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

BACKGROUND INFORMATION:

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

PROJECT DESCRIPTION:

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

Adjacent Zoning & Land Uses:

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

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

Neighborhood Meeting:
The applicant conducted a neighborhood meeting for the revised request on October 29, 2019. The neighborhood meeting report is attached.

2045 LAND USE MAP:
The 2045 Land Use Map identifies the properties subject to this rezoning as Medium Density Residential. The rezoning to Planned Unit Development-Conditional Zoning, as proposed, is consistent with the Medium Density Residential classification.

A portion of this site was identified and adopted within the Transit Oriented Development (TOD) Context Area with Advance Apex. The location is appropriate for higher medium density uses like townhomes due to the proximity to NC 540 Hwy, the adjacent Flats at 540 multi-family development, and Beaver Creek @540 townhome development, as well as proximity to a future transit corridor. TOD development typically dictates transit-supportive densities, which is a minimum of seven (7) units per acre for a circulator bus service and a minimum fifteen (15) units per acre for fixed route bus service. The Morris Acres PUD proposes a maximum density of seven (7) units per acre, contributing to an overall density that supports future transit.

PROPOSED ZONING CONDITIONS:

Limitation of Uses:

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

Permitted Uses and Limitations:

1. Townhomes
2. Greenway
3. Recreation Facility, private
4. Park, active
5. Park, passive
6. Utility, minor

Permitted Design Controls:

1. **Maximum Density**
   The PUD text indicates a maximum residential density for the project of 7.0 dwelling units per acre and no more than 122 total units.

2. **Maximum Height of the Buildings and Number of Stories**
   Maximum height – Three (3) stories with a maximum height of 45’.

3. **Minimum Building Setbacks**
   - From Building to Building – 10’
   - From Buffer/RCA – 10’ for Buildings; 5’ for Parking Areas

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

5. **Parking**
   The PUD indicates that parking will be provided per the standards in the UDO.

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

7. **Buffers**

Perimeter Buffers:	Required*	Proposed
Western property boundary	10' Type B	30' Type A
Eastern property boundary	20' Type B	50' Type A
Southern property boundary	30' Type B	30' Type A
Northern property boundary	10' Type B	20' Type A

**based on Land Use Class 3, Townhomes*

Architectural Standards:

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

Additionally, the following conditions shall also apply:

1. A maximum of 122 residential units shall be permitted upon the property;
2. A fifty-foot (50') type A buffer shall be established and maintained along the eastern boundary of the subject property;
3. The maximum height for buildings shall be three (3) stories (forty-five feet (45'));
4. All buildings constructed on the property shall provide solar conduit for the installation of rooftop solar panels; and
5. The applicant shall provide a 6' x 6' Public Art easement to the Town of Apex along the Morris Acres Road frontage of the subject property.

Pedestrian Connectivity:

The project will provide a 10' wide side path along the north side of Morris Acres Road, consistent with the recommendations of Bike Apex. The pedestrian network will be evaluated during subdivision plan review and shall be consistent with the UDO.

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

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

This PUD shall met 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, 25 year, and 24-hour storm events.

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

PARKS, RECREATION, AND CULTURAL RESOURCES ADVISORY COMMISSION:
The Parks, Recreation, and Cultural Resources Advisory Commission recommended a fee-in-lieu at their May 29, 2019 meeting. The fee rate will be set based on the date of PUD approval and will be applied to the number of lots proposed at the time of Master Subdivision Plan approval.

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

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

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

PLANNING STAFF RECOMMENDATION:
Planning staff recommends approval of the rezoning #19CZ02 Morris Acres PUD with the conditions offered by the applicant.

PLANNING BOARD RECOMMENDATION:
The Planning Board heard this item at their November 12, 2019 meeting and unanimously voted to recommend approval of the rezoning with the conditions as proposed by the applicant.

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:

Approval of the rezoning is reasonable because the proposed Planned Unit Development-Conditional Zoning district is consistent with the Medium Density Residential land use classification on the 2045 Land Use Map.

The proposed rezoning is reasonable and in the public interest because it provides an adequate transition in the height and density from the existing multi-family and townhome uses to the south and the existing single-family residential development to the east. The proposed rezoning allows for a maximum of seven (7) dwelling units per acres, which is the minimum density needed to support Transit Oriented Development (TOD) Context Area, as adopted with Advance Apex.

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

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

a) *Development parameters*
(i) The uses proposed to be developed in the PD Plan for PUD-CZ are those uses permitted in Sec. 4.2.2 *Use Table.*

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

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

(iii) The dimensional standards in Sec. 5.1.3 *Table of Intensity and Dimensional Standards, Planned Development Districts* may be varied in the PD Plan for PUD-CZ. The PUD-CZ shall demonstrate compliance with all other dimensional standards of the UDO, North Carolina Building Code, and North Carolina Fire Code.

(iv) The development proposed in the PD Plan for PUD-CZ encourages cluster and compact development to the greatest extent possible that is interrelated and linked by pedestrian ways, bikeways and other transportation systems. At a minimum, the PD Plan must show sidewalk improvements as required by the Apex Transportation Plan and the *Town of Apex Standard Specifications and Standard Details*, and greenway improvements as required by the Town of Apex Parks, Recreation, Greenways, and Open Space Plan and the Apex Transportation Plan. In addition, sidewalks shall be provided on both sides of all streets for single-family detached homes.

v) The design of development in the PD Plan for PUD-CZ results in land use patterns that promote and expand opportunities for walkability, connectivity, public transportation, and an efficient compact network of streets. Cul-de-sacs shall be avoided unless the design of the subdivision and the existing or proposed street system in the surrounding area indicate that a through street is not essential in the location of the proposed cul-de-sac, or where sensitive environmental areas such as streams, floodplains, and wetlands would be substantially disturbed by making road connections.

(vi) The development proposed in the PD Plan for PUD-CZ is compatible with the character of surrounding land uses and maintains and enhances the value of surrounding properties.

(vii) The development proposed in the PD Plan for PUD-CZ has architectural and design standards that are exceptional and provide higher quality than routine developments. All residential uses proposed in a PD Plan for PUD-CZ shall provide architectural elevations representative of the residential structures to be built to ensure the Standards of this Section are met.

b) *Off-street parking and loading*. The PD Plan for PUD-CZ shall demonstrate compliance with the standards of Sec. 8.3 *Off-Street Parking and Loading*, except that variations from these standards may be permitted if a comprehensive parking and loading plan for the PUD-CZ is submitted as part of the PD Plan that is determined to be suitable for the PUD-CZ, and generally consistent with the intent and purpose of the off-street parking and loading standards.

c) *RCA.* The PD Plan for PUD-CZ shall demonstrate compliance with Sec. 8.1.2 *Resource Conservation Area*, except that the percentage of RCA required under Sec. 8.1.2 may be reduced by the Town Council by no more than two percent (2%) provided that:

(i) The PD Plan for PUD-CZ includes a non-residential component; or

(ii) The PD Plan for PUD-CZ has an overall density of 6 residential units per acre or more.

d) *Landscaping*. The PD Plan for PUD-CZ shall demonstrate compliance with the standards of Sec. 8.2 *Landscaping, Buffering and Screening*, except that variations from these standards may be permitted where it is demonstrated that the proposed landscaping sufficiently buffers uses from each other, ensures compatibility with land uses on surrounding properties, creates attractive streetscapes and parking areas and is consistent with the character of the area. In no case shall a buffer be less than one half of the width required by Sec. 8.2 or 10 feet in width, whichever is greater.

e) *Signs.* Signage in the PD Plan for PUD-CZ shall demonstrate compliance with Sec. 8.7 *Signs*, except that the standards can be varied if a master signage plan is submitted for review and approval concurrent with the PD plan and is determined by the Town Council to be suitable for the PUD-CZ and generally consistent with the intent and purpose of the sign standards of the UDO. The master signage plan shall have design standards that are exceptional and provide for higher quality signs than those in routine developments and shall comply with Sec. 8.7.2 *Prohibited Signs*.

f) *Public facilities.* The improvements standards and guarantees applicable to the public facilities that will serve the site shall comply with Article 7: *Subdivision and* Article 14: *Parks, Recreation, Greenways, and Open Space*.

(i) The PD Plan for PUD-CZ demonstrates a safe and adequate on-site transportation circulation system. The on-site transportation circulation system shall be integrated with the off-site transportation circulation system of the Town. The PD Plan for PUD-CZ shall be consistent with the Apex Transportation Plan and the *Town of Apex Standard Specifications and Standard Details* and show required right-of-way widths and road sections. A Traffic Impact Analysis (TIA) shall be required per Sec. 13.19.

(ii) The PD Plan for PUD-CZ demonstrates a safe and adequate on-site system of potable water and wastewater lines that can accommodate the proposed development, and are efficiently integrated into off-site potable water and wastewater public improvement plans. The PD Plan shall include a proposed water and wastewater plan.

(iii) Adequate off-site facilities for potable water supply, sewage disposal, solid waste disposal, electrical supply, fire protection and roads shall be planned and programmed for the development proposed in the PD Plan for PUD-CZ, and the development is conveniently located in relation to schools and police protection services.

(iv) The PD Plan shall demonstrate compliance with the parks and recreation requirements of Sec. Article 14: *Parks, Recreation, Greenways, and Open Space* and Sec. 7.3.1 *Privately-owned Play Lawns* if there is a residential component in the PUD-CZ.

g) *Natural resource and environmental protection.* The PD Plan for PUD-CZ demonstrates compliance with the current regulatory standards of this Ordinance related to natural resource and environmental protection in Sec. 6.1 *Watershed Protection Overlay District*, Sec. 6.2 *Flood Damage Prevention Overlay District*, and Sec. 8.1 *Resource Conservation*.

h) *Storm water management.* The PD Plan shall demonstrate that the post-development rate of on-site storm water discharge from the entire site shall not exceed pre-development levels in accordance with Sec. 6.1.7 of the UDO.

i) *Phasing.* The PD Plan for PUD-CZ shall include a phasing plan for the development. If development of the PUD-CZ is proposed to occur in more than one phase, then guarantees shall be provided that project improvements and amenities that are necessary and desirable for residents of the project, or that are of benefit to the Town, are constructed with the first phase of the project, or, if this is not possible, then as early in the project as is technically feasible.

j) *Consistency with 2045 Land Use Map.* The PD Plan for PUD-CZ demonstrates consistency with the goals and policies established in the Town's 2045 Land Use.

k) *Complies with the UDO.* The PD Plan for PUD-CZ demonstrates compliance with all other relevant portions of the UDO.

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

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

1) *Consistency with 2045 Land Use Map.* The proposed Conditional Zoning (CZ) District use's appropriateness for its proposed location and consistency with the purposes, goals, objectives, and policies of the 2045 Land Use Map.

2) *Compatibility.* The proposed Conditional Zoning (CZ) District use's appropriateness for its proposed location and compatibility with the character of surrounding land uses.

3) *Zoning district supplemental standards.* The proposed Conditional Zoning (CZ) District use's compliance with Sec 4.4 *Supplemental Standards,* if applicable.

4) *Design minimizes adverse impact.* The design of the proposed Conditional Zoning (CZ) District use's minimization of adverse effects, including visual impact of the proposed use on adjacent lands; and avoidance of significant adverse impacts on surrounding lands regarding trash, traffic, service delivery, parking and loading, odors, noise, glare, and vibration and not create a nuisance.

5) *Design minimizes environmental impact.* The proposed Conditional Zoning District use's minimization of environmental impacts and protection from significant deterioration of water and air resources, wildlife habitat, scenic resources, and other natural resources.

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

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

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

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

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

May 24, 2019

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

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

Mr. Dean:

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

Study Area

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

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

The following intersections were also studied in the TIA:

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

.

Trip Generation

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

Background traffic

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

Trip Distribution and Assignment

The distribution to and from the development are as follows:

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

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

Traffic Capacity Analysis and Recommendations

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

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

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

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

Table 1. A.M. / P.M. Unsignalized Peak Hour Levels of Service Morris Acres Road and Reedybrook Crossing/North Site Driveway			
	Existing 2018	**No Build 2022**	**Build 2022**
Overall	NA	NA	NA
Eastbound (Reedybrook Crossing)	*A / B[2]*	*A / B[2]*	*B / B[2]*
Westbound (North Site Driveway)	*NA*	*NA*	*B / B[2]*
Northbound (Morris Acres Road)	*A / A[1]*	*A / A[1]*	*A / A[1]*
Southbound (Morris Acres Road)	*NA*	*NA*	*A / A[1]*

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

TIA recommendations:

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

Apex staff recommendations:

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

Morris Acres Road and South Site Driveway (unsignalized)

Table 2. A.M. / P.M. Unsignalized Peak Hour Levels of Service Morris Acres Road and South Site Driveway	
	Build 2022
Overall	NA
Westbound (South Site Driveway)	*A / B[2]*
Northbound (Morris Acres Road)	*NA*
Southbound (Morris Acres Road)	*A / A[1]*

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

TIA recommendations:

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

Apex staff recommendations:

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

Jenks Road and Morris Acres Road (unsignalized)

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

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

TIA recommendations:

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

Apex staff recommendations:

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

Morris Acres Road and Creekside Landing Drive (Signalized)

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

TIA recommendations:

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

Apex staff recommendations:

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

Morris Acres Road and US 64 Westbound (unsignalized)

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

1. Level of service for minor street stop controlled approaches

TIA recommendations:

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

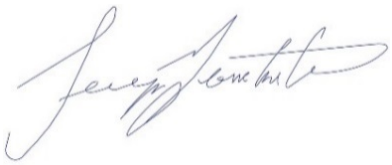
Apex staff recommendations:

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

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

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

Sincerely,



Serge Grebenschikov
Traffic Engineer
919-372-7448


Rezoning #19CZ02
540
GREEN LEVEL CHURCH RD
BRISTERS SPRING WAY
Walden Creek
WALDEN WOODS DR
WALDEN CREEK DR
RABBIT WALK LN
FLINTS POND CIR
The Flats at 540
TUNISIAN DR
REEDYBROOK CRSG
KYNER ALY
PEAKSIDE DR
540Townes
CitiSide
March, 2019
January, 2019 Aerial Photography
Prepared by: Town of Apex Planning Department
0
250
500
Feet

PLANNED UNIT DEVELOPMENT APPLICATION

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

Application #: 19CZ02 Submittal Date: 2/1/2019

Fee Paid $ 2370.00 Check #

PETITION TO AMEND THE OFFICIAL ZONING DISTRICT MAP

Project Name: Morris Acres PUD

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

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

Acreage: 17.44

Current Zoning: RR Proposed Zoning: PUD-CZ

Current 2030 LUM Designation: Medium Density Residential

Requested 2030 LUM Designation: Medium Density Residential

See next page for LUM amendment

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

Area classified as mixed use: Acreage:

Area proposed as non-residential development: Acreage:

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

Applicant Information

Name: Kaplan Residential

Address: 1111 Kane Concourse Ste 302

City: Bay Harbor Islands State: FL Zip: 33154

Phone: 305.901.2202 E-mail:

Owner Information

Name: Edith S Morris

Address: 7208 Morris Acres Road

City: Apex State: NC Zip: 27523

Phone: E-mail:

Agent Information

Name: Jason Barron

Address: 421 Fayetteville Street | Ste 530

City: Raleigh State: NC Zip: 27601

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

Other contacts: Nil Ghosh - nghosh@morningstarlawgroup.com

PLANNED UNIT DEVELOPMENT APPLICATION

Application #: 19CZ02 Submittal Date: 2/1/2019

2030 LAND USE MAP AMENDMENT (if applicable)

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

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

0, 7208, and 7208B Morris Acres Road

Current 2030 Land Use Classification: Medium Density Residential

Proposed 2030 Land Use Classification: Medium Density Residential

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

CERTIFIED LIST OF NEIGHBORING PROPERTY OWNERS

Application #: 19CZ02 Submittal Date: 2/1/2019

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

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

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

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

Date: October 18, 2019 By: _____

COUNTY OF WAKE STATE OF NORTH CAROLINA

Sworn and subscribed before me, Paula H. Zorio, a Notary Public for the above State and County, on this the 30th day of October, 2019.

_____
Notary Public

SEAL

Paula H. Zorio
Print Name

My Commission Expires: 3/26/24

PAULA H. ZORIO
NOTARY PUBLIC
WAKE COUNTY, N.C.

DEVELOPMENT NAME APPROVAL APPLICATION

Application #: 19CZ02 Submittal Date: 2/1/19

Fee for Initial Submittal: No Charge Fee for Name Change after Approval: $500*

Purpose

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

Guidelines

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

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

Existing Development Titles, Recurring

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

*excludes names with Green Level

DEVELOPMENT NAME APPROVAL APPLICATION

Application #: 19CZ02 Submittal Date: 2/1/19

Proposed Subdivision/Development Information

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

Nearest intersecting roads: Morris Acres Road at Reedybrook Crsg

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

Township: White Oak

Contact Information (as appropriate)

Contact person: Jason Barron

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

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

E-mail address: jbarron@morningstarlawgroup.com

Owner: _____

Phone number: _____ Fax number: _____

Address: _____

E-mail address: _____

Proposed Subdivision/Development Name

1st Choice: _____

2nd Choice *(Optional)*: _____

Town of Apex Staff Approval:

_____ _____

Town of Apex Planning Department Staff Date

STREET NAME APPROVAL APPLICATION

Application #: 19CZ02 Submittal Date: 2/1/2019

Wake County Approval Date: _____

Guidelines:

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

Information:

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

Nearest intersecting roads: Morris Acres Road at Reedybrook Crsg

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

Township: White Oak

Contact information (as appropriate)

Contact person: Jason Barron

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

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

E-mail address: jbarron@morningstarlawgroup.com

Owner: Edith S Morris

Phone number: _____ Fax number: _____

Address: 0, 7208 and 7208B Morris Acres Road

E-mail address: _____

STREET NAME APPROVAL APPLICATION

Application #: _____ Submittal Date: _____

# of roads to be named: _____

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

Example:	Road Name	Suffix
	Hunter	Street

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

TOWN OF APEX STAFF APPROVAL

Town of Apex Staff Approval Date

WAKE COUNTY STAFF APPROVAL:

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

Comments:

Wake County GIS Staff Approval Date

TOWN OF APEX UTILITIES OFFER AND AGREEMENT

Application #: _____ Submittal Date: _____

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

WAKE COUNTY, NORTH CAROLINA CUSTOMER SELECTION AGREEMENT

0, 7208, and 7208B Morris Acres Rd

_____

(the "Premises")

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

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

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

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

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

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

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

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

ACCEPTED:

CUSTOMER: _____ TOWN OF APEX

BY: _____ BY: _____
Authorized Agent Authorized Agent

DATE: _____ DATE: _____

AGENT AUTHORIZATION FORM

Application #: _____ Submittal Date: _____

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

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

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

The agent for this project is: Jason Barron

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

Agent Name: Jason Barron

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

Telephone Number: 919-590-0371

Fax Number: _____

E-Mail Address: jbarron@morningstarlawgroup.com

Signature(s) of Owner(s)

Edith S. Morris

Edith S. Morris — 1-28-2019

Type or print name — Date

_____

_____ _____

Type or print name — Date

_____

_____ _____

Type or print name — Date

Attach additional sheets if there are additional owners.

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

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.

10/18/19
Date

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

0, 7208 & 7208B Morris Acres Road (Address(es))

0732-28-9587; 0732-38-2530; and 0732-38-2709 (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
☑	Rezoning (including Planned Unit Development)	Town Council
■	Major Site Plan	Town Council (QJPH*)
☐	Special Use Permit	Town Council (QJPH*)
☑	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)):
A new residential community including up to 122 townhomes and associated open space & recreational amenities.

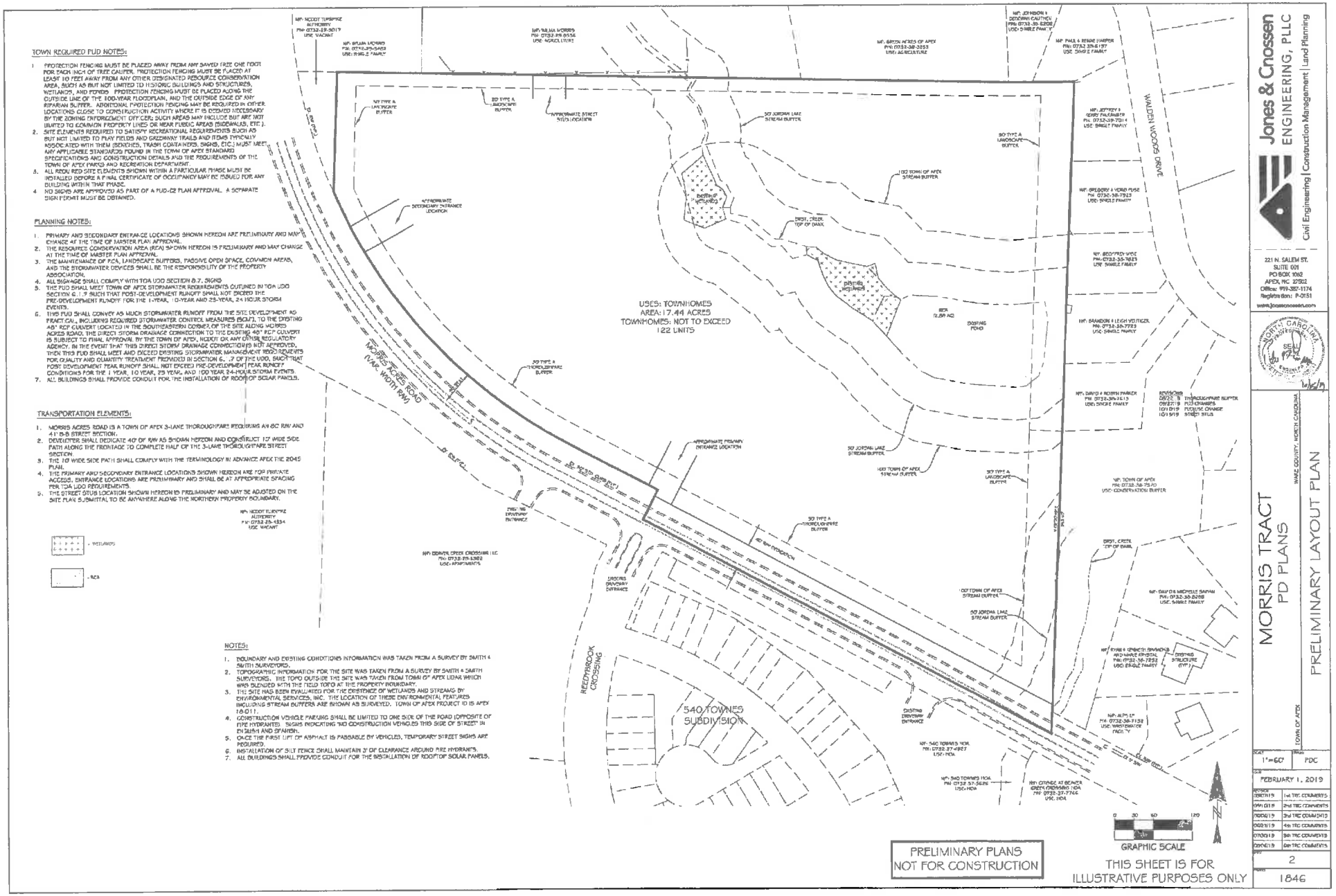
Estimated submittal date: November 1

MEETING INFORMATION:

Property Owner(s) name(s):	Edith S Morris
Applicant(s):	Kaplan Residential
Contact information (email/phone):	jbarron@morningstarlawgroup.com/919-590-0371
Meeting Address:	6175 Old Jenks Road, Apex, NC 27523
Date of meeting**:	10/29/19
Time of meeting**:	6:15PM

MEETING AGENDA TIMES:
Welcome: 6:15 PM - 6:18 PM Project Presentation: 6:18 PM - 6:25 PM Question & Answer: 6:25 PM - end

**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.


TOWN REQUIRED PUD NOTES:
1 PROTECTION FENCING MUST BE PLACED AWAY FROM ANY SAVED TREE ONE FOOT FOR EACH INCH OF TREE CALIPER. PROTECTION FENCING MUST BE PLACED AT LEAST 10 FEET AWAY FROM ANY OTHER DESIGNATED RESOURCE CONSERVATION AREA, SUCH AS BUT NOT LIMITED TO HISTORIC BUILDINGS AND STRUCTURES, WETLANDS, AND PONDS. PROTECTION FENCING MUST BE PLACED ALONG THE OUTSIDE LINE OF THE 100-YEAR FLOODPLAIN, AND THE OUTSIDE EDGE OF ANY RIPARIAN BUFFER. ADDITIONAL PROTECTION FENCING MAY BE REQUIRED IN OTHER LOCATIONS CLOSE TO CONSTRUCTION ACTIVITY WHERE IT IS DEEMED NECESSARY BY THE ZONING ENFORCEMENT OFFICER. SUCH AREAS MAY INCLUDE BUT ARE NOT LIMITED TO COMMON PROPERTY LINES OR NEAR PUBLIC AREAS (SIDEWALKS, ETC.).
2. SITE ELEMENTS REQUIRED TO SATISFY RECREATIONAL REQUIREMENTS SUCH AS BUT NOT LIMITED TO PLAY FIELDS AND GREENWAY TRAILS AND ITEMS TYPICALLY ASSOCIATED WITH THEM (BENCHES, TRASH CONTAINERS, SIGNS, ETC.) MUST MEET ANY APPLICABLE STANDARDS FOUND IN THE TOWN OF APEX STANDARD SPECIFICATIONS AND CONSTRUCTION DETAILS AND THE REQUIREMENTS OF THE TOWN OF APEX PARKS AND RECREATION DEPARTMENT.
3. ALL RECREATED SITE ELEMENTS SHOWN WITHIN A PARTICULAR PHASE MUST BE INSTALLED BEFORE A FINAL CERTIFICATE OF OCCUPANCY MAY BE ISSUED FOR ANY BUILDING WITHIN THAT PHASE.
4 NO SIGNS ARE APPROVED AS PART OF A PUD-CZ PLAN APPROVAL. A SEPARATE SIGN PERMIT MUST BE OBTAINED.
PLANNING NOTES:
1. PRIMARY AND SECONDARY ENTRANCE LOCATIONS SHOWN HEREON ARE PRELIMINARY AND MAY CHANGE AT THE TIME OF MASTER PLAN APPROVAL.
2. THE RESOURCE CONSERVATION AREA (RCA) SHOWN HEREON IS PRELIMINARY AND MAY CHANGE AT THE TIME OF MASTER PLAN APPROVAL.
3. THE MAINTENANCE OF RCA, LANDSCAPE BUFFERS, PASSIVE OPEN SPACE, COMMON AREAS, AND THE STORMWATER DEVICES SHALL BE THE RESPONSIBILITY OF THE PROPERTY ASSOCIATION.
4. ALL SIGNAGE SHALL COMPLY WITH TOA UDO SECTION 8.7, SIGNS
5. THE PUD SHALL MEET TOWN OF APEX STORMWATER REQUIREMENTS OUTLINED IN TOA UDO SECTION 6.1.7 SUCH THAT POST-DEVELOPMENT RUNOFF SHALL NOT EXCEED THE PRE-DEVELOPMENT RUNOFF FOR THE 1-YEAR, 10-YEAR AND 25-YEAR, 24 HOUR STORM EVENTS.
6. THIS PUD SHALL CONVEY AS MUCH STORMWATER RUNOFF FROM THE SITE DEVELOPMENT AS PRACTICAL, INCLUDING REQUIRED STORMWATER CONTROL MEASURES (SCM'), TO THE EXISTING 48" RCP CULVERT LOCATED IN THE SOUTHEASTERN CORNER OF THE SITE ALONG MORRIS ACRES ROAD. THE DIRECT STORM DRAINAGE CONNECTION TO THE EXISTING 48" RCP CULVERT IS SUBJECT TO FINAL APPROVAL BY THE TOWN OF APEX, NCDOT OR ANY OTHER REGULATORY AGENCY. IN THE EVENT THAT THIS DIRECT STORM DRAINAGE CONNECTION IS NOT APPROVED, THEN THIS PUD SHALL MEET AND EXCEED EXISTING STORMWATER MANAGEMENT REQUIREMENTS FOR QUALITY AND QUANTITY TREATMENT PROVIDED IN SECTION 6. .7 OF THE UDO, SUCH THAT POST DEVELOPMENT PEAK RUNOFF SHALL NOT EXCEED PRE-DEVELOPMENT PEAK RUNOFF CONDITIONS FOR THE 1 YEAR, 10 YEAR, 25 YEAR, AND 100 YEAR 24-HOUR STORM EVENTS.
7. ALL BUILDINGS SHALL PROVIDE CONDUIT FOR THE INSTALLATION OF ROOFTOP SOLAR PANELS.
TRANSPORTATION ELEMENTS:
1. MORRIS ACRES ROAD IS A TOWN OF APEX 3-LANE THOROUGHFARE REQUIRING AN 80' R/W AND 41'B-B STREET SECTION.
2. DEVELOPER SHALL DEDICATE 40' OF R/W AS SHOWN HEREON AND CONSTRUCT 10' WIDE SIDE PATH ALONG THE FRONTAGE TO COMPLETE HALF OF THE 3-LANE THOROUGHFARE STREET SECTION.
3. THE 10' WIDE SIDE PATH SHALL COMPLY WITH THE TERMINOLOGY IN ADVANCE APEX THE 2045 PLAN.
4. THE PRIMARY AND SECONDARY ENTRANCE LOCATIONS SHOWN HEREON ARE FOR PRIVATE ACCESS. ENTRANCE LOCATIONS ARE PRELIMINARY AND SHALL BE AT APPROPRIATE SPACING PER TOA UDO REQUIREMENTS.
5. THE STREET STUB LOCATION SHOWN HEREON IS PRELIMINARY AND MAY BE ADJUSTED ON THE SITE PLAN SUBMITAL TO BE ANYWHERE ALONG THE NORTHERN PROPERTY BOUNDARY.
- WETLANDS
- RCA
NOTES:
1. BOUNDARY AND EXISTING CONDITIONS INFORMATION WAS TAKEN FROM A SURVEY BY SMITH & SMITH SURVEYORS.
2. TOPOGRAPHIC INFORMATION FOR THE SITE WAS TAKEN FROM A SURVEY BY SMITH & SMITH SURVEYORS. THE TOPO OUTSIDE THE SITE WAS TAKEN FROM TOWN OF APEX LIDAR WHICH WAS BLENDED WITH THE FIELD TOPO AT THE PROPERTY BOUNDARY.
3. THE SITE HAS BEEN EVALUATED FOR THE EXISTENCE OF WETLANDS AND STREAMS BY ENVIRONMENTAL SERVICES, INC. THE LOCATION OF THESE ENVIRONMENTAL FEATURES INCLUDING STREAM BUFFERS ARE SHOWN AS SURVEYED. TOWN OF APEX PROJECT ID IS APEX 18-011.
4. CONSTRUCTION VEHICLE PARKING SHALL BE LIMITED TO ONE SIDE OF THE ROAD (OPPOSITE OF FIRE HYDRANTS). SIGNS INDICATING "NO CONSTRUCTION VEHICLES THIS SIDE OF STREET" IN ENGLISH AND SPANISH.
5. ONCE THE FIRST LIFT OF ASPHALT IS PASSABLE BY VEHICLES, TEMPORARY STREET SIGNS ARE REQUIRED.
6. INSTALLATION OF SILT FENCE SHALL MAINTAIN 3' OF CLEARANCE AROUND FIRE HYDRANTS.
7. ALL BUILDINGS SHALL PROVIDE CONDUIT FOR THE INSTALLATION OF ROOFTOP SOLAR PANELS.
USES: TOWNHOMES
AREA: 17.44 ACRES
TOWNHOMES: NOT TO EXCEED 122 UNITS
MORRIS ACRES ROAD
(VAR. WIDTH R/W)
WALDEN WOODS DRIVE
REEDYBROOK CROSSING
540 TOWNES SUBDIVISION
50' TYPE A LANDSCAPE BUFFER
50' TYPE A THOROUGHFARE BUFFER
50' JORDAN LAKE STREAM BUFFER
100' TOWN OF APEX STREAM BUFFER
APPROXIMATE PRIMARY ENTRANCE LOCATION
APPROXIMATE SECONDARY ENTRANCE LOCATION
APPROXIMATE STREET STUB LOCATION
EXISTING DRIVEWAY ENTRANCE
EXISTING STRUCTURE (TYP.)
EXISTING PONDS
EXISTING WETLANDS
BRST. CREEK TOP OF BANK
RCA 11.89 AC
NCDOT TURNPIKE AUTHORITY PIN: 0732-28-5017 USE: VACANT
NCDOT TURNPIKE AUTHORITY PIN: 0732-25-4334 USE: VACANT
MF: BRAVA CREEK CROSSING I LLC PIN: 0732-25-3282 USE: APARTMENTS
MF: TOWN OF APEX PIN: 0732-36-7520 USE: CONSERVATION BUFFER
MF: 540 TOWNES HOA PIN: 0732-37-4987 USE: HOA
MF: 540 TOWNES HOA PIN: 0732-37-5696 USE: HOA
MF: CHINGE AT BEAVER CREEK CROSSING HOA PIN: 0732-37-7746 USE: HOA
MF: ALPS LP PIN: 0732-36-7158 USE: WASTEWATER FACILITY
PRELIMINARY PLANS NOT FOR CONSTRUCTION
THIS SHEET IS FOR ILLUSTRATIVE PURPOSES ONLY
0 30 60 120
GRAPHIC SCALE
N
Jones & Crossen ENGINEERING, PLLC
Civil Engineering | Construction Management | Land Planning
221 N. SALEM ST.
SUITE 101
PO BOX 1062
APEX, NC 27502
Office: 919-387-1174
Registration: P-0151
www.jonescrossen.com
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 17
MORRIS TRACT
PD PLANS
WAKE COUNTY, NORTH CAROLINA
PRELIMINARY LAYOUT PLAN
TOWN OF APEX
SCALE 1"=60'
DRAWN PDC
DATE FEBRUARY 1, 2019
REVISIONS
2/28/2019 1st TRC COMMENTS
4/29/2019 2nd TRC COMMENTS
7/26/2019 3rd TRC COMMENTS
9/23/2019 4th TRC COMMENTS
11/20/2019 5th TRC COMMENTS
12/20/2019 6th TRC COMMENTS
SHEET 2
PROJECT 1846

SUMMARY OF DISCUSSION FROM THE NEIGHBORHOOD MEETING

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

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

Applicant(s): Kaplan Residential

Contact information (email/phone): c/o Jason Barron (jbarron@morningstarlawgroup.com)

Meeting Address: Hope Chapel, 6175 Old Jenks Road, Apex

Date of meeting: October 29, 2019 Time of meeting: 6:15 p.m.

