sizes.”

ARCHITECTURAL STANDARDS:

Residential Design Guidelines:

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 slab 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. All townhomes shall have a crawl space or have a raised slab foundation which at a minimum rises at least 6 inches from average grade across the front of the house to the finished floor level at the front door.
4. Front-facing garage doors shall have windows, decorative details or carriage-style adornments on them.
5. The garage cannot protrude more than 1 foot out from the front façade or front porch, measured from roof of porch.
6. On single-family homes, the roof shall be pitched at 5:12 or greater (not to include porches, bay windows, etc.).
7. On townhomes, roof line cannot be a single mass; it must be broken up either horizontally and/or vertically between, at minimum, every other unit.
8. House entrances for units with front-facing single-car garages must have a covered porch/stoop area leading to the front door.
9. Rear and side elevations of units that have right-of-way frontage shall have trim around the windows.
10. Four of the following decorative elements 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.
11. A varied color palette shall be utilized on single family and townhome units throughout the subdivision and shall include siding, trim, shutter, and accent colors complementing the siding colors.
12. All apartment buildings along S. Salem Street shall have interior corridors.
13. Recesses and projections shall be provided for at least 50% of each façade on each apartment building.
14. A solar PV system shall be installed on at least 15% of the single-family homes within the development. All solar installation required by this condition shall be completed or under construction prior to 90% of the building permits being issued for the approved number of single-family lots. The lots on which these homes are located shall be identified on the Master Subdivision Plat, which may be amended.
15. Solar conduit will be provided on all single-family homes to accommodate the future installation of solar panels.
16. Proposed Residential Materials
Proposed materials will be of a similar palette to provide consistency of character along with visual interest. Exterior materials that may be incorporated into any of the residential building products include:
 - a. Cementitious lap siding
 - b. Board and batten siding
 - c. Shake and shingle siding
 - d. Wood siding
 - e. Stone or synthetic stone
 - f. BrickAdditional building materials may be included with administrative staff approval. Substitute materials shall be allowed by staff as long as they are determined by the Planning Director to be substantially similar.

Non-Residential design guidelines:

1. Buildings shall be arranged to define, create and activate edges and public places. They shall be situated to address the street and provide massing that looks to define the street realm for pedestrians as well as automobiles.
2. Every effort shall be made to locate service and loading areas in the rear of structures. Where these features are located on the side of the building along a public road, they will be designed in such a



way that they do not distract from the character of the development and they will be screened in accordance with the UDO.

3. Elevations of buildings facing a street shall incorporate detailing in keeping with the character and style of the architectural features on adjacent buildings.
4. Elevations of corner buildings shall utilize design features such as variations in wall plane, variation in building mass and window placement to generate street interest.
5. Architectural treatments such as varying roof forms, façade articulation, breaks in roof, walls with texture materials and ornamental details as well as landscaping shall be incorporated to add visual interest. Large expanses of blank walls, greater than 25' in length or height, shall be broken up with windows or other architectural features to reduce visual impacts.
6. Differences of roof height, pitch, ridgelines and materials shall be used to create visual interest and avoid repetition.
7. Roof features may include flat roofs with parapet, hip roofs or awnings with metal or canvas material.
8. Solar conduit shall be provided on every non-residential building that has a flat roof, not to include public or private schools.
9. Non-residential exteriors shall incorporate variation in materials. The primary (front) façade and other façades located along a public right-of-way may include:
 - a. Brick and/or stone masonry
 - b. Decorative concrete block (integral color or textured)
 - c. Stone accents
 - d. Aluminum storefronts with anodized or pre-finished colors
 - e. EIFS cornices, and parapet trim
 - f. EIFS or synthetic stucco shall not be used in the first four feet above grade and shall be limited to only 25% of each building façade
 - g. Precast concrete
 - h. Soffit and fascia materials to be considered include EIFS with crown trim elements
 - i. Cementitious siding

Non-residential buildings visible from public view shall be constructed with compatible materials to other uses in the PUD. Rear elevations of non-residential buildings facing opaque landscape buffers or not visible from vehicular use areas or public rights-of-way may incorporate decorative concrete masonry, metal coping, or EIFS trim.

Exterior materials not allowable as part of the residential or non-residential development are as follows:

1. Vinyl siding
2. Painted, smooth faced concrete block
3. Metal Walls

PUBLIC ART

Two (2) locations for public art are identified for public art on Sheet 2.0 Preliminary Layout Plan. A minimum of one (1) location will be implemented.

PARKING

As part of the review and approval of a Master Subdivision Plan or Site Plan, the Planning Director may approve a parking reduction per UDO Section 8.3.9 or a reduction up to fifteen (15) percent in the number of required parking spaces (excluding single-family and townhomes), whichever is greater. The latter may be approved if the reduced number of parking spaces will be sufficient to satisfy the demand for parking, based

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on evidence provided by a licensed traffic engineer in the form of a parking study or other supporting evidence deemed appropriate by the Planning Director.

Guest parking shall be distributed so that there is at least one guest parking space within 200' of each townhome lot. On-street parallel parking stalls may be used to satisfy guest parking requirements.

SIGNAGE

All signage shall comply with UDO Sec. 8.7 *Signs*.

LANDSCAPING

All landscaping for this PUD shall comply with UDO Sec. 8.2 *Landscaping, Buffering, and Screening* except for the following provision regarding building landscaping requirements for townhomes (Sec. 8.2.4.A.3):

- Street trees located within street right-of-way shall count toward townhome landscaping requirements. Additionally, shrubs may be located either on the townhome lot or within HOA owned common areas to meet UDO requirements.

NATURAL RESOURCES AND ENVIRONMENTAL DATA

Resource Conservation Area (RCA):

The PUD proposes to provide the amount of RCA required per the UDO which is 20% of the gross project area (40.16 acres). The RCA will be comprised of preserved streams, ponds, wetlands, riparian buffer, perimeter and streetfront buffers, portions of stormwater control measures, and greenway trails.

Tree Canopy:

The PUD proposes to incorporate an urban street grid that contains canopy trees within public rights-of-way in addition to trees within perimeter buffers, pocket parks, community gathering spaces and other open space areas.

To further illustrate the project's commitment to preserving and re-establishing tree canopy in our region, at the time of first subdivision or site plan submittal, the developer will provide a donation of \$10,000 to a local non-profit organization with a mission towards tree preservation and tree replacement. We estimate the project will retain or replace almost 70% of existing canopy on the residential portion, and preserve or replant an additional 27% on the non-residential portion of the development, bringing replacement amount close to 97%. As such, this donation represents an assigned per-tree value in substitute canopy for the remaining 3%. The developer will work with the Town of Apex to identify a mutually acceptable non-profit organization to receive these funds. Developer is responsible for providing documentation for qualifying organizations.

STORMWATER MANAGEMENT

This PUD shall meet all stormwater management requirements for quality and quantity treatment in accordance with UDO Sec. 6.1.7 such that:

- Post development peak runoff shall not exceed pre-development peak runoff conditions for the 1 year, 10 year, and 24-hour storm events.
- Treatment for the first 1 inch of runoff will provide 85% removal of total suspended solids.

Acceptable stormwater structures shall include detention ponds, constructed wetlands, bio-retention areas, or other approved devices consistent with the NCDEQ Stormwater Design Manual and the Town of Apex UDO.



PUBLIC FACILITIES

Water and Sanitary Sewer:

The project will be served by Town water and sewer service. The design will meet the current Town of Apex master plans for water and sewer.

Developer may seek a developer agreement with the Town for the oversized waterline sizing along the site frontage and waterline connection under 540 for reimbursement per the Town’s Policy Regarding Town Participation in Utility Projects.

Transit:

At least two bus stops shall be provided at locations to be determined at the time of subdivision or site plan approval. In accordance with Apex standards, stops will provide a concrete landing pad between sidewalk and curb, an amenity pad behind the sidewalk to accommodate future shelter, lighting at bus stop location, and a sign post for a future sign.

Walkability:

The following facilities will be provided to contribute to a walkable community within and surrounding the Depot 499 development:

- Five-foot wide public sidewalks along both sides of all streets unless otherwise noted
- Six-foot wide private walking trails throughout the development
- A greenway connection to Scotts Ridge Elementary School (subject to WCPSS approval)
- Ten-foot wide sidepaths along South Salem Street frontage, Apex Barbecue Road frontage, and the main collector through the development as shown on Sheet C2.00.
- Construction or payment-in-lieu of approximately 910 linear feet of off-site sidewalks and side paths to complete missing pedestrian connections to the project from adjoining communities as shown on Sheet C2.00.
- Up to two high visibility crosswalks constructed along Apex Barbecue Road (subject to NCDOT and the Town of Apex approval)
- Bicycle and pedestrian facilities along existing road frontage along the boundaries of the PUD shall be installed as each pod is developed, and no later than the completion of Phase 2 as described in the zoning conditions related to traffic impacts.

Other Utilities and Facilities:

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

Streetscape features may be used to help with establishing a framework for the proposed development. These features may include street trees within the public right-of-way, benches, trash receptacles, and street and/or pedestrian lights compatible with their context. Other features may include markers, bollards, and unique paving patterns.

General Roadway Infrastructure

All proposed roadway infrastructure and right-of-way dedications will be consistent with the Town of Apex UDO and Transportation Plan if the requested Transportation Plan amendments are approved.

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The minor collector street extending from the major collector street at South Salem Street to Apex Barbecue Road will not be directly accessed by residential driveways.

The location of the major collector street connection to S. Salem Street is subject to change based on the ultimate layout and will be determined in coordination with staff during master subdivision plan review.

APEX TRANSPORTATION PLAN/ACCESS and CIRCULATION

The PUD as proposed is dependent upon the approval of several staff and applicant initiated amendments to the Thoroughfare and Collector Street Plan map and the Transit Plan map of the 2045 Comprehensive Transportation Plan.

The PUD proposes to extend the Major Collector currently stubbed to the northern portion of the site from the Woodall Estates subdivision. This Major Collector provides full-movement access to Apex Barbecue Road. A new full-movement access to Apex Barbecue Road is proposed to align with Town Side Drive. Along S. Salem Street, two (2) full-movement access points and two (2) right-in/right-out/left-over access points are proposed.

TRANSPORTATION IMPROVEMENTS

Staff would like to point out the following with regard to the TIA submittal:

1. The proposed zoning allows 50 single-family homes to be substituted for 50 townhomes and has added 25,000 SF of commercial square feet, resulting in a potential increase in trips compared to the TIA. The applicant has provided an updated trip generation comparison letter showing less than a 5% overall increase in trips during any peak hour period and commits in the zoning to a revised analysis at the request of staff should the subdivision and site plan submittals exceed the trip potential studied in the TIA.
2. The TIA analyzed Phase 1 as 650 multi-family/townhome units and a full build-out that adds 850 apartments, 375,000 SF office, and 250,000 SF shopping center. Discussion following the TIA review revealed a need to establish a mixed-use threshold for Phase 1 improvements as well as a threshold for additional improvements to be completed prior to build-out. The PUD reflects this modified phasing (Phase 1 and Phase 2) as thresholds for transportation improvements. Phase 1 represents improvements required prior to no more than 450 townhomes/single-family homes, and/or 400 apartments, and/or 150,000 SF of commercial space. Phase 2 represents improvements required prior to no more than 600 townhomes/single-family homes, and/or 600 apartments, and/or 300,000 SF of commercial space.
3. The TIA did not consider the impact of the potential school site on the PUD. However, should the school be added in Phase 1, the applicant commits in the zoning to an updated TIA to reevaluate the improvements which may result in modified and additional required improvements during that phase subject to approval by Apex and NCDOT.
4. Staff have provided an alternative for improvements along South Salem Street as accepted by the applicant: In lieu of adding a second southbound through lane extending across the NC 540 bridge in Phase 2 the developer would instead provide the second northbound through lane from the NC 540 bridge to Apex Barbecue Road to compliment the second southbound lane with the same limits, consistent with NCDOT recommendations for a four-lane section to be constructed on South Salem Street outside of the NC 540 bridge limits. The bridge would remain a concern for long term traffic congestion until widened by others, but the option avoids involvement of Depot 499 in widening the bridge while achieving improved operations along the site frontage.

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July 21, 2020 Town Council Meeting



The following zoning conditions represent the recommendations by Apex staff, with three (3) exceptions noted in bold, based on a review of the Traffic Impact Analysis (TIA) prepared for the Depot 499 development plan. Reported lane lengths represent storage length and do not include full width deceleration or taper length unless stated otherwise. While not all staff recommendations match what was recommended in the TIA or otherwise recommended by NCDOT, they represent the findings of Apex staff based on an interpretation of the requirements of the UDO to mitigate traffic impacts of the proposed development.

All recommendations are subject to consideration by Town Council, and on state-maintained roadways are ultimately subject to review and approval by NCDOT. NCDOT may reject and/or require alternative improvements compared to zoning conditions approved by Apex on state-maintained roadways. If offsite right of way or easements cannot be acquired by the developer through private negotiation, developer shall request legal assistance from the Town in the interest of obtaining such property for the purposes of satisfying the zoning conditions. If ROW is unable to be obtained, a fee-in-lieu may be accepted per UDO 7.1.7. During buildout, if the subdivision or site plan submittals exceed the trip generation potential that was studied in the original TIA, a revised analysis can be prepared, if requested by staff.

Phase 1 Improvements:

“Phase 1” in the following conditions represents improvements required prior to platting no more than 450 townhomes and/or single family homes, and/or certificate of occupancy for no more than 400 apartment dwelling units, and/or certificate of occupancy for no more than 150,000 square feet of commercial development. If a school is pursued on Pods R-T, the transportation commitments on PUD Plan Sheet C2.00 may be modified by the Town Council at site plan pursuant a modified TIA to adjust or reduce commensurate with reduced trip generation and/or modified movements. Addition of a school site in Phase 1 will require an updated TIA to reevaluate Phase 1 improvements which may result in modified and additional required improvements during that phase, subject to Apex and NCDOT approval.

Improvements to be constructed in Phase 1 as defined above:

- Apex Barbecue Road and Kelly Road
 - » Construct a 200 foot westbound left-turn lane on Apex Barbecue Road.
 - » Construct a 200 foot eastbound left-turn lane on Apex Barbecue Road.

Staff also recommends the following improvement:

- **Construct a 200-foot westbound right turn lane on Apex Barbecue Road.**

Phase 2 Improvements:

“Phase 2” in the following conditions represents improvements required prior to platting no more than 600 townhomes and/or single family homes, and/or certificate of occupancy for no more than 600 apartment dwelling units, and/or certificate of occupancy for no more than 300,000 square feet of commercial development.

Improvements to be constructed in Phase 2 as defined above:

- S. Salem Street and Southbound NC-540 Ramps (Signalized)
 - » Extend the southbound right turn lane on the ramp to provide 375 feet of storage and place it under signalized control rather than free-flow.
 - » Construct an additional westbound through lane on S. Salem Street prior to the interchange, extending through the intersection of NC-540 Northbound Ramps across the bridge and through the intersection of NC-540 Southbound Ramps in order to provide two contiguous westbound through lanes (see alternative below)*.



- S. Salem Street and Northbound NC-540 Ramps (Signalized)
 - » Construct two contiguous westbound through lanes carried from the site frontage across the bridge and through the intersection of Southbound NC-540 Ramps (see alternative below)*.
- *Alternative recommendations for NC 540 Interchange Ramps, Phase 2
 - » *Developer shall construct an additional westbound through lane on S. Salem Street at Southbound NC-540 Ramps starting immediately west of the bridge for a minimum of 200 feet and construct a 200-foot westbound right turn lane on S. Salem Street.
 - » *Developer shall construct an additional 150-foot southbound left turn lane on the Northbound NC-540 Exit Ramp, and begin an additional eastbound/northbound receiving through lane on S. Salem Street, carrying that additional (second) through lane across the development frontage and terminating in a left turn lane at Apex Barbecue Road.
 - » *Developer shall terminate the additional westbound/southbound through lane on S. Salem Street as a right turn lane at the NC 540 Northbound Ramps.
- S. Salem Street and Site Drive 7 (full movement access nearest NC 540)
 - » Construct an additional southbound through lane on S. Salem Street providing two southbound through lanes with a shared through-right lane.
 - » *For alternative NC 540 Interchange improvements, also construct an additional northbound through lane on S. Salem Street providing two northbound through lanes.
 - » Install a traffic signal once warranted and permitted by NCDOT. If not warranted, developer shall pay a fee in lieu for estimated design and construction cost of a traffic signal. If not permitted by NCDOT upon build-out of Phase 2, developer shall be released from the requirements to install a traffic signal.
- S. Salem Street and Site Drive 4 (between Site Drive 7 and Site Drive 1)
 - » Construct an additional southbound through lane on S. Salem Street providing two southbound through lanes with a shared through-right lane.
 - » *For alternative NC 540 Interchange improvements, also construct an additional northbound through lane on S. Salem Street providing two northbound through lanes.
- S. Salem Street and Site Drive 1 (main access for townhomes & commercial buildings)
 - » Construct an additional southbound through lane on S. Salem Street, converting the right turn lane to a through-right lane.
 - » *For alternative NC 540 Interchange improvements, also construct an additional northbound through lane on S. Salem Street providing two northbound through lanes.
 - » Install a traffic signal once warranted and permitted by NCDOT. If not warranted in Phase 2, developer shall pay a fee in lieu for estimated design and construction cost of a traffic signal. If not permitted by NCDOT upon build-out of Phase 2, developer shall be released from the requirement to install a traffic signal.
- S. Salem Street and Site Drive 3 (limited-movement access for commercial buildings north of Site Drive 1)
 - » Construct an additional southbound through lane on S. Salem Street providing two southbound through lanes with a shared through-right lane.
 - » *For alternative NC 540 Interchange improvements, also construct an additional northbound through lane on S. Salem Street providing two northbound through lanes.
- S. Salem Street and Site Drive 6 (right-in/right-out access nearest Apex Barbecue Road)
 - » Construct an additional southbound through lane on S. Salem Street providing two southbound through lanes with a shared through-right lane.
 - » *For alternative NC 540 Interchange improvements, also construct an additional northbound through lane on S. Salem Street providing two northbound through lanes.
- S. Salem Street and Apex Barbecue Road



- » Convert the existing southbound right turn lane on S. Salem Street to a through lane in order to provide two southbound through lanes carried southward across the site frontage.
- » Construct a 200-foot southbound right turn lane.
- » Extend the northbound left turn lane on S. Salem Street to provide 300 feet of storage (*or for alternative NC 540 Interchange improvements, terminate the additional northbound through lane as a left turn lane).
- » Extend the eastbound left turn lane on Apex Barbecue Road to provide 375 feet of storage.
- Apex Barbecue Road and Kelly Road
 - » Construct a second northbound through lane on Kelly Road that starts 800 feet south of the intersection and continues for approximately 1,000 feet north, dropping off with a 45:1 merge taper beyond the intersection of Grand Kelly Way.
 - » Widen the southbound approach of Kelly Road to provide a two-way left turn lane from Apex Barbecue Road to Karawind Lane.
 - » Construct a 200-foot southbound right turn lane on Kelly Road.

Staff also recommends the following improvement:

- **Construct a 200-foot eastbound right turn lane on Apex Barbecue Road.**

Staff also recommends adding the following improvements at Apex Barbecue Road and Town Side Drive:

- **Construct a 50-foot westbound right turn lane on Apex Barbecue Road.**
- **Install a traffic signal once warranted and permitted by NCDOT. If not warranted in Phase 2, developer shall pay a fee in lieu for estimated design and construction cost of a traffic signal. If not permitted by NCDOT upon build-out of Phase 2, developer shall be released from the requirement to install a traffic signal.**

Improvements required with construction of Site Drives:

- S. Salem Street and Site Drive 7 (full movement access nearest NC 540)
 - » With construction of Site Drive 7, developer shall:
 - › Provide a 150-foot eastbound left turn lane on the driveway.
 - › Construct a 250-foot northbound left turn lane on S. Salem Street.
 - › Construct a 100-foot southbound right turn lane to later be converted to a through lane if Site Drive 7 is constructed prior to Phase 2.
- S. Salem Street and Site Drive 4 (between Site Drive 7 and Site Drive 1)
 - » With construction of Site Drive 4, developer shall:
 - › Provide a minimum of 600 feet of separation between Site Drive 4 and both of the adjacent intersections, Site Drive 7 and Site Drive 1, in order to construct northbound left-over access with 150 feet of storage at Site Drive 4. Otherwise, Site Drive 4 shall be constructed as a right-in/right-out access.
 - › Construct a 100-foot southbound right turn lane to later be converted to a through lane if Site Drive 4 is constructed prior to Phase 2.
- S. Salem Street and Site Drive 1 (main access for townhomes & commercial buildings)
 - » With construction of Site Drive 1, developer shall:
 - › Provide a 150-foot eastbound left turn lane on the driveway.
 - › Construct a 200-foot northbound left turn lane on S. Salem Street.
 - › Construct a 100-foot southbound right turn lane on S. Salem Street.
- S. Salem Street and Site Drive 3 (limited-movement access for commercial buildings north of Site Drive 1)
 - » With construction of Site Drive 3, developer shall:

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- › Construct Site Drive 3 as a right-in/right-out, left-over access.
- › Construct a 150-foot northbound left turn lane on S. Salem Street.
- › Construct a 100-foot southbound right turn lane to later be converted to a through lane if Site Drive 3 is constructed prior to Phase 2.
- S. Salem Street and Site Drive 6 (right-in/right-out access nearest Apex Barbecue Road)
 - » With construction of Site Drive 6, developer shall:
 - › Provide right-in/right-out access with a minimum offset of 250 feet from Apex Barbecue Road.
 - › Construct a 100-foot southbound right turn lane to later be converted to a through lane if Site Drive 6 is constructed prior to Phase 2.
- Apex Barbecue Road and Site Drive 5 (right-in/right-out access nearest S. Salem Street)
 - » With construction of Site Drive 5, developer shall:
 - › Provide right-in/right-out access with a minimum offset of 250 feet from S. Salem Street.
 - › Construct a 100-foot eastbound right turn lane on Apex Barbecue Road.
- Apex Barbecue Road and Site Drive 2 / St. Mary Magdalene
 - » With construction of Site Drive 2, developer shall:
 - › Provide a full movement intersection aligned with the St. Mary Magdalene driveway.
 - › Provide a 150-foot northbound left turn lane on the driveway.
 - › Construct a 100-foot westbound left turn lane on Apex Barbecue Road.
 - › Construct a 100-foot eastbound right turn lane on Apex Barbecue Road.
- Apex Barbecue Road and Scotts Ridge Trail / Woodall Crest Drive
 - » Upon opening access to Aspen River Lane, developer shall:
 - › Install a double yellow centerline and edge line pavement markings per the Town of Apex major collector street typical section along Aspen River Lane and Woodall Crest Drive to Apex Barbecue Road.
 - » Developer shall install a traffic signal once warranted and permitted by NCDOT. If not warranted in Phase 2, developer shall pay a fee in lieu for estimated design and construction cost of a traffic signal. If not permitted by NCDOT upon build-out of Phase 2, developer shall be released from the requirement to install a traffic signal.

SCHOOL ALTERNATIVE

If a school use is pursued on Pods R-T on Land Use Option 1, an alternative transportation alignment is permitted as shown on the plan set. This alignment includes roundabouts to facilitate movements along the collector and out to S. Salem Street at site drive #7 to minimize mixing with school bus movements. School buses will access site drive #7 which Wake County Public School System requires to be an at-grade intersection. If a school use is not pursued on Pods R-T, the original collector alignment will be maintained as shown on Land Use Option 2. This intersection will also be at grade to provide needed access to the commercial and office uses on these high-visibility pods.

If a school is pursued on Pods R-T, the transportation commitments on PUD Plan Sheet C2.00 may be modified by the Town Council at site plan to adjust or reduce commensurate with reduced trip generation and/or modified movements. Traffic improvements may be modified based on a revised TIA with the inclusion of the school.

PHASING PLAN

This PUD will be completed in up to 10 phases. Location of phases will be determined at the time of Master Subdivision Plan.

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PARKS, RECREATION, AND CULTURAL RESOURCES ADVISORY COMMISSION:

The Depot 499 PUD was reviewed by the PRCR Advisory Commission on February 26, 2020. A fee-in-lieu of dedication was recommended and unanimously approved. The project is not located within a land dedication area and there are no greenways shown within the property. The project is within close proximity to Pleasant Park.

<u>Number of Units*</u>	<u>Housing Type</u>	<u>Fee Per Unit**</u>	<u>Total Fees</u>
50	Single-Family	\$3,446.98	\$172,349.00
600	Townhomes	\$2,321.54	\$1,392,924.00
850	Apartments	\$2,044.05	\$1,737,442.50
Total	-	-	\$3,302,715.50

*Final unit mix will be determined at the time of Master Subdivision Plan.

**Fees are based upon approval date and runs with project with exception of the increase in total unit count.

PLANNING STAFF RECOMMENDATION:

Planning staff recommends approval of the proposed 2045 Land Use Map amendment on 5.41 acres from Office Employment to High Density Residential and denial of the proposed rezoning from Residential Agriculture (RA) and Neighborhood Business-Conditional Zoning (B1-CZ #09CZ01) PUD-CZ as proposed by the applicant.

Planning staff can only recommend approval of the rezoning if the following changes to the proposed PUD are made:

1. Transportation Plan amendments. Staff does not support the proposed amendments to eliminate the two grade separated crossings. If the Town Council approves the amendments to the Thoroughfare and Collector Street map to remove those two crossings or if the applicant agrees to amend the plan to include them, this reasoning for denial becomes moot.
2. Transportation Improvements. Transportation Engineering staff have suggested the following modified or additional road improvements that have not been included by the applicant:
 - Construct a 200-foot westbound right turn lane on Apex Barbecue Road.
 - Construct a 200-foot eastbound right turn lane on Apex Barbecue Road.
 - At Apex Barbecue Road and Town Side Drive:
 - » Construct a 50-foot westbound right turn lane on Apex Barbecue Road.
 - » Install a traffic signal once warranted and permitted by NCDOT. If not warranted in Phase 2, developer shall pay a fee in lieu for estimated design and construction cost of a traffic signal. If not permitted by NCDOT upon build-out of Phase 2, developer shall be released from the requirement to install a traffic signal.

PLANNING BOARD RECOMMENDATION:

The Planning Board heard this item at their July 13, 2020 meeting and recommended denial of the 2045 Land Use Map amendment and rezoning as proposed by the applicant by a vote of 6-0.



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:

Without approval of the 2045 Land Use Map amendment, the proposed rezoning is not fully consistent with the 2045 Land Use Plan and other adopted plans in that the 2045 Land Use Map classifies the subject properties as Mixed Use: High Density Residential/Office Employment/Commercial Services; Medium/High Density Residential; Office Employment; and Office Employment/Commercial Services. The PUD as proposed indicates the area shown on the Land Use Map as Office Employment being proposed a multi-family which is inconsistent with that land use classification.

The proposed rezoning is not reasonable and in the public interest due to the following:

1. Transportation Plan. The current Thoroughfare and Collector Street map of the Comprehensive Transportation Plan provides for grade separated crossings of NC 540 Hwy and S. Salem Street. The purpose of these crossings is to provide vehicular connectivity in an area where there is limited ability to cross NC 540 Hwy as well as S. Salem Street and the railroad.
2. Transportation Improvements. Transportation engineering staff has requested additional road improvements and modifications to road improvements in order to mitigate the impact of this development on the surrounding road network. The applicant has not provided all of the requested improvements and modifications.

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.

Legislative Considerations

The Town Council 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.

- 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.

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- 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.



February 20, 2020

Rynal G. Stephenson, P.E.
Ramey Kemp & Associates, Inc.
5808 Faringdon Place
Raleigh, NC 27609

Subject: **Staff summary and comments for the Depot 499 TIA, 01/02/2020**

Mr. Stephenson:

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 studied access to the proposed Depot 499 development at the following eight intersections:

- S. Salem Street and Site Drive 1
- Apex Barbecue Road and Site Drive 2
- S. Salem Street and Site Drive 3 (for full build-out only)
- S. Salem Street and Site Drive 4 (for full build-out only)
- Apex Barbecue Road and Site Drive 5 (for full build-out only)
- S. Salem Street and Site Drive 6 (for full build-out only)
- S. Salem Street and Site Drive 7 (for full build-out only)
- Apex Barbecue Road and Woodall Crest Drive / Scotts Ridge Trail

Additional intersections that were also studied in the TIA include:

- Kelly Road and Old US 1
- Southbound NC-540 Ramps and S. Salem Street
- Northbound NC-540 Ramps and S. Salem Street
- Apex Barbecue Road and S. Salem Street
- Apex Barbecue Road and Town Side Drive
- Apex Barbecue Road and Kelly Road

Trip Generation

The proposed development is anticipated to be built in two phases. Phase 1 of the development is anticipated to consist of 650 townhome units. Full build-out of the development is anticipated to add 850 apartment units, 250,000 square feet of shopping center, and 375,000 square feet of general office building. In Phase 1 the development is projected to generate approximately 65 new trips entering and 217 new trips exiting the site during the weekday A.M. peak hour and 197 new trips entering and 115 new trips exiting the site during the weekday P.M. peak hour. Phase 1 of the proposed development is projected to generate a total of 4,870 new trips on the adjacent roadway network. Full build-out of the development is projected to generate approximately 728 new trips entering and 598 new trips exiting the site during the weekday A.M. peak hour and 629 new trips entering and 811 new trips exiting the site during the weekday P.M. peak hour. Full build-out of the proposed development is projected to generate a total of 26,330 new trips on the adjacent roadway network. It should be noted that these “new trips” are after deductions for internal capture (trips exchanged between land uses within the development) and pass-by (background traffic accessing the development then exiting back onto the adjacent roadways) using approved rates and methodology from the ITE Trip Generation Manual.

Background traffic

Background traffic consists of 3% annual background traffic growth compounded to year 2025 for Phase 1 and 2028 for full build-out of the development. In addition to background traffic growth, the following adjacent developments were included as part of background traffic in the analysis:

- Buckhorn Preserve (20% built out – 80% of development traffic)
- Jordan Manors (40% built out – 60% of development traffic)
- Jordan Pointe (65% built out – 35% of development traffic)
- Woodbury (25% built out – 75% of development traffic)
- Friendship Station
- New Hill Assembly
- Olive Ridge
- Pleasant Park
- West Village

Trip Distribution and Assignment

The trip distribution to and from the development was assumed to be different for the residential and the commercial and office components of the development. Residential site trip distribution to and from the development was assumed to be as follows:

- 30% to/from the north via NC-540
- 30% to/from the south via NC-540
- 20% to/from the north via S. Salem Street
- 10% to/from the north via Kelly Road
- 10% to/from the west via Old US 1

Commercial and office related trip distribution to and from the development was assumed to be as follows:

- 25% to/from the north via S. Salem Street
- 15% to/from the north via Kelly Road
- 15% to/from the west via Apex Barbecue Road
- 15% to/from the west via Old US 1
- 10% to/from the north via NC-540
- 10% to/from the south via NC-540
- 5% to/from the north via Scotts Ridge Trail
- 5% to/from the north via Town Side Drive

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 14 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 Conditions** - Existing year 2019 traffic.
- **Background 2025 Conditions** – Projected year (2025) with background growth, background development traffic and committed roadway improvements, where applicable.
- **Combined 2025 Conditions** – Projected year (2025) with background traffic, Phase 1 traffic with recommended improvements where applicable.
- **Background 2028 Conditions** – Projected year (2028) with background growth, background development traffic and committed roadway improvements, where applicable.
- **Combined 2028 Conditions with Improvements*** – Projected year (2028) with background traffic and development build-out traffic with recommended improvements where applicable.

*Note: The TIA analyzed a Combined 2028 scenario without recommended improvements that is not published in this summary but is available for review in the TIA.

All recommendations for storage on turn lanes do not include the appropriate deceleration length and taper per NCDOT guidance.

Kelly Road and Old US 1 (Unsignalized)

Table 1. A.M. / P.M. Unsignalized Peak Hour Levels of Service Kelly Road and Old US 1					
	Existing 2019	Back- ground 2025	Combined 2025	Back- ground 2028	Combined 2028
<u>Overall</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
<i>Eastbound (Old US 1)</i>	<i>A / A¹</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>
<i>Westbound (Old US 1)</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>
<i>Southbound (Kelly Road)</i>	<i>E / C²</i>	<i>C / F²</i>	<i>C / F²</i>	<i>C / F²</i>	<i>C / F²</i>

1. Level of service for left turn movement on free-flowing approach.
2. Level of service for stop-controlled minor street approach.

TIA recommendations:

- The TIA recommends no additional improvements at this intersection.

Apex staff recommendations:

- Apex staff concurs with the recommendation. The development is not anticipated to add more than 10% to overall intersection traffic or to any single movement or approach in the Combined 2025 or 2028 scenarios. Therefore, based on the UDO, additional improvements are not required as part of the proposed development plan.
- Staff recommends future consideration in longer term local plans for a channelized southbound right turn lane on Kelly Road with an acceleration lane on Old US 1 or a signalized dual right turn lane subject to review by NCDOT as funding becomes available to mitigate the long queues and delays on the southbound approach. The stop-controlled southbound approach is currently operating at LOS E and C in the A.M. and P.M. peak hours. The southbound approach is anticipated to be converted to right-in/right-out operations with the development of the West Village commercial phase. West Village has also committed to widening Old US 1 to provide a westbound right turn lane with 200 feet of storage and two westbound through lanes at the intersection. With these roadway improvements the eastbound and westbound approaches will operate in free-flow and the southbound intersection approach will operate at LOS C and F in the A.M. and P.M. peak hours for all future scenarios. Average vehicle delays and queues on the southbound approach are projected to increase with each traffic scenario due to increasing traffic volumes on Old US 1. For the P.M. peak hour, average delays are projected to increase from 115 seconds per vehicle in the Background 2025 Scenario to 203 seconds per vehicle in the Combined 2028 scenario. Likewise 95th percentile queues are projected to go up from 375 feet in the Background 2025 scenario to 500 feet in the Combined 2028 scenario on the southbound approach.

S. Salem Street and Southbound NC-540 Ramps (Signalized)

Table 2. A.M. / P.M. Signalized Peak Hour Levels of Service S. Salem Street and Southbound NC-540 Ramps					
	Existing 2019	Back- ground 2025	Combined 2025	Back- ground 2028	Combined 2028
<u>Overall</u>	<u>A / B</u>	<u>B / D</u>	<u>B / D</u>	<u>B / E</u>	<u>C / C</u>
<i>Eastbound (Old US 1/ S. Salem Street)</i>	A / A	B / D	B / D	B / D	C / C
<i>Westbound (Old US 1/S. Salem Street)</i>	B / B	C / E	C / E	B / F	A / C
<i>Southbound (Southbound NC-540 Ramp)</i>	B / C	A / B	A / C	A / B	E / E

TIA recommendations:

- The TIA assumed the following intersection improvements committed by the West Village development to be constructed during Depot 499 Phase 1 by 2025:
 - Construction of a southbound free flow right turn lane on the ramp and an additional westbound receiving lane west of the intersection on Old US 1.
 - Traffic signal phasing modifications to account for new intersection geometry.

In addition to the intersection improvements committed by the West Village development, the TIA recommends the following geometric and signal timing improvements in the Combined 2028 scenario:

- Extend the southbound right turn lane to provide a minimum of 375 feet of storage, converting from free-flow as already committed by West Village back to signalized control.
- Construct an additional westbound approach through lane with a minimum of 200 feet of storage tapering back down to a single westbound through lane at the bridge over NC-540 (subject to feasibility of constructability).
- Provide signal modifications to account for the new lane configurations at the intersection, including signalization for the southbound right turn movement.

Furthermore, the TIA recommends that these improvements be reevaluated in the future prior to issuance of a driveway permit for Site Drive 7 before the committed improvements by West Village are implemented. The TIA does not recommend any improvements as part of the Combined 2025 scenario.

Apex staff recommendations:

- Apex staff concurs with no additional improvements at the intersection for Phase 1 (Combined 2025). However, if the West Village committed improvements are not constructed by 2025 or completion of Depot 499 Phase 1, whichever comes first, Apex staff recommends that the Depot 499 development provide these improvements.
- For build-out (Combined 2028), staff concurs with the recommendation to extend the southbound right turn lane on the ramp to provide a minimum of 375 feet of storage and place it under signalized control rather than free-flow. Apex staff also recommends starting the additional westbound through lane on S. Salem Street prior to the interchange, extending through the intersection of NC-540 Northbound Ramps across the bridge and through the intersection of NC-540 Southbound Ramps in order to provide two contiguous westbound through lanes.

The TIA shows that the S. Salem Street corridor from Apex Barbecue Road to Kelly Road will be operating at or close to capacity for Phase 1 (Combined 2025). Beyond 2025, traffic demand exceeds capacity of a two-lane road with turn lanes, showing failing or close to failing operations at multiple approaches along the corridor. At the intersection of NC-540 Southbound Ramps and S. Salem Street, the westbound approach is shown to experience LOS E with average vehicle delays of 75.9 seconds per vehicle, and 95th percentile queue of over 1,000 feet in the Combined 2025 scenario, which is close to operational failure. In the Combined 2028 scenario, the conditions on the westbound approach show operations to deteriorate to LOS F with average delays of 114.9 seconds per vehicle and 95th percentile queues beyond 1,200 feet. Likewise the southbound approach was analyzed to operate at LOS E with average delays of 74 seconds per vehicle, and southbound left turn queues of 490 feet. The signal modifications recommended in the TIA do an effective job of reducing queues and delays at the intersection (as shown in Table 2) by metering the volume of vehicles that can approach the intersection on S. Salem Street, but they do not resolve the larger capacity issues on the corridor. Rather, the capacity problems are exacerbated upstream at the intersection of the NC-540 Northbound Ramps. The TIA recommendation to construct a second, short, westbound through lane that tapers back to a single lane at the bridge, does not solve the capacity issue, nor can it be recommended per NCDOT design guidance. It does not provide adequate transition length for westbound right turning vehicles since they would have to weave across this additional short through lane before entering the right turn lane for the NC-540 Southbound on-ramp.

For build-out (Combined 2028), traffic generated by the proposed development is projected to be more than 10% of the projected total A.M. and P.M. peak hour traffic. Therefore, per the UDO the additional improvements are justified to mitigate impacts of development traffic. With the construction of an additional contiguous westbound through lane as recommended by Apex staff, the intersection will have enough capacity to serve all approaches at LOS D or better while at the same time addressing the capacity issues on the corridor upstream.

S. Salem Street and Northbound NC-540 Ramps (Signalized)

Table 3. A.M. / P.M. Signalized Peak Hour Levels of Service S. Salem Street and Northbound NC-540 Ramps					
	Existing 2019	Back- ground 2025	Combined 2025	Back- ground 2028	Combined 2028
<u>Overall</u>	<u>B / A</u>	<u>D / B</u>	<u>D / C</u>	<u>D / C</u>	<u>D / D</u>
<i>Eastbound (S. Salem Street)</i>	<i>A / A</i>	<i>D / B</i>	<i>F / B</i>	<i>E / B</i>	<i>D / C</i>
<i>Westbound (S. Salem Street)</i>	<i>B / B</i>	<i>B / C</i>	<i>C / C</i>	<i>C / C</i>	<i>E / D</i>
<i>Southbound (Northbound NC-540 Ramp)</i>	<i>B / B</i>	<i>C / C</i>	<i>C / D</i>	<i>C / D</i>	<i>E / D</i>

TIA recommendations:

- The TIA recommends signal timing modifications as well as implementation of a coordinated system plan for the S. Salem Street/ Old US 1 corridor for buildout (Combined 2028). The TIA recommends no improvements at the signalized intersection for Phase 1.

Apex staff recommendations:

- Apex staff concurs with the recommendation that no improvements are required at this intersection for Phase 1. Although, the operations of the eastbound approach were analyzed to deteriorate from LOS D to LOS F with average delays of 80.7 seconds per vehicle in the A.M. peak hour, the development is projected to contribute less than 10% to the projected total A.M. and P.M. peak hour traffic in Phase 1 of the project. Therefore, per the UDO, no improvements are recommended.
- For build-out (Combined 2028), staff recommends the two contiguous westbound through lanes carried from the from the site frontage across the bridge and through the intersection of Southbound NC-540 Ramps as noted previously.

The development is projected to contribute more than 20% to the projected total A.M. and P.M. peak hour traffic volume for build-out of the project in 2028. This additional volume contributes to increased delays and queues on the eastbound approach in the A.M. peak hour. The eastbound left turn reaches a 95th percentile queue length of 820 feet which exceeds the left turn storage capacity of 650 feet. Likewise vehicle delays for the left turn movement were analyzed to exceed 6 minutes per vehicle in the Combined 2028 scenario, indicating significant spillback onto the single eastbound through lane approach, causing queue backups on the NC-540 bridge. This poses a safety issue from an emergency response standpoint. The signal timing modifications recommended in the TIA mitigate queues and delays by metering the volume of vehicles that can enter the intersection (see Combined 2028 column in Table 3), however the signal timing

modifications do not resolve the capacity issues on the corridor. Rather, longer eastbound queues and delays are shifted to the upstream intersection of Southbound NC-540 Ramps, where the safety issue from an emergency response standpoint still remains. Likewise, in the P.M. peak hour, intersection volume to capacity ratios reach or exceed a value of 1.0 on the eastbound and westbound approaches in the Combined 2028 scenario. Per the *Highway Capacity Manual* section 18-6, a volume to capacity ratio of 1.0 or more indicates that cycle capacity is fully utilized and represents failure from a capacity perspective.

The only solution to improve operations is to add capacity at this intersection. Widening S. Salem Street to provide two through lanes in the westbound direction, as recommended by Apex staff will allow more green-time to be reallocated to the congested eastbound left turn movement, reducing 95th percentile queues to 561 feet in the A.M. peak hour, and reducing volume to capacity ratios to be below the threshold for failure on all movements in both the A.M. and P.M. peak hours. With the improvements recommended by Apex staff, all approaches will operate at LOS D or better during both peak hours in the Combined 2028 scenario.

S. Salem Street and Site Drive 7

Table 4. A.M. / P.M. Peak Hour Levels of Service S. Salem Street and Site Drive 7		
	Combined 2028 Unsignalized	Combined 2028 Signalized
<u>Overall</u>	<u>NA</u>	<u>C / C</u>
<i>Eastbound (Site Drive 7)</i>	<i>F / F²</i>	<i>D / D</i>
<i>Northbound (S. Salem Street)</i>	<i>B / B¹</i>	<i>B / B</i>
<i>Southbound (S. Salem Street)</i>	<i>NA</i>	<i>C / C</i>

1. Level of service for left turn movement on free-flowing approach.
2. Level of service for stop-controlled minor street approach.

TIA recommendations:

- The TIA recommends construction of Site Drive 7 as a full movement intersection with one lane of ingress and two lanes of egress (eastbound left turn lane with minimum 150 feet of storage, and a right turn lane with full length storage). The TIA recommends providing stop control on the minor-street eastbound approach as a temporary measure and installation of a traffic signal once warranted. On S. Salem Street the TIA recommends construction of an exclusive northbound left turn lane with 250 feet of storage, and an exclusive southbound right turn lane with 100 feet of storage.

Apex staff recommendations:

- Apex staff recommends two southbound through lanes on S. Salem Street with a shared through-right lane rather than the 100-foot right turn storage bay recommended in the TIA. A single through lane with signalization results in backups that extend beyond the proposed Site Drive 4.

- Staff concurs with the recommended northbound left turn lane on S. Salem Street with 250 feet of storage and the eastbound left turn lane with 150 feet of storage.
- Staff concurs with the TIA recommendation for signalization once warrants are met. When signalized the intersection will operate at LOS D or better during both peak hours. Analysis of the unsignalized intersection indicates a breakdown in operations on the minor street approach with LOS F and average vehicle delays of over 10 minutes per vehicle in both peak hours.

S. Salem Street and Site Drive 4 (unsignalized)

Table 5. A.M. / P.M. Unsignalized Peak Hour Levels of Service S. Salem Street and Site Drive 4	
	Combined 2028
<u>Overall</u>	<u>NA</u>
<i>Eastbound (Site Drive 4)</i>	<i>C / C²</i>
<i>Northbound (S. Salem Street)</i>	<i>B / B¹</i>
<i>Southbound (S. Salem Street)</i>	<i>NA</i>

1. Level of service for left turn movement on free-flowing approach.
2. Level of service for stop-controlled minor street approach.

TIA recommendations:

- The TIA recommends construction of Site Drive 4 as a restricted access intersection with right-in/right-out access and a northbound left turn (“left-over”) into the site for build-but (Combined 2028). The TIA recommends the minor street approach to be stop controlled with one lane of ingress and one lane of egress. Additionally the TIA recommends construction of a southbound right turn lane with minimum 100 feet of storage and a northbound left turn lane with 150 feet of storage on S. Salem Street.

Apex staff recommendations:

- Apex staff recommends restricting Site Drive 4 to right-in/right-out access only due its close proximity to Site Drive 7 (450 feet) to the south and recommends two southbound through lanes on S. Salem Street with a shared through-right lane rather than the 100-foot right turn storage bay.

S. Salem Street and Site Drive 1

Table 6. A.M. / P.M. Peak Hour Levels of Service S. Salem Street and Site Drive 1			
	Combined 2025 Unsignalized	Combined 2028 Unsignalized	Combined 2028 Signalized
<u>Overall</u>	<u>NA</u>	<u>NA</u>	<u>B / C</u>
<i>Eastbound (Site Drive 1)</i>	<i>C / D²</i>	<i>F / F²</i>	<i>D / D</i>
<i>Northbound (S. Salem Street)</i>	<i>A / B¹</i>	<i>B / B¹</i>	<i>B / B</i>
<i>Southbound (S. Salem Street)</i>	<i>NA</i>	<i>NA</i>	<i>C / C</i>

1. Level of service for left turn movement on free-flowing approach.
2. Level of service for stop-controlled minor street approach.

TIA recommendations:

- The TIA recommends construction of Site Drive 1 as a full movement intersection with one lane of ingress and two lanes of egress (eastbound left turn lane with minimum 100 feet of storage, and a right turn lane with full length storage) in Phase 1 (Combined 2025). On S. Salem Street the TIA also recommends construction of an exclusive northbound left turn lane with 200 feet of storage, and an exclusive southbound right turn lane with 100 feet of storage. The TIA recommends providing stop control on the minor-street eastbound approach in Phase 1 of the development, and monitoring and installing a signal when warranted for build-out (Combined 2028).

Apex staff recommendations:

- Staff recommends concurs with the recommendations for left and right turn storage lengths on S. Salem Street. Staff recommends extending the eastbound left turn lane in Phase 1 to provide 150 feet of storage with construction of Site Drive 1, to meet vehicle storage needs of the 95th percentile queue that also satisfy eventual 2028 conditions.
- For build-out (Combined 2028), Apex staff recommends extending an additional southbound through lane on S. Salem Street and removal of the exclusive right turn bay. Traffic analysis indicated that the eastbound approach will operate at LOS D or better in both peak hours under stop-controlled conditions in the Combined 2025 scenario. Analysis indicated that the eastbound approach will worsen to LOS F with average vehicle delays of over 5 minutes per vehicle in both peak hours under stop-controlled conditions in the Combined 2028 scenario. Signalization of the intersection will improve operations to LOS D or better on all approaches for 2028. The additional southbound through lane for build-out will ensure optimal utilization across the site frontage preventing queue blockages at the upstream and downstream intersections.

- Staff concurs with the recommendation to provide stop control on the minor street approach in Phase 1 (Combined 2025), monitor for signalization and install a traffic signal when warranted for build-out (Combined 2028).

S. Salem Street and Site Drive 3 (unsignalized)

Table 7. A.M. / P.M. Unsignalized Peak Hour Levels of Service S. Salem Street and Site Drive 3	
	Combined 2028 Unsignalized
<u>Overall</u>	<u>NA</u>
<i>Eastbound (Site Drive 3)</i>	<i>C / C²</i>
<i>Northbound (S. Salem Street)</i>	<i>NA</i>
<i>Southbound (S. Salem Street)</i>	<i>NA</i>

1. Level of service for left turn movement on free-flowing approach.
2. Level of service for stop-controlled minor street approach.

TIA recommendations:

- The TIA recommends construction of Site Drive 3 as a restricted access intersection with right-in/right-out access, and a left-over into the site for build-out (Combined 2028). The TIA recommends the minor street approach to be stop controlled with one lane of ingress and one lane of egress. Additionally the TIA recommends construction of a southbound right turn lane with minimum 100 feet of storage and a northbound left turn lane with 150 feet of storage on S. Salem Street. The TIA did not analyze the operations of the northbound left-over turning movement in the TIA, to be consistent with the Memorandum of Understanding (MOU), however for operations of the left-over, the TIA references Site Drive 4 where the left-over movement was analyzed.

Apex staff recommendations:

- Apex staff recommends two southbound through lanes on S. Salem Street with a shared through-right lane rather than the 100-foot right turn bay. The additional southbound through lane for build-out will ensure optimal utilization across the site frontage preventing queue blockages at the upstream and downstream intersections.
- Staff concurs with the recommendation to provide a left-over with 150 feet of storage at this location. All movements at the intersection are projected to operate at LOS C or better and 95th percentile queues for the left turn are not anticipated to exceed 50 feet.

S. Salem Street and Site Drive 6 (unsignalized)

Table 8. A.M. / P.M. Unsignalized Peak Hour Levels of Service S. Salem Street and Site Drive 6	
	Combined 2028 Unsignalized
<u>Overall</u>	<i>NA</i>
<i>Eastbound (Site Drive 6)</i>	<i>C / C²</i>
<i>Northbound (S. Salem Street)</i>	<i>NA</i>
<i>Southbound (S. Salem Street)</i>	<i>NA</i>

1. Level of service for left turn movement on free-flowing approach.
2. Level of service for stop-controlled minor street approach.

TIA recommendations:

- The TIA recommends construction of Site Drive 6 as a right-in/right-out restricted access intersection, for build-out (Combined 2028). The TIA recommends the minor street approach to be stop controlled with one lane of ingress and one lane of egress. Additionally the TIA recommends construction of a southbound right turn lane with minimum 100 feet of storage on S. Salem Street.

Apex staff recommendations:

- Apex staff recommends two southbound through lanes on S. Salem Street with a shared through-right lane rather than the 100-foot right turn storage bay. The additional southbound through lane for build-out will ensure optimal utilization across the site frontage preventing queue blockages at the upstream and downstream intersections. All movements at the intersection are projected to operate at LOS C or better.

S. Salem Street and Apex Barbecue Road (signalized)

Table 9. A.M. / P.M. Signalized Peak Hour Levels of Service S. Salem Street and Apex Barbecue Road					
	Existing 2019	Back- ground 2025	Combined 2025	Back- ground 2028	Combined 2028
<u>Overall</u>	<u>B / B</u>	<u>C / C</u>	<u>C / C</u>	<u>C / C</u>	<u>C / C</u>
<i>Eastbound (Apex Barbecue Road)</i>	<i>B / B</i>	<i>C / C</i>	<i>C / C</i>	<i>C / C</i>	<i>D / D</i>
<i>Northbound (S. Salem Street)</i>	<i>A / A</i>	<i>B / B</i>	<i>B / B</i>	<i>B / B</i>	<i>C / C</i>
<i>Southbound (S. Salem Street)</i>	<i>B / B</i>	<i>C / C</i>	<i>C / C</i>	<i>C / C</i>	<i>C / C</i>

TIA recommendations:

- The TIA recommends no improvements to the intersection in Phase 1 (Combined 2025). For build-out (Combined 2028), the TIA recommends extension of the northbound left turn lane on S. Salem Street to provide a minimum of 300 feet of storage. The TIA also recommends extension of the eastbound left turn on Apex Barbecue Road to provide a minimum of 375 feet of storage.

Apex staff recommendations:

- Apex staff recommends signal timing modifications, reducing the cycle length to 90 seconds during Phase 1 subject to NCDOT review and approval. Shorter cycle lengths should reduce queueing in the left turn lanes to avoid spillback into the through lanes.
- For build-out (Combined 2028), staff recommends converting the existing southbound right turn lane to a through lane for two southbound through lanes, and widening for an exclusive southbound right turn lane with 200 feet of storage. The additional through lane should be carried southward across the proposed site frontage. The additional capacity in the southbound direction will allow more green time to be reallocated to the eastbound approach to serve the heavy left turn movement for both the A.M. and P.M. peak hours to prevent excessive queues and reduce delay.
- For build-out (Combined 2028), Apex staff concurs with the TIA recommendation to extend the northbound left turn lane to provide 300 feet of storage, and extending the eastbound left turn lane to provide 375 feet of storage.

The proposed development is projected to contribute more than 15% to the projected total A.M. and P.M. intersection peak hour traffic volume for build-out (Combined 2028). Either one of the alternative improvement scenarios recommended by Apex staff will adequately address queueing on Apex Barbecue Road as required per UDO section 13.19.5.

It should be noted that the Advance Apex Transportation Plan identifies a future roundabout at the intersection of S. Salem Street and Apex Barbecue Road. After further analysis with The Highway Capacity Software (HCS 7), Apex traffic staff recommends against a single-lane roundabout. A dual lane roundabout will satisfy projected traffic demand at this location, but will require dual approaching and receiving lanes in the northbound and southbound direction as well as appropriate development of acceleration and deceleration lengths beyond the intersection to merge the traffic back onto S. Salem Street. The dual lane roundabout could be proposed as an alternative to turn lane improvements or it can be retained in long term plans. However, there are right-of-way constraints due to the proximity of the CSX railroad, so the required shift in existing S. Salem Street along with road widening and construction of such a large circle may be impractical.

Apex Barbecue Road and Site Drive 5 (unsignalized)

Table 10. A.M. / P.M. Unsignalized Peak Hour Levels of Service S. Salem Street and Site Drive 5	
	Combined 2028 Unsignalized
<u>Overall</u>	<u>NA</u>
<i>Eastbound (Apex Barbecue Road)</i>	<i>NA</i>
<i>Westbound (Apex Barbecue Road)</i>	<i>NA</i>
<i>Northbound (Site Drive 5)</i>	<i>B / B²</i>

1. Level of service for left turn movement on free-flowing approach.
2. Level of service for stop-controlled minor street approach.

TIA recommendations:

- The TIA recommends construction of Site Drive 5 as a right-in/right-out restricted access intersection for build-out (Combined 2028). The TIA recommends the minor street approach to be stop controlled with one lane of ingress and one lane of egress. Additionally the TIA recommends construction of an eastbound right turn lane with minimum 100 feet of storage on Apex Barbecue Road.

Apex staff recommendations:

- Apex staff concur with the recommendations in the TIA. The right-out movement is projected to operate at LOS B in both peak hours and 95th percentile queues are not anticipated to exceed 50 feet. Per the preliminary layout for the development, it appears that access to Site Drive 5 is located 250 feet west of the signalized intersection of Apex Barbecue Road and S. Salem Street. Site Drive 5 should be shifted further west of the S. Salem Street intersection on Apex Barbecue Road, up to 500 feet if possible to provide more offset from downstream intersection queueing.

Apex Barbecue Road and Site Drive 2 (unsignalized)

Table 11. A.M. / P.M. Unsignalized Peak Hour Levels of Service Apex Barbecue Road and Site Drive 2		
	Combined 2025	Combined 2028
<u>Overall</u>	<u>NA</u>	<u>NA</u>
<i>Eastbound (Apex Barbecue Road)</i>	NA	NA
<i>Westbound (Apex Barbecue Road)</i>	A / A ¹	A / A ¹
<i>Northbound (Site Drive 2)</i>	B / B ²	D / F ²

1. Level of service for left turn movement on free-flowing approach.
2. Level of service for stop-controlled minor street approach.

TIA recommendations:

- The TIA recommends construction of Site Drive 2 as a full movement stop-controlled intersection with one lane of ingress and two lanes of egress (northbound left turn lane with minimum 100 feet of storage, and a right turn lane with full length storage) in Phase 1. On Apex Barbecue Road, the TIA also recommends construction of an exclusive westbound left turn lane with 100 feet of storage, and an exclusive eastbound right turn lane with 100 feet of storage. The TIA does not recommend any additional improvements for build-out (Combined 2028).

Apex staff recommendations:

- Apex staff recommends Site Drive 2 to be shifted 200 feet to the west to align with Magdala Place (Saint Mary Magdalene school access). In addition, staff recommends a northbound left turn lane with 150 feet of storage with construction of Site Drive 2. The extra storage is recommended to accommodate the 95th percentile queue of 150 feet in the P.M. peak hour for the Combined 2028 scenario. Apex staff concurs with the turn lane storage recommendations on Apex Barbecue Road. Staff also recommends monitoring this intersection for signalization following substantial completion of Phase 1 and prior to build-out, then installing a signal when warranted and permitted by NCDOT.

Apex Barbecue Road and Town Side Drive (unsignalized)

Table 12. A.M. / P.M. Unsignalized Peak Hour Levels of Service Apex Barbecue Road and Town Side Drive					
	Existing 2019	Back- ground 2025	Combined 2025	Back- ground 2028	Combined 2028
<u>Overall</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
<i>Eastbound (Apex Barbecue Road)</i>	<i>A / A¹</i>	<i>A / A¹</i>	<i>A / A¹</i>	<i>A / A¹</i>	<i>A / B¹</i>
<i>Westbound (Apex Barbecue Road)</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>
<i>Southbound (Town Side Drive)</i>	<i>C / B²</i>	<i>C / C²</i>	<i>C / C²</i>	<i>D / C²</i>	<i>F / F²</i>

1. Level of service for left turn movement on free-flowing approach.
2. Level of service for stop-controlled minor street approach.

TIA recommendations:

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

Apex staff recommendations:

- Apex staff recommends construction of a westbound right turn lane with 50 feet of storage per NCDOT Warrants for Left and Right Turns for the Combined 2028 scenario. Staff also recommends monitoring this intersection for signalization prior to build-out of the development and installing a signal when warranted and permitted by NCDOT. In the Build 2028 scenario, the development is projected to contribute more than 20% to the projected total A.M. and P.M. intersection peak hour traffic volume, causing level of service on the minor street approach to deteriorate to LOS F during both peak hours. Average vehicle delays are projected to be over 3 minutes per vehicle in the A.M. peak hour with a 95th percentile queue of 400 feet on Town Side Drive. Per the UDO, a traffic signal will improve operations on all approaches to LOS D or better during both peak hours.

Apex Barbecue Road and Scotts Ridge Trail / Woodall Crest Drive (unsignalized)

Table 13. A.M. / P.M. Unsignalized Peak Hour Levels of Service Apex Barbecue Road and Scotts Ridge Trail / Woodall Crest Drive					
	Existing 2019	Back- ground 2025	Combined 2025	Back- ground 2028	Combined 2028
Overall	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Eastbound (Apex Barbecue Road)	<i>A / A¹</i>	<i>A / A¹</i>	<i>A / A¹</i>	<i>A / A¹</i>	<i>A / A¹</i>
Westbound (Apex Barbecue Road)	<i>A / A¹</i>	<i>A / A¹</i>	<i>A / A¹</i>	<i>A / A¹</i>	<i>A / A¹</i>
Northbound (Woodall Crest Drive)	<i>B / B²</i>	<i>C / C²</i>	<i>C / D²</i>	<i>C / C²</i>	<i>F / F²</i>
Southbound (Scotts Ridge Trail)	<i>C / C²</i>	<i>D / D²</i>	<i>D / D²</i>	<i>E / D²</i>	<i>F / F²</i>

1. Level of service for left turn movement on free-flowing approach.
2. Level of service for stop-controlled minor street approach.

TIA recommendations:

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

Apex staff recommendations:

- Per the Advance Apex transportation plan, existing Woodall Crest Drive is a major collector road, running south for approximately 1,000 feet from Apex Barbecue Road to a major collector street stub (Aspen River Lane) at the southwest corner of the Woodall Estates development, with plans to be extended southward through the Depot 499 development to Old US 1. As such, Apex staff recommends the development stripe existing Aspen River Lane and Woodall Crest Drive with a double yellow centerline and edge line pavement markings per the Town of Apex major collector street typical section when the development extends Aspen River Lane for access.
- Also, staff recommends that this intersection be monitored for signalization prior to build-out and that a traffic signal be installed when warranted and permitted by NCDOT. In the Combined 2028 scenario, the development is projected to contribute more than 20% to the projected total A.M. and P.M. intersection peak hour traffic volume, causing level of service on the minor street approaches to deteriorate to LOS F during both peak hours. Average vehicle delays are projected to be over 2 minutes per vehicle on the southbound approach, and close to 60 seconds per vehicle on the northbound approach in both peak hours. Per the UDO, a traffic signal will improve operations on all approaches to LOS D or better during both peak hours.

Apex Barbecue Road and Kelly Road (signalized)

Table 14. A.M. / P.M. Signalized Peak Hour Levels of Service Apex Barbecue Road and Kelly Road					
	Existing 2019	Back- ground 2025	Combined 2025	Back- ground 2028	Combined 2028
<u>Overall</u>	<u>C / B</u>	<u>D / D</u>	<u>D / E</u>	<u>D / E</u>	<u>D / D</u>
<i>Eastbound (Apex Barbecue Road)</i>	<i>C / B</i>	<i>E / E</i>	<i>E / E</i>	<i>E / E</i>	<i>D / D</i>
<i>Westbound (Apex Barbecue Road)</i>	<i>B / B</i>	<i>D / E</i>	<i>D / E</i>	<i>D / F</i>	<i>D / E</i>
<i>Northbound (Kelly Road)</i>	<i>C / C</i>	<i>D / D</i>	<i>D / D</i>	<i>D / D</i>	<i>D / D</i>
<i>Southbound (Kelly Road)</i>	<i>B / B</i>	<i>D / D</i>	<i>D / D</i>	<i>D / E</i>	<i>E / D</i>

TIA recommendations:

- The West Village development is committed to constructing the following background intersection improvements with the first Phase of commercial development, or as otherwise determined during review and approval of site plans:
 - Construct an exclusive 400-foot eastbound left-turn lane on Apex Barbecue Road.
 - Construct an exclusive 350-foot westbound left-turn lane on Apex Barbecue Road.
 - Extend the northbound left-turn lane on Kelly Road to 350 feet.
 - Construct an exclusive 150-foot northbound right turn lane on Kelly Road.
 - Extend the southbound left-turn lane on Kelly Road to 350 feet.
 - Construct an exclusive 200-foot southbound right turn lane on Kelly Road.
 - Provide signal modifications to account for new lane configurations at the intersection.

In addition to these background improvements, the TIA recommends construction of an exclusive westbound right turn lane on Apex Barbecue Road with a minimum of 200 feet of storage (subject to feasibility of right-of-way acquisition), as well as an exclusive eastbound right turn lane on Apex Barbecue Road with a minimum of 175 feet of storage (subject to feasibility of constructability and right-of-way acquisition) for build-out (Combined 2028). The TIA also recommends a signal plan update to account for the new lane configurations at the intersection.

Apex staff recommendations:

- Apex staff concur with the TIA that no additional improvements are recommended at the intersection for Phase 1 (Combined 2025), subject to West Village’s committed

improvements being constructed by the year 2025. The intersection is projected to operate at LOS D and E in the A.M. and P.M. peak hours. The intersection is projected to operate with enough capacity to meet all traffic demand during both peak hours. Per the UDO, the Depot 499 development will not generate enough trips to trigger off-site improvements in Phase 1 of the project, even though the intersection is projected to operate at overall LOS E in the P.M. peak hour. If the West Village development stalls prior to substantial completion of Depot 499 Phase 1, Apex staff recommends re-evaluation of this intersection with a TIA update to continue development plans beyond Phase 1.

- For build-out (Combined 2028), staff concurs with the recommendations for a westbound right turn lane with a minimum of 200 feet of storage, as well as an exclusive eastbound right turn lane with a minimum of 175 feet of storage. In addition, Apex staff recommends the construction of a second northbound through lane on Kelly Road that starts 800 feet south of the intersection and continues for approximately 1,000 feet north, dropping off with a 45:1 merge taper beyond the intersection of Grand Kelly Way. Apex staff also recommends widening the southbound approach of Kelly Road to provide a two-way left turn (TWLT) lane from Apex Barbecue Road to Karawind Lane to allow more vehicle storage for the heavy southbound left turn movement. Additionally, signal timing should be adjusted to allow for permitted + protected phasing for the eastbound and westbound left turn movements.

The development is projected to contribute more than 10% to the projected total A.M. and P.M. peak hour traffic volume for build-out (Combined 2028). Specifically the southbound left turn movement, the westbound through and right turn movements, and the eastbound through movement are each projected to have traffic volume increases of over 25% due to full build conditions. Synchro analysis indicated overall LOS D in both peak hours in the Build 2028 scenario, however storage bay capacities on multiple approaches were shown to operate over their capacity, leading to spillover and lane blockage of the through lanes. Per NCDOT Congestion Management guidelines, further analysis using SimTraffic simulation software showed that the westbound left turn movements and the southbound left turn movements were spilling over into the through lanes causing operational failure with queues of over 1,000 feet in the southbound direction and over 2,000 feet in the westbound direction when simulation was run for a 60 minute interval during the P.M. peak hour.

Simulation also showed that modifying signal timing to allow for permitted + protected left turn operations on the eastbound and westbound approaches eliminated the spillover in the westbound direction. To mitigate queuing and spillover in the southbound direction, dual southbound left turn lanes and dual receiving lanes in the eastbound direction were considered. However, due to the physical constraints of widening Apex Barbecue Road and bridge over NC-540 for the dual receiving lanes, an alternative approach that increases capacity on Kelly Road was determined to be more viable and also consistent with long range plans. An additional through lane northbound in combination with widening on the north leg for the TWLT lane provides both additional green time and extra storage for the heavy southbound left turn movement. With the widening of Kelly Road, southbound left turn queues are projected to decrease to 500 feet in the peak hours, and all approaches are anticipated to operate at LOS D or better with no operational failures due to queue spillback.

Speed Limit Reduction Request – S. Salem Street.

- The TIA recommends a speed limit reduction on South Salem Street/Old US 1 (SR 1011) between Grappenhall Drive and the NC-540 interchange, and from the NC-540 interchange south to Pleasant Plains Road. The TIA recommends a speed limit reduction from currently posted 55 mph to 45 mph. A request has been sent to NCDOT for consideration with the TIA.

Apex staff recommendations:

- Apex staff is in support of the speed limit reduction to 45 mph from Grappenhall Drive to Pleasant Plains Road subject to NCDOT review and approval.

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,



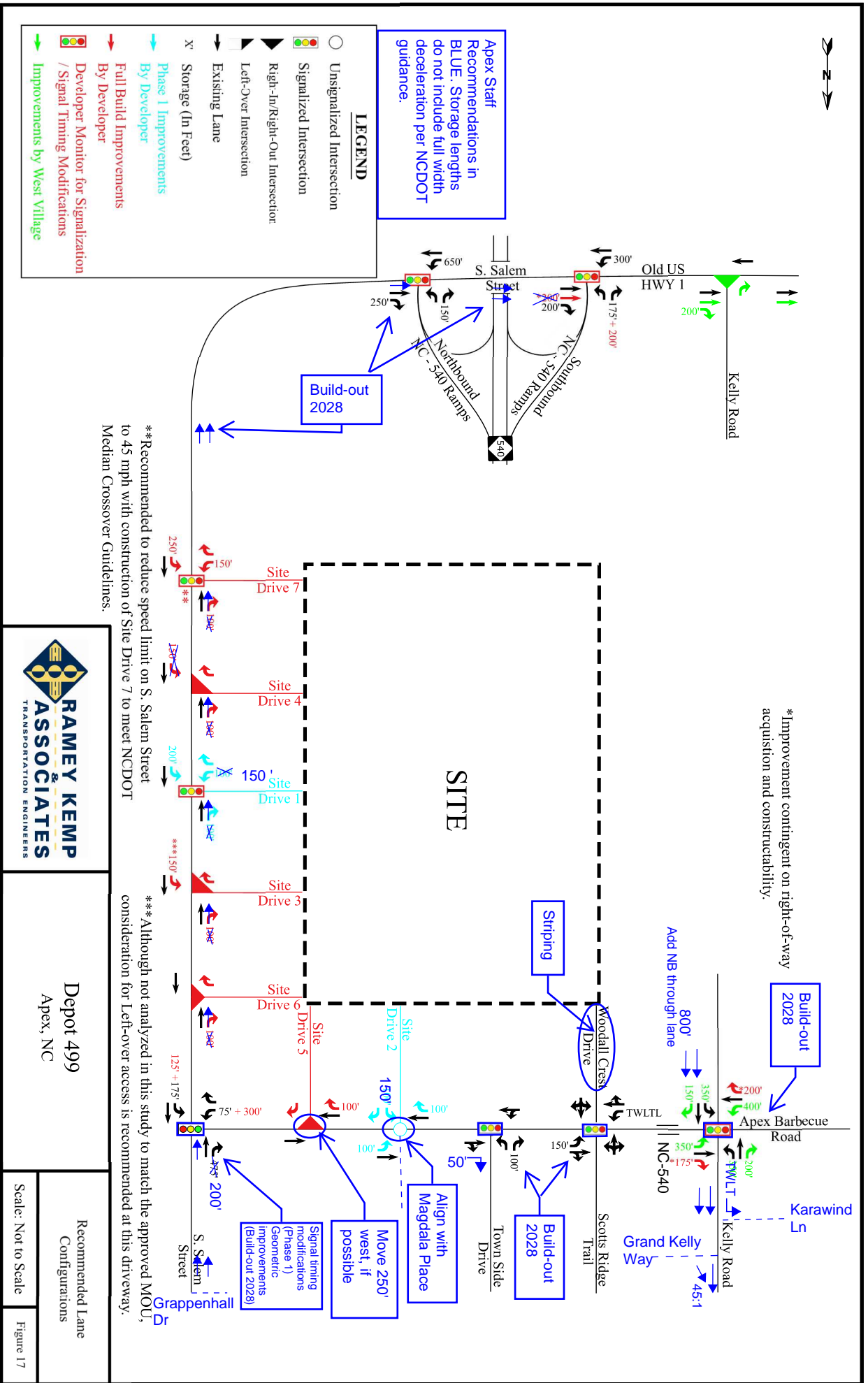
Serge Grebenschikov
Traffic Engineer
919-372-7448

Corrections to the TIA

Page 73 of 77. Recommended Improvements by Developer – Full Buildout:

- Extend the southbound ~~left-turn~~ right turn lane to provide a minimum of 375 feet of storage and appropriate taper.

Explanation: Southbound approach only has a right turn lane. This is shown correctly on the sketch diagram on page 76 of 77.



Apex Staff Recommendations in BLUE. Storage lengths do not include full width deceleration per NCDOT guidance.

LEGEND	
○	Unsignalized Intersection
●●●	Signalized Intersection
◀▶	Right-In/Right-Out Intersection
◀▶	Left-Over Intersection
→	Existing Lane
X	Storage (In Feet)
↔	Phase 1 Improvements By Developer
↔	Full Build Improvements By Developer
⊙	Developer Monitor for Signalization / Signal Timing Modifications
↔	Improvements by West Village

*Improvement contingent on right-of-way acquisition and constructability.

**Recommended to reduce speed limit on S. Salem Street to 45 mph with construction of Site Drive 7 to meet NCDOT Median Crossover Guidelines.

*** Although not analyzed in this study to match the approved MOU, consideration for Left-over access is recommended at this driveway.

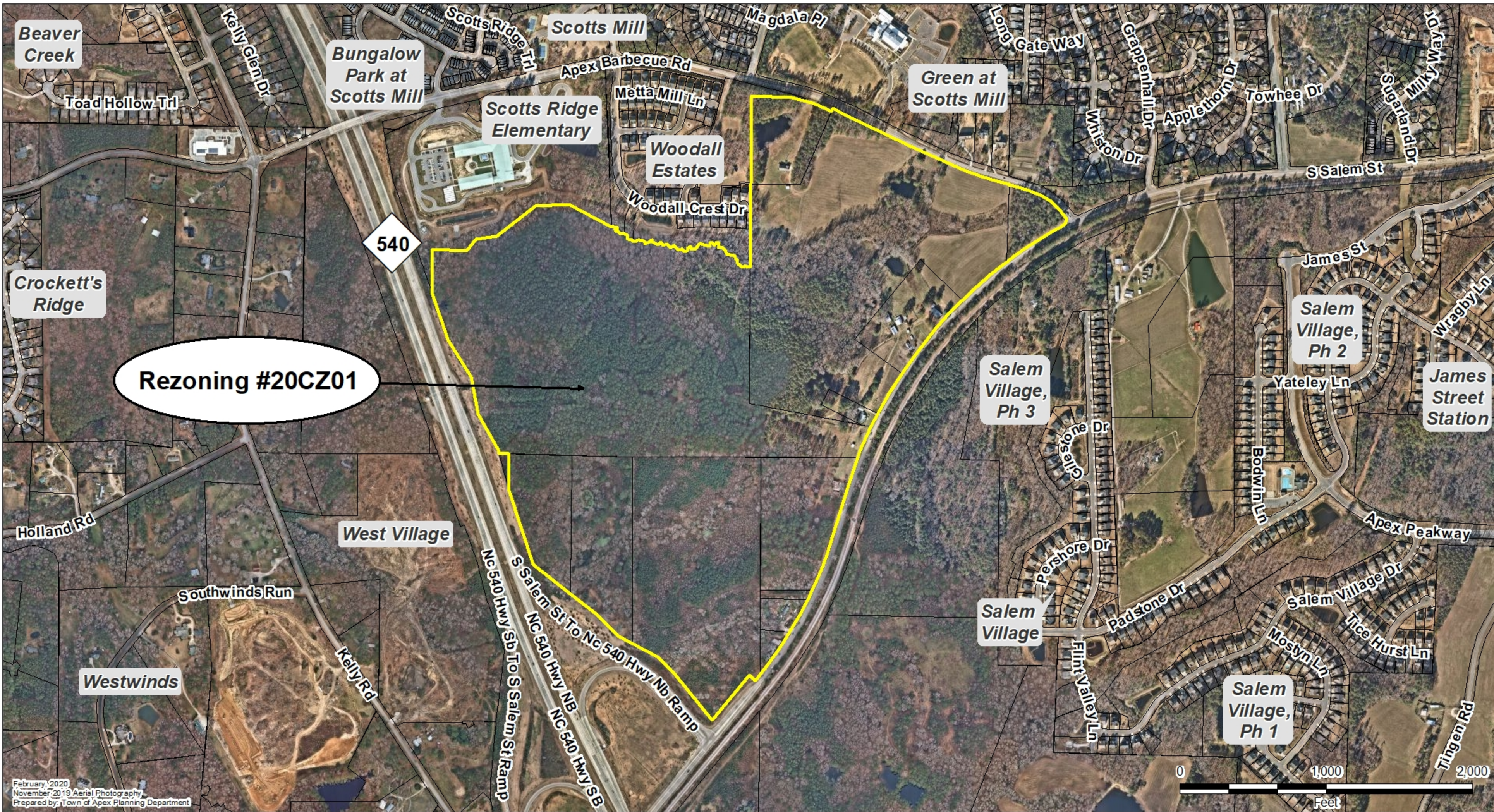


Depot 499
Apex, NC

Recommended Lane Configurations

Scale: Not to Scale

Figure 17



February, 2020
 November, 2019 Aerial Photography
 Prepared by: Town of Apex Planning Department

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 #: 20CZ01 Submittal Date: 1/2/2020
Fee Paid: \$ 5208.00 Check #: 114134

PETITION TO AMEND THE OFFICIAL ZONING DISTRICT MAP

Project Name: Depot 499
Address(es): See attached sheet on the following page for list of addresses
PIN(s): See attached sheet on the following page for list of PINs

Acreage: 200.80
Current Zoning: RA and B1-CZ Proposed Zoning: PUD-CZ
Current 2045 LUM Designation: High density residential, Medium/High Density Residential, Office Employment, Commercial Services
Requested 2045 LUM Designation: High density residential, Medium/High Density Residential, Office Employment, Commercial Services
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>171.90 acres</u>
Area proposed as non-residential development:	Acreage:	<u>51.57 acres</u>
Percent of mixed use area proposed as non-residential:	Percent:	<u>30%</u>

Applicant Information

Name: Stephen Dorn - Lennar
Address: 1100 Perimeter Park Drive Suite 112
City: Morrisville State: NC Zip: 27560
Phone: 919-465-5925 E-mail: stephen.dorn@lennar.com

Owner Information

Name: See attached sheet on the following page for all owner information
Address: _____
City: _____ State: _____ Zip: _____
Phone: _____ E-mail: _____

Agent Information

Name: Bob Zumwalt - McAdams Co
Address: 2905 Meridian Parkway
City: Durham State: NC Zip: 27713
Phone: 919-287-0789 E-mail: zumwalt@mcadamsco.com

Other contacts: _____

20CZ01

OWNER	ADDRESS	CITY	STATE	ZIP	PINs
MEKA, NARENDRA	0 KELLY RD	APEX	NC	27502	731459383
VARYA LLC	1604 S SALEM ST	APEX	NC	27502	731554102
POE ACRES FAMILY FARM LLC	0 APEX BARBECUE RD	APEX	NC	27502	731564395
HUNTER, CAREY B	1525 S SALEM ST	APEX	NC	27502	731641147
SZYMKIEWICZ, PAUL M JIN, WEI	1420 S SALEM ST	APEX	NC	27502	731645370
UTLEY, PAMELA	1420 S SALEM ST	APEX	NC	27502	731646532
POE ACRES FAMILY FARMS LLC	1330 S SALEM ST	APEX	NC	27502	731657166
POE, DARYL POE, JEANNE	6401 APEX BARBECUE RD	APEX	NC	27502	731676714
POE ACRES FAMILY FARMS LLC	1300 S SALEM ST	APEX	NC	27502	731750984
POE ACRES FAMILY FARMS LLC	0 APEX BARBECUE RD	APEX	NC	27502	731761944
POE, WILLIAM DOUGLAS POE, JEAN S	1216 S SALEM ST	APEX	NC	27502	731766588
REGENCY INTERNATIONAL INVESTMENTS LLC	0 APEX BARBECUE RD	APEX	NC	27502	731873224

PLANNED UNIT DEVELOPMENT APPLICATION

Application #: 20CZ01

Submittal Date: 1-2-2020

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:

Approximately 5.41 acres on the northeast corner of PIN 0731761944 located at 0 Apex Barbecue Road.

Current 2045 Land Use Classification: Office Employment

Proposed 2045 Land Use Classification: High Density Residential

What conditions justify 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.

The Office Employment Land Use Map Classification allows O&I, TF, PUD, and MEC zoning and High Density Residential allows HDSF, PUD, and TND. Although both allow the desired PUD zoning, the proposed use in this area is multi-family and/or townhouses, and this request will allow the FLUM to match the intended use. High Density Residential will keep the land more consistent with the surrounding areas given the Medium/High Density Residential land directly west and the Medium Density Residential land directly north. High Density Residential is described in the Comprehensive Plan as "townhomes and apartments up to 20 units per acre. . . providing housing options in close proximity to major commercial areas and transportation corridors." An amendment to High Density Residential allows for a smoother transition from the Medium Density Residential land directly north into the Community Mixed Use designated area, which will provide close proximity to commercial uses. This amendment will also allow for smoother transitions between uses throughout the parcel of land, rather than interposing a small area of Office Employment land in a predominantly residential area.

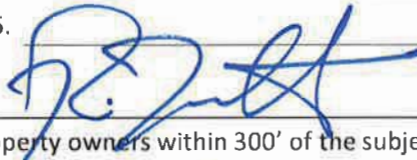
CERTIFIED LIST OF NEIGHBORING PROPERTY OWNERS

Application #: 20CZ01

Submittal Date: 1-2-2020

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 the following sheets for complete list	
2.	
3.	
4.	
5.	
6.	
7.	
8.	
9.	
10.	
11.	
12.	
13.	
14.	
15.	

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

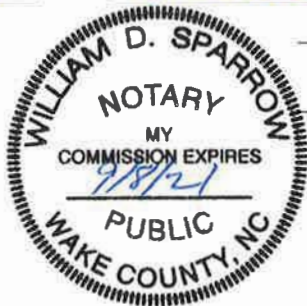
Date: 12/31/19

By: Robert Zunwalt

COUNTY OF WAKE STATE OF NORTH CAROLINA

Sworn and subscribed before me, William D. Sparrow, a Notary Public for the above State and County, on this the 31 day of December, 2019.

SEAL




Notary Public
William D. Sparrow
Print Name

My Commission Expires: 9/8/21

Owner	PIN
SEARS, TONY C SEARS, JUDY T	731329405
MILLS, DOROTHY M MILLS, DAVID G TRUSTEE	731366481
APEX TOWN OF	731407544
MIUCCIO, ANTHONY J TRUSTEE MIUCCIO, MARTHA J TRUSTEE	731424892
NC DEPARTMENT OF TRANSPORTATION	731426540
NC DEPT OF TRANSPORTATION TURNPIKE AUTHORITY	731429605
RICHARDS, BARRETT	731433004
FAHEY FAMILY FARM LLC	731434504
FAHEY FAMILY FARM LLC	731434767
FAHEY FAMILY FARM LLC	731435707
KENNEDY, WAYNE V KENNEDY, GEORGIA T	731436017
SM RALEIGH LLC	731441619
NC DEPT OF TRANSPORTATION TURNPIKE AUTHORITY	731452647
NC DEPT OF TRANSPORTATION TURNPIKE AUTHORITY	731457553
NC DEPARTMENT OF TRANSPORTATION	731459383
WAKE COUNTY BOARD OF EDUCATION	731477630
ROSEWOOD 1322 LLC	731514493
LAMPE, JOHN H	731518904
ROSEWOOD 1322 LLC	731523064
VARYA LLC	731554102
POE ACRES FAMILY FARM LLC	731564395
WOODALL ESTATES OWNERS ASSOCIATION INC	731575313
DAVIS, KYLE DAVIS, KARYN	731577338
BRISSON, LEE C BRISSON, TRACI L	731578308
HOU, SHENGBO GAO, QIAN	731578358
WOODALL ESTATES OWNERS ASSOCIATION INC	731578622
WISE, PATRICK WISE, NOUNIVAN	731579252
SMITH, JONDAN SMITH, CRYSTAL	731579318
SINGAMSETTY, SRIKANTH KARADGE, UMA BABURAO	731579407
ISSLER, PHILIP FREDERICK JR ISSLER, LISA RENEE	731579553
WOODALL ESTATES OWNERS ASSOCIATION INC	731589212
NC TURNPIKE AUTHORITY	731617572
HUNTER, CAREY B	731641147
SZYMKIEWICZ, PAUL M JIN, WEI	731645370
UTLEY, PAMELA	731646532
POE ACRES FAMILY FARMS LLC	731657166
WOODALL ESTATES OWNERS ASSOCIATION INC	731670122
ZAI, YINGKAI LIU, XIAOXUE	731670212
RAJAGOPAL, RAJESH TRUSTEE VENKATACHALAM, PRIYA TRUSTEE	731670262
WANG, XIAOXI WU, YUANTAI	731670338
WOODALL ESTATES OWNERS ASSOCIATION INC	731670443
KEARNEY, PETER KEARNEY, MARY	731670507
WOODALL ESTATES OWNERS ASSOCIATION INC	731670804
SHRESTHA, BIVA OJHA, UNNATI	731670926
JONES, WILLIAM JONES, JENNIFER	731670994
RAJENDRAN, PRABU GOVARDHANAN, SHOBANA	731671222

SUNDARAM, RAMAKRISHNAN	731671282
SIFONTE, DANNY SIFONTE, BERNA	731671942
SAXENA, VIJAY SAXENA, PARUL VIJAY	731672242
HOGAN, JEFFREY A HOGAN, JEANNE M	731672368
WOODALL, ANN C	731672786
CHEN, CHEN MENG, MENG	731673202
POON, KENNETH RONG, MENGQI	731673262
STUNTZ, KIM O'BRIEN, MICHAEL	731673328
WOODALL ESTATES OWNERS ASSOCIATION INC	731673425
CEARA PETERSON, LAURA AMELIA	731673490
POE, DARYL POE, JEANNE	731676714
CAO, ALLEN JUN XU, LILI	731680113
ANTONY, PRAVEEN JACOB, LIJA PUNNAMOOTIL	731680172
THORNTON, BRIAN GRANBERRY, WENDY	731681131
KOYTEK, ANTHONY J KOYTEK, ANTOINETTE M	731681190
DAVIDSON, STEPHEN REID DAVIDSON, KAYLA BROOK	731681325
LANE, DENTON JOHN LANE, LISA GABRIEL	731682304
LOVELACE, LESLEY ELIZABETH	731682363
MECKES, DOUGLAS R MECKES, GEORGIA S	731682459
PAEZ, MARGARET M	731683289
EMRE, NILAY YILMAZ YILMAZEMRE, ATA	731683321
TERRENTS, BRADY P TERRENTS, AMY C	731683407
BROWN, ARTHUR D III	731683465
YAKEL, JERREL L YAKEL, MELODY L	731684424
CJS APEX ASSEMBLAGE LLC	731731163
POE ACRES FAMILY FARMS LLC	731750984
POE ACRES FAMILY FARM LLC	731756252
POE ACRES FAMILY FARMS LLC	731761944
POE, WILLIAM DOUGLAS POE, JEAN S	731766588
POE, BOBBY W POE, ELIZABETH A	731776890
POE, BOBBY W POE, ELIZABETH A	731776915
CANTRELL, DONALD T CANTRELL, MARY E	731779802
ROMAN CATHOLIC DIOCESES OF RAL NC	731782553
MURPHY, MARK SEAN ANDERSON, DAWN EVE	731788078
MILLER, SAM D MILLER, SARAH C	731789048
CRAFT, SAMUEL CRAFT, MARA	731789098
SALEM VILLAGE OWNERS ASSOCIATION INC	731854079
CJS APEX ASSEMBLAGE LLC	731863120
CANTRELL, DARYL S CANTRELL, JESSICA	731870820
CANTRELL, DANIEL T CANTRELL, COURTNEY	731871830
REGENCY INTERNATIONAL INVESTMENTS LLC	731873224
BRITT, MARJORIE TINGEN	731873793
JON CAPUTO TRUST	731876587
KRUSE, ROBERT KRUSE, ABBEY	731876688
MCKINNISH, LORI	731877367
THOMAS, KIMBERLY H	731877563
SCHREIBER, COREY SCHREIBER, AMBER	731877743

DOYLE, ANDREW DOYLE, LAUREN

731877801

MILAM, MELINDA GAIL

731878546

WHITEHALL MANOR HOMEOWNERS ASSN

731879595

BOBBITT, FRANK C III BOBBITT, MARY L

731880048

PRINCE, MARION C FISH, NANCY P HEIRS

731961764

DEVELOPMENT NAME APPROVAL APPLICATION

Application #: 20CZ01

Submittal Date: 1-2-2020

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 #: 20CZ01

Submittal Date: 1-2-2020

Proposed Subdivision/Development Information

Description of location: Southwest corner of S Salem Street and Apex Barbecue Road

Nearest intersecting roads: Apex Barbecue Road and S Salem Street

Wake County PIN(s): 731459383, 731554102, 731564395, 731641147, 731645370, 731646532, 731657166, 731676714, 731750984, 731761944, 731766588, 731873224

Township: Apex

Contact Information (as appropriate)

Contact person: Stephen Dorn

Phone number: 919-224-9922

Fax number: _____

Address: 1100 Perimeter Park Drive, Suite 112 Morrisville, NC 27560

E-mail address: stephen.dorn@lennar.com

Owner: See attached sheet on the following page for all owner information

Phone number: _____

Fax number: _____

Address: _____

E-mail address: _____

Proposed Subdivision/Development Name

1st Choice: Depot 499

2nd Choice (Optional): _____

Town of Apex Staff Approval:

Town of Apex Planning Department Staff

Date

OWNER	ADDRESS	CITY	STATE	ZIP
MEKA, NARENDRA	0 KELLY RD	APEX	NC	27502
VARYA LLC	1604 S SALEM ST	APEX	NC	27502
POE ACRES FAMILY FARM LLC	0 APEX BARBECUE RD	APEX	NC	27502
HUNTER, CAREY B	1525 S SALEM ST	APEX	NC	27502
SZYMKIEWICZ, PAUL M JIN, WEI	1420 S SALEM ST	APEX	NC	27502
UTLEY, PAMELA	1420 S SALEM ST	APEX	NC	27502
POE ACRES FAMILY FARMS LLC	1330 S SALEM ST	APEX	NC	27502
POE, DARYL POE, JEANNE	6401 APEX BARBECUE RD	APEX	NC	27502
POE ACRES FAMILY FARMS LLC	1300 S SALEM ST	APEX	NC	27502
POE ACRES FAMILY FARMS LLC	0 APEX BARBECUE RD	APEX	NC	27502
POE, WILLIAM DOUGLAS POE, JEAN S	1216 S SALEM ST	APEX	NC	27502
REGENCY INTERNATIONAL INVESTMENTS LLC	0 APEX BARBECUE RD	APEX	NC	27502

STREET NAME APPROVAL APPLICATION

Application #: 20CZ01 Submittal Date: 1-2-2020

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: Southwest corner of S Salem Street and Apex Barbecue Road

Nearest intersecting roads: Apex Barbecue Road and S Salem Street

Wake County PIN(s): 731459383, 731554102, 731564395, 731641147, 731645370, 731646532, 731657166, 731676714, 731750984, 731761944, 731766588, 731873224

Township: Apex

Contact information (as appropriate)

Contact person: Stephen Dorn

Phone number: 919-224-9922 Fax number: _____

Address: 1100 Perimeter Park Drive, Suite 112 Morrisville, NC 27560

E-mail address: stephen.dorn@lennar.com

Owner: See attached sheet on the following page for all owner information

Phone number: _____ Fax number: _____

Address: _____

E-mail address: _____

OWNER	ADDRESS	CITY	STATE	ZIP
MEKA, NARENDRA	0 KELLY RD	APEX	NC	27502
VARYA LLC	1604 S SALEM ST	APEX	NC	27502
POE ACRES FAMILY FARM LLC	0 APEX BARBECUE RD	APEX	NC	27502
HUNTER, CAREY B	1525 S SALEM ST	APEX	NC	27502
SZYMKIEWICZ, PAUL M JIN, WEI	1420 S SALEM ST	APEX	NC	27502
UTLEY, PAMELA	1420 S SALEM ST	APEX	NC	27502
POE ACRES FAMILY FARMS LLC	1330 S SALEM ST	APEX	NC	27502
POE, DARYL POE, JEANNE	6401 APEX BARBECUE RD	APEX	NC	27502
POE ACRES FAMILY FARMS LLC	1300 S SALEM ST	APEX	NC	27502
POE ACRES FAMILY FARMS LLC	0 APEX BARBECUE RD	APEX	NC	27502
POE, WILLIAM DOUGLAS POE, JEAN S	1216 S SALEM ST	APEX	NC	27502
REGENCY INTERNATIONAL INVESTMENTS LLC	0 APEX BARBECUE RD	APEX	NC	27502

STREET NAME APPROVAL APPLICATION

Application #: 20CZ01 Submittal Date: 1-2-2020

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	<u>To be completed at time of master subdivision</u>	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 #: 20CZ01

Submittal Date: 1-2-2020

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

WAKE COUNTY, NORTH CAROLINA CUSTOMER SELECTION AGREEMENT

(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.

LENNAR CAROLINAS LLC, 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: LENNAR CAROLINAS LLC

TOWN OF APEX

BY: [Signature]
Authorized Agent

BY: _____
Authorized Agent

DATE: 12-31-2019

DATE: _____

AGENT AUTHORIZATION FORM

Application #: 20CZ01

Submittal Date: 1-2-2020

Paul Szymkiewicz & Wei Jin is the owner* of the property for which the attached application is being submitted:

- Land Use Amendment
Rezoning: For Conditional Zoning and Planned Development rezoning applications, this authorization includes express consent to zoning conditions that are agreed to by the Agent which will apply if the application is approved.
Site Plan
Subdivision
Variance
Other:

The property address is: 1420 S Salem St, Apex, NC 27502, PIN#0731645370

The agent for this project is: McAdams Co

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

Agent Name: Bob Zumwalt

Address: 2905 Meridian Parkway, Durham, NC 27713

Telephone Number: 919-361-5000

E-Mail Address: zumwalt@mcadamsco.com

Signature(s) of Owner(s)*

Paul Szymkiewicz Digitally signed by Paul Szymkiewicz Date: 2019.12.30 21:34:09 -05'00'

Paul Szymkiewicz 12/30/2019 Type or print name Date

Wei Jin Digitally signed by Wei Jin Date: 2019.12.30 21:35:57 -05'00'

Wei Jin 12/30/2019 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.

Pursuant to Article 40 of Chapter 66 of the North Carolina General Statutes (the Uniform Electronic Transactions Act) this application and all documents related hereto containing an electronic or digitized signature are legally binding in the same manner as are hard copy documents executed by hand signature. The parties hereby consent to use electronic or digitized signatures in accordance with the Town's Electronic Signature Policy and intend to be bound by the application and any related documents. If electronic signatures are used the application shall be delivered in an electronic record capable of retention by the recipient at the time of receipt.

AGENT AUTHORIZATION FORM

Application #: 20CZ01 Submittal Date: 1-2-2020

Regency International Investments LLC is the owner* of the property for which the attached application is being submitted:

- Land Use Amendment
- Rezoning: For Conditional Zoning and Planned Development rezoning applications, this authorization includes express consent to zoning conditions that are agreed to by the Agent which will apply if the application is approved.
- Site Plan
- Subdivision
- Variance
- Other: _____

The property address is: 0 Apex Barbeque Rd, Apex, NC 27502

The agent for this project is: McAdams Co

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

Agent Name: Bob Zumwalt

Address: 2905 Meridian Parkway, Durham, NC 27713

Telephone Number: 919-361-5000

E-Mail Address: zumwalt@mcadamsco.com

Signature(s) of Owner(s)*

Ashley Ansara
Regency International Investments LLC
Type or print name

12/19/2019
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.

Pursuant to Article 40 of Chapter 66 of the North Carolina General Statutes (the Uniform Electronic Transactions Act) this application and all documents related hereto containing an electronic or digitized signature are legally binding in the same manner as are hard copy documents executed by hand signature. The parties hereby consent to use electronic or digitized signatures in accordance with the Town's Electronic Signature Policy and intend to be bound by the application and any related documents. If electronic signatures are used the application shall be delivered in an electronic record capable of retention by the recipient at the time of receipt.

AGENT AUTHORIZATION FORM

Application #: 20CZ01

Submittal Date: 1-2-2020

Poe Acres Family Farm LLC

is the owner* of the property for which the attached

application is being submitted:

- Land Use Amendment
- Rezoning: For Conditional Zoning and Planned Development rezoning applications, this authorization includes express consent to zoning conditions that are agreed to by the Agent which will apply if the application is approved.
- Site Plan
- Subdivision
- Variance
- Other: _____

The property address is: 1330 S Salem St, Apex, NC 27502

The agent for this project is: McAdams Co

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

Agent Name: Bob Zumwalt

Address: 2905 Meridian Parkway, Durham, NC 27713

Telephone Number: 919-361-5000

E-Mail Address: zumwalt@mcadamsco.com

Signature(s) of Owner(s)*

William D. Poe, member/manager

William D. Poe

12-19-19

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.

Pursuant to Article 40 of Chapter 66 of the North Carolina General Statutes (the Uniform Electronic Transactions Act) this application and all documents related hereto containing an electronic or digitized signature are legally binding in the same manner as are hard copy documents executed by hand signature. The parties hereby consent to use electronic or digitized signatures in accordance with the Town's Electronic Signature Policy and intend to be bound by the application and any related documents. If electronic signatures are used the application shall be delivered in an electronic record capable of retention by the recipient at the time of receipt.

AGENT AUTHORIZATION FORM

Application #: 20CZ01

Submittal Date: 1/2/20

Carey B. Hunter is the owner* of the property for which the attached application is being submitted:

- Land Use Amendment
- Rezoning: For Conditional Zoning and Planned Development rezoning applications, this authorization includes express consent to zoning conditions that are agreed to by the Agent which will apply if the application is approved.
- Site Plan
- Subdivision
- Variance
- Other: _____

The property address is: 1525 S Salem St, Apex, NC 27502

The agent for this project is: McAdams Co

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

Agent Name: Bob Zumwalt

Address: 2905 Meridian Parkway, Durham, NC 22713

Telephone Number: 919-361-5000

E-Mail Address: zumwalt@mcadamsco.com

Signature(s) of Owner(s)*

Carey B Hunter
Carey B Hunter

Type or print name

1-2-20
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.

Pursuant to Article 40 of Chapter 66 of the North Carolina General Statutes (the Uniform Electronic Transactions Act) this application and all documents related hereto containing an electronic or digitized signature are legally binding in the same manner as are hard copy documents executed by hand signature. The parties hereby consent to use electronic or digitized signatures in accordance with the Town's Electronic Signature Policy and intend to be bound by the application and any related documents. If electronic signatures are used the application shall be delivered in an electronic record capable of retention by the recipient at the time of receipt.

AGENT AUTHORIZATION FORM

Application #: 20CZ01

Submittal Date: 1-2-2020

Poe Acres Family Farm LLC is the owner* of the property for which the attached application is being submitted:

- Land Use Amendment
- Rezoning: For Conditional Zoning and Planned Development rezoning applications, this authorization includes express consent to zoning conditions that are agreed to by the Agent which will apply if the application is approved.
- Site Plan
- Subdivision
- Variance
- Other: _____

The property address is: 1300 S Salem St, Apex, NC 27502

The agent for this project is: McAdams Co

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

Agent Name: Bob Zumwalt

Address: 2905 Meridian Parkway, Durham, NC 27713

Telephone Number: 919-361-5000

E-Mail Address: zumwalt@mcadamsco.com

Signature(s) of Owner(s)*

William D. Poe, member/manager

William D. Poe

12-19-19

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.

Pursuant to Article 40 of Chapter 66 of the North Carolina General Statutes (the Uniform Electronic Transactions Act) this application and all documents related hereto containing an electronic or digitized signature are legally binding in the same manner as are hard copy documents executed by hand signature. The parties hereby consent to use electronic or digitized signatures in accordance with the Town's Electronic Signature Policy and intend to be bound by the application and any related documents. If electronic signatures are used the application shall be delivered in an electronic record capable of retention by the recipient at the time of receipt.

AGENT AUTHORIZATION FORM

Application #: 20CZ01

Submittal Date: 1-2-2020

Poe Acres Family Farm LLC is the owner* of the property for which the attached application is being submitted:

- Land Use Amendment
- Rezoning: For Conditional Zoning and Planned Development rezoning applications, this authorization includes express consent to zoning conditions that are agreed to by the Agent which will apply if the application is approved.
- Site Plan
- Subdivision
- Variance
- Other: _____

The property address is: 0 Apex Barbeque Rd, Apex, NC 27502

The agent for this project is: McAdams Co

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

Agent Name: Bob Zumwalt

Address: 2905 Meridian Parkway, Durham, NC 27713

Telephone Number: 919-361-5000

E-Mail Address: zumwalt@mcadamsco.com

Signature(s) of Owner(s)*

William D. Poe, member/manager

William D. Poe

12-19-19

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.

Pursuant to Article 40 of Chapter 66 of the North Carolina General Statutes (the Uniform Electronic Transactions Act) this application and all documents related hereto containing an electronic or digitized signature are legally binding in the same manner as are hard copy documents executed by hand signature. The parties hereby consent to use electronic or digitized signatures in accordance with the Town's Electronic Signature Policy and intend to be bound by the application and any related documents. If electronic signatures are used the application shall be delivered in an electronic record capable of retention by the recipient at the time of receipt.

AGENT AUTHORIZATION FORM

Application #: 20CZ01

Submittal Date: 1-2-2020

Poe Acres Family Farm LLC is the owner* of the property for which the attached application is being submitted:

- Land Use Amendment
- Rezoning: For Conditional Zoning and Planned Development rezoning applications, this authorization includes express consent to zoning conditions that are agreed to by the Agent which will apply if the application is approved.
- Site Plan
- Subdivision
- Variance
- Other: _____

The property address is: 0 Apex Barbeque Rd, Apex, NC 27502

The agent for this project is: McAdams Co

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

Agent Name: Bob Zumwalt

Address: 2905 Meridian Parkway, Durham, NC 27713

Telephone Number: 919-361-5000

E-Mail Address: zumwalt@mcadamsco.com

Signature(s) of Owner(s)*

William D. Poe, member/manager

William D. Poe

Type or print name

12-19-19

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.

Pursuant to Article 40 of Chapter 66 of the North Carolina General Statutes (the Uniform Electronic Transactions Act) this application and all documents related hereto containing an electronic or digitized signature are legally binding in the same manner as are hard copy documents executed by hand signature. The parties hereby consent to use electronic or digitized signatures in accordance with the Town's Electronic Signature Policy and intend to be bound by the application and any related documents. If electronic signatures are used the application shall be delivered in an electronic record capable of retention by the recipient at the time of receipt.

AGENT AUTHORIZATION FORM

Application #: 20CZ01

Submittal Date: 1-2-2020

William Douglas Poe and Jean S Poe is the owner* of the property for which the attached application is being submitted:

- Land Use Amendment
- Rezoning: For Conditional Zoning and Planned Development rezoning applications, this authorization includes express consent to zoning conditions that are agreed to by the Agent which will apply if the application is approved.
- Site Plan
- Subdivision
- Variance
- Other: _____

The property address is: 1216 S Salem St, Apex, NC 27502

The agent for this project is: McAdams Co

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

Agent Name: Bob Zumwalt

Address: 2905 Meridian Parkway, Durham, NC 27713

Telephone Number: 919-361-5000

E-Mail Address: zumwalt@mcadamsco.com

Signature(s) of Owner(s)*

Wm Doug Poe
Wm. Doug Poe Type or print name 12-19-19 Date

Jean S Poe
Jean S Poe Type or print name 12-19-19 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.

Pursuant to Article 40 of Chapter 66 of the North Carolina General Statutes (the Uniform Electronic Transactions Act) this application and all documents related hereto containing an electronic or digitized signature are legally binding in the same manner as are hard copy documents executed by hand signature. The parties hereby consent to use electronic or digitized signatures in accordance with the Town's Electronic Signature Policy and intend to be bound by the application and any related documents. If electronic signatures are used the application shall be delivered in an electronic record capable of retention by the recipient at the time of receipt.

AGENT AUTHORIZATION FORM

Application #: 20CZ01

Submittal Date: 1-2-2020

Varya LLC is the owner* of the property for which the attached application is being submitted:

- Land Use Amendment
- Rezoning: For Conditional Zoning and Planned Development rezoning applications, this authorization includes express consent to zoning conditions that are agreed to by the Agent which will apply if the application is approved.
- Site Plan
- Subdivision
- Variance
- Other: _____

The property address is: 1604 S Salem St, Apex, NC 27502

The agent for this project is: McAdams Co

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

Agent Name: Bob Zumwalt

Address: 2905 Meridian Parkway, Durham, NC 22713

Telephone Number: 919-361-5000

E-Mail Address: zumwalt@mcadamsco.com

Signature(s) of Owner(s)*

Narendra Mehta

NARENDR MEHTA

Type or print name

12/26/2019

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.

Pursuant to Article 40 of Chapter 66 of the North Carolina General Statutes (the Uniform Electronic Transactions Act) this application and all documents related hereto containing an electronic or digitized signature are legally binding in the same manner as are hard copy documents executed by hand signature. The parties hereby consent to use electronic or digitized signatures in accordance with the Town's Electronic Signature Policy and intend to be bound by the application and any related documents. If electronic signatures are used the application shall be delivered in an electronic record capable of retention by the recipient at the time of receipt.

AGENT AUTHORIZATION FORM

Application #: 20CZ01

Submittal Date: 1-2-2020

Pamela Utley is the owner* of the property for which the attached application is being submitted:

- Land Use Amendment
- Rezoning: For Conditional Zoning and Planned Development rezoning applications, this authorization includes express consent to zoning conditions that are agreed to by the Agent which will apply if the application is approved.
- Site Plan
- Subdivision
- Variance
- Other: _____

The property address is: 1420 S Salem St, Apex, NC 27502

The agent for this project is: McAdams Co

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

Agent Name: Bob Zumwalt

Address: 2905 Meridian Parkway, Durham, NC 22713

Telephone Number: 919-361-5000

E-Mail Address: zumwalt@mcadamsco.com

Signature(s) of Owner(s)*

Pamela Utley
Pamela Utley
Type or print name

12-30-19
Date

Pamela Utley
Pamela Utley
Type or print name

12-30-19
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.

Pursuant to Article 40 of Chapter 66 of the North Carolina General Statutes (the Uniform Electronic Transactions Act) this application and all documents related hereto containing an electronic or digitized signature are legally binding in the same manner as are hard copy documents executed by hand signature. The parties hereby consent to use electronic or digitized signatures in accordance with the Town's Electronic Signature Policy and intend to be bound by the application and any related documents. If electronic signatures are used the application shall be delivered in an electronic record capable of retention by the recipient at the time of receipt.

AGENT AUTHORIZATION FORM

Application #: 20CZ01

Submittal Date: 1-2-2020

Daryl and Jeanne Poe is the owner* of the property for which the attached application is being submitted:

- Land Use Amendment
- Rezoning: For Conditional Zoning and Planned Development rezoning applications, this authorization includes express consent to zoning conditions that are agreed to by the Agent which will apply if the application is approved.
- Site Plan
- Subdivision
- Variance
- Other: _____

The property address is: 6401 Apex Barbeque Rd, Apex, NC 27502

The agent for this project is: McAdams Co

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

Agent Name: Bob Zumwalt

Address: 2905 Meridian Parkway, Durham, NC 27713

Telephone Number: 919-361-5000

E-Mail Address: zumwalt@mcadamsco.com

Signature(s) of Owner(s)*

Daryl Poe

Daryl Poe

Type or print name

12/19/19
Date

Jeanne Poe
Jeanne Poe

Type or print name

12/19/19
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.

Pursuant to Article 40 of Chapter 66 of the North Carolina General Statutes (the Uniform Electronic Transactions Act) this application and all documents related hereto containing an electronic or digitized signature are legally binding in the same manner as are hard copy documents executed by hand signature. The parties hereby consent to use electronic or digitized signatures in accordance with the Town's Electronic Signature Policy and intend to be bound by the application and any related documents. If electronic signatures are used the application shall be delivered in an electronic record capable of retention by the recipient at the time of receipt.

AGENT AUTHORIZATION FORM

Application #: 20CZ01

Submittal Date: _____

Narendra Meka is the owner* of the property for which the attached application is being submitted:

- Land Use Amendment
- Rezoning: For Conditional Zoning and Planned Development rezoning applications, this authorization includes express consent to zoning conditions that are agreed to by the Agent which will apply if the application is approved.
- Site Plan
- Subdivision
- Variance
- Other: _____

The property address is: 0 Kelly Rd, Apex, NC 27502

The agent for this project is: McAdams Co

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

Agent Name: Bob Zumwalt

Address: 2905 Meridian Parkway, Durham, NC 27713

Telephone Number: 919-361-5000

E-Mail Address: zumwalt@mcadamsco.com

Signature(s) of Owner(s)*

Narendra Meka

NARENORA MEKA
Type or print name

3/27/2020
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.

Pursuant to Article 40 of Chapter 66 of the North Carolina General Statutes (the Uniform Electronic Transactions Act) this application and all documents related hereto containing an electronic or digitized signature are legally binding in the same manner as are hard copy documents executed by hand signature. The parties hereby consent to use electronic or digitized signatures in accordance with the Town's Electronic Signature Policy and intend to be bound by the application and any related documents. If electronic signatures are used the application shall be delivered in an electronic record capable of retention by the recipient at the time of receipt.

AFFIDAVIT OF OWNERSHIP

Application #: 20CZ01

Submittal Date: _____

The undersigned, Robert Zumwalt (the "Affiant") first being duly sworn, hereby swears or affirms as follows:

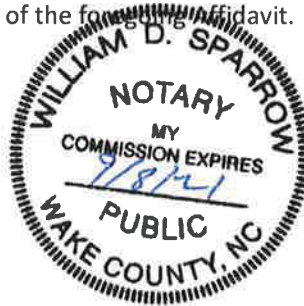
1. Affiant is over eighteen (18) years of age and authorized to make this Affidavit. The Affiant is the sole owner, or is the authorized agent of all owners, of the property located at _____ and legally described in Exhibit "A" attached hereto and incorporated herein (the "Property").
2. This Affidavit of Ownership is made for the purpose of filing an application for development approval with the Town of Apex.
3. If Affiant is the owner of the Property, Affiant acquired ownership by deed, dated _____, and recorded in the Wake County Register of Deeds Office on _____, in Book _____ Page _____.
4. If Affiant is the authorized agent of the owner(s) of the Property, Affiant possesses documentation indicating the agency relationship granting the Affiant the authority to apply for development approval on behalf of the owner(s).
5. If Affiant is the owner of the Property, from the time Affiant was deeded the Property on _____, Affiant has claimed sole ownership of the Property. Affiant or Affiant's predecessors in interest have been in sole and undisturbed possession and use of the property during the period of ownership. Since taking possession of the Property on _____, no one has questioned Affiant's ownership or right to possession nor demanded any rents or profits. To Affiant's knowledge, no claim or action has been brought against Affiant (if Affiant is the owner), or against owner(s) (if Affiant is acting as an authorized agent for owner(s)), which questions title or right to possession of the property, nor is any claim or action pending against Affiant or owner(s) in court regarding possession of the Property.

This the 31 day of December, 2019

[Signature] (seal)
Robert Zumwalt
 Type or print name

STATE OF NORTH CAROLINA
 COUNTY OF Durham

I, the undersigned, a Notary Public in and for the County of Wake, hereby certify that Robert Zumwalt, Affiant, personally known to me or known to me by said Affiant's presentation of said Affiant's _____, personally appeared before me this day and acknowledged the due and voluntary execution of the foregoing Affidavit.



[Signature]
 Notary Public
 State of North Carolina
 My Commission Expires: 9/8/21

[NOTARY SEAL]

AFFIDAVIT OF OWNERSHIP: EXHIBIT A – LEGAL DESCRIPTION

Application #: 20CZ01

Submittal Date: _____

Insert legal description below.

See attached sheet on the following page

BEGINNING AT AN EXISTING IRON PIPE IN THE SOUTHERN RIGHT OF WAY OF APEX BARBECUE ROAD(VARIABLE WIDTH PUBLIC RIGHT OF WAY) SAID PIPE BEING LOCATED SOUTH 34°04'17" WEST 11,877.46 FEET; FROM N.C. GEODETIC MONUMENT STALEY HAVING N.C. GRID COORDINATES OF NORTHING: 727,821.36; EASTING: 2,043,644.97; THENCE SOUTH 63°42'39" EAST 79.06 FEET TO A POINT; THENCE SOUTH 63°12'07" EAST 19.19 FEET TO A POINT; THENCE SOUTH 63°00'53" EAST 34.65 FEET TO A POINT; THENCE SOUTH 62°42'06" EAST 52.19 FEET TO A POINT; THENCE SOUTH 62°33'45" EAST 52.13 FEET TO A POINT; THENCE SOUTH 62°32'40" EAST 50.30 FEET TO A POINT; THENCE SOUTH 62°30'00" EAST 52.14 FEET TO A POINT; THENCE SOUTH 62°39'57" EAST 54.29 FEET TO A POINT; THENCE SOUTH 63°11'12" EAST 53.70 FEET TO A POINT; THENCE SOUTH 63°46'39" EAST 36.41 FEET TO A POINT; THENCE SOUTH 63°46'39" EAST 16.74 FEET TO A POINT; THENCE SOUTH 64°11'19" EAST 51.77 FEET TO A POINT; THENCE SOUTH 64°51'59" EAST 50.37 FEET TO A POINT; THENCE SOUTH 65°24'56" EAST 50.92 FEET TO A POINT; THENCE SOUTH 66°04'17" EAST 49.04 FEET TO A POINT; THENCE SOUTH 66°24'39" EAST 50.52 FEET TO A POINT; THENCE SOUTH 66°41'39" EAST 50.24 FEET TO A POINT; THENCE SOUTH 65°48'34" EAST 13.86 FEET TO AN IRON PIPE; THENCE SOUTH 66°32'39" EAST 82.52 FEET TO AN IRON PIPE; THENCE SOUTH 67°35'05" EAST 51.21 FEET TO AN IRON PIPE; THENCE SOUTH 69°12'49" EAST 51.50 FEET TO AN IRON PIPE; THENCE SOUTH 71°04'07" EAST 51.54 FEET TO AN IRON PIPE; THENCE SOUTH 73°20'50" EAST 101.55 FEET TO AN IRON PIPE; THENCE SOUTH 74°24'52" EAST 161.15 FEET TO AN IRON PIPE; THENCE SOUTH 02°10'02" WEST 7.75 FEET TO A POINT; THENCE SOUTH 88°43'28" EAST 27.86 FEET TO A POINT; THENCE SOUTH 72°42'27" EAST 113.73 FEET TO A POINT; THENCE SOUTH 68°36'15" EAST 83.47 FEET TO A POINT; THENCE SOUTH 58°59'14" EAST 72.35 FEET TO A POINT; THENCE SOUTH 47°32'47" EAST 78.45 FEET TO A POINT; THENCE SOUTH 39°07'25" EAST 73.73 FEET TO A POINT; THENCE SOUTH 33°40'07" EAST 2.16 FEET TO A POINT; THENCE WITH A CURVE TO THE LEFT WITH AN ARC LENGTH OF 13.47 FEET, WITH A RADIUS OF 3109.27 FEET, WITH A CHORD BEARING OF SOUTH 62°03'14" WEST, WITH A CHORD LENGTH OF 13.47 FEET TO A POINT; THENCE WITH A CURVE TO THE LEFT WITH AN ARC LENGTH OF 231.61 FEET, WITH A RADIUS OF 3099.28 FEET, WITH A CHORD BEARING OF SOUTH 59°42'22" WEST, WITH A CHORD LENGTH OF 231.55 FEET TO A POINT; THENCE WITH A CURVE TO THE LEFT WITH AN ARC LENGTH OF 227.89 FEET, WITH A RADIUS OF 2801.54 FEET, WITH A CHORD BEARING OF SOUTH 55°26'30" WEST, WITH A CHORD LENGTH OF 227.83 FEET TO A POINT; THENCE WITH A CURVE TO THE LEFT WITH AN ARC LENGTH OF 235.06 FEET, WITH A RADIUS OF 3224.08 FEET, WITH A CHORD BEARING OF SOUTH 51°04'54" WEST, WITH A CHORD LENGTH OF 235.00 FEET TO A POINT; THENCE WITH A CURVE TO THE LEFT WITH AN ARC LENGTH OF 111.80 FEET, WITH A RADIUS OF 4420.37 FEET, WITH A CHORD BEARING OF SOUTH 48°00'18" WEST, WITH A CHORD LENGTH OF 111.80 FEET TO A POINT; THENCE SOUTH 46°03'02" WEST 88.19 FEET TO A POINT; THENCE SOUTH 44°07'53" WEST 105.44 FEET TO A POINT; THENCE SOUTH 42°07'43" WEST 105.85 FEET TO A POINT; THENCE SOUTH 40°06'18" WEST 105.01 FEET TO A POINT; THENCE SOUTH 38°00'20" WEST 106.03 FEET TO A POINT; THENCE SOUTH 36°10'22" WEST 105.24 FEET TO A POINT; THENCE SOUTH 34°13'40" WEST 105.56 FEET TO A POINT; THENCE SOUTH 32°20'31" WEST 104.61 FEET TO A POINT; THENCE SOUTH 30°52'45" WEST 104.13 FEET TO A POINT; THENCE SOUTH 29°32'30" WEST 103.50 FEET TO A POINT; THENCE SOUTH 28°00'14" WEST 104.45 FEET TO A POINT; THENCE SOUTH 26°31'43" WEST 104.64 FEET TO A POINT; THENCE SOUTH 24°59'56" WEST 104.89 FEET TO A POINT; THENCE SOUTH 23°14'59" WEST 39.96 FEET TO A POINT; THENCE SOUTH 23°13'26" WEST 64.95 FEET TO A POINT; THENCE SOUTH 21°18'46" WEST 106.39 FEET TO A POINT; THENCE SOUTH 19°14'15" WEST 106.20 FEET TO A POINT; THENCE SOUTH 17°17'15" WEST 103.90 FEET TO A POINT; THENCE SOUTH 16°16'37" WEST 101.68 FEET TO A POINT; THENCE SOUTH 16°30'48" WEST 98.45 FEET TO A POINT; THENCE SOUTH 17°33'06" WEST 96.04 FEET TO A POINT; THENCE SOUTH 19°12'54" WEST 94.73 FEET TO A POINT; THENCE SOUTH 21°07'08" WEST 95.97 FEET TO A POINT; THENCE SOUTH 23°11'04" WEST 94.28 FEET TO A POINT; THENCE SOUTH 24°54'47" WEST 36.07 FEET TO A POINT; THENCE SOUTH 25°36'27" WEST 21.28 FEET TO A POINT; THENCE WITH A CURVE TO THE RIGHT

WITH AN ARC LENGTH OF 75.27 FEET, WITH A RADIUS OF 4719.43 FEET, WITH A CHORD BEARING OF SOUTH 26°43'54" WEST, WITH A CHORD LENGTH OF 75.27 FEET TO A POINT; THENCE SOUTH 27°24'30" WEST 54.11 FEET TO A POINT; THENCE SOUTH 29°06'08" WEST 50.34 FEET TO A POINT; THENCE SOUTH 30°10'37" WEST 48.21 FEET TO A POINT; THENCE SOUTH 31°14'39" WEST 49.26 FEET TO A POINT; THENCE SOUTH 32°10'05" WEST 46.54 FEET TO A POINT; THENCE SOUTH 33°12'31" WEST 49.52 FEET TO A POINT; THENCE SOUTH 34°15'48" WEST 48.00 FEET TO A POINT; THENCE SOUTH 35°13'24" WEST 44.88 FEET TO A POINT; THENCE SOUTH 36°06'22" WEST 46.73 FEET TO A POINT; THENCE SOUTH 37°02'59" WEST 45.18 FEET TO A POINT; THENCE SOUTH 37°48'49" WEST 54.89 FEET TO A POINT; THENCE SOUTH 38°28'27" WEST 48.54 FEET TO A POINT; THENCE SOUTH 38°58'15" WEST 15.35 FEET TO A POINT; THENCE NORTH 50°51'23" WEST 1.07 FEET TO A POINT; THENCE SOUTH 39°37'29" WEST 397.38 FEET TO A POINT IN THE EASTERN RIGHT OF WAY OF NC HIGHWAY 540(VARIABLE WIDTH RIGHT OF WAY); THENCE WITH SAID RIGHT OF WAY NORTH 39°05'29" WEST 390.87 FEET TO A POINT; THENCE NORTH 44°55'16" WEST 172.15 FEET TO A POINT; THENCE NORTH 61°55'05" WEST 301.58 FEET TO A POINT; THENCE NORTH 45°07'57" WEST 238.80 FEET TO A POINT; THENCE NORTH 52°17'53" WEST 532.13 FEET TO A POINT; THENCE NORTH 18°23'28" WEST 529.06 FEET TO A POINT; THENCE NORTH 14°12'08" WEST 264.95 TO A REBAR; THENCE NORTH 14°10'11" WEST 25.98 FEET TO A CONCRETE MONUMENT; THENCE NORTH 29°27'03" WEST 279.28 FEET TO A CONCRETE MONUMENT; THENCE NORTH 10°30'20" WEST 258.11 FEET TO A CONCRETE MONUMENT; THENCE NORTH 31°49'46" WEST 302.09 FEET TO A CONCRETE MONUMENT; THENCE NORTH 19°25'27" WEST 348.05 FEET TO A REBAR; THENCE NORTH 01°06'22" EAST 289.07 FEET TO A POINT IN THE CENTERLINE OF FISH BRANCH; THENCE WITH THE CENTERLINE OF SAID BRANCH SOUTH 62°05'16" EAST 8.68 FEET TO A POINT; THENCE SOUTH 75°58'33" EAST 23.59 FEET TO A POINT; THENCE SOUTH 54°32'13" EAST 16.14 FEET TO A POINT; THENCE SOUTH 28°27'52" EAST 21.06 FEET TO A POINT; THENCE SOUTH 52°11'00" EAST 19.37 FEET TO A POINT; THENCE NORTH 80°16'49" EAST 16.94 FEET TO A POINT; THENCE NORTH 27°19'34" EAST 14.43 FEET TO A POINT; THENCE NORTH 74°27'19" EAST 9.44 FEET TO A POINT; THENCE SOUTH 50°24'04" EAST 7.19 FEET TO A POINT; THENCE SOUTH 36°21'02" EAST 23.88 FEET TO A POINT; THENCE NORTH 39°19'42" EAST 12.17 FEET TO A POINT; THENCE NORTH 05°51'07" WEST 17.89 FEET TO A POINT; THENCE NORTH 50°03'59" EAST 8.76 FEET TO A POINT; THENCE SOUTH 73°12'41" EAST 16.32 FEET TO A POINT; THENCE SOUTH 21°18'53" EAST 18.47 FEET TO A POINT; THENCE SOUTH 72°13'16" EAST 13.54 FEET TO A POINT; THENCE NORTH 61°51'46" EAST 21.65 FEET TO A POINT; THENCE NORTH 74°00'24" EAST 50.54 FEET TO A POINT; THENCE NORTH 19°57'12" EAST 44.74 FEET TO A POINT; THENCE NORTH 06°03'59" WEST 20.11 FEET TO A POINT; THENCE NORTH 35°44'44" EAST 23.04 FEET TO A POINT; THENCE NORTH 69°35'37" EAST 22.30 FEET TO A POINT; THENCE SOUTH 84°36'00" EAST 31.56 FEET TO A POINT; THENCE NORTH 68°46'46" EAST 23.80 FEET TO A POINT; THENCE NORTH 88°42'18" EAST 17.10 FEET TO A POINT; THENCE SOUTH 54°50'03" EAST 18.40 FEET TO A POINT; THENCE NORTH 80°46'03" EAST 40.56 FEET TO A POINT; THENCE NORTH 58°20'09" EAST 25.29 FEET TO A POINT; THENCE NORTH 44°32'26" EAST 24.34 FEET TO A POINT; THENCE NORTH 71°02'31" EAST 19.10 FEET TO A POINT; THENCE NORTH 47°24'16" EAST 37.55 FEET TO A POINT; THENCE NORTH 81°51'36" EAST 25.80 FEET TO A POINT; THENCE NORTH 36°15'39" EAST 27.41 FEET TO A POINT; THENCE NORTH 20°21'02" WEST 17.38 FEET TO A POINT; THENCE NORTH 11°59'13" EAST 2.08 FEET TO A POINT; THENCE NORTH 58°12'58" EAST 29.12 FEET TO A POINT; THENCE NORTH 82°43'32" EAST 21.16 FEET TO A POINT; THENCE NORTH 05°01'51" WEST 12.48 FEET TO A POINT; THENCE NORTH 77°16'23" WEST 12.42 FEET TO A POINT; THENCE NORTH 37°17'58" EAST 22.50 FEET TO A POINT; THENCE NORTH 73°27'07" EAST 34.86 FEET TO A POINT; THENCE NORTH 03°15'44" EAST 13.46 FEET TO A POINT; THENCE NORTH 45°09'32" WEST 11.24 FEET TO A POINT; THENCE NORTH 53°48'21" EAST 6.23 FEET TO A POINT; THENCE SOUTH 68°53'55" EAST 13.88 FEET TO A POINT; THENCE NORTH 60°34'12" EAST 52.94 FEET TO A POINT; THENCE NORTH 78°46'01" EAST 46.77 FEET TO A POINT; THENCE NORTH 67°46'44" EAST 48.56 FEET TO A POINT; THENCE NORTH 74°58'45" EAST 43.00 FEET TO A POINT; THENCE SOUTH

89°36'23" EAST 38.18 FEET TO A POINT; THENCE SOUTH 79°42'51" EAST 22.68 FEET TO A POINT; THENCE SOUTH 29°26'17" EAST 17.84 FEET TO A POINT; THENCE NORTH 69°48'36" EAST 16.45 FEET TO A POINT; THENCE SOUTH 68°17'51" EAST 51.96 FEET TO A POINT; THENCE NORTH 73°12'05" EAST 27.64 FEET TO A POINT; THENCE SOUTH 79°24'02" EAST 15.42 FEET TO A POINT; THENCE SOUTH 74°12'31" EAST 45.28 FEET TO A POINT; THENCE SOUTH 39°16'28" EAST 36.13 FEET TO A POINT; THENCE SOUTH 08°43'30" WEST 18.30 FEET TO A POINT; THENCE SOUTH 50°53'39" EAST 18.00 FEET TO A POINT; THENCE NORTH 88°17'02" EAST 36.36 FEET TO A POINT; THENCE SOUTH 13°58'03" EAST 21.80 FEET TO A POINT; THENCE SOUTH 81°03'00" EAST 42.96 FEET TO A POINT; THENCE SOUTH 30°57'25" EAST 26.88 FEET TO A POINT; THENCE SOUTH 75°54'58" EAST 40.54 FEET TO A POINT; THENCE SOUTH 70°25'00" EAST 15.28 FEET TO A POINT; THENCE NORTH 84°19'40" EAST 27.52 FEET TO A POINT; THENCE SOUTH 80°36'18" EAST 37.25 FEET TO A POINT; THENCE SOUTH 42°44'12" WEST 13.86 FEET TO A POINT; THENCE SOUTH 64°51'55" WEST 13.95 FEET TO A POINT; THENCE SOUTH 64°16'15" EAST 26.38 FEET TO A POINT; THENCE SOUTH 51°02'50" EAST 20.28 FEET TO A POINT; THENCE SOUTH 76°30'27" EAST 49.09 FEET TO A POINT; THENCE SOUTH 02°56'27" WEST 22.78 FEET TO A POINT; THENCE SOUTH 68°53'00" EAST 39.44 FEET TO A POINT; THENCE SOUTH 74°05'57" EAST 21.64 FEET TO A POINT; THENCE NORTH 54°46'33" EAST 12.67 FEET TO A POINT; THENCE SOUTH 78°44'03" EAST 50.69 FEET TO A POINT; THENCE SOUTH 17°24'42" EAST 10.77 FEET TO A POINT; THENCE NORTH 81°02'40" EAST 18.57 FEET TO A POINT; THENCE NORTH 57°30'16" EAST 25.96 FEET TO A POINT; THENCE SOUTH 49°12'49" EAST 22.49 FEET TO A POINT; THENCE SOUTH 75°13'50" EAST 36.68 FEET TO A POINT; THENCE NORTH 43°03'04" EAST 18.03 FEET TO A POINT; THENCE SOUTH 43°29'16" EAST 25.33 FEET TO A POINT; THENCE NORTH 84°54'55" EAST 33.14 FEET TO A POINT; THENCE SOUTH 49°52'36" EAST 29.02 FEET TO A POINT; THENCE NORTH 47°30'27" EAST 22.64 FEET TO A POINT; THENCE SOUTH 44°10'50" EAST 48.34 FEET TO A POINT; THENCE NORTH 77°35'58" EAST 27.83 FEET TO A POINT; THENCE SOUTH 44°55'44" EAST 20.62 FEET TO A POINT; THENCE NORTH 67°39'06" EAST 23.64 FEET TO A POINT; THENCE NORTH 09°17'48" WEST 14.71 FEET TO A POINT; THENCE NORTH 56°08'00" EAST 16.99 FEET TO A POINT; THENCE SOUTH 84°08'50" EAST 9.11 FEET TO A POINT; THENCE SOUTH 21°28'59" EAST 19.37 FEET TO A POINT; THENCE NORTH 77°01'03" EAST 25.20 FEET TO A POINT; THENCE NORTH 52°22'39" EAST 13.09 FEET TO A POINT; THENCE NORTH 34°19'37" EAST 31.41 FEET TO A POINT; THENCE SOUTH 83°30'24" EAST 9.86 FEET TO A POINT; THENCE SOUTH 73°18'34" EAST 60.44 FEET TO A POINT; THENCE NORTH 25°37'49" EAST 32.53 FEET TO A POINT; THENCE SOUTH 40°49'03" EAST 28.47 FEET TO A POINT; THENCE NORTH 36°58'17" EAST 21.69 FEET TO A POINT; THENCE SOUTH 76°44'46" EAST 21.44 FEET TO A POINT; THENCE SOUTH 14°26'49" WEST 27.21 FEET TO A POINT; THENCE SOUTH 86°41'52" EAST 6.78 FEET TO A POINT; THENCE NORTH 87°14'33" EAST 24.64 FEET TO A POINT; THENCE SOUTH 40°22'08" EAST 36.29 FEET TO A POINT; THENCE SOUTH 13°37'04" EAST 24.06 FEET TO A POINT; THENCE SOUTH 82°58'59" EAST 35.03 FEET TO A POINT; THENCE SOUTH 73°33'17" EAST 23.68 FEET TO A POINT; THENCE SOUTH 25°37'21" EAST 34.01 FEET TO A POINT; THENCE SOUTH 06°57'32" EAST 21.00 FEET TO A POINT; THENCE SOUTH 53°23'42" EAST 38.38 FEET TO A POINT; THENCE SOUTH 83°14'09" EAST 8.53 FEET TO A POINT; THENCE NORTH 33°23'35" EAST 11.26 FEET TO A POINT; THENCE SOUTH 68°50'30" EAST 18.96 FEET TO A POINT; THENCE NORTH 81°37'03" EAST 18.18 FEET TO A POINT; THENCE SOUTH 39°21'14" EAST 5.22 FEET TO A POINT; THENCE LEAVING SAID BRANCH NORTH 00°20'56" EAST 1168.68 FEET TO AN IRON PIPE; THENCE SOUTH 88°15'40" EAST 294.44 FEET TO A POINT; THENCE SOUTH 72°25'22" EAST 125.09 FEET TO AN IRON PIPE; THENCE SOUTH 70°34'38" EAST 47.93 FEET TO AN IRON PIPE; THENCE SOUTH 67°51'29" EAST 47.60 FEET TO AN IRON PIPE; THENCE SOUTH 65°15'32" EAST 50.49 FEET TO AN IRON PIPE; THENCE NORTH 22°59'56" EAST 19.98 FEET TO THE POINT AND PLACE OF BEGINNING CONTAINING 8746939 SQUARE FEET, 200.802 ACRES.



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;
- Residential Master Subdivision Plans (excluding exempt subdivisions); or
- Special Use Permits

INSTRUCTIONS

Prior to submitting an application for a Rezoning, Major Site Plan, residential Master Subdivision Plan (excluding exempt subdivisions), or Special Use Permit, the applicant must conduct at least one (1) Neighborhood Meeting. The applicant shall submit all forms included in this packet with the initial application 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; residential 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; applicant shall provide reduced copies upon request.
 - Printed copies must equal the number of notices required to be sent.
 - Contact information for the applicant’s representative and Town Staff must be provided on the attached “Project Contact Information” form.
 - “Common Construction Issues & Who to Call” sheet (attached) must be included as part of 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.

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.

12/04/2019

Date

Dear Neighbor:

You are invited to a neighborhood meeting to review and discuss the development proposal at

See attached list of addresses

See attached list of PINs

Address(es)

PIN(s)

in accordance with the Town of Apex Neighborhood Meeting procedures. This meeting is intended to be 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):

Application Type		Approving Authority
<input checked="" type="checkbox"/>	Rezoning (including Planned Unit Development)	Town Council
<input type="checkbox"/>	Major Site Plan	Town Council (QJPH*)
<input type="checkbox"/>	Special Use Permit	Town Council (QJPH*)
<input type="checkbox"/>	Residential Master Subdivision Plan (excludes exempt subdivisions)	Technical Review Committee (staff)

*Quasi-Judicial Public Hearing: The Town Council cannot discuss the project prior to the public hearing.

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

The attached map illustrates the proposed rezoning of thirteen parcels of land from RA to PUD-CZ to allow for a mix of residential and nonresidential uses. The site will be adjacent to other PUD-CZ zoned properties.

Estimated submittal date: January 2, 2020

MEETING INFORMATION:

Property Owner(s) name(s): See attached list of property owners

Applicant(s): McAdams Co

Contact information (email/phone): zumwalt@mcadamsco.com / 919-361-5000

Meeting Address: 53 Hunter Street, Apex, NC 27502 (Pinnacle and Zenith Room)

Date of meeting**: 12/19/2019

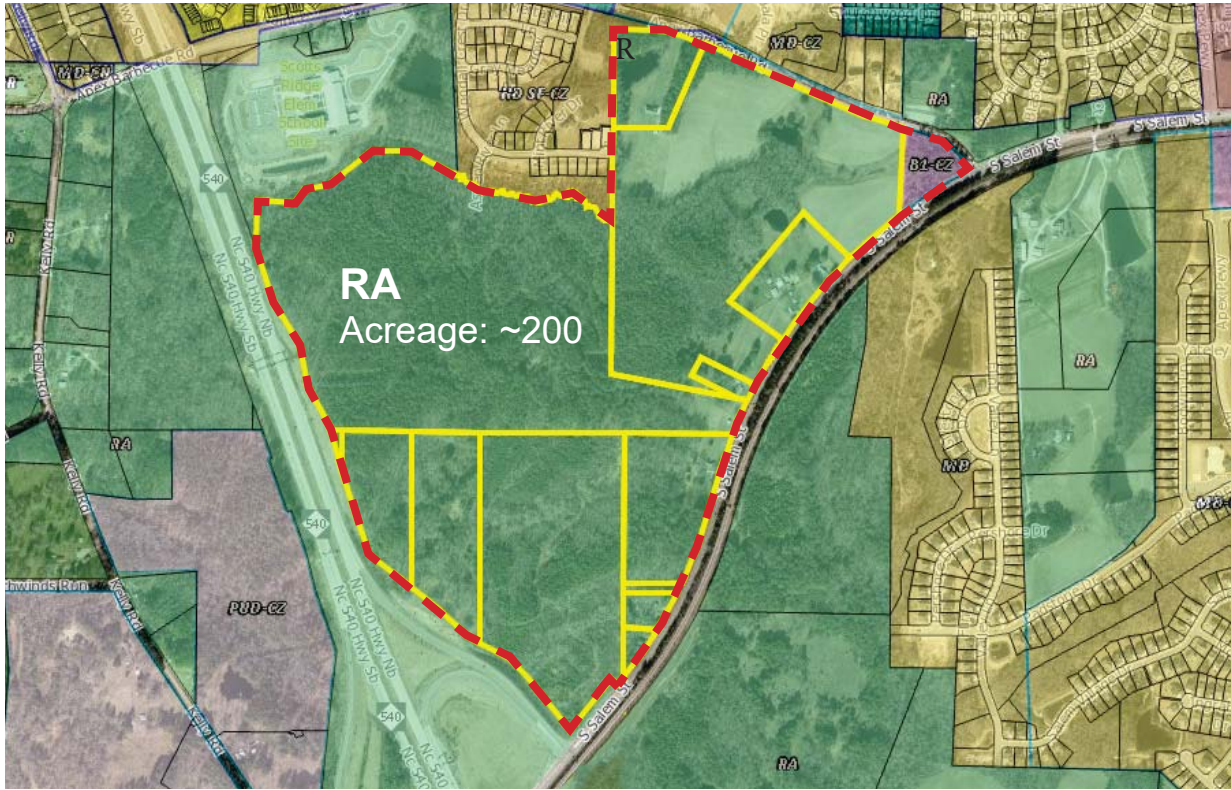
Time of meeting**: 6:30-8:30

MEETING AGENDA TIMES:

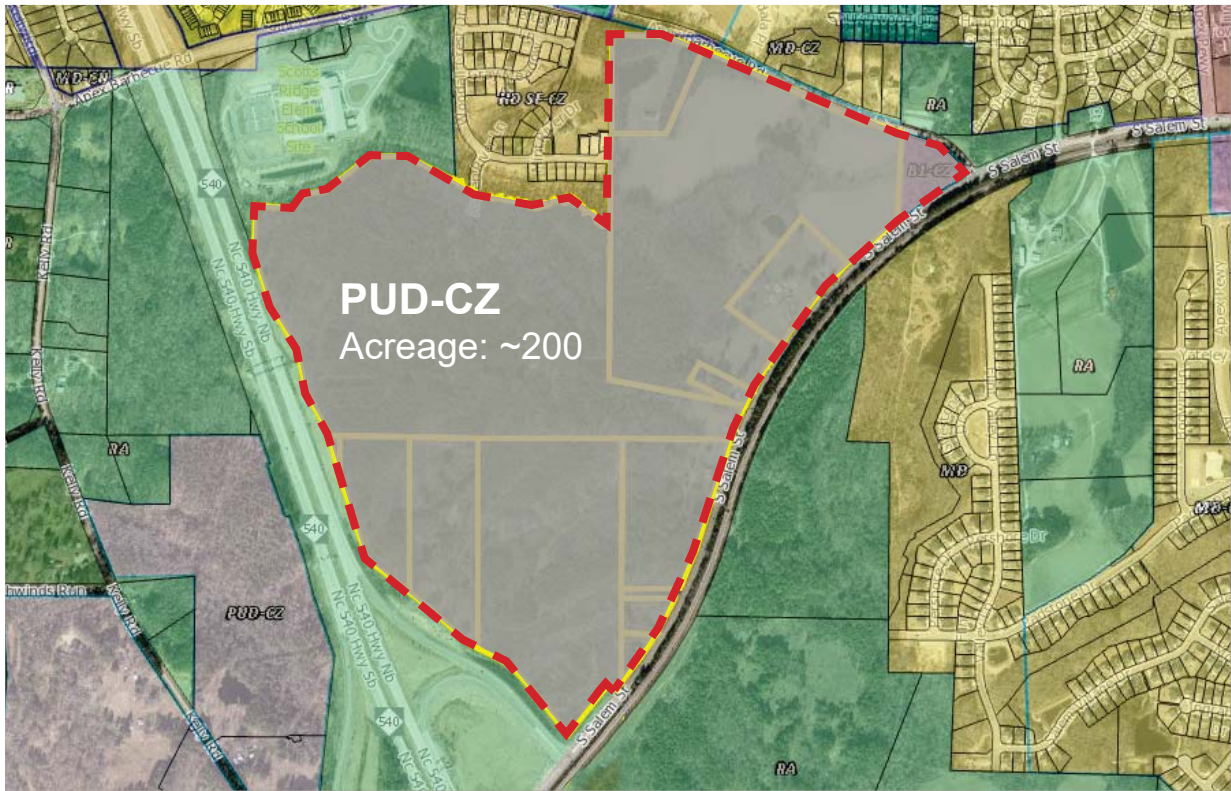
Welcome: 6:30-6:35 Project Presentation: 6:35-6:50 Question & Answer: 6:50-8:30

**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>.

SITE ADDRESSES	PINs	PROPERTY OWNERS
0 S SALEM ST	731457553	NC DEPT OF TRANSPORTATION TURNPIKE AUTHORITY
0 KELLY RD	731459383	NC DEPARTMENT OF TRANSPORTATION
1604 S SALEM ST	731554102	VARYA LLC
0 APEX BARBECUE RD	731564395	POE ACRES FAMILY FARM LLC
1525 S SALEM ST	731641147	HUNTER, CAREY B
1420 S SALEM ST	731645370	SZYMKIEWICZ, PAUL M JIN, WEI
1420 S SALEM ST	731646532	UTLEY, PAMELA
1330 S SALEM ST	731657166	POE ACRES FAMILY FARMS LLC
6401 APEX BARBECUE RD	731676714	POE, DARYL POE, JEANNE
1300 S SALEM ST	731750984	POE ACRES FAMILY FARMS LLC
0 APEX BARBECUE RD	731761944	POE ACRES FAMILY FARMS LLC
1216 S SALEM ST	731766588	POE, WILLIAM DOUGLAS POE, JEAN S
0 APEX BARBECUE RD	731873224	REGENCY INTERNATIONAL INVESTMENTS LLC



CURRENT ZONING



PROPOSED ZONING

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: Depot 499 Zoning: PUD-CZ
 Location: Southwest corner of S Salem Street and Apex Barbecue Road
 Property PIN(s): _____ Acreage/Square Feet: 200.80

Property Owner: See attached sheet on the following page for all owner information
 Address: _____
 City: _____ State: _____ Zip: _____
 Phone: _____ Email: _____

Developer: Lennar
 Address: 1100 Perimeter Park Drive Suite 112
 City: Morrisville State: NC Zip: 27560
 Phone: 919-465-5925 Fax: _____ Email: stephen.dorn@lennar.com

Engineer: McAdams
 Address: 2905 Meridian Parkway
 City: Durham State: NC Zip: 27713
 Phone: 919-361-5000 Fax: _____ Email: zumwalt@mcadamsco.com

Builder (if known): _____
 Address: _____
 City: _____ State: _____ Zip: _____
 Phone: _____ Fax: _____ Email: _____

Please note that Town staff will not have complete information about a proposed development until the application is submitted for review. If you have a question about Town development standards and how they relate to the proposed development, please contact the appropriate staff person listed below.

