

STAFF REPORT

Rezoning #21CZ14 Holland Road Mixed Use Assembly PUD

March 8, 2022 Town Council Meeting



All property owners and neighborhood associations within 300 feet of this rezoning have been notified per UDO Sec. 2.2.11 *Public Notification*.

BACKGROUND INFORMATION:

Location: 2236 Old US 1 Hwy; 1001 & 1004, & 1005 Red Cardinal Lane; 3104 & 3116 Holland Road; 7528 Humie Olive Road

Applicant/Agent: Geno Ray, LG Investments, Inc./Jeff Roach, Peak Engineering & Design, PLLC.

Owners: David Ray Powell, Johnny & Carolyn M Pendergraft, Pamela Etal Bullock & Francis T Purefoy, Ernestine Smith, Joanne Pendergraft Hearn Heirs, RGNC-10 LLC, Annie P. & Billie E. Stroup, Shelba Clem, P. Diane Williams, and Lisa W. Krummel

PROJECT DESCRIPTION:

Acreage: ±28.68 acres

PINs: 0720998487, 0730091779, 0730095707, 0731004075, 0731001087, 0731003359, 0720992587

Current Zoning: Rural Residential (RR)

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

Current 2045 Land Use Map: Medium Density Residential, Medium/High Density Residential, and Commercial Services

Town Limits: ETJ

Adjacent Zoning & Land Uses:

	Zoning	Land Use
North:	Medium Density-Conditional Use (MD-CZ #13CZ16); Rural Residential (RR)	Single-Family Residential (individual lots and Siena and Verona at Bella Casa)
South:	Rural Residential (RR); Neighborhood Business (B1); Tech/Flex-Conditional Zoning (TF-CZ #15CZ25 & 18CZ13)	Old US 1 Hwy; Single-Family Residential; Restaurant; Vacant
East:	Rural Residential (RR)	Holland Rd; Single-Family Residential; Church
West:	Rural Residential (RR)	Vacant; Single-Family Residential

EXISTING CONDITIONS:

The properties are situated on the north side of Old US 1, between Humie Olive and Holland Roads. The properties contain two residential structures and a few outbuildings. The subject site is heavily wooded.

NEIGHBORHOOD MEETING:

The applicant conducted a neighborhood meeting on April 27, 2021. The neighborhood meeting report is attached.

WCPSS Coordination:

A Letter of Impact from Wake County Public School System (WCPSS) was received for this rezoning and is included in the staff report packet. WCPSS indicates that elementary, middle, and high schools within the current assignment area for this rezoning/development are anticipated to have insufficient capacity for



future students at all levels; transportation to schools outside of the current assignment area should be anticipated. School expansion or construction within the next five years is anticipated address concerns at the elementary and high school levels.

2045 LAND USE MAP:

The 2045 Land Use Map designates the subject properties as Medium Density Residential, Medium/High Density Residential, and Commercial Services. The proposed rezoning to Planned Unit Development-Conditional Zoning (PUD-CZ) is generally consistent with those Land Use Map designations. The proposed rezoning includes a mix of residential uses and commercial uses. If the properties are rezoned as proposed, the 2045 LUM will automatically be amended to remove the Medium/High Density Residential area, expand the Medium Density Residential area and reduce the Commercial Services area per NCGS 160D-605(a).

PLANNED UNIT DEVELOPMENT PLAN:

The applicant is proposing a Planned Unit Development Plan with uses and development standards as follows:

Permitted Uses:

The development will include office, retail and residential uses. The Rezoned Lands may be used for, and only for, the uses listed below. The permitted uses are subject to the limitation and regulations stated in the UDO and any additional limitation 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.

Residential Tract:

- Accessory apartment
- Townhouse (as shown on the PUD Map)
- Single family (as shown on the PUD Map)
- Greenway
- Recreation Facility, private
- Park, active
- Park, passive
- Utility, minor

Commercial Tract:

- Drop-in or short-term day care
- Botanical garden
- Entertainment, indoor
- Youth or day camps
- Restaurant, drive-through
- Restaurant, general
- Medical or dental office or clinic
- Office, business or professional
- Publishing office
- Artisan Studio
- Barber and beauty shop
- Book store
- Nursing or convalescent facility
- Financial institution
- Floral shop
- Greenhouse or nursery, retail
- Grocery, general
- Grocery, specialty
- Health/fitness center or spa
- Laundromat
- Newsstand or gift shop
- Personal service
- Pharmacy
- Printing and copying service
- Real estate sales
- Retail sales, general
- Studio for art
- Tailor shop
- Upholstery shop
- Convenience store
- Convenience store with gas sales
- Dry cleaners and laundry service

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- Pet services
- Microbrewery
- Greenway
- Park, active
- Park, passive
- Utility, minor

Proposed Design Controls:

Density

The PD Plan proposes an overall maximum residential density of 6 dwelling units per acre and a maximum of 76,500 sf including four (4) outparcels and a convenience store with no more than ten (10) fueling stations in the nonresidential section. The overall residential development shall not exceed 110 dwelling units, with a minimum of 10 single-family detached dwellings and the remainder comprised of townhouses.

Height

The maximum building height shall be:

- Single-family detached: 36'
- Townhouses: 40'
- Non-residential: 50'

Single-family Minimum Lot Standards:

- Lot size: 6,000 square feet (see zoning condition #4)
- Lot width: 60'

Setbacks

Proposed Minimum Setbacks		
Single-family	Front	10'
	Front (garage)	20'
	Side	5'
	Corner side	10'
	Rear	10'
	From Buffer/RCA	10' for buildings; 5' for parking areas
Townhouse – front loaded	Front	10'
	Front (garage)	20'
	Side	3' (0 between units)
	Corner side	10'
	Rear	10'
	Building to building	10'
	From Buffer/RCA	10' for buildings; 5' for parking areas
Townhouse – rear/alley loaded	Front	10'
	Side	3' (0 between units)
	Corner side	10'
	Rear	5' from alley R/W
	Building to building	10'
	From Buffer/RCA	10' for buildings; 5' for parking areas

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Non-Residential	Street	20'
	Rear	20'
	Side	20'
	From Buffer/RCA	10' for buildings; 5' for parking areas

Buffers

The following buffers are proposed by this PUD.

Residential:

Perimeter Buffers:	UDO Required	Proposed
Northern Boundary	20' Type B or 10' Type B*	20' Type A; 20' Type B; or 30' Type A
Holland Road	30' Type B	30' Type B
Western Boundary	20' Type B**	10' Type B

Non-Residential:

Perimeter Buffers:	UDO Required*	Proposed
Holland Road	30' Type E	30' Type E
Old US 1	30' Type E	30' Type E
Humie Olive Road	30' Type E	30' Type E
Northern & Western Boundary Adjacent to PIN 0720-99-3901	40' Type A	10' Type B buffer is proposed although no buffer is required if a public street or private driveway straddles or is located along the property line between the parcels.

*based on Class 5 Land Use Class for Section 8.2.6 Buffering

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

Built Upon Area

The proposed maximum built upon area is 70% for the non-residential development and 60% for the residential development.

Resource Conservation Area

This PUD shall 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 shall provide 25% RCA for the non-residential portion of the development based upon the standards set forth within UDO Section 8.1. The development provides a non-residential component to the development and per UDO Section 2.3.4.F.1.c.i is requesting a RCA reduction to 25% minimum from the 30% minimum required for single-family and townhouse developments. Development shall not be subject to additional RCA requirement for mass grading of single-family detached lots per UDO 7.2.5.B.8.



Off-site RCA per 8.1.2.A.1 may be used to comply with the approved RCA standards outlined by the Unified Development Ordinance.

In response to a request from adjacent Bella Casa property owners. The buffer along the northern boundary may be cleared and replanted per previous PD Text conditions and shall count as Resource Conservation Area (RCA) for the development.

The overhead Duke Energy electric line and easements along Humie Olive Road, Old US 1 Highway, and Holland Road shall be counted towards the required RCA and buffer standards as identified within various UDO sections.

Parking

Parking for the development shall meet the requirements of UDO Section 8.3.

ZONING CONDITIONS

The following conditions shall also apply:

1. A maximum of 100 townhouse dwellings shall be permitted.
2. A minimum of 10 single-family detached dwellings shall be permitted.
3. Of the 100 permitted townhouse dwellings, at least two (2) residential restricted median-income affordable housing townhome ownership units (Affordable Housing Units) shall be constructed on-site and sold at a mutually agreeable maximum affordable housing median-income ownership initial sales price (includes unit price and lot price) that is calculated based upon the one-hundred percent (100%) of the Raleigh, NC Metropolitan Statistical Area (MSA) Area Median Income (AMI) as published by the U.S. Department of Housing and Urban Development (HUD). The Affordable Housing Units shall be occupied by low or median-income households earning no more than one-hundred percent (100%) of the Raleigh, NC MSA AMI, adjusted for family size as published by HUD. A restrictive covenant (i.e. resale deed restriction) with a minimum affordability period of ten (10) years shall be recorded against each residential restricted median-income affordable housing townhome ownership unit concurrently at the close of escrow upon the sale of the Affordable Housing Units to memorialize the affordable housing terms and conditions. The two (2) Affordable Housing Unit lots shall be identified on the Master Subdivision Final Plat, which may be amended from time to time. A restrictive covenant (i.e. affordable housing agreement) between the Town and Applicant shall be recorded against the two (2) Affordable Housing Unit lots prior to the issuance of a building permit for such lots to memorialize the affordable housing terms and conditions of the approved zoning condition. Final Affordable Housing Unit floor plan selection which includes the unit size and bedroom size will be at the discretion of the developer. Developer shall provide written notice to the Town, Attn: Housing Program Manager, giving the Town ninety (90) days to identify qualified applicants to enter into a lot or purchase agreement with the Seller of the Affordable Housing Units.
4. Single-family detached dwellings adjacent to and abutting Wake County PINs 0731-00-1666 and 0731-00-3635 shall be located on lots that are a minimum of 12,000 square feet and oriented to face Vasari Drive.
5. A signal warrant analysis for the intersection of Holland Road and Old HWY 1 shall be performed by the applicant prior to the platting of the 100th lot platted within the development and developer shall install a traffic signal if permitted by NCDOT at that time. If a traffic signal is not permitted by NCDOT at that time then developer shall have no future responsibility for a traffic signal.



6. A maximum of 76,500 square feet of commercial/retail uses, inclusive of up to four (4) non-residential outparcels and a convenience store with up to ten (10) fueling stations.
7. All single-family detached and non-residential buildings shall provide solar conduit for the installation of rooftop solar panels.
8. No covenant shall be placed on the property which prohibits accessory apartment as a use.
9. The uses Restaurant, drive-through and Convenience store with gas sales shall not be permitted within 100' of residential properties within the development.
10. A 20' landscape easement shall be provided between the commercial/retail area and the residential area. This area shall be landscaped to a Type 'A' buffer standard with a berm as permitted by UDO 8.2.6.B.5.
11. A Type 'A' buffer shall be provided along the northern boundary with the Bella Casa subdivision. The Type 'A' buffer will remove and replace the existing vegetation while permitting the buffer to count towards overall RCA requirements. A berm shall be installed along with additional buffer improvements per UDO Section 8.2.6.B.5.
12. The project shall install at least one (1) sign per SCM about not using fertilizer near an SCM drainage area. The sign(s) shall be installed in locations that are publicly accessible, such as adjacent to amenity centers, sidewalks, greenways, or side paths.
13. The project shall install one (1) sign near each SCM about cleaning up pet waste.
14. The project shall increase biodiversity within the development by:
 - a. Selecting and installing tree, shrub and perennial species with special attention to providing diverse and abundant pollinator and bird food sources, including plants that bloom in succession from spring to fall.; or
 - b. Planting only native plant species as listed in the Apex Design and Development Manual.
15. The project shall include landscaping that requires less irrigation and chemical use by planting warm season grasses for drought-resistance.
16. A minimum of three (3) pet waste stations shall be installed within the development located around the SCMs, play lawns, and gathering areas.
17. The exterior lighting for all non-residential buildings and parking lots will consist entirely of LED fixtures. The project shall install light timers, motion sensors, or other smart lighting technology for all lighting within the parking lots.
 - a. The project shall use full cutoff LED fixtures that have a maximum color temperature of 3,500 for all exterior lighting, including, but not limited to, parking lot and building mounted fixtures.

Architectural Standards

The proposed development offers the following architectural controls to ensure a consistency of character throughout the development, while allowing for enough variety to create interest and avoid monotony. 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 development plan submittal. The following conditions shall apply:

A. Residential Development

Single Family Detached:

1. Vinyl siding is not permitted; however, vinyl windows, decorative elements, and trim are permitted.
2. Primary building materials will be brick, stone, and fiber cement siding.
3. Windows that are not recessed shall be trimmed. Windows shall vary in size and/or type.



4. At least 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.
5. 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.
6. The rear and side elevations of the units that can be seen from the right-of-way shall have trim around the windows.
7. Front facing garage doors must have windows, decorative details, or carriage-style adornments.
8. Entrances for units with front-facing garages shall have a prominent covered porch/stoop area leading to the front door.
9. Porches constructed with a dwelling unit shall be a minimum of six feet (6') deep.
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.

Single Family Attached (Townhouses):

1. Vinyl siding is not permitted; however, vinyl windows, decorative elements and trim are permitted.
2. The roofline cannot be a single mass; it must be broken up horizontally and vertically between every unit.
3. Garage doors must have windows, decorative details or carriage-style adornments on them.
4. House entrances for units with front-facing single-car garages shall have a prominent covered porch/stoop area leading to the front door.
5. The garage cannot protrude more than 1 foot out from the front façade or front porch.
6. Building facades shall have horizontal relief achieved by the use of recesses and projections.
7. A varied color palette shall be utilized on homes throughout the subdivision to include a minimum of three (3) color families for siding and shall include varied trim, shutter, and accent colors complementing the siding color.
8. The rear and side elevations of the units that can be seen from the right-of-way shall have trim around the windows.
9. At least 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 brick or stone, decorative gables, decorative cornices, or metal roofing.
10. The visible side of a townhouse on a corner lot facing the public street shall contain at least 3 decorative elements such as, but not limited to, the following elements:
 - Windows
 - Bay window
 - Recessed window
 - Decorative window
 - Trim around the windows
 - Wrap around porch or side porch
 - Two or more building materials
 - Decorative brick/stone
 - Decorative trim
 - Decorative shake
 - Decorative air vents on gable
 - Decorative gable
 - Decorative cornice
 - Column
 - Portico
 - Balcony
 - Dormer



B. Commercial Development

1. Predominant exterior building materials shall be brick masonry, decorative concrete block (either integrally colored or textured), stone accents, aluminum storefronts with anodized or pre-finished colors, EIFS cornices and parapet trim, and precast concrete. Materials shall comply with UDO Section 9.3.5.
2. Additional exterior materials may include stone accents, aluminum store fronts with anodized or pre-finished colors, EIFS cornices and parapet trim, and precast concrete.
3. The building shall have more than one (1) parapet height.
4. The building exterior shall have more than one (1) material color.
5. No more than 20% of any building façade may consist of EIFS material.
6. EIFS or synthetic stucco shall not be used in the first 4 feet above grade.
7. Only full cut-off lighting fixtures and fixtures with external house-side shields shall be allowed where non-residential properties are adjacent to residential properties.

PUBLIC FACILITIES:

The project’s construction will consist of the extension of public facilities to serve the site. All public facilities and infrastructure shall comply with the Town of Apex Sewer and Water Master Plans and the Town of Apex Standards and Specifications.

STORMWATER MANAGEMENT:

This PUD shall meet all stormwater management requirements for quality and quantity treatment in accordance with Section 6.1.7 of the UDO, such that: Post development peak runoff shall not exceed pre-development peak runoff conditions for the 1-year, 10-year, and 25-year, 24-hour storm events.

AFFORDABLE HOUSING

The applicant met with Senior Planner Sarah Van Every and Housing Program Manager Christopher “C.J.” Valenzuela to discuss possible options to contribute to affordable housing and has proposed the following:

Of the 100 permitted townhouse dwellings, at least two (2) residential restricted median-income affordable housing townhome ownership units (Affordable Housing Units) shall be constructed on-site and sold at a mutually agreeable maximum affordable housing median-income ownership initial sales price (includes unit price and lot price) that is calculated based upon the one-hundred percent (100%) of the Raleigh, NC Metropolitan Statistical Area (MSA) Area Median Income (AMI) as published by the U.S. Department of Housing and Urban Development (HUD). The Affordable Housing Units shall be occupied by low or median-income households earning no more than one-hundred percent (100%) of the Raleigh, NC MSA AMI, adjusted for family size as published by HUD. A restrictive covenant (i.e. resale deed restriction) with a minimum affordability period of ten (10) years shall be recorded against each residential restricted median-income affordable housing townhome ownership unit concurrently at the close of escrow upon the sale of the Affordable Housing Units to memorialize the affordable housing terms and conditions. The two (2) Affordable Housing Unit lots shall be identified on the Master Subdivision Final Plat, which may be amended from time to time. A restrictive covenant (i.e. affordable housing agreement) between the Town and Applicant shall be recorded against the two (2) Affordable Housing Unit lots prior to the issuance of a building permit for such lots to memorialize the affordable housing terms and conditions of the approved zoning condition. Final Affordable Housing Unit floor plan selection which includes the unit size and bedroom size will be at the discretion of the developer. Developer shall provide written notice to the Town, Attn: Housing Program Manager, giving the Town ninety (90) days to identify qualified applicants to enter into a lot



or purchase agreement with the Seller of the Affordable Housing Units.

APEX TRANSPORTATION PLAN/ACCESS and CIRCULATION:

The proposed PUD is consistent with the Apex Transportation Plan. The proposed development provides access to Old US 1, Holland Road, and Humie Olive Road. Future development will extend Vasari Drive, the existing stub street from Bella Casa, south to serve the development. Stub street(s) to the west of the PUD will be provided to serve future development. A 10' Side Path will be constructed along Humie Olive Road and 5' sidewalks will be provided along Holland Road and Old US 1 Hwy.

Developer shall provide minimum dedication of public right-of-way along each of Holland Road, Old US 1, and Humie Olive Road. 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. Sidewalks shall be provided on both sides of streets internal to the site per UDO standards. 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 shall be finalized at the time of Master Subdivision Plan or Minor Site Plan review and approval.

Roadway improvements are subject to modification and final approval by the Town of Apex and NCDOT as part of the Minor Site Plan, Master Subdivision Plan, and construction plan approval process. A Traffic Impact Analysis (TIA) has been performed as part of this PUD rezoning consistent with the Town's standards for the same. Based upon the recommendations of the TIA and approval by Town staff and NCDOT, the final transportation improvement zoning conditions shall be provided:

1. Developer shall widen Holland Road along the project frontage as development occurs based on a minimum 41-foot curb and gutter roadway section with 5-foot sidewalk and dedication based on a minimum 80-foot right-of-way.
2. Developer shall propose a maximum of two (2) access points to Holland Road. A full-movement access shall be located approximately 950 feet north of Old US 1. A right-in/right-out access shall be located approximately 350 feet north of Old US 1 with right-turn channelization designed according to Apex and NCDOT standards.
3. Developer shall provide additional frontage widening along Holland Road to extend the exclusive southbound right turn lane at Old US 1 to the right-in/right-out access when that right-in/right-out access is constructed for an approximate total length of 350 feet.
4. Developer shall propose a maximum of one (1) access point to Old US 1. The right-in/right-out access point shall be proposed approximately 275 feet west of Holland Road and restricted by installation of a concrete median along the center of Old US 1, based on NCDOT standards.
5. Developer shall widen Old US 1 at the time the access point is constructed by adding a second westbound through-lane starting at Holland Road and terminating at the westbound right-turn lane at Humie Olive Road, and a 6-foot paved shoulder for a future bike lane, with a 5-foot sidewalk, and dedication based on a minimum 110-foot right-of-way.
6. Developer shall widen Humie Olive Road along the project frontage as development occurs based on a minimum 41-foot curb and gutter roadway section with 10-foot side path and dedication based on a minimum 80-foot right-of-way.
7. Developer shall propose a maximum of one (1) access point to Humie Olive Road. The full-movement access point shall be proposed approximately 600 feet west of Old US 1 Highway and

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Developer shall provide additional widening to construct a westbound right turn lane with 75 feet of storage and an eastbound left-turn lane with 175 feet of storage, plus applicable full-width deceleration and taper length.

8. Developer shall provide separate left- and right-turn lanes exiting the access point with 150 feet of internal protected storage, measured from the edge of Humie Olive Road to the first crossing internal access.
9. Developer shall extend the eastbound left-turn lane on Old US 1 at Humie Olive Road to provide a minimum of 225 feet of storage plus applicable full-width deceleration and taper length prior to the first certificate of occupancy in the commercial phase.
10. Developer shall extend the northbound left-turn lane on Friendship Road at Old US 1 to provide a minimum of 150 feet of storage plus applicable full-width deceleration and taper length prior to the first certificate of occupancy in the commercial phase.

ENVIRONMENTAL ADVISORY BOARD:

The Apex Environmental Advisory Board (EAB) held a pre-application meeting for this rezoning on April 15, 2021. The zoning conditions suggested by the EAB are listed below along with the applicant's response to each condition.

EAB Suggested Condition	Applicant's Response
Increase design storm for retention basins in flood-prone areas. <ul style="list-style-type: none">• Option 2: Increase design storm pre- and post-attenuation requirement to the 25-year storm.	Added
Install signage near environmental sensitive areas in order to: <ul style="list-style-type: none">• Reduce pet waste near SCM drainage areas; and• Eliminate fertilizer near SCM drainage areas.	Added
Increase biodiversity: <ul style="list-style-type: none">• Plant pollinator-friendly flora• Plant native flora (Refer to the Apex Design & Development Manual for approved native species).	Added
Improve soil quality to be amenable for a variety of native and non-invasive plantings	Added condition for native plantings
Install pet waste stations in neighborhoods	Added
Include solar conduit in building design	Added
Install timers or light sensors or smart lighting technology for exterior lighting.	Added
Include International Dark Sky Association compliance standards. <ul style="list-style-type: none">• Outdoor lighting shall be shielded in a way that focuses lighting to the ground.• Lighting that minimizes the emission of blue light to reduce glare shall be used.	Added
Incorporate natural lighting techniques into building design whether residential or non-residential.	Added
Maintain connections between RCAs to preserve habitat if possible.	Added
Move play area to residential side (north side) for better accessibility of open green space.	Added

PARKS, RECREATION, AND CULTURAL RESOURCES ADVISORY COMMISSION:

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The Parks, Recreation, and Cultural Resources Advisory Commission reviewed the Holland Road Mixed Use Assembly PUD project at their June 30, 2021 meeting. The Commission made a unanimous recommendation for a fee-in-lieu of dedication with a credit for construction of greenway trail if an opportunity is identified at the time of Master Subdivision Plan review and approval. The recommendation is based on the 2022 rates and proposed maximum lot count provided:

Single-family detached Units:	$\$3,753.89 \times 10 = \$37,538.90$
Single-family attached Units:	$\$2,528.25 \times 100 = \$252,825.00$
Total residential fee in lieu per current unit count:	$\$290,363.90$

Staff note: The fee-in-lieu rate is based on the date of PUD approval, not on the date of the Commission's recommendation.

PLANNING BOARD RECOMMENDATION:

The Planning Board held a public hearing on February 14, 2022 and, by a vote of 5-2, recommended approval with the additional conditions offered by the applicant. The applicant committed to increase the width of Thoroughfare Buffers along two roads, conduct a signal warrant analysis and install a traffic signal if warranted, and provide two homes at 100% of the Wake County AMI.

PLANNING STAFF RECOMMENDATION:

Planning staff recommends approval of Rezoning #21CZ14 Holland Road Mixed Use Assembly PUD with the conditions as offered 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:

The 2045 Land Use Map designates the site as Medium Density Residential, Medium/High Density Residential, and Commercial Services. The proposed PUD is generally consistent with that land use classification. The proposed rezoning includes a mix of residential uses and commercial uses. If the properties are rezoned as proposed, the 2045 LUM will automatically be amended to remove the Medium/High Density Residential area, expand the Medium Density Residential area, and reduce the Commercial Services area per NCGS 160D-605(a).

Approval of the rezoning is reasonable and in the public interest because the petition provides a transition between housing types and lower and higher residential densities, provides for a mix of neighborhood-level non-residential uses to develop along the three thoroughfares that will serve existing development, provides two units of median-income affordable housing, and provides pedestrian accommodations.

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 2030 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 ten percent (10%) provided that the PD Plan for PUD-CZ includes one or more of the following:
 - (i) A non-residential component; or
 - (ii) An overall density of 7 residential units per acre or more; or
 - (iii) Environmental measures including but not limited to the following:
 - (a) The installation of a solar photovoltaic (PV) system on a certain number or percentage of single-family or townhouse lots or on a certain number or percentage of multifamily, mixed-use, or nonresidential buildings. All required solar installation shall be completed or under construction prior to 90% of the building permits being issued for the approved number of lots or buildings. For single-family or townhouse installations, the lots on which these homes are located shall be identified on the Master Subdivision Plat, which may be amended;
 - (b) The installation of a geothermal system for a certain number or percentage of units within the development; or
 - (c) Energy efficiency standards that exceed minimum Building Code requirements (i.e. SEER rating for HVAC).
- 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 2030 Land Use.



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

Legislative Considerations

The Town Council shall find the PUD-CZ designation demonstrates compliance with the following standards. Sec. 2.3.3.F:

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

- 1) *Consistency with 2030 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 2030 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)

STAFF REPORT

Rezoning #21CZ14 Holland Road Mixed Use Assembly PUD

March 8, 2022 Town Council Meeting



District use complies with all standards imposed on it by all other applicable provisions of this Ordinance for use, layout, and general development characteristics.



June 4, 2021

Nathan Bouquin
Ramey Kemp & Associates, Inc.
5808 Faringdon Place, Suite 100
Raleigh, NC 27609

Subject: **Staff summary and comments for the Holland Road Mixed-Use TIA,
05/01/2021**

Mr. Bouquin:

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

Study Area

The TIA studied access to the proposed development at the following intersections:

- Holland Road and Site Drive 1
- Holland Road and Site Drive 2
- Old US Highway 1 and Site Drive 3
- Humie Olive Road and Site Drive 4

The following four intersections in the study area were also analyzed in the TIA:

- Old US Highway 1 and Humie Olive Road/ Vicious Fishes Brewery Driveway
- Old US Highway 1 and Holland Road
- Old US Highway 1 and Friendship Road
- Holland Road and Kelly Road

Trip Generation

The proposed development is expected to consist of up to 110 single-family homes, and 60,000 square feet of shopping center with 4 additional outparcels. The outparcels are expected to consist of two 4,000 square-foot fast food restaurants with drive-thrus, an 8,500 square-foot quality restaurant, and a gas station with 10 fuel pump stations and a convenience market. The mixed-use development is projected to generate approximately 216 new trips entering and 201 new trips exiting the site during the weekday A.M. peak hour and 210 new trips entering and 164 new trips exiting the site during the weekday P.M. peak hour. The development is projected to add a total of 11,920 daily trips onto the adjacent roadway network.

Background traffic

Background traffic consists of 4% annual background traffic growth compounded to build out year 2025, and the following approved developments:

- E-41 (Apex Friendship Elementary) – AM trips only
- Pleasant Park – PM trips only
- Friendship Middle School – AM trips only (since existing counts were taken during COVID-19 when school was not in session)
- Friendship High School - AM trips only (since existing counts were taken during COVID-19 when school was not in session)

Trip Distribution and Assignment

The trip distributions to and from the development for residential trips are as follows:

- 60% to/from the east via Old US Highway 1
- 25% to/from the north via Kelly Road
- 15% to/from the north via Humie Olive Road

The trip distributions to and from the development for commercial trips are as follows:

- 10% to/from the southeast via Friendship Road
- 25% to/from the north via Humie Olive Road
- 15% to/from the north via Kelly Road
- 20% to/from the east via Old US Highway 1
- 25% to/from the west via Old US Highway 1
- 5% to/from the north via Holland 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 8 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 2021** - Existing year 2021 traffic counts adjusted to account for pandemic traffic conditions.
- **No Build 2025** – Projected year (2025) with background growth, approved development traffic from others, and committed transportation improvements by others where applicable.
- **Build 2025** – Projected year (2025) with background traffic, background improvements, and site build-out including recommended improvements where applicable.

Holland Road and Site Drive 1 (Unsignalized)

Table 1. A.M. / P.M. Unsignalized Peak Hour Levels of Service Holland Road and Site Drive 1	
	Build 2025
<u>Overall</u>	<u>NA</u>
<i>Eastbound (Site Drive 1)</i>	<i>A / B¹</i>
<i>Northbound (Holland Road)</i>	<i>A / A²</i>
<i>Southbound (Holland Road)</i>	<i>NA</i>

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

TIA recommendations:

- The TIA recommends construction of future Site Drive 1 as a two-lane road (one lane in each direction) with full access and stop control at Holland Road. The TIA does not recommend any other improvements to the intersection.

Apex staff recommendations:

- Apex staff concur with the recommendations. All movements at the access drive are projected to operate at LOS B or better with minimal vehicle delays or queues.

Holland Road and Site Drive 2 (Unsignalized)

Table 2. A.M. / P.M. Unsignalized Peak Hour Levels of Service Holland Road and Site Drive 2	
	Build 2025
<u>Overall</u>	<u>NA</u>
<i>Eastbound (Site Drive 2)</i>	<i>A / A¹</i>
<i>Northbound (Holland Road)</i>	<i>NA</i>
<i>Southbound (Holland Road)</i>	<i>NA</i>

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

TIA recommendations:

- The TIA recommends construction of future Site Drive 2 as a two-lane road (one lane in each direction) with stop control and right-in/right-out operations at Holland Road. The TIA does not recommend any other improvements to the intersection.

Apex staff recommendations:

- Apex staff concur with the recommendations. The access drive is projected to operate at LOS A with minimal vehicle delays or queues.

Old US Highway 1 and Site Drive 3 (Unsignalized)

Table 3. A.M. / P.M. Unsignalized Peak Hour Levels of Service Old US Highway 1 and Site Drive 3	
	Build 2025
<u>Overall</u>	<u>NA</u>
<i>Eastbound (Old US Highway 1)</i>	<i>NA</i>
<i>Westbound (Old US Highway 1)</i>	<i>NA</i>
<i>Southbound (Site Drive 3)</i>	<i>D / C¹</i>

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

TIA recommendations:

- The TIA recommends construction of future Site Drive 3 as a two-lane road (one lane in each direction) with stop control and right-in/right-out operations at Old US Highway 1. Additionally, the TIA recommends construction of a westbound right turn lane on Old US Highway 1 with 75 feet of storage and appropriate deceleration length and taper per NCDOT guidance.

Apex staff recommendations:

- The distance between Holland Road and proposed Site Drive 3 is approximately 250 feet and the distance between Site Drive 3 and Humie Olive Road is approximately 550 feet. Due to short intersection spacing, Apex staff recommends construction of an exclusive right-turn add lane from the Holland Road to the Humie Olive Road intersections along Old US Highway 1 with a center median island on Old US Highway 1 for left turn access restrictions at Site Drive 3.

Humie Olive Road and Site Drive 4 (Unsignalized)

Table 4. A.M. / P.M. Unsignalized Peak Hour Levels of Service Humie Olive Road and Site Drive 4	
	Build 2025
<u>Overall</u>	<u>NA</u>
<i>Westbound (Site Drive 4)</i>	<i>F / C¹</i>
<i>Northbound (Humie Olive Road)</i>	<i>NA</i>
<i>Southbound (Humie Olive Road)</i>	<i>B / A²</i>

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

TIA recommendations:

- The TIA recommends construction of future Site Drive 4 as a stop controlled, full-access driveway, with two lanes egress and one lane of ingress. Additionally, the TIA recommends construction of a northbound right turn lane with 75 feet of storage, and a southbound left turn with 175 feet of storage and appropriate deceleration length and taper on Humie Olive Road.

Apex staff recommendations:

- Apex staff concurs with the recommendations in the TIA. The westbound egress lanes should provide 150 feet of internal storage to accommodate the left turn queues at the intersection. The minor street westbound approach will operate at LOS F and C in the AM and PM peak hours, respectively. It should be noted that average delays of over 2 minutes per vehicle are projected in the AM peak hour. The breakdown in operations on the minor street approach can be attributed to limited gaps in the traffic stream for left turning vehicles. With multiple access points out of the development, it's anticipated that vehicles will reroute when experiencing excessive delays at this intersection.

Old US Highway 1 and Humie Olive Road/ Vicious Fishes Brewery Driveway

Table 5. A.M. / P.M. Signalized Peak Hour Levels of Service Old US Highway 1 and Humie Olive Road/ Vicious Fishes Brewery Driveway			
	Existing 2021	No Build 2025	Build 2025
<u>Overall</u>	<u>B / B</u>	<u>F / C</u>	<u>F / C</u>
<i>Eastbound (Old US Highway 1)</i>	<i>B / A</i>	<i>A / B</i>	<i>A / B</i>
<i>Westbound (Old US Highway 1)</i>	<i>B / B</i>	<i>D / C</i>	<i>D / C</i>
<i>Northbound (Vicious Fishes Driveway)</i>	<i>B / B</i>	<i>D / B</i>	<i>D / B</i>
<i>Southbound (Humie Olive Road)</i>	<i>B / C</i>	<i>F / C</i>	<i>F / C</i>

TIA recommendations:

- The TIA recommends no improvements at this intersection. The development is not anticipated to increase traffic by more than 5% from the No Build condition at this intersection.

Apex staff recommendations:

- Town staff recommends extending the eastbound left turn lane on Old US Highway 1 from 50 feet of storage to 225 feet of storage plus appropriate deceleration length and taper to accommodate the AM peak hour 95th percentile left turn queue of 234 feet. The development is projected to increase left turn traffic by nearly 20% in the AM peak hour and 31% in the PM peak hour. Mitigation of storage for the left turn queue is recommended per the UDO as queues are projected to cause spillback and blocking of the eastbound through lane on Old US Highway 1.
- Staff recognizes that the southbound approach will operate at LOS F in the AM peak hour with average delays of 2 minutes per vehicle and 95th percentile queues of over 850 feet. These queues are projected to block access to Site Drive 4 on Humie Olive Road. However, since most of the congestion can be attributed to background traffic from the Friendship School system, no additional improvements are recommended at this intersection.

Old US Highway 1 and Holland Road (Unsignalized)

Table 6. A.M. / P.M. Unsignalized Peak Hour Levels of Service Old US Highway 1 and Holland Road			
	Existing 2021	No Build 2025	Build 2025
<u>Overall</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
<i>Eastbound (Old US Highway 1)</i>	<i>A / A²</i>	<i>B / A²</i>	<i>B / A²</i>
<i>Westbound (Old US Highway 1)</i>	NA	NA	NA
<i>Southbound (Holland Road)</i>	<i>C / C¹</i>	<i>F / D¹</i>	<i>F / F¹</i>

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

TIA recommendations:

- The TIA recommends construction of an exclusive eastbound left turn lane with minimum of 75 feet of storage and appropriate deceleration length and taper, as well as an exclusive southbound right turn lane with a minimum of 200 feet of storage and appropriate deceleration length and taper. A traffic signal was considered but was not recommended as it will most likely not be warranted based on traffic volumes.

Apex staff recommendations:

- Apex staff concurs with the recommendation for the eastbound left turn lane, but recommends extending the southbound right turn lane 350 feet north of the intersection to Site Drive 2. Based on Synchro analysis, the 95th percentile queue will extend to 400 feet in the AM peak hour, blocking access to Site Drive 2. Extension of the southbound right turn lane to Site Drive 2 will act as a relief lane to mitigate excessive delays and queuing on the southbound approach. The southbound approach is still projected to operate with average delays of over 3 minutes per vehicle in the AM peak hour and 82 seconds per vehicle in the PM peak hour.
- Apex staff concurs with the recommendation for no traffic signal as it will most likely not be warranted at this time.

Old US Highway 1 and Friendship Road (Unsignalized)

Table 7. A.M. / P.M. Unsignalized Peak Hour Levels of Service Old US Highway 1 and Friendship Road			
	Existing 2021	No Build 2025	Build 2025
<u>Overall</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
<i>Eastbound (Old US Highway 1)</i>	NA	NA	NA
<i>Westbound (Old US Highway 1)</i>	A / A^2	B / A^2	B / A^2
<i>Northbound (Friendship Road)</i>	C / D^1	F / F^1	F / F^1

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

TIA recommendations:

- The TIA assumes that intersection improvements committed by Pleasant Park will be constructed prior to the developments Build 2025 scenario. These improvements include an exclusive westbound left turn lane with 150 feet of storage and appropriate deceleration length and taper, and a northbound left turn lane with 100 feet of storage and appropriate deceleration length and taper. The TIA recommends no additional intersection improvements beyond what has been committed by Pleasant Park.

Apex staff recommendations:

- Apex recommends extending the proposed northbound left turn lane from 100 feet to 150 feet to accommodate the 95th percentile left turn queues in both the AM and PM peak hours. The development is anticipated to add more than 10% of traffic to the future left turn storage lane requiring mitigation of queue spillback per the UDO.
- Additionally Apex agrees with NCDOT recommendations at this intersection for an eastbound right turn lane with 100 feet of storage and appropriate deceleration length and taper based on NCDOT's right turn lane warrants on 2-lane highways.
- With these improvements the northbound approach is still projected to operate at LOS F with average delays of over 3 minutes per vehicle in the AM peak hour and over 80 seconds per vehicle in the PM peak hour.

Kelly Road and Holland Road (Unsignalized)

Table 8. A.M. / P.M. Unsignalized Peak Hour Levels of Service Kelly Road and Holland Road			
	Existing 2021	No Build 2025	Build 2025
<u>Overall</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
<i>Eastbound (Holland Road)</i>	<i>B / B¹</i>	<i>B / B¹</i>	<i>B / B¹</i>
<i>Northbound (Kelly Road)</i>	<i>A / A²</i>	<i>A / A²</i>	<i>A / A²</i>
<i>Southbound (Kelly Road)</i>	NA	NA	NA

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

TIA recommendations:

- The TIA recommends no improvements at this intersection.

Apex staff recommendations:

- Apex staff concurs with no improvements at this intersection. Although a southbound right turn lane would be justified per NCDOT right turn lane warrants on 2-lane highways, all movements are projected to operate at LOS B or better with minimal queuing and minimal vehicular delays at this intersection. It is located more than a mile from the site, and NCDOT recommended no improvements.

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

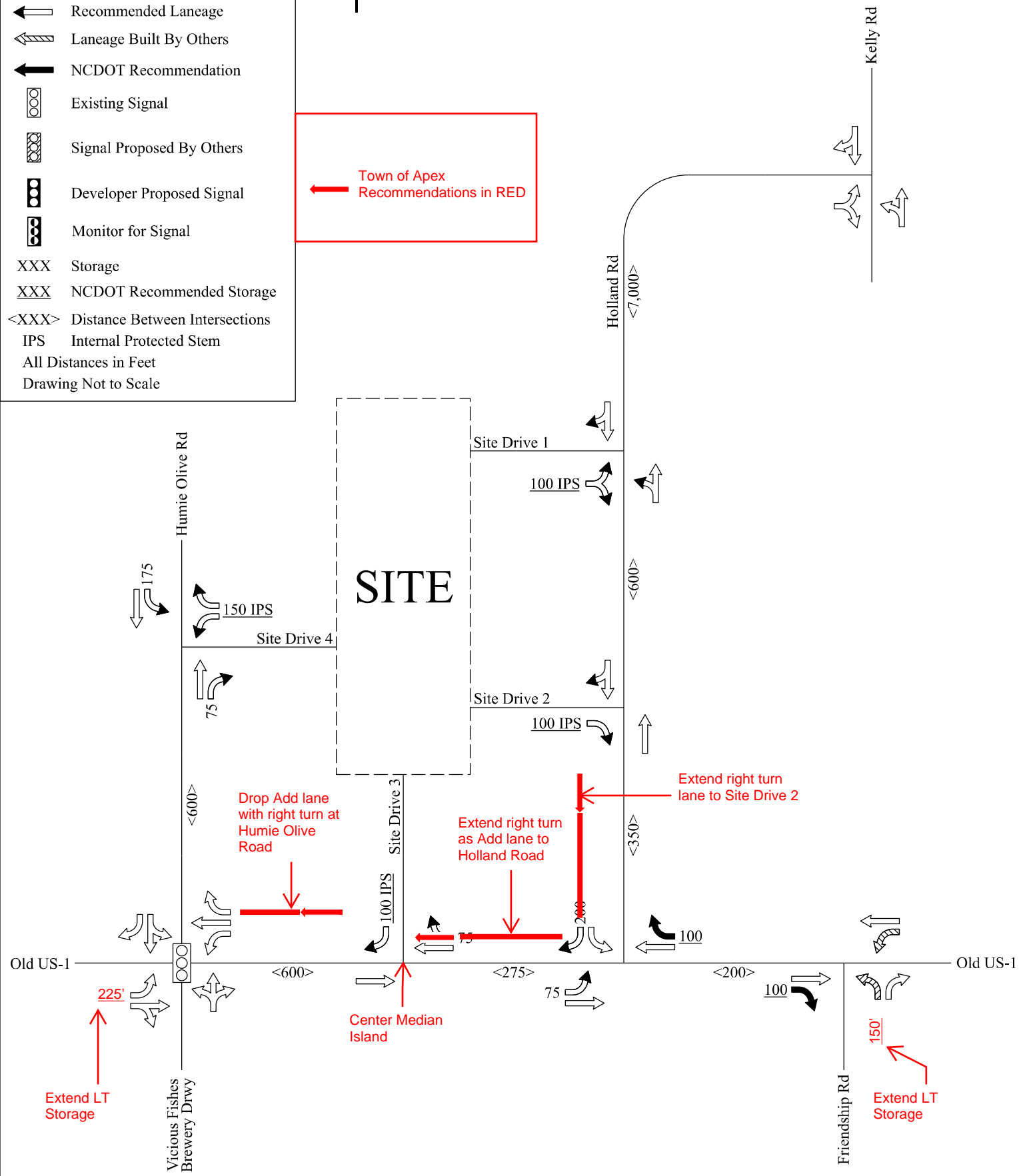
Attachment: Exhibit of Town of Apex Recommendations

Holland Rd Mixed-Use
Apex, Wake County
SC-2021-117

-  Existing Laneage
-  Recommended Laneage
-  Laneage Built By Others
-  NCDOT Recommendation
-  Existing Signal
-  Signal Proposed By Others
-  Developer Proposed Signal
-  Monitor for Signal
- XXX Storage
- XXX NCDOT Recommended Storage
- <XXX> Distance Between Intersections
- IPS Internal Protected Stem
- All Distances in Feet
- Drawing Not to Scale



Town of Apex
Recommendations in RED





Rezoning #21CZ14

Madison

Walden Rd

Evans Rd

Vetrina Way

Vecchio Ln

Siena and Verona at Bella Casa

Vasari Dr

Manzoni Dr

Holland Rd

Humie Olive Rd

Friendship Acres

Red Cardinal Ln

Old US 1 Hwy

Vandy Ct

Friendship Rd

0 250 500
Feet

July 2021
May 2021 Aerial Photography
Prepared by: Town of Apex Planning Department

PLANNED UNIT DEVELOPMENT APPLICATION

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

Application #: 21CZ14 Submittal Date: 05/03/2021
Fee Paid: \$ _____ Check #: _____

PETITION TO AMEND THE OFFICIAL ZONING DISTRICT MAP

Project Name: Holland Road Mixed Use Assembly PUD
Address(es): 7528 Humie Olive Rd, 2236 Old US 1 Hwy, 1001, 1004, 1005 Red Cadrinal Lane 3104 & 3116 Holland Rd
PIN(s) 0720992587, 0720998487, 0730095707, 0731001087, 0731003359, 0731004075, 0730091779
Acreage: 28.68 acres

Current Zoning: RR Proposed Zoning: PUD-CZ
Current 2045 LUM Designation: Med & Med-High Density Residential & Commercial Services

Is the proposed rezoning consistent with the 2045 LUM Classification(s)? Yes No Adjustments required to boundaries

If any portion of the project is shown as mixed use (3 or more stripes on the 2045 Land Use Map) provide the following:

Area classified as mixed use: Acreage: _____
Area proposed as non-residential development: Acreage: _____
Percent of mixed use area proposed as non-residential: Percent: _____

Applicant Information

Name: LG Investments, INC. att: Geno Ray
Address: 5944 Coral Ridge Drive Suite 312
City: Coral Springs State: FL Zip: 33076
Phone: (754) 875-2975 E-mail: geno@lginvest.net

Owner Information

Name: See Attached
Address: _____
City: _____ State: _____ Zip: _____
Phone: _____ E-mail: _____

Agent Information

Name: Peak Engineering & Design, PLLC, Jeff Roach
Address: 1125 Apex Peakway
City: Apex State: NC Zip: 27502
Phone: (919) 270-6940 E-mail: jroach@peakengineering.com
Other contacts: jedwards@peakengineering.com
jbarron@morningstarlawgroup.com

HOLLAND ROAD ASSEMBLY

Property Owner – Exhibit ‘A’

Property Owner	Contact Information	Site Address	PIN	Real Estate ID (REID)	Acreage	Current Zoning
David Ray Powell	524 Lapis Lane Cary, NC 27219	2236 Old US 1 Highway Apex, NC 27502	0720-99-8487	0197639	5.71 acres	RR
Johnny & Carolyn M. Pendergraft	2212 Old US 1 Hwy #1S Apex, NC 27502	1001 Red Cardinal Lane Apex, NC 27502	0730-09-1779	0160074	8.96 acres	RR
Pamela Purefoy, Francis T. Bullock Ernestine Smith	3116 Holland Road Apex, NC 27502	3116 Holland Road Apex, NC 27502	0730-09-5707	0070103	0.55 acres	RR
Joanne Pendergraft Hearn Heirs	Bonnie Wood 1115 Dycus Road Sanford, NC 27330	1005 Red Cardinal Lane Apex, NC 27502	0731-00-1087	0160076	2.00 acres	RR
RGNC-10, LLC	7307 NW 122 ND Ave Parkland, FL 33076	1004 Red Cardinal Lane Apex, NC 27502	0731-00-4075	0334537	2.10 acres	RR
Annie P. and Billy Stroup	1924 Old US 1 Hwy #1S Apex, NC 27502	3104 Holland Road Apex, NC 27502	0731-00-3359	0087601	7.36 acres	RR
Shelba W. Clem, P. Dianne Williams, Lisa W. Krummel	3007 Buckingham Way Apex, NC 27502	7528 Humie Olive Road Apex, NC 27502	0720-99-2587	0193211	2.00 acres	RR

Applicant and Owners’ Representative:

LG Investments, Inc.
Mr. Geno Ray
5944 Coral Ridge Drive Suite 312
Coral Springs, FL 33076
(754) 875-2975
geno@lginvest.net

Civil Engineer

Peak Engineering & Design, PLLC
Jeff Roach, P.E.
1125 Apex Peakway
Apex, NC 27502
(919) 439-0100
jroach@peakengineering.com

Real Estate Representative:

Billy Mills
Edwards Commercial Real Estate
2401 Weston Parkway Suite 103
Cary, NC 27513
(919) 618-3859
billymills0715@gmail.com

PLANNED UNIT DEVELOPMENT APPLICATION

Application #: 21CZ14

Submittal Date: 05/03/21

PLANNED UNIT DEVELOPMENT DISTRICT 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. The PD text and plan should demonstrate how the standards of Sec. 2.3.4.F are met by the proposed rezoning.

LEGISLATIVE CONSIDERATIONS - CONDITIONAL ZONING

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. Use additional pages as needed.

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.

Answered within the PD Text document

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

Answered within the PD Text document

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

Answered within the PD Text document

PETITION PROCESS INFORMATION

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.

Answered within the PD Text document

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.

Answered within the PD Text document

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.

Answered within the PD Text document

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.

Answered within the PD Text document

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

Answered within the PD Text document

PETITION PROCESS INFORMATION

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.

Answered within the PD Text document

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.

Answered within the PD Text document

CERTIFIED LIST OF NEIGHBORING PROPERTY OWNERS

Application #: 21CZ14

Submittal Date: 05/03/2021

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

	Owner's Name	PIN
1.	See Attached Sheets	
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		
11.		
12.		
13.		
14.		
15.		

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

Date: February 22, 2021

By: *Jonathan Edwards*

COUNTY OF WAKE STATE OF NORTH CAROLINA

Sworn and subscribed before me, DANIEL WOODS, a Notary Public for the above State and County, on this the 22 day of FEBRUARY, 2021.



Daniel H Woods
Notary Public
DANIEL H WOODS
Print Name

My Commission Expires: 11/18/2023

BELLA CASA HOMEOWNERS ASSOCIATION INC
OMEGA ASSOCIATION MANAGEMENT
160 NE MAYNARD RD STE 210
CARY NC 27513-9676
0721904649, 0721909863, 0731000924, 0731007839

DONNIE & DEBBIE CLARK
7608 HUMIE OLIVE RD
APEX NC 27502-9670
0720895858

THOMAS & JODI CLARKE
2219 VASARI DR
APEX NC 27502-9681
0731003635

ALBERTO DIAZ
OLIVER & OLIVER PLLC
PO BOX 10349
RALEIGH NC 27605-0349
0731004075

MICHAELA & SENTELL WILLIAMS
2211 VASARI DR
APEX NC 27502-9681
0731003841

HEARN, JOANN PENDERGRAFT HEIRS
BONNIE WOOD
1115 DYCUS RD
SANFORD NC 27330-7566
0731001087

MELVIN & JENNIFER HUGHES
2400 VETRINA WAY
APEX NC 27502-7747
0721908881

JOYCE KELLY
2217 OLD US 1 HWY
APEX NC 27502-8408
0730093122

TONY MCDONALD
1825 N MAIN ST
HOLLY SPRINGS NC 27540-9003
0731110157

MILLER LAND GROUP LLC
1922 NAPOLI DR
APEX NC 27502-9660
0720999210

MARIANNA & CHARLES BURT
7601 HUMIE OLIVE RD
APEX NC 27502-9670
0720896485

DONNIE & DEBBIE CLARK TRUSTEE
7608 HUMIE OLIVE RD
APEX NC 27502-9670
0720897818

SHELBA CLEM & DIANE WILLIAMS
3007 BUCKINGHAM WAY
APEX NC 27502-9341
0720992587

ALAN ECKARD
7609 HUMIE OLIVE RD
APEX NC 27502-9670
0720894498

JAMES & CLYDE EVANS
3020 HOLLAND RD
APEX NC 27502-9151
0731005747

MARK & LESLIE HOPKINS
3017 HOLLAND RD
APEX NC 27502-9151
0731102964

JVI BUILDING & DEVELOPMENT, INC
2509 SOUTHWINDS RUN
APEX NC 27502-6512
0720990292

RICHER & RICHERE LEVERT
2309 OLD US 1 HWY
APEX NC 27502-8410
0720985958, 0720988948

DENNIS & MELISSA MCGURK
2216 VASARI DR
APEX NC 27502-9681
0731001764

DEREK & KIMBERLY MORGAN
2411 VETRINA WAY
APEX NC 27502-7747
0721905775

MARC CHADWICK
2220 VASARI DR
APEX NC 27502-9681
0731001666

ELIZABETH GANELL & ELIZABETH RENEE CLARK
4034 120TH AVE N
ROYAL PALM BEACH FL 33411-8917
0721902492

COOL POOLS NC, LLC
2300 OLD US 1 HWY
APEX NC 27502-8409
0730096271

JAMES & MARY EVANS
2712 BUTTERFINGER LN
APEX NC 27502-8978
0731007820

DANIEL & ELLEN GRIFFIN
2401 VETRINA WAY
APEX NC 27502-7747
0721908740

ERIC & NIDAA HOSSENLOPP
2212 VASARI DR
APEX NC 27502-9681
0731001862

KENTON & DEVON KAPLAN
2208 VASARI DR
APEX NC 27502-9681
0731001941

WALTER MCCLAMB
PO BOX 243
APEX NC 27502-0243
0730097826, 0730097922, 0730098773,
0730098936, 0730099807, 0731007076

JEFFREY & AUDRA MCRAE
2215 VASARI DR
APEX NC 27502-9681
0731003743

KEVIN & KATHRYN NASH
2410 VETRINA WAY
APEX NC 27502-7747
0721906933

NDJ VENTURES LLC
7201 APEX BARBECUE RD
APEX NC 27502-7788
0720898988, 0720899911, 0720993901

JOHNNY & CAROLYN PENDERGRAFT
2212 OLD US 1 HWY #1S
APEX NC 27502-8407
0730091779

DAVID POWELL
524 LAPIS LN
CARY NC 27519-8576
0720993254, 0720998487

PAMELA PUREFOY & FRANCES BULLOCK
3116 HOLLAND RD
APEX NC 27502-6680
0730095707

CRISTINA & SETH ROBERTS
2323 MANZONI DR
APEX NC 27502-9674
0731003914

THE ROMAN CATHOLIC DIOCESE OF
RALEIGH NC
7200 STONEHENGE DR
RALEIGH NC 27613-1622
0731006698, 0731101525

OLIVER & LISA SCHABENBERGER
2153 VECCHIO LN
APEX NC 27502-9704
0721907889

PETER SIMPSON & PATRICIA GOTSHALL
2415 VETRINA WAY
APEX NC 27502-7747
0721904787

ANNIE & BILLY STROUP
1924 OLD US 1 HWY #1S
APEX NC 27502-7765
0731003359, 0730190468

MATTHEW & KERRY SYKES
2319 MANZONI DR
APEX NC 27502-9674
0731003980

TERRY & TINA VITHOULKAS
2405 VETRINA WAY
APEX NC 27502-7747
0721907619

WESTERN WAKE BIBLE CHAPEL
7612 HUMIE OLIVE RD
APEX NC 27502-9670
0731009204

DEVELOPMENT NAME APPROVAL APPLICATION

Application #: 21CZ14

Submittal Date: 05/03/2021

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 #: 21CZ14

Submittal Date: 05/03/2021

Proposed Subdivision/Development Information

Description of location: Multiple properties at the intersection of Humie Olive Road and Old US 1 Highway

Nearest intersecting roads: Humie Olive Road, Old US 1 Highway and Holland Road

Wake County PIN(s): 0720992587, 0720998487, 0730095707, 0731001087, 0731003359, 0731004075

Township: Buckhorn 0730-09-1779

Contact Information (as appropriate)

Contact person: Peak Engineering & Design, Jeff Roach and Morningstar Law Group, Jason Barron

Phone number: (919) 439-0100 Fax number: _____

Address: 1125 Apex Peakway, Apex, NC 27523

E-mail address: jroach@peakengineering.com

Owner: LG Investments, INC. att: Geno Ray

Phone number: (754) 875-2975 Fax number: _____

Address: 5944 Coral Ridge Drive Suite 312, Corral Springs, FL 33076

E-mail address: geno@lginvest.net

Proposed Subdivision/Development Name

1st Choice: Holland Road Mixed Use Assembly (final name is being coordinated with property owners)

2nd Choice (Optional): _____

Town of Apex Staff Approval:

Town of Apex Planning Department Staff

Date

TOWN OF APEX UTILITIES OFFER AND AGREEMENT

Application #: 21CZ14

Submittal Date: 05/03/2021

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

WAKE COUNTY, NORTH CAROLINA CUSTOMER SELECTION AGREEMENT

At the intersection of Humie Olive Road & Old US 1 Highway, and the
intersection of Old US 1 Highway and Holland Road.
(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.

LG Investments, Inc. (Geno Ray), 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: LG Investments, Inc. (Geno Ray)
BY: 
 Authorized Agent
DATE: 4/30/2021

TOWN OF APEX
BY: _____
 Authorized Agent
DATE: _____

AGENT AUTHORIZATION FORM

Application #: 21CZ14

Submittal Date: 5/3/21

David Ray Powell is the owner* of the property for which the attached application is being submitted:

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

The property address is: 2236 Old US 1 Highway, Apex, NC 27502

The agent for this project is: Peak Engineering & Design, PLLC

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

Agent Name: Jeff Roach, P.E. (Peak Engineering & Design, PLLC)

Address: 1125 Apex Peakway, Apex, NC 27502

Telephone Number: (919) 439-04100

E-Mail Address: jroach@peakengineering.com

Signature(s) of Owner(s)*

David R. Powell
 Type or print name

29 Apr 21
 Date

 Type or print name

 Date

Attach additional sheets if there are additional owners.

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

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

AFFIDAVIT OF OWNERSHIP

Application #: 21CZ14

Submittal Date: 5/3/21

The undersigned, David R. Powell (the "Affiant") first being duly sworn, hereby swears or affirms as follows:

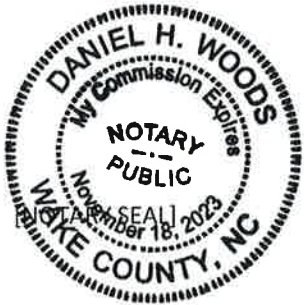
- 1. Affiant is over eighteen (18) years of age and authorized to make this Affidavit. The Affiant is the sole owner, or is the authorized agent of all owners, of the property located at 2236 Old US 1 Highway, Apex, NC 27502 and legally described in **Exhibit "A"** attached hereto and incorporated herein (the "Property").
- 2. This Affidavit of Ownership is made for the purpose of filing an application for development approval with the Town of Apex.
- 3. If Affiant is the owner of the Property, Affiant acquired ownership by deed, dated 8/19/1993, and recorded in the Wake County Register of Deeds Office on 8/23/1993, in Book 5746 Page 0146.
- 4. If Affiant is the authorized agent of the owner(s) of the Property, Affiant possesses documentation indicating the agency relationship granting the Affiant the authority to apply for development approval on behalf of the owner(s).
- 5. If Affiant is the owner of the Property, from the time Affiant was deeded the Property on 8/23/1993, Affiant has claimed sole ownership of the Property. Affiant or Affiant's predecessors in interest have been in sole and undisturbed possession and use of the property during the period of ownership. Since taking possession of the Property on 8/26/1993, no one has questioned Affiant's ownership or right to possession nor demanded any rents or profits. To Affiant's knowledge, no claim or action has been brought against Affiant (if Affiant is the owner), or against owner(s) (if Affiant is acting as an authorized agent for owner(s)), which questions title or right to possession of the property, nor is any claim or action pending against Affiant or owner(s) in court regarding possession of the Property.

This the _____ day of _____, 20_____.

David R. Powell (seal)
David R. Powell
 Type or print name

STATE OF NORTH CAROLINA
 COUNTY OF WAKE

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



Daniel H. Woods
 Notary Public
 State of North Carolina
 My Commission Expires: 11/18/2023

AGENT AUTHORIZATION FORM

Application #: 21CZ14

Submittal Date: 5/3/21

Johnny Pendragraft is the owner* of the property for which the attached application is being submitted:

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

The property address is: 3104 Holland Road, Apex, NC 27502

The agent for this project is: Peak Engineering & Design, PLLC

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

Agent Name: Jeff Roach, P.E. (Peak Engineering & Design, PLLC)

Address: 1125 Apex Peakway, Apex, NC 27502

Telephone Number: (919) 439-04100

E-Mail Address: jroach@peakengineering.com

Signature(s) of Owner(s)*

Johnny Pendragraft
JOHNNY PENDRAGRAFT Type or print name

4/28/2021
Date

Carolyn M. Pendragraft
CAROLYN M. PENDRAGRAFT Type or print name

4-28-21
Date

Attach additional sheets if there are additional owners.

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

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

AFFIDAVIT OF OWNERSHIP

Application #: 21/CZ14

Submittal Date: 5/3/21

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

1. Affiant is over eighteen (18) years of age and authorized to make this Affidavit. The Affiant is the sole owner, or is the authorized agent of all owners, of the property located at 3104 Holland Road, Apex, NC 27502 and legally described in **Exhibit "A"** attached hereto and incorporated herein (the "Property").
2. This Affidavit of Ownership is made for the purpose of filing an application for development approval with the Town of Apex.
3. If Affiant is the owner of the Property, Affiant acquired ownership by deed, dated 10/26/2000, and recorded in the Wake County Register of Deeds Office on 10/27/2000, in Book 8718 Page 1301-1303.
4. If Affiant is the authorized agent of the owner(s) of the Property, Affiant possesses documentation indicating the agency relationship granting the Affiant the authority to apply for development approval on behalf of the owner(s).
5. If Affiant is the owner of the Property, from the time Affiant was deeded the Property on 10/27/2000, Affiant has claimed sole ownership of the Property. Affiant or Affiant's predecessors in interest have been in sole and undisturbed possession and use of the property during the period of ownership. Since taking possession of the Property on 10/27/2000, no one has questioned Affiant's ownership or right to possession nor demanded any rents or profits. To Affiant's knowledge, no claim or action has been brought against Affiant (if Affiant is the owner), or against owner(s) (if Affiant is acting as an authorized agent for owner(s)), which questions title or right to possession of the property, nor is any claim or action pending against Affiant or owner(s) in court regarding possession of the Property.

This the 28 day of APRIL, 2021.

JOHNNY PENDERGRAFT (seal)
JOHNNY PENDERGRAFT
 Type or print name

STATE OF NORTH CAROLINA
COUNTY OF WAKE

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



Daniel H. Woods
 Notary Public
 State of North Carolina
 My Commission Expires: 11/18/2023

AGENT AUTHORIZATION FORM

Application #: 21CZ14

Submittal Date: 5/3/21

Nelson R. Smith is the owner* of the property for which the attached application is being submitted:

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

The property address is: 3116 Holland Road, Apex, NC 27502

The agent for this project is: Peak Engineering & Design, PLLC

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

Agent Name: Jeff Roach, P.E. (Peak Engineering & Design, PLLC)

Address: 1125 Apex Peakway, Apex, NC 27502

Telephone Number: (919) 439-04100

E-Mail Address: jroach@peakengineering.com

Signature(s) of Owner(s)*


Nelson R Smith
Type or print name

APR 30, 2021
Date

Type or print name

Date

Attach additional sheets if there are additional owners.

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

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

AFFIDAVIT OF OWNERSHIP

Application #: 21CZ14

Submittal Date: 5/3/21

The undersigned, Nelson R Smith (the "Affiant") first being duly sworn, hereby swears or affirms as follows:

1. Affiant is over eighteen (18) years of age and authorized to make this Affidavit. The Affiant is the sole owner, or is the authorized agent of all owners, of the property located at 3116 Holland Road, Apex, NC 27502 and legally described in **Exhibit "A"** attached hereto and incorporated herein (the "Property").
2. This Affidavit of Ownership is made for the purpose of filing an application for development approval with the Town of Apex.
3. If Affiant is the owner of the Property, Affiant acquired ownership by deed, dated 10/26/2000, and recorded in the Wake County Register of Deeds Office on 10/27/2000, in Book 8718 Page 1304-1306.
4. If Affiant is the authorized agent of the owner(s) of the Property, Affiant possesses documentation indicating the agency relationship granting the Affiant the authority to apply for development approval on behalf of the owner(s).
5. If Affiant is the owner of the Property, from the time Affiant was deeded the Property on 10/27/2000, Affiant has claimed sole ownership of the Property. Affiant or Affiant's predecessors in interest have been in sole and undisturbed possession and use of the property during the period of ownership. Since taking possession of the Property on 10/27/2000, no one has questioned Affiant's ownership or right to possession nor demanded any rents or profits. To Affiant's knowledge, no claim or action has been brought against Affiant (if Affiant is the owner), or against owner(s) (if Affiant is acting as an authorized agent for owner(s)), which questions title or right to possession of the property, nor is any claim or action pending against Affiant or owner(s) in court regarding possession of the Property.

This the 30 day of April, 2021.

Nelson R. Smith (seal)
Nelson R. Smith

Type or print name

STATE OF NORTH CAROLINA
COUNTY OF Cumberland

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

KONIEKA DAVIS
Notary Public
Cumberland Co., North Carolina
My Commission Expires Nov. 16, 2022

[NOTARY SEAL]

Konieka Davis
Notary Public
State of North Carolina
My Commission Expires: 11/16/22

AGENT AUTHORIZATION FORM

Application #: 21CZ14

Submittal Date: 5/3/21

Frances Bullock and Flonneka Purefoy the owner* of the property for which the attached application is being submitted:

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

The property address is: 3116 Holland Road, Apex, NC

The agent for this project is: Peak Engineering & Design, PLLC

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

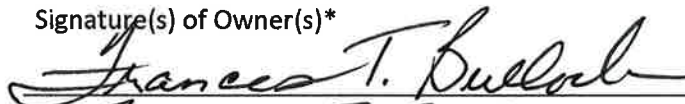
Agent Name: Jeff Roach, P.E. (Peak Engineering & Design, PLLC)


Address: 1125 Apex Peakway, Apex, NC 27502

Telephone Number: (919) 439-04100

E-Mail Address: jroach@peakengineering.com

Signature(s) of Owner(s)*


Frances T. Bullock
 Type or print name


5/2/2021
 Date


Flonneka Purefoy
 Type or print name

5/2/2021
 Date

Attach additional sheets if there are additional owners.