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

Question/Concern #1:

Why is building proposed in the Northeast Corner?

Applicant's Response:

Additional area was needed when the decision was made to develop at a much lower density. Also required to do public streets. The apartments allowed Site to be compressed, because the units could be stacked. The townhouse plan requires more land area.

Question/Concern #2:

When do you plan to provide elevations?

Applicant's Response:

At Master Subdivision submittal. Neighborhood meeting is required at that time.

Question/Concern #3:

What is type of buffer is a Type A Buffer?

Applicant's Response:

Most dense buffer required per Apex UDO. Supplemental plantings may be required in existing vegetated areas.

Question/Concern #4:

Which building heights will be considered adjacent to existing homes?

Applicant's Response:

Maximum building height is 45'.

SUMMARY OF DISCUSSION FROM THE NEIGHBORHOOD MEETING

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

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

Applicant(s): Kaplan Residential

Contact information (email/phone): c/o Jason Barron (jbarron@morningstarlawgroup.com)

Meeting Address: Hope Chapel, 6175 Old Jenks Road, Apex

Date of meeting: October 29, 2019 Time of meeting: 6:15 p.m.

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:
Discussion on traffic

Applicant's Response:
Entrance will be across from Apartments on other side of street.

Question/Concern #2:
Discussion on sewer

Applicant's Response:
We have to tie into existing sewer, will know at time of Site Plan if will be permitted to bury the line under the creek.

Question/Concern #3:
Question raised about 50' buffer adjacent to existing homes

Applicant's Response:
Yes, 50' Type A Buffer adjacent to all existing single family homes.

Question/Concern #4:

Applicant's Response:

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: Hope Chapel, 6175 Old Jenks Road, Apex

Date of meeting: October 29, 2019 Time of meeting: 6:15pm

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

Applicant(s): Kaplan Residential

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

	NAME/ORGANIZATION	ADDRESS	PHONE #	EMAIL	SEND PLANS & UPDATES
1.	ANNA COLTEN	1602 SHEPHERDS GL	[redacted]		
2.	Karen Abramson	2107 Oak Stream Ln.			
3.	Matt Abramson	"			
4.	Susan Cormier	1509 Poets Glade Dr.			
5.	Pati Edwards	1512 Poets Glade Dr.			
6.	Andrew George	2314 Walden Creek Dr			
7.	Emo Kaplan	2524 Walden Woods			
8.	Varda Carbleg	2416 Flints Pond Cir			
9.	Gail Peterson	2502 [illegible]			
10.	Michele Mulcahy	2526 Walden Woods			
11.	Abi Carruthers	2521 Walden Woods			
12.	Don Grosser	2503 Walden Woods			
13.	Dan Isaac	2507 Walden Woods			
14.	RYAN SIMMONS	2508 FLINTS POND CIR			

Use additional sheets, if necessary.

NEIGHBORHOOD MEETING SIGN-IN SHEET

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Meeting Address: Hope Chapel, 6175 Old Jenks Road, Apex

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Applicant(s): Kaplan Residential

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.	Doug Keiter	2213 Colony Woods Dr	[redacted]		
2.	Mark + Renae Harper	2519 Walden Woods Dr			
3.	John Koester	2505 Walden Woods Dr			
4.	John Williams	2518 Walden Woods Dr			
5.	Doug Dieckmann	2416 Flints Pond Cir			
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					

Use additional sheets, if necessary.


3205

Morris Acres PUD

PD PLAN

APEX, NORTH CAROLINA

Submitted: February 2019

Revised: February 28, 2019

Revised: May 10, 2019

Revised: June 7, 2019

Revised: June 27, 2019

Revised: July 31, 2019

Revised: August 6, 2019

Revised: August 23, 2019

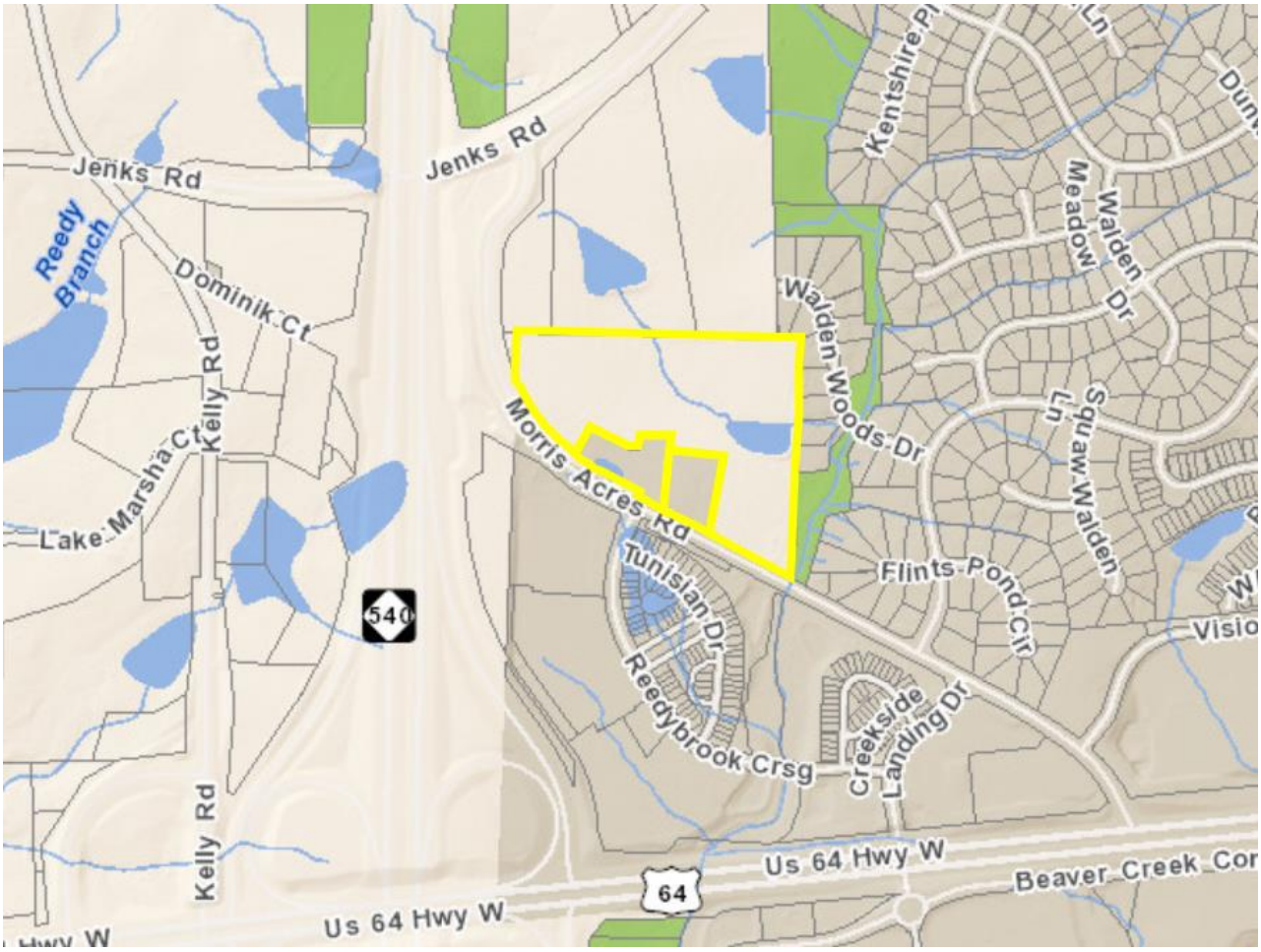
Revised: October 30, 2019

PREPARED BY:

MORNINGSTAR LAW GROUP

Section 1: Table of Contents – PUD Text

Section 2: Vicinity Map



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

Section 3: Project Data

A. Name of Project:
Morris Acres PUD

B. Property Owners:
Edith S. Morris

Prepared By:

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

C. Current Zoning Designation:
Rural Residential (RR)

D. Proposed Zoning Designation:
Planned Unit Development – Conditional Zoning (PUD-CZ)

E. Current 2045 Land Use Map Designation:
Medium Density Residential (< 7 units/acre)

F. Proposed 2045 Land Use Map Designation:
Medium Density Residential (< 7 units/acre)

G. Proposed Use
Up to 122 dwelling units and associated open space, recreational amenities and infrastructure.

H. Size of Project

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

Section 4: Purpose Statement

The Morris Acres PUD development will be a townhome community with buildings that are up to three (3) stories in height. The maximum building height shall be forty-five feet (45') measured to the top of any pitched roof. For a site adjacent to existing four-story apartments and NC540 to the south and west, but also adjacent to single family dwellings to the east, the townhome style development at three stories and seven (7) dwelling units per acre is intended to provide a transition between the existing uses. Additionally, the property abuts a future transit corridor anticipated to be located along Morris Acres Road, so medium density use at seven (7) dwelling units per acre is advisable.

A fifty-foot (50') Type A buffer shall be established along the eastern boundary of the subject property to appropriately buffer the townhome units from the existing residential community and further bolster transitions.

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

- Allow uses that are compatible with Section 4.2.2, *Use Table* of the UDO
- Provide for the preservation of existing environmentally sensitive areas.
- Provide for site specific and appropriate stormwater controls that exceed the requirements of the UDO.
- Provide appropriate buffering and screening from the proposed use to the existing residential areas.
- Offer medium density near interstate I-540 in an area where there are not many options for the same.
- Provide development densities that support the Town's future transit corridor planning.
- Provide residential densities that
- Demonstrate dimensional standards that are consistent with the UDO, and where variations occur, said variations will be included herein and subject to Council approval.
- Provide a high-quality community that is linked by a network of connected streets and pedestrian sidewalks that promotes connectivity, walkability and healthy lifestyles.
- Exhibit character and quality that is compatible with surrounding communities, which is expected to enhance the value of surrounding land uses.
- Provide open space and walkable trails to promote pedestrian activity, while appropriately buffering adjacent residential areas

All site-specific standards and conditions of this PUD Plan shall be consistent with all Conditional Zoning (CZ) District standards set forth in the UDO Section 2.3.3, *Conditional Zoning Districts* and UDO Section 2.3.4.F.1, *Planned Unit Development (PUD-CZ) District*. The proposed PUD will provide a development density that is

consistent with principles found throughout the recently updated Advance Apex 2045. Through various policies, the Peak Plan 2030 works to ensure that there are appropriate transitions between uses. The proposed PUD Plan does just that, by transitioning from I-540 on the west to the single-family Walden Creek community east of the site. Thus, the plan is consistent with several policies contained within the Peak Plan 2030.

Section 5: Permitted Uses

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

- Townhomes
- Greenway
- Recreation Facility, private
- Park, active
- Park, passive
- Utility, minor

Additionally, the following conditions shall also apply:

A. A maximum of 122 residential units shall be permitted upon the property.
B. A fifty-foot (50') Type A Duffer shall be established and maintained along the eastern boundary of the subject property.
C. The maximum height for buildings shall be three (3) stories (forty-five feet (45')).
D. All buildings constructed on the property shall provide solar conduit for the installation of rooftop solar panels.

Section 6: Proposed Design Controls

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

B. Residential Densities and Design Controls

Density - The overall gross density shall not exceed 7.0 units per acre.

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

Maximum Density:	7.0 Units/Acre (includes RCA and rights-of-way)
Maximum Number of Units:	122
Maximum Built-Upon Area:	70%
Minimum Lot Size:	n/a
Minimum Lot Width:	n/a

Maximum Building Height: three (3) stories (45')

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

Minimum Building Setbacks:

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

C. Buffers

Perimeter Buffers

North boundary:	20-foot Type A
South boundary (Morris Acres Road):	30-foot Type A
West boundary (along 0732-29-5017):	30-foot Type A
East boundary	50-foot Type A

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

Thoroughfare Buffers

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

Section 7: Proposed Architectural Controls

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

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

Section 8: Parking and Loading

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

Section 9: Signage

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

Section 10: Natural Resource and Environmental Data

A. River Basins and Watershed Protection Overlay Districts

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

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

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

The Site is located on the east side of the 540 corridor and therefore is required to preserve a minimum of 20% Resource Conservation Area (RCA). Designated RCA areas will be consistent with the items listed in Section 8.1.2(B) of the Town's UDO. Preserved streams, wetlands, and associated riparian buffers provide the primary RCA's throughout the site. Additional RCA area provided include stormwater management areas, perimeter buffers, and greenway trails within the walkable community.

C. Any historic structures present

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

Section 11: Stormwater Management

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

- Post development peak runoff shall not exceed pre-development peak runoff conditions for the 1 year, 10 year, and 25 year 24-hour storm events.

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

Section 12: Parks and Recreation

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

Section 13: Public Facilities

The proposed PUD shall meet all Public Facilities requirements as set forth in UDO

Section 2.3.4(F)(1)(f) and be designed according to sound engineering standards, and shall comply with Town of Apex Sewer and Water Master Plan and the Town of Apex Standards and Specifications. Specifically, road and utility infrastructure shall be as follows:

- **General Roadway Infrastructure**

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

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

- **Transportation Improvements**

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

- **Wayfinding Improvements**

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

- **Water and Sanitary Sewer**

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

- **Other Utilities**

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

Section 14: Phasing Plan

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

provided in accordance with the UDO.

Section 15: Consistency with the 2045 Land Use Map

The proposed land use is consistent with the 2045 Land Use Map.

Section 16: Compliance with the UDO

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

Section 17: Compliance with Comprehensive Transportation Plan and Bicycle Plan

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

Section 18: Public Art

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

MORRIS TRACT
PLANNED UNIT DEVELOPMENT

VICINITY MAP
N.T.S.

SITE DATA

PROJECT NAME	MORRIS TRACT
PREPARER'S CONTACT INFORMATION	JONES & CNOSSEN ENGINEERING, PLLC P.O. BOX 1062 APEX, NORTH CAROLINA 27502 PHONE - (919) 387-1174 FAX - (919) 387-3375 CONTACT PERSON - PETER D. CNOSSEN
OWNER / DEVELOPER CONTACT INFORMATION	KAPLAN RESIDENTIAL 1111 KANE CONCOURSE, SUITE 302 BAY HARBOUR, FLORIDA 33154 PHONE - (305) 901-2203 CONTACT PERSON - MORRIS KAPLAN
CURRENT ZONING	RR
CURRENT 2045 LAND USE MAP DESIGNATION	MEDIUM DENSITY RESIDENTIAL
PROPOSED ZONING DESIGNATION	PUD-CZ
PROPOSED 2045 LAND USE MAP DESIGNATION	MEDIUM DENSITY RESIDENTIAL
WAKE COUNTY PINS 0732-	38-2709, 38-2530, 28-9587
TOTAL PROJECT AREA	17.44 ACRES
AREA IN MORRIS ACRES ROAD R/W DEDICATION	0.64 ACRE
NET SITE AREA	16.80 ACRES
MAXIMUM NUMBER OF UNITS	122 UNITS (7.0 UNITS/ACRE)
PROPOSED NUMBER OF UNITS	122 UNITS (7.0 UNITS/ACRE)
REQUIRED RCA / BUFFER AREA	3.49 ACRES (20.0%)
PROVIDED RCA / BUFFER AREA	5.11 ACRES (29.3%)
MAXIMUM BUILT UPON AREA FOR PUD	70% OR 12.21 ACRES
MAXIMUM BUILDING HEIGHT	45' (3-STORIES)
OFF STREET PARKING	TOWN OF APEX UDO REQUIREMENTS
PUBLIC RECREATION REQUIREMENT	TOWNHOMES
WATERSHED INFORMATION	PRIMARY; BEAVER CREEK BASIN
HISTORIC STRUCTURE?	NO
FEMA FLOODPLAIN INFORMATION	MAP #3720073300J - PROJECT IS NOT WITHIN 100 YEAR FLOODPLAIN

PERMITTED USE:
- TOWNHOMES
- GREENWAY
- RECREATION FACILITY, PRIVATE
- PARK, ACTIVE
- PARK, PASSIVE
- UTILITY, MINOR

MINIMUM BUILDING SETBACKS

FROM BUILDING TO BUILDING	10'
FROM BUFFER/RCA	10' FOR BUILDINGS 5' FOR PARKING AREAS

PD PLAN - DRAWING SHEET INDEX

REVISIONS
09/27/19 RCA & SETBACKS
09/27/19 PUD CHANGES
10/10/19 PUD USE CHANGE

PRELIMINARY PLANS
NOT FOR CONSTRUCTION

THIS SHEET IS FOR
ILLUSTRATIVE PURPOSES ONLY

Jones & Cnossen
ENGINEERING, PLLC
Civil Engineering | Construction Management | Land Planning

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NORTH CAROLINA PROFESSIONAL SEAL 042 ENGINEER PETER D. CNOSSEN
10/30/19

MORRIS TRACT
PD PLANS
TOWN OF APEX, WAKE COUNTY, NORTH CAROLINA

COVER SHEET

SCALE	1"=100'
DRAWN	PDC
DATE	FEBRUARY 1, 2019

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

SHEET 1

PROJECT 1846

TOWN REQUIRED PUD NOTES:

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

PLANNING NOTES:

1. PRIMARY AND SECONDARY ENTRANCE LOCATIONS SHOWN HEREON ARE PRELIMINARY AND MAY CHANGE AT THE TIME OF MASTER PLAN APPROVAL.
2. THE RESOURCE CONSERVATION AREA (RCA) SHOWN HEREON IS PRELIMINARY AND MAY CHANGE AT THE TIME OF MASTER PLAN APPROVAL.
3. THE MAINTENANCE OF RCA, LANDSCAPE BUFFERS, PASSIVE OPEN SPACE, COMMON AREAS, AND THE STORMWATER DEVICES SHALL BE THE RESPONSIBILITY OF THE PROPERTY ASSOCIATION.
4. ALL SIGNAGE SHALL COMPLY WITH TOA UDO SECTION 8.7, SIGNS
5. THE PUD SHALL MEET TOWN OF APEX STORMWATER REQUIREMENTS OUTLINED IN TOA UDO SECTION 6.1.7 SUCH THAT POST-DEVELOPMENT RUNOFF SHALL NOT EXCEED THE PRE-DEVELOPMENT RUNOFF FOR THE 1-YEAR, 10-YEAR AND 25-YEAR, 24 HOUR STORM EVENTS.
6. THIS PUD SHALL CONVEY AS MUCH STORMWATER RUNOFF FROM THE SITE DEVELOPMENT AS PRACTICAL, INCLUDING REQUIRED STORMWATER CONTROL MEASURES (SCM'), TO THE EXISTING 48" RCP CULVERT LOCATED IN THE SOUTHEASTERN CORNER OF THE SITE ALONG MORRIS ACRES ROAD. THE DIRECT STORM DRAINAGE CONNECTION TO THE EXISTING 48" RCP CULVERT IS SUBJECT TO FINAL APPROVAL BY THE TOWN OF APEX, NCDOT OR ANY OTHER REGULATORY AGENCY. IN THE EVENT THAT THIS DIRECT STORM DRAINAGE CONNECTION IS NOT APPROVED, THEN THIS PUD SHALL MEET AND EXCEED EXISTING STORMWATER MANAGEMENT REQUIREMENTS FOR QUALITY AND QUANTITY TREATMENT PROVIDED IN SECTION 6.1.7 OF THE UDO, SUCH THAT POST DEVELOPMENT PEAK RUNOFF SHALL NOT EXCEED PRE-DEVELOPMENT PEAK RUNOFF CONDITIONS FOR THE 1 YEAR, 10 YEAR, 25 YEAR, AND 100 YEAR 24-HOUR STORM EVENTS.
7. ALL BUILDINGS SHALL PROVIDE CONDUIT FOR THE INSTALLATION OF ROOFTOP SOLAR PANELS.

TRANSPORTATION ELEMENTS:

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

- WETLANDS
- RCA

NOTES:

1. BOUNDARY AND EXISTING CONDITIONS INFORMATION WAS TAKEN FROM A SURVEY BY SMITH & SMITH SURVEYORS.
2. TOPOGRAPHIC INFORMATION FOR THE SITE WAS TAKEN FROM A SURVEY BY SMITH & SMITH SURVEYORS. THE TOPO OUTSIDE THE SITE WAS TAKEN FROM TOWN OF APEX LIDAR WHICH WAS BLENDED WITH THE FIELD TOPO AT THE PROPERTY BOUNDARY.
3. THE SITE HAS BEEN EVALUATED FOR THE EXISTENCE OF WETLANDS AND STREAMS BY ENVIRONMENTAL SERVICES, INC. THE LOCATION OF THESE ENVIRONMENTAL FEATURES INCLUDING STREAM BUFFERS ARE SHOWN AS SURVEYED. TOWN OF APEX PROJECT ID IS APEX 18-011.
4. CONSTRUCTION VEHICLE PARKING SHALL BE LIMITED TO ONE SIDE OF THE ROAD (OPPOSITE OF FIRE HYDRANTS). SIGNS INDICATING "NO CONSTRUCTION VEHICLES THIS SIDE OF STREET" IN ENGLISH AND SPANISH.
5. ONCE THE FIRST LIFT OF ASPHALT IS PASSABLE BY VEHICLES, TEMPORARY STREET SIGNS ARE REQUIRED.
6. INSTALLATION OF SILT FENCE SHALL MAINTAIN 3' OF CLEARANCE AROUND FIRE HYDRANTS.
7. ALL BUILDINGS SHALL PROVIDE CONDUIT FOR THE INSTALLATION OF ROOFTOP SOLAR PANELS.

N/F: NCDOT TURNPIKE AUTHORITY
PIN: 0732-29-5017
USE: VACANT

N/F: WILMA MORRIS
PIN: 0732-29-5482
USE: SINGLE FAMILY

N/F: WILMA MORRIS
PIN: 0732-29-8556
USE: AGRICULTURE

N/F: GREEN ACRES OF APEX
PIN: 0732-39-3853
USE: AGRICULTURE

N/F: JOHNSON & DEBORAH CAUTHEN
PIN: 0732-39-6202
USE: SINGLE FAMILY

N/F: PAUL & RENAE HARPER
PIN: 0732-39-6197
USE: SINGLE FAMILY

N/F: JEFFREY & KERRY FAUKANGER
PIN: 0732-39-7014
USE: SINGLE FAMILY

N/F: GREGORY & YOKO FUSE
PIN: 0732-38-7923
USE: SINGLE FAMILY

N/F: GEOFFREY WISE
PIN: 0732-38-7823
USE: SINGLE FAMILY

N/F: BRANDON & LEIGH VOJTICEK
PIN: 0732-38-7723
USE: SINGLE FAMILY

N/F: DAVID & ROBYN PARKER
PIN: 0732-38-7613
USE: SINGLE FAMILY

N/F: TOWN OF APEX
PIN: 0732-38-7570
USE: CONSERVATION BUFFER

N/F: DAVID & MICHELLE SAFIAN
PIN: 0732-38-9289
USE: SINGLE FAMILY

N/F: RYAN & KENNETH SIMMONS AND MARIE KRYSTAL
PIN: 0732-38-7292
USE: SINGLE FAMILY

N/F: ALPS LP
PIN: 0732-38-7152
USE: WASTEWATER FACILITY

N/F: BEAVER CREEK CROSSING LLC
PIN: 0732-28-6392
USE: APARTMENTS

N/F: NCDOT TURNPIKE AUTHORITY
PIN: 0732-28-4334
USE: VACANT

N/F: 540 TOWNES HOA
PIN: 0732-37-4927
USE: HOA

N/F: 540 TOWNES HOA
PIN: 0732-37-5626
USE: HOA

N/F: CITISIDE AT BEAVER CREEK CROSSING HOA
PIN: 0732-37-7766
USE: HOA

WALDEN WOODS DRIVE

MORRIS ACRES ROAD (VAR. WIDTH R/W)

REEDYBROOK CROSSING

540 TOWNES SUBDIVISION

USES: TOWNHOMES
AREA: 17.44 ACRES
TOWNHOMES: NOT TO EXCEED 122 UNITS

RCA (2.88 AC)

EXISTING POND

EXISTING WETLANDS

EXISTING WETLANDS

EXIST. CREEK TOP OF BANK

EXIST. CREEK TOP OF BANK

EXISTING STRUCTURE (TYP.)

30' TYPE A LANDSCAPE BUFFER

20' TYPE A LANDSCAPE BUFFER

APPROXIMATE STREET STUB LOCATION

50' JORDAN LAKE STREAM BUFFER

50' TYPE A LANDSCAPE BUFFER

100' TOWN OF APEX STREAM BUFFER

APPROXIMATE SECONDARY ENTRANCE LOCATION

30' TYPE A THOROUGHFARE BUFFER

APPROXIMATE PRIMARY ENTRANCE LOCATION

50' JORDAN LAKE STREAM BUFFER

100' TOWN OF APEX STREAM BUFFER

50' TYPE A LANDSCAPE BUFFER

30' TYPE A THOROUGHFARE BUFFER

40' R/W DEDICATION

N 03°20'49" E
565.07'

100' TOWN OF APEX STREAM BUFFER

50' JORDAN LAKE STREAM BUFFER

EXISTING DRIVEWAY ENTRANCE

EXISTING DRIVEWAY ENTRANCE

EXISTING DRIVEWAY ENTRANCE

EX. 80' R/W (TYP.)

EX. 80' STD. CURB (TYP.)

EX. 5' SW (TYP.)

EX. 5' SW (TYP.)

0 30 60 120
GRAPHIC SCALE

N

PRELIMINARY PLANS
NOT FOR CONSTRUCTION

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Registration: P-0151
www.jonescnossen.com

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 042 WALTER D. CNOSSEN
6/25/19

REVISIONS
08/22/19 THOROUGHFARE BUFFER
09/27/19 PUD CHANGES
10/10/19 PUD USE CHANGE
10/15/19 STREET STUB
10/30/19 NE 50' BUFFER

MORRIS TRACT PD PLANS

WAKE COUNTY, NORTH CAROLINA

TOWN OF APEX

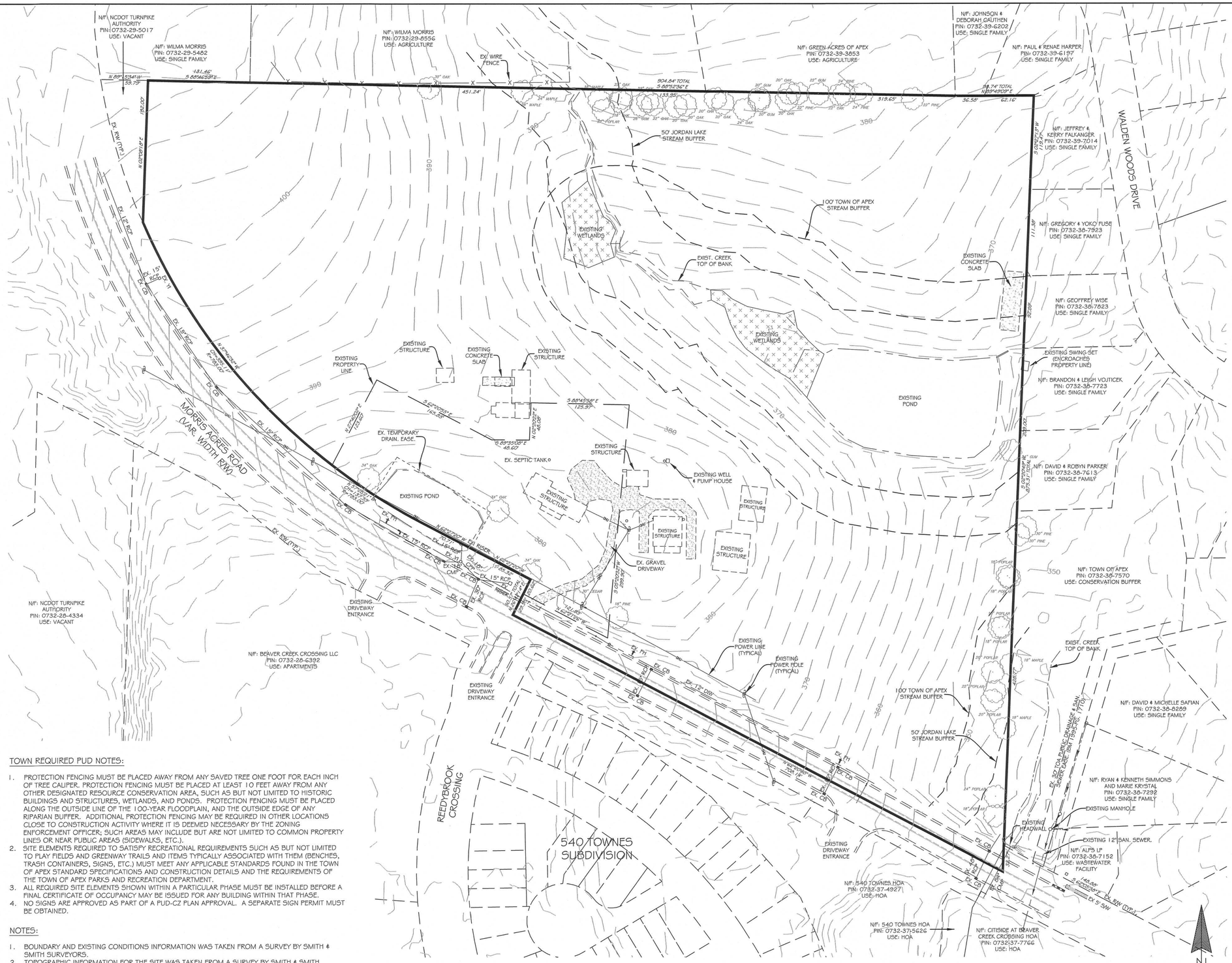
PRELIMINARY LAYOUT PLAN

SCALE	1"=60'
DRAWN	PDC
DATE	FEBRUARY 1, 2019

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

SHEET 2

PROJECT 1846



TOWN REQUIRED PUD NOTES:

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

NOTES:

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

PRELIMINARY PLANS
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NORTH CAROLINA PROFESSIONAL SEAL 17942 ENGINEER PETER D. CNOSSEN
01/7/19

MORRIS TRACT
PD PLANS

TOWN OF APEX
WAKE COUNTY, NORTH CAROLINA

EXISTING CONDITIONS PLAN

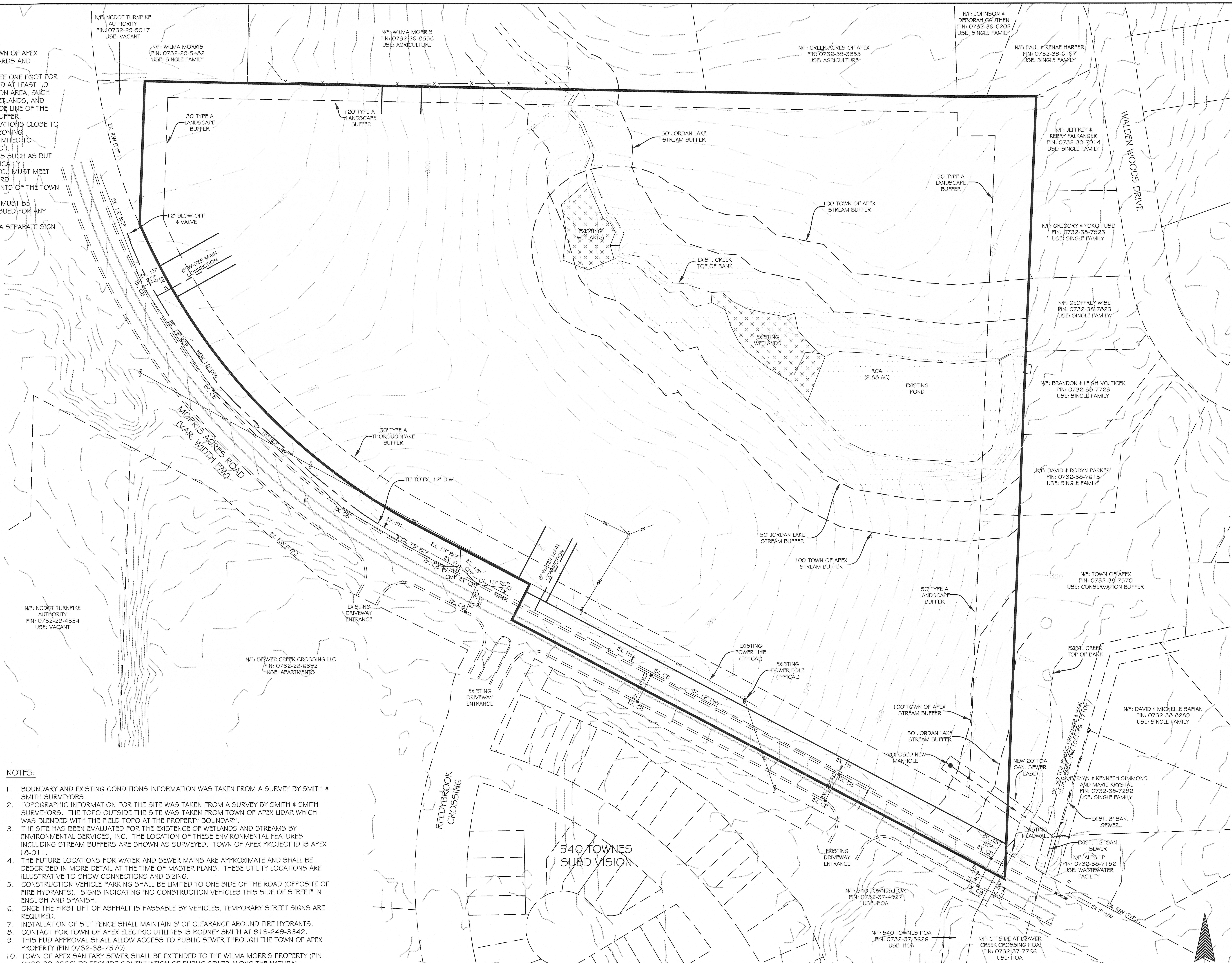
SCALE	1"=60'
DRAWN	PDC
DATE	FEBRUARY 1, 2019

REVISION	
03/07/19	1st TRC COMMENTS

SHEET	3
PROJECT	1846

TOWN REQUIRED PUD NOTES:

1. ALL UTILITY DESIGNS AND EXTENSIONS SHALL COMPLY WITH THE TOWN OF APEX SEWER AND WATER MASTER PLANS AND THE TOWN OF APEX STANDARDS AND SPECIFICATIONS.
2. PROTECTION FENCING MUST BE PLACED AWAY FROM ANY SAVED TREE ONE FOOT FOR EACH INCH OF TREE CALIPER. PROTECTION FENCING MUST BE PLACED AT LEAST 10 FEET AWAY FROM ANY OTHER DESIGNATED RESOURCE CONSERVATION AREA, SUCH AS BUT NOT LIMITED TO HISTORIC BUILDINGS AND STRUCTURES, WETLANDS, AND PONDS. PROTECTION FENCING MUST BE PLACED ALONG THE OUTSIDE LINE OF THE 100-YEAR FLOODPLAIN, AND THE OUTSIDE EDGE OF ANY RIPARIAN BUFFER. ADDITIONAL PROTECTION FENCING MAY BE REQUIRED IN OTHER LOCATIONS CLOSE TO CONSTRUCTION ACTIVITY WHERE IT IS DEEMED NECESSARY BY THE ZONING ENFORCEMENT OFFICER; SUCH AREAS MAY INCLUDE BUT ARE NOT LIMITED TO COMMON PROPERTY LINES OR NEAR PUBLIC AREAS (SIDEWALKS, ETC.).
3. 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.
4. ALL REQUIRED SITE ELEMENTS SHOWN WITHIN A PARTICULAR PHASE MUST BE INSTALLED BEFORE A FINAL CERTIFICATE OF OCCUPANCY MAY BE ISSUED FOR ANY BUILDING WITHIN THAT PHASE.
5. NO SIGNS ARE APPROVED AS PART OF A PUD-CZ PLAN APPROVAL. A SEPARATE SIGN PERMIT MUST BE OBTAINED.