Town of Apex Department Contacts

Planning Department Main Number (Provide development name or location 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

OWNER	ADDRESS	CITY	STATE	ZIP
NC DEPARTMENT OF TRANSPORTATION	0 KELLY RD	APEX	NC	27502
VARYA LLC	1604 S SALEM ST	APEX	NC	27502
POE ACRES FAMILY FARM LLC	0 APEX BARBECUE RD	APEX	NC	27502
HUNTER, CAREY B	1525 S SALEM ST	APEX	NC	27502
SZYMKIEWICZ, PAUL M JIN, WEI	1420 S SALEM ST	APEX	NC	27502
UTLEY, PAMELA	1420 S SALEM ST	APEX	NC	27502
POE ACRES FAMILY FARMS LLC	1330 S SALEM ST	APEX	NC	27502
POE, DARYL POE, JEANNE	6401 APEX BARBECUE RD	APEX	NC	27502
POE ACRES FAMILY FARMS LLC	1300 S SALEM ST	APEX	NC	27502
POE ACRES FAMILY FARMS LLC	0 APEX BARBECUE RD	APEX	NC	27502
POE, WILLIAM DOUGLAS POE, JEAN S	1216 S SALEM ST	APEX	NC	27502
REGENCY INTERNATIONAL INVESTMENTS LLC	0 APEX BARBECUE RD	APEX	NC	27502

Providing Input to Town Council:

Each Town Council meeting agenda includes a Public Forum time when anyone is permitted to speak for three (3) minutes on any topic with the exception of items listed as Public Hearings for that meeting. The Town Council meets on the 1st and 3rd Tuesdays of each month at 7:00 p.m. (except for holidays, see schedule of meetings at <http://www.apexnc.org/838/Agendas-Minutes>). You may also contact Town Council by e-mail at AllCouncil@apexnc.org.

Private Agreements and Easement Negotiation:

The Town of Apex cannot enforce private agreements between developers and neighbors and is not a party to the easement and right-of-way negotiation that occurs between developers and neighboring property owners for easements or rights-of-way that are necessary to build the project.

It is recommended that all private agreements be made in writing and that if a property owner feels it necessary, they should obtain private legal counsel in order to protect their interests in both private agreements and during easement negotiations. The only conditions that the Town of Apex can enforce are those conditions that are made a part of the conditional zoning of the property by agreement of the developer and the Town.

As an example, if a developer offers to build a fence for a neighbor to mitigate some impact, the Town can only enforce the construction of the fence if the fence becomes a condition of the rezoning. This would occur by the developer offering the condition as part of their conditional zoning application package or at the Town Council public hearing on the conditional zoning and the Town accepting it as a condition. Private agreements regarding a fence being constructed will not be enforced by the Town.

To request that any agreement with a developer is made a part of the conditional zoning at the time of approval, you may ask at the Town Council public hearing if the agreement is included in the conditions. If it is not, you may request that the Town Council not approve the rezoning without the agreement being included in the conditions (note that it is up to Town Council whether to approve or deny the rezoning but they cannot impose conditions that the applicant does not agree to add). The developer's proposed conditions can be viewed any time after a rezoning is submitted on the Interactive Development Map at: <http://apexnc.maps.arcgis.com/apps/OnePane/basicviewer/index.html?appid=fa9ba2017b784030b15ef4da27d9e795>

Documentation:

Neighbors to a requested new development and/or rezoning are strongly encouraged to fully document (such as through dated photographs) the condition of their property before any work is initiated for the new development. Stormwater controls installed on developed property are not designed to and will likely not remove 100% of the soil particles transported by stormwater runoff. As a result, creeks and ponds could become cloudy for a period of time after rain events.

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

Noise from tree removal, grading, excavating, paving, and building structures is a routine part of the construction process. The Town generally limits construction hours from 7:00 a.m. to 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: James Misciagno 919-372-7470

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

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

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: James Misciagno 919-372-7470

Sediment (dirt) and mud gets into the existing roads due to rain events and/or vehicle traffic. These incidents should be reported to James Misciagno. He will coordinate the cleaning of the roadways with the developer.

Dirt on Properties or in Streams: James Misciagno 919-372-7470 Danny Smith 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 James Misciagno at 919-372-7470 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: James Misciagno 919-372-7470

During dry weather dust often becomes a problem blowing into existing neighborhoods or roadways. These incidents should be reported to James Misciagno at 919-372-7470 so that he can coordinate the use of water trucks onsite with the grading contractor to help control the dust.

Trash: James Misciagno 919-372-7470

Excessive garbage and construction debris can blow around on a site or even off of the site. These incidents should be reported to James Misciagno at 919-372-7470. He will coordinate the cleanup and trash collection with the developer/home builder.

Temporary Sediment Basins: James Misciagno 919-372-7470

Temporary sediment basins during construction (prior to the conversion to the final stormwater pond) are often quite unattractive. Concerns should be reported to James Misciagno at 919-372-7470 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

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: 53 Hunter Street, Apex, NC 27502

Date of meeting: 12/19/19 Time of meeting: 6:30 pm - 8:30 pm

Property Owner(s) name(s): Poe Acres Family Farm LLC, Daryl and Jeanne Poe, William and Jean Poe, Regency International Investments, Carey Hunter, Paul Szymkiewicz, Pamela Utley, NCDOT, Varya LLC

Applicant(s): Lennar

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.	Amando Forsythe	603 Knightsborough	(919)928-2600	[REDACTED]	yes
2.	Jeanne Poe	6401 Apex Barbecue Rd	919-946-1419	[REDACTED]	yes
3.	Daryl Poe	6401 Apex Barbecue Rd	919-946-1411	[REDACTED]	yes
4.	Lee Brisson	1910 Woodall Crest Dr.	919-291-3262	[REDACTED]	yes
5.	Doug & Jean Poe	1216 S. Salem St.	919-215-5400	[REDACTED]	yes
6.	KYLE DAVIS	1914 WOODALL CREST DR	954-229-7543	[REDACTED]	yes
7.	James Galkowski	625 Magdala Place	919 6339104	[REDACTED]	m yes
8.	Don Cantrell	6300 Apex Barbecue Rd	919 6001500	[REDACTED]	gmail.com/yes
9.	Patrick Wise	1901 WOODALL CREST DR	727.412.1535	[REDACTED]	tes
10.	Ramakrishnan Sundaram	1885 Woodall Crest Dr	201-981-4541	[REDACTED]	m Yes
11.					
12.					
13.					
14.					

Use additional sheets, if necessary.

NEIGHBORHOOD MEETING SIGN-IN SHEET

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 Applicant(s): Lennar

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.	Matt Corwin / WTHM 1-6A	1401 Crapperhall Dr	919-636-9399	[REDACTED]	YES
2.	Pamela Howard	1420 S. Salem St. Apex	919-869-6181		Yes
3.	Mary Kearney	11680 Mint River Apex			Yes
4.	Tabitha Smith	1936 Graymeadow Dr	512 663 8627		yes
5.	Terry Maloffe	109 Texas Ct			yes
6.	Karyn Davis	1914 Woodall Crest Dr	678-591-6835		yes
7.	Toni Koyte K	1908 Melba M. II Ln	607-731-3366		yes
8.	MIKE OBRIEN	1876 Woodall Crest Dr	919 256 3176		yes
9.	DARYL CANTRELL	6320 APEX BARBECUE	617-838-6891		yes
10.					
11.					
12.					
13.					
14.					

Use additional sheets, if necessary.

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 Applicant(s): Lennar

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.	RICHARD MOORE	301 RUSHING WIND WAY	919-362-7510	[REDACTED]	✓
2.	Kelly Aguirrechu	306 Village Loop Dr.	305-753-5835	[REDACTED]	✓
3.	DONALD CANTRELL	6340 Apex Barbecue Rd	805-205-3...	[REDACTED]	✓
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					

Use additional sheets, if necessary.

SUMMARY OF DISCUSSION FROM THE NEIGHBORHOOD MEETING

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Property Owner(s) name(s): Poe Acres Family Farm LLC, Daryl and Jeanne Poe, William and Jean Poe, Regency International Investments, Carey Hunter, Paul Szymkiewicz, Pamela Utley, NCDOT, Varya LLC

Applicant(s): Lennar

Contact information (email/phone): Stephen Dorn / stephen.dorn@lennar.com / 919-224-9922

Meeting Address: 53 Hunter Street, Apex, NC 27502

Date of meeting: 12/19/19 Time of meeting: 6:30 pm - 8:30 pm

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:

How will the cut-through from S. Salem St. to Apex Barbecue Rd. impact traffic in Woodall neighborhood and how will impacts be mitigated? (neighbors expressed concerns regarding Apex Barbecue traffic)

Applicant's Response:

The connection from S. Salem St. to Apex Barbecue Rd. shown in conceptual plans is part of the Town's Thoroughfare plan and will likely be required as part of the project. Our plan includes narrow lanes, on street parking, and tree-lined streets in this area which will encourage slower driving. The Town will review and approve the proposed streets and we will work with the Town to ensure safe streets are provided.

Question/Concern #2:

Are children walking to school included in the traffic study?

Applicant's Response:

It would not be included in the traffic study, but this is a concern for us to take to the Town to review and develop a solution.

Question/Concern #3:

Expressed concern over the increased density that will come. Expressed concerns that development of Poe site was not disclosed by Lennar when homes were purchased in Woodall. Follow-up question: Will there be apartments and what is the time frame of the project?

Applicant's Response:

Yes, there will be apartments in the development. The Future Land Use Map designates the area as mixed use with high-density residential, which includes apartments and townhomes. The build-out of the project is most likely around 10 years.

Question/Concern #4:

What is happening to existing homes on the site?

Applicant's Response:

They will be included in the rezoning.

SUMMARY OF DISCUSSION FROM THE NEIGHBORHOOD MEETING

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Property Owner(s) name(s): Poe Acres Family Farm LLC, Daryl and Jeanne Poe, William and Jean Poe, Regency International Investments, Carey Hunter, Paul Szymkiewicz, Pamela Utley, NCDOT, Varya LLC

Applicant(s): Lennar

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Question/Concern #5:

Are there height regulations on buildings?

Applicant's Response:

Yes, and those regulations will be outlined in the PUD document. At this time, we believe apartments will most likely be 4 stories and office buildings will be no more than 6 stories.

Question/Concern #6:

Why does the plan include high density residential at the corner of S Salem St and Apex Barbecue road? Traffic is difficult in that area and the speed limit jumps.

Applicant's Response:

Higher density residential is intended to serve as a transition from commercial uses to lower density residential uses. We want to propose a speed limit reduction from 55 mph to 45 mph, however, this will need to be approved by the Town of Apex.

Question/Concern #7:

Is there coordination of the development with the construction of the new Peakway Bridge?

Applicant's Response:

We will coordinate our development with Apex Transportation staff and NCDOT. We do not know the status of the development of the Peakway bridge. However, construction of the bridge should be complete well before this project breaks ground.

Question/Concern #8:

With the plan for greenways throughout the development, how easy will it be for my family to bike over from other neighborhoods with traffic considered? Are there plans to connect the greenways to other areas?

Applicant's Response:

Sidewalks will be installed within the proposed development. We will look for missing pieces of the pedestrian network and may be able to fill in some of the existing gaps. Any off-site sidewalk improvements will require approval by the Town of Apex.

SUMMARY OF DISCUSSION FROM THE NEIGHBORHOOD MEETING

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Property Owner(s) name(s): Poe Acres Family Farm LLC, Daryl and Jeanne Poe, William and Jean Poe, Regency International Investments, Carey Hunter, Paul Szymkiewicz, Pamela Utley, NCDOT, Varya LLC

Applicant(s): Lennar

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Question/Concern #9:

What is the plan for Apex Barbecue Road?

Applicant's Response:

It will be a 3-lane road with bike lanes. If NCDOT signal warrants are met, a traffic signal may be required at Apex Barbecue Road.

Question/Concern #10:

Is there a plan to talk to State DOT about widening Apex Barbecue Road?

Applicant's Response:

It is a part of our traffic study done by Ramey Kemp & Associates. The traffic study is currently in the works; all counts have already been taken.

Question/Concern #11:

Neighbor concerned over their property backing up to the woods of the development. Will there be any sort of buffer?

Applicant's Response:

Yes, in fact because of the stream on the northern end of the property, there will be a dense riparian buffer of 200 feet (100 feet on either side of the stream) separating your property from the development.

Question/Concern #12:

How long has this project been in the works?

Applicant's Response:

The Town's plans for the site have been in place since 2003. Lennar's involvement began within the last year.

SUMMARY OF DISCUSSION FROM THE NEIGHBORHOOD MEETING

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Property Owner(s) name(s): Poe Acres Family Farm LLC, Daryl and Jeanne Poe, William and Jean Poe, Regency International Investments, Carey Hunter, Paul Szymkiewicz, Pamela Utley, NCDOT, Varya LLC

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Question/Concern #13:

Is it possible to eliminate some of the access points to the development? Is the street connection to Apex Barbecue Road near Woodall that is shown on the plans required?

Applicant's Response:

The Town will comment and provide their input on this concern upon our submittal, but it is our understanding that we will be required to connect to all streets that are stubbed to the boundaries of the proposed development.

Question/Concern #14:

Will office buildings be constructed without any tenants in place?

Applicant's Response:

No. The current process is rezoning the land to PUD-CZ to allow for a variety of uses. There are no specific businesses or tenants. The non-residential portions of the proposed development will likely be developed for specific tenants at later stages when there are sufficient retail and residential uses in place to attract office tenants. Speculative construction is not likely in this development.

Question/Concern #15:

How will runoff be dealt with for the site? What is the stormwater plan?

Applicant's Response:

It will be outlined in our PUD document to meet or exceed the stormwater management regulations of the Town. Specifics of the stormwater management plan will develop later in the design and engineering process.

Question/Concern #16:

Will the PUD plans be made public?

Applicant's Response:

Yes, they will be made public upon filing with the Town.

SUMMARY OF DISCUSSION FROM THE NEIGHBORHOOD MEETING

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Property Owner(s) name(s): Poe Acres Family Farm LLC, Daryl and Jeanne Poe, William and Jean Poe, Regency International Investments, Carey Hunter, Paul Szymkiewicz, Pamela Utley, NCDOT, Varya LLC

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Question/Concern #17:

Will other neighborhoods have access to the amenities of the development?

Applicant's Response:

That is a question to be discussed later and would involve decisions by the HOA.

Question/Concern #18:

Who should I talk to about getting speed bumps in my neighborhood?

Applicant's Response:

There is a petition process, and you would most likely need to speak with the Town Traffic Engineer.

Question/Concern #19:

What is the maximum resident number for the development?

Applicant's Response:

The maximum number of units is 1,350. This includes apartments, townhouses, and single-family homes. We can't provide an exact number for how many people will occupy each unit.

Question/Concern #20:

How will the school system deal with the new students that will come as part of this development?

Applicant's Response:

Wake County Public Schools will be notified of the development as part of the rezoning application. They will use that information as part of their planning for future schools and facilities.

SUMMARY OF DISCUSSION FROM THE NEIGHBORHOOD MEETING

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Property Owner(s) name(s): Poe Acres Family Farm LLC, Daryl and Jeanne Poe, William and Jean Poe, Regency International Investments, Carey Hunter, Paul Szymkiewicz, Pamela Utley, NCDOT, Varya LLC

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Question/Concern #21:

What type of buffer is being proposed on Apex Barbecue Road?

Applicant's Response:

A 30' Type Buffer that will include a multi-use trail

Question/Concern #22:

Applicant's Response:

Question/Concern #23:

Applicant's Response:

Question/Concern #24:

Applicant's Response:

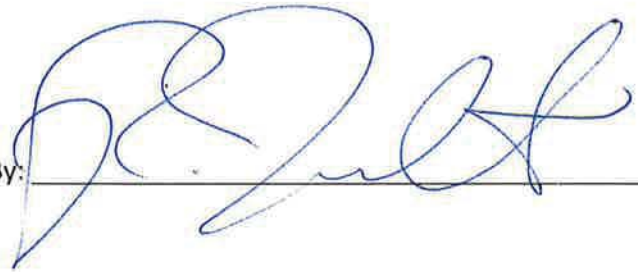
AFFIDAVIT OF CONDUCTING A NEIGHBORHOOD MEETING, SIGN-IN SHEET AND ISSUES/RESPONSES SUBMITTAL

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, Bob Zumwalt, 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 53 Hunter Street, Apex, NC 27502 (location/address) on 12/19/19 (date) from 6:30 pm (start time) to 8:30 pm (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.

12/31/19
Date


By: 

STATE OF NORTH CAROLINA
COUNTY OF WAKE

Sworn and subscribed before me, William D. Sparrow, a Notary Public for the above State and County, on this the 31 day of December, 2019.

SEAL




Notary Public
William D. Sparrow
Print Name

My Commission Expires: 9/8/21

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.

01/13/2020

Date

Dear Neighbor:

You are invited to a neighborhood meeting to review and discuss the development proposal at

See attached list of addresses

See attached list of PINs

Address(es)

PIN(s)

in accordance with the Town of Apex Neighborhood Meeting procedures. This meeting is intended to be 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):

Application Type		Approving Authority
<input checked="" type="checkbox"/>	Rezoning (including Planned Unit Development)	Town Council
<input type="checkbox"/>	Major Site Plan	Town Council (QJPH*)
<input type="checkbox"/>	Special Use Permit	Town Council (QJPH*)
<input type="checkbox"/>	Residential Master Subdivision Plan (excludes exempt subdivisions)	Technical Review Committee (staff)

*Quasi-Judicial Public Hearing: The Town Council cannot discuss the project prior to the public hearing.

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

Due to the holidays, we are having another neighborhood meeting to be sure everyone had a chance to attend. Content will generally be the same as our first meeting held on December 19. The attached map illustrates the proposed rezoning of twelve parcels of land from RA AND B1-CZ to PUD-CZ to allow for a mix of residential and non-residential uses.

Estimated submittal date: February 8, 2020

MEETING INFORMATION:

Property Owner(s) name(s):

See attached list of property owners

Applicant(s):

McAdams

Contact information (email/phone):

zumwalt@mcadamsco.com / 919-361-5000

Meeting Address:

Halle Cultural Arts Center Auditorium- 237 N Salem St, Apex, NC 27502

Date of meeting**:

01/29/2020

Time of meeting**:

6:30-8:30

MEETING AGENDA TIMES:

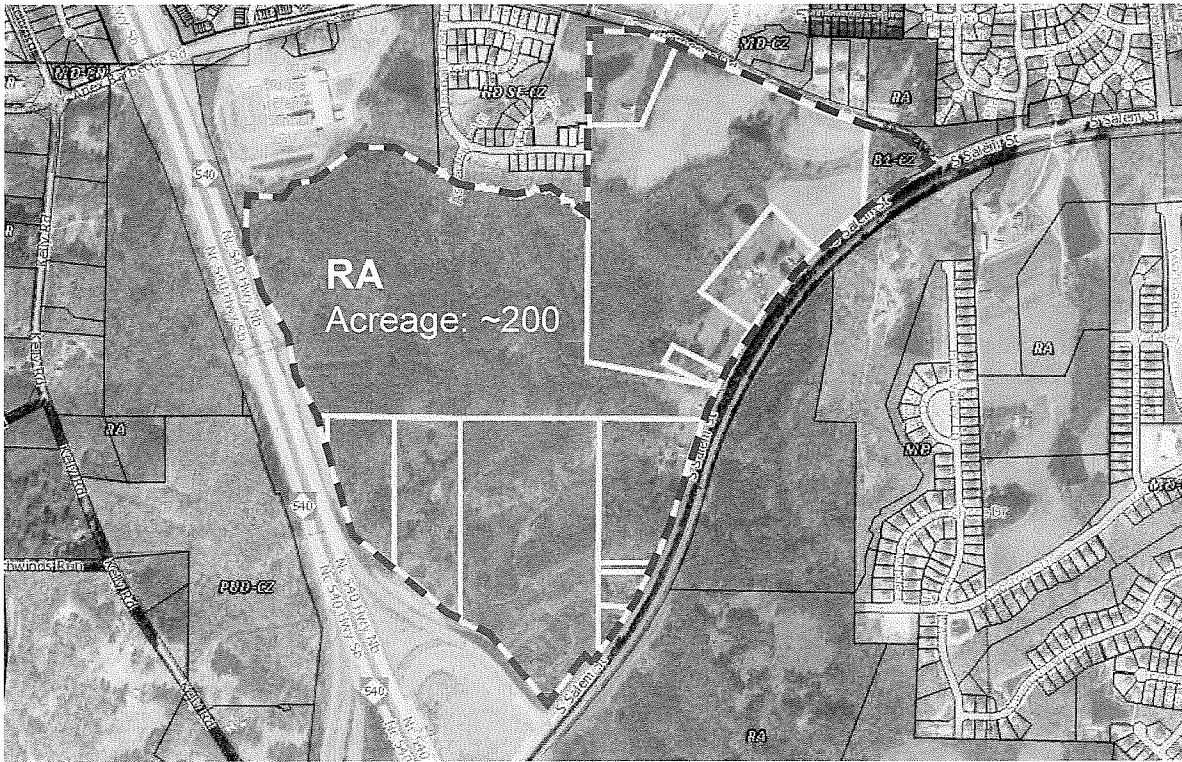
Welcome: 6:30-6:35

Project Presentation: 6:35-6:50

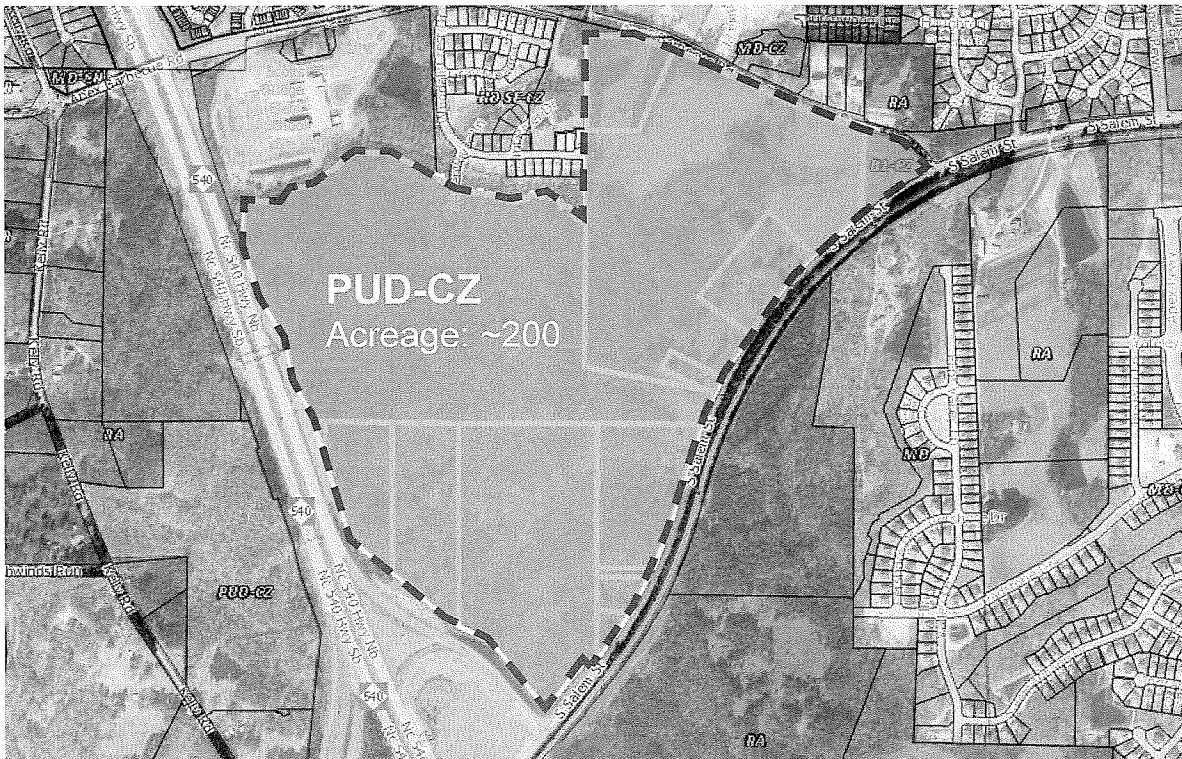
Question & Answer: 6:50-8:30

**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>.

OWNER	ADDRESS	CITY	STATE	ZIP
NC DEPARTMENT OF TRANSPORTATION	0 KELLY RD	APEX	NC	27502
VARYA LLC	1604 S SALEM ST	APEX	NC	27502
POE ACRES FAMILY FARM LLC	0 APEX BARBECUE RD	APEX	NC	27502
HUNTER, CAREY B	1525 S SALEM ST	APEX	NC	27502
SZYMKIEWICZ, PAUL M JIN, WEI	1420 S SALEM ST	APEX	NC	27502
UTLEY, PAMELA	1420 S SALEM ST	APEX	NC	27502
POE ACRES FAMILY FARMS LLC	1330 S SALEM ST	APEX	NC	27502
POE, DARYL POE, JEANNE	6401 APEX BARBECUE RD	APEX	NC	27502
POE ACRES FAMILY FARMS LLC	1300 S SALEM ST	APEX	NC	27502
POE ACRES FAMILY FARMS LLC	0 APEX BARBECUE RD	APEX	NC	27502
POE, WILLIAM DOUGLAS POE, JEAN S	1216 S SALEM ST	APEX	NC	27502
REGENCY INTERNATIONAL INVESTMENTS LLC	0 APEX BARBECUE RD	APEX	NC	27502



CURRENT ZONING



PROPOSED ZONING

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 Auditorium - 237 N Salem Street Apex, NC 27502
 Date of meeting: January 29, 2020 Time of meeting: 6:30-8:30
 Property Owner(s) name(s): Poe Acres Family Farm LLC, Daryl and Jeanne Poe, William and Jean Poe, Regency International Investments, Carey Hunter, Paul Szymkiewicz Pamela Utley, NCDOT, Varya LLC
 Applicant(s): Lennar

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.	Melissa Baker	106 Oak Pine Dr Apex, NC 27502	804-536-4515		✓
2.	Dawn Glover	Kings View town	919-631-1624		✓
3.	ERIAN GRIFFITH	2524 KELLY RD	919-387-8775		✓
4.	RD Meckes }	1765 Town Home	919-684-0444		✓
5.	G Meckes }	Drum apex, nc			
6.	Sowmya Navarajan	1885 Woodall Crest			✓
7.	Rajesh Rajyopal	1893 Woodall Crest			✓
8.	PRABHU RASENDRA	1889 woodall crest			✓
9.	Ashutosh Bahadure	1941 Metta Mill Ln			✓
10.	Stephen Weiss	1949 Metta Mill Ln			✓
11.	Pamela Utley	1420 S. Salem St	919-869-6187		✓
12.	Ann Woodall	4515 Apex Road Rd	919-389-3900		
13.					
14.					

Use additional sheets, if necessary.

NEIGHBORHOOD MEETING SIGN-IN SHEET

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Applicant(s): Lennar

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.	Karyn Davis	1914 Woodall Crest Dr Apex	678-591	[REDACTED]	yes
2.	Tanya Jeter	1932 Gray Meadows	919-948-8257	[REDACTED]	yes
3.	Brett Gantt	1006 Cuddington Ct	919-600-9003	[REDACTED]	yes
4.	JORDAN SMITH	1902 WOODALL CREST DR	414-571-5599	[REDACTED]	yes
5.	Vincent Hou	1906 Woodall Crest Dr	919-903-1534	[REDACTED]	yes
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					

Use additional sheets, if necessary.

SUMMARY OF DISCUSSION FROM THE NEIGHBORHOOD MEETING

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Property Owner(s) name(s): Poe Acres Family Farm LLC, Daryl and Jeanne Poe, William and Jean Poe, Regency International Investments, Carey Hunter, Paul Szymkiewicz, Pamela Utley, NCDOT, Varya LLC

Applicant(s): Lennar

Contact information (email/phone): Stephen Dorn / stephen.dorn@lennar.com / 919-224-9922

Meeting Address: Halle Cultural Arts Center - 237 N Salem Street Apex, NC 27502

Date of meeting: January 29, 2020 Time of meeting: 6:30 pm - 8:30 pm

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:

Concern over two connections into the Woodall neighborhood. Who can I speak to with the town.

Applicant's Response:

Apex requires us to have those connections. The best person to speak to would be the planning director, Dianne Khin.

Question/Concern #2:

What is the buffer along Woodall Crest?

Applicant's Response:

There will be a 200 foot buffer because of the stream.

Question/Concern #3:

Will runoff drain offsite?

Applicant's Response:

No, we will have our own stormwater control measures onsite to meet or exceed the standards.

Question/Concern #4:

Will Woodall have access to the amenities proposed for the property?

Applicant's Response:

Lennar will be able to address this at a later date.

SUMMARY OF DISCUSSION FROM THE NEIGHBORHOOD MEETING

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Question/Concern #5:

When would traffic lights be implemented?

Applicant's Response:

We will know more at a later date when we get more information from our traffic study

Question/Concern #6:

Where will construction trucks be entering the site?

Applicant's Response:

Trucks will definitely not enter on Woodall Crest. We are unsure of the exact location now, however, this will be outlined in the development plan.

Question/Concern #7:

What is the volume of traffic through Woodall?

Applicant's Response:

We will get this information from traffic study once it is completed

Question/Concern #8:

Will S Salem Street be wide enough?

Applicant's Response:

We are dedicating 50 feet for a 4 lane divided road

SUMMARY OF DISCUSSION FROM THE NEIGHBORHOOD MEETING

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Question/Concern #9:

How are you going about making this an environmentally sustainable project?

Applicant's Response:

Twenty percent of the site will be Resource Conservation Area. We will replant trees and incorporate green spaces throughout the development. We will use the proper stormwater management practices.

Question/Concern #10:

Is there a trail that leads to the elementary school?

Applicant's Response:

This is something we would have to look into and discuss with the elementary school. They may not want a trail connecting to the neighborhood.

Question/Concern #11:

Will new schools be built for this project?

Applicant's Response:

Part of our application is to submit a detailed form to Wake County Public Schools informing them of the size of the development and phasing estimates.

Question/Concern #12:

What does this planning process look like?

Applicant's Response:

So far we have submitted once and received comments from the TRC. We will resubmit and receive further comments and continue back and fourth until the plan is ready to go to Planning Board and then Town Council public hearings. You should receive a notification from the Town of these hearings.

SUMMARY OF DISCUSSION FROM THE NEIGHBORHOOD MEETING

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Question/Concern #13:

Will stoplights or stop signs be implemented on the main road running through the site so that people don't speed or cut through?

Applicant's Response:

This is something we still need to address. We are considering a potential roundabout and other strategies such as on street parking to slow traffic.

Question/Concern #14:

What will the commercial area look like?

Applicant's Response:

There isn't anything set in stone yet for the commercial areas, but Columbia plans to implement something similar to Fenton. This could include chef driven restaurants, a small boutique theater, and rooftop dining areas for example.

Question/Concern #15:

Will this development affect property values?

Applicant's Response:

We expect that this will increase property values in the surrounding communities.

Question/Concern #16:

Applicant's Response:

DEPOT 499 PLANNED UNIT DEVELOPMENT

South Salem Street and Apex Barbecue Road
Apex, North Carolina | PD PLAN
Case # 20CZ01

LAND PLANNING,
LANDSCAPE ARCHITECTURE +
CIVIL ENGINEER



MCADAMS

DEVELOPER

LENNAR[®]

DEPOT 499

Planned Unit Development

Prepared for The Town of Apex, North Carolina

Submittal Dates

First Submittal: January 2, 2020
Second Submittal: February 14, 2020
Third Submittal: March 13, 2020
Fourth Submittal: May 14, 2020
Fifth Submittal: June 5, 2020
Sixth Submittal: June 29, 2020
Seventh Submittal: July 15, 2020

Developer

Lennar Corporation
1100 Perimeter Park Drive Suite 112
Morrisville NC 27560

Planner, Engineer, Landscape Architect

McAdams
2905 Meridian Parkway
Durham NC 27113

Traffic Engineer

Ramey Kemp & Associates
5808 Faringdon Place, #100
Raleigh NC 27609



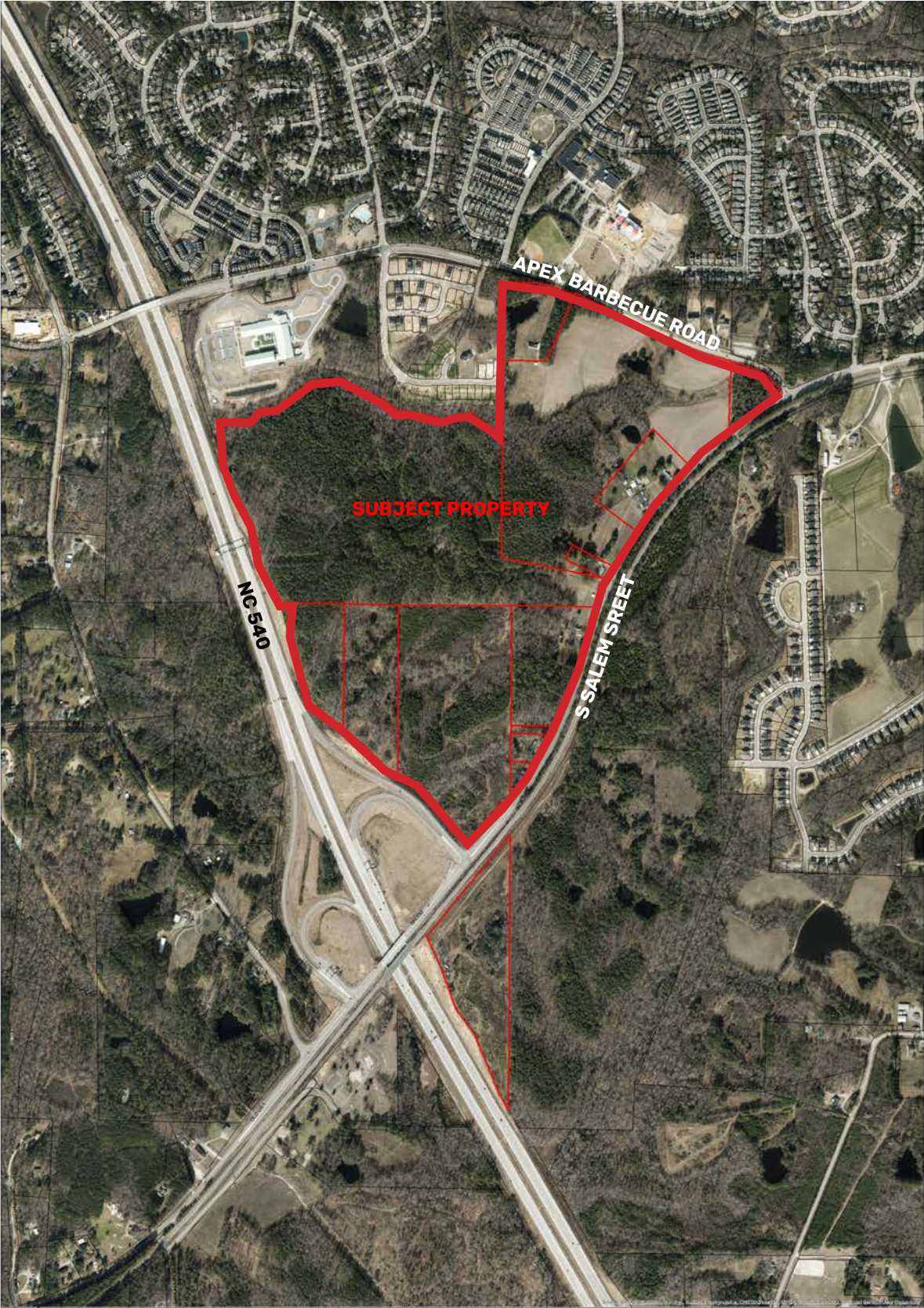
MCADAMS

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- 4.** PERMITTED USES
- 5.** AFFORDABLE HOUSING
- 6.** DESIGN CONTROLS
- 7.** ARCHITECTURAL STANDARDS
- 8.** PARKING AND LOADING
- 9.** SIGNAGE
- 10.** LANDSCAPING
- 11.** NATURAL RESOURCE AND ENVIRONMENTAL DATA
- 12.** STORMWATER MANAGEMENT
- 13.** PARKS AND RECREATION
- 14.** PUBLIC FACILITIES
- 15.** PHASING PLAN
- 16.** CONSISTENCY WITH LAND USE PLAN
- 17.** COMPLIANCE WITH UDO
- 18.** SCHOOL ALTERNATIVE
- 19.** TRANSPORTATION IMPROVEMENTS

VICINITY MAP



PROJECT DATA

Name of Project:	Depot 499
Applicant Owner/Developer:	Lennar 1100 Perimeter Park Drive, Suite 112 Morrisville, NC 27560 919-337-9420
Prepared By:	McAdams 2905 Meridian Parkway Durham, NC 27713 919-361-5000
Current Zoning Designation:	RA and B1-CZ (#09CZ01)
Proposed Zoning Designation:	PUD-CZ
Current 2045 Land Use Map Designation:	Community Mixed Use (High Density Residential/ Commercial Services/ Office Employment); Medium/High Density Residential, Office Employment; and Office Employment/ Commercial Services
Proposed 2045 Land Use Map Designation:	A change is requested for approximately 5.41 acres of land in the northeast corner of PIN 0731761944 from Office Employment to High Density Residential.
Proposed Use:	Mixed-used development with office/institutional, retail, restaurant single-family, townhomes, and multi-family units
Size of Project:	200.80 acres
Area Designated as Mixed Use on 2045 LUM:	171.90 acres
Area of Mixed Use Proposed as Non-residential:	51.57 acres (30% of mixed-used area)
Property Identification Numbers:	731459383, 731554102, 731564395, 731641147, 731645370, 731646532, 731657166, 731676714, 731750984, 731761944, 731766588, 731873224

PURPOSE STATEMENT

The Depot 499 PUD will consist of residential and nonresidential uses including multi-family units, townhomes, single-family homes, retail, restaurant, and office/institutional space. The proposed development will set aside required resource conservation areas throughout the 200-acre property. Depot 499's 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. The concept is also consistent with the concepts and recommendations of the South Salem Street Small Area Plan. This development will comply with the PUD Development Parameters outlined in §2.3.4.F.1.a.i-vii of the Town of Apex Unified Development Ordinance. The Depot 499 PUD is in accordance with the Development Parameters as follows:

- *The uses to be developed in the PD Plan for the PUD-CZ are those uses permitted in Section 4.2.2, Use Table.*
 - » The uses permitted within the Depot 499 PUD are permitted per §4.2.2 of the Town of Apex UDO.
- *The uses proposed in the PD Plan for the PUD-CZ can be entirely residential, entirely non-residential, or a mix of residential and non-residential uses, provided a minimum percentage of the 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 on 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.*
 - » Depot 499 is a mixed-used development containing a maximum of:
 - 850 apartment units
 - 650 townhomes / single-family homes (50 single-family maximum)
 - 650,000 square feet of non-residential floor area, including retail, restaurant, civic, and office space

This mix of uses provides a minimum of 30% non-residential land uses measured by ground floor and supporting parking or infrastructure consistent with Town policy.

- *The dimensional standards in §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.*
 - » The proposed dimensional standards are in compliance with the Town of Apex UDO. Development of the parcel will be in compliance with all other requirements of the UDO, North Carolina Building Code, and North Carolina Fire Code.
- *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 Details, and greenway improvements as required by the Town of Apex Parks, Recreation, 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.*

- » Public sidewalks will be constructed along the both sides of all streets, going above the Town of Apex UDO standards. To encourage a healthy lifestyle and establish a walkable community, pedestrian greenways will also be incorporated throughout the development connecting all uses and open space amenities. Additionally, the provision of sidepaths along South Salem Street frontage, Apex Barbecue Road frontage, and the main collector through the development will benefit the residents of the neighborhood and surrounding areas by creating complete pedestrian connections along major corridors to the north, east, and west of the property. See conditions 12 and 13 on C2.00.
- *The design of development in the PD Plan for the PUD-CZ results in land use patterns that promote and expand opportunities for walkability, connectivity, public transportation, and an efficient network of streets. Cul-de-sacs shall be avoided unless the design of the subdivision and the existing proposed or proposed street system in the surrounding area indicated that a through street is not essential in the location of the proposed cul-de-sacs, or where sensitive environmental features such as streams, floodplains, or wetlands would be substantially disturbed by making road connections.*
- » Depot 499 will create a walkable urban grid of residential and non-residential uses connected by sidewalks, tree-lined streets, and greenways. Cul-de-sacs will be avoided to enhance the connectivity of the development.
- *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.*
- » Depot 499 PUD-CZ is consistent with The Town of Apex's Future Land Use Map and compatible with the surrounding land uses. Current zoning surrounding the development includes varying residential densities of HDSF-CZ, MD, and RA as well as PUD-CZ zoning. The Future Land Use Map designates the property as well as its immediate surroundings as Community Mixed Use and Medium/High Density Residential. The 5.41 acres of land designated as Office Employment is requested to change to High Density Residential (see **Consistency with Land Use Plan**).
- *The development proposed in the PD Plan for the PUD-CZ has architectural and design standards that are exceptional and provide a 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.*
- » All multi-family buildings, townhomes, single-family homes, and commercial buildings will be of a higher quality construction than the typical residential or commercial development. Architectural controls for non-residential uses as well as sample elevations illustrating the high-quality appearance of the multi-family units, townhomes, and single-family homes are included with the PUD-CZ application.

All site-specific standards and conditions of this PD Plan shall be consistent with all Conditional Zoning (CZ) District standards set forth in the UDO Section 2.3.3, Conditional Zoning Districts. The proposed PUD will provide a development density consistent with the 2045 Land Use Plan designation of High Density Residential, Medium/High Density Residential, Office Employment, and Commercial Services in their respective areas. The Advance Apex Plan describes high density residential as "townhomes, triplexes, quadplexes, and apartments no less than 14 dwelling units per acre...located in close proximity to major commercial areas and transportation corridors" and describes medium/high residential use as "single family homes, duplexes, triplexes, quadplexes, townhomes, and apartments no less than 7 and no more than 14 units per acre...providing a variety of housing options located in close proximity to major transportation corridors." Proposed densities are listed in the Design Controls section of this document.

The proposed development incorporates a village commercial core surrounded by high-density residential living. Multi-family units transition to townhomes and single-family homes adjacent to Scott's Ridge Elementary School and the existing single-family development to its east. Retail, restaurant, civic, and office space exist at the southwestern portion of the property along NC 540 providing separation of residential areas from the highway. Riparian buffers and forested land encompass the residential areas to the north and west, and green spaces are incorporated throughout.

PERMITTED 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.

P = Permitted Use

* = Subject to limitations - see descriptions following chart.

Permitted Residential Area uses are allowed in Pods A-J and Pod P on PUD Plan Sheet C2.00

Permitted Non-Residential Area uses are allowed in Pods M-O and Q-T on PUD Plan Sheet C2.00

Permitted Mixed-Use Area uses are allowed in Pods K and L on PUD Plan Sheet C2.00

	Residential Areas	Non-Residential Areas	Mixed-Use Areas
Residential			
Single-Family	P (pod G only)		
Accessory Apartment	P*		
Townhouse	P		
Multi-family or Apartment Units	P (Pods H, I, J, and east of proposed public road in Pod G only)		
Multi-family or Apartment Units (2nd story and above only)		P	P
Condominium (2nd story and above only)		P	P
Congregate living facility	P	P (Pods R, S, T only)	
Family care home	P		
Nursing or convalescent facility		P (Pods R, S, T only)	
Utilities			
Utility, minor	P	P	P
Recreational Uses			
Greenway	P	P	P
Park, Active	P	P	P
Park, Passive	P	P	P
Recreation Facility, private	P		
Entertainment, Indoor		P	P

	Residential Areas	Non-Residential Areas	Mixed-Use Areas
Public and Civic Uses			
Ambulatory Health-care Facility with Emergency Dept.		P (Pods R, S, T only)	
Assembly Hall, non-profit/for-profit		P (Pods R, S, T only)	
Church or place of worship		P (Pods R, S, T only)	
Day Care Facility		P (Pods R, S, T only)	
Drop-in or short-term day care		P	P
Government Services		P (Pods R, S, T only)	
Hospital		P (Pods R, S, T only)	
Veterinary Clinic or Hospital		P (Pods R, S, T only)	
School, Public or Private		P (Pods R, S, T only)	
Transportation facility		P* (Pods R, S, T only)	
Vocational School		P (Pods R, S, T only)	
Food and Beverage Service			
Restaurant, general		P	P
Restaurant, drive-through		P*	P*
Bar, nightclub, wine bar, taproom		P*	P*
Office and Research			
Medical or dental clinic or office		P	P
Office, business or professional		P	P
Publishing Office		P	P
Public Accommodation			
Hotel or Motel		P	P*
Retail Sales and Services			
Artisan Studio		P	P
Barber and Beauty Shop		P	P
Book Store		P	P
Building supplies, retail		P*	
Convenience store, with gas sales		P (excluding Pod O)	
Convenience store, without gas sales		P	P
Dry cleaners and laundry service		P	P
Farmer's market		P	P
Financial Institution, with or without drive-through		P*	P*
Floral Shop		P	P

	Residential Areas	Non-Residential Areas	Mixed-Use Areas
Retail Sales and Services (continued)			
Funeral Home		P (Pods R, S, T only)	
Gas and fuel, retail			
Greenhouse or nursery, retail		P	
Grocery, general or specialty		P	P
Health/fitness center or spa		P	P
Newsstand or gift shop		P	P
Personal Service		P	P
Pharmacy, with or without drive-through		P*	P*
Printing and copying services, limited		P	P
Repair services, limited		P	P
Retail sales, general		P	P
Studio for art		P	P
Tailor shop		P	P
Theater		P	
Pet services		P	P
Production			
Microbrewery		P	P
Microdistillery		P	P

***Permitted Uses Subject to Limitations:**

Accessory Apartment - Homeowner Association covenants shall not restrict the construction of accessory dwelling units.

Transportation facility - Such use shall only be allowed for vehicles serving the use "School, public or private", but is permitted as either a principal or accessory use on a lot.

Drive-through facilities - Any drive-through facility (e.g. restaurant, financial institution, pharmacy) must be located within a multi-tenant building; No free standing drive-through facilities shall be allowed.

Bar, nightclub, wine bar, taproom - Hours of operation Sunday through Thursday shall close by 12 AM and hours of operation Friday through Saturday shall close by 2 AM.

A hotel restaurant or bar with a patio or deck open to the street, shall qualify as vertical integration in mixed-use pods.

Building supplies, retail - The maximum square footage of a building supplies retail store shall be limited to 20,000 square feet.

AFFORDABLE HOUSING

Wake County Public School System has expressed an interest in pursuing affordable housing on surplus property should the School Alternative be pursued. The affordable housing use is permitted in any pod, and the community has expressed interest in pursuing these projects in Apex.

If no such affordable housing project(s) containing at least 45 units has been approved by January 1, 2025, and the Town of Apex has a fund or other mechanism in place by January 1, 2025 to receive donations to construct, subsidize, or participate in the development of affordable housing units (the "Fund"), the developer will contribute \$300,000 to this Fund. This contribution represents the approximate value of a 2.0 acre dedication at market value. In the event the Fund has not been established by the Town of Apex by January 1, 2025, the money will be conveyed to a non-profit organization participating in affordable housing. The developer will work with the Town of Apex to identify a mutually acceptable non-profit organization to receive these funds.

Affordable housing units may be provided in any development pod within the project. Regardless of development pod, affordable housing area may be counted as non-residential for the purpose of calculating the 30% non-residential threshold within the mixed-use land designation. Affordable housing units shall only be required to comply with Residential Design Guidelines 1 and 12. For purposes of this condition, affordable housing is defined as housing that on average is affordable to a household with an annual income that is no greater than 60% of the Area Median Income for the respectively-sized household in the Raleigh, NC MSA, as determined by the United States Department of Housing and Urban Development (HUD).

DESIGN CONTROLS

Total Project Area: 200.80 acres

Apex 2045 Land Use Plan - Community Mixed-Use Calculation

- Total Project Area within Community Mixed-Use Designation: 171.90 acres
 - » Required Non-Residential Land Area: 51.57 acres (30%)
 - » Proposed Gross Non-Residential Land Area: 51.57 acres (30%)

Overall Density Limitations (across 200.80-acre site)

- Maximum number of apartments: 850
- Maximum number of Townhomes/Single-family: 650 (50 Single-Family Maximum)
- Maximum Non-Residential Floor Area: 650,000 SF

Overall Land Use Breakdown

- Mixed-Use PODS ~1.88 acres
- Non-Residential PODS ~41.08 acres
- Residential PODS ~93.99 acres
- Area within RCA/Buffers/Right-of-Way ~63.85 acres

- **Total** **200.8 acres**

Mixed-Use Land Area (PODs K/L)

- Proposed Land Area ~1.88 acres
- Minimum Vertical Integration:
 - » Residential - 24 units (over retail/office) or;
 - » Office - 10,000 SF (over retail)
 - » Maximum Residential Density 120 units

Non-Residential Land Area (PODs M/N/O/Q/R/S/T)

- Proposed Land Area ~ 41.08 acres
- Maximum SF 650,000 SF

Residential Land Area (PODs A-J/P)

- Proposed Land Area ~93.99 acres
- Maximum Density 1,500 units

Note: Acreage and configuration of PODS is approximate. Final size and configuration will be determined at the time of Master Subdivision Plan or Site Plan based on actual field survey and final design.

Residential Design Controls

Single-Family

- Minimum Lot Size: 2,550 square feet
- Minimum Lot Width: 36 feet
- Minimum Lot Depth: 85 feet
- Maximum Building Height: 45 feet (In Pod G, the first row of lots immediately adjacent to the Woodall subdivision shall not exceed 2 stories unless buffer is increased to a 50' Type A buffer)
- Building Setbacks
 - » Front: 20 feet to garage; 8 feet to building façade
 - » Side: 5 feet
 - » Rear: 15 feet
 - » Alley: 5 feet
 - » Corner: 8 feet

Townhomes

- Minimum Lot Width: 16 feet (alley loaded); 18 feet (front loaded)
- Minimum Lot Depth: 65 feet
- Maximum Building Height: 45 feet (In Pod G, the first row of lots immediately adjacent to the Woodall subdivision shall not exceed 2 stories, unless buffer is increased to a 50' Type A buffer)
- Minimum Building Setbacks - Front Loaded
 - » Front: 5 feet from building façade, 20 feet from garage
 - » Rear: 10 feet
 - » Corner: 8 feet
 - » Building separation: 10 feet
- Minimum Building Setbacks - Alley Loaded
 - » Front: 5 feet
 - » Rear: 5 feet
 - » Corner: 8 feet
 - » Alley: 5 feet
 - » Building separation: 10 feet

Apartments/Condominiums

- Maximum Building Height: South Salem Street – 6 stories or 90 ft
Apex Barbecue Road – 6 stories or 90 ft; The first row of buildings along this frontage shall not exceed 4 stories.
- Minimum Building Height: South Salem Street – 4 stories; a maximum of 25% of buildings along this frontage may be 3 stories
Apex Barbecue Road – 4 stories; a maximum of 25% of buildings along this frontage may be 3 stories
- Minimum Building Setbacks
 - » Front: 10 feet
 - » Rear: 10 feet
 - » Corner: 10 feet
 - » Building separation: 30 feet

Non-Residential Design Controls

- Maximum Building Height: 100 feet
- Minimum Building Height: 1 story
- Minimum Building Setbacks:
 - » Front: 10 feet
 - » Side: 10 feet
 - » Rear: 10 feet
 - » Corner: 15 feet

Mixed-Use Design Controls

- Minimum Building Height: 3 stories (Rooftop terraces that include a minimum of 1,500 sf of enclosed space for event, amenity, or other use such as a bar or restaurant shall qualify as a 3rd floor)
- Maximum Building Height: 80 feet
- Minimum Building Setbacks:
 - » Front: 10 feet
 - » Side: 10 feet
 - » Rear: 10 feet
 - » Corner: 15 feet

Landscaping, Buffering, and Screening

Refer to PUD Preliminary Layout Plan for perimeter and streetscape buffers.

The 10' Type D Streetfront Buffer shall not be required along minor or major collectors where street trees are provided at a rate equivalent to 1 tree per 1,000 sf of the area that would otherwise be provided as buffer.

ARCHITECTURAL STANDARDS

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. The elevations included are a condition of approval. Elevations included are limited examples of multiple options available. 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 Residential Master Subdivision Plan or Site Plan submittal.

Residential areas envisioned for Depot 499 will be comprised of single-family homes, attached townhomes, and multi-family units. In order to create a variety of architectural character along the streetscapes, the project will offer a variety of distinct residential elevations – see examples on the following pages. These elevations will incorporate a natural material selection and earth tone color palette with wood, brick or stone accents, which will help to add diversity to the streetscape.

While each of the architectural offerings proposed will have their own identity, a number of common threads will link the different neighborhoods within Depot 499 including color palettes, materials, roofing, and decorative garage doors. Elevations have been included below in an effort to represent the bulk, massing, scale and architectural style of the development.

Additional features used as focal points or key terminus points shall be located within or around the development (i.e. gazebos, fountains, and public art) in order to meet the Community Amenities requirement of the UDO. Other features not mentioned may be considered with administrative staff approval.

Residential Design Guidelines (all product types):

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 slab 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. All townhomes shall have a crawl space or have a raised slab foundation which at a minimum rises at least 6 inches from average grade across the front of the house to the finished floor level at the front door.
4. Front-facing garage doors shall have windows, decorative details or carriage-style adornments on them.
5. The garage cannot protrude more than 1 foot out from the front façade or front porch, measured from roof of porch.
6. On single-family homes, the roof shall be pitched at 5:12 or greater (not to include porches, bay windows, etc.).

7. On townhomes, roof line cannot be a single mass; it must be broken up either horizontally and/or vertically between, at minimum, every other unit.
8. House entrances for units with front-facing single-car garages must have a covered porch/stoop area leading to the front door.
9. Rear and side elevations of units that have right-of-way frontage shall have trim around the windows.
10. Four of the following decorative elements 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.
11. A varied color palette shall be utilized on single family and townhome units throughout the subdivision and shall include siding, trim, shutter, and accent colors complementing the siding colors.
12. All apartment buildings along S. Salem Street shall have interior corridors.
13. Recesses and projections shall be provided for at least 50% of each façade on each apartment building.
14. A solar PV system shall be installed on at least 15% of the single-family homes within the development. All solar installation required by this condition shall be completed or under construction prior to 90% of the building permits being issued for the approved number of single-family lots. The lots on which these homes are located shall be identified on the Master Subdivision Plat, which may be amended.
15. Solar conduit will be provided on all single-family homes to accommodate the future installation of solar panels.

Proposed Residential Materials

Proposed materials will be of a similar palette to provide consistency of character along with visual interest. Exterior materials that may be incorporated into any of the residential building products include:

- Cementitious lap siding
- Board and batten siding
- Shake and shingle siding
- Wood siding
- Stone or synthetic stone
- Brick

Additional building materials may be included with administrative staff approval. Substitute materials shall be allowed by staff as long as they are determined by the Planning Director to be substantially similar.

Representative Residential Building Elevations

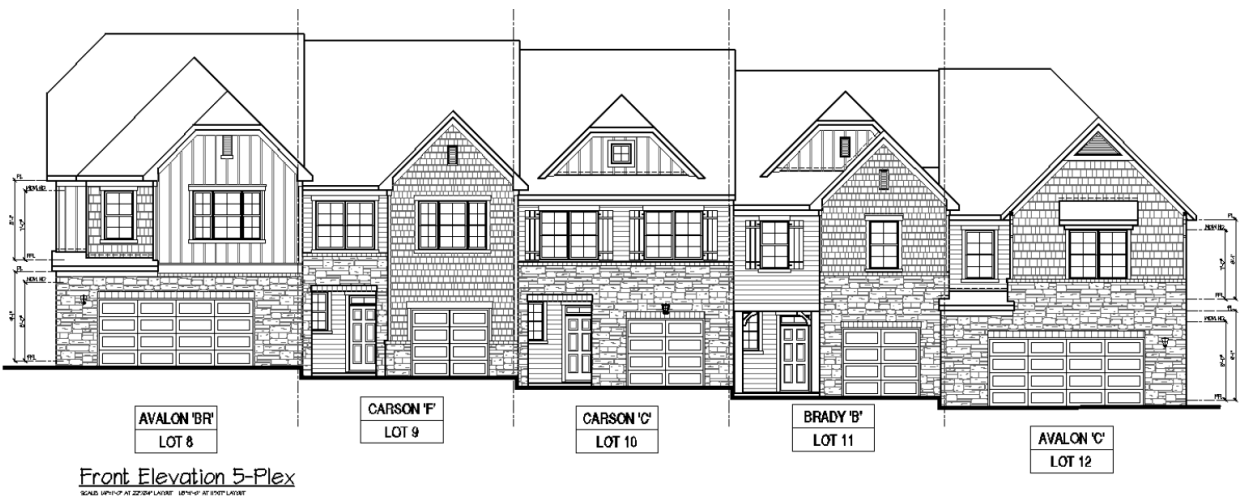
Single-Family Home Elevations



Townhouse Elevations



Townhouse Elevations



Townhouse Elevations



Townhouse Elevations



Affordable Housing Elevation

Elevation represents the minimum standard for affordable units. At the time of Master Subdivision or Site Plan, alternate elevations may be proposed and approved by staff as long as they are substantially similar.



Multi-Family Elevations



Non-Residential Design Guidelines:

- Buildings shall be arranged to define, create and activate edges and public places. They shall be situated to address the street and provide massing that looks to define the street realm for pedestrians as well as automobiles.
- Every effort shall be made to locate service and loading areas in the rear of structures. Where these features are located on the side of the building along a public road, they will be designed in such a way that they do not distract from the character of the development and they will be screened in accordance with the UDO.
- Elevations of buildings facing a street shall incorporate detailing in keeping with the character and style of the architectural features on adjacent buildings.
- Elevations of corner buildings shall utilize design features such as variations in wall plane, variation in building mass and window placement to generate street interest.
- Architectural treatments such as varying roof forms, façade articulation, breaks in roof, walls with texture materials and ornamental details as well as landscaping shall be incorporated to add visual interest. Large expanses of blank walls, greater than 25' in length or height, shall be broken up with windows or other architectural features to reduce visual impacts.
- Differences of roof height, pitch, ridgelines and materials shall be used to create visual interest and avoid repetition.
- Roof features may include flat roofs with parapet, hip roofs or awnings with metal or canvas material.
- Solar conduit shall be provided on every non-residential building that has a flat roof, not to include public or private schools.

Non-residential exteriors shall incorporate variation in materials. The primary (front) façade and other façades located along a public right-of-way may include:

- Brick and/or stone masonry
- Decorative concrete block (integral color or textured)
- Stone accents
- Aluminum storefronts with anodized or pre-finished colors
- EIFS cornices, and parapet trim
- EIFS or synthetic stucco shall not be used in the first four feet above grade and shall be limited to only 25% of each building façade
- Precast concrete
- Soffit and fascia materials to be considered include EIFS with crown trim elements
- Cementitious siding

Non-residential buildings visible from public view shall be constructed with compatible materials to other uses in the PUD. Rear elevations of non-residential buildings facing opaque landscape buffers or not visible from vehicular use areas or public rights-of-way may incorporate decorative concrete masonry, metal coping, or EIFS trim.

Exterior materials not allowable as part of the residential or non-residential development are as follows:

- Vinyl siding
- Painted, smooth faced concrete block
- Metal Walls

Public Art

Refer to PUD Preliminary Layout Plan for potential locations dedicated to public art. Two location options are provided and a minimum of one location will be implemented.

PARKING AND LOADING

As part of the review and approval of a Master Subdivision Plan or Site Plan, the Planning Director may approve a parking reduction per UDO Section 8.3.9 *or* a reduction up to fifteen (15) percent in the number of required parking spaces (excluding single-family and townhomes), whichever is greater. The latter may be approved if the reduced number of parking spaces will be sufficient to satisfy the demand for parking, based on evidence provided by a licensed traffic engineer in the form of a parking study or other supporting evidence deemed appropriate by the Planning Director.

Guest parking shall be distributed so that there is at least one guest parking space within 200' of each townhome lot. On-street parallel parking stalls may be used to satisfy guest parking requirements.

SIGNAGE

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

LANDSCAPING

All landscaping for this PUD shall comply with Section 8.2 Landscaping, of the Town of Apex UDO, except for the following provision regarding building landscaping requirements for townhomes (Section 8.2.4 A.3):

- Street trees located within street right-of-way shall count toward landscaping requirements. Additionally, shrubs may be located either on the townhome lot or within HOA owned common areas to meet UDO requirements.

NATURAL RESOURCES AND ENVIRONMENTAL DATA

River Basins and Watershed Protection Overlay Districts

This project is located within the Beaver Creek Drainage Basin, which is within the Cape Fear River Basin. Almost all of the project site is located within the Primary Watershed Protection Overlay District as shown on the Town of Apex Watershed Protection Map, and the northeast corner of the property falls under the Secondary Watershed Protection Overlay District. Accordingly, this PUD will comply with all built upon area, vegetated conveyances, structural SCMs and riparian stream buffer requirements of Section 6.1.7.

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 PUD will provide a minimum of 20% of the gross project area as a 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 RCAs throughout the site. Additional RCA areas may include perimeter and streetfront buffers, stormwater management areas (as permitted by the UDO), and greenway trails.

Floodplain

The project site does not sit within a designated current or future 100 year floodplain as shown on the Town of Apex FEMA map and FIRM Panel 3720073100J, dated May 2, 2006.

Tree Canopy

The Apex 2045 Land Use Plan designates the majority of this property as Community Mixed-Use. This land use designation prescribes a mix of High Density Residential (over 14 units/acre), Office Employment and Commercial uses. In order to implement this mix of uses in compliance with the land use plan, it will be necessary to remove some tree canopy outside of environmentally protected areas.

As part of the implementation of this community, the project will re-establish a new tree canopy by creating a new urban street grid containing canopy trees within the public rights-of-way, along with vegetated perimeter buffers, pocket parks, community gathering spaces and other open space areas.

To further illustrate the project's commitment to preserving and re-establishing tree canopy in our region, at the time of first subdivision or site plan submittal, the developer will provide a donation of \$10,000 to a local non-profit organization with a mission towards tree preservation and tree replacement. We estimate the project will retain or replace almost 70% of existing canopy on the residential portion, and preserve or replant an additional 27% on the non-residential portion of the development, bringing replacement amount close to 97%. As such, this donation represents an assigned per-tree value in substitute canopy for the remaining 3%. The developer will work with the Town of Apex to identify a mutually acceptable non-profit organization to receive these funds. Developer is responsible for providing documentation for qualifying organizations.

Historic Structures

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

STORMWATER MANAGEMENT

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 24-hour storm events.
- Treatment for the first 1 inch of runoff will provide 85% removal of total suspended solids.

Acceptable stormwater structures shall include detention ponds, constructed wetlands, bio-retention areas, or other approved devices consistent with the NC DEQ Stormwater Design Manual and the Town of Apex UDO.

PARKS AND RECREATION

The project was reviewed by the Parks, Recreation, and Cultural Resources Advisory Commission on February 26, 2020 and fee-in-lieu of dedication was recommended and unanimously approved.

Number of Units*	Housing Type	Fee Per Unit**	Total Fees
50	Single-Family	\$3446.98	\$172,349.00
600	Townhomes	\$2321.54	\$1,392,924.00
850	Apartments	\$2044.05	\$1,737,442.50
Total	-	-	\$3,302,715.50

*Final unit mix will be determined at the time of Master Subdivision.

**Fees are based upon approval date and runs with project with exception of the increase in total unit count.

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. Road and utility infrastructure shall be as follows:

General Roadway Infrastructure

All proposed roadway infrastructure and right-of-way dedications will be consistent with the Town of Apex UDO and Transportation Plan if the requested Transportation Plan amendments are approved.

The minor collector street extending from the major collector street at South Salem Street to Apex Barbecue Road will not be directly accessed by residential driveways.

The location of the major collector street connection to South Salem Street is subject to change based on the ultimate layout and will be determined in coordination with staff during master subdivision plan review.

Water and Sanitary Sewer

All lots within the project will be served by Town of Apex for water and sanitary sewer. The utility design will be finalized at the time of master subdivision plan approval and be based on available facilities adjacent to the site at that time. The design will meet the current Town of Apex master plans for water and sewer.

Developer may seek a developer agreement with the Town for the oversized waterline sizing along the site frontage and waterline connection under 540 for reimbursement per the Town's Policy Regarding Town Participation in Utility Projects.

Transit

At least two bus stops shall be provided at locations to be determined at the time of subdivision or site plan approval. In accordance with Apex standards, stops will provide a concrete landing pad between sidewalk and curb, an amenity pad behind the sidewalk to accommodate future shelter, lighting at bus stop location, and a sign post for a future sign.

Walkability

The following facilities will be provided to contribute to a walkable community within and surrounding the Depot 499 development:

- Five-foot wide public sidewalks along both sides of all streets unless otherwise noted
- Six-foot wide private walking trails throughout the development
- A greenway connection to Scott's Ridge Elementary School (subject to WCPSS approval)
- Ten-foot wide sidepaths along South Salem Street frontage, Apex Barbecue Road frontage, and the main collector through the development as shown on Sheet C2.00.
- Construction or payment-in-lieu of approximately 910 linear feet of off-site sidewalks and side paths to complete missing pedestrian connections to the project from adjoining communities as shown on Sheet C2.00.
- Up to two high visibility crosswalks constructed along Apex Barbecue Road (subject to NCDOT and the Town of Apex approval)
- Bicycle and pedestrian facilities along existing road frontage along the boundaries of the PUD shall be installed as each pod is developed, and no later than the completion of Phase 2 as described in the zoning conditions related to traffic impacts.

Other Utilities and Facilities

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

Streetscape features may be used to help with establishing a framework for the proposed development. These features may include street trees within the public right-of-way, benches, trash receptacles, and street and/or pedestrian lights compatible with their context. Other features may include markers, bollards, and unique paving patterns.

SCHOOL ALTERNATIVE

If a school use is pursued on Pods R-T on Land Use Option 1, an alternative transportation alignment is permitted as shown on the plan set. This alignment includes roundabouts to facilitate movements along the collector and out to S. Salem Street at site drive #7 to minimize mixing with school bus movements. School buses will access site drive #7 which Wake County Public School System requires to be an at-grade intersection. If a school use is not pursued on Pods R-T, the original collector alignment will be maintained as shown on Land Use Option 2. This intersection will also be at grade to provide needed access to the commercial and office uses on these high-visibility pods.

If a school is pursued on Pods R-T, the transportation commitments on PUD Plan Sheet C2.00 may be modified by the Town Council at site plan to adjust or reduce commensurate with reduced trip generation and/or modified movements. Traffic improvements may be modified based on a revised TIA with the inclusion of the school.

PHASING PLAN

This PUD will be completed in up to 10 phases. Location of phases will be determined at the time of Master Subdivision Review and Approval.

CONSISTENCY WITH LAND USE PLAN

The proposed land use will be consistent with Advance Apex 2045: The Apex Comprehensive Plan, adopted in February 2019 if the requested Land Use Map amendment is approved.

The Future Land Use Map designates a majority of the property as Community Mixed Use, which encompasses High Density Residential, Office Employment, and Commercial Services. The remaining northern portion of the property is divided into three classifications - Medium/High Density Residential, Office Employment, and Commercial Services. A Future Land Use Map Amendment is requested for approximately 5.41 acres of land in the northeast corner of PIN 0731761944 from Office Employment to High Density Residential.

The proposed development will align with these uses and include single-family homes, townhomes, apartments, and non-residential uses accordingly. Thirty percent of the Community Mixed Use designated area will be non-residential uses.

COMPLIANCE WITH 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).

TRANSPORTATION IMPROVEMENTS

The following zoning conditions represent the recommendations by Apex staff based on a review of the TIA prepared for the Depot 499 development plan. Reported lane lengths represent storage length and do not include full width deceleration or taper length unless stated otherwise. While not all staff recommendations match what was recommended in the TIA or otherwise recommended by NCDOT, they represent the findings of Apex staff based on an interpretation of the requirements of the UDO to mitigate traffic impacts of the proposed development.

All recommendations are subject to consideration by Town Council, and on state-maintained roadways are ultimately subject to review and approval by NCDOT. NCDOT may reject and/or require alternative improvements compared to zoning conditions approved by Apex on state-maintained roadways. If offsite right of way or easements cannot be acquired by the developer through private negotiation, developer shall request legal assistance from the Town in the interest of obtaining such property for the purposes of satisfying the zoning conditions. If ROW is unable to be obtained, a fee-in-lieu may be accepted per UDO 7.1.7. During buildout, if the subdivision or site plan submittals exceed the trip generation potential that was studied in the original TIA, a revised analysis can be prepared, if requested by staff.

“Phase 1” in the following conditions represents improvements required prior to platting no more than 450 townhomes and/or single family homes, and/or certificate of occupancy for no more than 400 apartment dwelling units, and/or certificate of occupancy for no more than 150,000 square feet of commercial development. If a school is pursued on Pods R-T, the transportation commitments on PUD Plan Sheet C2.00 may be modified by the Town Council at site plan pursuant a modified TIA to adjust or reduce commensurate with reduced trip generation and/or modified movements. Addition of a school site in Phase 1 will require an updated TIA to reevaluate Phase 1 improvements which may result in modified and additional required improvements during that phase, subject to Apex and NCDOT approval.

Improvements to be constructed in Phase 1 as defined above:

- Apex Barbecue Road and Kelly Road
 - » Construct a 200-foot westbound left-turn lane on Apex Barbecue Road.
 - » Construct a 200-foot eastbound left-turn lane on Apex Barbecue Road.

“Phase 2” in the following conditions represents improvements required prior to platting no more than 600 townhomes and/or single family homes, and/or certificate of occupancy for no more than 600 apartment dwelling units, and/or certificate of occupancy for no more than 300,000 square feet of commercial development.

Improvements to be constructed in Phase 2 as defined above:

- S. Salem Street and Southbound NC-540 Ramps (Signalized)
 - » Extend the southbound right turn lane on the ramp to provide 375 feet of storage and place it under signalized control rather than free-flow.
 - » Construct an additional westbound through lane on S. Salem Street prior to the interchange, extending through the intersection of NC-540 Northbound Ramps across the bridge and through the intersection of NC-540 Southbound Ramps in order to provide two contiguous westbound through lanes (see alternative below)*.
- S. Salem Street and Northbound NC-540 Ramps (Signalized)
 - » Construct two contiguous westbound through lanes carried from the site frontage across the bridge and through the intersection of Southbound NC-540 Ramps (see alternative below)*.
- *Alternative recommendations for NC 540 Interchange Ramps, Phase 2
 - » *Developer shall construct an additional westbound through lane on S. Salem Street at Southbound NC-540 Ramps starting immediately west of the bridge for a minimum of 200 feet and construct a 200-foot westbound right turn lane on S. Salem Street.
 - » *Developer shall construct an additional 150-foot southbound left turn lane on the Northbound NC-540 Exit Ramp, and begin an additional eastbound/northbound receiving through lane on S. Salem Street, carrying that additional (second) through lane across the development frontage and terminating in a left turn lane at Apex Barbecue Road.
 - » *Developer shall terminate the additional westbound/southbound through lane on S. Salem Street as a right turn lane at the NC 540 Northbound Ramps.

- **S. Salem Street and Site Drive 7 (full movement access nearest NC 540)**
 - » Construct an additional southbound through lane on S. Salem Street providing two southbound through lanes with a shared through-right lane.
 - » *For alternative NC 540 Interchange improvements, also construct an additional northbound through lane on S. Salem Street providing two northbound through lanes.
 - » Install a traffic signal once warranted and permitted by NCDOT. If not warranted, developer shall pay a fee in lieu for estimated design and construction cost of a traffic signal. If not permitted by NCDOT upon build-out of Phase 2, developer shall be released from the requirements to install a traffic signal.
- **S. Salem Street and Site Drive 4 (between Site Drive 7 and Site Drive 1)**
 - » Construct an additional southbound through lane on S. Salem Street providing two southbound through lanes with a shared through-right lane.
 - » *For alternative NC 540 Interchange improvements, also construct an additional northbound through lane on S. Salem Street providing two northbound through lanes.
- **S. Salem Street and Site Drive 1 (main access for townhomes & commercial buildings)**
 - » Construct an additional southbound through lane on S. Salem Street, converting the right turn lane to a through-right lane.
 - » *For alternative NC 540 Interchange improvements, also construct an additional northbound through lane on S. Salem Street providing two northbound through lanes.
 - » Install a traffic signal once warranted and permitted by NCDOT. If not warranted in Phase 2, developer shall pay a fee in lieu for estimated design and construction cost of a traffic signal. If not permitted by NCDOT upon build-out of Phase 2, developer shall be released from the requirement to install a traffic signal.
- **S. Salem Street and Site Drive 3 (limited-movement access for commercial buildings north of Site Drive 1)**
 - » Construct an additional southbound through lane on S. Salem Street providing two southbound through lanes with a shared through-right lane.
 - » *For alternative NC 540 Interchange improvements, also construct an additional northbound through lane on S. Salem Street providing two northbound through lanes.
- **S. Salem Street and Site Drive 6 (right-in/right-out access nearest Apex Barbecue Road)**
 - » Construct an additional southbound through lane on S. Salem Street providing two southbound through lanes with a shared through-right lane.
 - » *For alternative NC 540 Interchange improvements, also construct an additional northbound through lane on S. Salem Street providing two northbound through lanes.

- **S. Salem Street and Apex Barbecue Road**
 - » Convert the existing southbound right turn lane on S. Salem Street to a through lane in order to provide two southbound through lanes carried southward across the site frontage.
 - » Construct a 200-foot southbound right turn lane.
 - » Extend the northbound left turn lane on S. Salem Street to provide 300 feet of storage (*or for alternative NC 540 Interchange improvements, terminate the additional northbound through lane as a left turn lane).
 - » Extend the eastbound left turn lane on Apex Barbecue Road to provide 375 feet of storage.
- **Apex Barbecue Road and Kelly Road**
 - » Construct a second northbound through lane on Kelly Road that starts 800 feet south of the intersection and continues for approximately 1,000 feet north, dropping off with a 45:1 merge taper beyond the intersection of Grand Kelly Way.
 - » Widen the southbound approach of Kelly Road to provide a two-way left turn lane from Apex Barbecue Road to Karawind Lane.
 - » Construct a 200-foot southbound right turn lane on Kelly Road.

Improvements required with construction of Site Drives:

- **S. Salem Street and Site Drive 7 (full movement access nearest NC 540)**
 - » With construction of Site Drive 7, developer shall:
 - › Provide a 150-foot eastbound left turn lane on the driveway.
 - › Construct a 250-foot northbound left turn lane on S. Salem Street.
 - › Construct a 100-foot southbound right turn lane to later be converted to a through lane if Site Drive 7 is constructed prior to Phase 2.
- **S. Salem Street and Site Drive 4 (between Site Drive 7 and Site Drive 1)**
 - » With construction of Site Drive 4, developer shall:
 - › Provide a minimum of 600 feet of separation between Site Drive 4 and both of the adjacent intersections, Site Drive 7 and Site Drive 1, in order to construct northbound left-over access with 150 feet of storage at Site Drive 4. Otherwise, Site Drive 4 shall be constructed as a right-in/right-out access.
 - › Construct a 100-foot southbound right turn lane to later be converted to a through lane if Site Drive 4 is constructed prior to Phase 2.
- **S. Salem Street and Site Drive 1 (main access for townhomes & commercial buildings)**
 - » With construction of Site Drive 1, developer shall:
 - › Provide a 150-foot eastbound left turn lane on the driveway.
 - › Construct a 200-foot northbound left turn lane on S. Salem Street.
 - › Construct a 100-foot southbound right turn lane on S. Salem Street.

- **S. Salem Street and Site Drive 3 (limited-movement access for commercial buildings north of Site Drive 1)**
 - » With construction of Site Drive 3, developer shall:
 - › Construct Site Drive 3 as a right-in/right-out, left-over access.
 - › Construct a 150-foot northbound left turn lane on S. Salem Street.
 - › Construct a 100-foot southbound right turn lane to later be converted to a through lane if Site Drive 3 is constructed prior to Phase 2.
- **S. Salem Street and Site Drive 6 (right-in/right-out access nearest Apex Barbecue Road)**
 - » With construction of Site Drive 6, developer shall:
 - › Provide right-in/right-out access with a minimum offset of 250 feet from Apex Barbecue Road.
 - › Construct a 100-foot southbound right turn lane to later be converted to a through lane if Site Drive 6 is constructed prior to Phase 2.
- **Apex Barbecue Road and Site Drive 5 (right-in/right-out access nearest S. Salem Street)**
 - » With construction of Site Drive 5, developer shall:
 - › Provide right-in/right-out access with a minimum offset of 250 feet from S. Salem Street.
 - › Construct a 100-foot eastbound right turn lane on Apex Barbecue Road.
- **Apex Barbecue Road and Site Drive 2 / St. Mary Magdalene**
 - » With construction of Site Drive 2, developer shall:
 - › Provide a full movement intersection aligned with the St. Mary Magdalene driveway.
 - › Provide a 150-foot northbound left turn lane on the driveway.
 - › Construct a 100-foot westbound left turn lane on Apex Barbecue Road.
 - › Construct a 100-foot eastbound right turn lane on Apex Barbecue Road.
- **Apex Barbecue Road and Scotts Ridge Trail / Woodall Crest Drive**
 - » Upon opening access to Aspen River Lane, developer shall:
 - › Install a double yellow centerline and edge line pavement markings per the Town of Apex major collector street typical section along Aspen River Lane and Woodall Crest Drive to Apex Barbecue Road.
 - » Developer shall install a traffic signal once warranted and permitted by NCDOT. If not warranted in Phase 2, developer shall pay a fee in lieu for estimated design and construction cost of a traffic signal. If not permitted by NCDOT upon build-out of Phase 2, developer shall be released from the requirement to install a traffic signal.

LAND PLANNING,
LANDSCAPE ARCHITECTURE +
CIVIL ENGINEER



MCADAMS

DEVELOPER

LENNAR[®]



McADAMS

The John R. McAdams Company, Inc.
2905 Meridian Parkway
Durham, NC 27713

phone 919. 361. 5000
fax 919. 361. 2269
license number: C-0293, C-187

www.mcadamsco.com

CONTACT

BOB ZUMWALT
zumwalt@mcadamsco.com
PHONE: 919.361.5000

CLIENT

LENNAR OF THE CAROLINAS
1100 PERIMETER PARK DRIVE SUITE 112
MORRISVILLE, NORTH CAROLINA
PHONE: 919.465.5900



PROJECT DIRECTORY

LENNAR OF THE CAROLINAS
1100 PERIMETER PARK DRIVE SUITE 112
MORRISVILLE, NORTH CAROLINA
PHONE: 919.465.5900

DEPOT 499

SOUTH SALEM STREET & APEX BARBECUE ROAD APEX, NC, 27502

PLANNED DEVELOPMENT PLAN FOR PUD-CZ

PROJECT NUMBER: LEN-19090

DATE: JANUARY 02, 2020

SHEET INDEX

- C1.00 EXISTING CONDITIONS
- C2.00 PRELIMINARY LAYOUT PLAN
- C3.00 PRELIMINARY UTILITY AND STORMWATER PLAN

OWNERS

- MEKA, NARENDRA
PIN: 731459383
0 KELLY RD
APEX, NC 27502
- VARYA LLC
PIN: 731554102
1604 SALEM ST
APEX, NC 27502
- POE ACRES FAMILY FARM LLC
PIN: 731564395
0 APEX BARBECUE RD
APEX, NC 27502
- HUNTER, CAREY B
PIN: 731641147
1525 S SALEM ST
APEX, NC 27502
- SZYMKIEWICZ, PAUL M JIN, WEI
PIN: 731645370
1420 S SALEM ST
APEX, NC 27502
- UTLEY, PAMELA
PIN: 731646532
1420 S SALEM ST
APEX, NC 27502
- POE ACRES FAMILY FARMS LLC
PIN: 731657116
1330 S SALEM ST
APEX, NC 27502
- POE, DARYL POE, JEANNE
PIN: 731676714
6401 APEX BARBECUE RD
APEX, NC 27502
- POE ACRES FAMILY FARMS LLC
PIN: 731750984
1300 S SALEM ST
APEX, NC 27502
- POE ACRES FAMILY FARMS LLC
PIN: 731761944
0 APEX BARBECUE RD
APEX, NC 27502
- POE, WILLIAM DOUGLAS POE, JEAN S
PIN: 731766588
1216 S SALEM ST
APEX, NC 27502
- REGENCY INTERNATIONAL INVESTMENTS LLC
PIN: 731873224
0 APEX BARBECUE RD
APEX, NC 27502

SITE DATA

DEVELOPER	LENNAR 1100 PERIMETER PARK DRIVE, SUITE 112 MORRISVILLE, NC 27560
PARCELS	731459383, 731554102, 731564395, 731641147, 731645370, 731646532, 731657116, 731676714, 731750984, 731761944, 731766588, 731873224 (SEE TABLE ON COVER SHEET FOR OWNER INFORMATION)
SITE AREA	GROSS AREA: 200.80 AC
EXISTING ZONING	RA AND B1-CZ
PROPOSED ZONING	PUD-CZ
RIVER BASIN	CAPE FEAR
WATERSHED OVERLAY	PRIMARY WATERSHED OVERLAY
MAX BUILT UPON AREA (IMPERVIOUS)	70%
2045 LAND USE MAP DESIGNATION	CURRENT 2045 LAND USE MAP DESIGNATION: COMMUNITY MIXED USE (HIGH DENSITY RESIDENTIAL, COMMERCIAL SERVICES, AND OFFICE EMPLOYMENT), MEDIUM/HIGH DENSITY RESIDENTIAL, COMMERCIAL SERVICES, AND OFFICE EMPLOYMENT PROPOSED 2045 LAND USE MAP DESIGNATION: A CHANGE IS REQUESTED FOR APPROXIMATELY 5.41 ACRES OF LAND IN THE NORTHEAST CORNER OF PIN 731761944 FROM OFFICE EMPLOYMENT TO HIGH DENSITY RESIDENTIAL.
PROPOSED USE	MIXED-USE DEVELOPMENT WITH OFFICE, RETAIL, SINGLE-FAMILY, TOWNHOMES, AND MULTI-FAMILY UNITS
MAXIMUM DENSITY	APARTMENTS: 850 TOWNHOMES/SINGLE-FAMILY: 650 (50 SINGLE-FAMILY MAXIMUM) NON-RESIDENTIAL: 650,000 SF
AREA DESIGNATED AS MIXED USE ON 2045 LUM	171.90 AC
AREA OF MIXED USE PROPOSED AS NON-RESIDENTIAL	51.57 AC
MAXIMUM SF OF NON-RESIDENTIAL LAND AREA	650,000 SF
PERCENT OF MIXED USE AREAS PROPOSED AS NON-RESIDENTIAL	30%
BUFFER CALL IDENTIFICATION NUMBER	APEX 17-004

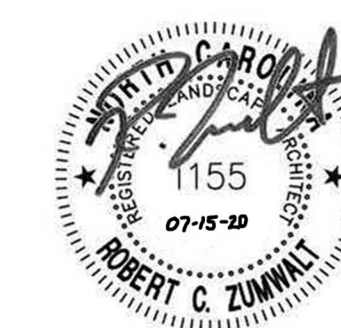


AERIAL AND VICINITY MAP
1"=1000' SCALE



SINGLE-FAMILY		
LOT WIDTH	MINIMUM 36'	
LOT DEPTH	MINIMUM 85'	
LOT SIZE	MINIMUM 2,550 SF	
BUILDING HEIGHT	MAXIMUM 45' (IN POD G, THE FIRST ROW OF LOTS IMMEDIATELY ADJACENT TO THE WOODALL SUBDIVISION SHALL NOT EXCEED 2 STORIES UNLESS BUFFER IS INCREASE TO A 50' TYPE A BUFFER)	
SETBACKS	SIDE	5'
	FRONT	8' (HOUSE-BUILDING FACADE) 20' (GARAGE)
	CORNER SIDE	8'
	REAR ALLEY	15' 5'
TOWNHOMES		
LOT WIDTH	MINIMUM 16' ALLEY-LOADED / 18' FRONT-LOADED	
LOT DEPTH	MINIMUM 65'	
BUILDING HEIGHT	MAXIMUM 45' (IN POD G, THE FIRST ROW OF LOTS IMMEDIATELY ADJACENT TO THE WOODALL SUBDIVISION SHALL NOT EXCEED 2 STORIES, UNLESS BUFFER IS INCREASE TO A 50' TYPE A BUFFER).	
SETBACKS	SIDE	5'
	FRONT	FRONT-LOADED 5' (HOUSE-BUILDING FACADE) 20' (GARAGE)
	CORNER SIDE	8'
	REAR	FRONT-LOADED 10' ALLEY-LOADED 5' (HOUSE-BUILDING FACADE)
ALLEY BUILDING SEPARATION	5' 10'	
APARTMENTS		
BUILDING HEIGHT	MINIMUM	SOUTH SALEM STREET: 4 STORIES; A MAXIMUM OF 25% OF BUILDINGS ALONG THIS FRONTAGE MAY BE 3 STORIES APEX BARBECUE ROAD: 4 STORIES; A MAXIMUM OF 25% OF BUILDINGS ALONG THIS FRONTAGE MAY BE 3 STORIES
	MAXIMUM	SOUTH SALEM STREET: 6 STORIES OR 90' APEX BARBECUE ROAD: 6 STORIES OR 90'; THE FIRST ROW OF BUILDINGS ALONG THIS FRONTAGE SHALL NOT EXCEED 4 STORIES
SETBACKS	FRONT	10'
	CORNER SIDE	10'
	REAR	10'
	BUILDING SEPARATION	30'
FEMA FIRM PANEL	3720073100	
RESOURCE CONSERVATION AREA (RCA)	THE PUD WILL PROVIDE A MINIMUM OF 20% OF THE GROSS PROJECT AREA AS RCA.	
MIXED-USE DESIGN CONTROLS		
MAX BUILDING HEIGHT	80'	
MIN BUILDING HEIGHT	3 STORIES (ROOFTOP TERRACES THAT INCLUDE A MINIMUM OF 1,500 SF OF ENCLOSED SPACE FOR EVENT, AMENITY, OR OTHER USE SUCH AS A BAR OR RESTAURANT SHALL QUALIFY AS A 3RD FLOOR)	
MIN BUILDINGS SETBACKS	SIDE	10'
	FRONT	10'
	CORNER SIDE	15'
	REAR	10'
NON-RESIDENTIAL DESIGN CONTROLS		
MAX BUILDING HEIGHT	100'	
MIN BUILDINGS SETBACKS	SIDE	10'
	FRONT	10'
	CORNER SIDE	15'
	REAR	10'

PRELIMINARY DRAWING - NOT RELEASED FOR CONSTRUCTION



REVISIONS

NO.	DATE	REVISION
1	02.14.2020	RESPONSE TO COMMENTS
2	03.13.2020	RESPONSE TO COMMENTS
3	05.14.2020	RESPONSE TO COMMENTS
4	06.05.2020	RESPONSE TO COMMENTS
5	06.29.2020	RESPONSE TO COMMENTS
5	07.15.2020	COVERSHEET REVISIONS

PUD-CZ
DRAWINGS FOR:
DEPOT 499
APEX, NC, 27502
PROJECT NUMBER: LEN-19090



ADJACENT PROPERTY INFORMATION:

- | | |
|---|--|
| 1. WAKE COUNTY BOARD OF EDUCATION
P.I.N.: 0731477650 | 13. BRITT, MARJORIE TINGEN
P.I.N.: 0731873793 |
| 2. WOODALL ESTATES OWNERS ASSOCIATION
P.I.N.: 0731575313 | 14. MCKINNISS, LORI
P.I.N.: 0731877367 |
| 3. WOODALL ESTATES OWNERS ASSOCIATION
P.I.N.: 0731670122 | 15. CIS APEX ASSEMBLAGE LLC
P.I.N.: 0731863120 |
| 4. POON, KENNETH RONG, MENGQI
P.I.N.: 0731673262 | 16. POE ACRES FAMILY FARM LLC
P.I.N.: 0731756252 |
| 5. PETERSON, CEARA AMELIA, LAURA
P.I.N.: 0731673490 | 17. CIS APEX ASSEMBLAGE LLC
P.I.N.: 0731731163 |
| 6. WOODALL, ANN C.
P.I.N.: 0731672786 | 18. HUNTER, CAREY B.
P.I.N.: 0731641147 |
| 7. ROMAN CATHOLIC DIOCESES OF RAL NC
P.I.N.: 0731782553 | 19. FAHEY FAMILY FARM LLC
P.I.N.: 0731434504 |
| 8. POE, BOBBY W., POE, ELIZABETH A.
P.I.N.: 0731776915 | 20. FAHEY FAMILY FARM LLC
P.I.N.: 0731435707 |
| 9. POE, BOBBY W., POE, ELIZABETH A.
P.I.N.: 0731776890 | 21. SM RALEIGH LLC
P.I.N.: 0731461619 |
| 10. CANTRELL, DONALD T., CANTRELL, MARY E.
P.I.N.: 0731779802 | 22. NC DEPT OF TRANSPORTATION TURNPIKE AUTHORITY
P.I.N.: 0731452647 |
| 11. CANTRELL, DARYL S., CANTRELL, JESSICA
P.I.N.: 0731870820 | 23. MILLS, DOROTHY M., MILLS, DAVID G., TRUSTEE
P.I.N.: 0731366481 |
| 12. CANTRELL, DANIEL T., CANTRELL, COURTNEY
P.I.N.: 0731871830 | 24. NC DEPARTMENT OF TRANSPORTATION TURNPIKE AUTHORITY
P.I.N.: 0731457553 |

GENERAL NOTES

- TOPOGRAPHIC AND SURROUNDING PARCEL INFORMATION TAKEN FROM TOWN OF APEX LIDAR DATA.
- PORTION OF BOUNDARY BY SURVEY FROM MCADAMS ALTA SURVEY DATED 11-22-2019, ADDITIONAL BOUNDARY FROM WAKE COUNTY GIS.
- THIS SITE IS NOT IN ANY SPECIAL FLOOD HAZARD AREAS OR FUTURE CONDITIONS FLOOD HAZARD AREAS, AS SHOWN ON FIRM PANEL 37200731001 DATED MAY 2, 2006.
- THERE ARE NO HISTORIC STRUCTURES ON THE SUBJECT PROPERTY.
- A DEMOLITION PERMIT WILL NEED TO BE ISSUED PRIOR TO TAKING DOWN THE EXISTING STRUCTURES. A LETTER OF ASBESTOS ABATEMENT WILL NEED TO ACCOMPANY THE APPLICATION FOR PERMIT.
- ALL EXISTING STRUCTURES ON THE SUBJECT PROPERTY SHALL BE REMOVED PER TOWN OF APEX STANDARDS AND REQUIREMENTS.
- BUFFER CALL IDENTIFICATION NUMBER - APEX 17-004.

LEGEND

- AIR CONDITIONING
- LIGHT POLE
- SEWER MANHOLE
- TELEPHONE BOX
- TELEPHONE PEDESTAL
- TRANSFORMER
- UTILITY POLE
- WELL
- OVERHEAD UTILITY
- RIGHT OF WAY
- SEWER EASEMENT
- SEWER
- STORM DRAINAGE

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PUD-CZ SET
S. SALEM STREET
APEX, NORTH CAROLINA



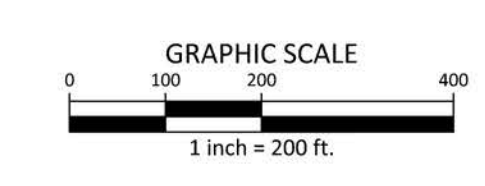
REVISIONS

NO.	DATE	RESPONSE TO COMMENTS
1	02.14.2020	RESPONSE TO COMMENTS
2	03.13.2020	RESPONSE TO COMMENTS
3	05.14.2020	RESPONSE TO COMMENTS
4	06.05.2020	RESPONSE TO COMMENTS
5	06.29.2020	RESPONSE TO COMMENTS

PLAN INFORMATION

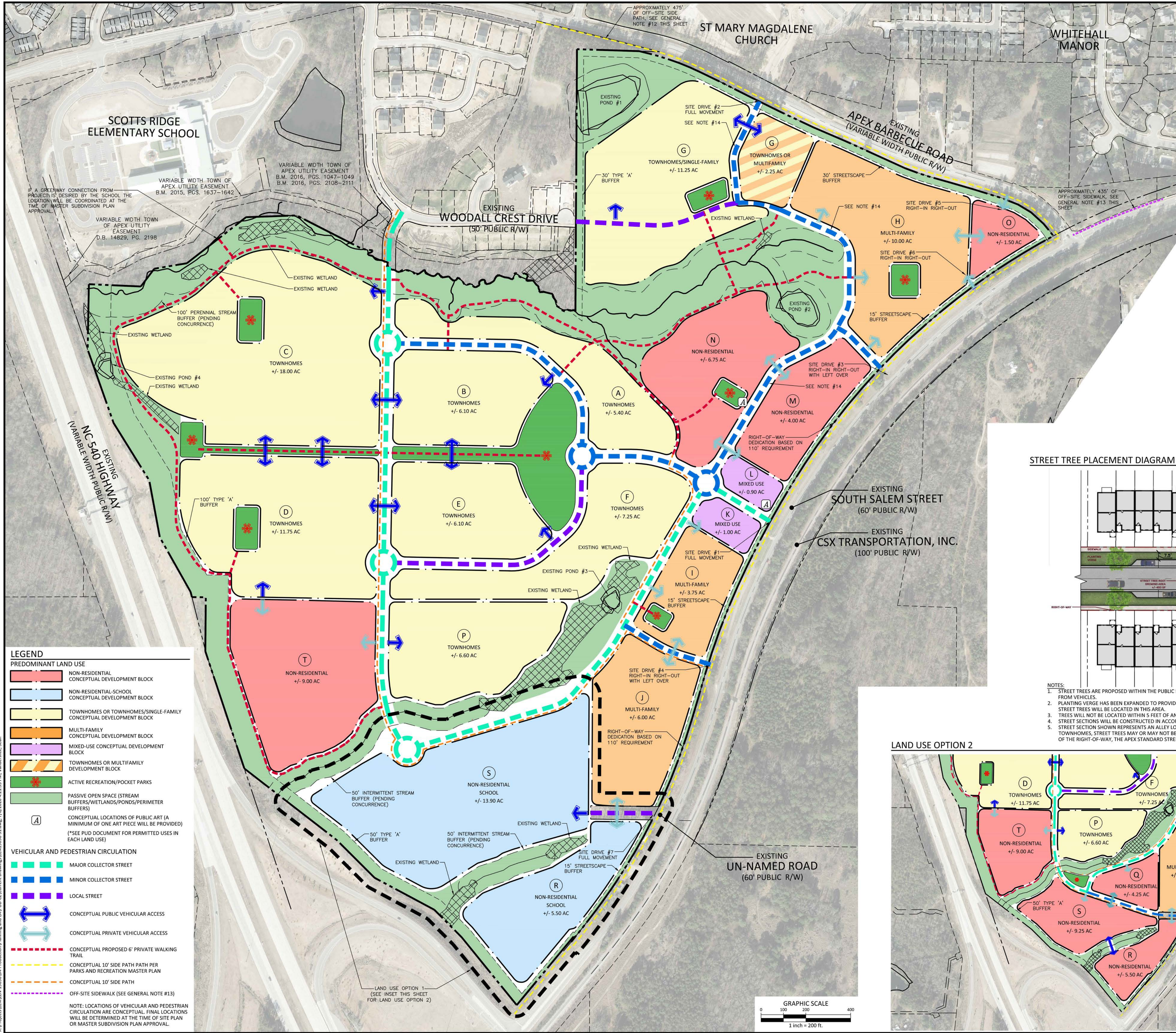
PROJECT NO.	LEN-19090
FILENAME	LEN19090-XC1
CHECKED BY	RCZ
DRAWN BY	SMV
SCALE	1"=200'
DATE	03.13.2020

EXISTING CONDITIONS
C1.00



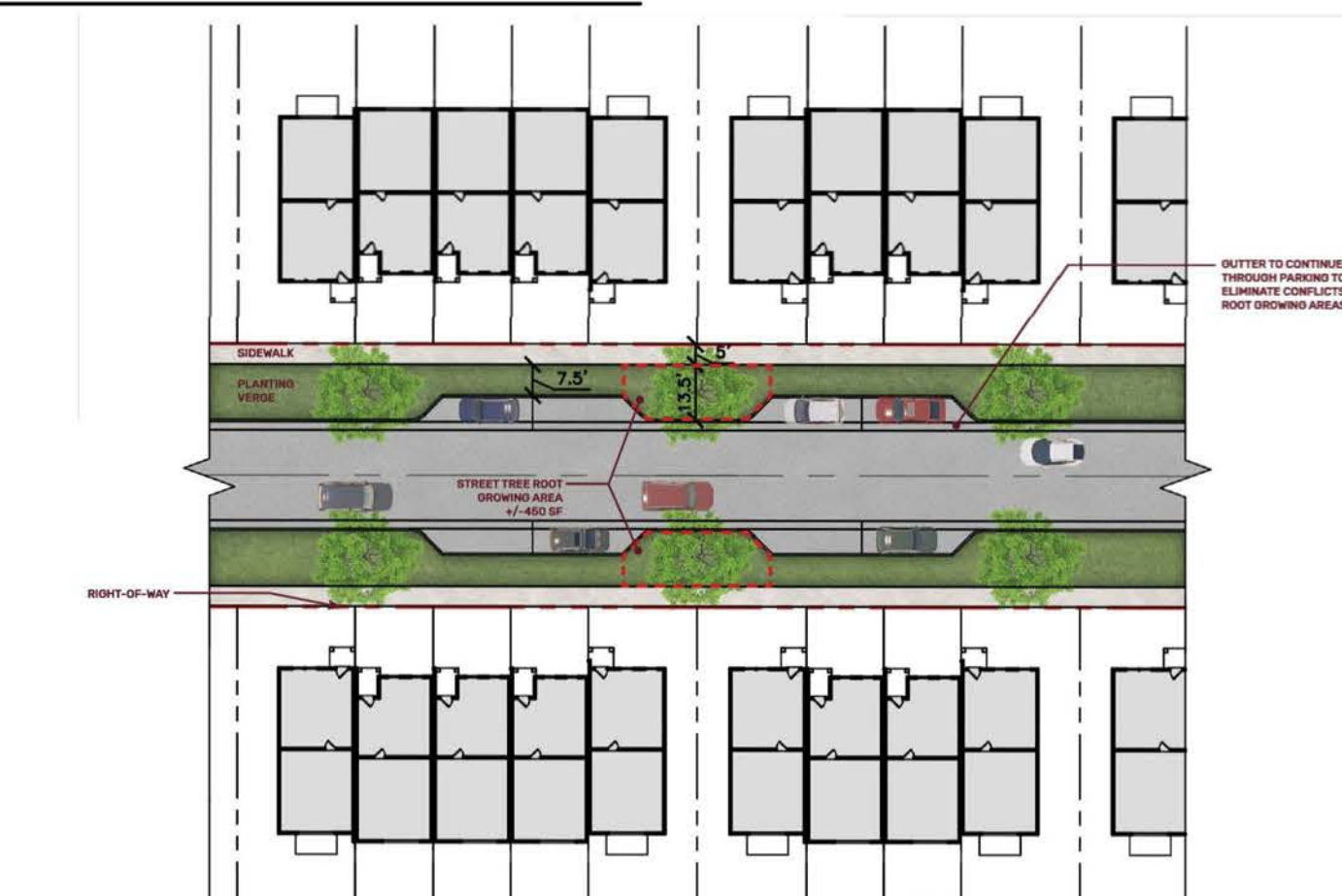
PRELIMINARY DRAWING - NOT RELEASED FOR CONSTRUCTION

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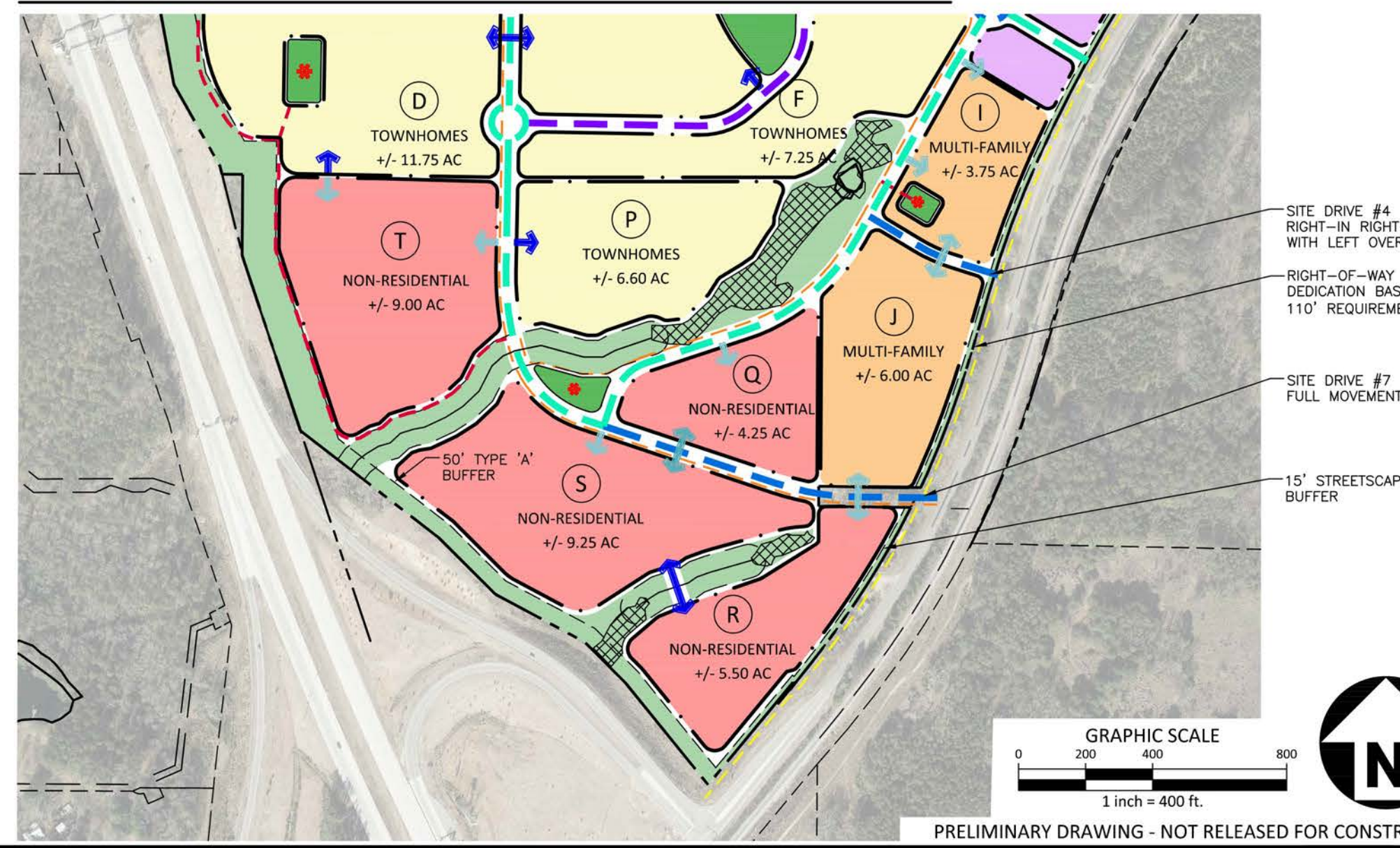
- ### GENERAL NOTES
- REFER TO PUD DOCUMENT FOR COMPLETE LIST OF ALLOWABLE USES FOR EACH TRACT OR DEVELOPMENT AREA.
 - SITE ELEMENTS REQUIRED TO SATISFY RECREATIONAL REQUIREMENTS SUCH AS, BUT NOT LIMITED TO, PLAY FIELDS AND GREENWAY TRAILS AND ITEMS TYPICALLY ASSOCIATED WITH THEM (BENCHES, TRASH CONTAINERS, 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.
 - SITE ITEMS SUCH AS BUT NOT LIMITED TO, LIGHTING, LANDSCAPING (INCLUDING MULCH), SCREENING (I.E.: DUMPSTERS/TRASH, MECHANICAL/HVAC, ETC.), SITE STABILIZATION (SEEDING), AND PARING AND PAVEMENT MARKING MUST BE COMPLETED PRIOR TO SCHEDULING A FINAL SITE INSPECTION.
 - NO SIGNS ARE APPROVED AS PART OF THE PUD-CZ PLAN APPROVAL. A SEPARATE SIGN PERMIT MUST BE OBTAINED. SIGNAGE WILL COMPLY WITH APEX'S UDO.
 - EXACT ACCESS AND STUB LOCATIONS TO BE FINALIZED AT SUBDIVISION PLAN PHASE.
 - EXACT LOCATION OF RESOURCE CONSERVATION AREA TO BE FINALIZED AT SUBDIVISION PLAN PHASE.
 - INTERNAL PUBLIC STREETS SHALL BE DEDICATED TO THE TOWN OF APEX. ROAD STUB-OUTS SHALL BE PROVIDED PER THE TOWN OF APEX REQUIREMENTS.
 - ALL PARKING STANDARDS WITHIN THE PUD WILL COMPLY WITH THE TOWN OF APEX'S UDO.
 - PLAN SHEETS ARE INTENDED FOR ILLUSTRATIVE USE ONLY.
 - PUBLIC AND PRIVATE VEHICULAR ACCESS AND WALKING TRAILS ARE SHOWN FOR CONCEPTUAL PURPOSES ONLY AND ARE SUBJECT TO CHANGE AT TIME OF SITE PLAN OR MASTER SUBDIVISION PLAN APPROVAL.
 - ACREAGE AND CONFIGURATION OF PODS IS APPROXIMATE. FINAL SIZE AND CONFIGURATION WILL BE DETERMINED AT THE TIME OF MASTER SUBDIVISION OR SITE PLAN BASED ON ACTUAL FIELD SURVEY AND FINAL DESIGN.
 - OFF-SITE SIDE PATH - SUBJECT TO RIGHT-OF-WAY OR EASEMENT ACQUISITION, THE PROJECT WILL CONSTRUCT APPROXIMATELY 475 LF OF OFF-SITE SIDE PATH (10' WIDE) ALONG THE SOUTH SIDE OF APEX BARBECUE ROAD ON WAKE COUNTY PIN 0731-67-5734 PRIOR TO THE ISSUANCE OF CERTIFICATES OF OCCUPANCY IN PODS G AND H. IN THE EVENT RIGHT-OF-WAY OR EASEMENT ACQUISITION IS NOT POSSIBLE, THE PROJECT WILL MAKE A PAYMENT-IN-LIEU FOR CONSTRUCTION OF THIS FACILITY IN ACCORDANCE WITH SECTION 7.1.7 OF THE APEX UDO.
 - OFF-SITE SIDEWALK - SUBJECT TO RIGHT-OF-WAY OR EASEMENT ACQUISITION, THE PROJECT WILL CONSTRUCT APPROXIMATELY 435 LF OF OFF-SITE SIDEWALK (5' WIDE) ALONG THE NORTH SIDE OF SOUTH SALEM STREET ON WAKE COUNTY PIN 0731-87-7367 PRIOR TO THE COMPLETION OF PHASE 2 AS DESCRIBED IN THE ZONING CONDITIONS RELATED TO TRAFFIC IMPACTS. IN THE EVENT RIGHT-OF-WAY OR EASEMENT ACQUISITION IS NOT POSSIBLE, THE PROJECT WILL MAKE A PAYMENT-IN-LIEU FOR CONSTRUCTION OF THIS FACILITY IN ACCORDANCE WITH SECTION 7.1.7 OF THE APEX UDO.
 - THE MINOR COLLECTOR STREET EXTENDING FROM THE MAJOR COLLECTOR STREET AT SOUTH SALEM STREET TO APEX BARBECUE ROAD WILL NOT BE DIRECTLY ACCESSED BY RESIDENTIAL DRIVEWAYS.
 - THE LOCATION OF THE MAJOR COLLECTOR STREET CONNECTION TO SOUTH SALEM STREET IS SUBJECT TO CHANGE BASED ON THE ULTIMATE LAYOUT AND WILL BE DETERMINED IN COORDINATION WITH STAFF DURING MASTER SUBDIVISION REVIEW.

STREET TREE PLACEMENT DIAGRAM



- NOTES:**
- STREET TREES ARE PROPOSED WITHIN THE PUBLIC RIGHT-OF-WAY TO ENHANCE THE STREETScape AND PROTECT THE PEDESTRIANS FROM VEHICLES.
 - PLANTING VERGE HAS BEEN EXPANDED TO PROVIDE A CLEAR PLANTING AREA OF 450 SF WITH A MINIMUM WIDTH OF 13.5 FEET. STREET TREES WILL BE LOCATED IN THIS AREA.
 - TREES WILL NOT BE LOCATED WITHIN 5 FEET OF ANY HARDScape OR UTILITY.
 - STREET SECTIONS WILL BE CONSTRUCTED IN ACCORDANCE WITH THE TOWN OF APEX STANDARD SPECIFICATIONS.
 - STREET SECTION SHOWN REPRESENTS AN ALLEY LOADED TOWNHOME PRODUCT. FOR STREET SECTIONS WITH FRONT LOADED TOWNHOMES, STREET TREES MAY OR MAY NOT BE LOCATED WITHIN THE RIGHT-OF-WAY. IF STREET TREES ARE LOCATED OUTSIDE OF THE RIGHT-OF-WAY, THE APEX STANDARD STREET SECTION WILL BE CONSTRUCTED TO RATHER THAN THIS SECTION.

LAND USE OPTION 2



LEGEND

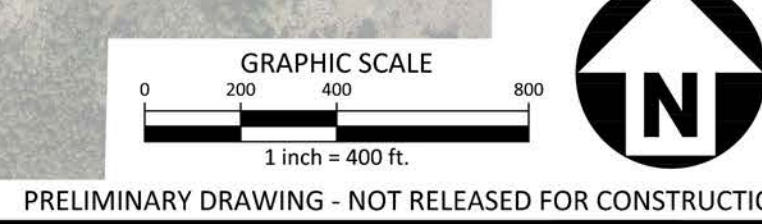
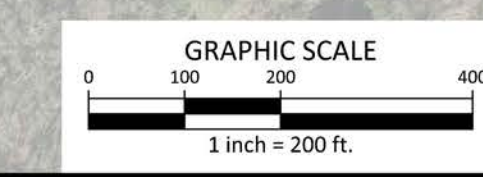
PREDOMINANT LAND USE

- NON-RESIDENTIAL CONCEPTUAL DEVELOPMENT BLOCK
- NON-RESIDENTIAL SCHOOL CONCEPTUAL DEVELOPMENT BLOCK
- TOWNHOMES OR TOWNHOMES/SINGLE-FAMILY CONCEPTUAL DEVELOPMENT BLOCK
- MULTI-FAMILY CONCEPTUAL DEVELOPMENT BLOCK
- MIXED-USE CONCEPTUAL DEVELOPMENT BLOCK
- TOWNHOMES OR MULTIFAMILY DEVELOPMENT BLOCK
- ACTIVE RECREATION/POCKET PARKS
- PASSIVE OPEN SPACE (STREAM BUFFERS/WETLANDS/PONDS/PERIMETER BUFFERS)
- CONCEPTUAL LOCATIONS OF PUBLIC ART (A MINIMUM OF ONE ART PIECE WILL BE PROVIDED) (*SEE PUD DOCUMENT FOR PERMITTED USES IN EACH LAND USE)

VEHICULAR AND PEDESTRIAN CIRCULATION

- MAJOR COLLECTOR STREET
- MINOR COLLECTOR STREET
- LOCAL STREET
- CONCEPTUAL PUBLIC VEHICULAR ACCESS
- CONCEPTUAL PRIVATE VEHICULAR ACCESS
- CONCEPTUAL PROPOSED 6' PRIVATE WALKING TRAIL
- CONCEPTUAL 10' SIDE PATH PER PARKS AND RECREATION MASTER PLAN
- CONCEPTUAL 10' SIDE PATH
- OFF-SITE SIDEWALK (SEE GENERAL NOTE #13)

NOTE: LOCATIONS OF VEHICULAR AND PEDESTRIAN CIRCULATION ARE CONCEPTUAL. FINAL LOCATIONS WILL BE DETERMINED AT THE TIME OF SITE PLAN OR MASTER SUBDIVISION PLAN APPROVAL.

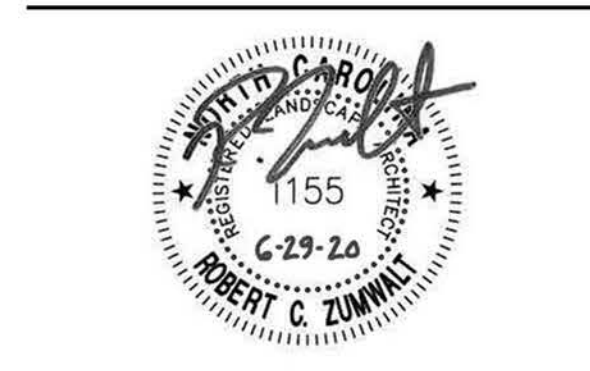


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LENNAR

DEPOT 499
PUD-CZ SET
S. SALEM STREET
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REVISIONS

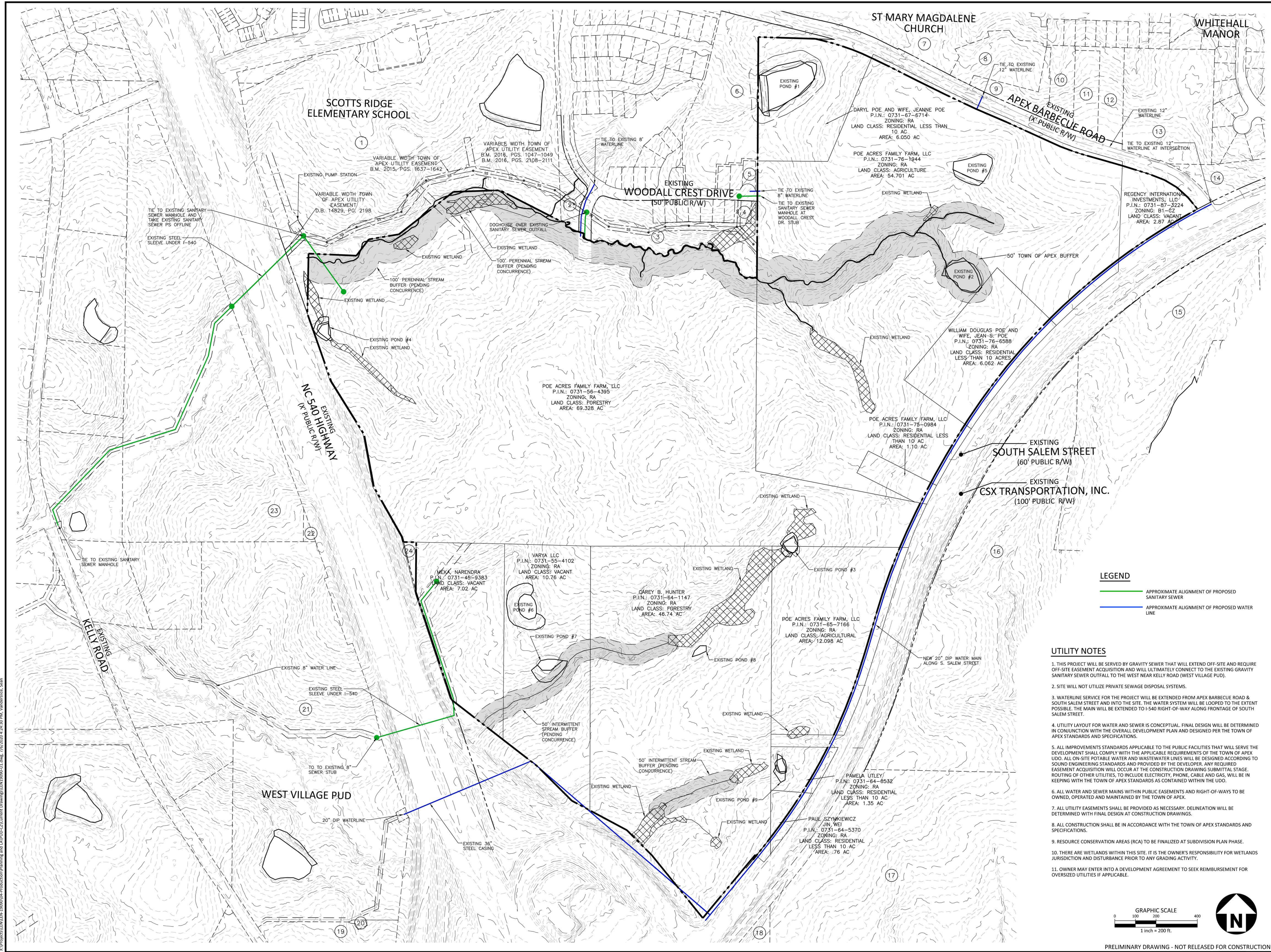
NO.	DATE	RESPONSE TO COMMENTS
1	02.14.2020	RESPONSE TO COMMENTS
2	03.13.2020	RESPONSE TO COMMENTS
3	05.14.2020	RESPONSE TO COMMENTS
4	06.05.2020	RESPONSE TO COMMENTS
5	06.29.2020	RESPONSE TO COMMENTS

PLAN INFORMATION

PROJECT NO. LEN-19090
FILENAME LEN19090-S1
CHECKED BY RCZ
DRAWN BY SMV
SCALE 1"=200'
DATE 03.13.2020

PRELIMINARY LAYOUT PLAN
C2.00

PRELIMINARY DRAWING - NOT RELEASED FOR CONSTRUCTION



DEPOT 499
 PUD-CZ SET
 S. SALEM STREET
 APEX, NORTH CAROLINA

LEGEND

- APPROXIMATE ALIGNMENT OF PROPOSED SANITARY SEWER
- APPROXIMATE ALIGNMENT OF PROPOSED WATER LINE

- UTILITY NOTES**
- THIS PROJECT WILL BE SERVED BY GRAVITY SEWER THAT WILL EXTEND OFF-SITE AND REQUIRE OFF-SITE EASEMENT ACQUISITION AND WILL ULTIMATELY CONNECT TO THE EXISTING GRAVITY SANITARY SEWER OUTFALL TO THE WEST NEAR KELLY ROAD (WEST VILLAGE PUD).
 - SITE WILL NOT UTILIZE PRIVATE SEWAGE DISPOSAL SYSTEMS.
 - WATERLINE SERVICE FOR THE PROJECT WILL BE EXTENDED FROM APEX BARBECUE ROAD & SOUTH SALEM STREET AND INTO THE SITE. THE WATER SYSTEM WILL BE LOOPE TO THE EXTENT POSSIBLE. THE MAIN WILL BE EXTENDED TO I-540 RIGHT-OF-WAY ALONG FRONTAGE OF SOUTH SALEM STREET.
 - UTILITY LAYOUT FOR WATER AND SEWER IS CONCEPTUAL. FINAL DESIGN WILL BE DETERMINED IN CONJUNCTION WITH THE OVERALL DEVELOPMENT PLAN AND DESIGNED PER THE TOWN OF APEX STANDARDS AND SPECIFICATIONS.
 - ALL IMPROVEMENTS STANDARDS APPLICABLE TO THE PUBLIC FACILITIES THAT WILL SERVE THE DEVELOPMENT SHALL COMPLY WITH THE APPLICABLE REQUIREMENTS OF THE TOWN OF APEX UDO. ALL ON-SITE POTABLE WATER AND WASTEWATER LINES WILL BE DESIGNED ACCORDING TO SOUND ENGINEERING STANDARDS AND PROVIDED BY THE DEVELOPER. ANY REQUIRED EASEMENT ACQUISITION WILL OCCUR AT THE CONSTRUCTION DRAWING SUBMITTAL STAGE. ROUTING OF OTHER UTILITIES, TO INCLUDE ELECTRICITY, PHONE, CABLE AND GAS, WILL BE IN KEEPING WITH THE TOWN OF APEX STANDARDS AS CONTAINED WITHIN THE UDO.
 - ALL WATER AND SEWER MAINS WITHIN PUBLIC EASEMENTS AND RIGHT-OF-WAYS TO BE OWNED, OPERATED AND MAINTAINED BY THE TOWN OF APEX.
 - ALL UTILITY EASEMENTS SHALL BE PROVIDED AS NECESSARY. DELINEATION WILL BE DETERMINED WITH FINAL DESIGN AT CONSTRUCTION DRAWINGS.
 - ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE TOWN OF APEX STANDARDS AND SPECIFICATIONS.
 - RESOURCE CONSERVATION AREAS (RCA) TO BE FINALIZED AT SUBDIVISION PLAN PHASE.
 - THERE ARE WETLANDS WITHIN THIS SITE. IT IS THE OWNER'S RESPONSIBILITY FOR WETLANDS JURISDICTION AND DISTURBANCE PRIOR TO ANY GRADING ACTIVITY.
 - OWNER MAY ENTER INTO A DEVELOPMENT AGREEMENT TO SEEK REIMBURSEMENT FOR OVERSIZED UTILITIES IF APPLICABLE.



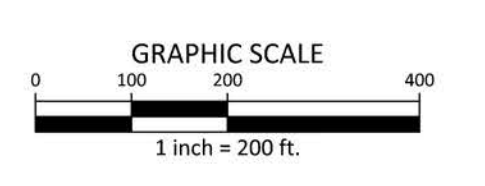
REVISIONS

NO.	DATE	RESPONSE TO COMMENTS
1	02.14.2020	RESPONSE TO COMMENTS
2	03.13.2020	RESPONSE TO COMMENTS
3	05.14.2020	RESPONSE TO COMMENTS
4	06.05.2020	RESPONSE TO COMMENTS
5	06.29.2020	RESPONSE TO COMMENTS

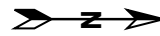
PLAN INFORMATION

PROJECT NO.	LEN-19090
FILENAME	LEN19090-U1
CHECKED BY	RCZ
DRAWN BY	SMV
SCALE	1"=200'
DATE	03.13.2020

PRELIMINARY UTILITY AND STORMWATER PLAN
C3.00



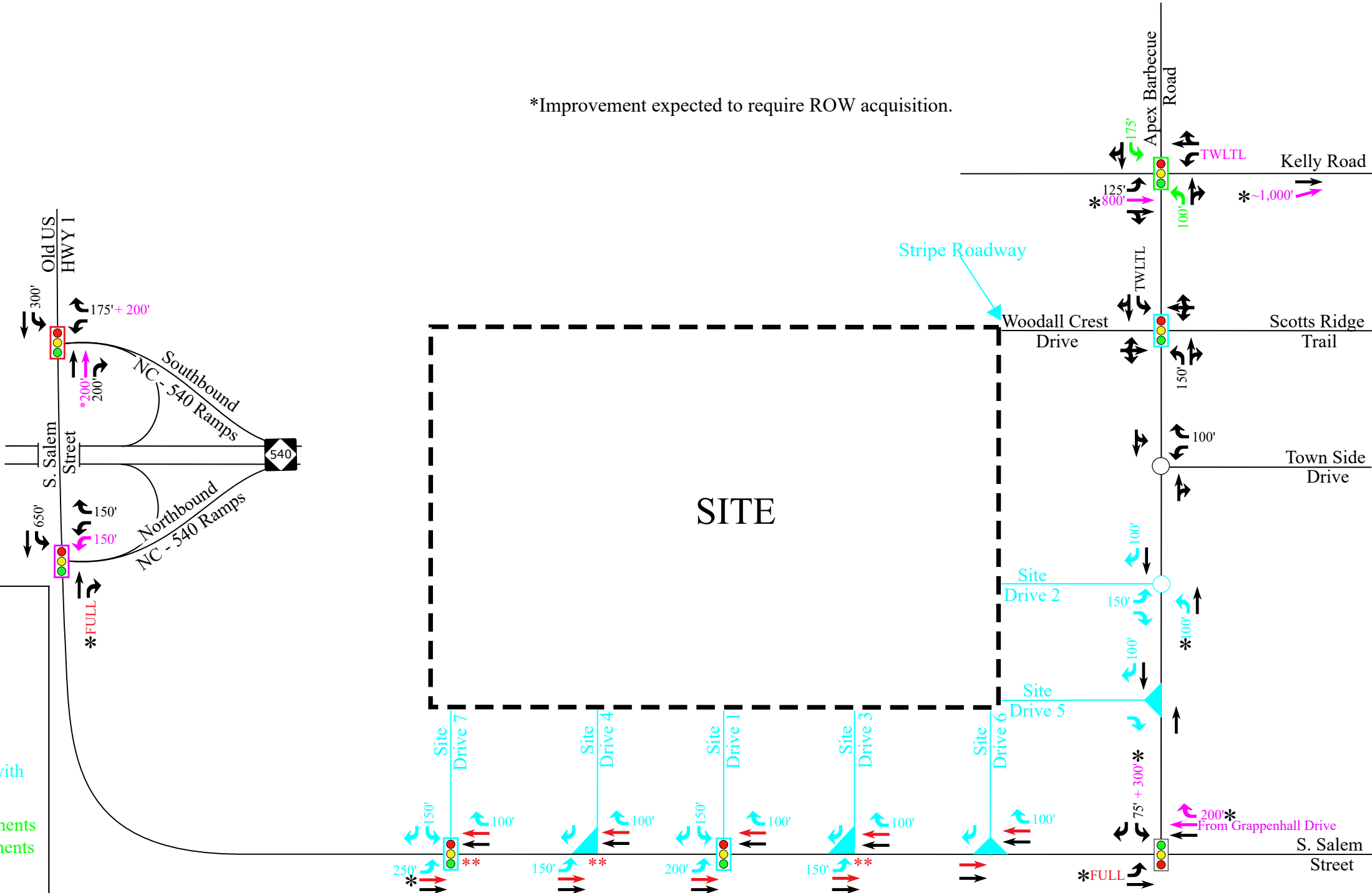
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*Improvement expected to require ROW acquisition.

LEGEND

- Unsignalized Intersection
- ◻ Signalized Intersection
- ▶ Right-In/Right-Out Intersection
- ◀ Left-Over Intersection
- Existing Lane
- X' Storage (In Feet)
- Improvements by Developer (with Construction of Driveway)
- Phase 1A Developer Improvements (450 Townhomes + 400 Apartments + 150,000 s.f. non-residential)
- Phase 1B Developer Improvements (900 residential units + 150,000 s.f. non-residential)
- Phase 2 Developer Improvements (1,200 residential units + 300,000 s.f. non-residential)
- ◻ Developer Monitor for Signalization / Signal Timing Modifications



**Access contingent on NCDOT Median Crossover Guideline Exception approval (otherwise access may be restricted at time median construction).



Depot 499
Apex, NC

Developer Lane
Configurations with Phasing

Scale: Not to Scale



June 26, 2020

Russell H. Dalton, PE
Town of Apex
Public Works & Transportation
P: 919-249-3358
E: Russell.Dalton@apexnc.org

Reference: Depot 499 – Apex, North Carolina

Subject: **Trip Generation Comparison Letter**

Dear Mr. Dalton,

The contents of this letter present the findings of a trip generation comparison for the Depot 499 development in Apex, North Carolina. The purpose of this technical memorandum is to evaluate the differences in the trips generated by the proposed site under two scenarios. This will include the trips generated under the previously approved densities, studied within the approved January 2020 TIA, and newly proposed densities included in the PUD submittal.

Trip Generation

The previously approved densities were shown in the approved Depot 499 TIA submitted in January 2020. Table 1 illustrates these densities and corresponding trip generation. Table 2 illustrates the proposed densities and corresponding trip generation.

The approved trip generation consists of 1,500 multifamily units (apartments or townhomes), 375,000 s.f. of office space, and 250,000 s.f. of retail. The proposed trip generation adds 50 single family homes, reduces the multifamily density to 1,450 units, adds an additional 25,000 s.f. of office space (400,000 s.f. total), and maintains the 250,000 s.f. of retail, for a total of 650,000 s.f. of non-residential development.

Table 1: Depot 499 - Approved Trip Generation

Land Use (ITE Code)	Intensity	Weekday Daily Traffic (vpd)	Weekday AM Peak Hour Trips (vph)		Weekday PM Peak Hour Trips (vph)	
			Enter	Exit	Enter	Exit
Multifamily Housing (Low-Rise) (220)	1,500 units	11,300	144	481	415	243
General Office Building (710)	375,000 s.f.	3,820	467	64	86	392
Shopping Center (820)	250,000 s.f.	11,210	172	105	514	556
Combined Total		26,330	783	650	1,015	1,191
<i>Internal Capture (7% Entering AM, 8% Exiting AM 24% Entering PM, 20% Exiting PM)</i>			-55	-52	-244	-238
Total External			728	598	771	953
<i>Pass-By Trips: Shopping Center (34% PM)</i>			0	0	-142	-142
Total New External Trips			728	598	629	811

Table 2: Depot 499 - Proposed Trip Generation

Land Use (ITE Code)	Intensity	Weekday Daily Traffic (vpd)	Weekday AM Peak Hour Trips (vph)		Weekday PM Peak Hour Trips (vph)	
			Enter	Exit	Enter	Exit
Single Family Homes (210)	50 units	550	10	30	33	19
Multifamily Housing (Low-Rise) (220)	1,450 units	10,920	139	466	402	236
General Office Building (710)	400,000 s.f.	4,070	495	68	91	414
Shopping Center (820)	250,000 s.f.	11,210	172	105	514	556
Combined Total		26,750	816	669	1,040	1,225
<i>Internal Capture (7% Entering AM, 8% Exiting AM 23% Entering PM, 20% Exiting PM)</i>			-57	-54	-239	-244
Total External			759	615	801	981
<i>Pass-By Trips: Shopping Center (34% PM)</i>			0	0	-143	-143
Total New External Trips			759	615	658	838

Table 3: Trip Generation Comparison

Difference in External Trips	+420	+31	+17	+29	+27
% Increase in External Trips	1.5%	4.3%	2.8%	4.6%	3.3%

The combined total trip generation, after internal capture and pass-by reductions, is only expected to increase by 1.5%, or 420 trips. The AM entering and exiting is expected to increase by 31 trips and 17 trips, respectively. This results in a 4.3% and 2.8% increase, respectively. The PM entering increases by 29 trips (4.6% increase) while the exiting increases by 27 trips (3.3% increase) when compared to the approved trip generation.

Conclusions

A trip generation comparison was performed comparing the approved density for the Depot 499 development to the density proposed in the June 29, 2020 PUD submittal. Only minor increases in trips are expected when comparing daily trips. Trips during the peak hour will increase by 4.6% or less with an increase of approximately 1.5% expected during the typical weekday. This relatively minor increase in trips should be considered negligible. The PUD document has also been updated with verbiage indicating that updated analysis will be provided with future site plans if the total trip generation for the site exceeds what was studied within the previously approved TIA, if requested by staff. Due to these reasons, it is recommended that the site proceed forward with the proposed densities.

Please feel free to contact me with any questions or comments regarding this study.

Sincerely,



Nathaniel Bouquin, PE
 Traffic Engineering Project Manager
Ramey Kemp & Associates, Inc.



NC Corporate License # C-0910

Attachments: NCHRP Internal Capture Reports

NCHRP 684 Internal Trip Capture Estimation Tool					
Project Name:	Depot 499			Organization:	RKA
Project Location:	Apex NC			Performed By:	TCP
Scenario Description:	Full Build			Date:	6/26/2020
Analysis Year:				Checked By:	
Analysis Period:	AM Street Peak Hour			Date:	

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)						
Land Use	Development Data (For Information Only)			Estimated Vehicle-Trips ³		
	ITE LUCs ¹	Quantity	Units	Total	Entering	Exiting
Office	710	400	KSF	563	495	68
Retail	820	250	KSF	277	172	105
Restaurant						
Cinema/Entertainment						
Residential	210/220	1,550	DU	665	149	496
Hotel						
All Other Land Uses ²						
				1,505	816	669

Table 2-A: Mode Split and Vehicle Occupancy Estimates						
Land Use	Entering Trips			Exiting Trips		
	Veh. Occ. ⁴	% Transit	% Non-Motorized	Veh. Occ. ⁴	% Transit	% Non-Motorized
Office	1.10	0%	0%	1.10	0%	0%
Retail	1.10	0%	0%	1.10	0%	0%
Restaurant	1.10	0%	0%	1.10	0%	0%
Cinema/Entertainment	1.10	0%	0%	1.10	0%	0%
Residential	1.10	0%	0%	1.10	0%	0%
Hotel	1.10	0%	0%	1.10	0%	0%
All Other Land Uses ²	1.10	0%	0%	1.10	0%	0%

Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-A: Internal Person-Trip Origin-Destination Matrix*						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		21	0	0	0	0
Retail	22		0	0	3	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	11	5	0	0		0
Hotel	0	0	0	0	0	

Table 5-A: Computations Summary			
	Total	Entering	Exiting
All Person-Trips	1,635	898	737
Internal Capture Percentage	8%	7%	8%
External Vehicle-Trips ⁵	1,373	759	614
External Transit-Trips ⁶	0	0	0
External Non-Motorized Trips ⁶	0	0	0

Table 6-A: Internal Trip Capture Percentages by Land Use		
Land Use	Entering Trips	Exiting Trips
Office	6%	28%
Retail	14%	22%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	2%	3%
Hotel	N/A	N/A

¹Land Use Codes (LUCs) from *Trip Generation Manual*, published by the Institute of Transportation Engineers.

²Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator.

³Enter trips assuming no transit or non-motorized trips (as assumed in ITE *Trip Generation Manual*).

⁴Enter vehicle occupancy assumed in Table 1-A vehicle trips. If vehicle occupancy changes for proposed mixed-use project, manual adjustments must be made to Tables 5-A, 9-A (O and D). Enter transit, non-motorized percentages that will result with proposed mixed-use project complete.

⁵Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A.

⁶Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas A&M Transportation Institute - Version 2013.1

Project Name:	Depot 499
Analysis Period:	AM Street Peak Hour

Land Use	Table 7-A (D): Entering Trips			Table 7-A (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.10	495	545	1.10	68	75
Retail	1.10	172	189	1.10	105	116
Restaurant	1.10	0	0	1.10	0	0
Cinema/Entertainment	1.10	0	0	1.10	0	0
Residential	1.10	149	164	1.10	496	546
Hotel	1.10	0	0	1.10	0	0

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		21	47	0	1	0
Retail	34		15	0	16	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	11	5	109	0		0
Hotel	0	0	0	0	0	

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		60	0	0	0	0
Retail	22		0	0	3	0
Restaurant	76	15		0	8	0
Cinema/Entertainment	0	0	0		0	0
Residential	16	32	0	0		0
Hotel	16	8	0	0	0	

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles ¹	Transit ²	Non-Motorized ²
Office	33	512	545	465	0	0
Retail	26	163	189	148	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	3	161	164	146	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses ³	0	0	0	0	0	0

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles ¹	Transit ²	Non-Motorized ²
Office	21	54	75	49	0	0
Retail	25	91	116	83	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	16	530	546	482	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses ³	0	0	0	0	0	0

¹Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A
²Person-Trips
³Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator
*Indicates computation that has been rounded to the nearest whole number.

NCHRP 684 Internal Trip Capture Estimation Tool			
Project Name:	Depot 499	Organization:	RKA
Project Location:	Apex NC	Performed By:	TCP
Scenario Description:	Full Build	Date:	6/26/2020
Analysis Year:		Checked By:	
Analysis Period:	PM Street Peak Hour	Date:	

Table 1-P: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)						
Land Use	Development Data (For Information Only)			Estimated Vehicle-Trips ³		
	ITE LUCs ¹	Quantity	Units	Total	Entering	Exiting
Office	710	400	KSF	505	91	414
Retail	820	250	KSF	1,070	514	556
Restaurant						
Cinema/Entertainment						
Residential	210/220	1,550	DU	710	435	255
Hotel						
All Other Land Uses ²						
				2,285	1,040	1,225

Table 2-P: Mode Split and Vehicle Occupancy Estimates						
Land Use	Entering Trips			Exiting Trips		
	Veh. Occ. ⁴	% Transit	% Non-Motorized	Veh. Occ. ⁴	% Transit	% Non-Motorized
Office	1.10	0%	0%	1.10	0%	0%
Retail	1.10	0%	0%	1.10	0%	0%
Restaurant	1.10	0%	0%	1.10	0%	0%
Cinema/Entertainment	1.10	0%	0%	1.10	0%	0%
Residential	1.10	0%	0%	1.10	0%	0%
Hotel	1.10	0%	0%	1.10	0%	0%
All Other Land Uses ²	1.10	0%	0%	1.10	0%	0%

Table 3-P: Average Land Use Interchange Distances (Feet Walking Distance)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		100	1000		1000	
Retail					1000	
Restaurant					1000	
Cinema/Entertainment					1000	
Residential		1000	1000			
Hotel					1000	

Table 4-P: Internal Person-Trip Origin-Destination Matrix*						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		45	0	0	8	0
Retail	12		0	0	148	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	11	43	0	0		0
Hotel	0	0	0	0	0	

Table 5-P: Computations Summary			
	Total	Entering	Exiting
All Person-Trips	2,492	1,144	1,348
Internal Capture Percentage	21%	23%	20%
External Vehicle-Trips ⁵	1,780	798	982
External Transit-Trips ⁶	0	0	0
External Non-Motorized Trips ⁶	0	0	0

Table 6-P: Internal Trip Capture Percentages by Land Use		
Land Use	Entering Trips	Exiting Trips
Office	23%	12%
Retail	16%	26%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	33%	19%
Hotel	N/A	N/A

¹Land Use Codes (LUCs) from *Trip Generation Manual*, published by the Institute of Transportation Engineers.

²Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator.

³Enter trips assuming no transit or non-motorized trips (as assumed in ITE *Trip Generation Manual*).

⁴Enter vehicle occupancy assumed in Table 1-P vehicle trips. If vehicle occupancy changes for proposed mixed-use project, manual adjustments must be made.

⁵Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P.

⁶Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Project Name:	Depot 499
Analysis Period:	PM Street Peak Hour

Table 7-P: Conversion of Vehicle-Trip Ends to Person-Trip Ends						
Land Use	Table 7-P (D): Entering Trips			Table 7-P (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.10	91	100	1.10	414	455
Retail	1.10	514	565	1.10	556	612
Restaurant	1.10	0	0	1.10	0	0
Cinema/Entertainment	1.10	0	0	1.10	0	0
Residential	1.10	435	479	1.10	255	281
Hotel	1.10	0	0	1.10	0	0

Table 8-P (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		91	14	0	8	0
Retail	12		177	24	148	31
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	11	90	45	0		8
Hotel	0	0	0	0	0	

Table 8-P (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		45	0	0	19	0
Retail	31		0	0	220	0
Restaurant	30	283		0	77	0
Cinema/Entertainment	6	23	0		19	0
Residential	57	43	0	0		0
Hotel	0	11	0	0	0	

Table 9-P (D): Internal and External Trips Summary (Entering Trips)						
Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles ¹	Transit ²	Non-Motorized ²
Office	23	77	100	70	0	0
Retail	88	477	565	434	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	156	323	479	294	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses ³	0	0	0	0	0	0

Table 9-P (O): Internal and External Trips Summary (Exiting Trips)						
Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles ¹	Transit ²	Non-Motorized ²
Office	53	402	455	365	0	0
Retail	160	452	612	411	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	54	227	281	206	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses ³	0	0	0	0	0	0

¹Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

²Person-Trips

³Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

Traffic Impact Analysis Depot 499 Apex, North Carolina



TRAFFIC IMPACT ANALYSIS

FOR

DEPOT 499

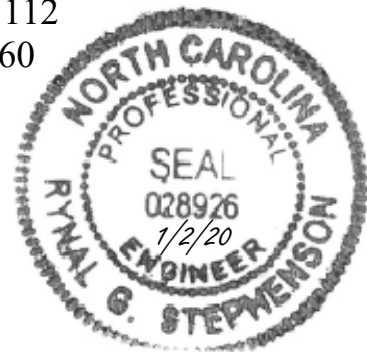
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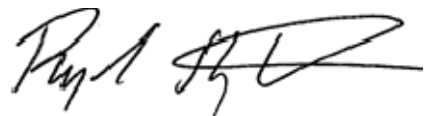
Apex, North Carolina

Prepared For:
Lennar Corporation
1100 Perimeter Park Drive, Suite 112
Morrisville, North Carolina 25760

Prepared By:
Ramey Kemp & Associates, Inc.
5808 Faringdon Place, Suite 100
Raleigh, NC 27609
License #C-0910



January 2020



RKA Project No. 19399

Prepared By: NB

Reviewed By: RS

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- Appendix B: Traffic Count Data
- Appendix C: Signal Information
- Appendix D: Adjacent Development Information
- Appendix E: Capacity Calculations – S. Salem Street and Apex Barbecue Road
- Appendix F: Capacity Calculations – S. Salem Street and Northbound NC-540 Ramps
- Appendix G: Capacity Calculations – S. Salem Street / Old US Hwy 1 and Southbound NC-540 Ramps
- Appendix H: Capacity Calculations – S. Salem Street and Kelly Road
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EXECUTIVE SUMMARY

A Traffic Impact Analysis (TIA) was conducted for the proposed Depot 499 mixed use project (formerly Poe Property) in accordance with Town of Apex and NCDOT Guidelines. The proposed development is located south of Apex Barbecue Road and west of S. Salem Street in Apex, North Carolina and is anticipated to consist of a maximum of 1,500 low-rise multi-family units (650 townhomes and 850 apartments), 250,000 square feet (s.f.) of retail, and 375,000 s.f. of general office. For the purpose of this TIA, the development is assumed to be constructed in phases with full buildout expected in 2028.

Access to the school site is proposed to be provided via the two (2) full movement driveways on S. Salem Street, two (2) left-over driveways on S. Salem Street, one (1) right-in / right-out driveway on S. Salem Street, one (1) full movement driveway on Apex Barbecue Road, and one (1) right-in/right-out driveway on Apex Barbecue Road. The site will also be served via connection to the existing Woodall Crest Drive, to the north, which has an existing full movement connection to Apex Barbecue Road.

Phase 1:

Under Phase 1 conditions, all intersections are expected to operate at acceptable levels of service during the weekday AM and PM peak hours. Turn-lanes were recommended at the site driveways according to the “Warrant for Left and Right-Turn Lanes at Grade, Unsignalized Intersections” chart contained in the NCDOT Driveway Manual.

Full Buildout:

Under full buildout conditions, recommendations are provided to improve all study intersections to acceptable level of service during the weekday AM and PM peak hours. Turn-lanes were recommended at the site driveways according to the “Warrant for Left and Right-Turn Lanes at Grade, Unsignalized Intersections” chart contained in the NCDOT Driveway Manual. It should be noted that of the recommended roadway improvements, not all improvements are expected to be warranted after completion of Phase 1. Due to this, off-site roadway improvements are recommended to be tied to specific phases / certificate of occupancy / site driveway construction. Specific improvements are discussed in section 7 of this report. Refer to section 9 for a summary of the recommended improvements / phasing.

TRAFFIC IMPACT ANALYSIS
DEPOT 499
APEX, NORTH CAROLINA

1. INTRODUCTION

The contents of this report present the findings of the Traffic Impact Analysis (TIA) conducted for the proposed Depot 499 development (formerly Poe Property) to be located west of S. Salem Street (Old US Hwy 1) and south of Apex Barbecue 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.

The proposed development was analyzed in two phases. Phase 1 is anticipated to be complete in 2025 and consist of 650 townhomes. Full build-out of the proposed development is expected to be complete in 2028 and is expected to add the following land uses to those of Phase 1:

- 250,000 square foot (s.f.) shopping center
- 850 apartments (total of 1,500 low-rise multifamily units)
- 375,000 s.f. general office building

The study analyzes traffic conditions during the weekday AM and PM peak hours for the following scenarios:

- Existing (2019) Traffic Conditions
- Background (2025) Traffic Conditions
- Background (2028) Traffic Conditions
- Combined (2025) Traffic Conditions – Phase 1
- Combined (2028) Traffic Conditions – Full Build-Out

1.1. Site Location and Study Area

The development is proposed to be located west of S. Salem Street (Old US Hwy 1) and south of Apex Barbecue Road in Apex, North Carolina. 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:

- S. Salem Street and Apex Barbecue Road
- S. Salem Street and Northbound NC-540 Ramps
- S. Salem Street / Old US Hwy 1 and Southbound NC-540 Ramps
- Old US Hwy 1 and Kelly Road
- Kelly Road and Apex Barbecue Road
- Apex Barbecue Road and Scotts Ridge Trail / Woodall Crest Drive
- Apex Barbecue Road and Town Side Drive

A copy of the Memorandum of Understanding (MOU) approved by NCDOT and the Town is provided in Appendix A.

1.2. Proposed Land Use and Site Access

The proposed development was analyzed in two phases. Phase 1 is anticipated to be complete in 2025 and consist of 650 townhomes. Full build-out of the proposed development is expected to be complete in 2028 and is expected to add the following land uses to those of Phase 1:

- 850 apartments (total of 1,500 low-rise multifamily units)
- 250,000 s.f. shopping center
- 375,000 s.f. general office building

Access to Phase 1 of the proposed development is proposed to be provided via one (1) full movement driveway on Apex Barbecue Road and one (1) full movement driveway on S. Salem Street. Phase 1 will also provide an internal connection to Woodall Crest Drive to the north. Full buildout of the development is proposed to provide five (5) additional driveways on S. Salem Street (two (2) left-over driveways, two (2) full movement driveways, and one (1) right-in/right-out driveway). Refer to Figure 2 for a copy of the preliminary site plan.

1.3. Adjacent Land Uses

The proposed development is located in an area consisting primarily of undeveloped land and residential development. The Scotts Ridge Elementary School is located west of the proposed Depot 499 development and east of NC-540 within the study area.

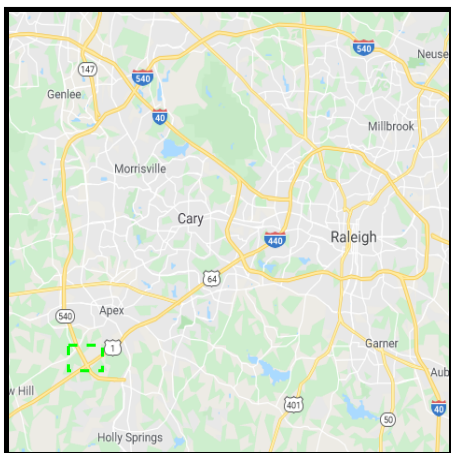
1.4. Existing Roadways

Existing lane configurations (number of traffic lanes on each intersection approach), lane widths, storage capacities, and other intersection and roadway information within the study area are shown in Figure 3. Table 1 provides a summary of this information, as well.

Table 1: Existing Roadway Inventory

Roadway Name	Route #	Typical Cross Section	Speed Limit	2018 NCDOT AADT (vpd)	Maintained By
NC 540		6-lane divided by grass median	70 mph	29,500	NCDOT
S. Salem Street / Old US Hwy 1	SR 1011	2-lane undivided	55 mph	12,000 ²	NCDOT
Apex Barbecue Road	SR 1162	2-lane undivided	45 mph	6,700	NCDOT
Kelly Road	SR 1163	2-lane undivided	45 mph	2,500 ²	NCDOT
Scotts Ridge Trail	N/A	2-lane undivided	25 mph	1,200 ¹	Town
Town Side Drive	N/A	2-lane undivided	25 mph	1,130 ¹	Town

1. NCDOT AADT data not available. Average daily traffic volumes determined based on current traffic counts from 2019, assuming the PM peak hour volume is 10% of the average daily traffic.
2. Traffic volumes based on 2017 NCDOT AADT data.



LEGEND

- Proposed Site Location
- Study Intersection
- Study Area

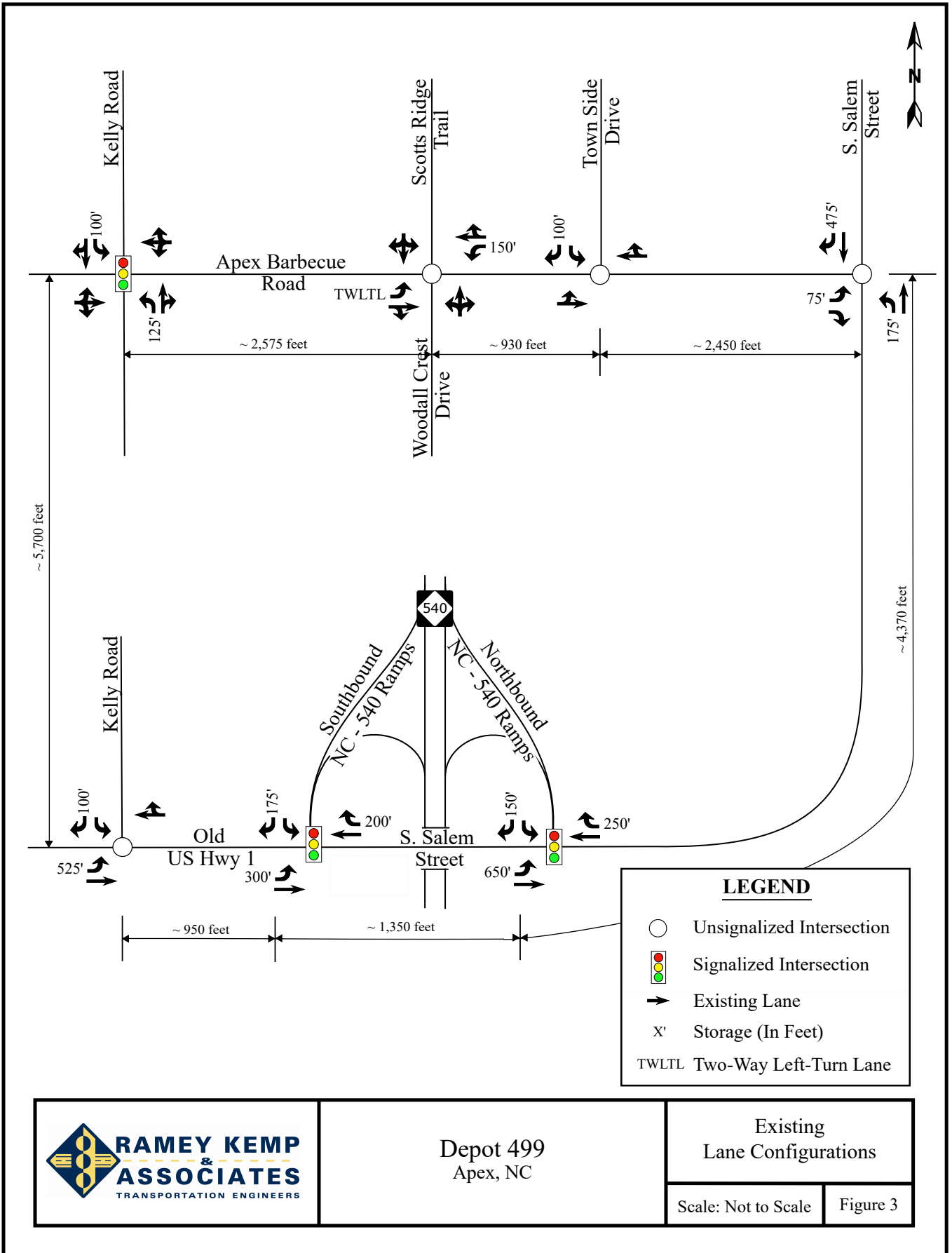


Depot 499
Apex, NC

Site Location Map

Scale: Not to Scale

Figure 1



2. EXISTING (2019) PEAK HOUR CONDITIONS

2.1. Existing (2019) Peak Hour Traffic

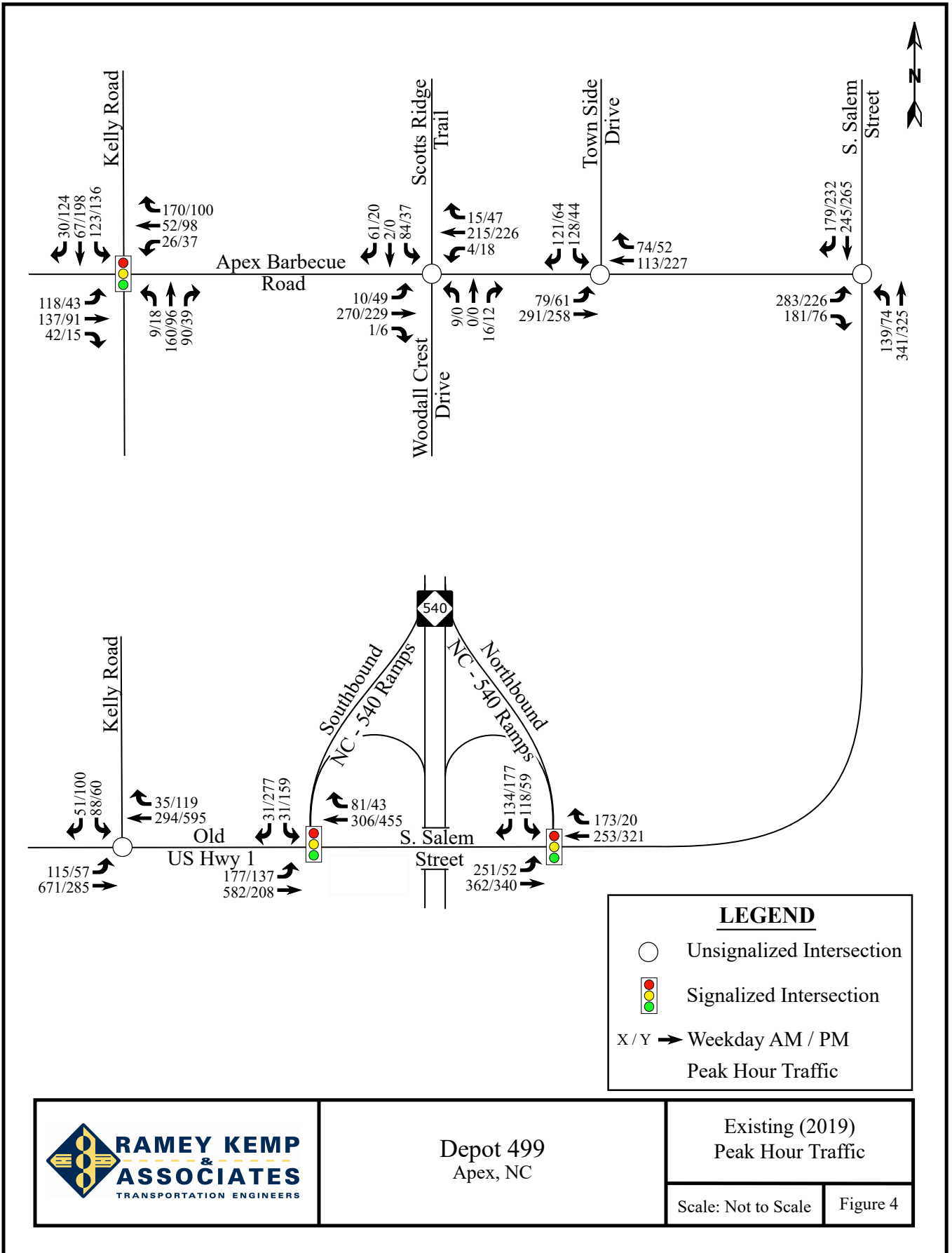
Existing peak hour traffic volumes were determined based on traffic counts conducted at the study intersections listed below in October of 2019 by RKA during typical weekday AM (7:00 AM – 9:00 AM) and PM (4:00 PM – 6:00 PM) peak periods:

- S. Salem Street and Apex Barbecue Road
- S. Salem Street and Northbound NC-540 Ramps
- S. Salem Street / Old US Hwy 1 and Southbound NC-540 Ramps
- Old US Hwy 1 and Kelly Road
- Kelly Road and Apex Barbecue Road
- Apex Barbecue Road and Scotts Ridge Trail / Woodall Crest Drive
- Apex Barbecue Road and Town Side Drive

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 is included in Appendix C. The results of the analysis are presented in Section 7 of this report.



3. BACKGROUND (2025 / 2028) 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 annual growth rate of 3% would be used to project existing traffic volumes to the analysis years of 2025 and 2028. The ambient traffic growth rate was applied to all intersections within the study area. Refer to Figures 5a and 5b for illustrations of the projected (2025) and projected (2028) peak hour traffic volumes, respectively.

3.2. Adjacent Development Traffic

Based on discussions with Town of Apex staff, the following adjacent developments and current build-out assumptions were considered in the analysis of future traffic conditions:

- Buckhorn Preserve (Currently 20% Built-out)
- Friendship Station (Full Buildout)
- Jordan Manors (Currently 40% Built-out)
- Jordan Pointe (Currently 65% Built-out)
- New Hill Assembly
- Olive Ridge
- Pleasant Park
- West Village (Full Build-out)
- Woodbury (Currently 25% Built-out)

The Buckhorn Preserve development is proposed to consist of 347 single-family homes and be constructed in three phases, with the final phase to be completed by 2020. The site is located on the east side of Richardson Road, just north of Mt. Zion Church Road in Apex, North

Carolina. Per coordination with Town staff, this development is assumed to have been 20% built-out at the time of data collection. The remaining 80% of the development is included in future conditions.

Friendship Station is proposed to consist 316 single-family homes, 185 apartment units, 238 townhome units, 99 townhome units north of Humie Olive Road, 44,000 sq. ft. of retail, 68,000 sq. ft. of office, and 100,000 sq. ft. of retail after two phases of construction and is expected to be completed by 2025. The site is located along Humie Olive Road at Olive Farm Road in Apex, North Carolina. Per coordination with Town staff, this development had not yet begun being built-out at the time of data collection and 100% of the full buildout scenario traffic was included in this study.

The Jordan Manors development is proposed to consist of 240 single-family homes and was expected to be completed by 2018. The site is located on the west side of New Hill Olive Chapel Road in Apex, North Carolina. Per coordination with Town staff, this development is assumed to have been 40% built-out at the time of data collection. The remaining 60% of the development is used in the future conditions.

The Jordon Pointe development is proposed to consist of 440 single-family detached homes and was expected to be completed by 2016. The site is located north of Old US Hwy 1 and east of Horton Road in Apex, North Carolina. Per coordination with Town staff, this development is assumed to have been 65% built-out at the time of data collection. The remaining 35% of the development is used in the future conditions.

The New Hill Assembly development is proposed to include 152 single-family homes and is expected to be completed in 2022. The site is located west of New Hill Olive Chapel Road, north of Old US Hwy 1, in Apex, North Carolina. Per coordination with Town staff, this development had not yet begun being built-out at the time of data collection and 100% of the site traffic was included in this study.

The Olive Ridge development is proposed to include a maximum of 169 single-family home development and is expected to be completed by 2022. The site is located east of New Hill Olive Chapel Road, across from Jordan Manors Drive in Apex, North Carolina. Per coordination with Town staff, this development had not yet begun being built-out at the time of data collection and 100% of the site traffic was included in this study.

The Pleasant Park development is proposed to consist of 4 baseball/softball fields, 3 tennis courts, 6 soccer fields, 2 basketball courts, 3 pickle ball courts, 1 sand volleyball court, cross-country route, and picnic areas on 92 acres and is expected to be completed by 2020. The site is located on the south side of Old US Hwy 1, west of NC 540, in Apex, North Carolina. Per coordination with Town staff, this development had not yet begun being built-out at the time of data collection and 100% of the site traffic was included in this study.

West Village is proposed to consist of 105 single family detached dwelling units and 279 residential townhome dwelling units and was expected to be complete in 2018. The site is located at the northwest quadrant of the intersection of Kelly Road and S. Salem Street/Old US Hwy 1 in Apex, North Carolina. Per coordination with Town staff, this development had not yet begun being built-out at the time of data collection and 100% of the full buildout scenario traffic / roadway improvements were included in this study.

The Woodbury development is proposed to consist of 320 single-family homes and 120 townhomes and is expected to be complete by 2019. The site is located east of New Hill Olive Chapel Road, north of the Old Us Hwy 1, in Apex, North Carolina. Per coordination with Town staff, this development is assumed to have been 25% built-out at the time of data collection. The remaining 75% of the development is used in the future conditions.

As a result of the site driveways for the above listed adjacent developments, the trips associated with these developments may not balance between the study intersections. Additionally, the build-out assumptions provided by the Town were applied to the total site trips of each respective TIA to determine the remaining site trips expected of each development. Refer to Figure 6 for an illustration of the total peak hour adjacent development

trips. Detailed adjacent development information for each development can be found in Appendix D.

3.3. Future Roadway Improvements

Based on coordination with the Town, it was determined that the West Village development would be converting the intersection of Kelly Road and Old US Hwy 1 to a right-in/right-out intersection, with completion of site driveways to the west of this intersection. Per coordination with the Town, it is expected that left-turns onto and off of Kelly Road will utilize this new intersection to the west. To account for this change in traffic patterns, projected and adjacent development traffic was diverted under 2025 and 2028 conditions.

The West Village development is also expected to provide improvements at the intersections of Old US Hwy 1 at Kelly Road, Old US Hwy 1 at Southbound NC-540 Ramps, and Kelly Road at Apex Barbecue Road, which are considered under background and combined conditions of this analysis.

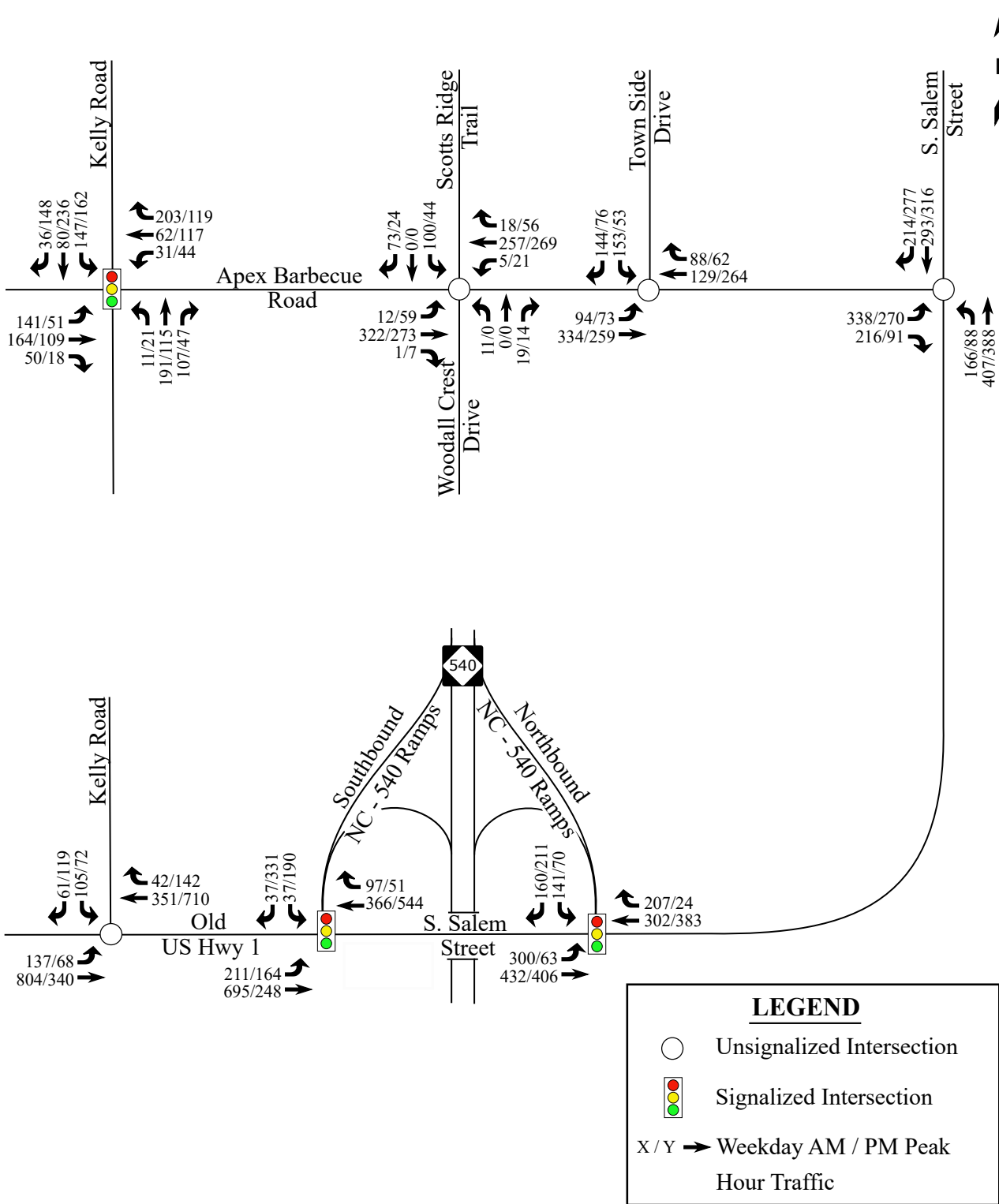
Refer to Figures 7a and 7b for the diverted (2025) peak hour traffic volumes and diverted (2028) peak hour traffic volumes, respectively. Refer to Appendix D for additional information regarding the committed roadway improvements by the West Village development.

3.4. Background (2025 / 2028) Peak Hour Traffic Volumes

The background (2025 / 2028) traffic volumes were determined by projecting the existing (2019) peak hour traffic to the analysis years of 2025 and 2028 and adding the adjacent development trips and diverted traffic. Refer to Figures 8a and 8b for illustrations of the background (2025) peak hour traffic volumes and background (2028) peak hour traffic volumes, respectively.

3.5. Analysis of Background (2025 / 2028) Peak Hour Traffic Conditions

The background (2025 / 2028) 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.

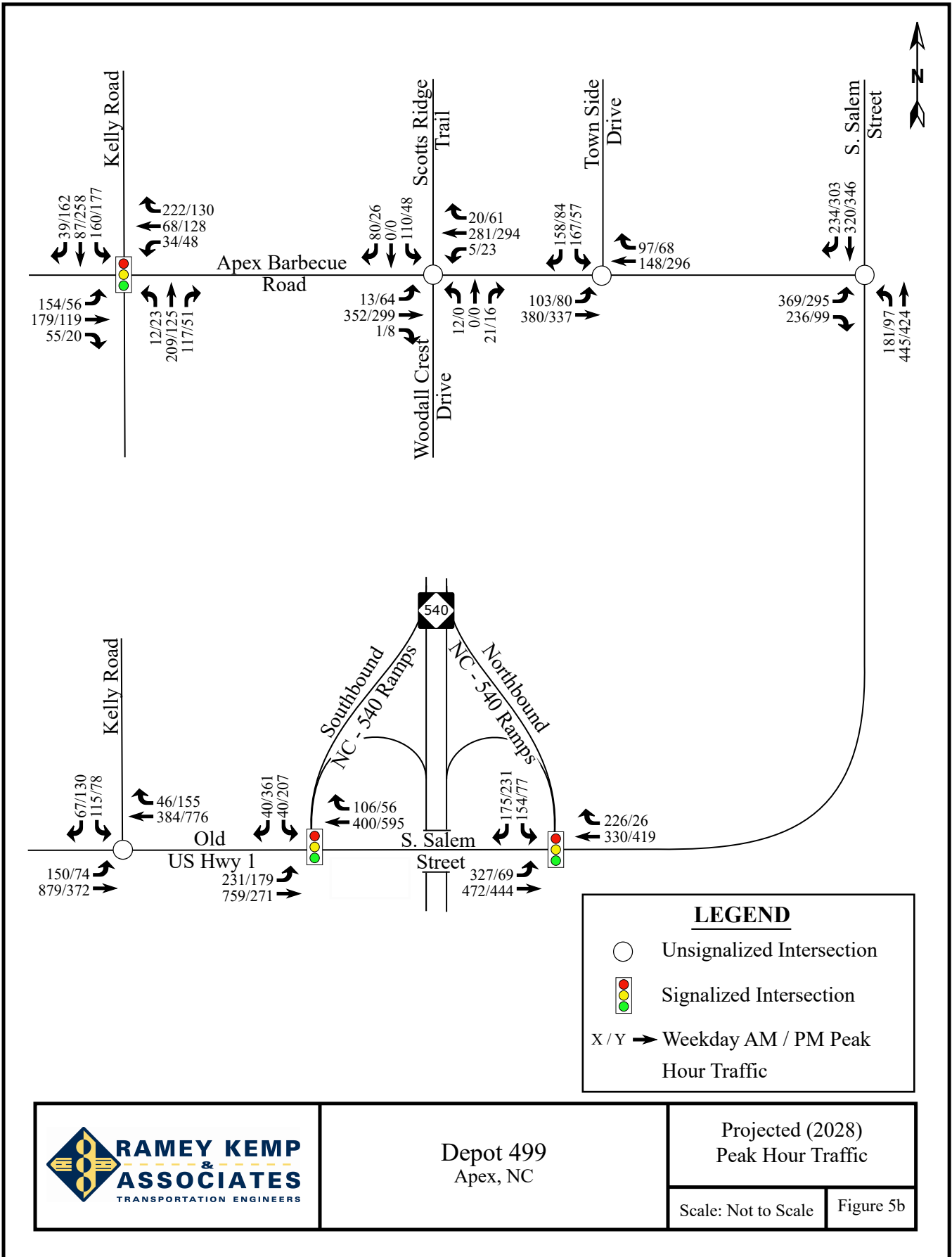


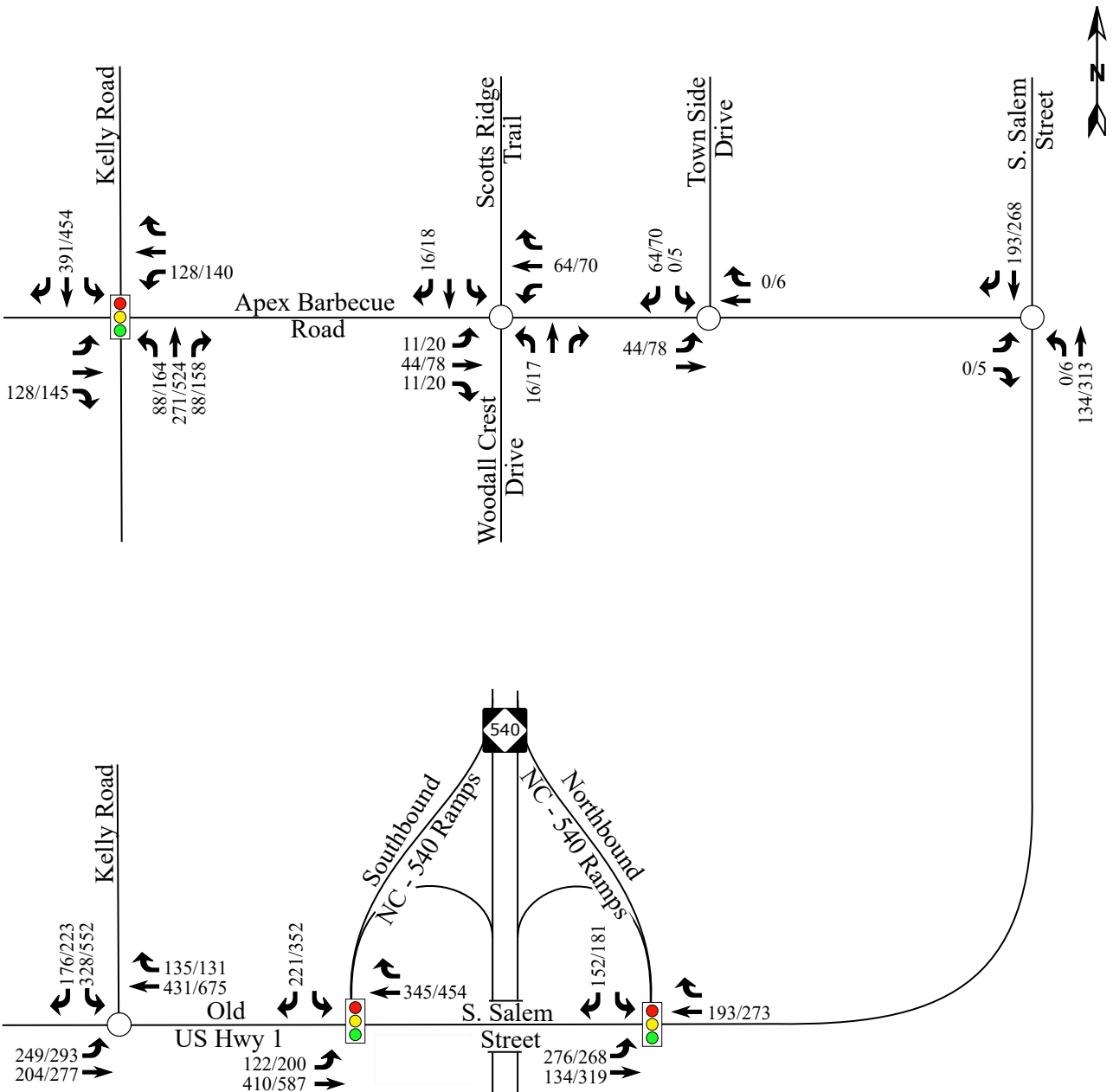
Depot 499
Apex, NC

Projected (2025)
Peak Hour Traffic

Scale: Not to Scale

Figure 5a





LEGEND

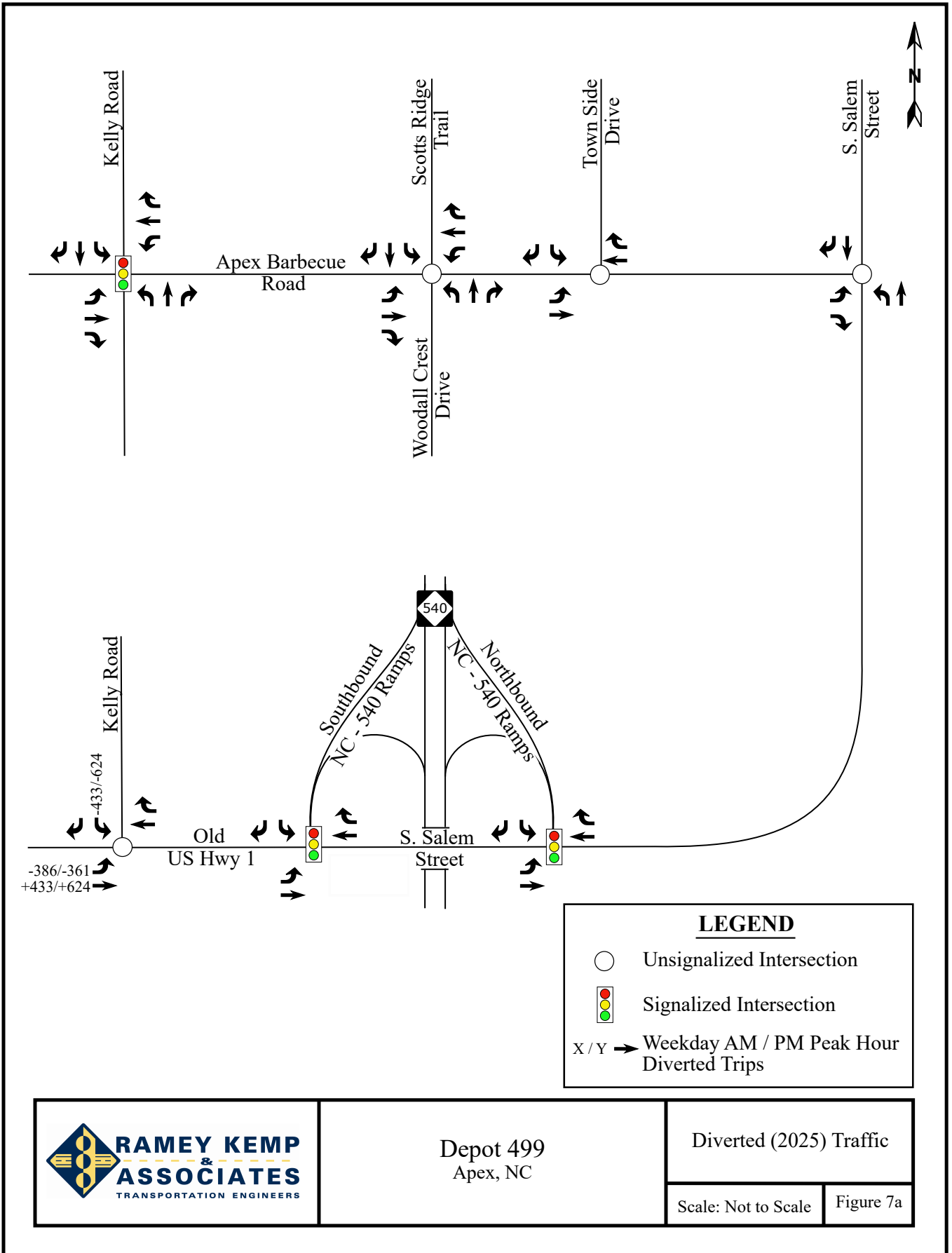
- Unsignalized Intersection
- Signalized Intersection
- X / Y → Weekday AM / PM Peak Hour Adjacent Development Trips

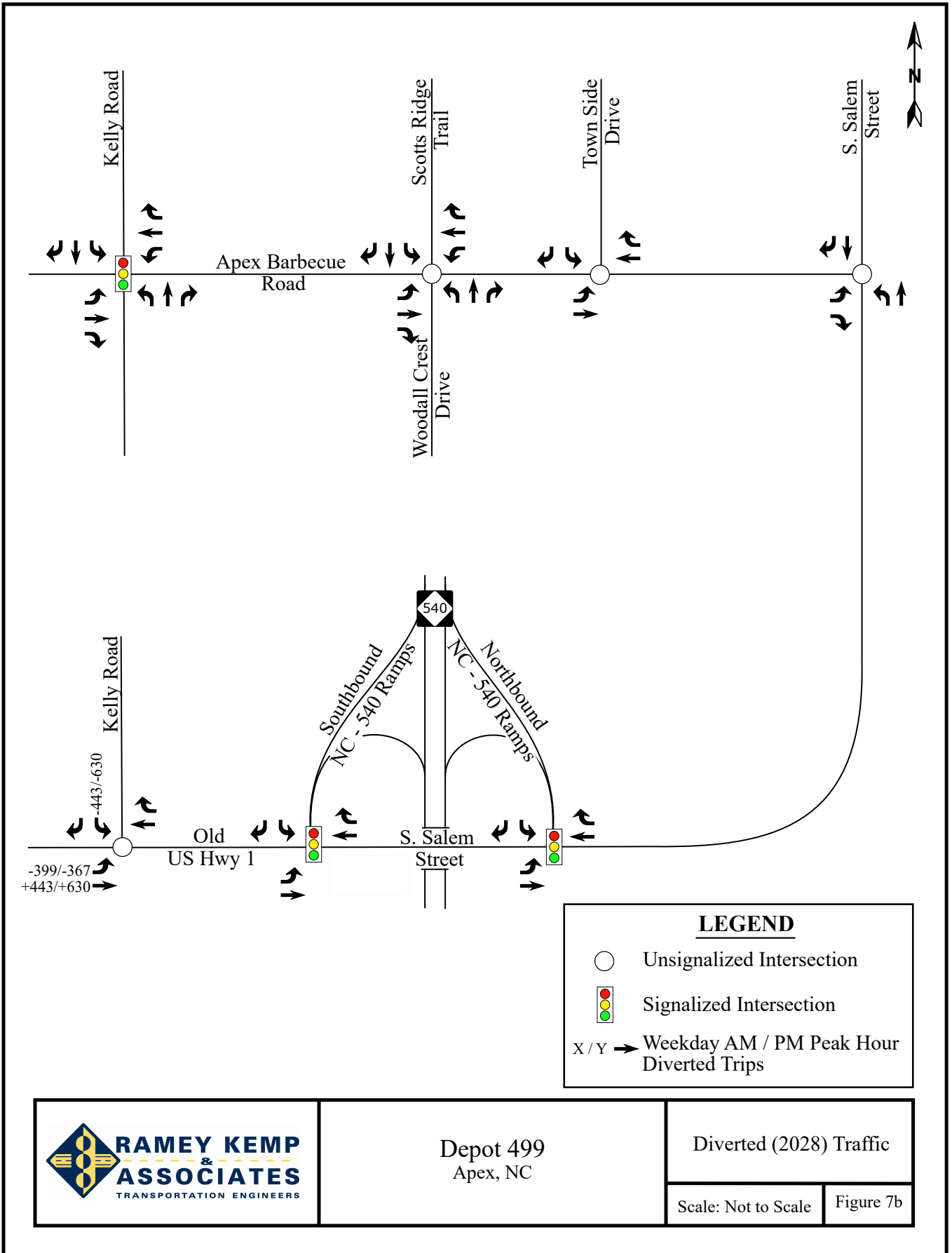


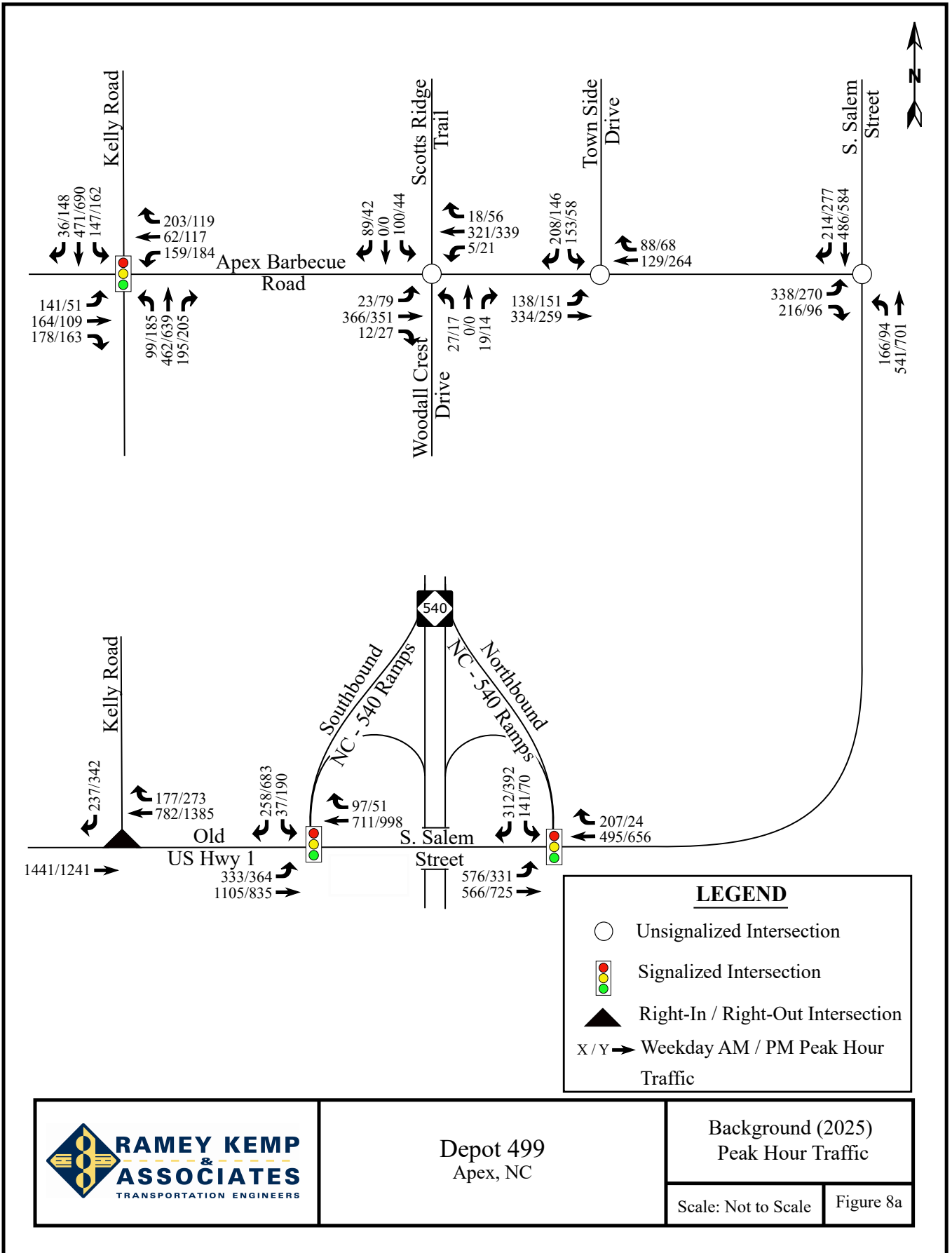
Depot 499
Apex, NC

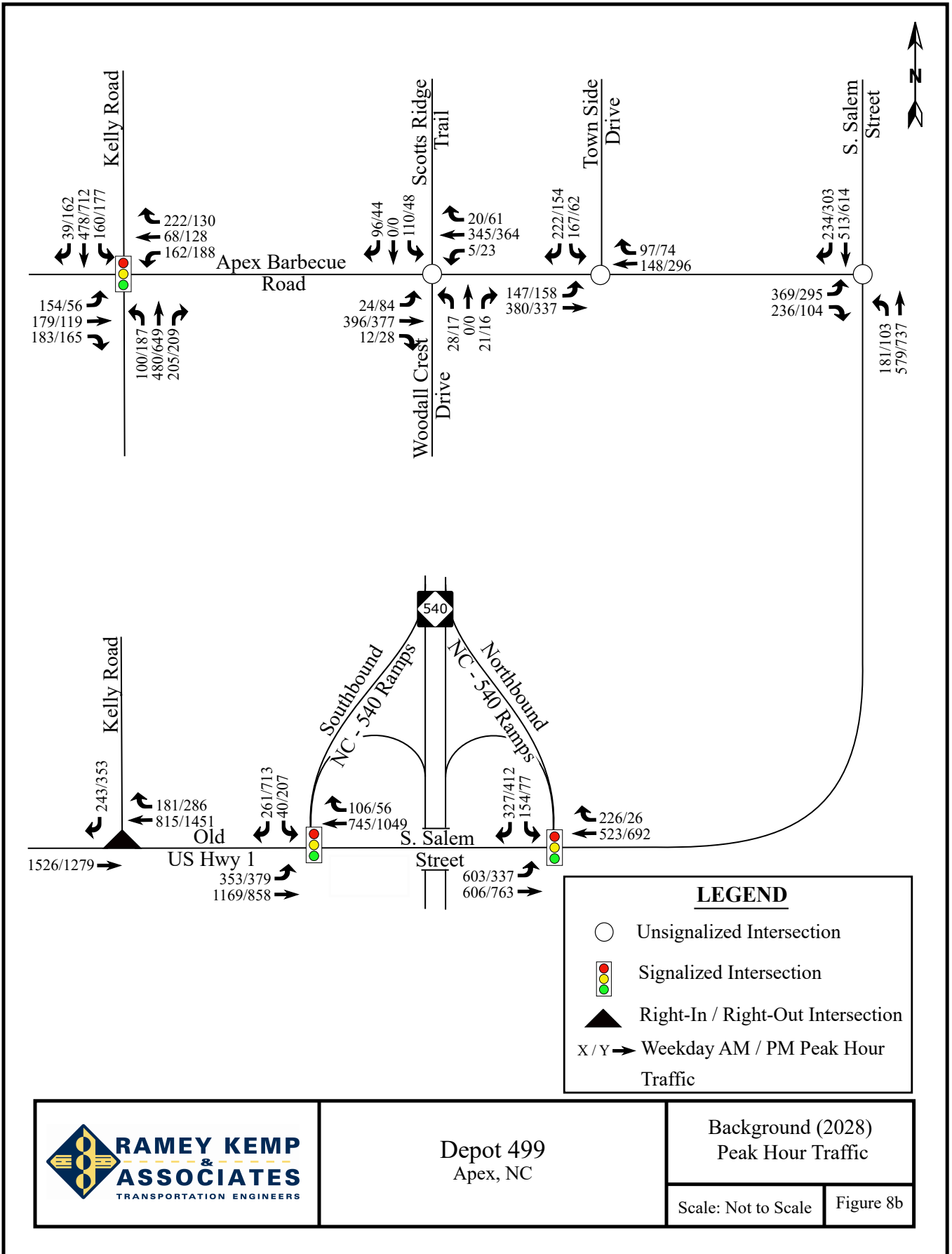
Peak Hour Adjacent
Development Trips

Scale: Not to Scale Figure 6









Depot 499
Apex, NC

Background (2028)
Peak Hour Traffic

Scale: Not to Scale Figure 8b

4. SITE TRIP GENERATION AND DISTRIBUTION

4.1. Trip Generation

The proposed development was analyzed in two phases. Phase 1 is expected to consist of 650 townhomes, while full build out is expected to consist of an additional 850 apartments (total of 1,500 low-rise multifamily units), 250,000 s.f. shopping center, and 375,000 s.f. general office development. Average weekday daily, weekday AM peak hour, and weekday PM peak hour trips for the proposed development were estimated using methodology contained within the ITE *Trip Generation Manual*, 10th Edition. Refer to Tables 2A and 2B for a summary of the trip generation potential for Phase 1 and full build-out, respectively.

Table 2A: 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
Multifamily Housing (Low-Rise) (220)	650 units	4,870	65	217	197	115

It is estimated that Phase 1 of the proposed development will generate approximately 4,870 total site trips on the roadway network during a typical 24-hour weekday period. Of the daily traffic volume, it is anticipated that 282 trips (65 entering and 217 exiting) will occur during the AM peak hour and 312 trips (197 entering and 115 exiting) will occur during the PM peak hour.

Table 2B: 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
Multifamily Housing (Low-Rise) (220)	1,500 units	11,300	144	481	415	243
General Office Building (710)	375,000 s.f.	3,820	467	64	86	392
Shopping Center (820)	250,000 s.f.	11,210	172	105	514	556
Total		26,330	783	650	1,015	1,191
<i>Internal Capture (7% Entering AM, 8% Exiting AM 24% Entering PM, 20% Exiting PM)</i>			-55	-52	-244	-238
Total External Trips			728	598	771	953
<i>Pass-By Trips: Shopping Center (34% PM)</i>			0	0	-142	-142
Total Primary Trips			728	598	629	811

It is estimated that the proposed development will generate approximately 26,330 total site trips on the roadway network during a typical 24-hour weekday period. Of the daily traffic volume, it is anticipated that 1,433 trips (783 entering and 650 exiting) will occur during the weekday AM peak hour and 2,206 (1,015 entering and 1,191 exiting) will occur during the weekday PM peak hour.

Internal capture of trips between the residential and retail uses was considered in this study. Internal capture is the consideration for trips that will be made within the site between different land uses, so the vehicle never leaves the internal site but can still be considered as a trip to that specific land use. Internal capture typically only considers trips between residential, office, and retail/restaurant land uses. Based on the NCHRP Internal Capture methodology, an AM peak hour internal capture rate of 7% entering and 8% exiting was applied to the total trips. Also, a PM peak hour internal capture rate of 24% entering and 20% exiting was applied to the total trips. The internal capture reductions are expected to account for 107 (55 entering

and 52 exiting) trips during the AM peak hour and 482 (244 entering and 238 exiting) trips during the PM peak hour.

Pass-by trips were also taken into consideration in this study. Pass-by trips are made by the traffic already using the adjacent roadway, entering the site as an intermediate stop on their way to another destination. Pass-by trips are expected to account for 284 trips (142 entering and 142 exiting) anticipated to occur during the weekday PM peak hour.

The total primary site trips are the calculated site trips after the reduction for internal capture and pass-by trips. Primary site trips are expected to generate approximately 1,326 trips (728 entering and 598 exiting) will occur during the AM peak hour and 1,440 trips (629 entering and 811 exiting) will occur during the PM peak hour. Refer to Appendix A for the NCHRP Internal capture spreadsheets used in these calculations.

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. It is estimated that residential trips generated by the proposed development will be distributed as follows:

- 30% to/from the north via NC-540
- 30% to/from the south via NC-540
- 20% to/from the north via S. Salem Street
- 10% to/from the north via Kelly Road
- 10% to/from the west via Old US Hwy 1

It is estimated that the commercial and office trips generated by the proposed development will be distributed as follows:

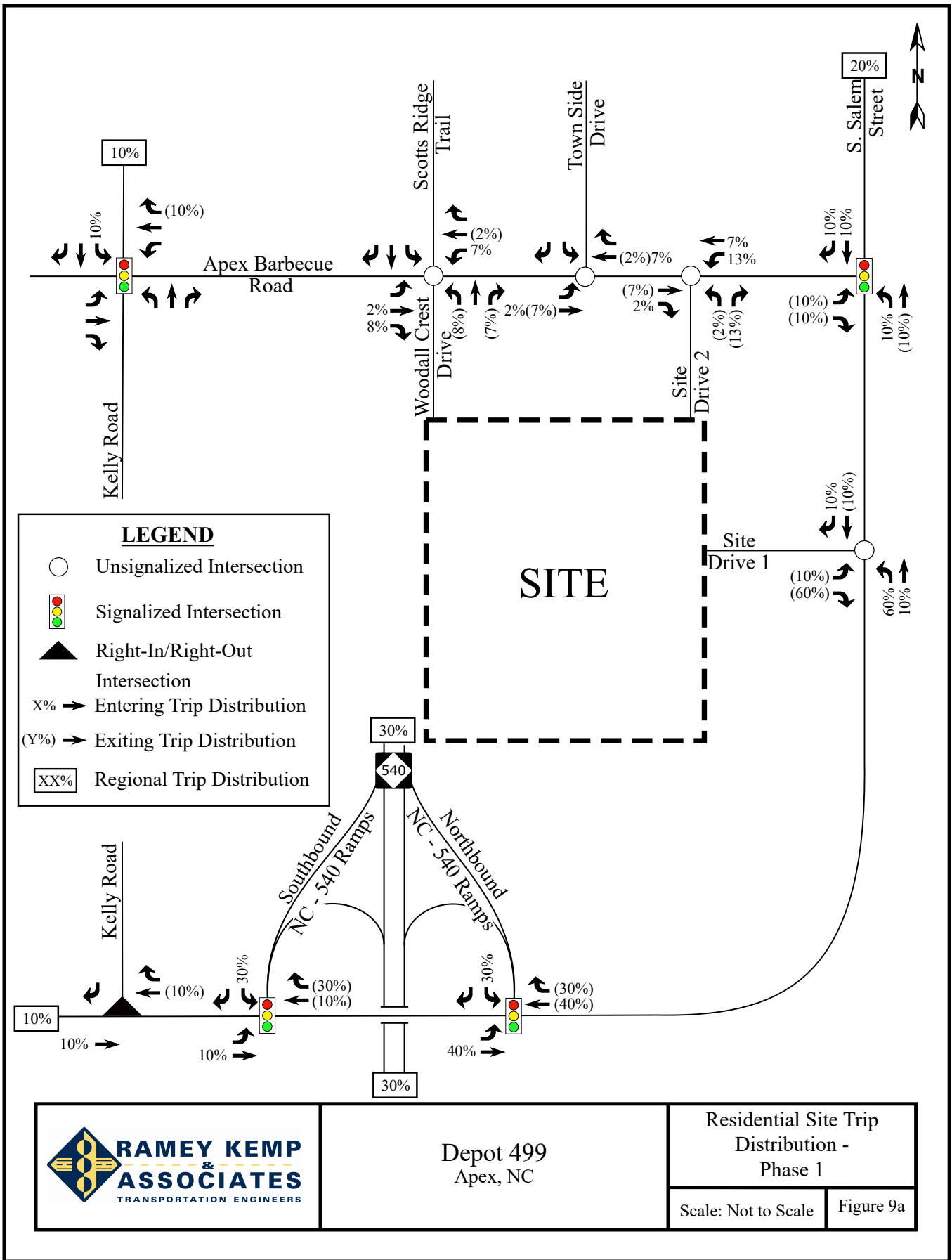
- 25% to/from the north via S. Salem Street
- 15% to/from the north via Kelly Road
- 15% to/from the west via Apex Barbecue Road
- 15% to/from the west via Old US Hwy 1

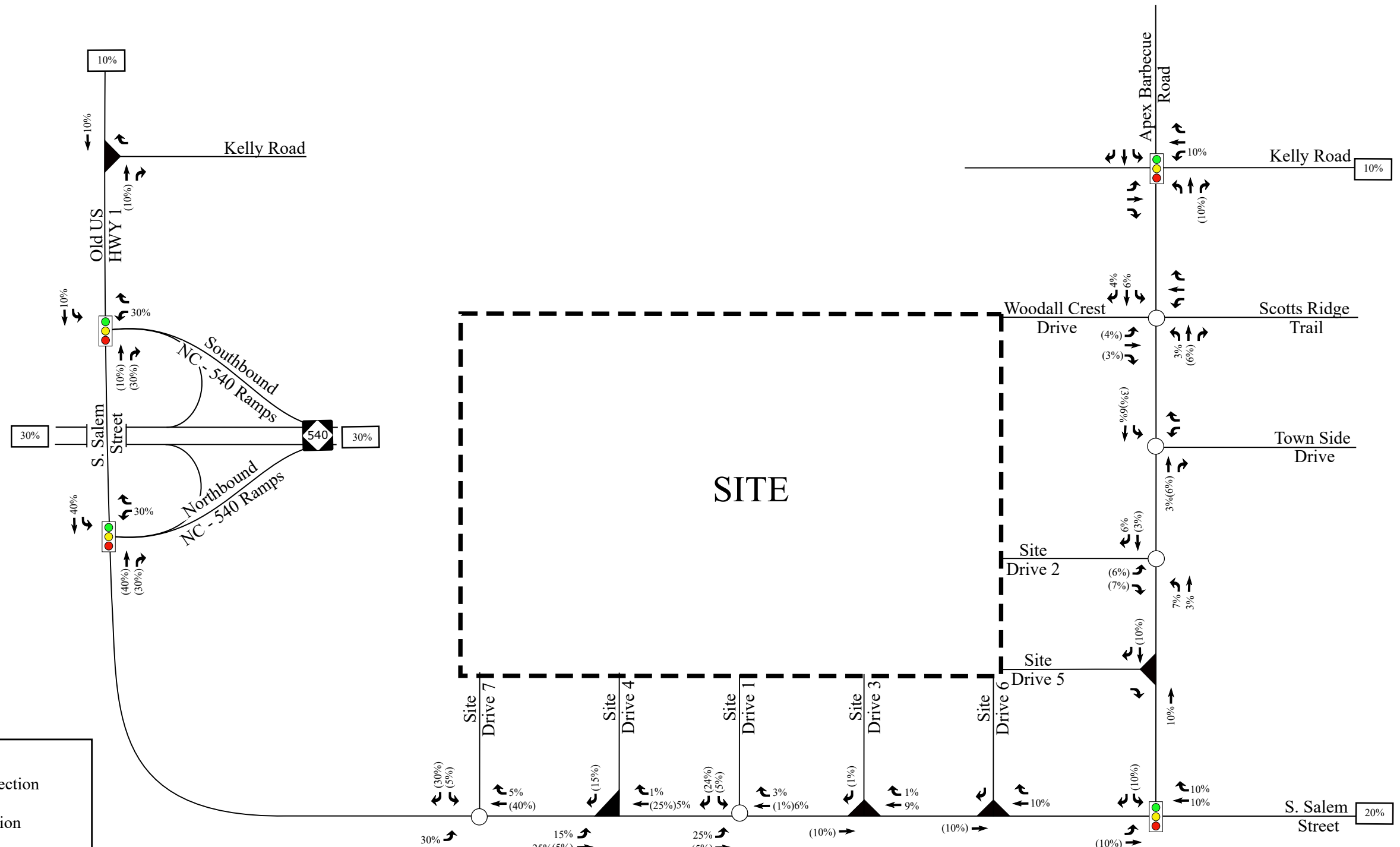
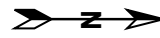
- 10% to/from the north via NC-540
- 10% to/from the south via NC-540
- 5% to/from the north via Scotts Ridge Trail
- 5% to/from the north via Town Side Drive

The residential site trip distribution for Phase 1 and Full Buildout of the proposed development is shown in Figures 9a and 9b, respectively. The commercial / office site trip distribution is illustrated in Figure 10. Refer to Figures 12a and 12b for the residential site trip assignment for Phase 1 and Full Buildout of the proposed development, respectively. Refer to Figure 13 for the commercial / office site trip assignment.

The pass-by site trips were distributed based on existing traffic patterns with consideration given to the proposed driveway access and site layout. Refer to Figure 11 for the pass-by site trip distribution. Pass-by site trip assignments are shown in Figure 14.

The total site trips were determined by adding the primary site trips and the pass-by site trips. Refer to Figure 12a for the Phase 1 total peak hour site trips and Figure 15 for the full buildout total peak hour site trips at the study intersections.





LEGEND

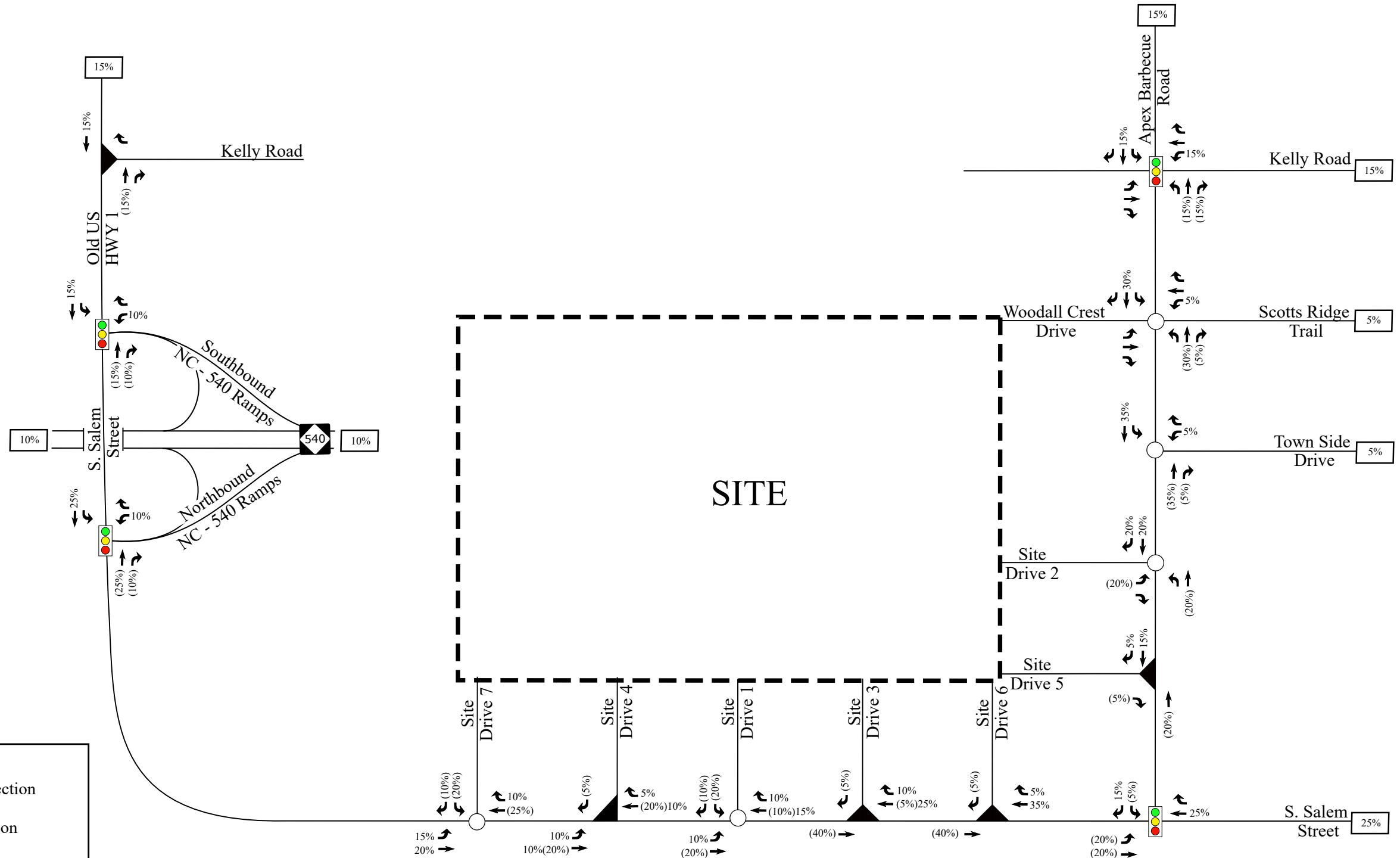
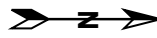
- Unsignalized Intersection
- ◫ Signalized Intersection
- ▲ Right-In/Right-Out Intersection
- ▼ Left-Over Intersection
- X% → Entering Trip Distribution
- (Y%) → Exiting Trip Distribution
- XX% Regional Trip Distribution



Depot 499
Apex, NC

Residential Site Trip
Distribution -
Full Build-Out

Scale: Not to Scale Figure 9b



LEGEND

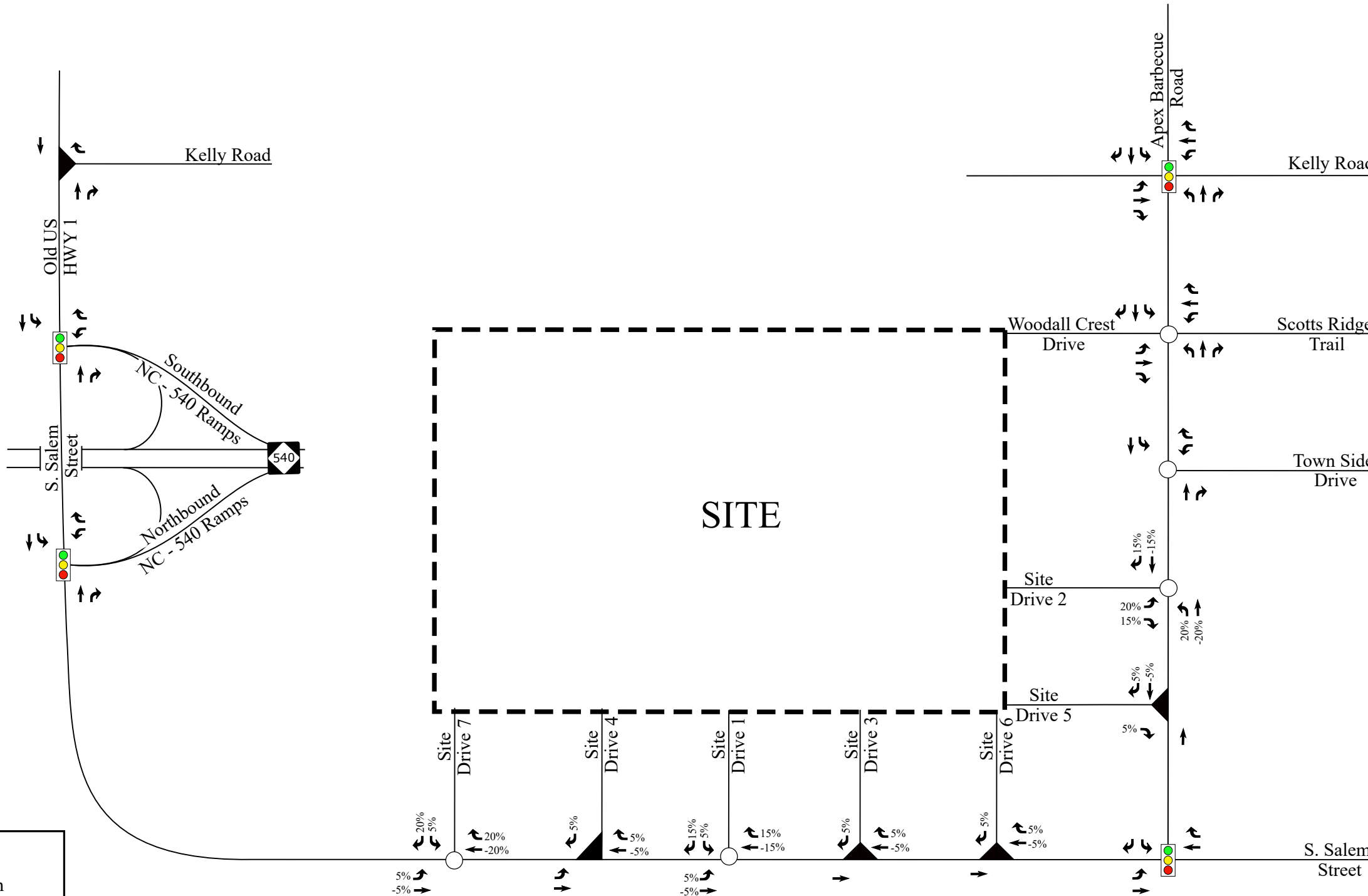
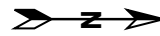
- Unsignalized Intersection
- 🚦 Signalized Intersection
- ▲ Right-In/Right-Out Intersection
- ◄ Left-Over Intersection
- X% → Entering Trip Distribution
- (Y%) → Exiting Trip Distribution
- XX% Regional Trip Distribution



Depot 499
Apex, NC

Commercial Site Trip
Distribution

Scale: Not to Scale Figure 10



LEGEND

- Unsignalized Intersection
- ⚡ Signalized Intersection
- ▲ Right-In/Right-Out Intersection
- ◄ Left-Over Intersection
- x% → PM Pass-By Trip Distribution

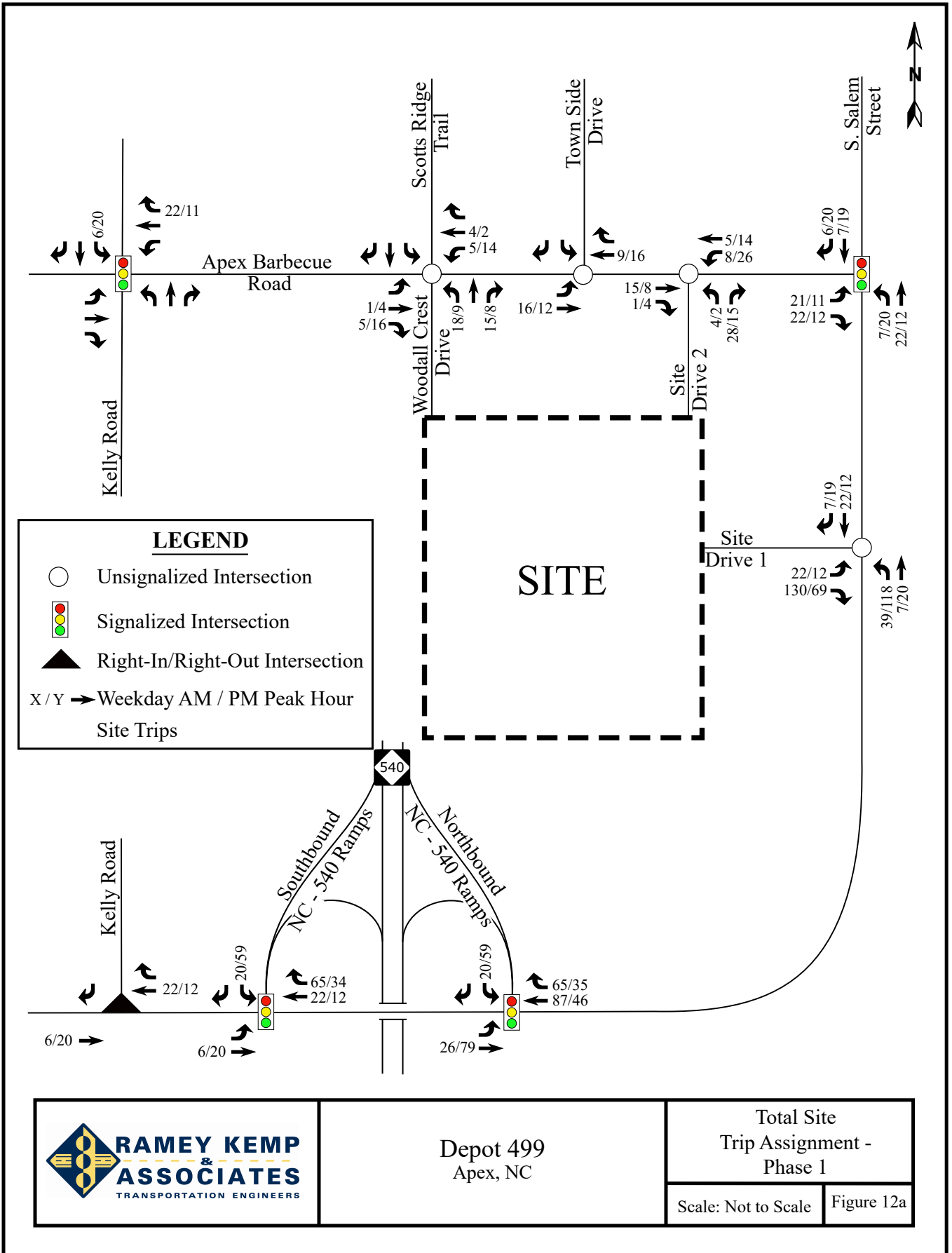


Depot 499
Apex, NC

PM Pass-By
Trip Distribution

Scale: Not to Scale

Figure 11

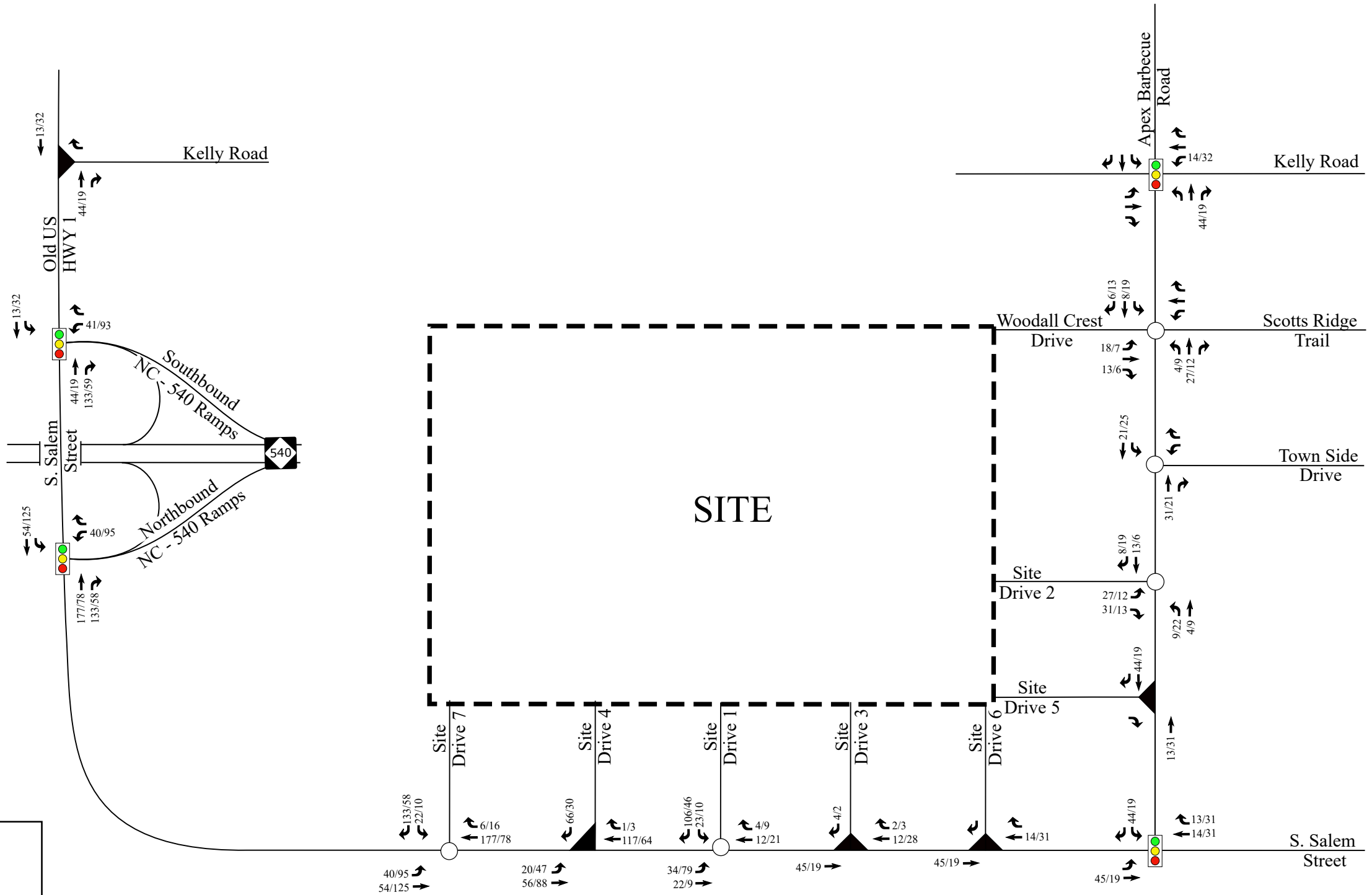
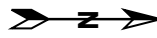


Depot 499
Apex, NC

Total Site
Trip Assignment -
Phase 1

Scale: Not to Scale

Figure 12a



LEGEND

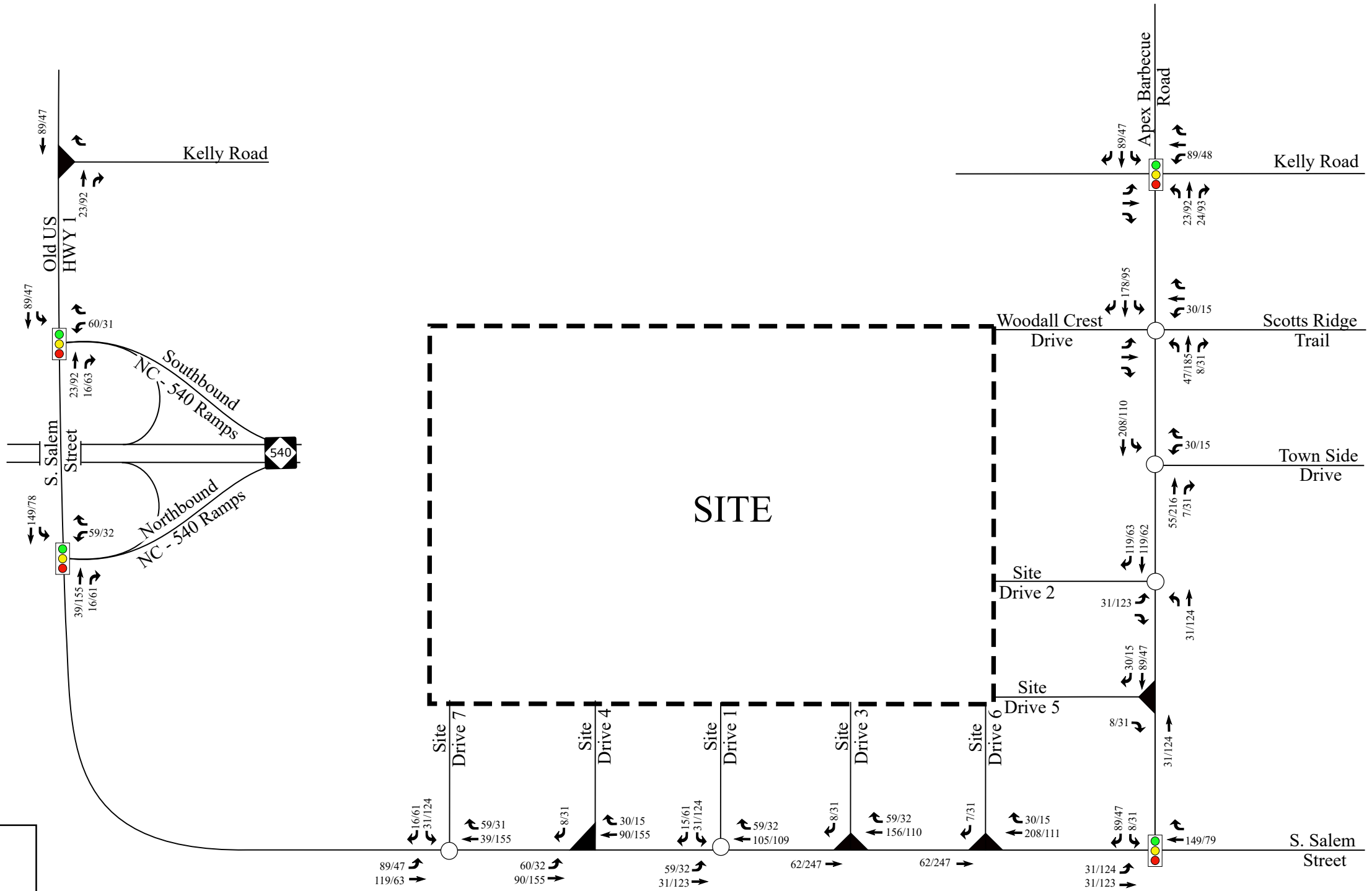
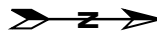
- Unsignalized Intersection
- ◫ Signalized Intersection
- ▲ Right-In/Right-Out Intersection
- ◼ Left-Over Intersection
- X/Y → Weekday AM / PM Peak Hour Site Trips

RAMEY KEMP & ASSOCIATES
TRANSPORTATION ENGINEERS

Depot 499
Apex, NC

Residential Site Trip
Assignment -
Full Build-Out

Scale: Not to Scale Figure 12b



LEGEND

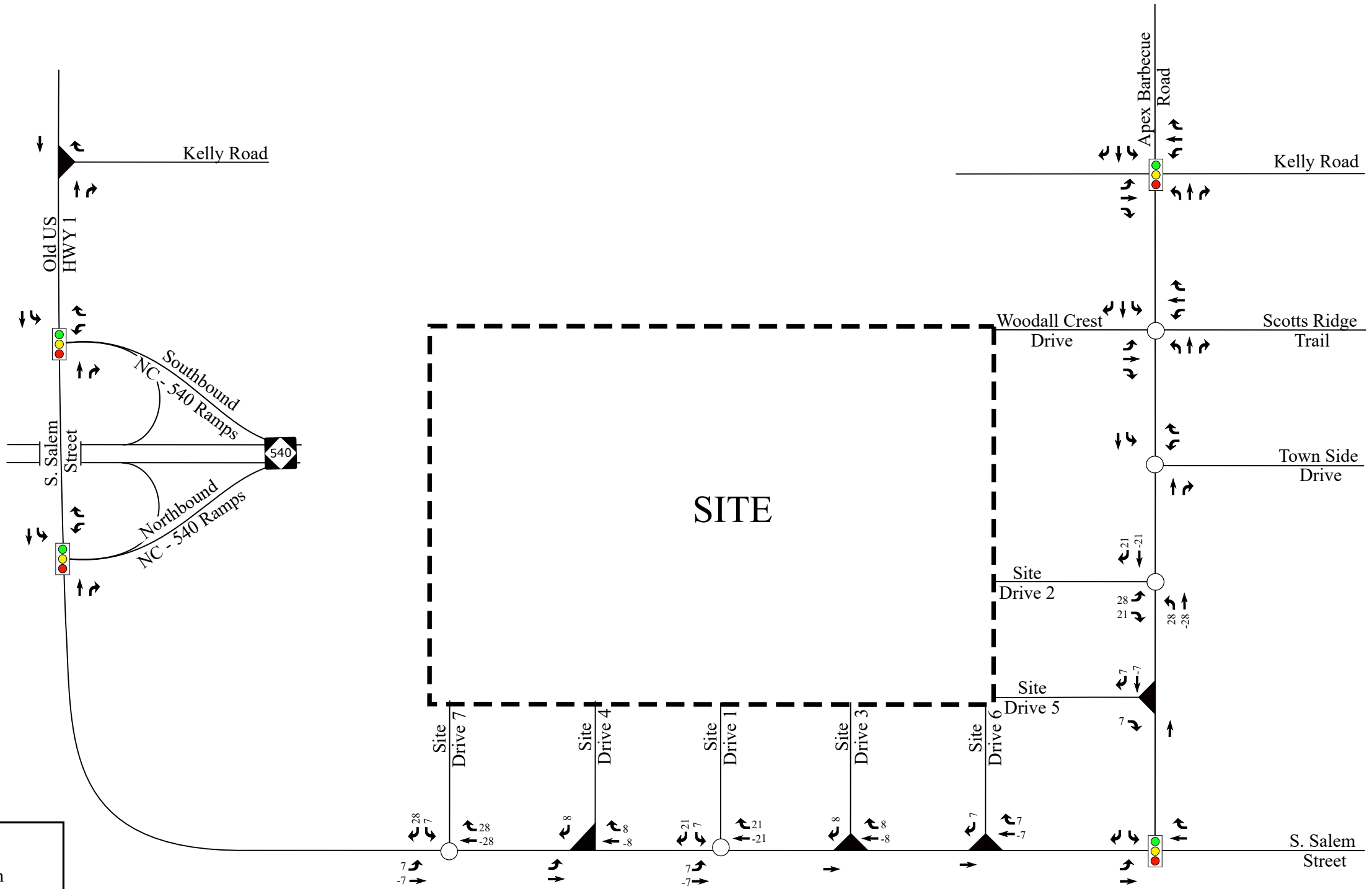
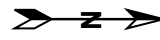
- Unsignalized Intersection
- 🚦 Signalized Intersection
- ▲ Right-In/Right-Out Intersection
- ◄ Left-Over Intersection
- X/Y → Weekday AM / PM Peak Hour Site Trips



Depot 499
Apex, NC

Commercial/Office
Site Trip Assignment -
Full Buildout

Scale: Not to Scale Figure 13



LEGEND

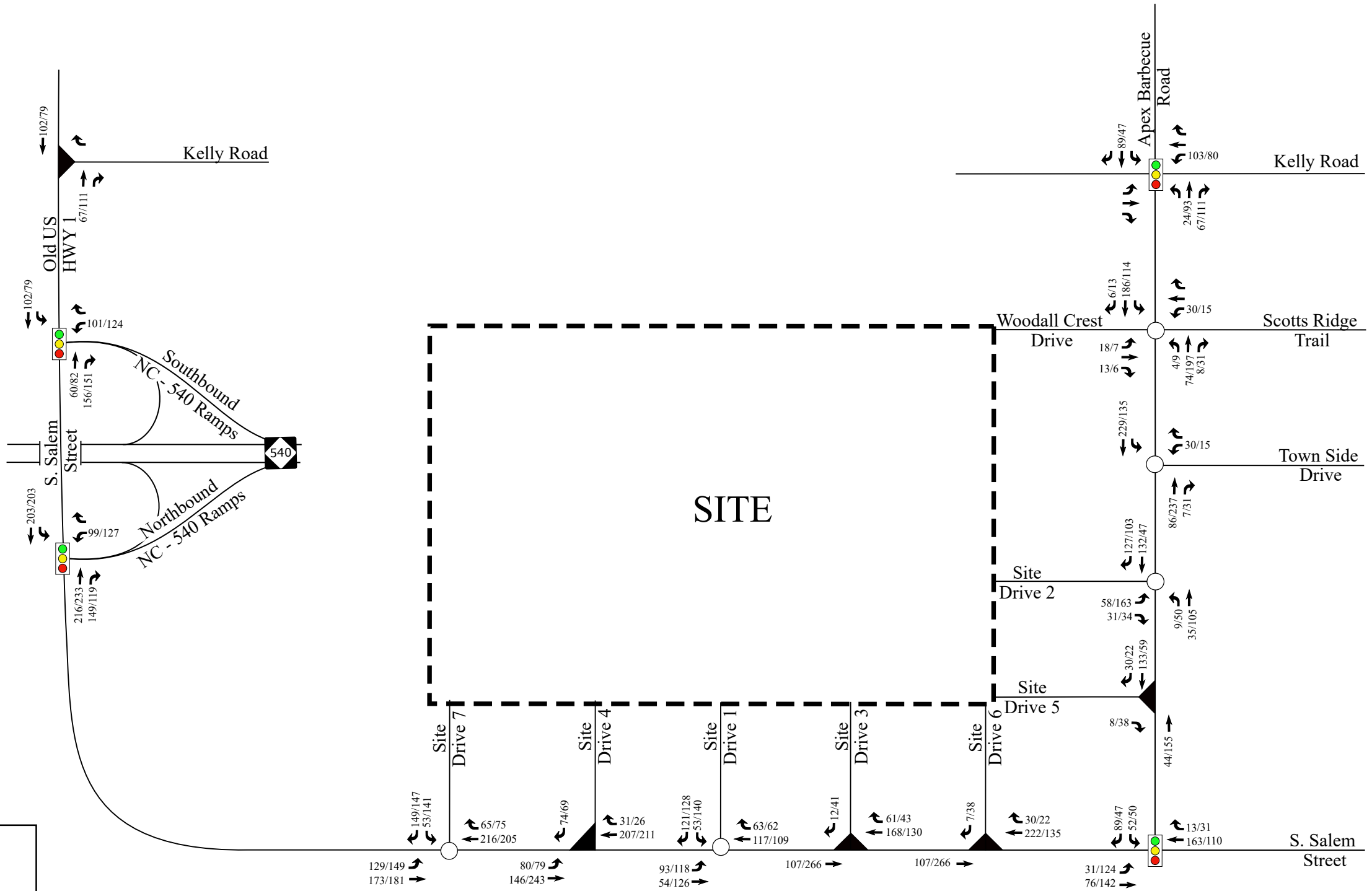
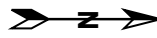
- Unsignalized Intersection
- 🚦 Signalized Intersection
- ▲ Right-In/Right-Out Intersection
- ◄ Left-Over Intersection
- x → PM Pass-By Trips



Depot 499
Apex, NC

PM Pass-By
Trip Assignment

Scale: Not to Scale Figure 14



LEGEND

- Unsignalized Intersection
- 🚦 Signalized Intersection
- ▲ Right-In/Right-Out Intersection
- ◼ Left-Over Intersection
- X/Y → Weekday AM / PM Peak Hour Site Trips



Depot 499
Apex, NC

Total Site Trip Assignment
- Full Buildout

Scale: Not to Scale Figure 15

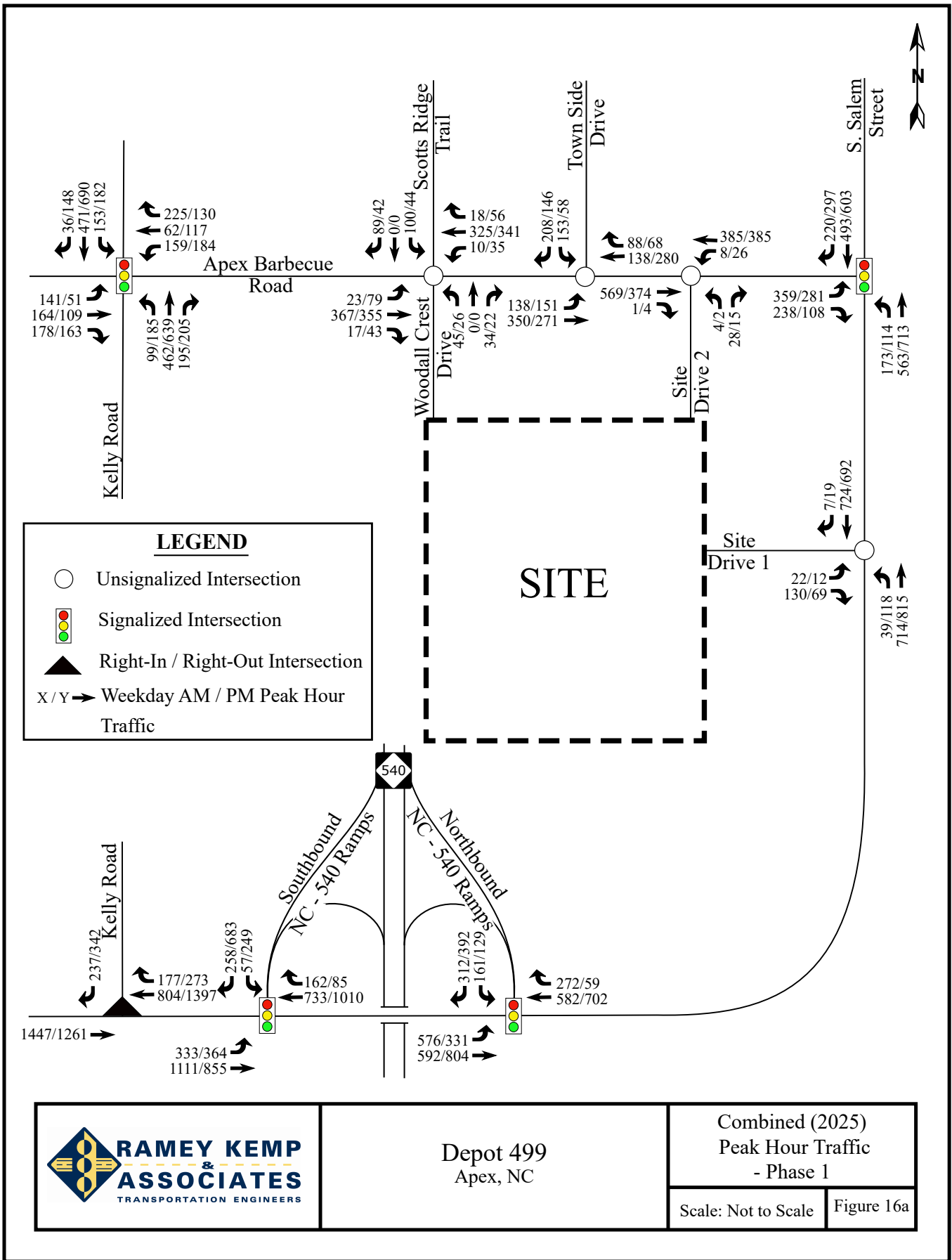
5. COMBINED (2025 / 2028) TRAFFIC CONDITIONS

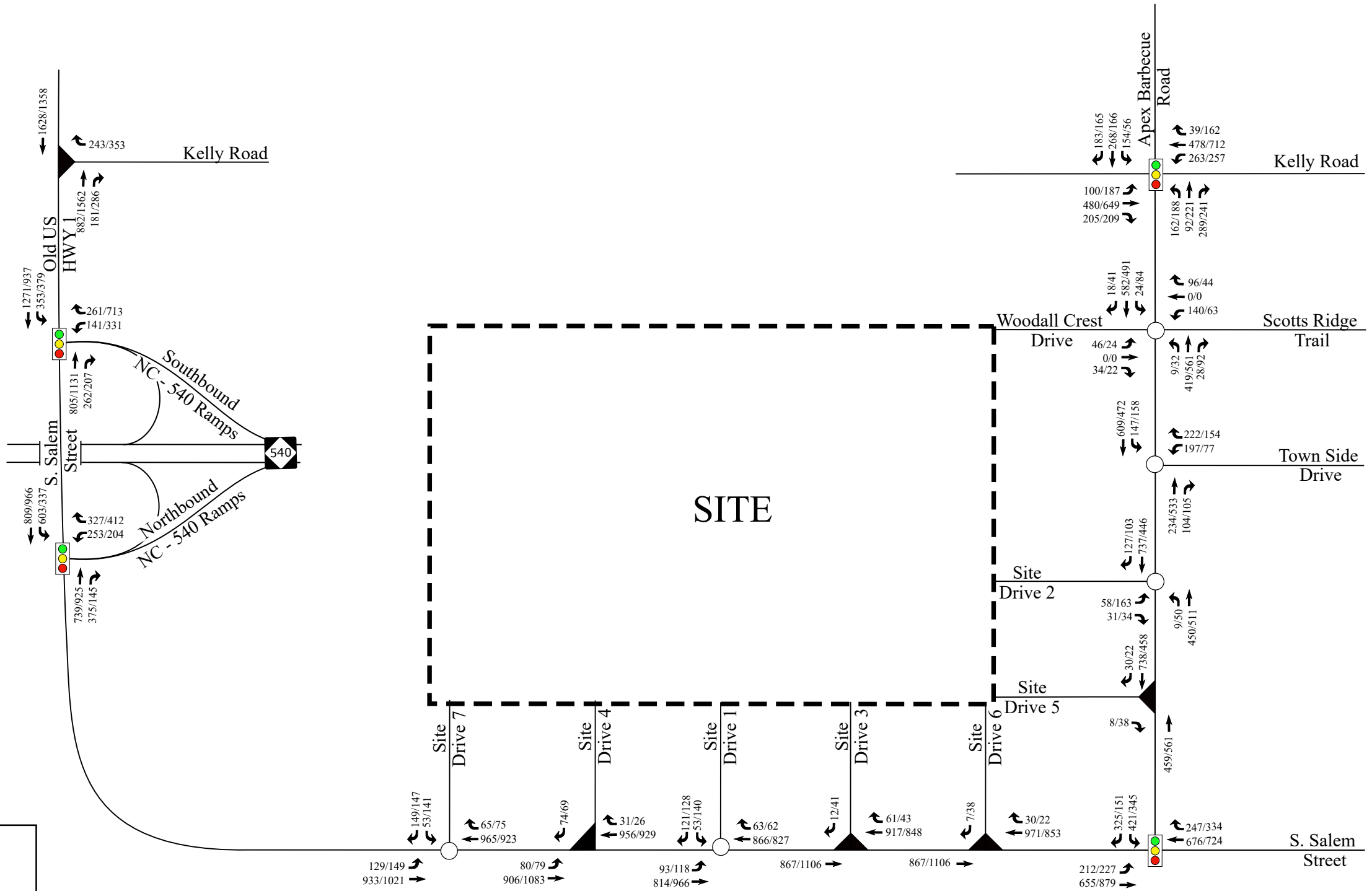
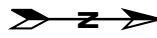
5.1. Combined (2025 / 2028) Peak Hour Traffic Volumes

To estimate traffic conditions with the site, the total site trips (Figures 12a, 15) were added to the background (2025 / 2028) traffic volumes (Figures 8a, 8b) to determine the combined (2025 / 2028) traffic volumes that can be expected upon build-out of the proposed development phases. Refer to Figures 16a and 16b for illustrations of the combined (2025) – Phase 1 and combined (2028) – Full Build peak hour traffic volumes, respectively.

5.2. Analysis of Combined (2025 / 2028) Peak Hour Traffic

Study intersections were analyzed with the combined (2025 / 2028) traffic volumes using the same methodology previously discussed for background traffic conditions. Intersections were analyzed with improvements necessary to accommodate future traffic volumes. The analysis results are presented in Section 7 of this report.





LEGEND

- Unsignalized Intersection
- 🚦 Signalized Intersection
- ▲ Right-In/Right-Out Intersection
- ◄ Left-Over Intersection
- X/Y → Weekday AM / PM Peak Hour Traffic



Depot 499
Apex, NC

Combined (2028) Peak Hour
Traffic - Full Buildout

Scale: Not to Scale Figure 16b

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. 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 3 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 3: 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 study intersections was completed according to the NCDOT Congestion Management Guidelines and Town of Apex Unified Development Ordinance (UDO).

7. CAPACITY ANALYSIS

7.1. S. Salem Street and Apex Barbecue Road

The signalized intersection of S. Salem Street and Apex Barbecue Road was analyzed under existing (2019), background (2025, 2028), and combined (2025, 2028) traffic conditions with the lane configurations and traffic control shown in Table 4. Refer to Table 4 for a summary of the analysis results. Refer to Appendix E for the Synchro capacity analysis reports.

Table 4: Analysis Summary of S. Salem Street and Apex Barbecue 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 NB SB	1 LT, 1 RT 1 LT, 1 TH 1 TH, 1 RT	B A B	B (14)	B A B	B (12)
Background (2025) Conditions	EB NB SB	1 LT, 1 RT 1 LT, 1 TH 1 TH, 1 RT	C B C	C (21)	C B C	B (19)
Combined (2025) Conditions	EB NB SB	1 LT, 1 RT 1 LT, 1 TH 1 TH, 1 RT	C B C	C (22)	C B C	C (20)
Background (2028) Conditions	EB NB SB	1 LT, 1 RT 1 LT, 1 TH 1 TH, 1 RT	C B C	C (22)	C B C	C (22)
Combined (2028) Conditions	EB NB SB	1 LT, 1 RT 1 LT, 1 TH 1 TH, 1 RT	D C C	C (32)	D C C	C (32)
Combined (2028) Conditions – with Improvements	EB NB SB	1 LT, 1 RT 1 LT, 1 TH 1 TH, 1 RT	D C C	C (32)	D C C	C (32)

Improvements by Developer in **Bold**.

Capacity analysis of existing (2019), background (2025,2028), and combined (2025,2028) traffic conditions indicates the intersection of S. Salem Street and Apex Barbecue Road is expected to operate at an overall LOS C or better during both weekday AM and PM peak hours. Future traffic volumes were evaluated to determine the need for turn-lane extensions. These turn-lane extensions were recommended under full buildout (2028) conditions for the

eastbound and northbound left-turn movements and are not expected to impact the intersection delay. As these improvements are on the frontage of the corner parcel and are not needed from a level of service standpoint, these turn-lane extensions are recommended to be completed with construction of Site Drive 5 and Site Drive 6. Turn-lane lengths were determined based on review of Synchro and SimTraffic analyses.

7.2. S. Salem Street and Northbound NC-540 Ramps

The signalized intersection of S. Salem Street and Northbound NC-540 Ramps was analyzed under existing (2019), background (2025, 2028), and combined (2025, 2028) traffic conditions with the lane configurations and traffic control shown in Table 5. Refer to Table 5 for a summary of the analysis results. Refer to Appendix F for the Synchro capacity analysis reports.

Table 5: Analysis Summary of S. Salem Street and Northbound NC-540 Ramps

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, 1 TH 1 TH, 1 RT 1 LT, 1 RT	A B B	B (10)	A B B	A (9)
Background (2025) Conditions	EB WB SB	1 LT, 1 TH 1 TH, 1 RT 1 LT, 1 RT	D B C	D (37)	B C C	B (20)
Combined (2025) Conditions	EB WB SB	1 LT, 1 TH 1 TH, 1 RT 1 LT, 1 RT	F C C	D (50)	B C D	C (25)
Background (2028) Conditions	EB WB SB	1 LT, 1 TH 1 TH, 1 RT 1 LT, 1 RT	E C C	D (48)	B C D	C (22)
Combined (2028) Conditions	EB WB SB	1 LT, 1 TH 1 TH, 1 RT 1 LT, 1 RT	F C D	F (92)	D D E	D (43)
Combined (2028) Conditions – with Signal Timing Modifications	EB WB SB	1 LT, 1 TH 1 TH, 1 RT 1 LT, 1 RT	D E E	D (53)	C D D	D (38)

Capacity analysis of existing (2019), background (2025,2028), and combined (2025) traffic conditions indicates the intersection of S. Salem Street and Northbound NC-540 Ramps is expected to operate at an overall LOS D or better during both weekday AM and PM peak hours. Under combined (2028) conditions, the intersection is expected to operate at LOS F during the weekday AM peak hour and LOS D during the weekday PM peak hour. Signal timing modifications are recommended under combined (2028) full buildout conditions to improve the overall intersection to LOS D during the weekday AM and PM peak hour. Signal

plans for the NC 540 interchange indicates that this intersection is part of the S. Salem Street closed loop system. Field inspection indicated that these intersections are not currently operating on a coordinated signal plan. Due to this, these signal timing modifications / recommendations include implementation of a coordinated system for the S. Salem Street corridor.

7.3. S. Salem Street / Old US Hwy 1 and Southbound NC-540 Ramps

The signalized intersection of S. Salem Street / Old US Hwy 1 and Southbound NC-540 Ramps was analyzed under existing (2019), background (2025, 2028), and combined (2025, 2028) traffic conditions with the lane configurations and traffic control shown in Table 6. Refer to Table 6 for a summary of the analysis results. Refer to Appendix G for the Synchro capacity analysis reports.

Table 6: Analysis Summary of S. Salem Street / Old US 1 and Southbound NC-540 Ramps

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, 1 TH 1 TH, 1 RT 1 LT, 1 RT	A B B	A (8)	A B C	B (16)
Background (2025) Conditions	EB WB SB	1 LT, 1 TH 1 TH, 1 RT 1 LT, <u>1 RT</u>	B C A	B (15)	D E B	D (45)
Combined (2025) Conditions	EB WB SB	1 LT, 1 TH 1 TH, 1 RT 1 LT, <u>1 RT</u>	C C A	B (19)	D E C	D (52)
Background (2028) Conditions	EB WB SB	1 LT, 1 TH 1 TH, 1 RT 1 LT, <u>1 RT</u>	B B A	B (16)	D F B	E (56)
Combined (2028) Conditions	EB WB SB	1 LT, 1 TH 1 TH, 1 RT 1 LT, <u>1 RT</u>	D C C	C (31)	D F E	F (81)
Combined (2028) Conditions – with Improvements	EB WB SB	1 LT, 1 TH 2 TH , 1 RT 1 LT, <u>1 RT</u>	C A E	C (22)	C C E	C (35)

Background improvements by the West Village development shown underlined.
Improvements by Developer in **Bold**.

Capacity analysis of existing (2019), background (2025), and combined (2025) traffic conditions indicates the intersection of S. Salem Street / Old US Hwy 1 and Southbound NC-540 Ramps is expected to operate at LOS D or better during both weekday AM and PM peak hours. Under background (2028) conditions, the intersection is expected to operate at an

overall LOS B during the weekday AM peak hour and LOS E during the weekday PM peak hour. Capacity analysis of combined (2028) conditions indicates that the intersection is expected to operate at an overall LOS C during the weekday AM peak hour and LOS F during the weekday PM peak hour. Improvements are necessary to the westbound and southbound approaches to improve the intersection to an overall LOS C during the weekday AM and PM peak hour under combined (2028) full buildout conditions. Signal plans for the NC 540 interchange indicates that this intersection is part of the S. Salem Street closed loop system. Field inspection indicated that these intersections are not currently operating on a coordinated signal plan. Due to this, these signal timing modifications / recommendations include implementation of a coordinated system for the S. Salem Street corridor.

Under background conditions, the West Village development is required to restripe the southbound approach to allow free-flow right-turns onto Old US Hwy 1. With the proposed Depot 499 improvements, this southbound right-turn movement will become signalized to allow for an additional westbound through lane. Due to this signalization, additional storage for the southbound right-turn lane is recommended. The exact storage length for the widening on the westbound approach is also subject to change during design due to construction limitations with the adjacent NC 540 bridge.

Since the largest degradation of level of service at this intersection is due to background growth, it is recommended that this improvement be reevaluated at a later phase of development. It is recommended that the improvements at this intersection be constructed prior to issuance of the driveway permit for Site Drive 7. Site Drive 7 is expected to handle a high volume of traffic / large density of the proposed development and thus be a larger generator of traffic at this intersection. These improvements are also contingent on the widening required of the West Village development. If the proposed development moves forward prior to West Village, it is recommended that these improvements be reevaluated.

7.4. S. Salem Street and Kelly Road

The unsignalized intersection of S. Salem Street and Kelly Road was analyzed under existing (2019), background (2025, 2028), and combined (2025, 2028) traffic conditions with the lane configurations and traffic control shown in Table 7. Due to the improvements warranted by the West Village development, the intersection was analyzed as a right-in / right-out intersection under all future scenarios. Refer to Table 7 for a summary of the analysis results. Refer to Appendix H for the Synchro capacity analysis reports.

Table 7: Analysis Summary of S. Salem Street and Kelly 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, 1 TH 1 TH-RT 1 LT, 1 RT	A ¹ -- F ²	N/A	A ¹ -- C ²	N/A
Background (2025) Conditions	EB WB SB	<u>1 TH</u> <u>2 TH, 1 RT</u> <u>1 RT</u>	-- -- C ²	N/A	-- -- F ²	N/A
Combined (2025) Conditions	EB WB SB	<u>1 TH</u> <u>2 TH, 1 RT</u> <u>1 RT</u>	-- -- C ²	N/A	-- -- F ²	N/A
Background (2028) Conditions	EB WB SB	<u>1 TH</u> <u>2 TH, 1 RT</u> <u>1 RT</u>	-- -- C ²	N/A	-- -- F ²	N/A
Combined (2028) Conditions	EB WB SB	<u>1 TH</u> <u>2 TH, 1 RT</u> <u>1 RT</u>	-- -- C ²	N/A	-- -- F ²	N/A

1. Level of service for major-street left-turn movement.
 2. Level of service for minor-street approach.
 Background improvements by the West Village development shown underlined.

Capacity analysis of existing (2019) traffic conditions indicates that the major-street left-turn movement at the intersection of S. Salem Street and Kelly Road is expected to operate at LOS A during the weekday AM and PM peak hours, while the minor-street approach is expected to operate at LOS F during the weekday AM peak hour and LOS C during the weekday PM peak

hour. Under background (2025,2028) and combined (2025,2028) conditions, the minor-street approach at the intersection is expected to operate at LOS C during the weekday AM peak hour and LOS F during the weekday PM peak hour. It is not uncommon for a minor street approach to operate at a poor level when a high volume of through traffic is on the main-line approach. This intersection is not expected to be a candidate for signalization due to the restricted right-in/right-out access. The traffic signals at the NC 540 ramps to the east are expected to create some gaps in traffic along S. Salem Street, which should result in less delay than shown in the Synchro report. No improvements are recommended by the proposed development.

7.5. Kelly Road and Apex Barbecue Road

The signalized intersection of Kelly Road and Apex Barbecue Road was analyzed under existing (2019), background (2025, 2028), and combined (2025, 2028) 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 I for the Synchro capacity analysis reports.

Table 8: Analysis Summary of Kelly Road and Apex Barbecue 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 SB	1 LT-TH-RT 1 LT-TH-RT 1 LT, 1 TH-RT 1 LT, 1 TH-RT	C B C B	C (23)	B B C B	B (19)
Background (2025) Conditions	EB WB NB SB	<u>1 LT</u> , 1 TH-RT <u>1 LT</u> , 1 TH-RT 1 LT, 1 TH, <u>1 RT</u> 1 LT, 1 TH, <u>1 RT</u>	E D D D	D (47)	E E D D	D (55)
Combined (2025) Conditions	EB WB NB SB	<u>1 LT</u> , 1 TH-RT <u>1 LT</u> , 1 TH-RT 1 LT, 1 TH, <u>1 RT</u> 1 LT, 1 TH, <u>1 RT</u>	E D D D	D (47)	E E D D	E (56)
Background (2028) Conditions	EB WB NB SB	<u>1 LT</u> , 1 TH-RT <u>1 LT</u> , 1 TH-RT 1 LT, 1 TH, <u>1 RT</u> 1 LT, 1 TH, <u>1 RT</u>	E D D D	D (50)	E F D E	E (60)
Combined (2028) Conditions	EB WB NB SB	<u>1 LT</u> , 1 TH-RT <u>1 LT</u> , 1 TH-RT 1 LT, 1 TH, <u>1 RT</u> 1 LT, 1 TH, <u>1 RT</u>	E E D F	E (73)	F F D F	F (93)
Combined (2028) Conditions – with Improvements	EB WB NB SB	<u>1 LT</u> , 1 TH, 1 RT <u>1 LT</u> , 1 TH, 1 RT 1 LT, 1 TH, <u>1 RT</u> 1 LT, 1 TH, <u>1 RT</u>	D D D E	D (48)	D E D D	D (50)

Background improvements by the West Village development shown underlined.
Improvements by Developer in **Bold**.

Capacity analysis of existing (2019) and background (2025) traffic conditions indicates the intersection of Kelly Road and Apex Barbecue Road is expected to operate at an overall LOS

D or better during the weekday AM and PM peak hours. Under combined (2025) – phase 1 and background (2028) conditions, the intersection is expected to operate at an overall LOS D during the weekday AM peak hour and LOS E during the weekday PM peak hour. Per the Town of Apex UDO, improvements should be recommended to improve intersections that degrade beyond a level of service D during the weekday peak hours when the development is expected to account for greater than 10% of the traffic at the intersection. Phase 1 of the proposed development is expected to add 0 seconds of delay during the weekday AM peak hour and 1 second of delay during the weekday PM peak hour and account for approximately 1% of the traffic during the weekday AM and PM peak hours. Due to the minor increase in intersection delay and low volume of site traffic at this intersection, no improvements are recommended at this intersection by the proposed development as part of Phase 1 of its development.

Capacity analysis of combined (2028) conditions indicates the intersection is expected to operate at LOS E during the weekday AM peak hour and LOS F during the weekday PM peak hour. Improvements are necessary to the eastbound and westbound approaches to improve the intersection to an overall LOS D during the weekday AM and PM peak hours under combined (2028) full buildout conditions. The exact storage length for the widening on the westbound approach is subject to change during design due to construction limitations with the adjacent bridge over NC 540. These eastbound and westbound turn-lanes are also expected to require right-of-way on land not controlled by the proposed development.

7.6. Apex Barbecue Road and Scotts Ridge Trail / Woodall Crest Drive

The unsignalized intersection of Apex Barbecue Road and Scotts Ridge Trail / Woodall Crest Drive was analyzed under existing (2019), background (2025, 2028), and combined (2025, 2028) 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 J for the Synchro capacity analysis reports.

Table 9: Analysis Summary of Apex Barbecue Road and Scotts Ridge Trail / Woodall Crest 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 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
Background (2025) Conditions	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 C ² D ²	N/A	A ¹ A ¹ C ² D ²	N/A
Combined (2025) Conditions	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 C ² D ²	N/A	A ¹ A ¹ D ² D ²	N/A
Background (2028) Conditions	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 C ² E ²	N/A	A ¹ A ¹ C ² D ²	N/A
Combined (2028) Conditions	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 F ² F ²	N/A	A ¹ A ¹ F ² F ²	N/A
Combined (2028) Conditions – with Signalization	EB WB NB SB	1 LT, 1 TH-RT 1 LT, 1 TH-RT 1 LT-TH-RT 1 LT-TH-RT	B B C D	C (21)	B C C D	C (23)

1. Level of service for major-street left-turn movement.
 2. Level of service for minor-street approach.

Capacity analysis of existing (2019), background (2025), and combined (2025) traffic conditions indicates all minor-street approaches and major-street left-turn movements at the intersection of Apex Barbecue Road and Scotts Ridge Trail / Woodall Crest Drive are expected to operate at LOS D or better during the weekday AM and PM peak hours. Under background (2028) conditions the major-street left-turn movements are expected to operate at LOS A during the weekday AM and PM peak hours, while the northbound minor-street approach is expected to operate at LOS C and the southbound minor-street approach is expected to operate at LOS E during the weekday AM peak hour. Under background (2028) conditions during the weekday PM peak hour, the minor-street approach is expected to operate at LOS D or better. Capacity analysis of combined (2028) conditions indicates that the major-street left-turn movements at the intersection are expected to operate at LOS A during the weekday AM and PM peak hours while the minor-street approaches are expected to operate at LOS F during the weekday AM and PM peak hours.

Although it is not uncommon for a minor-street approach to operate at a poor level of service with a high volume of through traffic on the main-line approach, a signal was considered at this intersection under combined (2028) full buildout conditions. With signalization, the intersection is expected to operate at an overall LOS C during the weekday AM and PM peak hours under combined (2028) full buildout conditions. Peak hour signal warrants were also reviewed under the combined (2028) full buildout conditions following the methodology contained in the Manual on Uniform Traffic Control Devices (MUTCD). The subject intersection is expected to meet warrants under the weekday AM peak hour but not under weekday PM peak hour conditions. These warrants are met on the Scott Ridge Trail approach and not on the Woodall Crest Drive side of the intersection. Due to this, signalization is not recommended by the proposed Depot 499 development.

A roundabout was considered for evaluation; however, a roundabout may not be the best permanent solution due to additional property impacts, increasing traffic on Apex Barbeque Road, the impacts of peak school traffic, and design challenges to accommodate school buses. This improvement would also be cost prohibitive for the development.

7.7. Apex Barbecue Road and Town Side Drive

The unsignalized intersection of Apex Barbecue Road and Town Side Drive was analyzed under existing (2019), background (2025, 2028), and combined (2025, 2028) traffic conditions with the lane configurations and traffic control shown in Table 10. Refer to Table 10 for a summary of the analysis results. Refer to Appendix K for the Synchro capacity analysis reports.

Table 10: Analysis Summary of Apex Barbecue Road and Town Side 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 SB	1 LT-TH 1 TH-RT 1 LT, 1 RT	A ¹ -- C ²	N/A	A ¹ -- B ²	N/A
Background (2025) Conditions	EB WB SB	1 LT-TH 1 TH-RT 1 LT, 1 RT	A ¹ -- C ²	N/A	A ¹ -- C ²	N/A
Combined (2025) Conditions	EB WB SB	1 LT-TH 1 TH-RT 1 LT, 1 RT	A ¹ -- C ²	N/A	A ¹ -- C ²	N/A
Background (2028) Conditions	EB WB SB	1 LT-TH 1 TH-RT 1 LT, 1 RT	A ¹ -- D ²	N/A	A ¹ -- C ²	N/A
Combined (2028) Conditions	EB WB SB	1 LT-TH 1 TH-RT 1 LT, 1 RT	A ¹ -- F ²	N/A	B ¹ -- F ²	N/A

1. Level of service for major-street left-turn movement.
2. Level of service for minor-street approach.

Capacity analysis of existing (2019), background (2025,2028) and combined (2025) traffic conditions indicates that the major-street left-turn movement and the minor-street approach at the intersection of Apex Barbecue Road and Town Side Drive are expected to operate at LOS D or better during the weekday AM and PM peak hours. Under combined (2028) conditions, the major-street left-turn movement is expected to operate at LOS B or better during the

weekday AM and PM peak hours, while the minor-street approach is expected to operate at LOS F during the weekday AM and PM peak hours. It is not uncommon for a minor street approach to operate at a poor level when a high volume of through traffic is on the main-line approach. As the proposed development is expected to contribute mostly through traffic to this intersection, no improvements are recommended by the proposed development.

7.8. S. Salem Street and Site Drive 1

The proposed unsignalized intersection of S. Salem Street and Site Drive 1 was analyzed under combined (2025, 2028) traffic conditions with the proposed lane configurations and traffic control shown in Table 11. Refer to Table 11 for a summary of the analysis results. Refer to Appendix L for the Synchro capacity analysis reports.

Table 11: Analysis Summary of S. Salem Street 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 (2025) Conditions	EB NB SB	1 LT, 1 RT 1 LT, 1 TH 1 TH, 1 RT	C ² A ¹ --	N/A	D ² B ¹ --	N/A
Combined (2028) Conditions	EB NB SB	1 LT, 1 RT 1 LT, 1 TH 1 TH, 1 RT	F ² B ¹ --	N/A	F ² B ¹ --	N/A
Combined (2028) Conditions – with Signalization	EB NB SB	1 LT, 1 RT 1 LT, 1 TH 1 TH, 1 RT	D B C	B (19)	D B C	C (24)

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 combined (2025) traffic conditions indicates the minor-street approach and major-street left-turn movement at the intersection of S. Salem Street and Site Drive 1 are expected to operate at LOS D or better during the weekday AM and PM peak hours. Under combined (2028) conditions, the major-street left-turn movement is expected to operate at LOS B and the minor-street approach is expected to operate at LOS F during the weekday AM and PM peak hours. Turn-lane lengths were determined based on review of Synchro and SimTraffic analyses, as well as review of the “Warrant for Left and Right-Turn Lanes at Grade, Unsignalized Intersections” chart contained in the NCDOT Driveway Manual.

Although it is not uncommon for a minor-street approach to operate at a poor level of service with a high volume of through traffic on the main-line approach, a signal was considered at

this intersection under combined (2028) full buildout conditions. With signalization, the intersection is expected to operate at an overall LOS C or better during the weekday AM and PM peak hours under combined (2028) full buildout conditions. Peak hour signal warrants were also reviewed under the combined (2028) full buildout conditions following the methodology contained in the MUTCD. The subject intersection is expected to meet warrants under the weekday AM and PM peak hours. Due to this, it is recommended that the proposed development monitor this intersection for signalization under full buildout conditions and install once warranted and approved by NCDOT.

7.9. Apex Barbecue Road and Site Drive 2

The proposed unsignalized intersection of Apex Barbecue Road and Site Drive 2 was analyzed under combined (2025, 2028) traffic conditions with the proposed lane configurations and traffic control shown in Table 12. Refer to Table 12 for a summary of the analysis results. Refer to Appendix M for the Synchro capacity analysis reports.

Table 12: Analysis Summary of Apex Barbecue Road 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 (2025) Conditions	EB WB NB	1 TH, 1 RT 1 LT, 1 TH 1 LT, 1 RT	-- A ¹ B ²	N/A	-- A ¹ B ²	N/A
Combined (2028) Conditions	EB WB NB	1 TH, 1 RT 1 LT, 1 TH 1 LT, 1 RT	-- A ¹ D 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**.

Capacity analysis of combined (2025) traffic conditions indicates the minor-street approach and major-street left-turn movement at the intersection of Apex Barbecue Road and Site Drive 2 are expected to operate at LOS B or better during the weekday AM and PM peak hours. Under combined (2028) conditions, the major-street left-turn movement is expected to operate at LOS A and the minor-street approach is expected to operate at LOS D during the weekday AM peak hour and LOS F during the weekday PM peak hour.

Turn-lane lengths were recommended based on review of Synchro and SimTraffic analyses, as well as review of the “Warrant for Left and Right-Turn Lanes at Grade, Unsignalized Intersections” chart contained in the NCDOT Driveway Manual.

Although it is not uncommon for a minor-street approach to operate at a poor level of service with a high volume of through traffic on the main-line approach, a signal was considered at

this intersection under combined (2028) full buildout conditions. Peak hour signal warrants were reviewed under the combined (2028) full buildout conditions following the methodology contained in the MUTCD. The subject intersection is not expected to meet warrants under the weekday AM and PM peak hours. Due to this, signalization of this intersection is not recommended.

7.10. S. Salem Street and Site Drive 3

The proposed right-in / right-out intersection of S. Salem Street and Site Drive 3 was analyzed under combined (2028) traffic conditions with the proposed lane configurations and traffic control shown in Table 13. Refer to Table 13 for a summary of the analysis results. Refer to Appendix N for the Synchro capacity analysis reports.

Table 13: Analysis Summary of S. Salem Street and Site Drive 3

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 (2028) Conditions	EB NB SB	1 RT 1 TH 1 TH, 1 RT	C ¹ -- --	N/A	C ¹ -- --	N/A

1. Level of service for minor-street approach. Improvements by Developer in **Bold**.

Capacity analysis of combined (2028) traffic conditions indicates the minor-street approach at the intersection of S. Salem Street and Site Drive 3 is expected to operate at LOS C during the weekday AM and PM peak hours. Turn-lane lengths were recommended based on review of Synchro and SimTraffic analyses, as well as review of the “Warrant for Left and Right-Turn Lanes at Grade, Unsignalized Intersections” chart contained in the NCDOT Driveway Manual.

Although analyzed as a right-in/right-out in the study to match the approved MOU, it is recommended that Site Drive 3 be considered for a left-over access to allow additional ingress into the proposed site. This driveway is located approximately 800 feet north of the full movement Site Drive 1 and approximately 1,000 feet south of the full movement intersection of S. Salem Street and Apex Barbecue Road. Due to these reasons, it is recommended that this driveway be considered for left-over driveway access. The storage length for the northbound left-turn movement is recommended per the storage length recommended at the left-over access at Site Drive 4.

7.11. S. Salem Street and Site Drive 4

The proposed left-over intersection of S. Salem Street and Site Drive 4 was analyzed under combined (2028) traffic conditions with the proposed lane configurations and traffic control shown in Table 14. Refer to Table 14 for a summary of the analysis results. Refer to Appendix O for the Synchro capacity analysis reports.

Table 14: Analysis Summary of S. Salem Street and Site Drive 4

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 (2028) Conditions	EB NB SB	1 RT 1 LT, 1 TH 1 TH, 1 RT	C ² B ¹ --	N/A	C 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 combined (2028) traffic conditions indicates the minor-street approach and the major-street left-turn movement at the intersection of S. Salem Street and Site Drive 4 are expected to operate at LOS C or better during the weekday AM and PM peak hours. Turn-lane lengths were recommended based on review of Synchro and SimTraffic analyses, as well as review of the “Warrant for Left and Right-Turn Lanes at Grade, Unsignalized Intersections” chart contained in the NCDOT Driveway Manual.

Providing a left turn into the development from S. Salem Street at Site Drive 4 will minimize left turning volumes at the main development access (Site Drive 1).

7.12. Apex Barbecue Road and Site Drive 5

The proposed right-in / right-out intersection of Apex Barbecue Road and Site Drive 5 was analyzed under combined (2028) traffic conditions with the proposed lane configurations and traffic control shown in Table 15. Refer to Table 15 for a summary of the analysis results. Refer to Appendix P for the Synchro capacity analysis reports.

Table 15: Analysis Summary of Apex Barbecue Road and Site Drive 5

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 (2028) Conditions	EB WB NB	1 TH, 1 RT 1 TH 1 RT	-- -- B¹	N/A	-- -- B¹	N/A

1. Level of service for minor-street approach. Improvements by Developer in **Bold**.

Capacity analysis of combined (2028) traffic conditions indicates the minor-street approach at the intersection of Apex Barbecue Road and Site Drive 5 is expected to operate at LOS B during the weekday AM and PM peak hours. Turn-lane lengths were recommended based on review of Synchro and SimTraffic analyses, as well as review of the “Warrant for Left and Right-Turn Lanes at Grade, Unsignalized Intersections” chart contained in the NCDOT Driveway Manual.

7.13. S. Salem Street and Site Drive 6

The proposed right-in / right-out intersection of S. Salem Street and Site Drive 6 was analyzed under combined (2028) traffic conditions with the proposed lane configurations and traffic control shown in Table 16. Refer to Table 16 for a summary of the analysis results. Refer to Appendix Q for the Synchro capacity analysis reports.

Table 16: Analysis Summary of S. Salem Street and Site Drive 6

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 (2028) Conditions	EB NB SB	1 RT 1 TH 1 TH, 1 RT	C ¹ -- --	N/A	C ¹ -- --	N/A

1. Level of service for minor-street approach. Improvements by Developer in **Bold**.

Capacity analysis of combined (2028) traffic conditions indicates the minor-street approach at the intersection of S. Salem Street and Site Drive 6 is expected to operate at LOS C during the weekday AM and PM peak hours. Turn-lane lengths were recommended based on review of Synchro and SimTraffic analyses, as well as review of the “Warrant for Left and Right-Turn Lanes at Grade, Unsignalized Intersections” chart contained in the NCDOT Driveway Manual.

7.14. S. Salem Street and Site Drive 7

The proposed intersection of S. Salem Street and Site Drive 7 was analyzed under combined (2028) traffic conditions with the proposed lane configurations and traffic control shown in Table 17. Refer to Table 17 for a summary of the analysis results. Refer to Appendix R for the Synchro capacity analysis reports.

Table 17: Analysis Summary of S. Salem Street and Site Drive 7

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 (2028) Conditions	EB NB SB	1 LT, 1 RT 1 LT, 1 TH 1 TH, 1 RT	F ² B ¹ --	N/A	F ² B ¹ --	N/A
Combined (2028) Conditions – with Signalization	EB NB SB	1 LT, 1 RT 1 LT, 1 TH 1 TH, 1 RT	D B C	C (22)	D B C	C (28)

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 combined (2028) traffic conditions indicates the minor-street approach at the intersection of S. Salem Street and Site Drive 7 is expected to operate at LOS F during the weekday AM and PM peak hours, while the major-street left-turn movement is expected to operate at LOS B during the weekday AM and PM peak hours. Turn-lane lengths were determined based on review of Synchro and SimTraffic analyses, as well as review of the “Warrant for Left and Right-Turn Lanes at Grade, Unsignalized Intersections” chart contained in the NCDOT Driveway Manual.

Although it is not uncommon for a minor-street approach to operate at a poor level of service with a high volume of through traffic on the main-line approach, a signal was considered at this intersection under combined (2028) full buildout conditions. With signalization, the intersection is expected to operate at an overall LOS C during the weekday AM and PM peak hours under combined (2028) full buildout conditions. Peak hour signal warrants were also

reviewed under the combined (2028) full buildout conditions following the methodology contained in the MUTCD. The subject intersection is expected to meet warrants under the weekday AM and PM peak hours. Due to this, it is recommended that the proposed development monitor this intersection for signalization under full buildout conditions and install once warranted and approved by NCDOT.

NCDOT Median Crossover Guidelines were also reviewed to ensure compliance with the proposed site driveways on S. Salem Street. With construction of this driveway, it is recommended that the speed limit of S. Salem Street to be reduced to 45 miles per hour (mph). By this stage of development, S. Salem Street is expected to be urbanized from downtown Apex, extending beyond the Depot 499 development, south to the West Village development. Due to future traffic volumes and number of intersections along the corridor, the currently signed 55 mph is expected to be uncharacteristic for the corridor, with 45 mph being a more appropriate posted speed limit. This speed reduction will also allow for the median crossover spacing (2,000 feet of 55 mph and 1,200 feet for 45 mph) to be met. A separate request for this speed limit reduction will be submitted with this TIA to the NCDOT District office for review.

8. CONCLUSIONS

This Traffic Impact Analysis was conducted to determine the potential traffic impacts of the proposed Depot 499 development (formerly Poe Property) to be located west of S. Salem Street (Old US Hwy 1) and south of Apex Barbecue Road in Apex, North Carolina. The proposed development was analyzed in two phases. Phase 1 is anticipated to be complete in 2025 and consist of 650 townhomes. Full build-out of the proposed development is expected to be complete in 2028 and is expected to add the following land uses to those of Phase 2:

- 850 apartments (total of 1,500 low-rise multifamily units)
- 250,000 s.f. shopping center
- 375,000 s.f. general office building

Access to Phase 1 of the proposed development is proposed to be provided via one (1) full movement driveway on Apex Barbecue Road and one (1) full movement driveway on S. Salem Street. Phase 1 will also provide an internal connection to Woodall Crest Drive to the north. Full buildout of the development is proposed to provide a total of five (5) driveways on S. Salem Street (two (2) left-over driveways, two (2) full movement driveways, and one (1) right-in/right-out driveway). Full buildout will provide a total of two (2) driveways on Apex Barbecue Road (one (1) full movement driveway and one (1) right-in/right-out driveway).