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

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

AFFIDAVIT OF OWNERSHIP

Application #: 21CZ14

Submittal Date: 5/3/21

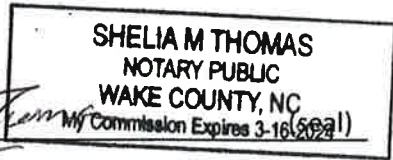
The undersigned, _____ (the "Affiant") first being duly sworn, hereby swears or affirms as follows:

1. Affiant is over eighteen (18) years of age and authorized to make this Affidavit. The Affiant is the sole owner, or is the authorized agent of all owners, of the property located at 3116 Holland Road, Apex, NC 27502 and legally described in **Exhibit "A"** attached hereto and incorporated herein (the "Property").
2. This Affidavit of Ownership is made for the purpose of filing an application for development approval with the Town of Apex.
3. If Affiant is the owner of the Property, Affiant acquired ownership by deed, dated 10/26/2000, and recorded in the Wake County Register of Deeds Office on 10/27/2000, in Book 8718 Page 1304-1306.
4. If Affiant is the authorized agent of the owner(s) of the Property, Affiant possesses documentation indicating the agency relationship granting the Affiant the authority to apply for development approval on behalf of the owner(s).
5. If Affiant is the owner of the Property, from the time Affiant was deeded the Property on 10/27/2000, Affiant has claimed sole ownership of the Property. Affiant or Affiant's predecessors in interest have been in sole and undisturbed possession and use of the property during the period of ownership. Since taking possession of the Property on 10/27/2000, no one has questioned Affiant's ownership or right to possession nor demanded any rents or profits. To Affiant's knowledge, no claim or action has been brought against Affiant (if Affiant is the owner), or against owner(s) (if Affiant is acting as an authorized agent for owner(s)), which questions title or right to possession of the property, nor is any claim or action pending against Affiant or owner(s) in court regarding possession of the Property.

This the 2nd day of May, 2021.

Shelia M. Thomas

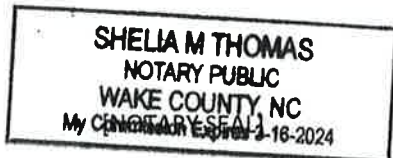
 Shelia M. Thomas



Type or print name

STATE OF NORTH CAROLINA
COUNTY OF Wake

I, the undersigned, a Notary Public in and for the County of Wake, hereby certify that Frances T. Bullwalk, Affiant, personally known to me or known to me by said Affiant's presentation of said Affiant's Frances T. Bullwalk, personally appeared before me this day and acknowledged the due and voluntary execution of the foregoing Affidavit.



Shelia M. Thomas

 Notary Public
 State of North Carolina
 My Commission Expires: 3-16-2024

AFFIDAVIT OF OWNERSHIP

Application #: 21CZ14

Submittal Date: 5/3/21

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

1. Affiant is over eighteen (18) years of age and authorized to make this Affidavit. The Affiant is the sole owner, or is the authorized agent of all owners, of the property located at 3116 Holland Road, Apex, NC 27502 and legally described in **Exhibit "A"** attached hereto and incorporated herein (the "Property").
2. This Affidavit of Ownership is made for the purpose of filing an application for development approval with the Town of Apex.
3. If Affiant is the owner of the Property, Affiant acquired ownership by deed, dated 10/26/2000, and recorded in the Wake County Register of Deeds Office on 10/27/2000, in Book 8718 Page 1304-1306.
4. If Affiant is the authorized agent of the owner(s) of the Property, Affiant possesses documentation indicating the agency relationship granting the Affiant the authority to apply for development approval on behalf of the owner(s).
5. If Affiant is the owner of the Property, from the time Affiant was deeded the Property on 10/27/2000, Affiant has claimed sole ownership of the Property. Affiant or Affiant's predecessors in interest have been in sole and undisturbed possession and use of the property during the period of ownership. Since taking possession of the Property on 10/27/2000, no one has questioned Affiant's ownership or right to possession nor demanded any rents or profits. To Affiant's knowledge, no claim or action has been brought against Affiant (if Affiant is the owner), or against owner(s) (if Affiant is acting as an authorized agent for owner(s)), which questions title or right to possession of the property, nor is any claim or action pending against Affiant or owner(s) in court regarding possession of the Property.

This the 2 day of MAY, 2021.

Shelia M. Thomas
Shelia M. Thomas

SHELIA M THOMAS
NOTARY PUBLIC
WAKE COUNTY, NC
My Commission Expires 3-16-2024

Type or print name

STATE OF NORTH CAROLINA
COUNTY OF Wake

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

Shelia M. Thomas
Notary Public
State of North Carolina
My Commission Expires: 3-16-2024

SHELIA M THOMAS
NOTARY PUBLIC
WAKE COUNTY, NC
My Commission Expires 3-16-2024

AGENT AUTHORIZATION FORM

Application #: 21CZ14

Submittal Date: 5/3/21

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

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

The property address is: _____

The agent for this project is: Peak Engineering & Design, PLLC

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


Agent Name: Jeff Roach, P.E. (Peak Engineering & Design, PLLC)


Address: 1125 Apex Peakway, Apex, NC 27502

Telephone Number: (919) 439-04100

E-Mail Address: jroach@peakengineering.com

Signature(s) of Owner(s)*


Robert W. Walker, Jr 5/5/21
 Type or print name Date


Sharie B Walker 05/05/21
 Type or print name Date

Attach additional sheets if there are additional owners.

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

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

AFFIDAVIT OF OWNERSHIP

Application #: 21CZ14 Submittal Date: 5/3/21

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

1. Affiant is over eighteen (18) years of age and authorized to make this Affidavit. The Affiant is the sole owner, or is the authorized agent of all owners, of the property located at 3116 Holland Road, Apex, NC 27502 and legally described in **Exhibit "A"** attached hereto and incorporated herein (the "Property").
2. This Affidavit of Ownership is made for the purpose of filing an application for development approval with the Town of Apex.
3. If Affiant is the owner of the Property, Affiant acquired ownership by deed, dated 10/26/2000, and recorded in the Wake County Register of Deeds Office on 10/27/2000, in Book 8718 Page 1304-1306.
4. If Affiant is the authorized agent of the owner(s) of the Property, Affiant possesses documentation indicating the agency relationship granting the Affiant the authority to apply for development approval on behalf of the owner(s).
5. If Affiant is the owner of the Property, from the time Affiant was deeded the Property on 10/27/2000, Affiant has claimed sole ownership of the Property. Affiant or Affiant's predecessors in interest have been in sole and undisturbed possession and use of the property during the period of ownership. Since taking possession of the Property on 10/27/2000, no one has questioned Affiant's ownership or right to possession nor demanded any rents or profits. To Affiant's knowledge, no claim or action has been brought against Affiant (if Affiant is the owner), or against owner(s) (if Affiant is acting as an authorized agent for owner(s)), which questions title or right to possession of the property, nor is any claim or action pending against Affiant or owner(s) in court regarding possession of the Property.

This the 5 day of May, 2021.

(Signature) (seal)
Sharie B. Walker
 Type or print name

STATE OF NORTH CAROLINA
 COUNTY OF Gerrard

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



(Signature)
 Notary Public
 State of North Carolina
 My Commission Expires: 7/18/23

AFFIDAVIT OF OWNERSHIP

Application #: 21CZ14

Submittal Date: 5/3/21

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

1. Affiant is over eighteen (18) years of age and authorized to make this Affidavit. The Affiant is the sole owner, or is the authorized agent of all owners, of the property located at 3116 Holland Road, Apex, NC 27502 and legally described in **Exhibit "A"** attached hereto and incorporated herein (the "Property").
2. This Affidavit of Ownership is made for the purpose of filing an application for development approval with the Town of Apex.
3. If Affiant is the owner of the Property, Affiant acquired ownership by deed, dated 10/26/2000, and recorded in the Wake County Register of Deeds Office on 10/27/2000, in Book 8718 Page 1304-1306.
4. If Affiant is the authorized agent of the owner(s) of the Property, Affiant possesses documentation indicating the agency relationship granting the Affiant the authority to apply for development approval on behalf of the owner(s).
5. If Affiant is the owner of the Property, from the time Affiant was deeded the Property on 10/27/2000, Affiant has claimed sole ownership of the Property. Affiant or Affiant's predecessors in interest have been in sole and undisturbed possession and use of the property during the period of ownership. Since taking possession of the Property on 10/27/2000, no one has questioned Affiant's ownership or right to possession nor demanded any rents or profits. To Affiant's knowledge, no claim or action has been brought against Affiant (if Affiant is the owner), or against owner(s) (if Affiant is acting as an authorized agent for owner(s)), which questions title or right to possession of the property, nor is any claim or action pending against Affiant or owner(s) in court regarding possession of the Property.

This the 5 day of May, 2021.

Robert W. Walker Jr. (seal)
Robert W. Walker Jr.
 Type or print name

STATE OF NORTH CAROLINA
 COUNTY OF Granville

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



Kristian A. Wilkerson
 Notary Public
 State of North Carolina
 My Commission Expires: 7/18/23

AGENT AUTHORIZATION FORM

Application #: 21CZ14 Submittal Date: 5/3/21

Crystal Purefoy is the owner* of the property for which the attached application is being submitted:

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

The property address is: 3116 Holland Road, Apex, NC 27502

The agent for this project is: Peak Engineering & Design, PLLC

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

Agent Name: Jeff Roach, P.E. (Peak Engineering & Design, PLLC)

Address: 1125 Apex Peakway, Apex, NC 27502

Telephone Number: (919) 439-0100

E-Mail Address: jroach@peakengineering.com

Signature(s) of Owner(s)*

Crystal Purefoy
Crystal Purefoy
Type or print name

5-3-2021
Date

Type or print name Date

Attach additional sheets if there are additional owners.

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

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

AFFIDAVIT OF OWNERSHIP

Application #: 21CZ14

Submittal Date: 5/3/21

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

1. Affiant is over eighteen (18) years of age and authorized to make this Affidavit. The Affiant is the sole owner, or is the authorized agent of all owners, of the property located at 3116 Holland Road, Apex, NC 27502 and legally described in **Exhibit "A"** attached hereto and incorporated herein (the "Property").
2. This Affidavit of Ownership is made for the purpose of filing an application for development approval with the Town of Apex.
3. If Affiant is the owner of the Property, Affiant acquired ownership by deed, dated 10/26/2000, and recorded in the Wake County Register of Deeds Office on 10/27/2000, in Book 8718 Page 1304-1306
4. If Affiant is the authorized agent of the owner(s) of the Property, Affiant possesses documentation indicating the agency relationship granting the Affiant the authority to apply for development approval on behalf of the owner(s).
5. If Affiant is the owner of the Property, from the time Affiant was deeded the Property on 10/27/2000, Affiant has claimed sole ownership of the Property. Affiant or Affiant's predecessors in interest have been in sole and undisturbed possession and use of the property during the period of ownership. Since taking possession of the Property on 10/27/2000, no one has questioned Affiant's ownership or right to possession nor demanded any rents or profits. To Affiant's knowledge, no claim or action has been brought against Affiant (if Affiant is the owner), or against owner(s) (if Affiant is acting as an authorized agent for owner(s)), which questions title or right to possession of the property, nor is any claim or action pending against Affiant or owner(s) in court regarding possession of the Property.

This the 23 day of July, 2021.

(seal)

Crystal Purefoy
Type or print name

STATE OF NORTH CAROLINA
COUNTY OF Wake

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

JENNIFER M TORRES
Notary Public
Wake County, NC
[NOTARY SEAL]

[Signature]
Notary Public
State of North Carolina
My Commission Expires: 2-18-2024

AGENT AUTHORIZATION FORM

PIN
0731-00-1087

Application #: 21CZ14

Submittal Date: 5/3/21

Bonnie H. Wood is the owner* of the property for which the attached application is being submitted:

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

The property address is: 1005 Red Cardinal Lane

The agent for this project is: Peak Engineering & Design, PLLC

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

Agent Name: Jeff Roach, P.E. (Peak Engineering & Design, PLLC)

Address: 1125 Apex Peakway, Apex, NC 27502

Telephone Number: (919) 439-04100

E-Mail Address: jroach@peakengineering.com

Signature(s) of Owner(s)*

Bonnie H. Wood

Bonnie H. Wood

Type or print name

5-4-21

Date

Type or print name

Date

Attach additional sheets if there are additional owners.

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

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

Application #: 21CZ14

Submittal Date: 5/3/21

The undersigned, Bonnie H. Wood (the "Affiant") first being duly sworn, hereby swears or affirms as follows:

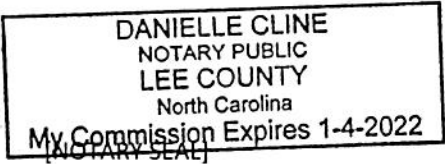
1. Affiant is over eighteen (18) years of age and authorized to make this Affidavit. The Affiant is the sole owner, or is the authorized agent of all owners, of the property located at 1005 Red Cardinal Lane, Apex, NC 27502 and legally described in **Exhibit "A"** attached hereto and incorporated herein (the "Property").
2. This Affidavit of Ownership is made for the purpose of filing an application for development approval with the Town of Apex.
3. If Affiant is the owner of the Property, Affiant acquired ownership by deed, dated 2/13/2016, and recorded in the Wake County Register of Deeds Office on 2/13/2016, in Book 16-E Page 835.
4. If Affiant is the authorized agent of the owner(s) of the Property, Affiant possesses documentation indicating the agency relationship granting the Affiant the authority to apply for development approval on behalf of the owner(s).
5. If Affiant is the owner of the Property, from the time Affiant was deeded the Property on 2/13/2016, Affiant has claimed sole ownership of the Property. Affiant or Affiant's predecessors in interest have been in sole and undisturbed possession and use of the property during the period of ownership. Since taking possession of the Property on 2/13/2016, no one has questioned Affiant's ownership or right to possession nor demanded any rents or profits. To Affiant's knowledge, no claim or action has been brought against Affiant (if Affiant is the owner), or against owner(s) (if Affiant is acting as an authorized agent for owner(s)), which questions title or right to possession of the property, nor is any claim or action pending against Affiant or owner(s) in court regarding possession of the Property.

This the 4th day of May, 2021.

Bonnie H. Wood (seal)
Bonnie H. Wood
 Type or print name

STATE OF NORTH CAROLINA
COUNTY OF Lee

I, the undersigned, a Notary Public in and for the County of Lee, hereby certify that Bonnie H. Wood Affiant, personally known to me or known to me by said Affiant's presentation of said Affiant's drivers license, personally appeared before me this day and acknowledged the due and voluntary execution of the foregoing Affidavit.



Danielle Cline
 Notary Public
 State of North Carolina
 My Commission Expires: 1-4-2022

AGENT AUTHORIZATION FORM

Application #: 21CZ14

Submittal Date: 5/3/21

RGNC-10, LLC is the owner* of the property for which the attached application is being submitted:

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

The property address is: 104 Red Cardinal Lane (PIN 0731-00-4075)

The agent for this project is: Peak Engineering & Design, PLLC

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


Agent Name: Jeff Roach, P.E. (Peak Engineering & Design, PLLC)

Address: 1125 Apex Peakway, Apex, NC 27502

Telephone Number: (919) 439-04100

E-Mail Address: jroach@peakengineering.com

Signature(s) of Owner(s)*


Rich Lewarchi Type or print name

5/5/21 Date

Type or print name

Date

Attach additional sheets if there are additional owners.

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

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

AFFIDAVIT OF OWNERSHIP

Application #: 21CZ14

Submittal Date: 5/3/21

The undersigned, RGNC-10, LLC (the "Affiant") first being duly sworn, hereby swears or affirms as follows:

- 1. Affiant is over eighteen (18) years of age and authorized to make this Affidavit. The Affiant is the sole owner, or is the authorized agent of all owners, of the property located at 1004 Red Cardinal Lane, Apex, NC 27502 and legally described in **Exhibit "A"** attached hereto and incorporated herein (the "Property").
- 2. This Affidavit of Ownership is made for the purpose of filing an application for development approval with the Town of Apex.
- 3. If Affiant is the owner of the Property, Affiant acquired ownership by deed, dated 10/25/2021, and recorded in the Wake County Register of Deeds Office on 10/25/2021, in Book 18763 Page 1063 - 1066.
- 4. If Affiant is the authorized agent of the owner(s) of the Property, Affiant possesses documentation indicating the agency relationship granting the Affiant the authority to apply for development approval on behalf of the owner(s).
- 5. If Affiant is the owner of the Property, from the time Affiant was deeded the Property on 10/25/2021, Affiant has claimed sole ownership of the Property. Affiant or Affiant's predecessors in interest have been in sole and undisturbed possession and use of the property during the period of ownership. Since taking possession of the Property on 10/25/2021, no one has questioned Affiant's ownership or right to possession nor demanded any rents or profits. To Affiant's knowledge, no claim or action has been brought against Affiant (if Affiant is the owner), or against owner(s) (if Affiant is acting as an authorized agent for owner(s)), which questions title or right to possession of the property, nor is any claim or action pending against Affiant or owner(s) in court regarding possession of the Property.

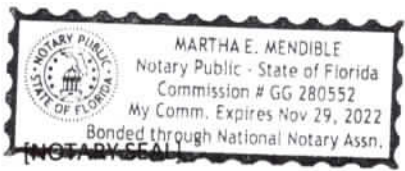
This the 5th day of Jan, 2022.

[Signature] (seal)
Rich Leonard!

Type or print name

STATE OF NORTH CAROLINA
COUNTY OF Broward

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



[Signature]
Notary Public Florida
State of North Carolina
My Commission Expires: 11/29/2022

AGENT AUTHORIZATION FORM

Application #: 21CZ14 Submittal Date: 5/3/21

Billy E. STROUP is the owner* of the property for which the attached application is being submitted:

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

The property address is: 3104 Holland Road, Apex, NC 27502

The agent for this project is: Peak Engineering & Design, PLLC

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

Agent Name: Jeff Roach, P.E. (Peak Engineering & Design, PLLC)

Address: 1125 Apex Peakway, Apex, NC 27502

Telephone Number: (919) 439-04100

E-Mail Address: jroach@peakengineering.com


Signature(s) of Owner(s)*

Billy E. STROUP
Type or print name

4-28-2021
Date

Type or print name

Date

Attach additional sheets if there are additional owners.

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

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

AFFIDAVIT OF OWNERSHIP


Application #: 21CZ14

Submittal Date: 5/3/21

The undersigned, Billy E. Stroup (the "Affiant") first being duly sworn, hereby swears or affirms as follows:


1. Affiant is over eighteen (18) years of age and authorized to make this Affidavit. The Affiant is the sole owner, or is the authorized agent of all owners, of the property located at 3104 Holland Road, Apex, NC 27502 and legally described in **Exhibit "A"** attached hereto and incorporated herein (the "Property").
2. This Affidavit of Ownership is made for the purpose of filing an application for development approval with the Town of Apex.
3. If Affiant is the owner of the Property, Affiant acquired ownership by deed, dated 10/26/2000, and recorded in the Wake County Register of Deeds Office on 10/27/2000, in Book 8718 Page 1301-1303.
4. If Affiant is the authorized agent of the owner(s) of the Property, Affiant possesses documentation indicating the agency relationship granting the Affiant the authority to apply for development approval on behalf of the owner(s).
5. If Affiant is the owner of the Property, from the time Affiant was deeded the Property on 10/27/2000, Affiant has claimed sole ownership of the Property. Affiant or Affiant's predecessors in interest have been in sole and undisturbed possession and use of the property during the period of ownership. Since taking possession of the Property on 10/27/2000, no one has questioned Affiant's ownership or right to possession nor demanded any rents or profits. To Affiant's knowledge, no claim or action has been brought against Affiant (if Affiant is the owner), or against owner(s) (if Affiant is acting as an authorized agent for owner(s)), which questions title or right to possession of the property, nor is any claim or action pending against Affiant or owner(s) in court regarding possession of the Property.

This the 28 day of APRIL, 2021


 _____ (seal)
4-28-2021
 Type or print name

STATE OF NORTH CAROLINA
COUNTY OF WAKE

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



 Notary Public
 State of North Carolina
 My Commission Expires: 11/18/2023

[NOTARY SEAL]

AGENT AUTHORIZATION FORM

Application #: 21CZ14

Submittal Date: 5/3/21

See owners listed below is the owner* of the property for which the attached application is being submitted:

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

The property address is: 7528 Humie Olive Road, Apex, NC 27502

The agent for this project is: Peak Engineering & Design, PLLC

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

Agent Name: Jeff Roach, P.E. (Peak Engineering & Design, PLLC)

Address: 1125 Apex Peakway, Apex, NC 27502

Telephone Number: (919) 439-04100

E-Mail Address: jroach@peakengineering.com

Signature(s) of Owner(s)*

P. Diane Williams P. Diane Williams June 9, 2021
Shelba W. Clem Shelba Clem _____
 Type or print name Date

Jeff Krummel Lisa W. Krummel June 9, 2021
Jeff Krummel Lisa W. Krummel _____
 Type or print name Date

Attach additional sheets if there are additional owners.

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

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

AFFIDAVIT OF OWNERSHIP

Application #: 21CZ14

Submittal Date: 5/3/21

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

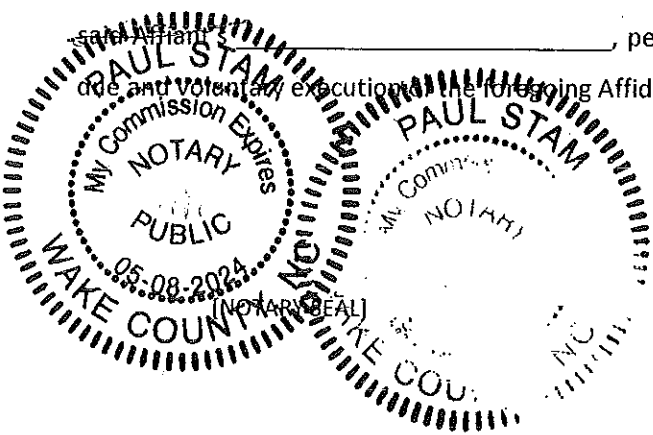
- Affiant is over eighteen (18) years of age and authorized to make this Affidavit. The Affiant is the sole owner, or is the authorized agent of all owners, of the property located at 7528 Humie Olive Road, Apex, NC 27502 and legally described in Exhibit "A" attached hereto and incorporated herein (the "Property").
- This Affidavit of Ownership is made for the purpose of filing an application for development approval with the Town of Apex.
- If Affiant is the owner of the Property, Affiant acquired ownership by deed, dated 7/1/2015 and recorded in the Wake County Register of Deeds Office on 7/1/2015, in Book 16078 Page 788-790.
- If Affiant is the authorized agent of the owner(s) of the Property, Affiant possesses documentation indicating the agency relationship granting the Affiant the authority to apply for development approval on behalf of the owner(s).
- If Affiant is the owner of the Property, from the time Affiant was deeded the Property on 7/1/2015, Affiant has claimed sole ownership of the Property. Affiant or Affiant's predecessors in interest have been in sole and undisturbed possession and use of the property during the period of ownership. Since taking possession of the Property on 7/1/2015, no one has questioned Affiant's ownership or right to possession nor demanded any rents or profits. To Affiant's knowledge, no claim or action has been brought against Affiant (if Affiant is the owner), or against owner(s) (if Affiant is acting as an authorized agent for owner(s)), which questions title or right to possession of the property, nor is any claim or action pending against Affiant or owner(s) in court regarding possession of the Property.

This the 9 day of June, 2021 *P. Diane Williams*
Shelba W. Clem

Shelba W. Clem (seal)
P. Diane Williams
Type or print name

STATE OF NORTH CAROLINA
COUNTY OF Wake

I, the undersigned, a Notary Public in and for the County of Wake, hereby certify that P. Diane Williams, Shelba W. Clem, Lisa Krummell & Jeff Krummell, Affiant, personally known to me or known to me by said Affiant's presentation of _____, personally appeared before me this day and acknowledged the



Paul Stam
Notary Public
State of North Carolina
My Commission Expires: May 8, 2024

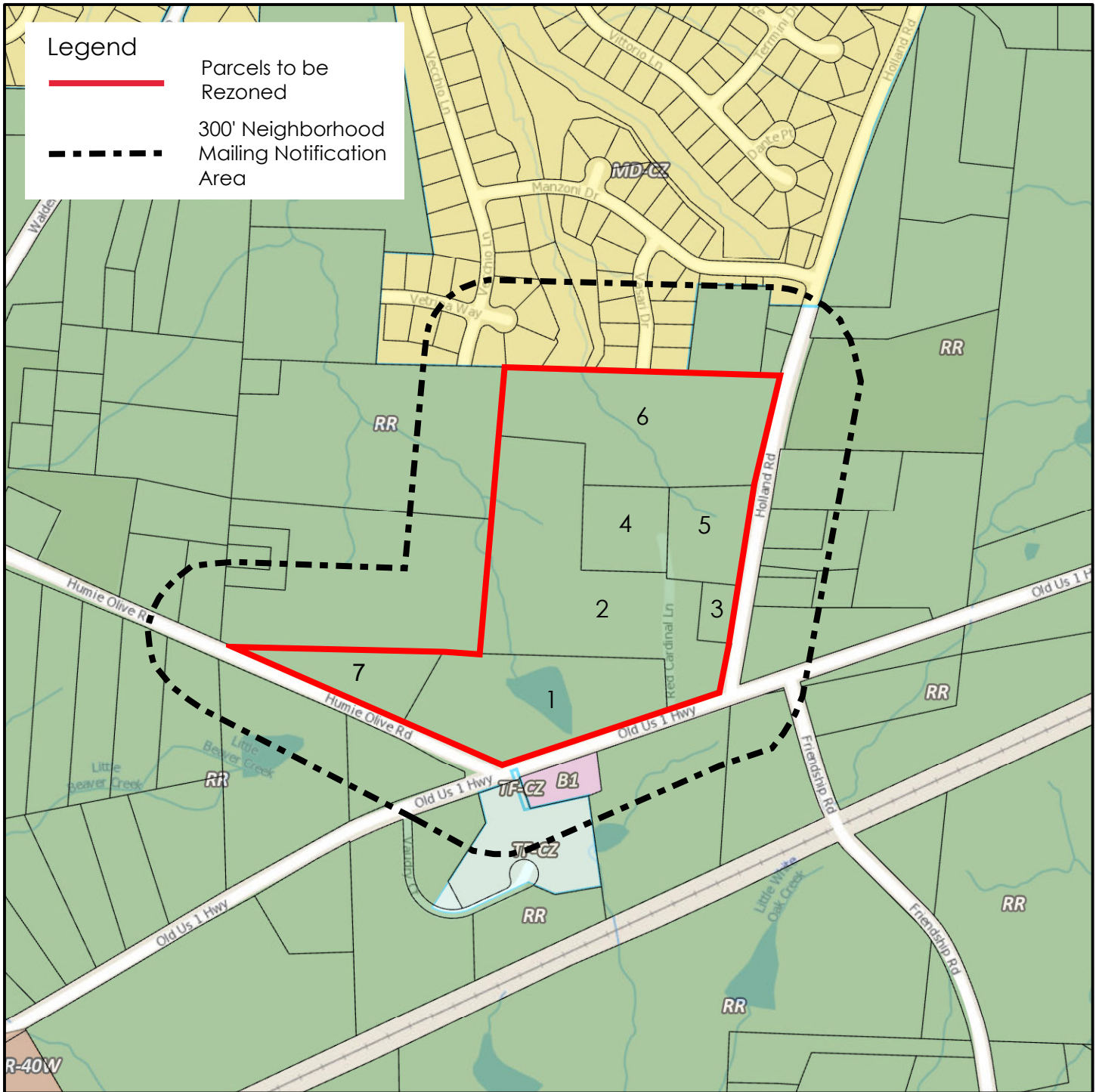
AFFIDAVIT OF OWNERSHIP: EXHIBIT A – LEGAL DESCRIPTION

Application #: 21CZ14

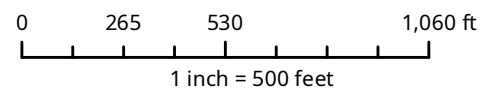
Submittal Date: 5/3/21

Insert legal description below.

1. N/F David Ray Powell - PIN 0720-99-8487 - DB 5746 Pg 146
2. N/F Johnny & Carolyn M Pendergraft - PIN 0730-09-1779 - DB 8718 Pg 1292
3. N/F Pamela Purefoy, Frances T. Bullock, Ernestine Smith - PIN 0730-09-5707 - DB 8718 Pg 1304
4. N/F Joann Pendergraft Hearn Heirs - PIN 0731-00-1087 - DB 16 Pg 835
5. N/F RGNC-10, LLC - PIN 0731-00-4075 - DB 18763 Pg 1063
6. N/F Annie P & Billy E Stroup - PIN 0731-00-3359 - DB 8718 Pg 1301
7. N/F Shelba W. Clem, P. Diane Williams, Lisa W. Krummel - PIN 0720-99-2587 - DB 16078 Pg 0788



Holland Road Assembly



Disclaimer

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

Wake County Residential Development Notification

Please complete each section of this form and submit with your application.

Town of Apex staff will enter this information into the online WCPSS form.

Please send any questions about this form to:
studentassignment-gis-group@wcpss.net

Developer Company Information	
Company Name	LG Investments, Inc.
Company Phone Number	(754) 875-2975
Developer Representative Name	Mr. Geno Ray
Developer Representative Phone Number	(754) 875-2975
Developer Representative Email	geno@lginvest.net

New Residential Subdivision Information	
Date of Application for Subdivision	November 2021
City, Town or Wake County Jurisdiction	Apex
Name of Subdivision	TBD (Holland Road Mixed Use Assembly)
Address of Subdivision (if unknown enter nearest cross streets)	Holland Road @ Old US 1 @ Humie Olive Road
REID(s)	0197639, 0160074, 0070103, 0160076, 0334537, 0087601, 0193211
PIN(s)	See zoning application and REIDs above for properties

Projected Dates Information	
Subdivision Completion Date	August 2026
Subdivision Projected First Occupancy Date	January 2024

Lot by Lot Development Information																	
Unit Type	Total # of Units	Senior Living	Studio	1 Bedroom	2 Bedroom	3 Bedroom	4 Bedroom	Square Foot Range		Price Range		Anticipated Completion Units & Dates					
								Min	Max	Low	High	Year	# Units	Year	# Units	Year	# Units
Single Family	10							2500				2023	5	2024	5		
Townhomes	100							2100				2023	15	2024	50	2025	35
Condos																	
Apartments																	
Other																	



Instruction Packet and Affidavit for Neighborhood Meetings

Town of Apex
Planning Department
PO Box 250
Apex, NC 27502

T: 919-249-3426
F: 919-249-3338

This packet consists of instructions and templates for conducting a required Neighborhood Meeting. Planning Department staff are available to advise you in the preparation of these materials. Call the Planning Department at (919) 249-3426 for more information.

WHAT IS THE PURPOSE OF A NEIGHBORHOOD MEETING?

A neighborhood meeting is a required form of community outreach to receive initial feedback regarding certain project types prior to submittal to the Planning Department per the standards found in UDO Sec. 2.2.7. The intention of the meeting is to initiate neighbor communication and identify issues and concerns early on and provide the applicant an opportunity to address neighbor concerns about the potential impacts of the project prior to submitting an application. A neighborhood meeting is valid for six (6) months prior to the submission of an application; a delay in submission requires a new neighborhood meeting.

WHEN IS A NEIGHBORHOOD MEETING REQUIRED?

- Rezoning (including Planned Unit Developments);
- Major Site Plans;
- Residential Master Subdivision Plans (excluding exempt subdivisions); or
- Special Use Permits

INSTRUCTIONS

Prior to submitting an application for a Rezoning, Major Site Plan, residential Master Subdivision Plan (excluding exempt subdivisions), or Special Use Permit, the applicant must conduct at least one (1) Neighborhood Meeting. The applicant shall submit all forms included in this packet with the initial application submittal.

The Neighborhood Meeting must be held in accordance with the following rules:

These groups and individuals must be invited to the meeting:

- The applicant is required to notify the Planning Department, all property owners within 300 feet of the subject property, and any neighborhood association that represents citizens in the area via first class mail a minimum of 10 days in advance of the neighborhood meeting, not including the day of mailing. The applicant shall use their own return address on the envelopes as the meeting is a private meeting between the applicant and the neighbors.
- The applicant shall include with the meeting notice a vicinity map in addition to either the existing zoning map of the area or preliminary plans of the proposed development (see Handout requirements below).

The meeting must be held within specific timeframes and meet certain requirements:

- The meeting must be held for a minimum of two (2) hours, Monday through Thursday, during the 5:00 p.m. - 9:00 p.m. time period. The meeting cannot be held on a Town recognized holiday (which coincide with the State of North Carolina recognized holidays).
- The meeting shall be held at a place that is generally accessible to neighbors that reside in close proximity to the land subject to the application.
- A sign-in sheet must be used in order to verify attendance. Ensure each attendee signs in. Please note if any person(s) refuses to sign in. Note if no one attended.
- Handout requirements:
 - For rezonings (excluding rezonings to PUD-CZ, TND-CZ and MEC-CZ), a vicinity map and existing zoning map of the area must be provided to help facilitate discussion.
 - For rezonings to PUD-CZ, TND-CZ and MEC-CZ; Major Site Plans; residential Master Subdivision Plans; and Special Use Permits, preliminary plans of the proposed development must be available at the meeting to help facilitate discussion. Neighbors may request emailed/mailed copies of the maps or plans from the applicant by checking the “send plans” box on the sign-in sheet; applicant shall provide reduced copies upon request.
 - Printed copies must equal the number of notices required to be sent.
 - Contact information for the applicant’s representative and Town Staff must be provided on the attached “Project Contact Information” form.
 - “Common Construction Issues & Who to Call” sheet (attached) must be included as part of the handout.
 - A copy of the handout must be included as part of the Neighborhood Meeting report.
- The agenda of the meeting shall include:
 - Explanation of all processes the meeting is being held for (rezoning, subdivision, etc.).
 - Explanation of future meetings (additional neighborhood meetings, Planning Board, Town Council, etc.).
 - Explanation of development proposal – uses and conditions for rezonings, layout for subdivision and site plans, and builder/end user if known/public knowledge.
- Questions or concerns by attendees, and responses by the applicant, if any, must be noted. Provide blank comment sheets or notecards for neighbors to submit written comments. The applicant shall also include any questions and concerns received via written correspondence (such as email) or phone call along with responses provided by the applicant.
- The applicant shall be responsible for notifying any neighbors who check the “Send Plans & Updates” box on the sign-in sheet of any additional neighborhood meetings and the actual submittal date to the Town with a link to the Town of Apex’s Interactive Development Map.

For accountability purposes, please submit the following with your application:

- A copy of the letter mailed to neighbors and neighborhood organizations (use attached invitation template);
- A list of those persons and neighborhood organizations invited to the meeting;
- A copy of the sign-in sheet (use attached sign-in sheet template);
- A summary of the meeting and a list of any changes made to the project as a result of the neighborhood comments (use attached meeting summary template);
- The affidavit, signed, dated, and notarized (use attached affidavit template); and
- One reduced copy of the maps and/or plans presented to the neighbors at the Neighborhood Meeting.

NOTICE OF NEIGHBORHOOD MEETING

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

April 14, 2021

Date

Dear Neighbor:

You are invited to a neighborhood meeting to review and discuss the development proposal at
 2236 Old US 1 Hwy, 1001, 1004 & 1005 Cardinal Lane, 0720-99-8487, 0731-00-3359, 0730-09-1779,
 3104 & 3116 Holland Road 0731-00-1087, 0731-00-4075, 0730-09-5707

Address(es)

PIN(s)

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

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

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

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

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

The purpose of this meeting is to discuss the upcoming Rezoning, Land Use Amendment, Site Plan and Residential Master Subdivision Plan, for the properties listed and shown on the attached map.

Meeting to be held virtually, Zoom link provided below.

Estimated submittal date: May 3, 2021

MEETING INFORMATION:

Property Owner(s) name(s): Please see attached map.

Applicant(s): LG Investments, INC. att: Jeff Roah @ Peak Engineering & Design

Contact information (email/phone): jroach@peakengineering.com / (919) 439-0100

Meeting Address: <https://us02web.zoom.us/j/82370025263?pwd=SCtqcUQvbnl1amZFbVhmNW5iS2lVdz09>

Date of meeting**: April 27, 2021

Time of meeting**: 5:00

MEETING AGENDA TIMES:

Welcome: 5:00 Project Presentation: 5:05 Question & Answer: 5:30 -

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

PROJECT CONTACT INFORMATION

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

Development Contacts:

Project Name: Holland Road Assembly Zoning: RR
 Location: Humie Olive Road, Old US 1 Hwy, Holland Road
 Property PIN(s): Please see attached sheet Acreage/Square Feet: 26.68

Property Owner: Please see attached map
 Address: _____
 City: _____ State: _____ Zip: _____
 Phone: _____ Email: _____

Developer: LG Investments, INC. att: Geno Ray
 Address: 5944 Coral Ridge Drive Suite 312
 City: Coral Springs State: FL Zip: 33076
 Phone: (754) 875-2975 Fax: _____ Email: geno@lginvest.net

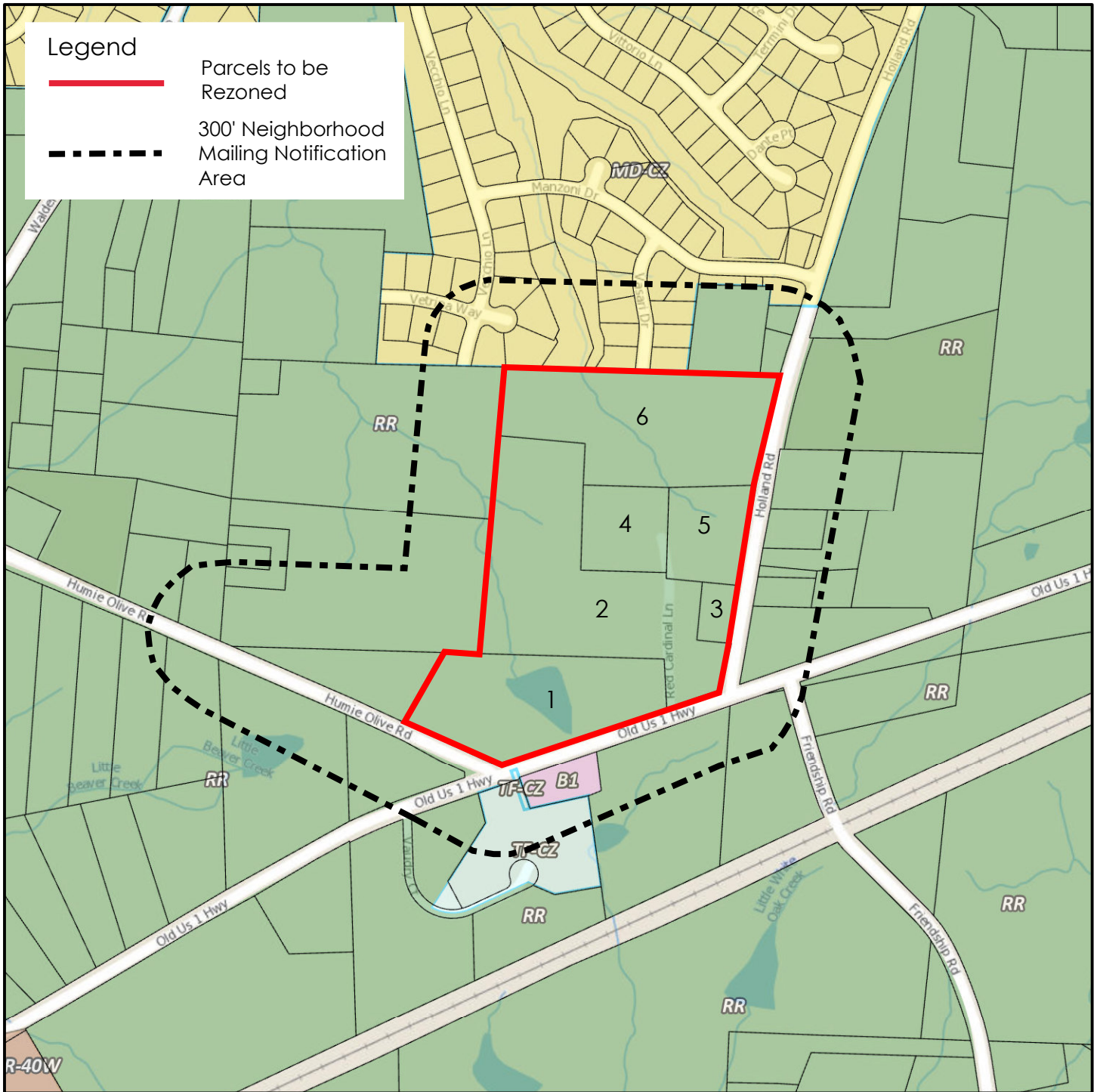
Engineer: Peak Engineering & Design, Jeff Roach
 Address: 1125 Apex Peakway
 City: Apex State: NC Zip: 27502
 Phone: (919) 270-6940 Fax: _____ Email: jroach@peakengineering.com

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

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

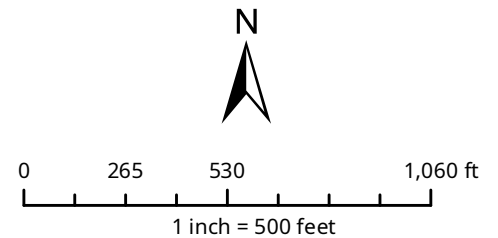
Town of Apex Department Contacts

Planning Department Main Number (Provide development name or location to be routed to correct planner)	(919) 249-3426
Parks, Recreation & Cultural Resources Department Angela Reincke, Parks Planner	(919) 249-7468
Public Works - Transportation Russell Dalton, Senior Transportation Engineer	(919) 249-3358
Water Resources Department Mike Deaton, Stormwater & Utility Engineering Manager Stan Fortier, Senior Engineer (Sedimentation & Erosion Control)	(919) 249-3413 (919) 249-1166
Electric Utilities Division Rodney Smith, Electric Technical Services Manager	(919) 249-3342



Holland Road Assembly

1. DAVID POWELL, 2236 OLD US 1 HWY LAPIS LN, APEX, NC 27502, 0720-99-8487
2. JOHNNY & CAROLYN PENDERGRAFT, 1005 RED CARDINAL LANE APEX, NC 27502, 0730-09-1779
3. PAMELA ETAL PUREFOY & FRANCES T BULLOCK, 3116 HOLLAND RD, APEX, NC 27502, 0730-09-5707
4. JOANN PENDERGRAFT HEARN HEIRS, 1005 RED CARDINAL LANE, APEX NC 27502, 0731-00-1087
5. ALBERTO DIAZ, OLIVER AND OLIVER, PLLC, 1004 RED CARDINAL LANE, APEX, NC 27502, 0731-00-4075
6. ANNIE P & BILLY E STROUP, 3104 HOLLAND ROAD, APEX NC 27502, 0731-00-3359



Disclaimer

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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: Zoom meeting hosted by Morningstar Law Group and Peak Engineering & Design

Date of meeting: April 27, 2021 Time of meeting: 5:00 - 7:00

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

Applicant(s): LG Investments, Inc.

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.					
2.	A list of meeting attendees is included within the PUD application				
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					

Use additional sheets, if necessary.

NEIGHBORHOOD MEETING ELECTRONIC SIGN-IN LIST

John Bang	
Ellen Griffin	2401 Vetrina Way
Dennis McGurk	2216 Vasari Drive
Melissa McGurk	2216 Vasari Drive
Jonathan Peck	7612 Humie Olive Road
Michael Wengenroth	Roman Catholic Diocese
Elizabeth Clark	0 Humie Olive Road
david powell	2236 Old US 1 Hwy
greg hoff	
Julia Kopacz	
Lisa Schabenberger	2153 Vecchio Lane
mark Hopkins	3017 Holland Road
Nelson Clark	
Dwight Clark	
Sean McRae	2215 Vasari Drive
audra mcrae	
Donnie Clark	7536 Humie Olive Road
Kimberly Morgan (Derek)	2411 Vetrina Way
debbie clark	
Marc Chadwick	2220 Vasari Drive
Ken O'Berry	
Kenton Kaplan	2208 Vasari Drive
Lily Ryzebol	2141 Vecchio Lane
Brady Townsend	
Jodi Clarke	2219 Vasari Drive
Jason Barron	
Jeff Roach	
Geno Ray	
Richard Leonardi	
Jonathan Edwards	
Billy Mills	
Matt Leonardi	

SUMMARY OF DISCUSSION FROM THE NEIGHBORHOOD MEETING

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

Property Owner(s) name(s): See PUD application for list of property owners

Applicant(s): LG Investments, Inc.

Contact information (email/phone): Geno Ray; geno@lginvest.net; (724) 875-2975

Meeting Address: Zoom meeting

Date of meeting: April 27, 2021 Time of meeting: 5:00 - 7:00 pm

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

Question/Concern #1:

A list of questions or concerns is included within the PUD application.

Applicant's Response:

Question/Concern #2:

Applicant's Response:

Question/Concern #3:

Applicant's Response:

Question/Concern #4:

Applicant's Response:

Introduction and Housekeeping:

A ZOOM meeting was held on Tuesday, April 27, 2020 for the Holland Road Assembly. The meeting started around 5:00 pm. Jason Barron with Morningstar Law Group hosted the meeting along with Jeff Roach with Peak Engineering & Design. An introduction to the property assembly and the proposed zoning request was made with exhibits provided (exhibits are included in the zoning submittal package). After introduction of the project, Mr. Barron answered questions which were emailed to the design team or provided in the ZOOM meeting “chat box”. Upon completion of the written question, the meeting was open for anyone to ask questions for the residents to hear. The meeting ended just after 7:00 pm when all questions were answered and the attendees all left the meeting. Below is a list of the questions with answers which were provided.

Email questions were received from Melissa McGurk prior to the meeting

Has the use for the land at the end of Vasari Drive been determined already?

- A row of SF detached homes backing up to the end of Vasari Drive with townhomes further sound of the single family detached lots.

How much buffer zone should we expect, if any, between the homes at the end of Vasari Drive and new construction? What mechanism exists for us to contribute our preferences, if any.

- 10’ buffer is being provided between like uses along the Vasari Drive extension since SF homes are proposed.

How will the developers deal with the creek that runs through the woods beyond Vasari Drive, and how far is the creek from the end of the current road?

- The project will not touch the channel/creek within the Bella Casa subdivision with the exception of connecting to the existing sanitary sewer outfall. The site is being evaluated for the presence of creeks, streams and wetlands for minimization of impacts and avoidance where possible..

We request that the road not go all the way through to US Hwy 1 to keep traffic patterns light for a safe area for the MANY children living on our street and in the neighborhood. Has the road structure been determined yet?

- The design is being evaluated to provide access throughout the property but the concept is not to provide a straightline street connection to Old US 1 – there will be twists and turns. The final layout will be put together after zoning is heard through the Town Council process.

What is the timeline for development of the area to start?

- Design will take 12-15 months from now and permits/approvals could be obtained by the Fall of 2022. Start construction in the Fall of 2022 with home construction beginning in the Springs of 2023. Residential build-out could take 2 years with the non-residential section along Old US 1 starting as soon as the owner has commitments from tenants or outparcel users.

For the different parcels of land on the map, how will they be grouped together for use and by whom?

- The properties have all been assembled for the rezoning process. As the Site Plans/Master Subdivision Plans are being reviewed, the final uses – residential vs non-residential – will be identified in the Site Plan documents.

Question from the Zoom Meeting Chat Box:

From Jonathan Peck to Everyone: 05:08 PM

Will the sewer line for the development go along Holland Road or elsewhere?

- The current plan is to connect sewer to the existing main located west of Varari Drive and serve the area west of Holland Road, east of the NDJ Ventures property, and north of Old US 1.

From Dennis McGurk to Everyone: 05:11 PM

If current "dead-end" streets become through streets, is there flexibility for whether those streets go all the way to Salem Rd (old US1) versus going onto less major roads (e.g., Holland Road)?

- The internal network of streets will route drivers through the property to multiple access points to public streets including Holland Road, Old US 1 and Humie Olive Road. The PUD sheets will show connection points around the property but do not go into detail for exactly how the streets will be routed within the site (this will continue through sketch plan production).

From Dwight Clark to Everyone: 05:18 PM

“What are the required number of entry points for the proposed development?”

- There is a minimum per the UDO but the project exceeds the minimums and provides access points in various locations to improve traffic and pedestrian mobility within the area. Final access points are reviewed with staff during zoning and site plans.

From Lisa Schabenberger to Everyone: 05:24 PM

Can you please repeat the number or percent of attached homes to total of 115?

- Total number of lots noted as 115 with approximately 10 single family detached homes along the Bella Casa neighborhood. Final lot count may vary slightly.

From Lily Ryzebol to Everyone: 05:26 PM

Have you considered the sites north of site 6 for the development?

- This is the Evans properties (PIN 0731-00-5747) and yes, the realtor reached out to the property owners who are not currently interested in selling the property. We will continue discussions but do not anticipate bringing the property into the zoning request at this time.

From Jonathan Peck to Everyone: 05:27 PM

There was talk in the past about Holland Rd being turned a bit to meet up with Friendship Rd across from it. Will this influence this?

- The long-range plans are for Holland Road and Friendship Road to align. This is not something that this project will be involved with as it would likely require condemnation and major roadway work. The Holland Road Assembly design does not hinder the future realignment or off-site improvements.

From Lily Ryzebol to Everyone: 05:31 PM

On the draft detailed plan, what does RCA stand for? How about SCM?

- RCA is Resource Conservation Area. SCM is Stormwater Control Measure.

From mark hopkins to Everyone: 05:31 PM

what is the impact on total traffic added to Holland road from the cumulative increase in this development on top of bella casa, Holland farm, etc? Do we anticipate stop lights, etc to aid getting out onto US1?

- The proposed improvements from the TIA were discussed with the neighbors. This included turn lane improvements along Humie Olive Road, Old US 1 frontage improvements, Holland Road access improvements and extended/added turn lanes. A traffic signal is not proposed at Holland/Friendship and Old US 1.

From Julia Kopacz to Me: (Privately) 05:31 PM

Would there be fencing along the NDJ property?

- The location of a fence along the NDJ Ventures property is being discussed separately with the owners of the property. Final location will be committed to either as a zoning condition or as a contractual obligation with the property owners as the design progresses.

From Dwight Clark to Everyone: 05:33 PM

“Will a traffic impact study be completed as part of this rezoning?”

- A TIA has been completed and will be submitted as part of the zoning application. Conditions will be added to the zoning package once reviewed by Apex staff and NCDOT.

From Jodi Clarke to Everyone: 05:34 PM

What is the lot size of the single family homes?

- Current lots are shown around 6,000 SF but that could change as we move further into the project design/Master Subdivision Plan.

From Lily Ryzebol to Everyone: 05:36 PM

Do you know (yet) whether you will need to work on the sewer line that is off of that north west corner in the detailed plan?

- Not yet. As part of the zoning, we investigate the existing utilities but have not expanded to include a full detailed study of the downstream system. We will be looking at the entire sewer outfall – likely to the Nature Park – to confirm there is capacity within the system.

From debbie clark to Everyone: 05:39 PM

I am concerned about trees being cut, noise pollution in addition from the noise from the school. Traffic increased, to be honest this is turning this land into a concrete jungle and I am totally against this. Apex does not need to be turned into a big city. it makes me ill.

- The rezoning is looking at the land use options within the property assembly associated with the Town’s 2045 Land Use Plan and UDO. All designs will comply with Town standards and the design team will continue to coordinate with the surrounding property owners, staff and other vested partners to minimize impacts to the items noted in the comments.

From Jodi Clarke to Everyone: 05:39 PM

Are there any plans underway to develop the vicious fishes property that you are aware of?

- Nothing has been filed that we are aware of with the Vicious Fishes property. But that could change at any point and we would not be aware of it.

From Dwight Clark to Everyone: 05:40 PM

“What are the price point of the SFD product and what type of superior architectural adders will be attached to the zoning to ensure property values are raised by this rezoning?”

- Price point is unknown as that is market-driven. There will be building elevations included in the zoning submittal package for the single family, townhomes and retail/commercial buildings which will dictate construction options within the site – thus setting the price of the homes and office/retail space. There is also a list of architectural conditions within the zoning application.

From Donnie Clark to Everyone: 05:42 PM

Has an environmental impact study ben done, along with a traffic safety impact study along Humie olive road, keeping the school in mind.

- An environmental study has been completed on the property and environmental issues onsite will be further studied as the project moves through the zoning and eventual Site Plan/Master

Subdivision Plan review. A traffic impact analysis has also been completed (draft is being reviewed by the buyers) and will be submitted as part of the zoning application.

From Kimberly Morgan to Everyone: 05:43 PM
We completely agree with debbie Clark's comment

- No response.

From Jonathan Peck to Me: (Privately) 05:46 PM
Would LG Investments be open to allowing a sewer tie-in or extension to cross under Holland Rd and serve a property across Holland Rd (it is the property owned by Western Wake Bible Chapel)?

- That is something that we can evaluate through zoning and during the Master Subdivision Plan designs. If this is reasonable, we believe something can be worked out with the adjacent property owners.

From Julia Kopacz to Everyone: 05:49 PM
Regarding the access point and single family/ Retail Commercial & Retail property backing up to NDJ property. Would there be privacy fencing separating properties.
great, thanks

- That is being discussed with the NDJ Ventures property owners through the zoning process.

From Dwight Clark to Everyone: 05:50 PM
Do density and/or commercial components trigger a certain number of access & exit points? To ensure adequate entry points for emergency vehicles or residents to exit the community in case of an emergency?"

- There are no thresholds within the UODO for commercial but we have 5 access points shown to surrounding public streets to assure there is adequate public safety access to the site. Great point that the site along a main corridor has sufficient emergency access. This will also be coordinated with staff (Police, Fire, Transportation and Planning) during the Site Plan design stage.

From Lisa Schabenberger to Everyone: 05:54 PM
Are there plans to distinguish the new development from the Bella Casa subdivision by creating signs for example? This could impact our property value.

- A sign easement will be provided at the entrance to the development. The builder will determine if a sign is installed, a project "pillar/post" or something else is added to differential the projects.

From Jodi Clarke to Everyone: 05:55 PM
I live in the last home on Vasari Drive, I want to see the houses adjacent to my home rather than them backing up to my house.

- That is a great comment from Ms. Clarke – one that the design team will investigate the option of "turning" the homes to provide more of an integrated development rather than different home/lot configuration.

From Lisa Schabenberger to Everyone: 05:56 PM
It looks like there is still property that is not part of this development nor part of the Evans Road development - is that correct?

- That is correct. There are a number parcels west of the Holland Road Assembly and east of the Evans Road Assembly which are not included in either rezoning application. The property owners are not interested in participating in the rezoning or development at this time.

From Ellen Griffin to Me: (Privately) 05:57 PM
Can you please share your email. I apologize if I missed it.

- Jason Barron and Jeff Roach both shared their emails for correspondence after the meeting.

From Lily Ryzebol to Everyone: 05:59 PM

Who is the residential developer?

- The applicant is currently working with a number of builders interested in the lots. Final builder selection will come during the Master Subdivision Plan design to incorporate additional builder-specific standards within the development.

From mark hopkins to Everyone: 06:03 PM

Have the 6 parcels already been acquired by the developer?

- The applicat does not own the parcels at this time. Each parcel is under contract and will not close until – at earliest – a decision has been made related to zoning.

From Jonathan Peck to Everyone: 06:17 PM

Whatever happened to the 25-50ft tree buffers between developments?

- The buffers between developments is controlled by various sections within the UDO. The proposed buffers are those which the Town requires for the uses proposed and noted within the PD Text document.

From Lily Ryzebol to Everyone: 06:24 PM

Hmm...how is any traffic study taking the pandemic situation into account? (Since current traffic is nowhere near reality)

- Information was provided to the group as we understand it from NCDOT and the Town of Apex transportation staff. Typically the traffic consultants obtain recent counts (pre-pandemic) and add an annual growth rate to the trips. That information is then used for “existing” conditions and the TIA completed. Recommendations are based upon the project’s impact on existing traffic with additional projects in the design process included.

From Jodi Clarke to Everyone: 06:27 PM

Thank you for the information - More single family homes, adjacent to existing homes.

- We continue to evaluate the sketch plan to determine the lot distribution for single family attached and single family detached homes. Numbers may vary slightly as we evaluated additional layouts.

From Ellen Griffin to Everyone: 06:27 PM

Is there anyone we can contact to seek additional buffer given that we have none?

- In reference to the buffer on the Bella Casa property, that is something designed by the original developer of Bella Casa. We do not have any control over the Bella Casa property. The buffers on the Holland Road Assembly properties are along the boundary of the site and meet or exceed the UDO standards for perimeter buffers.

From mark hopkins to Everyone: 06:28 PM

Sounds like a number of folks might like to see a lower density development here. Has the ship sailed in terms of providing any input to the town to consider in their plan? If there was an opportunity, is that something that should be done ahead of august?

- The sketch plan and layout continues to move to determine the best lot distribution within the property providing the transition from Bella Casa to the retail/office section. The density for the project is within the medium density zoning standard for the overall PUD designation including the non-residential component of the project.

From Jonathan Peck to Everyone: 06:31 PM

Being we are at the expanding front of Apex development, this development will be adding substantial traffic, and Old US 1 could see thousands of homes south of Friendship and west on Humie Olive, are there any plans to widen Old US 1 to four lanes?

- The Transportation Master Plan was discussed where Old US 1 Highway is planned to be a 4 lane, median divided thoroughfare from downtown Apex to the Humie Olive Road intersection and beyond. Roadway improvements will be completed as part of the Holland Road Assembly along Humie Olive Road, Old US 1 and Holland Road per the TIA which will be submitted with the zoning documents.

Additional Comments from attendees (asked after all the written comments were addressed)

Jodi Clark:

Asked about the option to turn the new single family homes along Vasari Way to face Vasari Way and not “back up to” the her property and the Chadwick property?

- This is something that the design team/applicant will look into with the sketch plans and turn if possible to accommodate the request

Dennis McGurk:

Asked about the look of the SCM which would be close to Bella Casa? Would there be any trees left along the border of the Bella properties and what plantings would be within the SCM?

- Trees would be left within the buffer north of the SCM near Bella Casa. The SCM would then have a grass slope to the top of dam with the pond on the upside of the slope. The concept is to plan the SCM with native vegetation to supplement the look of the SCM.

Derek Morgan:

Why the high density with townhomes and lot count?

- The density of the project remains within the medium density land use designation of the 2045 Land Use Map. Townhomes are permitted

Why do you have to connect to Bella Casa? Higher end homes dropping down to lower priced homes in the new development. Custom Homes adjacent to smaller SF and townhomes – why?

- The Town of Apex UDO requires the extension of stub streets into adjacent properties. A change of product is needed at some point and the developers see the single family homes adjacent to Bella Casa, moving to townhomes then to retail on the southern end of the property as a reasonable transition from one property to another.

Is there an option to gate Bella Casa and stop the through streets?

- The Town of Apex does not outright “ban” gates but there are not gated communities in Apex. And Apex will most likely not approve a gate for this area.

Kenton Kaplan:

Can we look to add more SF detached homes into the development?

- That is a great question. We can look into the layout and location of lots to see if there is an option to adjust the lot distribution.

The sketch plan shows a small “open space area” directly south of the Vasari Drive stub – can that be increased in size?

- Again, great thought that we will evaluate with the application/builder to see how we can increase the size of the open space area.

Sean McRae

Can we stop Vasari from extending into the development? How would the development access Old US 1 both from the property and Holland Road?

- The neighbors can request the stub street not extend but the UDO requires any new developments extend streets. Unless directed otherwise by staff/Council, Vasari Drive will extend into the property. The project plans to have multiple access points to Old US 1, Holland Road and Humie Olive to allow residents to access the non-residential areas without needing to use one of the major collector streets in the area.

Lisa

There is a buffer shown along the north side of the new development. What is the buffer width and is that combined with the existing Bella Casa buffers?

- The proposed buffer between single family homes with similar lot sizes is 10'. This is what is proposed for the development. Any buffers by the Holland Road Assembly developers would be contained wholly on the project side – not on the Bella Casa side. Any buffers on the Bella Casa side would remain untouched.

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

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

I, Jeffrey A. Roach, do hereby declare as follows:
Print Name

1. I have conducted a Neighborhood Meeting for the proposed Rezoning, Major Site Plan, Master Subdivision Plan, or Special Use Permit in accordance with UDO Sec. 2.2.7 *Neighborhood Meeting*.
2. The meeting invitations were mailed to the Apex Planning Department, all property owners within 300 feet of the subject property and any neighborhood association that represents citizens in the area via first class mail a minimum of 10 days in advance of the Neighborhood Meeting.
3. The meeting was conducted at a virtual ZOOM meeting (location/address) on April 27, 2021 (date) from 5:00 pm (start time) to 7:00 pm (end time).
4. I have included the mailing list, meeting invitation, sign-in sheet, issue/response summary, and zoning map/reduced plans with the application.
5. I have prepared these materials in good faith and to the best of my ability.

April 30, 2021
Date

By: 

STATE OF NORTH CAROLINA
COUNTY OF WAKE

Sworn and subscribed before me, DANIEL H. WOODS, a Notary Public for the above State and County, on this the 3 day of MAY, 2021.