NOTES:

1. BOUNDARY AND EXISTING CONDITIONS INFORMATION WAS TAKEN FROM A SURVEY BY SMITH & SMITH SURVEYORS.
2. TOPOGRAPHIC INFORMATION FOR THE SITE WAS TAKEN FROM A SURVEY BY SMITH & SMITH SURVEYORS. THE TOPO OUTSIDE THE SITE WAS TAKEN FROM TOWN OF APEX LIDAR WHICH WAS BLENDED WITH THE FIELD TOPO AT THE PROPERTY BOUNDARY.
3. THE SITE HAS BEEN EVALUATED FOR THE EXISTENCE OF WETLANDS AND STREAMS BY ENVIRONMENTAL SERVICES, INC. THE LOCATION OF THESE ENVIRONMENTAL FEATURES INCLUDING STREAM BUFFERS ARE SHOWN AS SURVEYED. TOWN OF APEX PROJECT ID IS APEX 18-011.
4. THE FUTURE LOCATIONS FOR WATER AND SEWER MAINS ARE APPROXIMATE AND SHALL BE DESCRIBED IN MORE DETAIL AT THE TIME OF MASTER PLANS. THESE UTILITY LOCATIONS ARE ILLUSTRATIVE TO SHOW CONNECTIONS AND SIZING.
5. CONSTRUCTION VEHICLE PARKING SHALL BE LIMITED TO ONE SIDE OF THE ROAD (OPPOSITE OF FIRE HYDRANTS). SIGNS INDICATING "NO CONSTRUCTION VEHICLES THIS SIDE OF STREET" IN ENGLISH AND SPANISH.
6. ONCE THE FIRST LIFT OF ASPHALT IS PASSABLE BY VEHICLES, TEMPORARY STREET SIGNS ARE REQUIRED.
7. INSTALLATION OF SILT FENCE SHALL MAINTAIN 3' OF CLEARANCE AROUND FIRE HYDRANTS.
8. CONTACT FOR TOWN OF APEX ELECTRIC UTILITIES IS RODNEY SMITH AT 919-249-3342.
9. THIS PUD APPROVAL SHALL ALLOW ACCESS TO PUBLIC SEWER THROUGH THE TOWN OF APEX PROPERTY (PIN 0732-38-7570).
10. TOWN OF APEX SANITARY SEWER SHALL BE EXTENDED TO THE WILMA MORRIS PROPERTY (PIN 0732-29-8556) TO PROVIDE CONTINUATION OF PUBLIC SEWER ALONG THE NATURAL DRAINAGE FEATURE.
11. ANY REQUIRED UTILITY CONNECTIONS TO THE SURROUNDING PROPERTIES AND PUBLIC R/W SHALL BE ALLOWED THROUGH ALL PERIMETER BUFFERS.

PRELIMINARY PLANS NOT FOR CONSTRUCTION

GRAPHIC SCALE 0 30 60 120

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NORTH CAROLINA PROFESSIONAL SEAL 17250 ENGINEER PETER D. CNOSSEN 10/30/19

MORRIS TRACT PD PLANS

TOWN OF APEX WAKE COUNTY, NORTH CAROLINA

PRELIMINARY UTILITY PLAN

SCALE 1"=60'	DRAWN PDC
DATE FEBRUARY 1, 2019	
REVISION 03/07/19	1st TRC COMMENTS
05/10/19	2nd TRC COMMENTS
06/27/19	4th TRC COMMENTS
09/27/19	PUD CHANGES
SHEET 4	
PROJECT 1846	

Traffic Impact Analysis

The Wayforth at Apex
Apex, NC

Prepared for:

Kaplan Residential

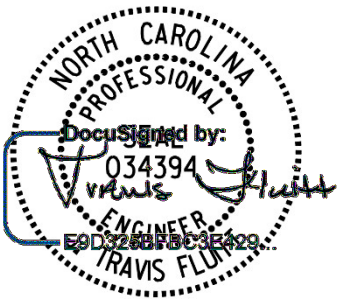
Kimley»Horn

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

Prepared for:
Kaplan Residential
Bay Harbor, FL

Prepared by:
Kimley-Horn and Associates, Inc.
NC License #F-0102
421 Fayetteville Street, Suite 600
Raleigh, NC 27601
(919) 677-2000

January 2019
013249000



1/21/2019

Executive Summary

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

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

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

Table ES-1
ITE Traffic Generation (Vehicles)

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

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

Table ES-2
Level-of-Service Summary

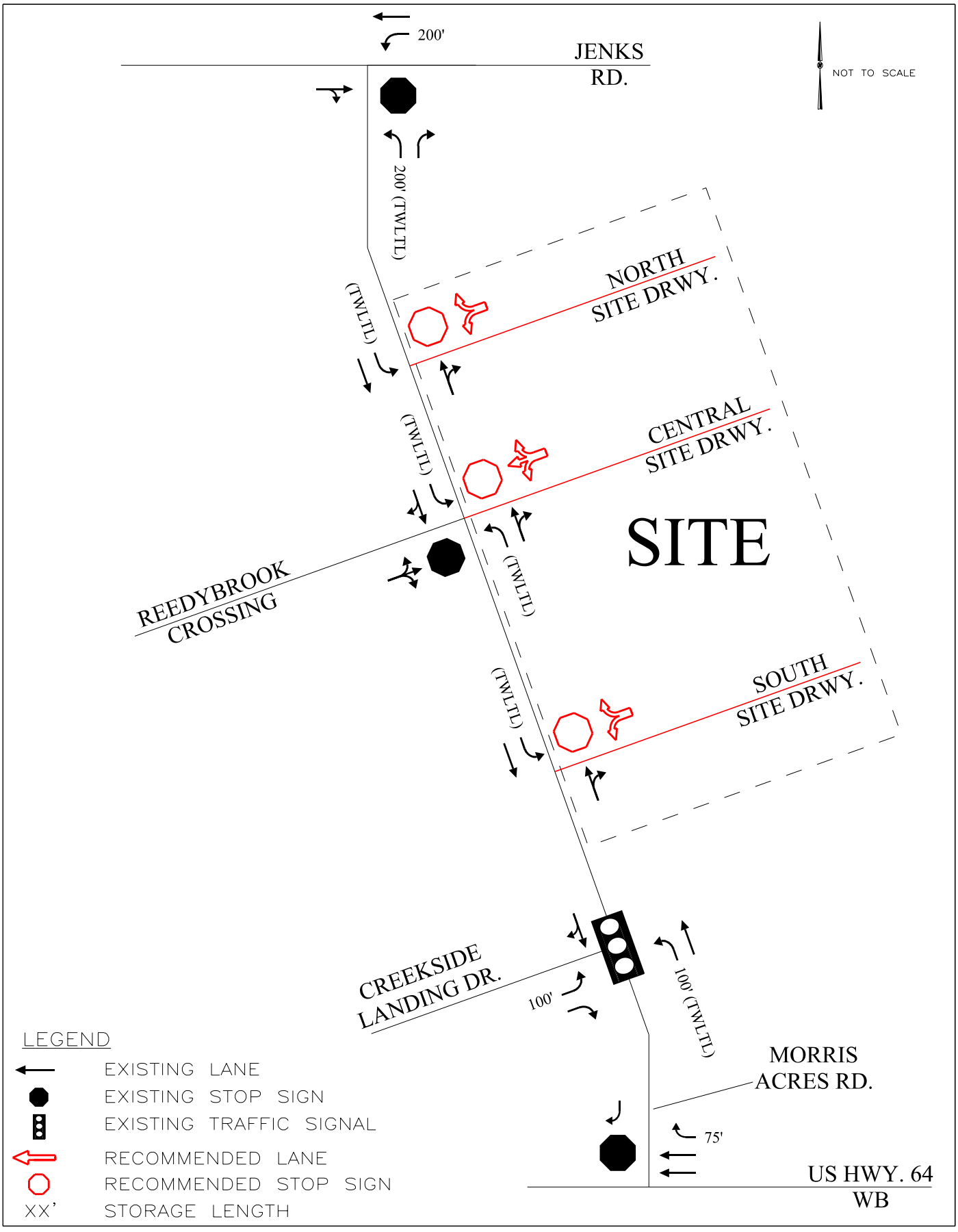
Condition	AM Peak Hour LOS (Delay)	PM Peak Hour LOS (Delay)
Jenks Road at Morris Acres Road (Unsignalized)		
Existing (2018) Traffic	NB ¯ B (11.3) WBL ¯ A (7.8)	NB ¯ B (14.6) WBL ¯ A (8.1)
Background (2022) Traffic	NB ¯ B (11.8) WBL ¯ A (7.9)	NB ¯ C (16.6) WBL ¯ A (8.2)
Build-out (2022) Traffic	NB ¯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

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

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

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

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



Kimley»Horn	THE WAYFORTH AT APEX APEX, NC TRAFFIC CAPACITY ANALYSIS	BUILD-OUT ROADWAY LANEAGE	FIGURE ES-1

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Appendices

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1.0 Introduction

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

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

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

2.0 Inventory

2.1 Study Area

The study area for this development in includes the following intersections:

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

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

2.2 Existing Conditions

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

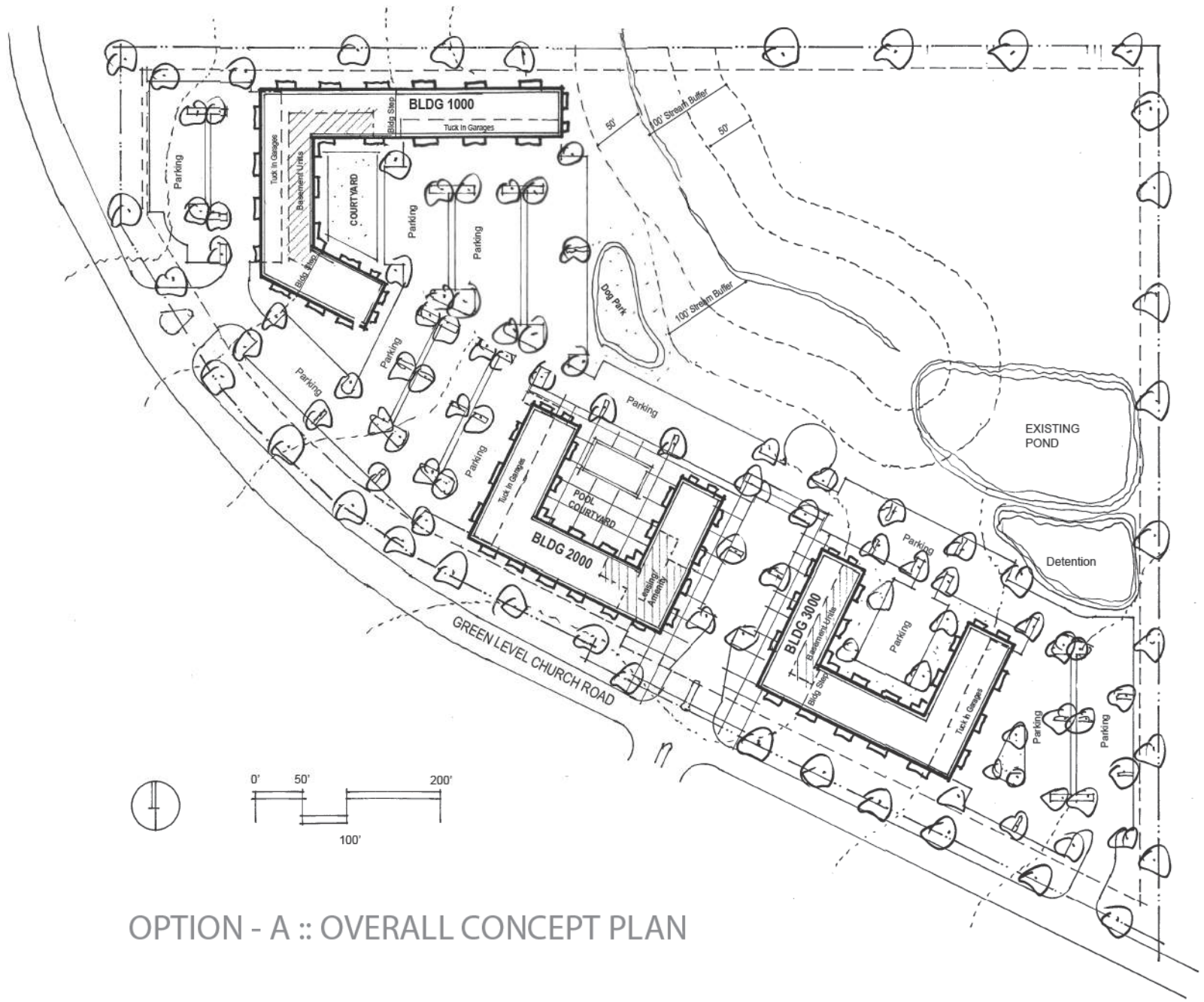
US 64 is a 4-lane divided highway with a posted speed limit of 55 mph near Morris Acres Road. On US 64 Westbound, the reported 2017 average daily traffic (ADT) volume was approximately 31,000 vehicles per day (vpd) west of Morris Acres Road. US 64 is designated as a freeway on the Town of Apex Thoroughfare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

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

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

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

Kimley»Horn	THE WAYFORTH AT APEX APEX, NC TRAFFIC CAPACITY ANALYSIS	SITE LOCATION	FIGURE 1



OPTION - A :: OVERALL CONCEPT PLAN

PROJECT DATA

RESIDENTIAL - 1,000 SF Average

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

Leasing and Amenity in Bldg 2000
- 7,500 SF

PARKING

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

Revised 10/25/18

MORRIS APEX DENSITY STUDY
APEX, NORTH CAROLINA

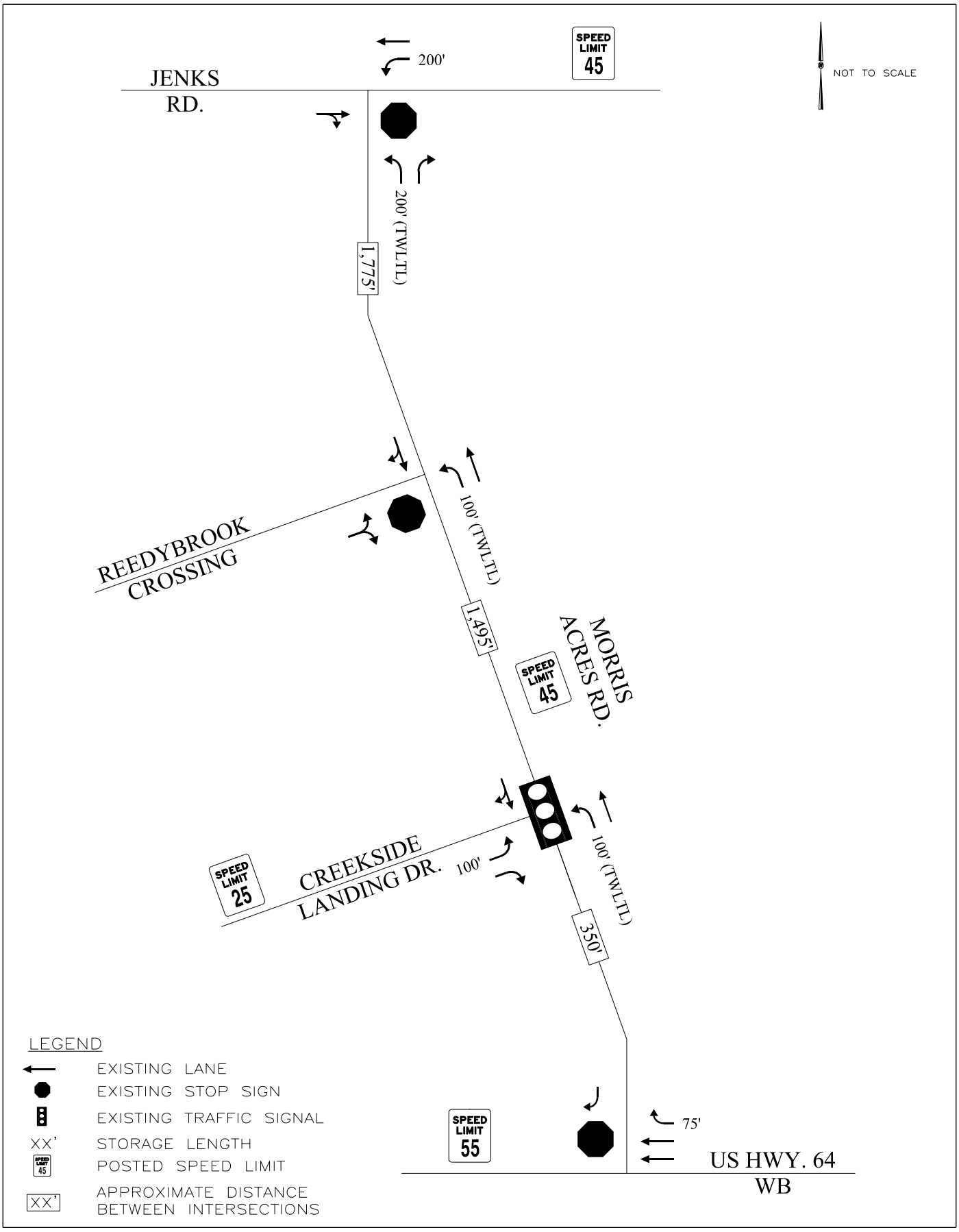
www.dwelldesignstudio.com
dwell design studio

FIGURE 2

PROPOSED SITE PLAN

THE WAYFORTH AT APEX
APEX, NC
TRAFFIC CAPACITY ANALYSIS

Kimley»Horn



Kimley»Horn

THE WAYFORTH AT APEX
APEX, NC
TRAFFIC CAPACITY ANALYSIS

EXISTING ROADWAY LANEAGE

FIGURE 3

3.0 Traffic Generation

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

Table 3.0
ITE Traffic Generation (Vehicles)

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

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

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

4.0 Site Traffic Distribution

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

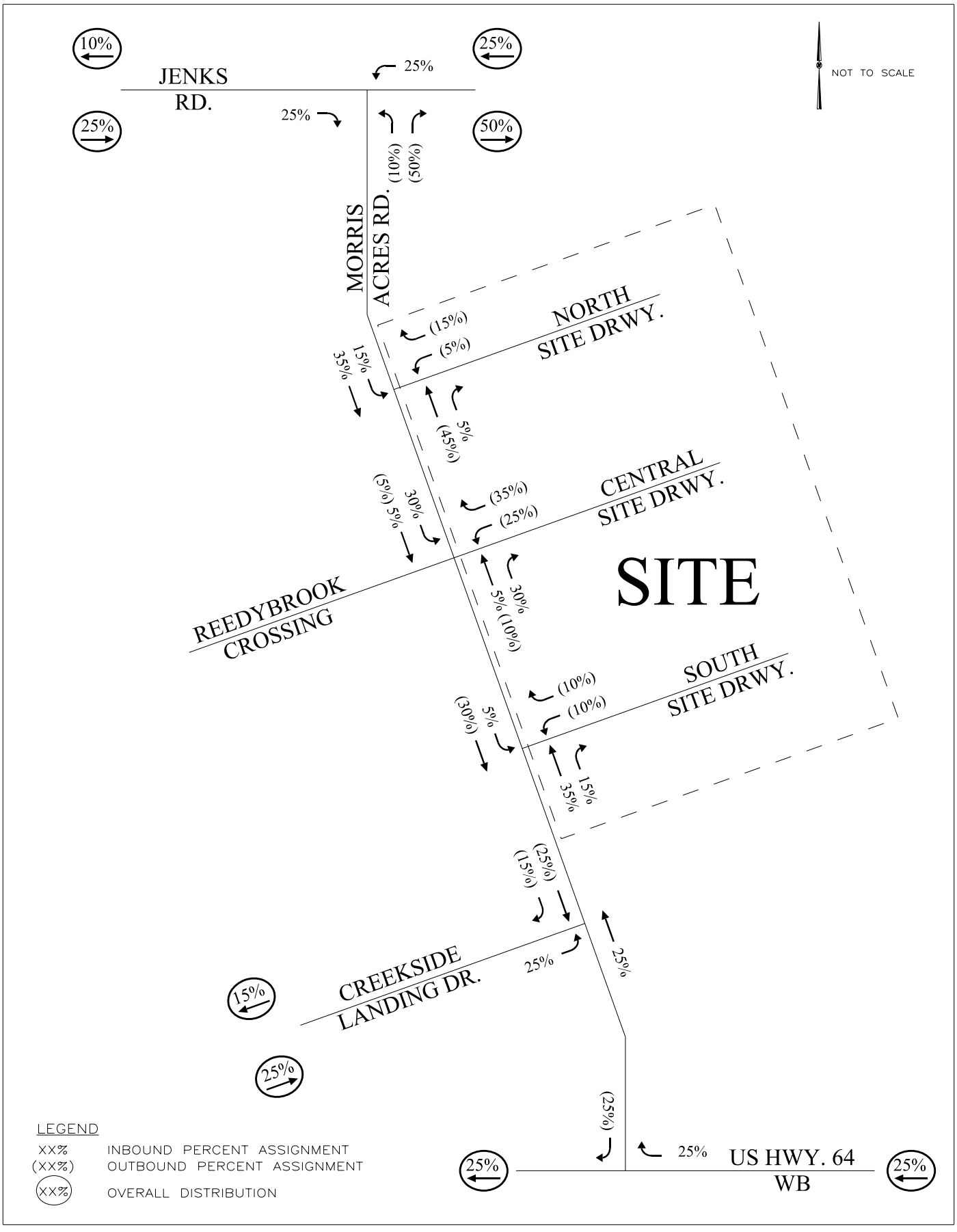
The inbound site traffic distribution used for the site was:

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

The outbound site traffic distribution used for the site was:

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

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



Kimley»Horn	THE WAYFORTH AT APEX APEX, NC TRAFFIC CAPACITY ANALYSIS	SITE TRAFFIC DISTRIBUTION AND PERCENT ASSIGNMENT	FIGURE 4

5.0 Projected Traffic Volumes

5.1 Existing Traffic

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

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

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

5.2 Historic Growth Traffic

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

5.3 Approved Development Traffic

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

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

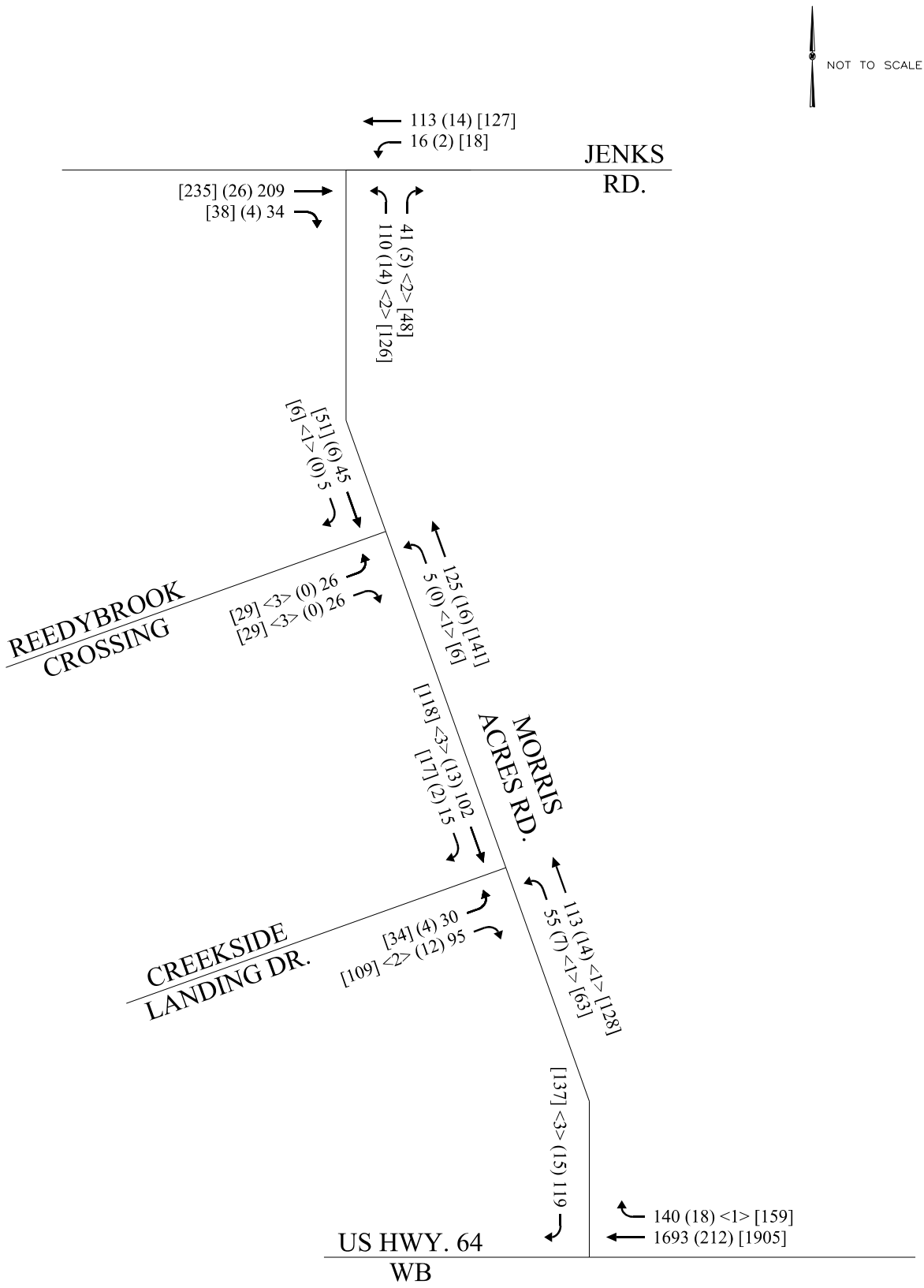
Background traffic volumes consisting of existing, historic growth, and approved development traffic, are shown on Figures 5 and 6 for the AM and PM peak hours, respectively.

5.4 Site Traffic

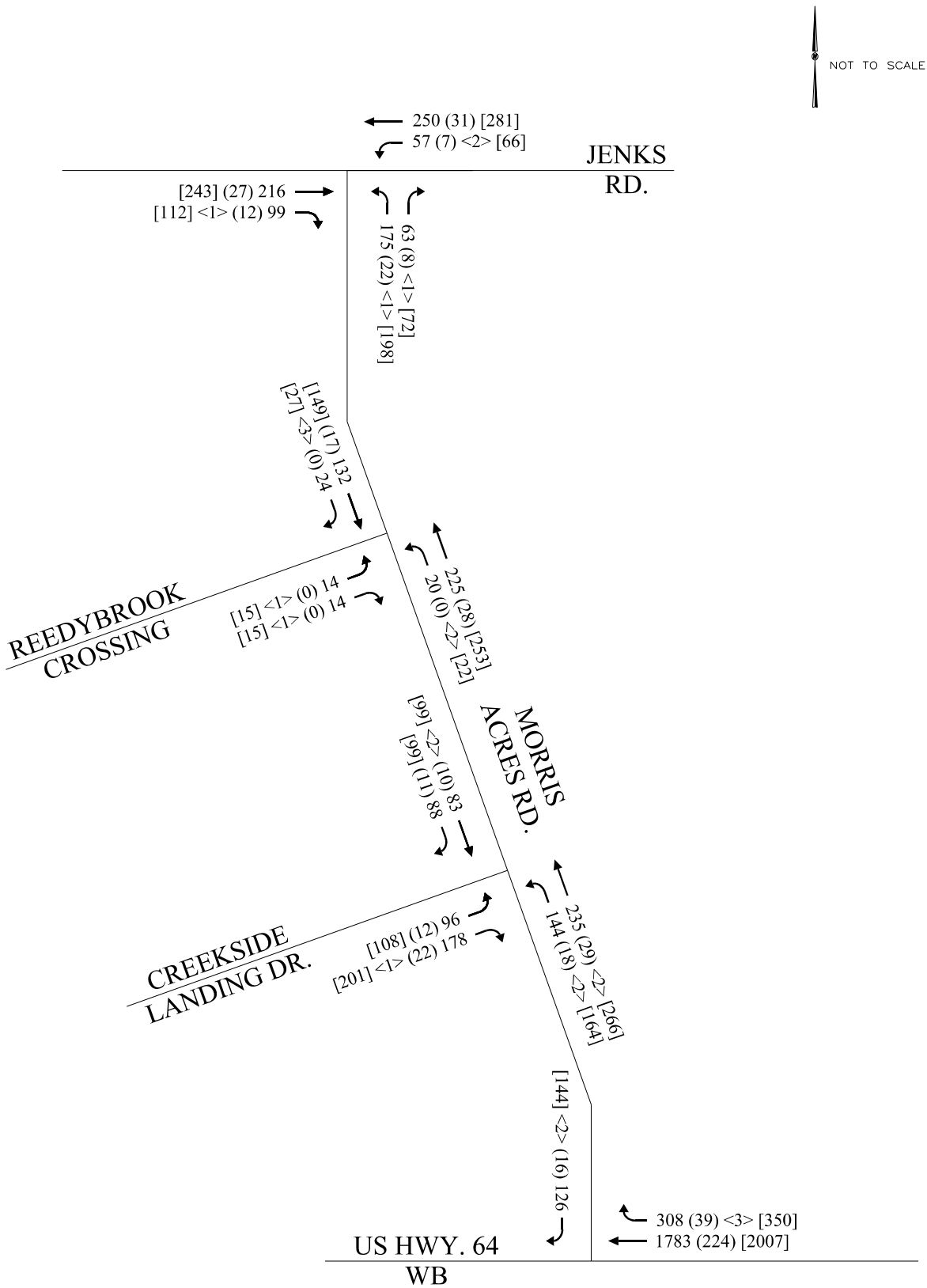
The projected site traffic was generated and assigned to the adjacent roadway network according to the distribution discussed previously in Section 4.0. The site traffic volumes for the AM and PM peak hours are shown in Figures 7 and 8, respectively.