The study analyzes traffic conditions during the weekday AM and PM peak hours for the following scenarios:

- Existing (2019) Traffic Conditions
- Background (2025) Traffic Conditions
- Combined (2025) Traffic Conditions
- Background (2028) Traffic Conditions
- Combined (2028) Traffic Conditions

Trip Generation

It is estimated that full buildout of the proposed development will generate approximately 26,330 total site trips on the roadway network during a typical 24-hour weekday period. Of the daily traffic volume, it is anticipated that 1,433 trips (783 entering and 650 exiting) will occur

during the weekday AM peak hour and 2,206 (1,015 entering and 1,191 exiting) will occur during the weekday 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

Phase 1:

Under Phase 1 conditions, all intersections are expected to operate at acceptable levels of service during the weekday AM and PM peak hours. Turn-lanes were recommended at the site driveways according to the “Warrant for Left and Right-Turn Lanes at Grade, Unsignalized Intersections” chart contained in the NCDOT Driveway Manual.

Full Buildout:

Under full buildout conditions, recommendations are provided to improve all study intersections to acceptable level of service during the weekday AM and PM peak hours. Turn-lanes were recommended at the site driveways according to the “Warrant for Left and Right-Turn Lanes at Grade, Unsignalized Intersections” chart contained in the NCDOT Driveway Manual. Of the recommended roadway improvements, not all improvements are expected to be warranted immediately after completion of Phase 1. Due to this, off-site roadway improvements are recommended to be tied to specific phases / certificate of occupancy / site driveway construction. Specific improvements are discussed in section 7 of this report. Refer to section 9 for a summary of the recommended improvements / phasing. This study considers the roadway improvements needed from a capacity analysis standpoint. Additional improvements required by the Town may be required but are not needed to accommodate the traffic generated by the proposed development.

Although Site Drive 3 is analyzed as a right-in/right-out in the study to match the approved MOU, it is recommended that Site Drive 3 be considered for a left-over access to allow

additional ingress into the proposed site. This driveway is located approximately 800 feet north of the full movement Site Drive 1 and approximately 1,000 feet south of the full movement intersection of S. Salem Street and Apex Barbecue Road. Due to these reasons, it is recommended that this driveway be considered for left-over driveway access. The storage length for the northbound left-turn movement is recommended per the storage length recommended at the left-over access at Site Drive 4.

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 Figures 17 for an illustration of the recommended lane configuration for the proposed development under Phase 1 and Full Buildout conditions.

Background Improvements by Others (West Village Development)

Apex Barbecue Road and Kelly Road

- Construct an exclusive eastbound left-turn lane on Apex Barbecue Road with a minimum of 400 feet of storage and appropriate taper.
- Construct an exclusive westbound left-turn lane on Apex Barbecue Road with a minimum of 350 feet of storage and appropriate taper.
- Extend the exclusive northbound left-turn lane on Kelly Road to provide a minimum of 350 feet of storage and appropriate taper.
- Construct an exclusive northbound right-turn lane on Kelly Road to provide a minimum of 150 feet of storage and appropriate taper.
- Extend the exclusive southbound left-turn lane on Kelly Road to provide a minimum of 350 feet of storage and appropriate taper.
- Construct an exclusive southbound right-turn lane on Kelly Road to provide a minimum of 200 feet of storage and appropriate taper.
- Provide signal modifications to account for new lane configurations at the intersection.

Old US Hwy 1 and Kelly Road

- Restrict Kelly Road to a right-in/right-out intersection with stop control on the southbound approach of Kelly Road.
- Construct a westbound right-turn lane on Old US Hwy 1 to provide a minimum of 200 feet of storage and appropriate taper.
- Construct an additional westbound through lane on Old US Hwy 1 to extend to the intersection of Old US Hwy 1 and Southbound NC-540 Ramps.

Old US Hwy 1 / S. Salem Street and Southbound NC-540 Ramps

- Construct an additional westbound through lane on Old US Hwy 1 to begin as a free-flow southbound left-turn movement off of the southbound NC-540 Ramp.
- Provide signal modifications to account for new lane configurations at the intersection.

Recommended Improvements by Developer – Phase 1S. Salem Street and Site Drive 1

- Provide site access via a full movement intersection with one (1) ingress lane and two (2) egress lanes (eastbound left-turn lane with a minimum of 100 feet of storage and appropriate taper and eastbound right-turn lane with full length storage).
- Provide stop control for the eastbound approach of Site Drive 1.
- Construct an exclusive northbound left-turn lane on S. Salem Street with a minimum of 200 feet of storage and appropriate taper.
- Construct an exclusive southbound right-turn lane on S. Salem Street with a minimum of 100 feet of storage and appropriate taper.

Apex Barbecue Road and Site Drive 2

- Provide site access via a full movement intersection with one (1) ingress lane and two (2) egress lanes (northbound left-turn lane with a minimum of 100 feet of storage and appropriate taper and northbound right-turn lane with full length storage).
- Provide stop control for the northbound approach of Site Drive 2.
- Construct an exclusive westbound left-turn lane on Apex Barbecue Road with a minimum of 100 feet of storage and appropriate taper.
- Construct an exclusive eastbound right-turn lane on Apex Barbecue Road with a minimum of 100 feet of storage and appropriate taper.

Recommended Improvements by Developer – Full Buildout

Old US Hwy 1 / S. Salem Street and Southbound NC-540 Ramps

(Recommended with construction of Site Drive 7)

- Extend the southbound left-turn lane to provide a minimum of 375 feet of storage and appropriate taper.
- Construct an additional westbound through lane with a minimum of 200 feet of storage and appropriate taper (subject to feasibility of constructability).
- Provide signal modifications to account for the new lane configurations at the intersection and provide signalization for the southbound right-turn movement.
- It is recommended that these improvements be reevaluated in the future if improvements are needed prior to the widening required of the West Village development and to determine if the additional westbound through lane is necessary.

S. Salem Street and Northbound NC-540 Ramps

(Recommended with construction of Site Drive 7)

- Provide signal timing modifications to account for new traffic patterns.

Apex Barbecue Road and Kelly Road

(Recommended after competition of Phase 1)

- Construct an exclusive westbound right-turn lane on Apex Barbecue Road with a minimum of 200 feet of storage and appropriate taper (subject to feasibility of right-of-way acquisition).
- Construct an exclusive eastbound right-turn lane on Apex Barbecue Road with a minimum of 175 feet of storage and appropriate taper (subject to feasibility of constructability and right-of-way acquisition).
- Provide signal modifications to account for the new lane configurations at the intersection.

S. Salem Street and Apex Barbecue Road(Recommended with construction of Site Drives 5 and 6)

- Extend the exclusive northbound left-turn lane on S. Salem Street to provide a minimum of 300 feet of storage and appropriate taper.
- Extend the exclusive eastbound left-turn lane on Apex Barbecue Road to provide a minimum of 375 feet of storage and appropriate taper.

S. Salem Street and Site Drive 1

- Monitor for signalization and install once warranted and approved by NCDOT and Town staff.

S. Salem Street and Site Drive 3

- Provide site access via a right-in/right-out intersection with one (1) ingress lane and one (1) egress lanes.
- Provide stop control for the eastbound approach of Site Drive 3.
- Construct an exclusive southbound right-turn lane on S. Salem Street with a minimum of 100 feet of storage and appropriate taper.
- Consider a left-over access for this driveway. Per the left-over driveway at Site Drive 4, a northbound left-turn lane with approximately 150 feet of storage and appropriate taper is expected.

S. Salem Street and Site Drive 4

- Provide site access via a left-over intersection with one (1) ingress lane and one (1) egress lanes.
- Provide stop control for the eastbound approach of Site Drive 4.
- Construct an exclusive southbound right-turn lane on S. Salem Street with a minimum of 100 feet of storage and appropriate taper.
- Construct an exclusive northbound left-turn lane on S. Salem Street with a minimum of 150 feet of storage and appropriate taper.

Apex Barbecue Road and Site Drive 5

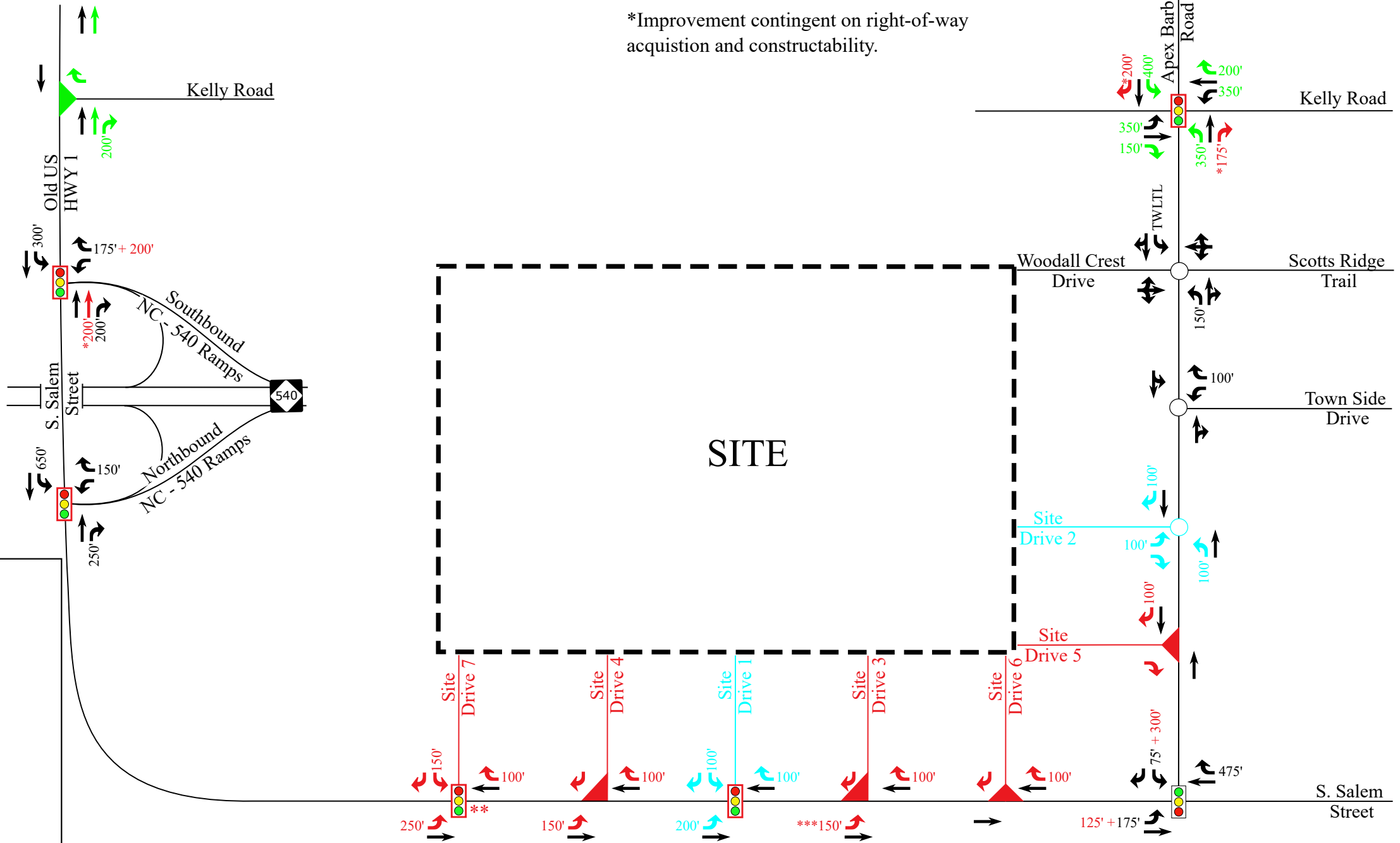
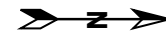
- Provide site access via a right-in/right-out intersection with one (1) ingress lane and one (1) egress lanes.
- Provide stop control for the northbound approach of Site Drive 5.
- Construct an exclusive eastbound right-turn lane on Apex Barbecue Road with a minimum of 100 feet of storage and appropriate taper.

S. Salem Street and Site Drive 6

- Provide site access via a right-in/right-out intersection with one (1) ingress lane and one (1) egress lanes.
- Provide stop control for the eastbound approach of Site Drive 6.
- Construct an exclusive southbound right-turn lane on S. Salem Street with a minimum of 100 feet of storage and appropriate taper.

S. Salem Street and Site Drive 7

- Provide site access via a full movement intersection with one (1) ingress lane and two (2) egress lanes (eastbound left-turn lane with a minimum of 150 feet of storage and appropriate taper and eastbound right-turn lane with full length storage).
- Provide stop control for the eastbound approach of Site Drive 7 until a traffic signal is warranted.
- Monitor for signalization and install once warranted and approved by NCDOT and Town staff.
- Construct an exclusive northbound left-turn lane on S. Salem Street with a minimum of 250 feet of storage and appropriate taper.
- Construct an exclusive southbound right-turn lane on S. Salem Street with a minimum of 100 feet of storage and appropriate taper.
- Reduce the speed limit of S. Salem Street, along the project frontage to 45 miles per hour (mph) to allow adequate spacing to meet NCDOT Median Crossover Guidelines.



LEGEND

- Unsignalized Intersection
- ◫ Signalized Intersection
- ▶ Right-In/Right-Out Intersection
- ◄ Left-Over Intersection
- Existing Lane
- X' Storage (In Feet)
- Phase 1 Improvements By Developer
- Full Build Improvements By Developer
- ◫ Developer Monitor for Signalization / Signal Timing Modifications
- Improvements by West Village

**Recommended to reduce speed limit on S. Salem Street to 45 mph with construction of Site Drive 7 to meet NCDOT Median Crossover Guidelines.

***Although not analyzed in this study to match the approved MOU, consideration for Left-over access is recommended at this driveway.



Depot 499
Apex, NC

Recommended Lane Configurations	
Scale: Not to Scale	Figure 17



Charleston, SC - Charlotte, NC - Columbia, SC - Raleigh, NC - Richmond, VA - Winston-Salem, NC

TECHNICAL APPENDIX

APPENDIX A

MEMORANDUM OF UNDERSTANDING

December 18, 2019

Serge Grebenshikov, PE
Town of Apex
73 Hunter Street
Apex, NC 27502
serge.grebenschikov@apexnc.gov

Reference: Depot 499 – Apex, NC

Subject: Memorandum of Understanding for TIA Report - **Revised**

Dear Mr. Grebenshikov:

The following is a Memorandum of Understanding (MOU) outlining the proposed scope of work and assumptions related to the Traffic Impact Analysis (TIA) for the proposed Depot 499 Development (formerly Poe Tract), to be located west of S. Salem Street (Old US Hwy 1) and south of Apex Barbecue Road in Apex, North Carolina. This revised MOU is provided to address new parcels added to the proposed site. This revision introduces increased density and three additional site accesses (two on S. Salem Street and one on Apex Barbecue Road). Refer to the attached site location map.

Phase 1 of the proposed development will be completed in 2025 and will consist of 650 townhomes. The full build out of the proposed development, anticipated to be completed in 2028, will consist of 850 apartments (a total of 1,500 low-rise multi-family units), 375,000 sq. ft. office, and 250,000 sq. ft. retail. Site access is proposed via one (1) full movement site driveway and one (1) right-in / right-out driveway along Apex Barbecue Road and five (5) site driveways along South Salem Street (two (2) right-in / right-out driveways, two (2) full movement driveways, and one (1) left-over driveway).

Study Area

Through 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 existing intersections:

- S. Salem Street and Apex Barbecue Road (signalized)
- S. Salem Street and Northbound NC-540 Ramps (signalized)
- S. Salem Street / Old US Hwy 1 and Southbound NC-540 Ramps (signalized)
- Old US Hwy 1 and Kelly Road (unsignalized)
- Apex Barbecue Road and Town Side Drive (unsignalized)
- Apex Barbecue Road and Scotts Ridge Trail (unsignalized)
- Apex Barbecue Road and Kelly Road (signalized)

This study area was determined during the TIA scoping meeting attended by the Town and NCDOT on October 30, 2019.

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) Conditions
- Background (2025) Conditions
- Background (2028) Conditions
- Combined (2025) Conditions – Phase 1
- Combined (2028) Conditions – Full Buildout

Existing Traffic Volumes

Peak hour turning movement counts were conducted by Ramey Kemp & Associates, Inc. at the existing study intersections above in October of 2019 during typical weekday AM (7:00 to 9:00AM) and weekday PM (4:00 to 6:00PM) peak periods. Traffic volumes were balanced between study intersections, where appropriate. Refer to the attached existing (2019) traffic volumes figure. Signal information was obtained from NCDOT.

Background Traffic Volumes

Background traffic volumes will be determined by projecting existing (2019) weekday AM and PM traffic volumes to the build-out year using a 3% annual growth rate. Historical data was considered when determining the proposed annual growth rate.

Through coordination with the Town and the NCDOT, it was determined that the following adjacent developments would be included in this study:

- Buckhorn Preserve (20% built-out)
- Friendship Station – Full Buildout
- Jordan Manors (40% built-out)
- Jordan Pointe (65% built-out)
- New Hill Assembly
- Olive Ridge
- Pleasant Park
- West Village – Full Buildout
- Woodbury (25% built-out)

Buildout percentages were determined through coordination with the Town staff. Additionally, several of these developments were located outside of this study area. Trips associated with these developments were pulled through the network as appropriate. Refer to the attached adjacent development traffic volumes figure for a detailed summary of each development.

Future Roadway Improvements

Through coordination with the Town Staff, the intersection of Old US Hwy 1 and Kelly Road is expected to be restricted to a right-in / right-out intersection by the West Village development by buildout of Phase 1 of the Depot 499 development. West Village will provide additional connections to Old US Hwy 1 to the west to accommodate left-turns onto on and off Kelly Road. Additionally, West Village will be providing a free flow right-turn lane on Old US Hwy 1 at Kelly Road. Traffic will be diverted, as appropriate, to account for this new lane configuration.

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 and 2 on the following page for a detailed breakdown of Phase 1 and Full Buildout of the proposed site trip generation, respectively.

Table 1: 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
Multifamily Housing (Low-Rise) (220)	650 dwellings	4,870	65	217	197	115

Table 2: 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
Multifamily Housing (Low-Rise) (220)	1,500 dwellings	11,300	144	481	415	243
General Office Building (710)	375,000 sq. ft.	3,820	467	64	86	392
Shopping Center (820)	250,000 sq. ft.	11,210	172	105	514	556
Total		26,330	783	650	1,015	1,191
<i>Internal Capture (7% Entering AM, 8% Exiting AM, 24% Entering PM, 20% Exiting PM)</i>			-55	-52	-244	-238
Total External Trips			728	598	771	953
<i>Pass-By Trips: Shopping Center (34% PM)</i>			0	0	-142	-142
Total Primary Trips			728	598	629	811

It is estimated that the full build out of the proposed development will generate approximately 26,330 total site trips on the roadway network during a typical 24-hour weekday period. Of the daily traffic volume, it is anticipated that 1,433 trips (783 entering and 650 exiting) will occur during the weekday AM peak hour and 2,206 trips (1,015 entering and 1,191 exiting) will occur during the weekday PM peak hour.

Internal capture of trips between the residential and retail uses was considered in this study. Internal capture is the consideration for trips that will be made within the site between different land uses, so the vehicle

technically never leaves the internal site but can still be considered as a trip to that specific land use. Internal capture typically only considers trips between residential, office, entertainment, hotel and retail/restaurant land uses. Based on the NCHRP Internal Capture methodology, an AM peak hour internal capture rate of 7% entering and 8% exiting was applied to the total trips. Also, a PM peak hour internal capture rate of 24% entering and 20% exiting was applied to the total trips. The internal capture reductions are expected to account for 107 (55 entering and 52 exiting) trips during the AM peak hour and 482 (244 entering and 238 exiting) trips during the PM peak hour.

Pass-by trips were also taken into consideration in this study. Pass-by trips are made by the traffic already using the adjacent roadway, entering the site as an intermediate stop on their way to another destination. Pass-by trips are expected to account for 284 trips (142 entering and 142 exiting) anticipated to occur during the weekday PM peak hour.

The total primary site trips are the calculated site trips after the reduction for internal capture and pass-by trips. Primary site trips are expected to generate approximately 1,326 trips (728 entering and 598 exiting) will occur during the AM peak hour and 1,440 trips (629 entering and 811 exiting) will occur during the PM peak hour. Refer to the attachments for the NCHRP Internal capture spreadsheets used in these calculations.

Trip Distribution

The proposed site trip distribution is based on existing traffic patterns, population centers, and engineering judgment. A summary of the residential distribution is below:

- 30% to/from the north via NC 540
- 30% to/from the south via NC 540
- 20% to/from the north via S. Salem Street
- 10% to/from the north via Kelly Road
- 10% to/from the west via Old US Hwy 1

A summary of the commercial distribution is below:

- 25% to/from the north via S. Salem Street
- 15% to/from the north via Kelly Road
- 15% to/from the west via Apex Barbecue Road
- 15% to/from the west via Old US Hwy 1
- 10% to/from the north via NC 540
- 10% to/from the south via NC 540
- 5% to/from the north via Scotts Ridge Trail
- 5% to/from the north via Town Side Drive

Refer to the attachments for the Phase 1 residential, full build residential, primary commercial, and pass-by site trip distribution figures.

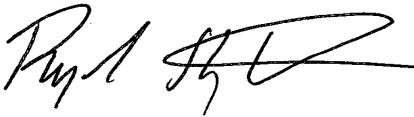
Report

The TIA will be prepared based on the Town and NCDOT Congestion Management requirements. If you find this memorandum of understanding acceptable, please let me know so that we may include it in the Traffic Impact Analysis.

If you have any questions or concerns, please do not hesitate to contact me.

Sincerely,

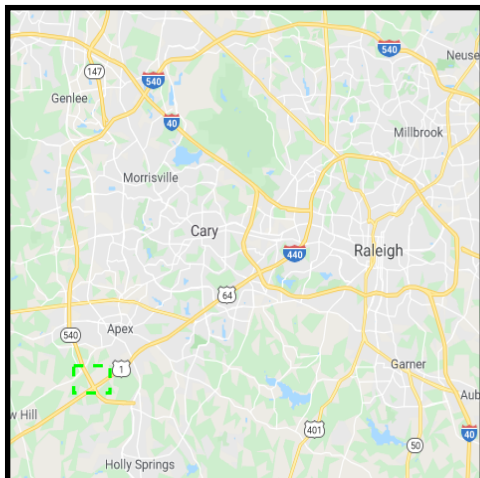
Ramey Kemp & Associates, Inc.






Rynal Stephenson, P.E.
Regional Manager Manager

- Attachments:
- Site Location Map
 - Preliminary Site Plans
 - Existing (2019) Traffic Volumes Figure
 - Adjacent Development Summary Figure
 - Site Trip Distribution Figures
 - Detailed Adjacent Development Information
 - Internal Capture Calculations
 - Count Data

- CC:
- Amy Neidringhaus, PE, NCDOT District Office
 - Sean Brennan, PE, NCDOT District Office
 - Russell Dalton, PE, Town of Apex
 - NCDOT Congestion Management



LEGEND

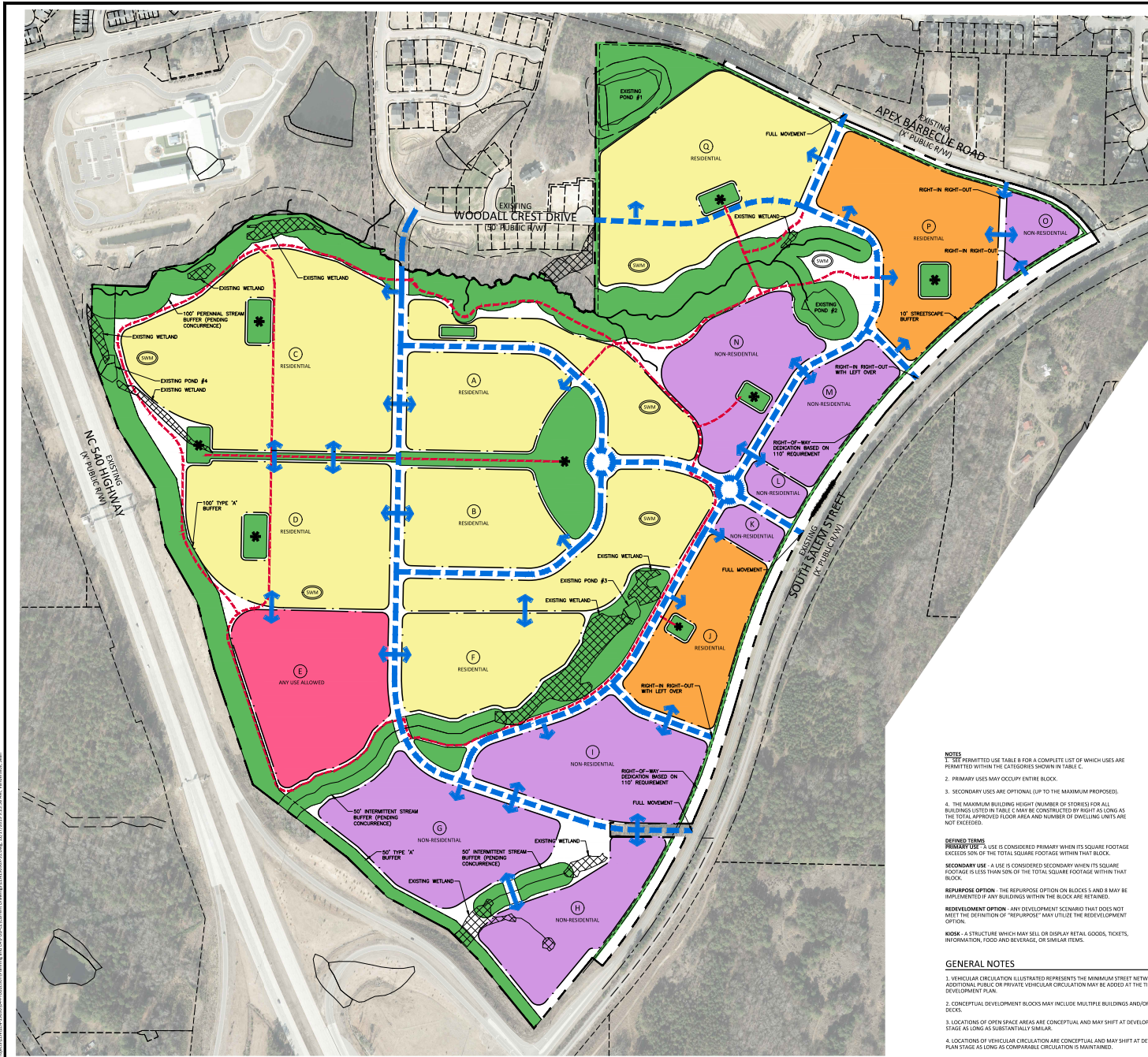
-  Proposed Site Location
-  Study Intersection
-  Study Area



Depot 499
Apex, NC

Site Location Map

Scale: Not to Scale



DESIGN COMMITMENTS

McADAMS
The John R. McAdams Company, Inc.
2905 Meridian Parkway
Durham, NC 27713
phone 919.361.5000
fax 919.361.2269
license number: C-0293, C-187
www.mcadamsco.com

CLIENT
LENNAR OF THE CAROLINAS
1100 PERIMETER PARK DRIVE SUITE 112
MORRISVILLE, NORTH CAROLINA
PHONE: 919.465.9900

DEPOT 499
PUD-CZ SET
S. SALEM STREET
APEX, NORTH CAROLINA

- NOTES**
- SEE PERMITTED USE TABLE B FOR A COMPLETE LIST OF WHICH USES ARE PERMITTED WITHIN THE CATEGORIES SHOWN IN TABLE C.
 - PRIMARY USES MAY OCCUPY ENTIRE BLOCK.
 - SECONDARY USES ARE OPTIONAL (UP TO THE MAXIMUM PROPOSED).
 - THE MAXIMUM BUILDING HEIGHT (NUMBER OF STOREYS) FOR ALL BUILDINGS LISTED IN TABLE C MAY BE CONSTRUCTED BY RIGHT AS LONG AS THE TOTAL APPROVED FLOOR AREA AND NUMBER OF DWELLING UNITS ARE NOT EXCEEDED.
- DEFINED TERMS**
PRIMARY USE: A USE IS CONSIDERED PRIMARY WHEN ITS SQUARE FOOTAGE EXCEEDS 50% OF THE TOTAL SQUARE FOOTAGE WITHIN THAT BLOCK.
SECONDARY USE: A USE IS CONSIDERED SECONDARY WHEN ITS SQUARE FOOTAGE IS LESS THAN 50% OF THE TOTAL SQUARE FOOTAGE WITHIN THAT BLOCK.
REPURPOSE OPTION: THE REPURPOSE OPTION ON BLOCKS A AND B MAY BE IMPLEMENTED IF ANY BUILDINGS WITHIN THE BLOCK ARE RETAINED.
REDEVELOPMENT OPTION: ANY DEVELOPMENT SCENARIO THAT DOES NOT MEET THE DEFINITION OF "REPURPOSE" MAY UTILIZE THE REDEVELOPMENT OPTION.
Kiosk: A STRUCTURE WHICH MAY SELL OR DISPLAY RETAIL GOODS, TICKETS, INFORMATION, FOOD AND BEVERAGE, OR SIMILAR ITEMS.

- GENERAL NOTES**
- VEHICULAR CIRCULATION ILLUSTRATED REPRESENTS THE MINIMUM STREET NETWORK. ADDITIONAL PUBLIC OR PRIVATE VEHICULAR CIRCULATION MAY BE ADDED AT THE TIME OF DEVELOPMENT PLAN.
 - CONCEPTUAL DEVELOPMENT BLOCKS MAY INCLUDE MULTIPLE BUILDINGS AND/OR PARKING DECKS.
 - LOCATIONS OF OPEN SPACE AREAS ARE CONCEPTUAL AND MAY SHIFT AT DEVELOPMENT PLAN STAGE AS LONG AS SUBSTANTIALLY SIMILAR.
 - LOCATIONS OF VEHICULAR CIRCULATION ARE CONCEPTUAL AND MAY SHIFT AT DEVELOPMENT PLAN STAGE AS LONG AS COMPARABLE CIRCULATION IS MAINTAINED.

LEGEND

PREDOMINANT LAND USE

- NON-RESIDENTIAL CONCEPTUAL DEVELOPMENT BLOCK
- RESIDENTIAL - LOW TO MEDIUM DENSITY CONCEPTUAL DEVELOPMENT BLOCK
- RESIDENTIAL - HIGH DENSITY CONCEPTUAL DEVELOPMENT BLOCK
- ANY USE ALLOWED CONCEPTUAL DEVELOPMENT BLOCK
- OPEN SPACE AREAS DOMINATED BY SOFTSCAPE ELEMENTS
- OPEN SPACE DESTINATIONS (PARKS)

VEHICULAR CIRCULATION (SEE SHEET C2.01 FOR SECTIONS)

- CIRCULATION CORRIDOR "A"
- CIRCULATION CORRIDOR "B"
- CIRCULATION CORRIDOR "C"
- EXISTING TRAFFIC LIGHT
- PEDESTRIAN CIRCULATION (SEE SHEET C2.01 FOR SECTIONS)
- PROPOSED TRAIL

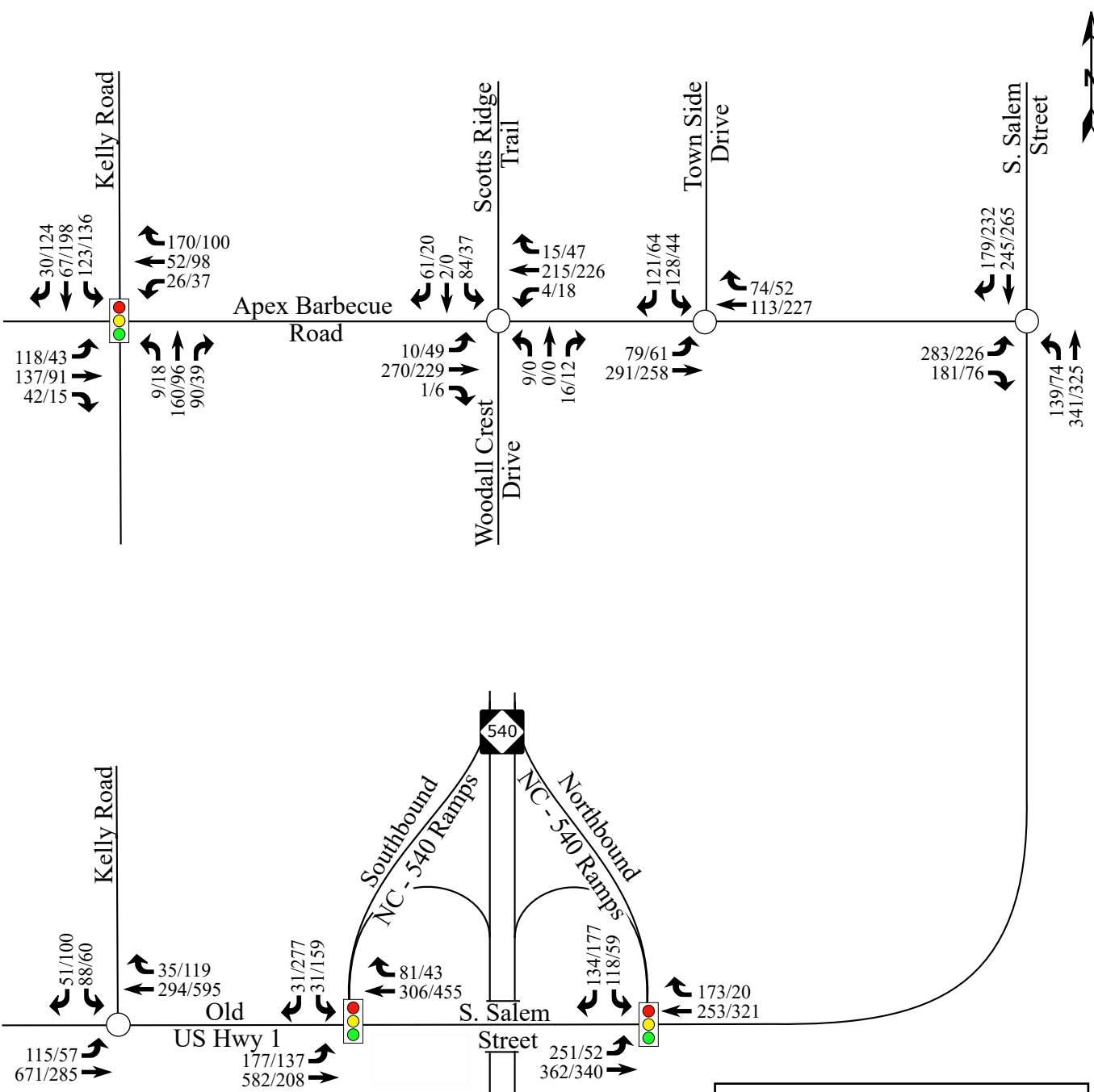
REVISIONS

NO.	DATE	REVISION DESCRIPTION
1	XX.XX.XXXX	REVISION DESCRIPTION
2	XX.XX.XXXX	REVISION DESCRIPTION

PLAN INFORMATION

PROJECT NO.: LEN-19090
 FILENAME: LEN19090-S1
 CHECKED BY: RC2
 DRAWN BY: SMV
 SCALE: 1"=200'
 DATE: 12.12.2019

SHEET
PRELIMINARY LAYOUT AND PHASING PLAN
C2.00



LEGEND

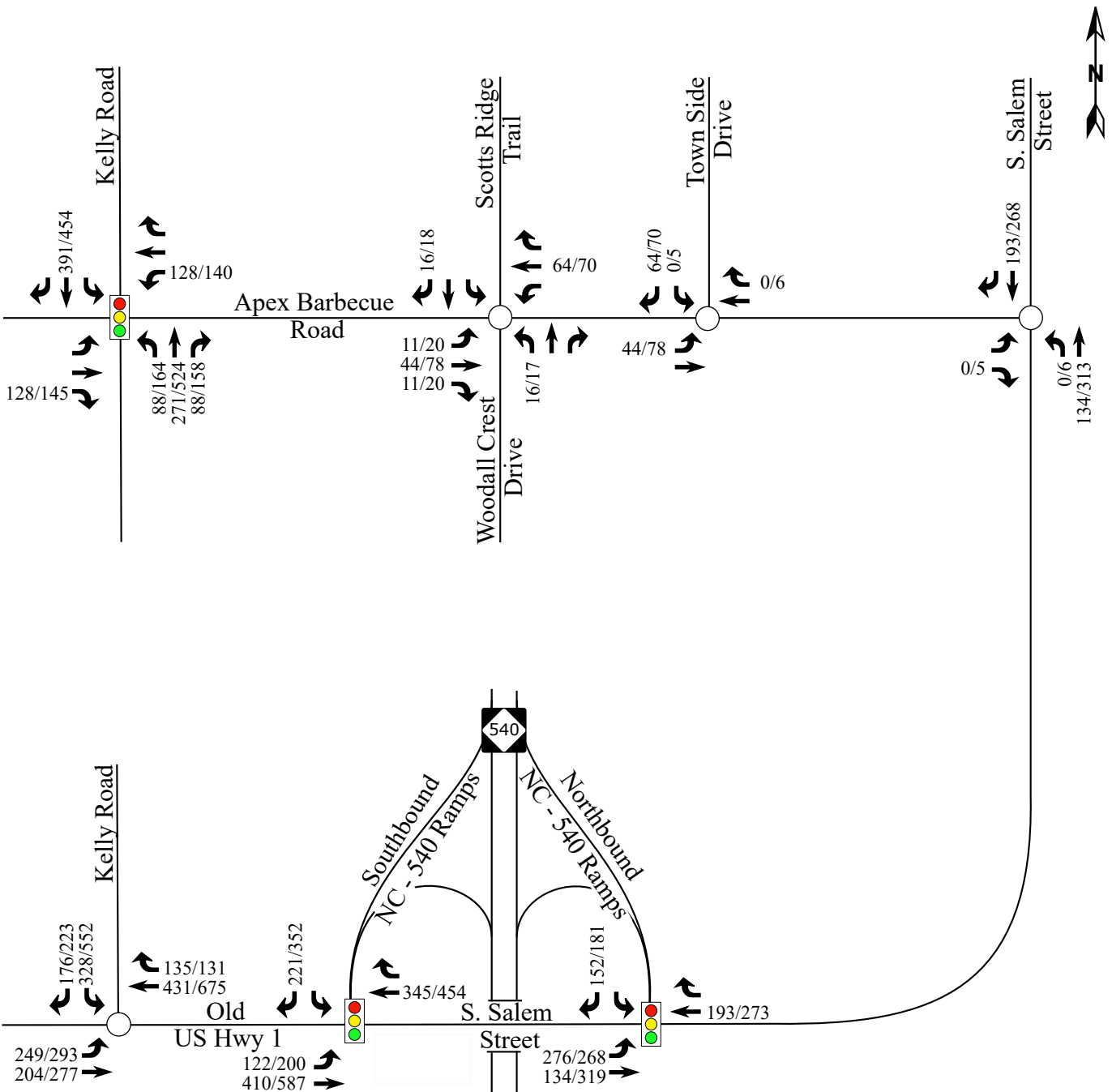
- Unsignalized Intersection
- 🚦 Signalized Intersection
- X/Y → Weekday AM / PM Peak Hour Traffic



Depot 499
Apex, NC

Existing (2019)
Peak Hour Traffic

Scale: Not to Scale



LEGEND

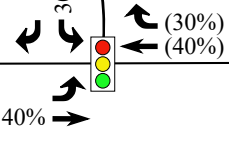
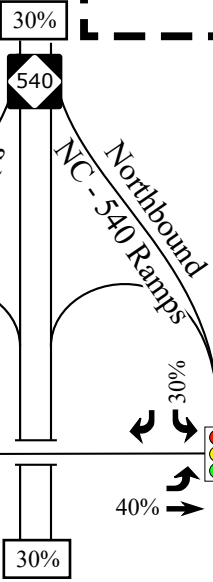
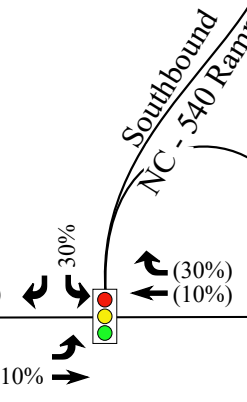
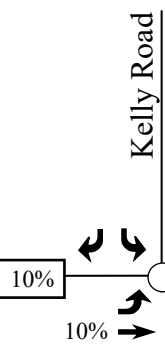
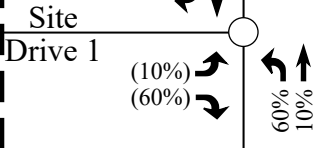
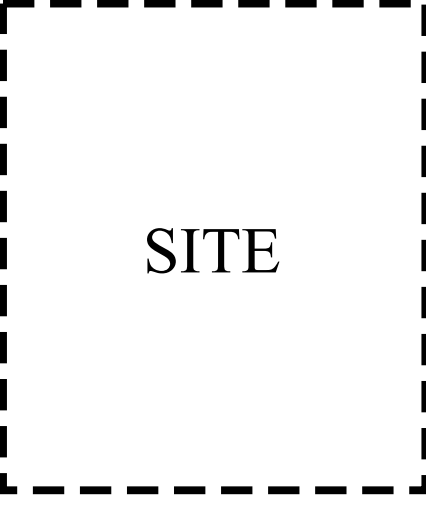
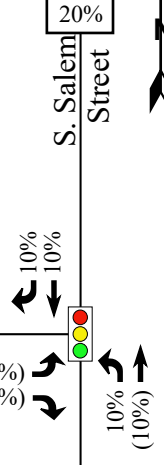
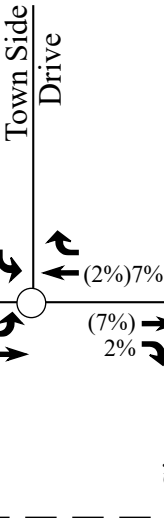
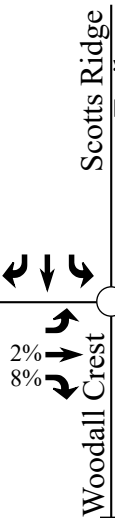
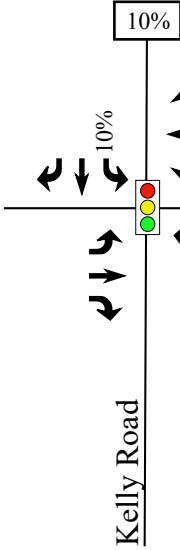
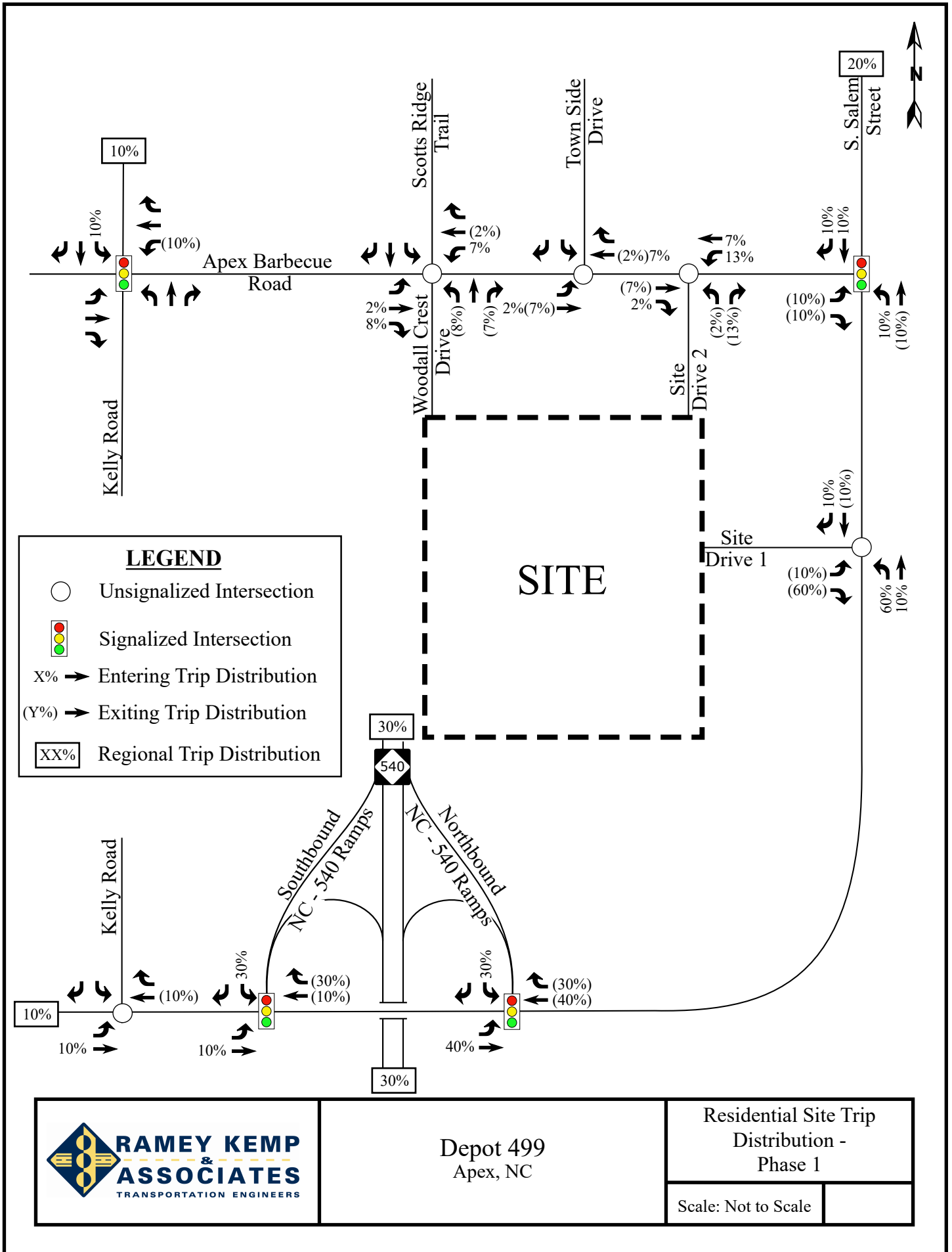
- Unsignalized Intersection
- ⬆️⬆️⬆️ Signalized Intersection
- X/Y → Weekday AM / PM Peak Hour Adjacent Development Trips



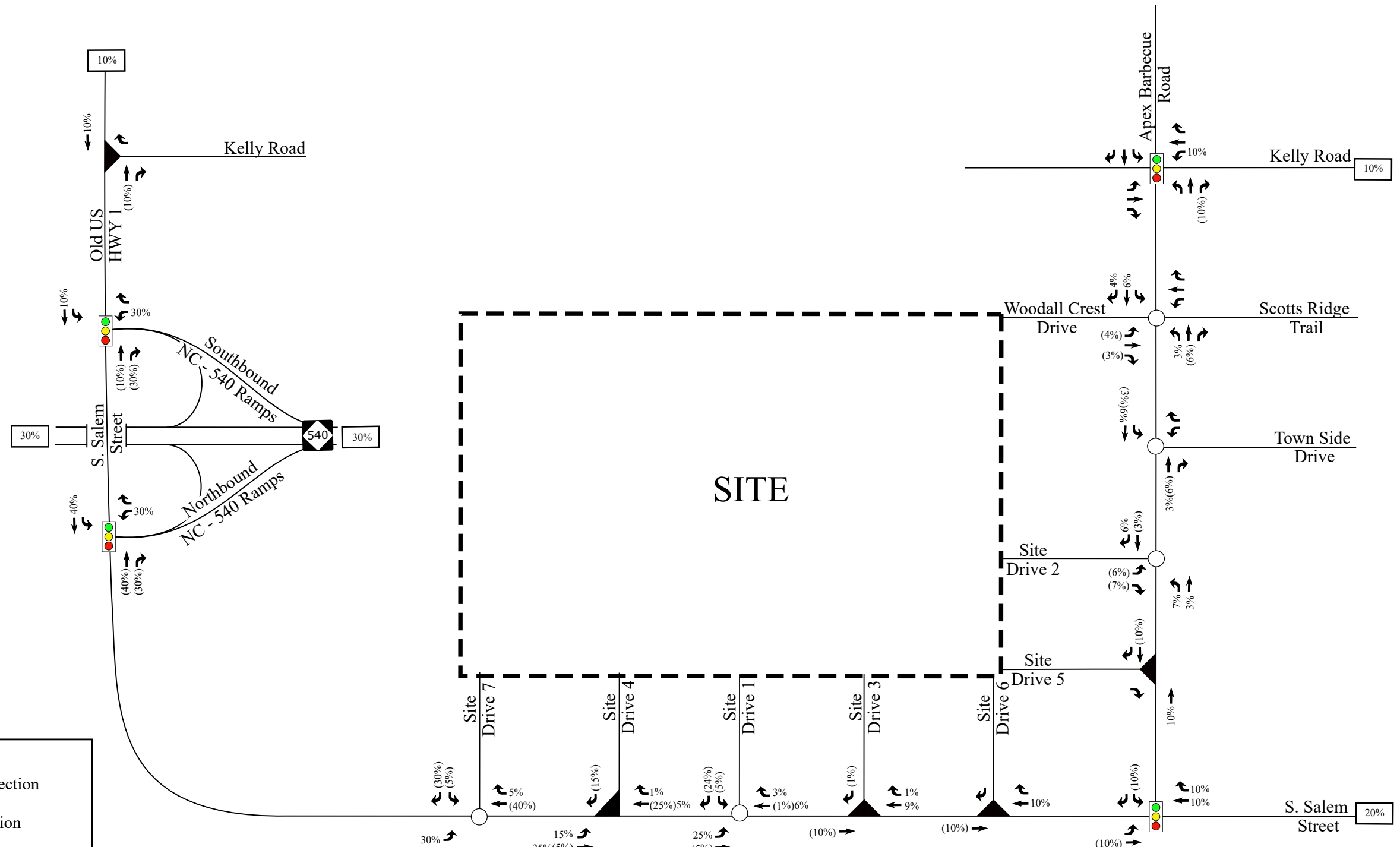
Depot 499
Apex, NC

Peak Hour Adjacent
Development Trips

Scale: Not to Scale



	Depot 499 Apex, NC	Residential Site Trip Distribution - Phase 1	
		Scale: Not to Scale	



LEGEND

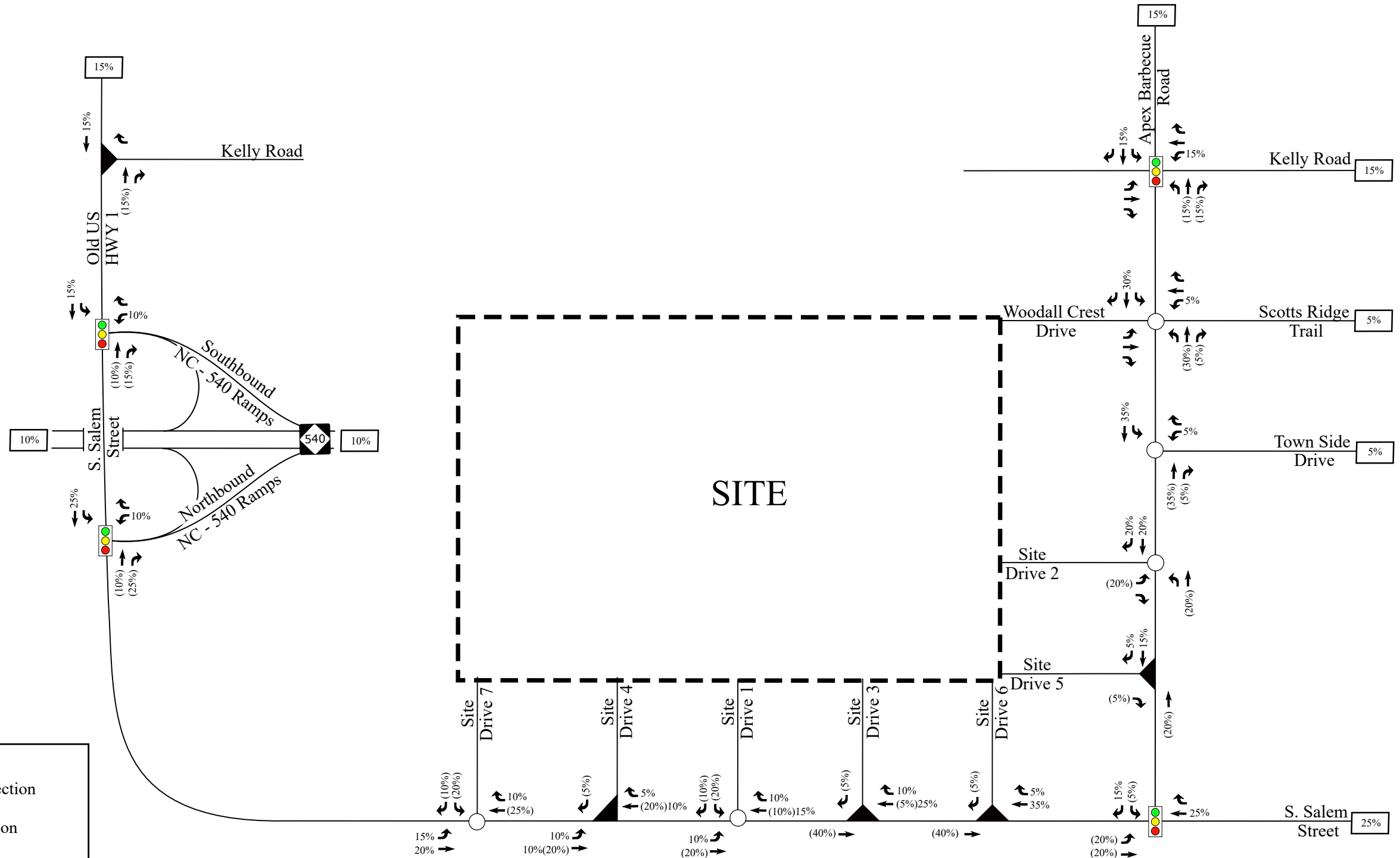
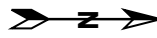
- Unsignalized Intersection
- Signalized Intersection
- Right-In/Right-Out Intersection
- Left-Over Intersection
- X% Entering Trip Distribution
- (Y%) Exiting Trip Distribution
- XX% Regional Trip Distribution



Depot 499
Apex, NC

Residential Site Trip
Distribution -
Full Build-Out

Scale: Not to Scale



LEGEND

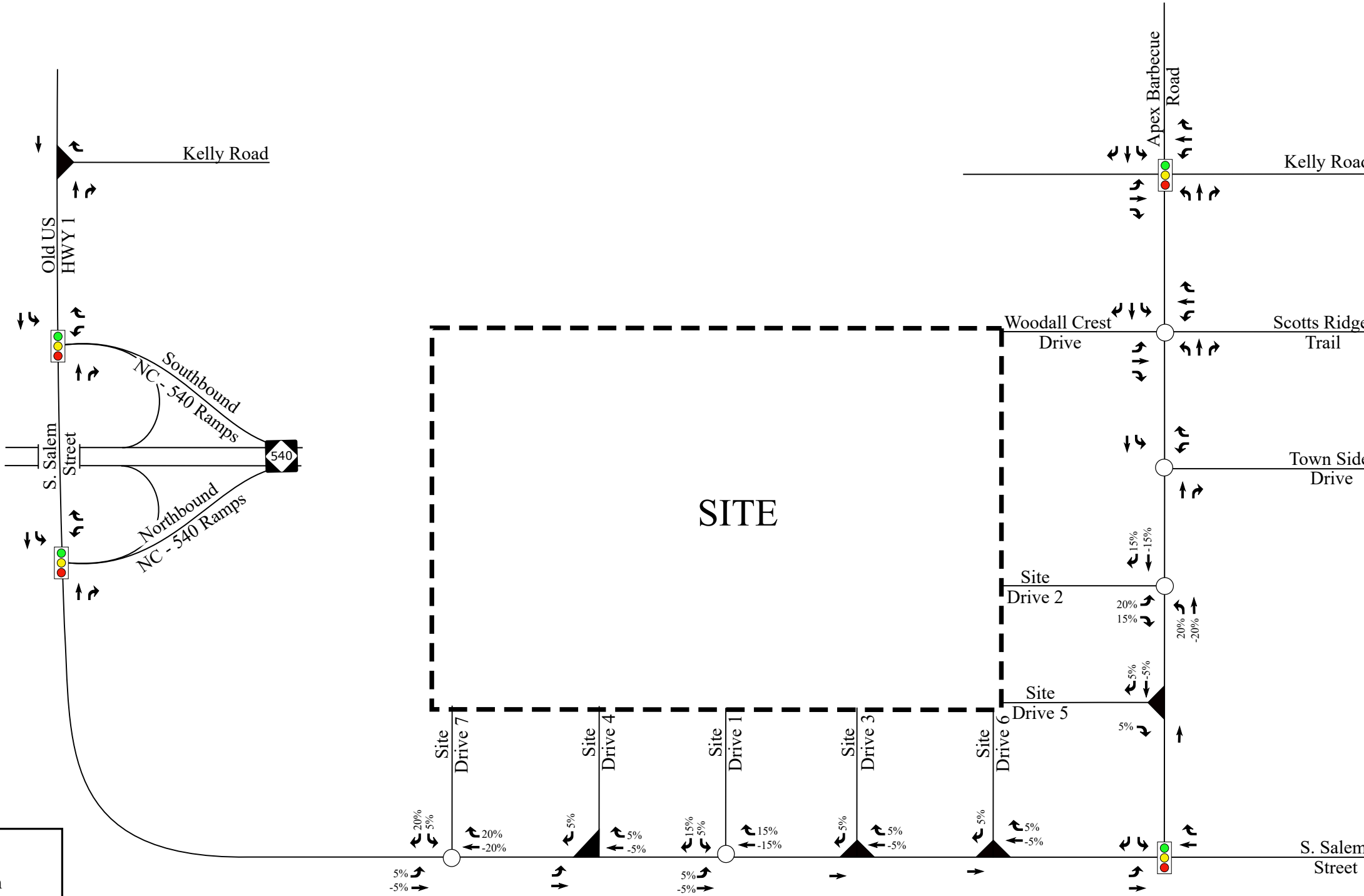
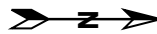
- Unsignalized Intersection
- ◫ Signalized Intersection
- ▲ Right-In/Right-Out Intersection
- ▼ Left-Over Intersection
- X% → Entering Trip Distribution
- (Y%) → Exiting Trip Distribution
- XX% Regional Trip Distribution



Depot 499
Apex, NC

Commercial Site Trip
Distribution

Scale: Not to Scale



LEGEND

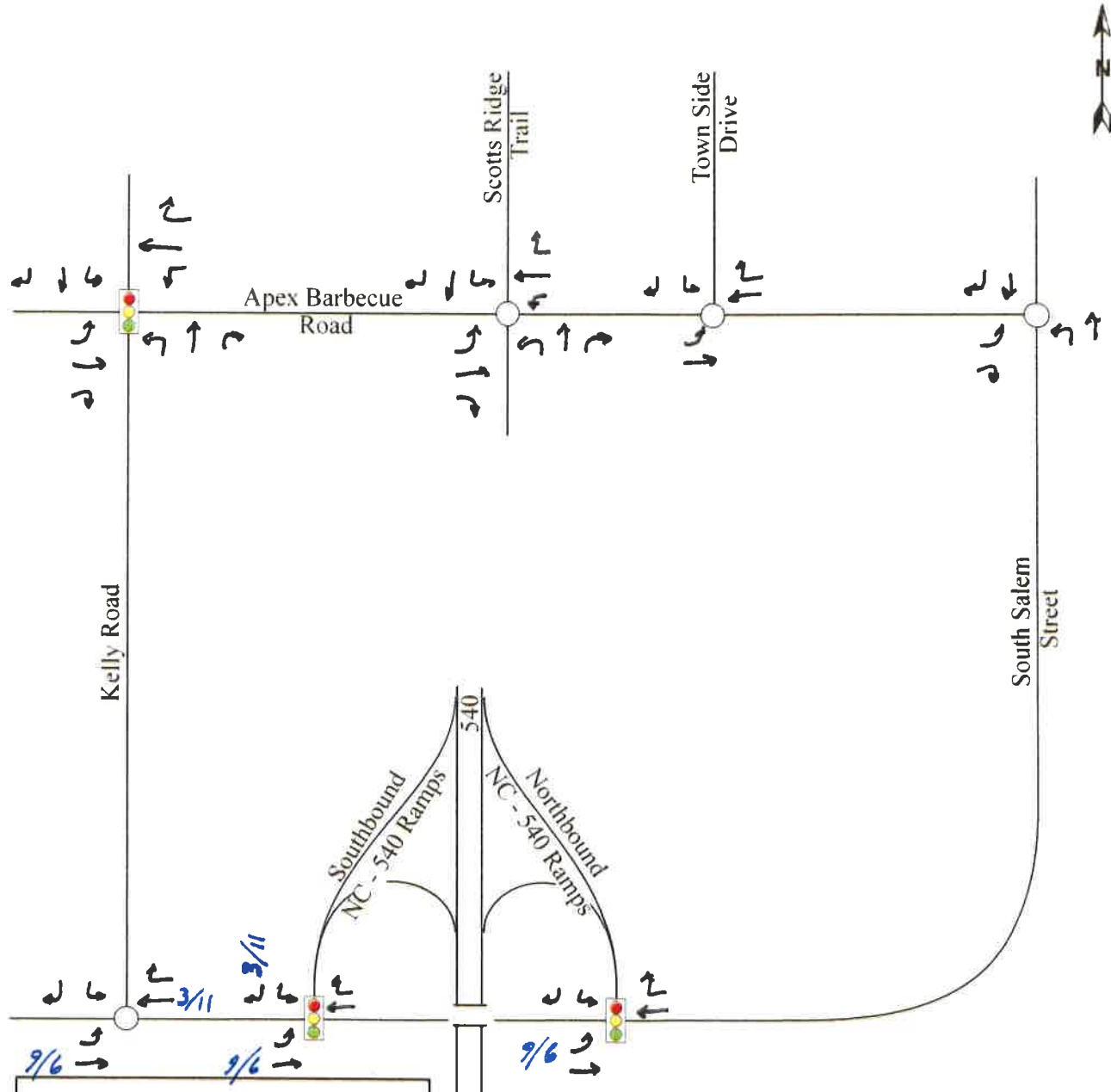
- Unsignalized Intersection
- Signalized Intersection
- Right-In/Right-Out Intersection
- Left-Over Intersection
- X% → PM Pass-By Trip Distribution

RAMEY KEMP & ASSOCIATES
TRANSPORTATION ENGINEERS




Depot 499
Apex, NC


PM Pass-By
Trip Distribution

Scale: Not to Scale



LEGEND

-  Unsignalized Intersection
-  Signalized Intersection
- X / Y  AM / PM Peak Hour Adjacent Development Trips

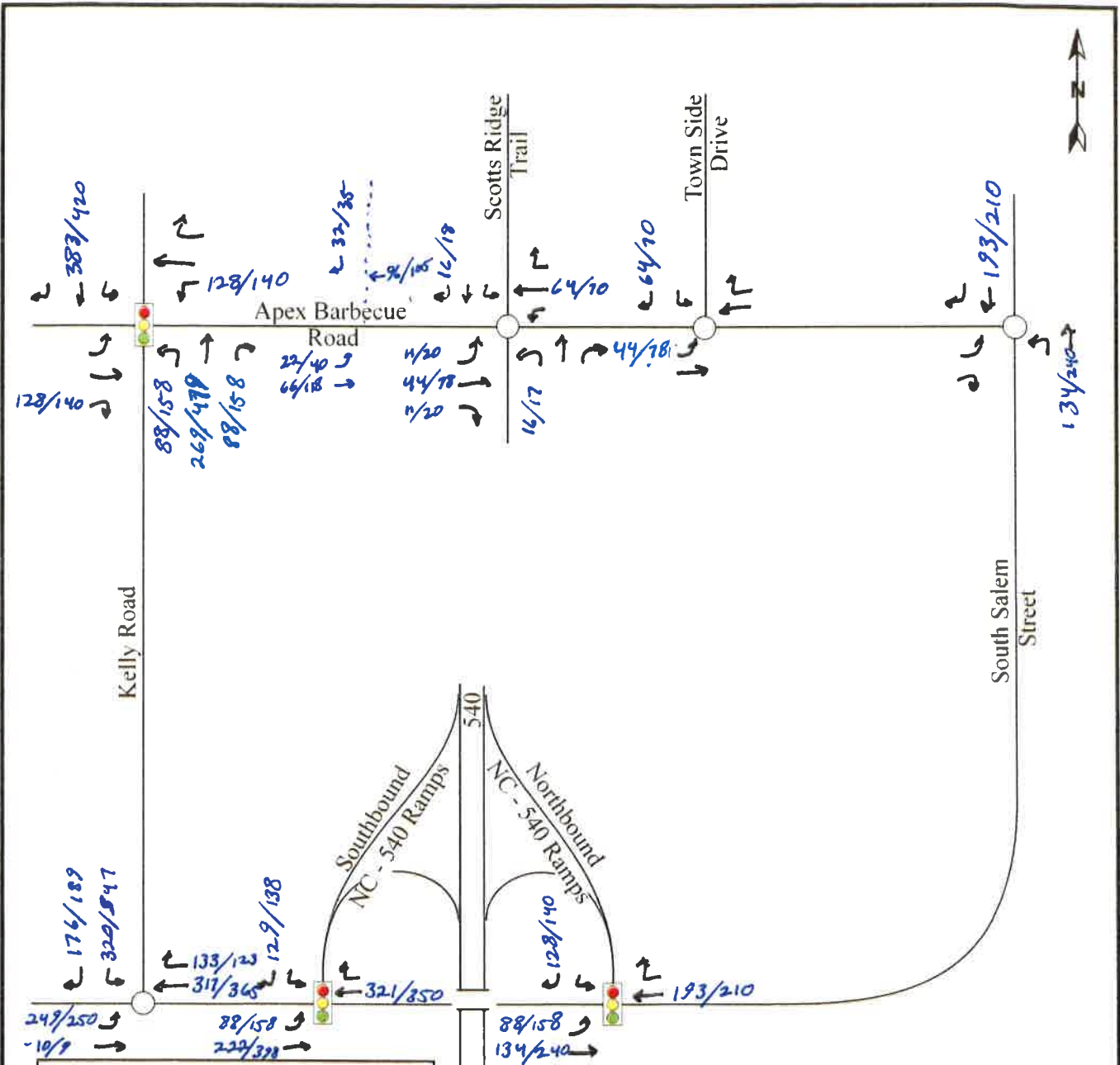


RAMEY KEMP & ASSOCIATES
TRANSPORTATION ENGINEERS

Poe Tract Mixed Use Development
Apex, NC

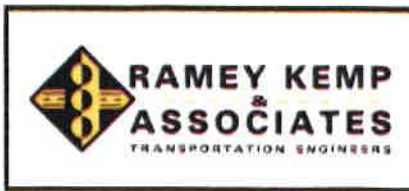
Olive Ridge Residential

Scale: Not to Scale



LEGEND

- Unsignalized Intersection
- 🚦 Signalized Intersection
- X/Y → AM / PM Peak Hour Adjacent Development Trips

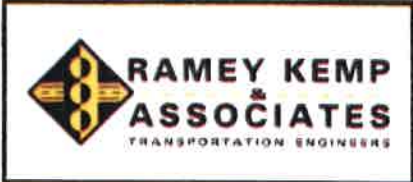
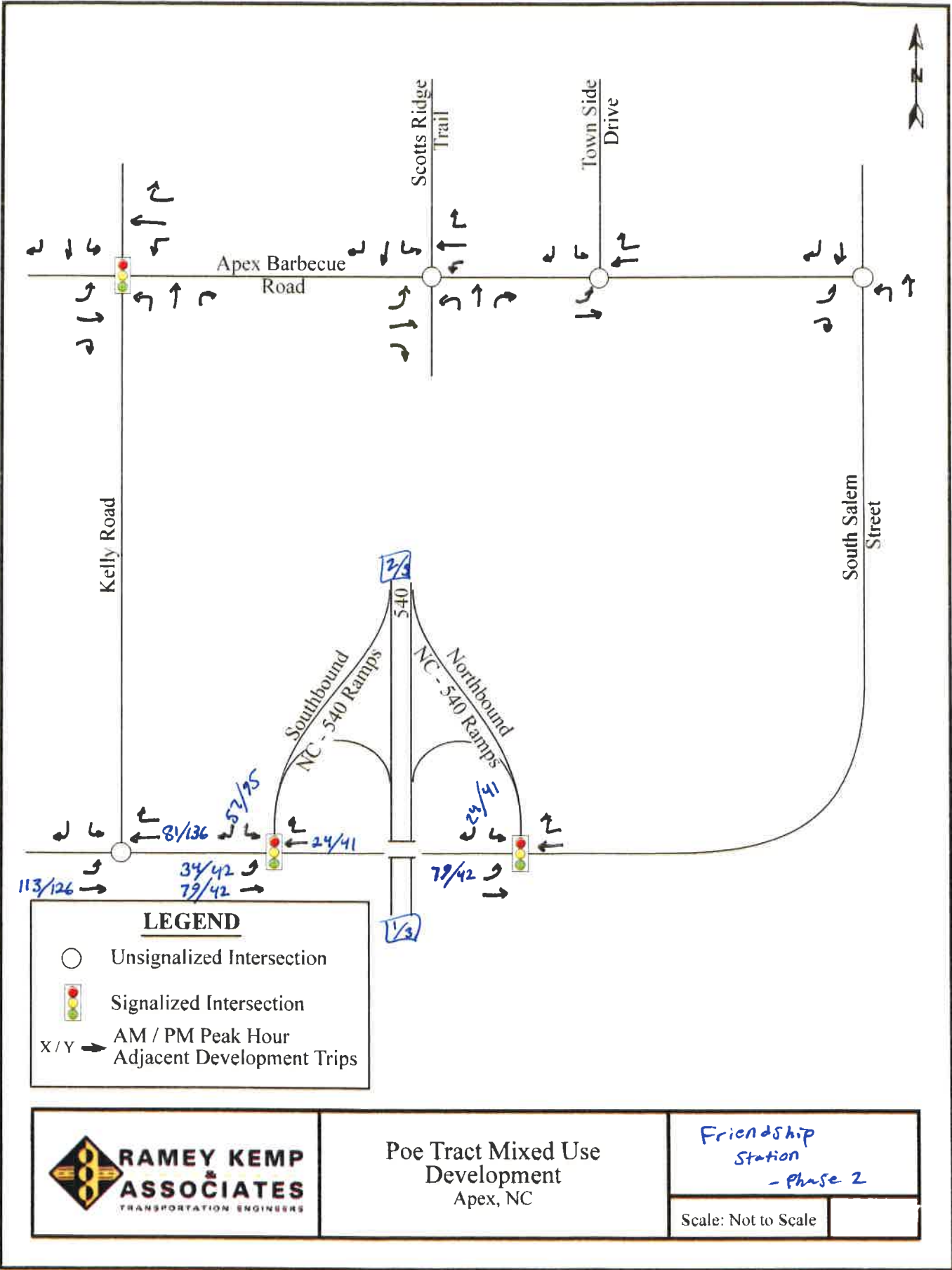


Poe Tract Mixed Use Development
Apex, NC

West village
-full build

Scale: Not to Scale

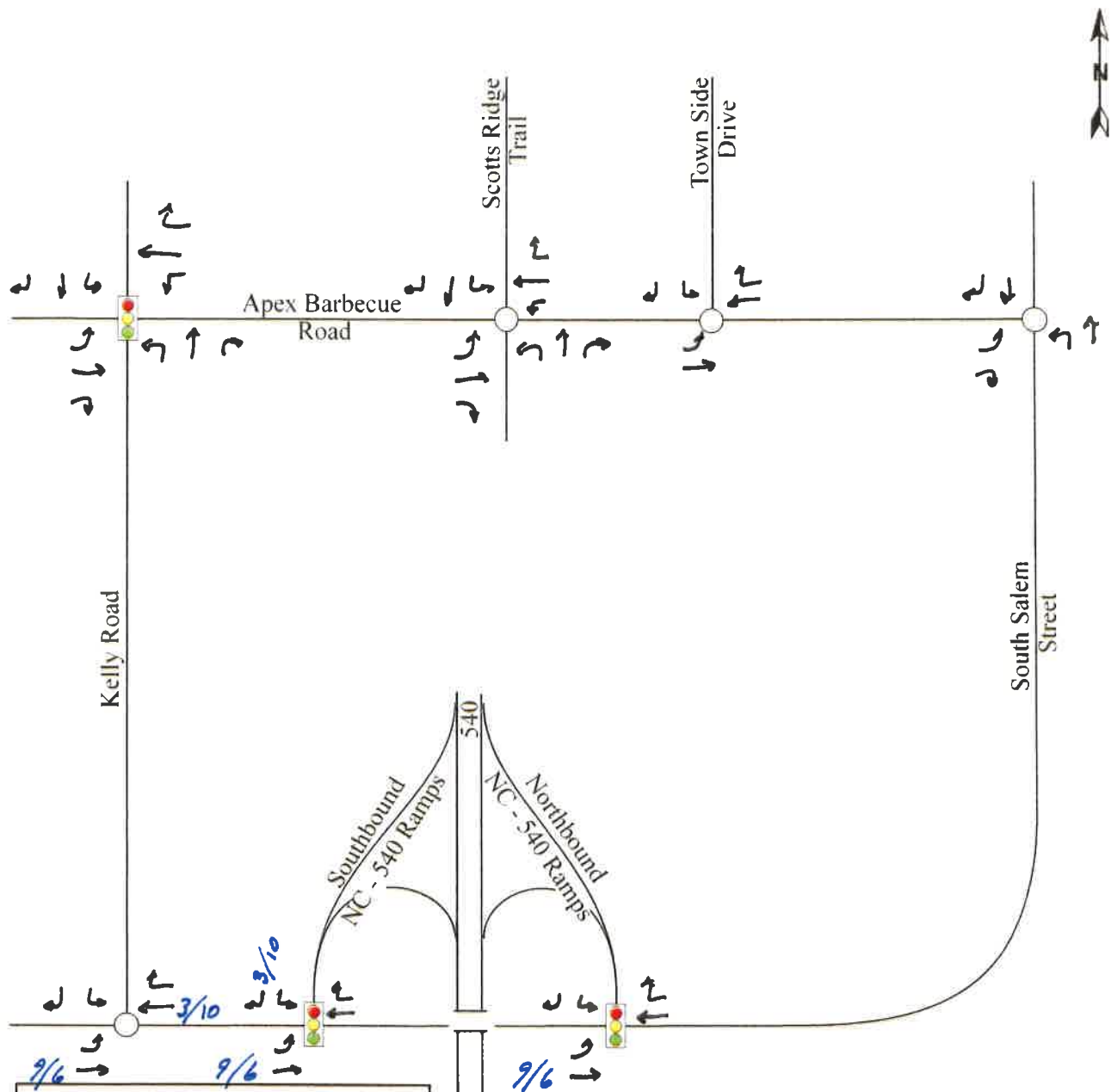




Poe Tract Mixed Use
Development
Apex, NC

Friendship
Station
- Phase 2

Scale: Not to Scale



LEGEND

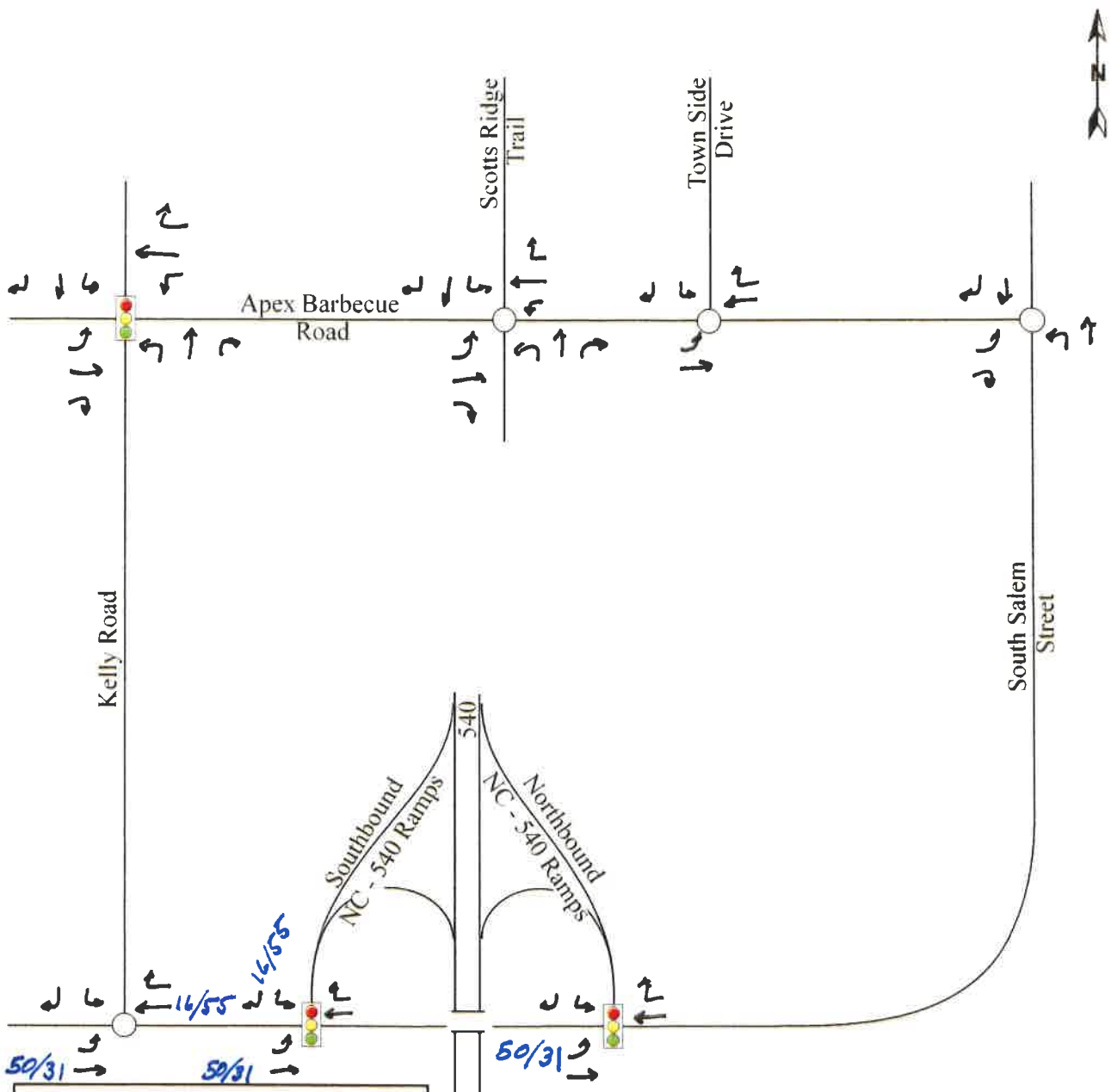
- Unsignalized Intersection
- 🚦 Signalized Intersection
- X/Y → AM / PM Peak Hour Adjacent Development Trips





Poe Tract Mixed Use Development
Apex, NC

New Hill Assembly

Scale: Not to Scale



LEGEND

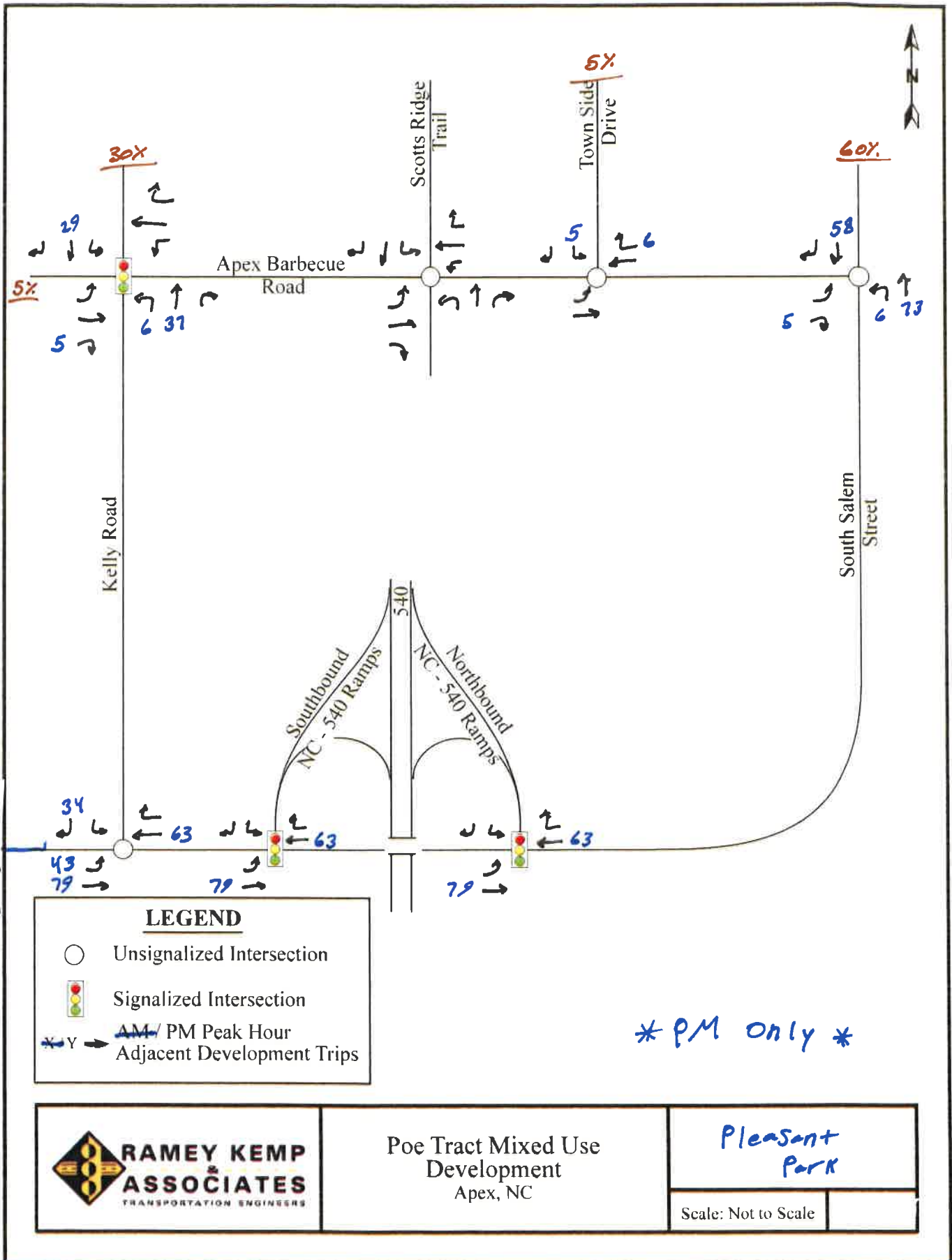
-  Unsignalized Intersection
-  Signalized Intersection
- X/Y → AM / PM Peak Hour Adjacent Development Trips



Poe Tract Mixed Use Development
Apex, NC

*Woodbury
(25% built-out)*

Scale: Not to Scale

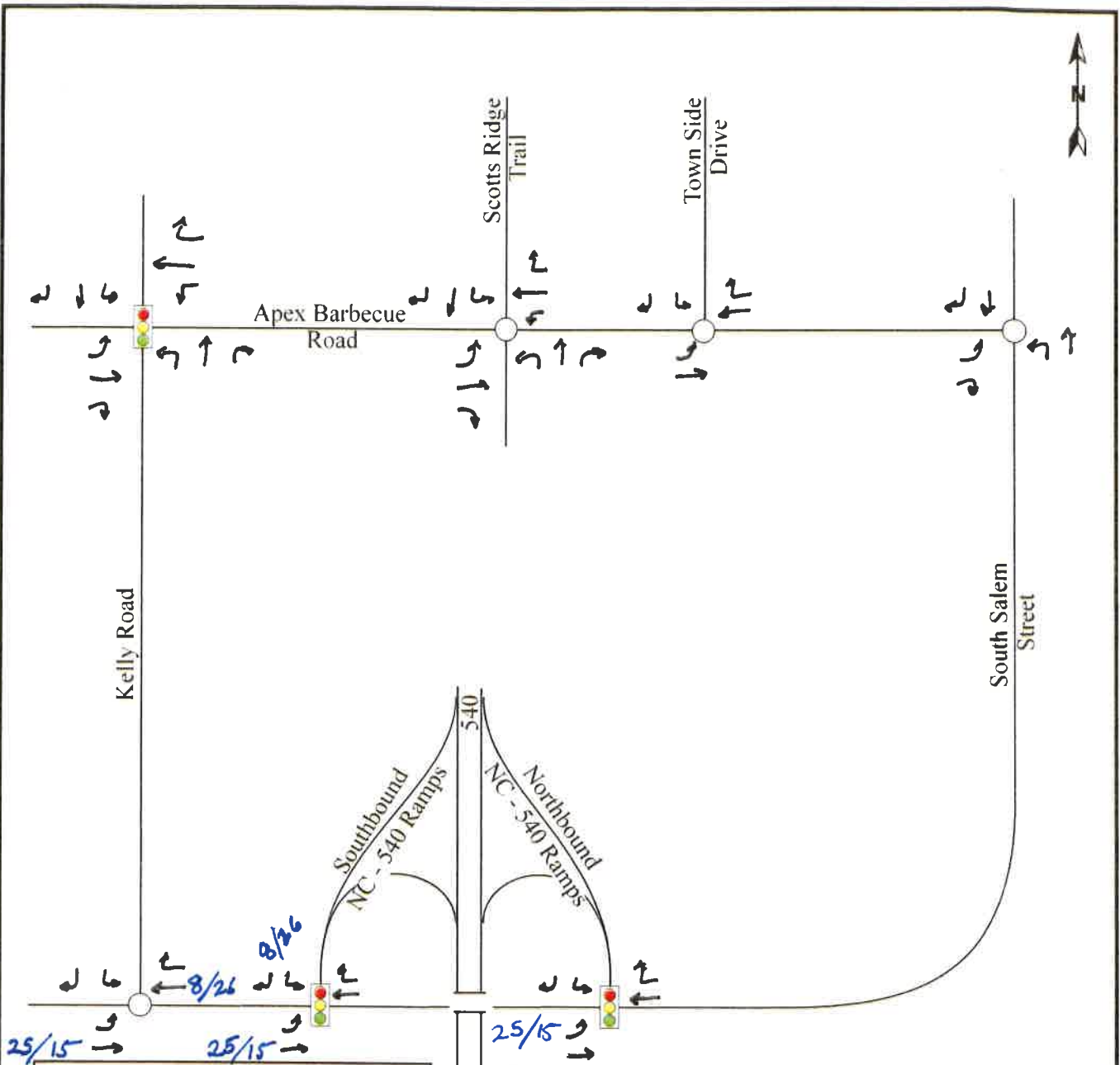


LEGEND

- Unsignalized Intersection
- 🚦 Signalized Intersection
- Y → ~~AM~~ / PM Peak Hour Adjacent Development Trips

** PM Only **

	Poe Tract Mixed Use Development Apex, NC	<i>Pleasant Park</i>	
		Scale: Not to Scale	



LEGEND

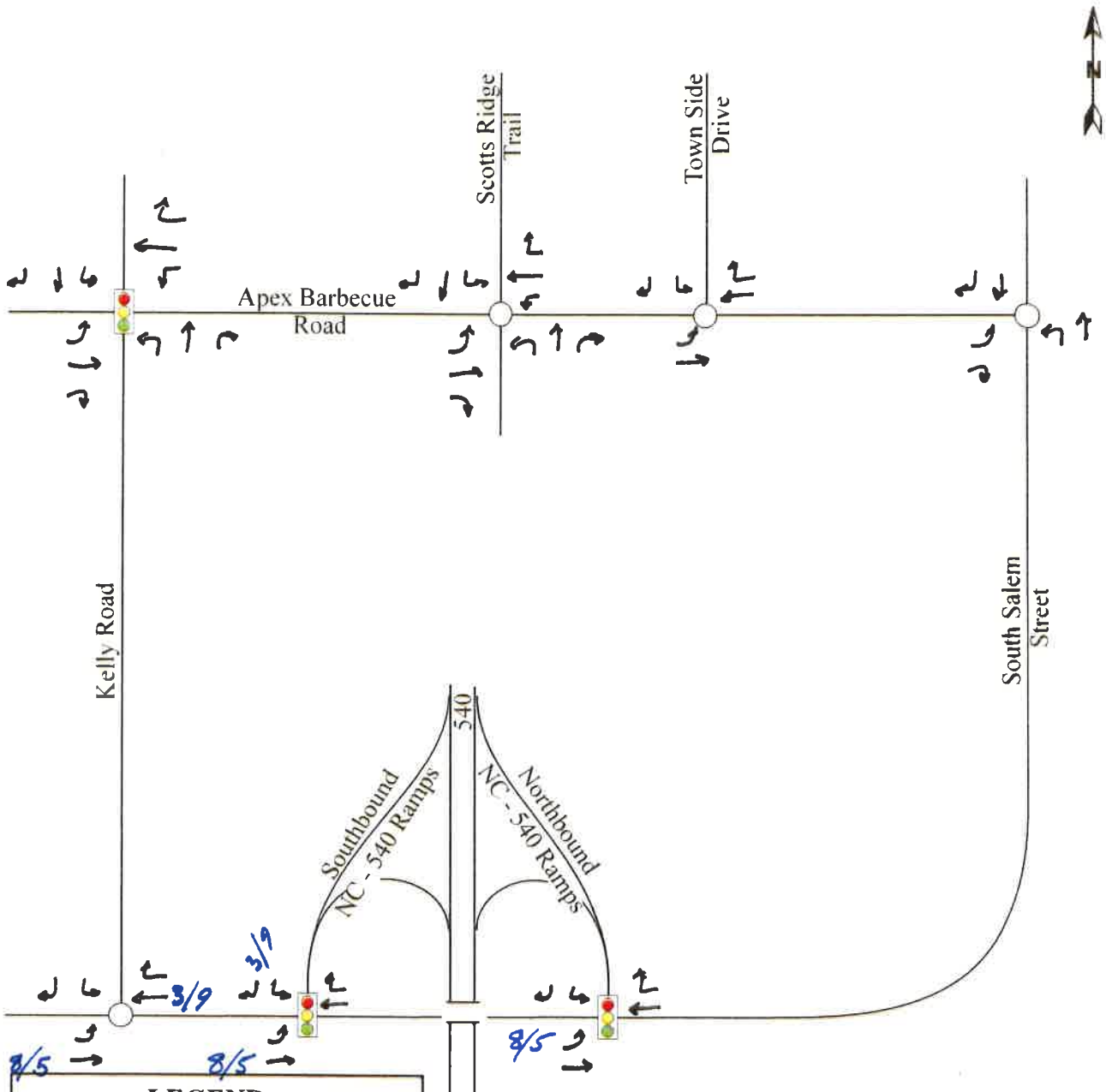
- Unsignalized Intersection
- 🚦 Signalized Intersection
- X/Y → AM / PM Peak Hour Adjacent Development Trips



Poe Tract Mixed Use Development
Apex, NC

Jordan Pointe
(65% built-out)

Scale: Not to Scale



LEGEND

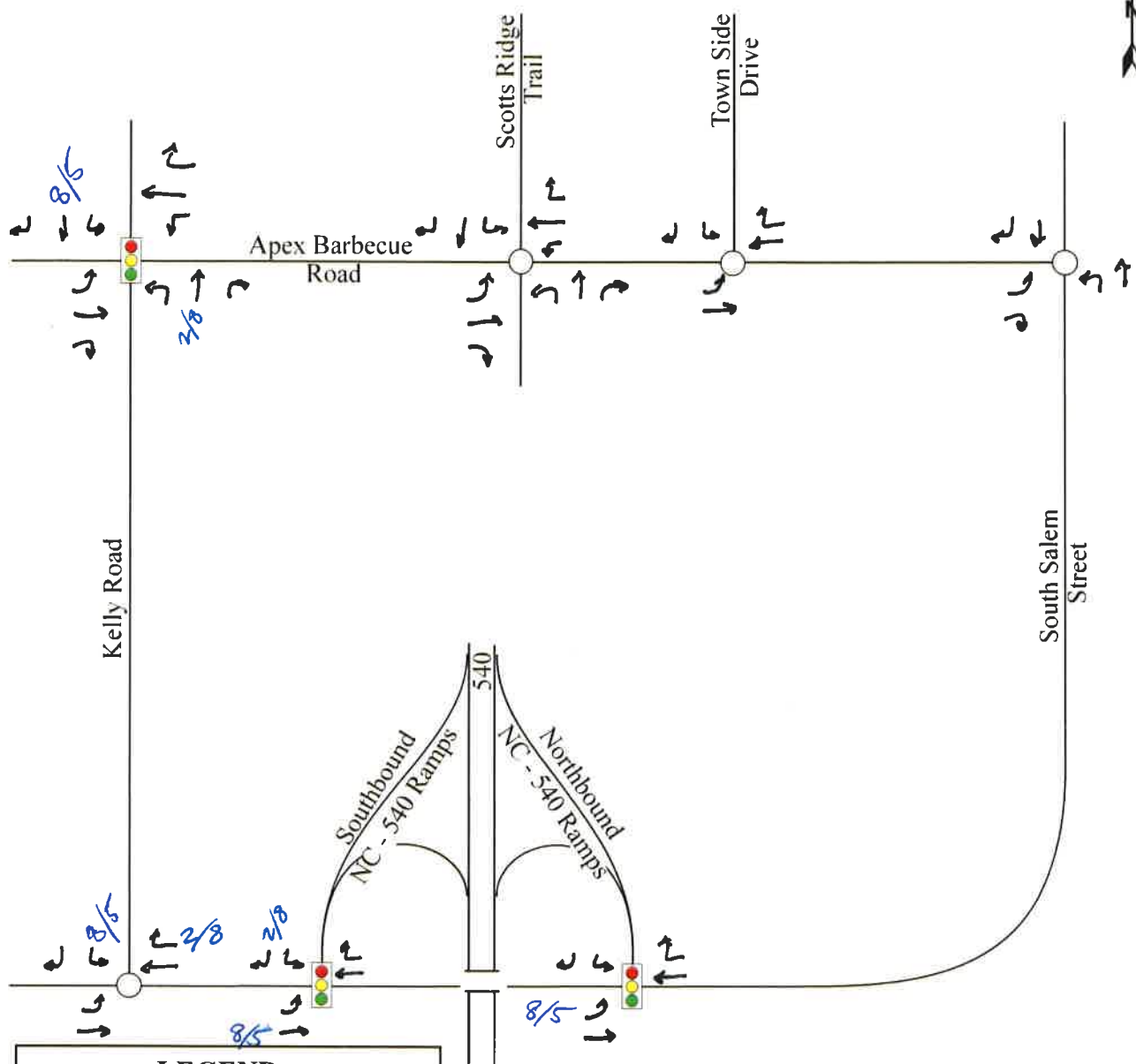
- Unsignalized Intersection
- 🚦 Signalized Intersection
- X/Y → AM / PM Peak Hour Adjacent Development Trips



Poe Tract Mixed Use Development
Apex, NC

Jordan Manors
(40% built-out)

Scale: Not to Scale



LEGEND

- Unsignalized Intersection
- 🚦 Signalized Intersection
- X/Y → AM / PM Peak Hour Adjacent Development Trips



Poe Tract Mixed Use Development
Apex, NC

Buckhorn
(20% built-out)

Scale: Not to Scale

NCHRP 8-51 Internal Trip Capture Estimation Tool			
Project Name:	Depot 499	Organization:	RKA
Project Location:	Apex, NC	Performed By:	
Scenario Description:		Date:	12/5/2019
Analysis Year:		Checked By:	
Analysis Period:	AM Street Peak Hour	Date:	

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)						
Land Use	Development Data (For Information Only)			Estimated Vehicle-Trips		
	ITE LUCs ¹	Quantity	Units	Total	Entering	Exiting
Office	710	375,000	s.f.	531	467	64
Retail	820	250,000	s.f.	277	172	105
Restaurant				0		
Cinema/Entertainment				0		
Residential	220	1,500	units	625	144	481
Hotel				0		
All Other Land Uses ²				0		
Total				1433	783	650

Table 2-A: Mode Split and Vehicle Occupancy Estimates						
Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						
All Other Land Uses ²						

Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-A: Internal Person-Trip Origin-Destination Matrix*						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		18	0	0	0	0
Retail	19		0	0	3	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	10	5	0	0		0
Hotel	0	0	0	0	0	

Table 5-A: Computations Summary			
	Total	Entering	Exiting
All Person-Trips	1,433	783	650
Internal Capture Percentage	8%	7%	8%
External Vehicle-Trips ³	1,323	728	595
External Transit-Trips ⁴	0	0	0
External Non-Motorized Trips ⁴	0	0	0

Table 6-A: Internal Trip Capture Percentages by Land Use		
Land Use	Entering Trips	Exiting Trips
Office	6%	28%
Retail	13%	21%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	2%	3%
Hotel	N/A	N/A

¹Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.

²Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

³Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

⁴Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas Transportation Institute

Project Name:	Depot 499
Analysis Period:	AM Street Peak Hour

Land Use	Table 7-A (D): Entering Trips			Table 7-A (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	467	467	1.00	64	64
Retail	1.00	172	172	1.00	105	105
Restaurant	1.00	0	0	1.00	0	0
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.00	144	144	1.00	481	481
Hotel	1.00	0	0	1.00	0	0

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		18	40	0	1	0
Retail	30		14	0	15	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	10	5	96	0		0
Hotel	0	0	0	0	0	

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		55	0	0	0	0
Retail	19		0	0	3	0
Restaurant	65	14		0	7	0
Cinema/Entertainment	0	0	0		0	0
Residential	14	29	0	0		0
Hotel	14	7	0	0	0	

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles ¹	Transit ²	Non-Motorized ²
Office	29	438	467	438	0	0
Retail	23	149	172	149	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	3	141	144	141	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses ³	0	0	0	0	0	0

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles ¹	Transit ²	Non-Motorized ²
Office	18	46	64	46	0	0
Retail	22	83	105	83	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	15	466	481	466	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses ³	0	0	0	0	0	0

¹Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A
²Person-Trips
³Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator
*Indicates computation that has been rounded to the nearest whole number.

NCHRP 8-51 Internal Trip Capture Estimation Tool					
Project Name:	Depot 499			Organization:	RKA
Project Location:	Apex, NC			Performed By:	
Scenario Description:				Date:	12/5/2019
Analysis Year:				Checked By:	
Analysis Period:	PM Street Peak Hour			Date:	

Table 1-P: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)						
Land Use	Development Data (For Information Only)			Estimated Vehicle-Trips		
	ITE LUCs ¹	Quantity	Units	Total	Entering	Exiting
Office	710	375,000	s.f.	478	86	392
Retail	820	250,000	s.f.	1070	514	556
Restaurant				0		
Cinema/Entertainment				0		
Residential	220	1,500	units	658	415	243
Hotel				0		
All Other Land Uses ²				0		
Total				2206	1015	1191

Table 2-P: Mode Split and Vehicle Occupancy Estimates						
Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						
All Other Land Uses ²						

Table 3-P: Average Land Use Interchange Distances (Feet Walking Distance)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0			1000	
Retail					1000	
Restaurant						
Cinema/Entertainment						
Residential		1000				
Hotel						

Table 4-P: Internal Person-Trip Origin-Destination Matrix*						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		41	0	0	7	0
Retail	11		0	0	134	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	10	39	0	0		0
Hotel	0	0	0	0	0	

Table 5-P: Computations Summary			
	Total	Entering	Exiting
All Person-Trips	2,206	1,015	1,191
Internal Capture Percentage	22%	24%	20%
External Vehicle-Trips ³	1,722	773	949
External Transit-Trips ⁴	0	0	0
External Non-Motorized Trips ⁴	0	0	0

Table 6-P: Internal Trip Capture Percentages by Land Use		
Land Use	Entering Trips	Exiting Trips
Office	24%	12%
Retail	16%	26%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	34%	20%
Hotel	N/A	N/A

¹Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.

²Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

³Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

⁴Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas Transportation Institute

Project Name:	Depot 499
Analysis Period:	PM Street Peak Hour

Table 7-P: Conversion of Vehicle-Trip Ends to Person-Trip Ends						
Land Use	Table 7-P (D): Entering Trips			Table 7-P (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	86	86	1.00	392	392
Retail	1.00	514	514	1.00	556	556
Restaurant	1.00	0	0	1.00	0	0
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.00	415	415	1.00	243	243
Hotel	1.00	0	0	1.00	0	0

Table 8-P (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		78	16	0	7	0
Retail	11		161	22	134	28
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	10	78	51	0		7
Hotel	0	0	0	0	0	

Table 8-P (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		41	0	0	17	0
Retail	27		0	0	191	0
Restaurant	26	257		0	66	0
Cinema/Entertainment	5	21	0		17	0
Residential	49	39	0	0		0
Hotel	0	10	0	0	0	

Table 9-P (D): Internal and External Trips Summary (Entering Trips)						
Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles ¹	Transit ²	Non-Motorized ²
Office	21	65	86	65	0	0
Retail	80	434	514	434	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	141	274	415	274	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses ³	0	0	0	0	0	0

Table 9-P (O): Internal and External Trips Summary (Exiting Trips)						
Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles ¹	Transit ²	Non-Motorized ²
Office	48	344	392	344	0	0
Retail	145	411	556	411	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	49	194	243	194	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses ³	0	0	0	0	0	0

¹Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

²Person-Trips

³Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

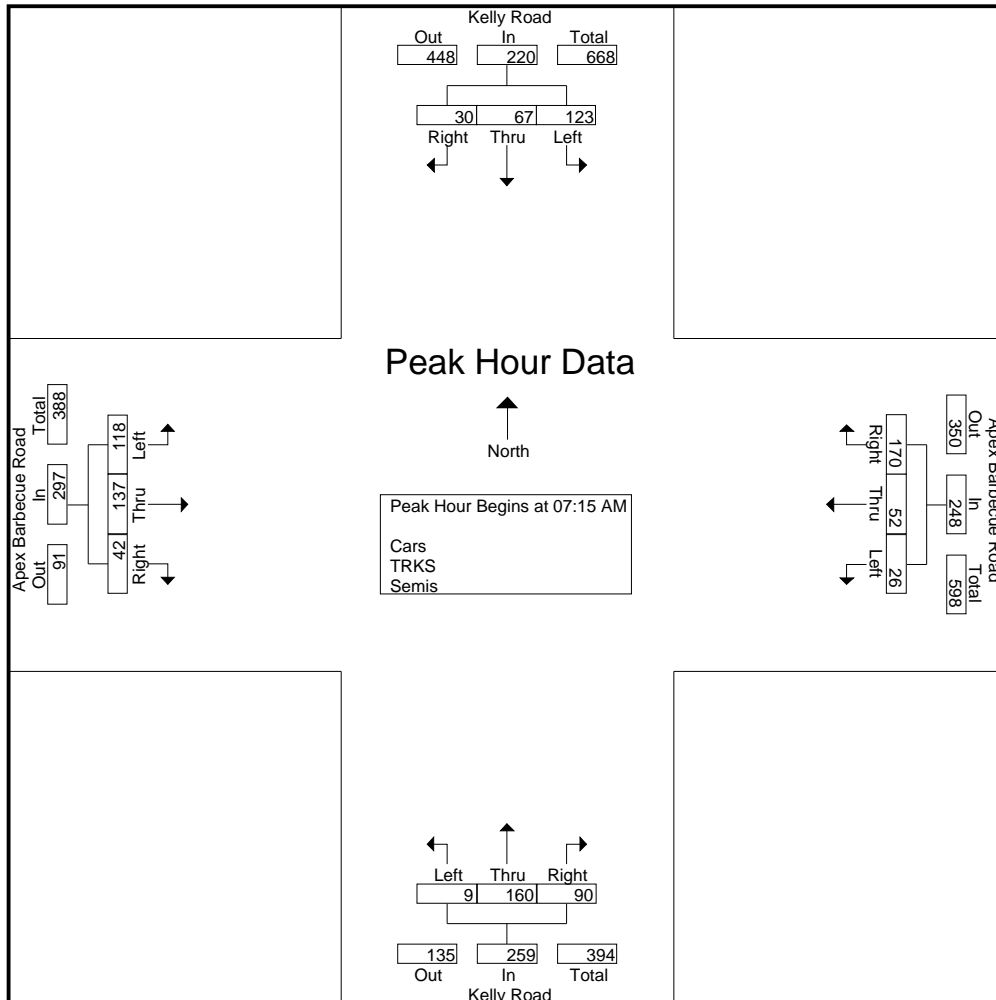
*Indicates computation that has been rounded to the nearest whole number.



5808 Faringdon Place, Suite 100
 Raleigh, NC 27609
 PH: 919 872-5115

File Name : Apex Barbecue Road and Kelly Road
 Site Code : 00000007
 Start Date : 10/22/2019
 Page No : 2

Start Time	Kelly Road From North				Apex Barbecue Road From East				Kelly Road From South				Apex Barbecue Road From West				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 09:00 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	9	8	11	28	34	13	6	53	4	41	4	49	7	29	29	65	195
07:30 AM	5	20	34	59	38	11	3	52	22	32	2	56	14	40	31	85	252
07:45 AM	7	18	46	71	47	22	8	77	30	43	2	75	11	41	30	82	305
08:00 AM	9	21	32	62	51	6	9	66	34	44	1	79	10	27	28	65	272
Total Volume	30	67	123	220	170	52	26	248	90	160	9	259	42	137	118	297	1024
% App. Total	13.6	30.5	55.9		68.5	21	10.5		34.7	61.8	3.5		14.1	46.1	39.7		
PHF	.833	.798	.668	.775	.833	.591	.722	.805	.662	.909	.563	.820	.750	.835	.952	.874	.839

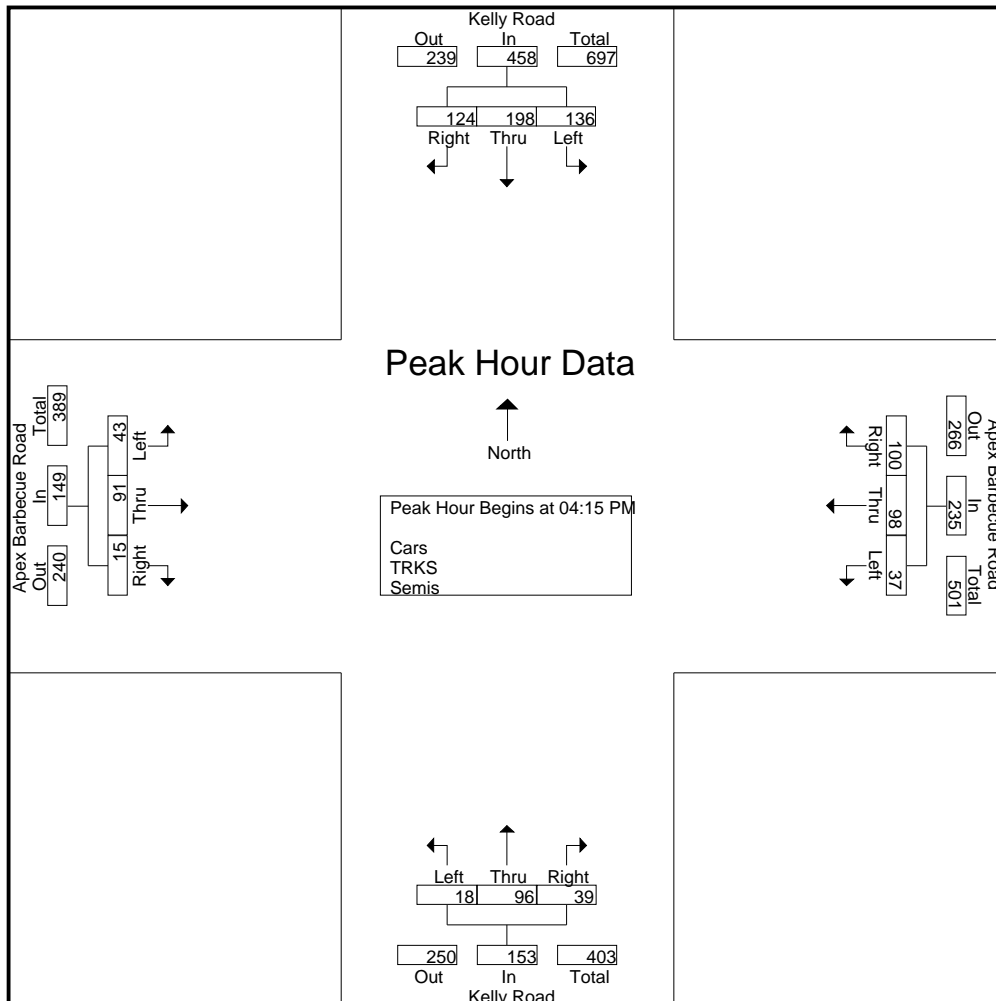




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 PH: 919 872-5115

File Name : Apex Barbecue Road and Kelly Road
 Site Code : 00000007
 Start Date : 10/22/2019
 Page No : 3

Start Time	Kelly Road From North				Apex Barbecue Road From East				Kelly Road From South				Apex Barbecue Road From West				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 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	32	41	37	110	36	17	11	64	9	24	4	37	2	20	12	34	245
04:30 PM	24	60	33	117	22	26	9	57	15	25	5	45	5	30	8	43	262
04:45 PM	41	54	28	123	25	34	14	73	5	18	7	30	3	23	13	39	265
05:00 PM	27	43	38	108	17	21	3	41	10	29	2	41	5	18	10	33	223
Total Volume	124	198	136	458	100	98	37	235	39	96	18	153	15	91	43	149	995
% App. Total	27.1	43.2	29.7		42.6	41.7	15.7		25.5	62.7	11.8		10.1	61.1	28.9		
PHF	.756	.825	.895	.931	.694	.721	.661	.805	.650	.828	.643	.850	.750	.758	.827	.866	.939





5808 Faringdon Place, Suite 100
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File Name : Apex Barbecue Road and Scotts Ridge Trail
 Site Code : 00000006
 Start Date : 10/22/2019
 Page No : 1

Groups Printed- Cars - TRKS - Semis

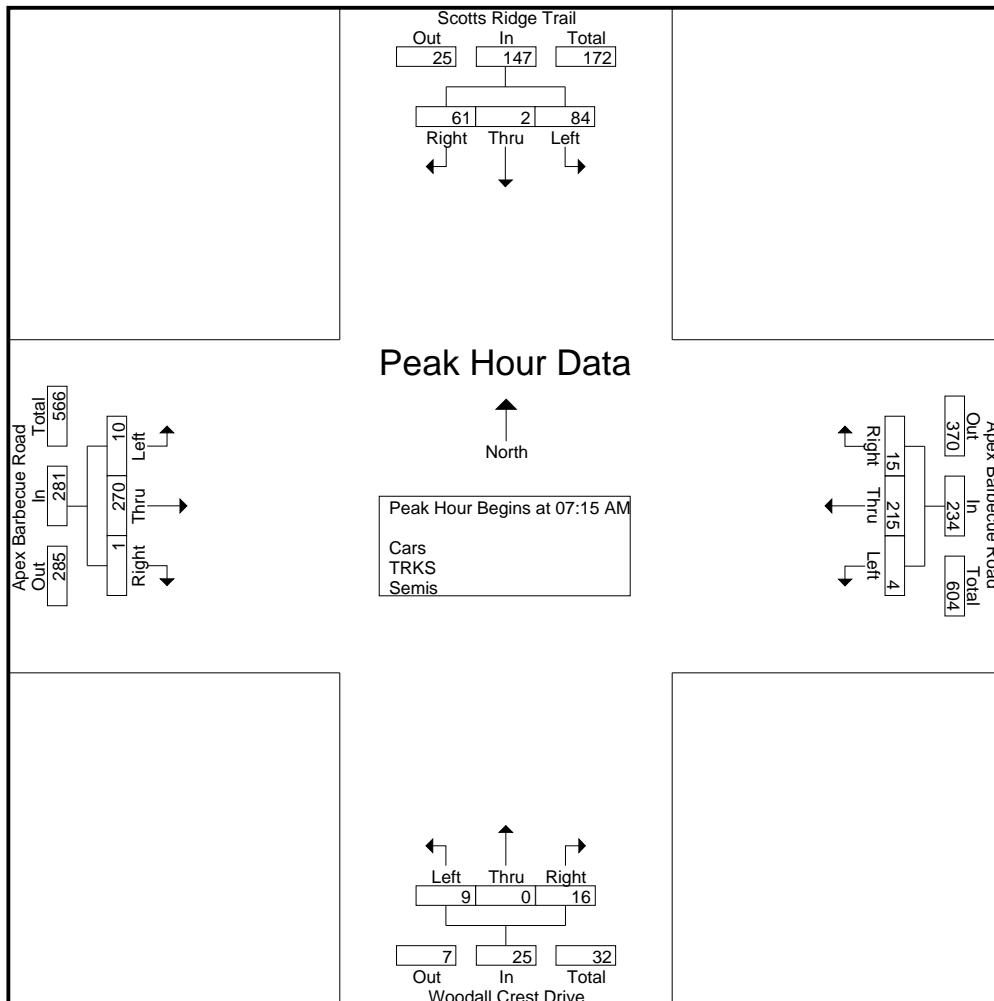
Start Time	Scotts Ridge Trail From North					Apex Barbecue Road From East					Woodall Crest Drive From South					Apex Barbecue Road From West					Exclu. Total	Inclu. Total	Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total			
07:00 AM	15	0	8	0	23	2	56	0	0	58	4	0	5	0	9	0	50	4	0	54	0	144	144
07:15 AM	12	1	16	0	29	2	30	0	0	32	6	0	2	0	8	0	51	2	0	53	0	122	122
07:30 AM	13	1	25	0	39	1	43	0	0	44	3	0	0	0	3	0	92	1	0	93	0	179	179
07:45 AM	23	0	26	0	49	7	94	2	0	103	4	0	3	0	7	0	70	2	0	72	0	231	231
Total	63	2	75	0	140	12	223	2	0	237	17	0	10	0	27	0	263	9	0	272	0	676	676
08:00 AM	13	0	17	0	30	5	48	2	0	55	3	0	4	0	7	1	57	5	0	63	0	155	155
08:15 AM	9	0	13	0	22	4	36	4	0	44	1	0	3	0	4	0	52	0	0	52	0	122	122
08:30 AM	14	0	25	0	39	8	36	2	0	46	6	0	1	0	7	1	57	7	0	65	0	157	157
08:45 AM	8	0	24	0	32	9	42	3	0	54	7	1	2	1	10	3	133	4	0	140	1	236	237
Total	44	0	79	0	123	26	162	11	0	199	17	1	10	1	28	5	299	16	0	320	1	670	671
*** BREAK ***																							
04:00 PM	5	0	6	0	11	7	44	4	0	55	6	0	0	0	6	3	64	9	0	76	0	148	148
04:15 PM	8	0	15	0	23	8	52	6	0	66	3	0	0	0	3	2	61	10	0	73	0	165	165
04:30 PM	6	0	4	0	10	15	67	2	0	84	3	0	0	0	3	1	62	11	0	74	0	171	171
04:45 PM	2	0	7	0	9	11	54	5	0	70	4	0	0	0	4	1	59	9	0	69	0	152	152
Total	21	0	32	0	53	41	217	17	0	275	16	0	0	0	16	7	246	39	0	292	0	636	636
05:00 PM	4	0	11	0	15	13	53	5	0	71	2	0	0	0	2	2	47	19	0	68	0	156	156
05:15 PM	1	0	9	0	10	9	48	3	0	60	1	1	2	0	4	3	43	13	0	59	0	133	133
05:30 PM	7	0	22	0	29	18	40	7	0	65	3	0	0	0	3	1	47	12	0	60	0	157	157
05:45 PM	3	0	11	0	14	15	49	9	0	73	4	0	0	0	4	2	53	9	0	64	0	155	155
Total	15	0	53	0	68	55	190	24	0	269	10	1	2	0	13	8	190	53	0	251	0	601	601
Grand Total	143	2	239	0	384	134	792	54	0	980	60	2	22	1	84	20	998	117	0	1135	1	2583	2584
Apprch %	37.2	0.5	62.2			13.7	80.8	5.5			71.4	2.4	26.2			1.8	87.9	10.3					
Total %	5.5	0.1	9.3		14.9	5.2	30.7	2.1		37.9	2.3	0.1	0.9		3.3	0.8	38.6	4.5		43.9	0	100	
Cars	143	0	237		380	129	779	54		962	58	2	21		82	20	977	116		1113	0	0	2537
% Cars	100	0	99.2		99	96.3	98.4	100		98.2	96.7	100	95.5		96.5	100	97.9	99.1		98.1	0	0	98.2
TRKS	0	2	2		4	5	13	0		18	2	0	1		3	0	21	1		22	0	0	47
% TRKS	0	100	0.8		1	3.7	1.6	0		1.8	3.3	0	4.5		3.5	0	2.1	0.9		1.9	0	0	1.8
Semis	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0
% Semis	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0



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File Name : Apex Barbecue Road and Scotts Ridge Trail
 Site Code : 00000006
 Start Date : 10/22/2019
 Page No : 2

Start Time	Scotts Ridge Trail From North				Apex Barbecue Road From East				Woodall Crest Drive From South				Apex Barbecue Road From West				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 09:00 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	12	1	16	29	2	30	0	32	6	0	2	8	0	51	2	53	122
07:30 AM	13	1	25	39	1	43	0	44	3	0	0	3	0	92	1	93	179
07:45 AM	23	0	26	49	7	94	2	103	4	0	3	7	0	70	2	72	231
08:00 AM	13	0	17	30	5	48	2	55	3	0	4	7	1	57	5	63	155
Total Volume	61	2	84	147	15	215	4	234	16	0	9	25	1	270	10	281	687
% App. Total	41.5	1.4	57.1		6.4	91.9	1.7		64	0	36		0.4	96.1	3.6		
PHF	.663	.500	.808	.750	.536	.572	.500	.568	.667	.000	.563	.781	.250	.734	.500	.755	.744

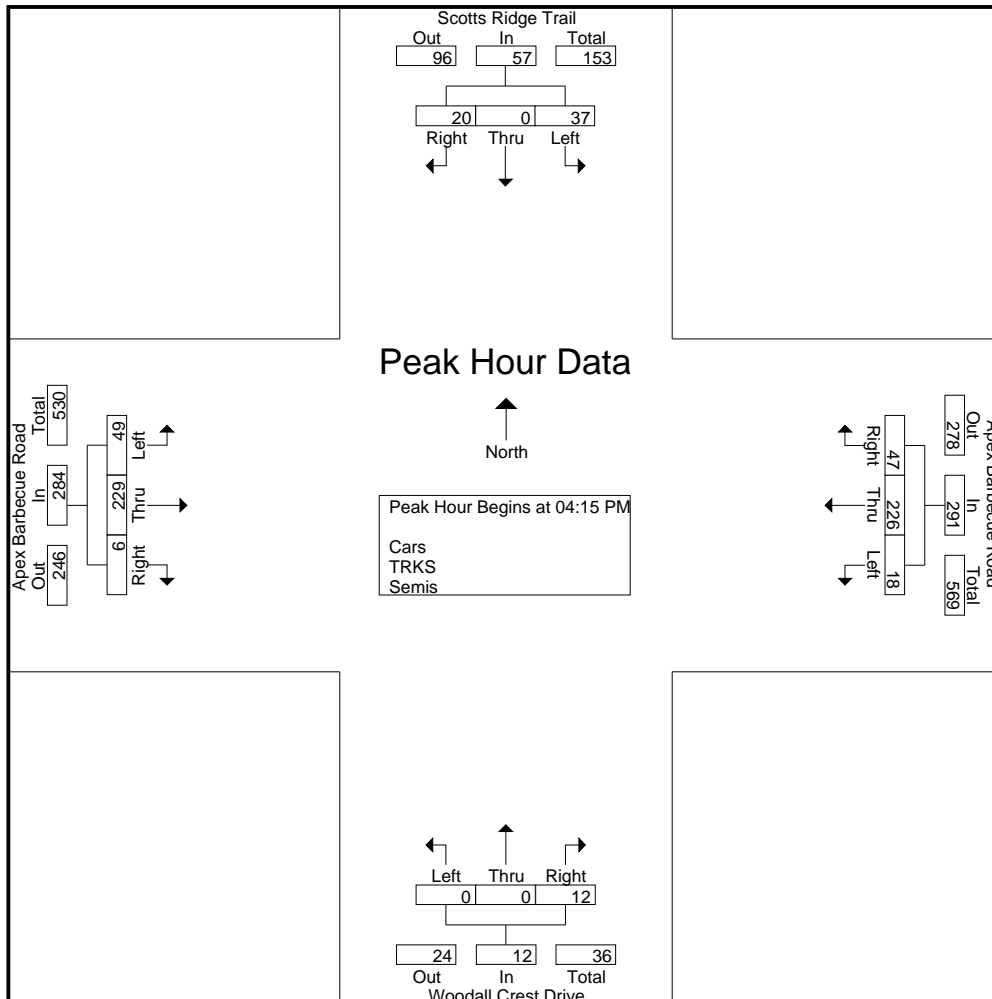




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File Name : Apex Barbecue Road and Scotts Ridge Trail
 Site Code : 00000006
 Start Date : 10/22/2019
 Page No : 3

Start Time	Scotts Ridge Trail From North				Apex Barbecue Road From East				Woodall Crest Drive From South				Apex Barbecue Road From West				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 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	8	0	15	23	8	52	6	66	3	0	0	3	2	61	10	73	165
04:30 PM	6	0	4	10	15	67	2	84	3	0	0	3	1	62	11	74	171
04:45 PM	2	0	7	9	11	54	5	70	4	0	0	4	1	59	9	69	152
05:00 PM	4	0	11	15	13	53	5	71	2	0	0	2	2	47	19	68	156
Total Volume	20	0	37	57	47	226	18	291	12	0	0	12	6	229	49	284	644
% App. Total	35.1	0	64.9		16.2	77.7	6.2		100	0	0		2.1	80.6	17.3		
PHF	.625	.000	.617	.620	.783	.843	.750	.866	.750	.000	.000	.750	.750	.923	.645	.959	.942

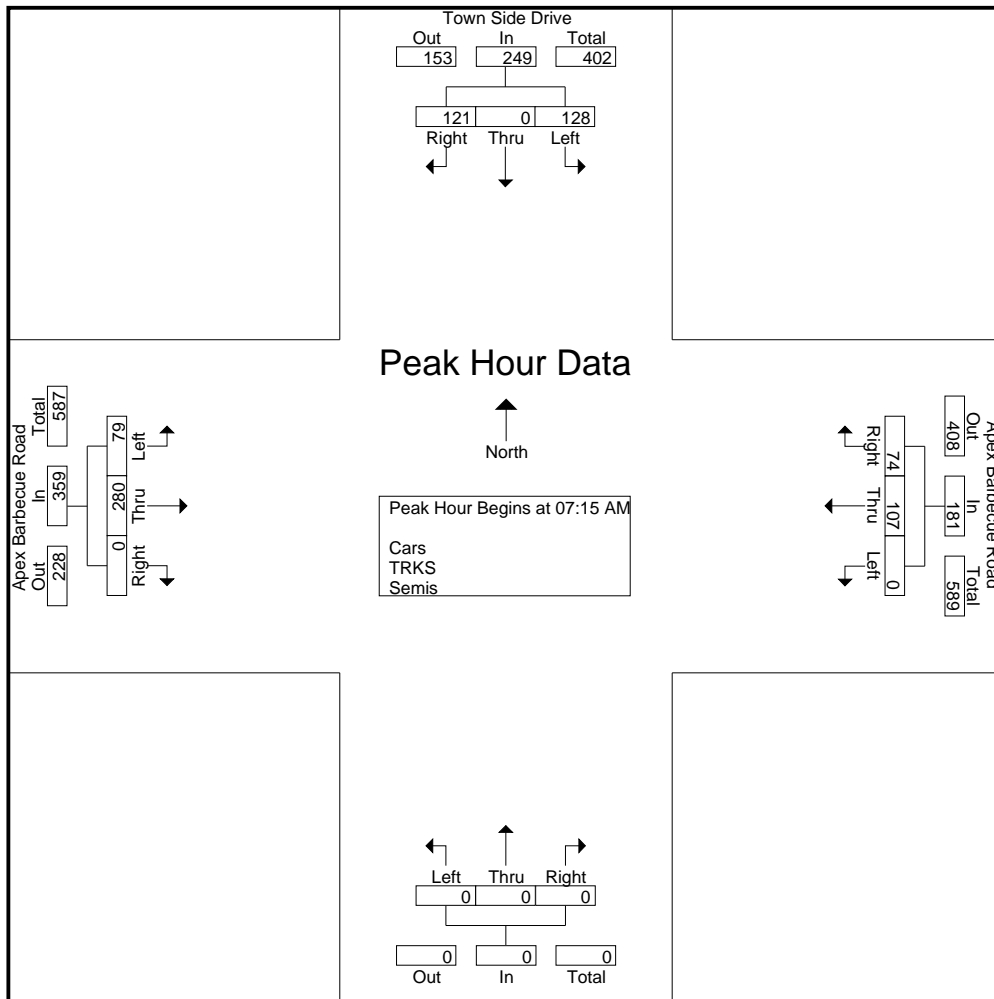




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File Name : Apex Barbecue Road and Town Side Drive
 Site Code : 00000005
 Start Date : 10/22/2019
 Page No : 2

Start Time	Town Side Drive From North				Apex Barbecue Road From East				From South				Apex Barbecue Road From West				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 09:00 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	8	0	19	27	12	21	0	33	0	0	0	0	0	55	17	72	132
07:30 AM	29	0	42	71	35	20	0	55	0	0	0	0	0	87	25	112	238
07:45 AM	58	0	47	105	24	36	0	60	0	0	0	0	0	76	22	98	263
08:00 AM	26	0	20	46	3	30	0	33	0	0	0	0	0	62	15	77	156
Total Volume	121	0	128	249	74	107	0	181	0	0	0	0	0	280	79	359	789
% App. Total	48.6	0	51.4		40.9	59.1	0		0	0	0	0	0	78	22		
PHF	.522	.000	.681	.593	.529	.743	.000	.754	.000	.000	.000	.000	.000	.805	.790	.801	.750

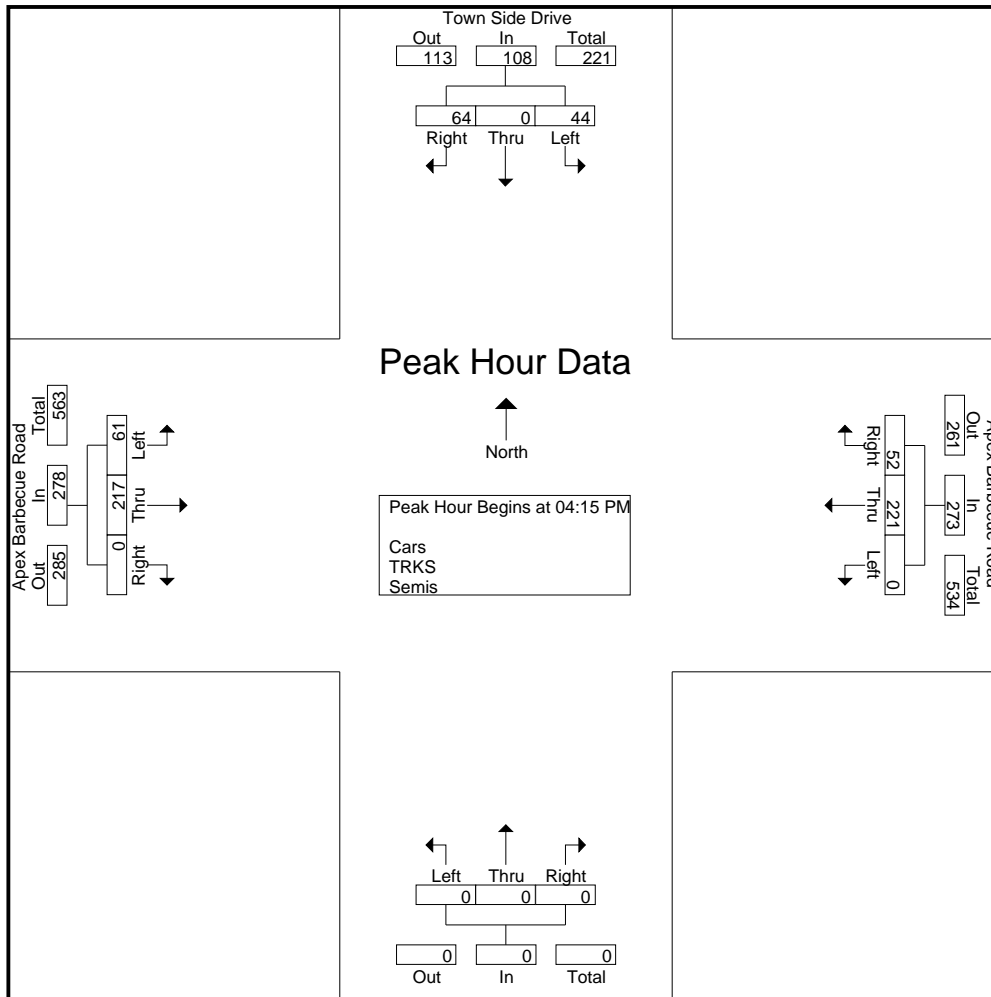




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File Name : Apex Barbecue Road and Town Side Drive
 Site Code : 00000005
 Start Date : 10/22/2019
 Page No : 3

Start Time	Town Side Drive From North				Apex Barbecue Road From East				From South				Apex Barbecue Road From West				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 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	22	0	17	39	16	40	0	56	0	0	0	0	0	62	16	78	173
04:30 PM	16	0	10	26	13	75	0	88	0	0	0	0	0	55	13	68	182
04:45 PM	13	0	9	22	5	52	0	57	0	0	0	0	0	54	17	71	150
05:00 PM	13	0	8	21	18	54	0	72	0	0	0	0	0	46	15	61	154
Total Volume	64	0	44	108	52	221	0	273	0	0	0	0	0	217	61	278	659
% App. Total	59.3	0	40.7		19	81	0		0	0	0	0	0	78.1	21.9		
PHF	.727	.000	.647	.692	.722	.737	.000	.776	.000	.000	.000	.000	.000	.875	.897	.891	.905

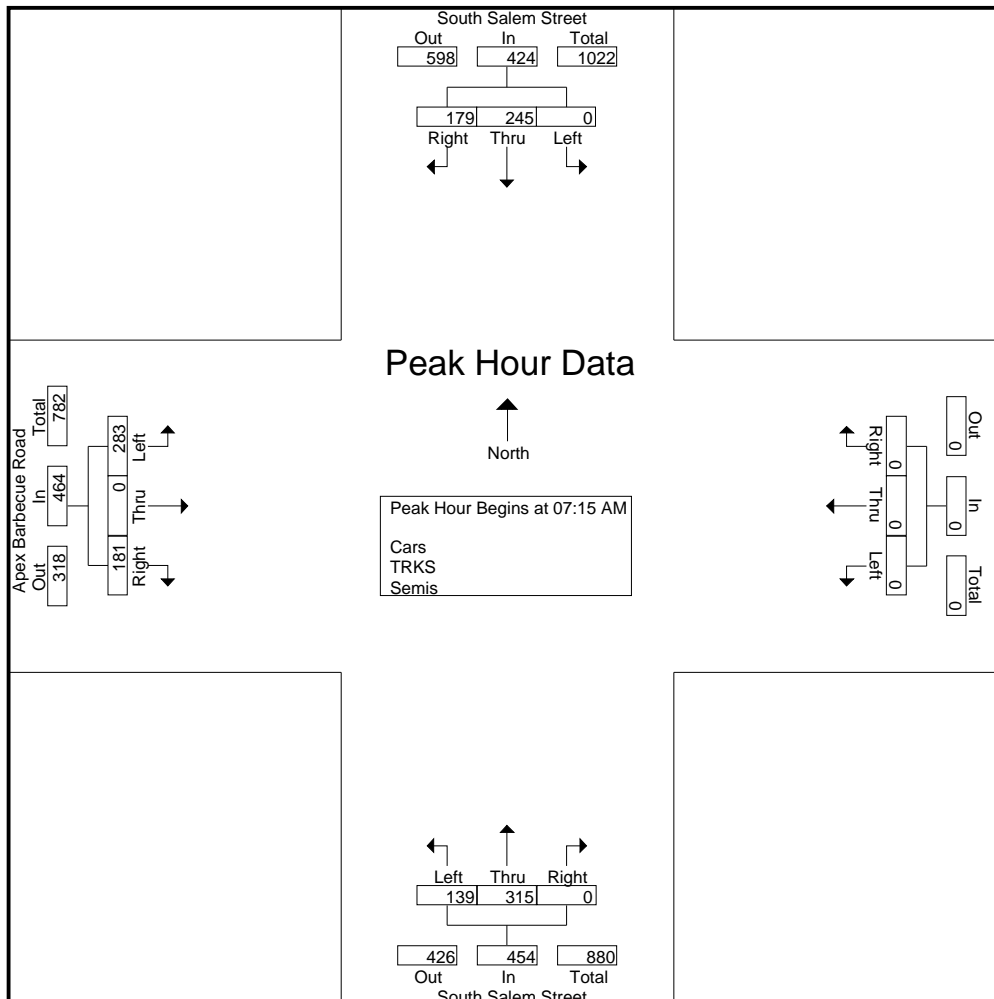




5808 Faringdon Place, Suite 100
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File Name : South Salem Street and Apex Barbecue Road
 Site Code : 00000001
 Start Date : 10/22/2019
 Page No : 2

Start Time	South Salem Street From North				From East				South Salem Street From South				Apex Barbecue Road From West				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 09:00 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	36	51	0	87	0	0	0	0	0	95	26	121	28	0	50	78	286
07:30 AM	49	71	0	120	0	0	0	0	0	76	55	131	48	0	59	107	358
07:45 AM	62	53	0	115	0	0	0	0	0	79	47	126	69	0	110	179	420
08:00 AM	32	70	0	102	0	0	0	0	0	65	11	76	36	0	64	100	278
Total Volume	179	245	0	424	0	0	0	0	0	315	139	454	181	0	283	464	1342
% App. Total	42.2	57.8	0		0	0	0		0	69.4	30.6		39	0	61		
PHF	.722	.863	.000	.883	.000	.000	.000	.000	.000	.829	.632	.866	.656	.000	.643	.648	.799

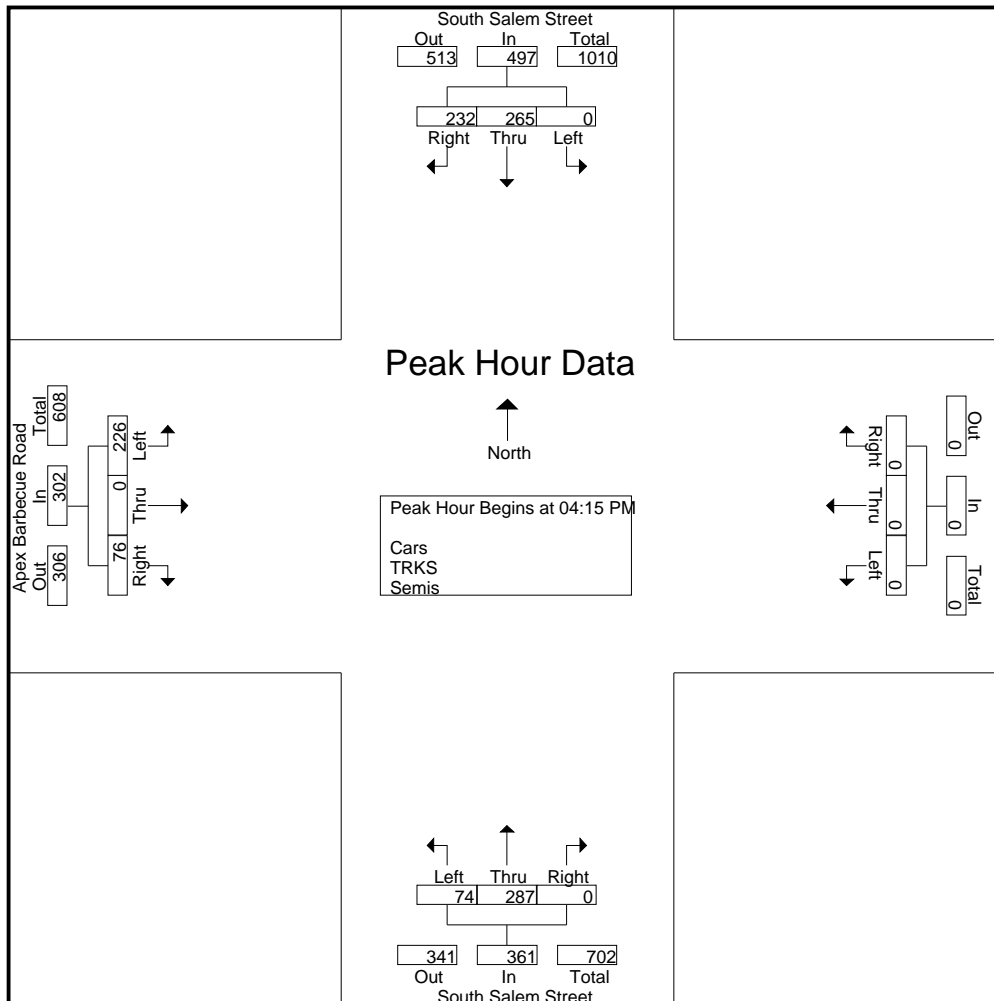




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 PH: 919 872-5115

File Name : South Salem Street and Apex Barbecue Road
 Site Code : 00000001
 Start Date : 10/22/2019
 Page No : 3