Notary Public

DANIEL H. WOODS

Print Name

My Commission Expires: 11/18/2023

Holland Road Mixed Use PUD

PD PLAN

APEX, NORTH CAROLINA

Submitted:

May 3, 2021

Resubmitted: June 10, 2021

Resubmitted: July 9, 2021

Resubmitted: January 14, 2022

PREPARED BY:



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Section 1: Table of Contents

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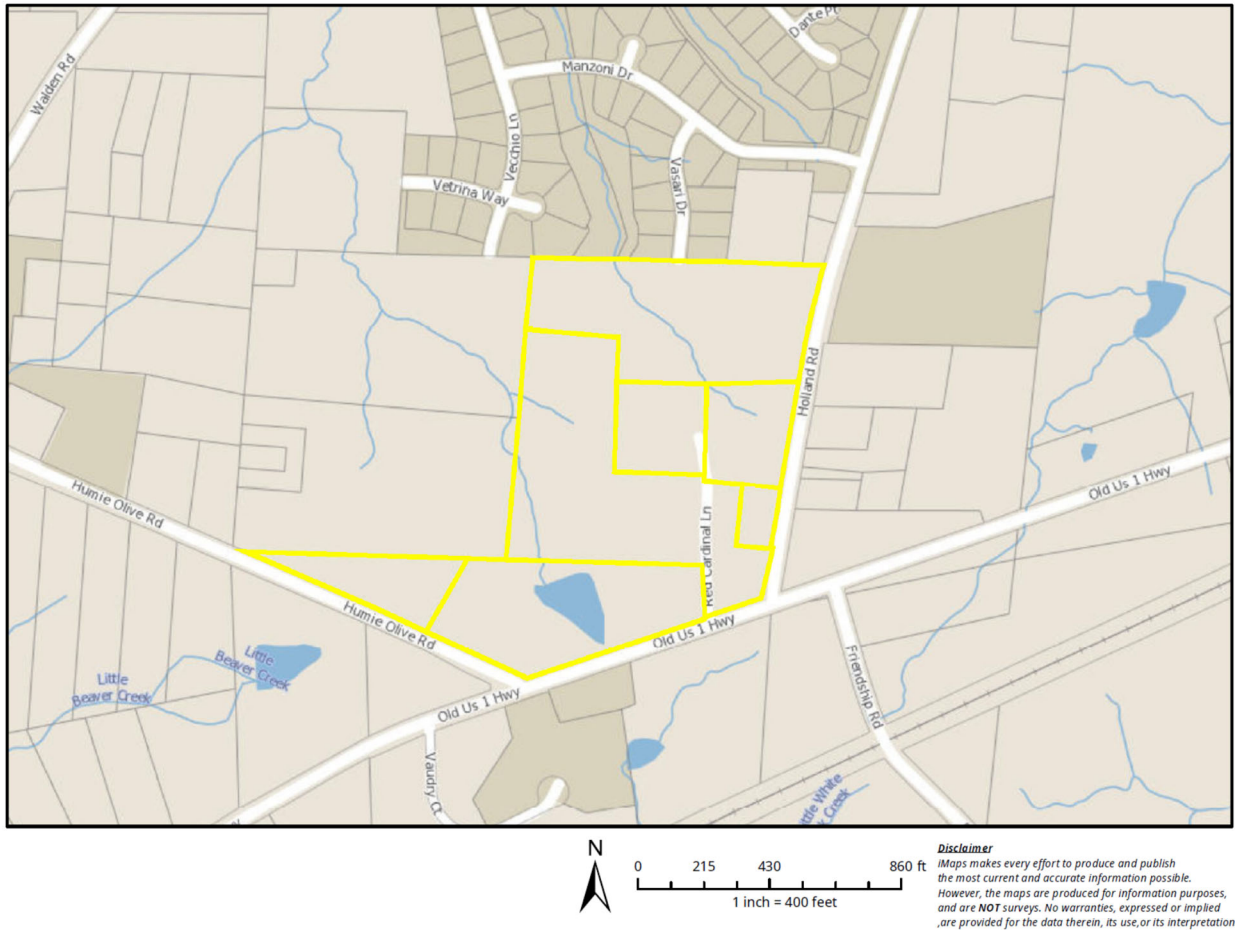
Section 15: Consistency with 2045 Land Use Plan

Section 16: Compliance with UDO

Section 17: Compliance with Apex Transportation and Bicycle Plan

Section 18: Public Art

Section 2: Vicinity Map



The Holland Road Mixed Use PUD is located in the Town of Apex, along the west side of Holland Road north of Old US 1 and Humie Olive Road. The subject properties are south of the Bella Casa residential community, and has underdeveloped parcels to the west, east and south. Advance Apex: The 2045 Land Use Map Update calls for nonresidential uses on the southern portion of the property along Old US 1 Highway and medium density development along the northern portion of the property as it transitions to the existing residential community. In that regard, the Holland Road Mixed Use PUD - with up to 76,500 square feet of commercial/retail uses, inclusive of four (4) non-residential outparcels and convenience store with up to ten (10) fueling stations, and a maximum of 110 residential dwelling units developed as medium density - fulfills the long-term planning vision that has existed for these properties for the better part of fifteen years, albeit with a modification to the line between the residential and non-residential uses.

Section 3: Project Data

A. Name of Project:

Holland Road Mixed Use PUD

B. Property Owners:

David Ray Powell (0720-99-8487)
Johnny and Carolyn M. Pendergraft (0730-09-1779)
Pamela Purefoy, Frances T. Bullock, Ernestine Smith (0730-09-5707)
Joanne Pendergraft Hearn Heirs (0731-00-1087)
RGNC-10, LLC (0731-00-4075)
Billy and Annie P. Stroup (0731-00-3359)
Shelba W Clem, P Diane Williams and Lisa W. Krummel (0720-99-2587)

C. Prepared By:

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

D. Current Zoning Designation:

Rural Residential (RR)

E. Proposed Zoning Designation:

Planned Unit Development – Conditional Zoning (PUD-CZ)

F. Current 2045 Land Use Map Designation:

Commercial Services; Medium Density Residential; Medium-High Density Residential

G. Proposed 2045 Land Use Map Designation:

Commercial Services and Medium Density Residential (with revised boundaries)

H. Proposed Use

Up to 76,500 square feet of commercial/retail uses, inclusive of four (4) non-residential outparcels and convenience store with up to ten (10) fueling stations, and a maximum of 110 residential dwelling units

I. Size of Project

A total of +/- 28.68 acres

Section 4: Purpose Statement

The Holland Road Mixed Use PUD will be a mix of non-residential and medium density residential uses in keeping with the Town's long-range plans for a mix of such uses, with a modification to the boundaries for the same. The southern portion of the Property as identified on the PUD Plans will permit the development of up to 76,500 square feet of commercial/retail uses, four (4) non-residential outparcels, a convenience store with up to ten (10) fueling stations. The northern portion of the property is permitted for up to 110 residential dwelling units, with a minimum of 10 single-family detached dwellings and the remainder comprised of townhouses.

This concept is consistent with the Town's stated PUD goals to provide site-specific, high-quality neighborhoods that preserve natural features and exhibit compatibility with, and connectivity to, surrounding land uses. More specifically, this plan shall:

- 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 appropriate buffering and screening from the proposed use to the existing residential areas;
- Offer a mix of medium density residential and commercial uses in an area planned for the same;
- Deliver goods and services within walking and biking distance of planned residences along with existing residences, thereby reducing traffic congestion;
- 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; and
- 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*, except where noted. The proposed PUD shall provide a development density and intensity that is consistent with principles found throughout *Advance Apex 2045*.

ENVIRONMENTAL ADVISORY BOARD (EAB) RECOMMENDATIONS:

A meeting was held with the EAB on April 15, 2021 in which the project was discussed. The following notes are provided directly from the EAB. The final zoning conditions have been included in PD Text Section 6 for enforceability:

- Increase design storm for retention basins in flood-prone areas.
 - Option 2: Increase design storm pre- and post-attenuation requirement to the 25-year storm.
- Install signage near environmental sensitive areas in order to:
 - Reduce pet waste near SCM drainage areas.
 - Eliminate fertilizer near SCM drainage areas.
- Increase biodiversity.
 - Option 1: Plant pollinator-friendly flora.
 - Option 2: Plant native flora (Refer to the Apex Design & Development Manual for approved native species).
- Include landscaping that requires less irrigation and chemical use.
 - Option 1: Plant warm season grasses for drought-resistance.
- Improve soil quality to be amenable for a variety of native and non-invasive plantings.
- Install pet waste stations in neighborhoods.
- Include solar conduit in building design.
- Include energy efficient exterior lighting in building design.
- Install timers or light sensors or smart lighting technology for exterior lighting.
- Include International Dark Sky Association compliance standards.
 - Outdoor lighting shall be shielded in a way that focuses lighting to the ground.
- Lighting that minimizes the emission of blue light to reduce glare shall be used. Incorporate natural lighting techniques into building design whether residential or non-residential.
- Maintain connections between RCAs to preserve habitat if possible.
- Move play area to residential side (north side) for better accessibility of open green space.

Section 5: Permitted Uses and Zoning Conditions

The development shall include office, retail, and residential uses. The Rezoned Lands may be used for, and only for, the uses listed below. The permitted uses are subject to the limitation and regulations stated in the UDO and any additional limitation 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. Specifically, the permitted uses include:

Residential Tract:

- Accessory apartment
- Townhouse (as shown on the PUD Map)
- Single-family (as shown on the PUD Map)
- Greenway
- Recreation Facility, private
- Park, active
- Park, passive
- Utility, minor

Commercial Tract:

- Drop-in or short-term day care
- Botanical garden
- Entertainment, indoor
- Youth or day camps
- Restaurant, drive-through
- Restaurant, general
- Medical or dental office or clinic
- Office, business or professional
- Publishing office
- Artisan Studio
- Barber and beauty shop
- Book store
- Convenience store
- Convenience store with gas sales
- Dry cleaners and laundry service
- Nursing or convalescent facility
- Financial institution
- Floral shop
- Greenhouse or nursery, retail
- Grocery, general
- Grocery, specialty
- Health/fitness center or spa
- Laundromat
- Newsstand or gift shop
- Personal service
- Pharmacy
- Printing and copying service
- Real estate sales
- Retail sales, general
- Studio for art
- Tailor shop
- Upholstery shop
- Pet services
- Microbrewery
- Greenway
- Park, active
- Park, passive
- Utility, minor

Holland Road Assembly PUD

The following Zoning conditions shall apply to the project:

- A. A maximum of 100 townhouse dwellings shall be permitted.
- B. A minimum of 10 single-family detached dwellings shall be permitted.
- C. Of the 100 permitted townhouse dwellings, at least two (2) residential restricted median-income affordable housing townhome ownership units (Affordable Housing Units) shall be constructed on-site and sold at a mutually agreeable maximum affordable housing median-income ownership initial sales price (includes unit price and lot price) that is calculated based upon the one-hundred percent (100%) of the Raleigh, NC Metropolitan Statistical Area (MSA) Area Median Income (AMI) as published by the U.S. Department of Housing and Urban Development (HUD). The Affordable Housing Units shall be occupied by low or median-income households earning no more than one-hundred percent (100%) of the Raleigh, NC MSA AMI, adjusted for family size as published by HUD. A restrictive covenant (i.e. resale deed restriction) with a minimum affordability period of ten (10) years shall be recorded against each residential restricted median-income affordable housing townhome ownership unit concurrently at the close of escrow upon the sale of the Affordable Housing Units to memorialize the affordable housing terms and conditions. The two (2) Affordable Housing Unit lots shall be identified on the Master Subdivision Final Plat, which may be amended from time to time. A restrictive covenant (i.e. affordable housing agreement) between the Town and Applicant shall be recorded against the two (2) Affordable Housing Unit lots prior to the issuance of a building permit for such lots to memorialize the affordable housing terms and conditions of the approved zoning condition. Final Affordable Housing Unit floor plan selection which includes the unit size and bedroom size will be at the discretion of the developer. Developer shall provide written notice to the Town, Attn: Housing Program Manager, giving the Town ninety (90) days to identify qualified applicants to enter into a lot or purchase agreement with the Seller of the Affordable Housing Units.
- D. Single-family detached dwellings adjacent to and abutting Wake County PINs 0731-00-1666 and 0731-00-3635 shall be located on lots that are a minimum of 12,000 square feet and oriented to face Vasari Drive.
- E. A signal warrant analysis for the intersection of Holland Road and Old HWY 1 shall be performed by the applicant prior to the platting of the 100th lot platted within the development and developer shall install a traffic signal if permitted by NCDOT at that time. If a traffic signal is not permitted by NCDOT at that time then developer shall have no future responsibility for a traffic signal.
- F. A maximum of 76,500 square feet of commercial/retail uses, inclusive of up to four (4) non-residential outparcels and a convenience store with up to ten (10) fueling stations.
- G. All single-family detached and non-residential buildings shall provide solar conduit for the installation of rooftop solar panels.
- H. No covenant shall be placed on the property which prohibits accessory apartment as a use.
- I. The uses Restaurant, drive-through and Convenience store with gas sales shall not be permitted within 100' of residential properties within the development.
- J. A 20' landscape easement shall be provided between the commercial/retail area and the residential area. This area shall be landscaped to a Type 'A' buffer standard with a berm as permitted by UDO 8.2.6.B.5.

- K. A Type 'A' buffer shall be provided along the northern boundary with the Bella Casa subdivision. The Type 'A' buffer will remove and replace the existing vegetation while permitting the buffer to count towards overall RCA requirements. A berm shall be installed along with additional buffer improvements per UDO Section 8.2.6.B.5.
- L. The project shall install at least one (1) sign per SCM about not using fertilizer near an SCM drainage area. The sign(s) shall be installed in locations that are publicly accessible, such as adjacent to amenity centers, sidewalks, greenways, or side paths.
- M. The project shall install one (1) sign near each SCM about cleaning up pet waste.
- N. The project shall increase biodiversity within the development by:
 - a. Selecting and installing tree, shrub and perennial species with special attention to providing diverse and abundant pollinator and bird food sources, including plants that bloom in succession from spring to fall.; or
 - b. Planting only native plant species as listed in the Apex Design and Development Manual.
- O. The project shall include landscaping that requires less irrigation and chemical use by planting warm season grasses for drought-resistance.
- P. A minimum of three (3) pet waste stations shall be installed within the development located around the SCMs, play lawns, and gathering areas.
- Q. The exterior lighting for all non-residential buildings and parking lots will consist entirely of LED fixtures. The project shall install light timers, motion sensors, or other smart lighting technology for all lighting within the parking lots.
 - a. The project shall use full cutoff LED fixtures that have a maximum color temperature of 3,500 for all exterior lighting, including, but not limited to, parking lot and building mounted fixtures.

Section 6: Proposed Design Controls

A. Non-Residential Design Controls

Parcel Size – +/- 11 acres (approximate size)

Density – The overall maximum non-residential uses permitted upon the property shall be 76,500 square feet inclusive of four (4) outparcels and a convenience store with gas sales with no more than ten (10) fueling stations

Design Controls – At a minimum, all non-residential uses shall comply with the following dimensional standards:

Maximum Built-Upon Area:	70%
Maximum Building Height:	50'
Minimum Building Setbacks:	
Street	20 feet
Rear	20 feet
Side	20 feet
From Buffer/RCA:	10 feet for Buildings 5 feet for Parking Areas

B. Residential Design Controls

Parcel Size – +/-17 acres (approximate size)

Density - The overall gross residential density shall not exceed 110 units

Design Controls – At a minimum, all residential uses shall comply with the following dimensional standards:

Maximum Density:	6.0 Dwelling Units/Acre (Includes RCA and rights-of-way)
Maximum Number of Units:	110
Maximum Built-Upon Area:	60%
Minimum Lot Size:	6,000 square feet for single-family detached
Minimum Lot Width:	50' for single-family detached 22' for townhouse
Maximum Building Height:	Single-family detached: 36' Townhouse: 40'

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

Single-Family Detached:	
Minimum Building Setbacks:	
- Front:	10 feet
- Front (garage):	20 feet
- Side:	5 feet
- Corner side:	10 feet
- Rear:	10 feet
- From Buffer/RCA:	10 feet for Buildings 5 feet for Parking Areas

Holland Road Assembly PUD

Single-family Attached (townhouse): Front Loaded

Minimum Building Setbacks:

- Front: 10 feet
- Front (garage): 20 feet
- Side: 3 feet (0 feet between townhouse units)
- Corner side: 10 feet
- Rear: 10 feet
- From Building to Building: 10 feet
- From Buffer/RCA: 10 feet for Buildings
5 feet for Parking Areas

Single-family Attached (townhouse): Rear/Alley Loaded

Minimum Building Setbacks:

- Front: 10 feet
- Side: 3 feet (0 feet between townhouse units)
- Corner side: 10 feet
- Rear: 5 feet from alley R/W
- From Building to Building: 10 feet
- From Buffer/RCA: 10 feet for Buildings
5 feet for Parking Areas

C. Buffers

	Residential	Non-residential
Northern boundary	Adjacent to Bella Casa: 20' Type A buffer; 20' Type B buffer; OR 30' Type A buffer	
Holland Road	20' Type B	20' Type E
Old US 1	N/A	20' Type E
Humie Olive Road	N/A	30' Type E
Western boundary	10' Type B	Adjacent to PIN 0720-99-3901: 10' Type B buffer is proposed although no buffer is required if a public street or private driveway straddles or is located along the property line between the parcels

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

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 development plan submittal. The following conditions shall apply:

A. Residential Development

Single-family Detached:

1. Vinyl siding is not permitted; however, vinyl windows, decorative elements, and trim are permitted.
2. Primary building materials shall be brick, stone, and fiber cement siding.
3. Windows that are not recessed shall be trimmed. Windows shall vary in size and/or type.
4. At least 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.
5. 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.
6. The rear and side elevations of the units that can be seen from the right-of-way shall have trim around the windows.
7. Front facing garage doors must have windows, decorative details, or carriage-style adornments.
8. Entrances for units with front-facing garages shall have a prominent covered porch/stoop area leading to the front door.
9. Porches constructed with a dwelling unit shall be a minimum of six feet (6') deep.
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.

Single-Family Attached (Townhouse):

1. Vinyl siding is not permitted; however, vinyl windows, decorative elements and trim are permitted.
2. The roofline cannot be a single mass; it must be broken up horizontally and vertically between every unit.
3. Garage doors must have windows, decorative details or carriage-style adornments on them.
4. House entrances for units with front-facing single-car garages shall have a prominent covered porch/stoop area leading to the front door.
5. The garage cannot protrude more than 1 foot out from the front façade or front porch.
6. Building facades shall have horizontal relief achieved by the use of recesses and projections.
7. A varied color palette shall be utilized on homes throughout the subdivision to include a minimum of three (3) color families for siding and shall include varied trim, shutter, and accent colors complementing the siding color.
8. The rear and side elevations of the units that can be seen from the right-of-way shall have trim around windows.

9. At least 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.
10. The visible side of a townhouse on a corner lot facing the public street shall contain at least 3 decorative elements, such as, but not limited to, the follow elements:
 - Windows
 - Bay window
 - Recessed window
 - Decorative window
 - Trim around the windows
 - Wrap around porch or side porch
 - Two or more building materials
 - Decorative brick/stone
 - Decorative trim
 - Decorative shake
 - Decorative air vents on gable
 - Decorative gable
 - Decorative cornice
 - Column
 - Portico
 - Balcony
 - Dormer

B. Commercial Development

1. Predominant exterior building materials shall be high quality materials, including brick, wood, stacked stone, other native stone, and tinted/textured concrete masonry units. Materials shall comply with UDO Section 9.3.5.
2. Additional exterior materials may include stone accents, aluminum storefronts with anodized or pre-finished colors, EIFS cornices and parapet trim, and precast concrete.
3. The building shall have more than one (1) parapet height.
4. The building exterior shall have more than one (1) material color.
5. No more than 20% of any building façade may consist of EIFS material.
6. EIFS or synthetic stucco shall not be used in the first 4 feet above grade.
7. Only full cut-off lighting fixtures and fixtures with external house-side shields shall be allowed where non-residential properties are adjacent to residential properties.

Section 8: Parking and Loading

Parking for the development shall meet the requirements of UDO Section 8.3.

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 properties are all located within the Cape Fear River/Jordan Lake Watershed. The Town's Watershed Protection Overlay District Map shows the property are part of the Primary Watershed within the Beaver Creek Basin.

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

This PUD shall 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 shall provide 25% RCA for the non-residential portion of the development based upon the standards set forth within UDO Section 8.1. The development provides a non-residential component to the development and per UDO Section 2.3.4.F.1.c.i is requesting a RCA reduction to 25% minimum from the 30% minimum required for single-family and townhouse developments. Development shall not be subject to additional RCA requirement for mass grading of single-family detached lots per UDO 7.2.5.B.8.

Off-site RCA per 8.1.2.a.1 may be used to comply with the approved RCA standards outlined by the Unified Development Ordinance.

In response to a request from adjacent Bella Casa property owners. the buffer along the northern boundary may be cleared and replanted per previous PD Text conditions and shall count as Resource Conservation Area (RCA) for the development.

The overhead Duke Energy electric line and easements along Humie Olive Road, Old US 1 Highway, and Holland Road shall be counted towards the required RCA and buffer standards as identified within various UDO sections.

C. Historic Structures

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

Section 11: Stormwater Management

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

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

Section 12: Parks and Recreation

The Parks, Recreation and Cultural Resources Advisory Commission reviewed the project on June 30, 2021 and unanimously recommended fee-in-lieu of dedication with a credit for construction of greenway trail if an opportunity is identified at the time of Master Subdivision Plan review and approval. The recommendation is based on the 2022 rates and proposed maximum lot count provided:

Single-family detached Units:	\$3,753.89 x 10 = \$37,538.90
Single-family attached Units:	\$2,528.25 x 100 = \$252,825.00
Total residential fee in lieu per current unit count:	\$290,363.90

(Final PRCR amount shall be coordinated with staff during Master Subdivision Plan and Construction Document reviews)

Per Article 14 of the UDO, credit for greenway against fees requires the approval of construction plans, contingent upon approval of an engineer's estimate of probable cost for greenway construction. The greenway shall be completed prior to 25% of the total units for the project receiving building permits.

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:

A. General Roadway Infrastructure

Developer shall provide minimum dedication of public right-of-way along each of Holland Road, Old US 1, and Humie Olive Road. 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. Sidewalks shall be provided on both sides of streets internal to the site per UDO standards. 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 shall be finalized at the time of Master Subdivision Plan or Minor Site Plan review and approval.

A 10' side path shall be constructed and installed along Humie Olive Road.

B. Transportation Improvements

Roadway improvements are subject to modification and final approval by the Town of Apex and NCDOT as part of the Minor Site Plan, Master Subdivision Plan, and construction plan approval process. A Traffic Impact Analysis (TIA) has been performed as part of this PUD rezoning consistent with the Town's standards for the same. Based upon the recommendations of the TIA and approval by Town staff and NCDOT, the final transportation improvement zoning conditions shall be provided.

1. Developer shall widen Holland Road along the project frontage as development occurs based on a minimum 41-foot curb and gutter roadway section with 5-foot sidewalk and dedication based on a minimum 80-foot right-of-way.
2. Developer shall propose a maximum of two (2) access points to Holland Road. A full-movement access shall be located approximately 950 feet north of Old US 1. A right-in/right-out access shall be located approximately 350 feet north of Old US 1 with right-turn channelization designed according to Apex and NCDOT standards.
3. Developer shall provide additional frontage widening along Holland Road to extend the exclusive southbound right turn lane at Old US 1 to the right-in/right-out access when that right-in/right-out access is constructed for an approximate total length of 350 feet.

4. Developer shall propose a maximum of one (1) access point to Old US 1. The right-in/right-out access point shall be proposed approximately 275 feet west of Holland Road and restricted by installation of a concrete median along the center of Old US 1, based on NCDOT standards.
5. Developer shall widen Old US 1 at the time the access point is constructed by adding a second westbound through-lane starting at Holland Road and terminating at the westbound right-turn lane at Humie Olive Road, and a 6-foot paved shoulder for a future bike lane, with a 5-foot sidewalk, and dedication based on a minimum 110-foot right-of-way.
6. Developer shall widen Humie Olive Road along the project frontage as development occurs based on a minimum 41-foot curb and gutter roadway section with 10-foot side path and dedication based on a minimum 80-foot right-of-way.
7. Developer shall propose a maximum of one (1) access point to Humie Olive Road. The full-movement access point shall be proposed approximately 600 feet west of Old US 1 Highway and Developer shall provide additional widening to construct a westbound right turn lane with 75 feet of storage and an eastbound left-turn lane with 175 feet of storage, plus applicable full-width deceleration and taper length. Developer shall provide separate left- and right-turn lanes exiting the access point with 150 feet of internal protected storage, measured from the edge of Humie Olive Road to the first crossing internal access.
8. Developer shall extend the eastbound left-turn lane on Old US 1 at Humie Olive Road to provide a minimum of 225 feet of storage plus applicable full-width deceleration and taper length prior to the Site Plan Final first certificate of occupancy in the commercial phase.
9. Developer shall extend the northbound left-turn lane on Friendship Road at Old US 1 to provide a minimum of 150 feet of storage plus applicable full-width deceleration and taper length prior to the first certificate of occupancy in the commercial phase.

C. Water and Sanitary Sewer

All development within the project shall be served by the Town of Apex for water and sanitary sewer. The utility design will be finalized at the time of development 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. All utility infrastructure shall meet current Town water and sewer master plans.

D. Other Utilities

Electricity will be provided by Apex Electric. Phone, cable, and gas shall 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 multiple phases, with construction anticipated to begin in 2022-23. Project phasing shall ensure the points of access are provided in accordance with the UDO and emergency services are always available for the property.

Section 15: Consistency with the 2045 Land Use Map

The proposed land use is consistent with the 2045 Land Use Map as amended by this rezoning.

Section 16: Compliance with the UDO

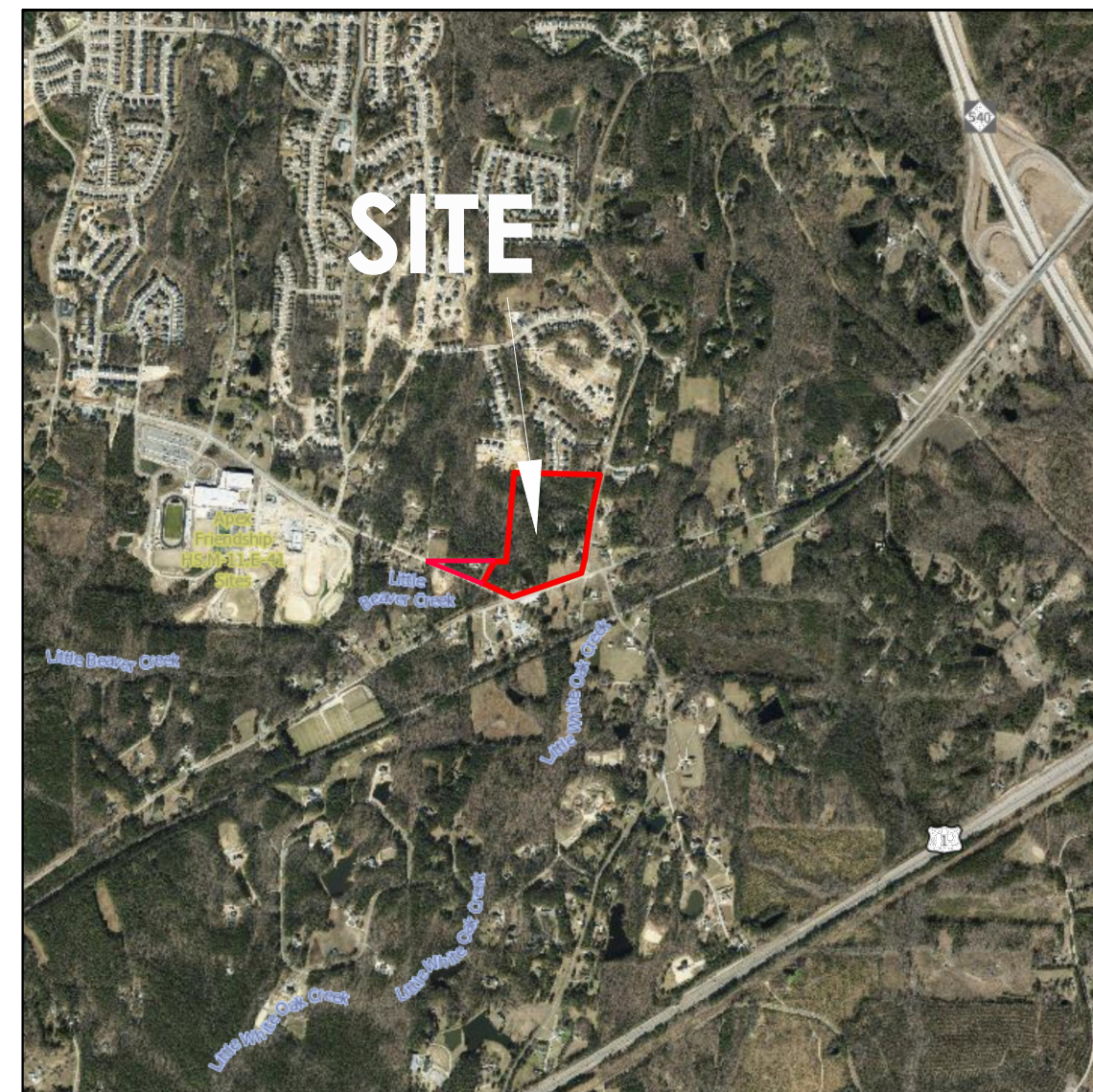
The development standards adopted for this PUD are in compliance with those set forth in the current version of the Town's Unified Development Ordinance (UDO). Any deviations from UDO requirements have been specifically defined within this document.

Section 17: Compliance with Comprehensive Transportation Plan and Bicycle Plan

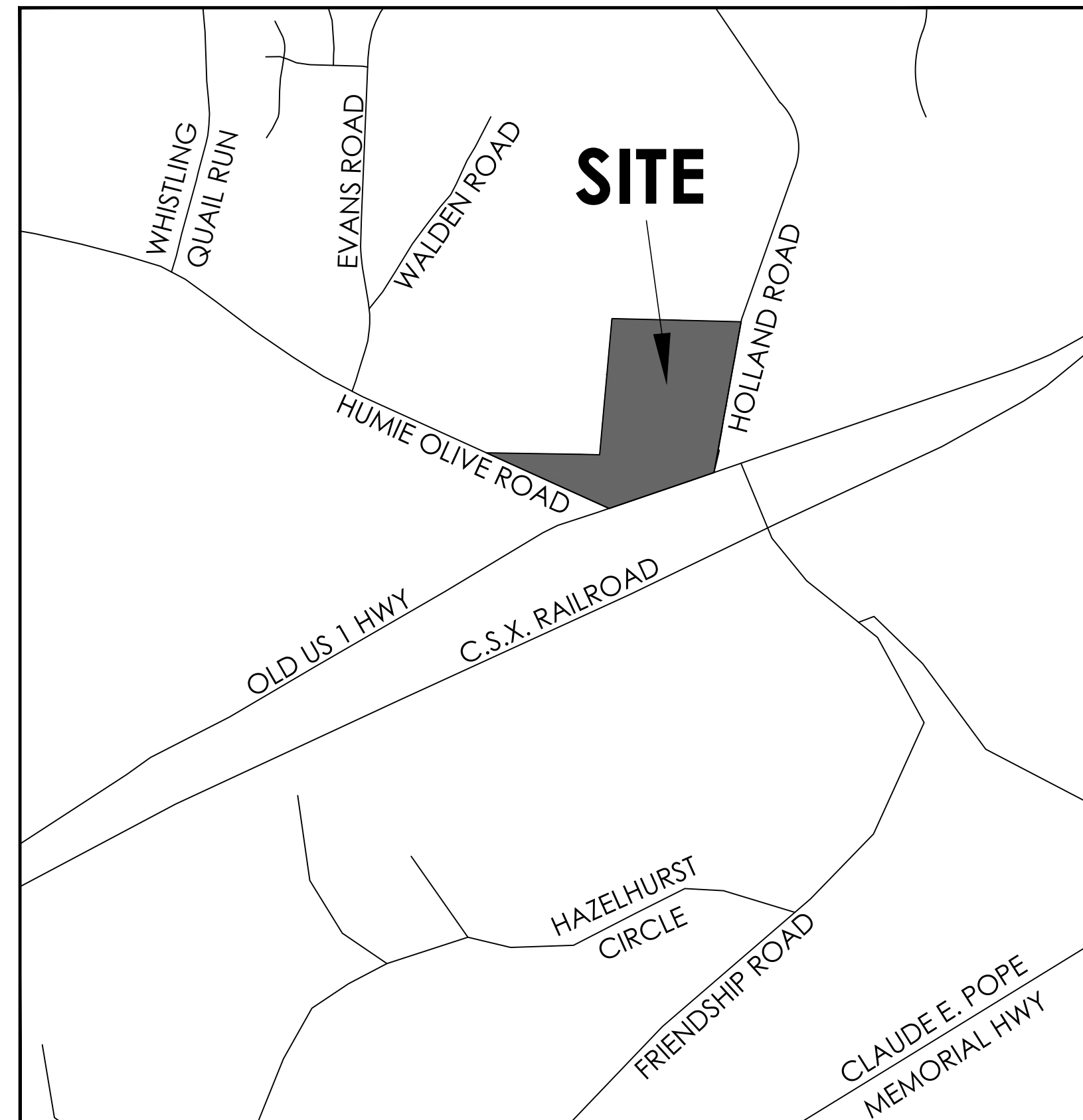
Development plan review for any development to be made pursuant to this amendment to the Official Zoning District Map shall comply with the adopted Comprehensive Transportation Plan in effect at the time of the development plan approval as provided for in the Unified Development Ordinance. Further, development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

HOLLAND ROAD MIXED USE ASSEMBLY

PLANNED UNIT DEVELOPMENT CONDITIONAL ZONING HOLLAND ROAD @ OLD US 1 HIGHWAY APEX, NORTH CAROLINA PROJECT NUMBER: 200304 MAY 3, 2021



AERIAL MAP
NOT TO SCALE



VICINITY MAP
NOT TO SCALE



DRAWING INDEX:

C000	COVER SHEET
C001	EXISTING CONDITIONS
C100	CONCEPTUAL SITE PLAN
C200	CONCEPTUAL UTILITY PLAN

OWNER/DEVELOPER

LG INVESTMENTS, INC.
GENO RAY
5944 CORAL RIDGE DRIVE SUITE 312
CORAL SPRINGS, FL 33076
(754) 875-2975

SURVEYOR

BATEMENT CIVIL SURVEYING COMPANY
STEVEN CARSON, PLS
2424 RELIANCE AVENUE
APEX, NC 27539
PHONE: (919) 577-1080
FAX: (919) 577-1081
WEBSITE: www.BatemanCivilSurvey.com

CIVIL ENGINEER

PEAK ENGINEERING & DESIGN, PLLC
JEFF ROACH, P.E.
1125 APEX PEAKWAY
APEX, NC 27502
PHONE: (919) 439-0100

TRANSPORTATION ENGINEER

RAMEY KEMP & ASSOCIATES
RYNAL STEPHENSON, P.E.
5808 FARRINGDON PLACE SUITE 210
RALEIGH, NC 27609
FAX: (919) 872-5115
FAX: (919) 878-5416
WEBSITE: www.RameyKemp.com

SITE INFORMATION:

Property Owner/Site Address	PIN	REID	Deeded Acreage	DB/Plot Book & Page
David Ray Powell 2236 Old US 1 HWY Apex, NC 27502	0720-99-8487	197638	5.71	DB 5746, PG 146
Johnny & Carolyn M. Pendergraft 1001 Red Cardinal Lane Apex, NC 27502	0730-09-1779	160074	8.96	DB 8718, PG 1292
Pamela Purefoy, Frances T. Bullock & Ernestine Smith 3116 Holland Road Apex, NC 27502	0730-09-5707	70103	0.55	DB 8718, PG 1304
Joann Pendergraft Hearn Heirs 1005 Red Cardinal Lane Apex, NC 27502	0731-00-1087	160076	2.00	DB 16-E, PG 835
RGNC-10 LLC attn: Rich Leonardi 1004 Red Cardinal Lane Apex, NC 27502	0731-00-4075	334537	2.10	DB 18763, PG 1063 BM 2005 Pg 1522
Annie P. & Billy E. Stroup 3104 Holland Road Apex, NC 27502	0731-00-3359	87601	7.36	DB 8718, PG 1301
Shelba W. Clem, P. Diane Williams, Lisa W. Krummel 7528 Humie Olive Road Apex, NC 27502	0720-99-2587	0193211	2.00	DB 16078, PG 0788
Total acreage:			28.68 acres	

Existing Zoning: RR (Rural Residential)
Proposed Zoning: PUD-CZ (Planned Unit Density - Conditional Zoning)
Current 2045 Land Use Map: Medium and Medium/High Density Residential; Commercial Services
Proposed 2045 Land Use Map: Medium Density Residential, Commercial Services
Existing Use: Vacant and Single Family Residential

Township: Buckhorn

Flood Zone Information: Firm Panel 3720072000J, 3720072100J, 3720073000J and 3720073100J do not show the presence of flood zones on the properties.
Watershed Information: Primary Watershed Protection Overlay District, Beaver Creek Basin, Cape Fear River Basin

Historical: No historical structures on site

Residential:
Proposed Uses: Single Family Detached and Attached (Townhomes)

Buildings: 110 total residential lots
Minimum of 10 Single Family Detached
Maximum of 100 Single Family Attached
60%

Maximum BUA:
Single Family Detached:
Maximum Building Height: 36'
Minimum Lot Size: 6,000 SF
Minimum lot width: 50'
Building Setbacks
Front: 10'
Front - Garage: 20'
Rear: 10'
Side: 5'
Side (Corner Lot): 10'

Single Family Attached (Townhouses):
Maximum Building Height: 40' / 3 stories
Minimum lot width: 22'
Front loaded: 10'
Rear/alley loaded: 10'
Front - Garage: 20'
Rear: 10'
Side: 5' (from alley easement or R/W)
Side - unit or corner lot: 3'

Parking Summary:
Single Family Detached
Required Spaces: 2 spaces per dwelling unit
10 dwelling units x 2 spaces/unit = 20 spaces
20 spaces (spaces will be provided within garages and driveways)
Single Family Attached
Required Spaces: 2 spaces per dwelling unit plus .25 per unit for guest parking
2 spaces/unit x 100 units = 200 spaces
.25 spaces/unit x 100 units = 25 spaces
225 spaces required

Commercial / Retail:
Proposed Uses: See PD Text for list of non-residential uses
Non Residential Square Footage: 76,500 SF plus convenience store with no more than ten (10) fueling stations
Maximum Building Height: 50'
Building Setbacks:
Front: 20'
Rear: 20'
Side: 20'
From Buffer/RCA: 10' for Buildings/5' for Parking Areas
Parking: Per UDO Section 8.3



NC License #P-0673

Project:
HOLLAND ROAD MIXED USE ASSEMBLY
HOLLAND ROAD @ OLD US 1 HIGHWAY
APEX, NORTH CAROLINA 27502

seal:

NO.	DATE	REVISION	BY
1	JANUARY 14, 2022	TOWN OF APEX ZONING COMMENT RESPONSE	JR

title:
COVER SHEET

proj #:
200304
date:
May 3, 2021
dwg by: chkd by:
JE JR
scale:
As Noted

sheet:

C000

ZONING DOCUMENT

NO.	DATE	REVISION	BY
1	JANUARY 14, 2022	TOWN OF APEX ZONING COMMENT REVISIONS	JR

title:

**EXISTING
CONDITIONS**

proj #:

200304

date:

May 3, 2021

dwg by: chkd by:

JE JR

scale:

As Noted

sheet:

C001

ZONING DOCUMENT



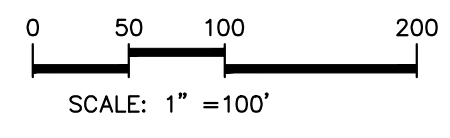
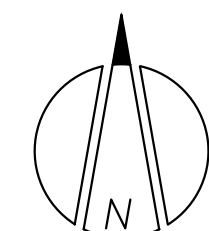
BOUNDARY LINE TABLE

Line Table			Line Table		
Line #	Length	Direction	Line #	Length	Direction
L1	724.03'	S88° 19' 24"E	L21	193.15'	N71° 00' 58"E
L2	125.81'	S88° 18' 19"E	L22	610.28'	S71° 12' 44"W
L3	991.75'	N5° 08' 57"E	L23	365.03'	N65° 06' 16"W
L4	630.83'	S88° 41' 36"E	L24	453.23'	N66° 24' 58"W
L5	349.72'	S88° 22' 38"E			
L6	37.39'	S16° 36' 31"W			
L7	56.31'	S14° 47' 09"W			
L8	57.80'	S13° 34' 48"W			
L9	58.93'	S12° 15' 11"W			
L10	57.13'	S10° 51' 46"W			
L11	56.07'	S10° 06' 24"W			
L12	68.29'	S9° 41' 43"W			
L13	228.76'	S9° 41' 43"W			
L14	98.06'	S9° 46' 21"W			
L15	30.07'	S9° 44' 05"W			
L16	62.67'	S9° 56' 33"W			
L17	30.31'	N88° 20' 16"W			
L18	136.11'	N10° 28' 10"E			
L19	7.97'	S84° 27' 46"E			
L20	167.32'	N13° 06' 20"E			

TREE LEGEND

	PINE TREE (18")
	PINE TREE (>18")
	DECIDUOUS TREE

PLAN SHEETS ARE INTENDED FOR ILLUSTRATIVE USE ONLY



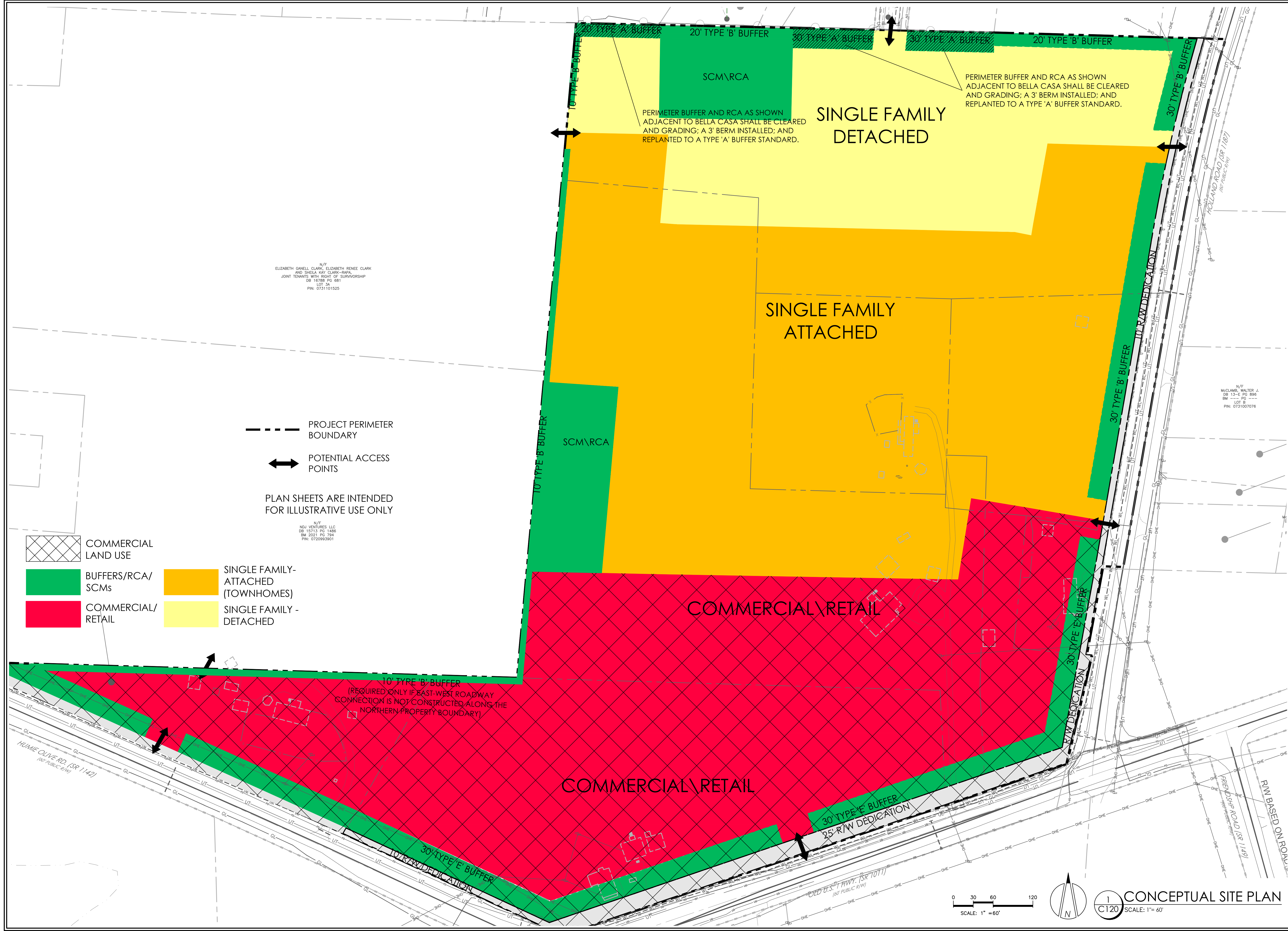
1 EXISTING CONDITIONS
SCALE: 1" = 100'

NO.	DATE	REVISION	BY
1	JANUARY 14, 2022	TOWN OF APEX ZONING COMMENT REVISIONS	JR

title:
**CONCEPTUAL
 SITE PLAN**

proj #:
200304
 date:
May 3, 2021
 dwg by: chkd by:
 JE JR
 scale:
 As Noted
 sheet:

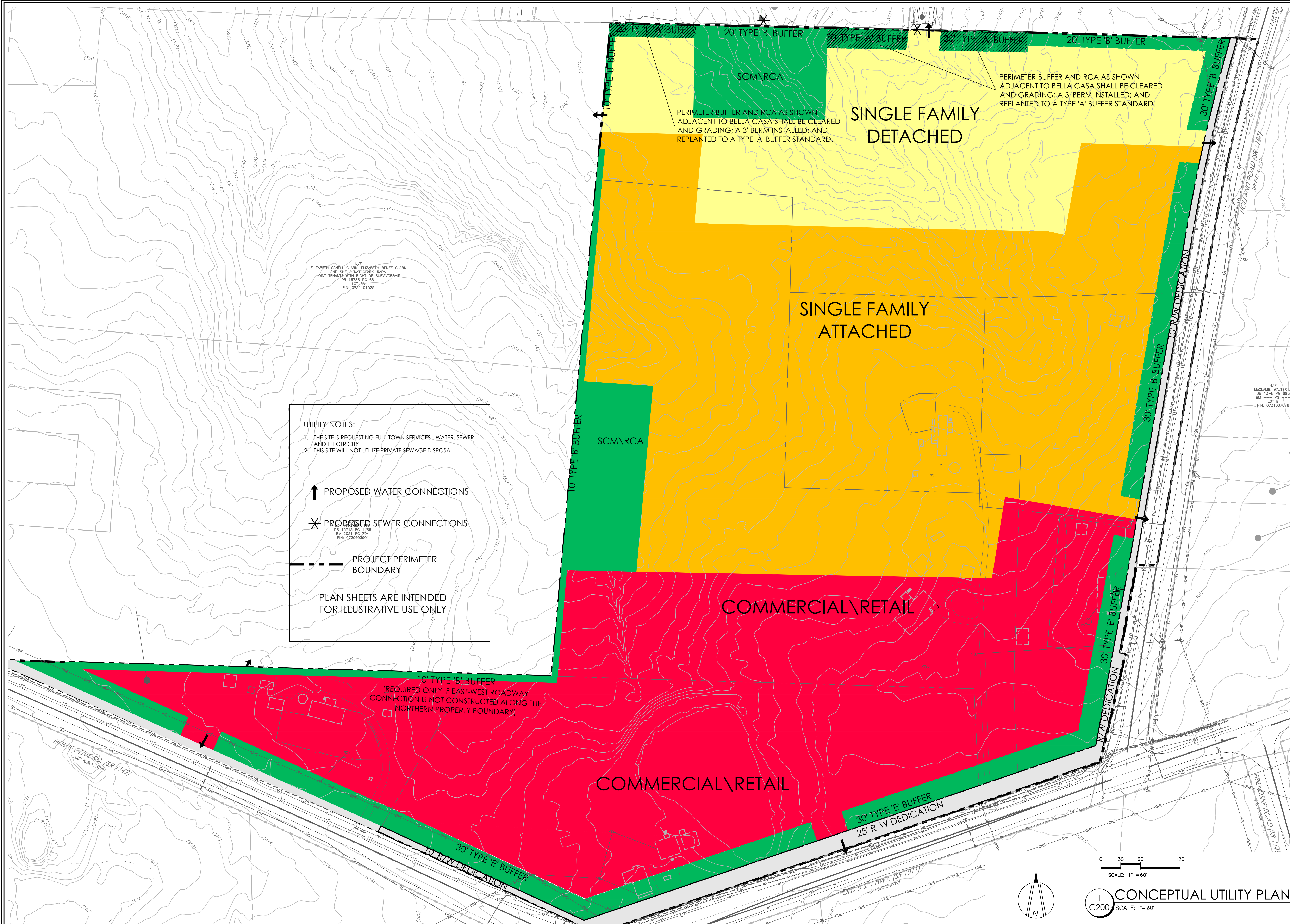
C100
 ZONING DOCUMENT



N/F
 ELIZABETH GANELL CLARK, ELIZABETH RENEE CLARK
 AND SHEILA MAY CLARK-SARA,
 JOINT TENANTS WITH RIGHT OF SURVIVORSHIP
 DB 18788 PG 681
 LOT 3A
 PIN: 0731101525

N/F
 NDJ VENTURES LLC
 DB 15713 PG 1486
 BM 2021 PG 794
 PIN: 0720993901

N/F
 McCLAMB, WALTER J.
 DB 13-E PG 896
 BM 2021 PG 794
 LOT B
 PIN: 0731007076



UTILITY NOTES:

1. THE SITE IS REQUESTING FULL TOWN SERVICES - WATER, SEWER AND ELECTRICITY
2. THIS SITE WILL NOT UTILIZE PRIVATE SEWAGE DISPOSAL.

↑ PROPOSED WATER CONNECTIONS

✕ PROPOSED SEWER CONNECTIONS

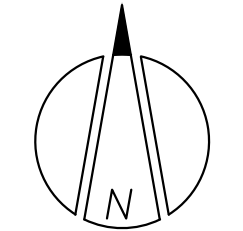
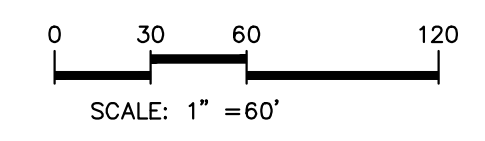
--- PROJECT PERIMETER BOUNDARY

PLAN SHEETS ARE INTENDED FOR ILLUSTRATIVE USE ONLY

PERIMETER BUFFER AND RCA AS SHOWN ADJACENT TO BELLA CASA SHALL BE CLEARED AND GRADING; A 3' BERM INSTALLED; AND REPLANTED TO A TYPE 'A' BUFFER STANDARD.

PERIMETER BUFFER AND RCA AS SHOWN ADJACENT TO BELLA CASA SHALL BE CLEARED AND GRADING; A 3' BERM INSTALLED; AND REPLANTED TO A TYPE 'A' BUFFER STANDARD.

10' TYPE 'B' BUFFER (REQUIRED ONLY IF EAST-WEST ROADWAY CONNECTION IS NOT CONSTRUCTED ALONG THE NORTHERN PROPERTY BOUNDARY)



1 CONCEPTUAL UTILITY PLAN
C200 SCALE: 1" = 60'

NC License #P-0673

project:
HOLLAND ROAD MIXED USE ASSEMBLY
HOLLAND ROAD @ OLD US 1 HIGHWAY
APEX, NORTH CAROLINA 27502

seal:

NO.	DATE	REVISION	BY
1	JANUARY 14, 2022	TOWN OF APEX TOWN COMMENT RESPONSE	JR

title:
CONCEPTUAL UTILITY PLAN

proj #: 200304
date: May 3, 2021
dwg by: chkd by: JR
scale: As Noted
sheet:



Building A - West Elevation 2
1/8" = 1'-0"



BUILDING A - SW PERSPECTIVE VIEW 1



Building B/C - South Elevation 2
1/8" = 1'-0"



BUILDING B/C - SE PERSPECTIVE VIEW 1

BUILDING B/C - CONCEPT DESIGN



Building D - East Elevation 2
1/8" = 1'-0"



BUILDING B - SE PERSPECTIVE VIEW 1



BRICK 1



DARK BRONZE ALUMINUM CANOPY & STOREFRONT



30%



CEMENTITIOUS SIDING



70%

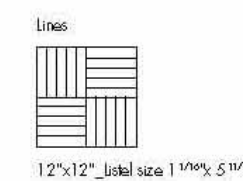
BRICK 2 COMBINATION OF TWO BRICK TYPES



COCOA Nonretiled



DECORS



WALL TILE - WOOD LOOK

REVIVE

Non-Residential Design Guidelines:

- Buildings shall be arranged to define, create and activate edges and public spaces.
- Every effort shall be made to locate service and loading areas in the rear of the structures. Where these features are located between the building and a public road, they will be designed in such a way that they do not distract from the character of the development and they will be screened in accordance with the UDO.
- Drive-thru lanes, pick-up windows and other like functions shall be allowable if located facing an adjacent street or drive. Landscaping and/or other architectural features should be used to create screening for these types of uses.
- Elevations of building facing a street shall incorporate detailing in keeping with the character and style of other architectural features.
- Elevations of corner buildings shall utilize design features such as variations in wall plane, variation in building mass and window placement to generate street interest.
- Architectural treatments such as varying roof forms, facade articulation, breaks in roof, walls with texture material and ornamental details as well as landscaping shall be incorporated to add visual interest.
- Differences in roof height, pitch, ridgelines and materials may be used to create visual interest and avoid repetition.

Non-residential exteriors shall incorporate variation in materials. The primary (front) facade of the buildings to be considered may include:

- Brick and/or stone masonry
- Decorative concrete block (integral color or textured)
- Stone accents
- Aluminum storefront with anodized or pre-finished colors
- EIFS cornices and parapet trim
- EIFS or synthetic stucco shall not be used in the first four feet above grade and shall be limited to 25% of each building facade
- Precast concrete
- Roof features may include flat roofs with parapet, hip roofs or awnings with metal or canvas material
- Soffit and fascia materials to be considered include EIFS with crown trim elements
- Cementitious siding
- Tile
- Heavy Timber accent elements

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

Exterior materials that are not allowed as part of the development are as follows:

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

COLUMBIA



HUDSON

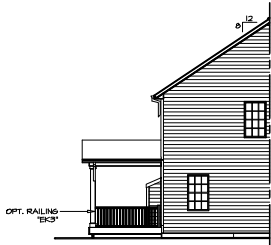


LEHIGH



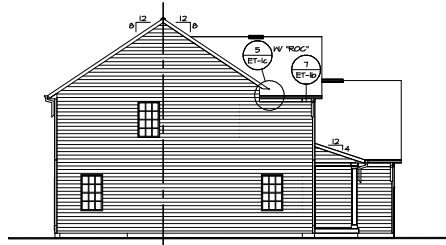
SENECA





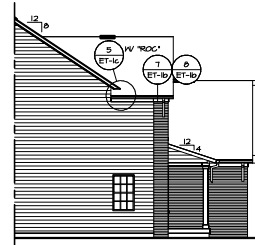
3 PARTIAL LEFT ELEVATION
SCALE: 1/8" = 1'-0"

GAS FIREPLACE FAMILY ROOM REAR LEFT COVERED PORCH "EP5"



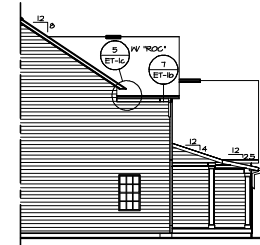
1 LEFT ELEVATION
SCALE: 1/8" = 1'-0"

ELEVATION "A" "ELA"
SIDING VENEER "EVA"



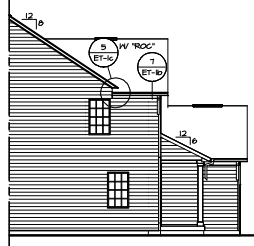
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SCALE: 1/8" = 1'-0"

ELEVATION "A" "ELA"
BRICK VENEER "EVA"



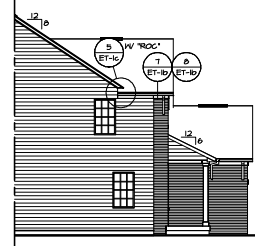
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SCALE: 1/8" = 1'-0"

ELEVATION "A" "ELA"
SIDING VENEER "EVA"
PORCH EXTENSION "EP5"



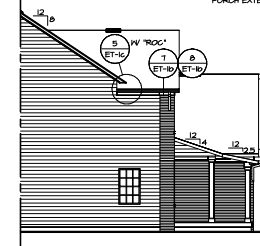
5 PARTIAL LEFT ELEVATION
SCALE: 1/8" = 1'-0"

ELEVATION "B" "ELB"
SIDING VENEER "EVB"



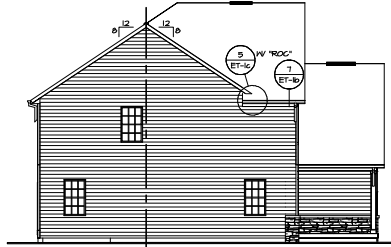
4 PARTIAL LEFT ELEVATION
SCALE: 1/8" = 1'-0"

ELEVATION "B" "ELB"
BRICK VENEER "EVB"



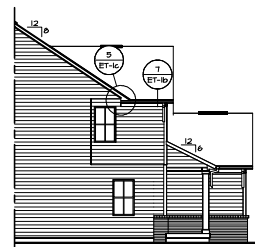
15 PARTIAL LEFT ELEVATION
SCALE: 1/8" = 1'-0"

ELEVATION "A" "ELA"
BRICK VENEER "EVA"
PORCH EXTENSION "EP5"



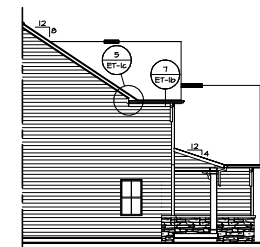
8 LEFT ELEVATION
SCALE: 1/8" = 1'-0"

ELEVATION "C" "ELC"
NO PORCH EXTENSION "ZM"



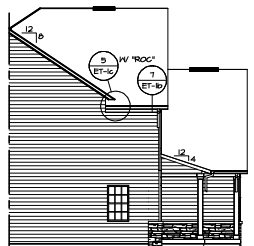
7 PARTIAL LEFT ELEVATION
SCALE: 1/8" = 1'-0"

ELEVATION "C" "ELC"
NO PORCH EXTENSION "ZM"



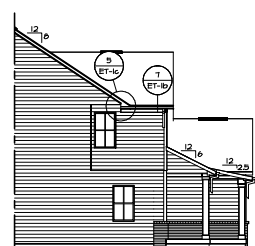
6 PARTIAL LEFT ELEVATION
SCALE: 1/8" = 1'-0"

ELEVATION "C" "ELC"
NO PORCH EXTENSION "ZM"



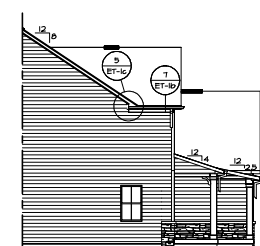
4 PARTIAL LEFT ELEVATION
SCALE: 1/8" = 1'-0"

ELEVATION "C" "ELC"
PORCH EXTENSION "EP5"



10 PARTIAL LEFT ELEVATION
SCALE: 1/8" = 1'-0"

ELEVATION "C" "ELC"
PORCH EXTENSION "EP5"



11 PARTIAL LEFT ELEVATION
SCALE: 1/8" = 1'-0"

ELEVATION "C" "ELC"
PORCH EXTENSION "EP5"

REVISIONS

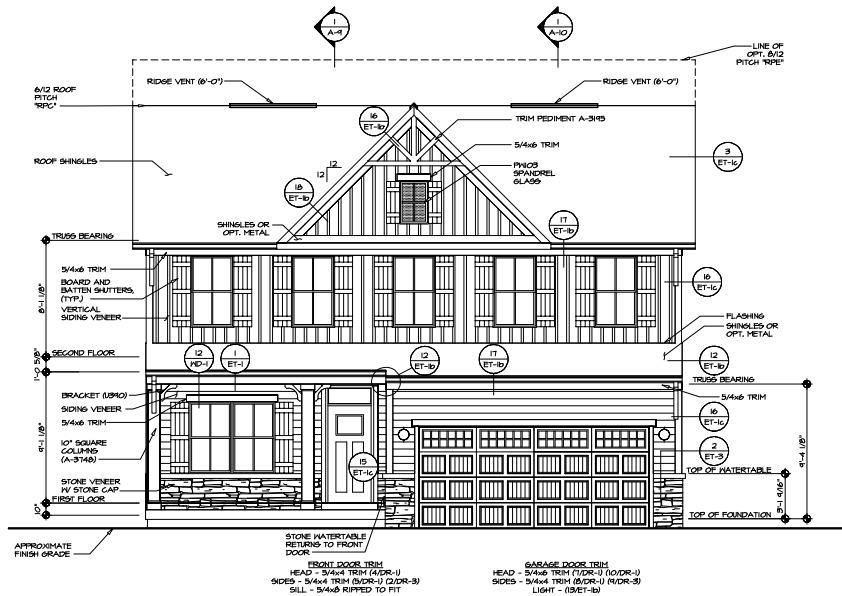
1. 07/12/17
2. 07/12/17
3. 07/12/17
4. 07/12/17
5. 07/12/17
6. 07/12/17
7. 07/12/17
8. 07/12/17
9. 07/12/17
10. 07/12/17
11. 07/12/17
12. 07/12/17
13. 07/12/17
14. 07/12/17
15. 07/12/17



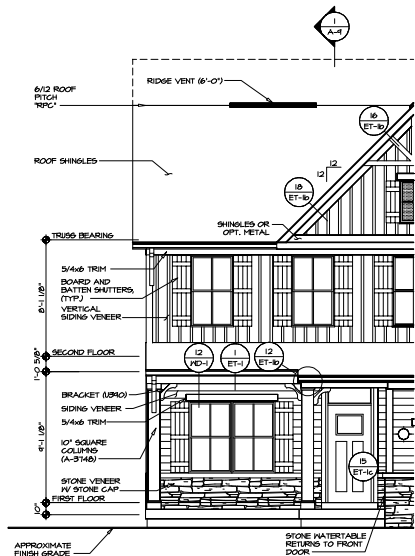
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DRAWING TITLE
DATE: 07/12/17
OPTION

SET NO. 86,000
DRAWING TITLE
DATE: 07/12/17
OPTION

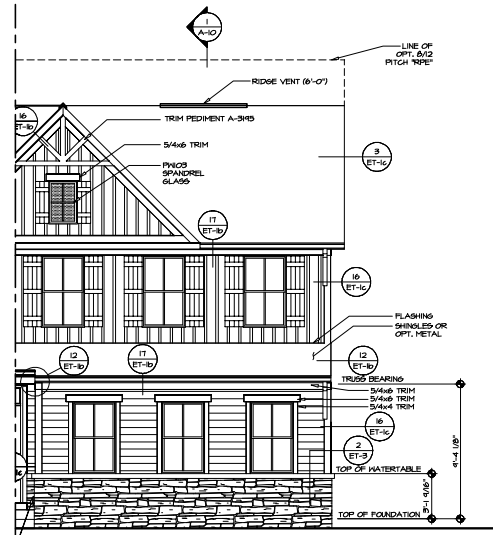
10



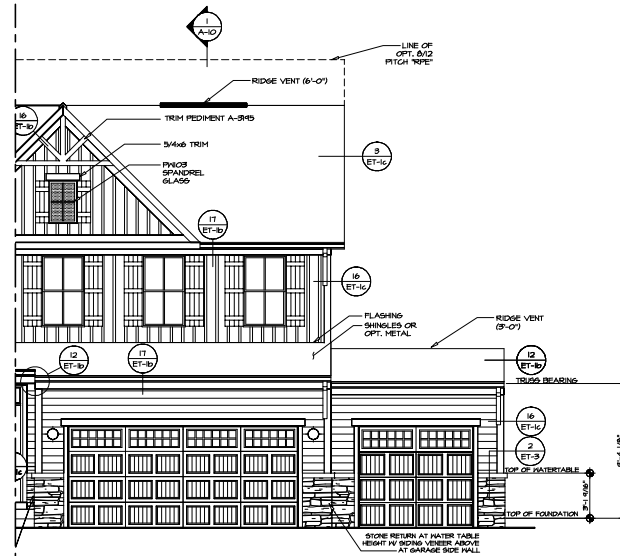
1 FRONT ELEVATION "K"
SCALE: 1/4" = 1'-0"



4 PARTIAL FRONT ELEVATION
SCALE: 1/4" = 1'-0" OPT. PORCH EXTENSION "EP6"



2 PARTIAL FRONT ELEVATION
SCALE: 1/4" = 1'-0" OPT. 2-CAR GARAGE SIDE ENTRY "GGC"



3 PARTIAL FRONT ELEVATION
SCALE: 1/4" = 1'-0" OPT. 3-CAR FRONT ENTRY GARAGE "GCF"

NOTE:
GARAGE DOOR GLASS
DESIGN MAY VARY BY
MANUFACTURER.