5.5 Build-Out Traffic

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



Kimley»Horn	THE WAYFORTH AT APEX APEX, NC TRAFFIC CAPACITY ANALYSIS	EXISTING AND PROJECTED (2022) BACKGROUND AM PEAK HOUR TRAFFIC VOLUMES	FIGURE 5



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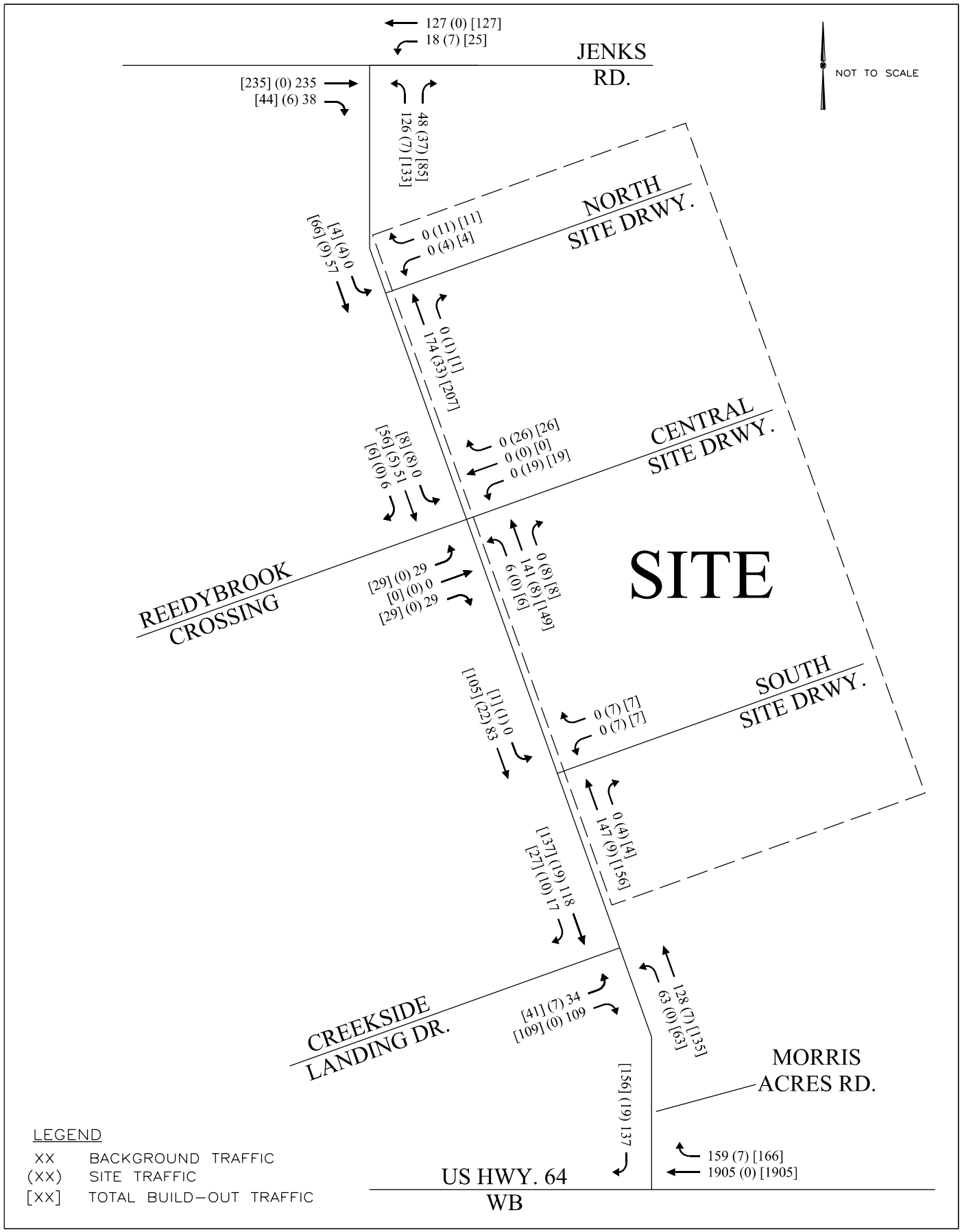
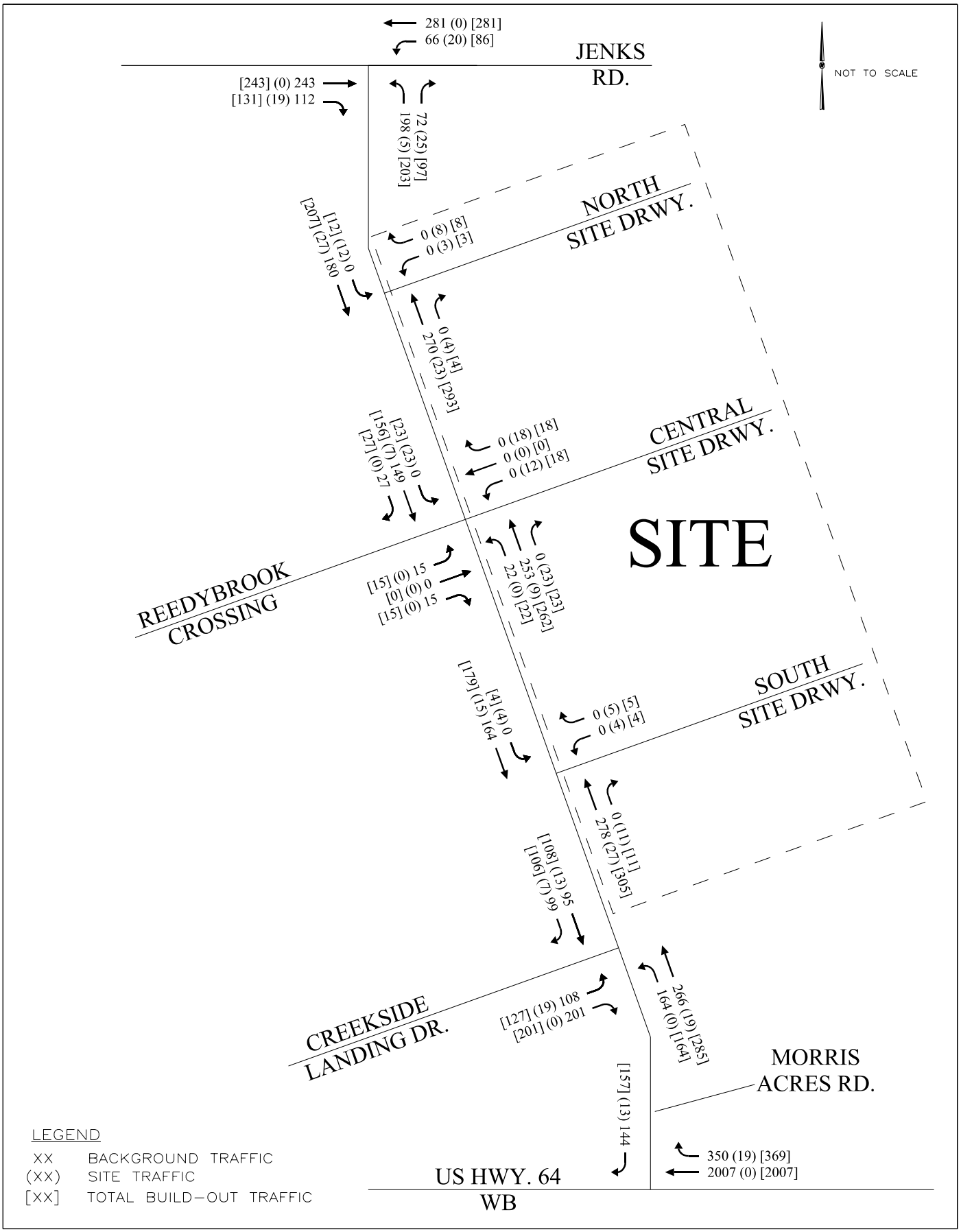
THE WAYFORTH AT APEX
APEX, NC
TRAFFIC CAPACITY ANALYSIS

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

FIGURE 6



Kimley»Horn	THE WAYFORTH AT APEX APEX, NC TRAFFIC CAPACITY ANALYSIS	PROJECTED (2022) BUILD-OUT AM PEAK HOUR TRAFFIC VOLUMES	FIGURE 7



Kimley»Horn	THE WAYFORTH AT APEX APEX, NC TRAFFIC CAPACITY ANALYSIS	PROJECTED (2022) BUILD-OUT PM PEAK HOUR TRAFFIC VOLUMES	FIGURE 8

6.0 Capacity Analysis

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

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

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

Table 6.0-A
Level-of-Service Control Delay Thresholds

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

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

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

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

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

Table 6.0-B
Level-of-Service Summary

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

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

6.1 Jenks Road at Morris Acres Road

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

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

Table 6.1
Level-of-Service
Jenks Road at Morris Acres Road (Unsignalized)

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

6.2 Morris Acres Road at Reedybrook Crossing/Central Site Driveway

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

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

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

Table 6.2
Level-of-Service
Morris Acres Road at Reedybrook Crossing/Central Site Driveway (Unsignalized)

Condition	AM Peak Hour LOS (Delay)	PM Peak Hour LOS (Delay)
Existing (2018) Traffic	EB ¯ A (9.4) NBL ¯ A (7.3)	EB ¯ B (10.2) NBL ¯ A (7.6)
Background (2022) Traffic	EB ¯ A (9.5) NBL ¯ B (7.3)	EB ¯ B (10.4) NBL ¯ A (7.7)
Build-out (2022) Traffic	EB ¯ B (10.2) WB ¯ B (10.2) NBL ¯ A (7.4) SBL ¯ A (7.6)	EB ¯ B (12.6) WB ¯ B (12.5) NBL ¯ A (7.7) SBL ¯ A (8.0)

6.3 Morris Acres Road at Creekside Landing Drive

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

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

Table 6.3
Level-of-Service
Morris Acres Road at Creekside Landing Drive (Signalized)

Condition	AM Peak Hour LOS (Delay)	PM Peak Hour LOS (Delay)
Existing (2018) Traffic	A (4.6)	A (6.7)
Background (2022) Traffic	A (4.7)	A (7.1)
Build-out (2022) Traffic	A (5.0)	A (7.8)

6.4 Morris Acres Road at US 64 Westbound

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

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

Table 6.4
Level-of-Service
Morris Acres Road at US 64 Westbound (Unsignalized)

Condition	AM Peak Hour LOS (Delay)	PM Peak Hour LOS (Delay)
Existing (2018) Traffic	SB – D (27.9)	SB – D (28.8)
Background (2022) Traffic	SB – E (41.8)	SB – E (43.6)
Build-out (2022) Traffic	SB – E (49.4)	SB – E (48.8)

6.5 Morris Acres Road at North Site Driveway

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

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

Table 6.5
Level-of-Service
Morris Acres Road at North Site Driveway (Unsignalized)

Condition	AM Peak Hour LOS (Delay)	PM Peak Hour LOS (Delay)
Build-out (2022) Traffic	WB – A (9.8) SBL – A (7.7)	WB – B (10.6) SBL – A (8.0)

6.6 Morris Acres Road at South Site Driveway

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

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

Table 6.6
Level-of-Service
Morris Acres Road at South Site Driveway (Unsignalized)

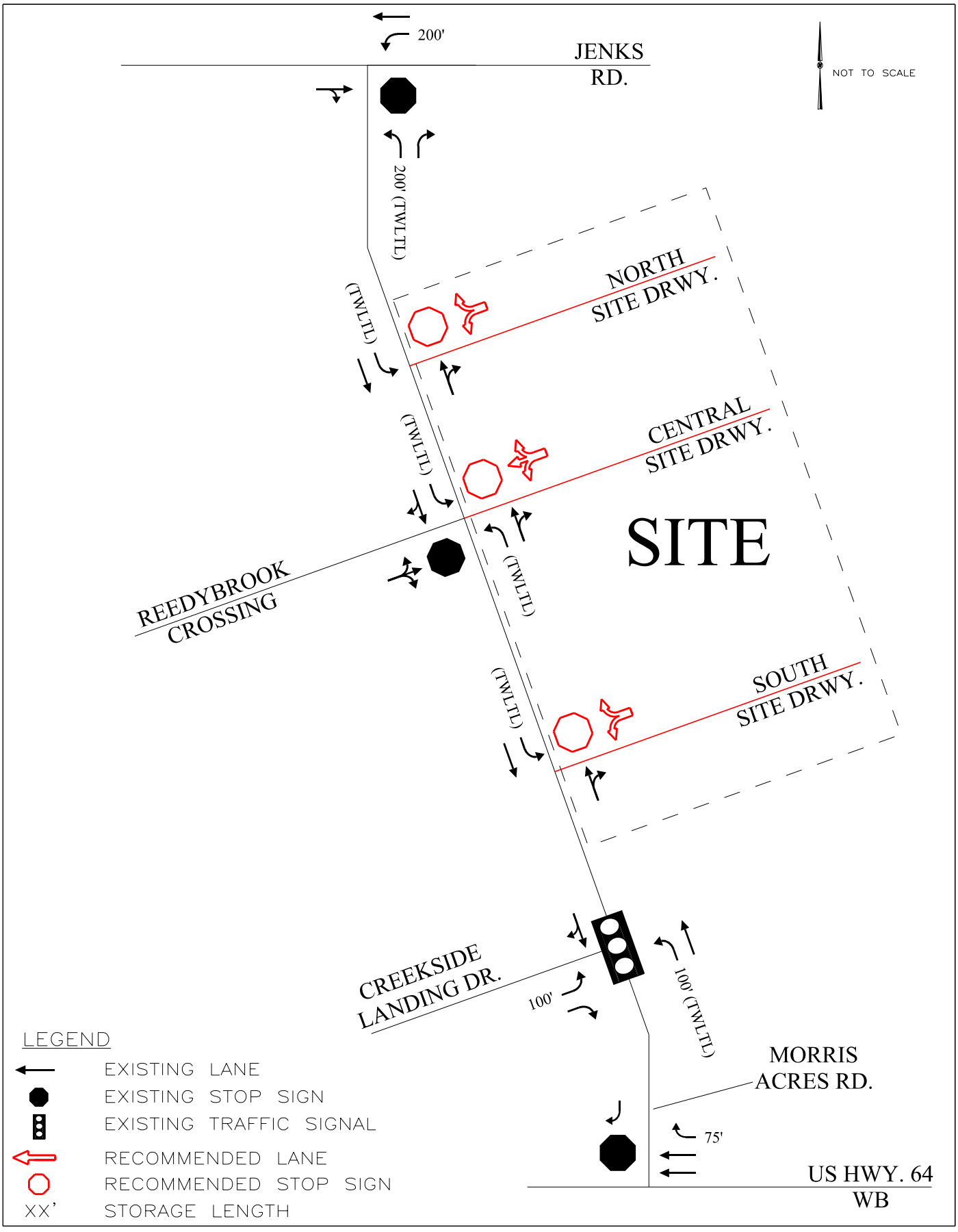
Condition	AM Peak Hour LOS (Delay)	PM Peak Hour LOS (Delay)
Build-out (2022) Traffic	WB – A (9.7) SBL – A (7.6)	WB – B (10.8) SBL – A (8.0)

7.0 Recommendations

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

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

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



Kimley»Horn	THE WAYFORTH AT APEX APEX, NC TRAFFIC CAPACITY ANALYSIS	BUILD-OUT ROADWAY LANEAGE	FIGURE 9

Appendix

Appendix A:
Assumptions Memorandum

Revised 11/6/2018

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

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

The study area will consist of the following intersections:

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

The study scenarios will consist of:

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

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

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

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

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

The following overall distribution will be used for entering traffic:

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

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

The Wayforth at Apex

Table 1 - Trip Generation

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

The Wayforth at Apex - Site Driveway Locations

Appendix B:
Trip Generation

The Wayforth at Apex

Table 1 - Trip Generation

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

Appendix C:
Traffic Count Data

Morris Acres Road/ and J enks Road AM and PM Peak Hour Traffic Count

Count Performed: Tuesday, October 23, 2018

Start Time	0 Southbound			J enks Road Westbound			Morris Acres Road Northbound			J enks Road Eastbound			Intersection Volume
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
7:00	0	0	0	2	15	0	28	0	13	0	53	9	120
7:15	0	0	0	2	21	0	26	0	13	0	38	9	109
7:30	0	0	0	2	37	0	24	0	13	0	54	9	139
7:45	0	0	0	4	31	0	37	0	13	0	55	3	143
8:00	0	0	0	4	23	0	29	0	9	0	54	9	128
8:15	0	0	0	6	22	0	20	0	6	0	46	13	113
8:30	0	0	0	3	27	0	18	0	15	0	45	11	119
8:45	0	0	0	4	28	0	15	0	17	0	53	12	129
16:00	0	0	0	11	39	0	36	0	16	0	47	24	173
16:15	0	0	0	16	47	0	38	0	12	0	39	24	176
16:30	0	0	0	9	45	0	48	0	16	0	38	14	170
16:45	0	0	0	11	59	0	35	0	17	0	41	21	184
17:00	0	0	0	10	65	0	41	0	15	0	47	23	201
17:15	0	0	0	15	52	0	44	0	20	0	45	31	207
17:30	0	0	0	15	67	0	43	0	11	0	63	28	227
17:45	0	0	0	17	66	0	47	0	17	0	61	17	225

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

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

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

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

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

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

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

Morris Acres Road and Creekside Landing Drive/ AM and PM Peak Hour Traffic Count

Count Performed: Tuesday, October 23, 2018

Start Time	Morris Acres Road Southbound			0 Westbound			Morris Acres Road Northbound			Creekside Landing Drive Eastbound			Intersection Volume
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
7:00	0	19	5	0	0	0	11	25	0	3	0	20	83
7:15	0	25	8	0	0	0	10	26	0	4	0	28	101
7:30	0	40	3	0	0	0	10	27	0	5	0	21	106
7:45	0	17	1	0	0	0	19	28	0	15	0	23	103
8:00	0	20	3	0	0	0	16	32	0	6	0	23	100
8:15	0	31	6	0	0	0	7	18	0	2	0	31	95
8:30	0	14	8	0	0	0	14	26	0	5	0	27	94
8:45	0	18	9	0	0	0	21	21	0	8	0	24	101
16:00	0	19	20	0	0	0	35	27	0	32	0	35	168
16:15	0	26	19	0	0	0	41	42	0	21	0	42	191
16:30	0	14	12	0	0	0	35	59	0	22	0	44	186
16:45	0	17	19	0	0	0	42	44	0	19	0	43	184
17:00	0	19	16	0	0	0	37	55	0	20	0	50	197
17:15	0	29	26	0	0	0	29	59	0	31	0	43	217
17:30	0	20	23	0	0	0	39	47	0	15	0	39	183
17:45	0	15	23	0	0	0	39	74	0	30	0	46	227

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

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

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

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

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

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

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

/Morris Acres Road and /US 64 AM and PM Peak Hour Traffic Count

Count Performed: Tuesday, October 23, 2018

Start Time	Morris Acres Road Southbound			US 64 Westbound			0 Northbound			0 Eastbound			Intersection Volume
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
7:00	0	0	19	0	300	31	0	0	0	0	0	0	350
7:15	0	0	34	0	320	34	0	0	0	0	0	0	388
7:30	0	0	35	0	399	37	0	0	0	0	0	0	471
7:45	0	0	26	0	450	43	0	0	0	0	0	0	519
8:00	0	0	26	0	428	32	0	0	0	0	0	0	486
8:15	0	0	32	0	416	28	0	0	0	0	0	0	476
8:30	0	0	23	0	370	40	0	0	0	0	0	0	433
8:45	0	0	24	0	372	41	0	0	0	0	0	0	437
16:00	0	0	33	0	394	55	0	0	0	0	0	0	482
16:15	0	0	35	0	417	61	0	0	0	0	0	0	513
16:30	0	0	37	0	415	80	0	0	0	0	0	0	532
16:45	0	0	28	0	416	78	0	0	0	0	0	0	522
17:00	0	0	32	0	456	76	0	0	0	0	0	0	564
17:15	0	0	29	0	459	71	0	0	0	0	0	0	559
17:30	0	0	34	0	450	74	0	0	0	0	0	0	558
17:45	0	0	31	0	418	87	0	0	0	0	0	0	536

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

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

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

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

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

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

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

Appendix D:
Approved Development Data

Beaver Creek Residential Development Final Traffic Impact Analysis

Green Level Church Road and US 64
Apex, NC

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

Prepared by:
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801 Jones Franklin Road
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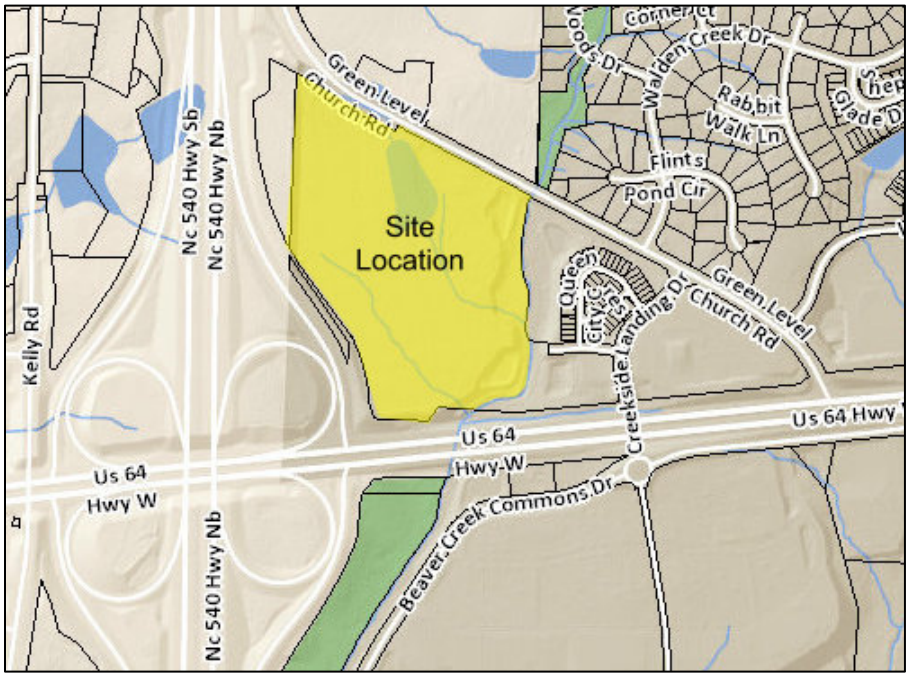
Raleigh, NC 27606

July 30, 2015
Revised August 28, 2015

1.0 INTRODUCTION

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

Figure 1: Proposed Site Location

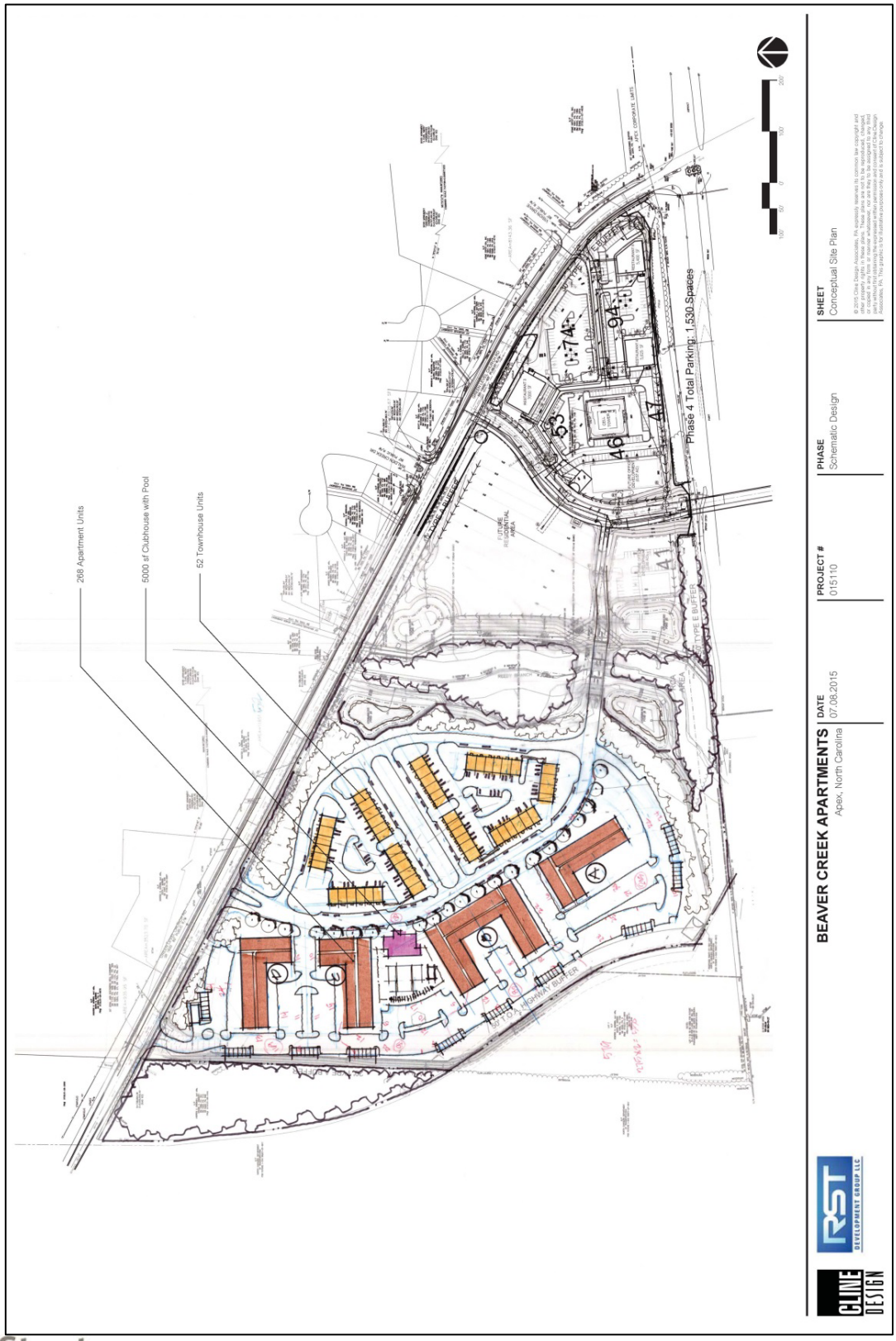


The proposed 27.5 acre site is planned to have up to 300 apartments and 50 townhomes. The proposed site is anticipated to be built-out by the year 2020. A conceptual sketch illustrating the development property and the access locations used in this study is shown on the site plan in Figure 2.