Start Time	South Salem Street From North				From East				South Salem Street From South				Apex Barbecue Road From West				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 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	53	60	0	113	0	0	0	0	0	63	19	82	28	0	64	92	287
04:30 PM	69	55	0	124	0	0	0	0	0	74	26	100	16	0	67	83	307
04:45 PM	49	75	0	124	0	0	0	0	0	64	10	74	16	0	53	69	267
05:00 PM	61	75	0	136	0	0	0	0	0	86	19	105	16	0	42	58	299
Total Volume	232	265	0	497	0	0	0	0	0	287	74	361	76	0	226	302	1160
% App. Total	46.7	53.3	0		0	0	0		0	79.5	20.5		25.2	0	74.8		
PHF	.841	.883	.000	.914	.000	.000	.000	.000	.000	.834	.712	.860	.679	.000	.843	.821	.945





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File Name : South Salem Street and Kelly Road
 Site Code : 00000004
 Start Date : 10/22/2019
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Groups Printed- Cars - TRKS - Semis

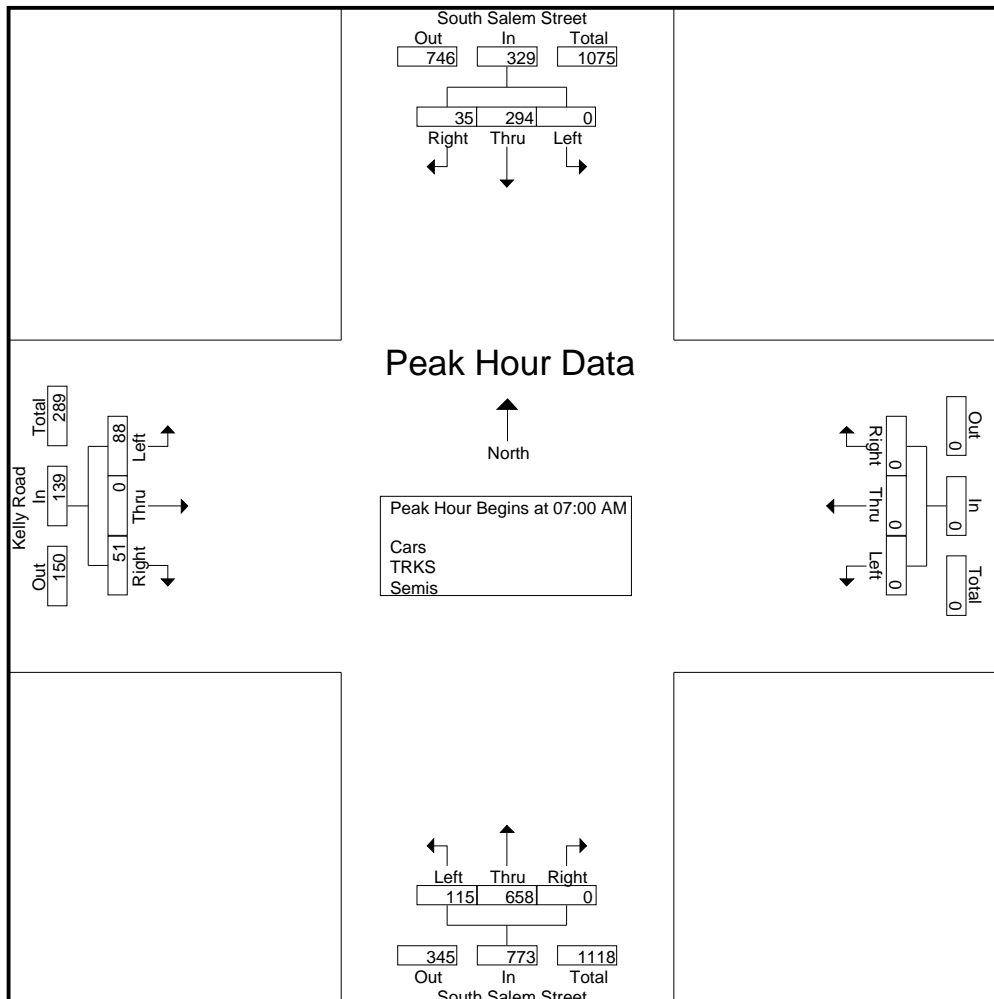
Start Time	South Salem Street From North					From East					South Salem Street From South					Kelly Road From West					Exclu. Total	Inclu. Total	Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total			
07:00 AM	9	131	0	0	140	0	0	0	0	0	0	144	19	0	163	11	0	20	0	31	0	334	334
07:15 AM	4	48	0	0	52	0	0	0	0	0	0	182	28	0	210	6	0	16	0	22	0	284	284
07:30 AM	10	56	0	0	66	0	0	0	0	0	0	143	23	0	166	14	0	31	0	45	0	277	277
07:45 AM	12	59	0	0	71	0	0	0	0	0	0	189	45	0	234	20	0	21	0	41	0	346	346
Total	35	294	0	0	329	0	0	0	0	0	0	658	115	0	773	51	0	88	0	139	0	1241	1241
08:00 AM	8	62	0	0	70	0	0	0	0	0	0	127	33	0	160	10	0	25	0	35	0	265	265
08:15 AM	9	51	0	0	60	0	0	0	0	0	0	117	18	0	135	8	0	27	0	35	0	230	230
08:30 AM	13	59	0	0	72	0	0	0	0	0	0	104	27	0	131	3	0	23	0	26	0	229	229
08:45 AM	10	55	0	0	65	0	0	0	0	0	0	141	22	0	163	12	0	27	0	39	0	267	267
Total	40	227	0	0	267	0	0	0	0	0	0	489	100	0	589	33	0	102	0	135	0	991	991
*** BREAK ***																							
04:00 PM	22	111	0	0	133	0	0	0	0	0	0	66	14	0	80	25	0	17	0	42	0	255	255
04:15 PM	23	113	0	0	136	0	0	0	0	0	0	74	13	0	87	28	0	15	0	43	0	266	266
04:30 PM	20	102	0	0	122	0	0	0	0	0	0	71	17	0	88	34	0	19	0	53	0	263	263
04:45 PM	16	137	0	0	153	0	0	0	0	0	0	67	9	0	76	36	0	12	0	48	0	277	277
Total	81	463	0	0	544	0	0	0	0	0	0	278	53	0	331	123	0	63	0	186	0	1061	1061
05:00 PM	17	156	0	0	173	0	0	0	0	0	0	86	14	0	100	22	0	13	0	35	0	308	308
05:15 PM	30	162	0	0	192	0	0	0	0	0	0	62	17	0	79	22	0	8	0	30	0	301	301
05:30 PM	38	137	0	0	175	0	0	0	0	0	0	71	14	0	85	35	0	23	0	58	0	318	318
05:45 PM	34	140	0	0	174	0	0	0	0	0	0	66	12	0	78	21	0	16	0	37	0	289	289
Total	119	595	0	0	714	0	0	0	0	0	0	285	57	0	342	100	0	60	0	160	0	1216	1216
Grand Total	275	1579	0	0	1854	0	0	0	0	0	0	1710	325	0	2035	307	0	313	0	620	0	4509	4509
Apprch %	14.8	85.2	0			0	0	0				0	84	16		49.5	0	50.5					
Total %	6.1	35	0		41.1	0	0	0				0	37.9	7.2	45.1	6.8	0	6.9		13.8	0	100	
Cars	269	1513	0		1782	0	0	0				0	1647	315	1962	296	0	304		600	0	0	4344
% Cars	97.8	95.8	0	0	96.1	0	0	0	0	0	0	0	96.3	96.9	0	96.4	96.4	0	97.1	0	96.8	0	96.3
TRKS	6	63	0		69	0	0	0				0	61	9	70	10	0	8		18	0	0	157
% TRKS	2.2	4	0	0	3.7	0	0	0	0	0	0	0	3.6	2.8	3.4	3.3	0	2.6	0	2.9	0	0	3.5
Semis	0	3	0		3	0	0	0				0	2	1	3	1	0	1		2	0	0	8
% Semis	0	0.2	0	0	0.2	0	0	0	0	0	0	0	0.1	0.3	0	0.3	0	0.3	0	0.3	0	0	0.2



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File Name : South Salem Street and Kelly Road
 Site Code : 00000004
 Start Date : 10/22/2019
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Start Time	South Salem Street From North				From East				South Salem Street From South				Kelly Road From West				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 09:00 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	9	131	0	140	0	0	0	0	0	144	19	163	11	0	20	31	334
07:15 AM	4	48	0	52	0	0	0	0	0	182	28	210	6	0	16	22	284
07:30 AM	10	56	0	66	0	0	0	0	0	143	23	166	14	0	31	45	277
07:45 AM	12	59	0	71	0	0	0	0	0	189	45	234	20	0	21	41	346
Total Volume	35	294	0	329	0	0	0	0	0	658	115	773	51	0	88	139	1241
% App. Total	10.6	89.4	0		0	0	0		0	85.1	14.9		36.7	0	63.3		
PHF	.729	.561	.000	.588	.000	.000	.000	.000	.000	.870	.639	.826	.638	.000	.710	.772	.897

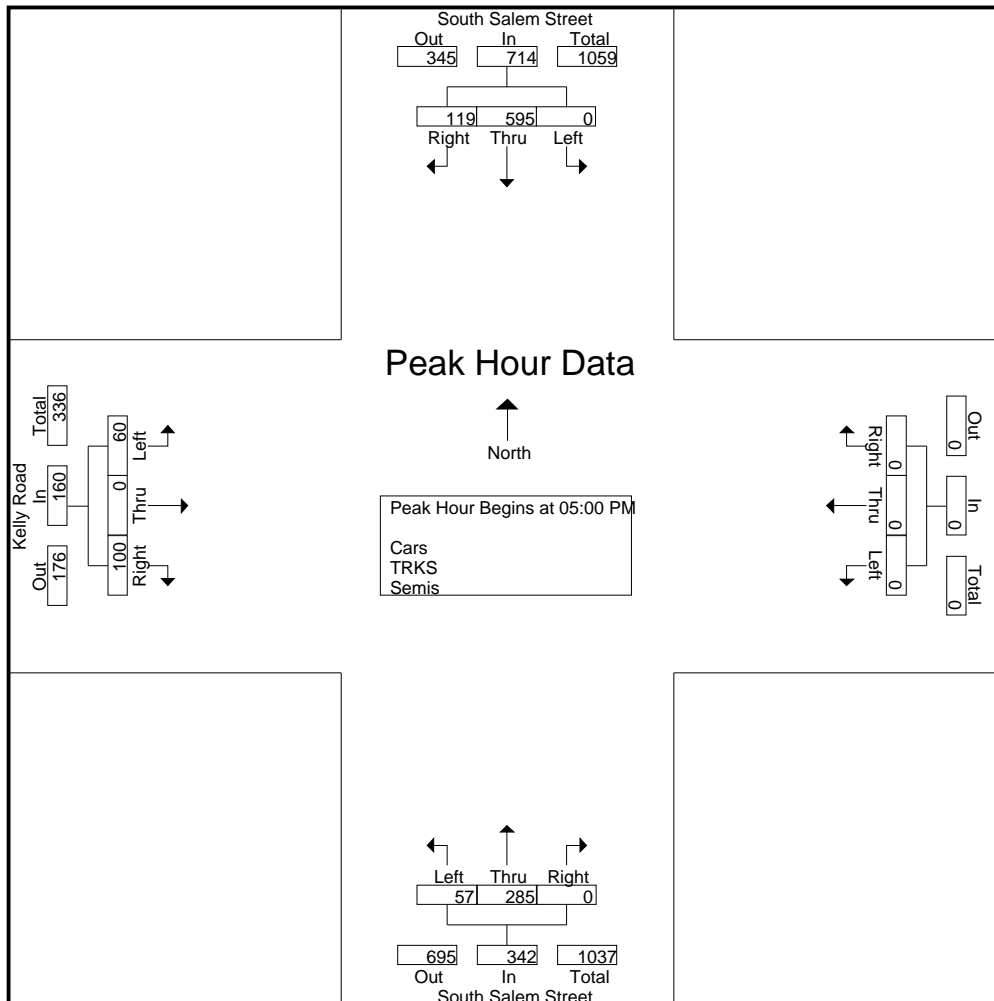




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File Name : South Salem Street and Kelly Road
 Site Code : 00000004
 Start Date : 10/22/2019
 Page No : 3

Start Time	South Salem Street From North				From East				South Salem Street From South				Kelly Road From West				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 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	17	156	0	173	0	0	0	0	0	86	14	100	22	0	13	35	308
05:15 PM	30	162	0	192	0	0	0	0	0	62	17	79	22	0	8	30	301
05:30 PM	38	137	0	175	0	0	0	0	0	71	14	85	35	0	23	58	318
05:45 PM	34	140	0	174	0	0	0	0	0	66	12	78	21	0	16	37	289
Total Volume	119	595	0	714	0	0	0	0	0	285	57	342	100	0	60	160	1216
% App. Total	16.7	83.3	0		0	0	0		0	83.3	16.7		62.5	0	37.5		
PHF	.783	.918	.000	.930	.000	.000	.000	.000	.000	.828	.838	.855	.714	.000	.652	.690	.956





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File Name : South Salem Street and Northbound I-540 Ramps
 Site Code : 00000002
 Start Date : 10/22/2019
 Page No : 1

Groups Printed- Cars - TRKS - Semis

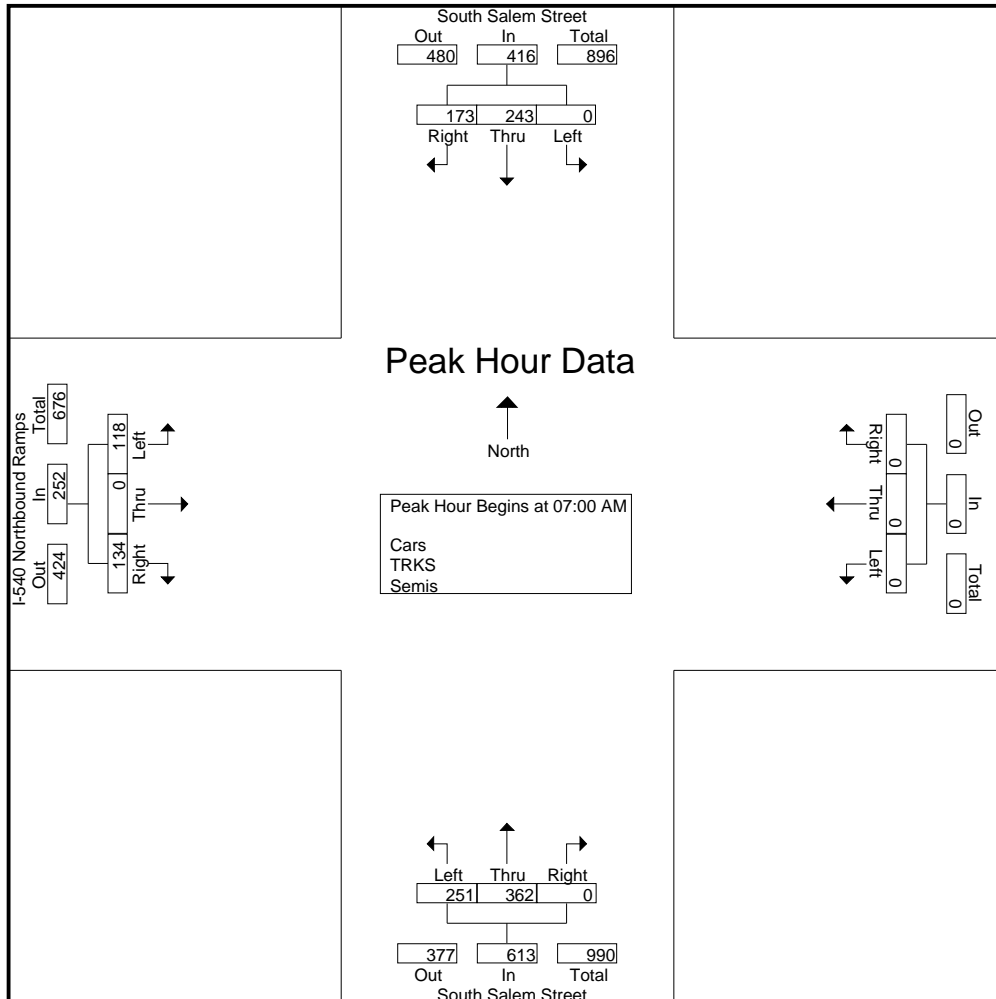
Start Time	South Salem Street From North					From East					South Salem Street From South					I-540 Northbound Ramps From West					Exclu. Total	Inclu. Total	Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total			
07:00 AM	33	74	0	0	107	0	0	0	0	0	0	79	42	0	121	63	0	11	0	74	0	302	302
07:15 AM	35	41	0	0	76	0	0	0	0	0	0	91	64	0	155	19	0	35	0	54	0	285	285
07:30 AM	53	63	0	0	116	0	0	0	0	0	0	91	65	0	156	25	0	46	0	71	0	343	343
07:45 AM	52	65	0	0	117	0	0	0	0	0	0	101	80	0	181	27	0	26	0	53	0	351	351
Total	173	243	0	0	416	0	0	0	0	0	0	362	251	0	613	134	0	118	0	252	0	1281	1281
08:00 AM	50	59	0	0	109	0	0	0	0	0	0	62	54	0	116	27	0	8	0	35	0	260	260
08:15 AM	21	33	0	0	54	0	0	0	0	0	0	56	43	0	99	26	0	10	0	36	0	189	189
08:30 AM	49	48	0	0	97	0	0	0	0	0	0	63	35	0	98	34	0	11	0	45	0	240	240
08:45 AM	49	62	0	0	111	0	0	0	0	0	0	73	41	0	114	26	0	12	0	38	0	263	263
Total	169	202	0	0	371	0	0	0	0	0	0	254	173	0	427	113	0	41	0	154	0	952	952
*** BREAK ***																							
04:00 PM	9	86	0	0	95	0	0	0	0	0	0	60	20	0	80	42	0	7	0	49	0	224	224
04:15 PM	5	84	0	0	89	0	0	0	0	0	0	68	11	0	79	36	0	13	0	49	0	217	217
04:30 PM	8	67	0	0	75	0	0	0	0	0	0	77	9	0	86	36	0	24	0	60	0	221	221
04:45 PM	6	85	0	0	91	0	0	0	0	0	0	64	13	0	77	40	0	9	0	49	0	217	217
Total	28	322	0	0	350	0	0	0	0	0	0	269	53	0	322	154	0	53	0	207	0	879	879
05:00 PM	3	76	0	0	79	0	0	0	0	0	0	93	9	0	102	40	0	19	0	59	0	240	240
05:15 PM	6	75	0	0	81	0	0	0	0	0	0	73	14	0	87	53	0	18	0	71	0	239	239
05:30 PM	5	71	0	0	76	0	0	0	0	0	0	95	16	0	111	44	0	13	0	57	0	244	244
05:45 PM	3	67	0	0	70	0	0	0	0	0	0	72	10	0	82	46	0	16	0	62	0	214	214
Total	17	289	0	0	306	0	0	0	0	0	0	333	49	0	382	183	0	66	0	249	0	937	937
Grand Total	387	1056	0	0	1443	0	0	0	0	0	0	1218	526	0	1744	584	0	278	0	862	0	4049	4049
Apprch %	26.8	73.2	0			0	0	0			0	69.8	30.2			67.7	0	32.3					
Total %	9.6	26.1	0		35.6	0	0	0		0	0	30.1	13		43.1	14.4	0	6.9		21.3	0	100	
Cars	385	1028	0		1413	0	0	0		0	0	1191	509		1700	560	0	275		835	0	0	3948
% Cars	99.5	97.3	0	0	97.9	0	0	0	0	0	0	97.8	96.8	0	97.5	95.9	0	98.9	0	96.9	0	0	97.5
TRKS	2	28	0		30	0	0	0		0	0	27	16		43	22	0	2		24	0	0	97
% TRKS	0.5	2.7	0	0	2.1	0	0	0	0	0	0	2.2	3	0	2.5	3.8	0	0.7	0	2.8	0	0	2.4
Semis	0	0	0		0	0	0	0		0	0	0	1		1	2	0	1		3	0	0	4
% Semis	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0	0.1	0.3	0	0.4	0	0.3	0	0	0.1



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File Name : South Salem Street and Northbound I-540 Ramps
 Site Code : 00000002
 Start Date : 10/22/2019
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Start Time	South Salem Street From North				From East				South Salem Street From South				I-540 Northbound Ramps From West				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 09:00 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	33	74	0	107	0	0	0	0	0	79	42	121	63	0	11	74	302
07:15 AM	35	41	0	76	0	0	0	0	0	91	64	155	19	0	35	54	285
07:30 AM	53	63	0	116	0	0	0	0	0	91	65	156	25	0	46	71	343
07:45 AM	52	65	0	117	0	0	0	0	0	101	80	181	27	0	26	53	351
Total Volume	173	243	0	416	0	0	0	0	0	362	251	613	134	0	118	252	1281
% App. Total	41.6	58.4	0		0	0	0		0	59.1	40.9		53.2	0	46.8		
PHF	.816	.821	.000	.889	.000	.000	.000	.000	.000	.896	.784	.847	.532	.000	.641	.851	.912

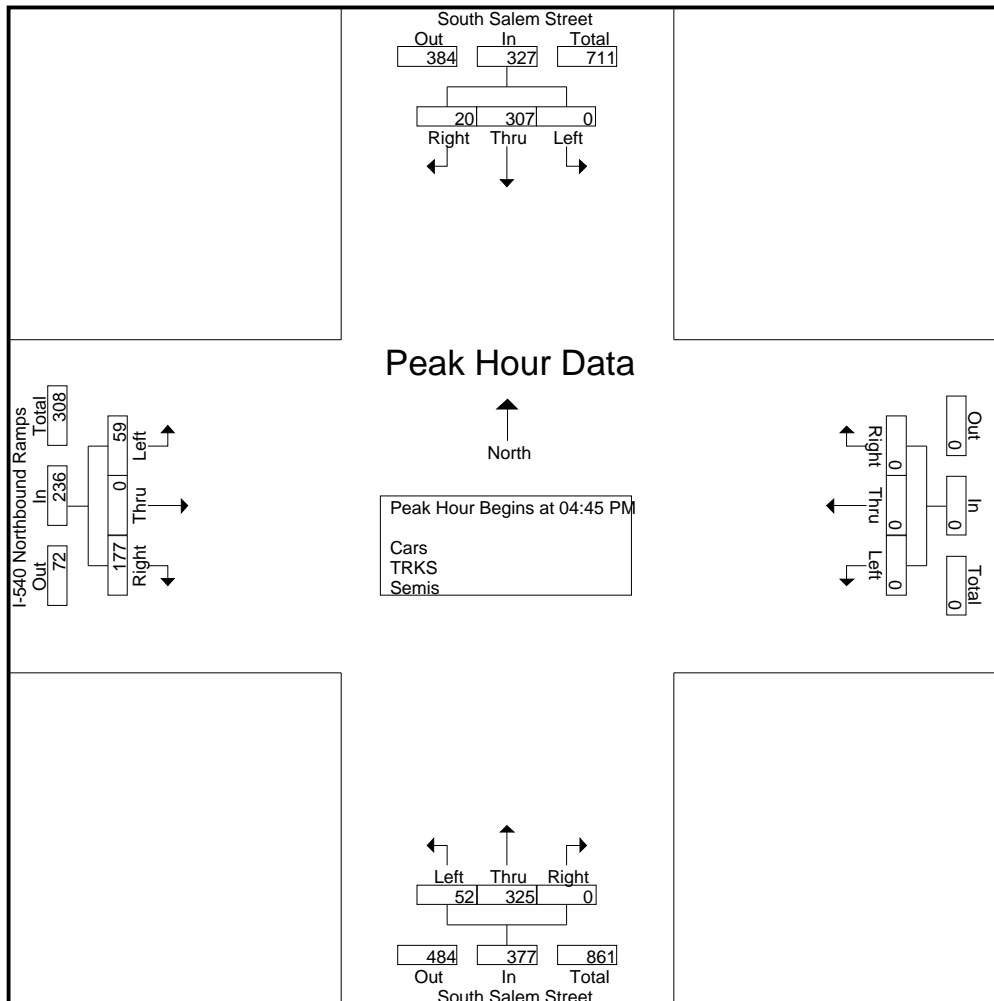




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File Name : South Salem Street and Northbound I-540 Ramps
 Site Code : 00000002
 Start Date : 10/22/2019
 Page No : 3

Start Time	South Salem Street From North				From East				South Salem Street From South				I-540 Northbound Ramps From West				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 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	6	85	0	91	0	0	0	0	0	64	13	77	40	0	9	49	217
05:00 PM	3	76	0	79	0	0	0	0	0	93	9	102	40	0	19	59	240
05:15 PM	6	75	0	81	0	0	0	0	0	73	14	87	53	0	18	71	239
05:30 PM	5	71	0	76	0	0	0	0	0	95	16	111	44	0	13	57	244
Total Volume	20	307	0	327	0	0	0	0	0	325	52	377	177	0	59	236	940
% App. Total	6.1	93.9	0		0	0	0		0	86.2	13.8		75	0	25		
PHF	.833	.903	.000	.898	.000	.000	.000	.000	.000	.855	.813	.849	.835	.000	.776	.831	.963





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File Name : South Salem Street and Southbound I-540 Ramps
 Site Code : 00000003
 Start Date : 10/22/2019
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Groups Printed- Cars - TRKS - Semis

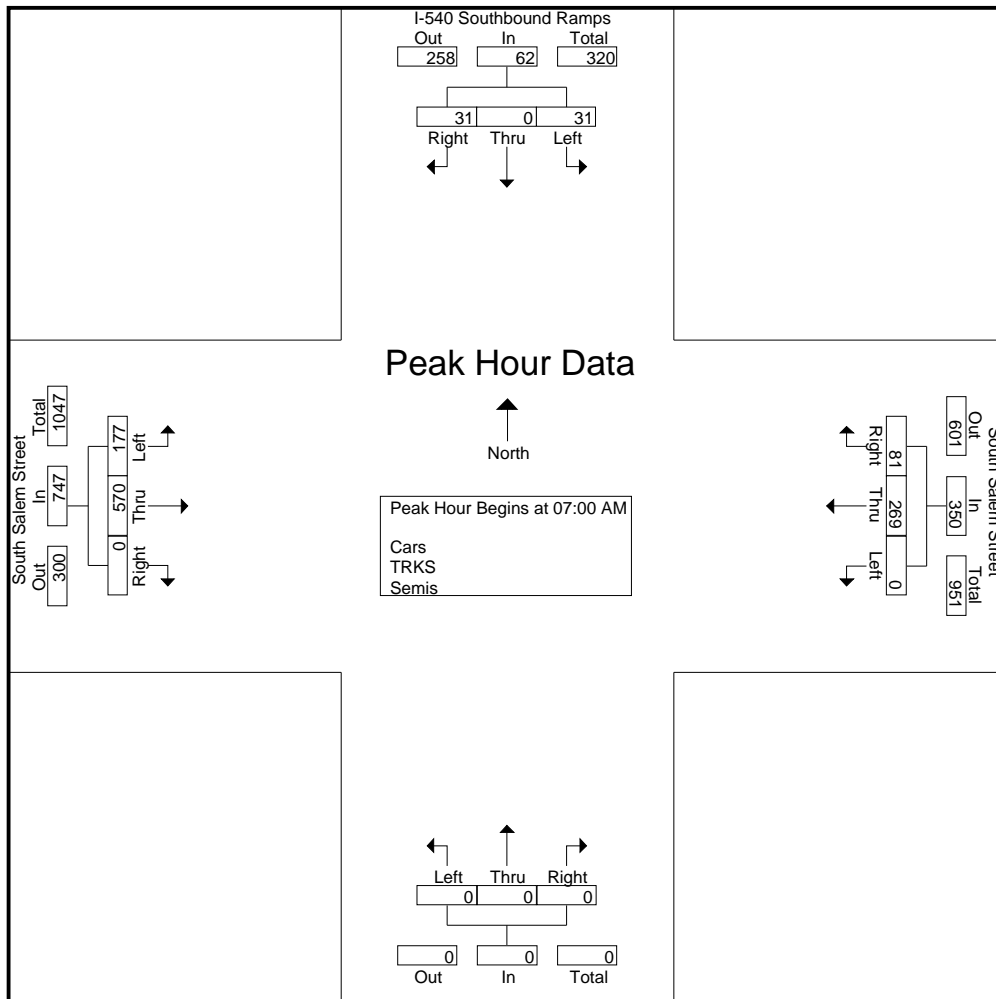
Start Time	I-540 Southbound Ramps From North					South Salem Street From East					From South					South Salem Street From West					Exclu. Total	Inclu. Total	Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total			
07:00 AM	13	0	5	0	18	12	105	0	0	117	0	0	0	0	0	0	118	47	0	165	0	300	300
07:15 AM	5	0	4	0	9	15	44	0	0	59	0	0	0	0	0	0	156	36	0	192	0	260	260
07:30 AM	8	0	12	0	20	20	64	0	0	84	0	0	0	0	0	0	139	46	0	185	0	289	289
07:45 AM	5	0	10	0	15	34	56	0	0	90	0	0	0	0	0	0	157	48	0	205	0	310	310
Total	31	0	31	0	62	81	269	0	0	350	0	0	0	0	0	0	570	177	0	747	0	1159	1159
08:00 AM	12	0	2	0	14	18	63	0	0	81	0	0	0	0	0	0	106	53	0	159	0	254	254
08:15 AM	11	0	4	0	15	12	51	0	0	63	0	0	0	0	0	0	84	55	0	139	0	217	217
08:30 AM	9	0	7	0	16	15	56	0	0	71	0	0	0	0	0	0	96	33	0	129	0	216	216
08:45 AM	4	0	8	0	12	19	65	0	1	84	0	0	0	0	0	0	97	61	0	158	1	254	255
Total	36	0	21	0	57	64	235	0	1	299	0	0	0	0	0	0	383	202	0	585	1	941	942
*** BREAK ***																							
04:00 PM	22	0	18	0	40	17	105	0	0	122	0	0	0	0	0	0	60	31	0	91	0	253	253
04:15 PM	29	0	25	0	54	20	98	0	0	118	0	0	0	0	0	0	55	34	0	89	0	261	261
04:30 PM	21	0	32	0	53	11	94	0	0	105	0	0	0	0	0	0	54	37	0	91	0	249	249
04:45 PM	32	0	24	0	56	14	111	0	0	125	0	0	0	0	0	0	47	30	0	77	0	258	258
Total	104	0	99	0	203	62	408	0	0	470	0	0	0	0	0	0	216	132	0	348	0	1021	1021
05:00 PM	62	0	43	0	105	13	101	0	0	114	0	0	0	0	0	1	60	43	0	104	0	323	323
05:15 PM	74	0	39	0	113	8	115	0	0	123	0	0	0	0	0	0	43	25	0	68	0	304	304
05:30 PM	76	0	48	0	124	10	103	0	0	113	0	0	0	0	0	0	53	41	0	94	0	331	331
05:45 PM	65	0	29	0	94	12	92	0	0	104	0	0	0	0	0	0	52	23	0	75	0	273	273
Total	277	0	159	0	436	43	411	0	0	454	0	0	0	0	0	1	208	132	0	341	0	1231	1231
Grand Total	448	0	310	0	758	250	1323	0	1	1573	0	0	0	0	0	1	1377	643	0	2021	1	4352	4353
Apprch %	59.1	0	40.9			15.9	84.1	0			0	0	0			0	68.1	31.8					
Total %	10.3	0	7.1		17.4	5.7	30.4	0		36.1	0	0	0	0	0	0	31.6	14.8		46.4	0	100	
Cars	433	0	305		738	247	1272	0		1520	0	0	0	0	0	0	1339	612		1951	0	0	4209
% Cars	96.7	0	98.4	0	97.4	98.8	96.1	0	100	96.6	0	0	0	0	0	0	97.2	95.2	0	96.5	0	0	96.7
TRKS	14	0	5		19	2	49	0		51	0	0	0	0	0	1	38	30		69	0	0	139
% TRKS	3.1	0	1.6	0	2.5	0.8	3.7	0	0	3.2	0	0	0	0	0	100	2.8	4.7	0	3.4	0	0	3.2
Semis	1	0	0		1	1	2	0		3	0	0	0	0	0	0	0	1		1	0	0	5
% Semis	0.2	0	0	0	0.1	0.4	0.2	0	0	0.2	0	0	0	0	0	0	0	0.2	0	0	0	0	0.1



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File Name : South Salem Street and Southbound I-540 Ramps
 Site Code : 00000003
 Start Date : 10/22/2019
 Page No : 2

Start Time	I-540 Southbound Ramps From North				South Salem Street From East				From South				South Salem Street From West				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 09:00 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	13	0	5	18	12	105	0	117	0	0	0	0	0	118	47	165	300
07:15 AM	5	0	4	9	15	44	0	59	0	0	0	0	0	156	36	192	260
07:30 AM	8	0	12	20	20	64	0	84	0	0	0	0	0	139	46	185	289
07:45 AM	5	0	10	15	34	56	0	90	0	0	0	0	0	157	48	205	310
Total Volume	31	0	31	62	81	269	0	350	0	0	0	0	0	570	177	747	1159
% App. Total	50	0	50		23.1	76.9	0		0	0	0	0	0	76.3	23.7		
PHF	.596	.000	.646	.775	.596	.640	.000	.748	.000	.000	.000	.000	.000	.908	.922	.911	.935

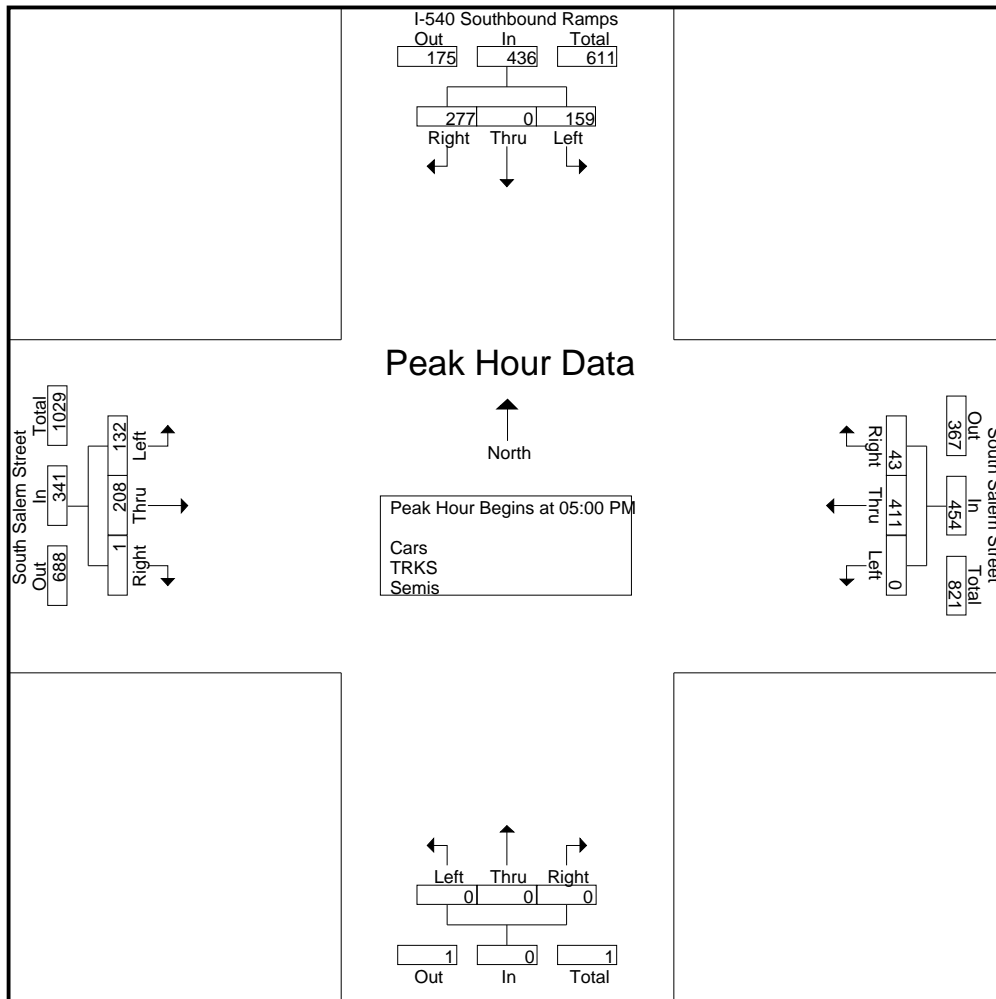




5808 Faringdon Place, Suite 100
 Raleigh, NC 27609
 PH: 919 872-5115

File Name : South Salem Street and Southbound I-540 Ramps
 Site Code : 00000003
 Start Date : 10/22/2019
 Page No : 3

Start Time	I-540 Southbound Ramps From North				South Salem Street From East				From South				South Salem Street From West				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 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	62	0	43	105	13	101	0	114	0	0	0	0	1	60	43	104	323
05:15 PM	74	0	39	113	8	115	0	123	0	0	0	0	0	43	25	68	304
05:30 PM	76	0	48	124	10	103	0	113	0	0	0	0	0	53	41	94	331
05:45 PM	65	0	29	94	12	92	0	104	0	0	0	0	0	52	23	75	273
Total Volume	277	0	159	436	43	411	0	454	0	0	0	0	1	208	132	341	1231
% App. Total	63.5	0	36.5		9.5	90.5	0		0	0	0		0.3	61	38.7		
PHF	.911	.000	.828	.879	.827	.893	.000	.923	.000	.000	.000	.000	.250	.867	.767	.820	.930



Nate Bouquin

From: Brennan, Sean P <spbrennan@ncdot.gov>
Sent: Friday, December 20, 2019 4:23 PM
To: Nate Bouquin; Serge Grebenschikov; Neidringhaus, Amy N; Fenner, Edwin F; Russell Dalton
Cc: Joshua Reinke; Ishak, Doumit Y; Bunting, Clarence B; Walker, Braden M; Rynal Stephenson
Subject: RE: [External] RE: Poe Property Apex - TIA Scoping Meeting

Nate,

I'm good with the MOU, but I wanted to note that there is a typo on page 7 that shows the second driveway from the north to be a left-over; however, this should be shown as a right-in/right-out.

Regards,

Sean Brennan, PE
Senior Assistant District Engineer
Division 5/District 1
Department of Transportation

919-733-3213 office
919-715-5778 fax
spbrennan@ncdot.gov

4009 District Drive (Physical Address)
Raleigh, NC 27607

1575 Mail Service Center (Mailing Address)
Raleigh, NC 27699-1575



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From: Nate Bouquin <nbouquin@rameykemp.com>
Sent: Wednesday, December 18, 2019 3:47 PM
To: Serge Grebenschikov <Serge.Grebenschikov@apexnc.org>; Brennan, Sean P <spbrennan@ncdot.gov>; Neidringhaus, Amy N <anneidringhaus@ncdot.gov>; Fenner, Edwin F <effenner@ncdot.gov>; Russell Dalton <Russell.Dalton@apexnc.org>
Cc: Joshua Reinke <jreinke@rameykemp.com>; Ishak, Doumit Y <dishak@ncdot.gov>; Bunting, Clarence B <cbunting@ncdot.gov>; Walker, Braden M <bmwalker1@ncdot.gov>; Rynal Stephenson <rstephenson@rameykemp.com>
Subject: RE: [External] RE: Poe Property Apex - TIA Scoping Meeting

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Thanks for the quick review Serge! Yes, with the proposed two (2) full movements we would meet the 1,200 feet spacing. The site has ~3,800 feet of frontage, so it seems like a lot at first but the spacing should meet their guidelines.

Have you have a happy and safe Holidays!

Nate Bouquin, EI
Transportation Associate



919-872-5115 (Office)
919-987-1301 (Direct)

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From: Serge Grebenschikov <Serge.Grebenschikov@apexnc.org>

Sent: Wednesday, December 18, 2019 3:42 PM

To: Brennan, Sean P <spbrennan@ncdot.gov>; Nate Bouquin <nbouquin@rameykemp.com>; Neidringhaus, Amy N <anneidringhaus@ncdot.gov>; Fenner, Edwin F <effenner@ncdot.gov>; Russell Dalton <Russell.Dalton@apexnc.org>

Cc: Joshua Reinke <jreinke@rameykemp.com>; Ishak, Doumit Y <dishak@ncdot.gov>; Bunting, Clarence B <cbunting@ncdot.gov>; Walker, Braden M <bmwalker1@ncdot.gov>; Rynal Stephenson <rstephenson@rameykemp.com>

Subject: RE: [External] RE: Poe Property Apex - TIA Scoping Meeting

Hi Nate,

I reviewed the MOU and I have no issues with your proposed distributions and trip assignments. I saw you are proposing 7 site driveways into the site with 5 along Old US 1. Does the spacing work out per NCDOT guidance (1200 feet between full access movements) on Old US 1. If so, then I don't think there are any issues.

Kind regards.

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

Nate Bouquin

From: Serge Grebenschikov <Serge.Grebenschikov@apexnc.org>
Sent: Wednesday, December 18, 2019 3:42 PM
To: Brennan, Sean P; Nate Bouquin; Neidringhaus, Amy N; Fenner, Edwin F; Russell Dalton
Cc: Joshua Reinke; Ishak, Doumit Y; Bunting, Clarence B; Walker, Braden M; Rynal Stephenson
Subject: RE: [External] RE: Poe Property Apex - TIA Scoping Meeting

Hi Nate,

I reviewed the MOU and I have no issues with your proposed distributions and trip assignments. I saw you are proposing 7 site driveways into the site with 5 along Old US 1. Does the spacing work out per NCDOT guidance (1200 feet between full access movements) on Old US 1. If so, then I don't think there are any issues.

Kind regards.

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: Brennan, Sean P [mailto:spbrennan@ncdot.gov]
Sent: Wednesday, December 18, 2019 1:26 PM
To: Nate Bouquin <nbouquin@rameykemp.com>; Neidringhaus, Amy N <anneidringhaus@ncdot.gov>; Fenner, Edwin F <effenner@ncdot.gov>; Serge Grebenschikov <Serge.Grebenschikov@apexnc.org>; Russell Dalton <Russell.Dalton@apexnc.org>
Cc: Joshua Reinke <jreinke@rameykemp.com>; Ishak, Doumit Y <dishak@ncdot.gov>; Bunting, Clarence B <cbunting@ncdot.gov>; Walker, Braden M <bmwalker1@ncdot.gov>; Rynal Stephenson <rstephenson@rameykemp.com>
Subject: RE: [External] RE: Poe Property Apex - TIA Scoping Meeting

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Yes.

Regards,
Sean Brennan, PE
Senior Assistant District Engineer
Division 5/District 1
Department of Transportation

919-733-3213 office
919-715-5778 fax
spbrennan@ncdot.gov

4009 District Drive (Physical Address)
Raleigh, NC 27607

1575 Mail Service Center (Mailing Address)
Raleigh, NC 27699-1575



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: Wednesday, December 18, 2019 1:23 PM
To: Brennan, Sean P <spbrennan@ncdot.gov>; Neidringhaus, Amy N <anneidringhaus@ncdot.gov>; Fenner, Edwin F <effenner@ncdot.gov>; Serge Grebenschikov <Serge.Grebenschikov@apexnc.org>; Russell Dalton <Russell.Dalton@apexnc.org>
Cc: Joshua Reinke <jreinke@rameykemp.com>; Ishak, Doumit Y <dishak@ncdot.gov>; Bunting, Clarence B <cbunting@ncdot.gov>; Walker, Braden M <bmwalker1@ncdot.gov>; Rynal Stephenson <rstephenson@rameykemp.com>
Subject: RE: [External] RE: Poe Property Apex - TIA Scoping Meeting

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Would it be acceptable if we submit that concurrently with the TIA and then just indicate that our southern access is contingent upon approval of the speed limit reduction?

Thanks!

Nate Bouquin, EI
Transportation Associate



919-872-5115 (Office)
919-987-1301 (Direct)

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APPENDIX B

COUNT DATA



5808 Faringdon Place, Suite 100
 Raleigh, NC 27609
 PH: 919 872-5115

File Name : Apex Barbecue Road and Kelly Road
 Site Code : 00000007
 Start Date : 10/22/2019
 Page No : 1

Groups Printed- Cars - TRKS - Semis

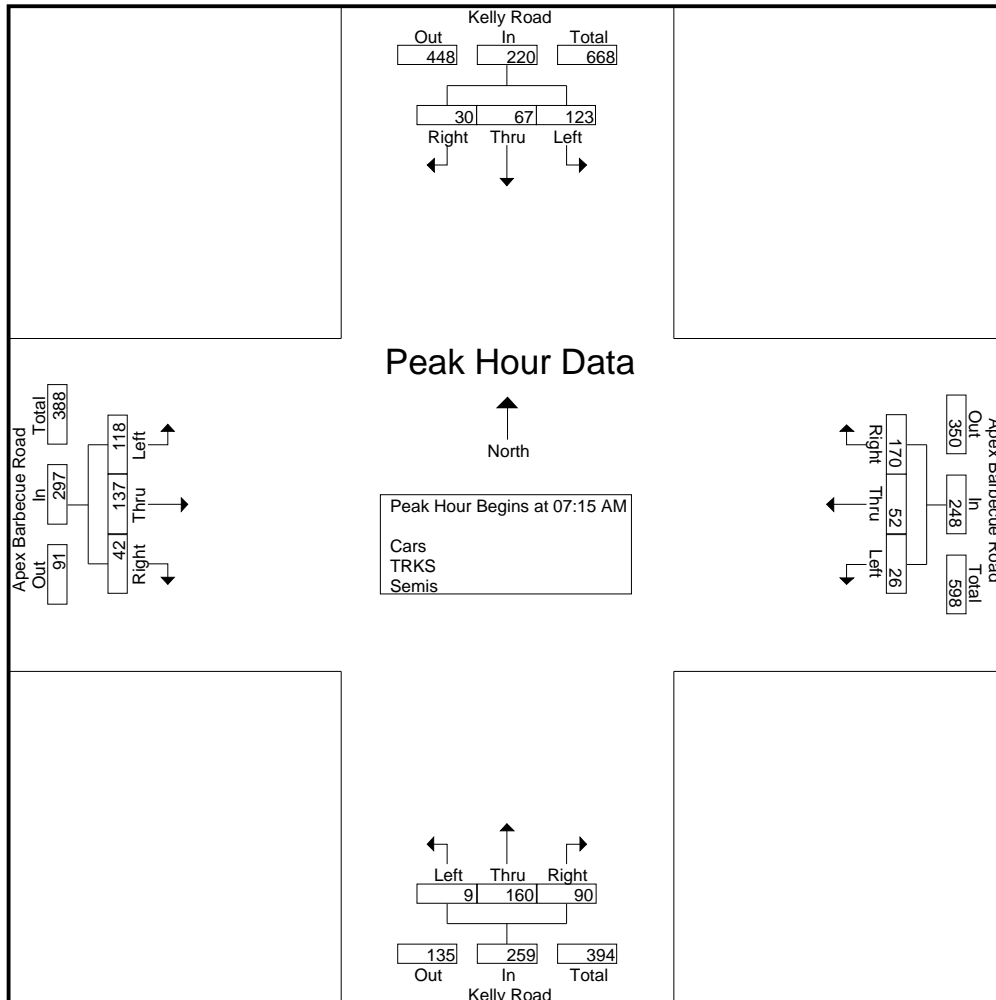
Start Time	Kelly Road From North					Apex Barbecue Road From East					Kelly Road From South					Apex Barbecue Road From West					Exclu. Total	Inclu. Total	Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total			
07:00 AM	21	11	14	0	46	27	61	6	0	94	4	45	4	0	53	8	30	25	0	63	0	256	256
07:15 AM	9	8	11	0	28	34	13	6	0	53	4	41	4	0	49	7	29	29	0	65	0	195	195
07:30 AM	5	20	34	0	59	38	11	3	0	52	22	32	2	0	56	14	40	31	0	85	0	252	252
07:45 AM	7	18	46	0	71	47	22	8	0	77	30	43	2	0	75	11	41	30	0	82	0	305	305
Total	42	57	105	0	204	146	107	23	0	276	60	161	12	0	233	40	140	115	0	295	0	1008	1008
08:00 AM	9	21	32	0	62	51	6	9	1	66	34	44	1	0	79	10	27	28	0	65	1	272	273
08:15 AM	8	16	15	0	39	29	8	8	0	45	23	24	2	0	49	7	27	12	0	46	0	179	179
08:30 AM	7	11	17	0	35	26	16	8	0	50	22	18	5	0	45	3	22	32	0	57	0	187	187
08:45 AM	12	16	17	0	45	42	17	18	0	77	30	23	3	0	56	8	30	33	0	71	0	249	249
Total	36	64	81	0	181	148	47	43	1	238	109	109	11	0	229	28	106	105	0	239	1	887	888
*** BREAK ***																							
04:00 PM	25	33	28	0	86	21	30	15	0	66	4	22	6	0	32	5	19	11	0	35	0	219	219
04:15 PM	32	41	37	0	110	36	17	11	0	64	9	24	4	0	37	2	20	12	0	34	0	245	245
04:30 PM	24	60	33	0	117	22	26	9	0	57	15	25	5	0	45	5	30	8	0	43	0	262	262
04:45 PM	41	54	28	0	123	25	34	14	0	73	5	18	7	0	30	3	23	13	0	39	0	265	265
Total	122	188	126	0	436	104	107	49	0	260	33	89	22	0	144	15	92	44	0	151	0	991	991
05:00 PM	27	43	38	0	108	17	21	3	0	41	10	29	2	0	41	5	18	10	0	33	0	223	223
05:15 PM	30	27	24	1	81	11	23	8	0	42	15	31	7	0	53	3	16	10	0	29	1	205	206
05:30 PM	17	59	47	0	123	27	10	6	0	43	15	37	8	0	60	3	13	13	0	29	0	255	255
05:45 PM	28	44	34	1	106	17	17	8	0	42	11	31	4	0	46	5	26	7	0	38	1	232	233
Total	102	173	143	2	418	72	71	25	0	168	51	128	21	0	200	16	73	40	0	129	2	915	917
Grand Total	302	482	455	2	1239	470	332	140	1	942	253	487	66	0	806	99	411	304	0	814	3	3801	3804
Apprch %	24.4	38.9	36.7			49.9	35.2	14.9			31.4	60.4	8.2			12.2	50.5	37.3					
Total %	7.9	12.7	12		32.6	12.4	8.7	3.7		24.8	6.7	12.8	1.7		21.2	2.6	10.8	8		21.4	0.1	99.9	
Cars	300	476	450		1228	469	325	134		929	247	476	66		789	97	405	303		805	0	0	3751
% Cars	99.3	98.8	98.9	100	99	99.8	97.9	95.7	100	98.5	97.6	97.7	100	0	97.9	98	98.5	99.7	0	98.9	0	0	98.6
TRKS	2	5	5		12	1	7	5		13	6	10	0		16	2	6	1		9	0	0	50
% TRKS	0.7	1	1.1		1	0.2	2.1	3.6		1.4	2.4	2.1	0		2	2	1.5	0.3		1.1	0	0	1.3
Semis	0	1	0		1	0	0	1		1	0	1	0		1	0	0	0		0	0	0	3
% Semis	0	0.2	0		0.1	0	0	0.7		0.1	0	0.2	0		0.1	0	0	0		0	0	0	0.1



5808 Faringdon Place, Suite 100
 Raleigh, NC 27609
 PH: 919 872-5115

File Name : Apex Barbecue Road and Kelly Road
 Site Code : 00000007
 Start Date : 10/22/2019
 Page No : 2

Start Time	Kelly Road From North				Apex Barbecue Road From East				Kelly Road From South				Apex Barbecue Road From West				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 09:00 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	9	8	11	28	34	13	6	53	4	41	4	49	7	29	29	65	195
07:30 AM	5	20	34	59	38	11	3	52	22	32	2	56	14	40	31	85	252
07:45 AM	7	18	46	71	47	22	8	77	30	43	2	75	11	41	30	82	305
08:00 AM	9	21	32	62	51	6	9	66	34	44	1	79	10	27	28	65	272
Total Volume	30	67	123	220	170	52	26	248	90	160	9	259	42	137	118	297	1024
% App. Total	13.6	30.5	55.9		68.5	21	10.5		34.7	61.8	3.5		14.1	46.1	39.7		
PHF	.833	.798	.668	.775	.833	.591	.722	.805	.662	.909	.563	.820	.750	.835	.952	.874	.839

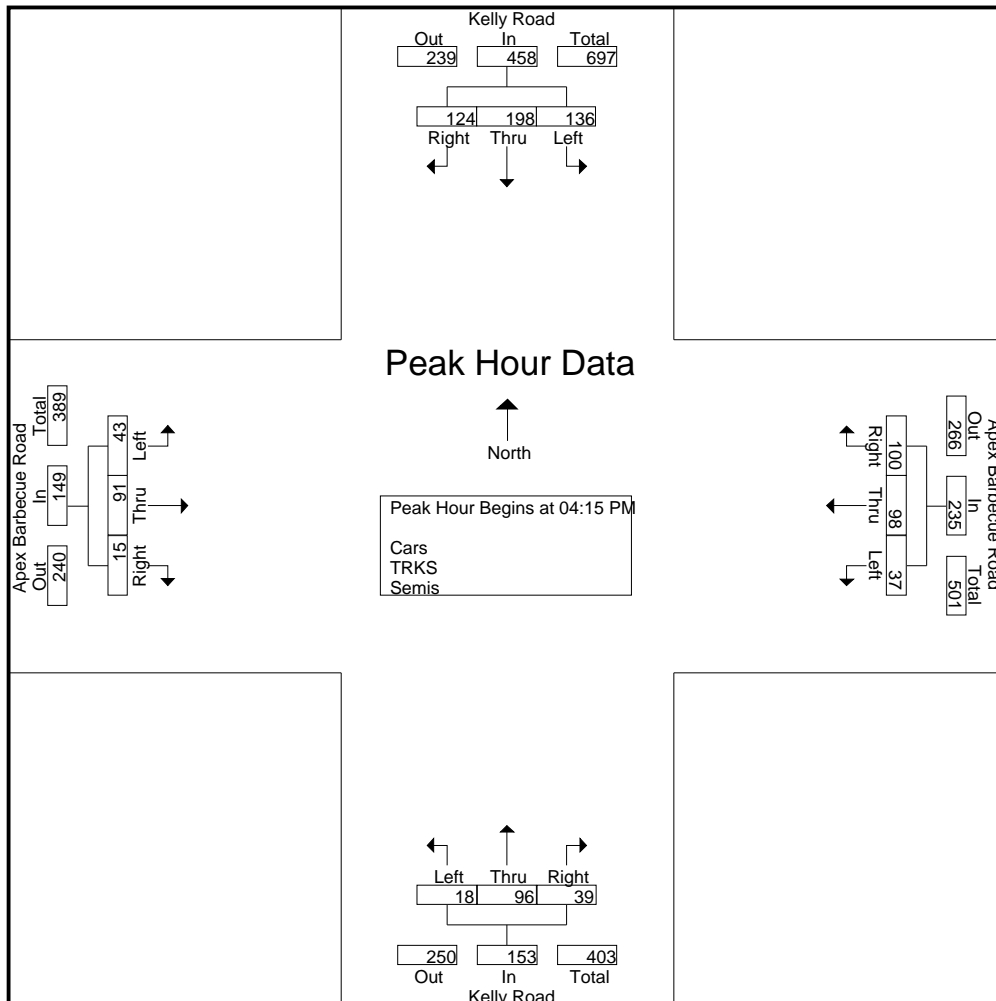




5808 Faringdon Place, Suite 100
 Raleigh, NC 27609
 PH: 919 872-5115

File Name : Apex Barbecue Road and Kelly Road
 Site Code : 00000007
 Start Date : 10/22/2019
 Page No : 3

Start Time	Kelly Road From North				Apex Barbecue Road From East				Kelly Road From South				Apex Barbecue Road From West				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 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	32	41	37	110	36	17	11	64	9	24	4	37	2	20	12	34	245
04:30 PM	24	60	33	117	22	26	9	57	15	25	5	45	5	30	8	43	262
04:45 PM	41	54	28	123	25	34	14	73	5	18	7	30	3	23	13	39	265
05:00 PM	27	43	38	108	17	21	3	41	10	29	2	41	5	18	10	33	223
Total Volume	124	198	136	458	100	98	37	235	39	96	18	153	15	91	43	149	995
% App. Total	27.1	43.2	29.7		42.6	41.7	15.7		25.5	62.7	11.8		10.1	61.1	28.9		
PHF	.756	.825	.895	.931	.694	.721	.661	.805	.650	.828	.643	.850	.750	.758	.827	.866	.939





5808 Faringdon Place, Suite 100
 Raleigh, NC 27609
 PH: 919 872-5115

File Name : Apex Barbecue Road and Scotts Ridge Trail
 Site Code : 00000006
 Start Date : 10/22/2019
 Page No : 1

Groups Printed- Cars - TRKS - Semis

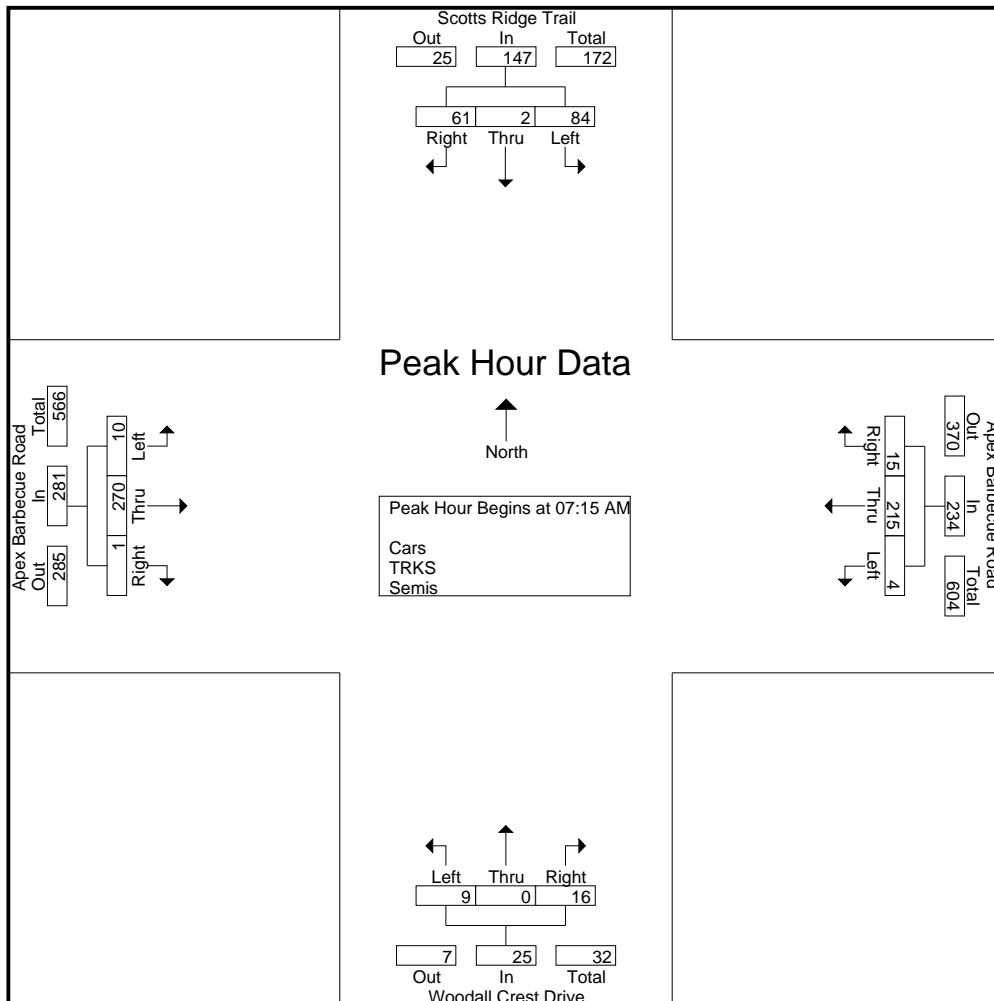
Start Time	Scotts Ridge Trail From North					Apex Barbecue Road From East					Woodall Crest Drive From South					Apex Barbecue Road From West					Exclu. Total	Inclu. Total	Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total			
07:00 AM	15	0	8	0	23	2	56	0	0	58	4	0	5	0	9	0	50	4	0	54	0	144	144
07:15 AM	12	1	16	0	29	2	30	0	0	32	6	0	2	0	8	0	51	2	0	53	0	122	122
07:30 AM	13	1	25	0	39	1	43	0	0	44	3	0	0	0	3	0	92	1	0	93	0	179	179
07:45 AM	23	0	26	0	49	7	94	2	0	103	4	0	3	0	7	0	70	2	0	72	0	231	231
Total	63	2	75	0	140	12	223	2	0	237	17	0	10	0	27	0	263	9	0	272	0	676	676
08:00 AM	13	0	17	0	30	5	48	2	0	55	3	0	4	0	7	1	57	5	0	63	0	155	155
08:15 AM	9	0	13	0	22	4	36	4	0	44	1	0	3	0	4	0	52	0	0	52	0	122	122
08:30 AM	14	0	25	0	39	8	36	2	0	46	6	0	1	0	7	1	57	7	0	65	0	157	157
08:45 AM	8	0	24	0	32	9	42	3	0	54	7	1	2	1	10	3	133	4	0	140	1	236	237
Total	44	0	79	0	123	26	162	11	0	199	17	1	10	1	28	5	299	16	0	320	1	670	671
*** BREAK ***																							
04:00 PM	5	0	6	0	11	7	44	4	0	55	6	0	0	0	6	3	64	9	0	76	0	148	148
04:15 PM	8	0	15	0	23	8	52	6	0	66	3	0	0	0	3	2	61	10	0	73	0	165	165
04:30 PM	6	0	4	0	10	15	67	2	0	84	3	0	0	0	3	1	62	11	0	74	0	171	171
04:45 PM	2	0	7	0	9	11	54	5	0	70	4	0	0	0	4	1	59	9	0	69	0	152	152
Total	21	0	32	0	53	41	217	17	0	275	16	0	0	0	16	7	246	39	0	292	0	636	636
05:00 PM	4	0	11	0	15	13	53	5	0	71	2	0	0	0	2	2	47	19	0	68	0	156	156
05:15 PM	1	0	9	0	10	9	48	3	0	60	1	1	2	0	4	3	43	13	0	59	0	133	133
05:30 PM	7	0	22	0	29	18	40	7	0	65	3	0	0	0	3	1	47	12	0	60	0	157	157
05:45 PM	3	0	11	0	14	15	49	9	0	73	4	0	0	0	4	2	53	9	0	64	0	155	155
Total	15	0	53	0	68	55	190	24	0	269	10	1	2	0	13	8	190	53	0	251	0	601	601
Grand Total	143	2	239	0	384	134	792	54	0	980	60	2	22	1	84	20	998	117	0	1135	1	2583	2584
Apprch %	37.2	0.5	62.2			13.7	80.8	5.5			71.4	2.4	26.2			1.8	87.9	10.3					
Total %	5.5	0.1	9.3		14.9	5.2	30.7	2.1		37.9	2.3	0.1	0.9		3.3	0.8	38.6	4.5		43.9	0	100	
Cars	143	0	237		380	129	779	54		962	58	2	21		82	20	977	116		1113	0	0	2537
% Cars	100	0	99.2		99	96.3	98.4	100		98.2	96.7	100	95.5		96.5	100	97.9	99.1		98.1	0	0	98.2
TRKS	0	2	2		4	5	13	0		18	2	0	1		3	0	21	1		22	0	0	47
% TRKS	0	100	0.8		1	3.7	1.6	0		1.8	3.3	0	4.5		3.5	0	2.1	0.9		1.9	0	0	1.8
Semis	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0
% Semis	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0



5808 Faringdon Place, Suite 100
 Raleigh, NC 27609
 PH: 919 872-5115

File Name : Apex Barbecue Road and Scotts Ridge Trail
 Site Code : 00000006
 Start Date : 10/22/2019
 Page No : 2

Start Time	Scotts Ridge Trail From North				Apex Barbecue Road From East				Woodall Crest Drive From South				Apex Barbecue Road From West				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 09:00 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	12	1	16	29	2	30	0	32	6	0	2	8	0	51	2	53	122
07:30 AM	13	1	25	39	1	43	0	44	3	0	0	3	0	92	1	93	179
07:45 AM	23	0	26	49	7	94	2	103	4	0	3	7	0	70	2	72	231
08:00 AM	13	0	17	30	5	48	2	55	3	0	4	7	1	57	5	63	155
Total Volume	61	2	84	147	15	215	4	234	16	0	9	25	1	270	10	281	687
% App. Total	41.5	1.4	57.1		6.4	91.9	1.7		64	0	36		0.4	96.1	3.6		
PHF	.663	.500	.808	.750	.536	.572	.500	.568	.667	.000	.563	.781	.250	.734	.500	.755	.744

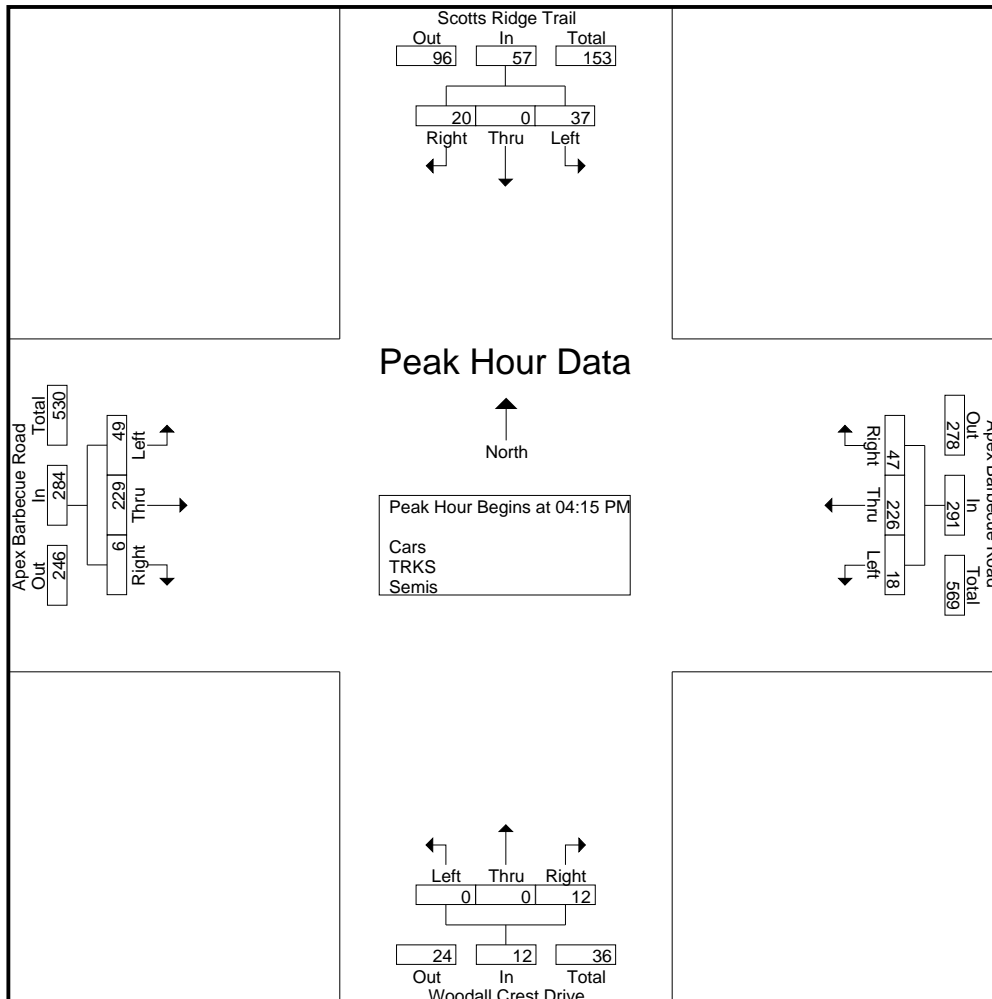




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File Name : Apex Barbecue Road and Scotts Ridge Trail
 Site Code : 00000006
 Start Date : 10/22/2019
 Page No : 3

Start Time	Scotts Ridge Trail From North				Apex Barbecue Road From East				Woodall Crest Drive From South				Apex Barbecue Road From West				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 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	8	0	15	23	8	52	6	66	3	0	0	3	2	61	10	73	165
04:30 PM	6	0	4	10	15	67	2	84	3	0	0	3	1	62	11	74	171
04:45 PM	2	0	7	9	11	54	5	70	4	0	0	4	1	59	9	69	152
05:00 PM	4	0	11	15	13	53	5	71	2	0	0	2	2	47	19	68	156
Total Volume	20	0	37	57	47	226	18	291	12	0	0	12	6	229	49	284	644
% App. Total	35.1	0	64.9		16.2	77.7	6.2		100	0	0		2.1	80.6	17.3		
PHF	.625	.000	.617	.620	.783	.843	.750	.866	.750	.000	.000	.750	.750	.923	.645	.959	.942





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File Name : Apex Barbecue Road and Town Side Drive
 Site Code : 00000005
 Start Date : 10/22/2019
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Groups Printed- Cars - TRKS - Semis

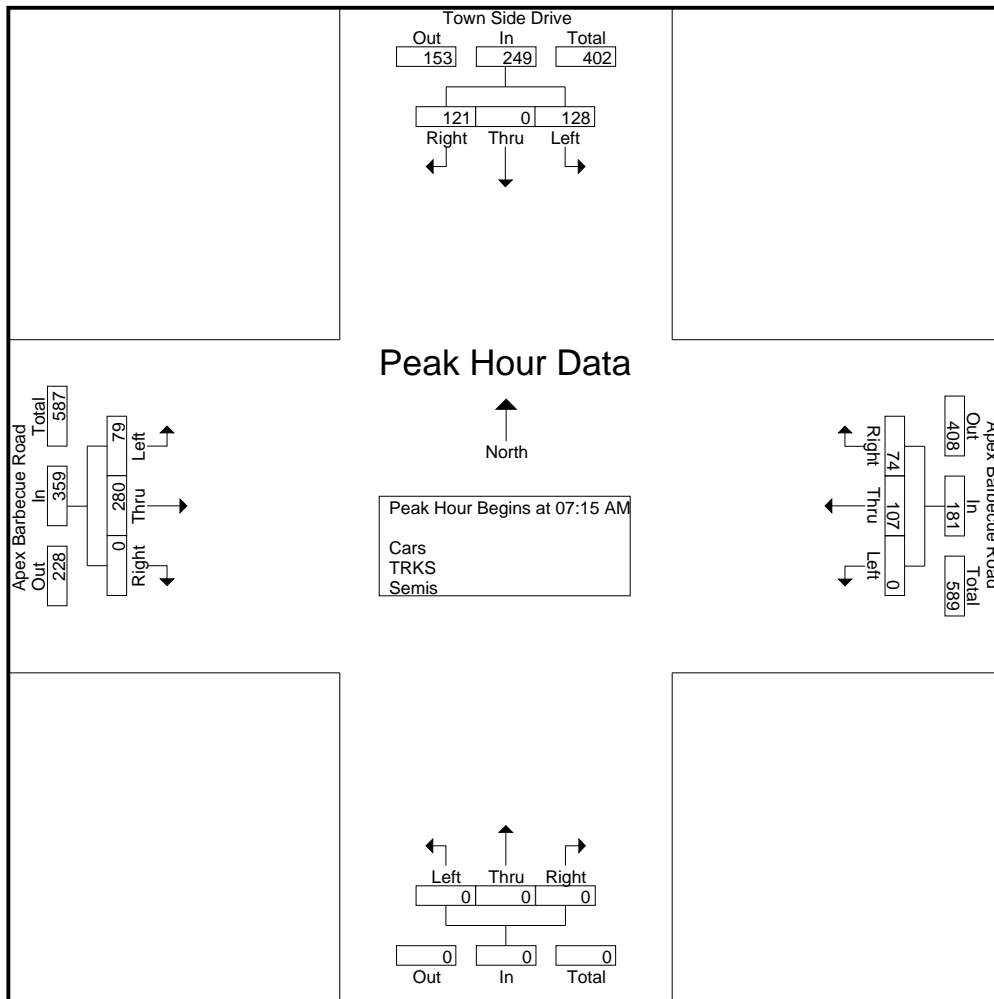
Start Time	Town Side Drive From North					Apex Barbecue Road From East					From South					Apex Barbecue Road From West					Exclu. Total	Inclu. Total	Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total			
07:00 AM	32	0	20	0	52	7	20	0	0	27	0	0	0	0	0	0	49	11	0	60	0	139	139
07:15 AM	8	0	19	0	27	12	21	0	0	33	0	0	0	0	0	0	55	17	0	72	0	132	132
07:30 AM	29	0	42	0	71	35	20	0	0	55	0	0	0	0	0	0	87	25	0	112	0	238	238
07:45 AM	58	0	47	0	105	24	36	0	0	60	0	0	0	0	0	0	76	22	0	98	0	263	263
Total	127	0	128	0	255	78	97	0	0	175	0	0	0	0	0	0	267	75	0	342	0	772	772
08:00 AM	26	0	20	0	46	3	30	0	0	33	0	0	0	0	0	0	62	15	0	77	0	156	156
08:15 AM	21	0	6	0	27	6	30	0	0	36	0	0	0	0	0	0	59	7	0	66	0	129	129
08:30 AM	20	0	20	0	40	8	23	0	0	31	0	0	0	0	0	0	75	11	0	86	0	157	157
08:45 AM	22	0	15	0	37	8	32	0	0	40	0	0	0	0	0	0	137	25	0	162	0	239	239
Total	89	0	61	0	150	25	115	0	0	140	0	0	0	0	0	0	333	58	0	391	0	681	681
*** BREAK ***																							
04:00 PM	9	0	9	0	18	7	45	0	0	52	0	0	0	0	0	0	58	19	0	77	0	147	147
04:15 PM	22	0	17	0	39	16	40	0	0	56	0	0	0	0	0	0	62	16	0	78	0	173	173
04:30 PM	16	0	10	0	26	13	75	0	0	88	0	0	0	0	0	0	55	13	0	68	0	182	182
04:45 PM	13	0	9	0	22	5	52	0	0	57	0	0	0	0	0	0	54	17	0	71	0	150	150
Total	60	0	45	0	105	41	212	0	0	253	0	0	0	0	0	0	229	65	0	294	0	652	652
05:00 PM	13	0	8	0	21	18	54	0	0	72	0	0	0	0	0	0	46	15	0	61	0	154	154
05:15 PM	14	0	5	0	19	12	48	0	0	60	0	0	0	0	0	0	41	13	0	54	0	133	133
05:30 PM	8	0	9	0	17	10	53	0	0	63	0	0	0	0	0	0	56	13	0	69	0	149	149
05:45 PM	14	0	10	0	24	14	54	0	0	68	0	0	0	0	0	0	50	10	0	60	0	152	152
Total	49	0	32	0	81	54	209	0	0	263	0	0	0	0	0	0	193	51	0	244	0	588	588
Grand Total	325	0	266	0	591	198	633	0	0	831	0	0	0	0	0	0	1022	249	0	1271	0	2693	2693
Apprch %	55	0	45			23.8	76.2	0			0	0	0				80.4	19.6					
Total %	12.1	0	9.9		21.9	7.4	23.5	0		30.9	0	0	0	0	0	0	38	9.2		47.2	0	100	
Cars	322	0	263		585	192	618	0		810	0	0	0	0	0	0	997	247		1244	0	0	2639
% Cars	99.1	0	98.9		99	97	97.6	0		97.5	0	0	0	0	0	0	97.6	99.2		97.9	0	0	98
TRKS	3	0	3		6	6	15	0		21	0	0	0	0	0	0	25	2		27	0	0	54
% TRKS	0.9	0	1.1		1	3	2.4	0		2.5	0	0	0	0	0	0	2.4	0.8		2.1	0	0	2
Semis	0	0	0		0	0	0	0		0	0	0	0	0	0	0	0	0		0	0	0	0
% Semis	0	0	0		0	0	0	0		0	0	0	0	0	0	0	0	0		0	0	0	0



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File Name : Apex Barbecue Road and Town Side Drive
 Site Code : 00000005
 Start Date : 10/22/2019
 Page No : 2

Start Time	Town Side Drive From North				Apex Barbecue Road From East				From South				Apex Barbecue Road From West				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 09:00 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	8	0	19	27	12	21	0	33	0	0	0	0	0	55	17	72	132
07:30 AM	29	0	42	71	35	20	0	55	0	0	0	0	0	87	25	112	238
07:45 AM	58	0	47	105	24	36	0	60	0	0	0	0	0	76	22	98	263
08:00 AM	26	0	20	46	3	30	0	33	0	0	0	0	0	62	15	77	156
Total Volume	121	0	128	249	74	107	0	181	0	0	0	0	0	280	79	359	789
% App. Total	48.6	0	51.4		40.9	59.1	0		0	0	0	0	0	78	22		
PHF	.522	.000	.681	.593	.529	.743	.000	.754	.000	.000	.000	.000	.000	.805	.790	.801	.750

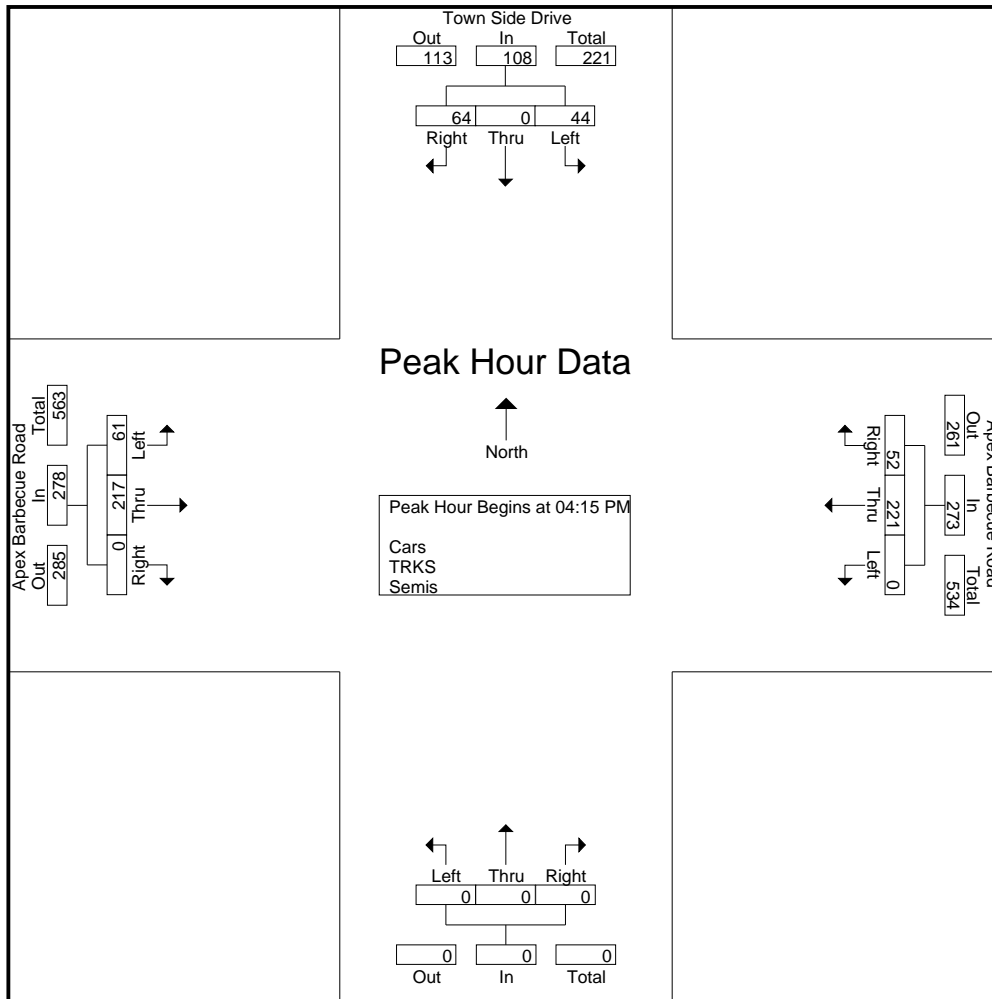




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File Name : Apex Barbecue Road and Town Side Drive
 Site Code : 00000005
 Start Date : 10/22/2019
 Page No : 3

Start Time	Town Side Drive From North				Apex Barbecue Road From East				From South				Apex Barbecue Road From West				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 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	22	0	17	39	16	40	0	56	0	0	0	0	0	62	16	78	173
04:30 PM	16	0	10	26	13	75	0	88	0	0	0	0	0	55	13	68	182
04:45 PM	13	0	9	22	5	52	0	57	0	0	0	0	0	54	17	71	150
05:00 PM	13	0	8	21	18	54	0	72	0	0	0	0	0	46	15	61	154
Total Volume	64	0	44	108	52	221	0	273	0	0	0	0	0	217	61	278	659
% App. Total	59.3	0	40.7		19	81	0		0	0	0	0	0	78.1	21.9		
PHF	.727	.000	.647	.692	.722	.737	.000	.776	.000	.000	.000	.000	.000	.875	.897	.891	.905

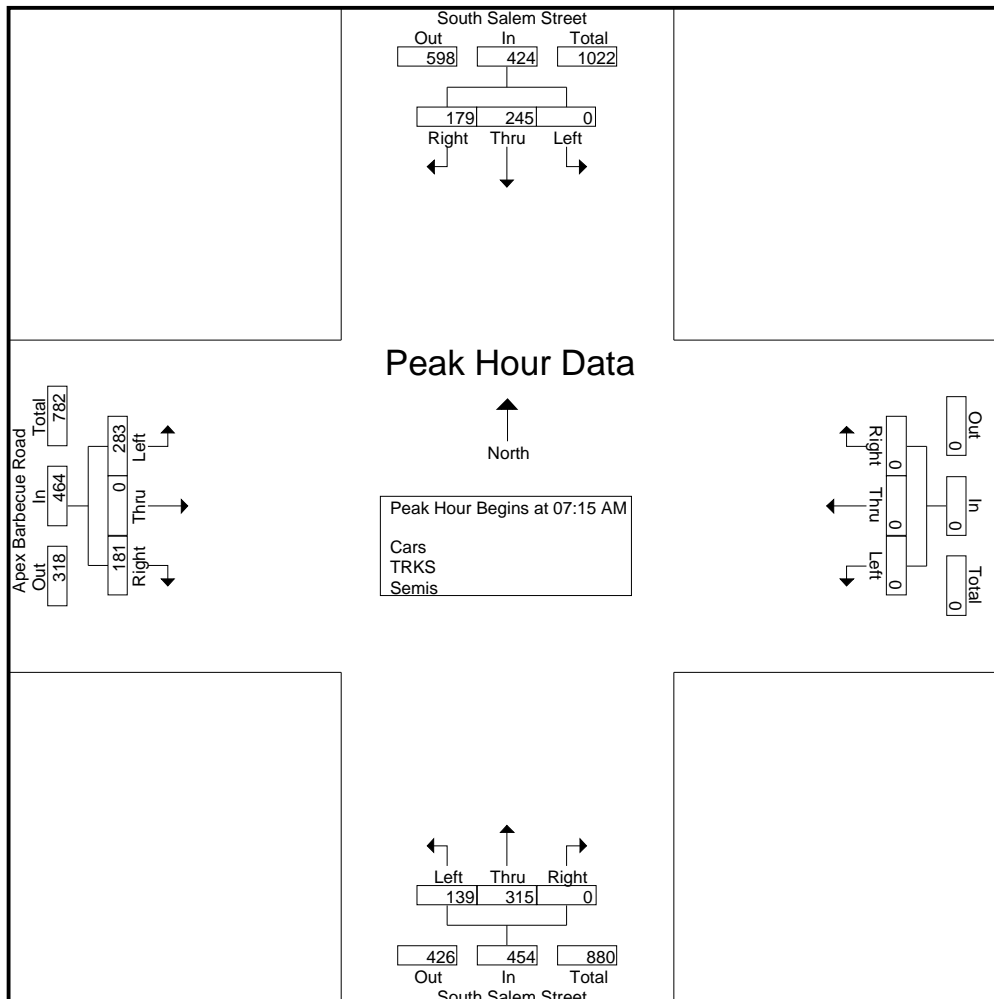




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File Name : South Salem Street and Apex Barbecue Road
 Site Code : 00000001
 Start Date : 10/22/2019
 Page No : 2

Start Time	South Salem Street From North				From East				South Salem Street From South				Apex Barbecue Road From West				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 09:00 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	36	51	0	87	0	0	0	0	0	95	26	121	28	0	50	78	286
07:30 AM	49	71	0	120	0	0	0	0	0	76	55	131	48	0	59	107	358
07:45 AM	62	53	0	115	0	0	0	0	0	79	47	126	69	0	110	179	420
08:00 AM	32	70	0	102	0	0	0	0	0	65	11	76	36	0	64	100	278
Total Volume	179	245	0	424	0	0	0	0	0	315	139	454	181	0	283	464	1342
% App. Total	42.2	57.8	0		0	0	0		0	69.4	30.6		39	0	61		
PHF	.722	.863	.000	.883	.000	.000	.000	.000	.000	.829	.632	.866	.656	.000	.643	.648	.799

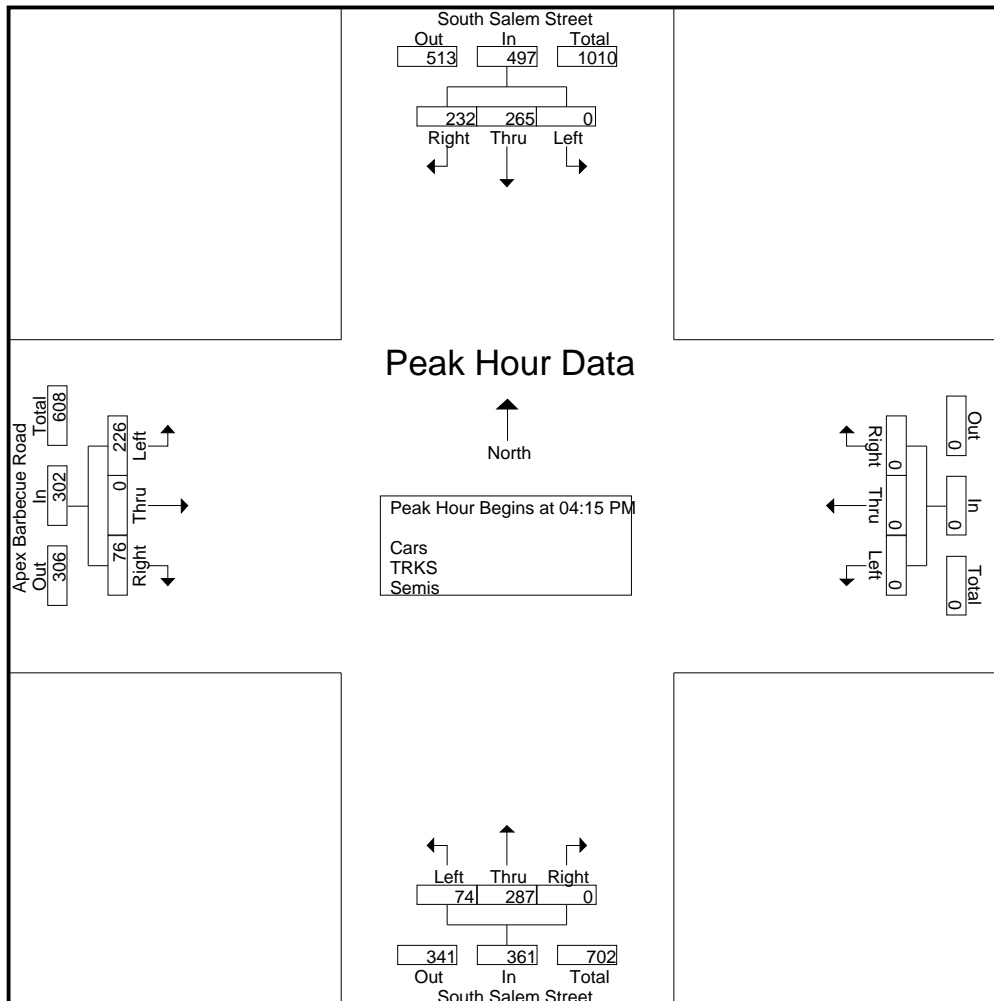




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File Name : South Salem Street and Apex Barbecue Road
 Site Code : 00000001
 Start Date : 10/22/2019
 Page No : 3

Start Time	South Salem Street From North				From East				South Salem Street From South				Apex Barbecue Road From West				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 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	53	60	0	113	0	0	0	0	0	63	19	82	28	0	64	92	287
04:30 PM	69	55	0	124	0	0	0	0	0	74	26	100	16	0	67	83	307
04:45 PM	49	75	0	124	0	0	0	0	0	64	10	74	16	0	53	69	267
05:00 PM	61	75	0	136	0	0	0	0	0	86	19	105	16	0	42	58	299
Total Volume	232	265	0	497	0	0	0	0	0	287	74	361	76	0	226	302	1160
% App. Total	46.7	53.3	0		0	0	0		0	79.5	20.5		25.2	0	74.8		
PHF	.841	.883	.000	.914	.000	.000	.000	.000	.000	.834	.712	.860	.679	.000	.843	.821	.945





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File Name : South Salem Street and Kelly Road
 Site Code : 00000004
 Start Date : 10/22/2019
 Page No : 1

Groups Printed- Cars - TRKS - Semis

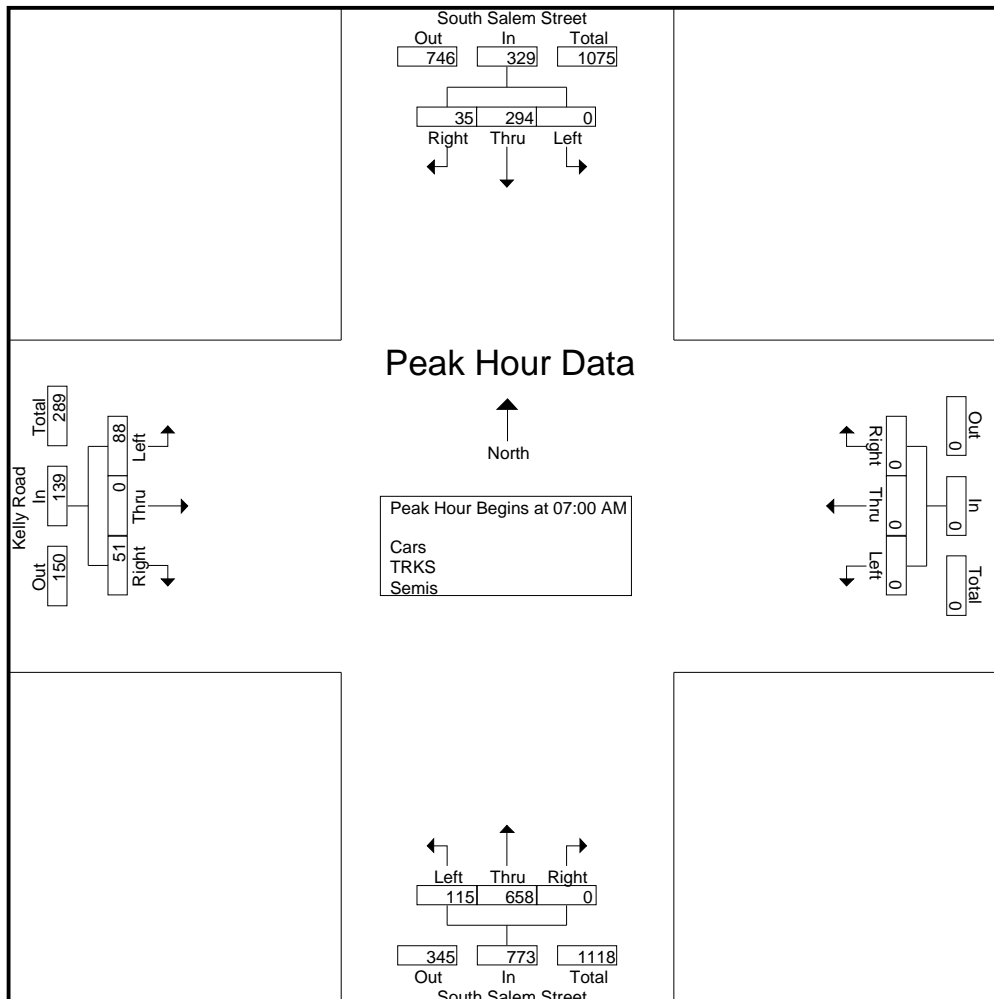
Start Time	South Salem Street From North					From East					South Salem Street From South					Kelly Road From West					Exclu. Total	Inclu. Total	Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total			
07:00 AM	9	131	0	0	140	0	0	0	0	0	0	144	19	0	163	11	0	20	0	31	0	334	334
07:15 AM	4	48	0	0	52	0	0	0	0	0	0	182	28	0	210	6	0	16	0	22	0	284	284
07:30 AM	10	56	0	0	66	0	0	0	0	0	0	143	23	0	166	14	0	31	0	45	0	277	277
07:45 AM	12	59	0	0	71	0	0	0	0	0	0	189	45	0	234	20	0	21	0	41	0	346	346
Total	35	294	0	0	329	0	0	0	0	0	0	658	115	0	773	51	0	88	0	139	0	1241	1241
08:00 AM	8	62	0	0	70	0	0	0	0	0	0	127	33	0	160	10	0	25	0	35	0	265	265
08:15 AM	9	51	0	0	60	0	0	0	0	0	0	117	18	0	135	8	0	27	0	35	0	230	230
08:30 AM	13	59	0	0	72	0	0	0	0	0	0	104	27	0	131	3	0	23	0	26	0	229	229
08:45 AM	10	55	0	0	65	0	0	0	0	0	0	141	22	0	163	12	0	27	0	39	0	267	267
Total	40	227	0	0	267	0	0	0	0	0	0	489	100	0	589	33	0	102	0	135	0	991	991
*** BREAK ***																							
04:00 PM	22	111	0	0	133	0	0	0	0	0	0	66	14	0	80	25	0	17	0	42	0	255	255
04:15 PM	23	113	0	0	136	0	0	0	0	0	0	74	13	0	87	28	0	15	0	43	0	266	266
04:30 PM	20	102	0	0	122	0	0	0	0	0	0	71	17	0	88	34	0	19	0	53	0	263	263
04:45 PM	16	137	0	0	153	0	0	0	0	0	0	67	9	0	76	36	0	12	0	48	0	277	277
Total	81	463	0	0	544	0	0	0	0	0	0	278	53	0	331	123	0	63	0	186	0	1061	1061
05:00 PM	17	156	0	0	173	0	0	0	0	0	0	86	14	0	100	22	0	13	0	35	0	308	308
05:15 PM	30	162	0	0	192	0	0	0	0	0	0	62	17	0	79	22	0	8	0	30	0	301	301
05:30 PM	38	137	0	0	175	0	0	0	0	0	0	71	14	0	85	35	0	23	0	58	0	318	318
05:45 PM	34	140	0	0	174	0	0	0	0	0	0	66	12	0	78	21	0	16	0	37	0	289	289
Total	119	595	0	0	714	0	0	0	0	0	0	285	57	0	342	100	0	60	0	160	0	1216	1216
Grand Total	275	1579	0	0	1854	0	0	0	0	0	0	1710	325	0	2035	307	0	313	0	620	0	4509	4509
Apprch %	14.8	85.2	0			0	0	0				0	84	16		49.5	0	50.5					
Total %	6.1	35	0		41.1	0	0	0				0	37.9	7.2	45.1	6.8	0	6.9		13.8	0	100	
Cars	269	1513	0		1782	0	0	0				0	1647	315	1962	296	0	304		600	0	0	4344
% Cars	97.8	95.8	0	0	96.1	0	0	0	0	0	0	0	96.3	96.9	0	96.4	96.4	0	97.1	0	96.8	0	96.3
TRKS	6	63	0		69	0	0	0				0	61	9	70	10	0	8		18	0	0	157
% TRKS	2.2	4	0	0	3.7	0	0	0	0	0	0	0	3.6	2.8	3.4	3.3	0	2.6	0	2.9	0	0	3.5
Semis	0	3	0		3	0	0	0				0	2	1	3	1	0	1		2	0	0	8
% Semis	0	0.2	0	0	0.2	0	0	0	0	0	0	0	0.1	0.3	0	0.3	0	0.3	0	0.3	0	0	0.2



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File Name : South Salem Street and Kelly Road
 Site Code : 00000004
 Start Date : 10/22/2019
 Page No : 2

Start Time	South Salem Street From North				From East				South Salem Street From South				Kelly Road From West				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 09:00 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	9	131	0	140	0	0	0	0	0	144	19	163	11	0	20	31	334
07:15 AM	4	48	0	52	0	0	0	0	0	182	28	210	6	0	16	22	284
07:30 AM	10	56	0	66	0	0	0	0	0	143	23	166	14	0	31	45	277
07:45 AM	12	59	0	71	0	0	0	0	0	189	45	234	20	0	21	41	346
Total Volume	35	294	0	329	0	0	0	0	0	658	115	773	51	0	88	139	1241
% App. Total	10.6	89.4	0		0	0	0		0	85.1	14.9		36.7	0	63.3		
PHF	.729	.561	.000	.588	.000	.000	.000	.000	.000	.870	.639	.826	.638	.000	.710	.772	.897

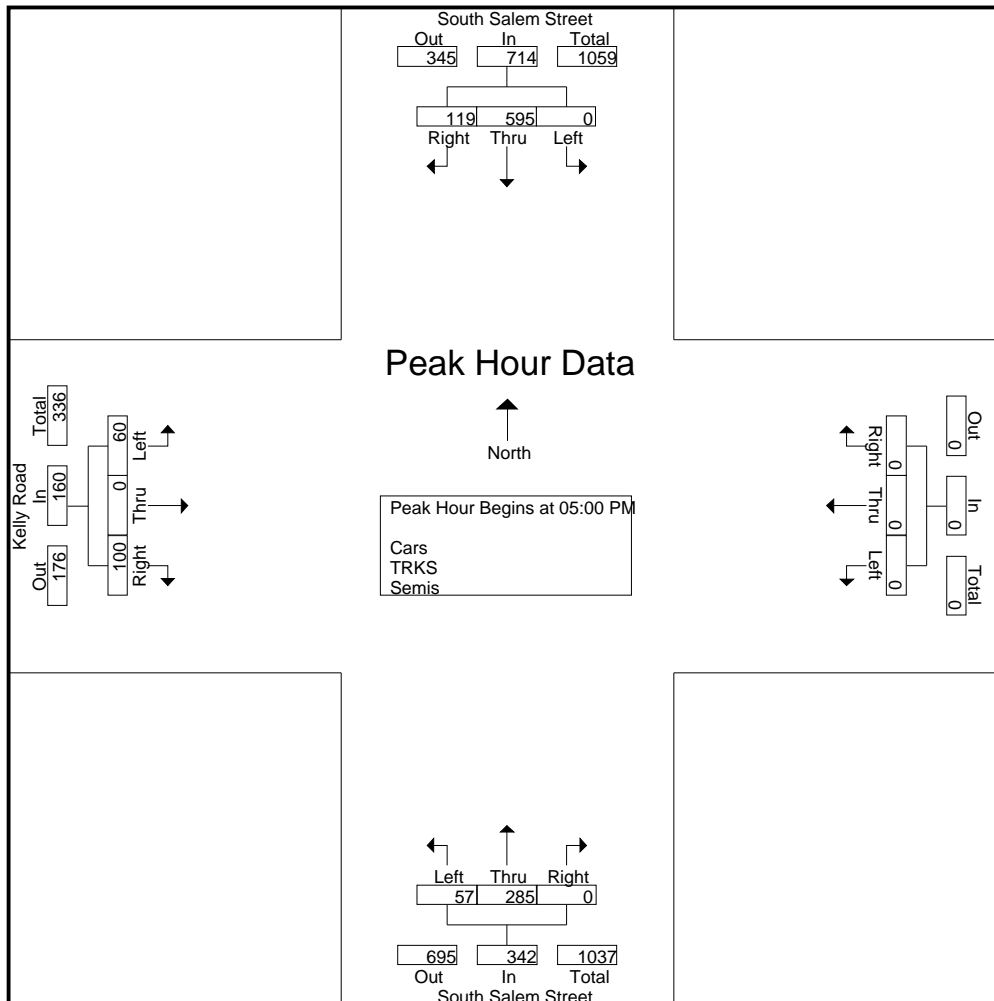




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File Name : South Salem Street and Kelly Road
 Site Code : 00000004
 Start Date : 10/22/2019
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Start Time	South Salem Street From North				From East				South Salem Street From South				Kelly Road From West				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 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	17	156	0	173	0	0	0	0	0	86	14	100	22	0	13	35	308
05:15 PM	30	162	0	192	0	0	0	0	0	62	17	79	22	0	8	30	301
05:30 PM	38	137	0	175	0	0	0	0	0	71	14	85	35	0	23	58	318
05:45 PM	34	140	0	174	0	0	0	0	0	66	12	78	21	0	16	37	289
Total Volume	119	595	0	714	0	0	0	0	0	285	57	342	100	0	60	160	1216
% App. Total	16.7	83.3	0		0	0	0		0	83.3	16.7		62.5	0	37.5		
PHF	.783	.918	.000	.930	.000	.000	.000	.000	.000	.828	.838	.855	.714	.000	.652	.690	.956





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File Name : South Salem Street and Northbound I-540 Ramps
 Site Code : 00000002
 Start Date : 10/22/2019
 Page No : 1

Groups Printed- Cars - TRKS - Semis

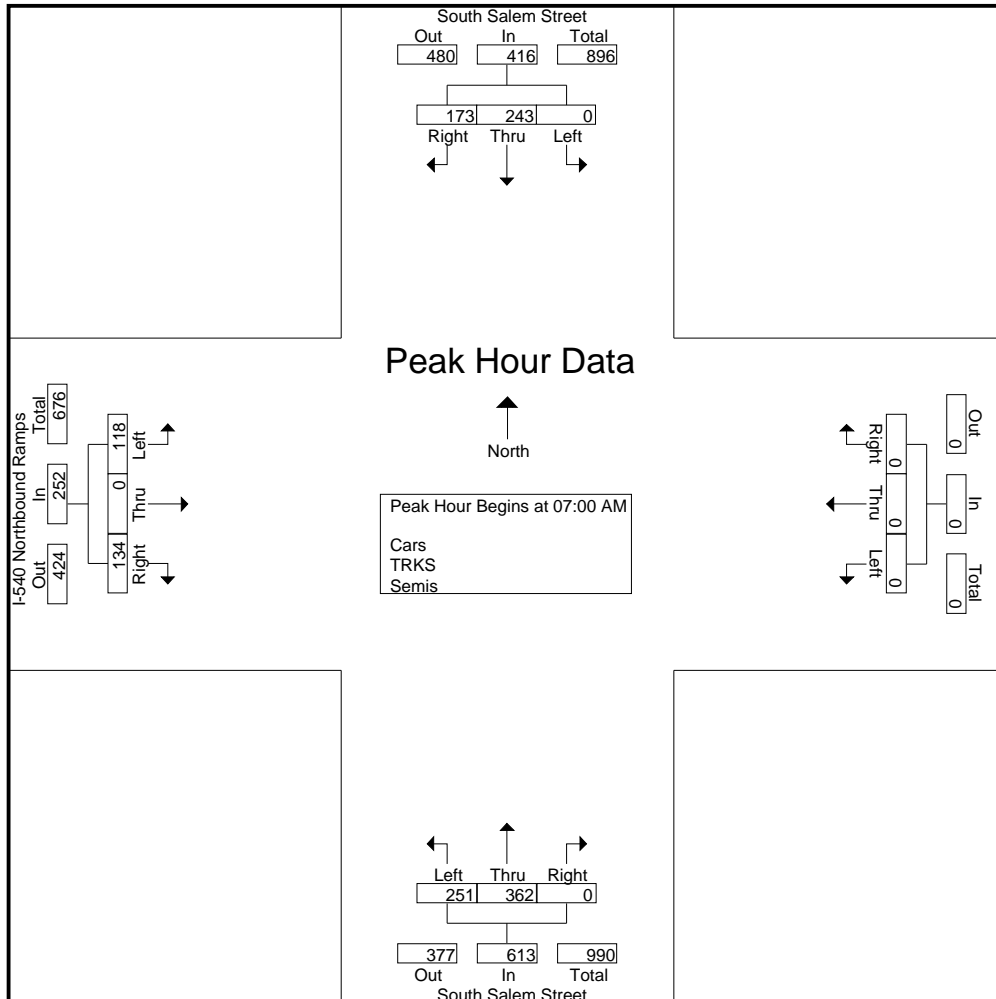
Start Time	South Salem Street From North					From East					South Salem Street From South					I-540 Northbound Ramps From West					Exclu. Total	Inclu. Total	Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total			
07:00 AM	33	74	0	0	107	0	0	0	0	0	0	79	42	0	121	63	0	11	0	74	0	302	302
07:15 AM	35	41	0	0	76	0	0	0	0	0	0	91	64	0	155	19	0	35	0	54	0	285	285
07:30 AM	53	63	0	0	116	0	0	0	0	0	0	91	65	0	156	25	0	46	0	71	0	343	343
07:45 AM	52	65	0	0	117	0	0	0	0	0	0	101	80	0	181	27	0	26	0	53	0	351	351
Total	173	243	0	0	416	0	0	0	0	0	0	362	251	0	613	134	0	118	0	252	0	1281	1281
08:00 AM	50	59	0	0	109	0	0	0	0	0	0	62	54	0	116	27	0	8	0	35	0	260	260
08:15 AM	21	33	0	0	54	0	0	0	0	0	0	56	43	0	99	26	0	10	0	36	0	189	189
08:30 AM	49	48	0	0	97	0	0	0	0	0	0	63	35	0	98	34	0	11	0	45	0	240	240
08:45 AM	49	62	0	0	111	0	0	0	0	0	0	73	41	0	114	26	0	12	0	38	0	263	263
Total	169	202	0	0	371	0	0	0	0	0	0	254	173	0	427	113	0	41	0	154	0	952	952
*** BREAK ***																							
04:00 PM	9	86	0	0	95	0	0	0	0	0	0	60	20	0	80	42	0	7	0	49	0	224	224
04:15 PM	5	84	0	0	89	0	0	0	0	0	0	68	11	0	79	36	0	13	0	49	0	217	217
04:30 PM	8	67	0	0	75	0	0	0	0	0	0	77	9	0	86	36	0	24	0	60	0	221	221
04:45 PM	6	85	0	0	91	0	0	0	0	0	0	64	13	0	77	40	0	9	0	49	0	217	217
Total	28	322	0	0	350	0	0	0	0	0	0	269	53	0	322	154	0	53	0	207	0	879	879
05:00 PM	3	76	0	0	79	0	0	0	0	0	0	93	9	0	102	40	0	19	0	59	0	240	240
05:15 PM	6	75	0	0	81	0	0	0	0	0	0	73	14	0	87	53	0	18	0	71	0	239	239
05:30 PM	5	71	0	0	76	0	0	0	0	0	0	95	16	0	111	44	0	13	0	57	0	244	244
05:45 PM	3	67	0	0	70	0	0	0	0	0	0	72	10	0	82	46	0	16	0	62	0	214	214
Total	17	289	0	0	306	0	0	0	0	0	0	333	49	0	382	183	0	66	0	249	0	937	937
Grand Total	387	1056	0	0	1443	0	0	0	0	0	0	1218	526	0	1744	584	0	278	0	862	0	4049	4049
Apprch %	26.8	73.2	0	0		0	0	0	0	0	0	69.8	30.2			67.7	0	32.3					
Total %	9.6	26.1	0	0	35.6	0	0	0	0	0	0	30.1	13	43.1	14.4	0	6.9		21.3	0	100		
Cars	385	1028	0	0	1413	0	0	0	0	0	0	1191	509	1700	560	0	275		835	0	0	3948	
% Cars	99.5	97.3	0	0	97.9	0	0	0	0	0	0	97.8	96.8	97.5	95.9	0	98.9	0	96.9	0	0	97.5	
TRKS	2	28	0	0	30	0	0	0	0	0	0	27	16	43	22	0	2		24	0	0	97	
% TRKS	0.5	2.7	0	0	2.1	0	0	0	0	0	0	2.2	3	2.5	3.8	0	0.7	0	2.8	0	0	2.4	
Semis	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2	0	1		3	0	0	4	
% Semis	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0.1	0.3	0	0.4	0	0.3	0	0	0.1	



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File Name : South Salem Street and Northbound I-540 Ramps
 Site Code : 00000002
 Start Date : 10/22/2019
 Page No : 2

Start Time	South Salem Street From North				From East				South Salem Street From South				I-540 Northbound Ramps From West				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 09:00 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	33	74	0	107	0	0	0	0	0	79	42	121	63	0	11	74	302
07:15 AM	35	41	0	76	0	0	0	0	0	91	64	155	19	0	35	54	285
07:30 AM	53	63	0	116	0	0	0	0	0	91	65	156	25	0	46	71	343
07:45 AM	52	65	0	117	0	0	0	0	0	101	80	181	27	0	26	53	351
Total Volume	173	243	0	416	0	0	0	0	0	362	251	613	134	0	118	252	1281
% App. Total	41.6	58.4	0		0	0	0		0	59.1	40.9		53.2	0	46.8		
PHF	.816	.821	.000	.889	.000	.000	.000	.000	.000	.896	.784	.847	.532	.000	.641	.851	.912

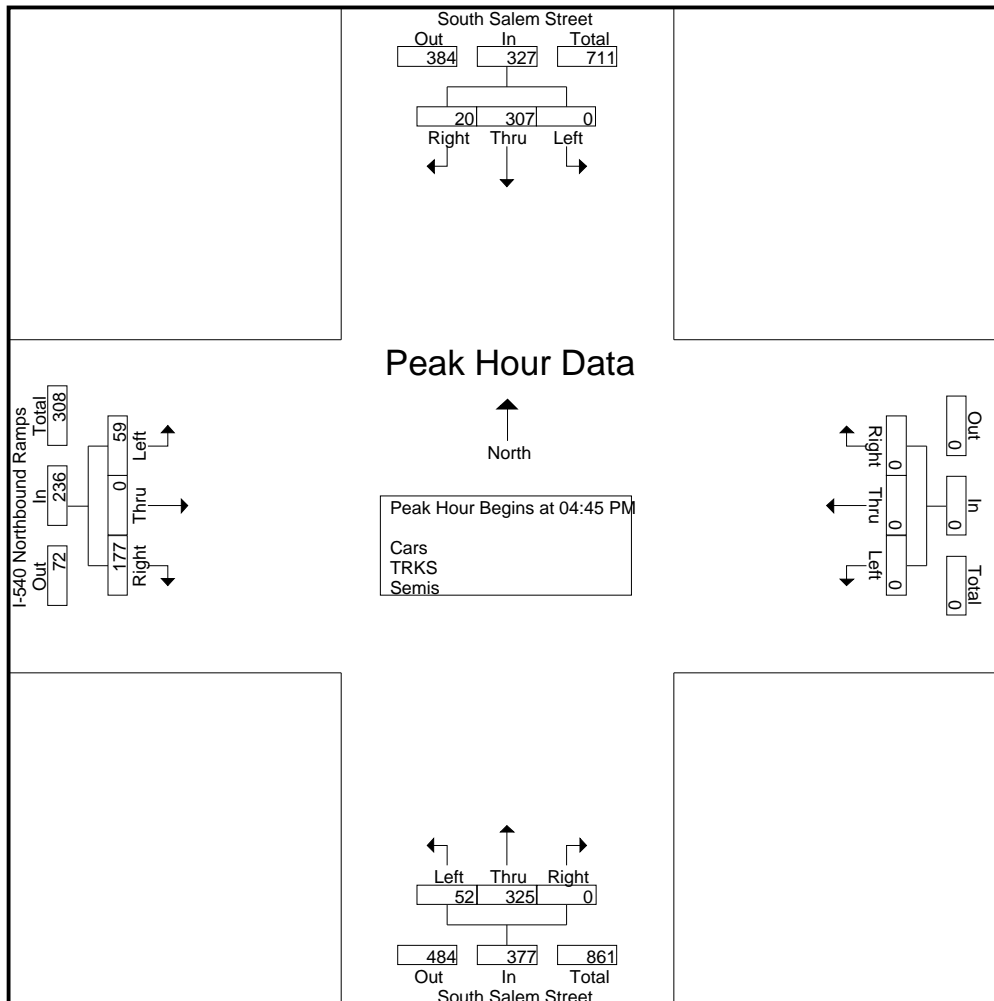




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File Name : South Salem Street and Northbound I-540 Ramps
 Site Code : 00000002
 Start Date : 10/22/2019
 Page No : 3

Start Time	South Salem Street From North				From East				South Salem Street From South				I-540 Northbound Ramps From West				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 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	6	85	0	91	0	0	0	0	0	64	13	77	40	0	9	49	217
05:00 PM	3	76	0	79	0	0	0	0	0	93	9	102	40	0	19	59	240
05:15 PM	6	75	0	81	0	0	0	0	0	73	14	87	53	0	18	71	239
05:30 PM	5	71	0	76	0	0	0	0	0	95	16	111	44	0	13	57	244
Total Volume	20	307	0	327	0	0	0	0	0	325	52	377	177	0	59	236	940
% App. Total	6.1	93.9	0		0	0	0		0	86.2	13.8		75	0	25		
PHF	.833	.903	.000	.898	.000	.000	.000	.000	.000	.855	.813	.849	.835	.000	.776	.831	.963





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File Name : South Salem Street and Southbound I-540 Ramps
 Site Code : 00000003
 Start Date : 10/22/2019
 Page No : 1

Groups Printed- Cars - TRKS - Semis

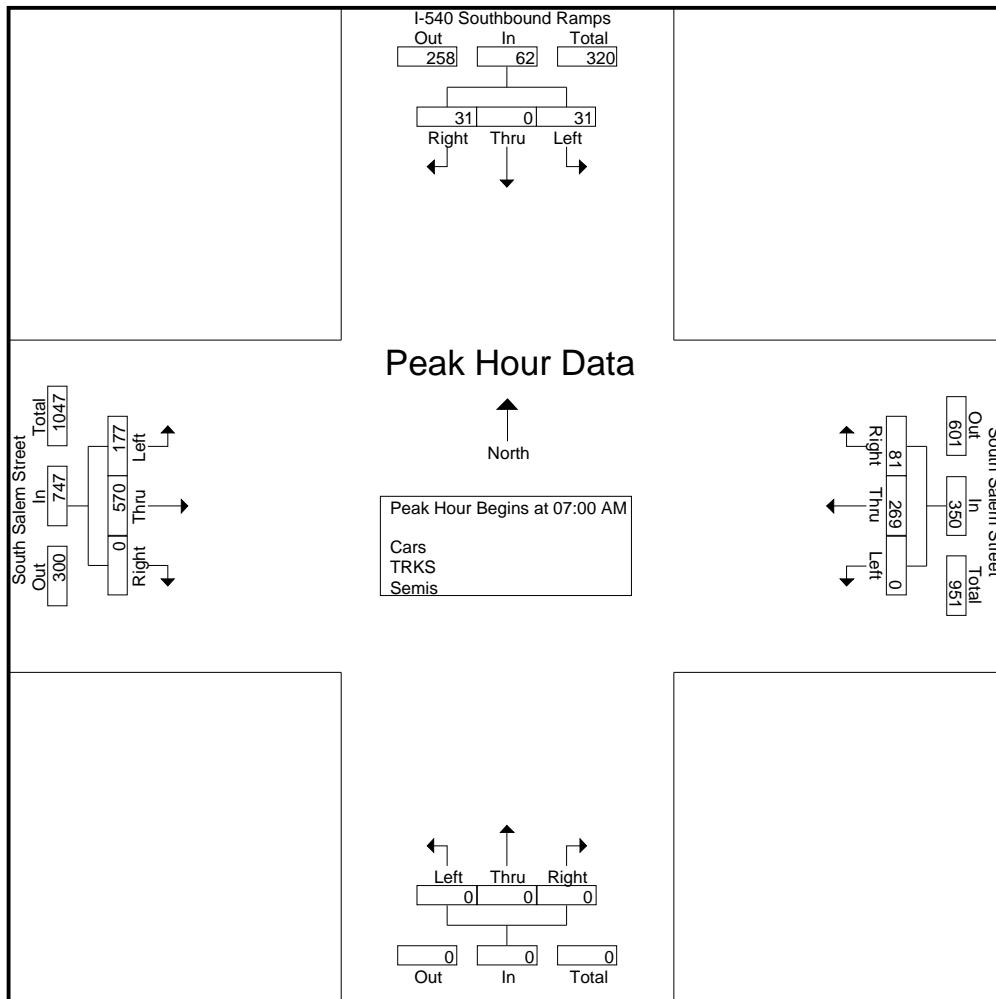
Start Time	I-540 Southbound Ramps From North					South Salem Street From East					From South					South Salem Street From West					Exclu. Total	Inclu. Total	Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total			
07:00 AM	13	0	5	0	18	12	105	0	0	117	0	0	0	0	0	0	118	47	0	165	0	300	300
07:15 AM	5	0	4	0	9	15	44	0	0	59	0	0	0	0	0	0	156	36	0	192	0	260	260
07:30 AM	8	0	12	0	20	20	64	0	0	84	0	0	0	0	0	0	139	46	0	185	0	289	289
07:45 AM	5	0	10	0	15	34	56	0	0	90	0	0	0	0	0	0	157	48	0	205	0	310	310
Total	31	0	31	0	62	81	269	0	0	350	0	0	0	0	0	0	570	177	0	747	0	1159	1159
08:00 AM	12	0	2	0	14	18	63	0	0	81	0	0	0	0	0	0	106	53	0	159	0	254	254
08:15 AM	11	0	4	0	15	12	51	0	0	63	0	0	0	0	0	0	84	55	0	139	0	217	217
08:30 AM	9	0	7	0	16	15	56	0	0	71	0	0	0	0	0	0	96	33	0	129	0	216	216
08:45 AM	4	0	8	0	12	19	65	0	1	84	0	0	0	0	0	0	97	61	0	158	1	254	255
Total	36	0	21	0	57	64	235	0	1	299	0	0	0	0	0	0	383	202	0	585	1	941	942
*** BREAK ***																							
04:00 PM	22	0	18	0	40	17	105	0	0	122	0	0	0	0	0	0	60	31	0	91	0	253	253
04:15 PM	29	0	25	0	54	20	98	0	0	118	0	0	0	0	0	0	55	34	0	89	0	261	261
04:30 PM	21	0	32	0	53	11	94	0	0	105	0	0	0	0	0	0	54	37	0	91	0	249	249
04:45 PM	32	0	24	0	56	14	111	0	0	125	0	0	0	0	0	0	47	30	0	77	0	258	258
Total	104	0	99	0	203	62	408	0	0	470	0	0	0	0	0	0	216	132	0	348	0	1021	1021
05:00 PM	62	0	43	0	105	13	101	0	0	114	0	0	0	0	0	1	60	43	0	104	0	323	323
05:15 PM	74	0	39	0	113	8	115	0	0	123	0	0	0	0	0	0	43	25	0	68	0	304	304
05:30 PM	76	0	48	0	124	10	103	0	0	113	0	0	0	0	0	0	53	41	0	94	0	331	331
05:45 PM	65	0	29	0	94	12	92	0	0	104	0	0	0	0	0	0	52	23	0	75	0	273	273
Total	277	0	159	0	436	43	411	0	0	454	0	0	0	0	0	1	208	132	0	341	0	1231	1231
Grand Total	448	0	310	0	758	250	1323	0	1	1573	0	0	0	0	0	1	1377	643	0	2021	1	4352	4353
Apprch %	59.1	0	40.9			15.9	84.1	0			0	0	0			0	68.1	31.8					
Total %	10.3	0	7.1		17.4	5.7	30.4	0		36.1	0	0	0	0	0	0	31.6	14.8		46.4	0	100	
Cars	433	0	305		738	247	1272	0		1520	0	0	0	0	0	0	1339	612		1951	0	0	4209
% Cars	96.7	0	98.4	0	97.4	98.8	96.1	0	100	96.6	0	0	0	0	0	0	97.2	95.2	0	96.5	0	0	96.7
TRKS	14	0	5		19	2	49	0		51	0	0	0	0	0	1	38	30		69	0	0	139
% TRKS	3.1	0	1.6	0	2.5	0.8	3.7	0	0	3.2	0	0	0	0	0	100	2.8	4.7	0	3.4	0	0	3.2
Semis	1	0	0		1	1	2	0		3	0	0	0	0	0	0	0	1		1	0	0	5
% Semis	0.2	0	0	0	0.1	0.4	0.2	0	0	0.2	0	0	0	0	0	0	0	0.2	0	0	0	0	0.1



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File Name : South Salem Street and Southbound I-540 Ramps
 Site Code : 00000003
 Start Date : 10/22/2019
 Page No : 2

Start Time	I-540 Southbound Ramps From North				South Salem Street From East				From South				South Salem Street From West				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 09:00 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	13	0	5	18	12	105	0	117	0	0	0	0	0	118	47	165	300
07:15 AM	5	0	4	9	15	44	0	59	0	0	0	0	0	156	36	192	260
07:30 AM	8	0	12	20	20	64	0	84	0	0	0	0	0	139	46	185	289
07:45 AM	5	0	10	15	34	56	0	90	0	0	0	0	0	157	48	205	310
Total Volume	31	0	31	62	81	269	0	350	0	0	0	0	0	570	177	747	1159
% App. Total	50	0	50		23.1	76.9	0		0	0	0	0	0	76.3	23.7		
PHF	.596	.000	.646	.775	.596	.640	.000	.748	.000	.000	.000	.000	.000	.908	.922	.911	.935

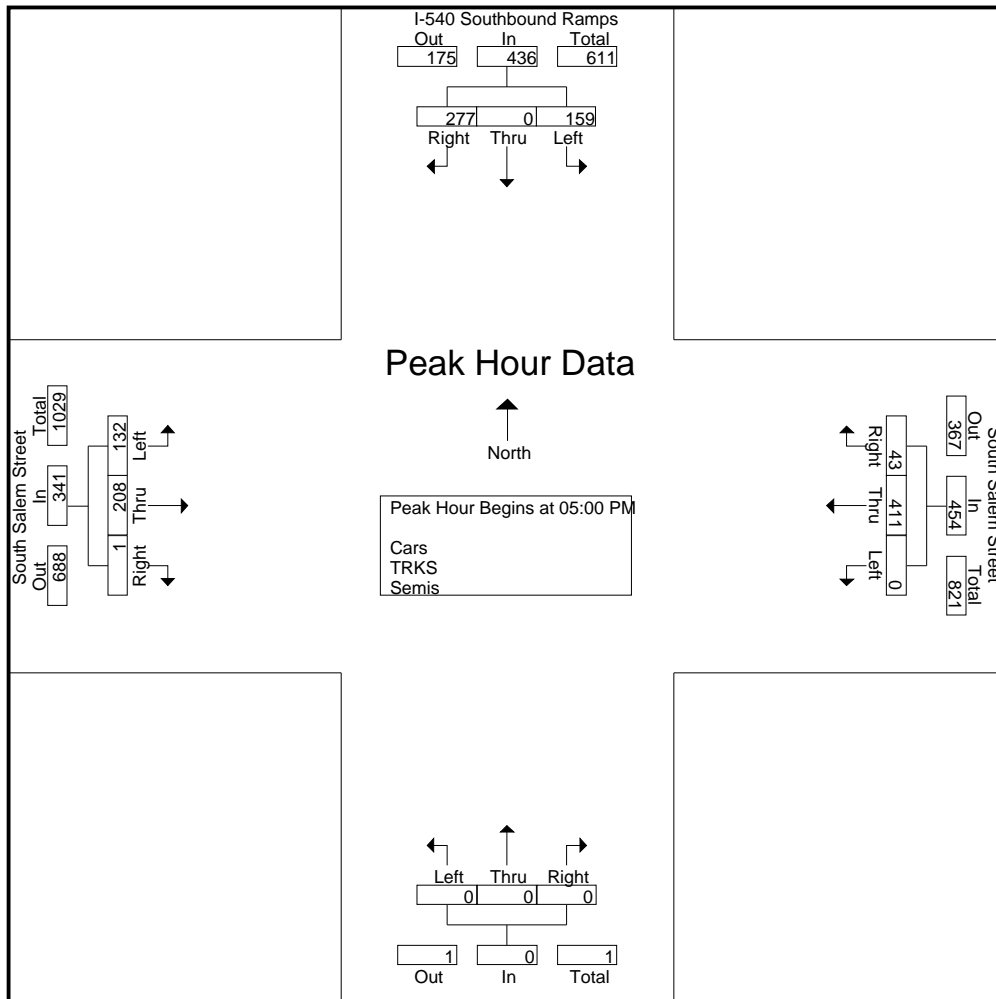




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File Name : South Salem Street and Southbound I-540 Ramps
 Site Code : 00000003
 Start Date : 10/22/2019
 Page No : 3

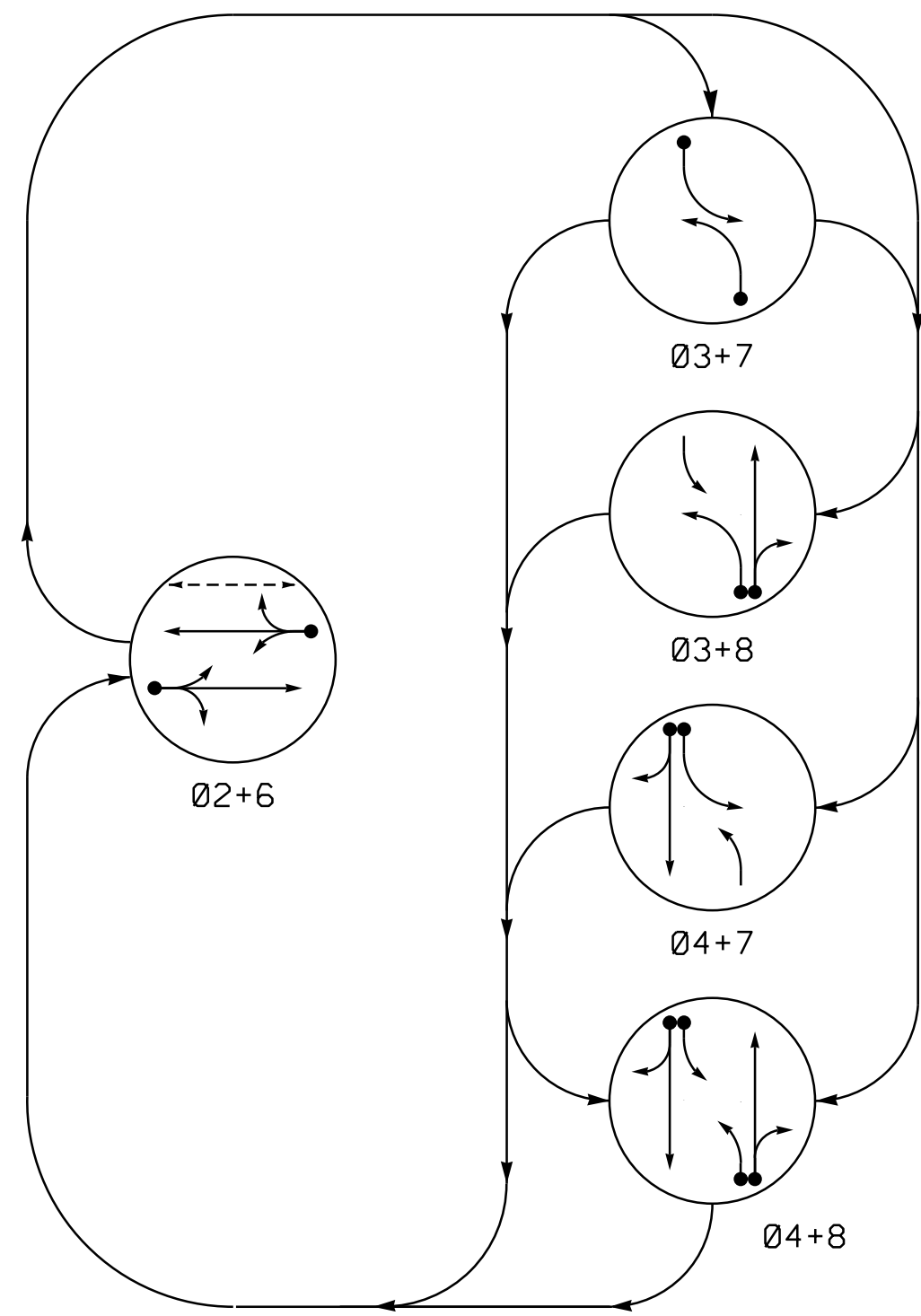
Start Time	I-540 Southbound Ramps From North				South Salem Street From East				From South				South Salem Street From West				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	62	0	43	105	13	101	0	114	0	0	0	0	1	60	43	104	323
05:15 PM	74	0	39	113	8	115	0	123	0	0	0	0	0	43	25	68	304
05:30 PM	76	0	48	124	10	103	0	113	0	0	0	0	0	53	41	94	331
05:45 PM	65	0	29	94	12	92	0	104	0	0	0	0	0	52	23	75	273
Total Volume	277	0	159	436	43	411	0	454	0	0	0	0	1	208	132	341	1231
% App. Total	63.5	0	36.5		9.5	90.5	0		0	0	0		0.3	61	38.7		
PHF	.911	.000	.828	.879	.827	.893	.000	.923	.000	.000	.000	.000	.250	.867	.767	.820	.930



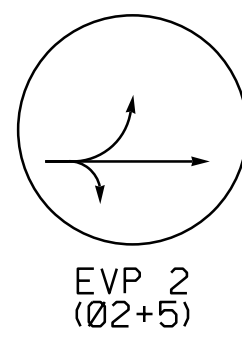
APPENDIX C

SIGNAL INFORMATION

PHASING DIAGRAM

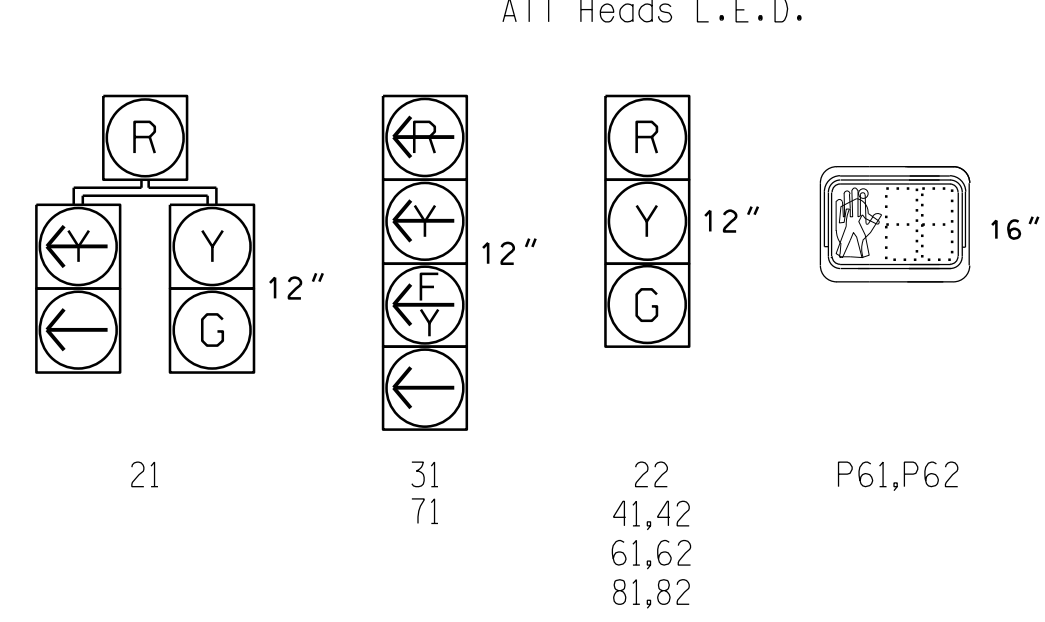


EV PREEMPT PHASE
(Medium Priority)



SIGNAL FACE	PHASE						
	02+6	03+7	03+8	04+7	04+8	EV P2	FLUSH
21	G	R	R	R	R	Y	Y
22	G	R	R	R	R	G	Y
31	R	R	R	Y	Y	R	R
41,42	R	R	R	G	G	R	R
61,62	G	R	R	R	R	R	Y
71	R	R	Y	Y	Y	R	R
81,82	R	R	G	G	R	R	R
P61,P62	W	DW	DW	DW	DW	DRK	

SIGNAL FACE I.D.



2070 LOOP & DETECTOR INSTALLATION

LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	DETECTOR PROGRAMMING					SYSTEM LOOP	NEW CARD
					PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME		
2A	6X6	300	5	Y	2	Y	Y	-	-	-	-
2B	6X40	0	2-4-2	Y	2	Y	Y	2.0	5	-	-
3A	6X40	0	2-4-2	Y	3	Y	Y	-	15	-	Y
4A	6X6	300	5	Y	4	-	Y	-	-	-	-
4B	6X40	0	2-4-2	Y	4	Y	Y	2.0	5	-	-
6A	6X6	300	4	-	6	Y	Y	-	-	-	-
6B	6X40	0	2-4-2	Y	6	Y	Y	2.0	5	-	-
7A	6X40	0	2-4-2	Y	7	Y	Y	-	15	-	Y
8A	6X6	300	5	Y	8	-	Y	-	-	-	-
8B	6X40	0	2-4-2	Y	8	Y	Y	2.0	5	-	-

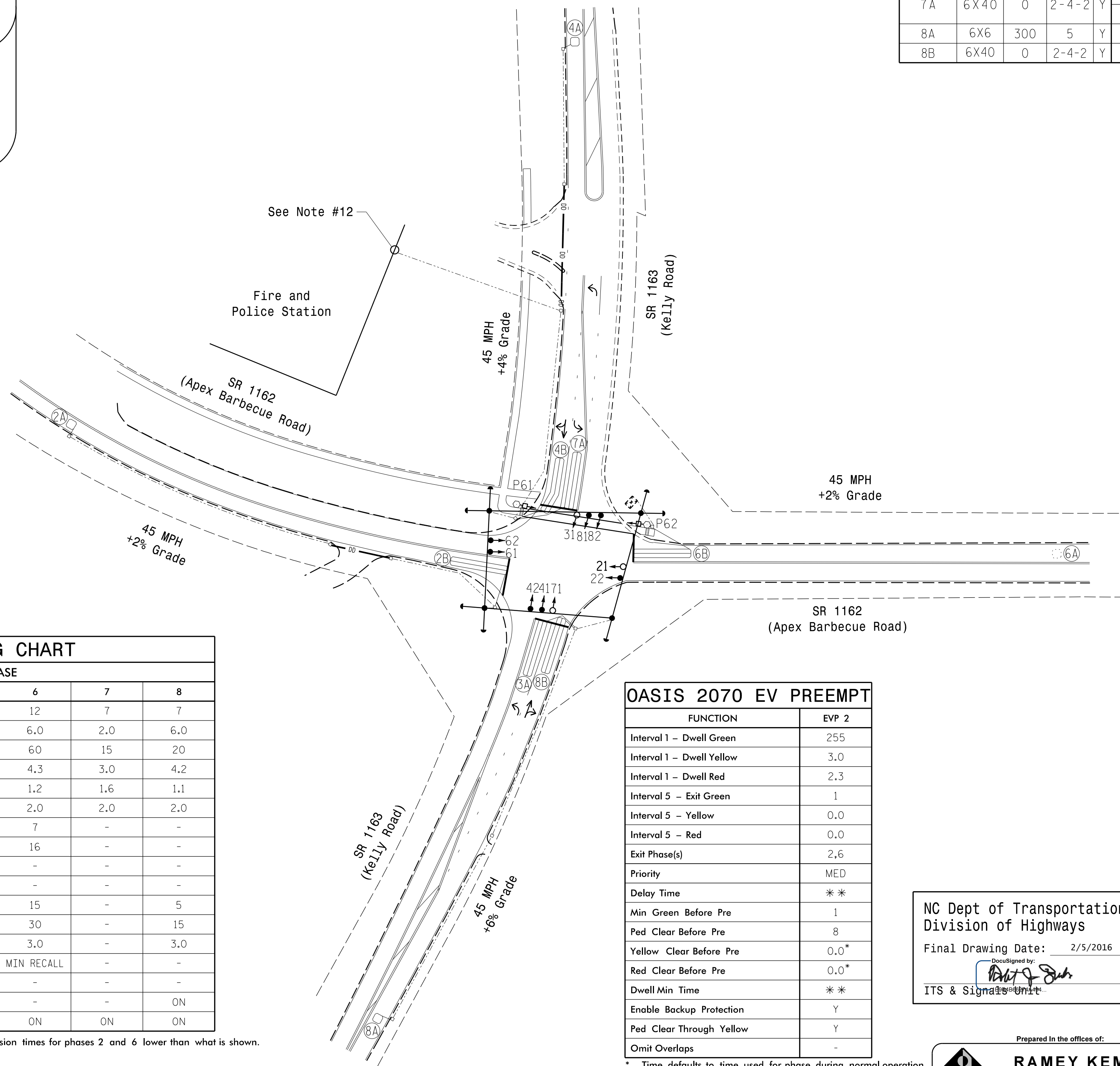
5 Phase Fully Actuated (Isolated)

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2012, "Standard Specifications for Roads and Structures" dated January 2012, and all applicable sections of the latest version of the generic Project Special Provisions. The PSP can be accessed at the following website: <https://connect.ncdot.gov/resources/safety/pages/its-and-signals.aspx>
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Phase 3 and/or 7 may be lagged.
- Reposition existing signal heads numbered 41,42,81 and 82.
- Set all detector units to presence mode.
- Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
- Program pedestrian heads to countdown the flashing "Don't Walk" time only.
- See Pavement Marking Plans for stop bar and crosswalk locations.
- Program signal heads numbered 21 and 22 to clear to all red before going into preempt.
- Shown locations of pedestrian signals are conceptual only. See sheets P1-P3 for pushbutton location details.
- The Delay before Preempt and Preempt Dwell Min Green time for emergency vehicle preemption timing will be determined by Town of Apex Traffic Engineer.
- Locate Emergency Vehicle Preemption switch in new Public Safety Station 5. Contractor shall coordinate with Town of Apex Staff on exact location.