REVISIONS

DATE

REVISIONS

DATE

REVISIONS

DATE

REVISIONS

DATE

REVISIONS

DATE

NVR
NVR, INC.
100
5155 Pennsylvania Ave., Suite 100
P.O. Box 100
Pikesville, MD 21113

SET NO. 01
DRAWING TITLE
DATE: 02/06/17
DRAWN BY: JLD
CHECKED BY: ELK

01
COLUMBIA
FRONT ELEVATION

01
FRONT ELEVATION
ELEVATION "K"

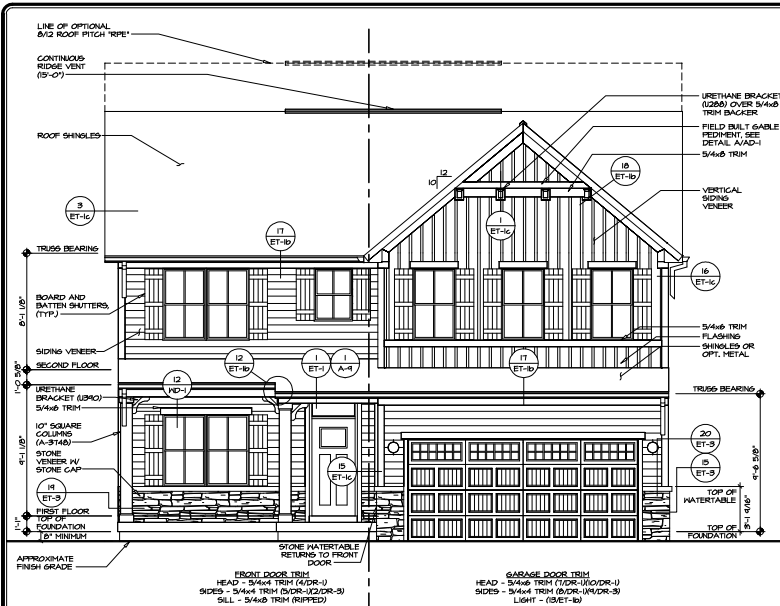
01
FRONT ELEVATION
ELEVATION "K"

01
FRONT ELEVATION
ELEVATION "K"

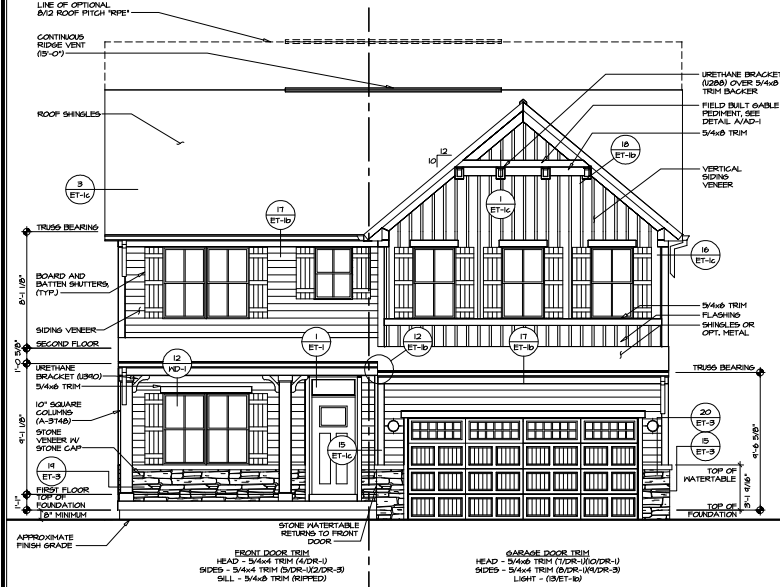
01
FRONT ELEVATION
ELEVATION "K"

01
FRONT ELEVATION
ELEVATION "K"

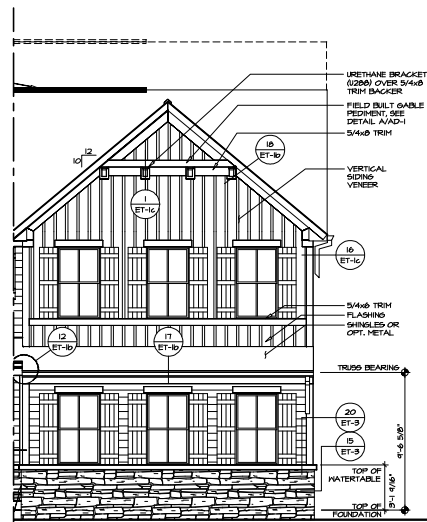
NOTE:
GARAGE DOOR GLASS
DESIGN MAY VARY BY
MANUFACTURER.



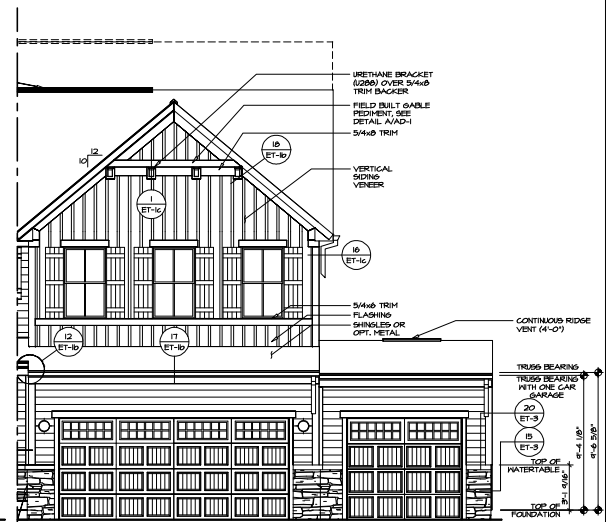
4 FRONT ELEVATION "K"
SCALE: 1/4" = 1'-0"
TWO CAR FRONT ENTRY GARAGE "SCB"
PORCH EXTENSION "EPB"



1 FRONT ELEVATION "K"
SCALE: 1/4" = 1'-0"
TWO CAR FRONT ENTRY GARAGE "SCB"
SHOWN WITH NO PORCH EXTENSION



2 PARTIAL FRONT ELEVATION
SCALE: 1/4" = 1'-0"
TWO CAR SIDE ENTRY GARAGE "SCC"
SHOWN WITH NO PORCH EXTENSION

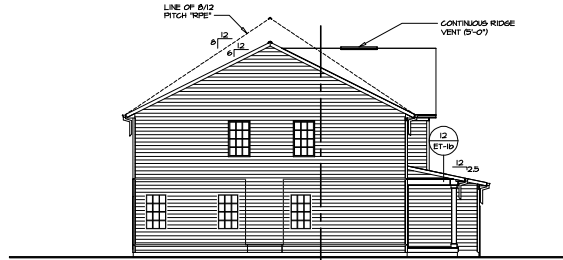


3 PARTIAL FRONT ELEVATION
SCALE: 1/4" = 1'-0"
THREE CAR FRONT ENTRY GARAGE "SCF"
SHOWN WITH NO PORCH EXTENSION

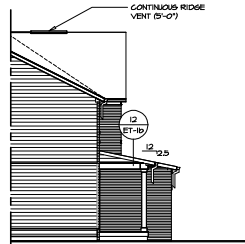
REVISION	DATE	BY	DESCRIPTION

SET NO. HADCO DRAWING OF DRAWING # 256A DATE: 5/25/17 DRAWN BY: CHECKED BY: DATE: 5/25/17 5435 PINEVILLE, MD 21133 TEL: 410-261-1100	NVR NATIONAL VENTURE ROOFING INC. 5435 PINEVILLE, MD 21133 TEL: 410-261-1100
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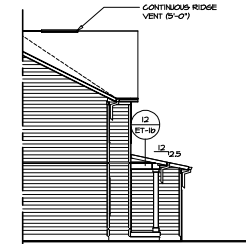
SHEET NO. A-1	FRONT ELEVATIONS ELEVATION "K"	9
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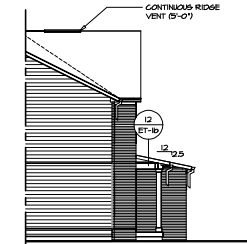
1
A-26
LEFT ELEVATION
SCALE: 1/8" = 1'-0"
SHOWN W/ ELEVATION "A" "ELA"
SIDING VENEER FRONT "EVF"
BRICK VENEER FRONT "EVA"



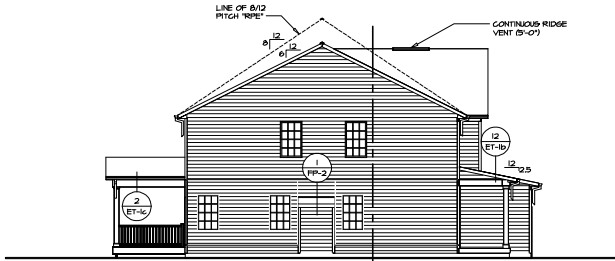
2
A-26
PARTIAL LEFT ELEVATION
SCALE: 1/8" = 1'-0"
SHOWN W/ ELEVATION "A" "ELA"
BRICK VENEER FRONT "EVA"



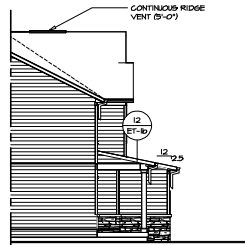
3
A-26
PARTIAL LEFT ELEVATION
SCALE: 1/8" = 1'-0"
SHOWN W/ ELEVATION "B" "ELB"
SIDING VENEER FRONT "EVF"



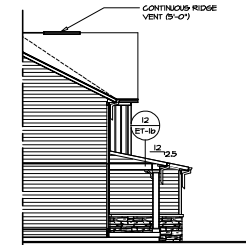
4
A-26
PARTIAL LEFT ELEVATION
SCALE: 1/8" = 1'-0"
SHOWN W/ ELEVATION "B" "ELB"
BRICK VENEER FRONT "EVA"



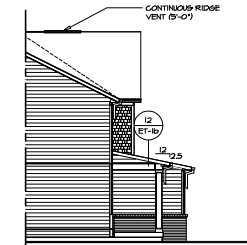
5
A-26
LEFT ELEVATION
SCALE: 1/8" = 1'-0"
SHOWN W/ ELEVATION "A" "ELA"
SIDING VENEER FRONT "EVF"
BRICK COVERED PORCH "EPC"
GAS FIREPLACE FAMILY ROOM SIDE "LDF"



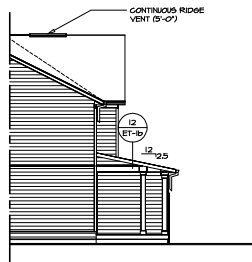
6
A-26
PARTIAL LEFT ELEVATION
SCALE: 1/8" = 1'-0"
SHOWN W/ ELEVATION "C" "ELC"
SHOWN W/O PORCH EXTENSION



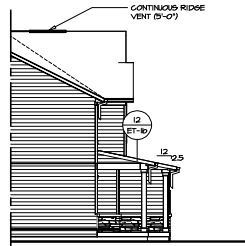
7
A-26
PARTIAL LEFT ELEVATION
SCALE: 1/8" = 1'-0"
SHOWN W/ ELEVATION "C" "ELC"
SHOWN W/O PORCH EXTENSION



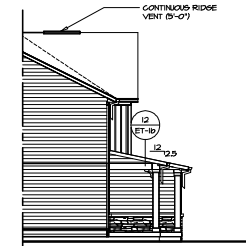
8
A-26
PARTIAL LEFT ELEVATION
SCALE: 1/8" = 1'-0"
SHOWN W/ ELEVATION "L" "ELL"
SHOWN W/O PORCH EXTENSION



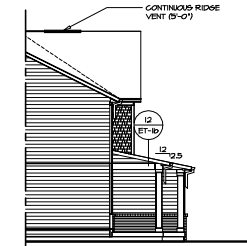
12
A-26
PARTIAL LEFT ELEVATION
SCALE: 1/8" = 1'-0"
SHOWN W/ ELEVATION "A" "ELA"
PORCH EXTENSION "EPF"



9
A-26
PARTIAL LEFT ELEVATION
SCALE: 1/8" = 1'-0"
SHOWN W/ ELEVATION "C" "ELC"
PORCH EXTENSION "EPF"



10
A-26
PARTIAL LEFT ELEVATION
SCALE: 1/8" = 1'-0"
SHOWN W/ ELEVATION "C" "ELC"
PORCH EXTENSION "EPF"



11
A-26
PARTIAL LEFT ELEVATION
SCALE: 1/8" = 1'-0"
SHOWN W/ ELEVATION "L" "ELL"
PORCH EXTENSION "EPF"

REMARKS

REV. NO. DATE

1. ALL WORK, INCLUDING MATERIALS, SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY THE LOCAL BUILDING DEPARTMENT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE LOCAL BUILDING DEPARTMENT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE LOCAL BUILDING DEPARTMENT.

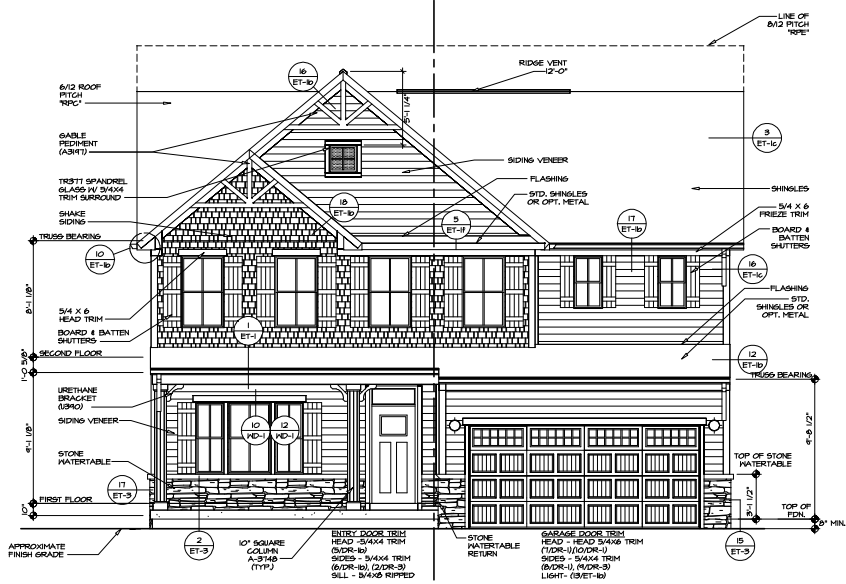


SET NO. 10000
DRAWING NO. 2000
DRAWN BY: GSA
DATE: 8/25/17
OPTION

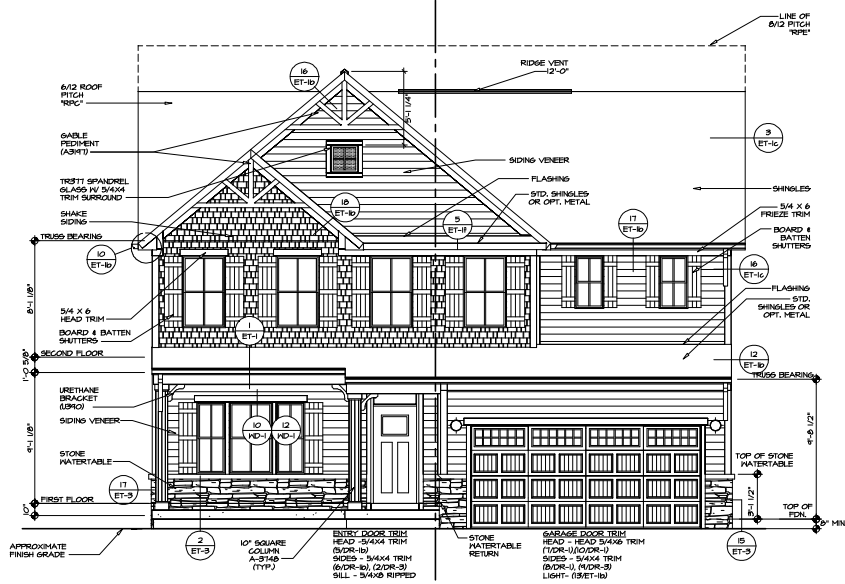
PROJECT TITLE
LEFT SIDE ELEVATIONS

OPTION DESCRIPTION

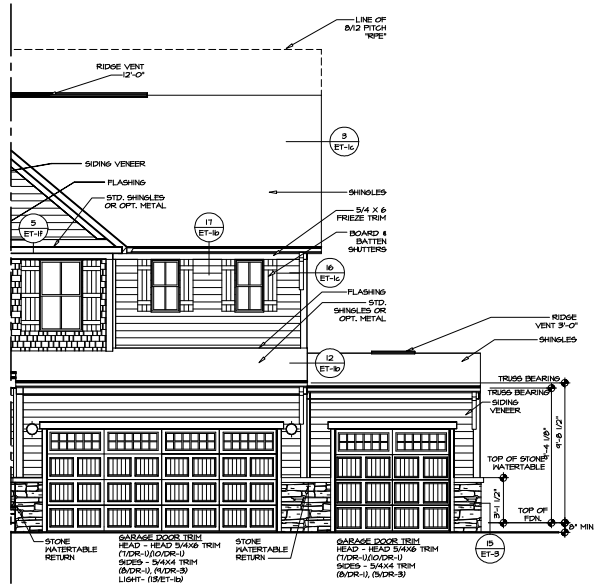
SHEET NO. 12



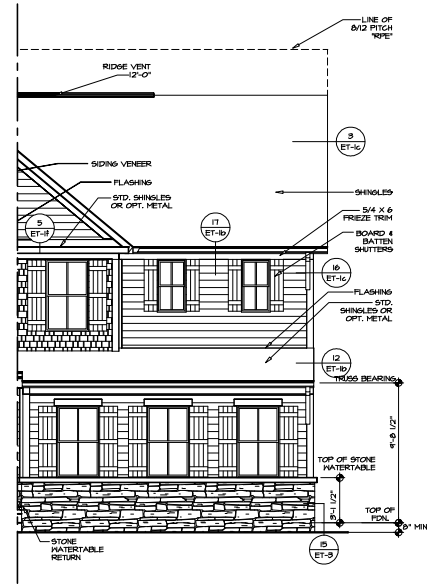
1 FRONT ELEVATION "L"
SCALE: 1/4" = 1'-0"
NO PORCH EXTENSION 20"



2 FRONT ELEVATION "L"
SCALE: 1/4" = 1'-0"
PORCH EXTENSION 28"



3 FRONT ELEVATION PARTIAL
SCALE: 1/4" = 1'-0"
THREE CAR GARAGE FRONT ENTRY 16"



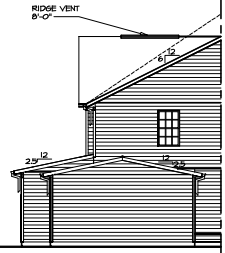
4 FRONT ELEVATION PARTIAL
SCALE: 1/4" = 1'-0"
TWO CAR GARAGE SIDE ENTRY 16"

NOTE:
GARAGE DOOR GLASS
DESIGN MAY VARY BY
MANUFACTURER

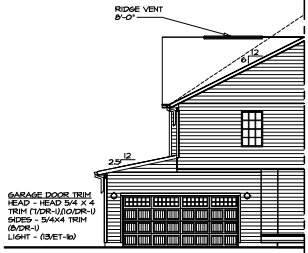
REV. NO.	DATE	REMARKS

1/4" = 1'-0" ARCHITECTURAL DRAWING
 NVR
 NVR, INC.
 100
 5455 Parkside Dr., Suite 100
 Parkville, MO 64151
 816-261-7878
 816-261-7879

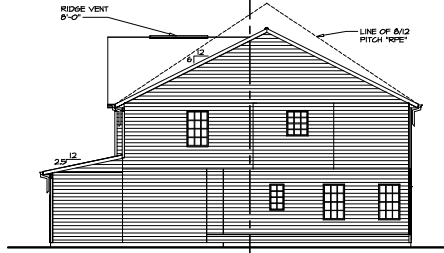
SHEET NO.	1
PROJECT	101
DATE	8/10/17
DESIGNER	ELL
DRRAWN BY	ELL
CHECKED BY	ELL
DATE	8/10/17
PROJECT	101
PROJECT TITLE	FRONT ELEVATION
PROJECT LOCATION	FRONT ELEVATION "L"
PROJECT NO.	101



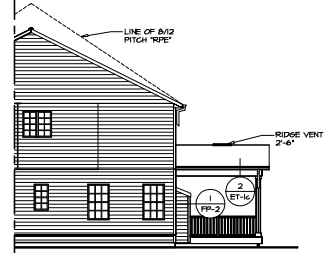
1 RIGHT ELEVATION PARTIAL
SCALE: 1/8" = 1'-0"
ELEVATION A "ELA"
ELEVATION B "ELB"
SIDING VENER FRONT "EVF"
THREE CAR GARAGE FRONT ENTRY "GGF"



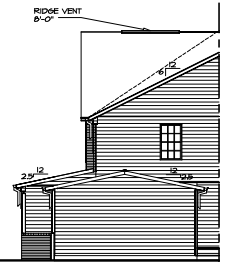
2 RIGHT ELEVATION PARTIAL
SCALE: 1/8" = 1'-0"
ELEVATION A "ELA"
ELEVATION B "ELB"
SIDING VENER FRONT "EVF"
THO CAR GARAGE SIDE ENTRY "GGC"
GARAGE DOOR TRIM
HEAD - HEAD 5/4 X 4
TRIM (TOP)-(U)(ODR)-(L)
SIDES - 5/4X4 TRIM
(B)(DR)-(L)
LIGHT - (B)(ET)-(R)



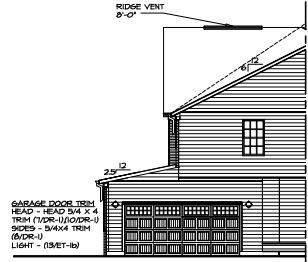
3 RIGHT ELEVATION
SCALE: 1/8" = 1'-0"
STUDY "MSB"
ELEVATION A "ELA"
ELEVATION B "ELB"
OWNERS BATHROOM SHOWER "AMA"
OWNERS BATHROOM ROMAN SHOWER "ARF"
THO CAR GARAGE FRONT ENTRY "GGC"
LINE OF 8/12 PITCH "RPE"



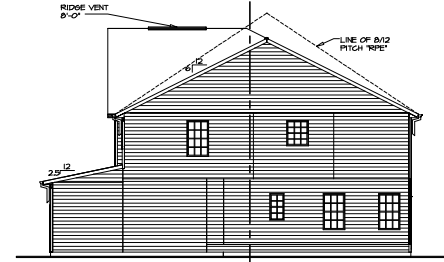
4 RIGHT ELEVATION PARTIAL
SCALE: 1/8" = 1'-0"
STUDY "MSB"
REAR COVERED PORCH "EPB"
OWNERS BATHROOM SOAKING TUB
AND SHOWER GLASS SURROUND "AMF"
GAS FIREPLACE FAMILY ROOM REAR "LRF"
LINE OF 8/12 PITCH "RPE"
RIDGE VENT 8'-0"



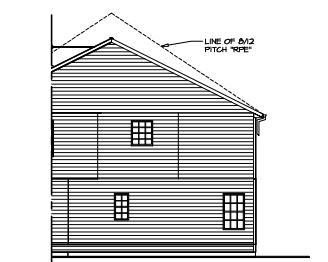
5 RIGHT ELEVATION PARTIAL
SCALE: 1/8" = 1'-0"
ELEVATION A "ELA"
ELEVATION B "ELB"
FULL BRICK FRONT "EVA"
THREE CAR GARAGE FRONT ENTRY "GGF"



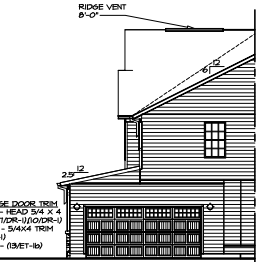
6 RIGHT ELEVATION PARTIAL
SCALE: 1/8" = 1'-0"
SHOWN IN ELEVATION A "ELA"
ELEVATION B "ELB"
FULL BRICK FRONT "EVA"
THO CAR GARAGE SIDE ENTRY "GGC"
GARAGE DOOR TRIM
HEAD - HEAD 5/4 X 4
TRIM (TOP)-(U)(ODR)-(L)
SIDES - 5/4X4 TRIM
(B)(DR)-(L)
LIGHT - (B)(ET)-(R)



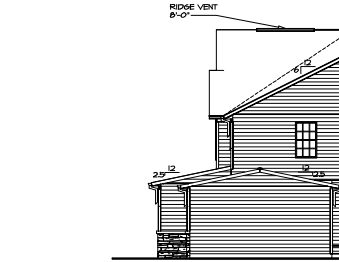
7 RIGHT ELEVATION
SCALE: 1/8" = 1'-0"
STUDY "MSB"
ELEVATION B "ELB"
ELEVATION C "ELC"
ELEVATION L "ELL"
OWNERS BATHROOM SHOWER "AMA"
OWNERS BATHROOM ROMAN SHOWER "ARF"
THO CAR GARAGE FRONT ENTRY "GGC"
LINE OF 8/12 PITCH "RPE"



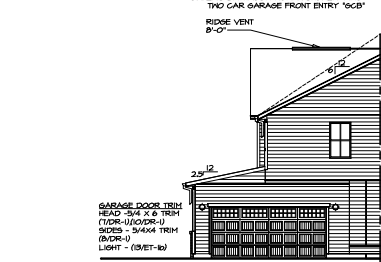
8 RIGHT ELEVATION PARTIAL
SCALE: 1/8" = 1'-0"
BEDROOM FIRST FLOOR "BMR"
OWNERS BATHROOM SHOWER "AMA"
OWNERS BATHROOM ROMAN SHOWER "ARF"
LINE OF 8/12 PITCH "RPE"



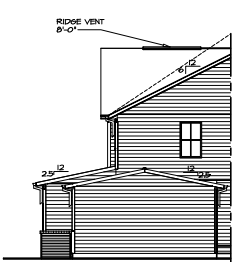
9 RIGHT ELEVATION PARTIAL
SCALE: 1/8" = 1'-0"
ELEVATION G "ELG"
THO CAR GARAGE SIDE ENTRY "GGC"
GARAGE DOOR TRIM
HEAD - HEAD 5/4 X 4
TRIM (TOP)-(U)(ODR)-(L)
SIDES - 5/4X4 TRIM
(B)(DR)-(L)
LIGHT - (B)(ET)-(R)



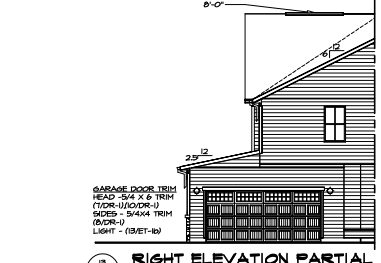
10 RIGHT ELEVATION PARTIAL
SCALE: 1/8" = 1'-0"
ELEVATION C "ELC"
THREE CAR GARAGE FRONT ENTRY "GGF"



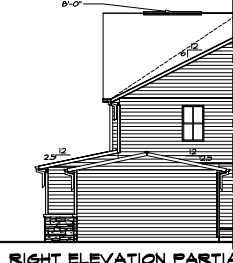
11 RIGHT ELEVATION PARTIAL
SCALE: 1/8" = 1'-0"
ELEVATION K "ELK"
THO CAR GARAGE SIDE ENTRY "GGC"
GARAGE DOOR TRIM
HEAD - 5/4 X 6 TRIM
(TOP)-(U)(ODR)-(L)
SIDES - 5/4X4 TRIM
(B)(DR)-(L)
LIGHT - (B)(ET)-(R)



12 RIGHT ELEVATION PARTIAL
SCALE: 1/8" = 1'-0"
ELEVATION K "ELK"
THREE CAR GARAGE FRONT ENTRY "GGF"
RIDGE VENT 8'-0"



13 RIGHT ELEVATION PARTIAL
SCALE: 1/8" = 1'-0"
ELEVATION L "ELL"
THO CAR GARAGE SIDE ENTRY "GGC"
GARAGE DOOR TRIM
HEAD - 5/4 X 6 TRIM
(TOP)-(U)(ODR)-(L)
SIDES - 5/4X4 TRIM
(B)(DR)-(L)
LIGHT - (B)(ET)-(R)

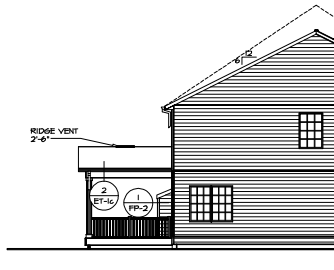


14 RIGHT ELEVATION PARTIAL
SCALE: 1/8" = 1'-0"
ELEVATION L "ELL"
THREE CAR GARAGE FRONT ENTRY "GGF"
RIDGE VENT 8'-0"

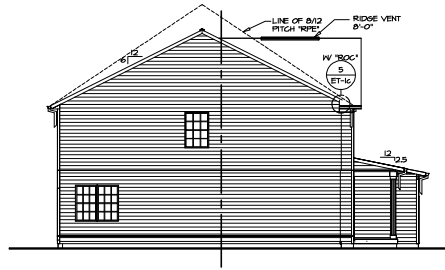
NOTE:
GARAGE DOOR GLASS
DESIGN MAY VARY BY
MANUFACTURER

SHEET NO. A-2	DATE	REVISIONS
	DATE	REVISIONS
SET NO. LAYOUT	DATE	REVISIONS
DRAWING TITLE	DATE	REVISIONS
RIGHT ELEVATION	DATE	REVISIONS
OPTION DESCRIPTION	DATE	REVISIONS
12		

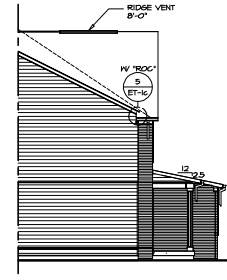




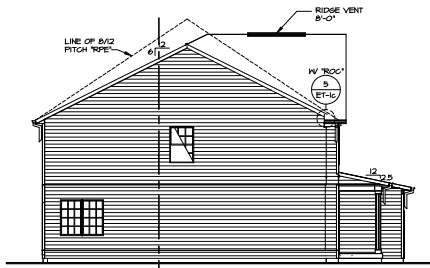
1
A-2b
LEFT ELEVATION PARTIAL
SCALE: 1/8" = 1'-0"
REAR COVERED PORCH "EPB"
GAS FIREPLACE FAMILY ROOM REAR "LFP"



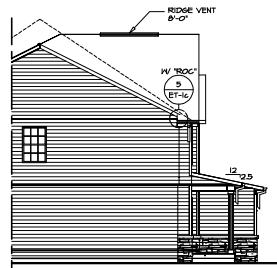
2
A-2b
LEFT ELEVATION
SCALE: 1/8" = 1'-0"
ELEVATION A "ELA"
SIDING VENEER FRONT "EVF"



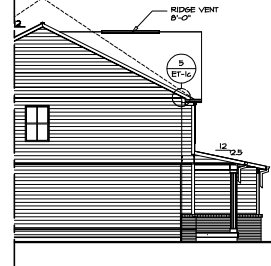
3
A-2b
LEFT ELEVATION PARTIAL
SCALE: 1/8" = 1'-0"
ELEVATION A "ELA"
ELEVATION B "ELB"
FULL BRICK FRONT "EVA"



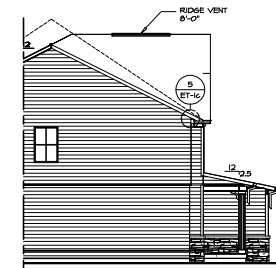
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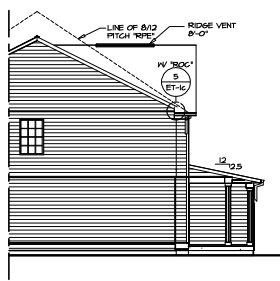
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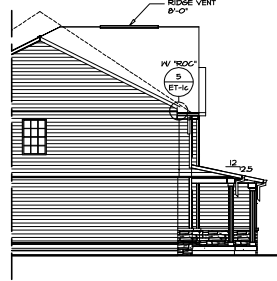
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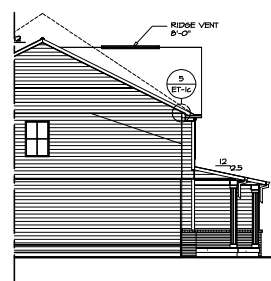
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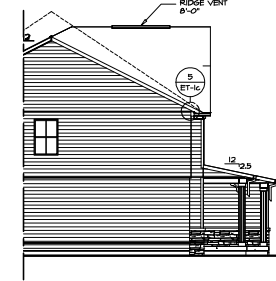
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ELEVATION A "ELA"
PORCH EXTENSION "EPB"



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LEFT ELEVATION PARTIAL
SCALE: 1/8" = 1'-0"
ELEVATION C "ELC"
PORCH EXTENSION "EPB"



9
A-2b
LEFT ELEVATION PARTIAL
SCALE: 1/8" = 1'-0"
ELEVATION K "ELK"
PORCH EXTENSION "EPB"



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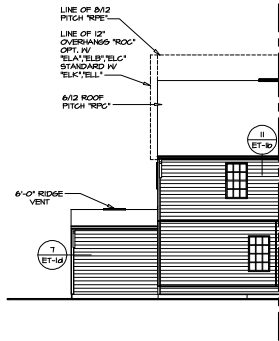
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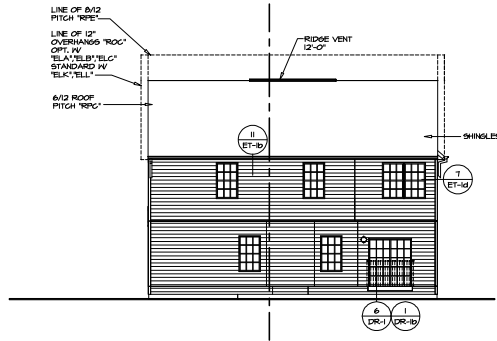


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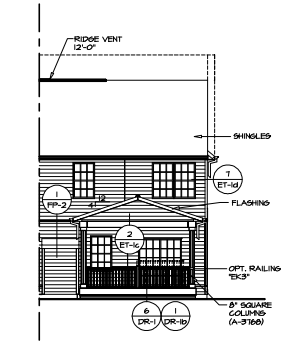
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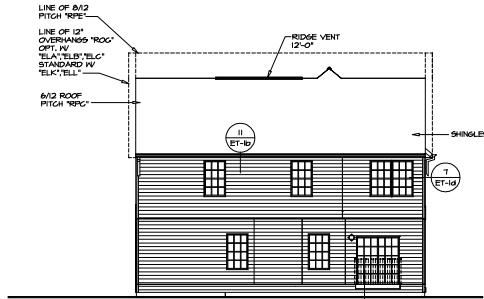
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SCALE: 1/8" = 1'-0"
SHOWN IN ELEVATION A 'ELA'
THREE CAR GARAGE FRONT ENTRY 'GCF'



2 REAR ELEVATION
SCALE: 1/8" = 1'-0"
SLIDING GLASS DOOR DINETTE 'DOT'
ELEVATION A 'ELA'
ELEVATION B 'ELB'



3 REAR ELEVATION PARTIAL
SCALE: 1/8" = 1'-0"
SHOWN IN ELEVATION A 'ELA'
GAS FIREPLACE FAMILY ROOM
GAS FIREPLACE REAR LIGHT
DOUBLE PATIO DOOR DINETTE 'DPT'
COVERED PORCH 'SEP'



4 REAR ELEVATION
SCALE: 1/8" = 1'-0"
SLIDING GLASS DOOR DINETTE 'DOT'
ELEVATION B 'ELB'
ELEVATION C 'ELC'
ELEVATION E 'ELL'

SHEET NO. A-2c	DATE 8/10/17	OPTION OPTION	NVR NVR, Inc. 100 5418 Prairie Ave. #1103 Dallas, TX 75242	REMARKS
				SET NO. 14800 DRAWING TITLE REAR ELEVATION
14				

Typical building elevations. Number of units, window configurations, garage door style, colors, and other architectural standards will vary from townhome unit to townhome unit.



SCALE NOTE:
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 11"x17" PRINTS ARE ONE HALF THE NOTED SCALE



TOWNHOME PRODUCT



UNIT E - LOT 25
 SCHUBERT ELEVATION "F"
 (REVERSE)

UNIT D - LOT 26
 MENDELSSOHN ELEVATION "A"
 (PER PLAN)

UNIT C - LOT 27
 MENDELSSOHN ELEVATION "C"
 (PER PLAN)

UNIT B - LOT 28
 MENDELSSOHN ELEVATION "A"
 (PER PLAN)

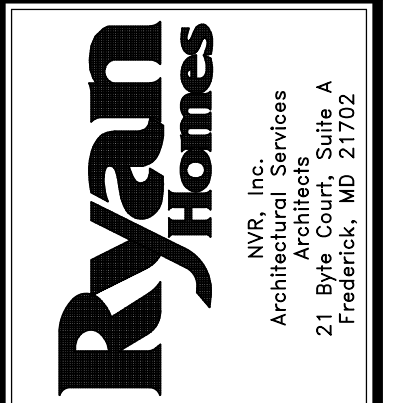
UNIT A - LOT 29
 MENDELSSOHN ELEVATION "E"
 (PER PLAN)

2025 AMBERGATE II - 5 UNIT BUILDING ELEVATION
 SCALE: 3/16" = 1'-0"

A 12" front facade off-set is provided between all townhome units within a common building "block". This includes the roof line and common building walls.

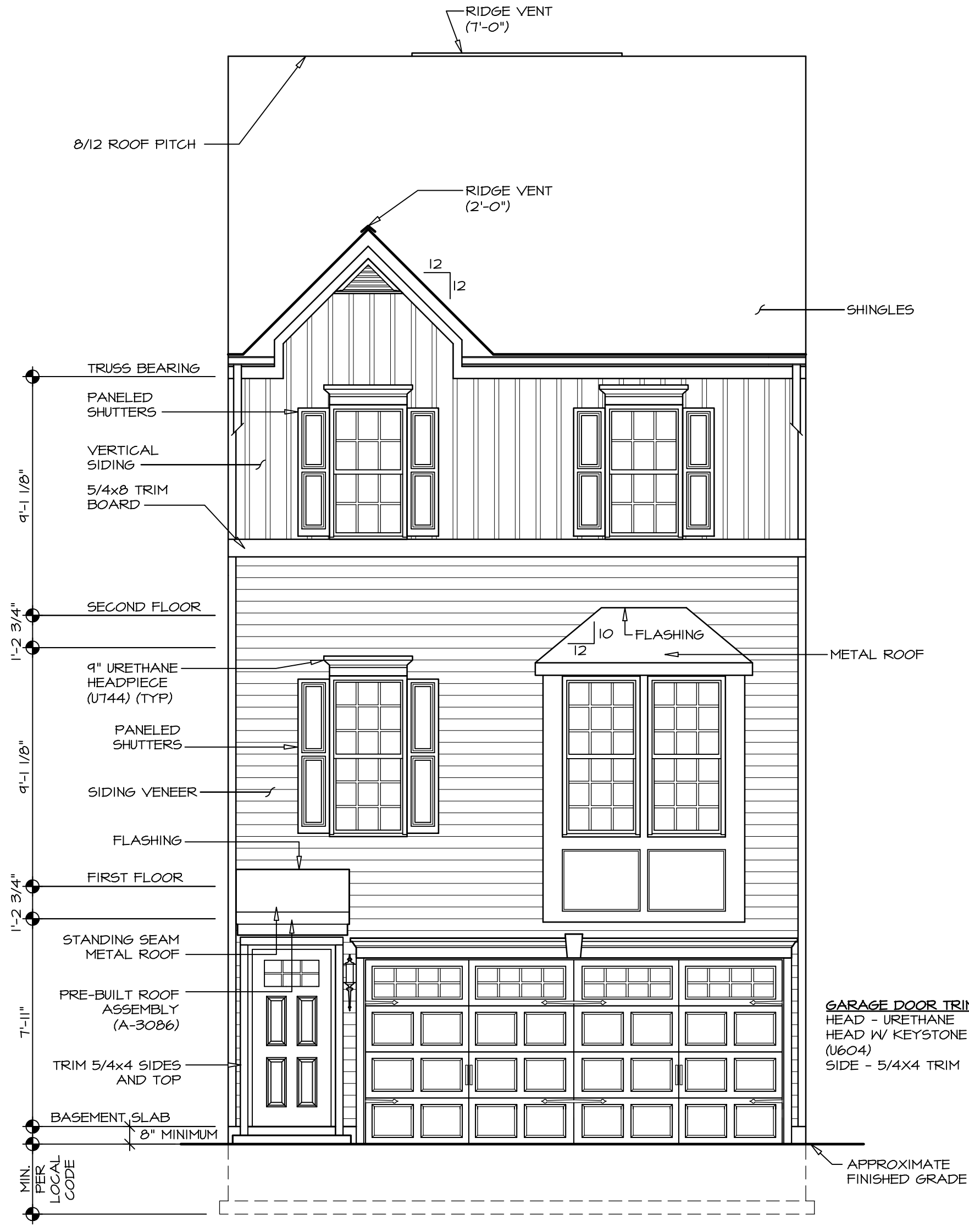
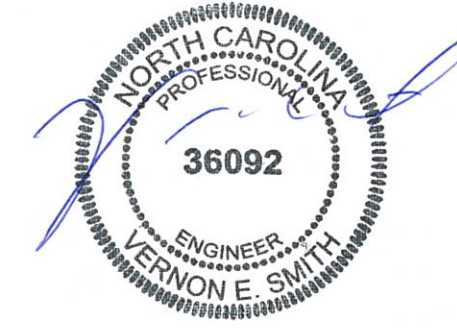
RLH / AM / 2025A-E

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OPTION DESCRIPTION	5 - UNIT BUILDING	DRAWN BY CL-S	REV. NO. DATE
		DATE: 4/27/2	1 5/6/24
			BCL - RLH / AM / 2025A-E

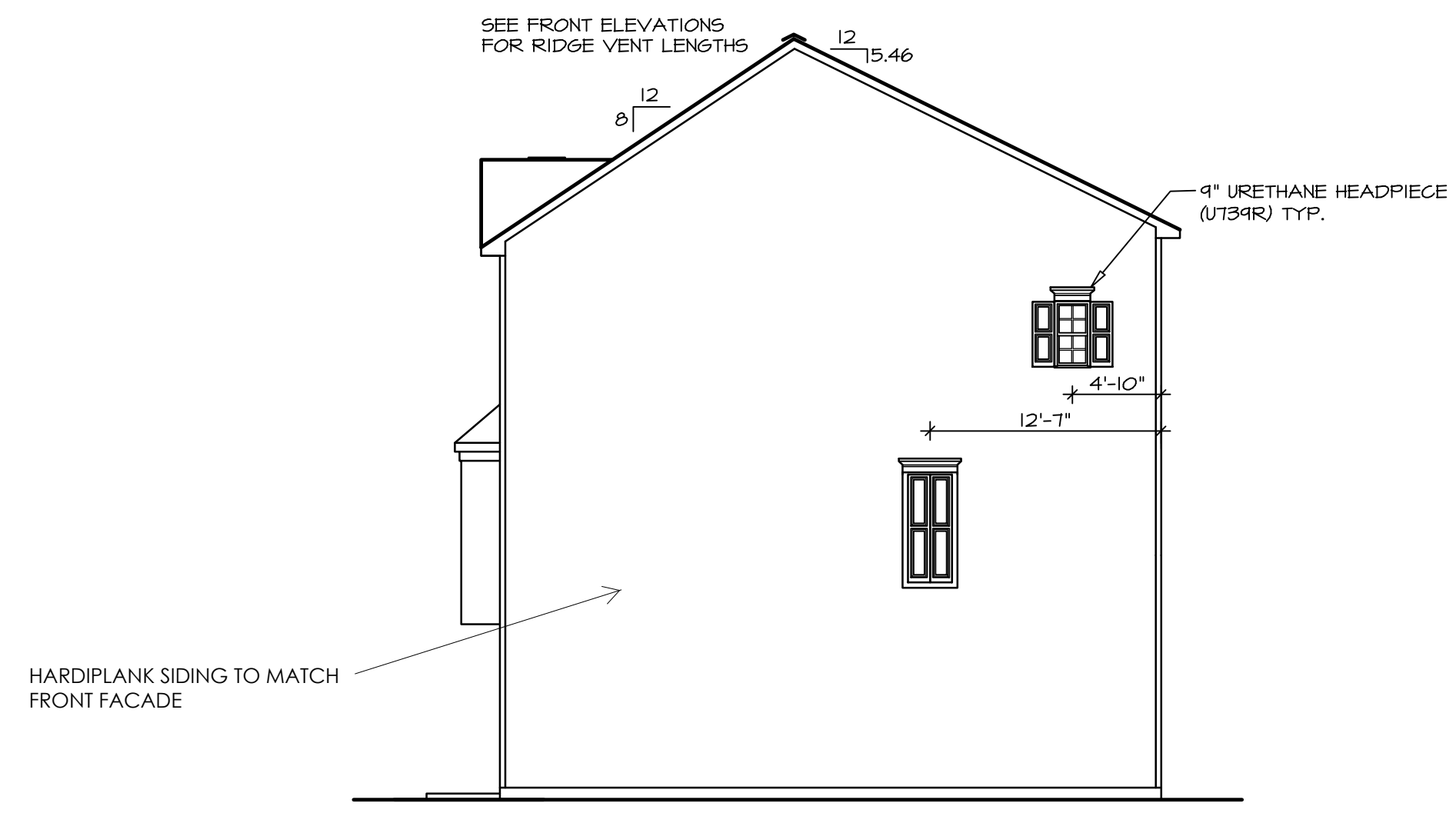


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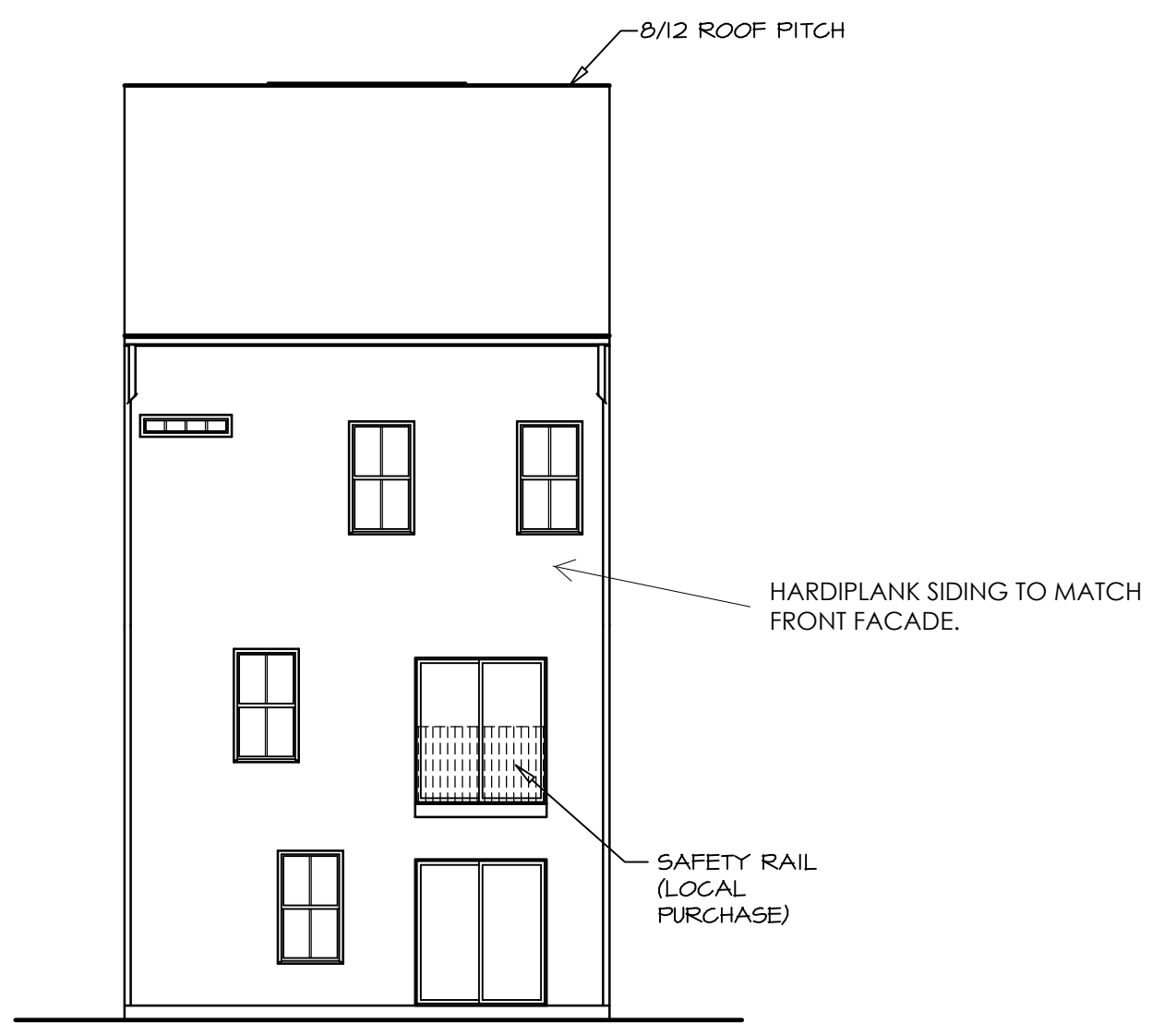
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1 ELEVATION "E"
 A-1.1 SCALE: 1/4" = 1'-0"



2 SIDE ELEVATION
 A-1.1 SCALE: 1/8" = 1'-0"



3 REAR ELEVATION
 A-1.1 SCALE: 1/8" = 1'-0"

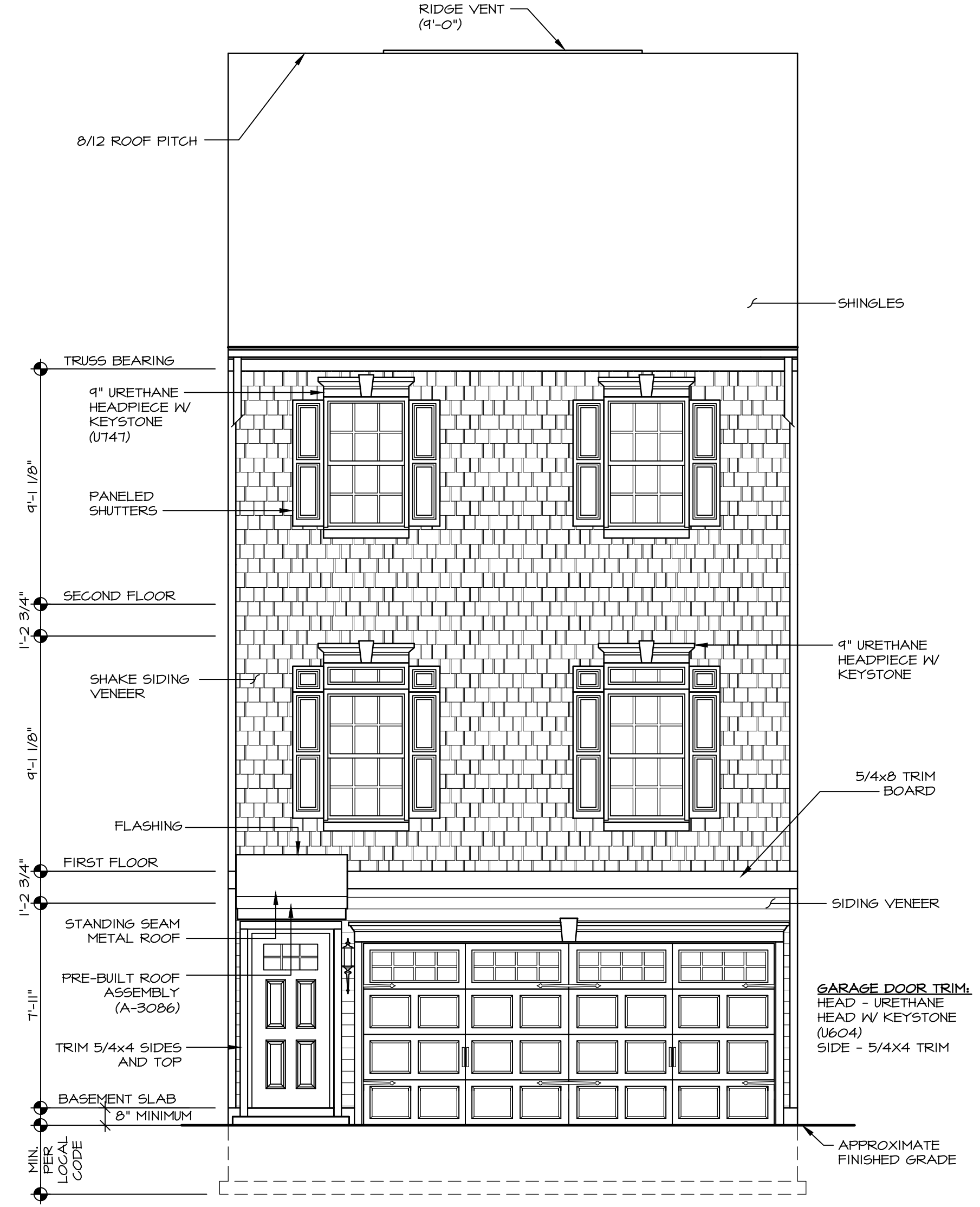
RLH / AM / 2025A

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OPTION DESCRIPTION 6						

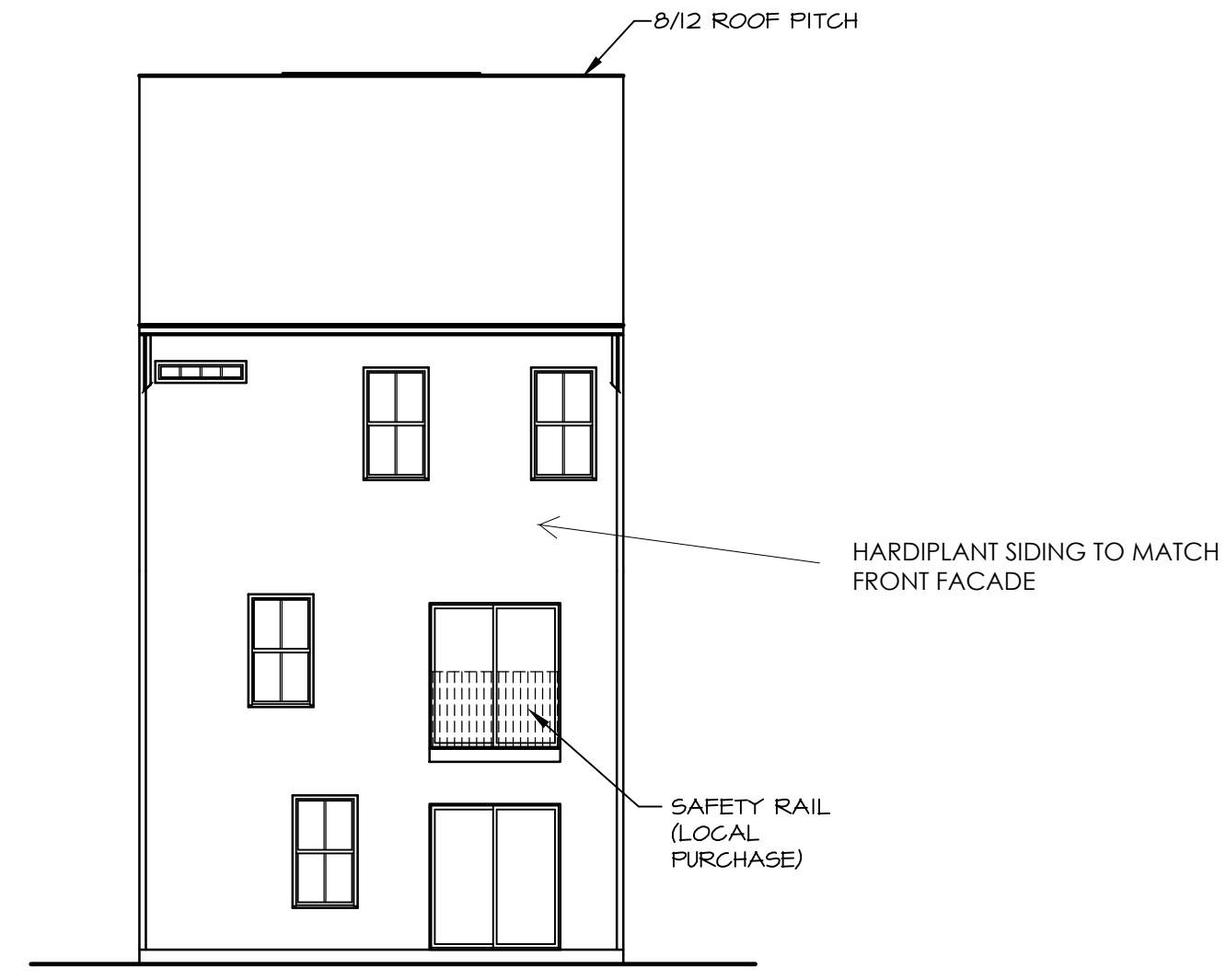


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1
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2
 A-1.1 SCALE: 1/8" = 1'-0"

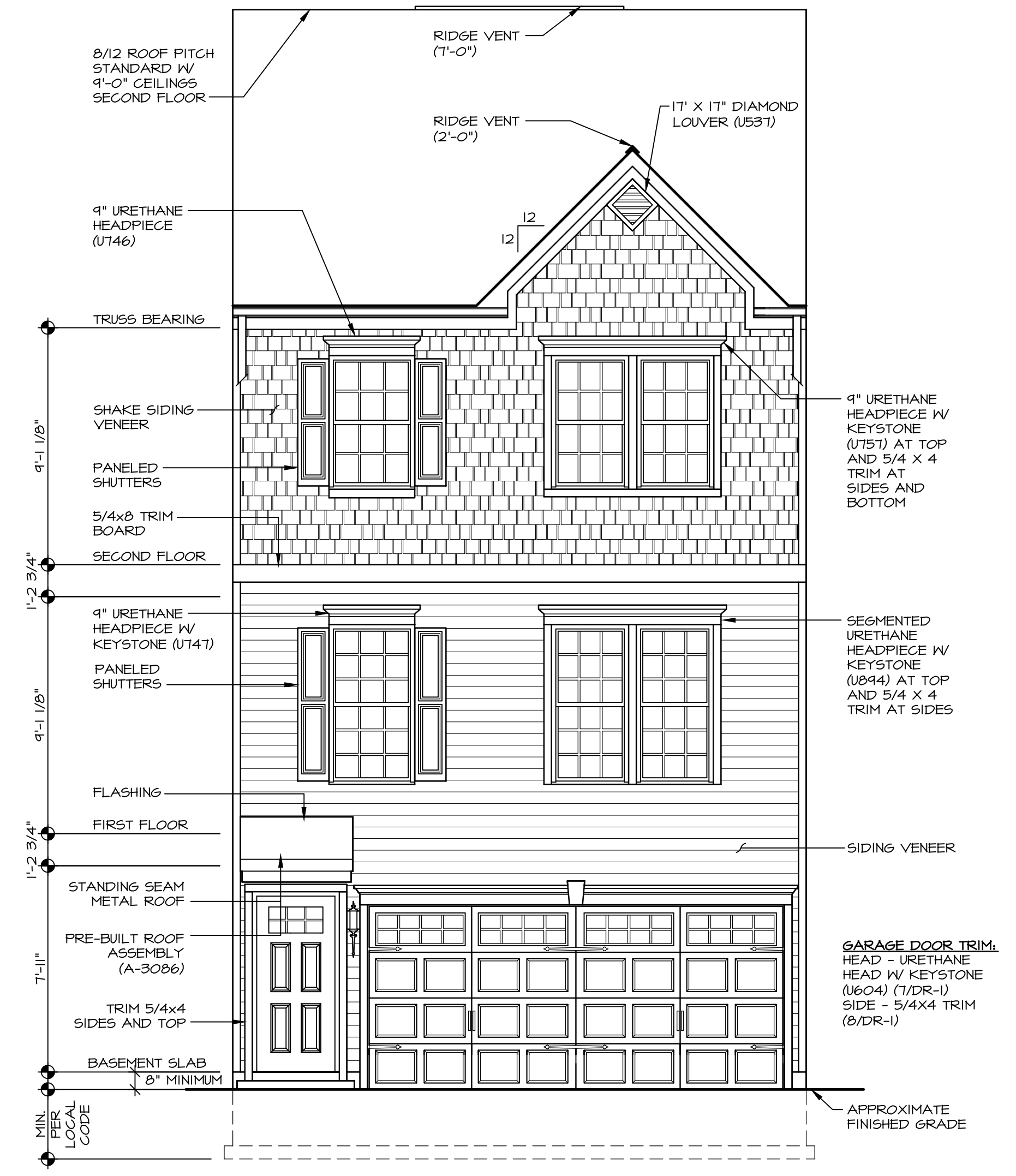
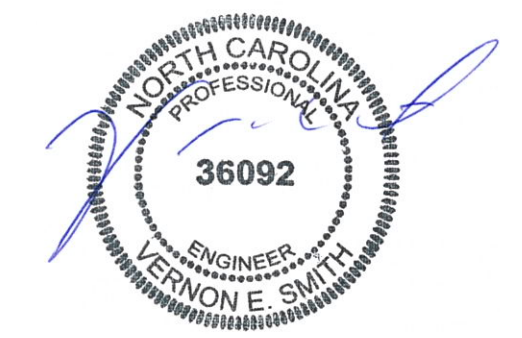
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OPTION DESCRIPTION 4						

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 NVR, Inc.
 Architectural Services
 Architects, Inc.
 21 Park Avenue
 Frederick, MD 21702

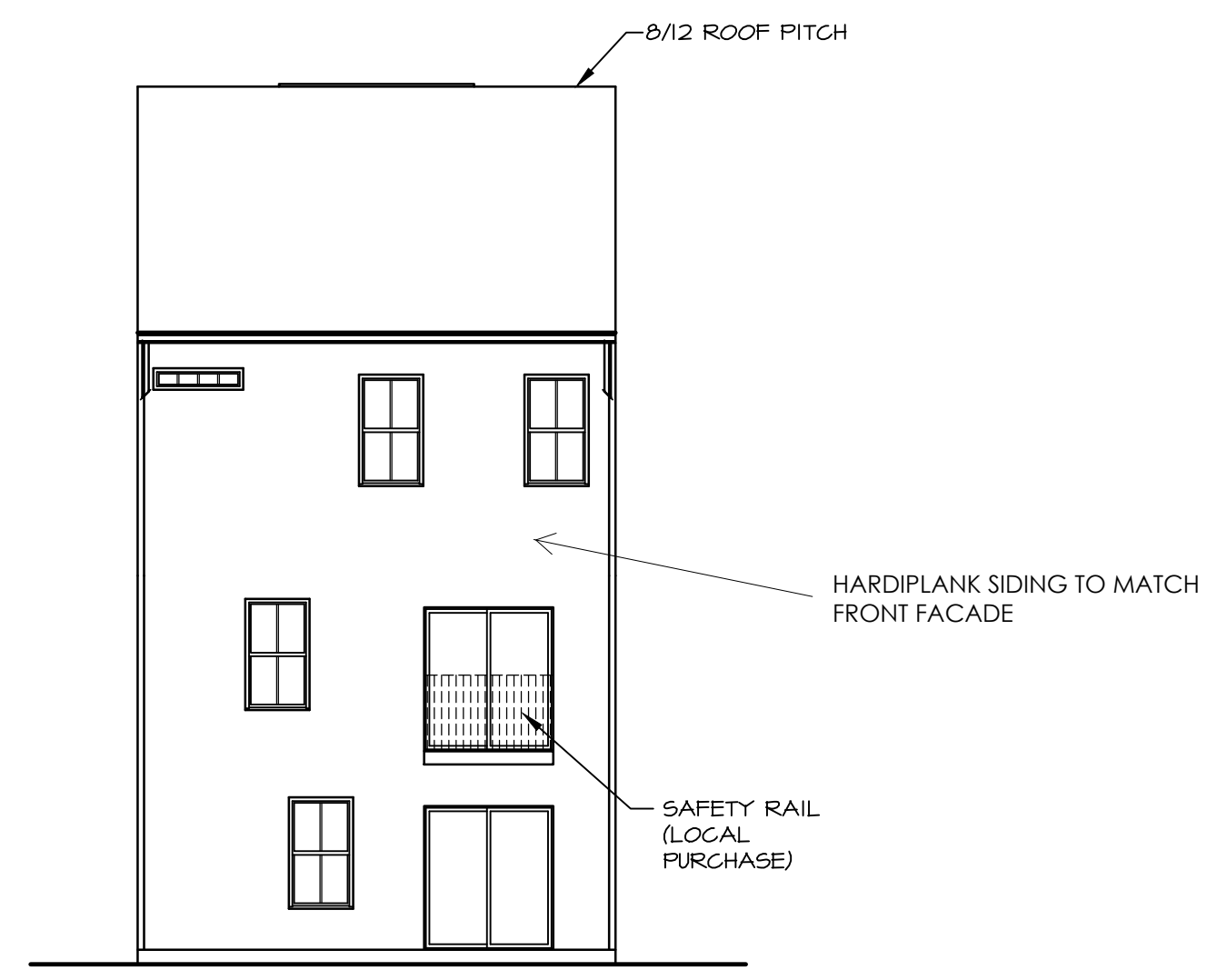
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1 ELEVATION "C"
 A-1.1 SCALE: 1/4" = 1'-0"