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

- 2015 Existing
- 2020 No-Build
- 2020 Build

Figure 2: Site Plan



4.0 TRAFFIC GENERATION

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

Table 2: ITE Trip Generation Table

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

4.1 SITE TRIP DISTRIBUTION

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

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

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

Figure 8: Site Trip Distribution

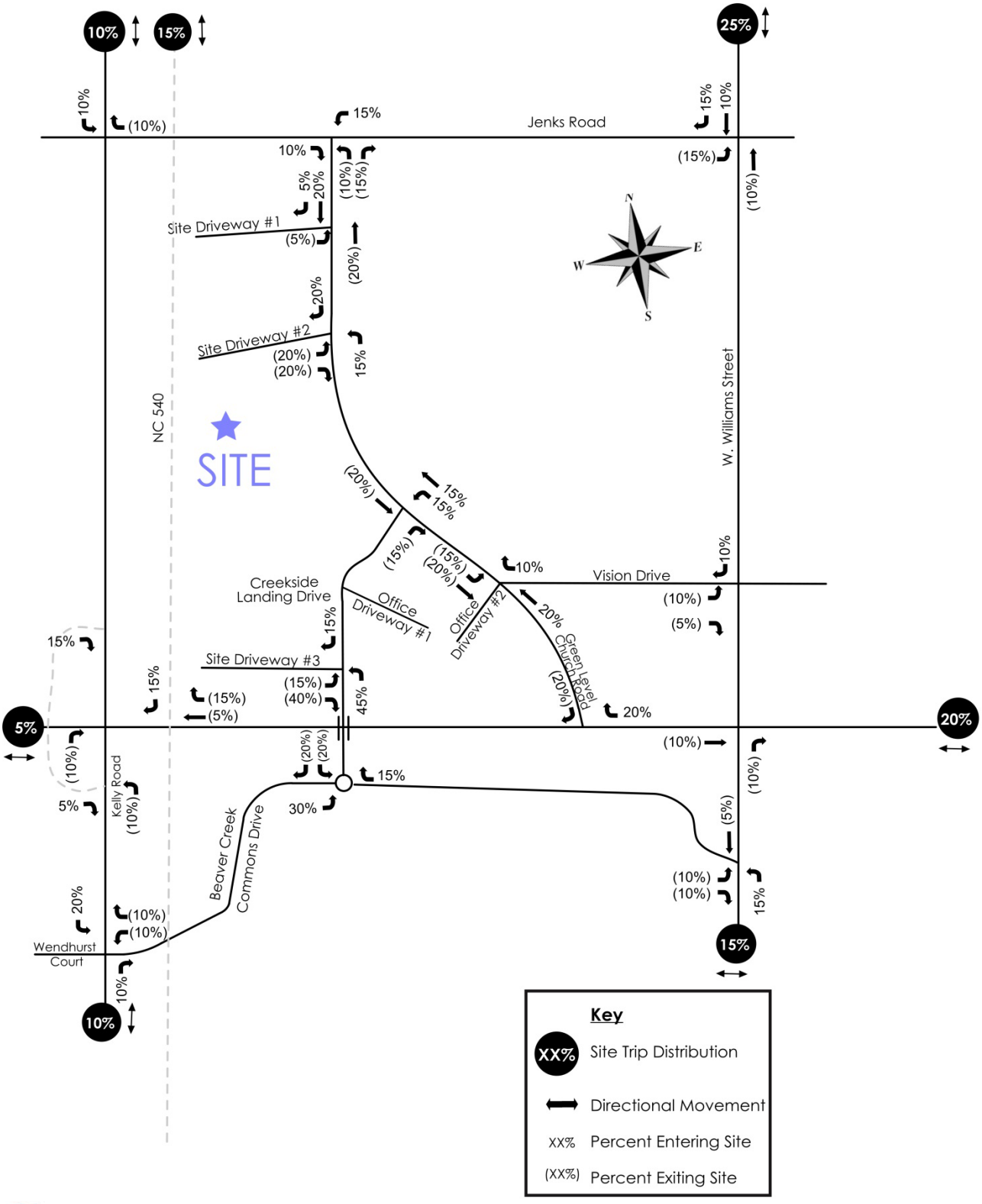


Figure 9: Future (2020) AM Build Out Traffic Volumes

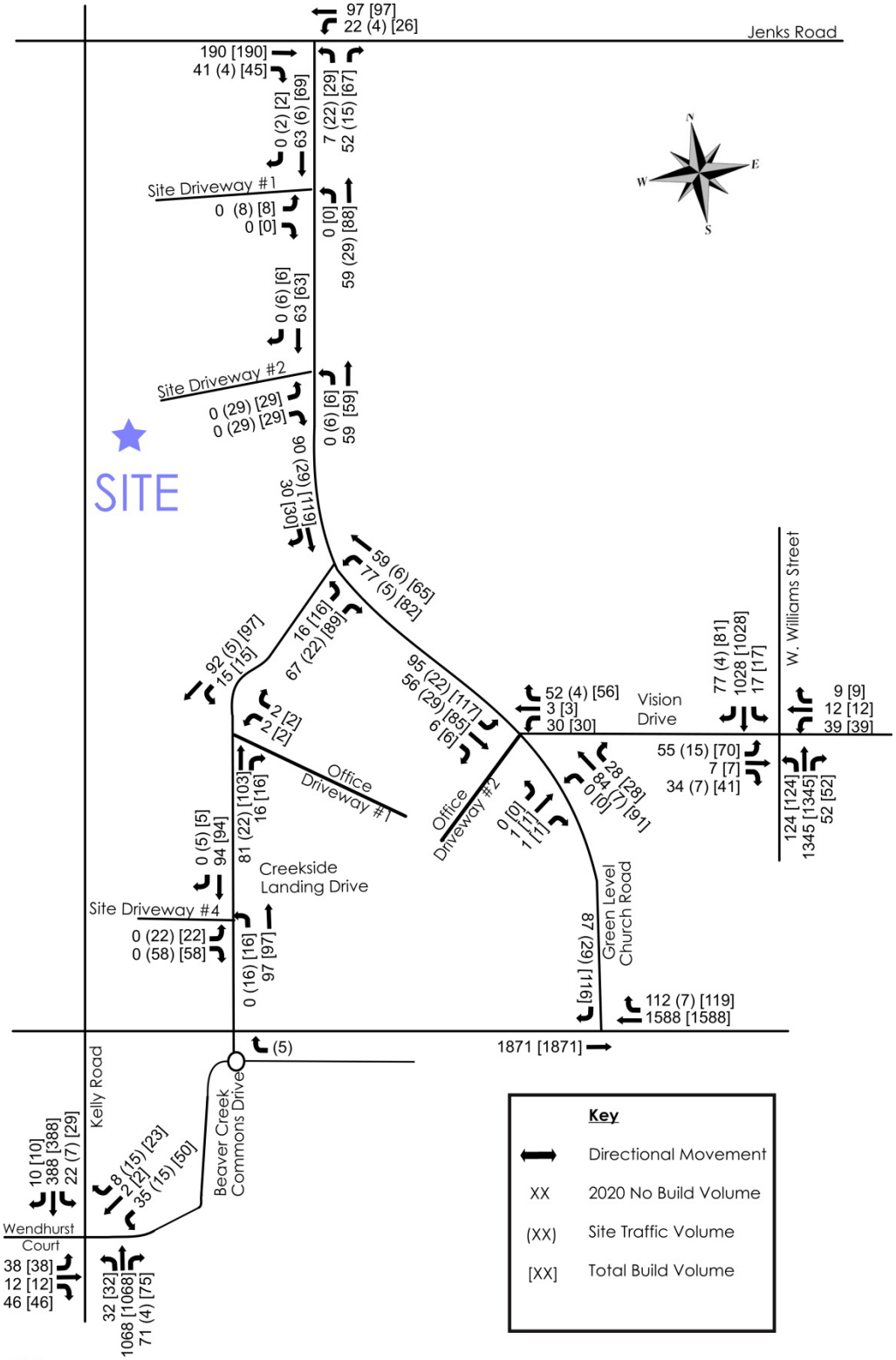


Figure 10: Future (2020) PM Build Out Traffic Volumes

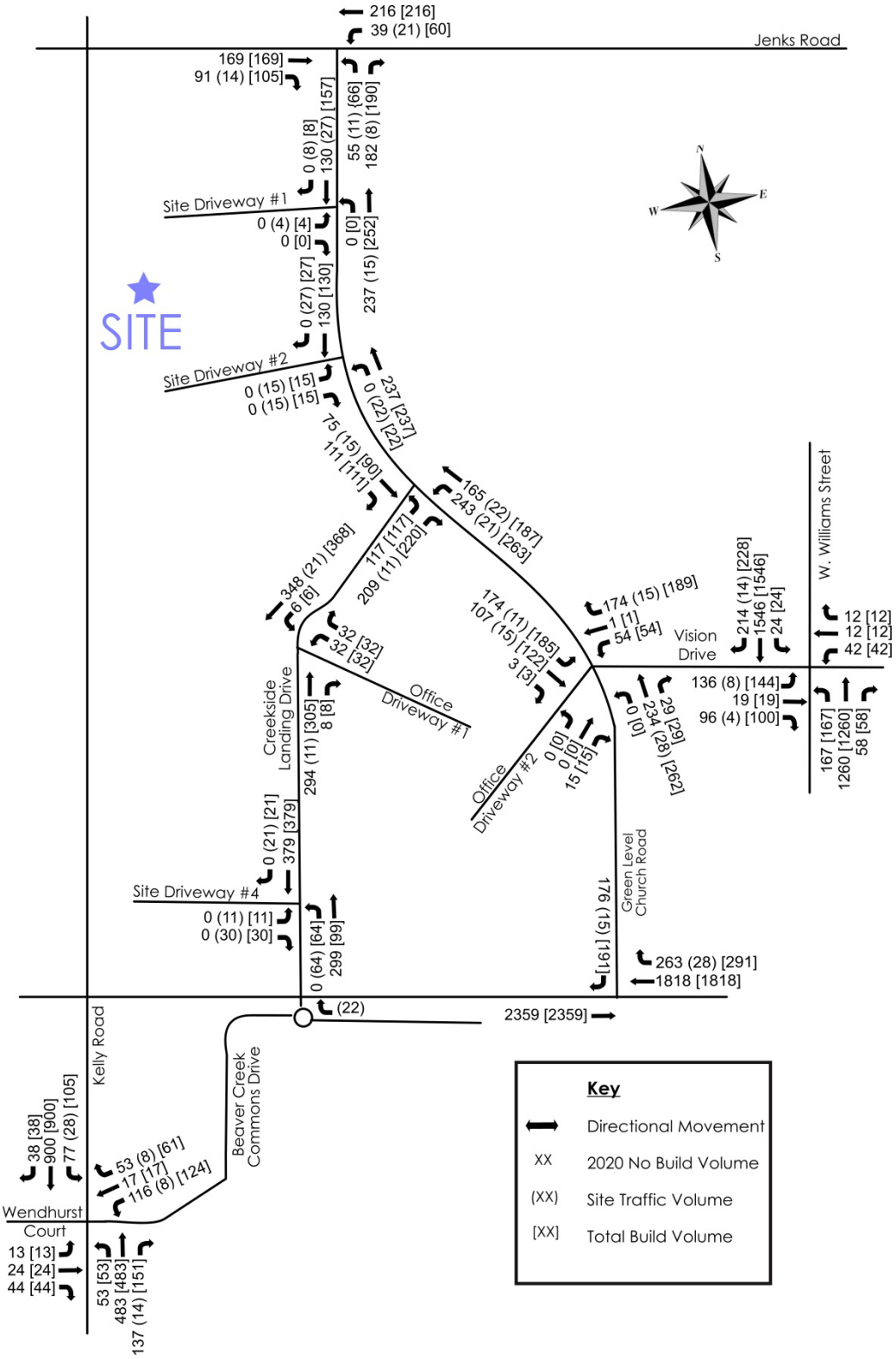
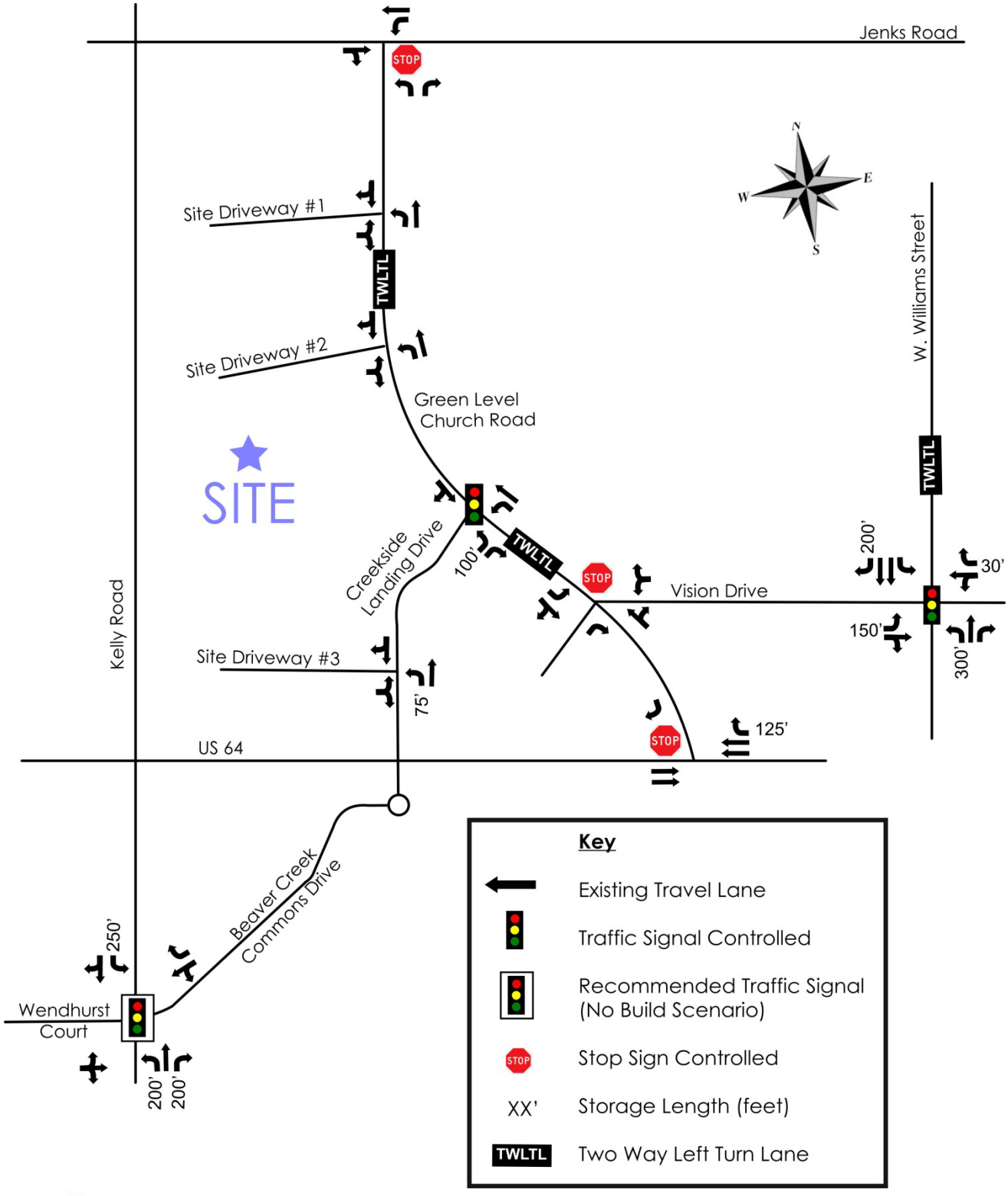


Figure 11: Recommended Geometry



Appendix E:
Intersection Spreadsheets

INTERSECTION ANALYSIS SHEET

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

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

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

AM PEAK HOUR
AM PHF = 0.91

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

PM PEAK HOUR
PM PHF = 0.95

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

INTERSECTION ANALYSIS SHEET

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

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

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

AM PEAK HOUR
AM PHF = 0.90

Description	Reedybrook Crossing Eastbound			Central Site Driveway Westbound			Morris Acres Road Northbound			Morris Acres Road Southbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
2018 Traffic Count	0	0	0	0	0	0	0	0	0	0	0	0
Count Balancing	26	0	26	0	0	0	5	125	0	0	45	5
2018 Existing Traffic	26	0	26	0	0	0	5	125	0	0	45	5
Growth Factor (0.03 per year)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.126	0.000	0.000	0.126	0.000
2022 Background Growth	0	0	0	0	0	0	0	16	0	0	6	0
Committed Projects												
Beaver Creek Phase 4 Residential	3	0	3	0	0	0	1	0	0	0	0	1
Total Committed Traffic	3	0	3	0	0	0	1	0	0	0	0	1
2022 Background Traffic	29	0	29	0	0	0	6	141	0	0	51	6
Project Traffic												
Percent Assignment Inbound	0%	0%	0%	0%	0%	0%	0%	5%	30%	30%	5%	0%
Inbound Project Traffic	0	0	0	0	0	0	0	1	8	8	1	0
Percent Assignment Outbound	0%	0%	0%	25%	0%	35%	0%	10%	0%	0%	5%	0%
Outbound Project Traffic	0	0	0	19	0	26	0	7	0	0	4	0
Total Project Traffic	0	0	0	19	0	26	0	8	8	8	5	0
2022 Buildout Total	29	0	29	19	0	26	6	149	8	8	56	6
Percent Impact (Approach)		0.0%			100.0%			9.8%			18.7%	

Overall Percent Impact 22.1%

PM PEAK HOUR
PM PHF = 0.90

Description	Reedybrook Crossing Eastbound			Central Site Driveway Westbound			Morris Acres Road Northbound			Morris Acres Road Southbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
2018 Traffic Count	0	0	0	0	0	0	0	0	0	0	0	0
Count Balancing	14	0	14	0	0	0	20	225	0	0	132	24
2018 Existing Traffic	14	0	14	0	0	0	20	225	0	0	132	24
Growth Factor (0.03 per year)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.126	0.000	0.000	0.126	0.000
2022 Background Growth	0	0	0	0	0	0	0	28	0	0	17	0
Committed Projects												
Beaver Creek Phase 4 Residential	1	0	1	0	0	0	2	0	0	0	0	3
Total Committed Traffic	1	0	1	0	0	0	2	0	0	0	0	3
2022 Background Traffic	15	0	15	0	0	0	22	253	0	0	149	27
Project Traffic												
Percent Assignment Inbound	0%	0%	0%	0%	0%	0%	0%	5%	30%	30%	5%	0%
Inbound Project Traffic	0	0	0	0	0	0	0	4	23	23	4	0
Percent Assignment Outbound	0%	0%	0%	25%	0%	35%	0%	10%	0%	0%	5%	0%
Outbound Project Traffic	0	0	0	12	0	18	0	5	0	0	3	0
Total Project Traffic	0	0	0	12	0	18	0	9	23	23	7	0
2022 Buildout Total	15	0	15	12	0	18	22	262	23	23	156	27
Percent Impact (Approach)		0.0%			100.0%			10.4%			14.6%	

Overall Percent Impact 16.1%

INTERSECTION ANALYSIS SHEET

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

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

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

AM PEAK HOUR
AM PHF = 0.97

Description	Creekside Landing Drive Eastbound Left	Through	Right	- Westbound Left	Through	Right	Morris Acres Road Northbound Left	Through	Right	Morris Acres Road Southbound Left	Through	Right
2018 Traffic Count	30	0	95	0	0	0	55	113	0	0	102	15
Count Balancing	0	0	0	0	0	0	0	0	0	0	0	0
2018 Existing Traffic	30	0	95	0	0	0	55	113	0	0	102	15
Growth Factor (0.03 per year)	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126
2022 Background Growth	4	0	12	0	0	0	7	14	0	0	13	2
Committed Projects												
Beaver Creek Phase 4 Residential	0	0	2	0	0	0	1	1	0	0	3	0
Total Committed Traffic	0	0	2	0	0	0	1	1	0	0	3	0
2022 Background Traffic	34	0	109	0	0	0	63	128	0	0	118	17
Project Traffic												
Percent Assignment Inbound	25%	0%	0%	0%	0%	0%	0%	25%	0%	0%	0%	0%
Inbound Project Traffic	7	0	0	0	0	0	0	7	0	0	0	0
Percent Assignment Outbound	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	25%	15%
Outbound Project Traffic	0	0	0	0	0	0	0	0	0	0	19	10
Total Project Traffic	7	0	0	0	0	0	0	7	0	0	19	10
2022 Buildout Total	41	0	109	0	0	0	63	135	0	0	137	27
Percent Impact (Approach)		4.7%			-			3.6%			17.7%	
Overall Percent Impact	8.4%											

PM PEAK HOUR
PM PHF = 0.91

Description	Creekside Landing Drive Eastbound Left	Through	Right	- Westbound Left	Through	Right	Morris Acres Road Northbound Left	Through	Right	Morris Acres Road Southbound Left	Through	Right
2018 Traffic Count	96	0	178	0	0	0	144	235	0	0	83	88
Count Balancing	0	0	0	0	0	0	0	0	0	0	0	0
2018 Existing Traffic	96	0	178	0	0	0	144	235	0	0	83	88
Growth Factor (0.03 per year)	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126
2022 Background Growth	12	0	22	0	0	0	18	29	0	0	10	11
Committed Projects												
Beaver Creek Phase 4 Residential	0	0	1	0	0	0	2	2	0	0	2	0
Total Committed Traffic	0	0	1	0	0	0	2	2	0	0	2	0
2022 Background Traffic	108	0	201	0	0	0	164	266	0	0	95	99
Project Traffic												
Percent Assignment Inbound	25%	0%	0%	0%	0%	0%	0%	25%	0%	0%	0%	0%
Inbound Project Traffic	19	0	0	0	0	0	0	19	0	0	0	0
Percent Assignment Outbound	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	25%	15%
Outbound Project Traffic	0	0	0	0	0	0	0	0	0	0	13	7
Total Project Traffic	19	0	0	0	0	0	0	19	0	0	13	7
2022 Buildout Total	127	0	201	0	0	0	164	285	0	0	108	106
Percent Impact (Approach)		5.8%			-			4.2%			9.4%	
Overall Percent Impact	5.9%											

INTERSECTION ANALYSIS SHEET

Project:	The Wayforth at Apex
Location:	Apex, NC
Ct. Date	10/23/2018
N/S Street:	Morris Acres Road
E/W Street:	US 64 WB

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

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

AM PEAK HOUR
AM PHF = 0.94

Description	US 64 WB Eastbound Left	US 64 WB Eastbound Through	US 64 WB Eastbound Right	US 64 WB Westbound Left	US 64 WB Westbound Through	US 64 WB Westbound Right	Morris Acres Road Northbound Left	Morris Acres Road Northbound Through	Morris Acres Road Northbound Right	Morris Acres Road Southbound Left	Morris Acres Road Southbound Through	Morris Acres Road Southbound Right
2018 Traffic Count	0	0	0	0	1693	140	0	0	0	0	0	119
Count Balancing	0	0	0	0	0	0	0	0	0	0	0	0
2018 Existing Traffic	0	0	0	0	1693	140	0	0	0	0	0	119
Growth Factor (0.03 per year)	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126
2022 Background Growth	0	0	0	0	212	18	0	0	0	0	0	15
Committed Projects												
Beaver Creek Phase 4 Residential	0	0	0	0	0	1	0	0	0	0	0	3
Total Committed Traffic	0	0	0	0	0	1	0	0	0	0	0	3
2022 Background Traffic	0	0	0	0	1905	159	0	0	0	0	0	137
Project Traffic												
Percent Assignment Inbound	0%	0%	0%	0%	0%	25%	0%	0%	0%	0%	0%	0%
Inbound Project Traffic	0	0	0	0	0	7	0	0	0	0	0	0
Percent Assignment Outbound	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	25%
Outbound Project Traffic	0	0	0	0	0	0	0	0	0	0	0	19
Total Project Traffic	0	0	0	0	0	7	0	0	0	0	0	19
2022 Buildout Total	0	0	0	0	1905	166	0	0	0	0	0	156
Percent Impact (Approach)		-			0.3%			-			12.2%	

Overall Percent Impact 1.2%

PM PEAK HOUR
PM PHF = 0.98

Description	US 64 WB Eastbound Left	US 64 WB Eastbound Through	US 64 WB Eastbound Right	US 64 WB Westbound Left	US 64 WB Westbound Through	US 64 WB Westbound Right	Morris Acres Road Northbound Left	Morris Acres Road Northbound Through	Morris Acres Road Northbound Right	Morris Acres Road Southbound Left	Morris Acres Road Southbound Through	Morris Acres Road Southbound Right
2018 Traffic Count	0	0	0	0	1783	308	0	0	0	0	0	126
Count Balancing	0	0	0	0	0	0	0	0	0	0	0	0
2018 Existing Traffic	0	0	0	0	1783	308	0	0	0	0	0	126
Growth Factor (0.03 per year)	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126
2022 Background Growth	0	0	0	0	224	39	0	0	0	0	0	16
Committed Projects												
Beaver Creek Phase 4 Residential	0	0	0	0	0	3	0	0	0	0	0	2
Total Committed Traffic	0	0	0	0	0	3	0	0	0	0	0	2
2022 Background Traffic	0	0	0	0	2007	350	0	0	0	0	0	144
Project Traffic												
Percent Assignment Inbound	0%	0%	0%	0%	0%	25%	0%	0%	0%	0%	0%	0%
Inbound Project Traffic	0	0	0	0	0	19	0	0	0	0	0	0
Percent Assignment Outbound	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	25%
Outbound Project Traffic	0	0	0	0	0	0	0	0	0	0	0	13
Total Project Traffic	0	0	0	0	0	19	0	0	0	0	0	13
2022 Buildout Total	0	0	0	0	2007	369	0	0	0	0	0	157
Percent Impact (Approach)		-			0.8%			-			8.3%	

Overall Percent Impact 1.3%

INTERSECTION ANALYSIS SHEET

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

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

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

AM PEAK HOUR
AM PHF = 0.90

Description	North Site Driveway Eastbound Left	Through	Right	North Site Driveway Westbound Left	Through	Right	Morris Acres Road Northbound Left	Through	Right	Morris Acres Road Southbound Left	Through	Right
2018 Traffic Count	0	0	0	0	0	0	0	0	0	0	0	0
Count Balancing	0	0	0	0	0	0	0	151	0	0	50	0
2018 Existing Traffic	0	0	0	0	0	0	0	151	0	0	50	0
Growth Factor (0.03 per year)	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126
2022 Background Growth	0	0	0	0	0	0	0	19	0	0	6	0
Committed Projects												
Beaver Creek Phase 4 Residential	0	0	0	0	0	0	0	4	0	0	1	0
Total Committed Traffic	0	0	0	0	0	0	0	4	0	0	1	0
2022 Background Traffic	0	0	0	0	0	0	0	174	0	0	57	0
Project Traffic												
Percent Assignment Inbound	0%	0%	0%	0%	0%	0%	0%	0%	5%	15%	35%	0%
Inbound Project Traffic	0	0	0	0	0	0	0	0	1	4	9	0
Percent Assignment Outbound	0%	0%	0%	5%	0%	15%	0%	45%	0%	0%	0%	0%
Outbound Project Traffic	0	0	0	4	0	11	0	33	0	0	0	0
Total Project Traffic	0	0	0	4	0	11	0	33	1	4	9	0
2022 Buildout Total	0	0	0	4	0	11	0	207	1	4	66	0
Percent Impact (Approach)		-			100.0%			16.4%			18.6%	
Overall Percent Impact	21.2%											

PM PEAK HOUR
PM PHF = 0.90

Description	North Site Driveway Eastbound Left	Through	Right	North Site Driveway Westbound Left	Through	Right	Morris Acres Road Northbound Left	Through	Right	Morris Acres Road Southbound Left	Through	Right
2018 Traffic Count	0	0	0	0	0	0	0	0	0	0	0	0
Count Balancing	0	0	0	0	0	0	0	238	0	0	156	0
2018 Existing Traffic	0	0	0	0	0	0	0	238	0	0	156	0
Growth Factor (0.03 per year)	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126
2022 Background Growth	0	0	0	0	0	0	0	30	0	0	20	0
Committed Projects												
Beaver Creek Phase 4 Residential	0	0	0	0	0	0	0	2	0	0	4	0
Total Committed Traffic	0	0	0	0	0	0	0	2	0	0	4	0
2022 Background Traffic	0	0	0	0	0	0	0	270	0	0	180	0
Project Traffic												
Percent Assignment Inbound	0%	0%	0%	0%	0%	0%	0%	0%	5%	15%	35%	0%
Inbound Project Traffic	0	0	0	0	0	0	0	0	4	12	27	0
Percent Assignment Outbound	0%	0%	0%	5%	0%	15%	0%	45%	0%	0%	0%	0%
Outbound Project Traffic	0	0	0	3	0	8	0	23	0	0	0	0
Total Project Traffic	0	0	0	3	0	8	0	23	4	12	27	0
2022 Buildout Total	0	0	0	3	0	8	0	293	4	12	207	0
Percent Impact (Approach)		-			100.0%			9.1%			17.8%	
Overall Percent Impact	14.6%											

INTERSECTION ANALYSIS SHEET

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

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

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

AM PEAK HOUR
AM PHF = 0.90

Description	South Site Driveway Eastbound Left	Through	Right	South Site Driveway Westbound Left	Through	Right	Morris Acres Road Northbound Left	Through	Right	Morris Acres Road Southbound Left	Through	Right
2018 Traffic Count	0	0	0	0	0	0	0	0	0	0	0	0
Count Balancing	0	0	0	0	0	0	0	130	0	0	71	0
2018 Existing Traffic	0	0	0	0	0	0	0	130	0	0	71	0
Growth Factor (0.03 per year)	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126
2022 Background Growth	0	0	0	0	0	0	0	16	0	0	9	0
Committed Projects												
Beaver Creek Phase 4 Residential	0	0	0	0	0	0	0	1	0	0	3	0
Total Committed Traffic	0	0	0	0	0	0	0	1	0	0	3	0
2022 Background Traffic	0	0	0	0	0	0	0	147	0	0	83	0
Project Traffic												
Percent Assignment Inbound	0%	0%	0%	0%	0%	0%	0%	35%	15%	5%	0%	0%
Inbound Project Traffic	0	0	0	0	0	0	0	9	4	1	0	0
Percent Assignment Outbound	0%	0%	0%	10%	0%	10%	0%	0%	0%	0%	30%	0%
Outbound Project Traffic	0	0	0	7	0	7	0	0	0	0	22	0
Total Project Traffic	0	0	0	7	0	7	0	9	4	1	22	0
2022 Buildout Total	0	0	0	7	0	7	0	156	4	1	105	0
Percent Impact (Approach)		-			100.0%			8.1%			21.8%	

Overall Percent Impact 17.9%

PM PEAK HOUR
PM PHF = 0.90

Description	South Site Driveway Eastbound Left	Through	Right	South Site Driveway Westbound Left	Through	Right	Morris Acres Road Northbound Left	Through	Right	Morris Acres Road Southbound Left	Through	Right
2018 Traffic Count	0	0	0	0	0	0	0	0	0	0	0	0
Count Balancing	0	0	0	0	0	0	0	244	0	0	145	0
2018 Existing Traffic	0	0	0	0	0	0	0	244	0	0	145	0
Growth Factor (0.03 per year)	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126
2022 Background Growth	0	0	0	0	0	0	0	31	0	0	18	0
Committed Projects												
Beaver Creek Phase 4 Residential	0	0	0	0	0	0	0	2	0	0	1	0
Total Committed Traffic	0	0	0	0	0	0	0	2	0	0	1	0
2022 Background Traffic	0	0	0	0	0	0	0	278	0	0	164	0
Project Traffic												
Percent Assignment Inbound	0%	0%	0%	0%	0%	0%	0%	35%	15%	5%	0%	0%
Inbound Project Traffic	0	0	0	0	0	0	0	27	11	4	0	0
Percent Assignment Outbound	0%	0%	0%	10%	0%	10%	0%	0%	0%	0%	30%	0%
Outbound Project Traffic	0	0	0	4	0	5	0	0	0	0	15	0
Total Project Traffic	0	0	0	4	0	5	0	27	11	4	15	0
2022 Buildout Total	0	0	0	4	0	5	0	305	11	4	179	0
Percent Impact (Approach)		-			100.0%			12.0%			10.4%	

Overall Percent Impact 13.0%

Appendix F:
Synchro Output:
Existing (2018)

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	209	34	16	113	110	41
Future Volume (vph)	209	34	16	113	110	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	200		200	0
Storage Lanes		0	1		1	1
Taper Length (ft)			100		100	
Satd. Flow (prot)	1827	0	1770	1863	1770	1583
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	1827	0	1770	1863	1770	1583
Link Speed (mph)	45			45	45	
Link Distance (ft)	645			534	1006	
Travel Time (s)	9.8			8.1	15.2	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Shared Lane Traffic (%)						
Lane Group Flow (vph)	267	0	18	124	121	45
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 26.1%		ICU Level of Service A	
Analysis Period (min) 15			

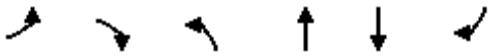
Intersection	
Int Delay, s/veh	3.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	209	34	16	113	110	41
Future Vol, veh/h	209	34	16	113	110	41
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	200	-	200	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	230	37	18	124	121	45

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	267	0	407	248
Stage 1	-	-	-	-	248	-
Stage 2	-	-	-	-	159	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1297	-	600	791
Stage 1	-	-	-	-	793	-
Stage 2	-	-	-	-	870	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1297	-	592	791
Mov Cap-2 Maneuver	-	-	-	-	645	-
Stage 1	-	-	-	-	793	-
Stage 2	-	-	-	-	858	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1	11.3
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	645	791	-	-	1297	-
HCM Lane V/C Ratio	0.187	0.057	-	-	0.014	-
HCM Control Delay (s)	11.9	9.8	-	-	7.8	-
HCM Lane LOS	B	A	-	-	A	-
HCM 95th %tile Q(veh)	0.7	0.2	-	-	0	-



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	26	26	5	125	45	5
Future Volume (vph)	26	26	5	125	45	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	100			0
Storage Lanes	1	0	1			0
Taper Length (ft)	25		100			
Satd. Flow (prot)	1694	0	1770	1863	1837	0
Flt Permitted	0.976		0.950			
Satd. Flow (perm)	1694	0	1770	1863	1837	0
Link Speed (mph)	25			45	45	
Link Distance (ft)	294			470	758	
Travel Time (s)	8.0			7.1	11.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Shared Lane Traffic (%)						
Lane Group Flow (vph)	58	0	6	139	56	0
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 16.6%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	2.3

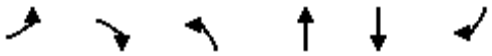
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	26	26	5	125	45	5
Future Vol, veh/h	26	26	5	125	45	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	100	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	29	29	6	139	50	6

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	203	53	56	0	-	0
Stage 1	53	-	-	-	-	-
Stage 2	150	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	786	1014	1549	-	-	-
Stage 1	970	-	-	-	-	-
Stage 2	878	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	783	1014	1549	-	-	-
Mov Cap-2 Maneuver	771	-	-	-	-	-
Stage 1	970	-	-	-	-	-
Stage 2	875	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.4	0.3	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1549	-	876	-	-
HCM Lane V/C Ratio	0.004	-	0.066	-	-
HCM Control Delay (s)	7.3	-	9.4	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

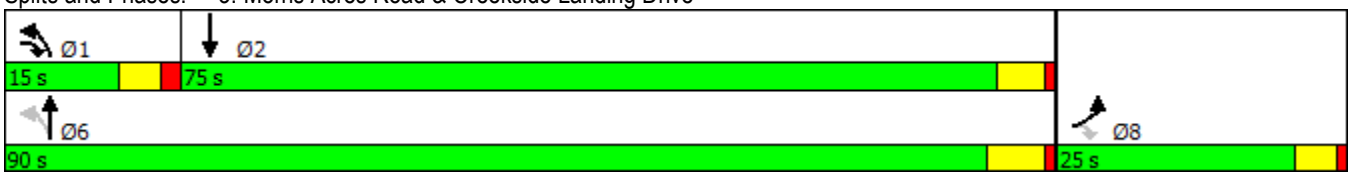
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	30	95	55	113	102	15
Future Volume (vph)	30	95	55	113	102	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	2%			-5%	5%	
Storage Length (ft)	100	0	100			0
Storage Lanes	1	1	1			0
Taper Length (ft)	55		100			
Satd. Flow (prot)	1752	1567	1814	1909	1785	0
Flt Permitted	0.950		0.510			
Satd. Flow (perm)	1752	1567	974	1909	1785	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		98			11	
Link Speed (mph)	25			45	45	
Link Distance (ft)	396			548	1004	
Travel Time (s)	10.8			8.3	15.2	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Shared Lane Traffic (%)						
Lane Group Flow (vph)	31	98	57	116	120	0
Turn Type	Prot	pm+ov	pm+pt	NA	NA	
Protected Phases	8	1	1	6	2	
Permitted Phases		8	6			
Detector Phase	8	1	1	6	2	
Switch Phase						
Minimum Initial (s)	7.0	7.0	7.0	12.0	12.0	
Minimum Split (s)	22.7	12.2	12.2	24.0	23.1	
Total Split (s)	25.0	15.0	15.0	90.0	75.0	
Total Split (%)	21.7%	13.0%	13.0%	78.3%	65.2%	
Yellow Time (s)	3.7	3.5	3.5	5.0	4.1	
All-Red Time (s)	1.0	1.7	1.7	1.0	1.0	
Lost Time Adjust (s)	0.3	-0.2	-0.2	-1.0	-0.1	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	
Lead/Lag		Lead	Lead		Lag	
Lead-Lag Optimize?		Yes	Yes		Yes	
Recall Mode	None	None	None	Min	Min	
Act Effct Green (s)	6.8	9.2	25.8	30.0	16.8	
Actuated g/C Ratio	0.21	0.28	0.79	0.92	0.51	
v/c Ratio	0.09	0.19	0.06	0.07	0.13	
Control Delay	12.6	3.2	2.1	1.7	7.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	12.6	3.2	2.1	1.7	7.8	
LOS	B	A	A	A	A	
Approach Delay	5.4			1.8	7.8	
Approach LOS	A			A	A	
Queue Length 50th (ft)	4	0	0	0	9	
Queue Length 95th (ft)	22	16	13	22	46	
Internal Link Dist (ft)	316			468	924	
Turn Bay Length (ft)	100		100			
Base Capacity (vph)	1086	637	1027	1909	1785	