PHASING DIAGRAM DETECTION LEGEND

- ←● DETECTED MOVEMENT
- ← UNDETECTED MOVEMENT (OVERLAP)
- ← UN SIGNALIZED MOVEMENT
- ←→ PEDESTRIAN MOVEMENT



OASIS 2070 TIMING CHART

FEATURE	PHASE						
	2	3	4	6	7	8	
Min Green 1 *	12	7	7	12	7	7	
Extension 1 *	6.0	2.0	6.0	6.0	2.0	6.0	
Max Green 1 *	60	15	20	60	15	20	
Yellow Clearance	4.3	3.0	4.2	4.3	3.0	4.2	
Red Clearance	1.0	1.6	1.1	1.2	1.6	1.1	
Red Revert	5.0	2.0	2.0	2.0	2.0	2.0	
Walk 1 *	-	-	-	7	-	-	
Don't Walk 1	-	-	-	16	-	-	
Seconds Per Actuation *	-	-	-	-	-	-	
Max Variable Initial *	-	-	-	-	-	-	
Time Before Reduction *	15	-	5	15	-	5	
Time To Reduce *	30	-	15	30	-	15	
Minimum Gap	3.0	-	3.0	3.0	-	3.0	
Recall Mode	MIN RECALL	-	-	MIN RECALL	-	-	
Vehicle Call Memory	-	-	-	-	-	-	
Dual Entry	-	-	ON	-	-	ON	
Simultaneous Gap	ON	ON	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.

OASIS 2070 EV PREEMPT

FUNCTION	EV P2
Interval 1 - Dwell Green	255
Interval 1 - Dwell Yellow	3.0
Interval 1 - Dwell Red	2.3
Interval 5 - Exit Green	1
Interval 5 - Yellow	0.0
Interval 5 - Red	0.0
Exit Phase(s)	2,6
Priority	MED
Delay Time	**
Min Green Before Pre	1
Ped Clear Before Pre	8
Yellow Clear Before Pre	0.0*
Red Clear Before Pre	0.0*
Dwell Min Time	**
Enable Backup Protection	Y
Ped Clear Through Yellow	Y
Omit Overlaps	-

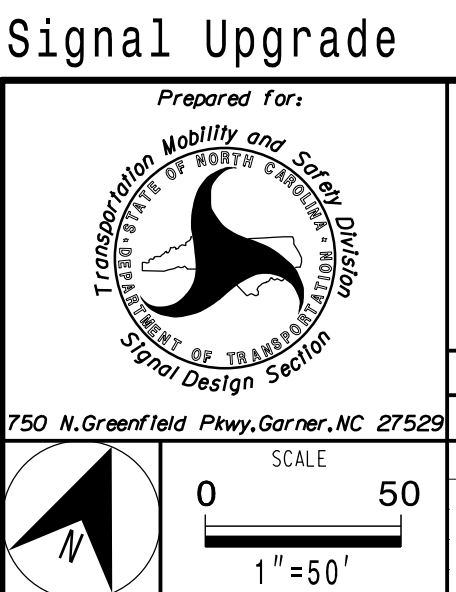
* Time defaults to time used for phase during normal operation
** See Note 11

LEGEND

- | PROPOSED | EXISTING |
|-----------------------------------|-----------------------------------|
| ○ → Traffic Signal Head | ● → Traffic Signal Head |
| ○ → Modified Signal Head | N/A |
| □ → Sign | □ → Sign |
| □ → Pedestrian Signal Head | □ → Pedestrian Signal Head |
| ○ → Signal Pole with Guy | ○ → Signal Pole with Guy |
| ○ → Signal Pole with Sidewalk Guy | ○ → Signal Pole with Sidewalk Guy |
| □ → Inductive Loop Detector | □ → Inductive Loop Detector |
| □ → Controller & Cabinet | □ → Controller & Cabinet |
| □ → Junction Box | □ → Junction Box |
| □ → 2-in Underground Conduit | □ → 2-in Underground Conduit |
| N/A → Right of Way | N/A → Right of Way |
| → → Directional Arrow | → → Directional Arrow |
| — DD — → Directional Drill | N/A → Directional Drill |
| ○ → Type II Signal Pedestal | ● → Type II Signal Pedestal |

NC Dept of Transportation
Division of Highways
Final Drawing Date: 2/5/2016
Prepared by: [Signature]
ITS & Signals Unit

Prepared in the offices of:
RAMEY KEMP ASSOCIATES, INC.
Transportation Engineers
800 Farrington Place, Suite 100
Raleigh, North Carolina 27609
919-872-8115 Tel. 919-878-5416 Fax.
www.rameykemp.com

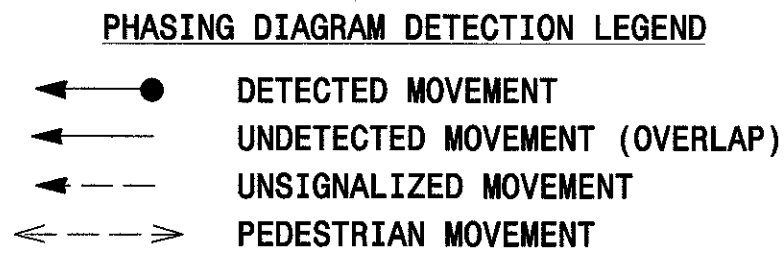
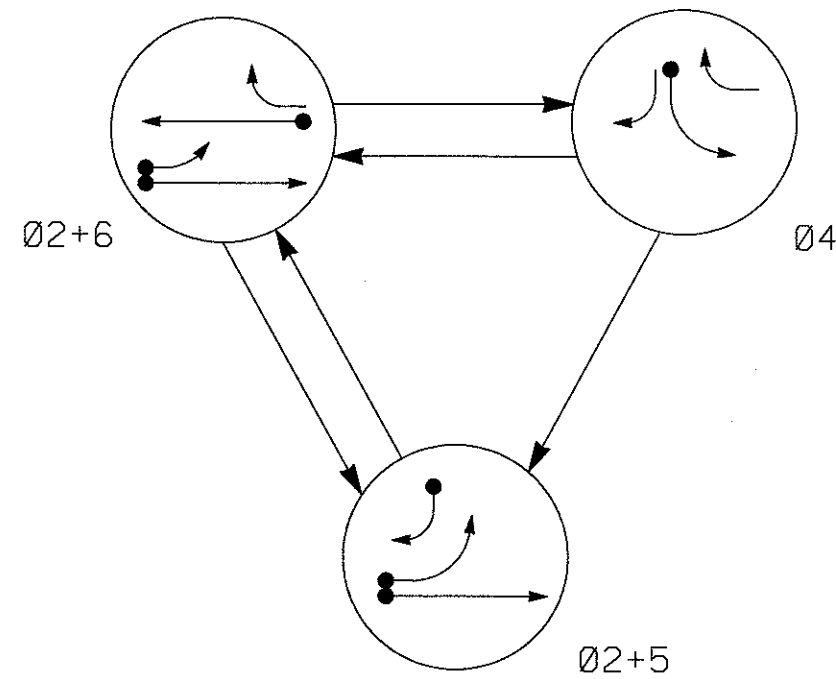


Signal Upgrade
SR 1162 (Apex Barbecue Road)
at
SR 1163 (Kelly Road)

Division 5	Wake County	Apex
PLAN DATE: February 2016	REVIEWED BY: WJ Hamilton	
PREPARED BY: NE Burns	PKA PROJ NO: 15242 (040)	
REVISIONS	INIT.	DATE

SEAL
WILLIAM J. HAMILTON
PROFESSIONAL ENGINEER
No. 32396
2/2/2016
SIG. INVENTORY NO. 05-2326

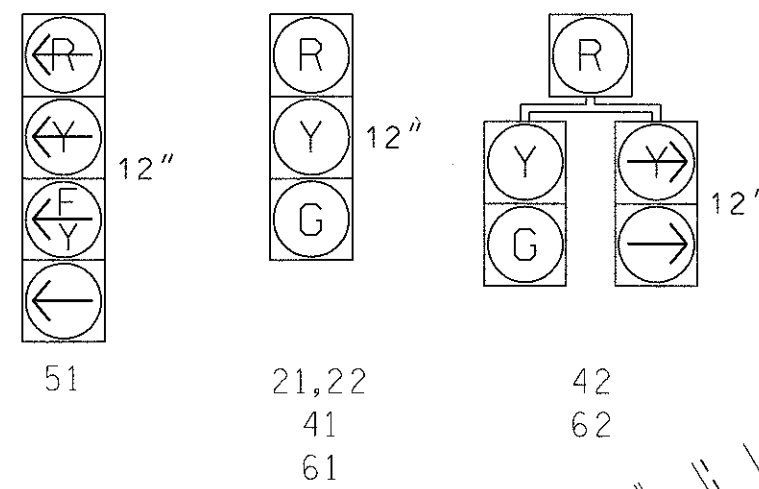
PHASING DIAGRAM



SIGNAL FACE	PHASE			
	02+5	02+6	04	02+5
21,22	G	G	R	Y
41	R	R	G	R
42	R	R	G	R
51	←	←	←	←
61	R	G	R	Y
62	R	G	R	Y

SIGNAL FACE I.D.

All Heads L.E.D.

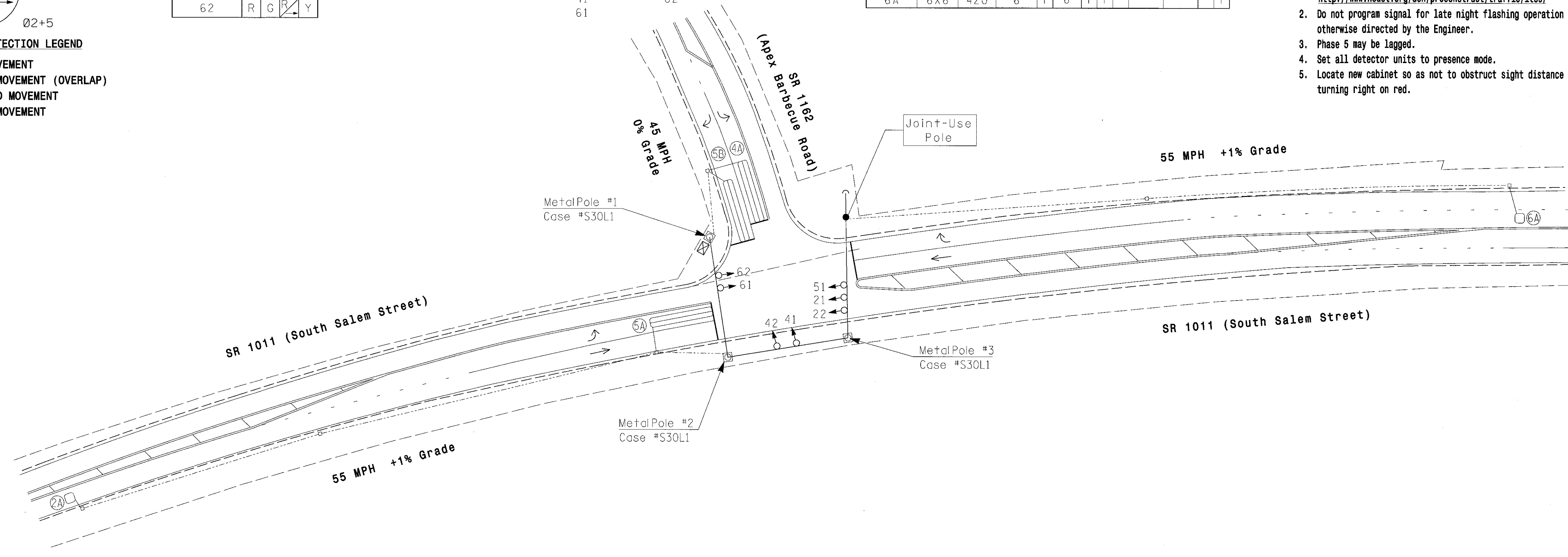


OASIS 2070 LOOP & DETECTOR INSTALLATION CHART												
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	DETECTOR PROGRAMMING							
					PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CAB
2A	6X6	420	6	Y	2	Y	Y	-	-	-	-	Y
4A	6X40	0	2-4-2	Y	4	Y	Y	-	-	3	-	Y
5A	6X40	0	2-4-2	Y	5	Y	Y	-	-	15	-	Y
5B	6X40	0	2-4-2	Y	5	Y	Y	-	-	10	-	Y
6A	6X6	420	6	Y	6	Y	Y	-	-	-	-	Y

3 Phase Fully Actuated Isolated

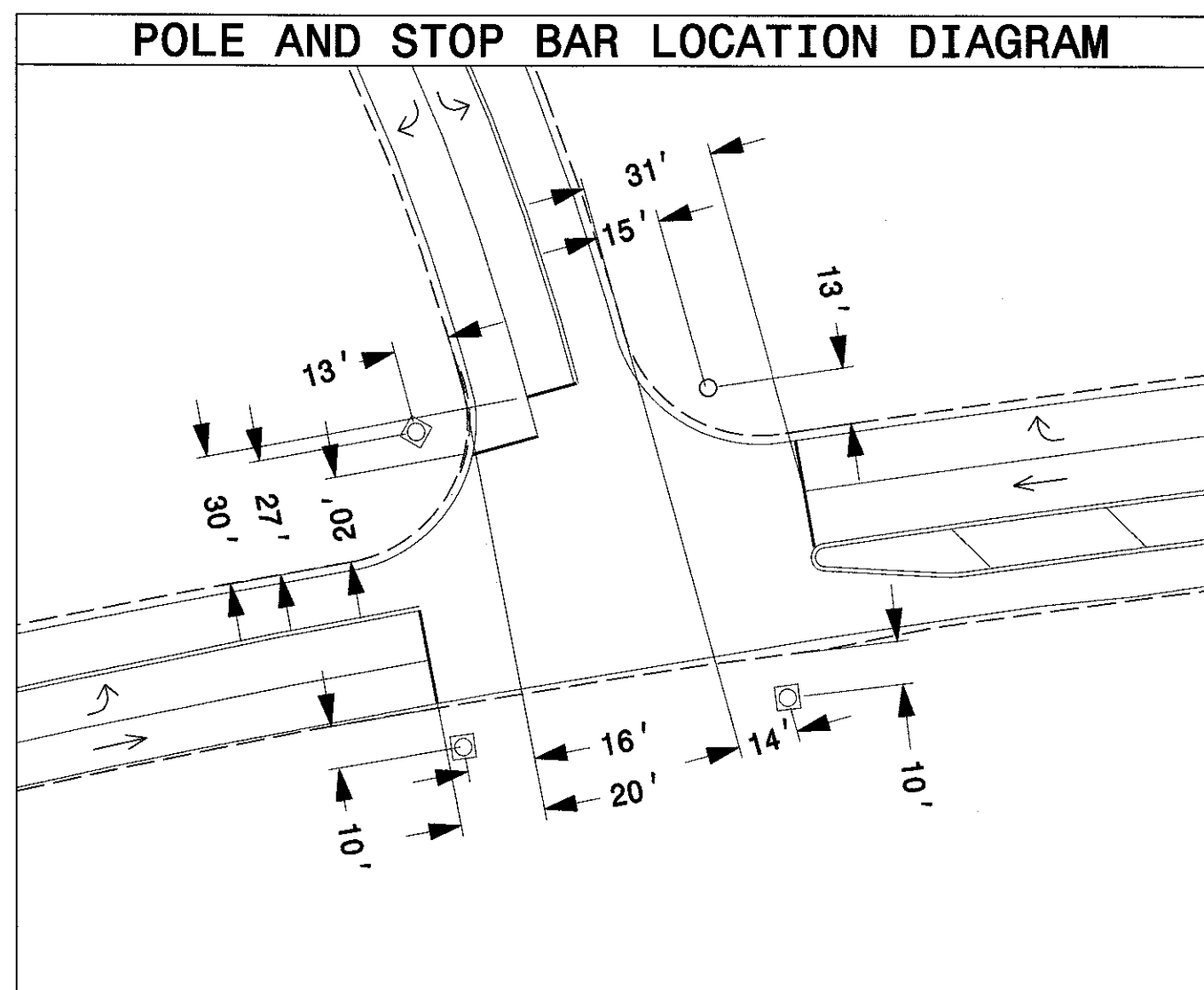
NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2012, "Standard Specifications for Roads and Structures" dated January 2012 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/its/>
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 5 may be lagged.
4. Set all detector units to presence mode.
5. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.



FEATURE	PHASE			
	2	4	5	6
Min Green 1 *	14	7	7	14
Extension 1 *	6.0	2.0	2.0	6.0
Max Green 1 *	90	30	15	90
Yellow Clearance	5.1	3.0	3.0	5.1
Red Clearance	1.0	2.3	2.1	1.0
Walk 1 *	-	-	-	-
Don't Walk 1	-	-	-	-
Seconds Per Actuation *	2.5	-	-	2.5
Max Variable Initial *	46	-	-	46
Time Before Reduction *	15	-	-	15
Time To Reduce *	45	-	-	45
Minimum Gap	3.4	-	-	3.4
Recall Mode	MIN RECALL	-	-	MIN RECALL
Vehicle Call Memory	YELLOW	-	-	YELLOW
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	●→
●→	Modified Signal Head	N/A
⊥	Sign	⊥
⊥	Pedestrian Signal Head With Push Button & Sign	⊥
○→	Signal Pole with Guy	●→
⊥	Signal Pole with Sidewalk Guy	⊥
⊠	Inductive Loop Detector	⊠
⊠	Controller & Cabinet	⊠
⊠	Junction Box	⊠
⊠	2-in Underground Conduit	⊠
N/A	Right of Way	⊠
→	Directional Arrow	→
○	Metal Strain Pole	○

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
FINAL DRAWING Date: 7/14/14
Traffic Engineering Branch

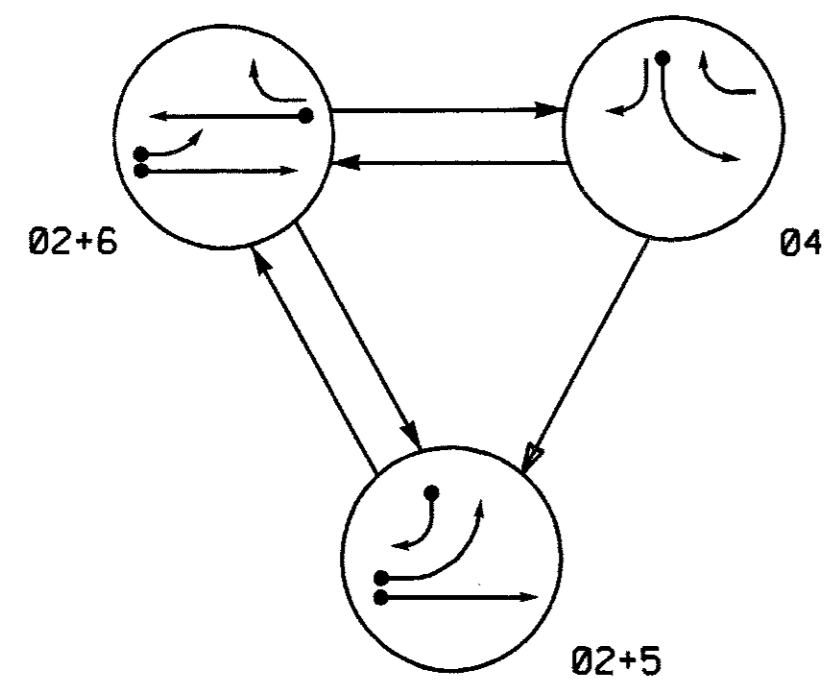
New Installation

Prepared for:

SR 1011 (South Salem Street) at SR 1162 (Apex Barbecue Road)
 Division 5 Wake County Apex
 PLAN DATE: July 2014 REVIEWED BY: WJ Hamilton
 PREPARED BY: NE Burns RKA PROJ. NO: 13110 (040)
 SCALE: 1" = 40'

 SIGNED: WJ Hamilton DATE: 7/19/14
 SIG. INVENTORY NO. 05-1543

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND
 -●- DETECTED MOVEMENT
 ->- UNDETECTED MOVEMENT (OVERLAP)
 ->- UNSIGNALIZED MOVEMENT
 ->- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE			
	02+5	02+6	04	F
21,22	G	G	R	Y
41	R	R	G	R
42	R	R	G	R
51	F	F	R	Y
61	R	G	R	Y
62	R	G	R	Y

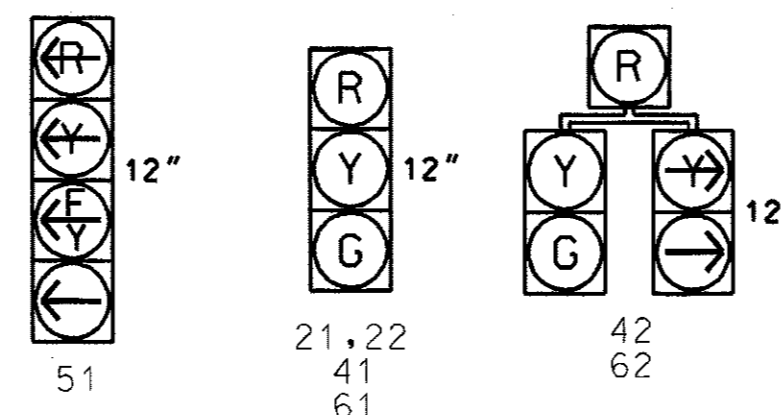
F = Flashing Yellow Arrow

STANDARD SIGNAL FACE CLEARANCES FOR FLASHING LEFT TURN SIGNAL

FROM	TO	
	1	2
F	1	2
R	1	2
G	1	2

F = Flashing Yellow Arrow

SIGNAL FACE I.D.
All Heads L.E.D.



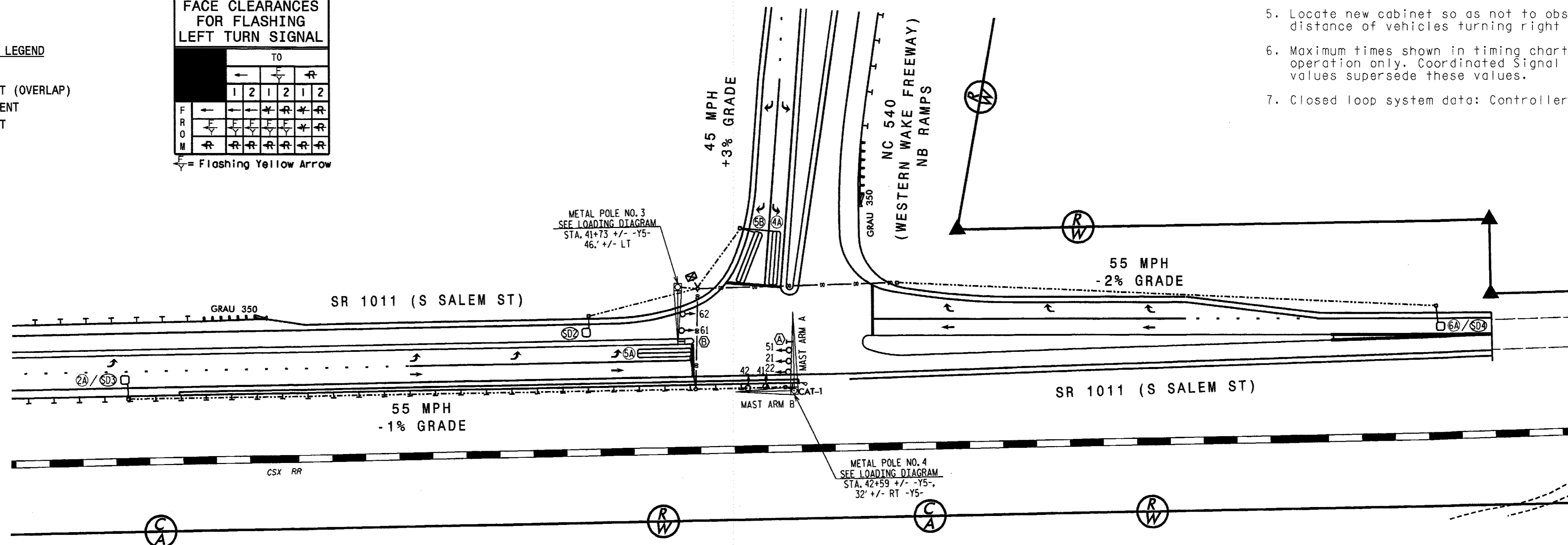
2070L LOOP & DETECTOR INSTALLATION

LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	DETECTOR PROGRAMMING							
					PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
SD2	6X6	+75	3	Y	-	-	-	-	-	-	Y	Y
2A/SD3	6X6	420	5	Y	2	Y	Y	-	-	-	Y	Y
4A	6X40	0	2-4-2	Y	4	Y	Y	-	-	-	-	Y
5A	6X40	0	2-4-2	Y	5	Y	Y	-	-	15	-	Y
5B	6X40	0	2-4-2	Y	5	Y	Y	-	-	15	-	Y
6A/SD4	6X6	420	6	Y	6	Y	Y	-	-	-	Y	Y

3 PHASE FULLY ACTUATED SR 1011 (S SALEM ST) CLOSED LOOP SYSTEM

NOTES

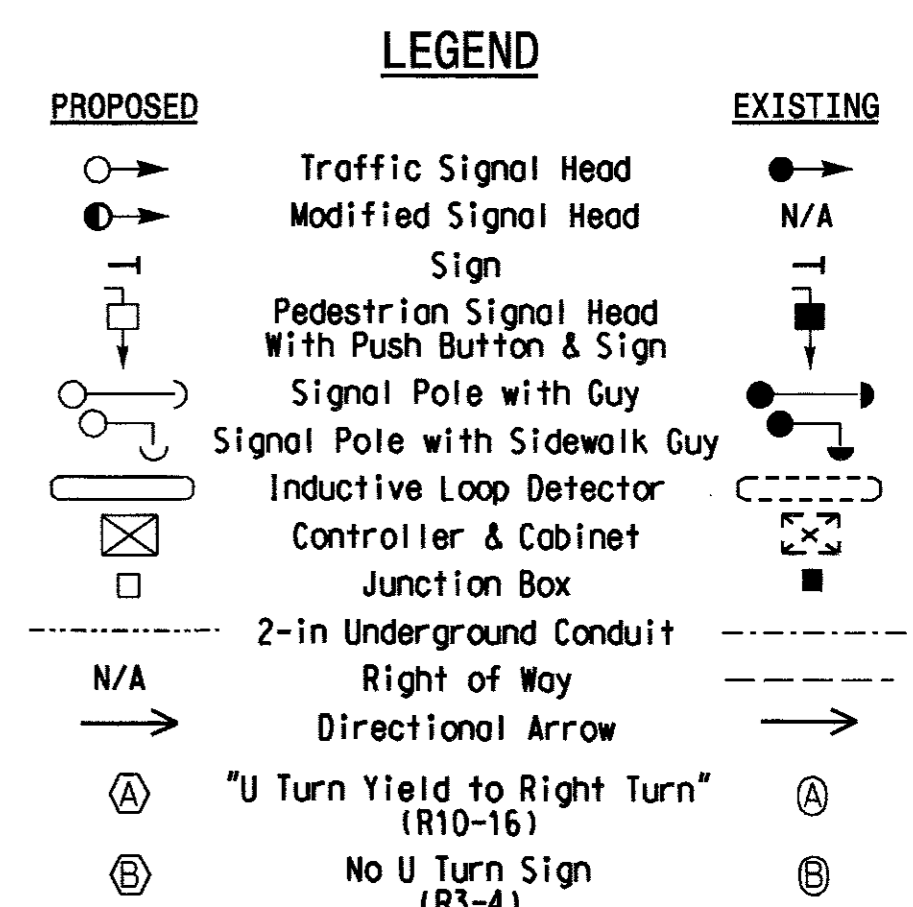
- Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
- Do Not Program signal for late night flashing operation unless otherwise directed by the Engineer.
- Phase 5 may be lagged.
- Set all detectors to presence mode.
- Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
- Maximum times shown in timing chart are for free-run operation only. Coordinated Signal system timing values supersede these values.
- Closed loop system data: Controller Asset #:2315.



OASIS 2070L TIMING CHART

FEATURE	PHASE			
	2	4	5	6
Min Green 1 *	14	7	7	14
Extension 1 *	6.0	1.0	1.0	6.0
Max Green 1 *	60	20	20	60
Yellow Clearance	5.4	3.1	3.2	5.4
Red Clearance	1.6	2.1	2.5	1.6
Walk 1 *	-	-	-	-
Don't Walk 1	-	-	-	-
Seconds Per Actuation *	2.5	-	-	2.5
Max Variable Initial *	46	-	-	46
Time Before Reduction *	15	-	-	15
Time To Reduce *	30	-	-	30
Minimum Gap	3.4	-	-	3.4
Recall Mode	MIN RECALL	-	-	MIN RECALL
Vehicle Call Memory	YELLOW	-	-	YELLOW
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 phase should not be lower than 4 seconds.

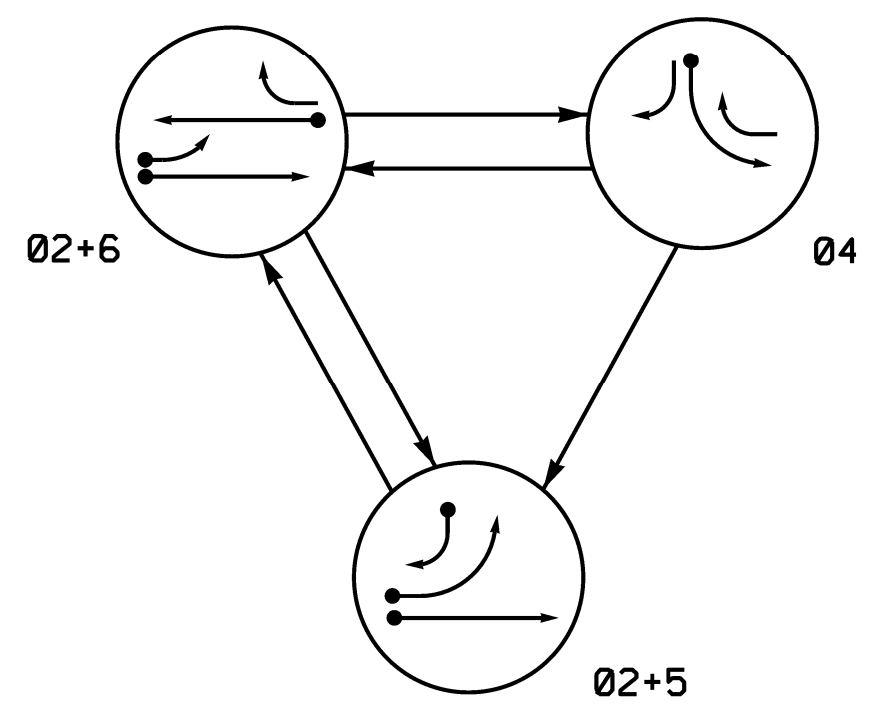


NC DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 FINAL DRAWING Date: 3/10/13
 R. J. [Signature]
 Traffic Engineering Branch

New Installation

THE LPA GROUP TRANSPORTATION CONSULTANTS THE LPA GROUP of North Carolina, P.A. 5000 Falls of Neuse Road, Suite 304 Raleigh, North Carolina 27609	730 N. Greenfield Pkwy, Garner, NC 27529	SR 1011 (S Salem St) at NC 540 (Western Wake Freeway) Northbound Ramps Division 5 Wake County Apex PLAN DATE: November 2010 REVIEWED BY: R Dubnicka PREPARED BY: K M Cory REVIEWED BY:	SEAL ROBERT J. DUBNICKA Professional Engineer No. 027742 DATE 11-20-10
RALEIGH-DURHAM ROADBUILDERS		REVISIONS RELOCATE METAL POLE NO. 4 INIT. DATE 12/20 2-22-13	SIG. INVENTORY NO. 05-2315

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE				FLASH
	02+5	02+6	04	4	
21,22	G	G	R	Y	
41	R	R	G	R	
42	R	R	G	R	
51	Y	Y	R	Y	
61	R	G	R	Y	
62	R	G	R	Y	

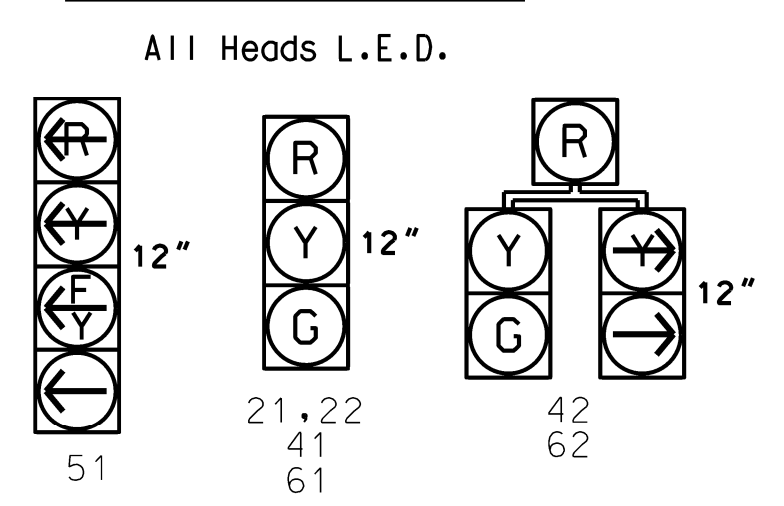
Y = Flashing Yellow Arrow

STANDARD SIGNAL FACE CLEARANCES FOR FLASHING LEFT TURN SIGNAL

FROM	TO			
	1	2	1	2
1	Y	Y	Y	Y
2	Y	Y	Y	Y
1	Y	Y	Y	Y
2	Y	Y	Y	Y

Y = Flashing Yellow Arrow

SIGNAL FACE I.D.



2070L LOOP & DETECTOR INSTALLATION

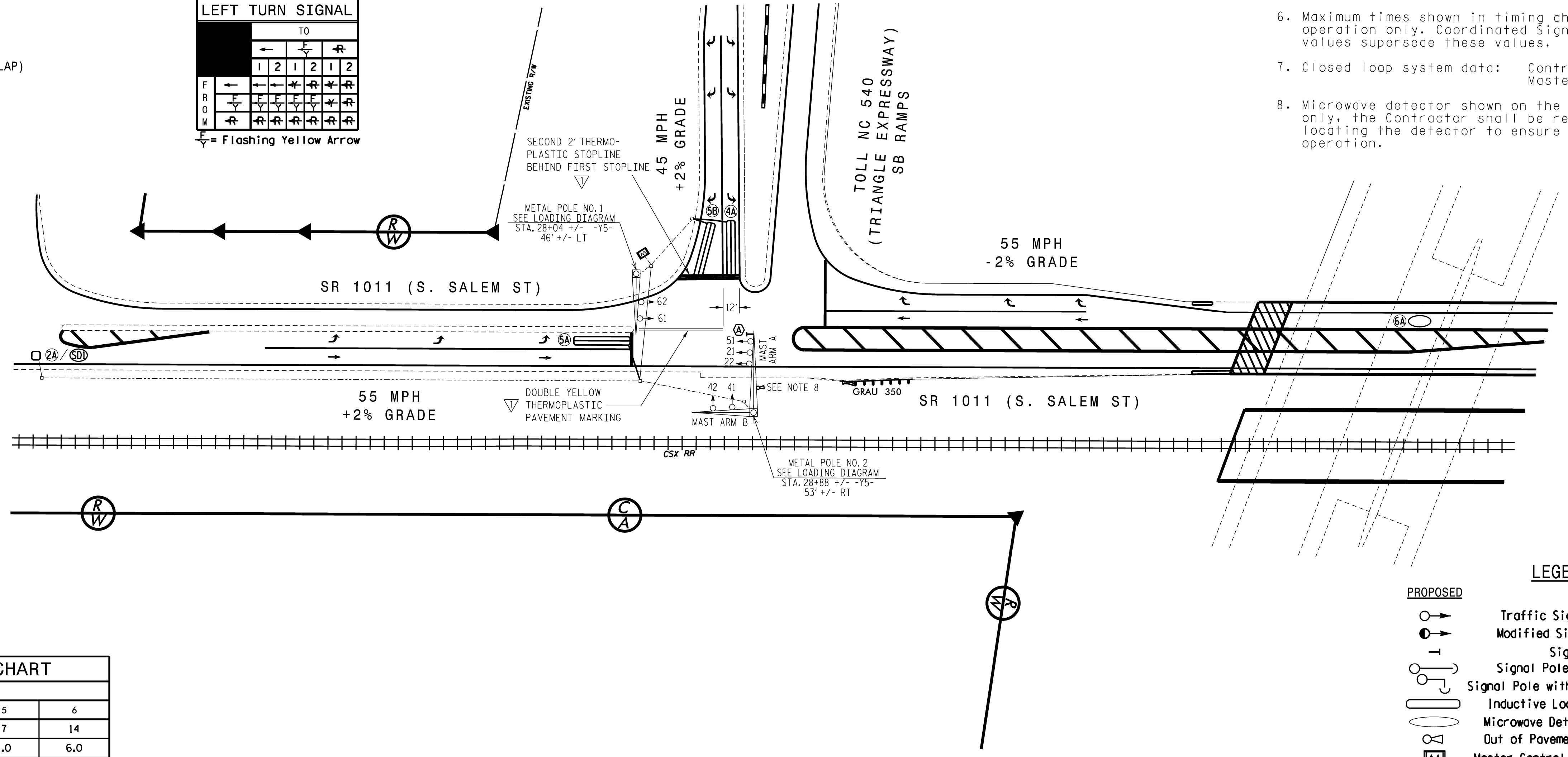
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	DETECTOR PROGRAMMING								
				PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD	
2A/SDI	6X6	420	6	Y	2	Y	Y	-	-	-	Y	Y
4A	6X40	0	2-4-2	Y	4	Y	Y	-	-	-	-	Y
5A	6X40	0	2-4-2	Y	5	Y	Y	-	-	15	-	Y
5B	6X40	0	2-4-2	Y	5	Y	Y	-	-	15	-	Y
6A	*	420	*	Y	6	Y	Y	-	-	-	-	*

* Microwave Detection Zone

3 PHASE FULLY ACTUATED SR 1011 (S. SALEM ST) CLOSED LOOP SYSTEM

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2012 and "Standard Specifications for Roads and Structures" dated January 2012.
- Do Not Program signal for late night flashing operation unless otherwise directed by the Engineer.
- Phase 5 may be lagged.
- Set all detectors to presence mode.
- Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
- Maximum times shown in timing chart are for free-run operation only. Coordinated Signal system timing values supersede these values.
- Closed loop system data: Controller Asset #: 2316 Master Asset #: 10547
- Microwave detector shown on the plan sheet is concept only, the Contractor shall be responsible for field locating the detector to ensure the most effective operation.



LEGEND

PROPOSED	EXISTING
○ → Traffic Signal Head	● → Traffic Signal Head
○ → Modified Signal Head	N/A
○ → Sign	○ → Sign
○ → Signal Pole with Guy	○ → Signal Pole with Guy
○ → Signal Pole with Sidewalk Guy	○ → Signal Pole with Sidewalk Guy
○ → Inductive Loop Detector	○ → Inductive Loop Detector
○ → Microwave Detection Zone	○ → Microwave Detection Zone
○ → Out of Pavement Detector	○ → Out of Pavement Detector
□ → Master Controller & Cabinet	□ → Master Controller & Cabinet
□ → Junction Box	□ → Junction Box
□ → 2-in Underground Conduit	□ → 2-in Underground Conduit
→ N/A Right of Way	→ Right of Way
→ Directional Arrow	→ Directional Arrow
(A) "U Turn Yield to Right Turn" (R10-16)	(A) "U Turn Yield to Right Turn" (R10-16)

OASIS 2070L TIMING CHART

FEATURE	PHASE			
	2	4	5	6
Min Green 1 *	14	7	7	14
Extension 1 *	6.0	1.0	1.0	6.0
Max Green 1 *	60	20	20	60
Yellow Clearance	5.4	3.1	3.1	5.4
Red Clearance	1.4	2.0	2.9	1.4
Walk 1 *	-	-	-	-
Don't Walk 1	-	-	-	-
Seconds Per Actuation *	2.5	-	-	2.5
Max Variable Initial *	46	-	-	46
Time Before Reduction *	15	-	-	15
Time To Reduce *	30	-	-	30
Minimum Gap	3.4	-	-	3.4
Recall Mode	MIN RECALL	-	-	MIN RECALL
Vehicle Call Memory	YELLOW	-	-	YELLOW
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.

NC Dept. of Transportation
Division of Highways
Final Drawing Date 11/13/2017
ITS & Signals Unit

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ATKINS

1616 EAST MILLBROOK ROAD, SUITE 310
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

REVISION SEAL

THE LPA GROUP TRANSPORTATION CONSULTANTS
5000 Falls of Neuse Road, Suite 304
Raleigh, North Carolina 27609

1750 N. Greenfield Pkwy, Garner, NC 27525

11/13/2017

Signal Revision

SR 1011 (S. Salem St) at Toll NC 540 (Triangle Expressway) Southbound Ramps

Division 5 Wake County Apex

PLAN DATE: November 2010 REVIEWED BY: R Dubnicka

PREPARED BY: K M Cory REVIEWED BY:

REVISIONS

NO.	DESCRIPTION	INIT.	DATE
1	CONSTRUCTION REVISION - ADDED ENHANCED TRAFFIC CONTROL DEVICES	DLJ	11/13/2017

SCALE 0 50 1"=50'

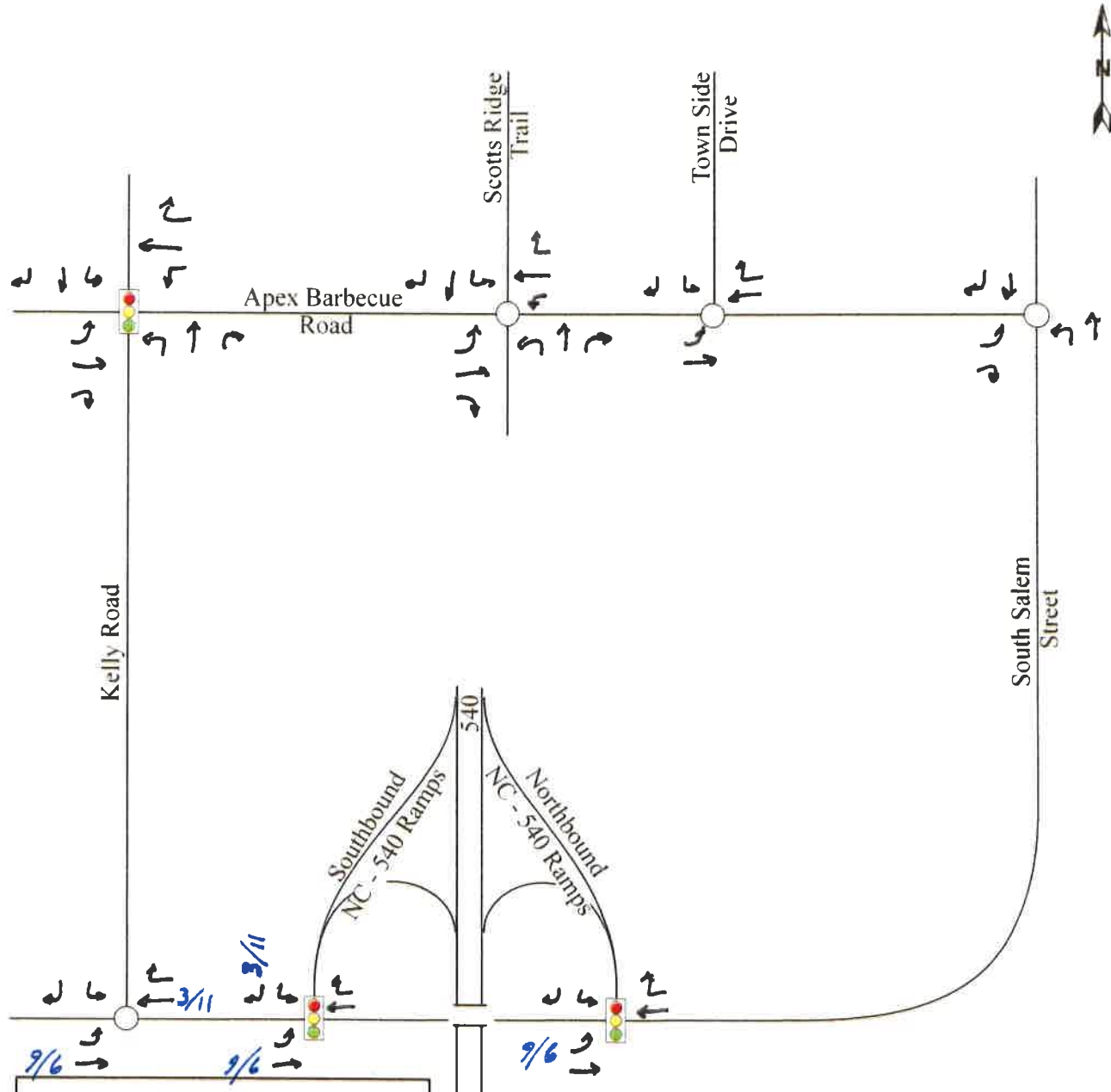
SIGNATURE DATE

SIG. INVENTORY NO. 05-2316




SEAL Not a Certified Document as the original document, but only as to the revision. This document originally issued and sealed by Robert J. Dubnicka, 27742, on 11-30-2010.

APPENDIX D

ADJACENT DEVELOPMENT INFORMATION



LEGEND

-  Unsignalized Intersection
-  Signalized Intersection
- X / Y  AM / PM Peak Hour Adjacent Development Trips

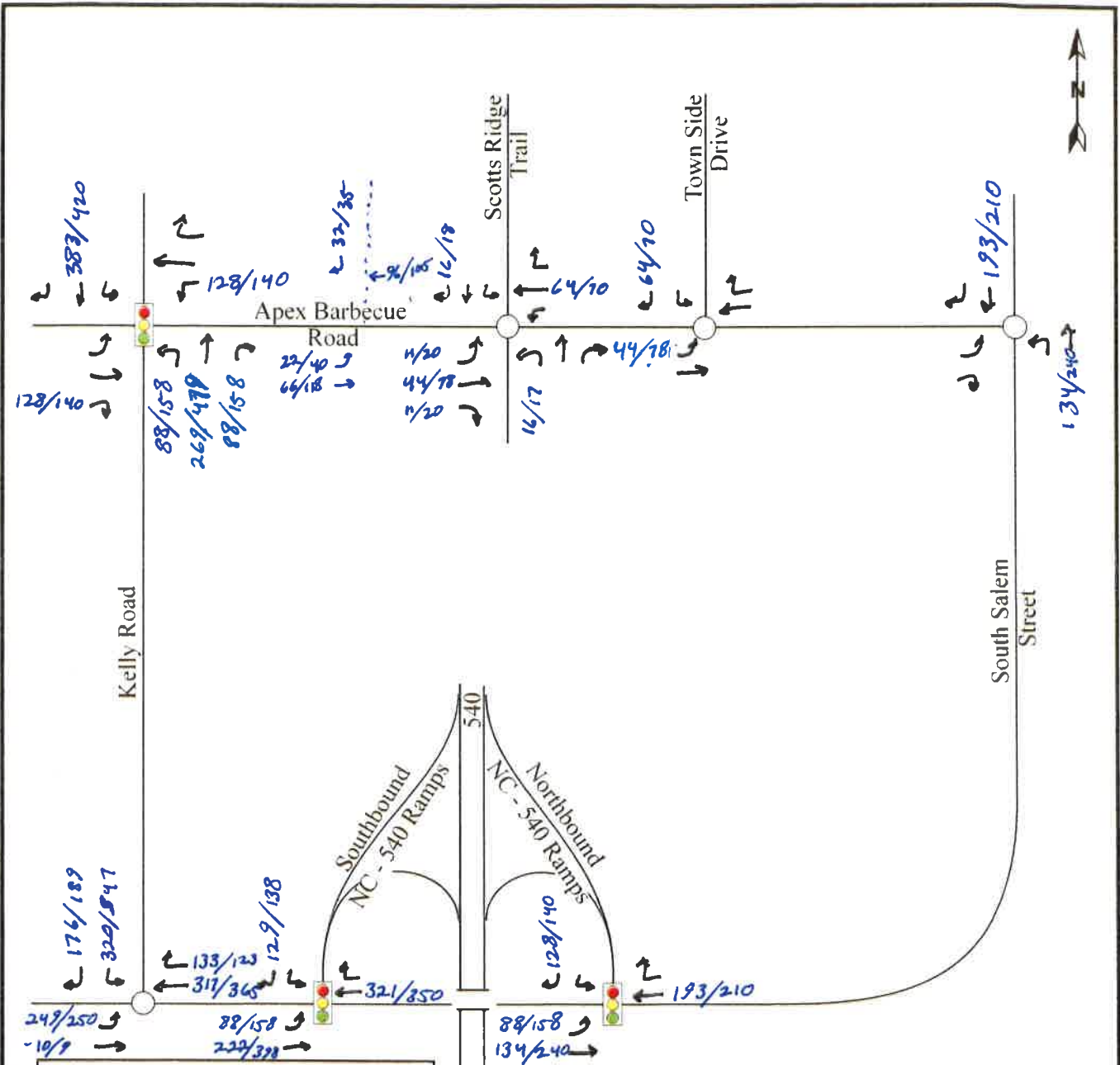


**RAMEY KEMP
&
ASSOCIATES**
TRANSPORTATION ENGINEERS

Poe Tract Mixed Use
Development
Apex, NC

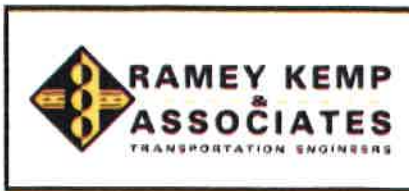
*Olive Ridge
Residential*

Scale: Not to Scale



LEGEND

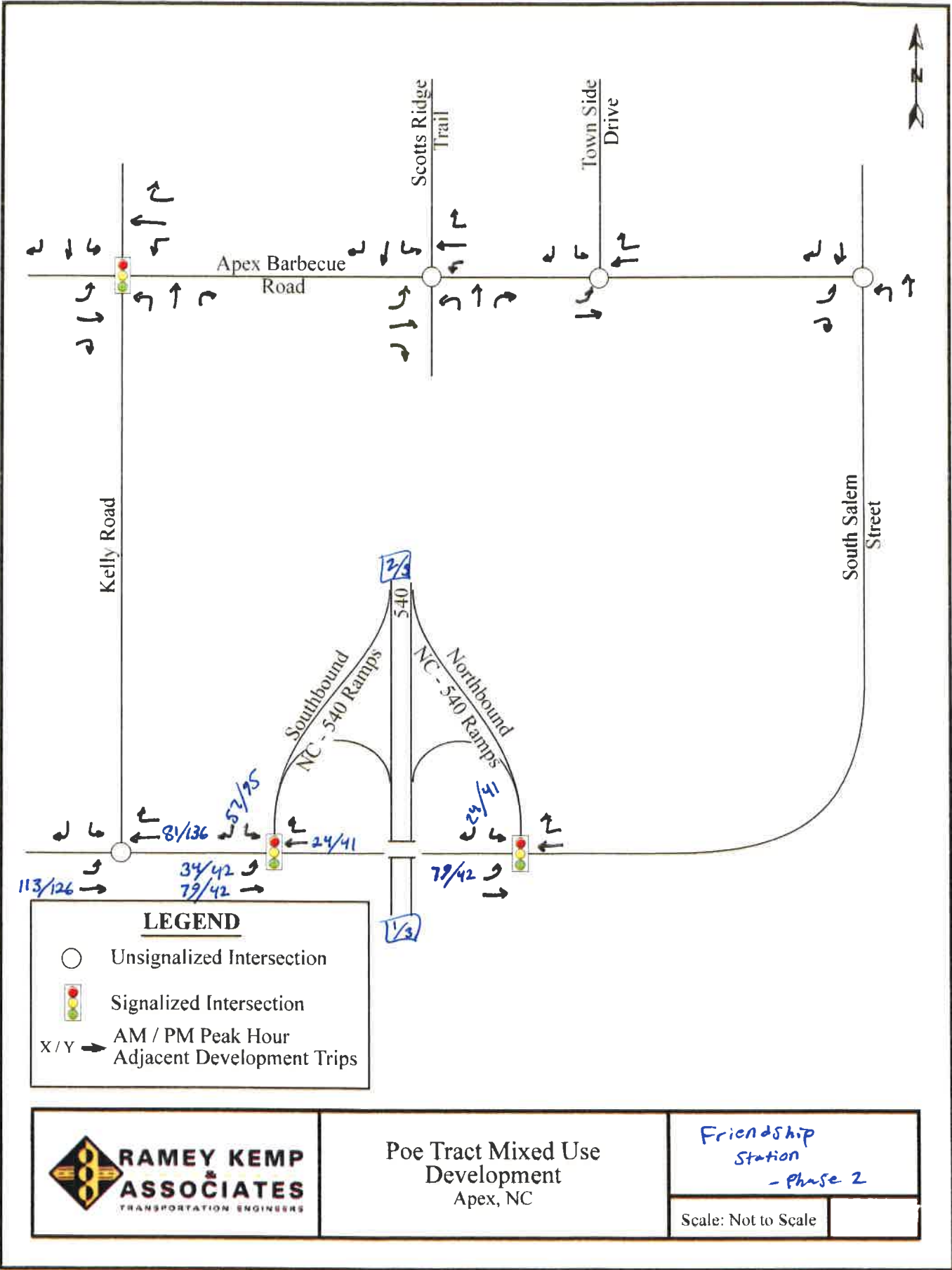
- Unsignalized Intersection
- 🚦 Signalized Intersection
- X/Y → AM / PM Peak Hour Adjacent Development Trips



Poe Tract Mixed Use Development
Apex, NC

West village
-full Build

Scale: Not to Scale



LEGEND

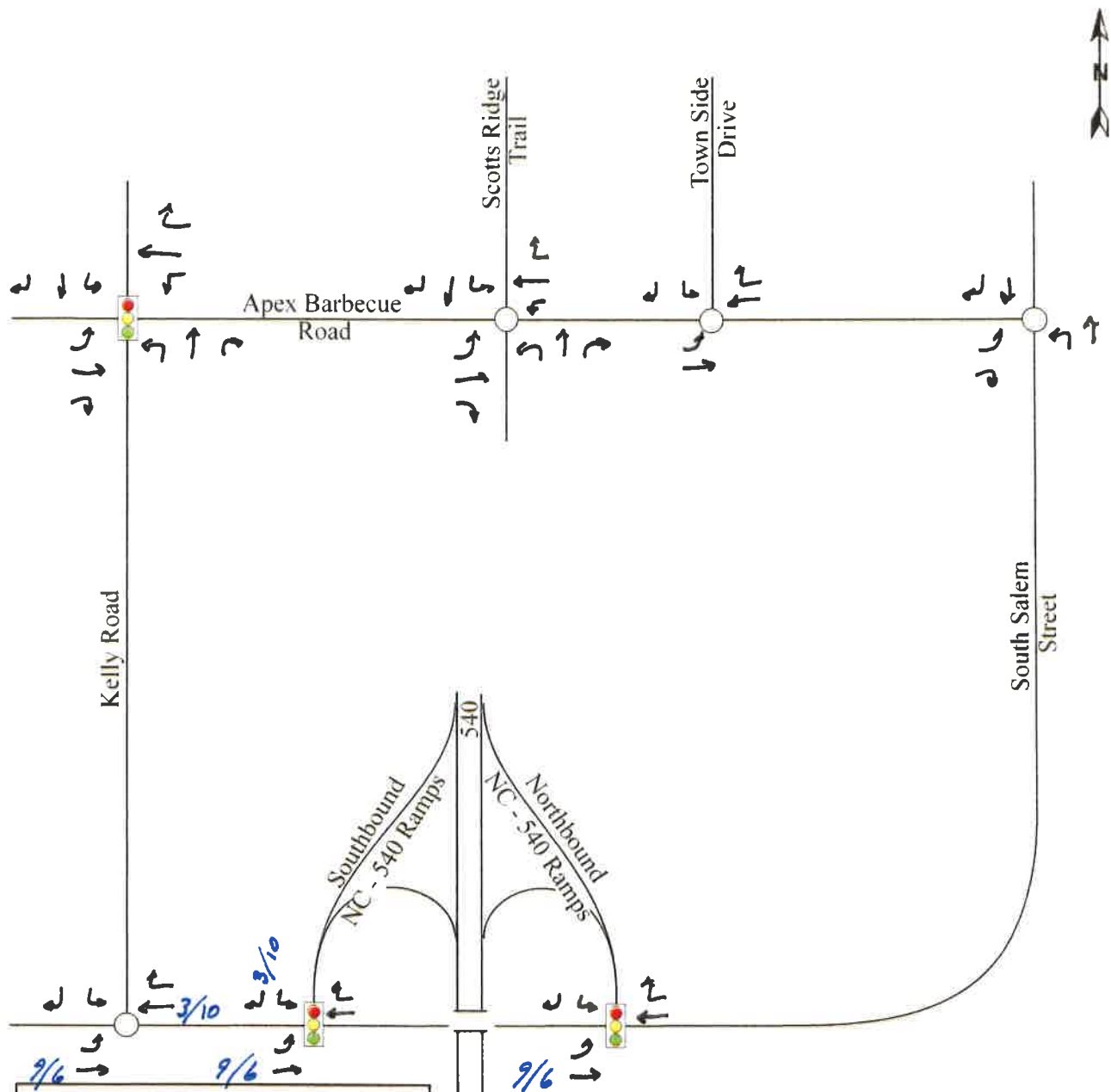
- Unsignalized Intersection
- 🚦 Signalized Intersection
- X/Y → AM / PM Peak Hour Adjacent Development Trips



Poe Tract Mixed Use Development
Apex, NC

Friendship Station
- Phase 2

Scale: Not to Scale



LEGEND

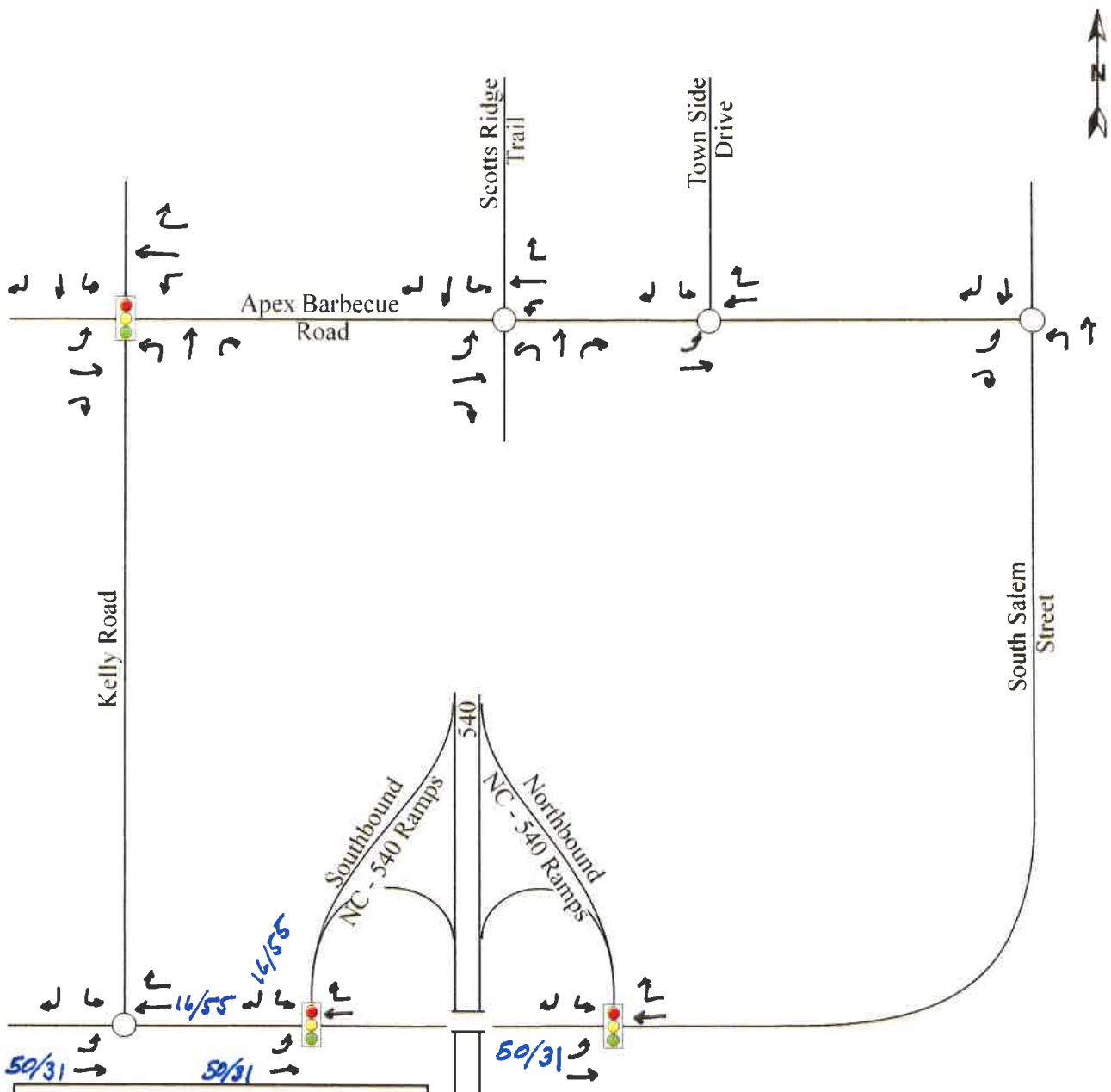
- Unsignalized Intersection
- 🚦 Signalized Intersection
- X/Y → AM / PM Peak Hour Adjacent Development Trips





Poe Tract Mixed Use Development
Apex, NC

New Hill Assembly

Scale: Not to Scale



LEGEND

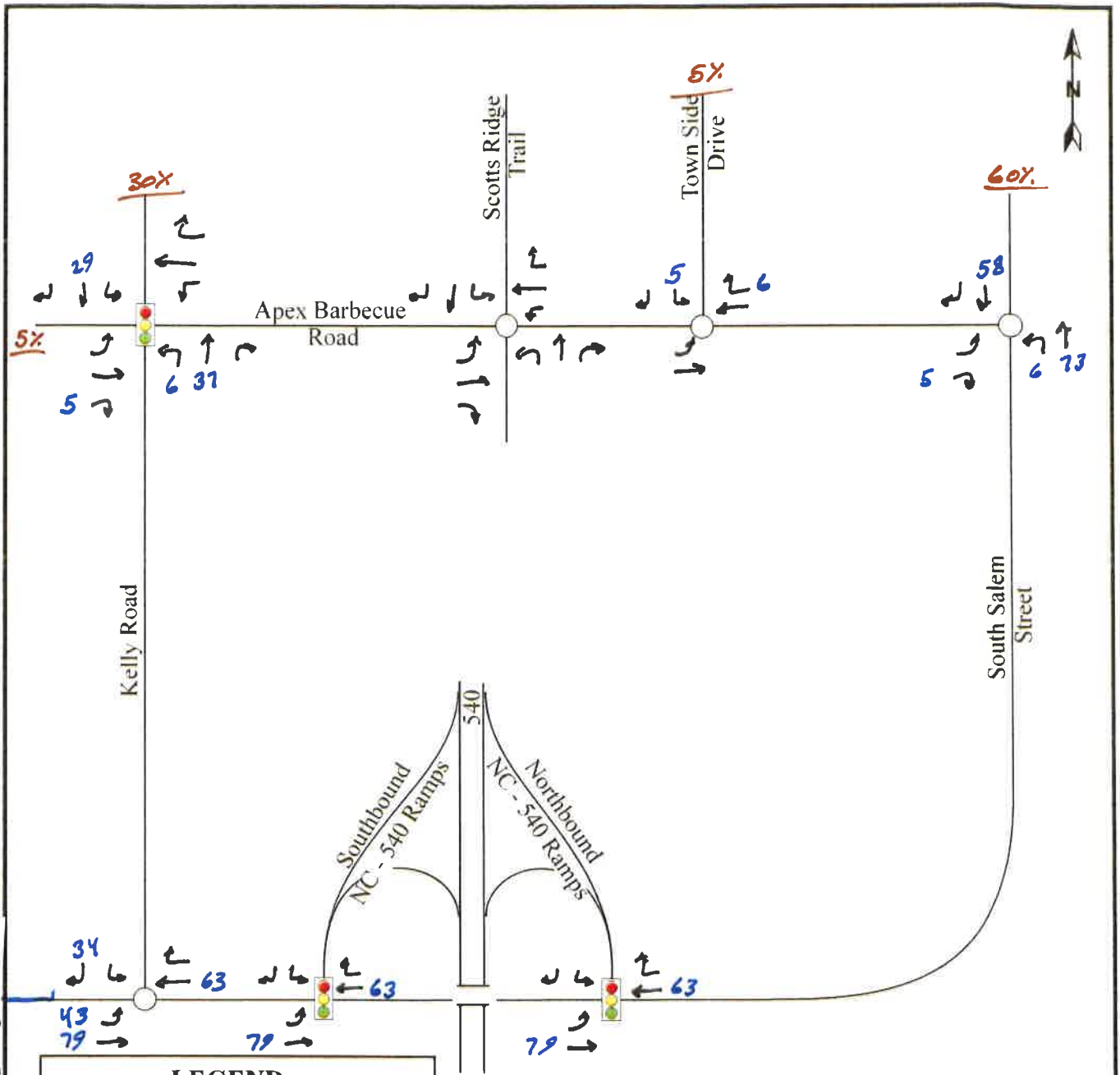
-  Unsignalized Intersection
-  Signalized Intersection
- X/Y → AM / PM Peak Hour Adjacent Development Trips



Poe Tract Mixed Use Development
Apex, NC

Woodbury
(25% built-out)

Scale: Not to Scale

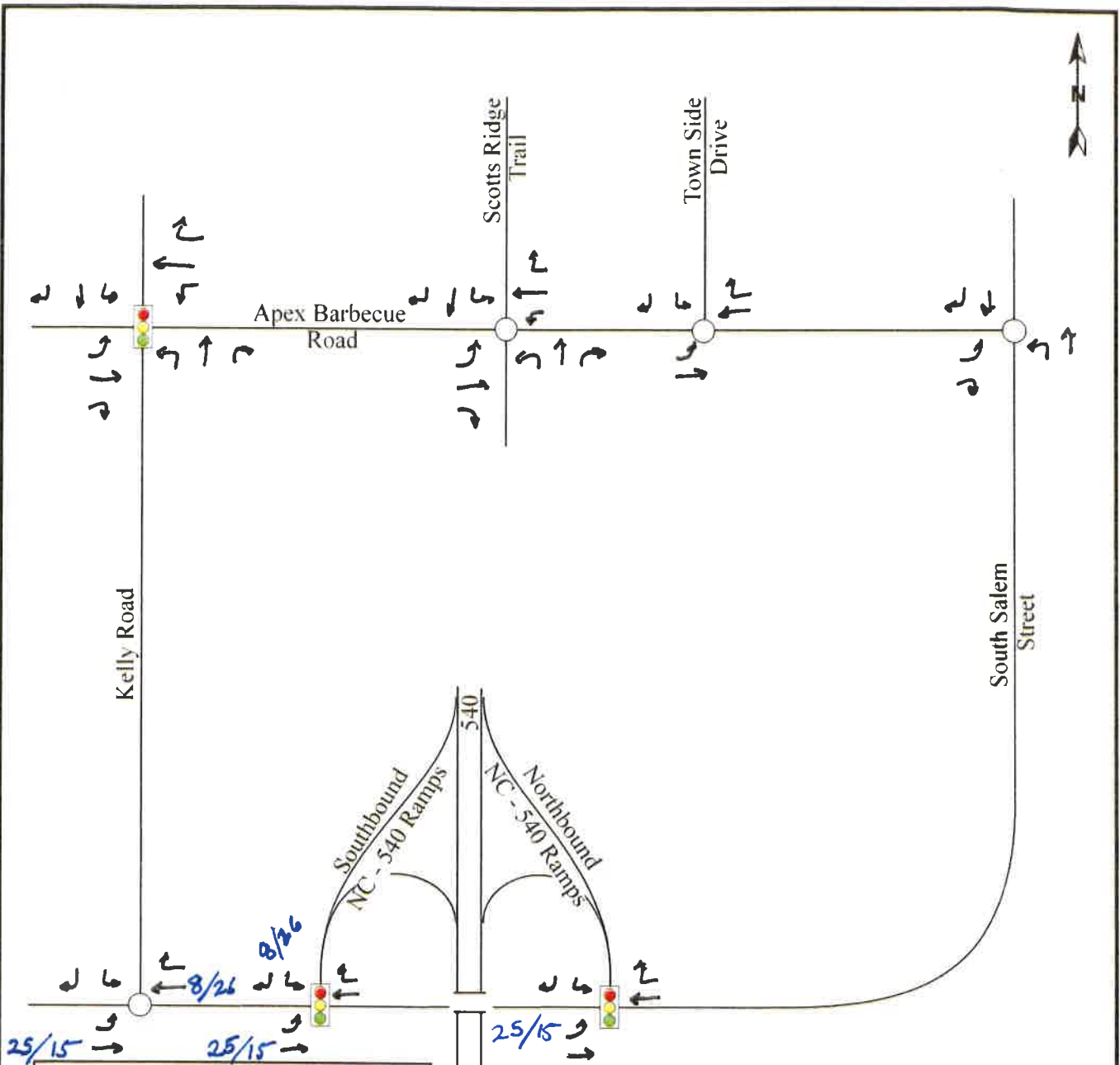


LEGEND

- Unsignalized Intersection
- 🚦 Signalized Intersection
- Y → ~~AM~~ / PM Peak Hour Adjacent Development Trips

** PM Only **

 <p>RAMEY KEMP ASSOCIATES TRANSPORTATION ENGINEERS</p>	<p>Poe Tract Mixed Use Development Apex, NC</p>	<p><i>Pleasant Park</i></p>	
		<p>Scale: Not to Scale</p>	



LEGEND

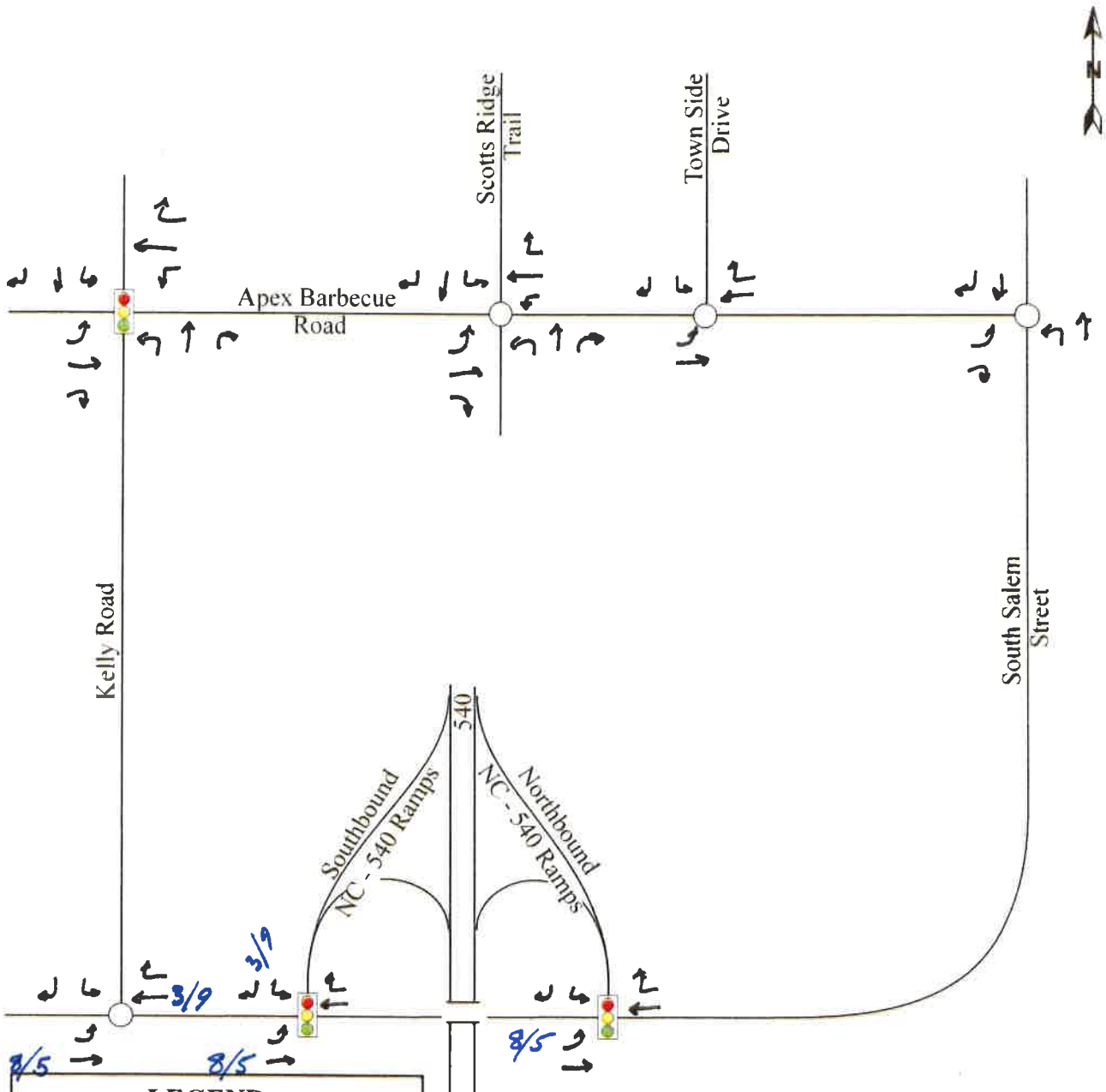
- Unsignalized Intersection
- 🚦 Signalized Intersection
- X/Y → AM / PM Peak Hour Adjacent Development Trips



Poe Tract Mixed Use Development
Apex, NC

Jordan Pointe
(65% built-out)

Scale: Not to Scale



LEGEND

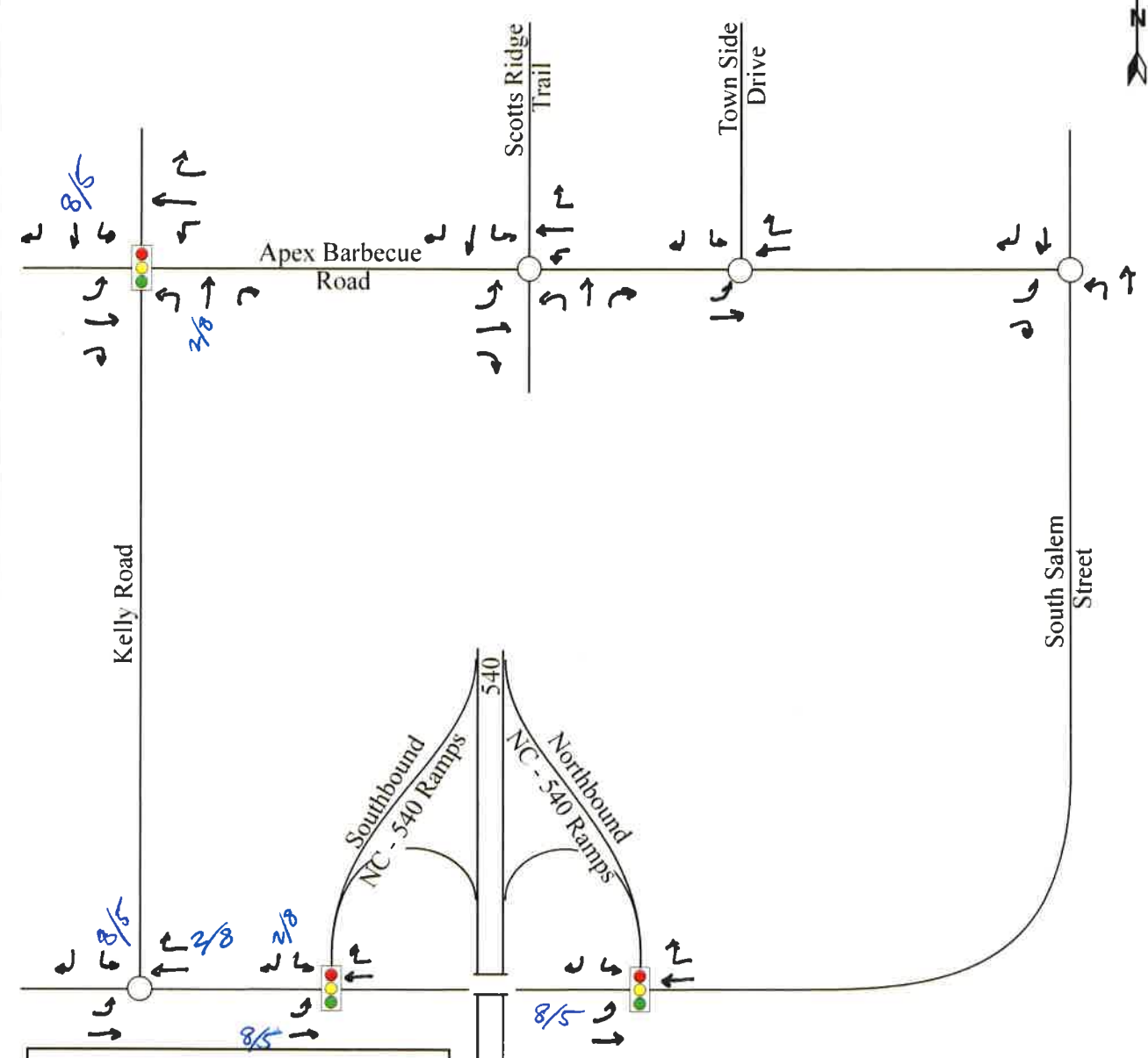
- Unsignalized Intersection
- 🚦 Signalized Intersection
- X/Y → AM / PM Peak Hour Adjacent Development Trips



Poe Tract Mixed Use Development
Apex, NC

Jordan Manors
(40% built-out)

Scale: Not to Scale



LEGEND

- Unsignalized Intersection
- 🚦 Signalized Intersection
- X/Y → AM / PM Peak Hour Adjacent Development Trips



Poe Tract Mixed Use Development
Apex, NC

Buckhorn
(20% built-out)

Scale: Not to Scale

Traffic Impact Analysis

For

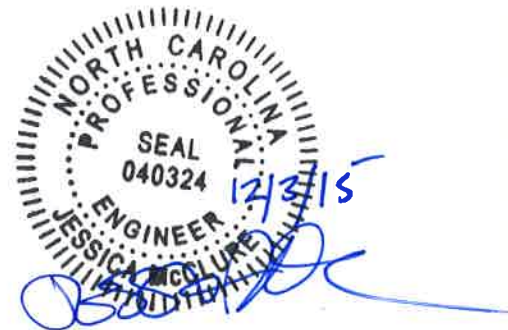
West Village

Located in

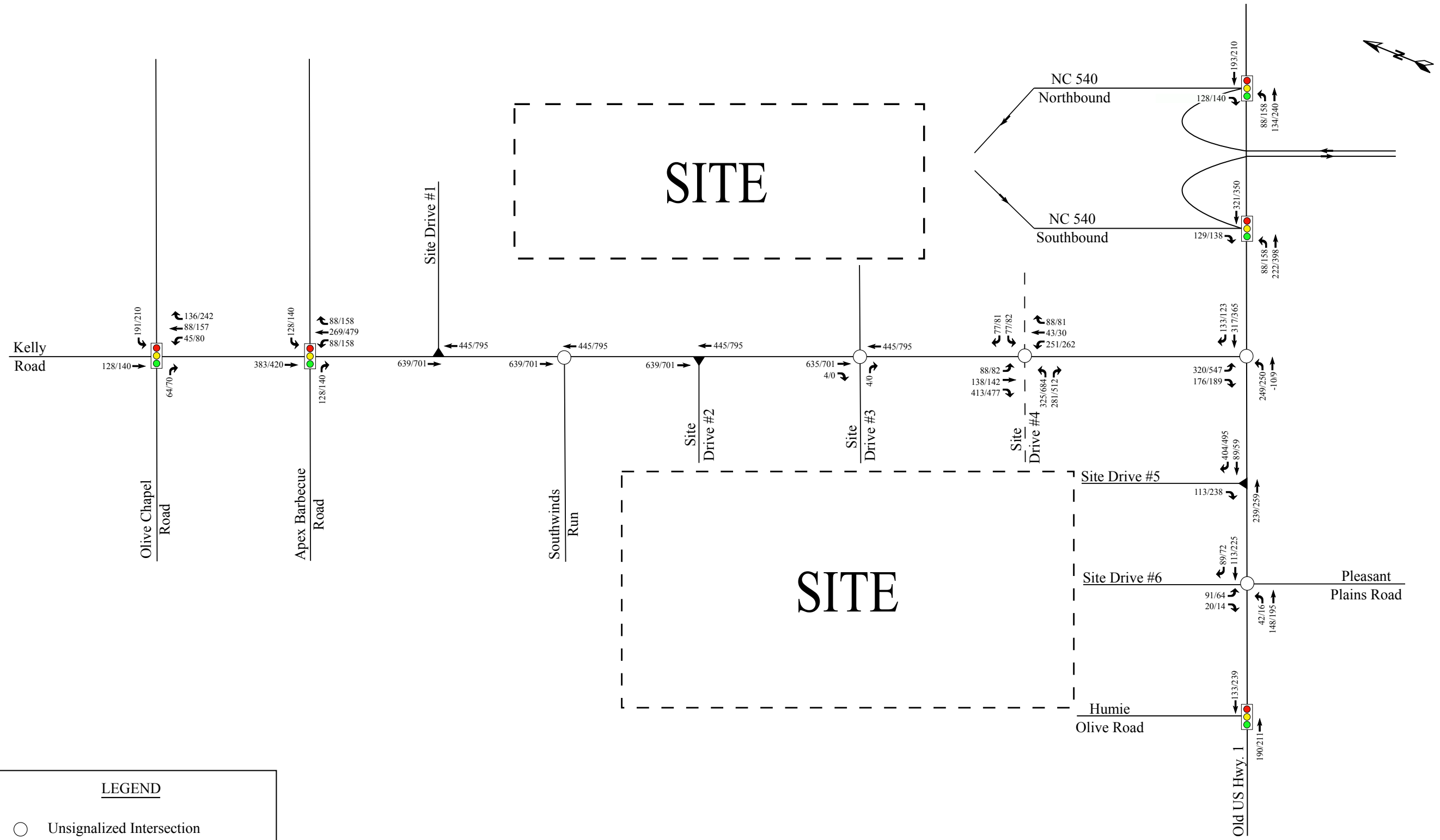
Apex, North Carolina

Prepared For:
Orleans Homes
3333 Street Road
Bensalem, PA 19020

Prepared By:
Ramey Kemp & Associates, Inc.
5808 Faringdon Place, Suite 100
Raleigh, NC 27609
NC Corporate License # C-0910



December 2015



LEGEND

- Unsignalized Intersection
- 🚦 Signalized Intersection
- ▶ Right-In / Right-Out Intersection
- XY → AM/PM Total Site Trips



West Village Development
Apex, NC

Total Site Trip Assignment (Phase 2 - 2020)	
Scale: Not to Scale	Figure 12b

West Village

Recommended rezoning conditions to address traffic impacts

All recommendations on state maintained roadways are subject to NCDOT review and approval as part of the driveway permits and encroachment agreements.

Build 2018 refers to the first phase of residential development or as otherwise determined during the review and approval of subdivision plans. Build 2020 refers to the first phase of commercial development or as otherwise determined during the review and approval of site plans. Recommendations for Build 2020 are subject to further analysis at the time of site plan submittal and may change from what is recommended below as part of site plan approval.

IPS: Internal Protected Storage Length. Distance from the intersection along the proposed driveway or street before any full movement commercial driveway access or public street intersection will be allowed.

Kelly Road at Olive Chapel Road

- Developer shall construct a 200-foot eastbound right turn lane and a 300-foot additional westbound left turn lane on Olive Chapel Road (with southbound receiving through lane on Kelly Road) for Build 2020.

Kelly Road at Apex Barbecue Road

- Developer shall construct a 400-foot eastbound left turn lane, 350-foot westbound left turn lane, 350-foot northbound left turn lane, 150-foot northbound right turn lane, 350-foot southbound left turn lane, and 200-foot southbound right turn lane for Build 2020.

Kelly Road at Southwinds Run

- Developer shall construct a 100-foot northbound left turn lane on Kelly Road, an additional (second) northbound through lane through the intersection to drop as a right turn at Site Drive #1, and begin an additional (second) southbound through lane immediately south of Southwinds Run for Build 2020.

Old US 1 at Kelly Road

- Developer shall construct a 100-foot westbound right turn lane on Old US 1 for Build 2018.
- Developer shall install a traffic signal once warranted and approved by NCDOT and install communication with the NC 540 traffic signals.

- Developer shall construct an additional westbound through lane, beginning at the NC 540 Southbound off-ramp as a free-flow right turn exiting the ramp, as well as a 200-foot westbound right turn lane on Old US 1 for Build 2020.
- Developer shall construct a second southbound left turn lane with 300 feet of storage for dual left turn lanes and extend the southbound right turn lane to 300 feet on Kelly Road for Build 2020.
- Developer shall extend the eastbound left turn lane as a contiguous lane back through the intersection with Site Drive #5 and Site Drive #6 starting as a second eastbound through lane 400-feet west of Site Drive #6 on Old US 1 for Build 2020.

NC 540 Ramps at Old US 1

- Developer shall provide a free-flow right turn lane for the NC 540 Southbound off-ramp and additional receiving through lane continuing west to drop as a right turn at Site Drive #6 on Old US 1 for Build 2020.
- Developer shall extend the eastbound left turn lane on Old US 1 at the NC 540 Southbound on-ramp as a contiguous lane back to Kelly Road to receive the southbound dual left turn lanes from Kelly Road for Build 2020.

Old US 1 at Pleasant Plains Road & Site Drive #6

- Developer shall construct Site Drive #6 with a through-left lane and a 100-foot right turn lane with 200 feet IPS for Build 2018.
- Developer shall construct a 100-foot eastbound left turn lane and 100-foot westbound left turn lane on Old US 1 for Build 2018.
- Developer shall install a traffic signal once warranted and approved by NCDOT and install communication with the NC 540 traffic signals.
- Developer shall construct an additional westbound through lane on Old US 1 to drop as a right turn lane at Site Drive #6 for Build 2020.
- Developer shall construct an additional eastbound through lane on Old US 1 beginning 400 feet west of Site Drive #6 for Build 2020.

Kelly Road at Site Drive #1

- Developer shall construct Site Drive #1 as a right-in and right-out only providing 100 feet IPS and a 100-foot northbound right turn lane on Kelly Road for Build 2018.
- Developer shall construct an additional northbound through lane on Kelly Road to drop as a right turn lane at Site Drive #1 for Build 2020.

Kelly Road at Site Drive #2

- Developer shall construct Site Drive #2 as a right-in and right-out only providing 100 feet IPS for Build 2018.
- Developer shall construct an additional northbound through lane and an additional southbound through lane on Kelly Road at Site Drive #2 for Build 2020.

Kelly Road at Site Drive #3

- Developer shall construct Site Drive #3 with a 100-foot eastbound right turn lane and a 100-foot westbound right turn lane on the Site Drive #3 approaches adjacent to through-right lanes with 200 feet IPS for Build 2018.
- Developer shall construct 100-foot northbound and 100-foot southbound left turn lanes on Kelly Road for Build 2018.
- Developer shall construct an additional (second) southbound through lane and additional (second) northbound through lane on Kelly Road at Site Drive #3 for Build 2020.

Kelly Road at Site Drive #4

- Developer shall construct Site Drive #4 with a four-lane eastbound approach including 400-foot dual left turn lanes, 100-foot right turn lane, and shared through-right lane with 500 feet IPS for Build 2020.
- Developer shall construct Site Drive #4 with a two-lane westbound approach including a 125-foot left turn lane and a through-right lane with 200-feet IPS for Build 2020.
- Developer shall construct an additional (second) southbound through lane dropping as a right turn lane at Site Drive #4, construct a 125-foot southbound left turn lane, 300-foot northbound left turn lane, and 100-foot northbound right turn lane on Kelly Road for Build 2020.
- Developer shall install a traffic signal once warranted and approved by NCDOT and install communication with the traffic signals on Old US 1.

Old US 1 at Site Drive #5

- Developer shall construct Site Drive #5 as a right-in and right-out only providing 200 feet IPS for Build 2018.
- Developer shall construct an additional (second) westbound through lane and add a 200-foot westbound right turn lane on Old US 1 for Build 2020.
- Developer shall construct an additional (second) eastbound through lane on Old US 1 for Build 2020.

Bristol Property Update

Apex, NC

PREPARED FOR

Pulte Homes
c/o Randy King
1225 Crescent Green Drive
Suite 250
Cary, NC 27518

PREPARED BY



VHB Engineering NC, PC (C-3705)
4000 WestChase Boulevard, Suite 530
Raleigh, NC 27607
919.829.0328

May 18, 2016

LEGEND	
	Turning Movement
	Existing Roadway
	Future Roadway
	Existing Stop Controlled Approach
	Future Signalized Intersection
	Future Stop Controlled Approach
XX	AM Peak Hour Site Trips
(XX)	PM Peak Hour Site Trips

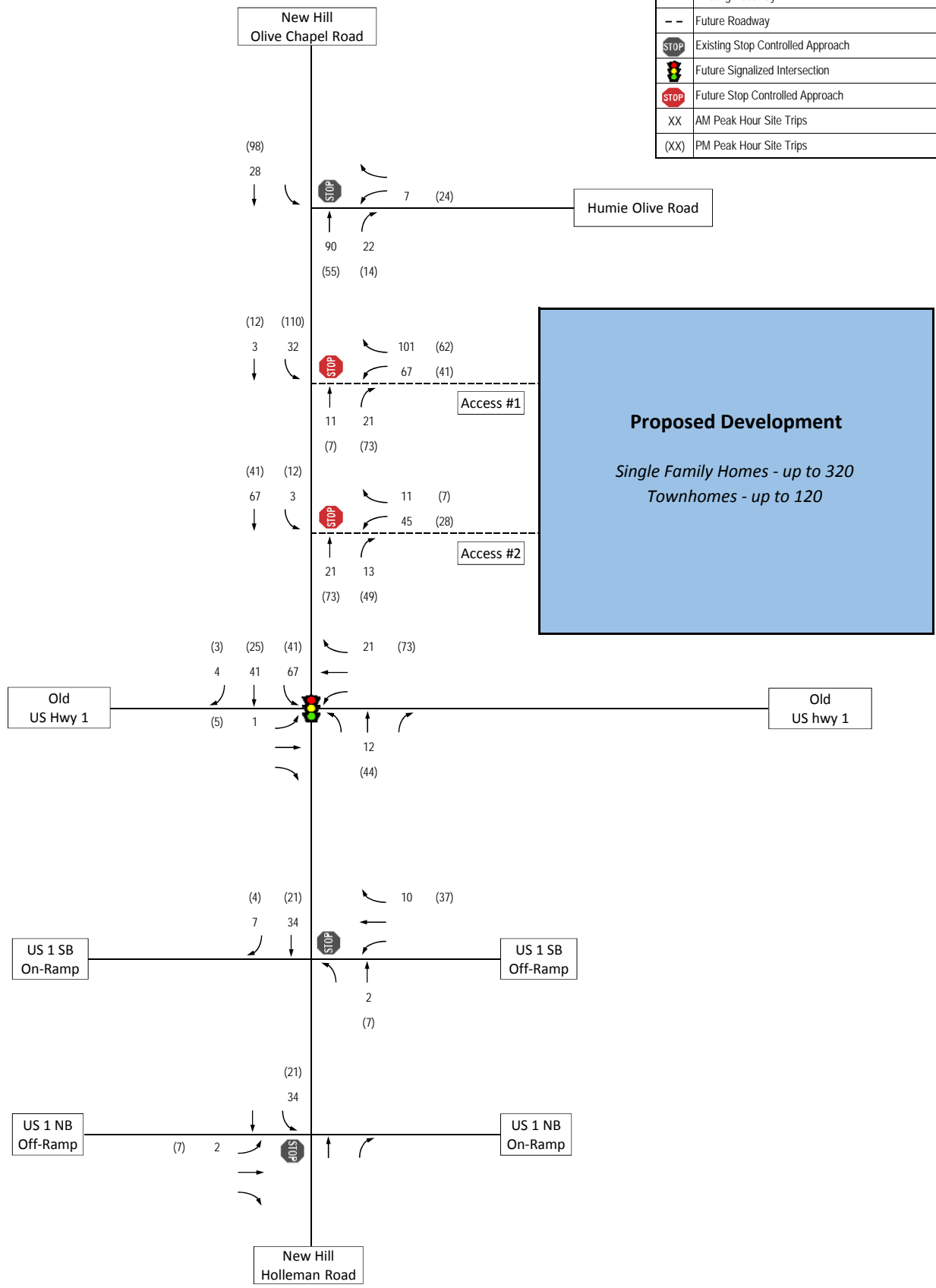


Figure 7
AM and PM Peak Hour Site Trips

Bristol Property
Apex, NC

Pleasant Park

Apex, NC

PREPARED FOR



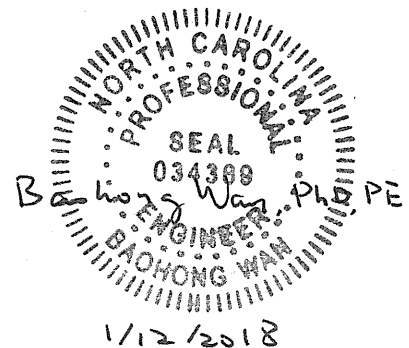
c/o Jason Bertoncino, PE, LEED AP
115 MacKenan Drive
Cary, NC 27511

PREPARED BY



VHB Engineering NC, P.C. (C-3705)
940 Main Campus Drive, Suite 500
Raleigh, NC 27606
919.829.0328

January 12, 2018



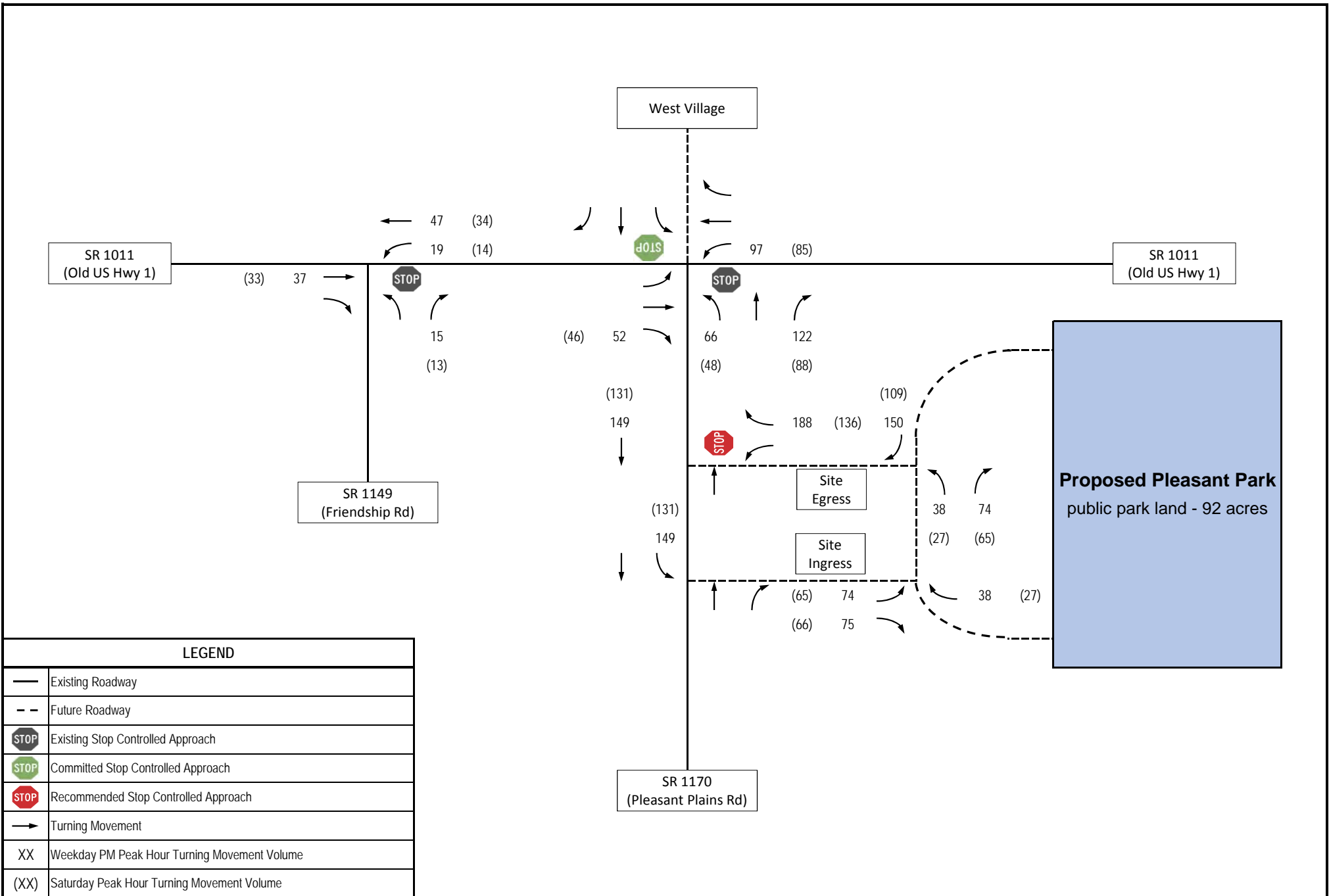


Figure 7
Weekday PM and Saturday Midday Peak Hour Hour Site Trips

Pleasant Park
Apex, NC



TRAFFIC IMPACT ANALYSIS

FOR

OLIVE RIDGE

LOCATED

IN

APEX, NORTH CAROLINA

Prepared For:
Rob Tessar
Weekley Homes, LLC
1901 N. Harrison Avenue, Suite 200
Cary, NC 27513

Prepared By:
Ramey Kemp & Associates, Inc.
5808 Faringdon Place, Suite 100
Raleigh, NC 27609
License #C-0910

December 2018

RKA Project No. 18357

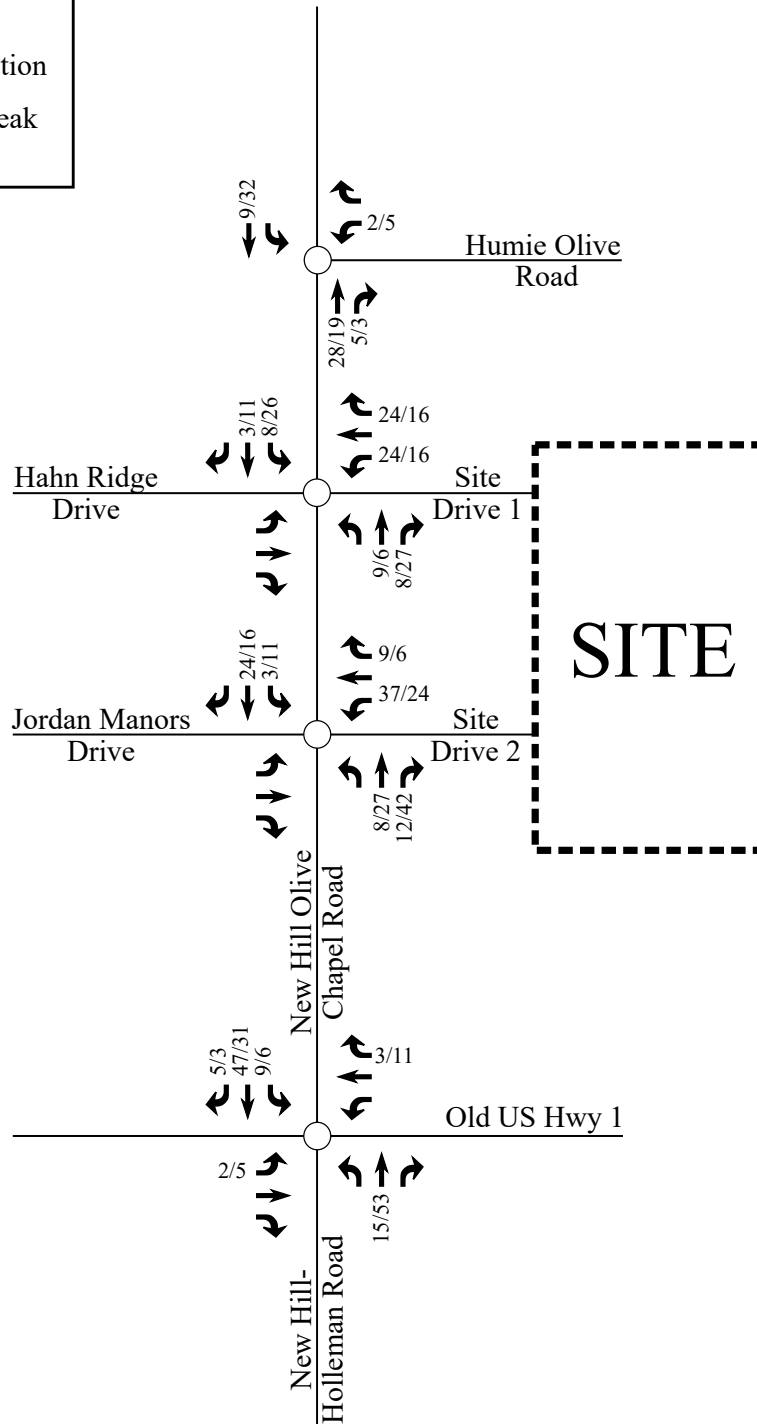


Prepared By: NB

Reviewed By: RS

LEGEND

- Unsignalized Intersection
- X/Y → Weekday AM / PM Peak Hour Site Trips



Olive Ridge Residential
Apex, NC

Site
Trip Assignment

Scale: Not to Scale

Figure 9

TRAFFIC IMPACT ANALYSIS

FOR

NEW HILL ASSEMBLY

LOCATED

IN

APEX, NORTH CAROLINA

Prepared For:
Forsyth Investments Company, LLC
414 Forsyth Street
Raleigh, NC 27609

Prepared By:
Ramey Kemp & Associates, Inc.
5808 Faringdon Place, Suite 100
Raleigh, NC 27609
License #C-0910

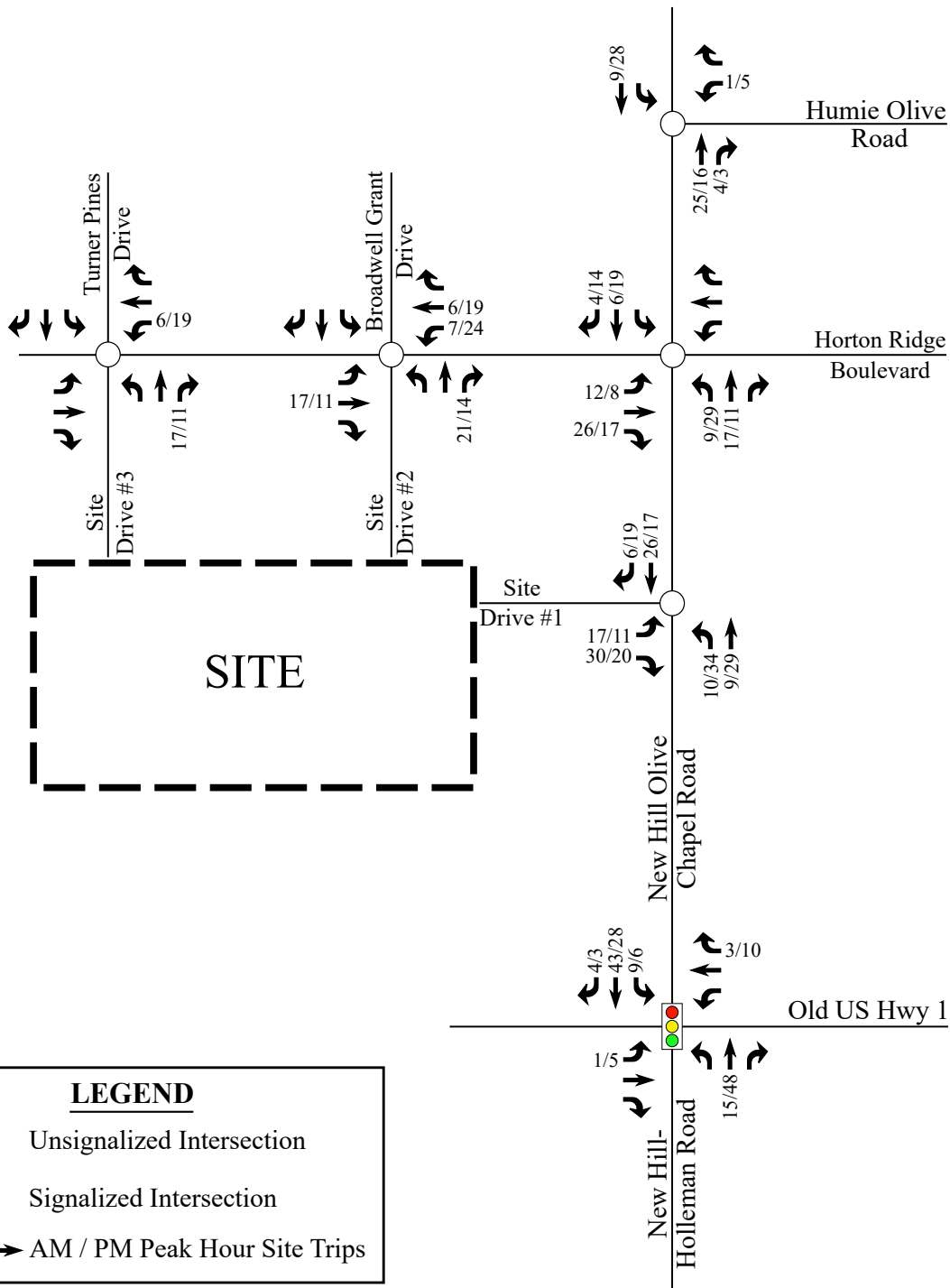


April 2018

RKA Project No. 18120

Prepared By: NB

Reviewed By: JM



LEGEND

- Unsignalized Intersection
- Signalized Intersection
- X/Y → AM / PM Peak Hour Site Trips



New Hill Assembly
Apex, NC

Site
Trip Assignment

Scale: Not to Scale

Figure 9



October 2, 2013

■
3001 Weston Parkway
Cary, NC 27513

Mr. Colen Davidson
Impact Homes, LLC
140 Towerview Court
Cary, North Carolina 27513

Re: Proposed Lawrence Assemblage Residential Development
Apex, North Carolina – Traffic Impact Analysis

Dear Mr. Davidson:

Kimley-Horn and Associates, Inc. has performed a Traffic Impact Analysis for the proposed Lawrence Assemblage residential development located north of Old US 1 and east of Horton Road in Apex, North Carolina. The proposed development will consist of 440 single-family homes. The development is proposed to be accessed by two project driveways on Horton Road and one project driveway on Old US 1. The development is expected to be completed (built-out) in 2016.

This report presents existing conditions, trip generation, distribution, traffic analyses, and recommendations for transportation improvements. The three traffic conditions studied include the existing (2013) traffic condition, the background (2016) traffic condition, and the projected (2016) build-out traffic condition. The study intersections consist of two existing unsignalized intersections and three proposed unsignalized intersections.

Existing Conditions

The surrounding land uses are agricultural and residential uses. Major roadways in the vicinity of the site include Old US 1 and New Hill Olive Chapel Road / New Hill Holleman Road. AM and PM peak hour traffic counts were performed at the intersections of Old US 1 at New Hill Olive Chapel Road / New Hill Holleman Road and Old US 1 at Horton Road on August 28, 2013. The existing AM and PM peak hour turning movement volumes are shown on **Figure 1** and **Figure 2**, respectively.

Trip Generation

The traffic generation potential of the development was determined using the traffic generation rates published in the *ITE Trip Generation Handbook* (Institute of Transportation Engineers, Ninth Edition, 2012) and is summarized in **Table 1**. Detailed trip generation calculations are attached.

Table 1 ITE Trip Generation							
Land Use	Size	Daily		AM		PM	
		In	Out	In	Out	In	Out
Single Family Detached Housing	440 d.u.	2,052	2,052	80	238	251	148

Table 1 shows that the site has the potential to generate approximately 2,052 new daily trips in and 2,052 new daily trips out with 80 new trips entering and 238 new trips exiting in the AM peak hour and 251 new trips entering and 148 new trips exiting in the PM peak hour.

Background Traffic

Based upon discussions with Town of Apex staff, there are no approved developments within the study area. Based on historical traffic volumes along the roadways in the study area, a 3.0% growth rate was applied to existing traffic to calculate the 2016 background traffic. The traffic growth and total background volumes for the AM and PM peak hours are shown in **Figure 1** and **Figure 2**, respectively.

Distribution and Assignment

Based on surrounding land uses and existing travel patterns, the proposed development site trips were assigned to the study intersections as follows:

- 48% to/from the south on New Hill Holleman Road
- 30% to/from the east on Old US 1
- 20% to/from the north on New Hill Olive Chapel Road
- 2% to/from the west on Old US 1

Figure 3 shows the site traffic distribution and percent assignment at the study intersections. Site traffic was assigned to the network based on the distributions shown above and added to the background traffic to obtain total traffic volumes. **Figure 4** and **Figure 5** show the AM and PM peak hour site and total build-out traffic volumes respectively at the five study intersections.

Capacity Analysis

Capacity analyses were performed for the five study intersections using Synchro Version 7 software. Synchro intersection LOS reports are attached. The level-of-service at each of the study intersections is summarized on **Table 2**.

Table 2 Level-of-Service Summary		
Condition	AM Peak Hour LOS (Delay in seconds)	PM Peak Hour LOS (Delay in seconds)
Horton Road at Site Driveway #1 (Unsignalized)		
Build-out (2016) Traffic	Short delays for side-street approach	
Horton Road at Site Driveway #2 (Unsignalized)		
Build-out (2016) Traffic	Short delays for side-street approach	
Old US 1 at Horton Road (Unsignalized)		
Existing (2013) Traffic	Short delays for side-street approach	
Background (2016) Traffic		
Build-out (2016) Traffic		
Old US 1 at Site Driveway #3 (Unsignalized)		
Build-out (2016)	Short delays for side-street approach	
Old US 1 at New Hill Olive Chapel Road / New Hill Holleman Road (Unsignalized)		
Existing (2013) Traffic	Short delays for side-street approaches	Moderate delays for side-street approaches
Background (2016) Traffic		
Build-out (2016) Traffic	Long delays for side-street approaches	
Build-out (2016) Traffic with Signal	B (15.2)	B (18.6)

Analysis indicates the side-street approaches for the three proposed unsignalized site driveways are expected to operate with short delays in the AM and PM peak hours for the build-out traffic condition.

Analysis indicates the southbound side-street approach for the unsignalized intersection of Old US 1 at Horton Road is currently operating with short delays in the AM and PM peak hours and is expected to continue operating with short delays in the AM and PM peak hours for the background and build-out traffic conditions.

Analysis indicates the side-street approaches for the unsignalized intersection of Old US 1 at New Hill Olive Chapel Road / New Hill Holleman Road is currently operating with short delays in the AM peak hour and moderate delays in the PM peak hour and is expected to continue operating with short delays in the AM peak hour and moderate delays in the PM peak hour for the background condition. The side-street approaches are expected to operate with long delays in both the AM and PM peak hours for the build-out traffic condition.

Upon build-out of the proposed development, volumes at the intersection of Old US 1 at New Hill Olive Chapel Road / New Hill Holleman Road are expected to meet traffic signal warrants. With signalization, the intersection is expected to operate at LOS B in both the AM and PM peak hours for the build-out traffic condition.

Recommendations

Based on the capacity analyses and criteria from NCDOT, the following roadway improvements are recommended:

Old US 1 at Horton Road

- Construct an eastbound right-turn lane with 75' of full-width storage on Old US 1

Old US 1 at Site Driveway #3

- Construct an eastbound right-turn lane with 125' of full-width storage on Old US 1
- Construct a westbound left-turn lane with 50' of full-width storage on Old US 1

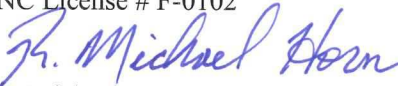
Old US 1 at New Hill Olive Chapel Road / New Hill Holleman Road

- Signalize when warrants are met

The existing roadway network and recommended roadway improvements are shown on **Figure 6**. If you have any further questions or comments please do not hesitate to call me at 919-677-2062.

Sincerely,

KIMLEY-HORN AND ASSOCIATES, INC
NC License # F-0102


R. Michael Horn, P.E.
Principal



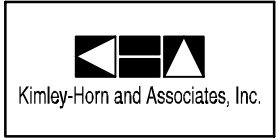
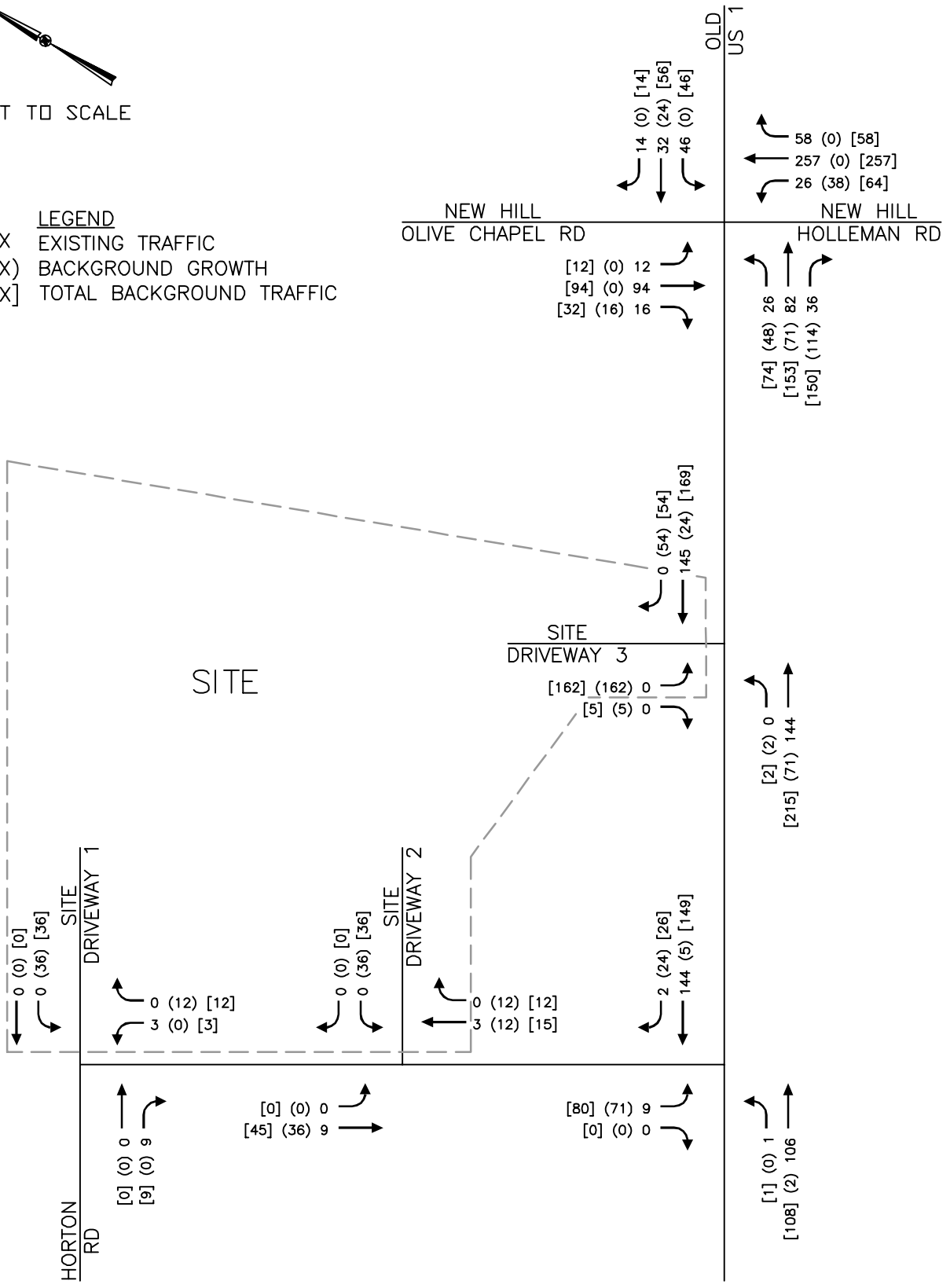
Attachments: Site Plan, Trip Generation Table, Traffic Counts, Intersection Worksheets, Signal Warrant Spreadsheet, Figures 1-6, Synchro LOS Reports

K:\RAL_TPTO_Traffic\012576000 Lawrence Assemblage\T5 - Report-Submittals\Lawrence Assemblage TIA.doc



NOT TO SCALE

LEGEND
 XX EXISTING TRAFFIC
 (XX) BACKGROUND GROWTH
 [XX] TOTAL BACKGROUND TRAFFIC



LAWRENCE ASSEMBLAGE
 TRAFFIC IMPACT ANALYSIS

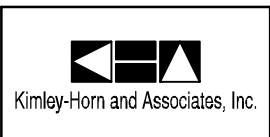
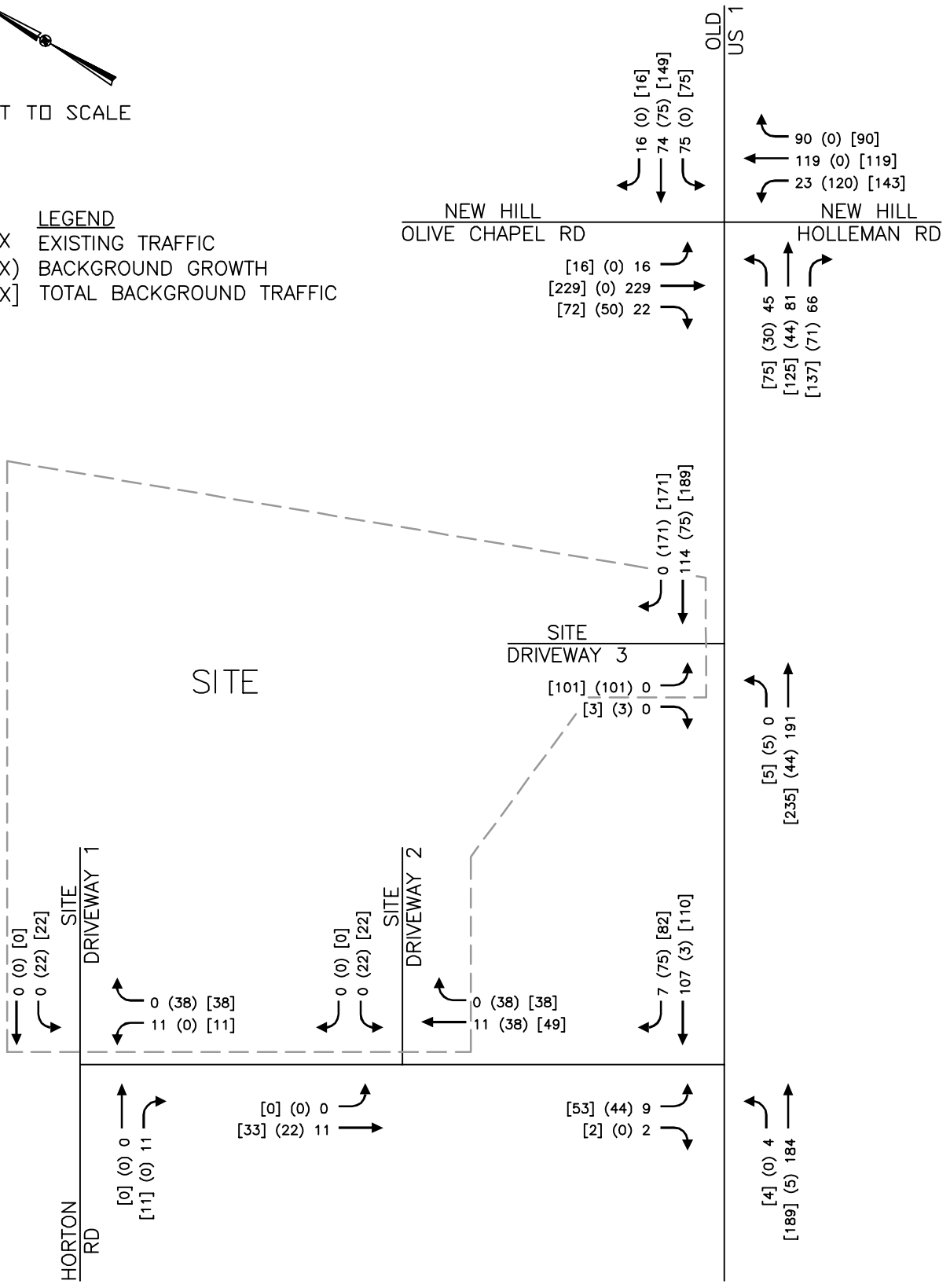
PROJECTED (2016)
 AM PEAK HOUR BUILDOUT
 TRAFFIC VOLUMES

FIGURE
 4



NOT TO SCALE

LEGEND
 XX EXISTING TRAFFIC
 (XX) BACKGROUND GROWTH
 [XX] TOTAL BACKGROUND TRAFFIC



LAWRENCE ASSEMBLAGE
 TRAFFIC IMPACT ANALYSIS

PROJECTED (2016)
 PM PEAK HOUR BUILDOUT
 TRAFFIC VOLUMES

FIGURE
 5

May 29, 2015

Mr. Colen Davidson
Milestone Developments, LLC.
140 Towerview Ct.
Cary, NC 27513



5/29/2015

RE: *Finkle and Haus Assemblage – Traffic Impact Analysis*

Dear Mr. Davidson:

Kimley-Horn and Associates, Inc. has revised the Traffic Impact Analysis (originally dated February 27, 2015) for the proposed residential development located on the west side of New Hill Olive Chapel Road in Apex, NC. The proposed development will consist of approximately 240 single-family homes split between 2 parcels (approximately 160 units in the northern parcel and 80 units in the southern parcel) and is expected to be completed (built-out) by the year 2018. The northern parcel is proposed to be accessed by two full-movement driveways on New Hill Olive Chapel Road, and the southern parcel is proposed to be access by two full-movement driveways on the Proposed Collector Road that will tie to New Hill Olive Chapel Road along the south end of the site. Figure 1 shows the site location, and Figure 2 shows the proposed site plan.

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 three traffic conditions studied include the existing (2015) traffic condition, the projected (2018) background traffic condition, and the projected (2018) build-out traffic condition. Analyses were performed for the weekday AM and PM peak hours. The study area consists of the following intersections:

- New Hill Olive Chapel Road & Old US Hwy 1
- New Hill Olive Chapel Road & Humie Olive Road
- New Hill Olive Chapel Road & Proposed Site Access 1
- New Hill Olive Chapel Road & Proposed Site Access 2
- New Hill Olive Chapel Road & Proposed Collector Road (to connect with Site Access 3, 4)

Background Traffic

AM and PM peak hour traffic counts were performed at the following intersections on January 22, 2015:

- New Hill Olive Chapel Road & Old US Hwy 1
- New Hill Olive Chapel Road & Humie Olive Road

The existing AM and PM peak hour turning movement volumes are shown on Figures 3 and 4, respectively. A 3% annual growth factor was applied to the existing volumes to account for ambient

growth in the area through 2018. Traffic from the following five approved but un-built developments was also added to the roadway network:

- Lawrence Assemblage
- Womble Tract Development
- Parkside at Bella Casa
- H-10 High School
- Residential Development along Evans Road (Bella Casa)
- Holland Road Property

Traffic for each of the above developments was assigned based on the *Lawrence Assemblage TIA* prepared by Kimley-Horn in October 2013 and the *Womble Tract Development TIA* prepared by Stantec, Inc. in February 2014. Total background traffic, which includes existing traffic, background growth, and approved development traffic, is shown on Figures 3 and 4 and detailed on the attached intersection worksheets.

Trip Generation

The traffic generation potential of the development was determined using the traffic generation rates published in the *ITE Trip Generation Handbook* (Institute of Transportation Engineers, Ninth Edition, 2012) and is summarized in Table 1.

Land Use	Intensity	Daily		AM		PM	
		In	Out	In	Out	In	Out
Single Family Detached (LUC 210) – North Parcel	160 d.u.	809	809	31	91	101	59
Single Family Detached (LUC 210) – South Parcel	80 d.u.	428	428	17	49	54	32
Total	240 d.u.	1,237	1,237	48	140	155	91

Table 1 shows that the site has the potential to generate approximately 1,237 new daily trips in and 1,237 new daily trips out with 48 new trips entering and 140 new trips exiting in the weekday AM peak hour and 155 new trips entering and 91 new trips exiting in the weekday PM peak hour.

Distribution and Assignment

The proposed development site trips were assigned to the study intersections as follows:

- 50% to/from the south on New Hill Holloman Road

- 30% to/from the north on New Hill Olive Chapel Road
- 10% to/from the east on Old US Hwy 1
- 5% to/from the east on Humie Olive Road
- 5% to/from the west on Old US Hwy 1

Site traffic was assigned to the network by parcel based on the distribution shown above and added to the background traffic to obtain total traffic volumes. Figure 5 shows the site traffic distribution and percent assignment by parcel at the study intersections. The attached Figures 6 and 7 show the AM and PM peak hour site and total traffic volumes at the study intersections.

Levels of Service

Capacity analyses were performed using Synchro Version 9 software. Synchro intersection LOS reports are attached. The LOS at each of the study intersections is summarized on Table 2.

Table 2 Level-of-Service Summary		
Condition	AM Peak-Hour LOS (Delay)	PM Peak-Hour LOS (Delay)
New Hill Olive Chapel Road & Old US Hwy 1		
Existing (2015) Traffic	NB – C (17.3) SB – B (12.8)	NB – C (17.5) SB – C (21.5)
Background (2018) Traffic - <i>Signalized</i>	C (20.5)	B (17.9)
Build-out (2018) Traffic - <i>Signalized</i>	C (21.5)	C (22.0)
New Hill Olive Chapel Road & Humie Olive Road (Unsignalized)		
Existing (2015) Traffic	WB – B (10.6)	WB – B (10.2)
Background (2018) Traffic	WB – C (17.5)	WB – B (14.0)
Build-out (2018) Traffic	WB – C (20.0)	WB – C (16.1)
New Hill Olive Chapel Road & Proposed Site Access #1 (Unsignalized)		
Build-out (2018) Traffic	EB – B (11.8) NBL – A (7.6)	EB – B (13.7) NBL – A (8.5)
New Hill Olive Chapel Road & Proposed Site Access #2 (Unsignalized)		
Build-out (2018) Traffic	EB – B (11.2) NBL – A (7.6)	EB – B (13.3) NBL – A (8.5)
New Hill Olive Chapel Road & Proposed Collector Route (Unsignalized)		
Build-out (2018) Traffic	EB – B (11.8) NBL – A (7.7)	EB – B (13.9) NBL – A (8.6)

Analysis indicates that the intersection of New Hill Olive Chapel Road and Old US Hwy 1 currently operates with short delays in the AM and PM peak hours for the northbound (New Hill Holloman Road) and southbound (New Hill Olive Chapel Road) approaches.

For the Background (2018) scenario, a traffic signal is committed to be constructed by the Lawrence Assemblage development at the intersection of New Hill Olive Chapel Road and Old US Hwy 1. In the year 2018 with a traffic signal in place, this intersection is projected to operate at LOS C in the AM peak hour and LOS B in the PM peak hour for the background traffic condition. At full build-out of the proposed development in 2018, this intersection is projected to operate at LOS C in the AM and PM peak hours.

Analysis indicates that the intersection of New Hill Olive Chapel Road and Humie Olive Road is expected to operate at an acceptable level-of-service at full build-out of the development in 2018. Furthermore, all of the proposed site driveways are expected to operate at an acceptable level-of-service.

Recommendations

Based on the capacity analyses presented herein, the following roadway improvements are recommended:

New Hill Olive Chapel Road & Proposed Site Access #1

- Construct a northbound left turn lane with a minimum of 50 feet of full-width storage on New Hill Olive Chapel Road

New Hill Olive Chapel Road & Proposed Site Access #2

- Construct a northbound left turn lane with a minimum of 50 feet of full-width storage on New Hill Olive Chapel Road

New Hill Olive Chapel Road & Proposed Collector Road

- Construct a northbound left turn lane with a minimum of 50 feet of full-width storage on New Hill Olive Chapel Road

The existing roadway network and recommended roadway improvements are shown on Figure 8.

Should you have any questions or comments, please do not hesitate to contact me at (919) 653-2948 or travis.fluitt@kimley-horn.com.

Sincerely,
Kimley-Horn and Associates, Inc.
NC License #F-0102

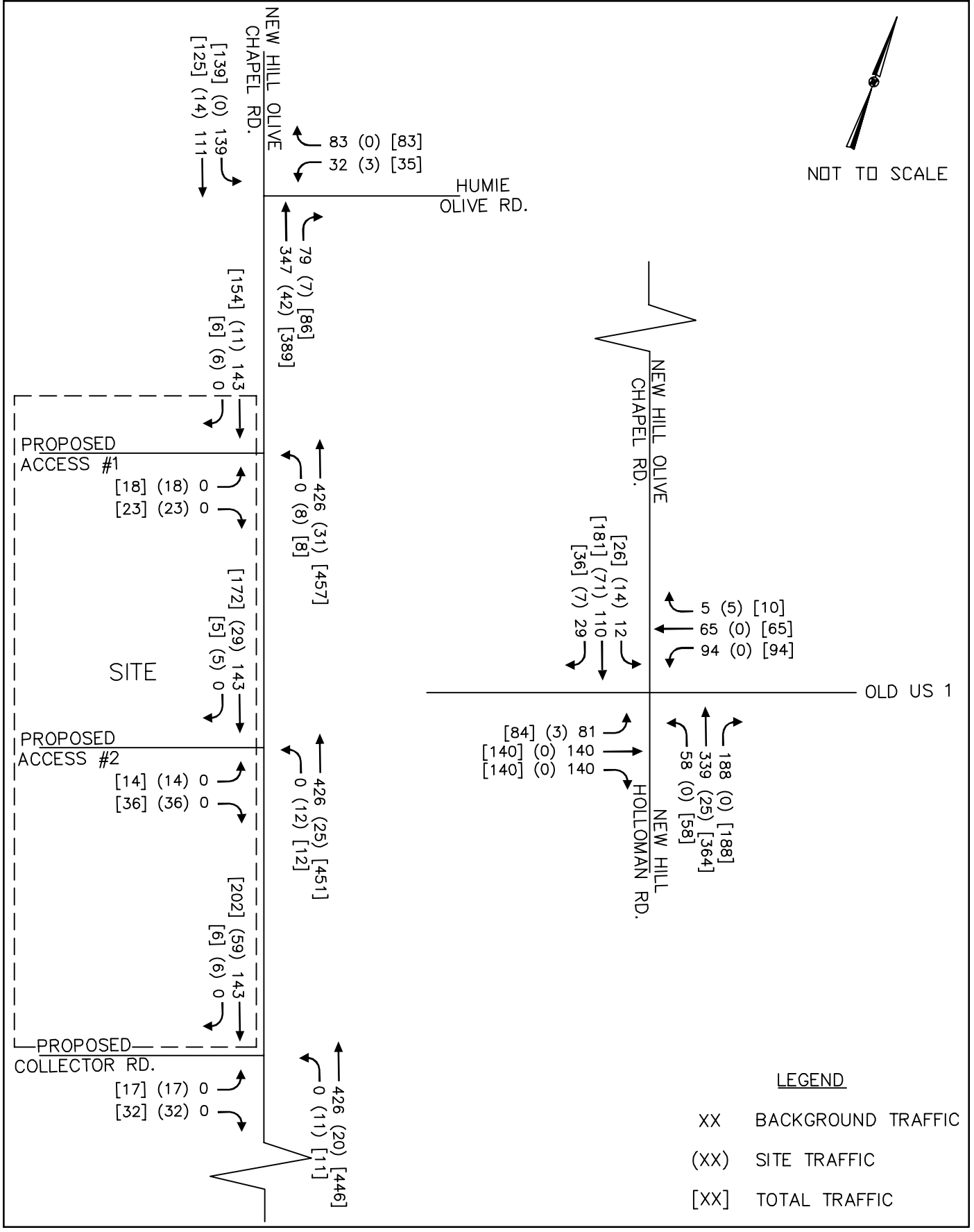


Travis Fluitt, P.E.
Project Manager

Attachments: Figures 1-8, Traffic Counts, Approved Development TIA Excerpts, Trip Generation Table, Intersection Worksheets, Synchro LOS Reports, Signal Warrant Spreadsheets



NOT TO SCALE

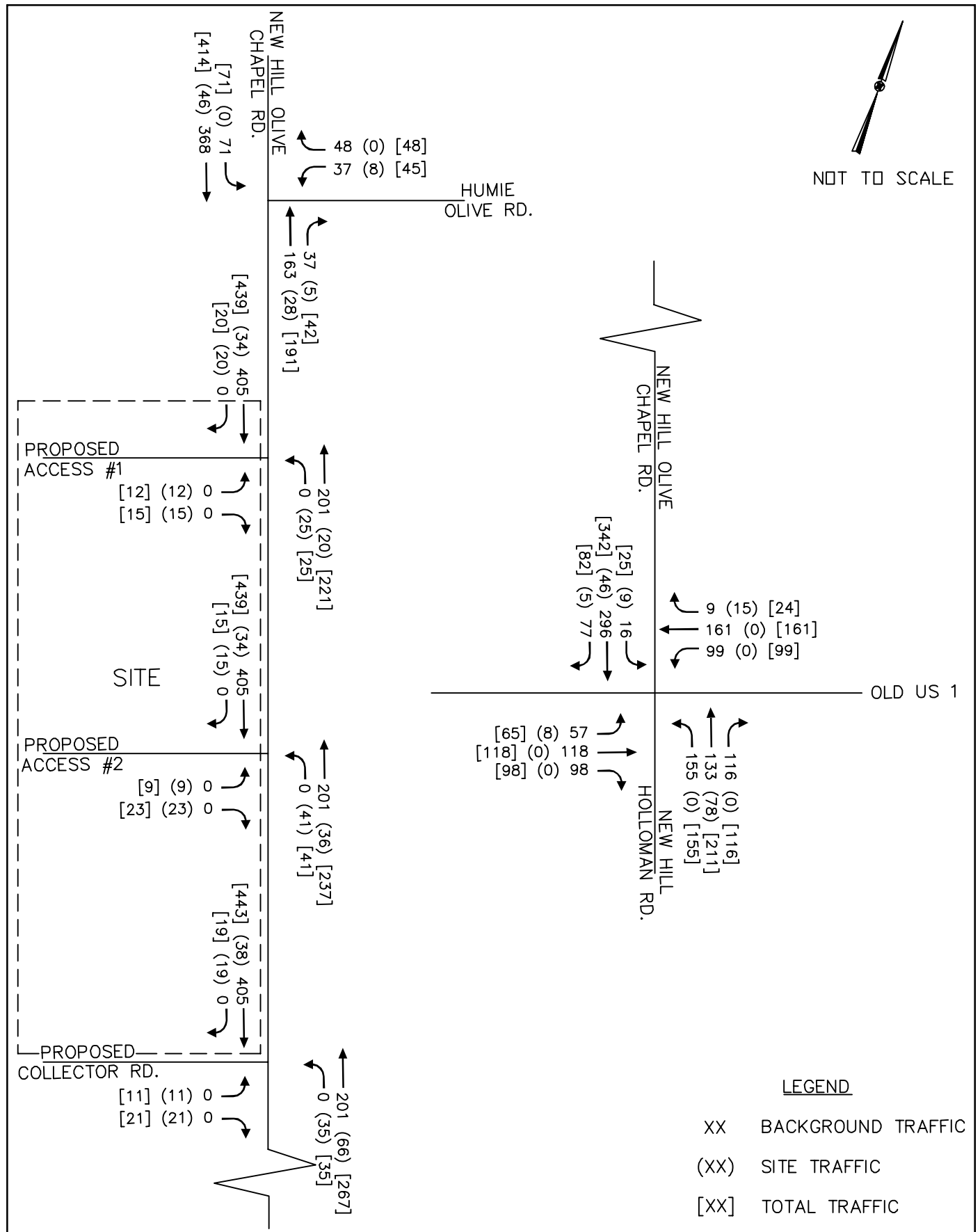


FINKLE & HAUS ASSEMBLAGE
APEX, NC
TRAFFIC IMPACT ANALYSIS

PROJECTED (2018)
BUILD-OUT AM PEAK HOUR
TRAFFIC VOLUMES

FIGURE
6

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.