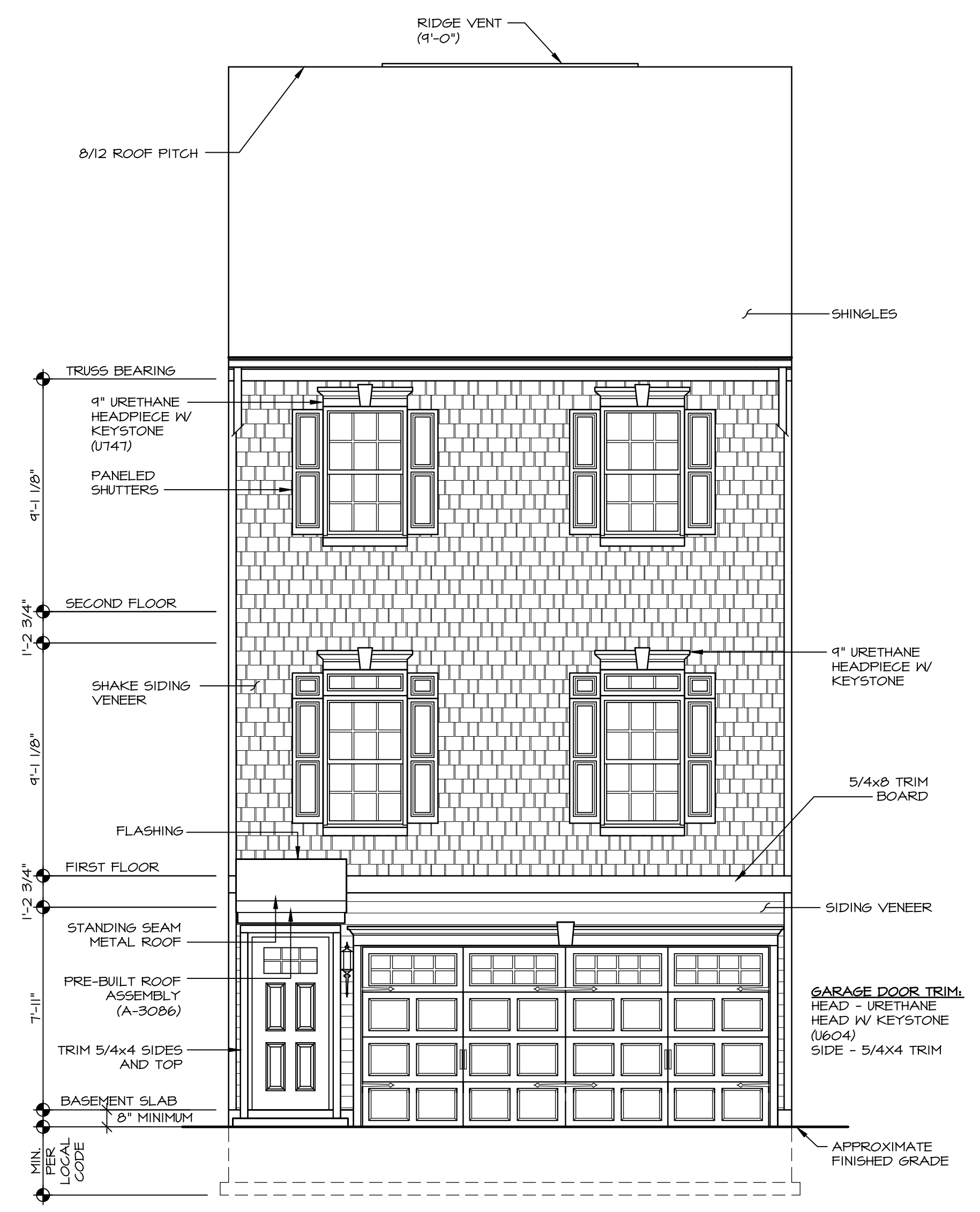
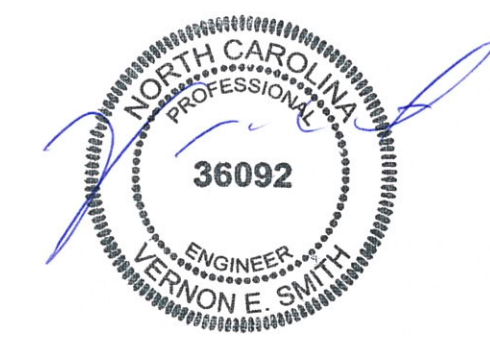


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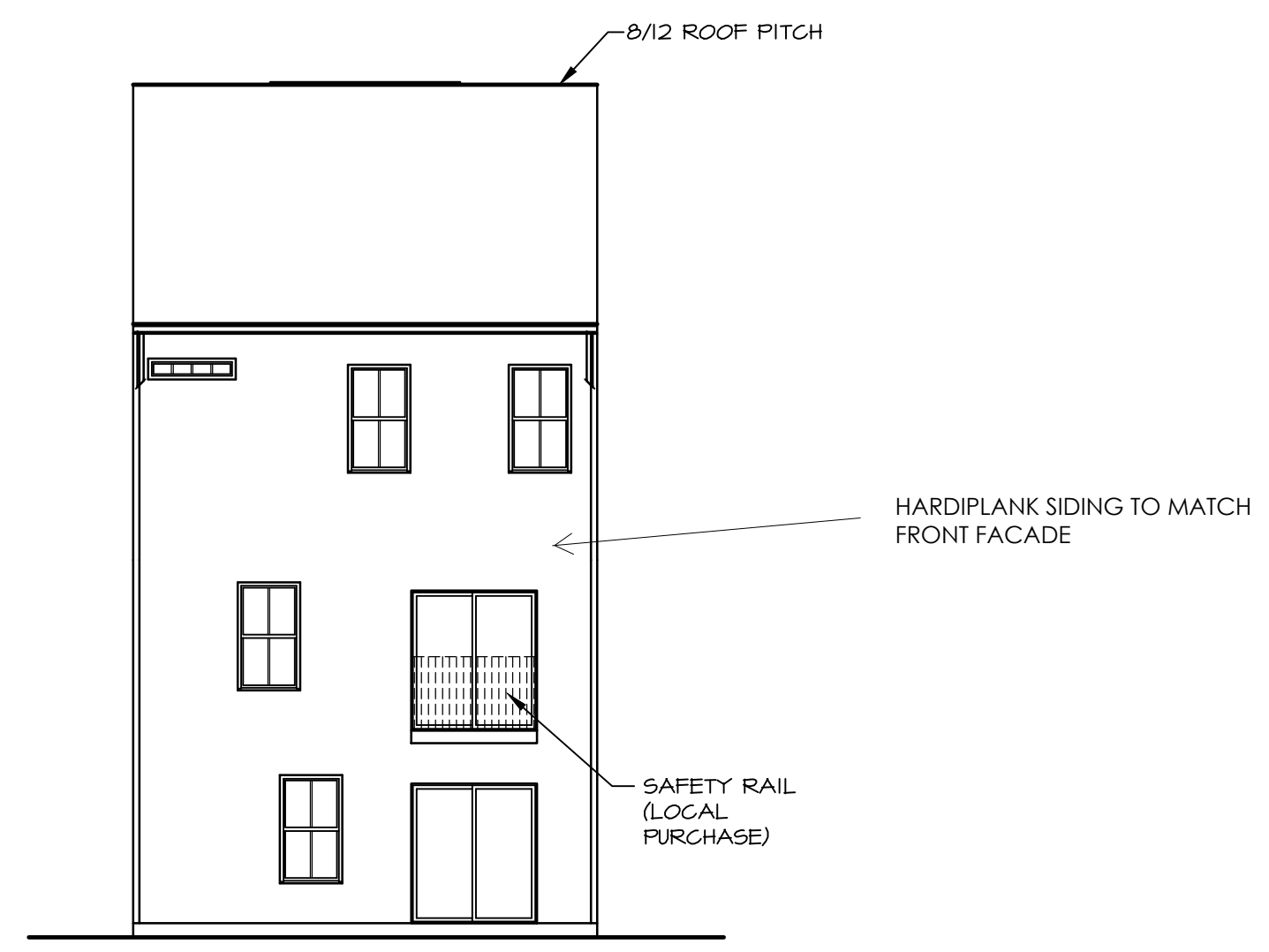
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ELEVATION "A"
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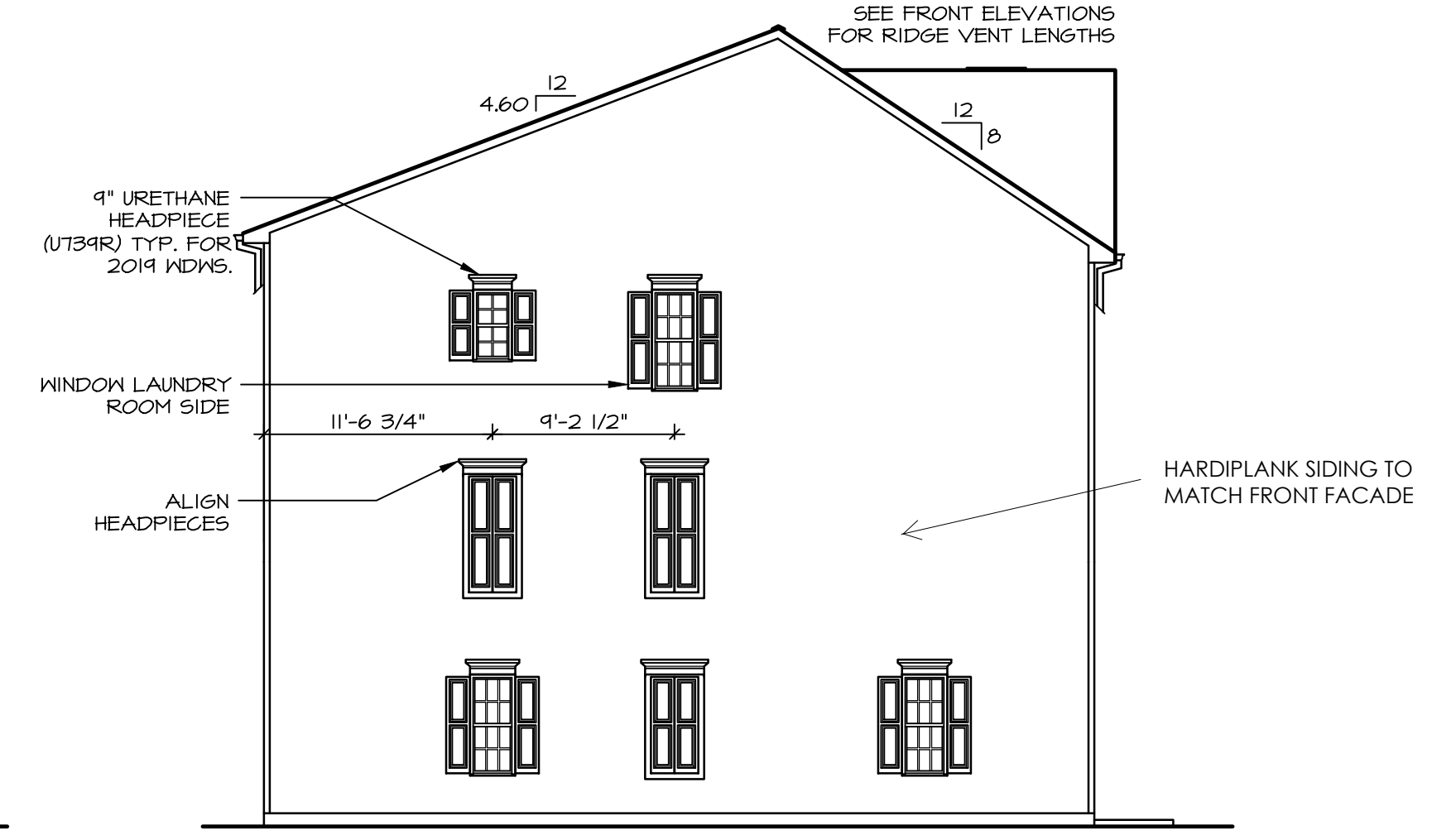
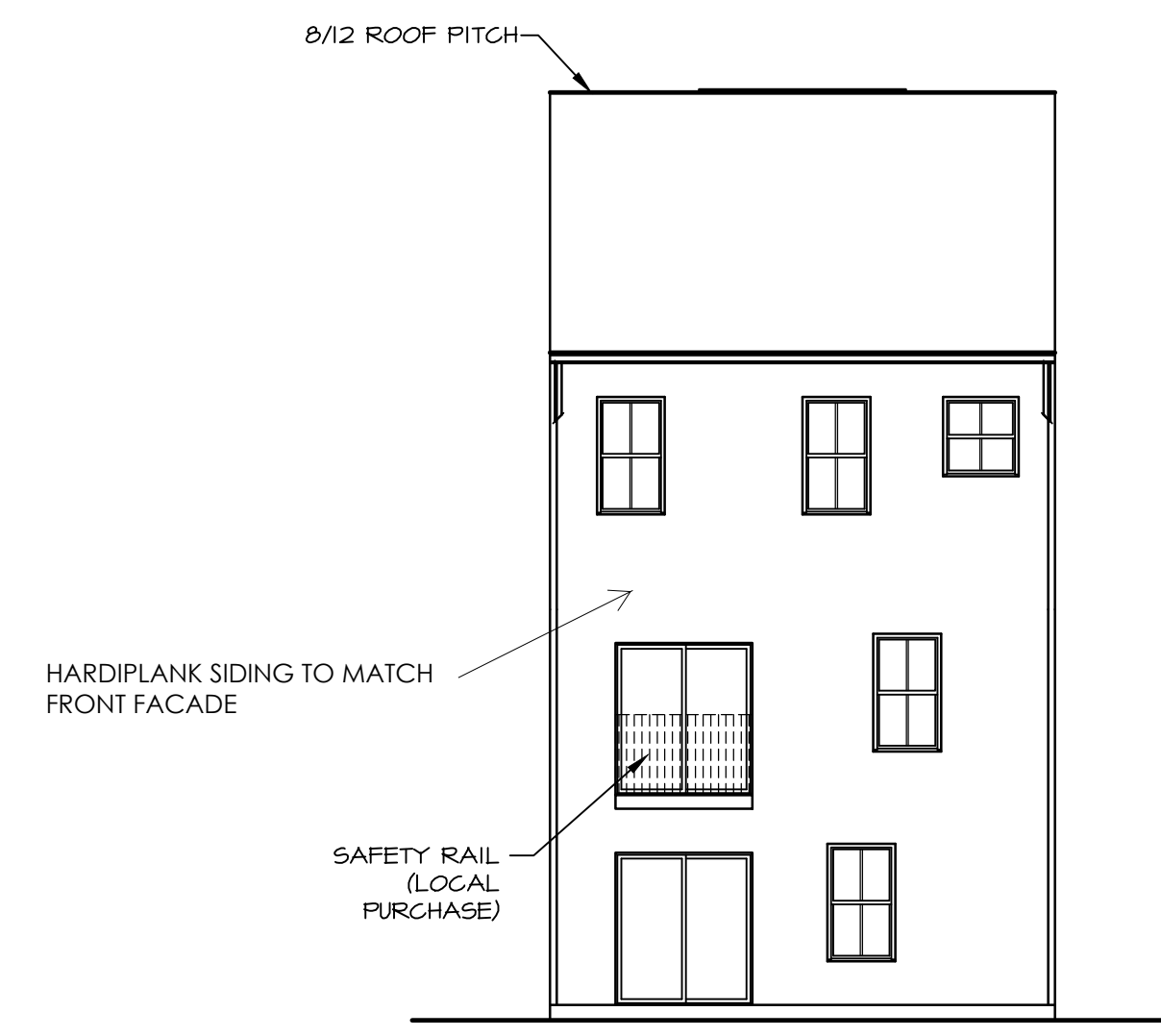
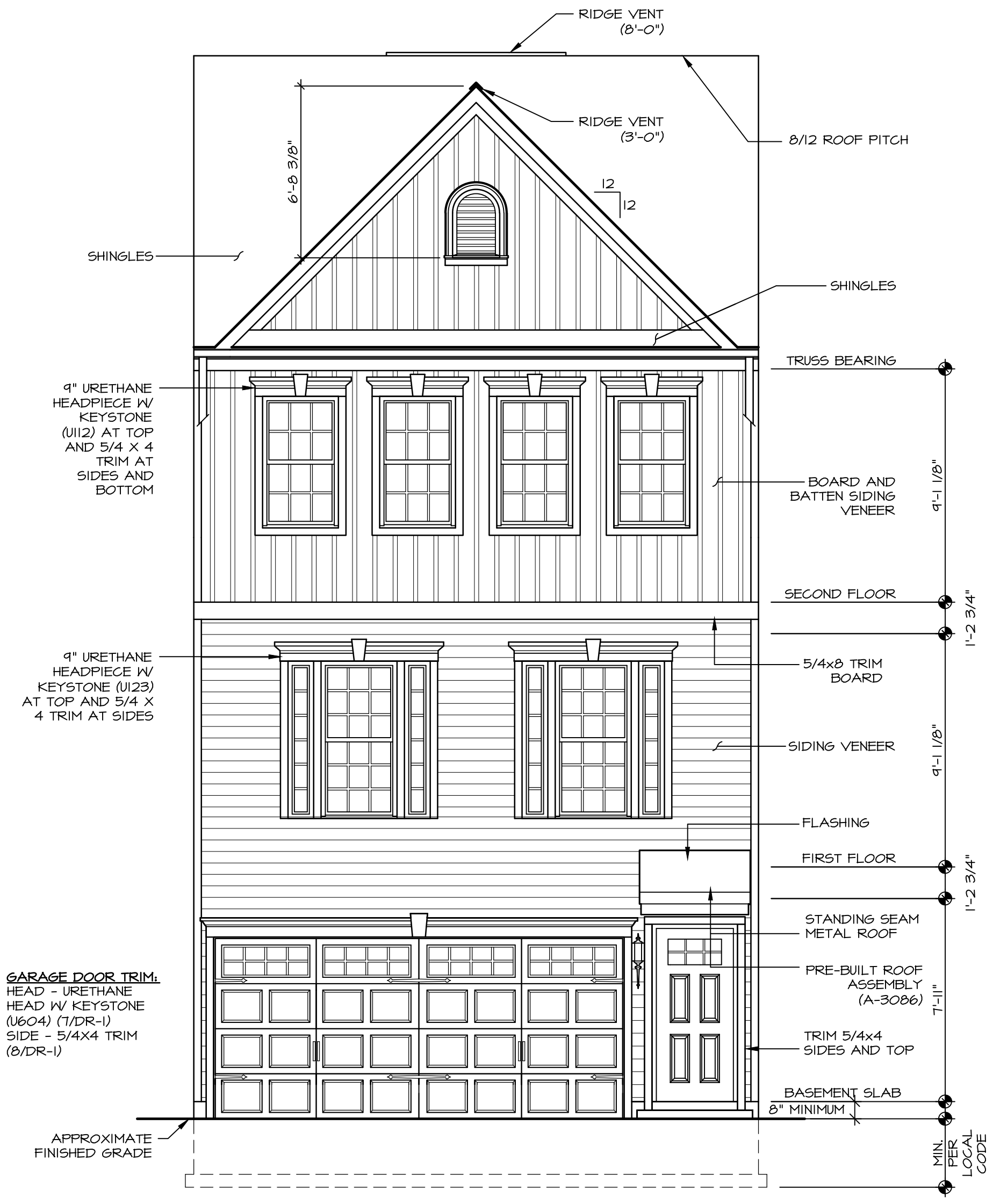


REAR ELEVATION
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RLH / AM / 2025D

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119					

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SHUBERT
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 OPTION



Holland Road Mixed - Use
Traffic Impact Analysis
Apex, North Carolina

TRAFFIC IMPACT ANALYSIS

FOR

HOLLAND ROAD MIXED-USE

LOCATED

IN

APEX, NC

Prepared For:
Peak Engineering & Design, PLLC
1125 Apex Peakway
Apex, NC 27502

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

APRIL 2021



RKA Project No. 21015

Prepared By: DT

Reviewed By: NB

**TRAFFIC IMPACT ANALYSIS
HOLLAND ROAD MIXED-USE
APEX, NORTH CAROLINA**

EXECUTIVE SUMMARY

1. Development Overview

A Traffic Impact Analysis (TIA) was conducted for the proposed Holland Road Mixed-Use development in accordance with the Apex (Town) Unified Development Ordinance (UDO) and North Carolina Department of Transportation (NCDOT) capacity analysis guidelines. The proposed development is to be located north of Old US Highway 1, west of Holland Road in Apex, North Carolina. The proposed development is expected to be a mixed-use development and estimated to be built out in 2025. Site access is proposed via one (1) full-movement driveway and one (1) right-in/right-out driveways along Holland Road, one (1) right-in/right-out driveway along Old US Highway 1, and one (1) full-movement driveway along Humie Olive Road.

2. Existing Traffic Conditions

The study area for the TIA was determined through coordination with the Town and NCDOT and consists of the following existing intersections:

- Humie Olive Road and Old US Highway 1
- Holland Road and Old US Highway 1
- Friendship Road and Old US Highway 1
- Holland Road and Kelly Road

Peak hour turning movement counts were collected at the following study intersections in February 2021, by RKA, on a typical weekday during weekday AM (7:00 – 9:00 AM) and weekday PM (4:00 – 6:00 PM) peak periods:

- Humie Olive Road and Old US Highway 1
- Holland Road and Old US Highway 1
- Friendship Road and Old US Highway 1
- Holland Road and Kelly Road

Peak hour turning movement counts from RKA were utilized at the intersection of Old US Highway 1 and Humie Olive Road from September 2015. Weekday PM peak hour counts were also utilized from the VHB Engineering NC, PC at the intersection of Friendship Road and Old US Highway 1 from April 2016. These counts were grown to 2021 using a 4% annual growth rate and were compared to newly collected count data at the same intersections. The comparison of this count data was used to develop a rate between available count data and new count data collected during COVID-19 conditions. The rates determined were applied to the new count data collected at all study intersections to determine 2021 existing traffic volumes. A growth rate of 47% was applied to the new count data collected during the weekday AM peak hour and 14% was applied to all new count data collected during the weekday PM peak hour to account for the reduction in traffic associated with the COVID-19 pandemic. Weekday AM and PM traffic volumes were balanced between study intersections, where appropriate.

3. Site Trip Generation

The proposed development is assumed to consist of a maximum of 110 single-family homes, a 60,000 s.f. shopping center, two (2) 4,000 s.f. fast-food restaurants with drive-thru, an 8,500 s.f. quality restaurant, and a 10 f.p. gas station with convenience market. Average weekday daily, AM peak hour, and PM peak hour trips for the proposed development were estimated using methodology contained within the ITE Trip Generation Manual, 10th Edition. Table E-1 provides a summary of the trip generation potential for the site.

Table E-1: Site Trip Generation

Land Use (ITE Code)	Intensity	Daily Traffic (vpd)	Weekday AM Peak Hour Trips (vph)		Weekday PM Peak Hour Trips (vph)	
			Enter	Exit	Enter	Exit
Single Family Homes (210)	110 units	1,140	21	62	70	41
Shopping Center (820)	60,000 s.f.	4,250	113	69	179	193
Quality Restaurant (931)	8,500 s.f.	710	--**	--**	44	22
Fast-Food Restaurant w/ Drive-Thru (934)	8,000 s.f.	3,770	164	158	136	125
Gas Station w/ Convenience Market (945)	10 f.p.	2,050	64	61	71	69
Total Trips		11,920	362	350	500	450
<i>Internal Capture (12% AM Entering & 13% AM Exiting) (35% PM Entering, 38% PM Exiting)</i>			-43	-46	-175	-171
Total External Trips			319	304	325	279
<i>Pass-By Trips: Fast-Food Restaurant with Drive-Through (49% AM, 50% PM)</i>			-69	-69	-41	-41
<i>Pass-By Trips: Quality Restaurant (44% PM)</i>			--	--	-9	-9
<i>Pass-By Trips: Gas Station w/ Convenience Market (62% AM, 56% PM)</i>			-34	-34	-25	-25
<i>Pass-By Trips: Shopping Center (34% PM)</i>			--	--	-40	-40
Total Primary Trips			216	201	210	164

4. Future Traffic Conditions

Through coordination with the Town and NCDOT, it was determined that an annual growth rate of 4% would be used to generate 2025 projected weekday AM and PM peak hour traffic volumes.

The following adjacent developments were identified to be considered under future conditions:

- E-41 (Apex Friendship Elementary) - AM trips only
- Pleasant Park - PM trips only
- Friendship Middle School (since AM pre-COVID-19 count is from prior to school opening) - AM trips only
- Friendship High School (since AM pre-COVID-19 count is from prior to school opening) - AM trips only

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

- 2021 Existing Traffic Conditions
- 2025 No-Build Traffic Conditions
- 2025 Build Traffic Conditions

5. Capacity Analysis Summary

The analysis considered weekday AM and PM peak hour traffic for 2021 existing, 2025 no-build, and 2025 build conditions. Refer to Section 7 of the TIA report for the capacity analysis summary performed at each study intersection.

6. Recommendations

Based on the findings of this study, specific geometric and traffic control improvements have been identified at study intersections. The improvements are summarized below and are illustrated in Figure E-1.

Background Improvements by Adjacent Developments – Pleasant Park Development

Old US Highway 1 and Friendship Road

- Provide an exclusive westbound left-turn lane with a minimum of 150 feet of storage and appropriate deceleration and taper length.
- Provide an exclusive northbound left-turn lane with a minimum of 100 feet of storage and appropriate deceleration and taper length.

Recommended Improvements by Developer

Holland Road and Old US Highway 1

- Provide an exclusive eastbound left-turn lane with a minimum of 75 feet of storage and appropriate deceleration and taper length.
- Provide an exclusive southbound right-turn lane with a minimum of 200 feet of storage and appropriate deceleration and taper length.

Holland Road and Site Drive 1

- Construct eastbound approach with one (1) ingress lane and one (1) egress lane.
- Provide stop-control for eastbound approach.

Holland Road and Site Drive 2

- Construct eastbound approach as a right-in/right-out driveway with one (1) ingress lane and one (1) egress lane.
- Provide stop-control for eastbound approach.

Old US Highway 1 and Site Drive 3

- Construct southbound approach as right-in/right-out driveway with one (1) ingress lane and one (1) egress lane.
- Provide stop-control for southbound approach.
- Provide westbound right-turn lane with at least 75 feet of storage and appropriate deceleration and taper length.

Humie Olive Road and Site Drive 4

- Construct westbound approach with one (1) ingress lane and two (2) egress lanes.
- Provide stop-control for westbound approach.
- Provide southbound left-turn lane with at least 175 feet of storage and appropriate deceleration and taper length.
- Provide northbound right-turn lane with at least 75 feet of storage and appropriate deceleration and taper length.
- Provide an exclusive westbound left-turn lane along Site Drive 4.

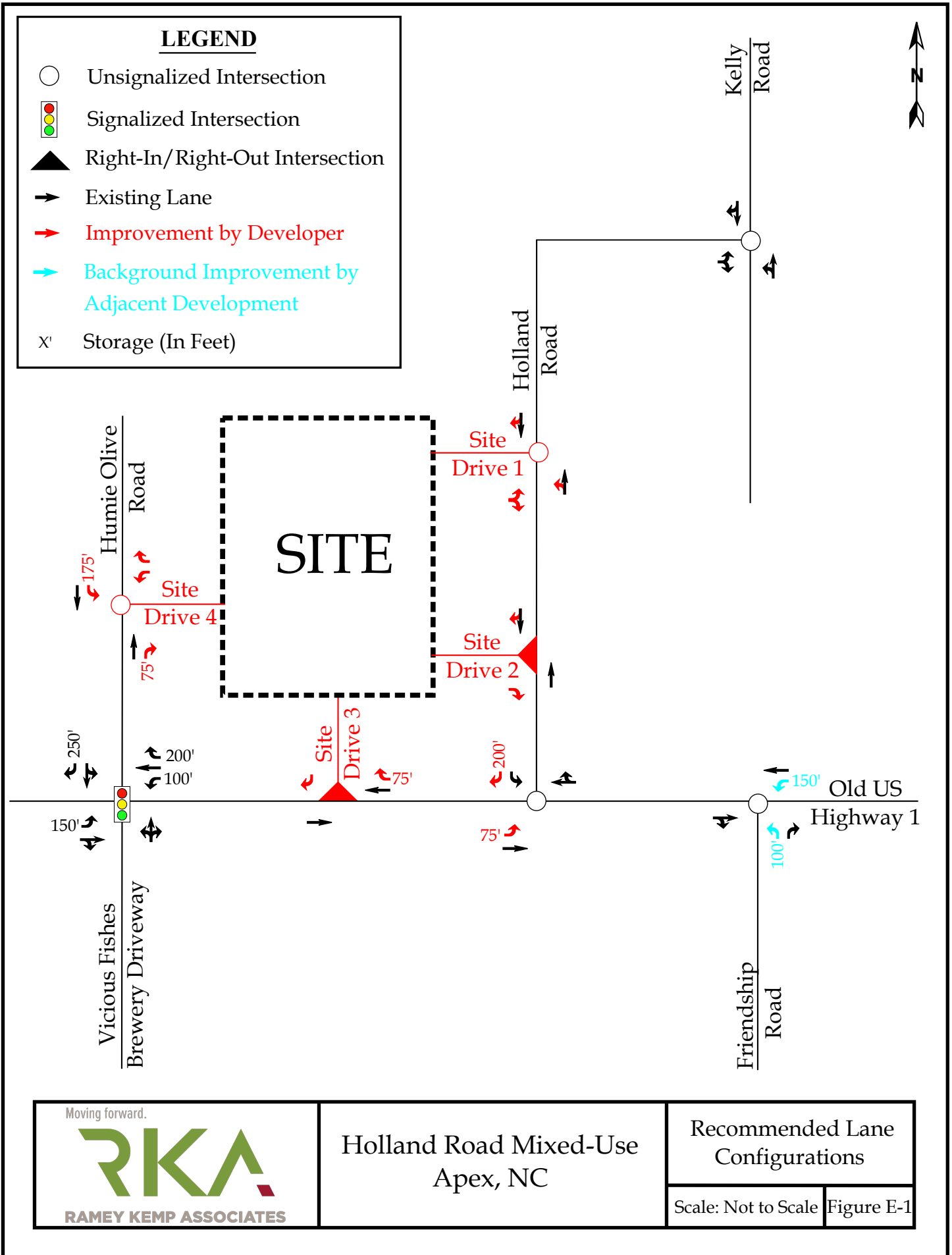


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Appendix K:	Capacity Calculations - Old US Highway 1 and Site Drive 3
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Appendix M:	SimTraffic Queuing Reports

**TRAFFIC IMPACT ANALYSIS
HOLLAND ROAD MIXED-USE
APEX, NORTH CAROLINA**

1. INTRODUCTION

The contents of this report present the findings of the Traffic Impact Analysis (TIA) conducted for the proposed Holland Road Mixed-Use development to be located north of Old US Highway 1, west of Holland Road in Apex, North Carolina. The purpose of this study is to determine the potential impacts to the surrounding transportation system created by traffic generated by the proposed development, as well as recommend improvements to mitigate the impacts.

The proposed development, anticipated to be completed by 2025, is assumed to consist of the following uses:

- A maximum of 110 single-family homes
- 60,000 square foot (s.f.) shopping center
- Two (2) 4,000 s.f. fast-food restaurants with drive-thru
- 8,500 s.f. quality restaurant
- 10 fueling positions (f.p.) gas station with convenience market

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

- 2021 Existing Traffic Conditions
- 2025 No-Build Traffic Conditions
- 2025 Build Traffic Conditions

1.1. Site Location and Study Area

The development is proposed to be located north of Old US Highway 1, west of Holland Road in Apex, North Carolina. Refer to Figure 1 for the site location map.

The study area for the TIA was determined through coordination with the North Carolina Department of Transportation (NCDOT) and the Town of Apex (Town) and consists of the following existing intersections:

- Humie Olive Road and Old US Highway 1
- Holland Road and Old US Highway 1
- Friendship Road and Old US Highway 1
- Holland Road and Kelly Road

Refer to Appendix A for the approved scoping documentation.

1.2. Proposed Land Use and Site Access

The site is expected to be located north of Old US Highway 1, west of Holland Road. The proposed development, anticipated to be completed in 2025, is assumed to consist of the following uses:

- A maximum of 110 single-family homes
- 60,000 square foot (s.f.) shopping center
- Two (2) 4,000 s.f. fast-food restaurants with drive-thru
- 8,500 s.f. quality restaurant
- 10 fueling positions (f.p.) gas station with convenience market

Site access is proposed via one (1) full-movement driveway and one (1) right-in/right-out driveways along Holland Road, one (1) right-in/right-out driveway along Old US Highway 1, and one (1) full-movement driveway along Humie Olive Road. Refer to Figure 2 for a copy of the preliminary site plan.

1.3. Adjacent Land Uses

The proposed development is located in an area consisting primarily of undeveloped land and residential development. There is a middle school and a high school campus located along Humie Olive Road, north of the study area.

1.4. Existing Roadways

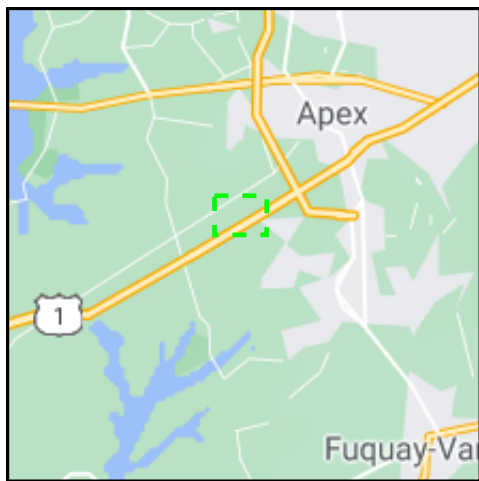
Existing lane configurations (number of traffic lanes on each intersection approach), lane widths, storage capacities, and other intersection and roadway information within the study area are shown in Figure 3. Table 1 provides a summary of this information, as well.

Table 1: Existing Roadway Inventory




Road Name	Route Number	Typical Cross Section	Speed Limit	Maintained By	2019 AADT (vpd)
Humie Olive Road	SR 1142	2-lane undivided	45 mph	NCDOT	4,770**
Old US Highway 1	SR 1011	2-lane undivided	55 mph	NCDOT	9,300
Holland Road	SR 1187	2-lane undivided	35 mph (assumed)	NCDOT	610*
Friendship Road	SR 1149	2-lane undivided	45 mph	NCDOT	2,220**
Kelly Road	SR 1163	2-lane undivided	45 mph	NCDOT	3,200

*2015 AADT

**AADT based on the traffic counts from 2021 assuming the weekday PM peak hour volume is 10% of the average daily traffic.



LEGEND

-  Proposed Site Location
-  Study Intersection
-  Study Area

Moving forward.

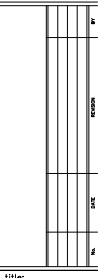


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Holland Road Mixed-Use
Apex, NC

Site Location Map

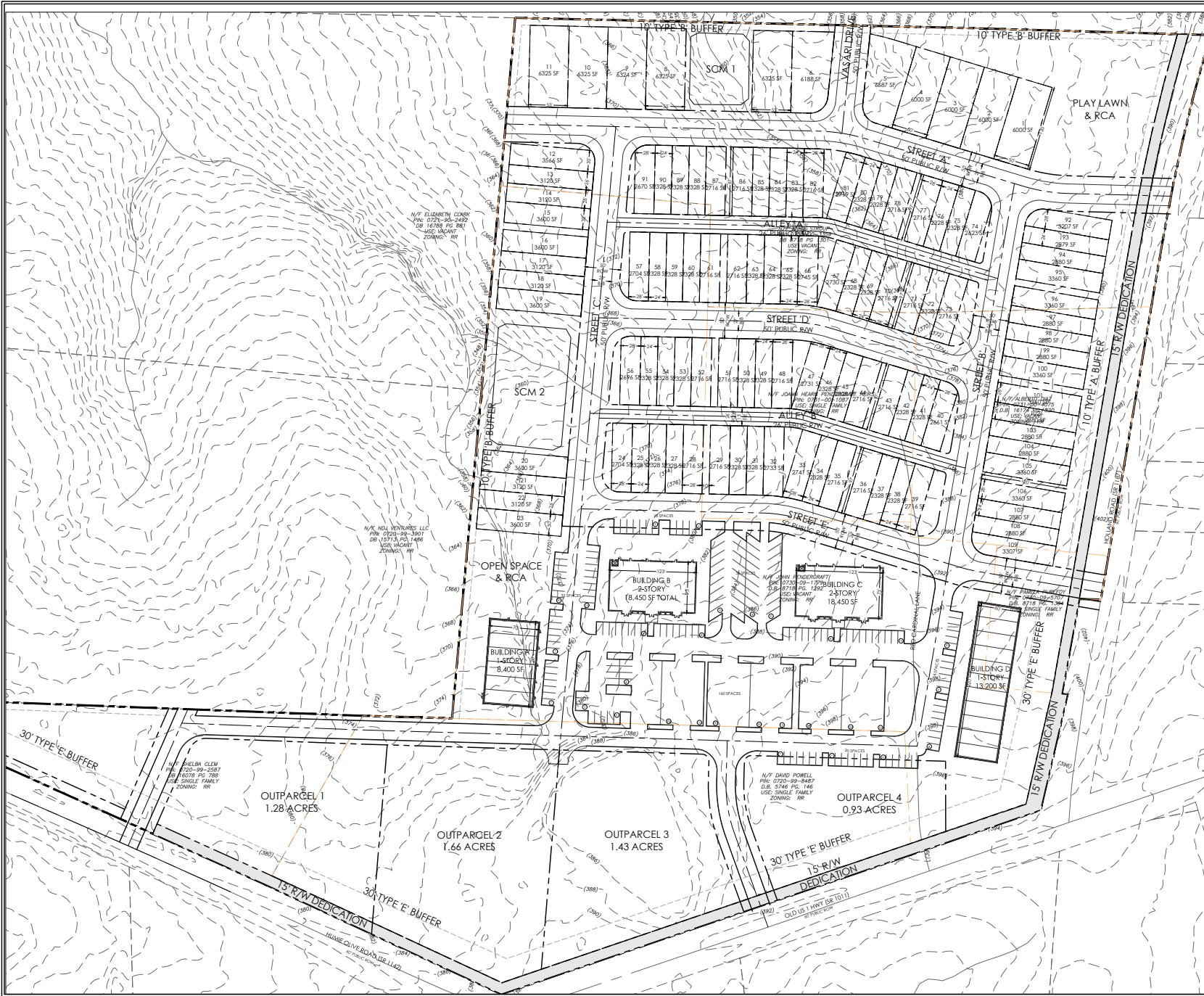
Scale: Not to Scale | Figure 1




Title:
SKETCH PLAN 1 TOPO

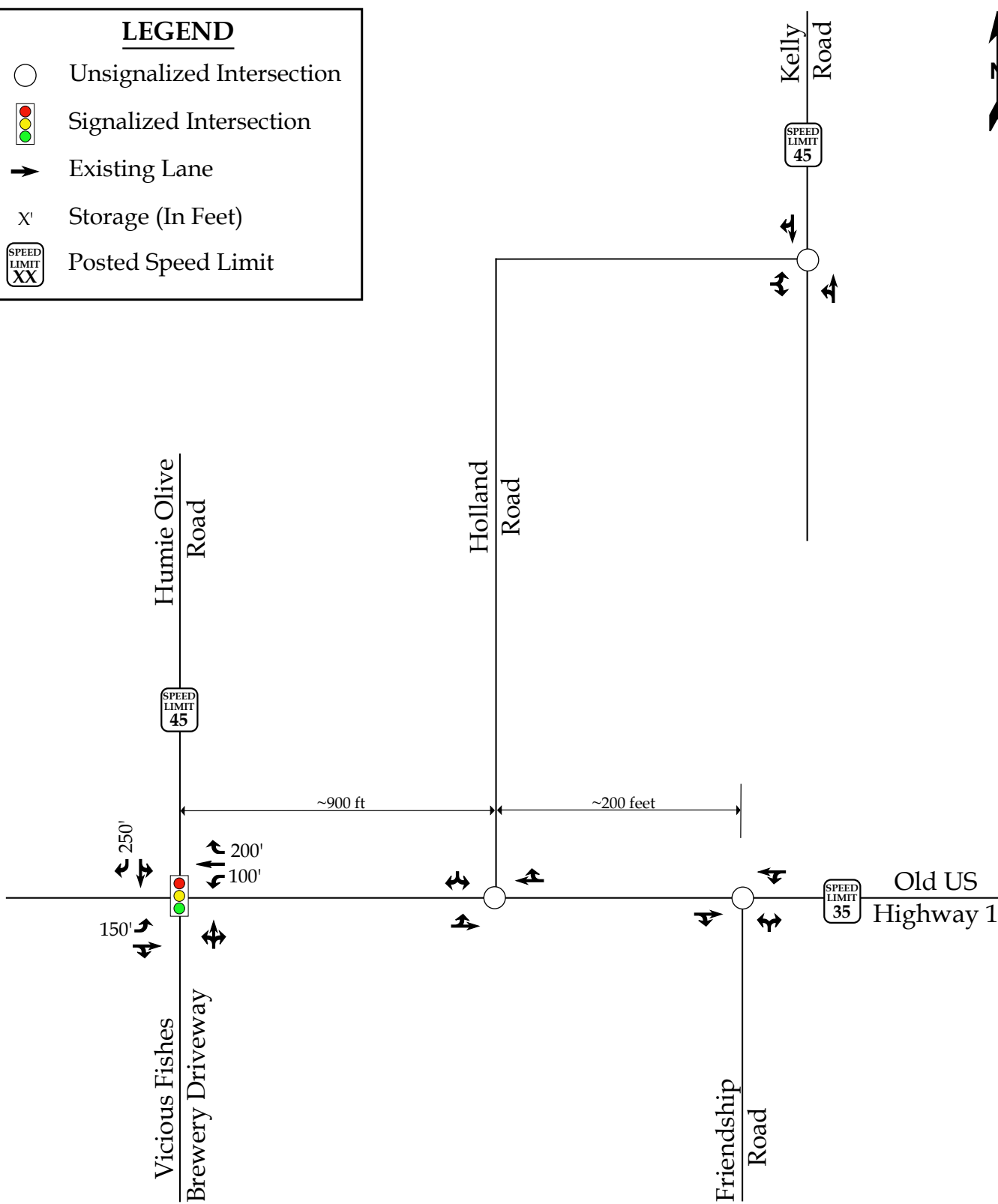
proj #:
200304
date:
May 1, 2020
des by: chkd by:
JR
scale:
As Noted
sheet:

SP-1
(Sketch Plan)



LEGEND

- Unsignalized Intersection
- ⬆️⬆️⬆️ Signalized Intersection
- ➡️ Existing Lane
- x' Storage (In Feet)
-  Posted Speed Limit



Moving forward.



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Holland Road Mixed-Use Apex, NC

2021 Existing Lane Configurations

Scale: Not to Scale

Figure 3

2. 2021 EXISTING PEAK HOUR CONDITIONS

2.1. 2021 Existing Peak Hour Traffic

Peak hour turning movement counts were collected at the following study intersections in February 2021, by RKA, on a typical weekday during weekday AM (7:00 – 9:00 AM) and weekday PM (4:00 – 6:00 PM) peak periods:

- Humie Olive Road and Old US Highway 1
- Holland Road and Old US Highway 1
- Friendship Road and Old US Highway 1
- Holland Road and Kelly Road

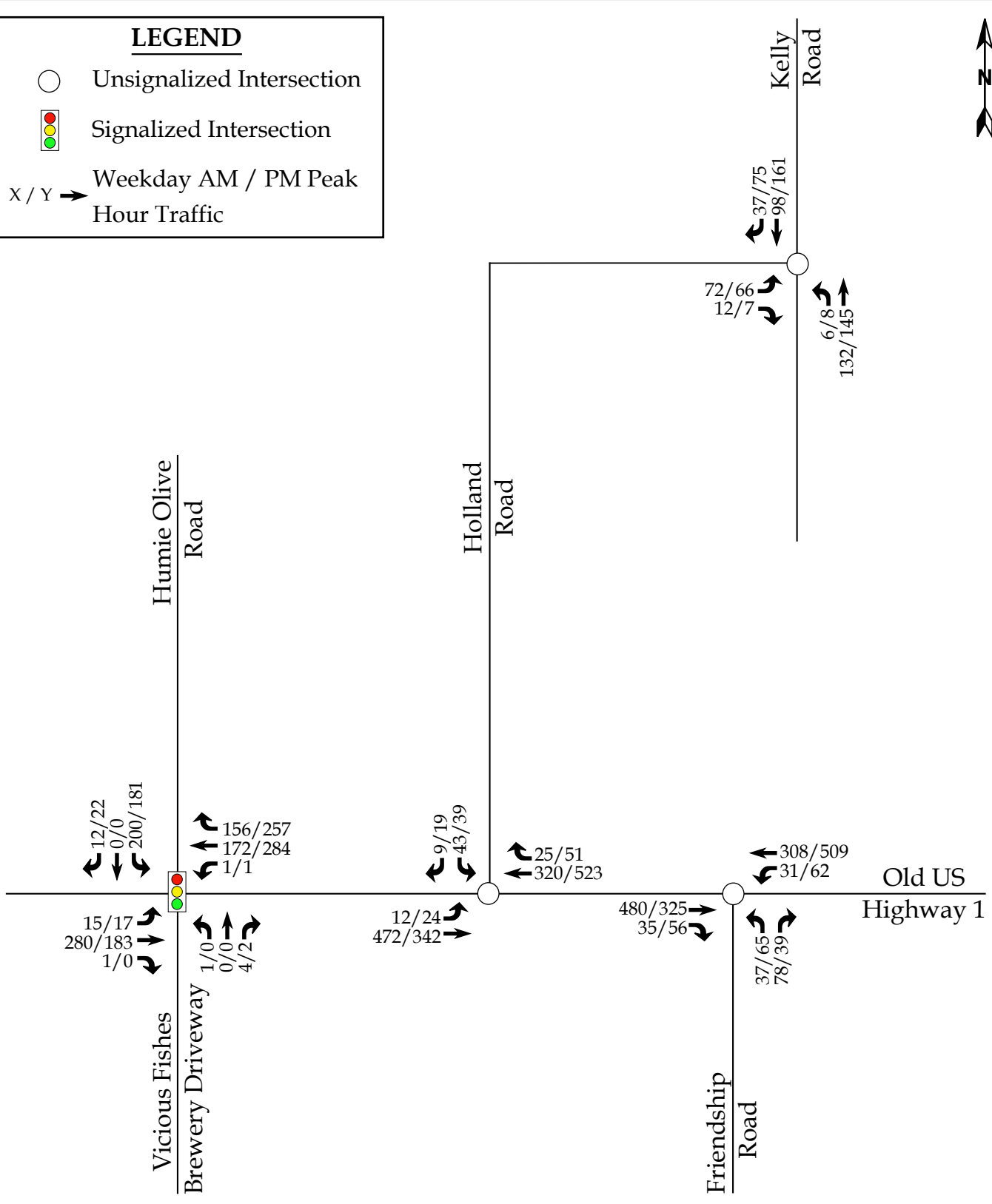
Peak hour turning movement counts from RKA were utilized at the intersection of Old US Highway 1 and Humie Olive Road from September 2015. Weekday PM peak hour counts were also utilized from the VHB Engineering NC, PC at the intersection of Friendship Road and Old US Highway 1 from April 2016. These counts were grown to 2021 using a 4% annual growth rate and were compared to newly collected count data at the same intersections. The comparison of this count data was used to develop a rate between available count data and new count data collected during COVID-19 conditions. The rates determined were applied to the new count data collected at all study intersections to determine 2021 existing traffic volumes. A growth rate of 47% was applied to the new count data collected during the weekday AM peak hour and 14% was applied to all new count data collected during the weekday PM peak hour to account for the reduction in traffic associated with the COVID-19 pandemic. Weekday AM and PM traffic volumes were balanced between study intersections, where appropriate. Refer to Figure 4 for 2021 existing weekday AM and PM peak hour traffic volumes. A copy of the count data is located in Appendix B of this report.

2.2. Analysis of 2021 Existing Peak Hour Traffic

The 2021 existing weekday AM and PM peak hour traffic volumes were analyzed to determine the current levels of service at the study intersections under existing roadway conditions. Signal information was obtained from NCDOT and is included in Appendix C. The results of the analysis are presented in Section 7 of this report.

LEGEND

- Unsignalized Intersection
- 🚦 Signalized Intersection
- X / Y → Weekday AM / PM Peak Hour Traffic



Moving forward.

RKA

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Holland Road Mixed-Use
Apex, NC

2021 Existing
Peak Hour Traffic

Scale: Not to Scale | Figure 4

3. 2025 NO-BUILD PEAK HOUR CONDITIONS

In order to account for growth of traffic and subsequent traffic conditions at a future year, no-build traffic projections are needed. No-build traffic is the component of traffic due to the growth of the community and surrounding area that is anticipated to occur regardless of whether or not the proposed development is constructed. No-build traffic is comprised of existing traffic growth within the study area and additional traffic created as a result of adjacent approved developments.

3.1. Ambient Traffic Growth

Through coordination with the Town and NCDOT, it was determined that an annual growth rate of 4% would be used to generate 2025 projected weekday AM and PM peak hour traffic volumes. Refer to Figure 5 for 2025 projected peak hour traffic.

3.2. Adjacent Development Traffic

Through coordination with the Town and NCDOT, the following adjacent developments were identified to be included as an approved adjacent development in this study:

- E-41 (Apex Friendship Elementary) – AM trips only
- Pleasant Park – PM trips only
- Friendship Middle School (since AM pre-COVID-19 count is from prior to school opening) – AM trips only
- Friendship High School (since AM pre-COVID-19 count is from prior to school opening) – AM trips only

Table 2 provides a summary of the adjacent developments. Additional adjacent development information can be found in Appendix D.

Table 2: Adjacent Development Information

Development Name	Location	Build-Out Year	Land Use / Intensity	TIA Performed
E-41 Elementary School	South of Humie Olive Road on Apex Friendship campus	2022	800-student public elementary School	August 2020 by RKA
Pleasant Park	South of Old US 1 and west of NC 540	2020	4 baseball/softball fields, 3 tennis courts, 6 soccer fields, 2 basketball courts, 3 pickle ball courts, 1 sand volleyball court, cross country route, and picnic areas	January 2018 by VHB
M-11 Middle School	South of Humie Olive Road on Apex Friendship campus	2018	1,450-student public middle school	September 2015 by RKA
H-10 High School	South of Humie Olive Road on Apex Friendship campus	2015	2,350-student public high school	January 2012 by RKA

It should be noted that the adjacent developments were approved, during scoping, by the Town and NCDOT. Only weekday AM peak hour site trips were included in this study for the elementary, middle, and high school located on the Apex Friendship campus since the school PM peak period (2:00 - 4:00 PM) studied in the school TIAs differs from the weekday PM peak period (4:00 - 6:00 PM) utilized for the proposed development. It should be noted that the use of the elementary, middle, and high school trips during the same peak hour is expected to present a very conservative estimate of the future traffic volumes as these trips are typically spread out between 6:30 AM - 9:00 AM. The use of all three schools as adjacent developments was determined due to limitations with conducting reliable traffic counts during the COVID-19 pandemic and in order to present a conservative analysis. The TIA performed for the Pleasant Park development studied the weekday PM peak hour and the Saturday midday peak hour; therefore, only the weekday PM peak hour trips were included in this study. Adjacent development trips are shown in Figure 6. Adjacent development information can be found in Appendix D.

3.3. Future Roadway Improvements

Based on coordination with the NCDOT and the Town, it was determined that the background improvements committed by the adjacent developments were included in the analysis.

The following improvements are committed by the Pleasant Park development:

Old US Highway 1 and Friendship Road

- Provide an exclusive westbound left-turn lane with a minimum of 150 feet of storage and appropriate deceleration and taper length.
- Provide an exclusive northbound left-turn lane with a minimum of 100 feet of storage and appropriate deceleration and taper length.

3.4. 2025 No-Build Peak Hour Traffic Volumes

The 2025 no-build traffic volumes were determined by projecting the 2021 existing peak hour traffic to the year 2025, and adding the adjacent development trips. Refer to Figure 7 for an illustration of the 2025 no-build peak hour traffic volumes at the study intersections.

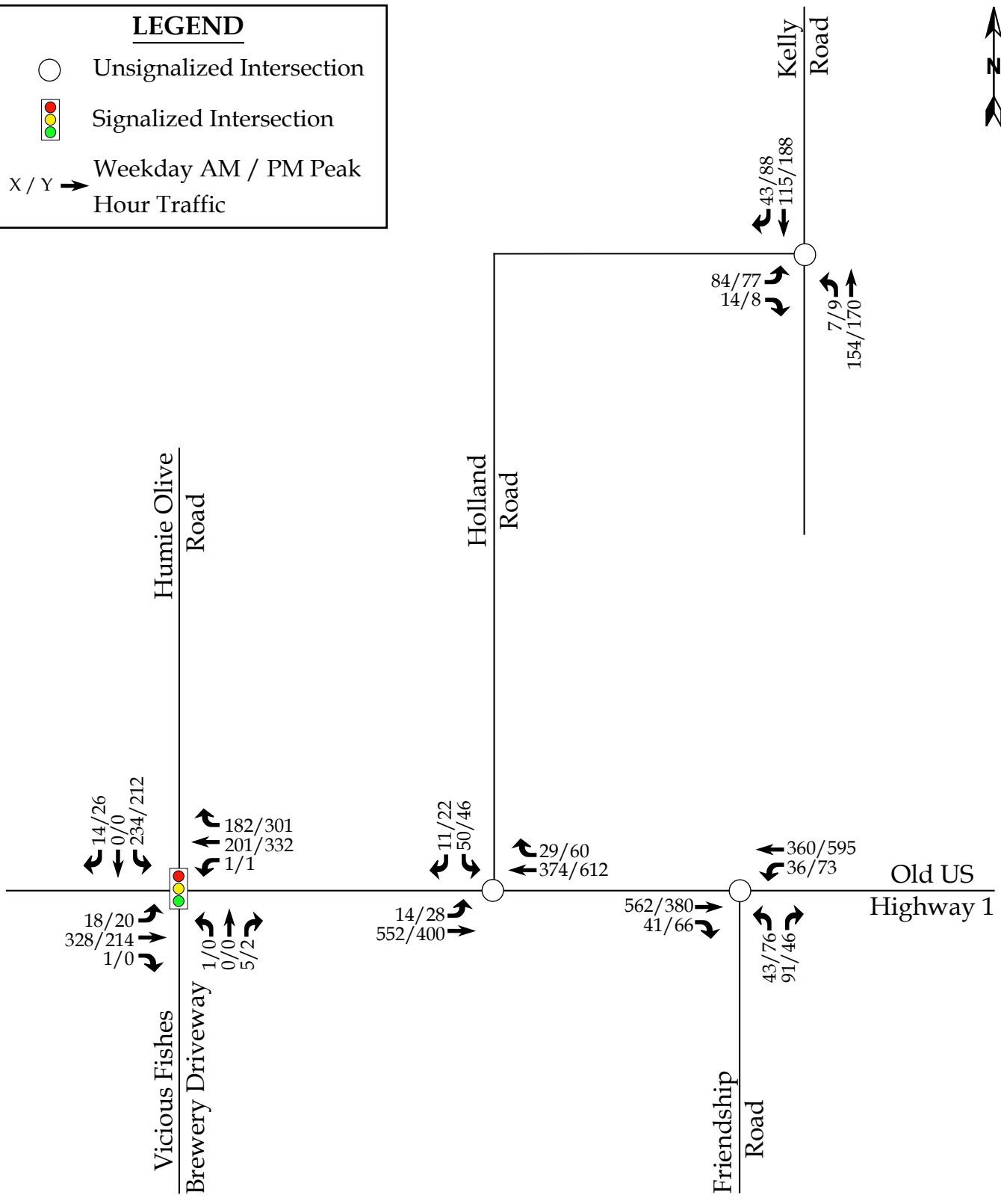
3.5. Analysis of 2025 No-Build Peak Hour Traffic Conditions

The 2025 no-build AM and PM peak hour traffic volumes at the study intersections were analyzed with future geometric roadway conditions and traffic control. The analysis results are presented in Section 7 of this report.



LEGEND

- Unsignalized Intersection
- ◫ Signalized Intersection
- X / Y → Weekday AM / PM Peak Hour Traffic



Moving forward.

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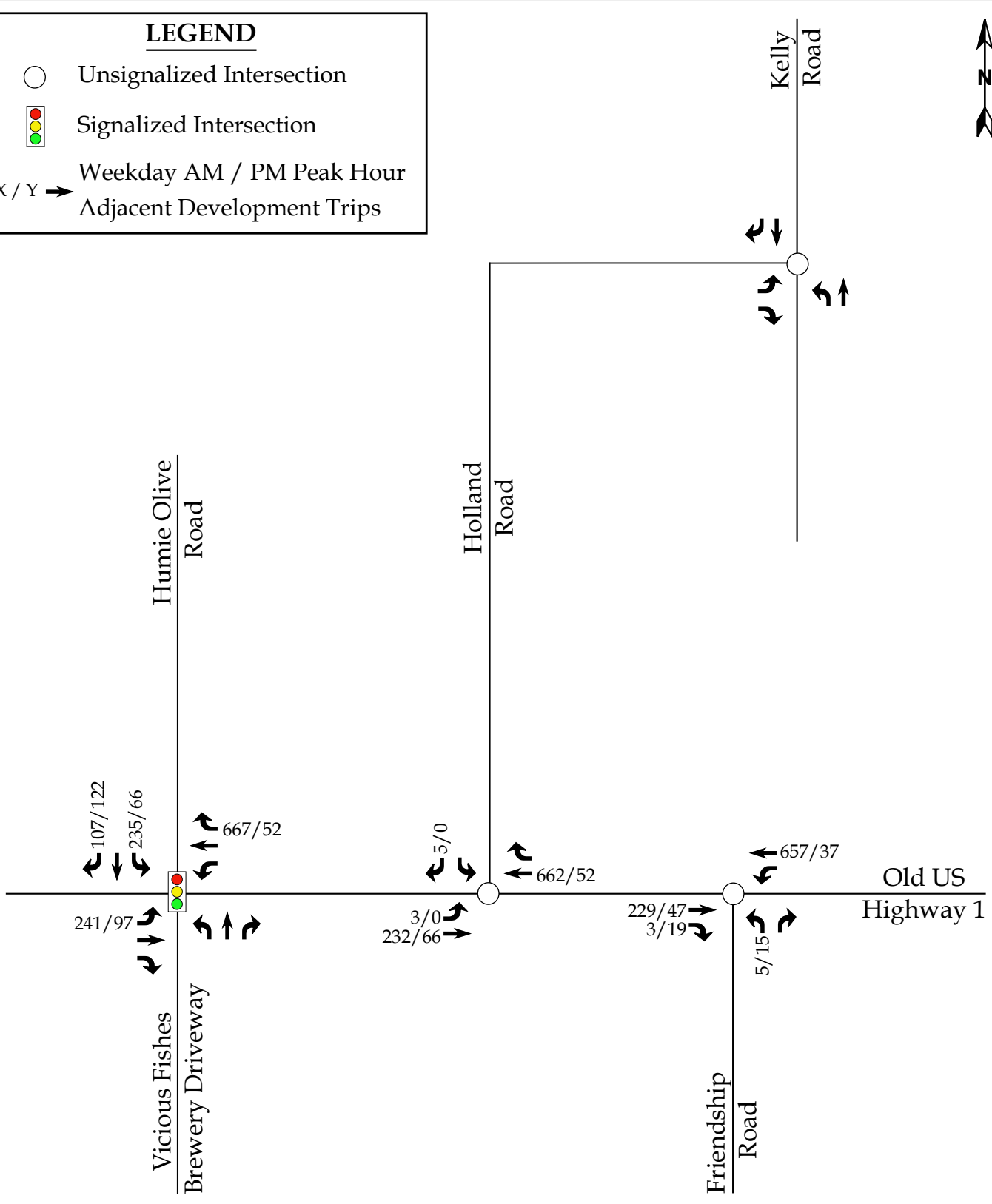
Holland Road Mixed-Use
Apex, NC

2025 Projected
Peak Hour Traffic

Scale: Not to Scale | Figure 5

LEGEND

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



Moving forward.

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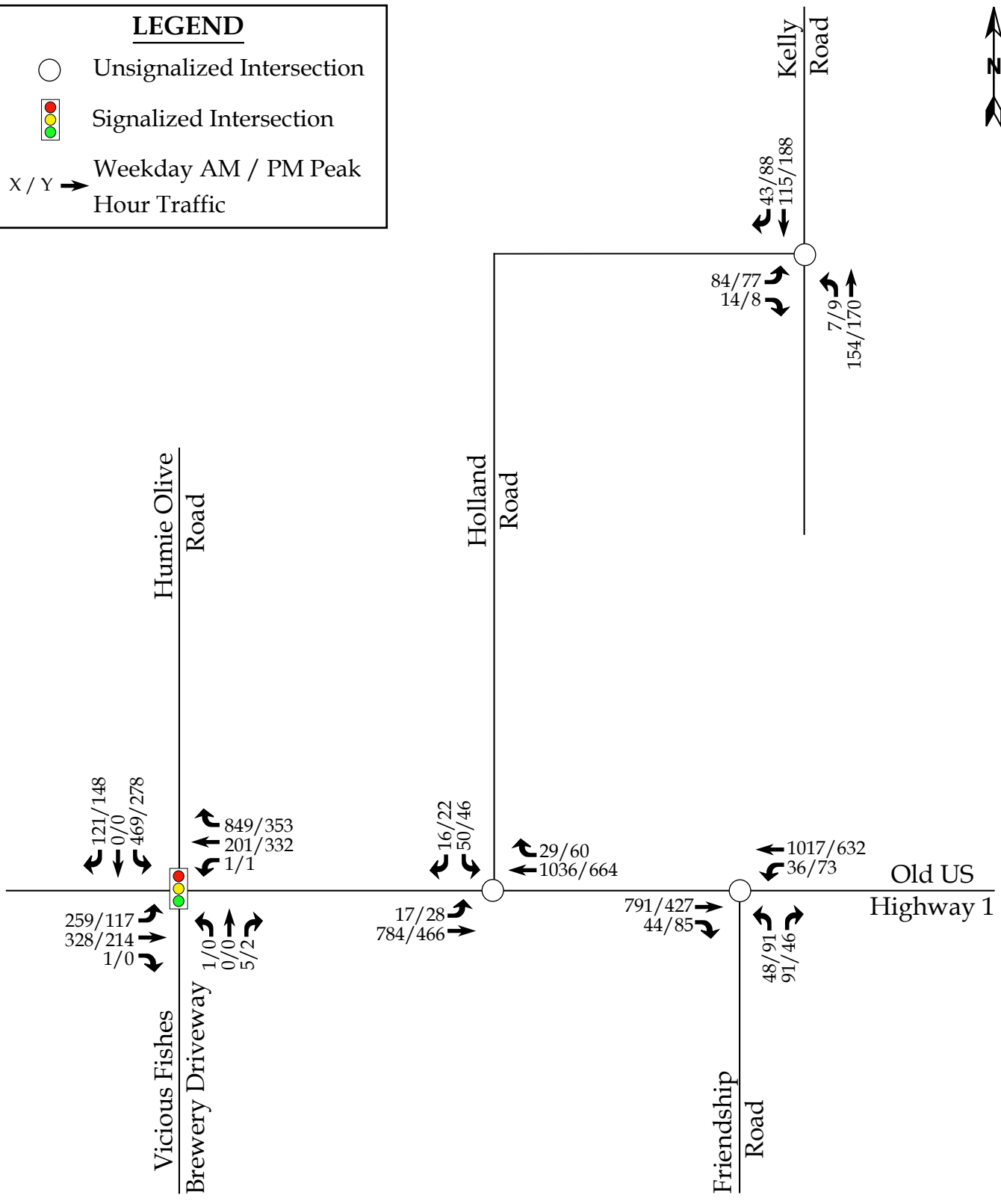
Holland Road Mixed-Use
Apex, NC

Peak Hour Adjacent
Development Trips

Scale: Not to Scale Figure 6

LEGEND

- Unsignalized Intersection
- ◫ Signalized Intersection
- X / Y → Weekday AM / PM Peak Hour Traffic



<p>Moving forward.</p> <p>RKA</p> <p>RAMEY KEMP ASSOCIATES</p>	<p>Holland Road Mixed-Use Apex, NC</p>	<p>2025 No-Build Peak Hour Traffic</p>	
		<p>Scale: Not to Scale</p>	<p>Figure 7</p>

Moving forward.