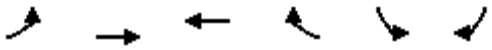


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.03	0.15	0.06	0.06	0.07	

Intersection Summary			
Area Type:	Other		
Cycle Length: 115			
Actuated Cycle Length: 32.7			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.19			
Intersection Signal Delay: 4.6		Intersection LOS: A	
Intersection Capacity Utilization 24.2%		ICU Level of Service A	
Analysis Period (min) 15			
Description: 05-2280			

Splits and Phases: 3: Morris Acres Road & Creekside Landing Drive





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	1693	140	0	119
Future Volume (vph)	0	0	1693	140	0	119
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0			75	0	0
Storage Lanes	0			1	0	1
Taper Length (ft)	25				25	
Satd. Flow (prot)	0	0	3539	1583	0	1611
Flt Permitted						
Satd. Flow (perm)	0	0	3539	1583	0	1611
Link Speed (mph)		55	55		45	
Link Distance (ft)		890	661		383	
Travel Time (s)		11.0	8.2		5.8	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	1801	149	0	127
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 60.8%		ICU Level of Service B	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations			↑↑	↱		↱
Traffic Vol, veh/h	0	0	1693	140	0	119
Future Vol, veh/h	0	0	1693	140	0	119
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Stop
Storage Length	-	-	-	75	-	0
Veh in Median Storage, #	-	-	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	1801	149	0	127

Major/Minor	Major2		Minor2	
Conflicting Flow All	-	0	-	901
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	-	-	-	3.32
Pot Cap-1 Maneuver	-	-	0	281
Stage 1	-	-	0	-
Stage 2	-	-	0	-
Platoon blocked, %	-	-		
Mov Cap-1 Maneuver	-	-	-	281
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	WB	SB
HCM Control Delay, s	0	27.9
HCM LOS		D

Minor Lane/Major Mvmt	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	281
HCM Lane V/C Ratio	-	-	0.451
HCM Control Delay (s)	-	-	27.9
HCM Lane LOS	-	-	D
HCM 95th %tile Q(veh)	-	-	2.2

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	216	99	57	250	175	63
Future Volume (vph)	216	99	57	250	175	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	200		200	0
Storage Lanes		0	1		1	1
Taper Length (ft)			100		100	
Satd. Flow (prot)	1785	0	1770	1863	1770	1583
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	1785	0	1770	1863	1770	1583
Link Speed (mph)	45			45	45	
Link Distance (ft)	645			534	1006	
Travel Time (s)	9.8			8.1	15.2	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Shared Lane Traffic (%)						
Lane Group Flow (vph)	331	0	60	263	184	66
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 40.4%		ICU Level of Service A	
Analysis Period (min) 15			

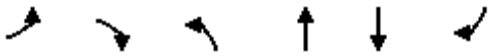
Intersection	
Int Delay, s/veh	4.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	216	99	57	250	175	63
Future Vol, veh/h	216	99	57	250	175	63
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	200	-	200	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	227	104	60	263	184	66

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	332	0	662	279
Stage 1	-	-	-	-	279	-
Stage 2	-	-	-	-	383	-
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	-	-	1227	-	427	760
Stage 1	-	-	-	-	768	-
Stage 2	-	-	-	-	689	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1227	-	406	760
Mov Cap-2 Maneuver	-	-	-	-	505	-
Stage 1	-	-	-	-	768	-
Stage 2	-	-	-	-	655	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.5	14.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	505	760	-	-	1227	-
HCM Lane V/C Ratio	0.365	0.087	-	-	0.049	-
HCM Control Delay (s)	16.2	10.2	-	-	8.1	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile Q(veh)	1.7	0.3	-	-	0.2	-



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	14	14	20	225	132	24
Future Volume (vph)	14	14	20	225	132	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	100			0
Storage Lanes	1	0	1			0
Taper Length (ft)	25		100			
Satd. Flow (prot)	1694	0	1770	1863	1824	0
Flt Permitted	0.976		0.950			
Satd. Flow (perm)	1694	0	1770	1863	1824	0
Link Speed (mph)	25			45	45	
Link Distance (ft)	294			470	758	
Travel Time (s)	8.0			7.1	11.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Shared Lane Traffic (%)						
Lane Group Flow (vph)	32	0	22	250	174	0
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 25.1%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	14	14	20	225	132	24
Future Vol, veh/h	14	14	20	225	132	24
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	100	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	16	16	22	250	147	27

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	454	160	173	0	-	0
Stage 1	160	-	-	-	-	-
Stage 2	294	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	564	885	1404	-	-	-
Stage 1	869	-	-	-	-	-
Stage 2	756	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	555	885	1404	-	-	-
Mov Cap-2 Maneuver	614	-	-	-	-	-
Stage 1	869	-	-	-	-	-
Stage 2	744	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.2	0.6	0
HCM LOS	B		

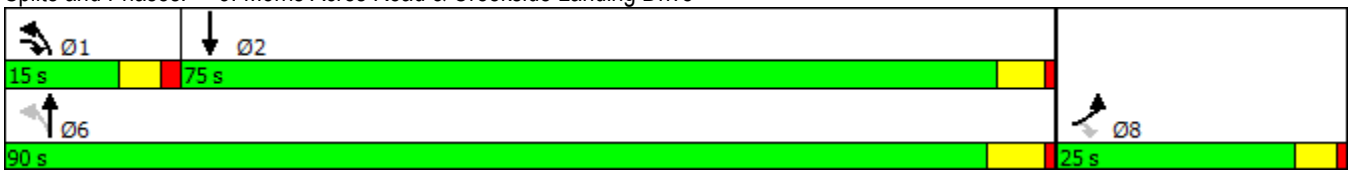
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1404	-	725	-	-
HCM Lane V/C Ratio	0.016	-	0.043	-	-
HCM Control Delay (s)	7.6	-	10.2	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

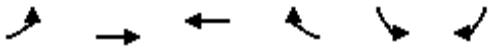
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	96	178	144	235	83	88
Future Volume (vph)	96	178	144	235	83	88
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	2%			-5%	5%	
Storage Length (ft)	100	0	100			0
Storage Lanes	1	1	1			0
Taper Length (ft)	55		100			
Satd. Flow (prot)	1752	1567	1814	1909	1689	0
Flt Permitted	0.950		0.448			
Satd. Flow (perm)	1752	1567	855	1909	1689	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		196			85	
Link Speed (mph)	25			45	45	
Link Distance (ft)	396			548	1004	
Travel Time (s)	10.8			8.3	15.2	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Shared Lane Traffic (%)						
Lane Group Flow (vph)	105	196	158	258	188	0
Turn Type	Prot	pm+ov	pm+pt	NA	NA	
Protected Phases	8	1	1	6	2	
Permitted Phases		8	6			
Detector Phase	8	1	1	6	2	
Switch Phase						
Minimum Initial (s)	7.0	7.0	7.0	12.0	12.0	
Minimum Split (s)	22.7	12.2	12.2	24.0	23.1	
Total Split (s)	25.0	15.0	15.0	90.0	75.0	
Total Split (%)	21.7%	13.0%	13.0%	78.3%	65.2%	
Yellow Time (s)	3.7	3.5	3.5	5.0	4.1	
All-Red Time (s)	1.0	1.7	1.7	1.0	1.0	
Lost Time Adjust (s)	0.3	-0.2	-0.2	-1.0	-0.1	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	
Lead/Lag		Lead	Lead		Lag	
Lead-Lag Optimize?		Yes	Yes		Yes	
Recall Mode	None	None	None	Min	Min	
Act Effct Green (s)	7.3	16.8	25.1	26.4	12.3	
Actuated g/C Ratio	0.19	0.43	0.64	0.67	0.31	
v/c Ratio	0.33	0.25	0.22	0.20	0.32	
Control Delay	18.5	2.2	4.8	4.6	9.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	18.5	2.2	4.8	4.6	9.1	
LOS	B	A	A	A	A	
Approach Delay	7.9			4.7	9.1	
Approach LOS	A			A	A	
Queue Length 50th (ft)	22	0	13	22	17	
Queue Length 95th (ft)	55	21	33	51	58	
Internal Link Dist (ft)	316			468	924	
Turn Bay Length (ft)	100		100			
Base Capacity (vph)	907	872	792	1909	1689	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.12	0.22	0.20	0.14	0.11	

Intersection Summary			
Area Type:	Other		
Cycle Length: 115			
Actuated Cycle Length: 39.4			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.33			
Intersection Signal Delay: 6.7		Intersection LOS: A	
Intersection Capacity Utilization 36.3%		ICU Level of Service A	
Analysis Period (min) 15			
Description: 05-2280			

Splits and Phases: 3: Morris Acres Road & Creekside Landing Drive





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	1783	308	0	126
Future Volume (vph)	0	0	1783	308	0	126
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0			75	0	0
Storage Lanes	0			1	0	1
Taper Length (ft)	25				25	
Satd. Flow (prot)	0	0	3539	1583	0	1611
Flt Permitted						
Satd. Flow (perm)	0	0	3539	1583	0	1611
Link Speed (mph)		55	55		45	
Link Distance (ft)		890	661		383	
Travel Time (s)		11.0	8.2		5.8	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	1819	314	0	129
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 63.8%		ICU Level of Service B	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations			↑↑	↱		↱
Traffic Vol, veh/h	0	0	1783	308	0	126
Future Vol, veh/h	0	0	1783	308	0	126
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Stop
Storage Length	-	-	-	75	-	0
Veh in Median Storage, #	-	-	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	1819	314	0	129

Major/Minor	Major2		Minor2	
Conflicting Flow All	-	0	-	910
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	-	-	-	3.32
Pot Cap-1 Maneuver	-	-	0	277
Stage 1	-	-	0	-
Stage 2	-	-	0	-
Platoon blocked, %	-	-		
Mov Cap-1 Maneuver	-	-	-	277
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	WB	SB
HCM Control Delay, s	0	28.8
HCM LOS		D

Minor Lane/Major Mvmt	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	277
HCM Lane V/C Ratio	-	-	0.464
HCM Control Delay (s)	-	-	28.8
HCM Lane LOS	-	-	D
HCM 95th %tile Q(veh)	-	-	2.3

Appendix G:
Synchro Output:
Background (2022)

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	235	38	18	127	126	48
Future Volume (vph)	235	38	18	127	126	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	200		200	0
Storage Lanes		0	1		1	1
Taper Length (ft)			100		100	
Satd. Flow (prot)	1827	0	1770	1863	1770	1583
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	1827	0	1770	1863	1770	1583
Link Speed (mph)	45			45	45	
Link Distance (ft)	645			534	1006	
Travel Time (s)	9.8			8.1	15.2	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Shared Lane Traffic (%)						
Lane Group Flow (vph)	300	0	20	140	138	53
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 28.6%		ICU Level of Service A	
Analysis Period (min) 15			

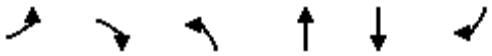
Intersection	
Int Delay, s/veh	3.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	235	38	18	127	126	48
Future Vol, veh/h	235	38	18	127	126	48
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	200	-	200	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	258	42	20	140	138	53

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	300	0	458	279
Stage 1	-	-	-	-	279	-
Stage 2	-	-	-	-	179	-
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	-	-	1261	-	561	760
Stage 1	-	-	-	-	768	-
Stage 2	-	-	-	-	852	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1261	-	552	760
Mov Cap-2 Maneuver	-	-	-	-	616	-
Stage 1	-	-	-	-	768	-
Stage 2	-	-	-	-	838	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1	11.8
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	616	760	-	-	1261	-
HCM Lane V/C Ratio	0.225	0.069	-	-	0.016	-
HCM Control Delay (s)	12.5	10.1	-	-	7.9	-
HCM Lane LOS	B	B	-	-	A	-
HCM 95th %tile Q(veh)	0.9	0.2	-	-	0	-



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	29	29	6	141	51	6
Future Volume (vph)	29	29	6	141	51	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	100			0
Storage Lanes	1	0	1			0
Taper Length (ft)	25		100			
Satd. Flow (prot)	1694	0	1770	1863	1835	0
Flt Permitted	0.976		0.950			
Satd. Flow (perm)	1694	0	1770	1863	1835	0
Link Speed (mph)	25			45	45	
Link Distance (ft)	294			470	758	
Travel Time (s)	8.0			7.1	11.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Shared Lane Traffic (%)						
Lane Group Flow (vph)	64	0	7	157	64	0
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 17.5%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	29	29	6	141	51	6
Future Vol, veh/h	29	29	6	141	51	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	100	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	32	32	7	157	57	7

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	230	60	63	0	-	0
Stage 1	60	-	-	-	-	-
Stage 2	170	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	758	1005	1540	-	-	-
Stage 1	963	-	-	-	-	-
Stage 2	860	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	755	1005	1540	-	-	-
Mov Cap-2 Maneuver	751	-	-	-	-	-
Stage 1	963	-	-	-	-	-
Stage 2	856	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.5	0.3	0
HCM LOS	A		

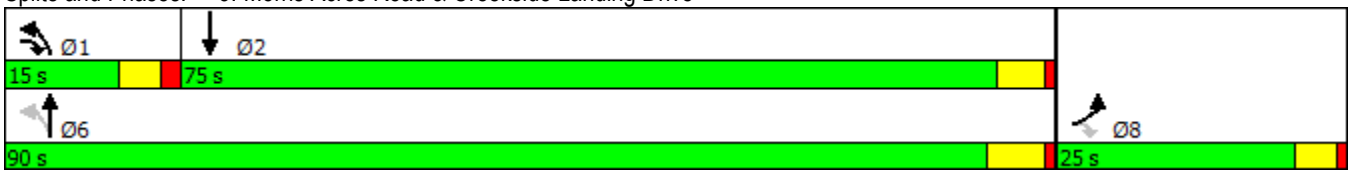
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1540	-	860	-	-
HCM Lane V/C Ratio	0.004	-	0.075	-	-
HCM Control Delay (s)	7.3	-	9.5	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

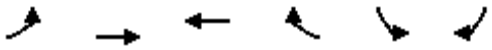
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	34	109	63	128	118	17
Future Volume (vph)	34	109	63	128	118	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	2%			-5%	5%	
Storage Length (ft)	100	0	100			0
Storage Lanes	1	1	1			0
Taper Length (ft)	55		100			
Satd. Flow (prot)	1752	1567	1814	1909	1785	0
Flt Permitted	0.950		0.497			
Satd. Flow (perm)	1752	1567	949	1909	1785	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		112			12	
Link Speed (mph)	25			45	45	
Link Distance (ft)	396			548	1004	
Travel Time (s)	10.8			8.3	15.2	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Shared Lane Traffic (%)						
Lane Group Flow (vph)	35	112	65	132	140	0
Turn Type	Prot	pm+ov	pm+pt	NA	NA	
Protected Phases	8	1	1	6	2	
Permitted Phases		8	6			
Detector Phase	8	1	1	6	2	
Switch Phase						
Minimum Initial (s)	7.0	7.0	7.0	12.0	12.0	
Minimum Split (s)	22.7	12.2	12.2	24.0	23.1	
Total Split (s)	25.0	15.0	15.0	90.0	75.0	
Total Split (%)	21.7%	13.0%	13.0%	78.3%	65.2%	
Yellow Time (s)	3.7	3.5	3.5	5.0	4.1	
All-Red Time (s)	1.0	1.7	1.7	1.0	1.0	
Lost Time Adjust (s)	0.3	-0.2	-0.2	-1.0	-0.1	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	
Lead/Lag		Lead	Lead		Lag	
Lead-Lag Optimize?		Yes	Yes		Yes	
Recall Mode	None	None	None	Min	Min	
Act Effct Green (s)	6.8	9.2	25.5	29.8	16.4	
Actuated g/C Ratio	0.21	0.28	0.79	0.92	0.51	
v/c Ratio	0.10	0.21	0.07	0.08	0.15	
Control Delay	12.6	3.2	2.1	1.7	8.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	12.6	3.2	2.1	1.7	8.0	
LOS	B	A	A	A	A	
Approach Delay	5.4			1.8	8.0	
Approach LOS	A			A	A	
Queue Length 50th (ft)	4	0	0	0	11	
Queue Length 95th (ft)	24	17	14	24	52	
Internal Link Dist (ft)	316			468	924	
Turn Bay Length (ft)	100		100			
Base Capacity (vph)	1100	652	1017	1909	1785	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.03	0.17	0.06	0.07	0.08	

Intersection Summary			
Area Type:	Other		
Cycle Length: 115			
Actuated Cycle Length: 32.4			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.21			
Intersection Signal Delay: 4.7		Intersection LOS: A	
Intersection Capacity Utilization 34.2%		ICU Level of Service A	
Analysis Period (min) 15			
Description: 05-2280			

Splits and Phases: 3: Morris Acres Road & Creekside Landing Drive





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	1905	159	0	137
Future Volume (vph)	0	0	1905	159	0	137
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0			75	0	0
Storage Lanes	0			1	0	1
Taper Length (ft)	25				25	
Satd. Flow (prot)	0	0	3539	1583	0	1611
Flt Permitted						
Satd. Flow (perm)	0	0	3539	1583	0	1611
Link Speed (mph)		55	55		45	
Link Distance (ft)		890	661		383	
Travel Time (s)		11.0	8.2		5.8	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	2027	169	0	146
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 67.8%		ICU Level of Service C	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	2.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations			↑↑	↱		↱
Traffic Vol, veh/h	0	0	1905	159	0	137
Future Vol, veh/h	0	0	1905	159	0	137
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Stop
Storage Length	-	-	-	75	-	0
Veh in Median Storage, #	-	-	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	2027	169	0	146

Major/Minor	Major2		Minor2	
Conflicting Flow All	-	0	-	1013
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	-	-	-	3.32
Pot Cap-1 Maneuver	-	-	0	237
Stage 1	-	-	0	-
Stage 2	-	-	0	-
Platoon blocked, %	-	-		
Mov Cap-1 Maneuver	-	-	-	237
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	WB	SB
HCM Control Delay, s	0	41.8
HCM LOS		E

Minor Lane/Major Mvmt	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	237
HCM Lane V/C Ratio	-	-	0.615
HCM Control Delay (s)	-	-	41.8
HCM Lane LOS	-	-	E
HCM 95th %tile Q(veh)	-	-	3.6

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	243	112	66	281	198	72
Future Volume (vph)	243	112	66	281	198	72
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	200		200	0
Storage Lanes		0	1		1	1
Taper Length (ft)			100		100	
Satd. Flow (prot)	1783	0	1770	1863	1770	1583
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	1783	0	1770	1863	1770	1583
Link Speed (mph)	45			45	45	
Link Distance (ft)	645			534	1006	
Travel Time (s)	9.8			8.1	15.2	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Shared Lane Traffic (%)						
Lane Group Flow (vph)	374	0	69	296	208	76
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 44.2%		ICU Level of Service A	
Analysis Period (min) 15			

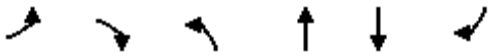
Intersection	
Int Delay, s/veh	5.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	243	112	66	281	198	72
Future Vol, veh/h	243	112	66	281	198	72
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	200	-	200	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	256	118	69	296	208	76

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	374	0	750	315
Stage 1	-	-	-	-	315	-
Stage 2	-	-	-	-	435	-
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	-	-	1184	-	379	725
Stage 1	-	-	-	-	740	-
Stage 2	-	-	-	-	653	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1184	-	357	725
Mov Cap-2 Maneuver	-	-	-	-	467	-
Stage 1	-	-	-	-	740	-
Stage 2	-	-	-	-	615	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.6	16.6
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	467	725	-	-	1184	-
HCM Lane V/C Ratio	0.446	0.105	-	-	0.059	-
HCM Control Delay (s)	18.8	10.5	-	-	8.2	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile Q(veh)	2.3	0.3	-	-	0.2	-



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	15	15	22	253	149	27
Future Volume (vph)	15	15	22	253	149	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	100			0
Storage Lanes	1	0	1			0
Taper Length (ft)	25		100			
Satd. Flow (prot)	1694	0	1770	1863	1824	0
Flt Permitted	0.976		0.950			
Satd. Flow (perm)	1694	0	1770	1863	1824	0
Link Speed (mph)	25			45	45	
Link Distance (ft)	294			470	758	
Travel Time (s)	8.0			7.1	11.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Shared Lane Traffic (%)						
Lane Group Flow (vph)	34	0	24	281	196	0
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 26.1%		ICU Level of Service A	
Analysis Period (min) 15			

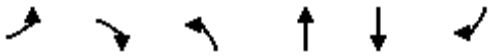
Intersection	
Int Delay, s/veh	1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	15	15	22	253	149	27
Future Vol, veh/h	15	15	22	253	149	27
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	100	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	17	17	24	281	166	30

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	511	181	196	0	-	0
Stage 1	181	-	-	-	-	-
Stage 2	330	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	523	862	1377	-	-	-
Stage 1	850	-	-	-	-	-
Stage 2	728	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	514	862	1377	-	-	-
Mov Cap-2 Maneuver	584	-	-	-	-	-
Stage 1	850	-	-	-	-	-
Stage 2	715	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.4	0.6	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1377	-	696	-	-
HCM Lane V/C Ratio	0.018	-	0.048	-	-
HCM Control Delay (s)	7.7	-	10.4	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.2	-	-

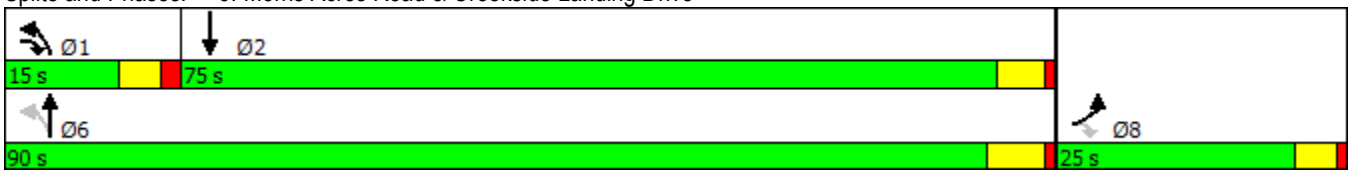


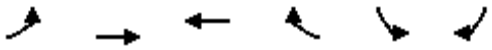
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	108	201	164	266	95	99
Future Volume (vph)	108	201	164	266	95	99
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	2%			-5%	5%	
Storage Length (ft)	100	0	100			0
Storage Lanes	1	1	1			0
Taper Length (ft)	55		100			
Satd. Flow (prot)	1752	1567	1814	1909	1691	0
Flt Permitted	0.950		0.438			
Satd. Flow (perm)	1752	1567	836	1909	1691	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		221			84	
Link Speed (mph)	25			45	45	
Link Distance (ft)	396			548	1004	
Travel Time (s)	10.8			8.3	15.2	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Shared Lane Traffic (%)						
Lane Group Flow (vph)	119	221	180	292	213	0
Turn Type	Prot	pm+ov	pm+pt	NA	NA	
Protected Phases	8	1	1	6	2	
Permitted Phases		8	6			
Detector Phase	8	1	1	6	2	
Switch Phase						
Minimum Initial (s)	7.0	7.0	7.0	12.0	12.0	
Minimum Split (s)	22.7	12.2	12.2	24.0	23.1	
Total Split (s)	25.0	15.0	15.0	90.0	75.0	
Total Split (%)	21.7%	13.0%	13.0%	78.3%	65.2%	
Yellow Time (s)	3.7	3.5	3.5	5.0	4.1	
All-Red Time (s)	1.0	1.7	1.7	1.0	1.0	
Lost Time Adjust (s)	0.3	-0.2	-0.2	-1.0	-0.1	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	
Lead/Lag		Lead	Lead		Lag	
Lead-Lag Optimize?		Yes	Yes		Yes	
Recall Mode	None	None	None	Min	Min	
Act Effct Green (s)	7.5	17.3	25.4	26.7	12.4	
Actuated g/C Ratio	0.19	0.43	0.64	0.67	0.31	
v/c Ratio	0.36	0.27	0.25	0.23	0.37	
Control Delay	19.1	2.2	5.1	4.8	10.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	19.1	2.2	5.1	4.8	10.3	
LOS	B	A	A	A	B	
Approach Delay	8.1			4.9	10.3	
Approach LOS	A			A	B	
Queue Length 50th (ft)	25	0	15	26	22	
Queue Length 95th (ft)	62	22	38	60	69	
Internal Link Dist (ft)	316			468	924	
Turn Bay Length (ft)	100		100			
Base Capacity (vph)	898	884	782	1909	1691	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.13	0.25	0.23	0.15	0.13	

Intersection Summary			
Area Type:	Other		
Cycle Length: 115			
Actuated Cycle Length: 39.9			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.37			
Intersection Signal Delay: 7.1		Intersection LOS: A	
Intersection Capacity Utilization 38.6%		ICU Level of Service A	
Analysis Period (min) 15			
Description: 05-2280			

Splits and Phases: 3: Morris Acres Road & Creekside Landing Drive





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	2007	350	0	144
Future Volume (vph)	0	0	2007	350	0	144
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0			75	0	0
Storage Lanes	0			1	0	1
Taper Length (ft)	25				25	
Satd. Flow (prot)	0	0	3539	1583	0	1611
Flt Permitted						
Satd. Flow (perm)	0	0	3539	1583	0	1611
Link Speed (mph)		55	55		45	
Link Distance (ft)		890	661		383	
Travel Time (s)		11.0	8.2		5.8	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	2048	357	0	147
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 71.1%		ICU Level of Service C	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	2007	350	0	144
Future Vol, veh/h	0	0	2007	350	0	144
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Stop
Storage Length	-	-	-	75	-	0
Veh in Median Storage, #	-	-	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	2048	357	0	147

Major/Minor	Major2		Minor2	
Conflicting Flow All	-	0	-	1024
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	-	-	-	3.32
Pot Cap-1 Maneuver	-	-	0	233
Stage 1	-	-	0	-
Stage 2	-	-	0	-
Platoon blocked, %	-	-		
Mov Cap-1 Maneuver	-	-	-	233
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	WB	SB
HCM Control Delay, s	0	43.6
HCM LOS		E

Minor Lane/Major Mvmt	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	233
HCM Lane V/C Ratio	-	-	0.631
HCM Control Delay (s)	-	-	43.6
HCM Lane LOS	-	-	E
HCM 95th %tile Q(veh)	-	-	3.8

Appendix H:
Synchro Output:
Build-out (2022)

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	235	44	25	127	133	85
Future Volume (vph)	235	44	25	127	133	85
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	200		200	0
Storage Lanes		0	1		1	1
Taper Length (ft)			100		100	
Satd. Flow (prot)	1824	0	1770	1863	1770	1583
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	1824	0	1770	1863	1770	1583
Link Speed (mph)	45			45	45	
Link Distance (ft)	645			534	1006	
Travel Time (s)	9.8			8.1	15.2	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Shared Lane Traffic (%)						
Lane Group Flow (vph)	306	0	27	140	146	93
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 34.8%		ICU Level of Service A	
Analysis Period (min) 15			

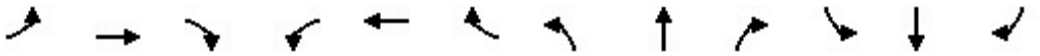
Intersection	
Int Delay, s/veh	4.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	235	44	25	127	133	85
Future Vol, veh/h	235	44	25	127	133	85
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	200	-	200	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	258	48	27	140	146	93

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	307	0	477	282
Stage 1	-	-	-	-	282	-
Stage 2	-	-	-	-	195	-
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	-	-	1254	-	547	757
Stage 1	-	-	-	-	766	-
Stage 2	-	-	-	-	838	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1254	-	535	757
Mov Cap-2 Maneuver	-	-	-	-	605	-
Stage 1	-	-	-	-	766	-
Stage 2	-	-	-	-	820	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.3	11.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	605	757	-	-	1254	-
HCM Lane V/C Ratio	0.242	0.123	-	-	0.022	-
HCM Control Delay (s)	12.8	10.4	-	-	7.9	-
HCM Lane LOS	B	B	-	-	A	-
HCM 95th %tile Q(veh)	0.9	0.4	-	-	0.1	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	4	29	19	4	26	6	149	8	8	56	6
Future Volume (vph)	29	4	29	19	4	26	6	149	8	8	56	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	100		0	100		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			100			100		
Satd. Flow (prot)	0	1703	0	0	1694	0	1770	1848	0	1770	1835	0
Flt Permitted		0.977			0.981		0.950			0.950		
Satd. Flow (perm)	0	1703	0	0	1694	0	1770	1848	0	1770	1835	0
Link Speed (mph)		25			25			45			45	
Link Distance (ft)		294			267			470			758	
Travel Time (s)		8.0			7.3			7.1			11.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	68	0	0	54	0	7	175	0	9	69	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 20.0%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	3.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	29	4	29	19	4	26	6	149	8	8	56	6
Future Vol, veh/h	29	4	29	19	4	26	6	149	8	8	56	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	32	4	32	21	4	29	7	166	9	9	62	7

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	283	271	66	285	270	170	69	0	0	174	0	0
Stage 1	83	83	-	183	183	-	-	-	-	-	-	-
Stage 2	200	188	-	102	87	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	669	636	998	667	636	874	1532	-	-	1403	-	-
Stage 1	925	826	-	819	748	-	-	-	-	-	-	-
Stage 2	802	745	-	904	823	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	638	629	998	637	629	874	1532	-	-	1403	-	-
Mov Cap-2 Maneuver	638	629	-	637	629	-	-	-	-	-	-	-
Stage 1	921	821	-	815	745	-	-	-	-	-	-	-
Stage 2	767	742	-	864	818	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.2	10.2	0.3	0.9
HCM LOS	B	B		

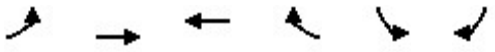
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1532	-	-	767	743	1403	-	-
HCM Lane V/C Ratio	0.004	-	-	0.09	0.073	0.006	-	-
HCM Control Delay (s)	7.4	-	-	10.2	10.2	7.6	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.3	0.2	0	-	-

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	41	109	63	135	137	27
Future Volume (vph)	41	109	63	135	137	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	2%			-5%	5%	
Storage Length (ft)	100	0	100			0
Storage Lanes	1	1	1			0
Taper Length (ft)	55		100			
Satd. Flow (prot)	1752	1567	1814	1909	1776	0
Flt Permitted	0.950		0.484			
Satd. Flow (perm)	1752	1567	924	1909	1776	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		112			16	
Link Speed (mph)	25			45	45	
Link Distance (ft)	396			548	1004	
Travel Time (s)	10.8			8.3	15.2	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Shared Lane Traffic (%)						
Lane Group Flow (vph)	42	112	65	139	169	0
Turn Type	Prot	pm+ov	pm+pt	NA	NA	
Protected Phases	8	1	1	6	2	
Permitted Phases		8	6			
Detector Phase	8	1	1	6	2	
Switch Phase						
Minimum Initial (s)	7.0	7.0	7.0	12.0	12.0	
Minimum Split (s)	22.7	12.2	12.2	24.0	23.1	
Total Split (s)	25.0	15.0	15.0	90.0	75.0	
Total Split (%)	21.7%	13.0%	13.0%	78.3%	65.2%	
Yellow Time (s)	3.7	3.5	3.5	5.0	4.1	
All-Red Time (s)	1.0	1.7	1.7	1.0	1.0	
Lost Time Adjust (s)	0.3	-0.2	-0.2	-1.0	-0.1	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	
Lead/Lag		Lead	Lead		Lag	
Lead-Lag Optimize?		Yes	Yes		Yes	
Recall Mode	None	None	None	Min	Min	
Act Effct Green (s)	6.8	9.2	25.5	29.8	16.4	
Actuated g/C Ratio	0.21	0.28	0.79	0.92	0.51	
v/c Ratio	0.11	0.21	0.07	0.08	0.19	
Control Delay	12.7	3.2	2.1	1.7	8.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	12.7	3.2	2.1	1.7	8.0	
LOS	B	A	A	A	A	
Approach Delay	5.8			1.8	8.0	
Approach LOS	A			A	A	
Queue Length 50th (ft)	5	0	0	0	13	
Queue Length 95th (ft)	27	17	14	25	61	
Internal Link Dist (ft)	316			468	924	
Turn Bay Length (ft)	100		100			
Base Capacity (vph)	1100	652	1005	1909	1776	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.04	0.17	0.06	0.07	0.10	