FINKLE & HAUS ASSEMBLAGE
 APEX, NC
 TRAFFIC IMPACT ANALYSIS

PROJECTED (2018)
 BUILD-OUT PM 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.

TRAFFIC IMPACT ANALYSIS UPDATE

FOR

FRIENDSHIP STATION

LOCATED

IN

APEX, NORTH CAROLINA

Prepared For:
Parkside Development Group, LLC
PO Box 1438
Apex, NC 27502

Prepared By:
Ramey Kemp & Associates, Inc.
5808 Faringdon Place, Suite 100
Raleigh, NC 27609
License #C-0910

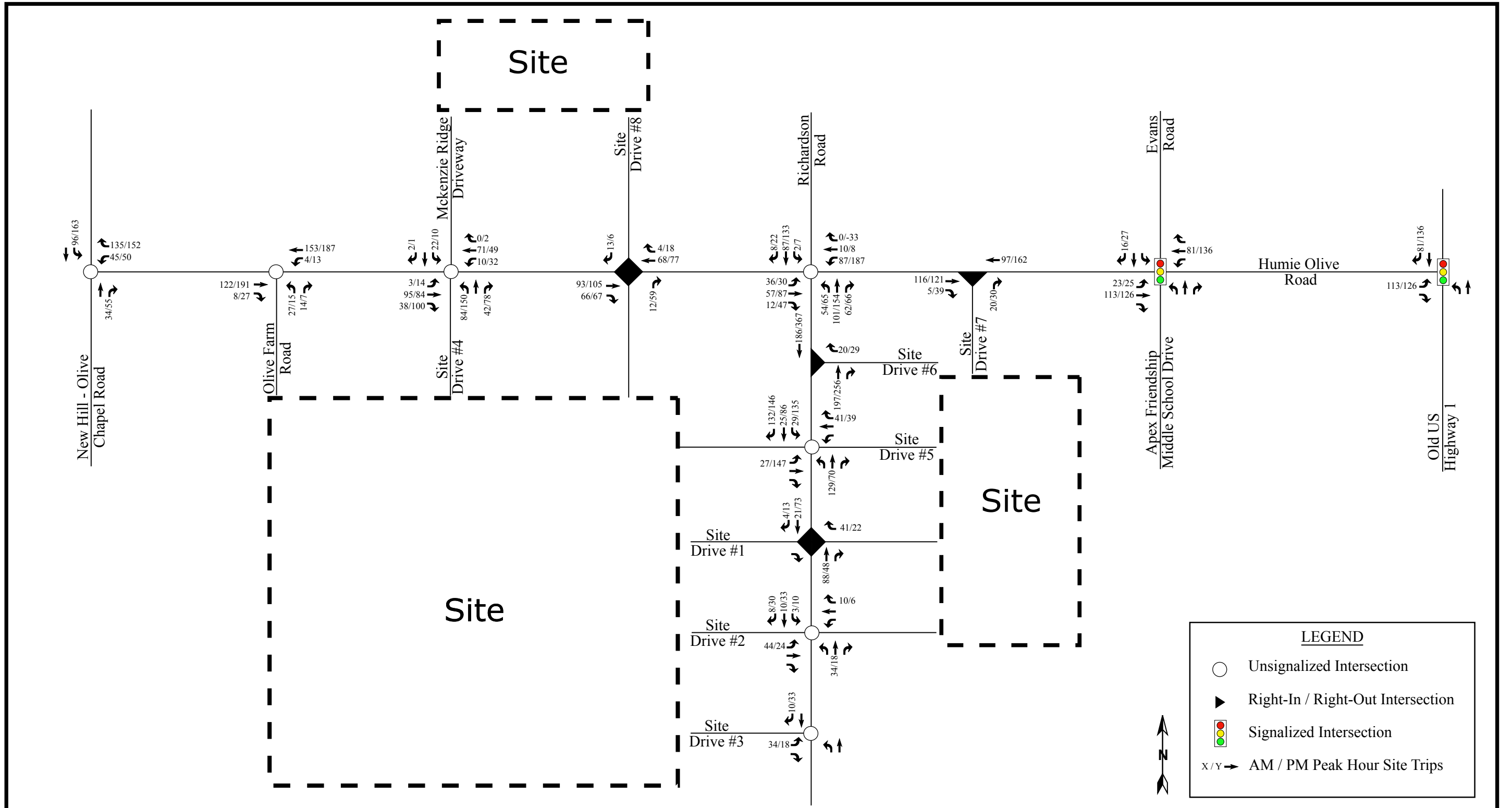


March 2017

RKA Project No. 16238

Prepared By: DBL

Reviewed By: TAA



Friendship Station Update
Apex, NC

Total Site Trip Assignment
Phase 2

Scale: Not to Scale Figure 12b



To: Russell Dalton, PE
Town of Apex

Date: August 3, 2015

Memorandum

Project #: 38495.00

From: Tommy Pate, PE
Transportation Engineer

Re: Goodwin-MacNair Property – Additional Analysis
Apex, NC

Benchmark Communities has plans to develop a parcel of land on the east side of Richardson Road, just north of Mt. Zion Church Road, in Apex, NC. The residential development is projected to consist of 347 single-family homes and be constructed in three phases, with the final phase expected to be completed by 2020.

A Traffic Impact Analysis (TIA) was submitted to the Town of Apex and NCDOT on June 26, 2015. The Town requested that three additional recently-approved developments be included in the analysis. VHB was also informed that the future geometrics at the Olive Chapel Road and Kelly Road intersection were being modified to include dual eastbound left-turn lanes along Olive Chapel Road (as part of the Town's LAPP project). An additional northbound receiving lane will be constructed on the north side of Kelly Road by developers in the area.

As a result, analysis was updated for the Olive Chapel Road and Kelly Road intersection in the No-Build (2020) and Build (2020) scenarios. Future laneage and storage lengths were based on preliminary Town designs, with the exception of the dual eastbound left-turn lanes along Olive Chapel Road. The storage lengths for these lanes are currently unknown; however based on the spacing between the Olive Chapel Road and Kelly Road intersection and the adjacent westbound leftover west of the intersection, and discussions with the Town, the lanes were assumed to provide roughly 150 feet of storage.

A future signal plan at the Olive Chapel Road and Kelly Road intersection has not been developed at this time; therefore it was assumed that the eastbound and westbound approaches along Olive Chapel Road would operate under protected phasing conditions, while the northbound and southbound approaches along Kelly Road would operate under permitted/protected phasing conditions. In addition, overlaps were assumed for the northbound, westbound and southbound right-turns.

As previously mentioned, traffic from three additional approved developments was incorporated in the No-Build (2020) analysis. Three approved developments are as follows:

- *Daycare and Office*: Located in the southwestern quadrant of the Olive Chapel Road and Kelly Road intersection, this development is proposed to consist of a 10,000 square-foot daycare center and up to 9,500 square feet of office space. The build year for the development is expected to occur in 2015. A traffic analysis report was prepared by Ramey Kemp & Associates and submitted to the Town in June 2014. As detailed in the report, the development is projected to generate 959 daily site trips with 151 trips occurring in the AM peak hour (91 entering, 60 exiting) and 212 trips occurring in the PM peak hour (73 entering, 139 exiting). These trips were distributed to the study area based on the assumed distribution patterns in the report. Field visits indicate that the development has not been constructed; therefore, 100% of the traffic associated with the development was included in the No-Build (2020) analysis.
- *The Reserve at Beaver Creek*: Located on the east side of Kelly Road, north and south of Beaver Creek Commons Drive, this residential development is proposed to consist of 58 single-family homes and 71 townhomes, with an anticipated build year of 2017. A traffic analysis report was prepared by Ramey Kemp & Associates and

VHB Engineering NC, P.C. (C-3705)
4000 WestChase Boulevard
Suite 530
Raleigh, NC 27607
P 919.829.0328



Memorandum

submitted to the Town in February 2015. As detailed in the report, the development is projected to generate 1,100 daily site trips with 89 trips occurring in the AM peak hour (20 entering, 69 exiting) and 109 trips occurring in the PM peak hour (70 entering, 39 exiting). These trips were distributed to the study area based on the assumed distribution patterns in the report. Field visits indicate that the development has not been constructed; therefore, 100% of the traffic associated with the development was included in the No-Build (2020) analysis.

- *The Pointe Shopping Center*: Located in the northeast quadrant of the Olive Chapel Road and Kelly Road intersection, this retail development is proposed to consist of a 45,600 square-foot supermarket, 22,280 square feet of retail space, and 4 outparcels (totaling approximately 6.6 acres). Based on discussions with Town staff, the outparcels were assumed to consist of 6,000 square feet of high-turnover, sit-down restaurant space, a drive-in bank, and 10,000 square feet of fast-food restaurant space. The build year is anticipated to be 2016. A traffic analysis report was prepared by Ramey Kemp & Associates and submitted to the Town in April 2015. As detailed in the report, the development is projected to generate 13,380 external daily site trips with 545 external trips occurring in the AM peak hour (311 entering, 234 exiting) and 687 external trips occurring in the PM peak hour (354 entering, 333 exiting). These trips were distributed to the study area based on the assumed distribution patterns in the report. Field visits indicate that the development has not been constructed; therefore, 100% of the traffic associated with the development was included in the No-Build (2020) analysis.

The Pointe Shopping Center TIA recommended extending the westbound right-turn lane along Olive Chapel Road to provide 350 feet of storage. This improvement was included in the No-Build (2020) analysis in accordance with the Overall Site Layout Plan for The Pointe development (Sheet C2.0) sealed on May 14, 2015. Additionally, developers in the area are constructing the additional northbound receiving lane along Kelly Road that will be needed once the dual eastbound left-turn lanes are constructed along Olive Chapel Road as part of the Town's LAPP project. All supporting documentation for these approved development trips are included at the end of the memo, along with the updated No-Build (2020) and Build (2020) turning movement projections.

As shown in the Summary Level of Service table at the end of this memo, the Olive Chapel Road and Kelly Road intersection is projected to operate acceptably in the No-Build (2020) and Build (2020) scenarios, despite the inclusion of additional approved development traffic. The improvements being made at this intersection by the Town of Apex and developers are projected to adequately mitigate the projected increase in traffic volumes in the future. Efforts should be made to ensure optimal signal phasing and timings are implemented at this location. No further improvements are recommended at this location.



4000 WestChase Boulevard
Suite 530
Raleigh, NC 27607
P 919.829.0328

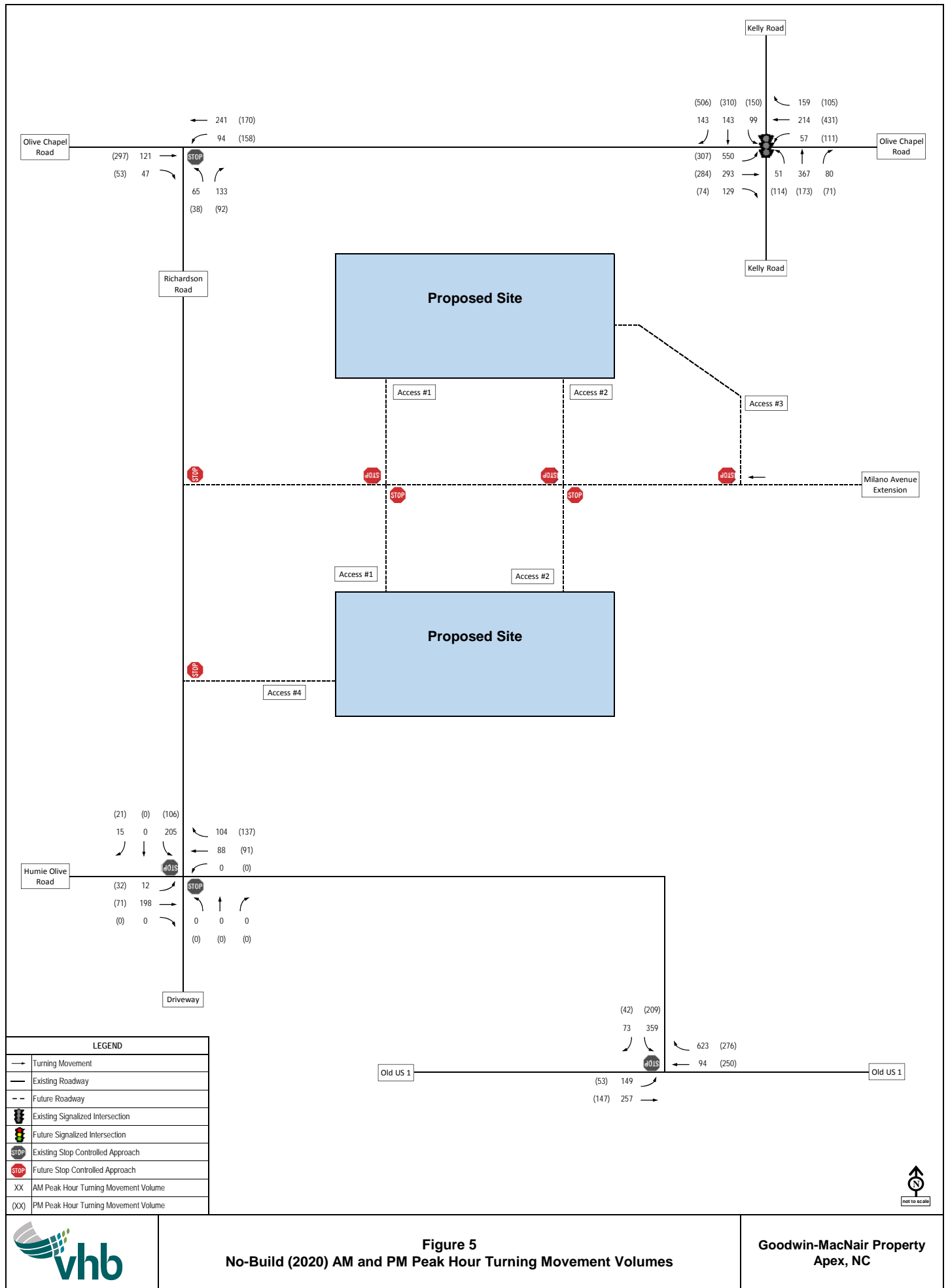


Figure 5
No-Build (2020) AM and PM Peak Hour Turning Movement Volumes

Goodwin-MacNair Property
Apex, NC

APPENDIX E

CAPACITY ANALYSIS CALCULATIONS













S. SALEM STREET

&

APEX BARBECUE ROAD

Lanes, Volumes, Timings
4: S. Salem Street & Apex Barbecue Road

Existing (2019) AM
12/16/2019

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	283	181	139	341	245	179
Future Volume (vph)	283	181	139	341	245	179
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	75	0	175			475
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)	1770	1583	1770	1863	1863	1583
Flt Permitted	0.950		0.371			
Satd. Flow (perm)	1770	1583	691	1863	1863	1583
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	45			55	55	
Link Distance (ft)	1302			4447	1058	
Travel Time (s)	19.7			55.1	13.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	314	201	154	379	272	199
Shared Lane Traffic (%)						
Lane Group Flow (vph)	314	201	154	379	272	199
Turn Type	Prot	pm+ov	pm+pt	NA	NA	pm+ov
Protected Phases	4	5	5	2	6	4
Permitted Phases		4	2			6
Detector Phase	4	5	5	2	6	4
Switch Phase						
Minimum Initial (s)	7.0	7.0	7.0	14.0	14.0	7.0
Minimum Split (s)	12.3	12.1	12.1	20.1	20.1	12.3
Total Split (s)	30.0	15.0	15.0	105.0	90.0	30.0
Total Split (%)	22.2%	11.1%	11.1%	77.8%	66.7%	22.2%
Maximum Green (s)	24.7	9.9	9.9	98.9	83.9	24.7
Yellow Time (s)	3.0	3.0	3.0	5.1	5.1	3.0
All-Red Time (s)	2.3	2.1	2.1	1.0	1.0	2.3
Lost Time Adjust (s)	-0.3	-0.1	-0.1	-1.1	-1.1	-0.3
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag		Lead	Lead		Lag	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	2.0	2.0	2.0	6.0	6.0	2.0
Minimum Gap (s)	2.0	2.0	2.0	3.4	3.4	2.0
Time Before Reduce (s)	0.0	0.0	0.0	15.0	15.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	45.0	45.0	0.0
Recall Mode	None	None	None	Min	Min	None
Act Effct Green (s)	17.6	31.5	29.5	29.5	15.7	38.3
Actuated g/C Ratio	0.31	0.55	0.52	0.52	0.27	0.67
v/c Ratio	0.58	0.23	0.29	0.39	0.53	0.19
Control Delay	22.0	7.5	9.1	10.0	22.6	4.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.0	7.5	9.1	10.0	22.6	4.2

Lanes, Volumes, Timings
 4: S. Salem Street & Apex Barbecue Road

Existing (2019) AM
 12/16/2019

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
LOS	C	A	A	B	C	A
Approach Delay	16.4			9.8	14.8	
Approach LOS	B			A	B	
Queue Length 50th (ft)	88	31	26	72	79	21
Queue Length 95th (ft)	171	67	54	131	149	42
Internal Link Dist (ft)	1222			4367	978	
Turn Bay Length (ft)	75		175			475
Base Capacity (vph)	776	904	546	1863	1863	1268
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	0.40	0.22	0.28	0.20	0.15	0.16

Intersection Summary

Area Type: Other
 Cycle Length: 135
 Actuated Cycle Length: 57.2
 Natural Cycle: 55
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.58
 Intersection Signal Delay: 13.6
 Intersection Capacity Utilization 48.8%
 Analysis Period (min) 15













Intersection LOS: B
 ICU Level of Service A

Splits and Phases: 4: S. Salem Street & Apex Barbecue Road



Lanes, Volumes, Timings
4: S. Salem Street & Apex Barbecue Road

Existing (2019) PM
12/16/2019

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	226	76	74	325	265	232
Future Volume (vph)	226	76	74	325	265	232
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	75	0	175			475
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)	1770	1583	1770	1863	1863	1583
Flt Permitted	0.950		0.397			
Satd. Flow (perm)	1770	1583	740	1863	1863	1583
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	45			55	55	
Link Distance (ft)	1302			4447	1058	
Travel Time (s)	19.7			55.1	13.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	251	84	82	361	294	258
Shared Lane Traffic (%)						
Lane Group Flow (vph)	251	84	82	361	294	258
Turn Type	Prot	pm+ov	pm+pt	NA	NA	pm+ov
Protected Phases	4	5	5	2	6	4
Permitted Phases		4	2			6
Detector Phase	4	5	5	2	6	4
Switch Phase						
Minimum Initial (s)	7.0	7.0	7.0	14.0	14.0	7.0
Minimum Split (s)	12.3	12.1	12.1	20.1	20.1	12.3
Total Split (s)	30.0	15.0	15.0	105.0	90.0	30.0
Total Split (%)	22.2%	11.1%	11.1%	77.8%	66.7%	22.2%
Maximum Green (s)	24.7	9.9	9.9	98.9	83.9	24.7
Yellow Time (s)	3.0	3.0	3.0	5.1	5.1	3.0
All-Red Time (s)	2.3	2.1	2.1	1.0	1.0	2.3
Lost Time Adjust (s)	-0.3	-0.1	-0.1	-1.1	-1.1	-0.3
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag		Lead	Lead		Lag	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	2.0	2.0	2.0	6.0	6.0	2.0
Minimum Gap (s)	2.0	2.0	2.0	3.4	3.4	2.0
Time Before Reduce (s)	0.0	0.0	0.0	15.0	15.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	45.0	45.0	0.0
Recall Mode	None	None	None	Min	Min	None
Act Effct Green (s)	12.2	25.1	25.7	25.7	16.3	35.1
Actuated g/C Ratio	0.25	0.52	0.53	0.53	0.34	0.73
v/c Ratio	0.56	0.10	0.15	0.36	0.47	0.22
Control Delay	22.5	7.5	6.4	7.9	17.5	4.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.5	7.5	6.4	7.9	17.5	4.0

Lanes, Volumes, Timings
 4: S. Salem Street & Apex Barbecue Road

Existing (2019) PM
 12/16/2019

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
LOS	C	A	A	A	B	A
Approach Delay	18.7			7.6	11.2	
Approach LOS	B			A	B	
Queue Length 50th (ft)	63	12	10	50	68	24
Queue Length 95th (ft)	135	32	28	107	145	50
Internal Link Dist (ft)	1222			4367	978	
Turn Bay Length (ft)	75		175			475
Base Capacity (vph)	946	908	614	1863	1863	1447
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	0.27	0.09	0.13	0.19	0.16	0.18

Intersection Summary

Area Type: Other
 Cycle Length: 135
 Actuated Cycle Length: 48.3
 Natural Cycle: 50
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.56
 Intersection Signal Delay: 11.9
 Intersection Capacity Utilization 44.8%
 Analysis Period (min) 15













Intersection LOS: B
 ICU Level of Service A

Splits and Phases: 4: S. Salem Street & Apex Barbecue Road



Lanes, Volumes, Timings
4: S. Salem Street & Apex Barbecue Road

Background (2025) AM
12/19/2019

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	338	216	166	541	486	214
Future Volume (vph)	338	216	166	541	486	214
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	75	0	175			475
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)	1770	1583	1770	1863	1863	1583
Flt Permitted	0.950		0.139			
Satd. Flow (perm)	1770	1583	259	1863	1863	1583
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	45			55	55	
Link Distance (ft)	1302			4447	1058	
Travel Time (s)	19.7			55.1	13.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	376	240	184	601	540	238
Shared Lane Traffic (%)						
Lane Group Flow (vph)	376	240	184	601	540	238
Turn Type	Prot	pm+ov	pm+pt	NA	NA	pm+ov
Protected Phases	4	5	5	2	6	4
Permitted Phases		4	2			6
Detector Phase	4	5	5	2	6	4
Switch Phase						
Minimum Initial (s)	7.0	7.0	7.0	14.0	14.0	7.0
Minimum Split (s)	12.3	12.1	12.1	20.1	20.1	12.3
Total Split (s)	30.0	15.0	15.0	105.0	90.0	30.0
Total Split (%)	22.2%	11.1%	11.1%	77.8%	66.7%	22.2%
Maximum Green (s)	24.7	9.9	9.9	98.9	83.9	24.7
Yellow Time (s)	3.0	3.0	3.0	5.1	5.1	3.0
All-Red Time (s)	2.3	2.1	2.1	1.0	1.0	2.3
Lost Time Adjust (s)	-0.3	-0.1	-0.1	-1.1	-1.1	-0.3
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag		Lead	Lead		Lag	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	2.0	2.0	2.0	6.0	6.0	2.0
Minimum Gap (s)	2.0	2.0	2.0	3.4	3.4	2.0
Time Before Reduce (s)	0.0	0.0	0.0	15.0	15.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	45.0	45.0	0.0
Recall Mode	None	None	None	Min	Min	None
Act Effct Green (s)	25.2	39.5	40.6	40.6	26.3	56.5
Actuated g/C Ratio	0.33	0.52	0.53	0.53	0.35	0.74
v/c Ratio	0.64	0.29	0.57	0.60	0.84	0.20
Control Delay	29.5	12.9	17.2	14.7	35.2	3.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.5	12.9	17.2	14.7	35.2	3.4
LOS	C	B	B	B	D	A
Approach Delay	23.0			15.3	25.5	
Approach LOS	C			B	C	
Queue Length 50th (ft)	152	60	41	179	233	27

Lanes, Volumes, Timings
 4: S. Salem Street & Apex Barbecue Road

Background (2025) AM
 12/19/2019

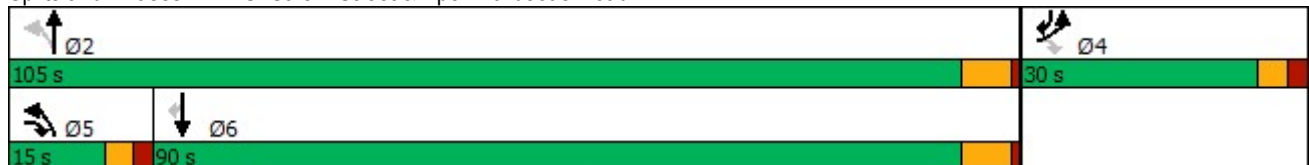
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Queue Length 95th (ft)	#294	132	84	268	349	46
Internal Link Dist (ft)	1222			4367	978	
Turn Bay Length (ft)	75		175			475
Base Capacity (vph)	587	841	339	1863	1858	1179
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.64	0.29	0.54	0.32	0.29	0.20

Intersection Summary

Area Type: Other
 Cycle Length: 135
 Actuated Cycle Length: 75.9
 Natural Cycle: 60
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.84
 Intersection Signal Delay: 21.1
 Intersection Capacity Utilization 66.0%
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.













Intersection LOS: C
 ICU Level of Service C

Splits and Phases: 4: S. Salem Street & Apex Barbecue Road



Lanes, Volumes, Timings
4: S. Salem Street & Apex Barbecue Road

Background (2025) PM
12/19/2019

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	270	96	94	701	584	277
Future Volume (vph)	270	96	94	701	584	277
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	75	0	175			475
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)	1770	1583	1770	1863	1863	1583
Flt Permitted	0.950		0.143			
Satd. Flow (perm)	1770	1583	266	1863	1863	1583
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	45			55	55	
Link Distance (ft)	1302			4447	1058	
Travel Time (s)	19.7			55.1	13.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	300	107	104	779	649	308
Shared Lane Traffic (%)						
Lane Group Flow (vph)	300	107	104	779	649	308
Turn Type	Prot	pm+ov	pm+pt	NA	NA	pm+ov
Protected Phases	4	5	5	2	6	4
Permitted Phases		4	2			6
Detector Phase	4	5	5	2	6	4
Switch Phase						
Minimum Initial (s)	7.0	7.0	7.0	14.0	14.0	7.0
Minimum Split (s)	12.3	12.1	12.1	20.1	20.1	12.3
Total Split (s)	30.0	15.0	15.0	105.0	90.0	30.0
Total Split (%)	22.2%	11.1%	11.1%	77.8%	66.7%	22.2%
Maximum Green (s)	24.7	9.9	9.9	98.9	83.9	24.7
Yellow Time (s)	3.0	3.0	3.0	5.1	5.1	3.0
All-Red Time (s)	2.3	2.1	2.1	1.0	1.0	2.3
Lost Time Adjust (s)	-0.3	-0.1	-0.1	-1.1	-1.1	-0.3
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag		Lead	Lead		Lag	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	2.0	2.0	2.0	6.0	6.0	2.0
Minimum Gap (s)	2.0	2.0	2.0	3.4	3.4	2.0
Time Before Reduce (s)	0.0	0.0	0.0	15.0	15.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	45.0	45.0	0.0
Recall Mode	None	None	None	Min	Min	None
Act Effct Green (s)	19.7	32.9	45.7	45.7	32.5	57.3
Actuated g/C Ratio	0.26	0.43	0.60	0.60	0.43	0.76
v/c Ratio	0.65	0.16	0.33	0.69	0.81	0.26
Control Delay	34.2	15.7	9.4	14.4	28.4	3.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.2	15.7	9.4	14.4	28.4	3.2

Lanes, Volumes, Timings
 4: S. Salem Street & Apex Barbecue Road

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
LOS	C	B	A	B	C	A
Approach Delay	29.4			13.8	20.3	
Approach LOS	C			B	C	
Queue Length 50th (ft)	121	28	18	222	252	31
Queue Length 95th (ft)	254	75	42	395	441	58
Internal Link Dist (ft)	1222			4367	978	
Turn Bay Length (ft)	75		175			475
Base Capacity (vph)	602	734	365	1863	1821	1326
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	0.50	0.15	0.28	0.42	0.36	0.23

Intersection Summary

Area Type: Other
 Cycle Length: 135
 Actuated Cycle Length: 75.7
 Natural Cycle: 60
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.81
 Intersection Signal Delay: 19.4
 Intersection Capacity Utilization 64.0%
 Analysis Period (min) 15













Intersection LOS: B
 ICU Level of Service C

Splits and Phases: 4: S. Salem Street & Apex Barbecue Road



Lanes, Volumes, Timings
4: S. Salem Street & Apex Barbecue Road

Background (2028) AM
12/19/2019

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	369	236	181	579	513	234
Future Volume (vph)	369	236	181	579	513	234
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	75	0	175			475
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)	1770	1583	1770	1863	1863	1583
Flt Permitted	0.950		0.129			
Satd. Flow (perm)	1770	1583	240	1863	1863	1583
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	45			55	55	
Link Distance (ft)	1302			4447	1058	
Travel Time (s)	19.7			55.1	13.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	410	262	201	643	570	260
Shared Lane Traffic (%)						
Lane Group Flow (vph)	410	262	201	643	570	260
Turn Type	Prot	pm+ov	pm+pt	NA	NA	pm+ov
Protected Phases	4	5	5	2	6	4
Permitted Phases		4	2			6
Detector Phase	4	5	5	2	6	4
Switch Phase						
Minimum Initial (s)	7.0	7.0	7.0	14.0	14.0	7.0
Minimum Split (s)	12.3	12.1	12.1	20.1	20.1	12.3
Total Split (s)	30.0	15.0	15.0	105.0	90.0	30.0
Total Split (%)	22.2%	11.1%	11.1%	77.8%	66.7%	22.2%
Maximum Green (s)	24.7	9.9	9.9	98.9	83.9	24.7
Yellow Time (s)	3.0	3.0	3.0	5.1	5.1	3.0
All-Red Time (s)	2.3	2.1	2.1	1.0	1.0	2.3
Lost Time Adjust (s)	-0.3	-0.1	-0.1	-1.1	-1.1	-0.3
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag		Lead	Lead		Lag	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	2.0	2.0	2.0	6.0	6.0	2.0
Minimum Gap (s)	2.0	2.0	2.0	3.4	3.4	2.0
Time Before Reduce (s)	0.0	0.0	0.0	15.0	15.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	45.0	45.0	0.0
Recall Mode	None	None	None	Min	Min	None
Act Effct Green (s)	25.3	39.8	42.8	42.8	28.3	58.6
Actuated g/C Ratio	0.32	0.51	0.55	0.55	0.36	0.75
v/c Ratio	0.72	0.33	0.64	0.63	0.85	0.22
Control Delay	34.1	14.3	20.9	15.1	35.3	3.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.1	14.3	20.9	15.1	35.3	3.4

Lanes, Volumes, Timings
 4: S. Salem Street & Apex Barbecue Road

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
LOS	C	B	C	B	D	A
Approach Delay	26.4			16.5	25.3	
Approach LOS	C			B	C	
Queue Length 50th (ft)	176	71	46	198	251	30
Queue Length 95th (ft)	#372	156	105	293	373	50
Internal Link Dist (ft)	1222			4367	978	
Turn Bay Length (ft)	75		175			475
Base Capacity (vph)	571	818	329	1863	1843	1186
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	0.72	0.32	0.61	0.35	0.31	0.22

Intersection Summary

Area Type: Other
 Cycle Length: 135
 Actuated Cycle Length: 78.2
 Natural Cycle: 65
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.85
 Intersection Signal Delay: 22.4
 Intersection Capacity Utilization 70.0%
 Analysis Period (min) 15
 Intersection LOS: C
 ICU Level of Service C













95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 4: S. Salem Street & Apex Barbecue Road



Lanes, Volumes, Timings
4: S. Salem Street & Apex Barbecue Road

Background (2028) PM
12/19/2019

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	295	104	103	737	614	303
Future Volume (vph)	295	104	103	737	614	303
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	75	0	175			475
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)	1770	1583	1770	1863	1863	1583
Flt Permitted	0.950		0.107			
Satd. Flow (perm)	1770	1583	199	1863	1863	1583
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	45			55	55	
Link Distance (ft)	1302			4447	1058	
Travel Time (s)	19.7			55.1	13.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	328	116	114	819	682	337
Shared Lane Traffic (%)						
Lane Group Flow (vph)	328	116	114	819	682	337
Turn Type	Prot	pm+ov	pm+pt	NA	NA	pm+ov
Protected Phases	4	5	5	2	6	4
Permitted Phases		4	2			6
Detector Phase	4	5	5	2	6	4
Switch Phase						
Minimum Initial (s)	7.0	7.0	7.0	14.0	14.0	7.0
Minimum Split (s)	12.3	12.1	12.1	20.1	20.1	12.3
Total Split (s)	30.0	15.0	15.0	105.0	90.0	30.0
Total Split (%)	22.2%	11.1%	11.1%	77.8%	66.7%	22.2%
Maximum Green (s)	24.7	9.9	9.9	98.9	83.9	24.7
Yellow Time (s)	3.0	3.0	3.0	5.1	5.1	3.0
All-Red Time (s)	2.3	2.1	2.1	1.0	1.0	2.3
Lost Time Adjust (s)	-0.3	-0.1	-0.1	-1.1	-1.1	-0.3
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag		Lead	Lead		Lag	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	2.0	2.0	2.0	6.0	6.0	2.0
Minimum Gap (s)	2.0	2.0	2.0	3.4	3.4	2.0
Time Before Reduce (s)	0.0	0.0	0.0	15.0	15.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	45.0	45.0	0.0
Recall Mode	None	None	None	Min	Min	None
Act Effct Green (s)	24.0	37.3	48.3	48.3	35.0	64.2
Actuated g/C Ratio	0.29	0.45	0.59	0.59	0.42	0.78
v/c Ratio	0.64	0.16	0.42	0.75	0.86	0.27
Control Delay	34.4	16.4	12.0	17.5	33.7	3.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.4	16.4	12.0	17.5	33.7	3.2

Lanes, Volumes, Timings
 4: S. Salem Street & Apex Barbecue Road

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
LOS	C	B	B	B	C	A
Approach Delay	29.7			16.9	23.6	
Approach LOS	C			B	C	
Queue Length 50th (ft)	141	33	24	283	304	35
Queue Length 95th (ft)	#311	86	45	428	474	65
Internal Link Dist (ft)	1222			4367	978	
Turn Bay Length (ft)	75		175			475
Base Capacity (vph)	545	753	310	1863	1792	1257
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	0.60	0.15	0.37	0.44	0.38	0.27

Intersection Summary













Area Type: Other
 Cycle Length: 135
 Actuated Cycle Length: 82.5
 Natural Cycle: 65
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.86
 Intersection Signal Delay: 22.1
 Intersection Capacity Utilization 67.0%
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 4: S. Salem Street & Apex Barbecue Road



Lanes, Volumes, Timings
4: S. Salem Street & Apex Barbecue Road

Combined (2025) AM - Phase 1
12/20/2019

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	359	238	173	563	493	220
Future Volume (vph)	359	238	173	563	493	220
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	75	0	175			475
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)	1770	1583	1770	1863	1863	1583
Flt Permitted	0.950		0.137			
Satd. Flow (perm)	1770	1583	255	1863	1863	1583
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	45			55	55	
Link Distance (ft)	1302			1929	1058	
Travel Time (s)	19.7			23.9	13.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	399	264	192	626	548	244
Shared Lane Traffic (%)						
Lane Group Flow (vph)	399	264	192	626	548	244
Turn Type	Prot	pm+ov	pm+pt	NA	NA	pm+ov
Protected Phases	4	5	5	2	6	4
Permitted Phases		4	2			6
Detector Phase	4	5	5	2	6	4
Switch Phase						
Minimum Initial (s)	7.0	7.0	7.0	14.0	14.0	7.0
Minimum Split (s)	12.3	12.1	12.1	20.1	20.1	12.3
Total Split (s)	30.0	15.0	15.0	105.0	90.0	30.0
Total Split (%)	22.2%	11.1%	11.1%	77.8%	66.7%	22.2%
Maximum Green (s)	24.7	9.9	9.9	98.9	83.9	24.7
Yellow Time (s)	3.0	3.0	3.0	5.1	5.1	3.0
All-Red Time (s)	2.3	2.1	2.1	1.0	1.0	2.3
Lost Time Adjust (s)	-0.3	-0.1	-0.1	-1.1	-1.1	-0.3
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag		Lead	Lead		Lag	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	2.0	2.0	2.0	6.0	6.0	2.0
Minimum Gap (s)	2.0	2.0	2.0	3.4	3.4	2.0
Time Before Reduce (s)	0.0	0.0	0.0	15.0	15.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	45.0	45.0	0.0
Recall Mode	None	None	None	Min	Min	None
Act Effct Green (s)	25.2	39.6	41.2	41.2	26.8	57.1
Actuated g/C Ratio	0.33	0.52	0.54	0.54	0.35	0.75
v/c Ratio	0.68	0.32	0.60	0.62	0.84	0.21
Control Delay	31.5	13.5	18.5	15.2	35.3	3.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.5	13.5	18.5	15.2	35.3	3.4

Lanes, Volumes, Timings
 4: S. Salem Street & Apex Barbecue Road

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
LOS	C	B	B	B	D	A
Approach Delay	24.4			15.9	25.5	
Approach LOS	C			B	C	
Queue Length 50th (ft)	165	69	43	190	237	28
Queue Length 95th (ft)	#340	148	92	284	356	47
Internal Link Dist (ft)	1222			1849	978	
Turn Bay Length (ft)	75		175			475
Base Capacity (vph)	583	835	337	1863	1855	1181
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	0.68	0.32	0.57	0.34	0.30	0.21

Intersection Summary

Area Type: Other
 Cycle Length: 135
 Actuated Cycle Length: 76.5
 Natural Cycle: 60
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.84
 Intersection Signal Delay: 21.7
 Intersection Capacity Utilization 67.9%
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.













Intersection LOS: C
 ICU Level of Service C

Splits and Phases: 4: S. Salem Street & Apex Barbecue Road



Lanes, Volumes, Timings
4: S. Salem Street & Apex Barbecue Road

Combined (2025) PM - Phase 1
12/20/2019

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	281	108	114	713	603	297
Future Volume (vph)	281	108	114	713	603	297
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	75	0	175			475
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)	1770	1583	1770	1863	1863	1583
Flt Permitted	0.950		0.126			
Satd. Flow (perm)	1770	1583	235	1863	1863	1583
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	45			55	55	
Link Distance (ft)	1302			1929	1058	
Travel Time (s)	19.7			23.9	13.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	312	120	127	792	670	330
Shared Lane Traffic (%)						
Lane Group Flow (vph)	312	120	127	792	670	330
Turn Type	Prot	pm+ov	pm+pt	NA	NA	pm+ov
Protected Phases	4	5	5	2	6	4
Permitted Phases		4	2			6
Detector Phase	4	5	5	2	6	4
Switch Phase						
Minimum Initial (s)	7.0	7.0	7.0	14.0	14.0	7.0
Minimum Split (s)	12.3	12.1	12.1	20.1	20.1	12.3
Total Split (s)	30.0	15.0	15.0	105.0	90.0	30.0
Total Split (%)	22.2%	11.1%	11.1%	77.8%	66.7%	22.2%
Maximum Green (s)	24.7	9.9	9.9	98.9	83.9	24.7
Yellow Time (s)	3.0	3.0	3.0	5.1	5.1	3.0
All-Red Time (s)	2.3	2.1	2.1	1.0	1.0	2.3
Lost Time Adjust (s)	-0.3	-0.1	-0.1	-1.1	-1.1	-0.3
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag		Lead	Lead		Lag	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	2.0	2.0	2.0	6.0	6.0	2.0
Minimum Gap (s)	2.0	2.0	2.0	3.4	3.4	2.0
Time Before Reduce (s)	0.0	0.0	0.0	15.0	15.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	45.0	45.0	0.0
Recall Mode	None	None	None	Min	Min	None
Act Effct Green (s)	21.4	35.0	47.9	47.9	34.3	60.8
Actuated g/C Ratio	0.27	0.44	0.60	0.60	0.43	0.76
v/c Ratio	0.66	0.17	0.42	0.71	0.83	0.27
Control Delay	35.3	16.4	11.1	15.2	30.6	3.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	35.3	16.4	11.1	15.2	30.6	3.3

Lanes, Volumes, Timings
 4: S. Salem Street & Apex Barbecue Road

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
LOS	D	B	B	B	C	A
Approach Delay	30.0			14.6	21.6	
Approach LOS	C			B	C	
Queue Length 50th (ft)	132	33	25	246	284	36
Queue Length 95th (ft)	274	87	49	404	462	63
Internal Link Dist (ft)	1222			1849	978	
Turn Bay Length (ft)	75		175			475
Base Capacity (vph)	571	731	339	1863	1798	1295
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	0.55	0.16	0.37	0.43	0.37	0.25

Intersection Summary

Area Type: Other
 Cycle Length: 135
 Actuated Cycle Length: 79.5
 Natural Cycle: 65
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.83
 Intersection Signal Delay: 20.4
 Intersection Capacity Utilization 66.1%
 Analysis Period (min) 15

Intersection LOS: C
 ICU Level of Service C













Splits and Phases: 4: S. Salem Street & Apex Barbecue Road



Lanes, Volumes, Timings
4: S. Salem Street & Apex Barbecue Road

Combined (2028) AM - Full Buildout

12/22/2019

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	421	325	212	655	676	247
Future Volume (vph)	421	325	212	655	676	247
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	75	0	175			475
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)	1770	1583	1770	1863	1863	1583
Flt Permitted	0.950		0.088			
Satd. Flow (perm)	1770	1583	164	1863	1863	1583
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	45			55	55	
Link Distance (ft)	397			334	1058	
Travel Time (s)	6.0			4.1	13.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	468	361	236	728	751	274
Shared Lane Traffic (%)						
Lane Group Flow (vph)	468	361	236	728	751	274
Turn Type	Prot	pm+ov	pm+pt	NA	NA	pm+ov
Protected Phases	4	5	5	2	6	4
Permitted Phases		4	2			6
Detector Phase	4	5	5	2	6	4
Switch Phase						
Minimum Initial (s)	7.0	7.0	7.0	14.0	14.0	7.0
Minimum Split (s)	12.3	12.1	12.1	20.1	20.1	12.3
Total Split (s)	30.0	15.0	15.0	105.0	90.0	30.0
Total Split (%)	22.2%	11.1%	11.1%	77.8%	66.7%	22.2%
Maximum Green (s)	24.7	9.9	9.9	98.9	83.9	24.7
Yellow Time (s)	3.0	3.0	3.0	5.1	5.1	3.0
All-Red Time (s)	2.3	2.1	2.1	1.0	1.0	2.3
Lost Time Adjust (s)	-0.3	-0.1	-0.1	-1.1	-1.1	-0.3
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag		Lead	Lead		Lag	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	2.0	2.0	2.0	6.0	6.0	2.0
Minimum Gap (s)	2.0	2.0	2.0	3.4	3.4	2.0
Time Before Reduce (s)	0.0	0.0	0.0	15.0	15.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	45.0	45.0	0.0
Recall Mode	None	None	None	Min	Min	None
Act Effct Green (s)	25.4	40.3	56.4	56.4	41.4	71.9
Actuated g/C Ratio	0.28	0.44	0.61	0.61	0.45	0.78
v/c Ratio	0.96	0.52	0.86	0.64	0.90	0.22
Control Delay	68.1	24.7	50.4	13.8	37.0	3.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.1	24.7	50.4	13.8	37.0	3.0

Lanes, Volumes, Timings
 4: S. Salem Street & Apex Barbecue Road

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
LOS	E	C	D	B	D	A
Approach Delay	49.2			22.7	27.9	
Approach LOS	D			C	C	
Queue Length 50th (ft)	268	148	82	241	385	32
Queue Length 95th (ft)	#588	308	#241	340	543	50
Internal Link Dist (ft)	317			254	978	
Turn Bay Length (ft)	75		175			475
Base Capacity (vph)	488	699	277	1832	1705	1237
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	0.96	0.52	0.85	0.40	0.44	0.22

Intersection Summary

Area Type: Other
 Cycle Length: 135
 Actuated Cycle Length: 91.9
 Natural Cycle: 80
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.96
 Intersection Signal Delay: 32.4
 Intersection Capacity Utilization 83.1%
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.













Intersection LOS: C
 ICU Level of Service E

Splits and Phases: 4: S. Salem Street & Apex Barbecue Road



Lanes, Volumes, Timings
4: S. Salem Street & Apex Barbecue Road

Combined (2028) PM - Full Buildout
12/22/2019

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	345	151	227	879	724	334
Future Volume (vph)	345	151	227	879	724	334
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	75	0	175			475
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)	1770	1583	1770	1863	1863	1583
Flt Permitted	0.950		0.079			
Satd. Flow (perm)	1770	1583	147	1863	1863	1583
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	45			55	55	
Link Distance (ft)	397			334	1058	
Travel Time (s)	6.0			4.1	13.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	383	168	252	977	804	371
Shared Lane Traffic (%)						
Lane Group Flow (vph)	383	168	252	977	804	371
Turn Type	Prot	pm+ov	pm+pt	NA	NA	pm+ov
Protected Phases	4	5	5	2	6	4
Permitted Phases		4	2			6
Detector Phase	4	5	5	2	6	4
Switch Phase						
Minimum Initial (s)	7.0	7.0	7.0	14.0	14.0	7.0
Minimum Split (s)	12.3	12.1	12.1	20.1	20.1	12.3
Total Split (s)	30.0	15.0	15.0	105.0	90.0	30.0
Total Split (%)	22.2%	11.1%	11.1%	77.8%	66.7%	22.2%
Maximum Green (s)	24.7	9.9	9.9	98.9	83.9	24.7
Yellow Time (s)	3.0	3.0	3.0	5.1	5.1	3.0
All-Red Time (s)	2.3	2.1	2.1	1.0	1.0	2.3
Lost Time Adjust (s)	-0.3	-0.1	-0.1	-1.1	-1.1	-0.3
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag		Lead	Lead		Lag	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	2.0	2.0	2.0	6.0	6.0	2.0
Minimum Gap (s)	2.0	2.0	2.0	3.4	3.4	2.0
Time Before Reduce (s)	0.0	0.0	0.0	15.0	15.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	45.0	45.0	0.0
Recall Mode	None	None	None	Min	Min	None
Act Effct Green (s)	25.5	40.4	61.5	61.5	46.5	77.1
Actuated g/C Ratio	0.26	0.42	0.63	0.63	0.48	0.79
v/c Ratio	0.83	0.26	0.98	0.83	0.90	0.30
Control Delay	52.8	23.1	76.9	20.4	36.8	3.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.8	23.1	76.9	20.4	36.8	3.2

Lanes, Volumes, Timings
 4: S. Salem Street & Apex Barbecue Road

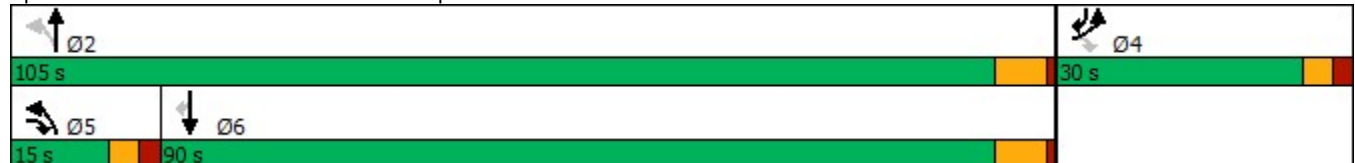
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
LOS	D	C	E	C	D	A
Approach Delay	43.7			32.0	26.2	
Approach LOS	D			C	C	
Queue Length 50th (ft)	221	65	103	414	432	47
Queue Length 95th (ft)	#499	152	#302	587	600	69
Internal Link Dist (ft)	317			254	978	
Turn Bay Length (ft)	75		175			475
Base Capacity (vph)	463	663	263	1795	1634	1256
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	0.83	0.25	0.96	0.54	0.49	0.30

Intersection Summary

Area Type: Other
 Cycle Length: 135
 Actuated Cycle Length: 97.1
 Natural Cycle: 80
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.98
 Intersection Signal Delay: 31.9
 Intersection Capacity Utilization 82.3%
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Intersection LOS: C
 ICU Level of Service E

Splits and Phases: 4: S. Salem Street & Apex Barbecue Road















Lanes, Volumes, Timings

Combined (2028) AM - Full Buildout - with Improvements

4: S. Salem Street & Apex Barbecue Road

12/23/2019

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	421	325	212	655	676	247
Future Volume (vph)	421	325	212	655	676	247
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	375	0	275			475
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)	1770	1583	1770	1863	1863	1583
Flt Permitted	0.950		0.088			
Satd. Flow (perm)	1770	1583	164	1863	1863	1583
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	45			55	55	
Link Distance (ft)	397			334	1058	
Travel Time (s)	6.0			4.1	13.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	468	361	236	728	751	274
Shared Lane Traffic (%)						
Lane Group Flow (vph)	468	361	236	728	751	274
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)	15	9	15			9
Number of Detectors	1	1	1	1	1	0
Detector Template						
Leading Detector (ft)	40	40	40	426	426	0
Trailing Detector (ft)	0	0	0	420	420	0
Detector 1 Position(ft)	0	0	0	420	420	0
Detector 1 Size(ft)	40	40	40	6	6	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)	3.0	10.0	15.0	0.0	0.0	0.0
Turn Type	Prot	pm+ov	pm+pt	NA	NA	pm+ov
Protected Phases	4	5	5	2	6	4
Permitted Phases		4	2			6
Detector Phase	4	5	5	2	6	4
Switch Phase						
Minimum Initial (s)	7.0	7.0	7.0	14.0	14.0	7.0
Minimum Split (s)	12.3	12.1	12.1	20.1	20.1	12.3
Total Split (s)	30.0	15.0	15.0	105.0	90.0	30.0

Lanes, Volumes, Timings Combined (2028) AM - Full Buildout - with Improvements
 4: S. Salem Street & Apex Barbecue Road 12/23/2019



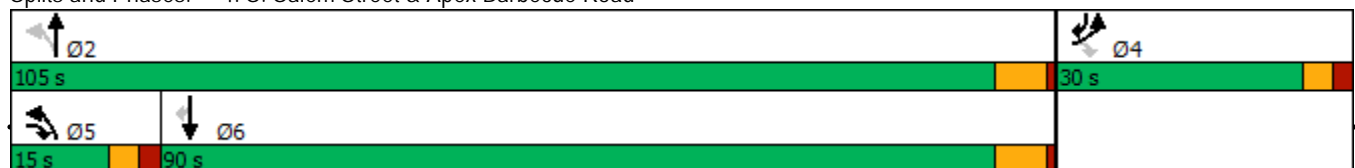
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Total Split (%)	22.2%	11.1%	11.1%	77.8%	66.7%	22.2%
Maximum Green (s)	24.7	9.9	9.9	98.9	83.9	24.7
Yellow Time (s)	3.0	3.0	3.0	5.1	5.1	3.0
All-Red Time (s)	2.3	2.1	2.1	1.0	1.0	2.3
Lost Time Adjust (s)	-0.3	-0.1	-0.1	-1.1	-1.1	-0.3
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag		Lead	Lead		Lag	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	2.0	2.0	2.0	6.0	6.0	2.0
Minimum Gap (s)	2.0	2.0	2.0	3.4	3.4	2.0
Time Before Reduce (s)	0.0	0.0	0.0	15.0	15.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	45.0	45.0	0.0
Recall Mode	None	None	None	Min	Min	None
Act Effct Green (s)	25.4	40.3	56.4	56.4	41.4	71.9
Actuated g/C Ratio	0.28	0.44	0.61	0.61	0.45	0.78
v/c Ratio	0.96	0.52	0.86	0.64	0.90	0.22
Control Delay	68.1	24.7	50.4	13.8	37.0	3.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.1	24.7	50.4	13.8	37.0	3.0
LOS	E	C	D	B	D	A
Approach Delay	49.2			22.7	27.9	
Approach LOS	D			C	C	
Queue Length 50th (ft)	268	148	82	241	385	32
Queue Length 95th (ft)	#588	308	#241	340	543	50
Internal Link Dist (ft)	317			254	978	
Turn Bay Length (ft)	375		275			475
Base Capacity (vph)	488	699	277	1832	1705	1237
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	0.96	0.52	0.85	0.40	0.44	0.22

Intersection Summary

Area Type: Other
 Cycle Length: 135
 Actuated Cycle Length: 91.9
 Natural Cycle: 80
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.96
 Intersection Signal Delay: 32.4
 Intersection Capacity Utilization 83.1%
 Analysis Period (min) 15
 Intersection LOS: C
 ICU Level of Service E

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 4: S. Salem Street & Apex Barbecue Road















Lanes, Volumes, Timings

Combined (2028) PM - Full Buildout - with Improvements

4: S. Salem Street & Apex Barbecue Road

12/23/2019

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	345	151	227	879	724	334
Future Volume (vph)	345	151	227	879	724	334
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	375	0	300			475
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)	1770	1583	1770	1863	1863	1583
Flt Permitted	0.950		0.079			
Satd. Flow (perm)	1770	1583	147	1863	1863	1583
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	45			55	55	
Link Distance (ft)	397			334	1058	
Travel Time (s)	6.0			4.1	13.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	383	168	252	977	804	371
Shared Lane Traffic (%)						
Lane Group Flow (vph)	383	168	252	977	804	371
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)	15	9	15			9
Number of Detectors	1	1	1	1	1	0
Detector Template						
Leading Detector (ft)	40	40	40	426	426	0
Trailing Detector (ft)	0	0	0	420	420	0
Detector 1 Position(ft)	0	0	0	420	420	0
Detector 1 Size(ft)	40	40	40	6	6	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)	3.0	10.0	15.0	0.0	0.0	0.0
Turn Type	Prot	pm+ov	pm+pt	NA	NA	pm+ov
Protected Phases	4	5	5	2	6	4
Permitted Phases		4	2			6
Detector Phase	4	5	5	2	6	4
Switch Phase						
Minimum Initial (s)	7.0	7.0	7.0	14.0	14.0	7.0
Minimum Split (s)	12.3	12.1	12.1	20.1	20.1	12.3
Total Split (s)	30.0	15.0	15.0	105.0	90.0	30.0

Lanes, Volumes, Timings
 4: S. Salem Street & Apex Barbecue Road

Combined (2028) PM - Full Buildout - with Improvements

12/23/2019

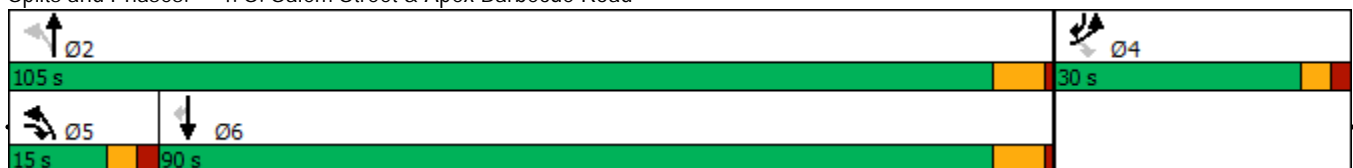
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Total Split (%)	22.2%	11.1%	11.1%	77.8%	66.7%	22.2%
Maximum Green (s)	24.7	9.9	9.9	98.9	83.9	24.7
Yellow Time (s)	3.0	3.0	3.0	5.1	5.1	3.0
All-Red Time (s)	2.3	2.1	2.1	1.0	1.0	2.3
Lost Time Adjust (s)	-0.3	-0.1	-0.1	-1.1	-1.1	-0.3
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag		Lead	Lead		Lag	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	2.0	2.0	2.0	6.0	6.0	2.0
Minimum Gap (s)	2.0	2.0	2.0	3.4	3.4	2.0
Time Before Reduce (s)	0.0	0.0	0.0	15.0	15.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	45.0	45.0	0.0
Recall Mode	None	None	None	Min	Min	None
Act Effct Green (s)	25.5	40.4	61.5	61.5	46.5	77.1
Actuated g/C Ratio	0.26	0.42	0.63	0.63	0.48	0.79
v/c Ratio	0.83	0.26	0.98	0.83	0.90	0.30
Control Delay	52.8	23.1	76.9	20.4	36.8	3.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.8	23.1	76.9	20.4	36.8	3.2
LOS	D	C	E	C	D	A
Approach Delay	43.7			32.0	26.2	
Approach LOS	D			C	C	
Queue Length 50th (ft)	221	65	103	414	432	47
Queue Length 95th (ft)	#499	152	#302	587	600	69
Internal Link Dist (ft)	317			254	978	
Turn Bay Length (ft)	375		300			475
Base Capacity (vph)	463	663	263	1795	1634	1256
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	0.83	0.25	0.96	0.54	0.49	0.30

Intersection Summary

Area Type: Other
 Cycle Length: 135
 Actuated Cycle Length: 97.1
 Natural Cycle: 80
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.98
 Intersection Signal Delay: 31.9
 Intersection Capacity Utilization 82.3%
 Analysis Period (min) 15
 Intersection LOS: C
 ICU Level of Service E

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 4: S. Salem Street & Apex Barbecue Road



APPENDIX F

CAPACITY ANALYSIS CALCULATIONS













S. SALEM STREET

&

NORTHBOUND NC-540 RAMPS

Lanes, Volumes, Timings
6: Old US Highway 1 & NC 540 NB Ramp Terminal

Existing (2019) AM
11/06/2019

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	251	362	253	173	118	134
Future Volume (vph)	251	362	253	173	118	134
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	650			250	0	150
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)	1770	1863	1863	1583	1770	1583
Flt Permitted	0.406				0.950	
Satd. Flow (perm)	756	1863	1863	1583	1770	1583
Right Turn on Red				No		No
Satd. Flow (RTOR)						
Link Speed (mph)		55	55		25	
Link Distance (ft)		1384	4447		1132	
Travel Time (s)		17.2	55.1		30.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	279	402	281	192	131	149
Shared Lane Traffic (%)						
Lane Group Flow (vph)	279	402	281	192	131	149
Turn Type	pm+pt	NA	NA	pm+ov	Prot	pm+ov
Protected Phases	5	2	6	4	4	5
Permitted Phases	2			6		4
Detector Phase	5	2	6	4	4	5
Switch Phase						
Minimum Initial (s)	7.0	14.0	14.0	7.0	7.0	7.0
Minimum Split (s)	12.7	21.0	21.0	12.2	12.2	12.7
Total Split (s)	20.0	80.0	60.0	20.0	20.0	20.0
Total Split (%)	20.0%	80.0%	60.0%	20.0%	20.0%	20.0%
Maximum Green (s)	14.3	73.0	53.0	14.8	14.8	14.3
Yellow Time (s)	3.2	5.4	5.4	3.1	3.1	3.2
All-Red Time (s)	2.5	1.6	1.6	2.1	2.1	2.5
Lost Time Adjust (s)	-0.7	-2.0	-2.0	-0.2	-0.2	-0.7
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead		Lag			Lead
Lead-Lag Optimize?	Yes		Yes			Yes
Vehicle Extension (s)	1.0	6.0	6.0	1.0	1.0	1.0
Minimum Gap (s)	1.0	3.4	3.1	1.0	1.0	1.0
Time Before Reduce (s)	0.0	15.0	15.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	30.0	30.0	0.0	0.0	0.0
Recall Mode	None	Min	Min	None	None	None
Act Effct Green (s)	32.4	32.4	16.5	29.6	8.0	23.9
Actuated g/C Ratio	0.64	0.64	0.33	0.59	0.16	0.47
v/c Ratio	0.40	0.34	0.46	0.21	0.47	0.20
Control Delay	5.7	5.1	17.4	6.2	26.3	8.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.7	5.1	17.4	6.2	26.3	8.4

Lanes, Volumes, Timings
 6: Old US Highway 1 & NC 540 NB Ramp Terminal

Existing (2019) AM
 11/06/2019

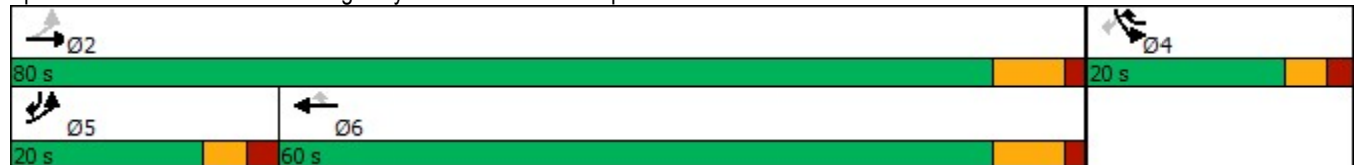
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
LOS	A	A	B	A	C	A
Approach Delay		5.4	12.9		16.8	
Approach LOS		A	B		B	
Queue Length 50th (ft)	26	40	62	22	35	23
Queue Length 95th (ft)	60	88	141	56	86	52
Internal Link Dist (ft)		1304	4367		1052	
Turn Bay Length (ft)	650			250		150
Base Capacity (vph)	788	1863	1839	1149	530	883
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	0.35	0.22	0.15	0.17	0.25	0.17

Intersection Summary

Area Type: Other
 Cycle Length: 100
 Actuated Cycle Length: 50.5
 Natural Cycle: 50
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.47
 Intersection Signal Delay: 10.1
 Intersection Capacity Utilization 46.3%
 Analysis Period (min) 15













Intersection LOS: B
 ICU Level of Service A

Splits and Phases: 6: Old US Highway 1 & NC 540 NB Ramp Terminal



Lanes, Volumes, Timings
6: Old US Highway 1 & NC 540 NB Ramp Terminal

Existing (2019) PM
11/06/2019

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	52	340	321	20	59	177
Future Volume (vph)	52	340	321	20	59	177
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	650			250	0	150
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)	1770	1863	1863	1583	1770	1583
Flt Permitted	0.383				0.950	
Satd. Flow (perm)	713	1863	1863	1583	1770	1583
Right Turn on Red				No		No
Satd. Flow (RTOR)						
Link Speed (mph)		55	55		25	
Link Distance (ft)		1384	4447		1132	
Travel Time (s)		17.2	55.1		30.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	58	378	357	22	66	197
Shared Lane Traffic (%)						
Lane Group Flow (vph)	58	378	357	22	66	197
Turn Type	pm+pt	NA	NA	pm+ov	Prot	pm+ov
Protected Phases	5	2	6	4	4	5
Permitted Phases	2			6		4
Detector Phase	5	2	6	4	4	5
Switch Phase						
Minimum Initial (s)	7.0	14.0	14.0	7.0	7.0	7.0
Minimum Split (s)	12.7	21.0	21.0	12.2	12.2	12.7
Total Split (s)	20.0	80.0	60.0	20.0	20.0	20.0
Total Split (%)	20.0%	80.0%	60.0%	20.0%	20.0%	20.0%
Maximum Green (s)	14.3	73.0	53.0	14.8	14.8	14.3
Yellow Time (s)	3.2	5.4	5.4	3.1	3.1	3.2
All-Red Time (s)	2.5	1.6	1.6	2.1	2.1	2.5
Lost Time Adjust (s)	-0.7	-2.0	-2.0	-0.2	-0.2	-0.7
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead		Lag			Lead
Lead-Lag Optimize?	Yes		Yes			Yes
Vehicle Extension (s)	1.0	6.0	6.0	1.0	1.0	1.0
Minimum Gap (s)	1.0	3.4	3.1	1.0	1.0	1.0
Time Before Reduce (s)	0.0	15.0	15.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	30.0	30.0	0.0	0.0	0.0
Recall Mode	None	Min	Min	None	None	None
Act Effct Green (s)	31.3	33.7	18.4	30.8	7.4	14.5
Actuated g/C Ratio	0.73	0.78	0.43	0.71	0.17	0.34
v/c Ratio	0.08	0.26	0.45	0.02	0.22	0.37
Control Delay	3.3	3.7	12.8	3.4	19.6	12.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	3.3	3.7	12.8	3.4	19.6	12.1

Lanes, Volumes, Timings
 6: Old US Highway 1 & NC 540 NB Ramp Terminal

Existing (2019) PM
 11/06/2019

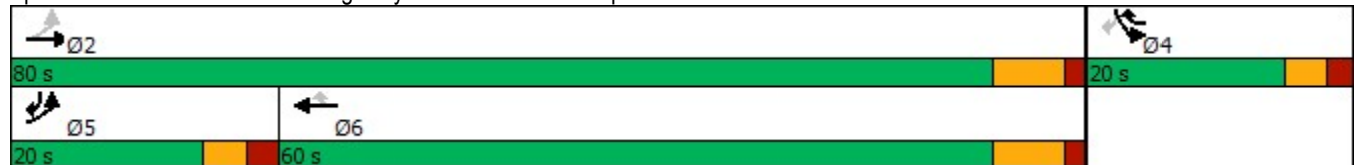
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
LOS	A	A	B	A	B	B
Approach Delay		3.7	12.2		14.0	
Approach LOS		A	B		B	
Queue Length 50th (ft)	5	37	73	2	16	31
Queue Length 95th (ft)	13	68	134	7	45	76
Internal Link Dist (ft)		1304	4367		1052	
Turn Bay Length (ft)	650			250		150
Base Capacity (vph)	893	1863	1863	1383	628	807
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	0.06	0.20	0.19	0.02	0.11	0.24

Intersection Summary

Area Type: Other
 Cycle Length: 100
 Actuated Cycle Length: 43.1
 Natural Cycle: 50
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.45
 Intersection Signal Delay: 9.2
 Intersection Capacity Utilization 41.1%
 Analysis Period (min) 15













Intersection LOS: A
 ICU Level of Service A

Splits and Phases: 6: Old US Highway 1 & NC 540 NB Ramp Terminal



Lanes, Volumes, Timings
6: S. Salem Street & NC-540 NB Ramps

Background (2025) AM
12/19/2019

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	576	566	495	207	141	312
Future Volume (vph)	576	566	495	207	141	312
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	650			250	0	150
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)	1770	1863	1863	1583	1770	1583
Flt Permitted	0.181				0.950	
Satd. Flow (perm)	337	1863	1863	1583	1770	1583
Right Turn on Red				No		No
Satd. Flow (RTOR)						
Link Speed (mph)		55	55		25	
Link Distance (ft)		1384	4447		1132	
Travel Time (s)		17.2	55.1		30.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	640	629	550	230	157	347
Shared Lane Traffic (%)						
Lane Group Flow (vph)	640	629	550	230	157	347
Turn Type	pm+pt	NA	NA	pm+ov	Prot	pm+ov
Protected Phases	5	2	6	4	4	5
Permitted Phases	2			6		4
Detector Phase	5	2	6	4	4	5
Switch Phase						
Minimum Initial (s)	7.0	14.0	14.0	7.0	7.0	7.0
Minimum Split (s)	12.7	21.0	21.0	12.2	12.2	12.7
Total Split (s)	20.0	80.0	60.0	20.0	20.0	20.0
Total Split (%)	20.0%	80.0%	60.0%	20.0%	20.0%	20.0%
Maximum Green (s)	14.3	73.0	53.0	14.8	14.8	14.3
Yellow Time (s)	3.2	5.4	5.4	3.1	3.1	3.2
All-Red Time (s)	2.5	1.6	1.6	2.1	2.1	2.5
Lost Time Adjust (s)	-0.7	-2.0	-2.0	-0.2	-0.2	-0.7
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead		Lag			Lead
Lead-Lag Optimize?	Yes		Yes			Yes
Vehicle Extension (s)	1.0	6.0	6.0	1.0	1.0	1.0
Minimum Gap (s)	1.0	3.4	3.1	1.0	1.0	1.0
Time Before Reduce (s)	0.0	15.0	15.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	30.0	30.0	0.0	0.0	0.0
Recall Mode	None	Min	Min	None	None	None
Act Effct Green (s)	45.8	45.8	25.4	40.4	10.0	30.4
Actuated g/C Ratio	0.69	0.69	0.38	0.61	0.15	0.46
v/c Ratio	1.13	0.49	0.77	0.24	0.59	0.48
Control Delay	97.8	6.4	25.7	6.0	37.5	16.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	97.8	6.4	25.7	6.0	37.5	16.6
LOS	F	A	C	A	D	B
Approach Delay		52.5	19.9		23.1	
Approach LOS		D	B		C	
Queue Length 50th (ft)	~229	89	181	36	58	89

Lanes, Volumes, Timings
 6: S. Salem Street & NC-540 NB Ramps

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Queue Length 95th (ft)	#536	190	322	61	132	206
Internal Link Dist (ft)		1304	4367		1052	
Turn Bay Length (ft)	650			250		150
Base Capacity (vph)	567	1831	1575	1098	411	729
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	1.13	0.34	0.35	0.21	0.38	0.48

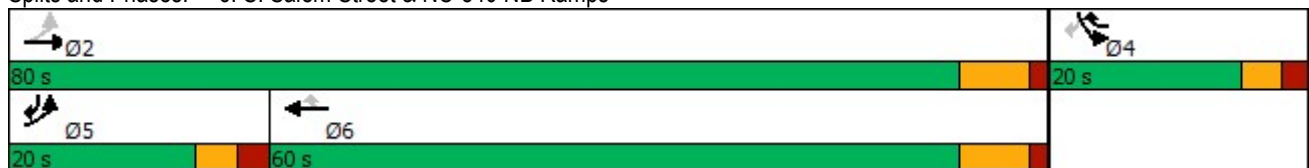
Intersection Summary

Area Type: Other
 Cycle Length: 100
 Actuated Cycle Length: 66
 Natural Cycle: 80
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 1.13
 Intersection Signal Delay: 36.7
 Intersection Capacity Utilization 78.3%
 Analysis Period (min) 15
 Intersection LOS: D
 ICU Level of Service D

~ 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: 6: S. Salem Street & NC-540 NB Ramps



Lanes, Volumes, Timings
6: S. Salem Street & NC-540 NB Ramps

Background (2025) PM
12/19/2019

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	331	725	656	24	70	392
Future Volume (vph)	331	725	656	24	70	392
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	650			250	0	150
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)	1770	1863	1863	1583	1770	1583
Flt Permitted	0.123				0.950	
Satd. Flow (perm)	229	1863	1863	1583	1770	1583
Right Turn on Red				No		No
Satd. Flow (RTOR)						
Link Speed (mph)		55	55		25	
Link Distance (ft)		1384	4447		1132	
Travel Time (s)		17.2	55.1		30.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	368	806	729	27	78	436
Shared Lane Traffic (%)						
Lane Group Flow (vph)	368	806	729	27	78	436
Turn Type	pm+pt	NA	NA	pm+ov	Prot	pm+ov
Protected Phases	5	2	6	4	4	5
Permitted Phases	2			6		4
Detector Phase	5	2	6	4	4	5
Switch Phase						
Minimum Initial (s)	7.0	14.0	14.0	7.0	7.0	7.0
Minimum Split (s)	12.7	21.0	21.0	12.2	12.2	12.7
Total Split (s)	20.0	80.0	60.0	20.0	20.0	20.0
Total Split (%)	20.0%	80.0%	60.0%	20.0%	20.0%	20.0%
Maximum Green (s)	14.3	73.0	53.0	14.8	14.8	14.3
Yellow Time (s)	3.2	5.4	5.4	3.1	3.1	3.2
All-Red Time (s)	2.5	1.6	1.6	2.1	2.1	2.5
Lost Time Adjust (s)	-0.7	-2.0	-2.0	-0.2	-0.2	-0.7
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead		Lag			Lead
Lead-Lag Optimize?	Yes		Yes			Yes
Vehicle Extension (s)	1.0	6.0	6.0	1.0	1.0	1.0
Minimum Gap (s)	1.0	3.4	3.1	1.0	1.0	1.0
Time Before Reduce (s)	0.0	15.0	15.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	30.0	30.0	0.0	0.0	0.0
Recall Mode	None	Min	Min	None	None	None
Act Effct Green (s)	53.4	55.2	32.5	46.7	8.7	25.4
Actuated g/C Ratio	0.78	0.80	0.47	0.68	0.13	0.37
v/c Ratio	0.70	0.54	0.83	0.03	0.35	0.75
Control Delay	23.6	5.3	25.0	4.0	38.2	31.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.6	5.3	25.0	4.0	38.2	31.2

Lanes, Volumes, Timings
 6: S. Salem Street & NC-540 NB Ramps

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
LOS	C	A	C	A	D	C
Approach Delay		11.0	24.2		32.3	
Approach LOS		B	C		C	
Queue Length 50th (ft)	82	111	260	4	32	152
Queue Length 95th (ft)	#282	226	432	10	88	#400
Internal Link Dist (ft)		1304	4367		1052	
Turn Bay Length (ft)	650			250		150
Base Capacity (vph)	544	1769	1473	1250	421	604
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	0.68	0.46	0.49	0.02	0.19	0.72

Intersection Summary

Area Type: Other
 Cycle Length: 100
 Actuated Cycle Length: 68.8
 Natural Cycle: 65
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.83
 Intersection Signal Delay: 19.6
 Intersection Capacity Utilization 71.2%
 Analysis Period (min) 15
 Intersection LOS: B
 ICU Level of Service C













95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 6: S. Salem Street & NC-540 NB Ramps



Lanes, Volumes, Timings
6: S. Salem Street & NC-540 NB Ramps

Background (2028) AM
12/19/2019

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	603	606	523	226	154	327
Future Volume (vph)	603	606	523	226	154	327
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	650			250	0	150
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)	1770	1863	1863	1583	1770	1583
Flt Permitted	0.163				0.950	
Satd. Flow (perm)	304	1863	1863	1583	1770	1583
Right Turn on Red				No		No
Satd. Flow (RTOR)						
Link Speed (mph)		55	55		25	
Link Distance (ft)		1384	4447		1132	
Travel Time (s)		17.2	55.1		30.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	670	673	581	251	171	363
Shared Lane Traffic (%)						
Lane Group Flow (vph)	670	673	581	251	171	363
Turn Type	pm+pt	NA	NA	pm+ov	Prot	pm+ov
Protected Phases	5	2	6	4	4	5
Permitted Phases	2			6		4
Detector Phase	5	2	6	4	4	5
Switch Phase						
Minimum Initial (s)	7.0	14.0	14.0	7.0	7.0	7.0
Minimum Split (s)	12.7	21.0	21.0	12.2	12.2	12.7
Total Split (s)	20.0	80.0	60.0	20.0	20.0	20.0
Total Split (%)	20.0%	80.0%	60.0%	20.0%	20.0%	20.0%
Maximum Green (s)	14.3	73.0	53.0	14.8	14.8	14.3
Yellow Time (s)	3.2	5.4	5.4	3.1	3.1	3.2
All-Red Time (s)	2.5	1.6	1.6	2.1	2.1	2.5
Lost Time Adjust (s)	-0.7	-2.0	-2.0	-0.2	-0.2	-0.7
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead		Lag			Lead
Lead-Lag Optimize?	Yes		Yes			Yes
Vehicle Extension (s)	1.0	6.0	6.0	1.0	1.0	1.0
Minimum Gap (s)	1.0	3.4	3.1	1.0	1.0	1.0
Time Before Reduce (s)	0.0	15.0	15.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	30.0	30.0	0.0	0.0	0.0
Recall Mode	None	Min	Min	None	None	None
Act Effect Green (s)	47.4	47.4	26.9	42.5	10.5	31.0
Actuated g/C Ratio	0.70	0.70	0.40	0.62	0.15	0.46
v/c Ratio	1.24	0.52	0.79	0.25	0.63	0.50
Control Delay	141.5	6.8	26.7	5.9	40.0	18.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	141.5	6.8	26.7	5.9	40.0	18.0

Lanes, Volumes, Timings
6: S. Salem Street & NC-540 NB Ramps

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
LOS	F	A	C	A	D	B
Approach Delay		74.0	20.5		25.1	
Approach LOS		E	C		C	
Queue Length 50th (ft)	~286	104	201	40	67	101
Queue Length 95th (ft)	#607	210	344	66	148	229
Internal Link Dist (ft)		1304	4367		1052	
Turn Bay Length (ft)	650			250		150
Base Capacity (vph)	542	1820	1534	1101	399	719
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	1.24	0.37	0.38	0.23	0.43	0.50

Intersection Summary

Area Type: Other
 Cycle Length: 100
 Actuated Cycle Length: 68.1
 Natural Cycle: 80
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 1.24
 Intersection Signal Delay: 47.9
 Intersection Capacity Utilization 82.0%
 Analysis Period (min) 15
 Intersection LOS: D
 ICU Level of Service D













~ 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: 6: S. Salem Street & NC-540 NB Ramps



Lanes, Volumes, Timings
6: S. Salem Street & NC-540 NB Ramps

Background (2028) PM
12/19/2019

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	337	763	692	26	77	412
Future Volume (vph)	337	763	692	26	77	412
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	650			250	0	150
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)	1770	1863	1863	1583	1770	1583
Flt Permitted	0.107				0.950	
Satd. Flow (perm)	199	1863	1863	1583	1770	1583
Right Turn on Red				No		No
Satd. Flow (RTOR)						
Link Speed (mph)		55	55		25	
Link Distance (ft)		1384	4447		1132	
Travel Time (s)		17.2	55.1		30.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	374	848	769	29	86	458
Shared Lane Traffic (%)						
Lane Group Flow (vph)	374	848	769	29	86	458
Turn Type	pm+pt	NA	NA	pm+ov	Prot	pm+ov
Protected Phases	5	2	6	4	4	5
Permitted Phases	2			6		4
Detector Phase	5	2	6	4	4	5
Switch Phase						
Minimum Initial (s)	7.0	14.0	14.0	7.0	7.0	7.0
Minimum Split (s)	12.7	21.0	21.0	12.2	12.2	12.7
Total Split (s)	20.0	80.0	60.0	20.0	20.0	20.0
Total Split (%)	20.0%	80.0%	60.0%	20.0%	20.0%	20.0%
Maximum Green (s)	14.3	73.0	53.0	14.8	14.8	14.3
Yellow Time (s)	3.2	5.4	5.4	3.1	3.1	3.2
All-Red Time (s)	2.5	1.6	1.6	2.1	2.1	2.5
Lost Time Adjust (s)	-0.7	-2.0	-2.0	-0.2	-0.2	-0.7
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead		Lag			Lead
Lead-Lag Optimize?	Yes		Yes			Yes
Vehicle Extension (s)	1.0	6.0	6.0	1.0	1.0	1.0
Minimum Gap (s)	1.0	3.4	3.1	1.0	1.0	1.0
Time Before Reduce (s)	0.0	15.0	15.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	30.0	30.0	0.0	0.0	0.0
Recall Mode	None	Min	Min	None	None	None
Act Effct Green (s)	56.6	58.3	35.1	49.5	8.9	26.2
Actuated g/C Ratio	0.78	0.81	0.49	0.69	0.12	0.36
v/c Ratio	0.74	0.56	0.85	0.03	0.39	0.80
Control Delay	28.5	5.6	26.3	3.8	40.6	35.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.5	5.6	26.3	3.8	40.6	35.5

Lanes, Volumes, Timings
 6: S. Salem Street & NC-540 NB Ramps

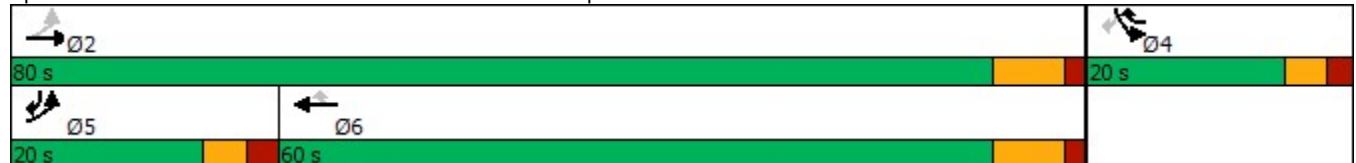
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
LOS	C	A	C	A	D	D
Approach Delay		12.6	25.5		36.3	
Approach LOS		B	C		D	
Queue Length 50th (ft)	100	123	285	4	37	176
Queue Length 95th (ft)	#326	258	479	10	97	#444
Internal Link Dist (ft)		1304	4367		1052	
Turn Bay Length (ft)	650			250		150
Base Capacity (vph)	509	1741	1421	1245	398	579
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	0.73	0.49	0.54	0.02	0.22	0.79

Intersection Summary













Area Type: Other
 Cycle Length: 100
 Actuated Cycle Length: 72.2
 Natural Cycle: 70
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.85
 Intersection Signal Delay: 21.6
 Intersection Capacity Utilization 73.4%
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Intersection LOS: C
 ICU Level of Service D







Splits and Phases: 6: S. Salem Street & NC-540 NB Ramps



Lanes, Volumes, Timings
6: S. Salem Street & NC-540 NB Ramps

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	576	592	582	272	161	312
Future Volume (vph)	576	592	582	272	161	312
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	650			250	0	150
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)	1770	1863	1863	1583	1770	1583
Flt Permitted	0.142				0.950	
Satd. Flow (perm)	265	1863	1863	1583	1770	1583
Right Turn on Red				No		No
Satd. Flow (RTOR)						
Link Speed (mph)		55	55		25	
Link Distance (ft)		1384	2516		1132	
Travel Time (s)		17.2	31.2		30.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	640	658	647	302	179	347
Shared Lane Traffic (%)						
Lane Group Flow (vph)	640	658	647	302	179	347
Turn Type	pm+pt	NA	NA	pm+ov	Prot	pm+ov
Protected Phases	5	2	6	4	4	5
Permitted Phases	2			6		4
Detector Phase	5	2	6	4	4	5
Switch Phase						
Minimum Initial (s)	7.0	14.0	14.0	7.0	7.0	7.0
Minimum Split (s)	12.7	21.0	21.0	12.2	12.2	12.7
Total Split (s)	20.0	80.0	60.0	20.0	20.0	20.0
Total Split (%)	20.0%	80.0%	60.0%	20.0%	20.0%	20.0%
Maximum Green (s)	14.3	73.0	53.0	14.8	14.8	14.3
Yellow Time (s)	3.2	5.4	5.4	3.1	3.1	3.2
All-Red Time (s)	2.5	1.6	1.6	2.1	2.1	2.5
Lost Time Adjust (s)	-0.7	-2.0	-2.0	-0.2	-0.2	-0.7
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead		Lag			Lead
Lead-Lag Optimize?	Yes		Yes			Yes
Vehicle Extension (s)	1.0	6.0	6.0	1.0	1.0	1.0
Minimum Gap (s)	1.0	3.4	3.1	1.0	1.0	1.0
Time Before Reduce (s)	0.0	15.0	15.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	30.0	30.0	0.0	0.0	0.0
Recall Mode	None	Min	Min	None	None	None
Act Effct Green (s)	51.9	51.9	31.4	47.6	11.1	31.7
Actuated g/C Ratio	0.71	0.71	0.43	0.65	0.15	0.43
v/c Ratio	1.27	0.50	0.81	0.29	0.67	0.51
Control Delay	157.1	6.5	27.3	5.9	44.7	20.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	157.1	6.5	27.3	5.9	44.7	20.5

Lanes, Volumes, Timings
 6: S. Salem Street & NC-540 NB Ramps

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
LOS	F	A	C	A	D	C
Approach Delay		80.7	20.5		28.8	
Approach LOS		F	C		C	
Queue Length 50th (ft)	~307	108	242	49	76	108
Queue Length 95th (ft)	#639	198	395	79	168	248
Internal Link Dist (ft)		1304	2436		1052	
Turn Bay Length (ft)	650			250		150
Base Capacity (vph)	504	1767	1439	1121	372	683
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	1.27	0.37	0.45	0.27	0.48	0.51

Intersection Summary

Area Type: Other
 Cycle Length: 100
 Actuated Cycle Length: 73.3
 Natural Cycle: 80
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 1.27
 Intersection Signal Delay: 50.3
 Intersection Capacity Utilization 84.0%
 Analysis Period (min) 15
 Intersection LOS: D
 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: 6: S. Salem Street & NC-540 NB Ramps



Lanes, Volumes, Timings
6: S. Salem Street & NC-540 NB Ramps

Combined (2025) PM - Phase 1
12/20/2019

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	331	804	702	59	129	392
Future Volume (vph)	331	804	702	59	129	392
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	650			250	0	150
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)	1770	1863	1863	1583	1770	1583
Flt Permitted	0.098				0.950	
Satd. Flow (perm)	183	1863	1863	1583	1770	1583
Right Turn on Red				No		No
Satd. Flow (RTOR)						
Link Speed (mph)		55	55		25	
Link Distance (ft)		1384	2516		1132	
Travel Time (s)		17.2	31.2		30.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	368	893	780	66	143	436
Shared Lane Traffic (%)						
Lane Group Flow (vph)	368	893	780	66	143	436
Turn Type	pm+pt	NA	NA	pm+ov	Prot	pm+ov
Protected Phases	5	2	6	4	4	5
Permitted Phases	2			6		4
Detector Phase	5	2	6	4	4	5
Switch Phase						
Minimum Initial (s)	7.0	14.0	14.0	7.0	7.0	7.0
Minimum Split (s)	12.7	21.0	21.0	12.2	12.2	12.7
Total Split (s)	20.0	80.0	60.0	20.0	20.0	20.0
Total Split (%)	20.0%	80.0%	60.0%	20.0%	20.0%	20.0%
Maximum Green (s)	14.3	73.0	53.0	14.8	14.8	14.3
Yellow Time (s)	3.2	5.4	5.4	3.1	3.1	3.2
All-Red Time (s)	2.5	1.6	1.6	2.1	2.1	2.5
Lost Time Adjust (s)	-0.7	-2.0	-2.0	-0.2	-0.2	-0.7
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead		Lag			Lead
Lead-Lag Optimize?	Yes		Yes			Yes
Vehicle Extension (s)	1.0	6.0	6.0	1.0	1.0	1.0
Minimum Gap (s)	1.0	3.4	3.1	1.0	1.0	1.0
Time Before Reduce (s)	0.0	15.0	15.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	30.0	30.0	0.0	0.0	0.0
Recall Mode	None	Min	Min	None	None	None
Act Effct Green (s)	57.7	57.7	37.9	53.5	10.5	30.3
Actuated g/C Ratio	0.73	0.73	0.48	0.68	0.13	0.39
v/c Ratio	0.86	0.65	0.87	0.06	0.61	0.71
Control Delay	41.2	8.1	29.6	3.9	47.2	31.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.2	8.1	29.6	3.9	47.2	31.2

Lanes, Volumes, Timings
 6: S. Salem Street & NC-540 NB Ramps

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
LOS	D	A	C	A	D	C
Approach Delay		17.8	27.6		35.2	
Approach LOS		B	C		D	
Queue Length 50th (ft)	118	169	319	9	68	181
Queue Length 95th (ft)	#345	331	526	19	149	#402
Internal Link Dist (ft)		1304	2436		1052	
Turn Bay Length (ft)	650			250		150
Base Capacity (vph)	450	1682	1362	1183	353	631
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	0.82	0.53	0.57	0.06	0.41	0.69

Intersection Summary

Area Type: Other
 Cycle Length: 100
 Actuated Cycle Length: 78.6
 Natural Cycle: 75
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.87
 Intersection Signal Delay: 24.6
 Intersection Capacity Utilization 74.9%
 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: 6: S. Salem Street & NC-540 NB Ramps



Lanes, Volumes, Timings
6: S. Salem Street & NC-540 NB Ramps

Combined (2028) AM - Full Buildout

12/24/2019

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	603	809	739	375	253	327
Future Volume (vph)	603	809	739	375	253	327
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	650			250	0	150
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)	1770	1863	1863	1583	1770	1583
Flt Permitted	0.084				0.950	
Satd. Flow (perm)	156	1863	1863	1583	1770	1583
Right Turn on Red				No		No
Satd. Flow (RTOR)						
Link Speed (mph)		55	55		25	
Link Distance (ft)		1384	1271		1132	
Travel Time (s)		17.2	15.8		30.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	670	899	821	417	281	363
Shared Lane Traffic (%)						
Lane Group Flow (vph)	670	899	821	417	281	363
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	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)	15			9	15	9
Number of Detectors	1	1	1	0	1	1
Detector Template						
Leading Detector (ft)	40	426	426	0	40	40
Trailing Detector (ft)	0	420	420	0	0	0
Detector 1 Position(ft)	0	420	420	0	0	0
Detector 1 Size(ft)	40	6	6	20	40	40
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)	15.0	0.0	0.0	0.0	0.0	15.0
Turn Type	pm+pt	NA	NA	pm+ov	Prot	pm+ov
Protected Phases	5	2	6	4	4	5
Permitted Phases	2			6		4
Detector Phase	5	2	6	4	4	5
Switch Phase						
Minimum Initial (s)	7.0	14.0	14.0	7.0	7.0	7.0
Minimum Split (s)	12.7	21.0	21.0	12.2	12.2	12.7
Total Split (s)	20.0	80.0	60.0	20.0	20.0	20.0

Lanes, Volumes, Timings
6: S. Salem Street & NC-540 NB Ramps

Combined (2028) AM - Full Buildout

12/24/2019

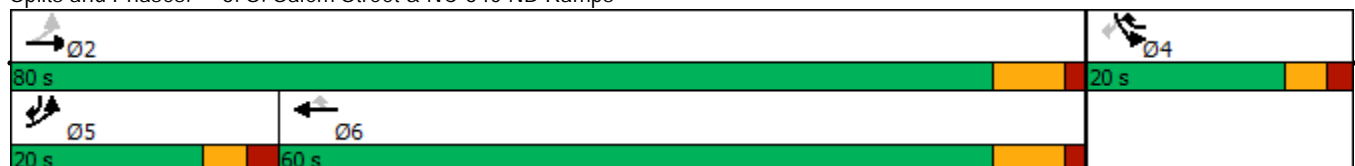
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Total Split (%)	20.0%	80.0%	60.0%	20.0%	20.0%	20.0%
Maximum Green (s)	14.3	73.0	53.0	14.8	14.8	14.3
Yellow Time (s)	3.2	5.4	5.4	3.1	3.1	3.2
All-Red Time (s)	2.5	1.6	1.6	2.1	2.1	2.5
Lost Time Adjust (s)	-0.7	-2.0	-2.0	-0.2	-0.2	-0.7
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead		Lag		Lead	
Lead-Lag Optimize?	Yes		Yes		Yes	
Vehicle Extension (s)	1.0	6.0	6.0	1.0	1.0	1.0
Minimum Gap (s)	1.0	3.4	3.1	1.0	1.0	1.0
Time Before Reduce (s)	0.0	15.0	15.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	30.0	30.0	0.0	0.0	0.0
Recall Mode	None	Min	Min	None	None	None
Act Effect Green (s)	64.0	64.0	43.7	64.0	15.2	35.4
Actuated g/C Ratio	0.72	0.72	0.49	0.72	0.17	0.40
v/c Ratio	1.74	0.67	0.90	0.37	0.94	0.58
Control Delay	365.0	9.7	34.4	5.7	78.5	28.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	365.0	9.7	34.4	5.7	78.5	28.0
LOS	F	A	C	A	E	C
Approach Delay		161.4	24.7		50.0	
Approach LOS		F	C		D	
Queue Length 50th (ft)	~531	230	398	75	162	162
Queue Length 95th (ft)	#820	336	577	114	#358	296
Internal Link Dist (ft)		1304	1191		1052	
Turn Bay Length (ft)	650			250		150
Base Capacity (vph)	386	1580	1161	1134	300	628
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	1.74	0.57	0.71	0.37	0.94	0.58

Intersection Summary

Area Type: Other
 Cycle Length: 100
 Actuated Cycle Length: 89.3
 Natural Cycle: 110
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 1.74
 Intersection Signal Delay: 91.6
 Intersection Capacity Utilization 98.8%
 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: 6: S. Salem Street & NC-540 NB Ramps



Lanes, Volumes, Timings
6: S. Salem Street & NC-540 NB Ramps

Combined (2028) PM - Full Buildout

12/24/2019

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	337	966	925	145	204	412
Future Volume (vph)	337	966	925	145	204	412
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	650			250	0	150
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)	1770	1863	1863	1583	1770	1583
Flt Permitted	0.068				0.950	
Satd. Flow (perm)	127	1863	1863	1583	1770	1583
Right Turn on Red				No		No
Satd. Flow (RTOR)						
Link Speed (mph)		55	55		25	
Link Distance (ft)		1384	1271		1132	
Travel Time (s)		17.2	15.8		30.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	374	1073	1028	161	227	458
Shared Lane Traffic (%)						
Lane Group Flow (vph)	374	1073	1028	161	227	458
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	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)	15			9	15	9
Number of Detectors	1	1	1	0	1	1
Detector Template						
Leading Detector (ft)	40	426	426	0	40	40
Trailing Detector (ft)	0	420	420	0	0	0
Detector 1 Position(ft)	0	420	420	0	0	0
Detector 1 Size(ft)	40	6	6	20	40	40
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)	15.0	0.0	0.0	0.0	0.0	15.0
Turn Type	pm+pt	NA	NA	pm+ov	Prot	pm+ov
Protected Phases	5	2	6	4	4	5
Permitted Phases	2			6		4
Detector Phase	5	2	6	4	4	5
Switch Phase						
Minimum Initial (s)	7.0	14.0	14.0	7.0	7.0	7.0
Minimum Split (s)	12.7	21.0	21.0	12.2	12.2	12.7
Total Split (s)	20.0	80.0	60.0	20.0	20.0	20.0

Lanes, Volumes, Timings
6: S. Salem Street & NC-540 NB Ramps

Combined (2028) PM - Full Buildout

12/24/2019

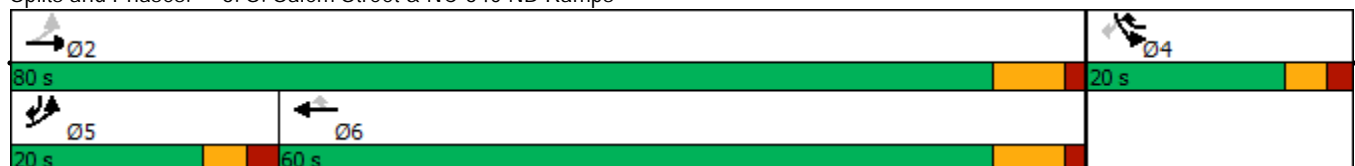
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Total Split (%)	20.0%	80.0%	60.0%	20.0%	20.0%	20.0%
Maximum Green (s)	14.3	73.0	53.0	14.8	14.8	14.3
Yellow Time (s)	3.2	5.4	5.4	3.1	3.1	3.2
All-Red Time (s)	2.5	1.6	1.6	2.1	2.1	2.5
Lost Time Adjust (s)	-0.7	-2.0	-2.0	-0.2	-0.2	-0.7
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead		Lag			Lead
Lead-Lag Optimize?	Yes		Yes			Yes
Vehicle Extension (s)	1.0	6.0	6.0	1.0	1.0	1.0
Minimum Gap (s)	1.0	3.4	3.1	1.0	1.0	1.0
Time Before Reduce (s)	0.0	15.0	15.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	30.0	30.0	0.0	0.0	0.0
Recall Mode	None	Min	Min	None	None	None
Act Effct Green (s)	75.0	75.0	55.0	74.3	14.2	34.3
Actuated g/C Ratio	0.76	0.76	0.55	0.75	0.14	0.35
v/c Ratio	1.09	0.76	1.00	0.14	0.90	0.84
Control Delay	103.8	11.8	50.7	3.8	78.0	45.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	103.8	11.8	50.7	3.8	78.0	45.4
LOS	F	B	D	A	E	D
Approach Delay		35.6	44.3		56.2	
Approach LOS		D	D		E	
Queue Length 50th (ft)	~219	335	~627	24	143	264
Queue Length 95th (ft)	#403	511	#931	41	#274	#434
Internal Link Dist (ft)		1304	1191		1052	
Turn Bay Length (ft)	650			250		150
Base Capacity (vph)	344	1408	1032	1196	267	546
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	1.09	0.76	1.00	0.13	0.85	0.84

Intersection Summary

Area Type: Other
 Cycle Length: 100
 Actuated Cycle Length: 99.3
 Natural Cycle: 100
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 1.09
 Intersection Signal Delay: 43.0
 Intersection Capacity Utilization 91.2%
 Analysis Period (min) 15
 Intersection LOS: D
 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: 6: S. Salem Street & NC-540 NB Ramps















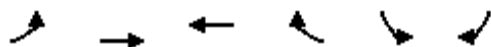
Lanes, Volumes, Timings

Combined (2028) AM - Full Buildout - with Improvements

6: S. Salem Street & NC-540 NB Ramps

12/24/2019

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	603	809	739	375	253	327
Future Volume (vph)	603	809	739	375	253	327
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	650			250	0	150
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)	1770	1863	1863	1583	1770	1583
Flt Permitted	0.080				0.950	
Satd. Flow (perm)	149	1863	1863	1583	1770	1583
Right Turn on Red				No		No
Satd. Flow (RTOR)						
Link Speed (mph)		55	55		25	
Link Distance (ft)		1384	1271		1132	
Travel Time (s)		17.2	15.8		30.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	670	899	821	417	281	363
Shared Lane Traffic (%)						
Lane Group Flow (vph)	670	899	821	417	281	363
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	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)	15			9	15	9
Number of Detectors	1	1	1	0	1	1
Detector Template						
Leading Detector (ft)	40	426	426	0	40	40
Trailing Detector (ft)	0	420	420	0	0	0
Detector 1 Position(ft)	0	420	420	0	0	0
Detector 1 Size(ft)	40	6	6	20	40	40
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)	15.0	0.0	0.0	0.0	0.0	15.0
Turn Type	pm+pt	NA	NA	pm+ov	Prot	pm+ov
Protected Phases	5	2	6	4	4	5
Permitted Phases	2			6		4
Detector Phase	5	2	6	4	4	5
Switch Phase						
Minimum Initial (s)	7.0	14.0	14.0	7.0	7.0	7.0
Minimum Split (s)	12.7	21.0	21.0	12.2	12.2	12.7
Total Split (s)	38.0	89.0	51.0	21.0	21.0	38.0



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Total Split (%)	34.5%	80.9%	46.4%	19.1%	19.1%	34.5%
Maximum Green (s)	32.3	82.0	44.0	15.8	15.8	32.3
Yellow Time (s)	3.2	5.4	5.4	3.1	3.1	3.2
All-Red Time (s)	2.5	1.6	1.6	2.1	2.1	2.5
Lost Time Adjust (s)	-0.7	-2.0	-2.0	-0.2	-0.2	-0.7
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead		Lag			Lead
Lead-Lag Optimize?	Yes		Yes			Yes
Vehicle Extension (s)	1.0	6.0	6.0	1.0	1.0	1.0
Minimum Gap (s)	1.0	3.4	3.1	1.0	1.0	1.0
Time Before Reduce (s)	0.0	15.0	15.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	30.0	30.0	0.0	0.0	0.0
Recall Mode	None	C-Min	Min	None	None	None
Act Effct Green (s)	84.0	84.0	46.0	67.0	16.0	54.0
Actuated g/C Ratio	0.76	0.76	0.42	0.61	0.15	0.49
v/c Ratio	1.12	0.63	1.05	0.43	1.09	0.47
Control Delay	90.2	9.2	79.6	13.2	128.0	21.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	90.2	9.2	79.6	13.2	128.0	21.0
LOS	F	A	E	B	F	C
Approach Delay		43.8	57.2		67.7	
Approach LOS		D	E		E	
Queue Length 50th (ft)	~479	349	~636	146	~224	163
Queue Length 95th (ft)	m#572	m364	#873	215	#392	245
Internal Link Dist (ft)		1304	1191		1052	
Turn Bay Length (ft)	650			250		150
Base Capacity (vph)	600	1422	779	964	257	777
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	1.12	0.63	1.05	0.43	1.09	0.47

Intersection Summary

Area Type: Other
 Cycle Length: 110
 Actuated Cycle Length: 110
 Offset: 50 (45%), Referenced to phase 2:EBTL, Start of Green
 Natural Cycle: 110
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.12
 Intersection Signal Delay: 53.1
 Intersection Capacity Utilization 98.8%
 Analysis Period (min) 15
 Intersection LOS: D
 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.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: S. Salem Street & NC-540 NB Ramps















Lanes, Volumes, Timings

Combined (2028) PM - Full Buildout - with Improvements

6: S. Salem Street & NC-540 NB Ramps







12/24/2019

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	337	966	925	145	204	412
Future Volume (vph)	337	966	925	145	204	412
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	650			250	0	150
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)	1770	1863	1863	1583	1770	1583
Flt Permitted	0.068				0.950	
Satd. Flow (perm)	127	1863	1863	1583	1770	1583
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				83		91
Link Speed (mph)		55	55		25	
Link Distance (ft)		1384	1271		1132	
Travel Time (s)		17.2	15.8		30.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	374	1073	1028	161	227	458
Shared Lane Traffic (%)						
Lane Group Flow (vph)	374	1073	1028	161	227	458
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	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)	15			9	15	9
Number of Detectors	1	1	1	0	1	1
Detector Template						
Leading Detector (ft)	40	426	426	0	40	40
Trailing Detector (ft)	0	420	420	0	0	0
Detector 1 Position(ft)	0	420	420	0	0	0
Detector 1 Size(ft)	40	6	6	20	40	40
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)	15.0	0.0	0.0	0.0	0.0	15.0
Turn Type	pm+pt	NA	NA	pm+ov	Prot	pm+ov
Protected Phases	5	2	6	4	4	5
Permitted Phases	2			6		4
Detector Phase	5	2	6	4	4	5
Switch Phase						
Minimum Initial (s)	7.0	14.0	14.0	7.0	7.0	7.0
Minimum Split (s)	12.7	21.0	21.0	12.2	12.2	12.7
Total Split (s)	20.0	80.0	60.0	20.0	20.0	20.0

Lanes, Volumes, Timings
6: S. Salem Street & NC-540 NB Ramps

Combined (2028) PM - Full Buildout - with Improvements

12/24/2019

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Total Split (%)	20.0%	80.0%	60.0%	20.0%	20.0%	20.0%
Maximum Green (s)	14.3	73.0	53.0	14.8	14.8	14.3
Yellow Time (s)	3.2	5.4	5.4	3.1	3.1	3.2
All-Red Time (s)	2.5	1.6	1.6	2.1	2.1	2.5
Lost Time Adjust (s)	-0.7	-2.0	-2.0	-0.2	-0.2	-0.7
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead		Lag		Lead	
Lead-Lag Optimize?	Yes		Yes		Yes	
Vehicle Extension (s)	1.0	6.0	6.0	1.0	1.0	1.0
Minimum Gap (s)	1.0	3.4	3.1	1.0	1.0	1.0
Time Before Reduce (s)	0.0	15.0	15.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	30.0	30.0	0.0	0.0	0.0
Recall Mode	None	C-Min	Min	None	None	None
Act Effct Green (s)	75.7	75.7	55.0	74.3	14.3	35.0
Actuated g/C Ratio	0.76	0.76	0.55	0.74	0.14	0.35
v/c Ratio	1.06	0.76	1.00	0.13	0.90	0.75
Control Delay	82.5	7.9	52.9	2.0	78.7	31.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	82.5	7.9	52.9	2.0	78.7	31.5
LOS	F	A	D	A	E	C
Approach Delay		27.2	46.0		47.1	
Approach LOS		C	D		D	
Queue Length 50th (ft)	~217	201	~627	11	143	207
Queue Length 95th (ft)	m#312	m410	#931	26	#274	332
Internal Link Dist (ft)		1304	1191		1052	
Turn Bay Length (ft)	650			250		150
Base Capacity (vph)	353	1410	1024	1208	265	613
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	1.06	0.76	1.00	0.13	0.86	0.75

Intersection Summary

Area Type: Other
 Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 90 (90%), Referenced to phase 2:EBTL, Start of Green
 Natural Cycle: 110
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.06
 Intersection Signal Delay: 38.0
 Intersection Capacity Utilization 91.2%
 Analysis Period (min) 15
 Intersection LOS: D
 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.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: S. Salem Street & NC-540 NB Ramps



APPENDIX G

CAPACITY ANALYSIS CALCULATIONS













S. SALEM STREET / OLD US HWY 1

&

SOUTHBOUND NC-540 RAMPS

Lanes, Volumes, Timings
7: Old US Highway 1 & NC 540 SB Ramp Terminal

Existing (2019) AM
11/06/2019

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	177	582	306	81	31	31
Future Volume (vph)	177	582	306	81	31	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	300			200	0	175
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)	1770	1863	1863	1583	1770	1583
Flt Permitted	0.379				0.950	
Satd. Flow (perm)	706	1863	1863	1583	1770	1583
Right Turn on Red				No		No
Satd. Flow (RTOR)						
Link Speed (mph)		55	55		25	
Link Distance (ft)		547	1384		1259	
Travel Time (s)		6.8	17.2		34.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	197	647	340	90	34	34
Shared Lane Traffic (%)						
Lane Group Flow (vph)	197	647	340	90	34	34
Turn Type	pm+pt	NA	NA	pm+ov	Prot	pm+ov
Protected Phases	5	2	6	4	4	5
Permitted Phases	2			6		4
Detector Phase	5	2	6	4	4	5
Switch Phase						
Minimum Initial (s)	7.0	14.0	14.0	7.0	7.0	7.0
Minimum Split (s)	13.0	20.8	20.8	12.1	12.1	13.0
Total Split (s)	20.0	80.0	60.0	20.0	20.0	20.0
Total Split (%)	20.0%	80.0%	60.0%	20.0%	20.0%	20.0%
Maximum Green (s)	14.0	73.2	53.2	14.9	14.9	14.0
Yellow Time (s)	3.1	5.4	5.4	3.1	3.1	3.1
All-Red Time (s)	2.9	1.4	1.4	2.0	2.0	2.9
Lost Time Adjust (s)	-1.0	-1.8	-1.8	-0.1	-0.1	-1.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead		Lag			Lead
Lead-Lag Optimize?	Yes		Yes			Yes
Vehicle Extension (s)	1.0	6.0	6.0	1.0	1.0	1.0
Minimum Gap (s)	1.0	3.4	3.4	1.0	1.0	1.0
Time Before Reduce (s)	0.0	15.0	15.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	30.0	30.0	0.0	0.0	0.0
Recall Mode	None	Min	Min	None	None	None
Act Effct Green (s)	30.8	32.1	17.0	29.3	7.2	17.9
Actuated g/C Ratio	0.68	0.71	0.38	0.65	0.16	0.40
v/c Ratio	0.29	0.49	0.48	0.09	0.12	0.05
Control Delay	4.5	5.9	14.9	4.4	19.5	8.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.5	5.9	14.9	4.4	19.5	8.1

Lanes, Volumes, Timings
 7: Old US Highway 1 & NC 540 SB Ramp Terminal

Existing (2019) AM
 11/06/2019

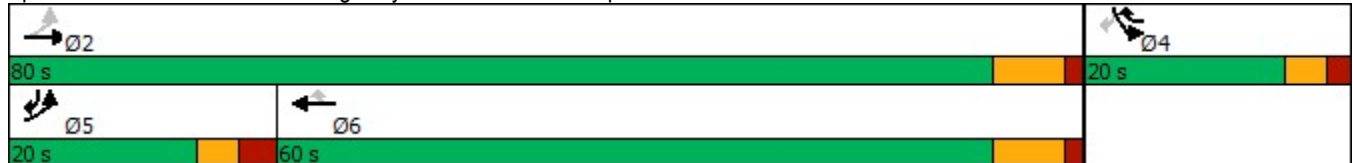
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
LOS	A	A	B	A	B	A
Approach Delay		5.6	12.7		13.8	
Approach LOS		A	B		B	
Queue Length 50th (ft)	17	77	70	8	8	5
Queue Length 95th (ft)	34	134	139	23	29	18
Internal Link Dist (ft)		467	1304		1179	
Turn Bay Length (ft)	300			200		175
Base Capacity (vph)	841	1863	1863	1292	597	857
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.23	0.35	0.18	0.07	0.06	0.04

Intersection Summary

Area Type: Other
 Cycle Length: 100
 Actuated Cycle Length: 45.1
 Natural Cycle: 50
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.49
 Intersection Signal Delay: 8.3
 Intersection Capacity Utilization 44.8%
 Analysis Period (min) 15













Intersection LOS: A
 ICU Level of Service A

Splits and Phases: 7: Old US Highway 1 & NC 540 SB Ramp Terminal



Lanes, Volumes, Timings
7: Old US Highway 1 & NC 540 SB Ramp Terminal

Existing (2019) PM
11/06/2019

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	137	208	455	43	159	277
Future Volume (vph)	137	208	455	43	159	277
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	300			200	0	175
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)	1770	1863	1863	1583	1770	1583
Flt Permitted	0.234				0.950	
Satd. Flow (perm)	436	1863	1863	1583	1770	1583
Right Turn on Red				No		No
Satd. Flow (RTOR)						
Link Speed (mph)		55	55		25	
Link Distance (ft)		547	1384		1259	
Travel Time (s)		6.8	17.2		34.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	152	231	506	48	177	308
Shared Lane Traffic (%)						
Lane Group Flow (vph)	152	231	506	48	177	308
Turn Type	pm+pt	NA	NA	pm+ov	Prot	pm+ov
Protected Phases	5	2	6	4	4	5
Permitted Phases	2			6		4
Detector Phase	5	2	6	4	4	5
Switch Phase						
Minimum Initial (s)	7.0	14.0	14.0	7.0	7.0	7.0
Minimum Split (s)	13.0	20.8	20.8	12.1	12.1	13.0
Total Split (s)	20.0	80.0	60.0	20.0	20.0	20.0
Total Split (%)	20.0%	80.0%	60.0%	20.0%	20.0%	20.0%
Maximum Green (s)	14.0	73.2	53.2	14.9	14.9	14.0
Yellow Time (s)	3.1	5.4	5.4	3.1	3.1	3.1
All-Red Time (s)	2.9	1.4	1.4	2.0	2.0	2.9
Lost Time Adjust (s)	-1.0	-1.8	-1.8	-0.1	-0.1	-1.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead		Lag			Lead
Lead-Lag Optimize?	Yes		Yes			Yes
Vehicle Extension (s)	1.0	6.0	6.0	1.0	1.0	1.0
Minimum Gap (s)	1.0	3.4	3.4	1.0	1.0	1.0
Time Before Reduce (s)	0.0	15.0	15.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	30.0	30.0	0.0	0.0	0.0
Recall Mode	None	Min	Min	None	None	None
Act Effct Green (s)	37.5	37.5	22.4	37.5	9.9	25.0
Actuated g/C Ratio	0.65	0.65	0.39	0.65	0.17	0.43
v/c Ratio	0.30	0.19	0.70	0.05	0.58	0.45
Control Delay	5.6	4.6	21.4	3.9	32.5	15.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.6	4.6	21.4	3.9	32.5	15.1

Lanes, Volumes, Timings
 7: Old US Highway 1 & NC 540 SB Ramp Terminal

Existing (2019) PM
 11/06/2019

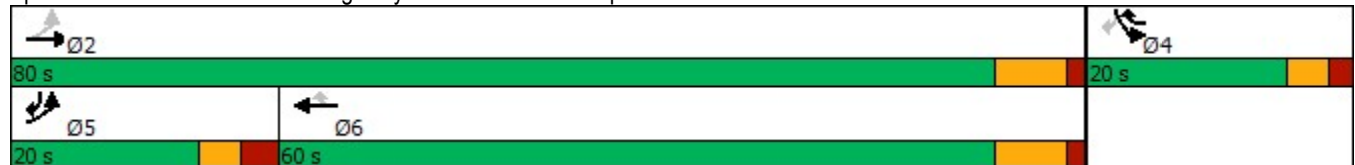
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
LOS	A	A	C	A	C	B
Approach Delay		5.0	19.9		21.4	
Approach LOS		A	B		C	
Queue Length 50th (ft)	15	24	130	4	53	67
Queue Length 95th (ft)	41	59	289	16	139	165
Internal Link Dist (ft)		467	1304		1179	
Turn Bay Length (ft)	300			200		175
Base Capacity (vph)	641	1849	1706	1181	476	840
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	0.24	0.12	0.30	0.04	0.37	0.37

Intersection Summary

Area Type: Other
 Cycle Length: 100
 Actuated Cycle Length: 57.8
 Natural Cycle: 60
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.70
 Intersection Signal Delay: 16.4
 Intersection Capacity Utilization 52.8%
 Analysis Period (min) 15













Intersection LOS: B
 ICU Level of Service A

Splits and Phases: 7: Old US Highway 1 & NC 540 SB Ramp Terminal



Lanes, Volumes, Timings
7: Old US Highway 1/S. Salem Street & NC-540 SB Ramps

Background (2025) AM
12/19/2019

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	333	1105	711	97	37	258
Future Volume (vph)	333	1105	711	97	37	258
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	300			200	0	175
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)	1770	1863	1863	1583	1770	1583
Flt Permitted	0.125				0.950	
Satd. Flow (perm)	233	1863	1863	1583	1770	1583
Right Turn on Red				No		No
Satd. Flow (RTOR)						
Link Speed (mph)		55	55		25	
Link Distance (ft)		547	1384		1259	
Travel Time (s)		6.8	17.2		34.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	370	1228	790	108	41	287
Shared Lane Traffic (%)						
Lane Group Flow (vph)	370	1228	790	108	41	287
Turn Type	pm+pt	NA	NA	pm+ov	Prot	Free
Protected Phases	5	2	6	4	4	
Permitted Phases	2			6		Free
Detector Phase	5	2	6	4	4	
Switch Phase						
Minimum Initial (s)	7.0	14.0	14.0	7.0	7.0	
Minimum Split (s)	13.0	20.8	20.8	12.1	12.1	
Total Split (s)	20.0	80.0	60.0	20.0	20.0	
Total Split (%)	20.0%	80.0%	60.0%	20.0%	20.0%	
Maximum Green (s)	14.0	73.2	53.2	14.9	14.9	
Yellow Time (s)	3.1	5.4	5.4	3.1	3.1	
All-Red Time (s)	2.9	1.4	1.4	2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.8	-1.8	-0.1	-0.1	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	1.0	6.0	6.0	1.0	1.0	
Minimum Gap (s)	1.0	3.4	3.4	1.0	1.0	
Time Before Reduce (s)	0.0	15.0	15.0	0.0	0.0	
Time To Reduce (s)	0.0	30.0	30.0	0.0	0.0	
Recall Mode	None	Min	Min	None	None	
Act Effct Green (s)	56.1	57.9	36.3	49.9	8.0	70.6
Actuated g/C Ratio	0.79	0.82	0.51	0.71	0.11	1.00
v/c Ratio	0.75	0.80	0.82	0.10	0.20	0.18
Control Delay	26.0	10.5	23.1	4.3	38.8	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.0	10.5	23.1	4.3	38.8	0.3
LOS	C	B	C	A	D	A
Approach Delay		14.1	20.8		5.1	
Approach LOS		B	C		A	
Queue Length 50th (ft)	86	278	297	15	18	0

Lanes, Volumes, Timings
 7: Old US Highway 1/S. Salem Street & NC-540 SB Ramps

Background (2025) AM
 12/19/2019

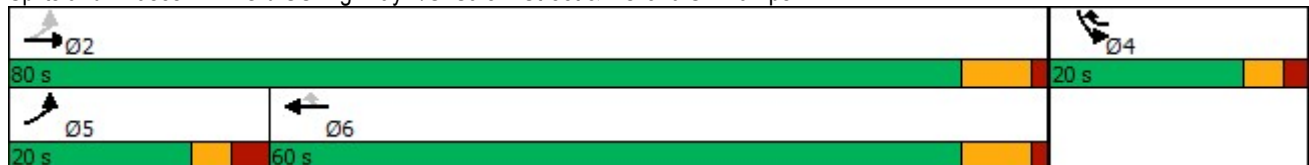
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Queue Length 95th (ft)	#268	520	453	29	55	0
Internal Link Dist (ft)		467	1304		1179	
Turn Bay Length (ft)	300			200		175
Base Capacity (vph)	546	1748	1433	1308	416	1583
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.68	0.70	0.55	0.08	0.10	0.18

Intersection Summary

Area Type: Other
 Cycle Length: 100
 Actuated Cycle Length: 70.6
 Natural Cycle: 70
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.82
 Intersection Signal Delay: 15.2
 Intersection Capacity Utilization 74.2%
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.













Intersection LOS: B
 ICU Level of Service D

Splits and Phases: 7: Old US Highway 1/S. Salem Street & NC-540 SB Ramps



Lanes, Volumes, Timings
 7: Old US Highway 1/S. Salem Street & NC-540 SB Ramps

Background (2025) PM
 12/19/2019

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	364	835	998	51	190	683
Future Volume (vph)	364	835	998	51	190	683
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	300			200	0	175
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)	1770	1863	1863	1583	1770	1583
Flt Permitted	0.068				0.950	
Satd. Flow (perm)	127	1863	1863	1583	1770	1583
Right Turn on Red				No		No
Satd. Flow (RTOR)						
Link Speed (mph)		55	55		25	
Link Distance (ft)		547	1384		1259	
Travel Time (s)		6.8	17.2		34.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	404	928	1109	57	211	759
Shared Lane Traffic (%)						
Lane Group Flow (vph)	404	928	1109	57	211	759
Turn Type	pm+pt	NA	NA	pm+ov	Prot	Free
Protected Phases	5	2	6	4	4	
Permitted Phases	2			6		Free
Detector Phase	5	2	6	4	4	
Switch Phase						
Minimum Initial (s)	7.0	14.0	14.0	7.0	7.0	
Minimum Split (s)	13.0	20.8	20.8	12.1	12.1	
Total Split (s)	20.0	80.0	60.0	20.0	20.0	
Total Split (%)	20.0%	80.0%	60.0%	20.0%	20.0%	
Maximum Green (s)	14.0	73.2	53.2	14.9	14.9	
Yellow Time (s)	3.1	5.4	5.4	3.1	3.1	
All-Red Time (s)	2.9	1.4	1.4	2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.8	-1.8	-0.1	-0.1	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	1.0	6.0	6.0	1.0	1.0	
Minimum Gap (s)	1.0	3.4	3.4	1.0	1.0	
Time Before Reduce (s)	0.0	15.0	15.0	0.0	0.0	
Time To Reduce (s)	0.0	30.0	30.0	0.0	0.0	
Recall Mode	None	Min	Min	None	None	
Act Effct Green (s)	75.1	75.1	55.0	73.7	13.6	98.7
Actuated g/C Ratio	0.76	0.76	0.56	0.75	0.14	1.00
v/c Ratio	1.17	0.65	1.07	0.05	0.86	0.48
Control Delay	131.2	8.6	71.6	3.4	73.7	1.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	131.2	8.6	71.6	3.4	73.7	1.0

Lanes, Volumes, Timings
 7: Old US Highway 1/S. Salem Street & NC-540 SB Ramps

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
LOS	F	A	E	A	E	A
Approach Delay		45.8	68.3		16.9	
Approach LOS		D	E		B	
Queue Length 50th (ft)	~260	245	~796	8	132	0
Queue Length 95th (ft)	#448	360	#1043	17	#248	0
Internal Link Dist (ft)		467	1304		1179	
Turn Bay Length (ft)	300			200		175
Base Capacity (vph)	346	1417	1038	1204	269	1583
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	1.17	0.65	1.07	0.05	0.78	0.48

Intersection Summary

Area Type: Other
 Cycle Length: 100
 Actuated Cycle Length: 98.7
 Natural Cycle: 130
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 1.17
 Intersection Signal Delay: 45.3
 Intersection Capacity Utilization 95.7%
 Analysis Period (min) 15
 Intersection LOS: D
 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: 7: Old US Highway 1/S. Salem Street & NC-540 SB Ramps









Lanes, Volumes, Timings
7: Old US Highway 1/S. Salem Street & NC-540 SB Ramps

Background (2028) AM
12/19/2019

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	353	1169	745	106	40	261
Future Volume (vph)	353	1169	745	106	40	261
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	300			200	0	175
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)	1770	1863	1863	1583	1770	1583
Flt Permitted	0.124				0.950	
Satd. Flow (perm)	231	1863	1863	1583	1770	1583
Right Turn on Red				No		No
Satd. Flow (RTOR)						
Link Speed (mph)		55	55		25	
Link Distance (ft)		547	1384		1259	
Travel Time (s)		6.8	17.2		34.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	392	1299	828	118	44	290
Shared Lane Traffic (%)						
Lane Group Flow (vph)	392	1299	828	118	44	290
Turn Type	pm+pt	NA	NA	pm+ov	Prot	Free
Protected Phases	5	2	6	4	4	
Permitted Phases	2			6		Free
Detector Phase	5	2	6	4	4	
Switch Phase						
Minimum Initial (s)	7.0	14.0	14.0	7.0	7.0	
Minimum Split (s)	13.0	20.8	20.8	12.1	12.1	
Total Split (s)	20.0	80.0	60.0	20.0	20.0	
Total Split (%)	20.0%	80.0%	60.0%	20.0%	20.0%	
Maximum Green (s)	14.0	73.2	53.2	14.9	14.9	
Yellow Time (s)	3.1	5.4	5.4	3.1	3.1	
All-Red Time (s)	2.9	1.4	1.4	2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.8	-1.8	-0.1	-0.1	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	1.0	6.0	6.0	1.0	1.0	
Minimum Gap (s)	1.0	3.4	3.4	1.0	1.0	
Time Before Reduce (s)	0.0	15.0	15.0	0.0	0.0	
Time To Reduce (s)	0.0	30.0	30.0	0.0	0.0	
Recall Mode	None	Min	Min	None	None	
Act Effct Green (s)	64.2	65.7	43.1	56.1	7.7	78.7
Actuated g/C Ratio	0.82	0.83	0.55	0.71	0.10	1.00
v/c Ratio	0.79	0.83	0.81	0.10	0.25	0.18
Control Delay	30.1	12.1	22.0	4.1	42.6	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.1	12.1	22.0	4.1	42.6	0.3

Lanes, Volumes, Timings
 7: Old US Highway 1/S. Salem Street & NC-540 SB Ramps

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
LOS	C	B	C	A	D	A
Approach Delay		16.3	19.8		5.8	
Approach LOS		B	B		A	
Queue Length 50th (ft)	116	332	322	17	23	0
Queue Length 95th (ft)	#303	#684	498	31	59	0
Internal Link Dist (ft)		467	1304		1179	
Turn Bay Length (ft)	300			200		175
Base Capacity (vph)	497	1672	1340	1322	355	1583
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	0.79	0.78	0.62	0.09	0.12	0.18

Intersection Summary

Area Type: Other
 Cycle Length: 100
 Actuated Cycle Length: 78.7
 Natural Cycle: 80
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.83
 Intersection Signal Delay: 16.2
 Intersection Capacity Utilization 77.1%
 Analysis Period (min) 15
 Intersection LOS: B
 ICU Level of Service D













95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 7: Old US Highway 1/S. Salem Street & NC-540 SB Ramps



Lanes, Volumes, Timings
7: Old US Highway 1/S. Salem Street & NC-540 SB Ramps

Background (2028) PM
12/19/2019

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	379	858	1049	56	207	713
Future Volume (vph)	379	858	1049	56	207	713
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	300			200	0	175
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)	1770	1863	1863	1583	1770	1583
Flt Permitted	0.068				0.950	
Satd. Flow (perm)	127	1863	1863	1583	1770	1583
Right Turn on Red				No		No
Satd. Flow (RTOR)						
Link Speed (mph)		55	55		25	
Link Distance (ft)		547	1384		1259	
Travel Time (s)		6.8	17.2		34.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	421	953	1166	62	230	792
Shared Lane Traffic (%)						
Lane Group Flow (vph)	421	953	1166	62	230	792
Turn Type	pm+pt	NA	NA	pm+ov	Prot	Free
Protected Phases	5	2	6	4	4	
Permitted Phases	2			6		Free
Detector Phase	5	2	6	4	4	
Switch Phase						
Minimum Initial (s)	7.0	14.0	14.0	7.0	7.0	
Minimum Split (s)	13.0	20.8	20.8	12.1	12.1	
Total Split (s)	20.0	80.0	60.0	20.0	20.0	
Total Split (%)	20.0%	80.0%	60.0%	20.0%	20.0%	
Maximum Green (s)	14.0	73.2	53.2	14.9	14.9	
Yellow Time (s)	3.1	5.4	5.4	3.1	3.1	
All-Red Time (s)	2.9	1.4	1.4	2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.8	-1.8	-0.1	-0.1	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	1.0	6.0	6.0	1.0	1.0	
Minimum Gap (s)	1.0	3.4	3.4	1.0	1.0	
Time Before Reduce (s)	0.0	15.0	15.0	0.0	0.0	
Time To Reduce (s)	0.0	30.0	30.0	0.0	0.0	
Recall Mode	None	Min	Min	None	None	
Act Effct Green (s)	75.0	75.0	55.0	74.3	14.3	99.3
Actuated g/C Ratio	0.76	0.76	0.55	0.75	0.14	1.00
v/c Ratio	1.22	0.68	1.13	0.05	0.91	0.50
Control Delay	152.9	9.3	95.0	3.4	79.8	1.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	152.9	9.3	95.0	3.4	79.8	1.1

Lanes, Volumes, Timings
 7: Old US Highway 1/S. Salem Street & NC-540 SB Ramps

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
LOS	F	A	F	A	E	A
Approach Delay		53.3	90.4		18.8	
Approach LOS		D	F		B	
Queue Length 50th (ft)	~283	258	~872	9	145	0
Queue Length 95th (ft)	#475	382	#1121	18	#279	0
Internal Link Dist (ft)		467	1304		1179	
Turn Bay Length (ft)	300			200		175
Base Capacity (vph)	344	1407	1032	1196	267	1583
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	1.22	0.68	1.13	0.05	0.86	0.50

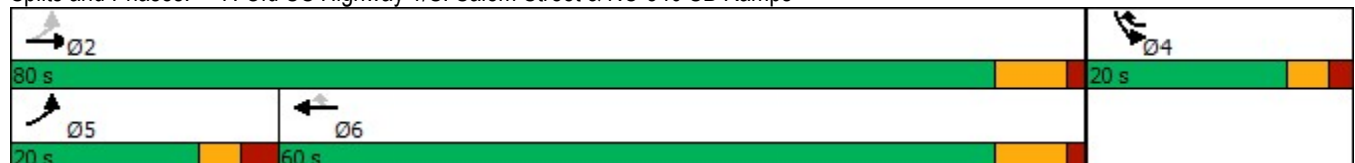
Intersection Summary













Area Type: Other
 Cycle Length: 100
 Actuated Cycle Length: 99.3
 Natural Cycle: 140
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 1.22
 Intersection Signal Delay: 56.1
 Intersection Capacity Utilization 100.2%
 Analysis Period (min) 15
 Intersection LOS: E
 ICU Level of Service G

~ 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: Old US Highway 1/S. Salem Street & NC-540 SB Ramps



						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	333	1111	733	162	57	258
Future Volume (vph)	333	1111	733	162	57	258
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	300			200	0	175
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)	1770	1863	1863	1583	1770	1583
Flt Permitted	0.107				0.950	
Satd. Flow (perm)	199	1863	1863	1583	1770	1583
Right Turn on Red				No		No
Satd. Flow (RTOR)						
Link Speed (mph)		55	55		25	
Link Distance (ft)		547	1384		1259	
Travel Time (s)		6.8	17.2		34.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	370	1234	814	180	63	287
Shared Lane Traffic (%)						
Lane Group Flow (vph)	370	1234	814	180	63	287
Turn Type	pm+pt	NA	NA	pm+ov	Prot	Free
Protected Phases	5	2	6	4	4	
Permitted Phases	2			6		Free
Detector Phase	5	2	6	4	4	
Switch Phase						
Minimum Initial (s)	7.0	14.0	14.0	7.0	7.0	
Minimum Split (s)	13.0	20.8	20.8	12.1	12.1	
Total Split (s)	20.0	80.0	60.0	20.0	20.0	
Total Split (%)	20.0%	80.0%	60.0%	20.0%	20.0%	
Maximum Green (s)	14.0	73.2	53.2	14.9	14.9	
Yellow Time (s)	3.1	5.4	5.4	3.1	3.1	
All-Red Time (s)	2.9	1.4	1.4	2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.8	-1.8	-0.1	-0.1	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	1.0	6.0	6.0	1.0	1.0	
Minimum Gap (s)	1.0	3.4	3.4	1.0	1.0	
Time Before Reduce (s)	0.0	15.0	15.0	0.0	0.0	
Time To Reduce (s)	0.0	30.0	30.0	0.0	0.0	
Recall Mode	None	Min	Min	None	None	
Act Effct Green (s)	58.1	58.1	39.0	52.2	8.0	76.5
Actuated g/C Ratio	0.76	0.76	0.51	0.68	0.10	1.00
v/c Ratio	0.85	0.87	0.86	0.17	0.34	0.18
Control Delay	37.3	14.8	26.2	4.5	42.1	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.3	14.8	26.2	4.5	42.1	0.3

Lanes, Volumes, Timings
 7: Old US Highway 1/S. Salem Street & NC-540 SB Ramps

Combined (2025) AM - Phase 1
 12/20/2019

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
LOS	D	B	C	A	D	A
Approach Delay		20.0	22.3		7.8	
Approach LOS		C	C		A	
Queue Length 50th (ft)	101	283	312	27	28	0
Queue Length 95th (ft)	#308	607	504	46	76	0
Internal Link Dist (ft)		467	1304		1179	
Turn Bay Length (ft)	300			200		175
Base Capacity (vph)	470	1721	1389	1235	360	1583
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	0.79	0.72	0.59	0.15	0.17	0.18

Intersection Summary

Area Type: Other
 Cycle Length: 100
 Actuated Cycle Length: 76.5
 Natural Cycle: 70
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.87
 Intersection Signal Delay: 19.3
 Intersection Capacity Utilization 75.4%
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.