4. SITE TRIP GENERATION AND DISTRIBUTION

4.1. Trip Generation

The proposed development is assumed to consist of a maximum of 110 single-family homes, a 60,000 s.f. shopping center, two (2) 4,000 s.f. fast-food restaurants with drive-thru, an 8,500 s.f. quality restaurant, and a 10 f.p. gas station with convenience market. Average weekday daily, AM peak hour, and PM peak hour trips for the proposed development were estimated using methodology contained within the ITE *Trip Generation Manual*, 10th Edition. Table 3 provides a summary of the trip generation potential for the site.

Table 3: Trip Generation Summary

Land Use (ITE Code)	Intensity	Daily Traffic (vpd)	Weekday AM Peak Hour Trips (vph)		Weekday PM Peak Hour Trips (vph)	
			Enter	Exit	Enter	Exit
Single Family Homes (210)	110 units	1,140	21	62	70	41
Shopping Center (820)	60,000 s.f.	4,250	113	69	179	193
Quality Restaurant (931)	8,500 s.f.	710	--**	--**	44	22
Fast-Food Restaurant w/ Drive-Thru (934)	8,000 s.f.	3,770	164	158	136	125
Gas Station w/ Convenience Market (945)	10 f.p.	2,050	64	61	71	69
Total Trips		11,920	362	350	500	450
<i>Internal Capture (12% AM Entering & 13% AM Exiting) (35% PM Entering, 38% PM Exiting)</i>			-43	-46	-175	-171
Total External Trips			319	304	325	279
<i>Pass-By Trips: Fast-Food Restaurant with Drive-Through (49% AM, 50% PM)</i>			-69	-69	-41	-41
<i>Pass-By Trips: Quality Restaurant (44% PM)</i>			--	--	-9	-9
<i>Pass-By Trips: Gas Station w/ Convenience Market (62% AM, 56% PM)</i>			-34	-34	-25	-25
<i>Pass-By Trips: Shopping Center (34% PM)</i>			--	--	-40	-40
Total Primary Trips			216	201	210	164

**No trips are expected to be generated during the weekday AM peak hour, as this land use is not typically open during this peak hour.

It is estimated that the proposed site will generate approximately 11,920 total site trips on the roadway network during a typical 24-hour weekday period. Of the daily traffic volume, it is anticipated that 712 trips (362 entering and 350 exiting) would occur during the weekday AM peak hour and 950 trips (500 entering and 450 exiting) would occur during the weekday PM peak hour.

Internal capture of trips was considered in this study. Internal capture is the consideration for trips that will be made within the site between different land uses, so the vehicle never leaves the internal site but can still be considered as a trip to that specific land use. Internal capture typically only considers trips between residential, office, and retail/restaurant land uses. Based on NCHRP Report 684 methodology, peak hour internal capture rates of 12% AM Entering, 13% AM Exiting, 35% PM Entering, and 38% PM Exiting were applied to the total trips. The internal capture reductions are expected to account for approximately 89 trips (43 entering and 46 exiting) during the weekday AM peak hour and 346 trips (175 entering and 171 exiting) during the weekday PM peak hour.

Pass-by trips were also taken into consideration in this study. Pass-by trips are made by the traffic already using the adjacent roadway, entering the site as an intermediate stop on their way to another destination. Pass-by percentages are applied to site trips after adjustments for internal capture. Pass-by trips for the development are expected to account for approximately 206 trips (103 entering and 103 exiting) during the weekday AM peak hour, and 230 trips (115 entering and 115 exiting) during the weekday PM peak hour. It should be noted that the pass-by trips were balanced, as it is likely that these trips would enter and exit in the same hour. The pass-by percentages used in this study were determined according to ITE standards for the specific land uses and also match the NCDOT suggested rate provided in the NCDOT rate vs equations spreadsheet.

The total primary site trips are the calculated site trips after the reduction for internal capture and pass-by trips. Primary site trips are expected to generate approximately 417 trips (216 entering and 201 exiting) during the weekday AM peak hour and 374 trips (210 entering and 164 exiting) during the PM peak hour.

4.2. Site Trip Distribution and Assignment

Trip distribution percentages used in assigning site traffic for this development were estimated based on a combination of existing traffic patterns, population centers adjacent to the study area, and engineering judgment.

It is estimated that the residential site trips are regionally distributed as follows:

- 60% to/from the east via Old US Highway 1
- 25% to/from the north via Kelly Road
- 15% to/from the north via Humie Olive Road

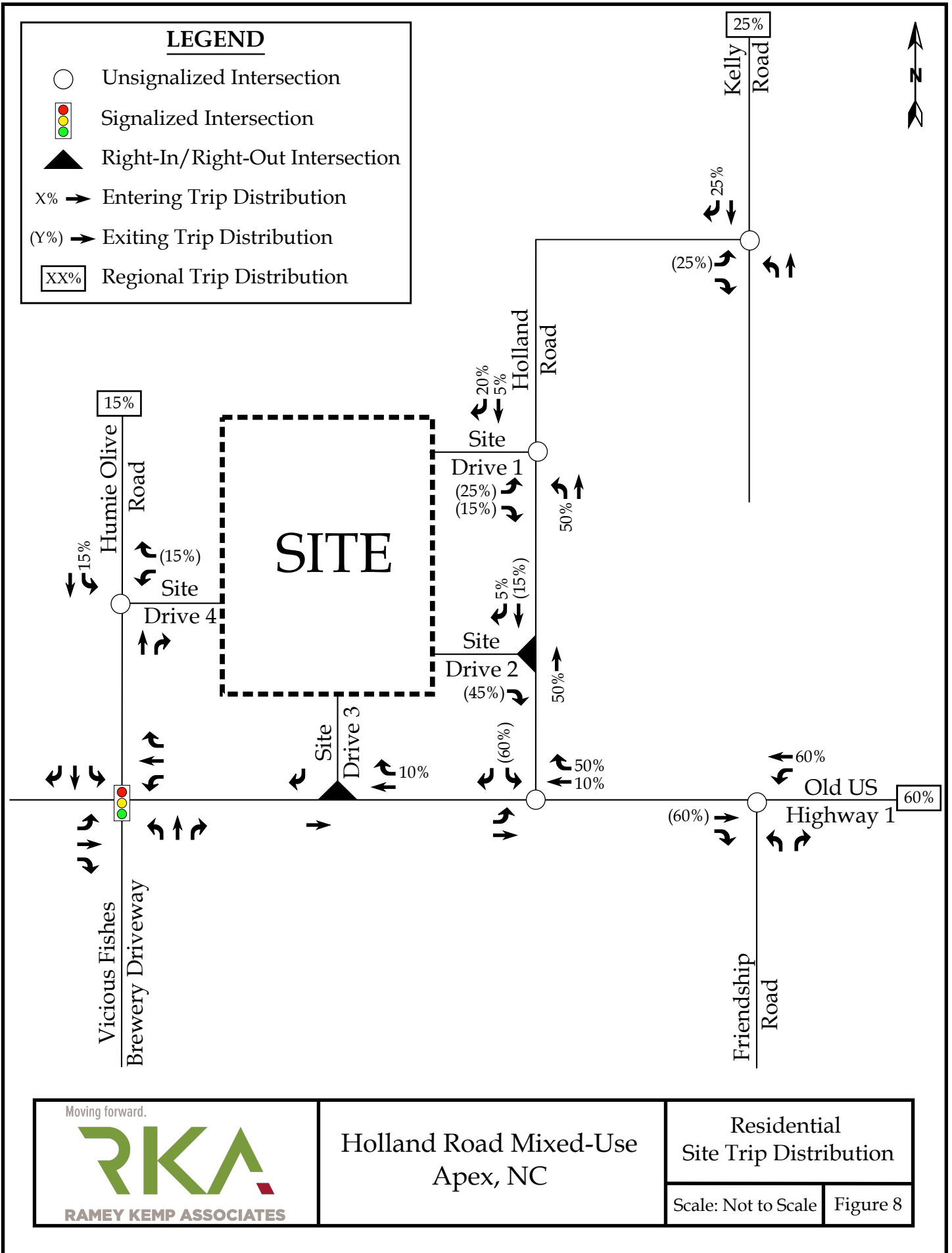
It is estimated that the retail site trips are regionally distributed as follows:

- 10% to/from the southeast via Friendship Road
- 25% to/from the north via Humie Olive Road
- 15% to/from the north via Kelly Road
- 20% to/from the east via Old US Highway 1
- 25% to/from the west via Old US Highway 1
- 5% to/from the north via Holland Road

The residential site trip distribution is shown in Figure 8, the retail site trip distribution is shown in Figure 9. Refer to Figure 10 for the residential site trip assignment and Figure 11 for the retail site trip assignment.

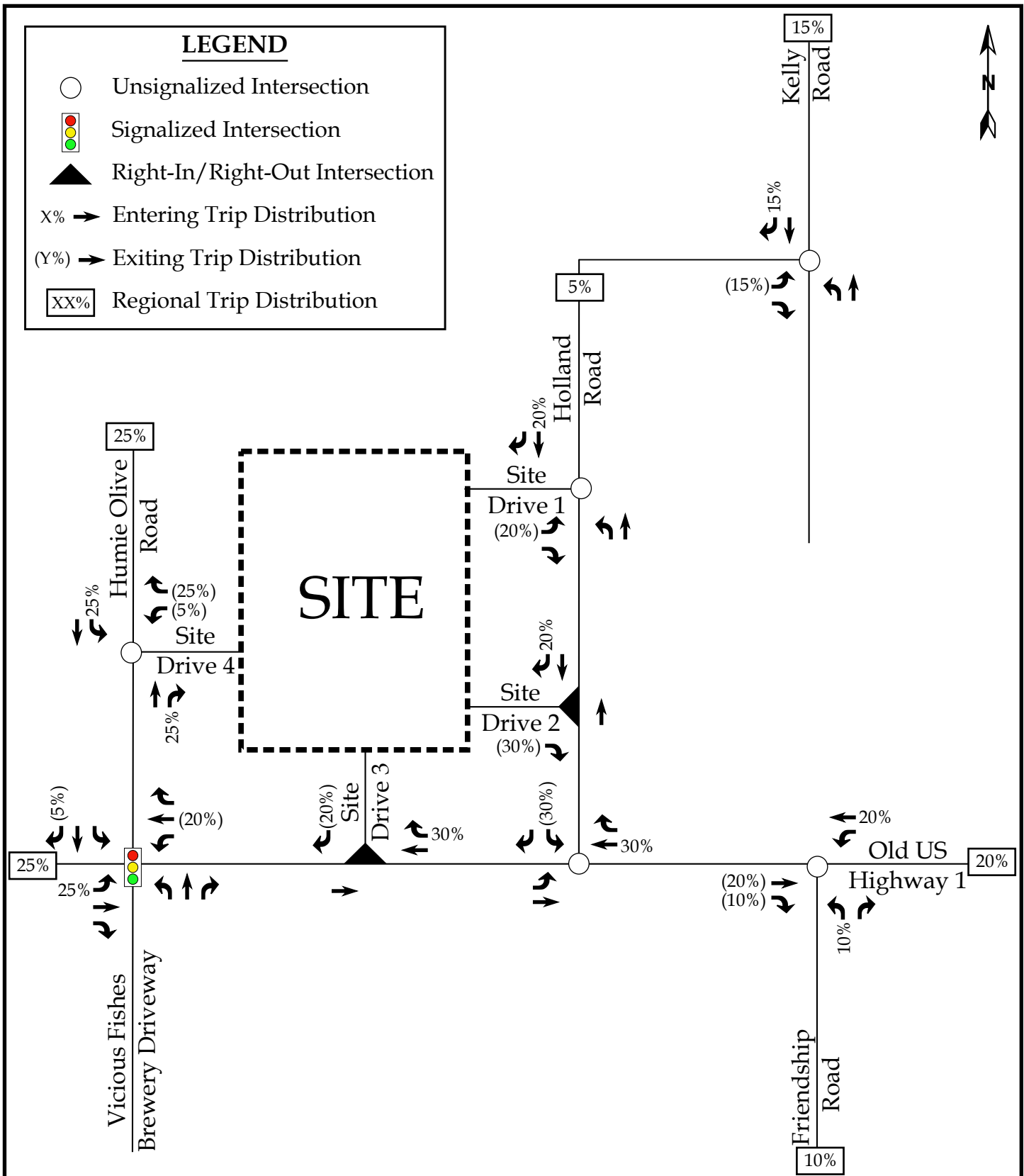
The pass-by site trips were distributed based on existing traffic patterns with consideration given to the proposed driveway access and site layout. Refer to Figure 12 for the pass-by site trip distribution. Pass-by site trips are shown in Figure 13.

The total site trips were determined by adding the primary site trips and the pass-by site trips. Refer to Figure 14 for the total peak hour site trips at the study intersections.



LEGEND

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



Moving forward.

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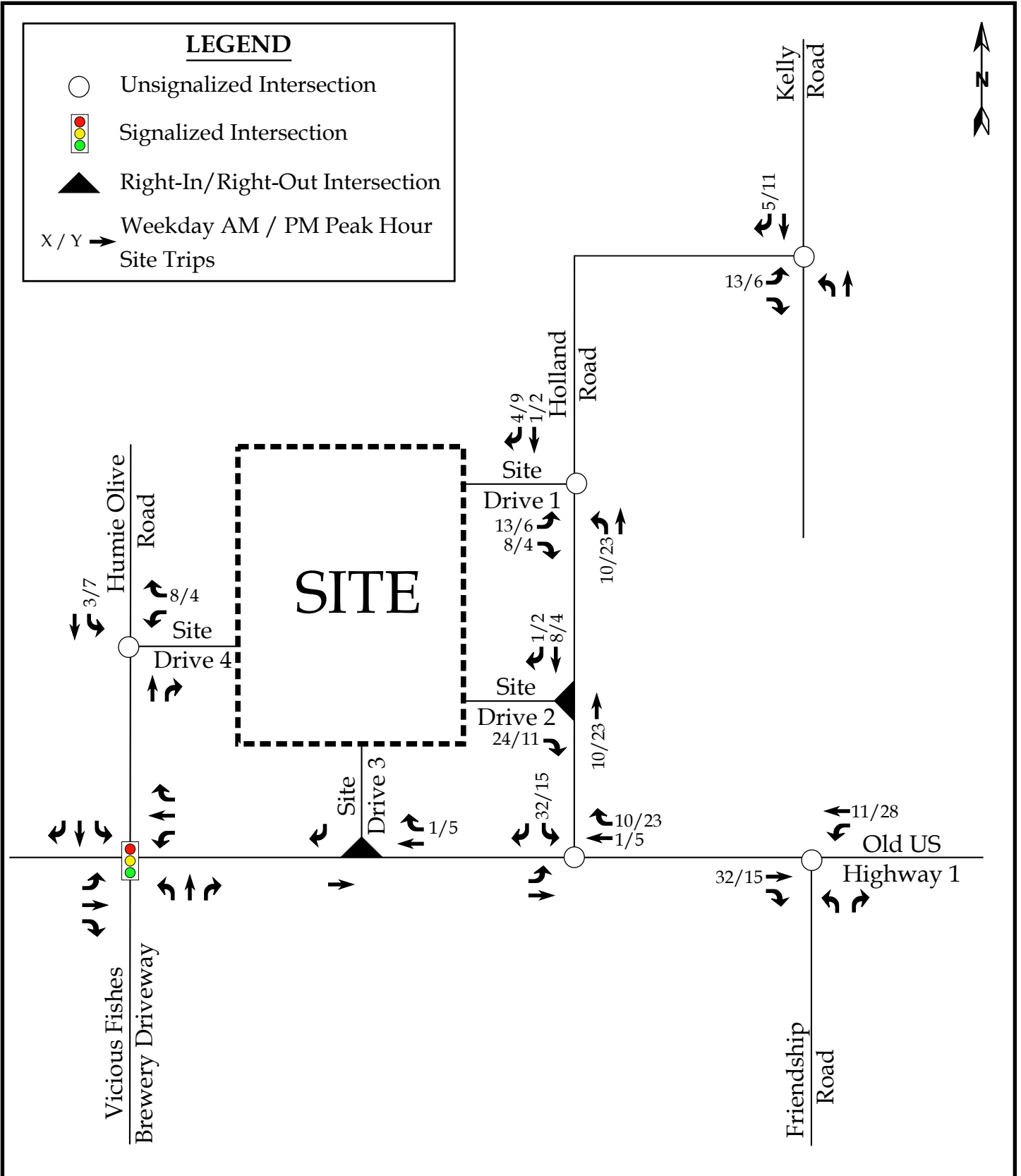
Holland Road Mixed-Use
Apex, NC

Retail
Site Trip Distribution

Scale: Not to Scale | Figure 9

LEGEND

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



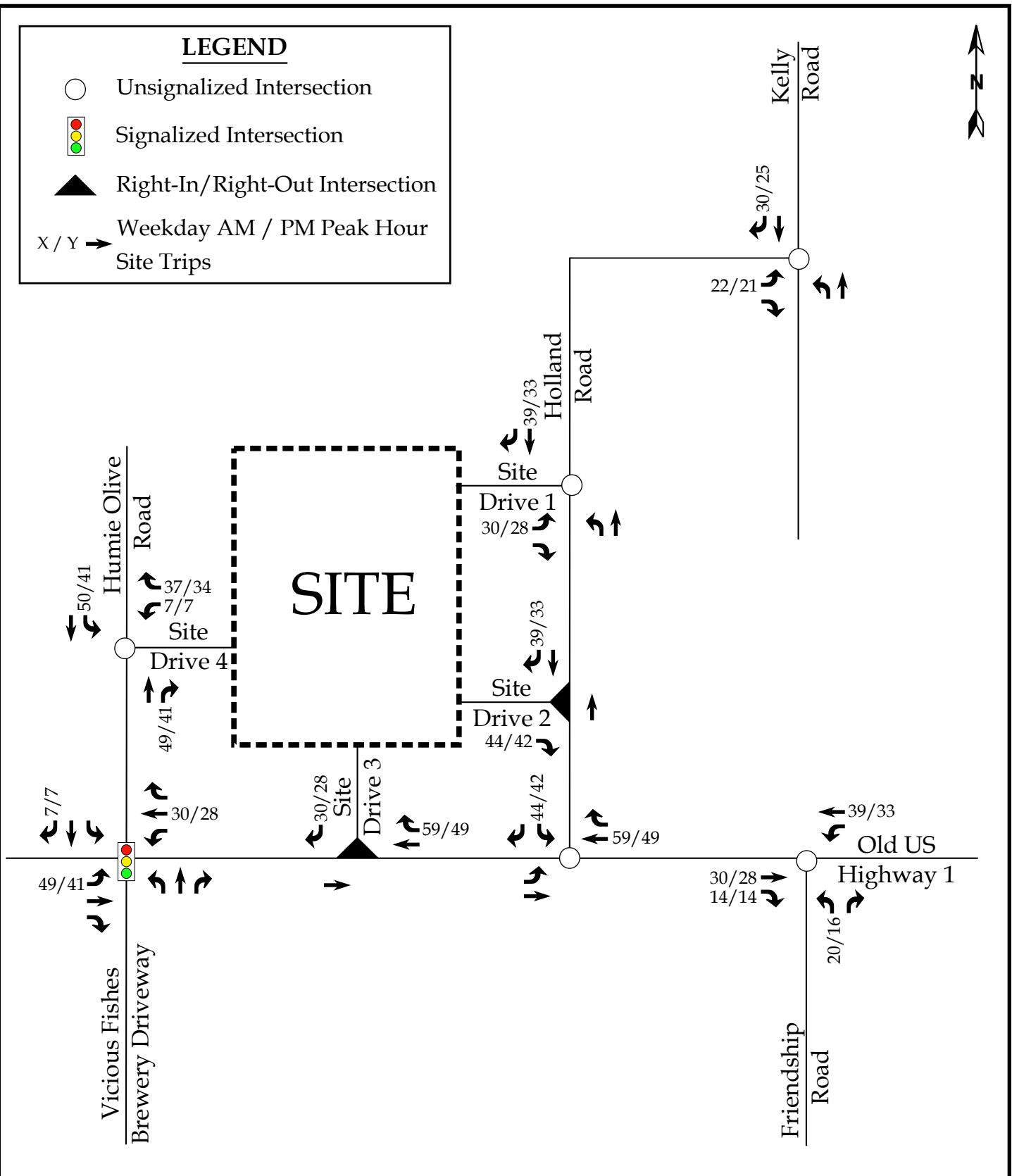
Holland Road Mixed-Use
Apex, NC

Residential
Site Trip Assignment

Scale: Not to Scale | Figure 10

LEGEND

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



Moving forward.





RAMEY KEMP ASSOCIATES

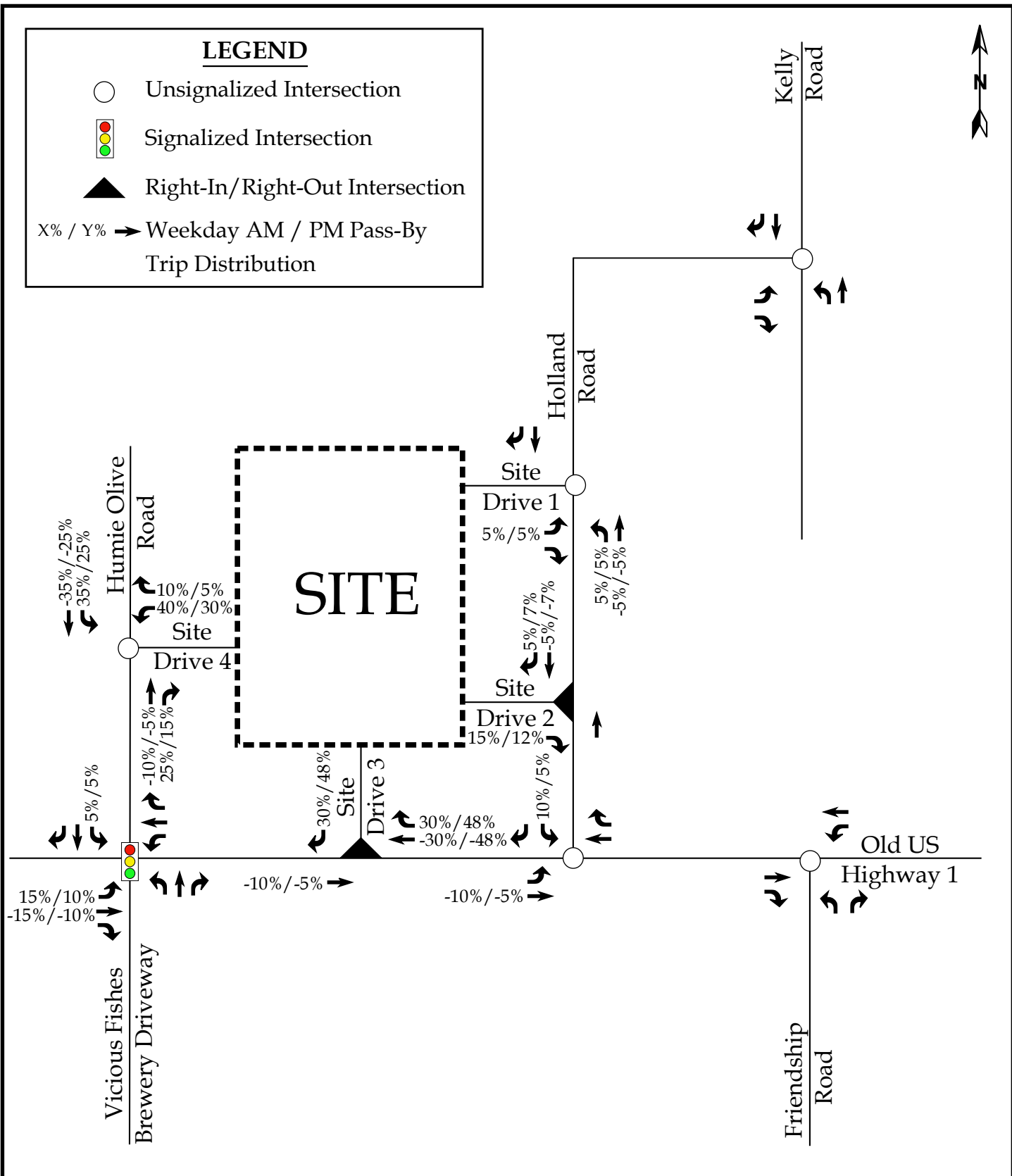
Holland Road Mixed-Use
Apex, NC


Retail
Site Trip Assignment

Scale: Not to Scale | Figure 11

LEGEND

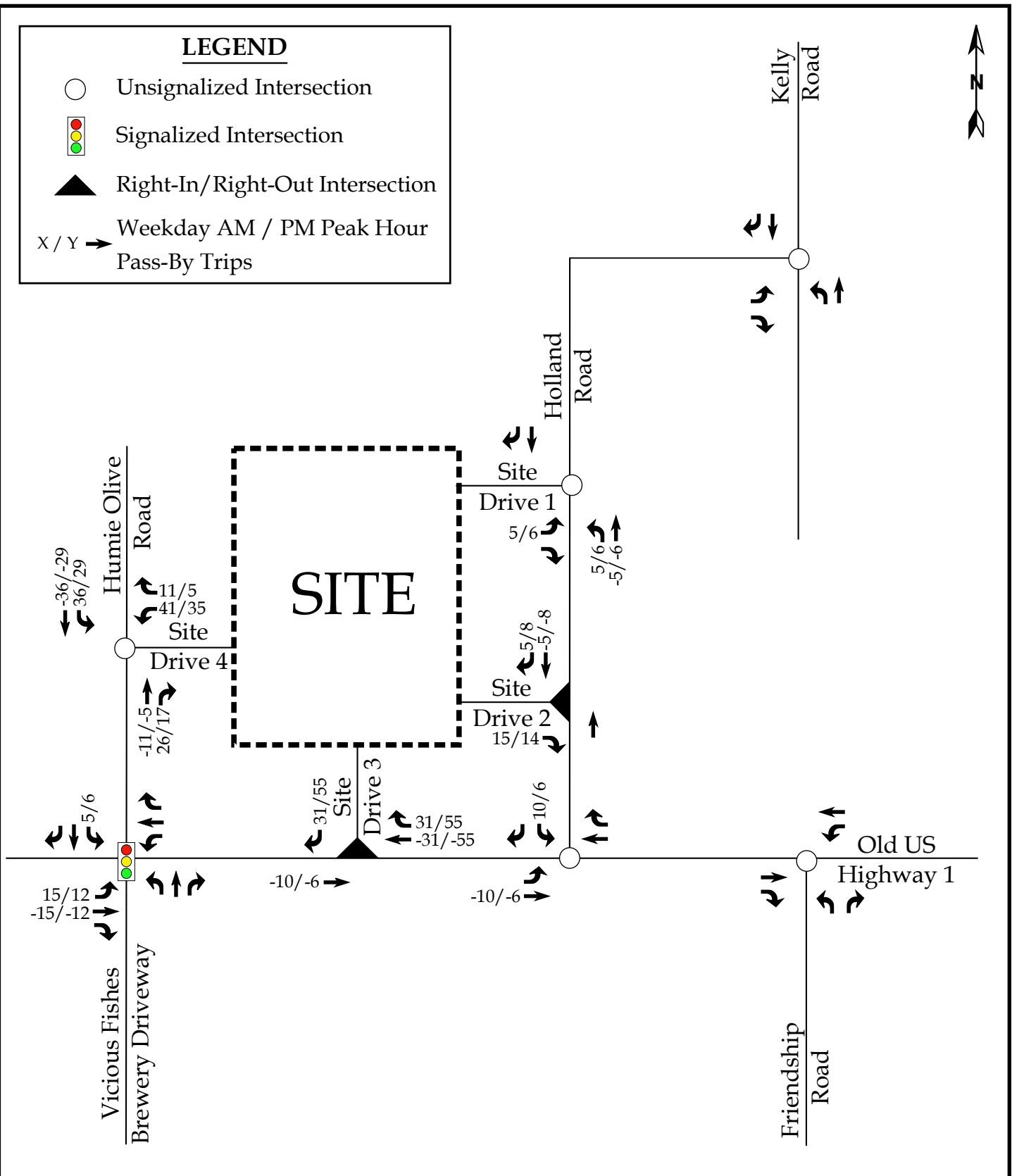
-  Unsignalized Intersection
-  Signalized Intersection
-  Right-In/Right-Out Intersection
- X% / Y%  Weekday AM / PM Pass-By Trip Distribution



<p>Moving forward.</p>  <p>RAMEY KEMP ASSOCIATES</p>	<p>Holland Road Mixed-Use Apex, NC</p>	<p>Pass-By Site Trip Distribution</p>	
		<p>Scale: Not to Scale</p>	<p>Figure 12</p>

LEGEND

- Unsignalized Intersection
- 🚦 Signalized Intersection
- ▲ Right-In/Right-Out Intersection
- X / Y → Weekday AM / PM Peak Hour Pass-By Trips



Moving forward.




RKA
RAMEY KEMP ASSOCIATES

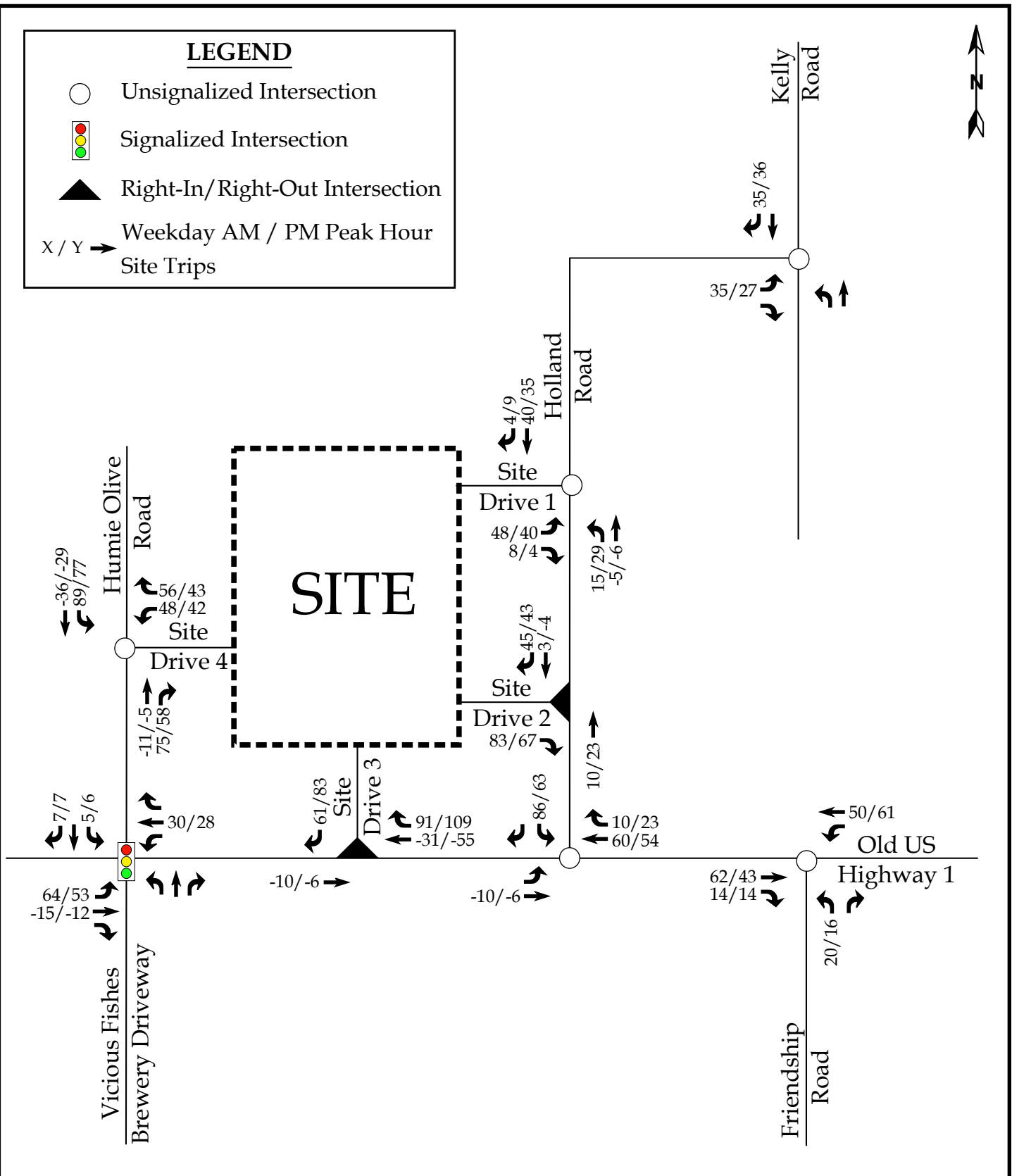
Holland Road Mixed-Use
Apex, NC

Pass-By
Site Trip Assignment

Scale: Not to Scale | Figure 13

LEGEND

-  Unsignalized Intersection
-  Signalized Intersection
-  Right-In/Right-Out Intersection
- X / Y → Weekday AM / PM Peak Hour Site Trips



Moving forward.



RAMEY KEMP ASSOCIATES

Holland Road Mixed-Use
Apex, NC

Total Site Trip Assignment	
Scale: Not to Scale	Figure 14

5. 2025 BUILD TRAFFIC CONDITIONS

5.1. 2025 Build Peak Hour Traffic Volumes

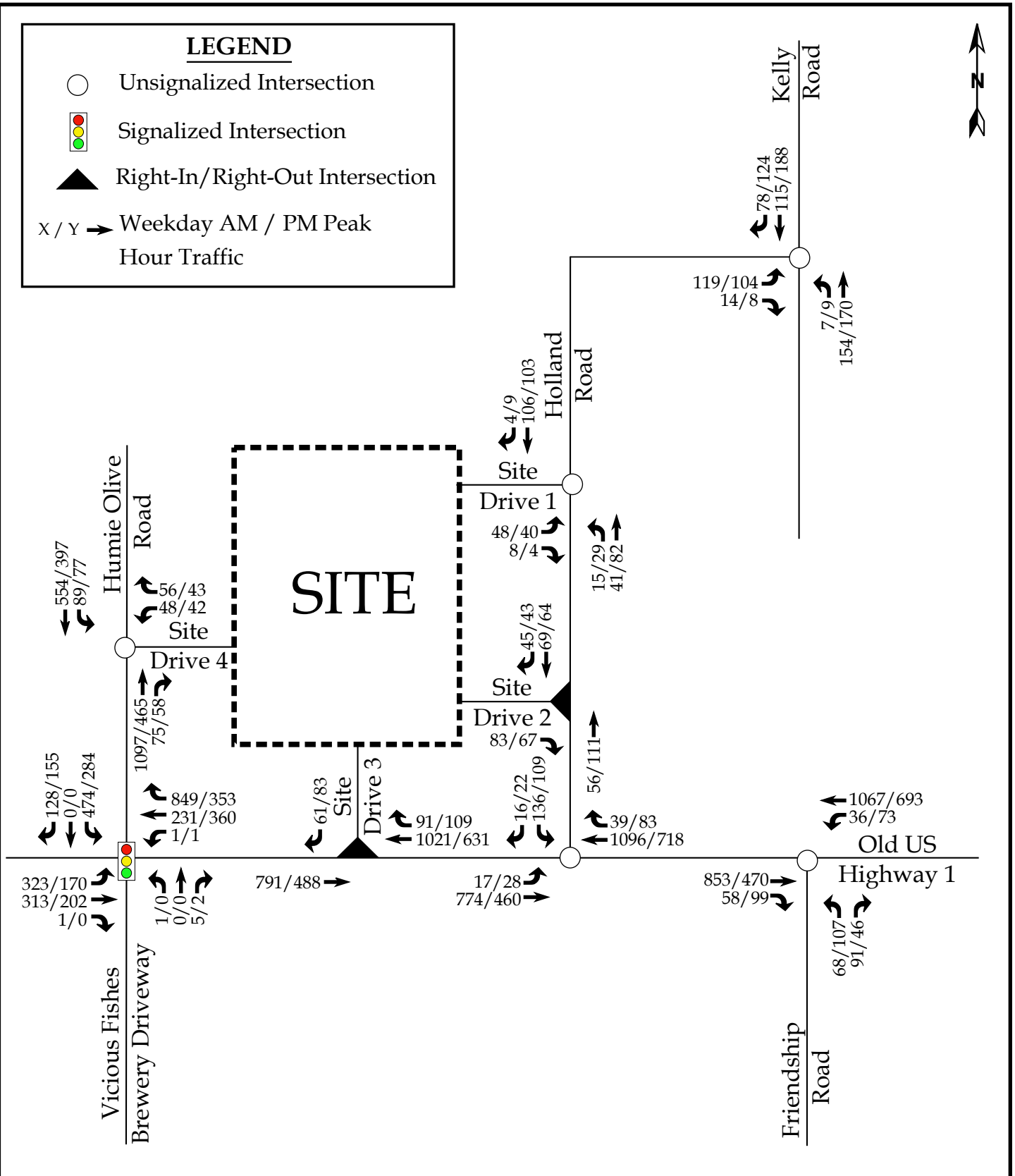
To estimate traffic conditions with the site fully built-out, the total site trips were added to the 2025 no-build traffic volumes to determine the 2025 build traffic volumes. Refer to Figure 15 for an illustration of the 2025 build peak hour traffic volumes with the proposed site fully developed.

5.2. Analysis of 2025 Build Peak Hour Traffic

Study intersections were analyzed with the 2025 build traffic volumes using the same methodology previously discussed for existing and no-build traffic conditions. Intersections were analyzed with improvements necessary to accommodate future traffic volumes. The results of the capacity analysis for each intersection are presented in Section 7 of this report.

LEGEND

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



<p>Moving forward.</p> <p>RAMEY KEMP ASSOCIATES</p>	<p>Holland Road Mixed-Use Apex, NC</p>	<p>2025 Build Peak Hour Traffic</p>	
		<p>Scale: Not to Scale</p>	<p>Figure 15</p>

6. TRAFFIC ANALYSIS PROCEDURE

Study intersections were analyzed using the methodology outlined in the *Highway Capacity Manual* (HCM), 6th Edition published by the Transportation Research Board. Capacity and level of service are the design criteria for this traffic study. A computer software package, Synchro (Version 10.3), was used to complete the analyses of the study area intersections. Please note that the unsignalized capacity analysis does not provide an overall level of service for an intersection; only delay for an approach with a conflicting movement.

The HCM defines capacity as “the maximum hourly rate at which persons or vehicles can reasonably be expected to traverse a point or uniform section of a lane or roadway during a given time period under prevailing roadway, traffic, and control conditions.” Level of service (LOS) is a term used to represent different driving conditions, and is defined as a “qualitative measure describing operational conditions within a traffic stream, and their perception by motorists and/or passengers.” Level of service varies from Level “A” representing free flow, to Level “F” where breakdown conditions are evident. Refer to Table 4 for HCM levels of service and related average control delay per vehicle for both signalized and unsignalized intersections. Control delay as defined by the HCM includes “initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay”. An average control delay of 50 seconds at a signalized intersection results in LOS “D” operation at the intersection.

Table 4: Highway Capacity Manual – Levels-of-Service and Delay

UNSIGNALIZED INTERSECTION		SIGNALIZED INTERSECTION	
LEVEL OF SERVICE	AVERAGE CONTROL DELAY PER VEHICLE (SECONDS)	LEVEL OF SERVICE	AVERAGE CONTROL DELAY PER VEHICLE (SECONDS)
A	0-10	A	0-10
B	10-15	B	10-20
C	15-25	C	20-35
D	25-35	D	35-55
E	35-50	E	55-80
F	>50	F	>80

6.1. Adjustments to Analysis Guidelines

Capacity analysis at all study intersections was completed according to the NCDOT Congestions Management Guidelines.

Moving forward.

7. CAPACITY ANALYSIS

7.1. Humie Olive Road and Old US Highway 1

The existing unsignalized intersection of Humie Olive Road and Old US Highway 1 was analyzed under 2021 existing, 2025 no-build, and 2025 build traffic conditions with the lane configurations and traffic control shown in Table 5. Refer to Table 5 for a summary of the analysis results. Refer to Appendix E for the Synchro capacity analysis reports. SimTraffic queuing reports can be found in Appendix M.

Table 5: Analysis Summary of Humie Olive Road and Old US Highway 1

ANALYSIS SCENARIO	APPROACH	LANE CONFIGURATIONS	WEEKDAY AM PEAK HOUR LEVEL OF SERVICE		WEEKDAY PM PEAK HOUR LEVEL OF SERVICE	
			Approach	Overall (seconds)	Approach	Overall (seconds)
2021 Existing	EB	1 LT, 1 TH-RT	B	B (14)	A	B (16)
	WB	1 LT, 1 TH, 1 RT	B			
	NB	1 LT-TH-RT	B			
	SB	1 LT-TH, 1 RT	B			
2025 No-Build	EB	1 LT, 1 TH-RT	A	F (130)	B	C (23)
	WB	1 LT, 1 TH, 1 RT	D			
	NB	1 LT-TH-RT	D			
	SB	1 LT-TH, 1 RT	F			
2025 Build	EB	1 LT, 1 TH-RT	A	F (129)	B	C (23)
	WB	1 LT, 1 TH, 1 RT	D			
	NB	1 LT-TH-RT	D			
	SB	1 LT-TH, 1 RT	F			

Capacity analysis of 2021 existing traffic conditions indicates that the intersection of Humie Olive Road and Old US Highway 1 is expected to operate at an overall LOS B during the weekday AM and PM peak hours. Under 2025 no-build and 2025 build conditions, the intersection is expected to operate at an overall LOS F during the weekday AM peak hour and an overall LOS C during the weekday PM peak hour. It should be noted that higher delays are expected during the weekday AM peak hour under 2025 no-build and 2025 build conditions due to the high traffic volumes created by school traffic. However, this school traffic is only expected to occur during a short period of time within the peak hour. As a result of limitations with conducting reliable traffic counts during the COVID-19 pandemic,

all school traffic associated with the elementary, middle, and high school located north of the study area along Humie Olive Road was added into the same peak hour. This analysis is assumed to be extremely conservative as the school traffic would typically be spread across multiple hours in the morning.

The proposed development is expected to account for 4% of the overall traffic at the intersection during the weekday AM peak hour and 5% of overall traffic during the weekday PM peak hour. Additionally, the proposed development is expected to cause a negligible increase to the overall delay at the intersection during the weekday AM and PM peak hours. Due to the minor impacts by the proposed development and a low percentage of traffic expected, no improvements are recommended at this intersection by the proposed development.

Moving forward.

7.2. Holland Road and Old US Highway 1

The existing unsignalized intersection of Holland Road and Old US Highway 1 was analyzed under 2021 existing, 2025 no-build, and 2025 build traffic conditions with the lane configurations and traffic control shown in Table 6. Refer to Table 6 for a summary of the analysis results. Refer to Appendix F for the Synchro capacity analysis reports. SimTraffic queuing reports can be found in Appendix M.

Table 6: Analysis Summary of Holland Road and Old US Highway 1

ANALYSIS SCENARIO	APPROACH	LANE CONFIGURATIONS	WEEKDAY AM PEAK HOUR LEVEL OF SERVICE		WEEKDAY PM PEAK HOUR LEVEL OF SERVICE	
			Approach	Overall (seconds)	Approach	Overall (seconds)
2021 Existing	EB	1 LT-TH	A ¹	N/A	A ¹	N/A
	WB	1 TH-RT	--		--	
	SB	1 LT-RT	C ²		C ²	
2025 No-Build	EB	1 LT-TH	B ¹	N/A	A ¹	N/A
	WB	1 TH-RT	--		--	
	SB	1 LT-RT	F ²		D ²	
2025 Build	EB	1 LT-TH	B ¹	N/A	A ¹	N/A
	WB	1 TH-RT	--		--	
	SB	1 LT-RT	F ²		F ²	
2025 Build - with Improvements	EB	1 LT, 1 TH	B ¹	N/A	A ¹	N/A
	WB	1 TH-RT	--		--	
	SB	1 LT, 1 RT	F ²		F ²	

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

2. Level of service for minor-street approach.

Improvements by Developer shown in bold.

Capacity analysis of 2021 existing traffic conditions indicates that the major-street left-turn movement and the minor-street approach at the intersection of Holland Road and Old US Highway 1 are expected to operate at LOS C or better during the weekday AM and PM peak hour. Under 2025 no-build conditions, the major-street left-turn movement is expected to operate at LOS B or better during the weekday AM and PM peak hours, while the minor-street approach is expected to operate at LOS F during the weekday AM peak hour and LOS D during the weekday PM peak hour. Capacity analysis of 2025 build conditions indicates that the major-street left-turn movement is expected to operate at LOS B or better, while the minor-street approach is expected to operate at LOS F during the weekday AM and PM peak

hours. These levels of service are not uncommon for an unsignalized minor-street approach at a two-lane mainline (Old US Highway 1) with heavy through volumes.

Under 2025 build conditions, the intersection was analyzed with an exclusive eastbound left-turn lane and an exclusive southbound right-turn lane. Exclusive turn lanes at the study intersection are expected to decrease delays on the minor-street approach and reduce queues experienced. Based on SimTraffic max queue lengths, an exclusive eastbound left-turn lane with a minimum of 75 feet of storage and an exclusive southbound right-turn lane with a minimum of 200 feet of storage, both with appropriate deceleration and taper length, are recommended by the proposed development.

A traffic signal was considered at this intersection, and 2025 build peak hour traffic volumes were analyzed utilizing the criteria contained in the *Manual on Uniform Traffic Control Devices* (MUTCD). A traffic signal was only warranted during the weekday AM peak hour under 2025 build traffic conditions. Although 2025 build volumes at the intersection are expected to meet weekday AM peak hour warrants, due to the residential nature of the study area, which typically operates with two distinct peak hours, it is unlikely that the 4 or 8-hour warrants would be met, which NCDOT favors for signalization. Additionally, it should be noted that increased delays are only expected during a short period of time since school traffic is generated over a concentrated period during the peak hours studied. As a result of limitations with conducting reliable traffic counts during the COVID-19 pandemic, all school traffic associated with the elementary, middle, and high school located north of the study area along Humie Olive Road was added into the same peak hour. This analysis is assumed to be extremely conservative as the school traffic would typically be spread across multiple hours in the morning.

Due to a high volume of through traffic experienced on the Old US Highway 1 corridor during the weekday AM peak hour, the introduction of a traffic signal at this intersection would likely result in additional delay to the mainline traffic that would otherwise operate unrestricted through this intersection. Additionally, upstream signals at the intersection of Humie Olive Road and Old US Highway 1 and at other intersections to the northeast of the

study area are expected to provide gaps in traffic for turning movements and reduce the queue lengths experienced.

This intersection is also located approximately 200 feet west of the intersection of Friendship Road and Old US Highway 1. Due to close proximity, the realignment of these intersections into a single intersection has the potential to improve operations along the major-street corridor. The future intersection after the realignment should be monitored for signalization to determine if a signal is warranted. The realignment of the two intersections is not recommended by the proposed development as the developer does not control the appropriate properties for this realignment.

Moving forward.

7.3. Friendship Road and Old US Highway 1

The existing unsignalized intersection of Friendship Road and Old US Highway 1 was analyzed under 2021 existing, 2025 no-build, and 2025 build traffic conditions with the lane configurations and traffic control shown in Table 7. Refer to Table 7 for a summary of the analysis results. Refer to Appendix G for the Synchro capacity analysis reports. SimTraffic queuing reports can be found in Appendix M.

Table 7: Analysis Summary of Friendship Road and Old US Highway 1

ANALYSIS SCENARIO	APPROACH	LANE CONFIGURATIONS	WEEKDAY AM PEAK HOUR LEVEL OF SERVICE		WEEKDAY PM PEAK HOUR LEVEL OF SERVICE	
			Approach	Overall (seconds)	Approach	Overall (seconds)
2021 Existing	EB WB NB	1 TH-RT 1 LT-TH 1 LT-RT	-- A ¹ C ²	N/A	-- A ¹ D ²	N/A
2025 No-Build	EB WB NB	1 TH-RT <u>1 LT</u> , 1 TH <u>1 LT</u> , 1 RT	-- B ¹ F ²	N/A	-- A ¹ F ²	N/A
2025 Build	EB WB NB	1 TH-RT <u>1 LT</u> , 1 TH <u>1 LT</u> , 1 RT	-- B ¹ F ²	N/A	-- A ¹ F ²	N/A

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

2. Level of service for minor-street approach.

Improvements committed to by the Pleasant Park development are shown underlined.

Capacity analysis of 2021 existing traffic conditions indicates that the major-street left-turn movement and the minor-street approach at the intersection of Holland Road and Old US Highway 1 are expected to operate at LOS C or better during the weekday AM and PM peak hour. Under 2025 no-build and 2025 build conditions, the major-street left-turn movement is expected to operate at LOS B or better during the weekday AM and PM peak hours, while the minor-street approach is expected to operate at LOS F during the weekday AM and PM peak hours. These levels of service are not uncommon for an unsignalized minor-street approach at a two-lane mainline (Old US Highway 1) with heavy through volumes.

A traffic signal was considered at this intersection, and 2025 build peak hour traffic volumes were analyzed utilizing the criteria contained in the *Manual on Uniform Traffic Control Devices* (MUTCD). A traffic signal was warranted during the weekday AM and PM peak hours under 2025 build traffic conditions. Although 2025 build volumes at the intersection are expected to meet peak hour warrants, due to the residential nature of the study area, which typically operates with two distinct peak hours, it is unlikely that the 4 or 8-hour warrants would be met, which NCDOT favors for signalization. Additionally, it should be noted that increased delays are only expected during a short period of time since school traffic is generated over a concentrated period during the peak hours studied. As a result of limitations with conducting reliable traffic counts during the COVID-19 pandemic, all school traffic associated with the elementary, middle, and high school located north of the study area along Humie Olive Road was added into the same peak hour. This analysis is assumed to be extremely conservative as the school traffic would typically be spread across multiple hours in the morning.

Due to a high volume of through traffic experienced on the Old US Highway 1 corridor during the weekday AM peak hour, the introduction of a traffic signal at this intersection would likely result in additional delay to the mainline traffic that would otherwise operate unrestricted through this intersection. Additionally, upstream signals at the intersection of Humie Olive Road and Old US Highway 1 and at other intersections to the northeast of the study area are expected to provide gaps in traffic for turning movements and reduce the queue lengths experienced.

This intersection is also located approximately 200 feet east of the intersection of Holland Road and Old US Highway 1. Due to close proximity, the realignment of these intersections into a single intersection has the potential to improve operations along the major-street corridor. The future intersection after the realignment should be monitored for signalization to determine if a signal is warranted. The realignment of the two intersections is not recommended by the proposed development as the developer does not control the appropriate properties for this realignment.

Moving forward.

7.4. Holland Road and Kelly Road

The existing unsignalized intersection of Holland Road and Kelly Road was analyzed under 2021 existing, 2025 no-build, and 2025 build traffic conditions with the lane configurations and traffic control shown in Table 8. Refer to Table 8 for a summary of the analysis results. Refer to Appendix H for the Synchro capacity analysis reports. SimTraffic queuing reports can be found in Appendix M.

Table 8: Analysis Summary of Holland Road and Kelly Road

ANALYSIS SCENARIO	APPROACH	LANE CONFIGURATIONS	WEEKDAY AM PEAK HOUR LEVEL OF SERVICE		WEEKDAY PM PEAK HOUR LEVEL OF SERVICE	
			Approach	Overall (seconds)	Approach	Overall (seconds)
2021 Existing	EB NB SB	1 LT-RT 1 LT-TH 1 TH-RT	B ² A ¹ --	N/A	B ² A ¹ --	N/A
2025 No-Build	EB NB SB	1 LT-RT 1 LT-TH 1 TH-RT	B ² A ¹ --	N/A	B ² A ¹ --	N/A
2025 Build	EB NB SB	1 LT-RT 1 LT-TH 1 TH-RT	B ² A ¹ --	N/A	B ² A ¹ --	N/A

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

Capacity analysis of 2021 existing, 2025 no-build, and 2025 build traffic conditions indicates that the major-street left-turn movement and the minor-street approach at the intersection of Holland Road and Kelly Road are expected to operate at LOS B or better during the weekday AM and PM peak hours.

Moving forward.

7.5. Holland Road and Site Drive 1

The proposed intersection of Holland Road and Site Drive 1 was analyzed under 2025 build traffic conditions with the lane configurations and traffic control shown in Table 9. Refer to Table 9 for a summary of the analysis results. Refer to Appendix I for the Synchro capacity analysis reports. SimTraffic queuing reports can be found in Appendix M.

Table 9: Analysis Summary of Holland Road and Site Drive 1

ANALYSIS SCENARIO	APPROACH	LANE CONFIGURATIONS	WEEKDAY AM PEAK HOUR LEVEL OF SERVICE		WEEKDAY PM PEAK HOUR LEVEL OF SERVICE	
			Approach	Overall (seconds)	Approach	Overall (seconds)
2025 Build	EB NB SB	1 LT-RT 1 LT-TH 1 TH-RT	A ² A ¹ --	N/A	B ² A ¹ --	N/A

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

Improvements by the Developer shown in bold.

Capacity analysis of 2025 build traffic conditions indicates that the major-street left-turn movement and the minor-street approach at the intersection of Holland Road and Site Drive 1 are expected to operate at LOS B or better during the weekday AM and PM peak hour.

Turn lanes were considered according to the *Policy on Street and Driveway Access to NC Highways* (Driveway Manual). Based on the Driveway Manual, no turn lanes are recommended as Holland Road is expected to serve an ADT below the 4,000 vehicle per day (vpd) threshold typically considered for the turn-lane requirements at the build out of the proposed development.

Moving forward.

7.6. Holland Road and Site Drive 2

The proposed unsignalized intersection of Holland Road and Site Drive 2 was analyzed under 2025 build traffic conditions with lane configurations and traffic control shown in Table 10. Refer to Table 10 for a summary of the analysis results. Refer to Appendix J for the Synchro capacity analysis reports. SimTraffic queuing reports can be found in Appendix M.

Table 10: Analysis Summary of Holland Road and Site Drive 2

ANALYSIS SCENARIO	APPROACH	LANE CONFIGURATIONS	WEEKDAY AM PEAK HOUR LEVEL OF SERVICE		WEEKDAY PM PEAK HOUR LEVEL OF SERVICE	
			Approach	Overall (seconds)	Approach	Overall (seconds)
2025 Build	EB NB SB	1 RT 1 TH 1 TH-RT	A ¹ -- --	N/A	A ¹ -- --	N/A

1. Level of service for minor-street approach.
Improvements by the Developer shown in bold.

Capacity analysis of 2025 build traffic conditions indicates that the minor-street approach at the intersection of Holland Road and Site Drive 2 is expected to operate at LOS A during the weekday AM and PM peak hours.

Turn lanes were considered according to the *Policy on Street and Driveway Access to NC Highways* (Driveway Manual). Based on the Driveway Manual, no turn lanes are recommended as Holland Road is expected to serve an ADT below the 4,000 vehicle per day (vpd) threshold typically considered for the turn-lane requirements at the build out of the proposed development.

Moving forward.

7.7. Old US Highway 1 and Site Drive 3

The proposed unsignalized intersection of Old US Highway 1 and Site Drive 3 was analyzed under 2025 build traffic conditions with the lane configurations and traffic control shown in Table 11. Refer to Table 11 for a summary of the analysis results. Refer to Appendix K for the Synchro capacity analysis reports. SimTraffic queuing reports can be found in Appendix M.

Table 11: Analysis Summary of Old US Highway 1 and Site Drive 3

ANALYSIS SCENARIO	APPROACH	LANE CONFIGURATIONS	WEEKDAY AM PEAK HOUR LEVEL OF SERVICE		WEEKDAY PM PEAK HOUR LEVEL OF SERVICE	
			Approach	Overall (seconds)	Approach	Overall (seconds)
2025 Build	EB WB SB	1 TH 1 TH, 1 RT 1 RT	-- -- D¹	N/A	-- -- C¹	N/A

1. Level of service for minor-street approach.
Improvements by the Developer shown in bold.

Capacity analysis of 2025 build traffic conditions indicates that the minor-street approach at the intersection of Old US Highway 1 and Site Drive 3 is expected to operate at LOS D or better during the weekday AM and PM peak hours.

Turn lanes were considered according to the *Policy on Street and Driveway Access to NC Highways* (Driveway Manual). Based on the Driveway Manual, a westbound right-turn lane with a minimum of 75 feet of storage and appropriate deceleration and taper is warranted and recommended by the proposed development.

Moving forward.

7.8. Humie Olive Road and Site Drive 4

The proposed unsignalized intersection of Humie Olive Road and Site Drive 4 was analyzed under 2025 build traffic conditions with the lane configurations and traffic control shown in Table 12. Refer to Table 12 for a summary of the analysis results. Refer to Appendix L for the Synchro capacity analysis reports. SimTraffic queuing reports can be found in Appendix M.

Table 12: Analysis Summary of Humie Olive Road and Site Drive 4

ANALYSIS SCENARIO	APPROACH	LANE CONFIGURATIONS	WEEKDAY AM PEAK HOUR LEVEL OF SERVICE		WEEKDAY PM PEAK HOUR LEVEL OF SERVICE	
			Approach	Overall (seconds)	Approach	Overall (seconds)
2025 Build	WB NB SB	1 LT, 1 RT 1 TH, 1 RT 1 LT, 1 TH	F ² -- B ¹	N/A	C ² -- A ¹	N/A

1. Level of service for major-street left-turn movement.
 2. Level of service for minor-street approach.
- Improvements by the Developer shown in bold.

Capacity analysis of 2025 build traffic conditions indicates that the major-street left-turn movement at the intersection of Humie Olive Road and Site Drive 4 is expected to operate at LOS B or better during the weekday AM and PM peak hours, while the minor-street approach is expected to operate at LOS F during the weekday AM peak hour and LOS C during the weekday PM peak hour. It should be noted that higher delays are expected during the weekday AM peak hour under 2025 build conditions due to the high traffic volumes created by school traffic along Humie Olive Road. However, this school traffic is only expected to occur during a short period of time within the peak hour.

Turn lanes were considered according to the *Policy on Street and Driveway Access to NC Highways* (Driveway Manual). Based on the Driveway Manual, a southbound left-turn lane with a minimum of 175 feet of storage and a northbound right-turn lane with a minimum of 75 feet of storage, both with appropriate deceleration and taper length, are warranted and

recommended by the proposed development. In addition to the turn lanes warranted by the Driveway Manual, under 2025 build conditions, an exclusive westbound left-turn lane was considered and is recommended based on capacity and synchro queue lengths.

A traffic signal was considered at this intersection, and 2025 build peak hour traffic volumes were analyzed utilizing the criteria contained in the *Manual on Uniform Traffic Control Devices* (MUTCD). A traffic signal was only warranted during the weekday AM peak hour under 2025 build traffic conditions. Although 2025 build volumes at the intersection are expected to meet weekday AM peak hour warrants, due to the residential nature of the study area, which typically operates with two distinct peak hours, it is unlikely that the 4 or 8-hour warrants would be met, which NCDOT favors for signalization. Additionally, it should be noted that increased delays are only expected during a short period of time since school traffic is generated over a concentrated period during the peak hours studied. As a result of limitations with conducting reliable traffic counts during the COVID-19 pandemic, all school traffic associated with the elementary, middle, and high school located north of the study area along Humie Olive Road was added into the same peak hour. This analysis is assumed to be extremely conservative as the school traffic would typically be spread across multiple hours in the morning.

Based on SimTraffic max queue lengths, southbound queues at the signalized intersection of Humie Olive Road and Old US Highway 1 are expected to extend approximately 500 feet along Humie Olive Road during the weekday AM peak hour and approximately 250 feet during the weekday PM peak hour. These queues are not expected to reach or extend past the proposed location of Site Drive 4 under 2025 build conditions. It should be noted that this analysis is assumed to be extremely conservative as the school traffic added to the weekday AM peak hour under future conditions would typically be spread across multiple hours in the morning.

8. CONCLUSIONS

This Traffic Impact Analysis was conducted to determine the potential traffic impacts of the proposed mixed-use development, north of Old US Highway 1, west of Holland Road in Apex, North Carolina. The proposed development is expected to be a mixed-use development and be built out by 2025. Site access is proposed one (1) full-movement driveway and one (1) right-in/right-out driveway along Holland Road, one (1) right-in/right-out driveway along Old US Highway 1, and one (1) full-movement driveway along Humie Olive Road.

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

- 2021 Existing Traffic Conditions
- 2025 No-Build Traffic Conditions
- 2025 Build Traffic Conditions

Trip Generation

It is estimated that the proposed site will generate approximately 11,920 total site trips on the roadway network during a typical 24-hour weekday period. Of the daily traffic volume, it is anticipated that 712 trips (362 entering and 350 exiting) would occur during the weekday AM peak hour and 950 trips (500 entering and 450 exiting) would occur during the weekday PM peak hour.

Adjustments to Analysis Guidelines

Capacity analysis at all study intersections was completed according to NCDOT Congestion Management Guidelines. Refer to section 6.1 of this report for a detailed description of any adjustments to these guidelines made throughout the analysis.

Intersection Capacity Analysis Summary

All the study area intersections (including the proposed site driveways) are expected to operate at acceptable levels-of-service under existing and future year conditions with the

exception of the intersections listed below. A summary of the study area intersections that are expected to need improvements are as follows:

Humie Olive Road and Old US Highway 1

Under 2025 no-build and 2025 build conditions, the intersection is expected to operate at an overall LOS F during the weekday AM peak hour and an overall LOS C during the weekday PM peak hour. It should be noted that higher delays are expected during the weekday AM peak hour under 2025 no-build and 2025 build conditions due to the high traffic volumes created by school traffic. However, this school traffic is only expected to occur during a short period of time within the peak hour. As a result of limitations with conducting reliable traffic counts during the COVID-19 pandemic, all school traffic associated with the elementary, middle, and high school located north of the study area along Humie Olive Road was added into the same peak hour. This analysis is assumed to be extremely conservative as the school traffic would typically be spread across multiple hours in the morning.

The proposed development is expected to account for 4% of the overall traffic at the intersection during the weekday AM peak hour and 5% of overall traffic during the weekday PM peak hour. Additionally, the proposed development is expected to cause a negligible increase to the overall delay at the intersection during the weekday AM and PM peak hours. Due to the minor impacts by the proposed development and a low percentage of traffic expected, no improvements are recommended at this intersection by the proposed development.

Holland Road and Old US Highway 1

The minor-street approach is expected to operate at poor levels of service under future conditions during the weekday AM and PM peak hours. These levels of service are not uncommon for an unsignalized minor-street approach at a two-lane mainline (Old US Highway 1) with heavy through volumes.

Under 2025 build conditions, the intersection was analyzed with an exclusive eastbound left-turn lane and an exclusive southbound right-turn lane. Exclusive turn lanes at the study

intersection are expected to decrease delays on the minor-street approach and reduce queues experienced. Based on SimTraffic max queue lengths, an exclusive eastbound left-turn lane with a minimum of 75 feet of storage and an exclusive southbound right-turn lane with a minimum of 200 feet of storage, both with appropriate deceleration and taper length, are recommended by the proposed development.

A traffic signal was considered at this intersection, and 2025 build peak hour traffic volumes were analyzed utilizing the criteria contained in the *Manual on Uniform Traffic Control Devices* (MUTCD). A traffic signal was only warranted during the weekday AM peak hour under 2025 build traffic conditions. Although 2025 build volumes at the intersection are expected to meet weekday AM peak hour warrants, due to the residential nature of the study area, which typically operates with two distinct peak hours, it is unlikely that the 4 or 8-hour warrants would be met, which NCDOT favors for signalization. Additionally, it should be noted that increased delays are only expected during a short period of time since school traffic is generated over a concentrated period during the peak hours studied. As a result of limitations with conducting reliable traffic counts during the COVID-19 pandemic, all school traffic associated with the elementary, middle, and high school located north of the study area along Humie Olive Road was added into the same peak hour. This analysis is assumed to be extremely conservative as the school traffic would typically be spread across multiple hours in the morning.