Intersection Summary			
Area Type:	Other		
Cycle Length: 115			
Actuated Cycle Length: 32.4			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.21			
Intersection Signal Delay: 5.0		Intersection LOS: A	
Intersection Capacity Utilization 34.2%		ICU Level of Service A	
Analysis Period (min) 15			
Description: 05-2280			

Splits and Phases: 3: Morris Acres Road & Creekside Landing Drive



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations			↑↑	↱		↱
Traffic Volume (vph)	0	0	1905	166	0	156
Future Volume (vph)	0	0	1905	166	0	156
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0			75	0	0
Storage Lanes	0			1	0	1
Taper Length (ft)	25				25	
Satd. Flow (prot)	0	0	3539	1583	0	1611
Flt Permitted						
Satd. Flow (perm)	0	0	3539	1583	0	1611
Link Speed (mph)		55	55		45	
Link Distance (ft)		890	661		383	
Travel Time (s)		11.0	8.2		5.8	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	2027	177	0	166
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 69.0%		ICU Level of Service C	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	3.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations			↑↑	↱		↱
Traffic Vol, veh/h	0	0	1905	166	0	156
Future Vol, veh/h	0	0	1905	166	0	156
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Stop
Storage Length	-	-	-	75	-	0
Veh in Median Storage, #	-	-	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	2027	177	0	166

Major/Minor	Major2		Minor2	
Conflicting Flow All	-	0	-	1013
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	-	-	-	3.32
Pot Cap-1 Maneuver	-	-	0	237
Stage 1	-	-	0	-
Stage 2	-	-	0	-
Platoon blocked, %	-	-		
Mov Cap-1 Maneuver	-	-	-	237
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	WB	SB
HCM Control Delay, s	0	49.4
HCM LOS		E

Minor Lane/Major Mvmt	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	237
HCM Lane V/C Ratio	-	-	0.7
HCM Control Delay (s)	-	-	49.4
HCM Lane LOS	-	-	E
HCM 95th %tile Q(veh)	-	-	4.6

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	4	11	207	4	4	66
Future Volume (vph)	4	11	207	4	4	66
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	100	
Storage Lanes	1	0		0	1	
Taper Length (ft)	25				100	
Satd. Flow (prot)	1655	0	1859	0	1770	1863
Flt Permitted	0.988				0.950	
Satd. Flow (perm)	1655	0	1859	0	1770	1863
Link Speed (mph)	25		45			45
Link Distance (ft)	317		758			1006
Travel Time (s)	8.6		11.5			15.2
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Shared Lane Traffic (%)						
Lane Group Flow (vph)	16	0	234	0	4	73
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 21.1%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	0.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	4	11	207	4	4	66
Future Vol, veh/h	4	11	207	4	4	66
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	12	230	4	4	73

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	314	232	0	0	234	0
Stage 1	232	-	-	-	-	-
Stage 2	82	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	679	807	-	-	1333	-
Stage 1	807	-	-	-	-	-
Stage 2	941	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	677	807	-	-	1333	-
Mov Cap-2 Maneuver	697	-	-	-	-	-
Stage 1	807	-	-	-	-	-
Stage 2	938	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.8	0	0.4
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	774	1333	-
HCM Lane V/C Ratio	-	-	0.022	0.003	-
HCM Control Delay (s)	-	-	9.8	7.7	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	7	7	156	4	4	105
Future Volume (vph)	7	7	156	4	4	105
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	100	
Storage Lanes	1	0		0	1	
Taper Length (ft)	25				100	
Satd. Flow (prot)	1694	0	1857	0	1770	1863
Flt Permitted	0.976				0.950	
Satd. Flow (perm)	1694	0	1857	0	1770	1863
Link Speed (mph)	25		45			45
Link Distance (ft)	369		1004			470
Travel Time (s)	10.1		15.2			7.1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Shared Lane Traffic (%)						
Lane Group Flow (vph)	16	0	177	0	4	117
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 18.5%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	0.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	7	7	156	4	4	105
Future Vol, veh/h	7	7	156	4	4	105
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	8	8	173	4	4	117

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	302	176	0	0	178	0
Stage 1	176	-	-	-	-	-
Stage 2	126	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	690	867	-	-	1398	-
Stage 1	855	-	-	-	-	-
Stage 2	900	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	688	867	-	-	1398	-
Mov Cap-2 Maneuver	713	-	-	-	-	-
Stage 1	855	-	-	-	-	-
Stage 2	897	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.7	0	0.3
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	782	1398	-
HCM Lane V/C Ratio	-	-	0.02	0.003	-
HCM Control Delay (s)	-	-	9.7	7.6	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	243	131	86	281	203	97
Future Volume (vph)	243	131	86	281	203	97
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	200		200	0
Storage Lanes		0	1		1	1
Taper Length (ft)			100		100	
Satd. Flow (prot)	1775	0	1770	1863	1770	1583
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	1775	0	1770	1863	1770	1583
Link Speed (mph)	45			45	45	
Link Distance (ft)	645			534	1006	
Travel Time (s)	9.8			8.1	15.2	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Shared Lane Traffic (%)						
Lane Group Flow (vph)	394	0	91	296	214	102
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 46.8%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	5.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	243	131	86	281	203	97
Future Vol, veh/h	243	131	86	281	203	97
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	200	-	200	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	256	138	91	296	214	102

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	394	0	802	325
Stage 1	-	-	-	-	325	-
Stage 2	-	-	-	-	477	-
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	-	-	1165	-	353	716
Stage 1	-	-	-	-	732	-
Stage 2	-	-	-	-	624	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1165	-	325	716
Mov Cap-2 Maneuver	-	-	-	-	438	-
Stage 1	-	-	-	-	732	-
Stage 2	-	-	-	-	575	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2	17.6
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	438	716	-	-	1165	-
HCM Lane V/C Ratio	0.488	0.143	-	-	0.078	-
HCM Control Delay (s)	20.8	10.9	-	-	8.3	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile Q(veh)	2.6	0.5	-	-	0.3	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	4	15	12	4	18	22	262	23	23	156	27
Future Volume (vph)	15	4	15	12	4	18	22	262	23	23	156	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	100		0	100		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			100			100		
Satd. Flow (prot)	0	1712	0	0	1697	0	1770	1840	0	1770	1822	0
Flt Permitted		0.978			0.983		0.950			0.950		
Satd. Flow (perm)	0	1712	0	0	1697	0	1770	1840	0	1770	1822	0
Link Speed (mph)		25			25			45			45	
Link Distance (ft)		294			267			470			758	
Travel Time (s)		8.0			7.3			7.1			11.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	38	0	0	37	0	24	317	0	26	203	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 29.1%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	15	4	15	12	4	18	22	262	23	23	156	27
Future Vol, veh/h	15	4	15	12	4	18	22	262	23	23	156	27
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	17	4	17	13	4	20	24	291	26	26	173	30

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	604	605	188	603	607	304	203	0	0	317	0	0
Stage 1	239	239	-	353	353	-	-	-	-	-	-	-
Stage 2	365	366	-	250	254	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	410	412	854	411	411	736	1369	-	-	1243	-	-
Stage 1	764	708	-	664	631	-	-	-	-	-	-	-
Stage 2	654	623	-	754	697	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	384	396	854	388	395	736	1369	-	-	1243	-	-
Mov Cap-2 Maneuver	384	396	-	388	395	-	-	-	-	-	-	-
Stage 1	751	693	-	652	620	-	-	-	-	-	-	-
Stage 2	621	612	-	719	682	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	12.6	12.5	0.6	0.9
HCM LOS	B	B		

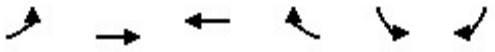
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1369	-	-	510	519	1243	-	-
HCM Lane V/C Ratio	0.018	-	-	0.074	0.073	0.021	-	-
HCM Control Delay (s)	7.7	-	-	12.6	12.5	8	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.2	0.2	0.1	-	-

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	127	201	164	285	108	106
Future Volume (vph)	127	201	164	285	108	106
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	2%			-5%	5%	
Storage Length (ft)	100	0	100			0
Storage Lanes	1	1	1			0
Taper Length (ft)	55		100			
Satd. Flow (prot)	1752	1567	1814	1909	1694	0
Flt Permitted	0.950		0.432			
Satd. Flow (perm)	1752	1567	825	1909	1694	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		221			78	
Link Speed (mph)	25			45	45	
Link Distance (ft)	396			548	1004	
Travel Time (s)	10.8			8.3	15.2	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Shared Lane Traffic (%)						
Lane Group Flow (vph)	140	221	180	313	235	0
Turn Type	Prot	pm+ov	pm+pt	NA	NA	
Protected Phases	8	1	1	6	2	
Permitted Phases		8	6			
Detector Phase	8	1	1	6	2	
Switch Phase						
Minimum Initial (s)	7.0	7.0	7.0	12.0	12.0	
Minimum Split (s)	22.7	12.2	12.2	24.0	23.1	
Total Split (s)	25.0	15.0	15.0	90.0	75.0	
Total Split (%)	21.7%	13.0%	13.0%	78.3%	65.2%	
Yellow Time (s)	3.7	3.5	3.5	5.0	4.1	
All-Red Time (s)	1.0	1.7	1.7	1.0	1.0	
Lost Time Adjust (s)	0.3	-0.2	-0.2	-1.0	-0.1	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	
Lead/Lag		Lead	Lead		Lag	
Lead-Lag Optimize?		Yes	Yes		Yes	
Recall Mode	None	None	None	Min	Min	
Act Effct Green (s)	7.9	17.8	25.8	27.2	12.6	
Actuated g/C Ratio	0.19	0.44	0.63	0.67	0.31	
v/c Ratio	0.41	0.27	0.25	0.25	0.41	
Control Delay	20.1	2.2	5.3	5.1	11.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	20.1	2.2	5.3	5.1	11.6	
LOS	C	A	A	A	B	
Approach Delay	9.1			5.1	11.6	
Approach LOS	A			A	B	
Queue Length 50th (ft)	30	0	16	30	28	
Queue Length 95th (ft)	73	23	40	68	83	
Internal Link Dist (ft)	316			468	924	
Turn Bay Length (ft)	100		100			
Base Capacity (vph)	884	885	771	1909	1694	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.16	0.25	0.23	0.16	0.14	

Intersection Summary			
Area Type:	Other		
Cycle Length: 115			
Actuated Cycle Length: 40.7			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.41			
Intersection Signal Delay: 7.8		Intersection LOS: A	
Intersection Capacity Utilization 40.8%		ICU Level of Service A	
Analysis Period (min) 15			
Description: 05-2280			

Splits and Phases: 3: Morris Acres Road & Creekside Landing Drive



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations			↑↑	↱		↱
Traffic Volume (vph)	0	0	2007	369	0	157
Future Volume (vph)	0	0	2007	369	0	157
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0			75	0	0
Storage Lanes	0			1	0	1
Taper Length (ft)	25				25	
Satd. Flow (prot)	0	0	3539	1583	0	1611
Flt Permitted						
Satd. Flow (perm)	0	0	3539	1583	0	1611
Link Speed (mph)		55	55		45	
Link Distance (ft)		890	661		383	
Travel Time (s)		11.0	8.2		5.8	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	2048	377	0	160
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 71.9%		ICU Level of Service C	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations			↑↑	↱		↱
Traffic Vol, veh/h	0	0	2007	369	0	157
Future Vol, veh/h	0	0	2007	369	0	157
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Stop
Storage Length	-	-	-	75	-	0
Veh in Median Storage, #	-	-	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	2048	377	0	160

Major/Minor	Major2		Minor2	
Conflicting Flow All	-	0	-	1024
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	-	-	-	3.32
Pot Cap-1 Maneuver	-	-	0	233
Stage 1	-	-	0	-
Stage 2	-	-	0	-
Platoon blocked, %	-	-		
Mov Cap-1 Maneuver	-	-	-	233
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	WB	SB
HCM Control Delay, s	0	48.8
HCM LOS		E

Minor Lane/Major Mvmt	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	233
HCM Lane V/C Ratio	-	-	0.688
HCM Control Delay (s)	-	-	48.8
HCM Lane LOS	-	-	E
HCM 95th %tile Q(veh)	-	-	4.4

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	4	8	293	4	12	207
Future Volume (vph)	4	8	293	4	12	207
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	100	
Storage Lanes	1	0		0	1	
Taper Length (ft)	25				100	
Satd. Flow (prot)	1664	0	1859	0	1770	1863
Flt Permitted	0.985				0.950	
Satd. Flow (perm)	1664	0	1859	0	1770	1863
Link Speed (mph)	25		45			45
Link Distance (ft)	317		758			1006
Travel Time (s)	8.6		11.5			15.2
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Shared Lane Traffic (%)						
Lane Group Flow (vph)	13	0	330	0	13	230
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 25.7%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	0.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	4	8	293	4	12	207
Future Vol, veh/h	4	8	293	4	12	207
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	9	326	4	13	230

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	585	328	0	0	330	0
Stage 1	328	-	-	-	-	-
Stage 2	257	-	-	-	-	-
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	473	713	-	-	1229	-
Stage 1	730	-	-	-	-	-
Stage 2	786	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	468	713	-	-	1229	-
Mov Cap-2 Maneuver	557	-	-	-	-	-
Stage 1	730	-	-	-	-	-
Stage 2	778	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.6	0	0.4
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	652	1229	-
HCM Lane V/C Ratio	-	-	0.02	0.011	-
HCM Control Delay (s)	-	-	10.6	8	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	4	5	305	11	4	179
Future Volume (vph)	4	5	305	11	4	179
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	100	
Storage Lanes	1	0		0	1	
Taper Length (ft)	25				100	
Satd. Flow (prot)	1678	0	1853	0	1770	1863
Flt Permitted	0.980				0.950	
Satd. Flow (perm)	1678	0	1853	0	1770	1863
Link Speed (mph)	25		45			45
Link Distance (ft)	369		1004			470
Travel Time (s)	10.1		15.2			7.1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Shared Lane Traffic (%)						
Lane Group Flow (vph)	10	0	351	0	4	199
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 26.7%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	0.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	4	5	305	11	4	179
Future Vol, veh/h	4	5	305	11	4	179
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	6	339	12	4	199

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	553	345	0	0	351	0
Stage 1	345	-	-	-	-	-
Stage 2	208	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	494	698	-	-	1208	-
Stage 1	717	-	-	-	-	-
Stage 2	827	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	492	698	-	-	1208	-
Mov Cap-2 Maneuver	572	-	-	-	-	-
Stage 1	717	-	-	-	-	-
Stage 2	824	-	-	-	-	-

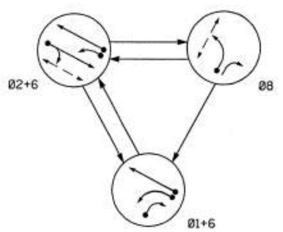
Approach	WB	NB	SB
HCM Control Delay, s	10.8	0	0.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	636	1208	-
HCM Lane V/C Ratio	-	-	0.016	0.004	-
HCM Control Delay (s)	-	-	10.8	8	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0	0	-

Appendix I:
Signal Plans

PROJECT REFERENCE NO.	SHEET NO.
36249.2236	Sig-1

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

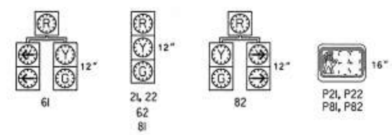
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE Ø1+6	Ø2+6	Ø8	FLASH
21, 22	R	G	R	Y
61	↙G	G	R	Y
62	G	G	R	Y
81	R	R	G	R
82	R↘	R	G	R
P21, P22	DW	W	DW	DRK
P81, P82	DW	DW	W	DRK

SIGNAL FACE I.D.

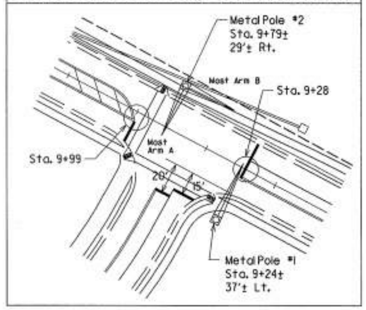
Denotes L.E.D.



2070L LOOP & DETECTOR INSTALLATION

INDUCTIVE LOOPS					DETECTOR PROGRAMMING							
LOOP	SIZE (FT)	TURNS	DISTANCE FROM STOPBAR (FT)	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	SYSTEM LOOP	STRETCH TIME	DELAY TIME	NEW CARD
1A	6X40	2-4-2	0	Y	1	Y	Y	–	–	–	15	Y
					6	Y	Y	Y	–	–	3	Y
1B	6X40	2-4-2	0	Y	1	Y	Y	–	–	–	15	Y
2A	6X6	5	300	Y	2	Y	Y	–	–	–	–	Y
6A	6X6	5	300	Y	6	Y	Y	–	–	–	–	Y
8A	6X40	2-4-2	0	Y	8	Y	Y	–	–	–	3	Y

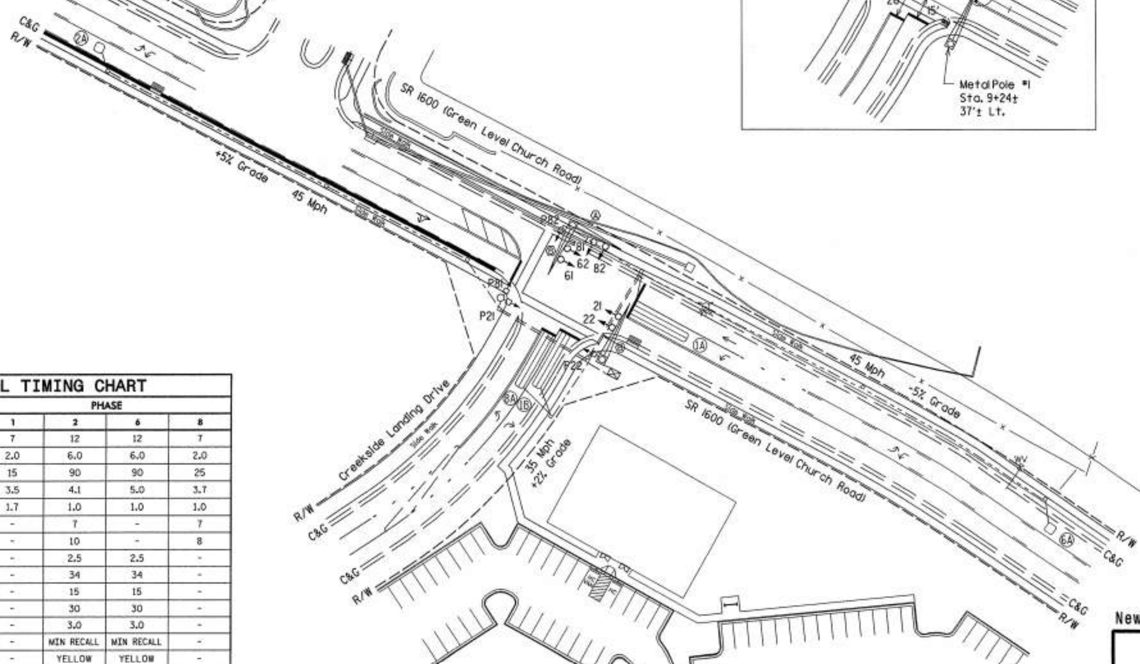
Metal Pole and Stop Bar Locations



3 Phase
Fully Actuated
(Isolated)

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006, "Standard Specifications for Roads and Structures" dated July 2006 and all applicable sections of the latest version of the generic Project Special Provisions. The PSP can be accessed at the following website: "http://www.ncdot.org/doh/preconstruct/traffic/tmssu/"
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Set all detector units to presence mode.
4. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
5. Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
6. Program pedestrian heads to countdown the flashing "Don't Walk" time only.
7. Contractor to furnish Metal Poles and Mast Arms to be black powder coated.



LEGEND

PROPOSED		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	
	Pavement Marking Arrow	
	Metal Pole with Mastarm	
	Rigid Metal Conduit	
	Pedestrian Signal Pedestal	
N/A	Wheelchair Ramp	
Ⓐ	Green Level Church Rd	Ⓐ
Ⓑ	Creekside Landing Dr	Ⓑ

2070L TIMING CHART

FEATURE	PHASE 1	2	6	8
Min Green 1 *	7	12	12	7
Extension 1 *	2.0	6.0	6.0	2.0
Max Green 1 *	15	90	90	25
Yellow Clearance	3.5	4.1	5.0	3.7
Red Clearance	1.7	1.0	1.0	1.0
Walk 1 *	-	7	-	7
Don't Walk 1	-	10	-	8
Seconds Per Actuation *	-	2.5	2.5	-
Max Variable Initial *	-	34	34	-
Time Before Reduction *	-	15	15	-
Time To Reduce *	-	30	30	-
Minimum Gap	-	3.0	3.0	-
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.

New Installation

RAMEY KEMP & ASSOCIATES, INC.
TRANSPORTATION ENGINEERS

Prepared for:
Traffic Engineering and Safety Systems Branch
Signals and Geometrics Section
122 N. McDowell St., Raleigh, NC 27603

SR 1600 (Green Level Church Rd.) at Creekside Landing Drive

Division 5 | Wake County | Apex

PLAN DATE:	Sept 2006	REVIEWED BY:	D.J. Darity
PREPARED BY:	H.W. Surti	RKA PROJ. NO.:	04111 (041)

SCALE 0 40 1"=40'

REVISIONS	INIT.	DATE

SEAL
North Carolina Professional Engineer Seal 19713 Donald J. Darity
11-03-2006
SIGNATURE DATE
SIG. INVENTORY NO. 05-2280

Kimley»Horn

KIMLEY-HORN AND ASSOCIATES, INC
NC License #F-0102

MEMORANDUM

To:	Mr. Sean Brennan, P.E., NCDOT Mr. Russell Dalton, P.E., Town of Apex
From:	Kevin Dean, P.E. Kimley-Horn and Associates, Inc.
Date:	April 30, 2019
Subject:	The Wayforth at Apex – Traffic Analysis Addendum – Revised Site Access

Kimley-Horn has performed an addendum to the original *Wayforth at Apex TIA* (Kimley-Horn, January 2019) to determine the impacts of a revision to the site access. The original TIA for the development analyzed the site assuming three full-movement access driveways along Morris Acres Road. However, a revised development plan indicates that only two full-movement driveways will be provided, with one driveway aligning with Reedybrook Crossing and another approximately 515 feet to the south. The revised development plan is shown on the attached **Figure 1.**

As this change in access will not have impacts on any off-site intersections, it was confirmed with the Town of Apex that this addendum should only include analysis for the site driveway intersections along Morris Acres Road. It should be noted that as the previously-analyzed "North Site Driveway" is no longer proposed, the "Central Site Driveway" described in the previous analysis has been renamed to "North Site Driveway" for this addendum analysis.

This report presents trip generation, distribution, traffic analyses, and recommendations for transportation improvements required to meet anticipated traffic demands at the proposed site driveways.

Background Volume Development

AM and PM peak hour background traffic volumes were obtained from the original TIA and were not modified as part of this analysis.

Trip Generation

Trip generation data was obtained from the original TIA and was not modified as part of this analysis.

Trip Distribution and Assignment

No changes were made to the overall distribution of site traffic assumed in the original TIA. However, to account for this revised access scenario, site traffic assignment percentages were modified for this addendum. The revised site traffic assignment is shown on the attached **Figure 2**.

The attached **Figures 3** and **4** show the AM and PM peak hour site traffic and total build-out volumes at the study intersections, and volume development is detailed on the attached intersection spreadsheets.

Capacity Analysis

Consistent with the original TIA, capacity analyses were performed using Synchro Version 9.2 software. Synchro intersection level-of-service (LOS) reports are attached. The LOS for the study intersections are summarized in Table 1.

Table 2
Level-of-Service Summary

Condition	AM Peak Hour LOS (Delay)	PM Peak Hour LOS (Delay)
Morris Acres Road at Reedybrook Crossing/North Site Driveway (Unsignalized)		
Existing (2018) Traffic	EB – A (9.4) NBL – A (7.3)	EB – B (10.2) NBL – A (7.6)
Background (2022) Traffic	EB – A (9.5) NBL – B (7.3)	EB – B (10.4) NBL – A (7.7)
Build-out (2022) Traffic	EB – B (10.2) WB – B (10.3) NBL – A (7.4) SBL – A (7.6)	EB – B (12.8) WB – B (12.6) NBL – A (7.7) SBL – A (8.0)
Morris Acres Road at South Site Driveway (Unsignalized)		
Build-out (2022) Traffic	WB – A (9.7) SBL – A (7.6)	WB – B (10.8) SBL – A (8.0)

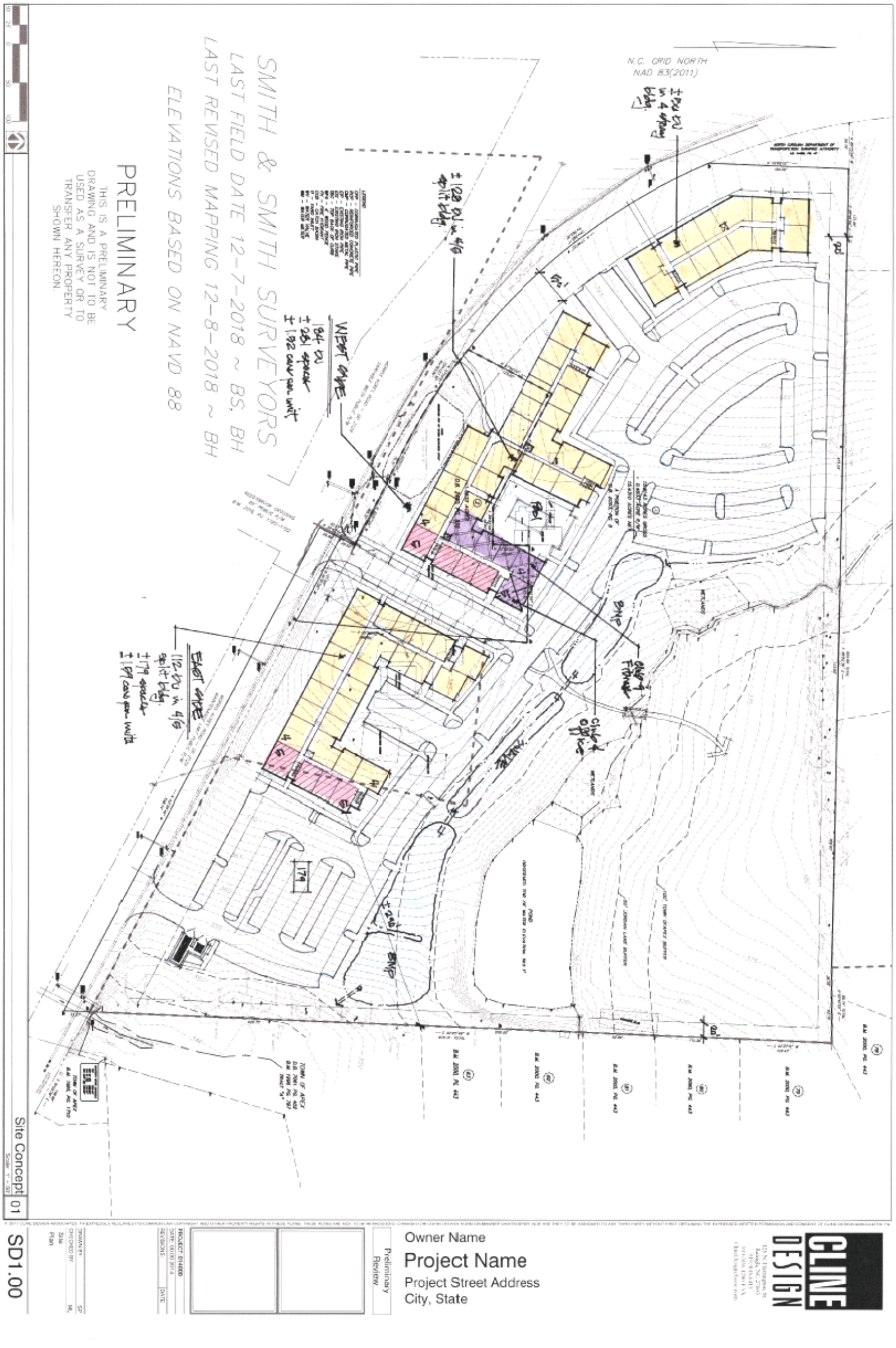
Analysis indicates that the site driveway intersections are expected to operate at an acceptable level-of-service at project build-out, and no queueing issues are expected at these intersections.

Recommendations

Based on the findings of this addendum analysis, and consistent with the original TIA, no roadway improvements are recommended to be performed to accommodate projected site traffic volumes.

The build-out roadway laneage is shown on **Figure 5**.

Should you have any questions or comments, please do not hesitate to contact me at (919) 678-4185 or kevin.dean@kimley-horn.com.



SMITH & SMITH SURVEYORS

LAST FIELD DATE 12-7-2018 ~ BS, BH

LAST REVISED MAPPING 12-8-2018 ~ BS, BH

ELEVATIONS BASED ON NAVD 88

PRELIMINARY

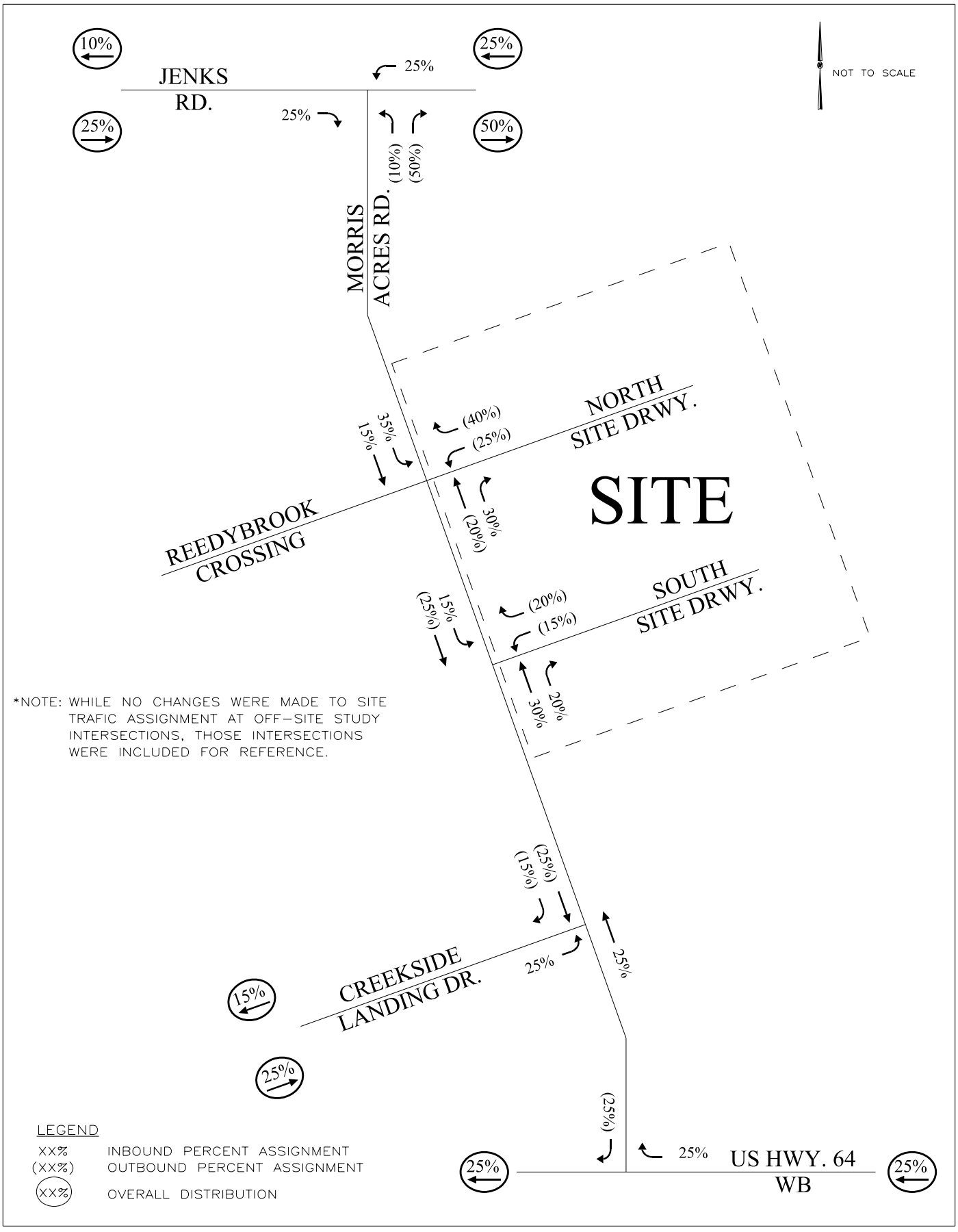
THIS IS A PRELIMINARY DRAWING AND IS NOT TO BE USED AS A SURVEY OR TO TRANSFER ANY PROPERTY SHOWN HEREON.