Splits and Phases: 7: Old US Highway 1/S. Salem Street & NC-540 SB Ramps



Lanes, Volumes, Timings
 7: Old US Highway 1/S. Salem Street & NC-540 SB Ramps

Combined (2025) PM - Phase 1

12/20/2019

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	364	855	1010	85	249	683
Future Volume (vph)	364	855	1010	85	249	683
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	300			200	0	175
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)	1770	1863	1863	1583	1770	1583
Flt Permitted	0.068				0.950	
Satd. Flow (perm)	127	1863	1863	1583	1770	1583
Right Turn on Red				No		No
Satd. Flow (RTOR)						
Link Speed (mph)		55	55		25	
Link Distance (ft)		547	1384		1259	
Travel Time (s)		6.8	17.2		34.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	404	950	1122	94	277	759
Shared Lane Traffic (%)						
Lane Group Flow (vph)	404	950	1122	94	277	759
Turn Type	pm+pt	NA	NA	pm+ov	Prot	Free
Protected Phases	5	2	6	4	4	
Permitted Phases	2			6		Free
Detector Phase	5	2	6	4	4	
Switch Phase						
Minimum Initial (s)	7.0	14.0	14.0	7.0	7.0	
Minimum Split (s)	13.0	20.8	20.8	12.1	12.1	
Total Split (s)	20.0	80.0	60.0	20.0	20.0	
Total Split (%)	20.0%	80.0%	60.0%	20.0%	20.0%	
Maximum Green (s)	14.0	73.2	53.2	14.9	14.9	
Yellow Time (s)	3.1	5.4	5.4	3.1	3.1	
All-Red Time (s)	2.9	1.4	1.4	2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.8	-1.8	-0.1	-0.1	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	1.0	6.0	6.0	1.0	1.0	
Minimum Gap (s)	1.0	3.4	3.4	1.0	1.0	
Time Before Reduce (s)	0.0	15.0	15.0	0.0	0.0	
Time To Reduce (s)	0.0	30.0	30.0	0.0	0.0	
Recall Mode	None	Min	Min	None	None	
Act Effect Green (s)	75.0	75.0	55.0	75.0	15.0	100.0
Actuated g/C Ratio	0.75	0.75	0.55	0.75	0.15	1.00
v/c Ratio	1.18	0.68	1.10	0.08	1.05	0.48
Control Delay	137.7	9.5	82.0	3.5	110.4	1.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	137.7	9.5	82.0	3.5	110.4	1.0

Lanes, Volumes, Timings
 7: Old US Highway 1/S. Salem Street & NC-540 SB Ramps

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
LOS	F	A	F	A	F	A
Approach Delay		47.7	75.9		30.3	
Approach LOS		D	E		C	
Queue Length 50th (ft)	~260	257	~813	13	~192	0
Queue Length 95th (ft)	#448	379	#1061	25	#353	0
Internal Link Dist (ft)		467	1304		1179	
Turn Bay Length (ft)	300			200		175
Base Capacity (vph)	341	1397	1024	1187	265	1583
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	1.18	0.68	1.10	0.08	1.05	0.48

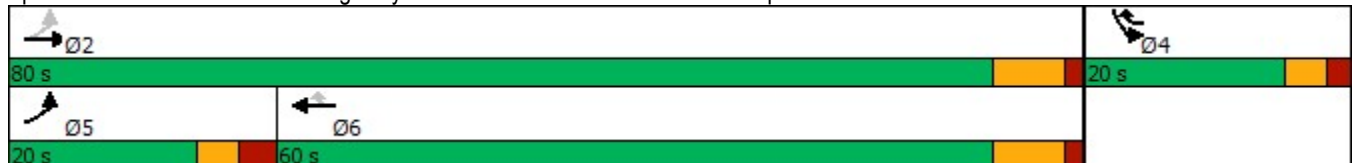
Intersection Summary













Area Type: Other
 Cycle Length: 100
 Actuated Cycle Length: 100
 Natural Cycle: 130
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 1.18
 Intersection Signal Delay: 52.2
 Intersection Capacity Utilization 99.6%
 Analysis Period (min) 15
 Intersection LOS: D
 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: 7: Old US Highway 1/S. Salem Street & NC-540 SB Ramps



						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	353	1271	805	262	141	261
Future Volume (vph)	353	1271	805	262	141	261
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	300			200	0	175
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)	1770	1863	1863	1583	1770	1583
Flt Permitted	0.102				0.950	
Satd. Flow (perm)	190	1863	1863	1583	1770	1583
Right Turn on Red				No		No
Satd. Flow (RTOR)						
Link Speed (mph)		55	55		25	
Link Distance (ft)		547	1384		1259	
Travel Time (s)		6.8	17.2		34.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	392	1412	894	291	157	290
Shared Lane Traffic (%)						
Lane Group Flow (vph)	392	1412	894	291	157	290
Turn Type	pm+pt	NA	NA	pm+ov	Prot	Free
Protected Phases	5	2	6	4	4	
Permitted Phases	2			6		Free
Detector Phase	5	2	6	4	4	
Switch Phase						
Minimum Initial (s)	7.0	14.0	14.0	7.0	7.0	
Minimum Split (s)	13.0	20.8	20.8	12.1	12.1	
Total Split (s)	20.0	80.0	60.0	20.0	20.0	
Total Split (%)	20.0%	80.0%	60.0%	20.0%	20.0%	
Maximum Green (s)	14.0	73.2	53.2	14.9	14.9	
Yellow Time (s)	3.1	5.4	5.4	3.1	3.1	
All-Red Time (s)	2.9	1.4	1.4	2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.8	-1.8	-0.1	-0.1	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	1.0	6.0	6.0	1.0	1.0	
Minimum Gap (s)	1.0	3.4	3.4	1.0	1.0	
Time Before Reduce (s)	0.0	15.0	15.0	0.0	0.0	
Time To Reduce (s)	0.0	30.0	30.0	0.0	0.0	
Recall Mode	None	Min	Min	None	None	
Act Effct Green (s)	75.1	75.1	55.1	71.7	11.6	96.7
Actuated g/C Ratio	0.78	0.78	0.57	0.74	0.12	1.00
v/c Ratio	1.00	0.98	0.84	0.25	0.74	0.18
Control Delay	70.3	31.2	27.2	4.5	61.8	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	70.3	31.2	27.2	4.5	61.8	0.3

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
LOS	E	C	C	A	E	A
Approach Delay		39.7	21.6		21.9	
Approach LOS		D	C		C	
Queue Length 50th (ft)	~166	653	431	47	95	0
Queue Length 95th (ft)	#376	#1209	#744	74	162	0
Internal Link Dist (ft)		467	1304		1179	
Turn Bay Length (ft)	300			200		175
Base Capacity (vph)	392	1446	1060	1229	274	1583
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	1.00	0.98	0.84	0.24	0.57	0.18

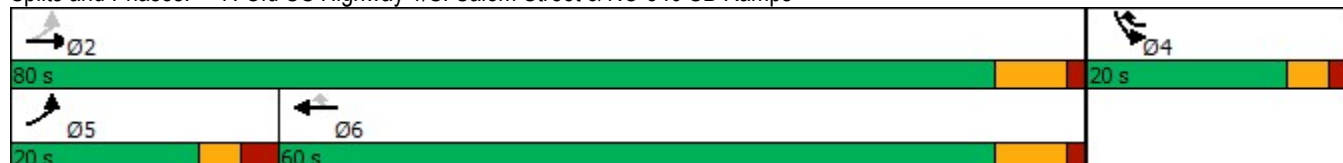
Intersection Summary













Area Type: Other
 Cycle Length: 100
 Actuated Cycle Length: 96.7
 Natural Cycle: 90
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 1.00
 Intersection Signal Delay: 31.2
 Intersection Capacity Utilization 83.0%
 Analysis Period (min) 15







Intersection LOS: C
 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: 7: Old US Highway 1/S. Salem Street & NC-540 SB Ramps



						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	379	937	1131	207	331	713
Future Volume (vph)	379	937	1131	207	331	713
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	300			200	0	175
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)	1770	1863	1863	1583	1770	1583
Flt Permitted	0.068				0.950	
Satd. Flow (perm)	127	1863	1863	1583	1770	1583
Right Turn on Red				No		No
Satd. Flow (RTOR)						
Link Speed (mph)		55	55		25	
Link Distance (ft)		547	1384		1259	
Travel Time (s)		6.8	17.2		34.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	421	1041	1257	230	368	792
Shared Lane Traffic (%)						
Lane Group Flow (vph)	421	1041	1257	230	368	792
Turn Type	pm+pt	NA	NA	pm+ov	Prot	Free
Protected Phases	5	2	6	4	4	
Permitted Phases	2			6		Free
Detector Phase	5	2	6	4	4	
Switch Phase						
Minimum Initial (s)	7.0	14.0	14.0	7.0	7.0	
Minimum Split (s)	13.0	20.8	20.8	12.1	12.1	
Total Split (s)	20.0	80.0	60.0	20.0	20.0	
Total Split (%)	20.0%	80.0%	60.0%	20.0%	20.0%	
Maximum Green (s)	14.0	73.2	53.2	14.9	14.9	
Yellow Time (s)	3.1	5.4	5.4	3.1	3.1	
All-Red Time (s)	2.9	1.4	1.4	2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.8	-1.8	-0.1	-0.1	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	1.0	6.0	6.0	1.0	1.0	
Minimum Gap (s)	1.0	3.4	3.4	1.0	1.0	
Time Before Reduce (s)	0.0	15.0	15.0	0.0	0.0	
Time To Reduce (s)	0.0	30.0	30.0	0.0	0.0	
Recall Mode	None	Min	Min	None	None	
Act Effect Green (s)	75.0	75.0	55.0	75.0	15.0	100.0
Actuated g/C Ratio	0.75	0.75	0.55	0.75	0.15	1.00
v/c Ratio	1.23	0.75	1.23	0.19	1.39	0.50
Control Delay	156.7	11.3	135.2	4.1	230.8	1.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	156.7	11.3	135.2	4.1	230.8	1.1

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
LOS	F	B	F	A	F	A
Approach Delay		53.2	114.9		74.0	
Approach LOS		D	F		E	
Queue Length 50th (ft)	~283	312	~993	36	~314	0
Queue Length 95th (ft)	#475	470	#1246	58	#491	0
Internal Link Dist (ft)		467	1304		1179	
Turn Bay Length (ft)	300			200		175
Base Capacity (vph)	341	1397	1024	1187	265	1583
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	1.23	0.75	1.23	0.19	1.39	0.50

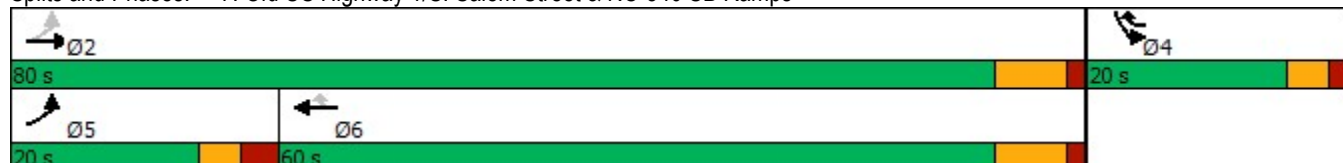
Intersection Summary

Area Type: Other
 Cycle Length: 100
 Actuated Cycle Length: 100
 Natural Cycle: 150
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 1.39
 Intersection Signal Delay: 81.4
 Intersection Capacity Utilization 111.4%
 Analysis Period (min) 15

Intersection LOS: F
 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: Old US Highway 1/S. Salem Street & NC-540 SB Ramps















Lanes, Volumes, Timings

Combined (2028) AM - Full Buildout - with Improvements

7: Old US Highway 1/S. Salem Street & NC-540 SB Ramps

12/24/2019

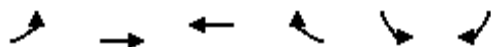
						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	353	1271	805	262	141	261
Future Volume (vph)	353	1271	805	262	141	261
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	300			200	0	375
Storage Lanes	1			2	1	1
Taper Length (ft)	100				100	
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	1.00
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1863	3539	1583	1770	1583
Flt Permitted	0.258				0.950	
Satd. Flow (perm)	481	1863	3539	1583	1770	1583
Right Turn on Red				No		No
Satd. Flow (RTOR)						
Link Speed (mph)		55	55		25	
Link Distance (ft)		547	1384		1259	
Travel Time (s)		6.8	17.2		34.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	392	1412	894	291	157	290
Shared Lane Traffic (%)						
Lane Group Flow (vph)	392	1412	894	291	157	290
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	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)	15			9	15	9
Number of Detectors	1	1	1	0	1	1
Detector Template						
Leading Detector (ft)	40	426	426	0	40	40
Trailing Detector (ft)	0	420	420	0	0	0
Detector 1 Position(ft)	0	420	420	0	0	0
Detector 1 Size(ft)	40	6	6	20	40	40
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)	15.0	0.0	0.0	0.0	0.0	15.0
Turn Type	pm+pt	NA	NA	pm+ov	Prot	pm+ov
Protected Phases	5	2	6	4	4	5
Permitted Phases	2			6		4
Detector Phase	5	2	6	4	4	5
Switch Phase						
Minimum Initial (s)	7.0	14.0	14.0	7.0	7.0	7.0
Minimum Split (s)	13.0	20.8	20.8	12.1	12.1	13.0
Total Split (s)	27.0	93.0	66.0	17.0	17.0	27.0

Lanes, Volumes, Timings

Combined (2028) AM - Full Buildout - with Improvements

7: Old US Highway 1/S. Salem Street & NC-540 SB Ramps

12/24/2019



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Total Split (%)	24.5%	84.5%	60.0%	15.5%	15.5%	24.5%
Maximum Green (s)	21.0	86.2	59.2	11.9	11.9	21.0
Yellow Time (s)	3.1	5.4	5.4	3.1	3.1	3.1
All-Red Time (s)	2.9	1.4	1.4	2.0	2.0	2.9
Lost Time Adjust (s)	-1.0	-1.8	-1.8	-0.1	-0.1	-1.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead		Lag		Lead	
Lead-Lag Optimize?	Yes		Yes		Yes	
Vehicle Extension (s)	1.0	6.0	6.0	1.0	1.0	1.0
Minimum Gap (s)	1.0	3.4	3.4	1.0	1.0	1.0
Time Before Reduce (s)	0.0	15.0	15.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	30.0	30.0	0.0	0.0	0.0
Recall Mode	None	C-Min	Min	None	None	None
Act Effct Green (s)	88.6	88.6	70.0	86.4	11.4	30.0
Actuated g/C Ratio	0.81	0.81	0.64	0.79	0.10	0.27
v/c Ratio	0.72	0.94	0.40	0.23	0.86	0.67
Control Delay	11.8	23.3	9.7	7.3	86.8	43.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.8	23.3	9.7	7.3	86.8	43.0
LOS	B	C	A	A	F	D
Approach Delay		20.8	9.1		58.4	
Approach LOS		C	A		E	
Queue Length 50th (ft)	56	649	176	80	110	183
Queue Length 95th (ft)	107	#1243	m263	m136	#223	249
Internal Link Dist (ft)		467	1304		1179	
Turn Bay Length (ft)	300			200		375
Base Capacity (vph)	645	1501	2252	1252	193	552
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	0.61	0.94	0.40	0.23	0.81	0.53

Intersection Summary

Area Type: Other
 Cycle Length: 110
 Actuated Cycle Length: 110
 Offset: 0 (0%), Referenced to phase 2:EBTL, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.94
 Intersection Signal Delay: 21.7
 Intersection Capacity Utilization 83.0%
 Analysis Period (min) 15
 Intersection LOS: C
 ICU Level of Service E

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 7: Old US Highway 1/S. Salem Street & NC-540 SB Ramps















Lanes, Volumes, Timings

Combined (2028) PM - Full Buildout - with Improvements

7: Old US Highway 1/S. Salem Street & NC-540 SB Ramps

12/24/2019

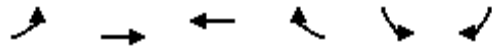
						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	379	937	1131	207	331	713
Future Volume (vph)	379	937	1131	207	331	713
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	300			200	0	375
Storage Lanes	1			2	1	1
Taper Length (ft)	100				100	
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	1.00
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1863	3539	1583	1770	1583
Flt Permitted	0.095				0.950	
Satd. Flow (perm)	177	1863	3539	1583	1770	1583
Right Turn on Red				No		No
Satd. Flow (RTOR)						
Link Speed (mph)		55	55		25	
Link Distance (ft)		547	1384		1259	
Travel Time (s)		6.8	17.2		34.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	421	1041	1257	230	368	792
Shared Lane Traffic (%)						
Lane Group Flow (vph)	421	1041	1257	230	368	792
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	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)	15			9	15	9
Number of Detectors	1	1	1	0	1	1
Detector Template						
Leading Detector (ft)	40	426	426	0	40	40
Trailing Detector (ft)	0	420	420	0	0	0
Detector 1 Position(ft)	0	420	420	0	0	0
Detector 1 Size(ft)	40	6	6	20	40	40
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)	15.0	0.0	0.0	0.0	0.0	15.0
Turn Type	pm+pt	NA	NA	pm+ov	Prot	pm+ov
Protected Phases	5	2	6	4	4	5
Permitted Phases	2			6		4
Detector Phase	5	2	6	4	4	5
Switch Phase						
Minimum Initial (s)	7.0	14.0	14.0	7.0	7.0	7.0
Minimum Split (s)	13.0	20.8	20.8	12.1	12.1	13.0
Total Split (s)	30.0	73.0	43.0	27.0	27.0	30.0

Lanes, Volumes, Timings

Combined (2028) PM - Full Buildout - with Improvements

7: Old US Highway 1/S. Salem Street & NC-540 SB Ramps

12/24/2019



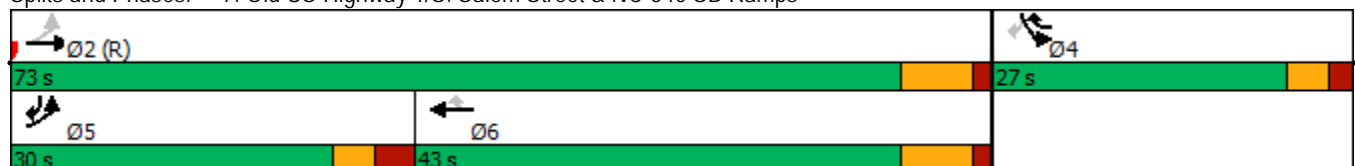
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Total Split (%)	30.0%	73.0%	43.0%	27.0%	27.0%	30.0%
Maximum Green (s)	24.0	66.2	36.2	21.9	21.9	24.0
Yellow Time (s)	3.1	5.4	5.4	3.1	3.1	3.1
All-Red Time (s)	2.9	1.4	1.4	2.0	2.0	2.9
Lost Time Adjust (s)	-1.0	-1.8	-1.8	-0.1	-0.1	-1.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead		Lag			Lead
Lead-Lag Optimize?	Yes		Yes			Yes
Vehicle Extension (s)	1.0	6.0	6.0	1.0	1.0	1.0
Minimum Gap (s)	1.0	3.4	3.4	1.0	1.0	1.0
Time Before Reduce (s)	0.0	15.0	15.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	30.0	30.0	0.0	0.0	0.0
Recall Mode	None	C-Min	Min	None	None	None
Act Effect Green (s)	68.4	68.4	37.7	64.3	21.6	52.3
Actuated g/C Ratio	0.68	0.68	0.38	0.64	0.22	0.52
v/c Ratio	0.80	0.82	0.94	0.23	0.96	0.96
Control Delay	36.2	18.3	32.6	5.6	77.8	47.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.2	18.3	32.6	5.6	77.8	47.0
LOS	D	B	C	A	E	D
Approach Delay		23.5	28.4		56.8	
Approach LOS		C	C		E	
Queue Length 50th (ft)	195	427	363	30	232	463
Queue Length 95th (ft)	#352	643	m396	m40	#409	#736
Internal Link Dist (ft)		467	1304		1179	
Turn Bay Length (ft)	300			200		375
Base Capacity (vph)	529	1274	1344	1024	389	827
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	0.80	0.82	0.94	0.22	0.95	0.96

Intersection Summary

Area Type: Other
 Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 0 (0%), Referenced to phase 2:EBTL, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.96
 Intersection Signal Delay: 34.7
 Intersection Capacity Utilization 83.7%
 Analysis Period (min) 15
 Intersection LOS: C
 ICU Level of Service E

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 7: Old US Highway 1/S. Salem Street & NC-540 SB Ramps



APPENDIX H

CAPACITY ANALYSIS CALCULATIONS

S. SALEM STREET

&

KELLY ROAD

Intersection

Int Delay, s/veh	14.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↘	↑	↗		↘	↗
Traffic Vol, veh/h	224	671	294	35	88	51
Future Vol, veh/h	224	671	294	35	88	51
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	525	-	-	-	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	249	746	327	39	98	57

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	366	0	-	0	1591 347
Stage 1	-	-	-	-	347 -
Stage 2	-	-	-	-	1244 -
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	1193	-	-	-	118 696
Stage 1	-	-	-	-	716 -
Stage 2	-	-	-	-	272 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1193	-	-	-	~ 93 696
Mov Cap-2 Maneuver	-	-	-	-	~ 93 -
Stage 1	-	-	-	-	566 -
Stage 2	-	-	-	-	272 -

Approach	EB	WB	SB
HCM Control Delay, s	2.2	0	124.9
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1193	-	-	-	93	696
HCM Lane V/C Ratio	0.209	-	-	-	1.051	0.081
HCM Control Delay (s)	8.8	-	-	-	191.1	10.6
HCM Lane LOS	A	-	-	-	F	B
HCM 95th %tile Q(veh)	0.8	-	-	-	6.4	0.3

Notes

~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection

Int Delay, s/veh 5.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↘	↑	↗		↘	↗
Traffic Vol, veh/h	57	285	595	119	60	190
Future Vol, veh/h	57	285	595	119	60	190
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	525	-	-	-	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	63	317	661	132	67	211

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	793	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	828	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	828	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	1.6	0	24.2
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	828	-	-	-	197	424
HCM Lane V/C Ratio	0.076	-	-	-	0.338	0.498
HCM Control Delay (s)	9.7	-	-	-	32.3	21.6
HCM Lane LOS	A	-	-	-	D	C
HCM 95th %tile Q(veh)	0.2	-	-	-	1.4	2.7

Intersection

Int Delay, s/veh 1.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑↑	↑		↑
Traffic Vol, veh/h	0	1441	782	177	0	237
Future Vol, veh/h	0	1441	782	177	0	237
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	-	-
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	0	1601	869	197	0	263

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	-	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	-
Pot Cap-1 Maneuver	0	-	0
Stage 1	0	-	0
Stage 2	0	-	0
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	16.6
HCM LOS			C

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	570
HCM Lane V/C Ratio	-	-	-	0.462
HCM Control Delay (s)	-	-	-	16.6
HCM Lane LOS	-	-	-	C
HCM 95th %tile Q(veh)	-	-	-	2.4

Intersection

Int Delay, s/veh 12.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑↑	↑		↑
Traffic Vol, veh/h	0	1241	1385	273	0	342
Future Vol, veh/h	0	1241	1385	273	0	342
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	-	-
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	0	1379	1539	303	0	380

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	-	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	-
Pot Cap-1 Maneuver	0	-	-
Stage 1	0	-	-
Stage 2	0	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	114.9
HCM LOS			F

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	344
HCM Lane V/C Ratio	-	-	-	1.105
HCM Control Delay (s)	-	-	-	114.9
HCM Lane LOS	-	-	-	F
HCM 95th %tile Q(veh)	-	-	-	14.4

Notes

~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection

Int Delay, s/veh 1.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑↑	↑		↑
Traffic Vol, veh/h	0	1526	815	181	0	243
Future Vol, veh/h	0	1526	815	181	0	243
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	-	-
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	0	1696	906	201	0	270

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	-	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	-
Pot Cap-1 Maneuver	0	-	0
Stage 1	0	-	0
Stage 2	0	-	0
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

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

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	555
HCM Lane V/C Ratio	-	-	-	0.486
HCM Control Delay (s)	-	-	-	17.5
HCM Lane LOS	-	-	-	C
HCM 95th %tile Q(veh)	-	-	-	2.6

Intersection

Int Delay, s/veh 15.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑↑	↑		↑
Traffic Vol, veh/h	0	1279	1451	286	0	353
Future Vol, veh/h	0	1279	1451	286	0	353
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	-	-
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	0	1421	1612	318	0	392

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	-	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	-
Pot Cap-1 Maneuver	0	-	-
Stage 1	0	-	-
Stage 2	0	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	151.6
HCM LOS			F

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	326
HCM Lane V/C Ratio	-	-	-	1.203
HCM Control Delay (s)	-	-	-	151.6
HCM Lane LOS	-	-	-	F
HCM 95th %tile Q(veh)	-	-	-	17

Notes

~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection

Int Delay, s/veh 1.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑↑	↑		↑
Traffic Vol, veh/h	0	1447	804	177	0	237
Future Vol, veh/h	0	1447	804	177	0	237
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	-	-
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	0	1608	893	197	0	263

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	-	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	-
Pot Cap-1 Maneuver	0	-	0
Stage 1	0	-	0
Stage 2	0	-	0
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	17
HCM LOS			C

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	560
HCM Lane V/C Ratio	-	-	-	0.47
HCM Control Delay (s)	-	-	-	17
HCM Lane LOS	-	-	-	C
HCM 95th %tile Q(veh)	-	-	-	2.5

Intersection

Int Delay, s/veh 12.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑↑	↑		↑
Traffic Vol, veh/h	0	1261	1397	273	0	342
Future Vol, veh/h	0	1261	1397	273	0	342
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	-	-
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	0	1401	1552	303	0	380

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	-	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	-
Pot Cap-1 Maneuver	0	-	-
Stage 1	0	-	-
Stage 2	0	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	118.5
HCM LOS			F

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	341
HCM Lane V/C Ratio	-	-	-	1.114
HCM Control Delay (s)	-	-	-	118.5
HCM Lane LOS	-	-	-	F
HCM 95th %tile Q(veh)	-	-	-	14.6

Notes

~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection

Int Delay, s/veh 1.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑↑	↑		↑
Traffic Vol, veh/h	0	1628	882	181	0	243
Future Vol, veh/h	0	1628	882	181	0	243
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	-	-
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	0	1809	980	201	0	270

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	-	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	-
Pot Cap-1 Maneuver	0	-	0
Stage 1	0	-	0
Stage 2	0	-	0
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	18.9
HCM LOS			C

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	525
HCM Lane V/C Ratio	-	-	-	0.514
HCM Control Delay (s)	-	-	-	18.9
HCM Lane LOS	-	-	-	C
HCM 95th %tile Q(veh)	-	-	-	2.9

Intersection

Int Delay, s/veh 20.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑↑	↑		↑
Traffic Vol, veh/h	0	1358	1562	286	0	353
Future Vol, veh/h	0	1358	1562	286	0	353
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	-	-
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	0	1509	1736	318	0	392

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	-	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	-
Pot Cap-1 Maneuver	0	-	-
Stage 1	0	-	-
Stage 2	0	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	202.6
HCM LOS			F

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	296
HCM Lane V/C Ratio	-	-	-	1.325
HCM Control Delay (s)	-	-	-	202.6
HCM Lane LOS	-	-	-	F
HCM 95th %tile Q(veh)	-	-	-	19.6

Notes

~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

APPENDIX I

CAPACITY ANALYSIS CALCULATIONS













KELLY ROAD

&

APEX BARBECUE ROAD

Lanes, Volumes, Timings
4: S. Salem Street & Apex Barbecue Road

Existing (2019) AM
12/16/2019

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	283	181	139	341	245	179
Future Volume (vph)	283	181	139	341	245	179
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	75	0	175			475
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)	1770	1583	1770	1863	1863	1583
Flt Permitted	0.950		0.371			
Satd. Flow (perm)	1770	1583	691	1863	1863	1583
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	45			55	55	
Link Distance (ft)	1302			4447	1058	
Travel Time (s)	19.7			55.1	13.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	314	201	154	379	272	199
Shared Lane Traffic (%)						
Lane Group Flow (vph)	314	201	154	379	272	199
Turn Type	Prot	pm+ov	pm+pt	NA	NA	pm+ov
Protected Phases	4	5	5	2	6	4
Permitted Phases		4	2			6
Detector Phase	4	5	5	2	6	4
Switch Phase						
Minimum Initial (s)	7.0	7.0	7.0	14.0	14.0	7.0
Minimum Split (s)	12.3	12.1	12.1	20.1	20.1	12.3
Total Split (s)	30.0	15.0	15.0	105.0	90.0	30.0
Total Split (%)	22.2%	11.1%	11.1%	77.8%	66.7%	22.2%
Maximum Green (s)	24.7	9.9	9.9	98.9	83.9	24.7
Yellow Time (s)	3.0	3.0	3.0	5.1	5.1	3.0
All-Red Time (s)	2.3	2.1	2.1	1.0	1.0	2.3
Lost Time Adjust (s)	-0.3	-0.1	-0.1	-1.1	-1.1	-0.3
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag		Lead	Lead		Lag	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	2.0	2.0	2.0	6.0	6.0	2.0
Minimum Gap (s)	2.0	2.0	2.0	3.4	3.4	2.0
Time Before Reduce (s)	0.0	0.0	0.0	15.0	15.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	45.0	45.0	0.0
Recall Mode	None	None	None	Min	Min	None
Act Effct Green (s)	17.6	31.5	29.5	29.5	15.7	38.3
Actuated g/C Ratio	0.31	0.55	0.52	0.52	0.27	0.67
v/c Ratio	0.58	0.23	0.29	0.39	0.53	0.19
Control Delay	22.0	7.5	9.1	10.0	22.6	4.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.0	7.5	9.1	10.0	22.6	4.2

Lanes, Volumes, Timings
 4: S. Salem Street & Apex Barbecue Road

Existing (2019) AM
 12/16/2019

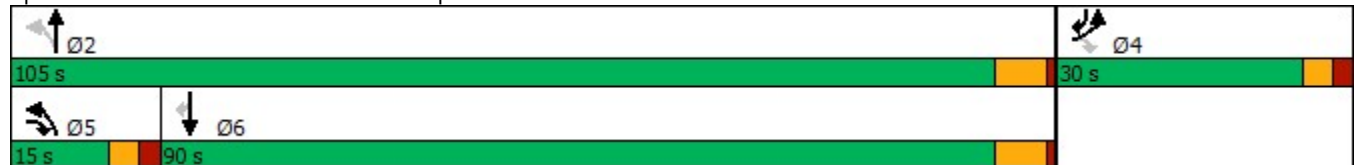
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
LOS	C	A	A	B	C	A
Approach Delay	16.4			9.8	14.8	
Approach LOS	B			A	B	
Queue Length 50th (ft)	88	31	26	72	79	21
Queue Length 95th (ft)	171	67	54	131	149	42
Internal Link Dist (ft)	1222			4367	978	
Turn Bay Length (ft)	75		175			475
Base Capacity (vph)	776	904	546	1863	1863	1268
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	0.40	0.22	0.28	0.20	0.15	0.16

Intersection Summary

Area Type: Other
 Cycle Length: 135
 Actuated Cycle Length: 57.2
 Natural Cycle: 55
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.58
 Intersection Signal Delay: 13.6
 Intersection Capacity Utilization 48.8%
 Analysis Period (min) 15













Intersection LOS: B
 ICU Level of Service A

Splits and Phases: 4: S. Salem Street & Apex Barbecue Road



Lanes, Volumes, Timings
4: S. Salem Street & Apex Barbecue Road

Existing (2019) PM
12/16/2019

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	226	76	74	325	265	232
Future Volume (vph)	226	76	74	325	265	232
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	75	0	175			475
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)	1770	1583	1770	1863	1863	1583
Flt Permitted	0.950		0.397			
Satd. Flow (perm)	1770	1583	740	1863	1863	1583
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	45			55	55	
Link Distance (ft)	1302			4447	1058	
Travel Time (s)	19.7			55.1	13.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	251	84	82	361	294	258
Shared Lane Traffic (%)						
Lane Group Flow (vph)	251	84	82	361	294	258
Turn Type	Prot	pm+ov	pm+pt	NA	NA	pm+ov
Protected Phases	4	5	5	2	6	4
Permitted Phases		4	2			6
Detector Phase	4	5	5	2	6	4
Switch Phase						
Minimum Initial (s)	7.0	7.0	7.0	14.0	14.0	7.0
Minimum Split (s)	12.3	12.1	12.1	20.1	20.1	12.3
Total Split (s)	30.0	15.0	15.0	105.0	90.0	30.0
Total Split (%)	22.2%	11.1%	11.1%	77.8%	66.7%	22.2%
Maximum Green (s)	24.7	9.9	9.9	98.9	83.9	24.7
Yellow Time (s)	3.0	3.0	3.0	5.1	5.1	3.0
All-Red Time (s)	2.3	2.1	2.1	1.0	1.0	2.3
Lost Time Adjust (s)	-0.3	-0.1	-0.1	-1.1	-1.1	-0.3
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag		Lead	Lead		Lag	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	2.0	2.0	2.0	6.0	6.0	2.0
Minimum Gap (s)	2.0	2.0	2.0	3.4	3.4	2.0
Time Before Reduce (s)	0.0	0.0	0.0	15.0	15.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	45.0	45.0	0.0
Recall Mode	None	None	None	Min	Min	None
Act Effct Green (s)	12.2	25.1	25.7	25.7	16.3	35.1
Actuated g/C Ratio	0.25	0.52	0.53	0.53	0.34	0.73
v/c Ratio	0.56	0.10	0.15	0.36	0.47	0.22
Control Delay	22.5	7.5	6.4	7.9	17.5	4.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.5	7.5	6.4	7.9	17.5	4.0

Lanes, Volumes, Timings
 4: S. Salem Street & Apex Barbecue Road

Existing (2019) PM
 12/16/2019

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
LOS	C	A	A	A	B	A
Approach Delay	18.7			7.6	11.2	
Approach LOS	B			A	B	
Queue Length 50th (ft)	63	12	10	50	68	24
Queue Length 95th (ft)	135	32	28	107	145	50
Internal Link Dist (ft)	1222			4367	978	
Turn Bay Length (ft)	75		175			475
Base Capacity (vph)	946	908	614	1863	1863	1447
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	0.27	0.09	0.13	0.19	0.16	0.18

Intersection Summary

Area Type: Other
 Cycle Length: 135
 Actuated Cycle Length: 48.3
 Natural Cycle: 50
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.56
 Intersection Signal Delay: 11.9
 Intersection Capacity Utilization 44.8%
 Analysis Period (min) 15













Intersection LOS: B
 ICU Level of Service A

Splits and Phases: 4: S. Salem Street & Apex Barbecue Road



Lanes, Volumes, Timings
4: S. Salem Street & Apex Barbecue Road

Background (2025) AM
12/19/2019

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	338	216	166	541	486	214
Future Volume (vph)	338	216	166	541	486	214
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	75	0	175			475
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)	1770	1583	1770	1863	1863	1583
Flt Permitted	0.950		0.139			
Satd. Flow (perm)	1770	1583	259	1863	1863	1583
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	45			55	55	
Link Distance (ft)	1302			4447	1058	
Travel Time (s)	19.7			55.1	13.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	376	240	184	601	540	238
Shared Lane Traffic (%)						
Lane Group Flow (vph)	376	240	184	601	540	238
Turn Type	Prot	pm+ov	pm+pt	NA	NA	pm+ov
Protected Phases	4	5	5	2	6	4
Permitted Phases		4	2			6
Detector Phase	4	5	5	2	6	4
Switch Phase						
Minimum Initial (s)	7.0	7.0	7.0	14.0	14.0	7.0
Minimum Split (s)	12.3	12.1	12.1	20.1	20.1	12.3
Total Split (s)	30.0	15.0	15.0	105.0	90.0	30.0
Total Split (%)	22.2%	11.1%	11.1%	77.8%	66.7%	22.2%
Maximum Green (s)	24.7	9.9	9.9	98.9	83.9	24.7
Yellow Time (s)	3.0	3.0	3.0	5.1	5.1	3.0
All-Red Time (s)	2.3	2.1	2.1	1.0	1.0	2.3
Lost Time Adjust (s)	-0.3	-0.1	-0.1	-1.1	-1.1	-0.3
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag		Lead	Lead		Lag	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	2.0	2.0	2.0	6.0	6.0	2.0
Minimum Gap (s)	2.0	2.0	2.0	3.4	3.4	2.0
Time Before Reduce (s)	0.0	0.0	0.0	15.0	15.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	45.0	45.0	0.0
Recall Mode	None	None	None	Min	Min	None
Act Effct Green (s)	25.2	39.5	40.6	40.6	26.3	56.5
Actuated g/C Ratio	0.33	0.52	0.53	0.53	0.35	0.74
v/c Ratio	0.64	0.29	0.57	0.60	0.84	0.20
Control Delay	29.5	12.9	17.2	14.7	35.2	3.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.5	12.9	17.2	14.7	35.2	3.4
LOS	C	B	B	B	D	A
Approach Delay	23.0			15.3	25.5	
Approach LOS	C			B	C	
Queue Length 50th (ft)	152	60	41	179	233	27

Lanes, Volumes, Timings
 4: S. Salem Street & Apex Barbecue Road

Background (2025) AM
 12/19/2019

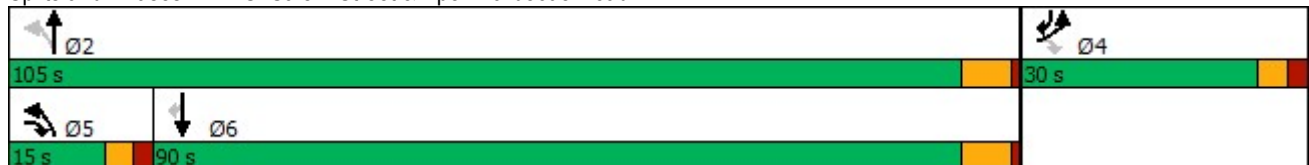
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Queue Length 95th (ft)	#294	132	84	268	349	46
Internal Link Dist (ft)	1222			4367	978	
Turn Bay Length (ft)	75		175			475
Base Capacity (vph)	587	841	339	1863	1858	1179
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.64	0.29	0.54	0.32	0.29	0.20

Intersection Summary

Area Type: Other
 Cycle Length: 135
 Actuated Cycle Length: 75.9
 Natural Cycle: 60
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.84
 Intersection Signal Delay: 21.1
 Intersection Capacity Utilization 66.0%
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.













Intersection LOS: C
 ICU Level of Service C

Splits and Phases: 4: S. Salem Street & Apex Barbecue Road



Lanes, Volumes, Timings
4: S. Salem Street & Apex Barbecue Road

Background (2025) PM
12/19/2019

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	270	96	94	701	584	277
Future Volume (vph)	270	96	94	701	584	277
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	75	0	175			475
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)	1770	1583	1770	1863	1863	1583
Flt Permitted	0.950		0.143			
Satd. Flow (perm)	1770	1583	266	1863	1863	1583
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	45			55	55	
Link Distance (ft)	1302			4447	1058	
Travel Time (s)	19.7			55.1	13.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	300	107	104	779	649	308
Shared Lane Traffic (%)						
Lane Group Flow (vph)	300	107	104	779	649	308
Turn Type	Prot	pm+ov	pm+pt	NA	NA	pm+ov
Protected Phases	4	5	5	2	6	4
Permitted Phases		4	2			6
Detector Phase	4	5	5	2	6	4
Switch Phase						
Minimum Initial (s)	7.0	7.0	7.0	14.0	14.0	7.0
Minimum Split (s)	12.3	12.1	12.1	20.1	20.1	12.3
Total Split (s)	30.0	15.0	15.0	105.0	90.0	30.0
Total Split (%)	22.2%	11.1%	11.1%	77.8%	66.7%	22.2%
Maximum Green (s)	24.7	9.9	9.9	98.9	83.9	24.7
Yellow Time (s)	3.0	3.0	3.0	5.1	5.1	3.0
All-Red Time (s)	2.3	2.1	2.1	1.0	1.0	2.3
Lost Time Adjust (s)	-0.3	-0.1	-0.1	-1.1	-1.1	-0.3
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag		Lead	Lead		Lag	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	2.0	2.0	2.0	6.0	6.0	2.0
Minimum Gap (s)	2.0	2.0	2.0	3.4	3.4	2.0
Time Before Reduce (s)	0.0	0.0	0.0	15.0	15.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	45.0	45.0	0.0
Recall Mode	None	None	None	Min	Min	None
Act Effct Green (s)	19.7	32.9	45.7	45.7	32.5	57.3
Actuated g/C Ratio	0.26	0.43	0.60	0.60	0.43	0.76
v/c Ratio	0.65	0.16	0.33	0.69	0.81	0.26
Control Delay	34.2	15.7	9.4	14.4	28.4	3.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.2	15.7	9.4	14.4	28.4	3.2

Lanes, Volumes, Timings
 4: S. Salem Street & Apex Barbecue Road

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
LOS	C	B	A	B	C	A
Approach Delay	29.4			13.8	20.3	
Approach LOS	C			B	C	
Queue Length 50th (ft)	121	28	18	222	252	31
Queue Length 95th (ft)	254	75	42	395	441	58
Internal Link Dist (ft)	1222			4367	978	
Turn Bay Length (ft)	75		175			475
Base Capacity (vph)	602	734	365	1863	1821	1326
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	0.50	0.15	0.28	0.42	0.36	0.23

Intersection Summary

Area Type: Other
 Cycle Length: 135
 Actuated Cycle Length: 75.7
 Natural Cycle: 60
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.81
 Intersection Signal Delay: 19.4
 Intersection Capacity Utilization 64.0%
 Analysis Period (min) 15













Intersection LOS: B
 ICU Level of Service C

Splits and Phases: 4: S. Salem Street & Apex Barbecue Road



Lanes, Volumes, Timings
4: S. Salem Street & Apex Barbecue Road

Background (2028) AM
12/19/2019

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	369	236	181	579	513	234
Future Volume (vph)	369	236	181	579	513	234
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	75	0	175			475
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)	1770	1583	1770	1863	1863	1583
Flt Permitted	0.950		0.129			
Satd. Flow (perm)	1770	1583	240	1863	1863	1583
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	45			55	55	
Link Distance (ft)	1302			4447	1058	
Travel Time (s)	19.7			55.1	13.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	410	262	201	643	570	260
Shared Lane Traffic (%)						
Lane Group Flow (vph)	410	262	201	643	570	260
Turn Type	Prot	pm+ov	pm+pt	NA	NA	pm+ov
Protected Phases	4	5	5	2	6	4
Permitted Phases		4	2			6
Detector Phase	4	5	5	2	6	4
Switch Phase						
Minimum Initial (s)	7.0	7.0	7.0	14.0	14.0	7.0
Minimum Split (s)	12.3	12.1	12.1	20.1	20.1	12.3
Total Split (s)	30.0	15.0	15.0	105.0	90.0	30.0
Total Split (%)	22.2%	11.1%	11.1%	77.8%	66.7%	22.2%
Maximum Green (s)	24.7	9.9	9.9	98.9	83.9	24.7
Yellow Time (s)	3.0	3.0	3.0	5.1	5.1	3.0
All-Red Time (s)	2.3	2.1	2.1	1.0	1.0	2.3
Lost Time Adjust (s)	-0.3	-0.1	-0.1	-1.1	-1.1	-0.3
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag		Lead	Lead		Lag	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	2.0	2.0	2.0	6.0	6.0	2.0
Minimum Gap (s)	2.0	2.0	2.0	3.4	3.4	2.0
Time Before Reduce (s)	0.0	0.0	0.0	15.0	15.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	45.0	45.0	0.0
Recall Mode	None	None	None	Min	Min	None
Act Effct Green (s)	25.3	39.8	42.8	42.8	28.3	58.6
Actuated g/C Ratio	0.32	0.51	0.55	0.55	0.36	0.75
v/c Ratio	0.72	0.33	0.64	0.63	0.85	0.22
Control Delay	34.1	14.3	20.9	15.1	35.3	3.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.1	14.3	20.9	15.1	35.3	3.4

Lanes, Volumes, Timings
 4: S. Salem Street & Apex Barbecue Road

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
LOS	C	B	C	B	D	A
Approach Delay	26.4			16.5	25.3	
Approach LOS	C			B	C	
Queue Length 50th (ft)	176	71	46	198	251	30
Queue Length 95th (ft)	#372	156	105	293	373	50
Internal Link Dist (ft)	1222			4367	978	
Turn Bay Length (ft)	75		175			475
Base Capacity (vph)	571	818	329	1863	1843	1186
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	0.72	0.32	0.61	0.35	0.31	0.22

Intersection Summary

Area Type: Other
 Cycle Length: 135
 Actuated Cycle Length: 78.2
 Natural Cycle: 65
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.85
 Intersection Signal Delay: 22.4
 Intersection Capacity Utilization 70.0%
 Analysis Period (min) 15
 Intersection LOS: C
 ICU Level of Service C













95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 4: S. Salem Street & Apex Barbecue Road



Lanes, Volumes, Timings
4: S. Salem Street & Apex Barbecue Road

Background (2028) PM
12/19/2019

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	295	104	103	737	614	303
Future Volume (vph)	295	104	103	737	614	303
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	75	0	175			475
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)	1770	1583	1770	1863	1863	1583
Flt Permitted	0.950		0.107			
Satd. Flow (perm)	1770	1583	199	1863	1863	1583
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	45			55	55	
Link Distance (ft)	1302			4447	1058	
Travel Time (s)	19.7			55.1	13.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	328	116	114	819	682	337
Shared Lane Traffic (%)						
Lane Group Flow (vph)	328	116	114	819	682	337
Turn Type	Prot	pm+ov	pm+pt	NA	NA	pm+ov
Protected Phases	4	5	5	2	6	4
Permitted Phases		4	2			6
Detector Phase	4	5	5	2	6	4
Switch Phase						
Minimum Initial (s)	7.0	7.0	7.0	14.0	14.0	7.0
Minimum Split (s)	12.3	12.1	12.1	20.1	20.1	12.3
Total Split (s)	30.0	15.0	15.0	105.0	90.0	30.0
Total Split (%)	22.2%	11.1%	11.1%	77.8%	66.7%	22.2%
Maximum Green (s)	24.7	9.9	9.9	98.9	83.9	24.7
Yellow Time (s)	3.0	3.0	3.0	5.1	5.1	3.0
All-Red Time (s)	2.3	2.1	2.1	1.0	1.0	2.3
Lost Time Adjust (s)	-0.3	-0.1	-0.1	-1.1	-1.1	-0.3
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag		Lead	Lead		Lag	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	2.0	2.0	2.0	6.0	6.0	2.0
Minimum Gap (s)	2.0	2.0	2.0	3.4	3.4	2.0
Time Before Reduce (s)	0.0	0.0	0.0	15.0	15.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	45.0	45.0	0.0
Recall Mode	None	None	None	Min	Min	None
Act Effct Green (s)	24.0	37.3	48.3	48.3	35.0	64.2
Actuated g/C Ratio	0.29	0.45	0.59	0.59	0.42	0.78
v/c Ratio	0.64	0.16	0.42	0.75	0.86	0.27
Control Delay	34.4	16.4	12.0	17.5	33.7	3.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.4	16.4	12.0	17.5	33.7	3.2

Lanes, Volumes, Timings
 4: S. Salem Street & Apex Barbecue Road

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
LOS	C	B	B	B	C	A
Approach Delay	29.7			16.9	23.6	
Approach LOS	C			B	C	
Queue Length 50th (ft)	141	33	24	283	304	35
Queue Length 95th (ft)	#311	86	45	428	474	65
Internal Link Dist (ft)	1222			4367	978	
Turn Bay Length (ft)	75		175			475
Base Capacity (vph)	545	753	310	1863	1792	1257
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	0.60	0.15	0.37	0.44	0.38	0.27

Intersection Summary













Area Type: Other
 Cycle Length: 135
 Actuated Cycle Length: 82.5
 Natural Cycle: 65
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.86
 Intersection Signal Delay: 22.1
 Intersection Capacity Utilization 67.0%
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 4: S. Salem Street & Apex Barbecue Road









Lanes, Volumes, Timings
4: S. Salem Street & Apex Barbecue Road

Combined (2025) AM - Phase 1
12/20/2019

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	359	238	173	563	493	220
Future Volume (vph)	359	238	173	563	493	220
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	75	0	175			475
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)	1770	1583	1770	1863	1863	1583
Flt Permitted	0.950		0.137			
Satd. Flow (perm)	1770	1583	255	1863	1863	1583
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	45			55	55	
Link Distance (ft)	1302			1929	1058	
Travel Time (s)	19.7			23.9	13.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	399	264	192	626	548	244
Shared Lane Traffic (%)						
Lane Group Flow (vph)	399	264	192	626	548	244
Turn Type	Prot	pm+ov	pm+pt	NA	NA	pm+ov
Protected Phases	4	5	5	2	6	4
Permitted Phases		4	2			6
Detector Phase	4	5	5	2	6	4
Switch Phase						
Minimum Initial (s)	7.0	7.0	7.0	14.0	14.0	7.0
Minimum Split (s)	12.3	12.1	12.1	20.1	20.1	12.3
Total Split (s)	30.0	15.0	15.0	105.0	90.0	30.0
Total Split (%)	22.2%	11.1%	11.1%	77.8%	66.7%	22.2%
Maximum Green (s)	24.7	9.9	9.9	98.9	83.9	24.7
Yellow Time (s)	3.0	3.0	3.0	5.1	5.1	3.0
All-Red Time (s)	2.3	2.1	2.1	1.0	1.0	2.3
Lost Time Adjust (s)	-0.3	-0.1	-0.1	-1.1	-1.1	-0.3
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag		Lead	Lead		Lag	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	2.0	2.0	2.0	6.0	6.0	2.0
Minimum Gap (s)	2.0	2.0	2.0	3.4	3.4	2.0
Time Before Reduce (s)	0.0	0.0	0.0	15.0	15.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	45.0	45.0	0.0
Recall Mode	None	None	None	Min	Min	None
Act Effct Green (s)	25.2	39.6	41.2	41.2	26.8	57.1
Actuated g/C Ratio	0.33	0.52	0.54	0.54	0.35	0.75
v/c Ratio	0.68	0.32	0.60	0.62	0.84	0.21
Control Delay	31.5	13.5	18.5	15.2	35.3	3.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.5	13.5	18.5	15.2	35.3	3.4

Lanes, Volumes, Timings
 4: S. Salem Street & Apex Barbecue Road

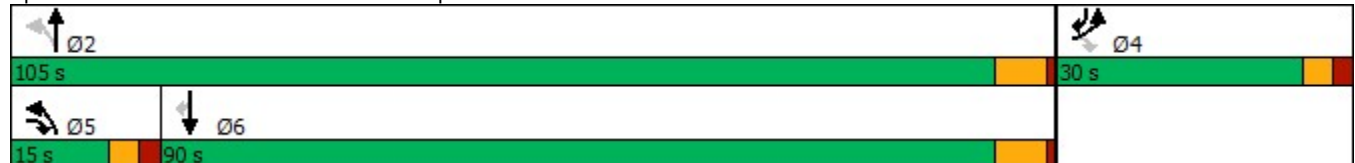
						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
LOS	C	B	B	B	D	A
Approach Delay	24.4			15.9	25.5	
Approach LOS	C			B	C	
Queue Length 50th (ft)	165	69	43	190	237	28
Queue Length 95th (ft)	#340	148	92	284	356	47
Internal Link Dist (ft)	1222			1849	978	
Turn Bay Length (ft)	75		175			475
Base Capacity (vph)	583	835	337	1863	1855	1181
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	0.68	0.32	0.57	0.34	0.30	0.21

Intersection Summary

Area Type: Other
 Cycle Length: 135
 Actuated Cycle Length: 76.5
 Natural Cycle: 60
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.84
 Intersection Signal Delay: 21.7
 Intersection Capacity Utilization 67.9%
 Analysis Period (min) 15
 Intersection LOS: C
 ICU Level of Service C













95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 4: S. Salem Street & Apex Barbecue Road



Lanes, Volumes, Timings
4: S. Salem Street & Apex Barbecue Road

Combined (2025) PM - Phase 1
12/20/2019

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	281	108	114	713	603	297
Future Volume (vph)	281	108	114	713	603	297
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	75	0	175			475
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)	1770	1583	1770	1863	1863	1583
Flt Permitted	0.950		0.126			
Satd. Flow (perm)	1770	1583	235	1863	1863	1583
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	45			55	55	
Link Distance (ft)	1302			1929	1058	
Travel Time (s)	19.7			23.9	13.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	312	120	127	792	670	330
Shared Lane Traffic (%)						
Lane Group Flow (vph)	312	120	127	792	670	330
Turn Type	Prot	pm+ov	pm+pt	NA	NA	pm+ov
Protected Phases	4	5	5	2	6	4
Permitted Phases		4	2			6
Detector Phase	4	5	5	2	6	4
Switch Phase						
Minimum Initial (s)	7.0	7.0	7.0	14.0	14.0	7.0
Minimum Split (s)	12.3	12.1	12.1	20.1	20.1	12.3
Total Split (s)	30.0	15.0	15.0	105.0	90.0	30.0
Total Split (%)	22.2%	11.1%	11.1%	77.8%	66.7%	22.2%
Maximum Green (s)	24.7	9.9	9.9	98.9	83.9	24.7
Yellow Time (s)	3.0	3.0	3.0	5.1	5.1	3.0
All-Red Time (s)	2.3	2.1	2.1	1.0	1.0	2.3
Lost Time Adjust (s)	-0.3	-0.1	-0.1	-1.1	-1.1	-0.3
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag		Lead	Lead		Lag	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	2.0	2.0	2.0	6.0	6.0	2.0
Minimum Gap (s)	2.0	2.0	2.0	3.4	3.4	2.0
Time Before Reduce (s)	0.0	0.0	0.0	15.0	15.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	45.0	45.0	0.0
Recall Mode	None	None	None	Min	Min	None
Act Effct Green (s)	21.4	35.0	47.9	47.9	34.3	60.8
Actuated g/C Ratio	0.27	0.44	0.60	0.60	0.43	0.76
v/c Ratio	0.66	0.17	0.42	0.71	0.83	0.27
Control Delay	35.3	16.4	11.1	15.2	30.6	3.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	35.3	16.4	11.1	15.2	30.6	3.3

Lanes, Volumes, Timings
 4: S. Salem Street & Apex Barbecue Road

Combined (2025) PM - Phase 1
 12/20/2019

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
LOS	D	B	B	B	C	A
Approach Delay	30.0			14.6	21.6	
Approach LOS	C			B	C	
Queue Length 50th (ft)	132	33	25	246	284	36
Queue Length 95th (ft)	274	87	49	404	462	63
Internal Link Dist (ft)	1222			1849	978	
Turn Bay Length (ft)	75		175			475
Base Capacity (vph)	571	731	339	1863	1798	1295
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	0.55	0.16	0.37	0.43	0.37	0.25

Intersection Summary

Area Type: Other
 Cycle Length: 135
 Actuated Cycle Length: 79.5
 Natural Cycle: 65
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.83
 Intersection Signal Delay: 20.4
 Intersection Capacity Utilization 66.1%
 Analysis Period (min) 15

Intersection LOS: C
 ICU Level of Service C













Splits and Phases: 4: S. Salem Street & Apex Barbecue Road



Lanes, Volumes, Timings
4: S. Salem Street & Apex Barbecue Road

Combined (2028) AM - Full Buildout

12/22/2019

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	421	325	212	655	676	247
Future Volume (vph)	421	325	212	655	676	247
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	75	0	175			475
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)	1770	1583	1770	1863	1863	1583
Flt Permitted	0.950		0.088			
Satd. Flow (perm)	1770	1583	164	1863	1863	1583
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	45			55	55	
Link Distance (ft)	397			334	1058	
Travel Time (s)	6.0			4.1	13.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	468	361	236	728	751	274
Shared Lane Traffic (%)						
Lane Group Flow (vph)	468	361	236	728	751	274
Turn Type	Prot	pm+ov	pm+pt	NA	NA	pm+ov
Protected Phases	4	5	5	2	6	4
Permitted Phases		4	2			6
Detector Phase	4	5	5	2	6	4
Switch Phase						
Minimum Initial (s)	7.0	7.0	7.0	14.0	14.0	7.0
Minimum Split (s)	12.3	12.1	12.1	20.1	20.1	12.3
Total Split (s)	30.0	15.0	15.0	105.0	90.0	30.0
Total Split (%)	22.2%	11.1%	11.1%	77.8%	66.7%	22.2%
Maximum Green (s)	24.7	9.9	9.9	98.9	83.9	24.7
Yellow Time (s)	3.0	3.0	3.0	5.1	5.1	3.0
All-Red Time (s)	2.3	2.1	2.1	1.0	1.0	2.3
Lost Time Adjust (s)	-0.3	-0.1	-0.1	-1.1	-1.1	-0.3
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag		Lead	Lead		Lag	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	2.0	2.0	2.0	6.0	6.0	2.0
Minimum Gap (s)	2.0	2.0	2.0	3.4	3.4	2.0
Time Before Reduce (s)	0.0	0.0	0.0	15.0	15.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	45.0	45.0	0.0
Recall Mode	None	None	None	Min	Min	None
Act Effct Green (s)	25.4	40.3	56.4	56.4	41.4	71.9
Actuated g/C Ratio	0.28	0.44	0.61	0.61	0.45	0.78
v/c Ratio	0.96	0.52	0.86	0.64	0.90	0.22
Control Delay	68.1	24.7	50.4	13.8	37.0	3.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.1	24.7	50.4	13.8	37.0	3.0

Lanes, Volumes, Timings
 4: S. Salem Street & Apex Barbecue Road

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
LOS	E	C	D	B	D	A
Approach Delay	49.2			22.7	27.9	
Approach LOS	D			C	C	
Queue Length 50th (ft)	268	148	82	241	385	32
Queue Length 95th (ft)	#588	308	#241	340	543	50
Internal Link Dist (ft)	317			254	978	
Turn Bay Length (ft)	75		175			475
Base Capacity (vph)	488	699	277	1832	1705	1237
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	0.96	0.52	0.85	0.40	0.44	0.22

Intersection Summary

Area Type: Other
 Cycle Length: 135
 Actuated Cycle Length: 91.9
 Natural Cycle: 80
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.96
 Intersection Signal Delay: 32.4
 Intersection Capacity Utilization 83.1%
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Intersection LOS: C
 ICU Level of Service E













Splits and Phases: 4: S. Salem Street & Apex Barbecue Road



Lanes, Volumes, Timings
4: S. Salem Street & Apex Barbecue Road

Combined (2028) PM - Full Buildout

12/22/2019

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	345	151	227	879	724	334
Future Volume (vph)	345	151	227	879	724	334
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	75	0	175			475
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)	1770	1583	1770	1863	1863	1583
Flt Permitted	0.950		0.079			
Satd. Flow (perm)	1770	1583	147	1863	1863	1583
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	45			55	55	
Link Distance (ft)	397			334	1058	
Travel Time (s)	6.0			4.1	13.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	383	168	252	977	804	371
Shared Lane Traffic (%)						
Lane Group Flow (vph)	383	168	252	977	804	371
Turn Type	Prot	pm+ov	pm+pt	NA	NA	pm+ov
Protected Phases	4	5	5	2	6	4
Permitted Phases		4	2			6
Detector Phase	4	5	5	2	6	4
Switch Phase						
Minimum Initial (s)	7.0	7.0	7.0	14.0	14.0	7.0
Minimum Split (s)	12.3	12.1	12.1	20.1	20.1	12.3
Total Split (s)	30.0	15.0	15.0	105.0	90.0	30.0
Total Split (%)	22.2%	11.1%	11.1%	77.8%	66.7%	22.2%
Maximum Green (s)	24.7	9.9	9.9	98.9	83.9	24.7
Yellow Time (s)	3.0	3.0	3.0	5.1	5.1	3.0
All-Red Time (s)	2.3	2.1	2.1	1.0	1.0	2.3
Lost Time Adjust (s)	-0.3	-0.1	-0.1	-1.1	-1.1	-0.3
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag		Lead	Lead		Lag	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	2.0	2.0	2.0	6.0	6.0	2.0
Minimum Gap (s)	2.0	2.0	2.0	3.4	3.4	2.0
Time Before Reduce (s)	0.0	0.0	0.0	15.0	15.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	45.0	45.0	0.0
Recall Mode	None	None	None	Min	Min	None
Act Effct Green (s)	25.5	40.4	61.5	61.5	46.5	77.1
Actuated g/C Ratio	0.26	0.42	0.63	0.63	0.48	0.79
v/c Ratio	0.83	0.26	0.98	0.83	0.90	0.30
Control Delay	52.8	23.1	76.9	20.4	36.8	3.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.8	23.1	76.9	20.4	36.8	3.2

Lanes, Volumes, Timings
 4: S. Salem Street & Apex Barbecue Road

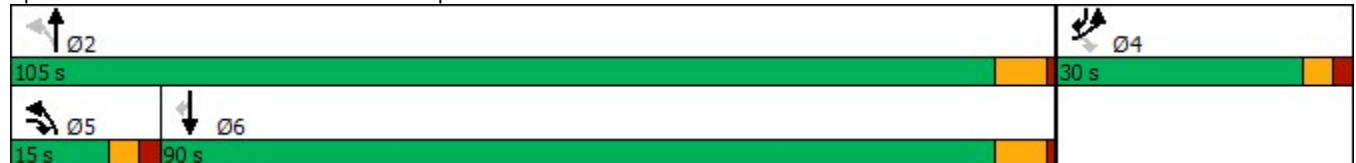
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
LOS	D	C	E	C	D	A
Approach Delay	43.7			32.0	26.2	
Approach LOS	D			C	C	
Queue Length 50th (ft)	221	65	103	414	432	47
Queue Length 95th (ft)	#499	152	#302	587	600	69
Internal Link Dist (ft)	317			254	978	
Turn Bay Length (ft)	75		175			475
Base Capacity (vph)	463	663	263	1795	1634	1256
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	0.83	0.25	0.96	0.54	0.49	0.30

Intersection Summary

Area Type: Other
 Cycle Length: 135
 Actuated Cycle Length: 97.1
 Natural Cycle: 80
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.98
 Intersection Signal Delay: 31.9
 Intersection Capacity Utilization 82.3%
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Intersection LOS: C
 ICU Level of Service E

Splits and Phases: 4: S. Salem Street & Apex Barbecue Road















Lanes, Volumes, Timings

Combined (2028) AM - Full Buildout - with Improvements

4: S. Salem Street & Apex Barbecue Road

12/23/2019

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	421	325	212	655	676	247
Future Volume (vph)	421	325	212	655	676	247
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	375	0	275			475
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)	1770	1583	1770	1863	1863	1583
Flt Permitted	0.950		0.088			
Satd. Flow (perm)	1770	1583	164	1863	1863	1583
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	45			55	55	
Link Distance (ft)	397			334	1058	
Travel Time (s)	6.0			4.1	13.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	468	361	236	728	751	274
Shared Lane Traffic (%)						
Lane Group Flow (vph)	468	361	236	728	751	274
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)	15	9	15			9
Number of Detectors	1	1	1	1	1	0
Detector Template						
Leading Detector (ft)	40	40	40	426	426	0
Trailing Detector (ft)	0	0	0	420	420	0
Detector 1 Position(ft)	0	0	0	420	420	0
Detector 1 Size(ft)	40	40	40	6	6	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)	3.0	10.0	15.0	0.0	0.0	0.0
Turn Type	Prot	pm+ov	pm+pt	NA	NA	pm+ov
Protected Phases	4	5	5	2	6	4
Permitted Phases		4	2			6
Detector Phase	4	5	5	2	6	4
Switch Phase						
Minimum Initial (s)	7.0	7.0	7.0	14.0	14.0	7.0
Minimum Split (s)	12.3	12.1	12.1	20.1	20.1	12.3
Total Split (s)	30.0	15.0	15.0	105.0	90.0	30.0



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Total Split (%)	22.2%	11.1%	11.1%	77.8%	66.7%	22.2%
Maximum Green (s)	24.7	9.9	9.9	98.9	83.9	24.7
Yellow Time (s)	3.0	3.0	3.0	5.1	5.1	3.0
All-Red Time (s)	2.3	2.1	2.1	1.0	1.0	2.3
Lost Time Adjust (s)	-0.3	-0.1	-0.1	-1.1	-1.1	-0.3
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag		Lead	Lead		Lag	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	2.0	2.0	2.0	6.0	6.0	2.0
Minimum Gap (s)	2.0	2.0	2.0	3.4	3.4	2.0
Time Before Reduce (s)	0.0	0.0	0.0	15.0	15.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	45.0	45.0	0.0
Recall Mode	None	None	None	Min	Min	None
Act Effct Green (s)	25.4	40.3	56.4	56.4	41.4	71.9
Actuated g/C Ratio	0.28	0.44	0.61	0.61	0.45	0.78
v/c Ratio	0.96	0.52	0.86	0.64	0.90	0.22
Control Delay	68.1	24.7	50.4	13.8	37.0	3.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.1	24.7	50.4	13.8	37.0	3.0
LOS	E	C	D	B	D	A
Approach Delay	49.2			22.7	27.9	
Approach LOS	D			C	C	
Queue Length 50th (ft)	268	148	82	241	385	32
Queue Length 95th (ft)	#588	308	#241	340	543	50
Internal Link Dist (ft)	317			254	978	
Turn Bay Length (ft)	375		275			475
Base Capacity (vph)	488	699	277	1832	1705	1237
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	0.96	0.52	0.85	0.40	0.44	0.22

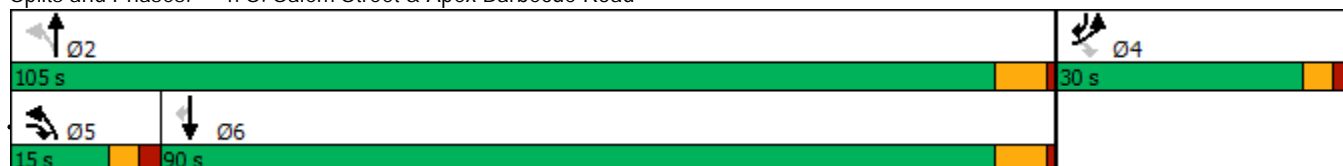
Intersection Summary

Area Type: Other
 Cycle Length: 135
 Actuated Cycle Length: 91.9
 Natural Cycle: 80
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.96
 Intersection Signal Delay: 32.4
 Intersection Capacity Utilization 83.1%
 Analysis Period (min) 15

Intersection LOS: C
 ICU Level of Service E

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 4: S. Salem Street & Apex Barbecue Road















Lanes, Volumes, Timings

Combined (2028) PM - Full Buildout - with Improvements

4: S. Salem Street & Apex Barbecue Road

12/23/2019

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	345	151	227	879	724	334
Future Volume (vph)	345	151	227	879	724	334
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	375	0	300			475
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)	1770	1583	1770	1863	1863	1583
Flt Permitted	0.950		0.079			
Satd. Flow (perm)	1770	1583	147	1863	1863	1583
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	45			55	55	
Link Distance (ft)	397			334	1058	
Travel Time (s)	6.0			4.1	13.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	383	168	252	977	804	371
Shared Lane Traffic (%)						
Lane Group Flow (vph)	383	168	252	977	804	371
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)	15	9	15			9
Number of Detectors	1	1	1	1	1	0
Detector Template						
Leading Detector (ft)	40	40	40	426	426	0
Trailing Detector (ft)	0	0	0	420	420	0
Detector 1 Position(ft)	0	0	0	420	420	0
Detector 1 Size(ft)	40	40	40	6	6	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)	3.0	10.0	15.0	0.0	0.0	0.0
Turn Type	Prot	pm+ov	pm+pt	NA	NA	pm+ov
Protected Phases	4	5	5	2	6	4
Permitted Phases		4	2			6
Detector Phase	4	5	5	2	6	4
Switch Phase						
Minimum Initial (s)	7.0	7.0	7.0	14.0	14.0	7.0
Minimum Split (s)	12.3	12.1	12.1	20.1	20.1	12.3
Total Split (s)	30.0	15.0	15.0	105.0	90.0	30.0

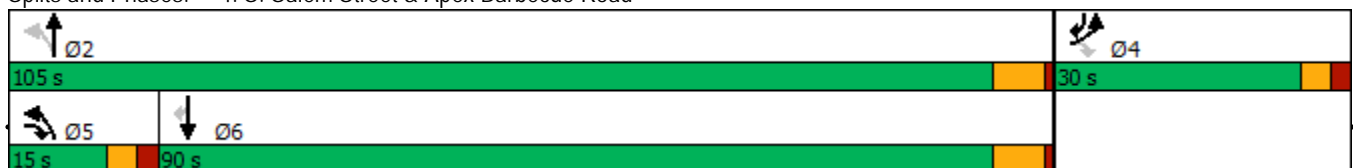
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Total Split (%)	22.2%	11.1%	11.1%	77.8%	66.7%	22.2%
Maximum Green (s)	24.7	9.9	9.9	98.9	83.9	24.7
Yellow Time (s)	3.0	3.0	3.0	5.1	5.1	3.0
All-Red Time (s)	2.3	2.1	2.1	1.0	1.0	2.3
Lost Time Adjust (s)	-0.3	-0.1	-0.1	-1.1	-1.1	-0.3
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag		Lead	Lead		Lag	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	2.0	2.0	2.0	6.0	6.0	2.0
Minimum Gap (s)	2.0	2.0	2.0	3.4	3.4	2.0
Time Before Reduce (s)	0.0	0.0	0.0	15.0	15.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	45.0	45.0	0.0
Recall Mode	None	None	None	Min	Min	None
Act Effct Green (s)	25.5	40.4	61.5	61.5	46.5	77.1
Actuated g/C Ratio	0.26	0.42	0.63	0.63	0.48	0.79
v/c Ratio	0.83	0.26	0.98	0.83	0.90	0.30
Control Delay	52.8	23.1	76.9	20.4	36.8	3.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.8	23.1	76.9	20.4	36.8	3.2
LOS	D	C	E	C	D	A
Approach Delay	43.7			32.0	26.2	
Approach LOS	D			C	C	
Queue Length 50th (ft)	221	65	103	414	432	47
Queue Length 95th (ft)	#499	152	#302	587	600	69
Internal Link Dist (ft)	317			254	978	
Turn Bay Length (ft)	375		300			475
Base Capacity (vph)	463	663	263	1795	1634	1256
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	0.83	0.25	0.96	0.54	0.49	0.30

Intersection Summary

Area Type: Other
 Cycle Length: 135
 Actuated Cycle Length: 97.1
 Natural Cycle: 80
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.98
 Intersection Signal Delay: 31.9
 Intersection Capacity Utilization 82.3%
 Analysis Period (min) 15
 Intersection LOS: C
 ICU Level of Service E

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 4: S. Salem Street & Apex Barbecue Road



APPENDIX J

CAPACITY ANALYSIS CALCULATIONS

APEX BARBECUE ROAD

&

SCOTTS RIDGE TRAIL / WOODALL CREST

DRIVE

HCM 6th TWSC
 2: Scotts Ridge Trail & Apex Barbecue Road

Existing (2019) AM
 11/06/2019

Intersection

Int Delay, s/veh	4.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	339	4	4	346	15	9	4	16	84	4	61
Future Vol, veh/h	10	339	4	4	346	15	9	4	16	84	4	61
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	250	-	-	125	-	-	-	-	-	-	-	-
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	11	377	4	4	384	17	10	4	18	93	4	68

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	401	0	0	381	0	0	838	810	379	813	804	393
Stage 1	-	-	-	-	-	-	401	401	-	401	401	-
Stage 2	-	-	-	-	-	-	437	409	-	412	403	-
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	1158	-	-	1177	-	-	286	314	668	297	316	656
Stage 1	-	-	-	-	-	-	626	601	-	626	601	-
Stage 2	-	-	-	-	-	-	598	596	-	617	600	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1158	-	-	1177	-	-	251	310	668	283	312	656
Mov Cap-2 Maneuver	-	-	-	-	-	-	251	310	-	283	312	-
Stage 1	-	-	-	-	-	-	620	596	-	620	599	-
Stage 2	-	-	-	-	-	-	530	594	-	590	595	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.2			0.1			14.8			22.4		
HCM LOS							B			C		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	399	1158	-	-	1177	-	-	370
HCM Lane V/C Ratio	0.081	0.01	-	-	0.004	-	-	0.447
HCM Control Delay (s)	14.8	8.1	-	-	8.1	-	-	22.4
HCM Lane LOS	B	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.3	0	-	-	0	-	-	2.2

HCM 6th TWSC
 2: Scotts Ridge Trail & Apex Barbecue Road

Existing (2019) PM
 11/06/2019

Intersection												
Int Delay, s/veh	2.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔		↔	↔			↔			↔	
Traffic Vol, veh/h	49	270	6	18	353	47	4	4	12	37	4	20
Future Vol, veh/h	49	270	6	18	353	47	4	4	12	37	4	20
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	250	-	-	125	-	-	-	-	-	-	-	-
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	54	300	7	20	392	52	4	4	13	41	4	22

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	444	0	0	307	0	0	883	896	304	878	873	418
Stage 1	-	-	-	-	-	-	412	412	-	458	458	-
Stage 2	-	-	-	-	-	-	471	484	-	420	415	-
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	1116	-	-	1254	-	-	266	280	736	268	289	635
Stage 1	-	-	-	-	-	-	617	594	-	583	567	-
Stage 2	-	-	-	-	-	-	573	552	-	611	592	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1116	-	-	1254	-	-	241	262	736	247	271	635
Mov Cap-2 Maneuver	-	-	-	-	-	-	241	262	-	247	271	-
Stage 1	-	-	-	-	-	-	587	565	-	555	558	-
Stage 2	-	-	-	-	-	-	540	543	-	566	564	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	1.3			0.3			14.2			19.8		
HCM LOS							B			C		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	415	1116	-	-	1254	-	-	311
HCM Lane V/C Ratio	0.054	0.049	-	-	0.016	-	-	0.218
HCM Control Delay (s)	14.2	8.4	-	-	7.9	-	-	19.8
HCM Lane LOS	B	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.2	0.2	-	-	0	-	-	0.8

Intersection

Int Delay, s/veh	6.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	23	366	12	5	321	18	27	4	19	100	4	89
Future Vol, veh/h	23	366	12	5	321	18	27	4	19	100	4	89
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	250	-	-	125	-	-	-	-	-	-	-	-
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	26	407	13	6	357	20	30	4	21	111	4	99

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	377	0	0	420	0	0	897	855	414	857	851	367
Stage 1	-	-	-	-	-	-	466	466	-	379	379	-
Stage 2	-	-	-	-	-	-	431	389	-	478	472	-
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	1181	-	-	1139	-	-	261	296	638	277	297	678
Stage 1	-	-	-	-	-	-	577	562	-	643	615	-
Stage 2	-	-	-	-	-	-	603	608	-	568	559	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1181	-	-	1139	-	-	216	288	638	259	289	678
Mov Cap-2 Maneuver	-	-	-	-	-	-	216	288	-	259	289	-
Stage 1	-	-	-	-	-	-	564	550	-	629	612	-
Stage 2	-	-	-	-	-	-	509	605	-	533	547	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.5			0.1			20			28.3		
HCM LOS							C			D		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	296	1181	-	-	1139	-	-	363
HCM Lane V/C Ratio	0.188	0.022	-	-	0.005	-	-	0.591
HCM Control Delay (s)	20	8.1	-	-	8.2	-	-	28.3
HCM Lane LOS	C	A	-	-	A	-	-	D
HCM 95th %tile Q(veh)	0.7	0.1	-	-	0	-	-	3.6

Intersection												
Int Delay, s/veh	3.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	79	351	27	21	339	56	17	4	14	44	4	42
Future Vol, veh/h	79	351	27	21	339	56	17	4	14	44	4	42
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	250	-	-	125	-	-	-	-	-	-	-	-
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	88	390	30	23	377	62	19	4	16	49	4	47

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	439	0	0	420	0	0	1061	1066	405	1045	1050	408
Stage 1	-	-	-	-	-	-	581	581	-	454	454	-
Stage 2	-	-	-	-	-	-	480	485	-	591	596	-
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	1121	-	-	1139	-	-	202	222	646	207	227	643
Stage 1	-	-	-	-	-	-	499	500	-	586	569	-
Stage 2	-	-	-	-	-	-	567	552	-	493	492	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1121	-	-	1139	-	-	171	200	646	184	205	643
Mov Cap-2 Maneuver	-	-	-	-	-	-	171	200	-	184	205	-
Stage 1	-	-	-	-	-	-	460	461	-	540	558	-
Stage 2	-	-	-	-	-	-	511	541	-	439	453	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	1.5			0.4			22.2			25.1		
HCM LOS							C			D		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	248	1121	-	-	1139	-	-	278
HCM Lane V/C Ratio	0.157	0.078	-	-	0.02	-	-	0.36
HCM Control Delay (s)	22.2	8.5	-	-	8.2	-	-	25.1
HCM Lane LOS	C	A	-	-	A	-	-	D
HCM 95th %tile Q(veh)	0.5	0.3	-	-	0.1	-	-	1.6

Intersection

Int Delay, s/veh	8.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	24	396	12	5	345	20	28	4	21	110	4	96
Future Vol, veh/h	24	396	12	5	345	20	28	4	21	110	4	96
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	250	-	-	125	-	-	-	-	-	-	-	-
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	27	440	13	6	383	22	31	4	23	122	4	107

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	405	0	0	453	0	0	963	918	447	920	913	394
Stage 1	-	-	-	-	-	-	501	501	-	406	406	-
Stage 2	-	-	-	-	-	-	462	417	-	514	507	-
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	1154	-	-	1108	-	-	235	272	612	251	273	655
Stage 1	-	-	-	-	-	-	552	543	-	622	598	-
Stage 2	-	-	-	-	-	-	580	591	-	543	539	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1154	-	-	1108	-	-	190	264	612	233	265	655
Mov Cap-2 Maneuver	-	-	-	-	-	-	190	264	-	233	265	-
Stage 1	-	-	-	-	-	-	539	531	-	608	595	-
Stage 2	-	-	-	-	-	-	479	588	-	506	527	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.5			0.1			22.1			38.1		
HCM LOS							C			E		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	269	1154	-	-	1108	-	-	331
HCM Lane V/C Ratio	0.219	0.023	-	-	0.005	-	-	0.705
HCM Control Delay (s)	22.1	8.2	-	-	8.3	-	-	38.1
HCM Lane LOS	C	A	-	-	A	-	-	E
HCM 95th %tile Q(veh)	0.8	0.1	-	-	0	-	-	5.1

Intersection

Int Delay, s/veh	4.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	84	377	28	23	364	61	17	4	16	48	4	44
Future Vol, veh/h	84	377	28	23	364	61	17	4	16	48	4	44
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	250	-	-	125	-	-	-	-	-	-	-	-
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	93	419	31	26	404	68	19	4	18	53	4	49

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	472	0	0	450	0	0	1138	1145	435	1122	1126	438
Stage 1	-	-	-	-	-	-	621	621	-	490	490	-
Stage 2	-	-	-	-	-	-	517	524	-	632	636	-
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	1090	-	-	1110	-	-	179	200	621	183	205	619
Stage 1	-	-	-	-	-	-	475	479	-	560	549	-
Stage 2	-	-	-	-	-	-	541	530	-	468	472	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1090	-	-	1110	-	-	149	179	621	160	183	619
Mov Cap-2 Maneuver	-	-	-	-	-	-	149	179	-	160	183	-
Stage 1	-	-	-	-	-	-	435	438	-	512	536	-
Stage 2	-	-	-	-	-	-	483	518	-	412	432	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	1.5			0.4			24.2			30.7		
HCM LOS							C			D		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	228	1090	-	-	1110	-	-	244
HCM Lane V/C Ratio	0.18	0.086	-	-	0.023	-	-	0.437
HCM Control Delay (s)	24.2	8.6	-	-	8.3	-	-	30.7
HCM Lane LOS	C	A	-	-	A	-	-	D
HCM 95th %tile Q(veh)	0.6	0.3	-	-	0.1	-	-	2.1

HCM 6th TWSC
 2: Scotts Ridge Trail & Apex Barbecue Road

Combined (2025) AM - Phase 1
 12/20/2019

Intersection

Int Delay, s/veh	7.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	23	367	17	10	325	18	45	4	34	100	4	89
Future Vol, veh/h	23	367	17	10	325	18	45	4	34	100	4	89
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	250	-	-	125	-	-	-	-	-	-	-	-
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	26	408	19	11	361	20	50	4	38	111	4	99

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	381	0	0	427	0	0	915	873	418	884	872	371
Stage 1	-	-	-	-	-	-	470	470	-	393	393	-
Stage 2	-	-	-	-	-	-	445	403	-	491	479	-
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	1177	-	-	1132	-	-	253	289	635	266	289	675
Stage 1	-	-	-	-	-	-	574	560	-	632	606	-
Stage 2	-	-	-	-	-	-	592	600	-	559	555	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1177	-	-	1132	-	-	208	280	635	241	280	675
Mov Cap-2 Maneuver	-	-	-	-	-	-	208	280	-	241	280	-
Stage 1	-	-	-	-	-	-	561	548	-	618	600	-
Stage 2	-	-	-	-	-	-	497	594	-	510	543	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.5			0.2			22.9			31.3		
HCM LOS							C			D		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	292	1177	-	-	1132	-	-	344
HCM Lane V/C Ratio	0.316	0.022	-	-	0.01	-	-	0.623
HCM Control Delay (s)	22.9	8.1	-	-	8.2	-	-	31.3
HCM Lane LOS	C	A	-	-	A	-	-	D
HCM 95th %tile Q(veh)	1.3	0.1	-	-	0	-	-	4

HCM 6th TWSC
 2: Scotts Ridge Trail & Apex Barbecue Road

Combined (2025) PM - Phase 1
 12/20/2019

Intersection

Int Delay, s/veh	4.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	79	355	43	35	341	56	26	4	22	44	4	42
Future Vol, veh/h	79	355	43	35	341	56	26	4	22	44	4	42
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	250	-	-	125	-	-	-	-	-	-	-	-
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	88	394	48	39	379	62	29	4	24	49	4	47

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	441	0	0	442	0	0	1108	1113	418	1096	1106	410
Stage 1	-	-	-	-	-	-	594	594	-	488	488	-
Stage 2	-	-	-	-	-	-	514	519	-	608	618	-
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	1119	-	-	1118	-	-	187	208	635	191	210	642
Stage 1	-	-	-	-	-	-	491	493	-	561	550	-
Stage 2	-	-	-	-	-	-	543	533	-	483	481	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1119	-	-	1118	-	-	156	185	635	165	187	642
Mov Cap-2 Maneuver	-	-	-	-	-	-	156	185	-	165	187	-
Stage 1	-	-	-	-	-	-	452	454	-	517	531	-
Stage 2	-	-	-	-	-	-	482	514	-	424	443	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	1.4			0.7			25.5			27.9		
HCM LOS							D			D		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	233	1119	-	-	1118	-	-	255
HCM Lane V/C Ratio	0.248	0.078	-	-	0.035	-	-	0.392
HCM Control Delay (s)	25.5	8.5	-	-	8.3	-	-	27.9
HCM Lane LOS	D	A	-	-	A	-	-	D
HCM 95th %tile Q(veh)	0.9	0.3	-	-	0.1	-	-	1.8

HCM 6th TWSC
 2: Scotts Ridge Trail & Apex Barbecue Road

Intersection

Int Delay, s/veh	44.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	24	582	18	9	419	28	46	4	34	140	4	96
Future Vol, veh/h	24	582	18	9	419	28	46	4	34	140	4	96
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	250	-	-	125	-	-	-	-	-	-	-	-
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	27	647	20	10	466	31	51	4	38	156	4	107

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	497	0	0	667	0	0	1268	1228	657	1234	1223	482
Stage 1	-	-	-	-	-	-	711	711	-	502	502	-
Stage 2	-	-	-	-	-	-	557	517	-	732	721	-
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	1067	-	-	923	-	-	145	178	465	~ 153	179	584
Stage 1	-	-	-	-	-	-	424	436	-	552	542	-
Stage 2	-	-	-	-	-	-	515	534	-	413	432	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1067	-	-	923	-	-	113	172	465	~ 134	173	584
Mov Cap-2 Maneuver	-	-	-	-	-	-	113	172	-	~ 134	173	-
Stage 1	-	-	-	-	-	-	413	425	-	538	536	-
Stage 2	-	-	-	-	-	-	413	528	-	366	421	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.3			0.2			50.9			241.1		
HCM LOS							F			F		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	167	1067	-	-	923	-	-	195
HCM Lane V/C Ratio	0.559	0.025	-	-	0.011	-	-	1.368
HCM Control Delay (s)	50.9	8.5	-	-	8.9	-	-	241.1
HCM Lane LOS	F	A	-	-	A	-	-	F
HCM 95th %tile Q(veh)	2.9	0.1	-	-	0	-	-	15.4

Notes

~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

HCM 6th TWSC
 2: Scotts Ridge Trail & Apex Barbecue Road

Intersection

Int Delay, s/veh	14.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	84	491	41	32	561	92	24	4	22	63	4	44
Future Vol, veh/h	84	491	41	32	561	92	24	4	22	63	4	44
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	250	-	-	125	-	-	-	-	-	-	-	-
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	93	546	46	36	623	102	27	4	24	70	4	49

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	725	0	0	592	0	0	1528	1552	569	1515	1524	674
Stage 1	-	-	-	-	-	-	755	755	-	746	746	-
Stage 2	-	-	-	-	-	-	773	797	-	769	778	-
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	878	-	-	984	-	-	96	113	522	98	118	455
Stage 1	-	-	-	-	-	-	401	417	-	405	421	-
Stage 2	-	-	-	-	-	-	392	399	-	394	407	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	878	-	-	984	-	-	74	97	522	81	102	455
Mov Cap-2 Maneuver	-	-	-	-	-	-	74	97	-	81	102	-
Stage 1	-	-	-	-	-	-	358	373	-	362	405	-
Stage 2	-	-	-	-	-	-	333	384	-	332	364	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	1.3			0.4			56.4			156		
HCM LOS							F			F		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	123	878	-	-	984	-	-	121
HCM Lane V/C Ratio	0.452	0.106	-	-	0.036	-	-	1.019
HCM Control Delay (s)	56.4	9.6	-	-	8.8	-	-	156
HCM Lane LOS	F	A	-	-	A	-	-	F
HCM 95th %tile Q(veh)	2	0.4	-	-	0.1	-	-	6.9

Lanes, Volumes, Timings
2: Scotts Ridge Trail & Apex Barbecue Road

Combined (2028) AM - Full Buildout - with Improvements

12/23/2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	582	18	9	419	28	46	4	34	140	4	96
Future Volume (vph)	24	582	18	9	419	28	46	4	34	140	4	96
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		0	125		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	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	1.00	1.00	1.00	1.00	1.00
Frt		0.996			0.991			0.945			0.946	
Flt Protected	0.950			0.950				0.973			0.972	
Satd. Flow (prot)	1770	1855	0	1770	1846	0	0	1713	0	0	1713	0
Flt Permitted	0.950			0.950				0.727			0.775	
Satd. Flow (perm)	1770	1855	0	1770	1846	0	0	1280	0	0	1366	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			25			25	
Link Distance (ft)		2580			931			1103			1486	
Travel Time (s)		39.1			14.1			30.1			40.5	
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)	27	647	20	10	466	31	51	4	38	156	4	107
Shared Lane Traffic (%)												
Lane Group Flow (vph)	27	667	0	10	497	0	0	93	0	0	267	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			0			0	
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	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	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	
Detector 1 Queue (s)	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	
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	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		

Lanes, Volumes, Timings
2: Scotts Ridge Trail & Apex Barbecue Road

Combined (2028) AM - Full Buildout - with Improvements

12/23/2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	5	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	7.0	12.0		7.0	12.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	14.0	21.0		14.0	21.0		14.0	14.0		14.0	14.0	
Total Split (s)	14.0	33.0		14.0	33.0		18.0	18.0		18.0	18.0	
Total Split (%)	21.5%	50.8%		21.5%	50.8%		27.7%	27.7%		27.7%	27.7%	
Maximum Green (s)	7.0	26.0		7.0	26.0		11.0	11.0		11.0	11.0	
Yellow Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
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	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Act Effect Green (s)	9.4	26.4		9.4	24.1			13.5			13.5	
Actuated g/C Ratio	0.18	0.50		0.18	0.46			0.26			0.26	
v/c Ratio	0.09	0.72		0.03	0.59			0.28			0.76	
Control Delay	23.8	17.0		23.6	15.2			22.6			41.1	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	23.8	17.0		23.6	15.2			22.6			41.1	
LOS	C	B		C	B			C			D	
Approach Delay		17.3			15.4			22.6			41.1	
Approach LOS		B			B			C			D	
Queue Length 50th (ft)	6	124		2	80			21			68	
Queue Length 95th (ft)	30	#412		16	239			71			#240	
Internal Link Dist (ft)		2500			851			1023			1406	
Turn Bay Length (ft)	250			125								
Base Capacity (vph)	315	1105		315	1021			329			351	
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	0.09	0.60		0.03	0.49			0.28			0.76	

Intersection Summary

Area Type: Other
 Cycle Length: 65
 Actuated Cycle Length: 52.6
 Natural Cycle: 65
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.76
 Intersection Signal Delay: 21.1
 Intersection Capacity Utilization 57.4%
 Analysis Period (min) 15
 Intersection LOS: C
 ICU Level of Service B

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 2: Scotts Ridge Trail & Apex Barbecue Road



Lanes, Volumes, Timings

Combined (2028) PM - Full Buildout - with Improvements

2: Scotts Ridge Trail & Apex Barbecue Road

12/23/2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	84	491	41	32	561	92	24	4	22	63	4	44
Future Volume (vph)	84	491	41	32	561	92	24	4	22	63	4	44
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		0	125		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	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	1.00	1.00	1.00	1.00	1.00
Frt		0.988			0.979			0.941			0.946	
Flt Protected	0.950			0.950				0.976			0.972	
Satd. Flow (prot)	1770	1840	0	1770	1824	0	0	1711	0	0	1713	0
Flt Permitted	0.950			0.950				0.841			0.793	
Satd. Flow (perm)	1770	1840	0	1770	1824	0	0	1474	0	0	1397	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			25			25	
Link Distance (ft)		2580			931			1103			1486	
Travel Time (s)		39.1			14.1			30.1			40.5	
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)	93	546	46	36	623	102	27	4	24	70	4	49
Shared Lane Traffic (%)												
Lane Group Flow (vph)	93	592	0	36	725	0	0	55	0	0	123	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			0			0	
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	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	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	
Detector 1 Queue (s)	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	
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	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		

Lanes, Volumes, Timings
2: Scotts Ridge Trail & Apex Barbecue Road

Combined (2028) PM - Full Buildout - with Improvements

12/23/2019

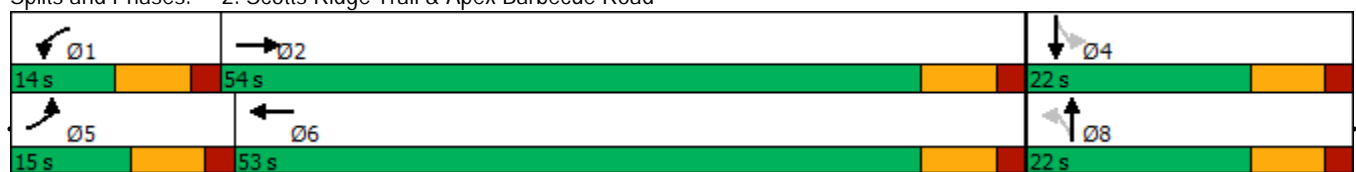
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	5	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	7.0	12.0		7.0	12.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	14.0	19.0		14.0	19.0		14.0	14.0		14.0	14.0	
Total Split (s)	15.0	54.0		14.0	53.0		22.0	22.0		22.0	22.0	
Total Split (%)	16.7%	60.0%		15.6%	58.9%		24.4%	24.4%		24.4%	24.4%	
Maximum Green (s)	8.0	47.0		7.0	46.0		15.0	15.0		15.0	15.0	
Yellow Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
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	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Act Effect Green (s)	10.8	39.2		10.1	35.5			14.1			14.1	
Actuated g/C Ratio	0.15	0.55		0.14	0.50			0.20			0.20	
v/c Ratio	0.35	0.59		0.14	0.80			0.19			0.45	
Control Delay	38.8	14.9		36.8	23.9			31.2			36.6	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	38.8	14.9		36.8	23.9			31.2			36.6	
LOS	D	B		D	C			C			D	
Approach Delay		18.2			24.5			31.2			36.6	
Approach LOS		B			C			C			D	
Queue Length 50th (ft)	41	194		16	276			23			53	
Queue Length 95th (ft)	99	316		48	450			60			118	
Internal Link Dist (ft)		2500			851			1023			1406	
Turn Bay Length (ft)	250			125								
Base Capacity (vph)	277	1274		249	1245			392			372	
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	0.34	0.46		0.14	0.58			0.14			0.33	

Intersection Summary

Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 71.7
 Natural Cycle: 60
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.80
 Intersection Signal Delay: 23.0
 Intersection Capacity Utilization 62.1%
 Analysis Period (min) 15

Intersection LOS: C
 ICU Level of Service B

Splits and Phases: 2: Scotts Ridge Trail & Apex Barbecue Road



APPENDIX K

CAPACITY ANALYSIS CALCULATIONS

APEX BARBECUE ROAD

&

TOWN SIDE DRIVE

Intersection

Int Delay, s/veh	5.8					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↖	↗		↖	↗
Traffic Vol, veh/h	79	360	244	74	128	121
Future Vol, veh/h	79	360	244	74	128	121
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	88	400	271	82	142	134

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	353	0	-	0	888
Stage 1	-	-	-	-	312
Stage 2	-	-	-	-	576
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	1206	-	-	-	314
Stage 1	-	-	-	-	742
Stage 2	-	-	-	-	562
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1206	-	-	-	284
Mov Cap-2 Maneuver	-	-	-	-	284
Stage 1	-	-	-	-	672
Stage 2	-	-	-	-	562

Approach	EB	WB	SB
HCM Control Delay, s	1.5	0	20.7
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1206	-	-	-	284	728
HCM Lane V/C Ratio	0.073	-	-	-	0.501	0.185
HCM Control Delay (s)	8.2	0	-	-	29.7	11.1
HCM Lane LOS	A	A	-	-	D	B
HCM 95th %tile Q(veh)	0.2	-	-	-	2.6	0.7

Intersection

Int Delay, s/veh	2.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	↔
Traffic Vol, veh/h	61	258	354	52	44	64
Future Vol, veh/h	61	258	354	52	44	64
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	68	287	393	58	49	71

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	451	0	-	0	845 422
Stage 1	-	-	-	-	422 -
Stage 2	-	-	-	-	423 -
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	1109	-	-	-	333 632
Stage 1	-	-	-	-	662 -
Stage 2	-	-	-	-	661 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1109	-	-	-	309 632
Mov Cap-2 Maneuver	-	-	-	-	309 -
Stage 1	-	-	-	-	614 -
Stage 2	-	-	-	-	661 -

Approach	EB	WB	SB
HCM Control Delay, s	1.6	0	14.4
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1109	-	-	-	309	632
HCM Lane V/C Ratio	0.061	-	-	-	0.158	0.113
HCM Control Delay (s)	8.5	0	-	-	18.8	11.4
HCM Lane LOS	A	A	-	-	C	B
HCM 95th %tile Q(veh)	0.2	-	-	-	0.6	0.4

Intersection

Int Delay, s/veh	8.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	138	334	129	88	153	208
Future Vol, veh/h	138	334	129	88	153	208
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	153	371	143	98	170	231

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	241	0	0	869	192
Stage 1	-	-	-	192	-
Stage 2	-	-	-	677	-
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	1326	-	-	322	850
Stage 1	-	-	-	841	-
Stage 2	-	-	-	505	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	1326	-	-	275	850
Mov Cap-2 Maneuver	-	-	-	275	-
Stage 1	-	-	-	719	-
Stage 2	-	-	-	505	-

Approach	EB	WB	SB
HCM Control Delay, s	2.4	0	22
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1326	-	-	-	275	850
HCM Lane V/C Ratio	0.116	-	-	-	0.618	0.272
HCM Control Delay (s)	8.1	0	-	-	37.2	10.8
HCM Lane LOS	A	A	-	-	E	B
HCM 95th %tile Q(veh)	0.4	-	-	-	3.8	1.1

Intersection

Int Delay, s/veh	4.7					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↖	↗		↖	↗
Traffic Vol, veh/h	151	259	264	68	58	146
Future Vol, veh/h	151	259	264	68	58	146
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	168	288	293	76	64	162

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	369	0	-	0	955
Stage 1	-	-	-	-	331
Stage 2	-	-	-	-	624
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	1190	-	-	-	287
Stage 1	-	-	-	-	728
Stage 2	-	-	-	-	534
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1190	-	-	-	239
Mov Cap-2 Maneuver	-	-	-	-	239
Stage 1	-	-	-	-	606
Stage 2	-	-	-	-	534

Approach	EB	WB	SB
HCM Control Delay, s	3.1	0	15.6
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1190	-	-	-	239	711
HCM Lane V/C Ratio	0.141	-	-	-	0.27	0.228
HCM Control Delay (s)	8.5	0	-	-	25.5	11.6
HCM Lane LOS	A	A	-	-	D	B
HCM 95th %tile Q(veh)	0.5	-	-	-	1.1	0.9

Intersection

Int Delay, s/veh	11.9					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↖	↗		↖	↗
Traffic Vol, veh/h	147	380	148	97	167	222
Future Vol, veh/h	147	380	148	97	167	222
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	163	422	164	108	186	247

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	272	0	-	0	966
Stage 1	-	-	-	-	218
Stage 2	-	-	-	-	748
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	1291	-	-	-	282
Stage 1	-	-	-	-	818
Stage 2	-	-	-	-	468
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1291	-	-	-	235
Mov Cap-2 Maneuver	-	-	-	-	235
Stage 1	-	-	-	-	683
Stage 2	-	-	-	-	468

Approach	EB	WB	SB
HCM Control Delay, s	2.3	0	32.4
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1291	-	-	-	235	822
HCM Lane V/C Ratio	0.127	-	-	-	0.79	0.3
HCM Control Delay (s)	8.2	0	-	-	60.6	11.2
HCM Lane LOS	A	A	-	-	F	B
HCM 95th %tile Q(veh)	0.4	-	-	-	5.8	1.3

Intersection

Int Delay, s/veh 5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↶	↷		↶	↷
Traffic Vol, veh/h	158	337	296	74	62	154
Future Vol, veh/h	158	337	296	74	62	154
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	176	374	329	82	69	171

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	411	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	1148	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1148	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	2.8	0	18.5
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1148	-	-	-	190	676
HCM Lane V/C Ratio	0.153	-	-	-	0.363	0.253
HCM Control Delay (s)	8.7	0	-	-	34.3	12.1
HCM Lane LOS	A	A	-	-	D	B
HCM 95th %tile Q(veh)	0.5	-	-	-	1.5	1

Intersection

Int Delay, s/veh	8.9					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	↕
Traffic Vol, veh/h	138	350	138	88	153	208
Future Vol, veh/h	138	350	138	88	153	208
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	153	389	153	98	170	231

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	251	0	-	0	897
Stage 1	-	-	-	-	202
Stage 2	-	-	-	-	695
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	1314	-	-	-	310
Stage 1	-	-	-	-	832
Stage 2	-	-	-	-	495
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1314	-	-	-	264
Mov Cap-2 Maneuver	-	-	-	-	264
Stage 1	-	-	-	-	708
Stage 2	-	-	-	-	495

Approach	EB	WB	SB
HCM Control Delay, s	2.3	0	23.4
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1314	-	-	-	264	839
HCM Lane V/C Ratio	0.117	-	-	-	0.644	0.275
HCM Control Delay (s)	8.1	0	-	-	40.4	10.9
HCM Lane LOS	A	A	-	-	E	B
HCM 95th %tile Q(veh)	0.4	-	-	-	4	1.1

Intersection

Int Delay, s/veh	4.7					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↖	↗		↖	↗
Traffic Vol, veh/h	151	271	280	68	58	146
Future Vol, veh/h	151	271	280	68	58	146
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	168	301	311	76	64	162

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	387	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	1171	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1171	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	3.1	0	16.1
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1171	-	-	-	228	694
HCM Lane V/C Ratio	0.143	-	-	-	0.283	0.234
HCM Control Delay (s)	8.6	0	-	-	26.9	11.8
HCM Lane LOS	A	A	-	-	D	B
HCM 95th %tile Q(veh)	0.5	-	-	-	1.1	0.9

Intersection

Int Delay, s/veh	50.7					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	↔
Traffic Vol, veh/h	147	609	234	104	197	222
Future Vol, veh/h	147	609	234	104	197	222
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	163	677	260	116	219	247

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	376	0	-	0	1321 318
Stage 1	-	-	-	-	318 -
Stage 2	-	-	-	-	1003 -
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	1182	-	-	-	~ 173 723
Stage 1	-	-	-	-	738 -
Stage 2	-	-	-	-	355 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1182	-	-	-	~ 135 723
Mov Cap-2 Maneuver	-	-	-	-	~ 135 -
Stage 1	-	-	-	-	575 -
Stage 2	-	-	-	-	355 -

Approach	EB	WB	SB
HCM Control Delay, s	1.7	0	180.1
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1182	-	-	-	135	723
HCM Lane V/C Ratio	0.138	-	-	-	1.621	0.341
HCM Control Delay (s)	8.5	0	-	-	\$ 369	12.5
HCM Lane LOS	A	A	-	-	F	B
HCM 95th %tile Q(veh)	0.5	-	-	-	15.7	1.5

Notes

~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection

Int Delay, s/veh	10.7					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	↔
Traffic Vol, veh/h	158	472	533	105	77	154
Future Vol, veh/h	158	472	533	105	77	154
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	176	524	592	117	86	171

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	709	0	-	0	1527 651
Stage 1	-	-	-	-	651 -
Stage 2	-	-	-	-	876 -
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	890	-	-	-	129 469
Stage 1	-	-	-	-	519 -
Stage 2	-	-	-	-	407 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	890	-	-	-	93 469
Mov Cap-2 Maneuver	-	-	-	-	93 -
Stage 1	-	-	-	-	374 -
Stage 2	-	-	-	-	407 -

Approach	EB	WB	SB
HCM Control Delay, s	2.5	0	62.5
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	890	-	-	-	93	469
HCM Lane V/C Ratio	0.197	-	-	-	0.92	0.365
HCM Control Delay (s)	10	0	-	-	153.6	17
HCM Lane LOS	B	A	-	-	F	C
HCM 95th %tile Q(veh)	0.7	-	-	-	5.2	1.6

APPENDIX L

CAPACITY ANALYSIS CALCULATIONS

S. SALEM STREET

&

SITE DRIVE 1

Intersection

Int Delay, s/veh	2.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↘	↗	↘	↗	↗	↘
Traffic Vol, veh/h	22	130	39	714	724	7
Future Vol, veh/h	22	130	39	714	724	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	100	0	200	-	-	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	144	43	793	804	8

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	1683	804	812	0	0
Stage 1	804	-	-	-	-
Stage 2	879	-	-	-	-
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	104	383	814	-	-
Stage 1	440	-	-	-	-
Stage 2	406	-	-	-	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	98	383	814	-	-
Mov Cap-2 Maneuver	98	-	-	-	-
Stage 1	417	-	-	-	-
Stage 2	406	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	24.8	0.5	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	814	-	98	383	-	-
HCM Lane V/C Ratio	0.053	-	0.249	0.377	-	-
HCM Control Delay (s)	9.7	-	53.5	20	-	-
HCM Lane LOS	A	-	F	C	-	-
HCM 95th %tile Q(veh)	0.2	-	0.9	1.7	-	-

Intersection

Int Delay, s/veh	1.9					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↘	↗	↘	↗	↗	↘
Traffic Vol, veh/h	12	69	118	815	692	19
Future Vol, veh/h	12	69	118	815	692	19
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	100	0	200	-	-	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	13	77	131	906	769	21

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	1937	769	790	0	0
Stage 1	769	-	-	-	-
Stage 2	1168	-	-	-	-
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	72	401	830	-	-
Stage 1	457	-	-	-	-
Stage 2	296	-	-	-	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	61	401	830	-	-
Mov Cap-2 Maneuver	61	-	-	-	-
Stage 1	385	-	-	-	-
Stage 2	296	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	25.5	1.3	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	830	-	61	401	-	-
HCM Lane V/C Ratio	0.158	-	0.219	0.191	-	-
HCM Control Delay (s)	10.1	-	79.8	16.1	-	-
HCM Lane LOS	B	-	F	C	-	-
HCM 95th %tile Q(veh)	0.6	-	0.7	0.7	-	-

Intersection

Int Delay, s/veh	10.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↘	↗	↘	↗	↗	↘
Traffic Vol, veh/h	53	121	93	814	866	63
Future Vol, veh/h	53	121	93	814	866	63
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	100	0	200	-	-	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	59	134	103	904	962	70

Major/Minor	Minor2	Major1	Major2		
Conflicting Flow All	2072	962	1032	0	0
Stage 1	962	-	-	-	-
Stage 2	1110	-	-	-	-
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	59	310	673	-	-
Stage 1	371	-	-	-	-
Stage 2	315	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	~ 50	310	673	-	-
Mov Cap-2 Maneuver	~ 50	-	-	-	-
Stage 1	314	-	-	-	-
Stage 2	315	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	113.9	1.2	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	673	-	50	310	-	-
HCM Lane V/C Ratio	0.154	-	1.178	0.434	-	-
HCM Control Delay (s)	11.3	-	\$ 316.4	25.2	-	-
HCM Lane LOS	B	-	F	D	-	-
HCM 95th %tile Q(veh)	0.5	-	5.3	2.1	-	-

Notes

~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection

Int Delay, s/veh 105.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↘	↗	↘	↗	↗	↘
Traffic Vol, veh/h	140	128	118	966	827	62
Future Vol, veh/h	140	128	118	966	827	62
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	100	0	200	-	-	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	156	142	131	1073	919	69

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	2254	919	988	0	-	0
Stage 1	919	-	-	-	-	-
Stage 2	1335	-	-	-	-	-
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	~ 46	329	699	-	-	-
Stage 1	389	-	-	-	-	-
Stage 2	245	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 37	329	699	-	-	-
Mov Cap-2 Maneuver	~ 37	-	-	-	-	-
Stage 1	316	-	-	-	-	-
Stage 2	245	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	879.8	1.2	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	699	-	37	329	-	-
HCM Lane V/C Ratio	0.188	-	4.204	0.432	-	-
HCM Control Delay (s)	11.3	\$	1662.2	24	-	-
HCM Lane LOS	B	-	F	C	-	-
HCM 95th %tile Q(veh)	0.7	-	18.1	2.1	-	-













Notes

~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Lanes, Volumes, Timings
8: S. Salem Street & Site Drive 1

Combined (2028) AM - Full Buildout - with Improvements

12/23/2019

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	53	121	93	814	866	63
Future Volume (vph)	53	121	93	814	866	63
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100	0	200			100
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)	1770	1583	1770	1863	1863	1583
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1770	1583	1770	1863	1863	1583
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	25			55	55	
Link Distance (ft)	1159			803	1010	
Travel Time (s)	31.6			10.0	12.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	59	134	103	904	962	70
Shared Lane Traffic (%)						
Lane Group Flow (vph)	59	134	103	904	962	70
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)	15	9	15			9
Number of Detectors	1	1	1	2	2	1
Detector Template	Left	Right	Left	Thru	Thru	Right
Leading Detector (ft)	20	20	20	100	100	20
Trailing Detector (ft)	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0
Detector 1 Size(ft)	20	20	20	6	6	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	Prot	pm+ov	Prot	NA	NA	pm+ov
Protected Phases	4	5	5	2	6	4
Permitted Phases		4				6

Lanes, Volumes, Timings
8: S. Salem Street & Site Drive 1

Combined (2028) AM - Full Buildout - with Improvements

12/23/2019

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Detector Phase	4	5	5	2	6	4
Switch Phase						
Minimum Initial (s)	7.0	7.0	7.0	14.0	14.0	7.0
Minimum Split (s)	14.0	14.0	14.0	21.0	21.0	14.0
Total Split (s)	20.0	18.0	18.0	100.0	82.0	20.0
Total Split (%)	16.7%	15.0%	15.0%	83.3%	68.3%	16.7%
Maximum Green (s)	13.0	11.0	11.0	93.0	75.0	13.0
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		Lead	Lead		Lag	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	Min	None	None
Act Effect Green (s)	11.9	24.7	12.7	74.6	54.3	71.8
Actuated g/C Ratio	0.13	0.27	0.14	0.83	0.60	0.80
v/c Ratio	0.25	0.31	0.41	0.59	0.86	0.06
Control Delay	46.5	32.1	49.6	6.0	24.5	2.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.5	32.1	49.6	6.0	24.5	2.7
LOS	D	C	D	A	C	A
Approach Delay	36.5			10.5	23.1	
Approach LOS	D			B	C	
Queue Length 50th (ft)	33	61	58	179	451	9
Queue Length 95th (ft)	85	139	136	322	717	17
Internal Link Dist (ft)	1079			723	930	
Turn Bay Length (ft)	100		200			100
Base Capacity (vph)	330	466	286	1736	1529	1342
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	0.18	0.29	0.36	0.52	0.63	0.05

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 90.2
 Natural Cycle: 75
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.86
 Intersection Signal Delay: 18.6
 Intersection Capacity Utilization 69.7%
 Analysis Period (min) 15
 Intersection LOS: B
 ICU Level of Service C













Splits and Phases: 8: S. Salem Street & Site Drive 1



Lanes, Volumes, Timings
8: S. Salem Street & Site Drive 1

Combined (2028) PM - Full Buildout - with Improvements

12/23/2019

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	140	128	118	966	827	62
Future Volume (vph)	140	128	118	966	827	62
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100	0	200			100
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)	1770	1583	1770	1863	1863	1583
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1770	1583	1770	1863	1863	1583
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	25			55	55	
Link Distance (ft)	1159			803	1010	
Travel Time (s)	31.6			10.0	12.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	156	142	131	1073	919	69
Shared Lane Traffic (%)						
Lane Group Flow (vph)	156	142	131	1073	919	69
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)	15	9	15			9
Number of Detectors	1	1	1	2	2	1
Detector Template	Left	Right	Left	Thru	Thru	Right
Leading Detector (ft)	20	20	20	100	100	20
Trailing Detector (ft)	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0
Detector 1 Size(ft)	20	20	20	6	6	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	Prot	pm+ov	Prot	NA	NA	pm+ov
Protected Phases	4	5	5	2	6	4
Permitted Phases		4				6

Lanes, Volumes, Timings
8: S. Salem Street & Site Drive 1

Combined (2028) PM - Full Buildout - with Improvements

12/23/2019

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Detector Phase	4	5	5	2	6	4
Switch Phase						
Minimum Initial (s)	7.0	7.0	7.0	14.0	14.0	7.0
Minimum Split (s)	14.0	14.0	14.0	21.0	21.0	14.0
Total Split (s)	21.0	19.0	19.0	99.0	80.0	21.0
Total Split (%)	17.5%	15.8%	15.8%	82.5%	66.7%	17.5%
Maximum Green (s)	14.0	12.0	12.0	92.0	73.0	14.0
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		Lead	Lead		Lag	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	Min	None	None
Act Effect Green (s)	14.5	32.6	13.0	74.2	56.1	75.7
Actuated g/C Ratio	0.15	0.33	0.13	0.75	0.57	0.76
v/c Ratio	0.60	0.27	0.57	0.77	0.87	0.06
Control Delay	54.3	29.8	55.3	11.7	28.5	2.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.3	29.8	55.3	11.7	28.5	2.8
LOS	D	C	E	B	C	A
Approach Delay	42.7			16.4	26.7	
Approach LOS	D			B	C	
Queue Length 50th (ft)	96	67	81	352	492	9
Queue Length 95th (ft)	#200	143	#174	505	686	18
Internal Link Dist (ft)	1079			723	930	
Turn Bay Length (ft)	100		200			100
Base Capacity (vph)	297	546	260	1686	1433	1244
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	0.53	0.26	0.50	0.64	0.64	0.06

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 99.1
 Natural Cycle: 70
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.87
 Intersection Signal Delay: 23.7
 Intersection Capacity Utilization 70.3%
 Analysis Period (min) 15
 Intersection LOS: C
 ICU Level of Service C

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 8: S. Salem Street & Site Drive 1



APPENDIX M

CAPACITY ANALYSIS CALCULATIONS

APEX BARBECUE ROAD

&

SITE DRIVE 2

Intersection

Int Delay, s/veh	0.5					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↘	↑	↘	↗
Traffic Vol, veh/h	569	4	8	385	4	28
Future Vol, veh/h	569	4	8	385	4	28
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	-	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	632	4	9	428	4	31

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	636	0	1078
Stage 1	-	-	-	-	632
Stage 2	-	-	-	-	446
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	-	-	947	-	242
Stage 1	-	-	-	-	530
Stage 2	-	-	-	-	645
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	947	-	240
Mov Cap-2 Maneuver	-	-	-	-	240
Stage 1	-	-	-	-	530
Stage 2	-	-	-	-	639

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	13.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	240	480	-	-	947	-
HCM Lane V/C Ratio	0.019	0.065	-	-	0.009	-
HCM Control Delay (s)	20.3	13	-	-	8.8	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile Q(veh)	0.1	0.2	-	-	0	-

Intersection

Int Delay, s/veh	0.5					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↘	↑	↘	↗
Traffic Vol, veh/h	374	4	26	385	4	15
Future Vol, veh/h	374	4	26	385	4	15
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	-	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	416	4	29	428	4	17

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	420	0	902
Stage 1	-	-	-	-	416
Stage 2	-	-	-	-	486
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	-	-	1139	-	308
Stage 1	-	-	-	-	666
Stage 2	-	-	-	-	618
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1139	-	300
Mov Cap-2 Maneuver	-	-	-	-	300
Stage 1	-	-	-	-	666
Stage 2	-	-	-	-	603

Approach	EB	WB	NB
HCM Control Delay, s	0	0.5	12.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	300	637	-	-	1139	-
HCM Lane V/C Ratio	0.015	0.026	-	-	0.025	-
HCM Control Delay (s)	17.2	10.8	-	-	8.2	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile Q(veh)	0	0.1	-	-	0.1	-

Intersection

Int Delay, s/veh	2.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↖	↑	↖	↗
Traffic Vol, veh/h	737	30	9	450	58	31
Future Vol, veh/h	737	30	9	450	58	31
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	-	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	819	33	10	500	64	34

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	852	0	1339
Stage 1	-	-	-	-	819
Stage 2	-	-	-	-	520
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	-	-	787	-	168
Stage 1	-	-	-	-	433
Stage 2	-	-	-	-	597
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	787	-	166
Mov Cap-2 Maneuver	-	-	-	-	166
Stage 1	-	-	-	-	433
Stage 2	-	-	-	-	589

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	31.4
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	166	375	-	-	787	-
HCM Lane V/C Ratio	0.388	0.092	-	-	0.013	-
HCM Control Delay (s)	39.8	15.6	-	-	9.6	-
HCM Lane LOS	E	C	-	-	A	-
HCM 95th %tile Q(veh)	1.7	0.3	-	-	0	-

Intersection

Int Delay, s/veh	12					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↘	↑	↘	↗
Traffic Vol, veh/h	446	103	50	511	163	34
Future Vol, veh/h	446	103	50	511	163	34
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	-	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	496	114	56	568	181	38

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	610	0	1176
Stage 1	-	-	-	-	496
Stage 2	-	-	-	-	680
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	-	-	969	-	211
Stage 1	-	-	-	-	612
Stage 2	-	-	-	-	503
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	969	-	199
Mov Cap-2 Maneuver	-	-	-	-	199
Stage 1	-	-	-	-	612
Stage 2	-	-	-	-	474

Approach	EB	WB	NB
HCM Control Delay, s	0	0.8	77.6
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	199	574	-	-	969	-
HCM Lane V/C Ratio	0.91	0.066	-	-	0.057	-
HCM Control Delay (s)	91.3	11.7	-	-	8.9	-
HCM Lane LOS	F	B	-	-	A	-
HCM 95th %tile Q(veh)	7.2	0.2	-	-	0.2	-

APPENDIX N

CAPACITY ANALYSIS CALCULATIONS

S. SALEM STREET

&

SITE DRIVE 3

Intersection

Int Delay, s/veh	0.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↑		↑	↑	↑
Traffic Vol, veh/h	0	12	0	867	917	61
Future Vol, veh/h	0	12	0	867	917	61
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	0	13	0	963	1019	68

Major/Minor	Minor2	Major1	Major2		
Conflicting Flow All	-	1019	-	0	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-
Critical Hdwy	-	6.22	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-
Follow-up Hdwy	-	3.318	-	-	-
Pot Cap-1 Maneuver	0	288	0	-	-
Stage 1	0	-	0	-	-
Stage 2	0	-	0	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	-	288	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	18.1	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	288	-	-
HCM Lane V/C Ratio	-	0.046	-	-
HCM Control Delay (s)	-	18.1	-	-
HCM Lane LOS	-	C	-	-
HCM 95th %tile Q(veh)	-	0.1	-	-

Intersection

Int Delay, s/veh	0.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↖	↖	↗
Traffic Vol, veh/h	0	41	0	1106	848	43
Future Vol, veh/h	0	41	0	1106	848	43
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	0	46	0	1229	942	48

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	-	942	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	6.22	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	3.318	-
Pot Cap-1 Maneuver	0	319	0
Stage 1	0	-	0
Stage 2	0	-	0
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	319	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	18.2	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	319	-	-
HCM Lane V/C Ratio	-	0.143	-	-
HCM Control Delay (s)	-	18.2	-	-
HCM Lane LOS	-	C	-	-
HCM 95th %tile Q(veh)	-	0.5	-	-

APPENDIX O

CAPACITY ANALYSIS CALCULATIONS

S. SALEM STREET

&

SITE DRIVE 4

Intersection

Int Delay, s/veh	1.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗	↘	↑	↑	↗
Traffic Vol, veh/h	0	74	80	906	956	31
Future Vol, veh/h	0	74	80	906	956	31
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	150	-	-	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	0	82	89	1007	1062	34

Major/Minor	Minor2	Major1	Major2		
Conflicting Flow All	-	1062	1096	0	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-
Critical Hdwy	-	6.22	4.12	-	-
Critical Hdwy Stg 1	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-
Follow-up Hdwy	-	3.318	2.218	-	-
Pot Cap-1 Maneuver	0	272	637	-	-
Stage 1	0	-	-	-	-
Stage 2	0	-	-	-	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	272	637	-	-
Mov Cap-2 Maneuver	-	-	-	-	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	23.9	0.9	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	637	-	272	-	-
HCM Lane V/C Ratio	0.14	-	0.302	-	-
HCM Control Delay (s)	11.6	-	23.9	-	-
HCM Lane LOS	B	-	C	-	-
HCM 95th %tile Q(veh)	0.5	-	1.2	-	-

Intersection

Int Delay, s/veh	1.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗	↘	↖	↗	↘
Traffic Vol, veh/h	0	69	79	1083	929	26
Future Vol, veh/h	0	69	79	1083	929	26
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	150	-	-	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	0	77	88	1203	1032	29

Major/Minor	Minor2	Major1	Major2		
Conflicting Flow All	-	1032	1061	0	0
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-
Critical Hdwy	-	6.22	4.12	-	-
Critical Hdwy Stg 1	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-
Follow-up Hdwy	-	3.318	2.218	-	-
Pot Cap-1 Maneuver	0	283	657	-	-
Stage 1	0	-	-	-	-
Stage 2	0	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	-	283	657	-	-
Mov Cap-2 Maneuver	-	-	-	-	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	22.4	0.8	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	657	-	283	-	-
HCM Lane V/C Ratio	0.134	-	0.271	-	-
HCM Control Delay (s)	11.3	-	22.4	-	-
HCM Lane LOS	B	-	C	-	-
HCM 95th %tile Q(veh)	0.5	-	1.1	-	-

APPENDIX P

CAPACITY ANALYSIS CALCULATIONS

APEX BARBECUE ROAD

&

SITE DRIVE 5

Intersection

Int Delay, s/veh	0.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑		↑		↑
Traffic Vol, veh/h	738	30	0	459	0	8
Future Vol, veh/h	738	30	0	459	0	8
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	820	33	0	510	0	9

Major/Minor	Major1	Major2	Minor1	
Conflicting Flow All	0	0	-	820
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	-	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	-	-	-	3.318
Pot Cap-1 Maneuver	-	0	0	375
Stage 1	-	0	0	-
Stage 2	-	0	0	-
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	375
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	14.8
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	375	-	-	-
HCM Lane V/C Ratio	0.024	-	-	-
HCM Control Delay (s)	14.8	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.1	-	-	-

Intersection

Int Delay, s/veh	0.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑		↑		↑
Traffic Vol, veh/h	458	22	0	561	0	38
Future Vol, veh/h	458	22	0	561	0	38
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	509	24	0	623	0	42

Major/Minor	Major1	Major2	Minor1	
Conflicting Flow All	0	0	-	509
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	-	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	-	-	-	3.318
Pot Cap-1 Maneuver	-	-	0	564
Stage 1	-	-	0	-
Stage 2	-	-	0	-
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	564
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	11.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	564	-	-	-
HCM Lane V/C Ratio	0.075	-	-	-
HCM Control Delay (s)	11.9	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.2	-	-	-

APPENDIX Q

CAPACITY ANALYSIS CALCULATIONS

S. SALEM STREET

&

SITE DRIVE 6

Intersection

Int Delay, s/veh	0.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↖	↖	↗
Traffic Vol, veh/h	0	7	0	867	971	30
Future Vol, veh/h	0	7	0	867	971	30
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	0	8	0	963	1079	33

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	- 1079	-	0 - 0
Stage 1	-	-	- - -
Stage 2	-	-	- - -
Critical Hdwy	- 6.22	-	- - -
Critical Hdwy Stg 1	-	-	- - -
Critical Hdwy Stg 2	-	-	- - -
Follow-up Hdwy	- 3.318	-	- - -
Pot Cap-1 Maneuver	0 265	0	- - -
Stage 1	0	- 0	- - -
Stage 2	0	- 0	- - -
Platoon blocked, %			- - -
Mov Cap-1 Maneuver	- 265	-	- - -
Mov Cap-2 Maneuver	-	-	- - -
Stage 1	-	-	- - -
Stage 2	-	-	- - -

Approach	EB	NB	SB
HCM Control Delay, s	19	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT EBLn1	SBT	SBR
Capacity (veh/h)	- 265	-	-
HCM Lane V/C Ratio	- 0.029	-	-
HCM Control Delay (s)	- 19	-	-
HCM Lane LOS	- C	-	-
HCM 95th %tile Q(veh)	- 0.1	-	-

Intersection

Int Delay, s/veh	0.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↖	↖	↗
Traffic Vol, veh/h	0	38	0	1106	853	22
Future Vol, veh/h	0	38	0	1106	853	22
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	0	42	0	1229	948	24

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	- 948	-	0 -
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	- 6.22	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	- 3.318	-	-
Pot Cap-1 Maneuver	0 316	0	-
Stage 1	0	0	-
Stage 2	0	0	-
Platoon blocked, %			-
Mov Cap-1 Maneuver	- 316	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	18.1	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT EBLn1	SBT	SBR
Capacity (veh/h)	- 316	-	-
HCM Lane V/C Ratio	- 0.134	-	-
HCM Control Delay (s)	- 18.1	-	-
HCM Lane LOS	- C	-	-
HCM 95th %tile Q(veh)	- 0.5	-	-

APPENDIX R

CAPACITY ANALYSIS CALCULATIONS

S. SALEM STREET

&

SITE DRIVE 7

Intersection

Int Delay, s/veh	21.9					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↘	↗	↘	↗	↗	↘
Traffic Vol, veh/h	53	149	129	933	965	65
Future Vol, veh/h	53	149	129	933	965	65
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	150	0	250	-	-	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	59	166	143	1037	1072	72

Major/Minor	Minor2	Major1	Major2		
Conflicting Flow All	2395	1072	1144	0	0
Stage 1	1072	-	-	-	-
Stage 2	1323	-	-	-	-
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	~ 37	268	611	-	-
Stage 1	329	-	-	-	-
Stage 2	249	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	~ 28	268	611	-	-
Mov Cap-2 Maneuver	~ 28	-	-	-	-
Stage 1	252	-	-	-	-
Stage 2	249	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	240.5	1.5	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	611	-	28	268	-	-
HCM Lane V/C Ratio	0.235	-	2.103	0.618	-	-
HCM Control Delay (s)	12.7	-	809.9	37.9	-	-
HCM Lane LOS	B	-	F	E	-	-
HCM 95th %tile Q(veh)	0.9	-	7	3.8	-	-

Notes

~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection

Int Delay, s/veh	164					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↖	↗	↖	↗	↗	↖
Traffic Vol, veh/h	141	147	149	1021	923	75
Future Vol, veh/h	141	147	149	1021	923	75
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	150	0	250	-	-	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	157	163	166	1134	1026	83

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	2492	1026	1109	0	0
Stage 1	1026	-	-	-	-
Stage 2	1466	-	-	-	-
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	~ 32	285	630	-	-
Stage 1	346	-	-	-	-
Stage 2	212	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	~ 24	285	630	-	-
Mov Cap-2 Maneuver	~ 24	-	-	-	-
Stage 1	255	-	-	-	-
Stage 2	212	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s \$	1392	1.6	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	630	-	24	285	-	-
HCM Lane V/C Ratio	0.263	-	6.528	0.573	-	-
HCM Control Delay (s)	12.7	\$	2808.6	33.3	-	-
HCM Lane LOS	B	-	F	D	-	-
HCM 95th %tile Q(veh)	1.1	-	19.6	3.3	-	-













Notes

~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Lanes, Volumes, Timings
14: S. Salem Street & Site Drive 7

Combined (2028) AM - Full Buildout - with Improvements

12/23/2019

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	53	149	129	933	965	65
Future Volume (vph)	53	149	129	933	965	65
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150	0	250			100
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)	1770	1583	1770	1863	1863	1583
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1770	1583	1770	1863	1863	1583
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	25			55	55	
Link Distance (ft)	1521			1271	429	
Travel Time (s)	41.5			15.8	5.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	59	166	143	1037	1072	72
Shared Lane Traffic (%)						
Lane Group Flow (vph)	59	166	143	1037	1072	72
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)	15	9	15			9
Number of Detectors	1	1	1	2	2	1
Detector Template	Left	Right	Left	Thru	Thru	Right
Leading Detector (ft)	20	20	20	100	100	20
Trailing Detector (ft)	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0
Detector 1 Size(ft)	20	20	20	6	6	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	Prot	pm+ov	Prot	NA	NA	pm+ov
Protected Phases	4	5	5	2	6	4
Permitted Phases		4				6

Lanes, Volumes, Timings
 14: S. Salem Street & Site Drive 7

Combined (2028) AM - Full Buildout - with Improvements

12/23/2019

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Detector Phase	4	5	5	2	6	4
Switch Phase						
Minimum Initial (s)	7.0	7.0	7.0	14.0	14.0	7.0
Minimum Split (s)	14.0	14.0	14.0	21.0	21.0	14.0
Total Split (s)	20.0	18.0	18.0	100.0	82.0	20.0
Total Split (%)	16.7%	15.0%	15.0%	83.3%	68.3%	16.7%
Maximum Green (s)	13.0	11.0	11.0	93.0	75.0	13.0
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		Lead	Lead		Lag	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	Min	Min	None
Act Effect Green (s)	11.9	25.6	13.3	84.7	64.1	81.5
Actuated g/C Ratio	0.12	0.25	0.13	0.84	0.64	0.81
v/c Ratio	0.28	0.41	0.61	0.66	0.90	0.06
Control Delay	51.1	37.4	60.2	7.1	28.5	2.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.1	37.4	60.2	7.1	28.5	2.5
LOS	D	D	E	A	C	A
Approach Delay	41.0			13.5	26.9	
Approach LOS	D			B	C	
Queue Length 50th (ft)	41	100	101	248	583	9
Queue Length 95th (ft)	85	170	#209	438	#1017	17
Internal Link Dist (ft)	1441			1191	349	
Turn Bay Length (ft)	150		250			100
Base Capacity (vph)	287	415	248	1645	1404	1351
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	0.21	0.40	0.58	0.63	0.76	0.05

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 100.6
 Natural Cycle: 80
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.90
 Intersection Signal Delay: 21.9
 Intersection Capacity Utilization 76.3%
 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: 14: S. Salem Street & Site Drive 7



Lanes, Volumes, Timings
14: S. Salem Street & Site Drive 7

Combined (2028) PM - Full Buildout - with Improvements

12/23/2019

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	141	147	149	1021	923	75
Future Volume (vph)	141	147	149	1021	923	75
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150	0	250			100
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)	1770	1583	1770	1863	1863	1583
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1770	1583	1770	1863	1863	1583
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	25			55	55	
Link Distance (ft)	1521			1271	429	
Travel Time (s)	41.5			15.8	5.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	157	163	166	1134	1026	83
Shared Lane Traffic (%)						
Lane Group Flow (vph)	157	163	166	1134	1026	83
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)	15	9	15			9
Number of Detectors	1	1	1	2	2	1
Detector Template	Left	Right	Left	Thru	Thru	Right
Leading Detector (ft)	20	20	20	100	100	20
Trailing Detector (ft)	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0
Detector 1 Size(ft)	20	20	20	6	6	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	Prot	pm+ov	Prot	NA	NA	pm+ov
Protected Phases	4	5	5	2	6	4
Permitted Phases		4				6

Lanes, Volumes, Timings
 14: S. Salem Street & Site Drive 7

Combined (2028) PM - Full Buildout - with Improvements

12/23/2019

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Detector Phase	4	5	5	2	6	4
Switch Phase						
Minimum Initial (s)	7.0	7.0	7.0	14.0	14.0	7.0
Minimum Split (s)	14.0	14.0	14.0	21.0	21.0	14.0
Total Split (s)	20.0	21.0	21.0	100.0	79.0	20.0
Total Split (%)	16.7%	17.5%	17.5%	83.3%	65.8%	16.7%
Maximum Green (s)	13.0	14.0	14.0	93.0	72.0	13.0
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		Lead	Lead		Lag	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	Min	Min	None
Act Effect Green (s)	14.3	34.4	15.0	85.8	65.7	85.1
Actuated g/C Ratio	0.13	0.31	0.14	0.78	0.60	0.77
v/c Ratio	0.69	0.33	0.69	0.78	0.93	0.07
Control Delay	64.7	33.6	63.7	11.7	35.0	3.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	64.7	33.6	63.7	11.7	35.0	3.1
LOS	E	C	E	B	D	A
Approach Delay	48.8			18.3	32.6	
Approach LOS	D			B	C	
Queue Length 50th (ft)	119	98	125	383	635	12
Queue Length 95th (ft)	#213	161	#219	560	#983	23
Internal Link Dist (ft)	1441			1191	349	
Turn Bay Length (ft)	150		250			100
Base Capacity (vph)	245	512	262	1582	1276	1235
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	0.64	0.32	0.63	0.72	0.80	0.07

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 110.3
 Natural Cycle: 90
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.93
 Intersection Signal Delay: 27.7
 Intersection Capacity Utilization 77.1%
 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: 14: S. Salem Street & Site Drive 7



PLANNING BOARD REPORT TO TOWN COUNCIL

Rezoning Case: 20CZ01 Depot 499 PUD and 2045 Land Use Map Amendment

Planning Board Meeting Date: July 13, 2020



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:

Acreeage: ±200.8 acres
PIN(s): 0731459383, 0731554102, 0731564395, 0731641147, 0731645370, 0731646532, 0731657166, 0731676714, 0731750984, 0731761944, 0731766588, 0731873224
Current Zoning: Residential Agricultural (RA) & Neighborhood Business-Conditional Zoning (B1-CZ #09CZ01)
Proposed Zoning: Planned Unit Development-Conditional Zoning (PUD-CZ)
Current 2045 Land Use Map: Mixed Use: High Density Residential/Office Employment/Commercial Services; Medium/High Density Residential; Office Employment; Office Employment/Commercial Services
Proposed 2045 Land Use Map: Amendment requested for a ±5.41 acre portion of PIN 0731761944 from Office Employment to High Density Residential
Town Limits: ETJ

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: Not consistent due to

recommended denial of 2045 Land Use Map amendment.

Apex Transportation Plan
 Consistent Inconsistent Reason: Not consistent due to

recommended change to Apex Transportation Plan amendment (keep two overpasses)

Parks, Recreation, Open Space, and Greenways Plan
 Consistent Inconsistent Reason: _____

PLANNING BOARD REPORT TO TOWN COUNCIL

Rezoning Case: 20CZ01 Depot 499 PUD and 2045 Land Use Map Amendment

Planning Board Meeting Date: July 13, 2020



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 Plan.* 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 Plan.

Consistent Inconsistent Reason: _____

Recommended denial of amendment to the 2045 LUM.

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: _____

Recommended denial of amendment to the 2045 LUM.

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: _____

Not consistent due to overpasses on Transportation Plan recommended amendment.

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 Case: 20CZ01 Depot 499 PUD and 2045 Land Use Map Amendment

Planning Board Meeting Date: July 13, 2020



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: _____

Developer and WCPSS said school will not fit with the Transportation Plan the way they have designed it.

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: _____

Doesn't meet Transportation Plan.

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: _____

PLANNING BOARD REPORT TO TOWN COUNCIL
Rezoning Case: 20CZ01 Depot 499 PUD and 2045 Land Use Map Amendment

Planning Board Meeting Date: July 13, 2020



Planning Board Recommendation:

Motion: Recommend denial of LUM amendment and rezoning.

Introduced by Planning Board member: Mark Steele - LUM; Tim Royal - rezoning

Seconded by Planning Board member: Reginald Skinner - LUM; Mark Steele - rezoning

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:

Denial: the project is not consistent with all applicable officially adopted plans and/or the applicable legislative considerations as noted above.

With 6 Planning Board Member(s) voting "aye"

With 0 Planning Board Member(s) voting "no"

Reasons for dissenting votes:

Note to Town Council: Loved the product; like to see them go back to drawing board to see
if the school will fit somewhere else on the property. Transportation Plan is priority; traffic
was cited as a priority by citizens during 2045 Land Use Plan process.

This report reflects the recommendation of the Planning Board, this the 13th day of July 2020.

Attest:

Michael Marks Digitally signed by Michael Marks
Date: 2020.07.14 08:01:05 -04'00'

Michael Marks, Planning Board Chair

Dianne Khin Digitally signed by Dianne Khin
Date: 2020.07.13 19:24:07 -04'00'

Dianne Khin, Planning Director



TOWN OF APEX
 POST OFFICE BOX 290
 APEX, NORTH CAROLINA 27502
 PHONE 919-249-3426

**PUBLIC NOTIFICATION
 OF PUBLIC HEARINGS
 CONDITIONAL ZONING #20CZ01
 Depot 499 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/Authorized Agent: Stephen Dorn, Lennar

Property Addresses: 0 Kelly Rd; 1216, 1300, 1330, 1420, 1525, and 1604 S. Salem St; 0 and 6401 Apex Barbecue Rd
Acres: 1200.8 acres

Property Identification Numbers (PINs): 0731459383, 0731534102, 0731564395, 0731641147, 0731645370, 0731646332, 0731657166, 0731676714, 0731750984, 0731761944, 0731766588, 0731873224

Current 2045 Land Use Map Designation: Mixed Use: High Density Residential/Office, Employment/Commercial

Services: Medium/High Density Residential; Office Employment; Office Employment/Commercial Services

Proposed 2045 Land Use Map Designation: Amendment requested for a 23.41 acre portion of PIN 0731761944 from Office Employment to High Density Residential

Existing Zoning of Properties: Residential Agricultural (RA) & Neighborhood Business-Conditional Zoning (B1-CZ #09CZ01)

Proposed Zoning of Properties: 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 13, 2020 4:30 PM

If you would like to speak during the public hearing, you may sign-in ahead of time by emailing your name and address to lorraine.snow@apexnc.org

If you are unable to attend, you may view the meeting through the Town's YouTube livestream at:

<https://www.youtube.com/channel/apexgov>. You may share comments by noon on Friday, July 10, 2020,

following instructions in the [Remote Participation Policy](#). The policy includes options to provide comments by email (public.hearing@apexnc.org, 350-word limit) or voicemail (919-372-7300, 3-minute limit).

Town Council Public Hearing Date and Time: July 21, 2020 6:00 PM

If you are unable to attend, you may view the meeting through the Town's YouTube livestream at:

<https://www.youtube.com/channel/apexgov>. You may share comments by noon on Monday, July 20, 2020,

following instructions in the [Remote Participation Policy](#). The policy includes options to provide comments by email (public.hearing@apexnc.org, 350-word limit) or voicemail (919-372-7300, 3-minute limit).

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/310256>

Published Dates: June 26, 2020 – July 21, 2020

Diane F. Klein, AICP
 Director of Planning and Community Development



TOWN OF APEX

POST OFFICE BOX 250
APEX, NORTH CAROLINA 27502
PHONE 919-249-3426

PUBLIC NOTIFICATION OF PUBLIC HEARINGS CONDITIONAL ZONING #20CZ01 Depot 499 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/Authorized Agent: Stephen Dorn, Lennar

Property Addresses: 0 Kelly Rd; 1216, 1300, 1330, 1420, 1525, and 1604 S. Salem St; 0 and 6401 Apex Barbecue Rd

Acreage: ±200.8 acres

Property Identification Numbers (PINs): 0731459383, 0731554102, 0731564395, 0731641147, 0731645370, 0731646532, 0731657166, 0731676714, 0731750984, 0731761944, 0731766588, 0731873224

Current 2045 Land Use Map Designation: Mixed Use: High Density Residential/Office Employment/Commercial Services; Medium/High Density Residential; Office Employment; Office Employment/Commercial Services

Proposed 2045 Land Use Map Designation: Amendment requested for a ±5.41 acre portion of PIN 0731761944 from Office Employment to High Density Residential

Existing Zoning of Properties: Residential Agricultural (RA) & Neighborhood Business-Conditional Zoning (B1-CZ #09CZ01)

Proposed Zoning of Properties: 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 13, 2020 4:30 PM

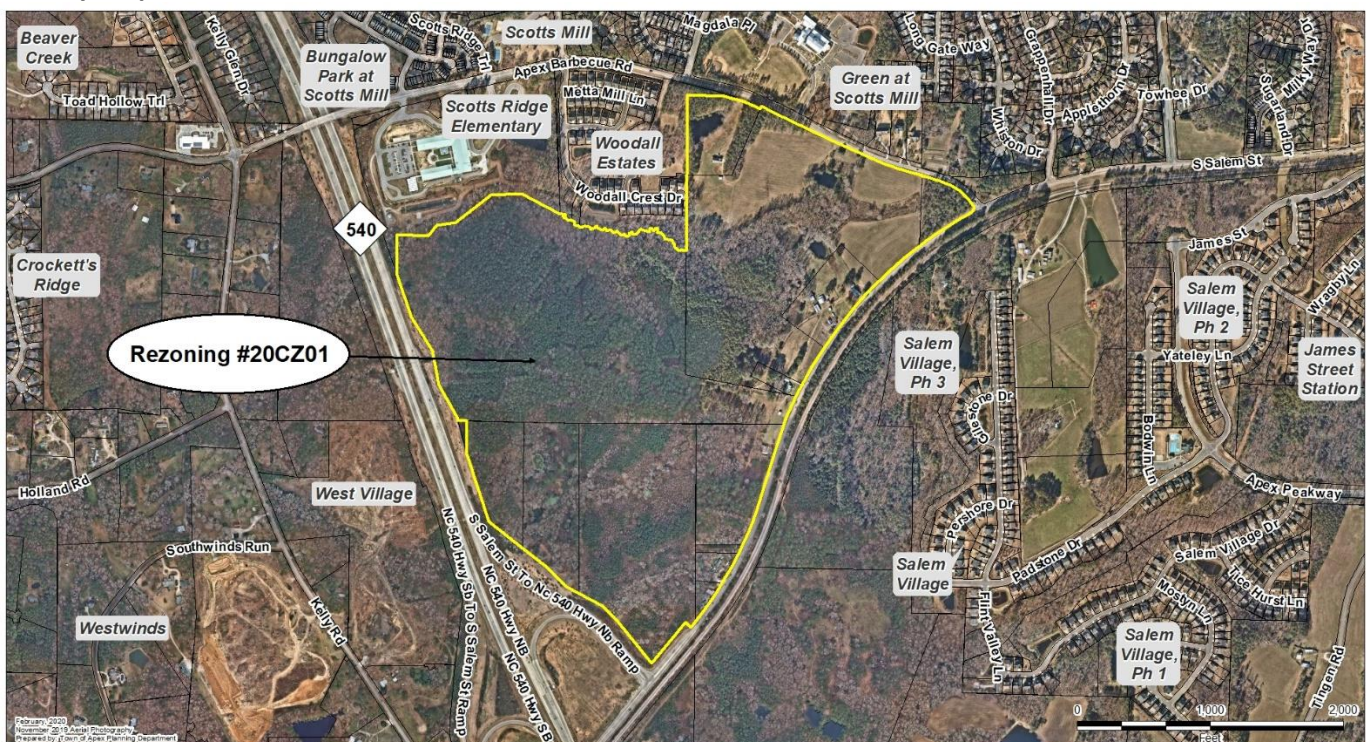
If you would like to speak during the public hearing, you may sign-in ahead of time by emailing your name and address to bonnie.brock@apexnc.org.

If you are unable to attend, you may view the meeting through the Town's YouTube livestream at: <https://www.youtube.com/c/townofapexgov>. You may share comments by noon on Friday, July 10, 2020, following instructions in the [Remote Participation policy](#). The policy includes options to provide comments by email (public.hearing@apexnc.org, 350-word limit) or voicemail (919-372-7300, 3-minute limit).

Town Council Public Hearing Date and Time: July 21, 2020 6:00 PM

If you are unable to attend, you may view the meeting through the Town's YouTube livestream at: <https://www.youtube.com/c/townofapexgov>. You may share comments by noon on Monday, July 20, 2020, following instructions in the [Remote Participation policy](#). The policy includes options to provide comments by email (public.hearing@apexnc.org, 350-word limit) or voicemail (919-372-7300, 3-minute limit).

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/30256>.

Dianne F. Khin, AICP
Director of Planning and Community Development



Kelly Glen

Scotts Mill

MAGDALA PL

Whitehall Manor

Scotts Ridge Elementary

Woodall Estates

APEX BARBECUE RD

SALEM ST

Rezoning #20CZ01

Salem Village

PADSTONE DR

West Village

540

KELLY YRD



Public Hearing Sign Posted By

[Signature]
Signature

1/7/2020
Date

January, 2020
November 2019 Aerial Photography
Prepared by: Town of Apex Planning Department



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 Name: Rezoning #20CZ01 Depot 499 PUD
 Project Location: 0 Kelly Rd; 1216, 1300, 1330, 1420, 1525, and 1604 S. Salem St;
 0 and 6401 Apex Barbecue Rd
 Applicant or Authorized Agent: Stephen Dorn
 Firm: Lennar

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 26, 2020** 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.

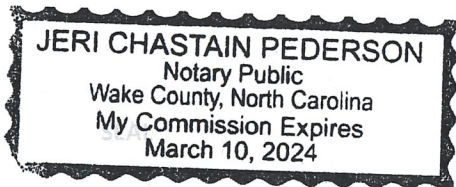
6/26/2020
 Date

Maïne Fkhu
 Director of Planning and Community Development

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 26 day of June, 2020.

Jeri Chastain Pederson
 Notary Public



My Commission Expires: 03 / 10 / 2024