Due to a high volume of through traffic experienced on the Old US Highway 1 corridor during the weekday AM peak hour, the introduction of a traffic signal at this intersection would likely result in additional delay to the mainline traffic that would otherwise operate unrestricted through this intersection. Additionally, upstream signals at the intersection of Humie Olive Road and Old US Highway 1 and at other intersections to the northeast of the study area are expected to provide gaps in traffic for turning movements and reduce the queue lengths experienced.

This intersection is also located approximately 200 feet west of the intersection of Friendship Road and Old US Highway 1. Due to close proximity, the realignment of these intersections

into a single intersection has the potential to improve operations along the major-street corridor. The future intersection after the realignment should be monitored for signalization to determine if a signal is warranted. The realignment of the two intersections is not recommended by the proposed development as the developer does not control the appropriate properties for this realignment.

Friendship Road and Old US Highway 1

The minor-street approach is expected to operate at poor levels of service under future conditions during the weekday AM and PM peak hours. These levels of service are not uncommon for an unsignalized minor-street approach at a two-lane mainline (Old US Highway 1) with heavy through volumes.

A traffic signal was considered at this intersection, and 2025 build peak hour traffic volumes were analyzed utilizing the criteria contained in the *Manual on Uniform Traffic Control Devices* (MUTCD). A traffic signal was warranted during the weekday AM and PM peak hours under 2025 build traffic conditions. Although 2025 build volumes at the intersection are expected to meet peak hour warrants, due to the residential nature of the study area, which typically operates with two distinct peak hours, it is unlikely that the 4 or 8-hour warrants would be met, which NCDOT favors for signalization. Additionally, it should be noted that increased delays are only expected during a short period of time since school traffic is generated over a concentrated period during the peak hours studied. As a result of limitations with conducting reliable traffic counts during the COVID-19 pandemic, all school traffic associated with the elementary, middle, and high school located north of the study area along Humie Olive Road was added into the same peak hour. This analysis is assumed to be extremely conservative as the school traffic would typically be spread across multiple hours in the morning.

Due to a high volume of through traffic experienced on the Old US Highway 1 corridor during the weekday AM peak hour, the introduction of a traffic signal at this intersection would likely result in additional delay to the mainline traffic that would otherwise operate unrestricted through this intersection. Additionally, upstream signals at the intersection of Humie Olive Road and Old US Highway 1 and at other intersections to the northeast of the

study area are expected to provide gaps in traffic for turning movements and reduce the queue lengths experienced.

This intersection is also located approximately 200 feet east of the intersection of Holland Road and Old US Highway 1. Due to close proximity, the realignment of these intersections into a single intersection has the potential to improve operations along the major-street corridor. The future intersection after the realignment should be monitored for signalization to determine if a signal is warranted. The realignment of the two intersections is not recommended by the proposed development as the developer does not control the appropriate properties for this realignment.

Humie Olive Road and Site Drive 4

The minor-street approach is expected to operate at poor levels of service under future conditions during the weekday AM peak hour. It should be noted that higher delays are expected during the weekday AM peak hour under 2025 build conditions due to the high traffic volumes created by school traffic along Humie Olive Road. However, this school traffic is only expected to occur during a short period of time within the peak hour.

Turn lanes were considered according to the *Policy on Street and Driveway Access to NC Highways* (Driveway Manual). Based on the Driveway Manual, a southbound left-turn lane with a minimum of 175 feet of storage and a northbound right-turn lane with a minimum of 75 feet of storage, both with appropriate deceleration and taper length, are warranted and recommended by the proposed development. In addition to the turn lanes warranted by the Driveway Manual, under 2025 build conditions, an exclusive westbound left-turn lane was considered and is recommended based on capacity and synchro queue lengths.

A traffic signal was considered at this intersection, and 2025 build peak hour traffic volumes were analyzed utilizing the criteria contained in the *Manual on Uniform Traffic Control Devices* (MUTCD). A traffic signal was only warranted during the weekday AM peak hour under 2025 build traffic conditions. Although 2025 build volumes at the intersection are expected to

meet weekday AM peak hour warrants, due to the residential nature of the study area, which typically operates with two distinct peak hours, it is unlikely that the 4 or 8-hour warrants would be met, which NCDOT favors for signalization. Additionally, it should be noted that increased delays are only expected during a short period of time since school traffic is generated over a concentrated period during the peak hours studied. As a result of limitations with conducting reliable traffic counts during the COVID-19 pandemic, all school traffic associated with the elementary, middle, and high school located north of the study area along Humie Olive Road was added into the same peak hour. This analysis is assumed to be extremely conservative as the school traffic would typically be spread across multiple hours in the morning.

Based on SimTraffic max queue lengths, southbound queues at the signalized intersection of Humie Olive Road and Old US Highway 1 are expected to extend approximately 500 feet along Humie Olive Road during the weekday AM peak hour and approximately 250 feet during the weekday PM peak hour. These queues are not expected to reach or extend past the proposed location of Site Drive 4 under 2025 build conditions. It should be noted that this analysis is assumed to be extremely conservative as the school traffic added to the weekday AM peak hour under future conditions would typically be spread across multiple hours in the morning.

9. RECOMMENDATIONS

Based on the findings of this study, specific geometric improvements have been identified and are recommended to accommodate future traffic conditions. See a more detailed description of the recommended improvements below. Refer to Figure 16 for an illustration of the recommended lane configuration for the proposed development.

Background Improvements by Adjacent Developments – Pleasant Park Development

Old US Highway 1 and Friendship Road

- Provide an exclusive westbound left-turn lane with a minimum of 150 feet of storage and appropriate deceleration and taper length.
- Provide an exclusive northbound left-turn lane with a minimum of 100 feet of storage and appropriate deceleration and taper length.

Recommended Improvements by Developer

Holland Road and Old US Highway 1

- Provide an exclusive eastbound left-turn lane with a minimum of 75 feet of storage and appropriate deceleration and taper length.
- Provide an exclusive southbound right-turn lane with a minimum of 200 feet of storage and appropriate deceleration and taper length.

Holland Road and Site Drive 1

- Construct eastbound approach with one (1) ingress lane and one (1) egress lane.
- Provide stop-control for eastbound approach.

Holland Road and Site Drive 2

- Construct eastbound approach as a right-in/right-out driveway with one (1) ingress lane and one (1) egress lane.
- Provide stop-control for eastbound approach.

Old US Highway 1 and Site Drive 3

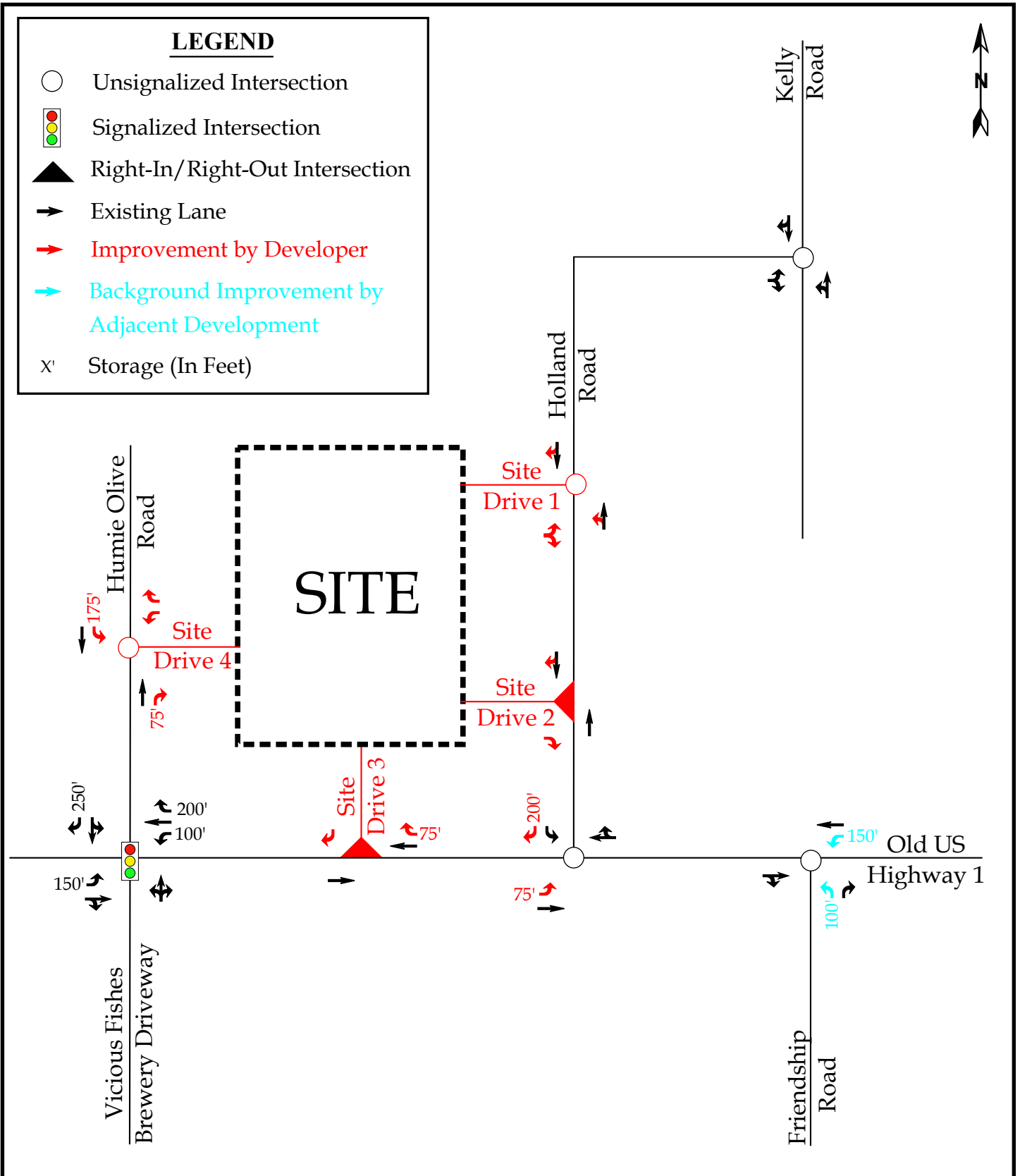
- Construct southbound approach as right-in/right-out driveway with one (1) ingress lane and one (1) egress lane.
- Provide stop-control for southbound approach.
- Provide westbound right-turn lane with at least 75 feet of storage and appropriate deceleration and taper length.

Humie Olive Road and Site Drive 4

- Construct westbound approach with one (1) ingress lane and two (2) egress lanes.
- Provide stop-control for westbound approach.
- Provide southbound left-turn lane with at least 175 feet of storage and appropriate deceleration and taper length.
- Provide northbound right-turn lane with at least 75 feet of storage and appropriate deceleration and taper length.
- Provide an exclusive westbound left-turn lane along Site Drive 4.

LEGEND

- Unsignalized Intersection
- ◫ Signalized Intersection
- ▲ Right-In/Right-Out Intersection
- Existing Lane
- Improvement by Developer
- Background Improvement by Adjacent Development
- x' Storage (In Feet)



Holland Road Mixed-Use
Apex, NC

Recommended Lane
Configurations

Scale: Not to Scale | Figure 16

TECHNICAL APPENDIX

APPENDIX A

SCOPING DOCUMENTATION

February 23, 2021

Russell Dalton, PE
Town of Apex
73 Hunter Street
Apex, NC 27502
P: 919-249-3358
E: russell.dalton@apexnc.org

Subject: **Memorandum of Understanding** – Holland Road Mixed-Use
Apex, North Carolina

Dear Mr. Dalton:

The following is a Memorandum of Understanding (MOU) outlining the proposed scope of work and assumptions related to the Traffic Impact Analysis (TIA) for the proposed Holland Road Mixed-Use development to be located north of Old US Highway 1, west of Holland Road in Apex, North Carolina. It is our understanding that the mixed-use development is expected to consist of a maximum of 110 townhomes, 60,000 square foot (s.f.) shopping center, two (2) 4,000 s.f. Fast-Food Restaurants with Drive Thru, an 8,500 s.f. Quality Restaurant, and a Gas Station w/ Convenience Market that consists of 10 fueling positions (f.p.). The proposed development is expected to be fully built-out by 2025. Site access is proposed via one (1) full-movement driveway and one (1) right-in/right-out driveway along Holland Road, one (1) right-in/right-out driveway along Old US Highway 1, and one (1) full-movement driveway along Humie Olive Road. See the attachments for a preliminary site plan. This MOU is compiled with information regarding the scope of the Holland Road Mixed-Use TIA, per the TIA scoping meeting with the Town and NCDOT on January 20, 2021.

Study Area

Based on coordination with the Town of Apex (Town) and the North Carolina Department of Transportation (NCDOT), the study area is proposed to consist of the following existing intersections:

- Humie Olive Road and Old US Highway 1 (Signalized)
- Holland Road and Old US Highway 1 (Unsignalized)
- Friendship Road and Old US Highway 1 (Unsignalized)
- Holland Road and Kelly Road (Unsignalized)

Analysis Scenarios

All capacity analyses will be performed utilizing Synchro (Version 10.3). All study intersections will be analyzed during typical weekday AM and PM peak hours under the following proposed traffic scenarios:

- Existing (2021) Traffic Conditions
- No-Build (2025) Traffic Conditions

- Build (2025) Traffic Conditions

Existing Traffic Volumes

Peak hour turning movement counts were collected at the study intersections on a typical weekday during weekday AM (7:00 – 9:00 AM) and weekday PM (4:00 – 6:00 PM) peak periods. Turning movement counts from RKA will be utilized at the intersection of Old US Highway 1 and Humie Olive Road from September 2015. Weekday PM peak hour will also be utilized from the VHB Engineering NC, PC at the intersection of Friendship Road and Old US Highway 1 from April 2016. These counts were grown to 2021 using a proposed 4% growth rate and were compared to newly collected count data at the same intersections. The comparison of this count data was used to develop a rate between available count data and new count data collected during COVID-19 conditions. The rates determined were applied to the new count data collected at all study intersections to determine existing (2021) traffic volumes. A growth rate of 47% was applied to the new count data collected during the weekday AM peak hour and 14% was applied to all new count data collected during the weekday PM peak hour to account for the reduction in traffic associated with the COVID-19 pandemic. Weekday AM and PM traffic volumes were balanced between study intersections, where appropriate. Signal information was obtained from the NCDOT. Refer to the attached existing (2021) traffic volumes figures for an illustration of volumes before and after the growth rates were applied.

No-Build Traffic Volumes

Per coordination with Town and NCDOT Staff, no-build traffic volumes will be determined by projecting existing (2021) traffic volumes to the build-out year (2025) using a proposed 4% annual growth rate.

Adjacent Developments

Per coordination with the Town, the following adjacent developments are to be included in this study:

- E-41 (Apex Friendship Elementary) – AM only
- Pleasant Park – PM only
- Friendship Middle School (since AM pre-COVID-19 count is from prior to school opening) – AM only
- Friendship High School (since AM pre-COVID-19 count is from prior to school opening) – AM only

All other future developments will be accounted for with the proposed 4% growth rate.

Future Roadway Improvements

Through coordination with NCDOT and the Town, future roadway improvements associated with the adjacent developments will be included in this analysis.

Trip Generation

Average weekday daily, AM peak hour, and PM peak hour trips for the proposed development were estimated using methodology contained within the ITE *Trip Generation Manual*, 10th Edition. Refer to Table 1, on the next page, for a detailed breakdown of the buildout site trip generation.

Table 1: Trip Generation Summary

Land Use (ITE Code)	Intensity	Daily Traffic (vpd)	AM Peak Hour Trips (vph)		PM Peak Hour Trips (vph)	
			Enter	Exit	Enter	Exit
Single Family Homes (210)	110 units	1,140	21	62	70	41
Shopping Center (820)	60,000 s.f.	4,250	113	69	179	193
Quality Restaurant (931)	8,500 s.f.	710	--*	--*	44	22
Fast Food Restaurant w/ Drive-Thru (934)	8,000 s.f.	3,770	164	158	136	125
Gas Station w/ Convenience Market (945)	10 f.p.	2,050	64	61	71	69
Total Trips		11,920	362	350	500	450
<i>Internal Capture: (12% AM Entering, 13% AM Exiting) (35% PM Entering, 38% PM Exiting)</i>			-43	-46	-175	-171
Total External Trips			319	304	325	279
<i>Pass-By Trips:</i>						
<i>Shopping Center (34% PM)</i>			--	--	-40	-40
<i>Quality Restaurant (44% PM)</i>			--	--	-9	-9
<i>Fast-Food w/ Drive-Thru (49% AM, 50% PM)</i>			-69	-69	-41	-41
<i>Gas Station w/ Convenience Market (62% AM, 56% PM)</i>			-34	-34	-25	-25
Total Primary Trips			216	201	210	164

*No trips are expected to be generated during the weekday AM peak hour, as this land use is not typically open during this peak hour.

It is estimated that the proposed site will generate approximately 11,920 total site trips on the roadway network during a typical 24-hour weekday period. Of the daily traffic volume, it is anticipated that 712 trips (362 entering and 350 exiting) would occur during the weekday AM peak hour and 950 trips (500 entering and 450 exiting) would occur during the weekday PM peak hour.

Internal capture of trips was considered in this study. Internal capture is the consideration for trips that will be made within the site between different land uses, so the vehicle never leaves the internal site but can still be considered as a trip to that specific land use. Internal capture typically only considers trips between residential, office, and retail/restaurant land uses. Based on NCHRP Report 684 methodology, peak hour internal capture rates of 12% AM Entering, 13% AM Exiting, 35% PM Entering, and 38% PM Exiting were applied to the total trips. The internal capture reductions are expected to account for approximately 89 trips (43 entering and 46 exiting) during the weekday AM peak hour and 346 trips (175 entering and 171 exiting) during the weekday PM peak hour.

Pass-by trips were also taken into consideration in this study. Pass-by trips are made by the traffic already using the adjacent roadway, entering the site as an intermediate stop on their way to another destination. Pass-by percentages are applied to site trips after adjustments for internal capture. Pass-by trips for the development are expected to account for approximately 206 trips (103 entering and 103 exiting) during the

weekday AM peak hour, and 230 trips (115 entering and 115 exiting) during the weekday PM peak hour. It should be noted that the pass-by trips were balanced, as it is likely that these trips would enter and exit in the same hour. The pass-by percentages used in this study were determined according to ITE standards for the specific land uses and also match the NCDOT suggested rate provided in the NCDOT rate vs equations spreadsheet.

Trip Distribution

The primary site trips are distributed based on a combination of existing traffic patterns, population centers adjacent to the study area, and engineering judgment.

A summary of the proposed residential regional trip distributions is as follows:

- 60% to/from the east via Old US Highway 1
- 25% to/from the north via Kelly Road
- 15% to/from the north via Humie Olive Road

A summary of the proposed retail regional trip distributions is as follows:

- 10% to/from the southeast via Friendship Road
- 25% to/from the north via Humie Olive Road
- 15% to/from the north via Kelly Road
- 20% to/from the east via Old US Highway 1
- 25% to/from the west via Old US Highway 1
- 5% to/from the north via Holland Road

Refer to the attachments for figures showing the anticipated site trip distributions for the site.

Report

The Traffic Impact Analysis report will be prepared based on the Town and NCDOT guidelines. If you find this memorandum of understanding acceptable, please let me know so that we may include it in the TIA report. If you have any questions or concerns, please do not hesitate to contact me.

Sincerely,
Ramey Kemp & Associates, Inc.

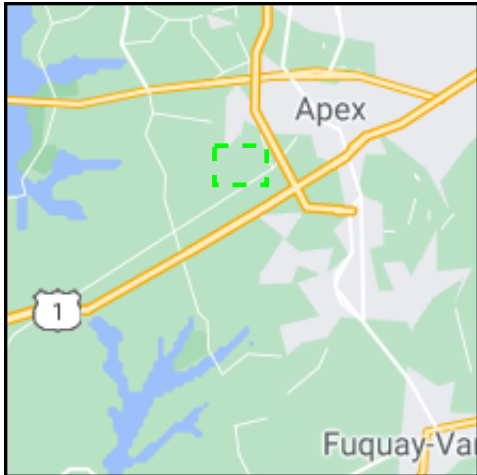


Nate Bouquin, PE
Traffic Engineering Project Manager

Attachments: Site Location Map
Preliminary Site Plan
Existing (2021) Traffic Volumes Figure – unadjusted
Existing (2021) Traffic Volumes Figure

Site Trip Distribution Figures
NCHRP Internal Capture Results

cc: Serge Grebenshikov, PE, Town of Apex
Amy Neidringhaus, PE, NCDOT
Sean Brennan, PE, NCDOT
NCDOT Congestion Management
Jeff Roach, PE, Peak Engineering



LEGEND

- - - Proposed Site Location
- Study Intersection
- - - Study Area

Moving forward.

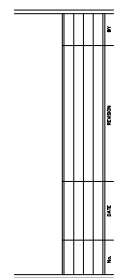
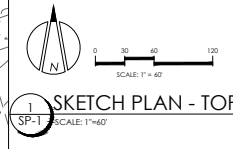
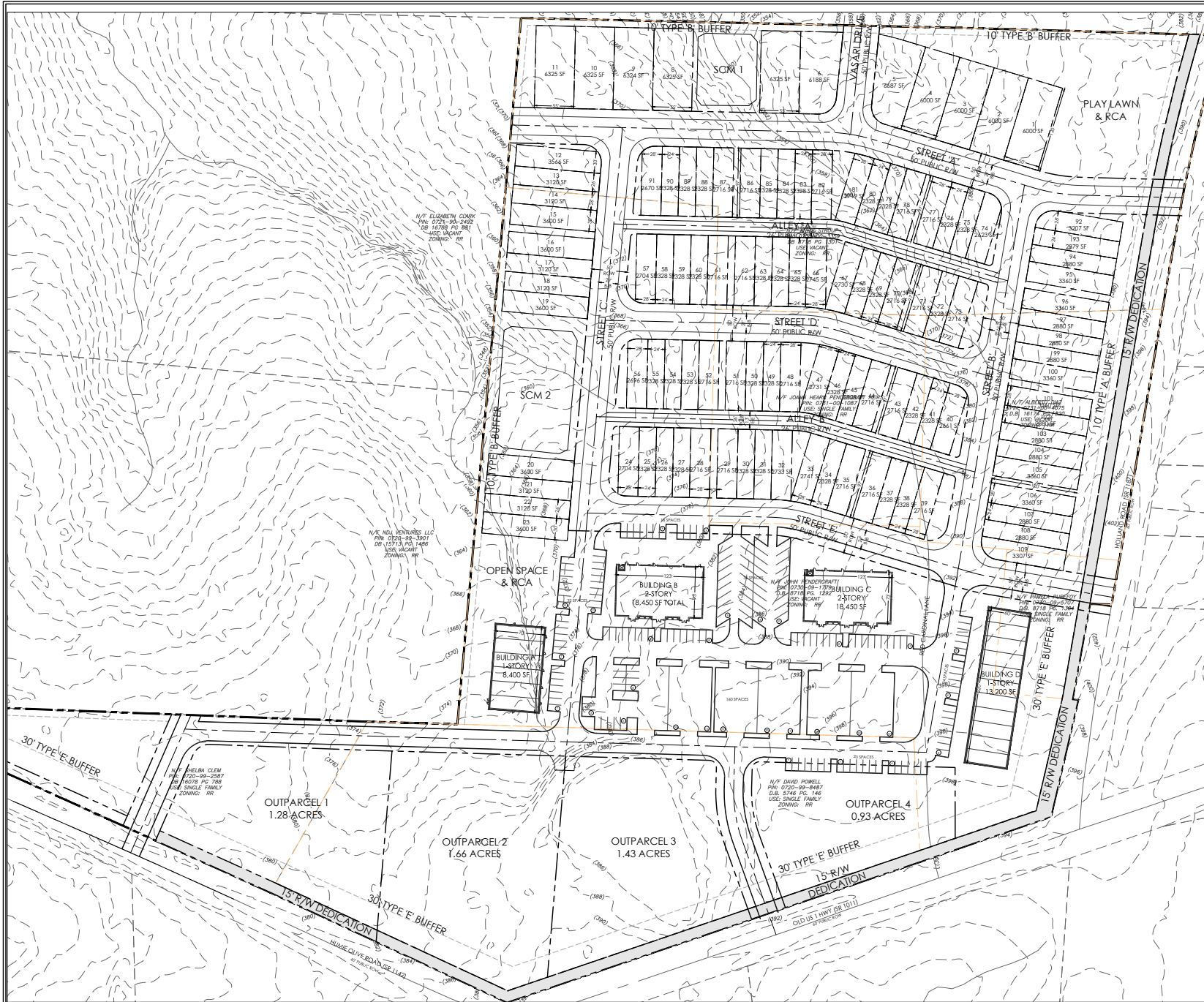


RKA
RAMEY KEMP ASSOCIATES

Holland Road Mixed-Use
Apex, NC

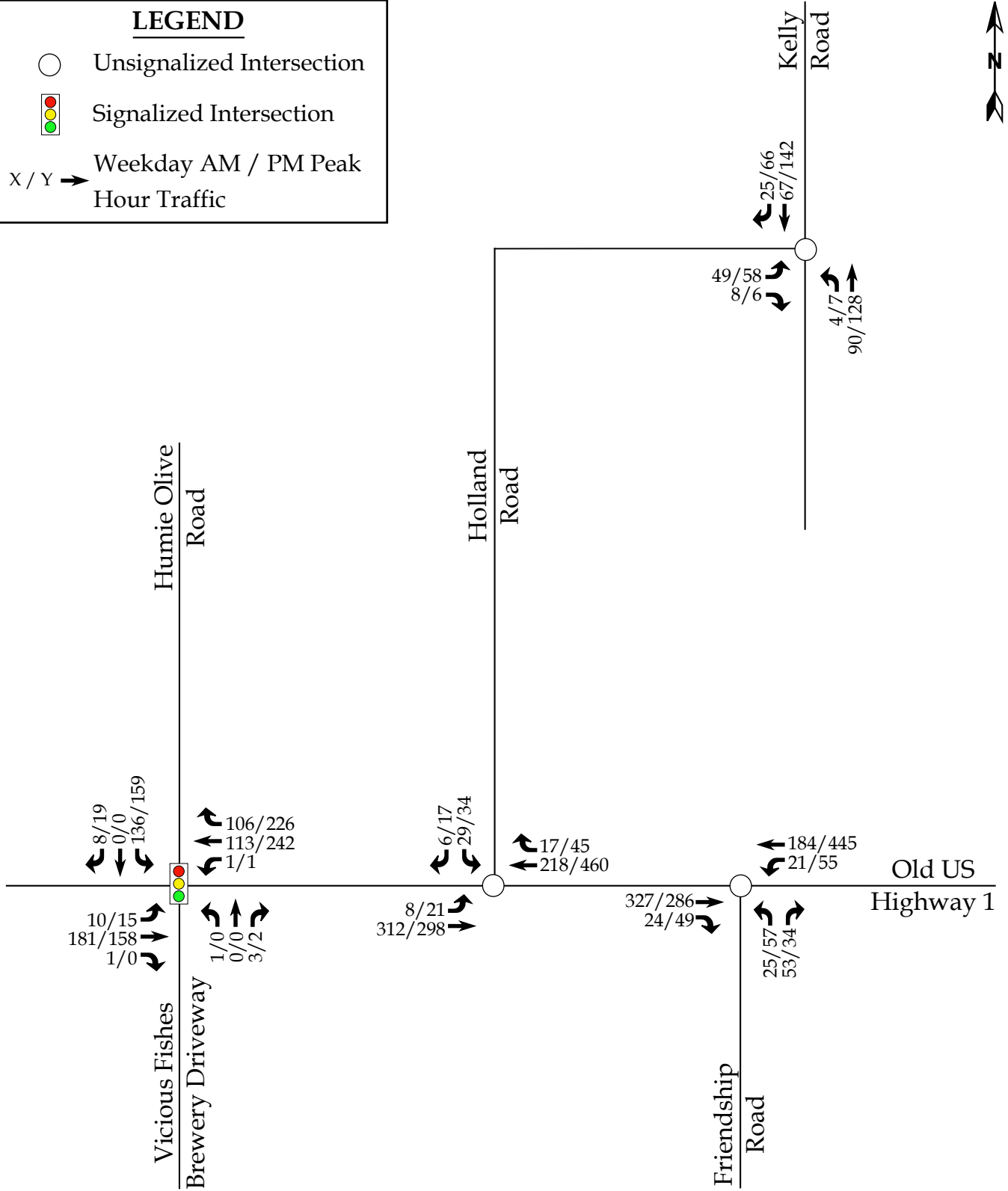
Site Location Map

Scale: Not to Scale



LEGEND

- Unsignalized Intersection
- ◫ Signalized Intersection
- X / Y → Weekday AM / PM Peak Hour Traffic



Moving forward.



RAMEY KEMP ASSOCIATES

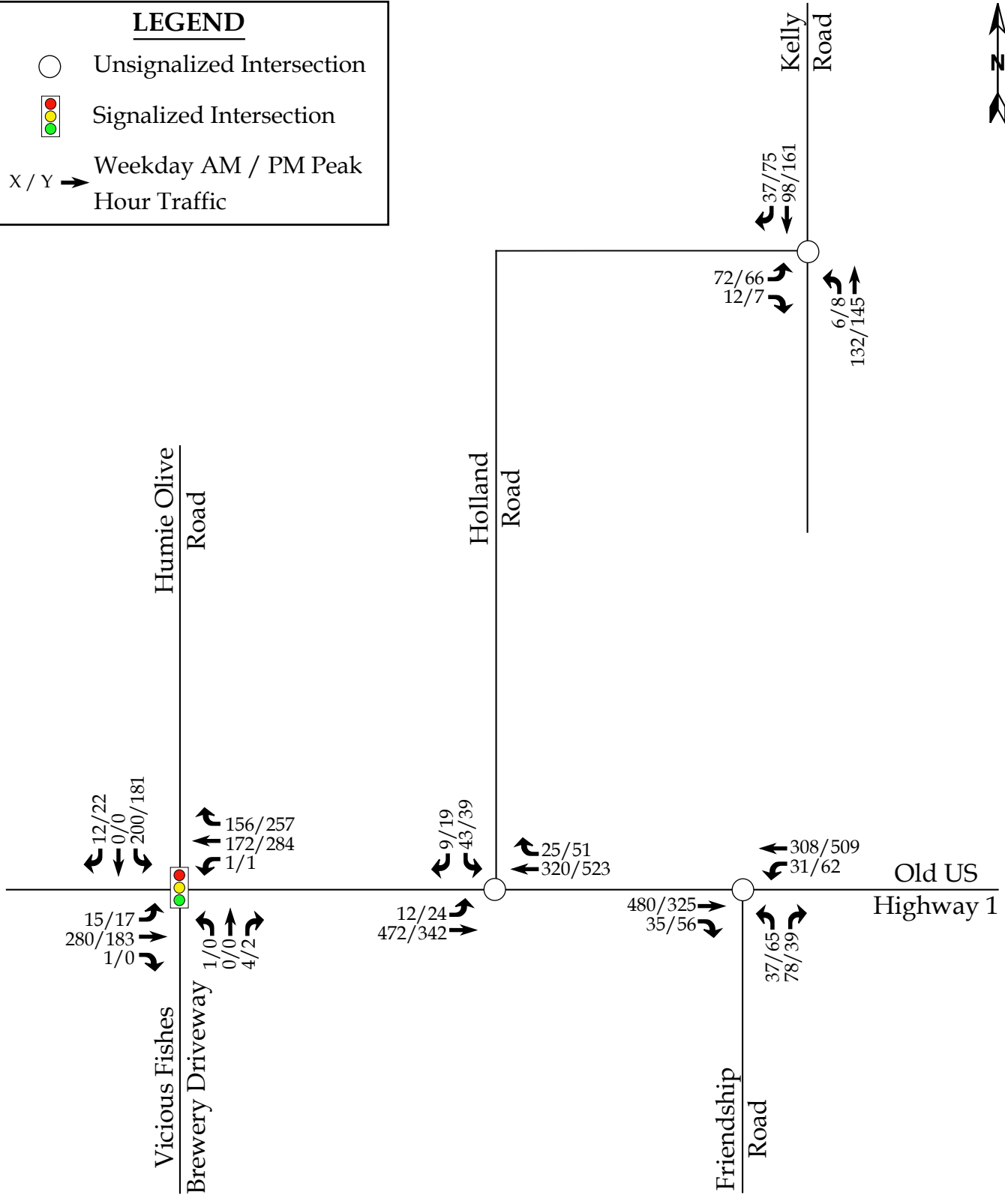
**Holland Road Mixed-Use
Apex, NC**

Existing (2021)
Peak Hour Traffic -
unadjusted

Scale: Not to Scale

LEGEND

- Unsignalized Intersection
- ◫ Signalized Intersection
- X / Y → Weekday AM / PM Peak Hour Traffic



Moving forward.



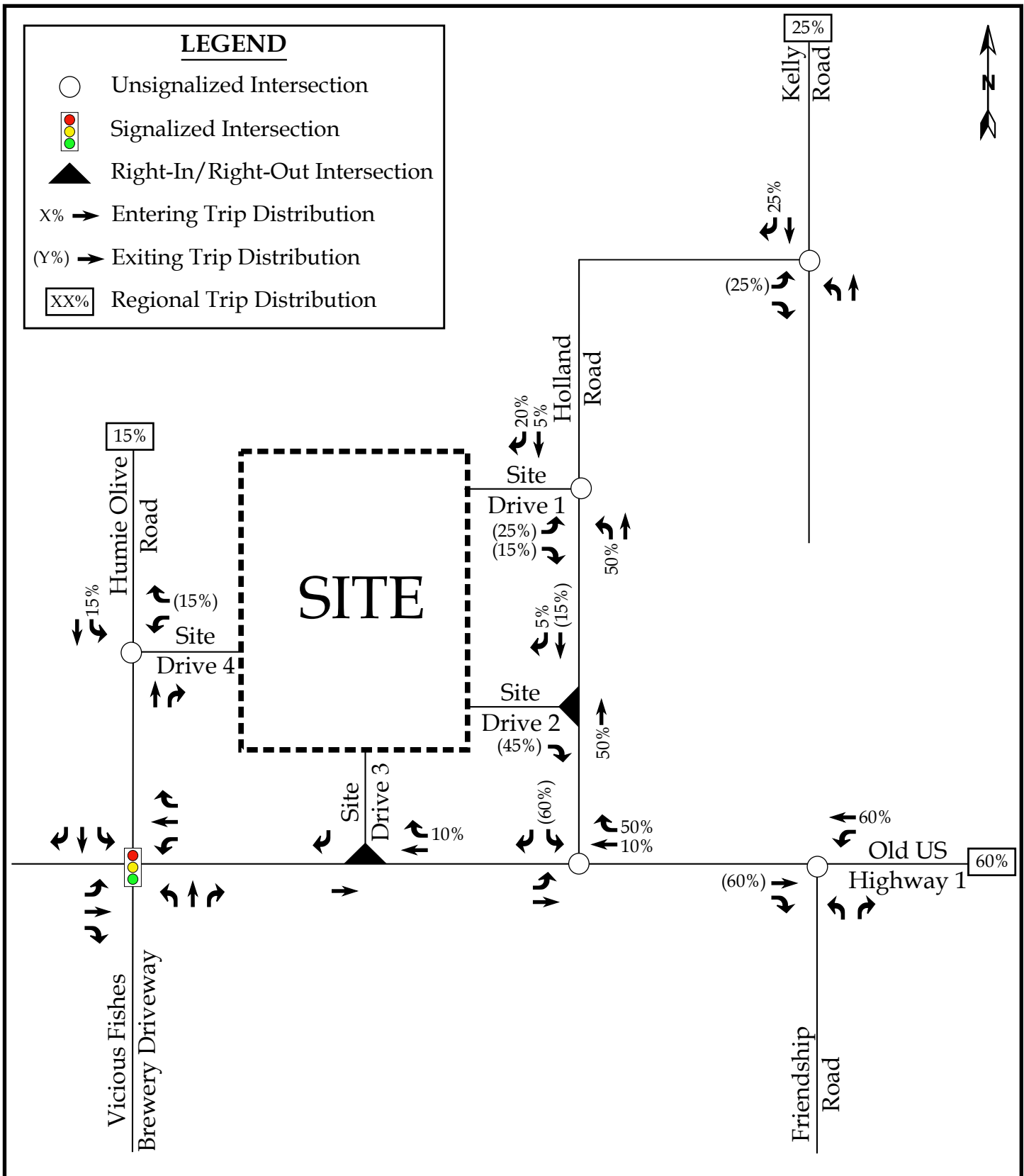
Holland Road Mixed-Use
Apex, NC

Existing (2021)
Peak Hour Traffic

Scale: Not to Scale

LEGEND

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



Moving forward.



RAMEY KEMP ASSOCIATES

Holland Road Mixed-Use
Apex, NC

Proposed Residential
Site Trip Distribution

Scale: Not to Scale

NCHRP 8-51 Internal Trip Capture Estimation Tool			
Project Name:	Holland Road Mixed-Use	Organization:	RKA
Project Location:	Apex, NC	Performed By:	AP
Scenario Description:		Date:	2/9/2021
Analysis Year:		Checked By:	
Analysis Period:	AM Street Peak Hour	Date:	

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)						
Land Use	Development Data (For Information Only)			Estimated Vehicle-Trips		
	ITE LUCs ¹	Quantity	Units	Total	Entering	Exiting
Office				0		
Retail	820/945	60,000 / 10	s.f / f.p.	307	177	130
Restaurant	931/934	16,500	s.f	322	164	158
Cinema/Entertainment				0		
Residential	210	110	units	83	21	62
Hotel				0		
All Other Land Uses ²				0		
Total				712	362	350

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

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

Table 4-A: Internal Person-Trip Origin-Destination Matrix*						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		17	0	0	0
Restaurant	0	14		0	1	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	1	12	0		0
Hotel	0	0	0	0	0	

Table 5-A: Computations Summary			
	Total	Entering	Exiting
All Person-Trips	712	362	350
Internal Capture Percentage	13%	12%	13%
External Vehicle-Trips ³	622	317	305
External Transit-Trips ⁴	0	0	0
External Non-Motorized Trips ⁴	0	0	0

Table 6-A: Internal Trip Capture Percentages by Land Use		
Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	8%	13%
Restaurant	18%	9%
Cinema/Entertainment	N/A	N/A
Residential	5%	21%
Hotel	N/A	N/A

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

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

³Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

⁴Person-Trips

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

Estimation Tool Developed by the Texas Transportation Institute

Project Name:	Holland Road Mixed-Use
Analysis Period:	AM Street Peak Hour

Land Use	Table 7-A (D): Entering Trips			Table 7-A (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	0	0	1.00	0	0
Retail	1.00	177	177	1.00	130	130
Restaurant	1.00	164	164	1.00	158	158
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.00	21	21	1.00	62	62
Hotel	1.00	0	0	1.00	0	0

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	38		17	0	18	0
Restaurant	49	22		0	6	5
Cinema/Entertainment	0	0	0		0	0
Residential	1	1	12	0		0
Hotel	0	0	0	0	0	

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		57	38	0	0	0
Retail	0		82	0	0	0
Restaurant	0	14		0	1	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	30	33	0		0
Hotel	0	7	10	0	0	

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles ¹	Transit ²	Non-Motorized ²
Office	0	0	0	0	0	0
Retail	15	162	177	162	0	0
Restaurant	29	135	164	135	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	1	20	21	20	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses ³	0	0	0	0	0	0

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles ¹	Transit ²	Non-Motorized ²
Office	0	0	0	0	0	0
Retail	17	113	130	113	0	0
Restaurant	15	143	158	143	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	13	49	62	49	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses ³	0	0	0	0	0	0

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

²Person-Trips

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

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

NCHRP 8-51 Internal Trip Capture Estimation Tool			
Project Name:	Holland Road Mixed-Use	Organization:	RKA
Project Location:	Apex, NC	Performed By:	AP
Scenario Description:		Date:	2/9/2021
Analysis Year:		Checked By:	
Analysis Period:	PM Street Peak Hour	Date:	

Table 1-P: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)						
Land Use	Development Data (For Information Only)			Estimated Vehicle-Trips		
	ITE LUCs ¹	Quantity	Units	Total	Entering	Exiting
Office				0		
Retail	820/945	60,000 / 10	s.f / f.p.	512	250	262
Restaurant	931/934	16,500	s.f	327	180	147
Cinema/Entertainment				0		
Residential	210	110	units	111	70	41
Hotel				0		
All Other Land Uses ²				0		
Total				950	500	450

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

Table 3-P: Average Land Use Interchange Distances (Feet Walking Distance)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail					1200	
Restaurant					1200	
Cinema/Entertainment						
Residential		1200	1200			
Hotel						

Table 4-P: Internal Person-Trip Origin-Destination Matrix*						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		52	0	32	0
Restaurant	0	60		0	11	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	12	6	0		0
Hotel	0	0	0	0	0	

Table 5-P: Computations Summary			
	Total	Entering	Exiting
All Person-Trips	950	500	450
Internal Capture Percentage	36%	35%	38%
External Vehicle-Trips ³	604	327	277
External Transit-Trips ⁴	0	0	0
External Non-Motorized Trips ⁴	0	0	0

Table 6-P: Internal Trip Capture Percentages by Land Use		
Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	29%	32%
Restaurant	32%	48%
Cinema/Entertainment	N/A	N/A
Residential	61%	44%
Hotel	N/A	N/A

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

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

³Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

⁴Person-Trips

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

Estimation Tool Developed by the Texas Transportation Institute

Project Name:	Holland Road Mixed-Use
Analysis Period:	PM Street Peak Hour

Land Use	Table 7-P (D): Entering Trips			Table 7-P (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	0	0	1.00	0	0
Retail	1.00	250	250	1.00	262	262
Restaurant	1.00	180	180	1.00	147	147
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.00	70	70	1.00	41	41
Hotel	1.00	0	0	1.00	0	0

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	5		76	10	59	13
Restaurant	4	60		12	23	10
Cinema/Entertainment	0	0	0		0	0
Residential	2	12	6	0		1
Hotel	0	0	0	0	0	

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		20	4	0	3	0
Retail	0		52	0	32	0
Restaurant	0	125		0	11	0
Cinema/Entertainment	0	10	5		3	0
Residential	0	18	18	0		0
Hotel	0	5	9	0	0	

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles ¹	Transit ²	Non-Motorized ²
Office	0	0	0	0	0	0
Retail	72	178	250	178	0	0
Restaurant	58	122	180	122	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	43	27	70	27	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses ³	0	0	0	0	0	0

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles ¹	Transit ²	Non-Motorized ²
Office	0	0	0	0	0	0
Retail	84	178	262	178	0	0
Restaurant	71	76	147	76	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	18	23	41	23	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses ³	0	0	0	0	0	0

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

APPENDIX B

TRAFFIC COUNTS



TRAFFIC DATA COLLECTION

File Name : Apex(Holland and Kelly)AM Peak
 Site Code :
 Start Date : 2/2/2021
 Page No : 1

Groups Printed- Cars + - Trucks

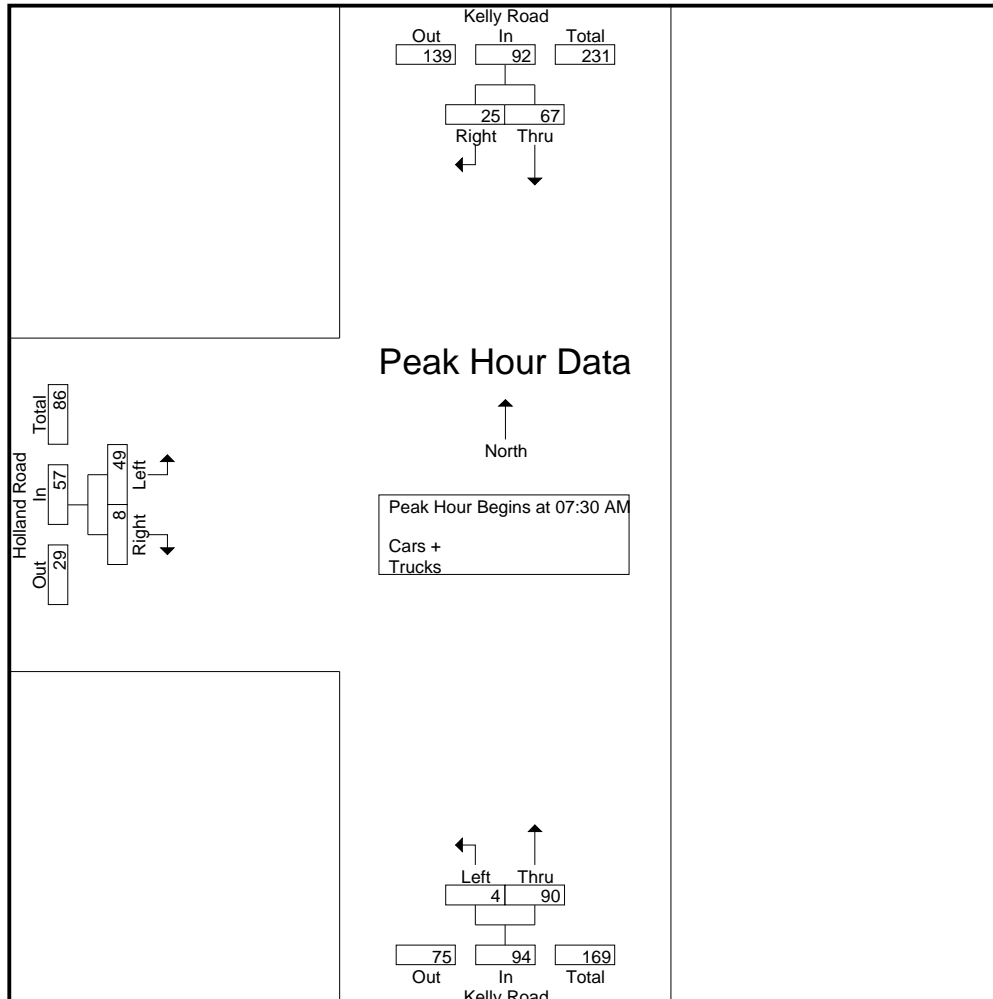
Start Time	Kelly Road Southbound			Kelly Road Northbound			Holland Road Eastbound			Int. Total
	Right	Thru	App. Total	Thru	Left	App. Total	Right	Left	App. Total	
07:00 AM	3	17	20	9	1	10	4	9	13	43
07:15 AM	0	15	15	12	1	13	1	10	11	39
07:30 AM	4	16	20	20	2	22	2	12	14	56
07:45 AM	9	18	27	20	0	20	1	16	17	64
Total	16	66	82	61	4	65	8	47	55	202
08:00 AM	8	13	21	27	2	29	3	10	13	63
08:15 AM	4	20	24	23	0	23	2	11	13	60
08:30 AM	10	14	24	18	1	19	1	10	11	54
08:45 AM	7	16	23	15	2	17	1	9	10	50
Total	29	63	92	83	5	88	7	40	47	227
Grand Total	45	129	174	144	9	153	15	87	102	429
Apprch %	25.9	74.1		94.1	5.9		14.7	85.3		
Total %	10.5	30.1	40.6	33.6	2.1	35.7	3.5	20.3	23.8	
Cars +	45	127	172	144	9	153	15	87	102	427
% Cars +	100	98.4	98.9	100	100	100	100	100	100	99.5
Trucks	0	2	2	0	0	0	0	0	0	2
% Trucks	0	1.6	1.1	0	0	0	0	0	0	0.5



TRAFFIC DATA COLLECTION

File Name : Apex(Holland and Kelly)AM Peak
 Site Code :
 Start Date : 2/2/2021
 Page No : 2

Start Time	Kelly Road Southbound			Kelly Road Northbound			Holland Road Eastbound			Int. Total
	Right	Thru	App. Total	Thru	Left	App. Total	Right	Left	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:30 AM										
07:30 AM	4	16	20	20	2	22	2	12	14	56
07:45 AM	9	18	27	20	0	20	1	16	17	64
08:00 AM	8	13	21	27	2	29	3	10	13	63
08:15 AM	4	20	24	23	0	23	2	11	13	60
Total Volume	25	67	92	90	4	94	8	49	57	243
% App. Total	27.2	72.8		95.7	4.3		14	86		
PHF	.694	.838	.852	.833	.500	.810	.667	.766	.838	.949

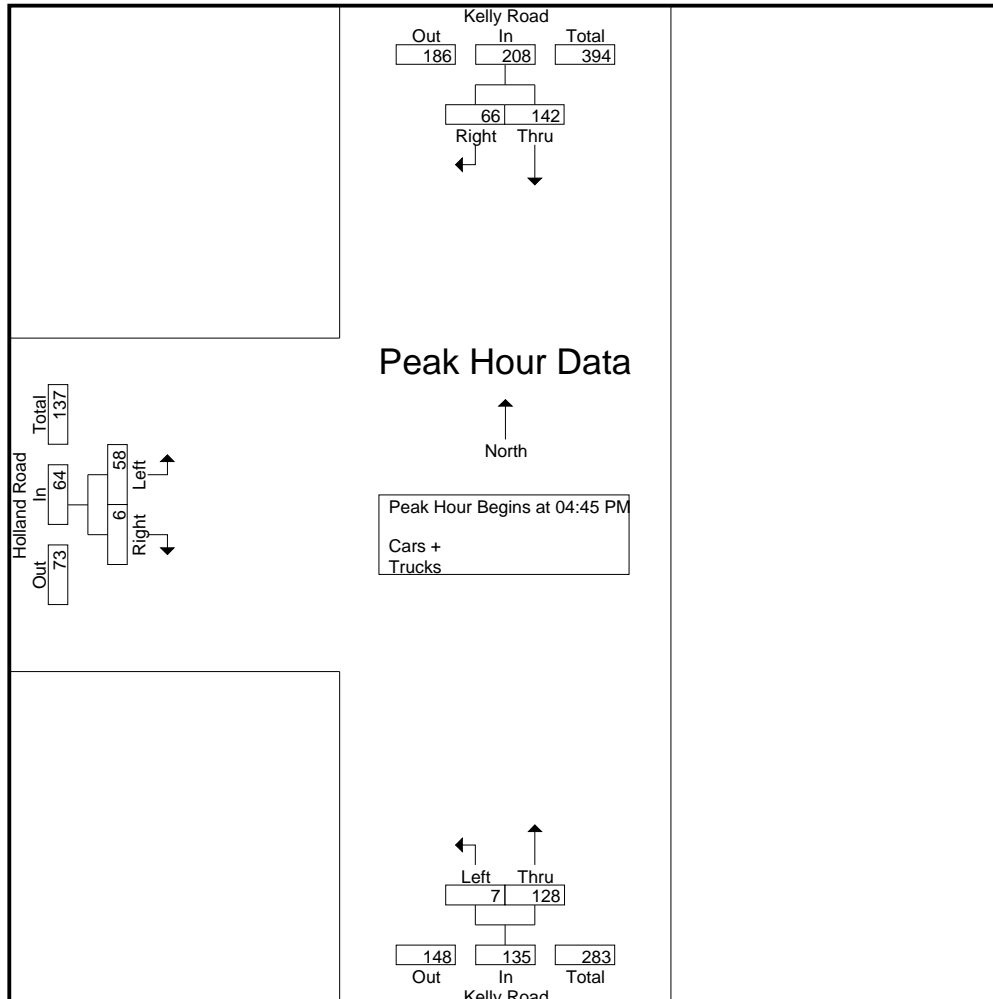




TRAFFIC DATA COLLECTION

File Name : Apex(Holland and Kelly)PM Peak
 Site Code :
 Start Date : 2/2/2021
 Page No : 2

Start Time	Kelly Road Southbound			Kelly Road Northbound			Holland Road Eastbound			Int. Total
	Right	Thru	App. Total	Thru	Left	App. Total	Right	Left	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:45 PM										
04:45 PM	7	26	33	30	1	31	0	14	14	78
05:00 PM	23	36	59	24	1	25	1	13	14	98
05:15 PM	17	41	58	46	2	48	4	16	20	126
05:30 PM	19	39	58	28	3	31	1	15	16	105
Total Volume	66	142	208	128	7	135	6	58	64	407
% App. Total	31.7	68.3		94.8	5.2		9.4	90.6		
PHF	.717	.866	.881	.696	.583	.703	.375	.906	.800	.808





TRAFFIC DATA COLLECTION

File Name : Apex(Old US 1 and Friendship)AM Peak
 Site Code :
 Start Date : 2/2/2021
 Page No : 1

Groups Printed- Cars + - Trucks

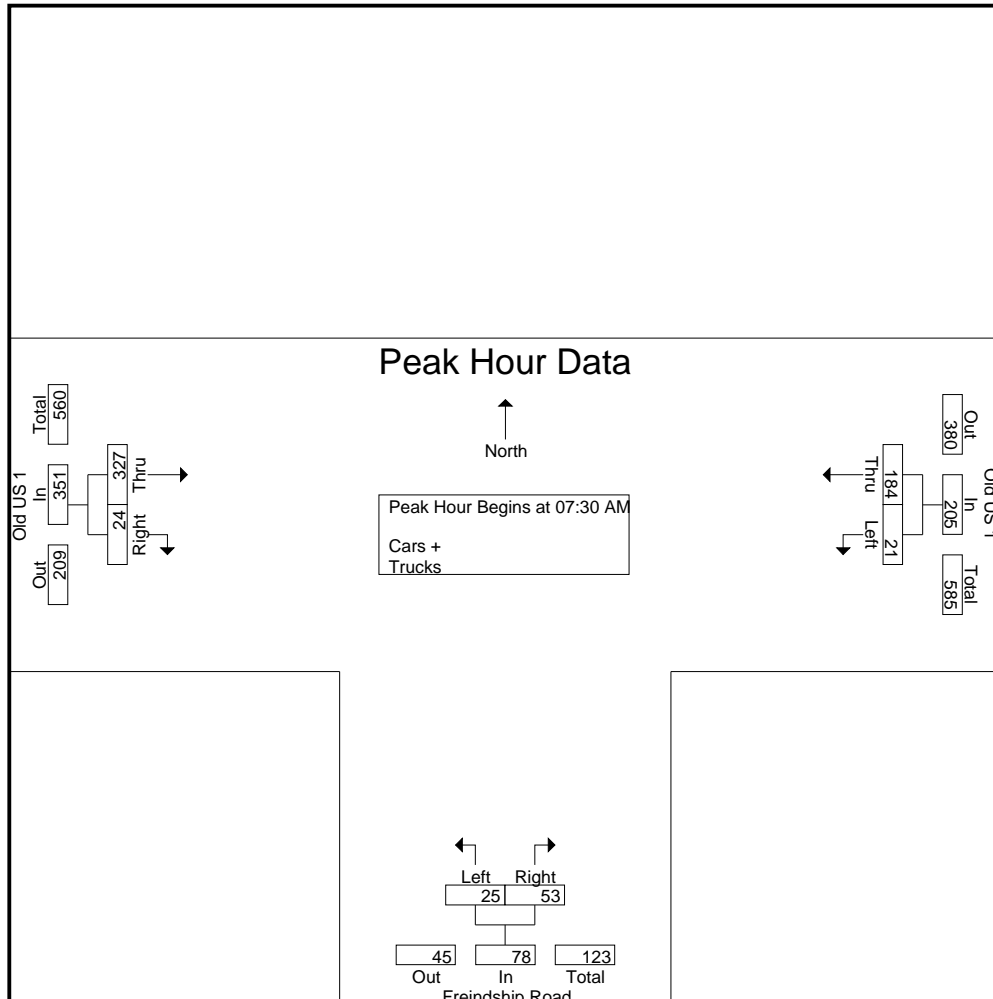
Start Time	Old US 1 Westbound			Freindship Road Northbound			Old US 1 Eastbound			Int. Total
	Thru	Left	App. Total	Right	Left	App. Total	Right	Thru	App. Total	
07:00 AM	42	5	47	8	4	12	3	53	56	115
07:15 AM	20	4	24	10	8	18	9	62	71	113
07:30 AM	30	5	35	17	5	22	5	91	96	153
07:45 AM	62	7	69	13	10	23	5	78	83	175
Total	154	21	175	48	27	75	22	284	306	556
08:00 AM	44	5	49	11	6	17	4	73	77	143
08:15 AM	48	4	52	12	4	16	10	85	95	163
08:30 AM	58	4	62	5	3	8	6	77	83	153
08:45 AM	48	6	54	6	6	12	2	71	73	139
Total	198	19	217	34	19	53	22	306	328	598
Grand Total	352	40	392	82	46	128	44	590	634	1154
Apprch %	89.8	10.2		64.1	35.9		6.9	93.1		
Total %	30.5	3.5	34	7.1	4	11.1	3.8	51.1	54.9	
Cars +	341	40	381	81	44	125	42	576	618	1124
% Cars +	96.9	100	97.2	98.8	95.7	97.7	95.5	97.6	97.5	97.4
Trucks	11	0	11	1	2	3	2	14	16	30
% Trucks	3.1	0	2.8	1.2	4.3	2.3	4.5	2.4	2.5	2.6



TRAFFIC DATA COLLECTION

File Name : Apex(Old US 1 and Friendship)AM Peak
 Site Code :
 Start Date : 2/2/2021
 Page No : 2

Start Time	Old US 1 Westbound			Freindship Road Northbound			Old US 1 Eastbound			Int. Total
	Thru	Left	App. Total	Right	Left	App. Total	Right	Thru	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:30 AM										
07:30 AM	30	5	35	17	5	22	5	91	96	153
07:45 AM	62	7	69	13	10	23	5	78	83	175
08:00 AM	44	5	49	11	6	17	4	73	77	143
08:15 AM	48	4	52	12	4	16	10	85	95	163
Total Volume	184	21	205	53	25	78	24	327	351	634
% App. Total	89.8	10.2		67.9	32.1		6.8	93.2		
PHF	.742	.750	.743	.779	.625	.848	.600	.898	.914	.906





TRAFFIC DATA COLLECTION

File Name : Apex(Old US 1 and Friendship)PM Peak
 Site Code :
 Start Date : 2/2/2021
 Page No : 1

Groups Printed- Cars + - Trucks

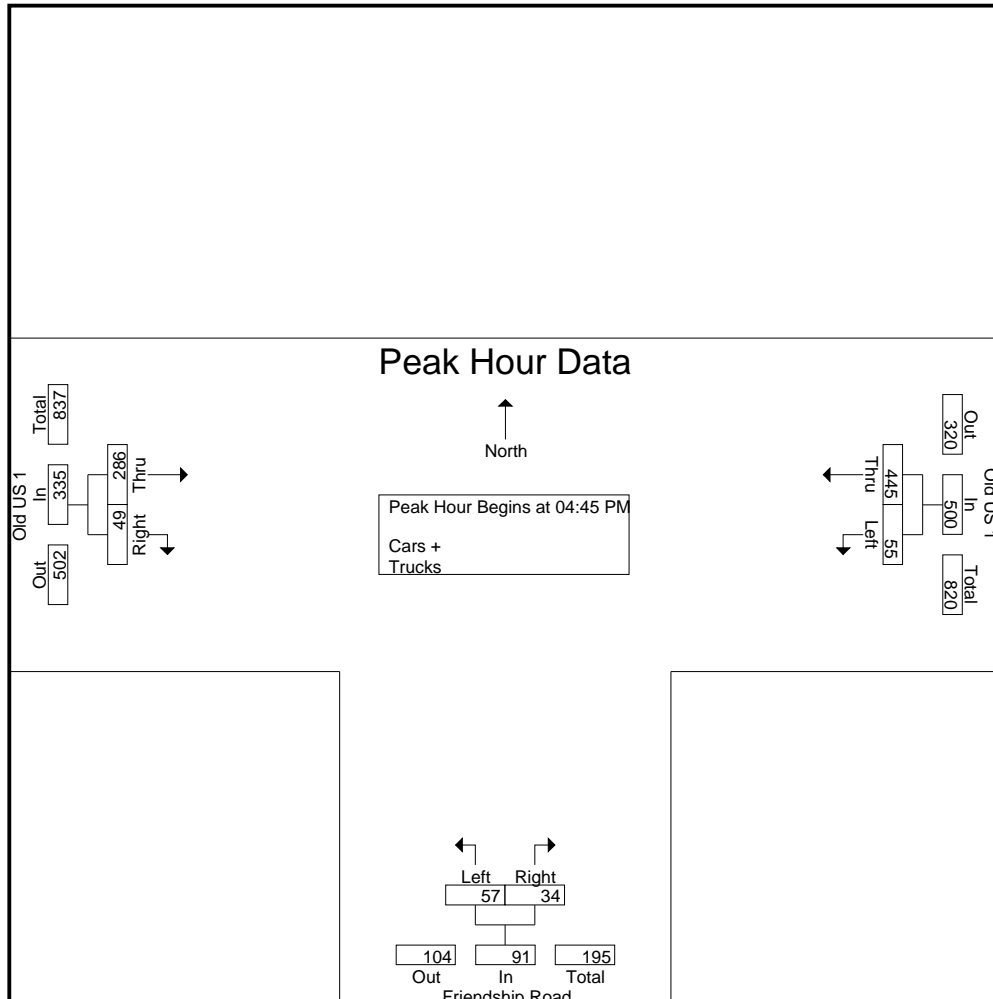
Start Time	Old US 1 Westbound			Friendship Road Northbound			Old US 1 Eastbound			Int. Total
	Thru	Left	App. Total	Right	Left	App. Total	Right	Thru	App. Total	
04:00 PM	84	13	97	12	12	24	12	76	88	209
04:15 PM	85	17	102	9	7	16	8	79	87	205
04:30 PM	82	5	87	11	14	25	8	64	72	184
04:45 PM	86	10	96	6	14	20	13	75	88	204
Total	337	45	382	38	47	85	41	294	335	802
05:00 PM	115	16	131	6	15	21	15	64	79	231
05:15 PM	122	19	141	12	12	24	10	82	92	257
05:30 PM	122	10	132	10	16	26	11	65	76	234
05:45 PM	72	13	85	5	11	16	13	74	87	188
Total	431	58	489	33	54	87	49	285	334	910
Grand Total	768	103	871	71	101	172	90	579	669	1712
Apprch %	88.2	11.8		41.3	58.7		13.5	86.5		
Total %	44.9	6	50.9	4.1	5.9	10	5.3	33.8	39.1	
Cars +	763	102	865	68	101	169	90	565	655	1689
% Cars +	99.3	99	99.3	95.8	100	98.3	100	97.6	97.9	98.7
Trucks	5	1	6	3	0	3	0	14	14	23
% Trucks	0.7	1	0.7	4.2	0	1.7	0	2.4	2.1	1.3



TRAFFIC DATA COLLECTION

File Name : Apex(Old US 1 and Friendship)PM Peak
 Site Code :
 Start Date : 2/2/2021
 Page No : 2

Start Time	Old US 1 Westbound			Friendship Road Northbound			Old US 1 Eastbound			Int. Total
	Thru	Left	App. Total	Right	Left	App. Total	Right	Thru	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:45 PM										
04:45 PM	86	10	96	6	14	20	13	75	88	204
05:00 PM	115	16	131	6	15	21	15	64	79	231
05:15 PM	122	19	141	12	12	24	10	82	92	257
05:30 PM	122	10	132	10	16	26	11	65	76	234
Total Volume	445	55	500	34	57	91	49	286	335	926
% App. Total	89	11		37.4	62.6		14.6	85.4		
PHF	.912	.724	.887	.708	.891	.875	.817	.872	.910	.901





TRAFFIC DATA COLLECTION

File Name : Apex(Old US 1 and Holland)AM Peak
 Site Code :
 Start Date : 2/2/2021
 Page No : 1