Kimley»Horn

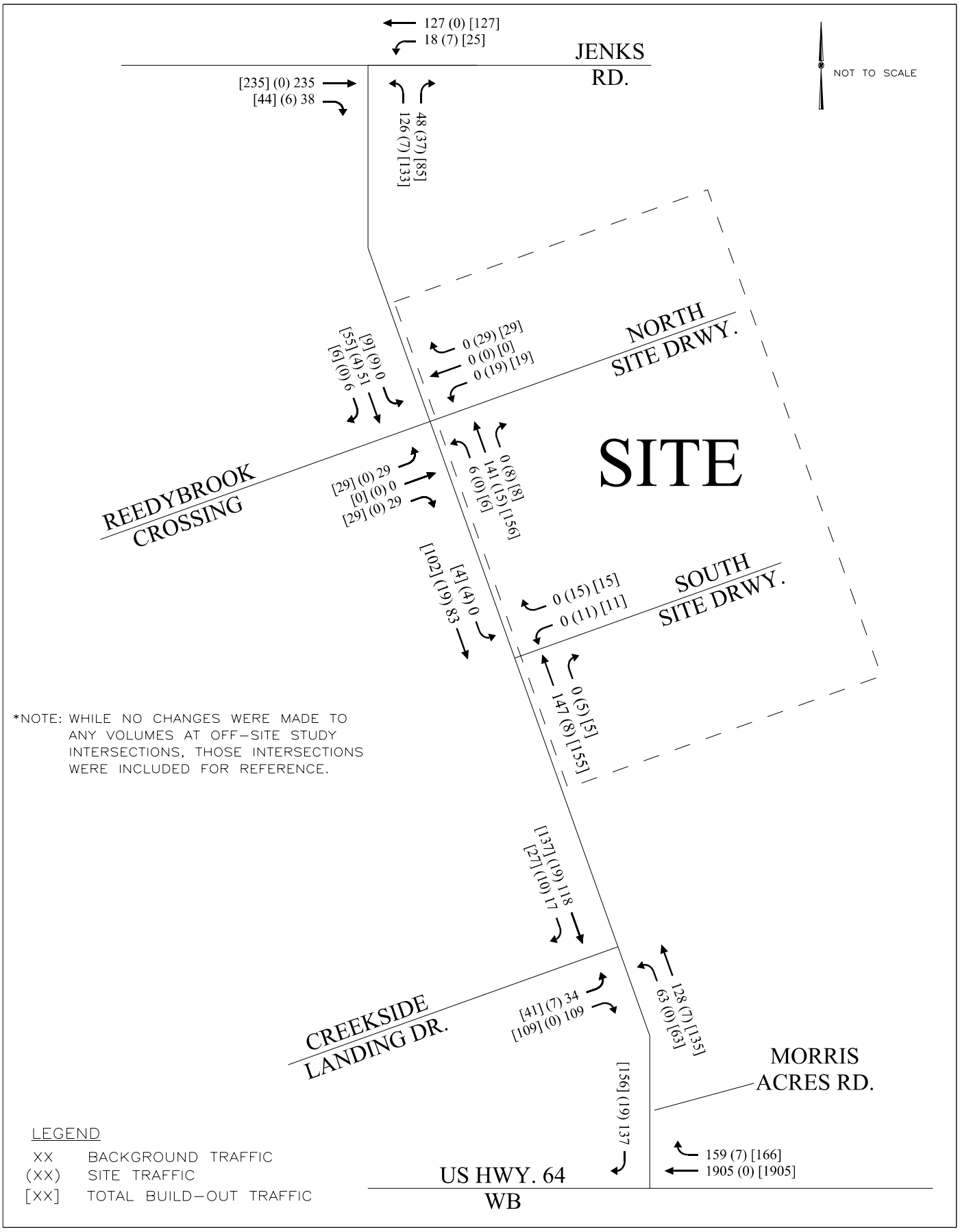
THE WAYFORTH AT APEX
APEX, NC
TRAFFIC CAPACITY ANALYSIS

ADDENDUM ANALYSIS – REVISED DEVELOPMENT PLAN

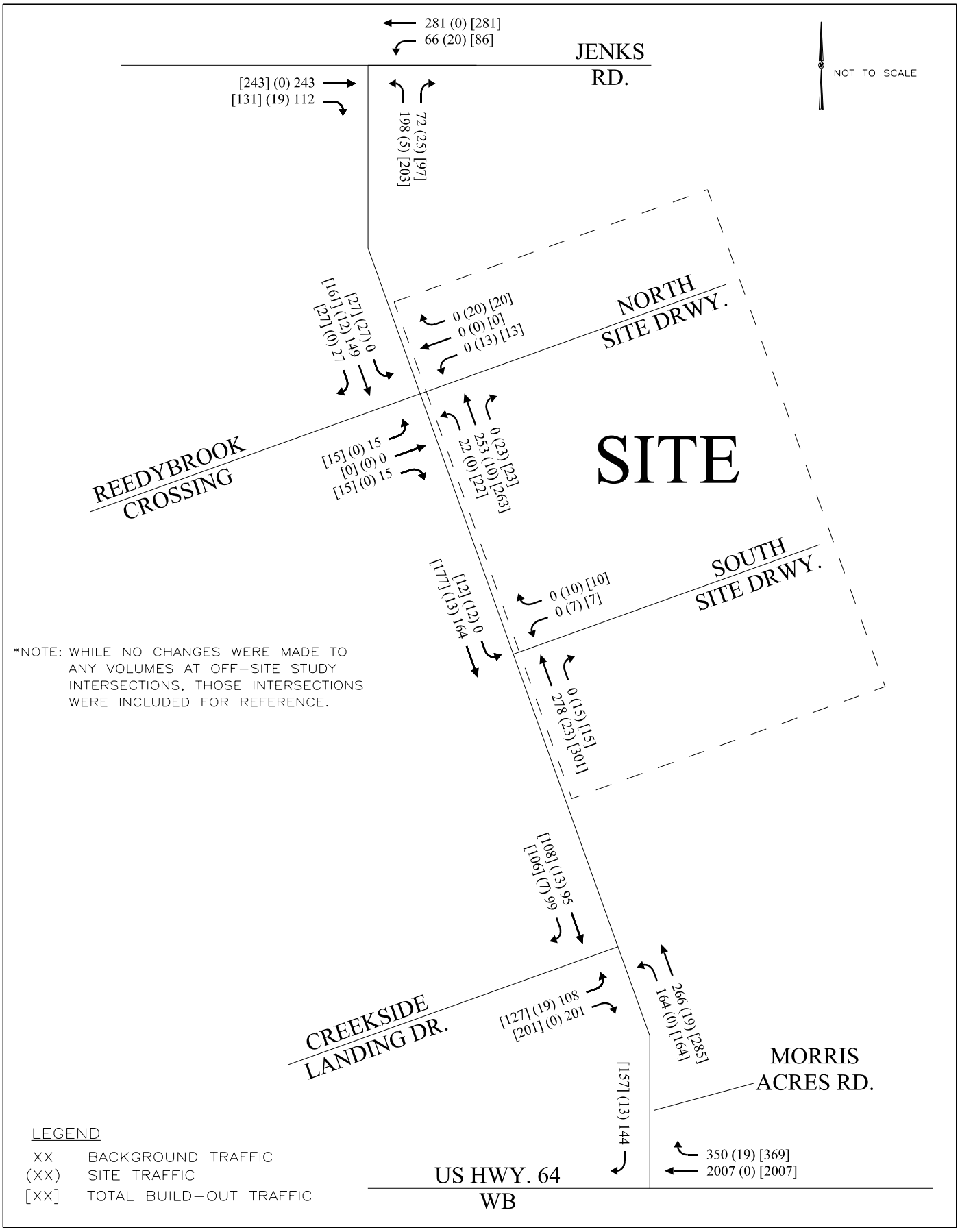
FIGURE 1



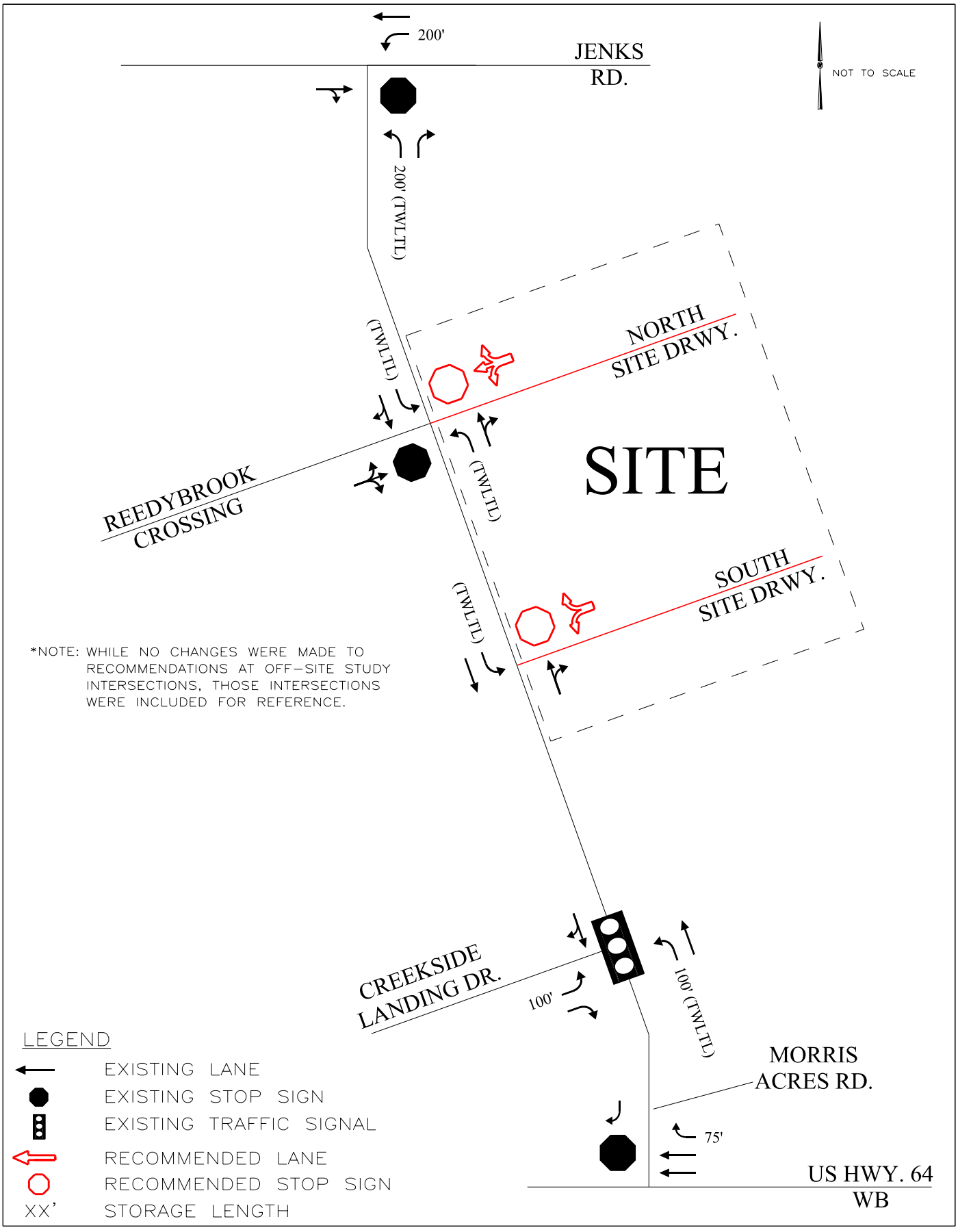
Kimley»Horn	THE WAYFORTH AT APEX APEX, NC TRAFFIC CAPACITY ANALYSIS	ADDENDUM ANALYSIS – SITE TRAFFIC DISTRIBUTION AND PERCENT ASSIGNMENT	FIGURE 2



Kimley»Horn	THE WAYFORTH AT APEX APEX, NC TRAFFIC CAPACITY ANALYSIS	ADDENDUM ANALYSIS – PROJECTED (2022) BUILD-OUT AM PEAK HOUR TRAFFIC VOLUMES	FIGURE 3



Kimley»Horn	THE WAYFORTH AT APEX APEX, NC TRAFFIC CAPACITY ANALYSIS	ADDENDUM ANALYSIS – PROJECTED (2022) BUILD-OUT PM PEAK HOUR TRAFFIC VOLUMES	FIGURE 4



Kimley»Horn	THE WAYFORTH AT APEX APEX, NC TRAFFIC CAPACITY ANALYSIS	ADDENDUM ANALYSIS – BUILD-OUT ROADWAY LANEAGE	FIGURE 5

INTERSECTION ANALYSIS SHEET

Project:	**The Wayforth at Apex**
Location:	**Apex, NC**
Scenario:	**Addendum - 2 Site Driveways**
Ct. Date	**Balance with Jenks at Morris Acres**
N/S Street:	**Morris Acres Road**
E/W Street:	**Reedybrook Crossing/North Site Driveway**

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

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

AM PEAK HOUR
AM PHF = 0.90

	Reedybrook Crossing **Eastbound**			North Site Driveway **Westbound**			Morris Acres Road **Northbound**			Morris Acres Road **Southbound**		
Description	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
2018 Traffic Count	0	0	0	0	0	0	0	0	0	0	0	0
Count Balancing	26	0	26	0	0	0	5	125	0	0	45	5
2018 Existing Traffic	26	0	26	0	0	0	5	125	0	0	45	5
Growth Factor (0.03 per year)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.126	0.000	0.000	0.126	0.000
2022 Background Growth	0	0	0	0	0	0	0	16	0	0	6	0
Committed Projects												
Beaver Creek Phase 4 Residential	3	0	3	0	0	0	1	0	0	0	0	1
Total Committed Traffic	3	0	3	0	0	0	1	0	0	0	0	1
2022 Background Traffic	29	0	29	0	0	0	6	141	0	0	51	6
Project Traffic												
Percent Assignment Inbound	0%	0%	0%	0%	0%	0%	0%	0%	30%	35%	15%	0%
Inbound Project Traffic	0	0	0	0	0	0	0	0	8	9	4	0
Percent Assignment Outbound	0%	0%	0%	25%	0%	40%	0%	20%	0%	0%	0%	0%
Outbound Project Traffic	0	0	0	19	0	29	0	15	0	0	0	0
Total Project Traffic	0	0	0	19	0	29	0	15	8	9	4	0
2022 Buildout Total	29	0	29	19	0	29	6	156	8	9	55	6
Percent Impact (Approach)		0.0%			100.0%			13.5%			18.7%	

Overall Percent Impact 24.3%

PM PEAK HOUR
PM PHF = 0.90

	Reedybrook Crossing **Eastbound**			North Site Driveway **Westbound**			Morris Acres Road **Northbound**			Morris Acres Road **Southbound**		
Description	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
2018 Traffic Count	0	0	0	0	0	0	0	0	0	0	0	0
Count Balancing	14	0	14	0	0	0	20	225	0	0	132	24
2018 Existing Traffic	14	0	14	0	0	0	20	225	0	0	132	24
Growth Factor (0.03 per year)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.126	0.000	0.000	0.126	0.000
2022 Background Growth	0	0	0	0	0	0	0	28	0	0	17	0
Committed Projects												
Beaver Creek Phase 4 Residential	1	0	1	0	0	0	2	0	0	0	0	3
Total Committed Traffic	1	0	1	0	0	0	2	0	0	0	0	3
2022 Background Traffic	15	0	15	0	0	0	22	253	0	0	149	27
Project Traffic												
Percent Assignment Inbound	0%	0%	0%	0%	0%	0%	0%	0%	30%	35%	15%	0%
Inbound Project Traffic	0	0	0	0	0	0	0	0	23	27	12	0
Percent Assignment Outbound	0%	0%	0%	25%	0%	40%	0%	20%	0%	0%	0%	0%
Outbound Project Traffic	0	0	0	13	0	20	0	10	0	0	0	0
Total Project Traffic	0	0	0	13	0	20	0	10	23	27	12	0
2022 Buildout Total	15	0	15	13	0	20	22	263	23	27	161	27
Percent Impact (Approach)		0.0%			100.0%			10.7%			18.2%	

Overall Percent Impact 18.0%

INTERSECTION ANALYSIS SHEET

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

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

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

AM PEAK HOUR
AM PHF = 0.90

	South Site Driveway **Eastbound**			South Site Driveway **Westbound**			Morris Acres Road **Northbound**			Morris Acres Road **Southbound**		
Description	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
2018 Traffic Count	0	0	0	0	0	0	0	0	0	0	0	0
Count Balancing	0	0	0	0	0	0	0	130	0	0	71	0
2018 Existing Traffic	0	0	0	0	0	0	0	130	0	0	71	0
Growth Factor (0.03 per year)	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126
2022 Background Growth	0	0	0	0	0	0	0	16	0	0	9	0
Committed Projects												
Beaver Creek Phase 4 Residential	0	0	0	0	0	0	0	1	0	0	3	0
Total Committed Traffic	0	0	0	0	0	0	0	1	0	0	3	0
2022 Background Traffic	0	0	0	0	0	0	0	147	0	0	83	0
Project Traffic												
Percent Assignment Inbound	0%	0%	0%	0%	0%	0%	0%	30%	20%	15%	0%	0%
Inbound Project Traffic	0	0	0	0	0	0	0	8	5	4	0	0
Percent Assignment Outbound	0%	0%	0%	15%	0%	20%	0%	0%	0%	0%	25%	0%
Outbound Project Traffic	0	0	0	11	0	15	0	0	0	0	19	0
Total Project Traffic	0	0	0	11	0	15	0	8	5	4	19	0
2022 Buildout Total	0	0	0	11	0	15	0	155	5	4	102	0
Percent Impact (Approach)		-			100.0%			8.1%			21.8%	

Overall Percent Impact 21.3%

PM PEAK HOUR
PM PHF = 0.90

	South Site Driveway **Eastbound**			South Site Driveway **Westbound**			Morris Acres Road **Northbound**			Morris Acres Road **Southbound**		
Description	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
2018 Traffic Count	0	0	0	0	0	0	0	0	0	0	0	0
Count Balancing	0	0	0	0	0	0	0	244	0	0	145	0
2018 Existing Traffic	0	0	0	0	0	0	0	244	0	0	145	0
Growth Factor (0.03 per year)	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126
2022 Background Growth	0	0	0	0	0	0	0	31	0	0	18	0
Committed Projects												
Beaver Creek Phase 4 Residential	0	0	0	0	0	0	0	2	0	0	1	0
Total Committed Traffic	0	0	0	0	0	0	0	2	0	0	1	0
2022 Background Traffic	0	0	0	0	0	0	0	278	0	0	164	0
Project Traffic												
Percent Assignment Inbound	0%	0%	0%	0%	0%	0%	0%	30%	20%	15%	0%	0%
Inbound Project Traffic	0	0	0	0	0	0	0	23	15	12	0	0
Percent Assignment Outbound	0%	0%	0%	15%	0%	20%	0%	0%	0%	0%	25%	0%
Outbound Project Traffic	0	0	0	7	0	10	0	0	0	0	13	0
Total Project Traffic	0	0	0	7	0	10	0	23	15	12	13	0
2022 Buildout Total	0	0	0	7	0	10	0	301	15	12	177	0
Percent Impact (Approach)		-			100.0%			12.0%			13.2%	

Overall Percent Impact 15.3%

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	4	29	19	4	29	6	156	8	9	55	6
Future Volume (vph)	29	4	29	19	4	29	6	156	8	9	55	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	100		0	100		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			100			100		
Satd. Flow (prot)	0	1703	0	0	1690	0	1770	1850	0	1770	1835	0
Flt Permitted		0.977			0.982		0.950			0.950		
Satd. Flow (perm)	0	1703	0	0	1690	0	1770	1850	0	1770	1835	0
Link Speed (mph)		25			25			45			45	
Link Distance (ft)		294			267			470			758	
Travel Time (s)		8.0			7.3			7.1			11.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	68	0	0	57	0	7	182	0	10	68	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 20.6%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	3.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	29	4	29	19	4	29	6	156	8	9	55	6
Future Vol, veh/h	29	4	29	19	4	29	6	156	8	9	55	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	32	4	32	21	4	32	7	173	9	10	61	7

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	293	280	64	294	279	178	68	0	0	182	0	0
Stage 1	84	84	-	191	191	-	-	-	-	-	-	-
Stage 2	209	196	-	103	88	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	659	628	1000	658	629	865	1533	-	-	1393	-	-
Stage 1	924	825	-	811	742	-	-	-	-	-	-	-
Stage 2	793	739	-	903	822	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	625	621	1000	628	622	865	1533	-	-	1393	-	-
Mov Cap-2 Maneuver	625	621	-	628	622	-	-	-	-	-	-	-
Stage 1	920	819	-	807	739	-	-	-	-	-	-	-
Stage 2	755	736	-	863	816	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.2	10.3	0.3	1
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1533	-	-	758	741	1393	-	-
HCM Lane V/C Ratio	0.004	-	-	0.091	0.078	0.007	-	-
HCM Control Delay (s)	7.4	-	-	10.2	10.3	7.6	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.3	0.3	0	-	-

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	11	15	155	5	4	102
Future Volume (vph)	11	15	155	5	4	102
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	100	
Storage Lanes	1	0		0	1	
Taper Length (ft)	25				100	
Satd. Flow (prot)	1681	0	1853	0	1770	1863
Flt Permitted	0.980				0.950	
Satd. Flow (perm)	1681	0	1853	0	1770	1863
Link Speed (mph)	25		45			45
Link Distance (ft)	369		1004			470
Travel Time (s)	10.1		15.2			7.1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Shared Lane Traffic (%)						
Lane Group Flow (vph)	29	0	178	0	4	113
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 18.5%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	11	15	155	5	4	102
Future Vol, veh/h	11	15	155	5	4	102
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	12	17	172	6	4	113

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	297	175	0	0	178	0
Stage 1	175	-	-	-	-	-
Stage 2	122	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	694	868	-	-	1398	-
Stage 1	855	-	-	-	-	-
Stage 2	903	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	692	868	-	-	1398	-
Mov Cap-2 Maneuver	715	-	-	-	-	-
Stage 1	855	-	-	-	-	-
Stage 2	900	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.7	0	0.3
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	796	1398	-
HCM Lane V/C Ratio	-	-	0.036	0.003	-
HCM Control Delay (s)	-	-	9.7	7.6	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	4	15	13	4	20	22	263	23	27	161	27
Future Volume (vph)	15	4	15	13	4	20	22	263	23	27	161	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	100		0	100		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			100			100		
Satd. Flow (prot)	0	1712	0	0	1696	0	1770	1840	0	1770	1822	0
Flt Permitted		0.978			0.983		0.950			0.950		
Satd. Flow (perm)	0	1712	0	0	1696	0	1770	1840	0	1770	1822	0
Link Speed (mph)		25			25			45			45	
Link Distance (ft)		294			267			470			758	
Travel Time (s)		8.0			7.3			7.1			11.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	38	0	0	40	0	24	318	0	30	209	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 31.9%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	15	4	15	13	4	20	22	263	23	27	161	27
Future Vol, veh/h	15	4	15	13	4	20	22	263	23	27	161	27
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	17	4	17	14	4	22	24	292	26	30	179	30

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	621	621	194	618	623	305	209	0	0	318	0	0
Stage 1	254	254	-	354	354	-	-	-	-	-	-	-
Stage 2	367	367	-	264	269	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	400	403	847	402	402	735	1362	-	-	1242	-	-
Stage 1	750	697	-	663	630	-	-	-	-	-	-	-
Stage 2	653	622	-	741	687	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	372	386	847	378	385	735	1362	-	-	1242	-	-
Mov Cap-2 Maneuver	372	386	-	378	385	-	-	-	-	-	-	-
Stage 1	737	680	-	651	619	-	-	-	-	-	-	-
Stage 2	618	611	-	704	670	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	12.8	12.6	0.5	1
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1362	-	-	497	514	1242	-	-
HCM Lane V/C Ratio	0.018	-	-	0.076	0.08	0.024	-	-
HCM Control Delay (s)	7.7	-	-	12.8	12.6	8	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.2	0.3	0.1	-	-

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	7	10	301	15	12	177
Future Volume (vph)	7	10	301	15	12	177
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	100	
Storage Lanes	1	0		0	1	
Taper Length (ft)	25				100	
Satd. Flow (prot)	1681	0	1850	0	1770	1863
Flt Permitted	0.979				0.950	
Satd. Flow (perm)	1681	0	1850	0	1770	1863
Link Speed (mph)	25		45			45
Link Distance (ft)	369		1004			470
Travel Time (s)	10.1		15.2			7.1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Shared Lane Traffic (%)						
Lane Group Flow (vph)	19	0	351	0	13	197
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 26.8%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	0.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	7	10	301	15	12	177
Future Vol, veh/h	7	10	301	15	12	177
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	8	11	334	17	13	197

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	566	343	0	0	351	0
Stage 1	343	-	-	-	-	-
Stage 2	223	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	486	700	-	-	1208	-
Stage 1	719	-	-	-	-	-
Stage 2	814	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	481	700	-	-	1208	-
Mov Cap-2 Maneuver	564	-	-	-	-	-
Stage 1	719	-	-	-	-	-
Stage 2	805	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.8	0	0.5
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	637	1208	-
HCM Lane V/C Ratio	-	-	0.03	0.011	-
HCM Control Delay (s)	-	-	10.8	8	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.1	0	-

PLANNING BOARD REPORT TO TOWN COUNCIL

Rezoning #19CZ02 Morris Acres PUD

November 12, 2019 Planning Board Meeting

Report Requirements:

Per NCGS 160A-387, all proposed amendments to the zoning ordinance or zoning map shall have a written report provided from the Planning Board to the Town Council within 30 days of referral of the amendment to the Planning Board, or the Town Council may proceed in its consideration of the amendment without the Planning Board report. Furthermore, in no case is the Town Council bound by the recommendations, if any, of the Planning Board.

Per NCGS 160A-383, the Planning Board shall advise and comment on whether the proposed zoning amendment is consistent with all applicable officially adopted plans, and provide a written recommendation to the Town Council that addresses plan consistency and other matters as deemed appropriate by the Planning Board, but a comment by the Planning Board that a proposed amendment is inconsistent with the officially adopted plans shall not preclude consideration or approval of the proposed amendment by the Town Council.

PROJECT DESCRIPTION:

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

Applicable Officially Adopted Plans:

The Board must state whether the project is consistent or inconsistent with the following officially adopted plans, if applicable. Applicable plans have a check mark next to them.

☒ 2045 Land Use Map

☒ Consistent ☐ Inconsistent Reason: _____

☒ Apex Transportation Plan

☒ Consistent ☐ Inconsistent Reason: _____

☒ Parks, Recreation, Open Space, and Greenways Plan

☒ Consistent ☐ Inconsistent Reason: _____

Legislative Considerations:

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

1. *Consistency with 2045 Land Use Map*. The proposed Conditional Zoning (CZ) District use's appropriateness for its proposed location and consistency with the purposes, goals, objectives, and policies of the 2045 Land Use Map.
   ☒ Consistent ☐ Inconsistent Reason: _____

2. *Compatibility.* The proposed Conditional Zoning (CZ) District use's appropriateness for its proposed location and compatibility with the character of surrounding land uses.
   ☒ Consistent ☐ Inconsistent Reason: _____

3. *Zoning district supplemental standards*. The proposed Conditional Zoning (CZ) District use's compliance with Sec. 4.4 Supplemental Standards, if applicable.
   ☒ Consistent ☐ Inconsistent Reason: _____

4. *Design minimizes adverse impact.* The design of the proposed Conditional Zoning (CZ) District use's minimization of adverse effects, including visual impact of the proposed use on adjacent lands; and avoidance of significant adverse impacts on surrounding lands regarding trash, traffic, service delivery, parking and loading, odors, noise, glare, and vibration and not create a nuisance.
   ☒ Consistent ☐ Inconsistent Reason: _____

5. *Design minimizes environmental impact.* The proposed Conditional Zoning District use's minimization of environmental impacts and protection from significant deterioration of water and air resources, wildlife habitat, scenic resources, and other natural resources.
   ☒ Consistent ☐ Inconsistent Reason: _____

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

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

8. *Detrimental to adjacent properties.* Whether the proposed Conditional Zoning (CZ) District use is substantially detrimental to adjacent properties.
   ☑ Consistent ☐ Inconsistent Reason: _____

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

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

Planning Board Recommendation:

Motion: To recommend approval as proposed.

Introduced by Planning Board member: Tim Royal

Seconded by Planning Board member: Beth Godfrey

☐ *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:

As proposed by applicant.

☐ *Denial*: the project is not consistent with all applicable officially adopted plans.

With 6 Planning Board Member(s) voting "aye"

With 0 Planning Board Member(s) voting "no"

Reasons for dissenting votes:

This report reflects the recommendation of the Planning Board, this the 12th day of November 2019.

Attest:

Margo Bills, Planning Board Chair

Dianne Khin, Planning Director

TOWN OF APEX
POST OFFICE BOX 250
APEX, NORTH CAROLINA 27502
PHONE 919-249-3426

PUBLIC NOTIFICATION OF PUBLIC HEARINGS

CONDITIONAL ZONING #19CZ02
0, 7208, 7208-B Morris Acres Road
Morris Acres PUD

Pursuant to the provisions of North Carolina General Statutes Section 160A-364 and to the Town of Apex Unified Development Ordinance (UDO) Section 2.2.11, notice is hereby given of public hearings before the Planning Board and Town Council of the Town of Apex. The purpose of these hearings is to consider the following:

Applicant: Kaplan Residential
Authorized Agent: Jason Barron, Morningstar Law Group
Property Addresses: 0, 7208, & 7208B Morris Acres Road
Acreage: ± 17.4376
Property Identification Numbers (PINs): 0732289587, 0732382530, & 0732382709
Existing 2045 Land Use Map Designation: Medium Density Residential
Existing Zoning of Property: Rural Residential (RR)
Proposed Zoning of Property: Planned Unit Development-Conditional Zoning (PUD-CZ)

Public Hearing Location: Apex Town Hall
73 Hunter Street, Apex, North Carolina
Council Chambers, 2nd Floor

Planning Board Public Hearing Date and Time: **November 12, 2019 4:30 P.M.**
Town Council Public Hearing Date and Time: **November 19, 2019 7:00 P.M.**

Vicinity Map:

Property owners within 300 feet of the proposed conditional zoning have been sent this notice via first class mail. All interested parties may appear at the public hearing and be heard with respect to the application. Maps showing the location for the above site(s) to be considered in addition to a copy of the 2045 Land Use Map can be inspected at the Apex Town Hall or call 919-249-3426, Department of Planning and Community Development for further information. To view the petition and related documents on-line: https://www.apexnc.org/DocumentCenter/View/26285.

Dianne F. Khin, AICP
Planning Director

Published Dates: November 1 – November 19, 2019

TOWN OF APEX
POST OFFICE BOX 250
APEX, NORTH CAROLINA 27502
PHONE 919-249-3426

PUBLIC NOTIFICATION OF PUBLIC HEARINGS

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Morris Acres PUD

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Acreage: ± 17.4376
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Existing Zoning of Property: Rural Residential (RR)
Proposed Zoning of Property: Planned Unit Development-Conditional Zoning (PUD-CZ)

Public Hearing Location: Apex Town Hall
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Dianne F. Khin, AICP
Planning Director

Published Dates: November 1 – November 19, 2019

Public Hearing Sign Posted By

Signature

2/6/19

Date

TOWN OF APEX
POST OFFICE BOX 250
APEX, NORTH CAROLINA 27502
PHONE 919-249-3426

AFFIDAVIT CERTIFYING
Public Notification – Written (Mailed) Notice

Section 2.2.11
Town of Apex Unified Development Ordinance

Project Name:	Rezoning 19CZ02
Project Location:	0, 7208, & 7208B Morris Acres Road
Applicant or Authorized Agent:	Jason Barron
Firm:	Morningstar Law Group

This is to certify that I, as Planning Director, mailed or caused to have mailed by first class postage for the above mentioned project **November 1, 2019**, a notice containing the time and place, location, nature and scope of the application, where additional information may be obtained, and the opportunity for interested parties to be heard, to the property owners within 300' of the land subject to notification. I further certify that I relied on information provided to me by the above-mentioned person as to accuracy and mailing addresses of property owners within 300' of the land subject to notification.

11/1/19
Date

Planning Director

STATE OF NORTH CAROLINA
COUNTY OF WAKE

Sworn and subscribed before me, Jeri Chastain Pederson, a Notary Public for the above State and County, this the 01 day of November, 2019.

JERI CHASTAIN PEDERSON
Notary Public
Wake County, North Carolina
My Commission Expires
March 10, 2024

Jeri Chastain Pederson
Notary Public

My Commission Expires: 03 / 10 / 2024