Groups Printed- Cars + - Trucks

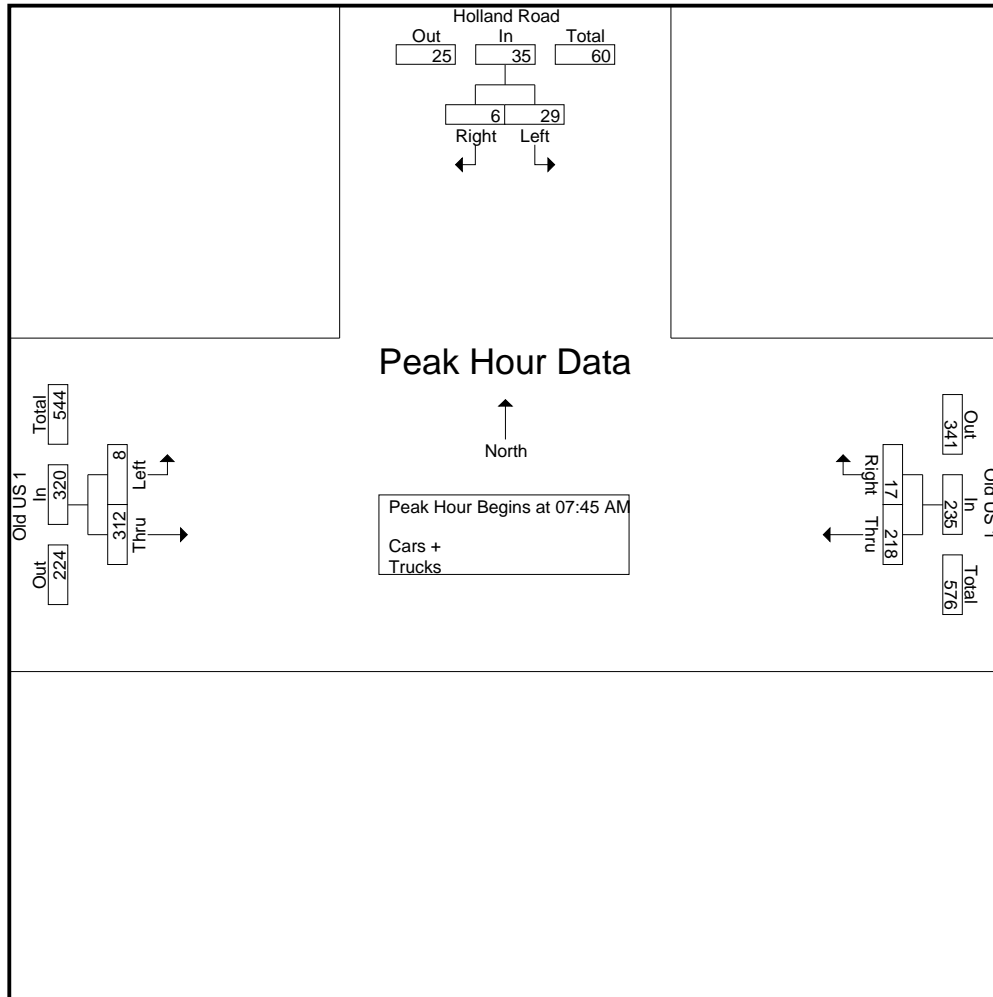
Start Time	Holland Road Southbound			Old US 1 Westbound			Old US 1 Eastbound			Int. Total
	Right	Left	App. Total	Right	Thru	App. Total	Thru	Left	App. Total	
07:00 AM	4	5	9	3	43	46	51	3	54	109
07:15 AM	1	5	6	1	28	29	68	4	72	107
07:30 AM	3	10	13	3	31	34	86	2	88	135
07:45 AM	3	10	13	5	67	72	75	2	77	162
Total	11	30	41	12	169	181	280	11	291	513
08:00 AM	0	5	5	4	47	51	70	2	72	128
08:15 AM	2	10	12	4	48	52	86	2	88	152
08:30 AM	1	4	5	4	56	60	81	2	83	148
08:45 AM	3	3	6	1	52	53	71	5	76	135
Total	6	22	28	13	203	216	308	11	319	563
Grand Total	17	52	69	25	372	397	588	22	610	1076
Apprch %	24.6	75.4		6.3	93.7		96.4	3.6		
Total %	1.6	4.8	6.4	2.3	34.6	36.9	54.6	2	56.7	
Cars +	17	52	69	25	370	395	588	22	610	1074
% Cars +	100	100	100	100	99.5	99.5	100	100	100	99.8
Trucks	0	0	0	0	2	2	0	0	0	2
% Trucks	0	0	0	0	0.5	0.5	0	0	0	0.2



TRAFFIC DATA COLLECTION

File Name : Apex(Old US 1 and Holland)AM Peak
 Site Code :
 Start Date : 2/2/2021
 Page No : 2

Start Time	Holland Road Southbound			Old US 1 Westbound			Old US 1 Eastbound			Int. Total
	Right	Left	App. Total	Right	Thru	App. Total	Thru	Left	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:45 AM										
07:45 AM	3	10	13	5	67	72	75	2	77	162
08:00 AM	0	5	5	4	47	51	70	2	72	128
08:15 AM	2	10	12	4	48	52	86	2	88	152
08:30 AM	1	4	5	4	56	60	81	2	83	148
Total Volume	6	29	35	17	218	235	312	8	320	590
% App. Total	17.1	82.9		7.2	92.8		97.5	2.5		
PHF	.500	.725	.673	.850	.813	.816	.907	1.00	.909	.910





TRAFFIC DATA COLLECTION

File Name : Apex(Old US 1 and Holland)PM Peak
 Site Code :
 Start Date : 2/2/2021
 Page No : 1

Groups Printed- Cars + - Trucks

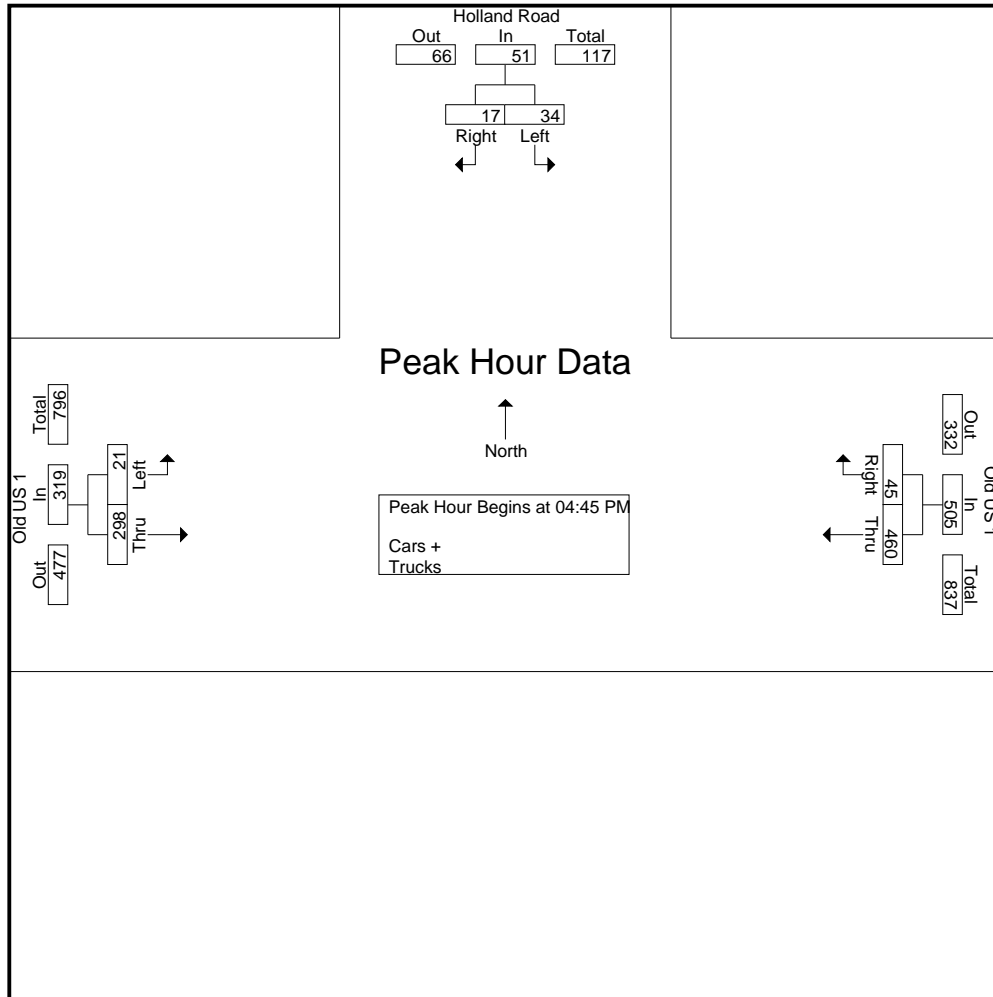
Start Time	Holland Road Southbound			Old US 1 Westbound			Old US 1 Eastbound			Int. Total
	Right	Left	App. Total	Right	Thru	App. Total	Thru	Left	App. Total	
04:00 PM	3	16	19	5	91	96	72	1	73	188
04:15 PM	6	5	11	7	84	91	84	5	89	191
04:30 PM	2	8	10	9	87	96	59	5	64	170
04:45 PM	1	4	5	12	88	100	83	7	90	195
Total	12	33	45	33	350	383	298	18	316	744
05:00 PM	7	8	15	9	123	132	69	6	75	222
05:15 PM	2	9	11	13	121	134	83	4	87	232
05:30 PM	7	13	20	11	128	139	63	4	67	226
05:45 PM	3	10	13	7	75	82	78	4	82	177
Total	19	40	59	40	447	487	293	18	311	857
Grand Total	31	73	104	73	797	870	591	36	627	1601
Apprch %	29.8	70.2		8.4	91.6		94.3	5.7		
Total %	1.9	4.6	6.5	4.6	49.8	54.3	36.9	2.2	39.2	
Cars +	31	72	103	73	796	869	591	36	627	1599
% Cars +	100	98.6	99	100	99.9	99.9	100	100	100	99.9
Trucks	0	1	1	0	1	1	0	0	0	2
% Trucks	0	1.4	1	0	0.1	0.1	0	0	0	0.1



TRAFFIC DATA COLLECTION

File Name : Apex(Old US 1 and Holland)PM Peak
 Site Code :
 Start Date : 2/2/2021
 Page No : 2

Start Time	Holland Road Southbound			Old US 1 Westbound			Old US 1 Eastbound			Int. Total
	Right	Left	App. Total	Right	Thru	App. Total	Thru	Left	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:45 PM										
04:45 PM	1	4	5	12	88	100	83	7	90	195
05:00 PM	7	8	15	9	123	132	69	6	75	222
05:15 PM	2	9	11	13	121	134	83	4	87	232
05:30 PM	7	13	20	11	128	139	63	4	67	226
Total Volume	17	34	51	45	460	505	298	21	319	875
% App. Total	33.3	66.7		8.9	91.1		93.4	6.6		
PHF	.607	.654	.638	.865	.898	.908	.898	.750	.886	.943





TRAFFIC DATA COLLECTION

File Name : Apex(Old US 1 and Humie Olive)AM Peak
 Site Code :
 Start Date : 2/2/2021
 Page No : 1

Groups Printed- Cars + - Trucks

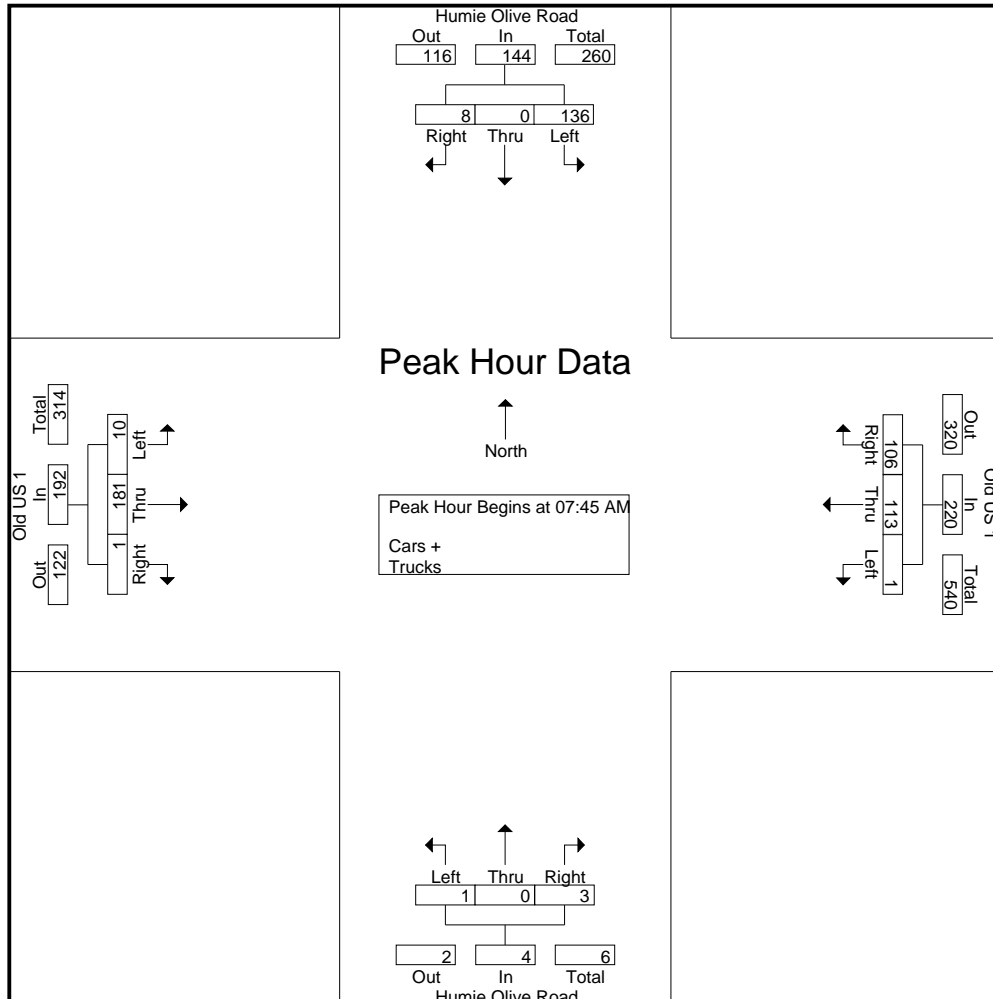
Start Time	Humie Olive Road Southbound				Old US 1 Westbound				Humie Olive Road Northbound				Old US 1 Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
07:00 AM	2	0	23	25	26	22	0	48	0	0	0	0	0	31	5	36	109
07:15 AM	1	0	28	29	21	5	3	29	0	0	0	0	1	47	1	49	107
07:30 AM	1	0	33	34	18	17	0	35	0	0	1	1	3	55	1	59	129
07:45 AM	1	0	27	28	25	42	0	67	0	0	1	1	0	47	2	49	145
Total	5	0	111	116	90	86	3	179	0	0	2	2	4	180	9	193	490
08:00 AM	1	0	25	26	28	18	1	47	1	0	0	1	1	46	4	51	125
08:15 AM	2	0	48	50	24	25	0	49	1	0	0	1	0	40	1	41	141
08:30 AM	4	0	36	40	29	28	0	57	1	0	0	1	0	48	3	51	149
08:45 AM	3	0	32	35	33	22	0	55	0	0	0	0	1	40	3	44	134
Total	10	0	141	151	114	93	1	208	3	0	0	3	2	174	11	187	549
Grand Total	15	0	252	267	204	179	4	387	3	0	2	5	6	354	20	380	1039
Apprch %	5.6	0	94.4		52.7	46.3	1		60	0	40		1.6	93.2	5.3		
Total %	1.4	0	24.3	25.7	19.6	17.2	0.4	37.2	0.3	0	0.2	0.5	0.6	34.1	1.9	36.6	
Cars +	15	0	246	261	196	169	4	369	2	0	2	4	6	345	19	370	1004
% Cars +	100	0	97.6	97.8	96.1	94.4	100	95.3	66.7	0	100	80	100	97.5	95	97.4	96.6
Trucks	0	0	6	6	8	10	0	18	1	0	0	1	0	9	1	10	35
% Trucks	0	0	2.4	2.2	3.9	5.6	0	4.7	33.3	0	0	20	0	2.5	5	2.6	3.4



TRAFFIC DATA COLLECTION

File Name : Apex(Old US 1 and Humie Olive)AM Peak
 Site Code :
 Start Date : 2/2/2021
 Page No : 2

Start Time	Humie Olive Road Southbound				Old US 1 Westbound				Humie Olive Road Northbound				Old US 1 Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	1	0	27	28	25	42	0	67	0	0	1	1	0	47	2	49	145
08:00 AM	1	0	25	26	28	18	1	47	1	0	0	1	1	46	4	51	125
08:15 AM	2	0	48	50	24	25	0	49	1	0	0	1	0	40	1	41	141
08:30 AM	4	0	36	40	29	28	0	57	1	0	0	1	0	48	3	51	149
Total Volume	8	0	136	144	106	113	1	220	3	0	1	4	1	181	10	192	560
% App. Total	5.6	0	94.4		48.2	51.4	0.5		75	0	25		0.5	94.3	5.2		
PHF	.500	.000	.708	.720	.914	.673	.250	.821	.750	.000	.250	1.00	.250	.943	.625	.941	.940





TRAFFIC DATA COLLECTION

File Name : Apex(Old US 1 and Humie Olive)PM Peak
 Site Code :
 Start Date : 2/2/2021
 Page No : 1

Groups Printed- Cars + - Trucks

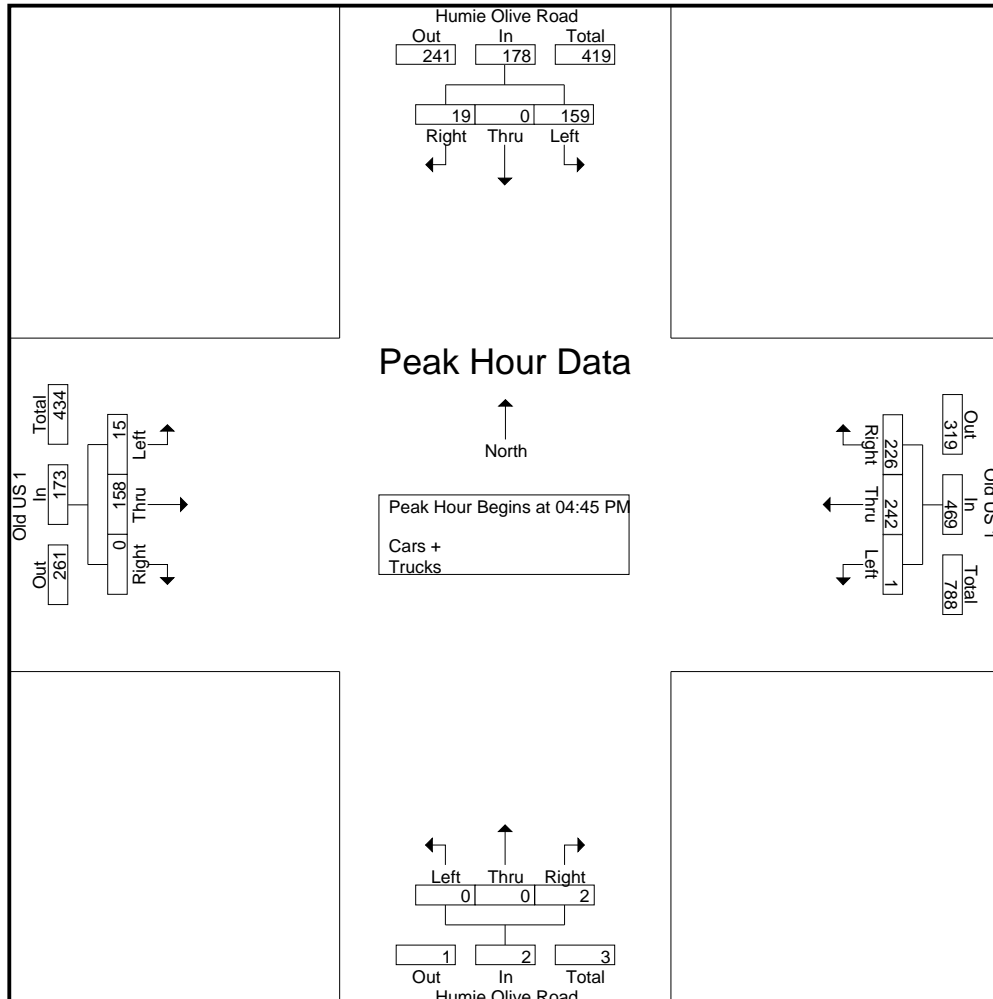
Start Time	Humie Olive Road Southbound				Old US 1 Westbound				Humie Olive Road Northbound				Old US 1 Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
04:00 PM	3	0	40	43	55	38	0	93	0	0	3	3	1	31	9	41	180
04:15 PM	3	0	47	50	46	43	0	89	2	0	0	2	0	36	3	39	180
04:30 PM	1	0	38	39	54	37	0	91	0	1	0	1	0	35	9	44	175
04:45 PM	4	0	43	47	39	48	0	87	0	0	0	0	0	42	1	43	177
Total	11	0	168	179	194	166	0	360	2	1	3	6	1	144	22	167	712
05:00 PM	6	0	39	45	68	61	0	129	0	0	0	0	0	40	3	43	217
05:15 PM	3	0	42	45	53	68	1	122	1	0	0	1	0	45	4	49	217
05:30 PM	6	0	35	41	66	65	0	131	1	0	0	1	0	31	7	38	211
05:45 PM	6	0	44	50	32	44	0	76	0	0	1	1	0	35	5	40	167
Total	21	0	160	181	219	238	1	458	2	0	1	3	0	151	19	170	812
Grand Total	32	0	328	360	413	404	1	818	4	1	4	9	1	295	41	337	1524
Apprch %	8.9	0	91.1		50.5	49.4	0.1		44.4	11.1	44.4		0.3	87.5	12.2		
Total %	2.1	0	21.5	23.6	27.1	26.5	0.1	53.7	0.3	0.1	0.3	0.6	0.1	19.4	2.7	22.1	
Cars +	32	0	326	358	411	401	1	813	4	1	4	9	1	289	39	329	1509
% Cars +	100	0	99.4	99.4	99.5	99.3	100	99.4	100	100	100	100	100	98	95.1	97.6	99
Trucks	0	0	2	2	2	3	0	5	0	0	0	0	0	6	2	8	15
% Trucks	0	0	0.6	0.6	0.5	0.7	0	0.6	0	0	0	0	0	2	4.9	2.4	1



TRAFFIC DATA COLLECTION

File Name : Apex(Old US 1 and Humie Olive)PM Peak
 Site Code :
 Start Date : 2/2/2021
 Page No : 2

Start Time	Humie Olive Road Southbound				Old US 1 Westbound				Humie Olive Road Northbound				Old US 1 Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	4	0	43	47	39	48	0	87	0	0	0	0	0	42	1	43	177
05:00 PM	6	0	39	45	68	61	0	129	0	0	0	0	0	40	3	43	217
05:15 PM	3	0	42	45	53	68	1	122	1	0	0	1	0	45	4	49	217
05:30 PM	6	0	35	41	66	65	0	131	1	0	0	1	0	31	7	38	211
Total Volume	19	0	159	178	226	242	1	469	2	0	0	2	0	158	15	173	822
% App. Total	10.7	0	89.3		48.2	51.6	0.2		100	0	0		0	91.3	8.7		
PHF	.792	.000	.924	.947	.831	.890	.250	.895	.500	.000	.000	.500	.000	.878	.536	.883	.947





5808 Faringdon Place, Suite 100
 Raleigh, NC 27609
 PH: 919 872-5115
 FX: 919 878-5416

File Name : Humie Olive Road and Old US 1
 Site Code : 00099215
 Start Date : 9/2/2015
 Page No : 1

Groups Printed- Cars/Trucks

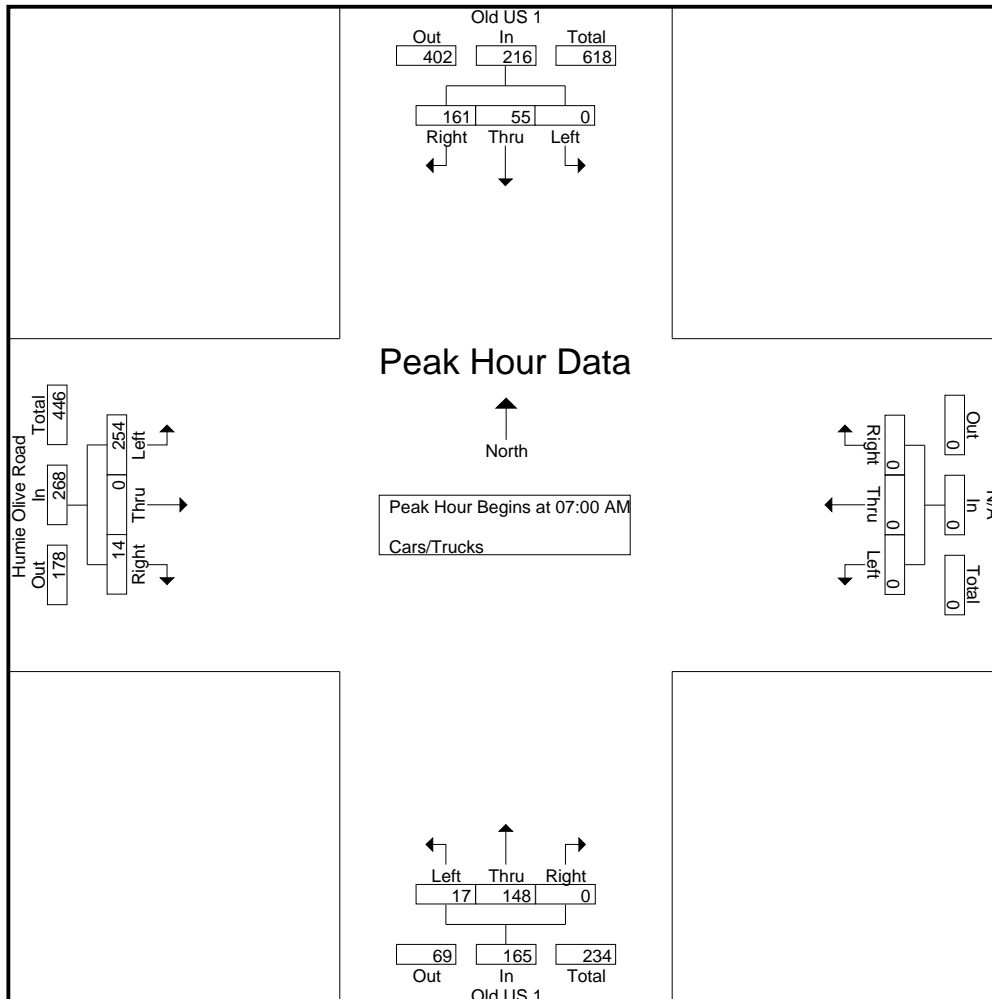
Start Time	Old US 1 Southbound				N/A Westbound				Old US 1 Northbound				Humie Olive Road Eastbound				Exclu. Total	Inclu. Total	Int. Total
	Right	Thru	Left	Trks	Right	Thru	Left	Trks	Right	Thru	Left	Trks	Right	Thru	Left	Trks			
07:00 AM	87	8	0	0	0	0	0	0	0	34	8	1	4	0	115	0	1	256	257
07:15 AM	26	16	0	0	0	0	0	0	0	39	3	0	6	0	85	0	0	175	175
07:30 AM	26	15	0	1	0	0	0	0	0	32	4	2	2	0	25	0	3	104	107
07:45 AM	22	16	0	1	0	0	0	0	0	43	2	0	2	0	29	1	2	114	116
Total	161	55	0	2	0	0	0	0	0	148	17	3	14	0	254	1	6	649	655
08:00 AM	24	12	0	0	0	0	0	0	0	25	2	2	2	0	15	4	6	80	86
08:15 AM	22	8	0	3	0	0	0	0	0	19	0	0	1	0	33	0	3	83	86
08:30 AM	14	8	0	0	0	0	0	0	0	23	2	0	0	0	30	1	1	77	78
08:45 AM	19	6	0	1	0	0	0	0	0	18	4	1	0	0	32	0	2	79	81
Total	79	34	0	4	0	0	0	0	0	85	8	3	3	0	110	5	12	319	331
*** BREAK ***																			
04:00 PM	27	40	0	3	0	0	0	0	0	24	1	2	5	0	22	2	7	119	126
04:15 PM	14	27	0	0	0	0	0	0	0	22	4	1	1	0	26	2	3	94	97
04:30 PM	30	25	0	1	0	0	0	0	0	18	0	1	5	0	20	2	4	98	102
04:45 PM	37	31	0	1	0	0	0	0	0	18	1	1	2	0	17	4	6	106	112
Total	108	123	0	5	0	0	0	0	0	82	6	5	13	0	85	10	20	417	437
05:00 PM	50	41	0	2	0	0	0	0	0	26	6	1	2	0	21	2	5	146	151
05:15 PM	49	43	0	1	0	0	0	0	0	30	4	1	7	0	70	2	4	203	207
05:30 PM	37	36	0	3	0	0	0	0	0	31	4	1	5	0	35	1	5	148	153
05:45 PM	24	26	0	0	0	0	0	0	0	20	4	0	5	0	49	0	0	128	128
Total	160	146	0	6	0	0	0	0	0	107	18	3	19	0	175	5	14	625	639
Grand Total	508	358	0	17	0	0	0	0	0	422	49	14	49	0	624	21	52	2010	2062
Apprch %	58.7	41.3	0		0	0	0		0	89.6	10.4		7.3	0	92.7				
Total %	25.3	17.8	0		0	0	0		0	21	2.4		2.4	0	31		2.5	97.5	



5808 Faringdon Place, Suite 100
 Raleigh, NC 27609
 PH: 919 872-5115
 FX: 919 878-5416

File Name : Humie Olive Road and Old US 1
 Site Code : 00099215
 Start Date : 9/2/2015
 Page No : 2

Start Time	Old US 1 Southbound				N/A Westbound				Old US 1 Northbound				Humie Olive Road Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	87	8	0	95	0	0	0	0	0	34	8	42	4	0	115	119	256
07:15 AM	26	16	0	42	0	0	0	0	0	39	3	42	6	0	85	91	175
07:30 AM	26	15	0	41	0	0	0	0	0	32	4	36	2	0	25	27	104
07:45 AM	22	16	0	38	0	0	0	0	0	43	2	45	2	0	29	31	114
Total Volume	161	55	0	216	0	0	0	0	0	148	17	165	14	0	254	268	649
% App. Total	74.5	25.5	0		0	0	0		0	89.7	10.3		5.2	0	94.8		
PHF	.463	.859	.000	.568	.000	.000	.000	.000	.000	.860	.531	.917	.583	.000	.552	.563	.634

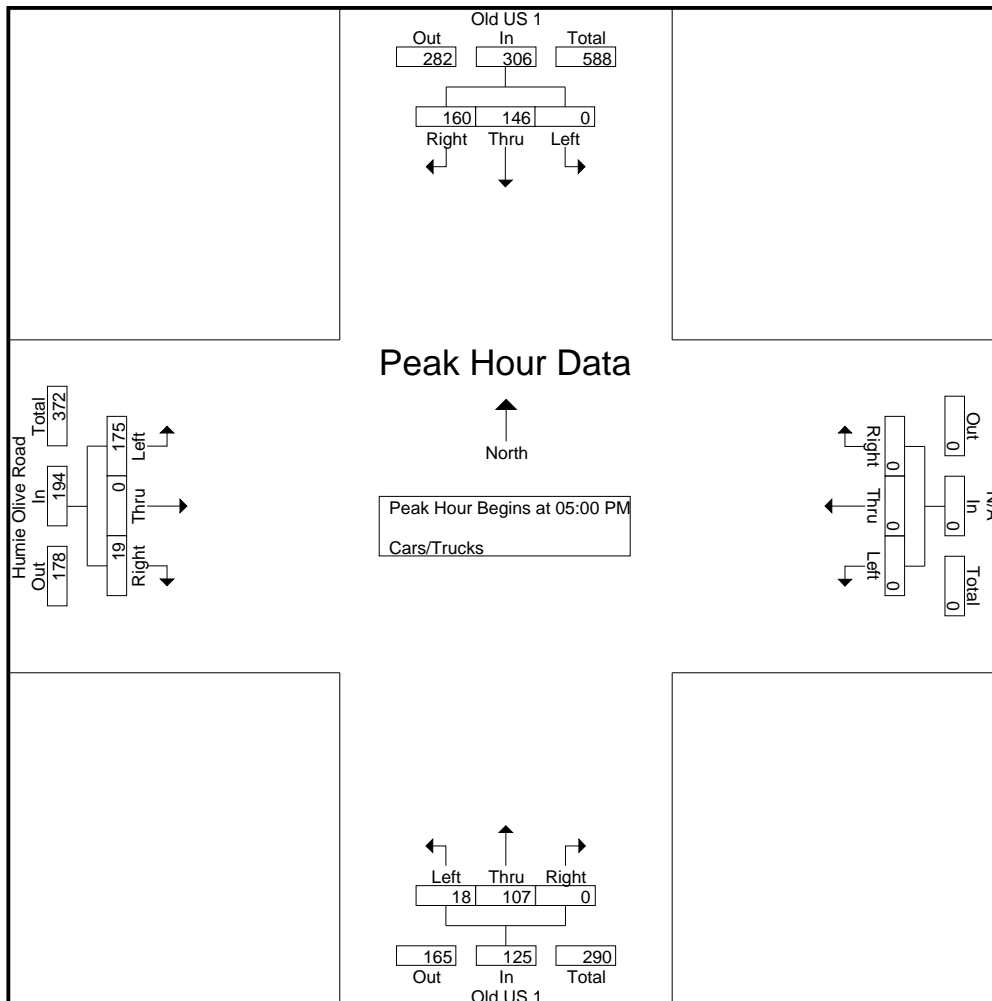




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 Raleigh, NC 27609
 PH: 919 872-5115
 FX: 919 878-5416

File Name : Humie Olive Road and Old US 1
 Site Code : 00099215
 Start Date : 9/2/2015
 Page No : 3

Start Time	Old US 1 Southbound				N/A Westbound				Old US 1 Northbound				Humie Olive Road Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	50	41	0	91	0	0	0	0	0	26	6	32	2	0	21	23	146
05:15 PM	49	43	0	92	0	0	0	0	0	30	4	34	7	0	70	77	203
05:30 PM	37	36	0	73	0	0	0	0	0	31	4	35	5	0	35	40	148
05:45 PM	24	26	0	50	0	0	0	0	0	20	4	24	5	0	49	54	128
Total Volume	160	146	0	306	0	0	0	0	0	107	18	125	19	0	175	194	625
% App. Total	52.3	47.7	0		0	0	0		0	85.6	14.4		9.8	0	90.2		
PHF	.800	.849	.000	.832	.000	.000	.000	.000	.000	.863	.750	.893	.679	.000	.625	.630	.770



VHB Engineering NC, P.C.

4000 WestChase Boulevard, Suite 530

Raleigh, NC 27607

p: 919-829-0328 f: 919.833-0034

File Name : Friendship Thursday

Site Code :

Start Date : 4/7/2016

Page No : 1

Groups Printed- Passenger Vehicles - Single Unit - TTST - Bicycles on Crosswalk - Pedestrians

Start Time	Friendship Road Southbound				Old US Highway 1 Westbound				Friendship Road Northbound				Old US Highway 1 Eastbound				Exclu. Total	Inclu. Total	Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds			
04:00 PM	0	0	0	0	10	74	0	0	8	0	5	0	0	57	6	0	0	160	160
04:15 PM	0	0	0	0	9	58	0	0	7	0	10	0	0	50	12	0	0	146	146
04:30 PM	0	0	0	0	8	75	0	0	9	0	10	0	0	43	9	0	0	154	154
04:45 PM	0	0	0	0	17	86	0	0	4	0	11	0	0	47	8	0	0	173	173
Total	0	0	0	0	44	293	0	0	28	0	36	0	0	197	35	0	0	633	633
05:00 PM	0	0	0	0	18	89	0	0	6	0	5	0	0	44	9	0	0	171	171
05:15 PM	0	0	0	0	19	114	0	0	7	0	13	0	0	72	7	0	0	232	232
05:30 PM	0	0	0	0	19	87	0	0	11	0	10	0	0	69	11	0	0	207	207
05:45 PM	0	0	0	1	18	110	0	0	4	0	10	0	0	66	8	0	1	216	217
Total	0	0	0	1	74	400	0	0	28	0	38	0	0	251	35	0	1	826	827
06:00 PM	0	0	0	0	18	78	0	0	4	0	16	0	0	88	10	0	0	214	214
06:15 PM	0	0	0	0	19	59	0	0	5	0	13	0	0	50	5	0	0	151	151
06:30 PM	0	0	0	0	11	50	0	0	2	0	5	0	0	64	7	0	0	139	139
06:45 PM	0	0	0	0	5	41	0	0	3	0	8	0	0	33	3	0	0	93	93
Total	0	0	0	0	53	228	0	0	14	0	42	0	0	235	25	0	0	597	597
Grand Total	0	0	0	1	171	921	0	0	70	0	116	0	0	683	95	0	1	2056	2057
Apprch %	0	0	0		15.7	84.3	0		37.6	0	62.4		0	87.8	12.2				
Total %	0	0	0		8.3	44.8	0		3.4	0	5.6		0	33.2	4.6		0	100	
Passenger Vehicles	0	0	0		170	892	0		67	0	116		0	658	89		0	0	1992
% Passenger Vehicles	0	0	0	0	99.4	96.9	0	0	95.7	0	100	0	0	96.3	93.7	0	0	0	96.8
Single Unit	0	0	0		0	27	0		3	0	0		0	21	6		0	0	57
% Single Unit	0	0	0	0	0	2.9	0	0	4.3	0	0	0	0	3.1	6.3	0	0	0	2.8
TTST	0	0	0		1	2	0		0	0	0		0	4	0		0	0	7
% TTST	0	0	0	0	0.6	0.2	0	0	0	0	0	0	0	0.6	0	0	0	0	0.3
Bicycles on Crosswalk	0	0	0		0	0	0		0	0	0		0	0	0		0	0	0
% Bicycles on Crosswalk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0		0	0	0		0	0	0		0	0	0		0	0	1
% Pedestrians	0	0	0	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

VHB Engineering NC, P.C.

4000 WestChase Boulevard, Suite 530

Raleigh, NC 27607

p: 919-829-0328 f: 919.833-0034

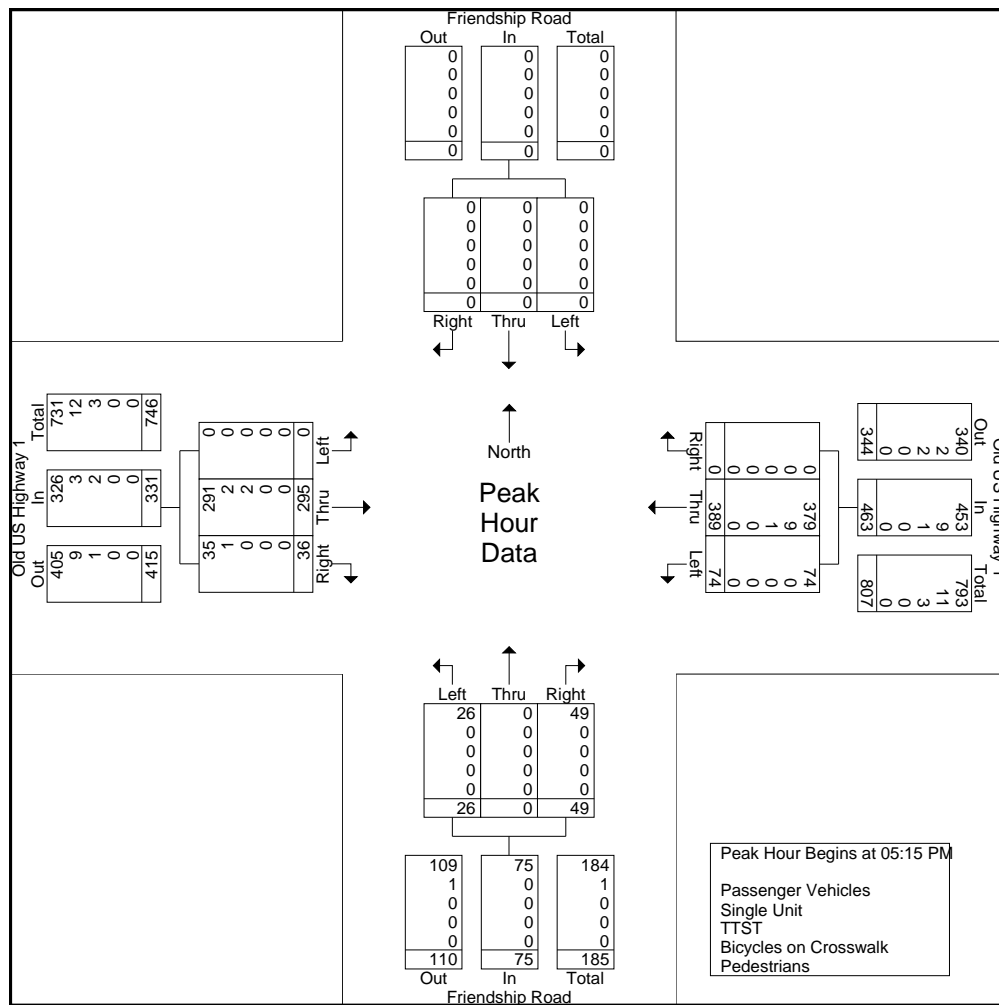
File Name : Friendship Thursday

Site Code :

Start Date : 4/7/2016

Page No : 3

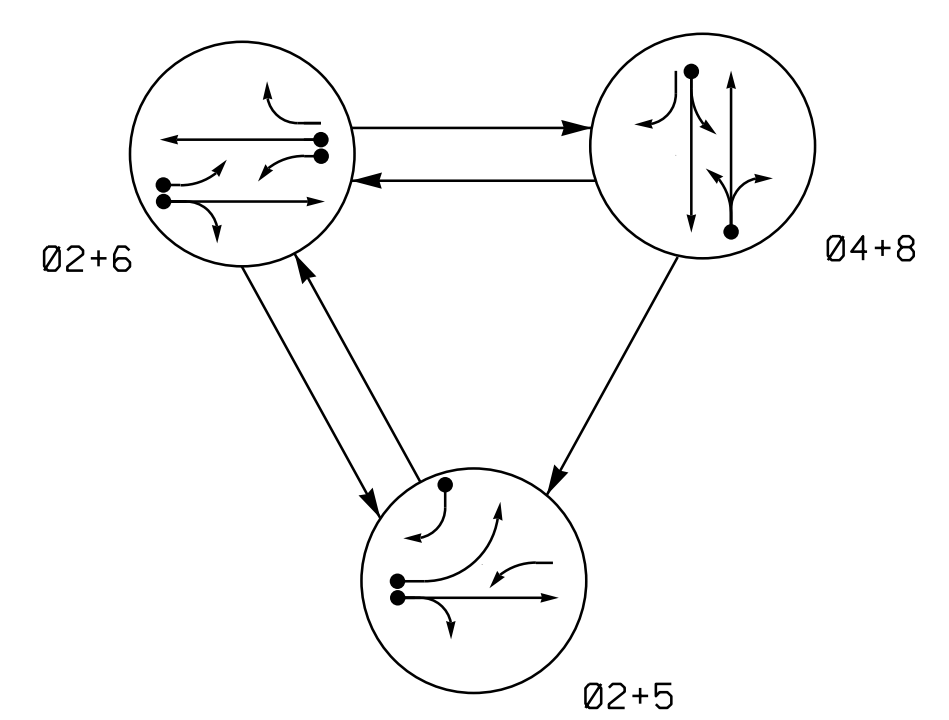
Start Time	Friendship Road Southbound				Old US Highway 1 Westbound				Friendship Road Northbound				Old US Highway 1 Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 04:00 PM to 06:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:15 PM																	
05:15 PM	0	0	0	0	19	114	0	133	7	0	13	20	0	72	7	79	232
05:30 PM	0	0	0	0	19	87	0	106	11	0	10	21	0	69	11	80	207
05:45 PM	0	0	0	0	18	110	0	128	4	0	10	14	0	66	8	74	216
06:00 PM	0	0	0	0	18	78	0	96	4	0	16	20	0	88	10	98	214
Total Volume	0	0	0	0	74	389	0	463	26	0	49	75	0	295	36	331	869
% App. Total	0	0	0	0	16	84	0	18.3	34.7	0	65.3	16.3	0	89.1	10.9	23.4	
PHF	.000	.000	.000	.000	.974	.853	.000	.870	.591	.000	.766	.893	.000	.838	.818	.844	.936
Passenger Vehicles	0	0	0	0	74	379	0	453	26	0	49	75	0	291	35	326	854
% Passenger Vehicles	0	0	0	0	100	97.4	0	97.8	100	0	100	100	0	98.6	97.2	98.5	98.3
Single Unit	0	0	0	0	0	9	0	9	0	0	0	0	0	2	1	3	12
% Single Unit	0	0	0	0	0	2.3	0	1.9	0	0	0	0	0	0.7	2.8	0.9	1.4
TTST	0	0	0	0	0	1	0	1	0	0	0	0	0	2	0	2	3
% TTST	0	0	0	0	0	0.3	0	0.2	0	0	0	0	0	0.7	0	0.6	0.3
Bicycles on Crosswalk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bicycles on Crosswalk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



APPENDIX C

SIGNAL PLANS

PHASING DIAGRAM

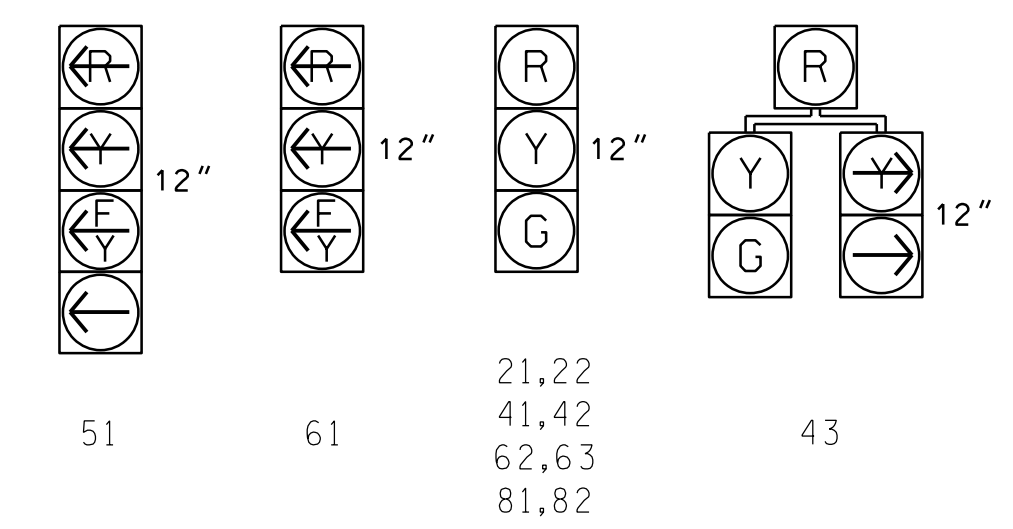


PHASING DIAGRAM DETECTION LEGEND

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

SIGNAL FACE	PHASE				
	02+5	02+6	04+8	FUTURE	
21, 22	G	G	R	Y	
41, 42	R	R	G	R	
43	R	R	G	R	
51			R	Y	
61			R	Y	
62, 63	R	G	R	Y	
81, 82	R	R	G	R	

SIGNAL FACE I.D.
All Heads L.E.D.

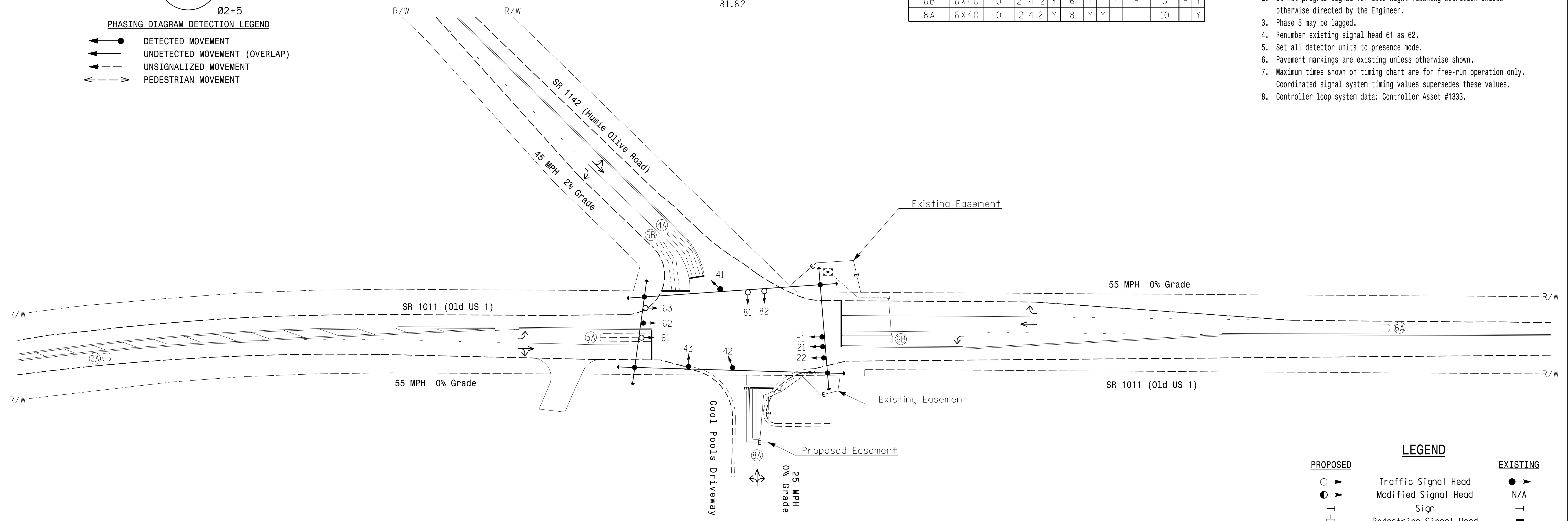


OASIS 2070 LOOP & DETECTOR INSTALLATION CHART

LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	DETECTOR PROGRAMMING							
					PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
2A	6X6	420	EXIST	-	2	Y	Y	-	-	-	-	-
4A	6X40	0	2-4-2	-	4	Y	Y	-	-	3	-	-
5A	6X40	0	2-4-2	-	5	Y	Y	-	-	15	-	-
5B	6X40	0	2-4-2	-	5	Y	Y	-	-	10	-	-
6A	6X6	420	EXIST	-	6	Y	Y	-	-	-	-	-
6B	6X40	0	2-4-2	Y	6	Y	Y	Y	-	3	-	Y
8A	6X40	0	2-4-2	Y	8	Y	Y	-	-	10	-	Y

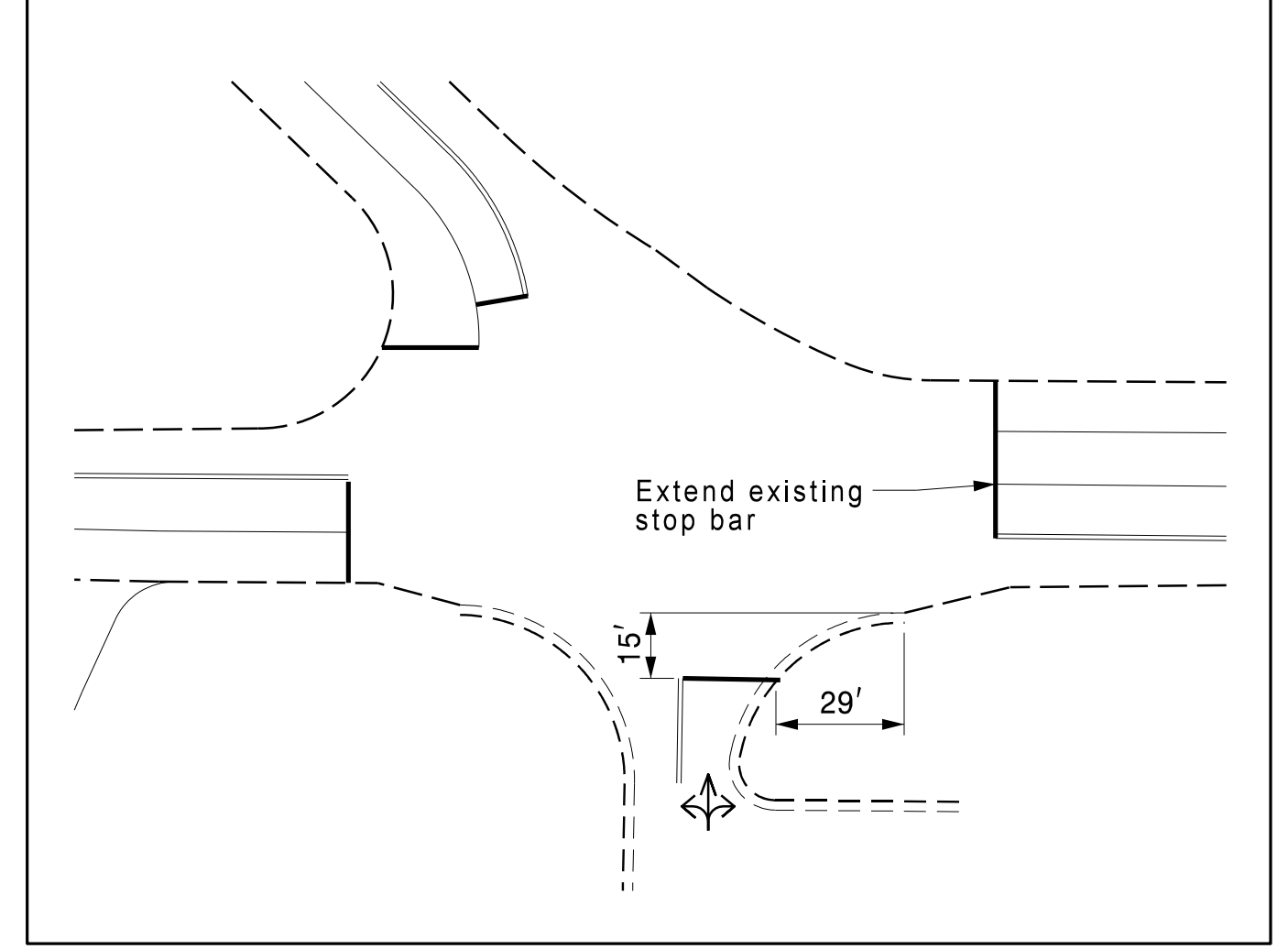
3 Phase Fully Actuated (Humie Olive Road CLS)
NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2018, "Standard Specifications for Roads and Structures" dated January 2018 and all applicable sections of the latest version of the generic Project Special Provisions. The PSP can be accessed at the following website: <https://connect.ncdot.gov/resources/safety/pages/its-and-signals.aspx>
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Phase 5 may be lagged.
- Re-number existing signal head 61 as 62.
- Set all detector units to presence mode.
- Pavement markings are existing unless otherwise shown.
- Maximum times shown on timing chart are for free-run operation only. Coordinated signal system timing values supersedes these values.
- Controller loop system data: Controller Asset #1333.



FEATURE	PHASE				
	2	4	5	6	8
Min Green 1 *	14	7	7	14	7
Extension 1 *	6.0	2.0	2.0	6.0	2.0
Max Green 1 *	90	30	15	90	30
Yellow Clearance	5.2	4.3	3.0	5.2	3.2
Red Clearance	1.8	1.8	1.9	1.8	3.1
Walk 1 *	-	-	-	-	-
Don't Walk 1	-	-	-	-	-
Seconds Per Actuation *	2.5	-	-	2.5	-
Max Variable Initial *	46	-	-	46	-
Time Before Reduction *	15	-	-	15	-
Time To Reduce *	45	-	-	45	-
Minimum Gap	3.4	-	-	3.4	-
Recall Mode	MIN RECALL	-	-	MIN RECALL	-
Vehicle Call Memory	YELLOW	-	-	YELLOW	-
Dual Entry	-	ON	-	-	ON
Simultaneous Gap	ON	ON	ON	ON	ON

STOP LINE AND POLE LOCATION DIAGRAM

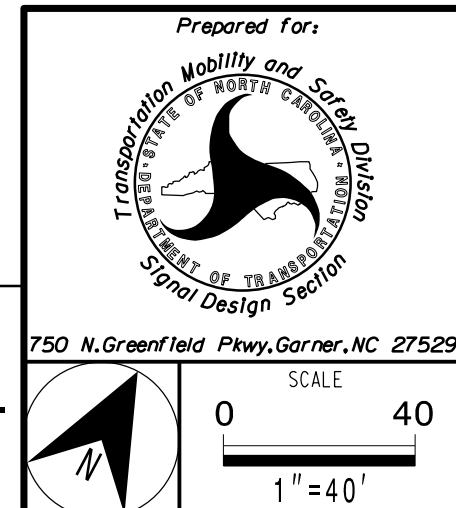


NC Dept of Transportation
Division of Highways
Final Drawing Date: 11/5/2018
ITS & Signals Unit

PROPOSED		EXISTING	
○	Traffic Signal Head	●	Traffic Signal Head
○	Modified Signal Head	N/A	Modified Signal Head
⊥	Sign	⊥	Sign
⊥	Pedestrian Signal Head	⊥	Pedestrian Signal Head
⊥	With Push Button & Sign	⊥	With Push Button & Sign
⊥	Signal Pole with Guy	⊥	Signal Pole with Guy
⊥	Signal Pole with Sidewalk Guy	⊥	Signal Pole with Sidewalk Guy
⊥	Inductive Loop Detector	⊥	Inductive Loop Detector
⊥	Controller & Cabinet	⊥	Controller & Cabinet
⊥	Junction Box	⊥	Junction Box
---	2-in Underground Conduit	---	2-in Underground Conduit
N/A	Right of Way	N/A	Right of Way
→	Directional Arrow	→	Directional Arrow
E-	Permanent Maintenance Easement	N/A	Permanent Maintenance Easement

Signal Upgrade

Prepared in the offices of:
RAMEY KEMP ASSOCIATES, INC.
Transportation Engineers
5808 Stratford Place, Suite 100
Raleigh, North Carolina 27609
919-872-9115 Tel. 919-872-9116 Fax
www.rameykemp.com



SR 1011 (Old US 1) at SR 1142 (Humie Olive Road) / Cool Pools Driveway		Apex	
PLAN DATE: October 2018	REVIEWED BY: WJ Hamilton		
PREPARED BY: TS Popelka	RKA PROJ. NO: 18265 (040)		
REVISIONS	INIT.	DATE	

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

SEAL
NORTH CAROLINA
PROFESSIONAL
ENGINEER
SEAL 32396
WILLIAM J. HAMILTON
10/29/2018
SIGNATURE DATE
SIG. INVENTORY NO. 05-1333

APPENDIX D

ADJACENT DEVELOPMENT INFORMATION

TRAFFIC IMPACT
ANALYSIS
FOR
H-10 HIGH SCHOOL

LOCATED
IN
APEX, NORTH CAROLINA

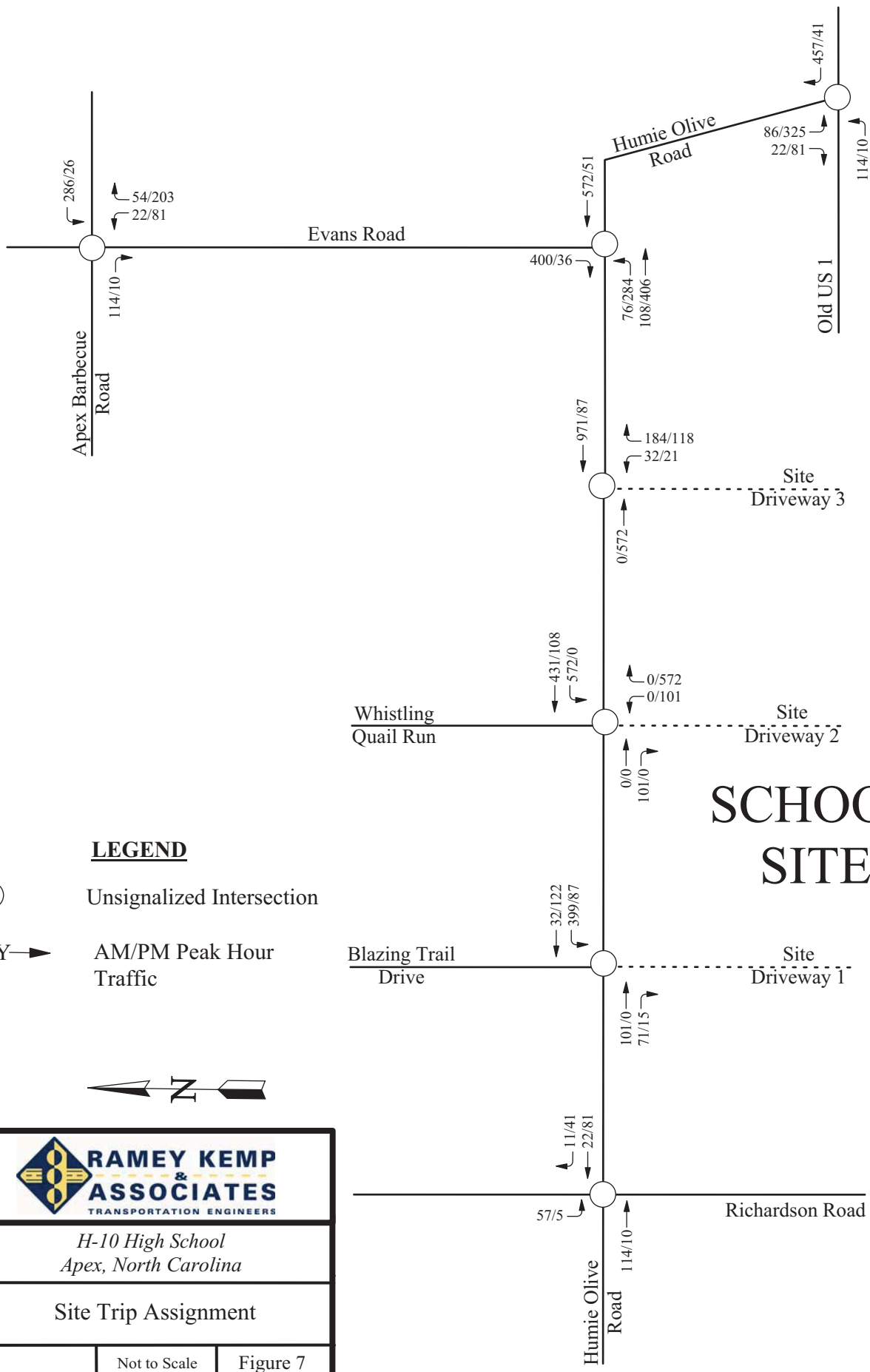
Prepared For:
CLH Design, P.A.
400 Regency Forest Drive, Suite 120
Cary, NC 27518

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

January 2012

RKA Project #11147





LEGEND

○ Unsignalized Intersection

X/Y → AM/PM Peak Hour Traffic



*H-10 High School
Apex, North Carolina*

Site Trip Assignment

Not to Scale

Figure 7

SCHOOL SITE

Traffic Impact Analysis M-11 Middle School Apex, NC



**RAMEY KEMP
&
ASSOCIATES**
TRANSPORTATION ENGINEERS

TRAFFIC IMPACT
ANALYSIS
FOR
M-11 MIDDLE SCHOOL

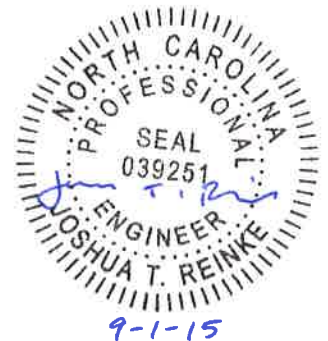
LOCATED
IN
APEX, NORTH CAROLINA

Prepared For:
CLH Design, P.A.
400 Regency Forest Drive, Suite 120
Cary, NC 27518

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

September 2015

RKA Project #14271.02



**Wake County
M-11 Middle School**

7701 Humie Olive Road
Apex, NC 27502

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Raleigh, NC 27607-3396
1919.981.9659
1919.981.9923

Civil Engineer and Landscape Architect
CLH Design, PA
400 Regency Forest Dr. Ste. 120
Cary, NC 27518
1919.319.6116
1919.319.7518

Structural Engineer
Stewart
421 Fayetteville St., Suite 400
Raleigh, NC 27601
1919.380.8750
1919.380.8752

Food Service Engineer
Foodesign Associates, Inc.
5828 Oak Drive
Charlotte, NC 28227
1704.545.6151
1704.545.1243

Theater Consultant
Barbizon
101 Krog Street
Atlanta, GA 30307
1404.681.5124
1404.681.5315

Roofing Consultant
Wiss, Janney, Elstner Associates, Inc.
2751 Prosperity Ave., Ste. 450
Fairfax, VA 22031
1703.641.4601
1703.641.8822

Revisions

Seal

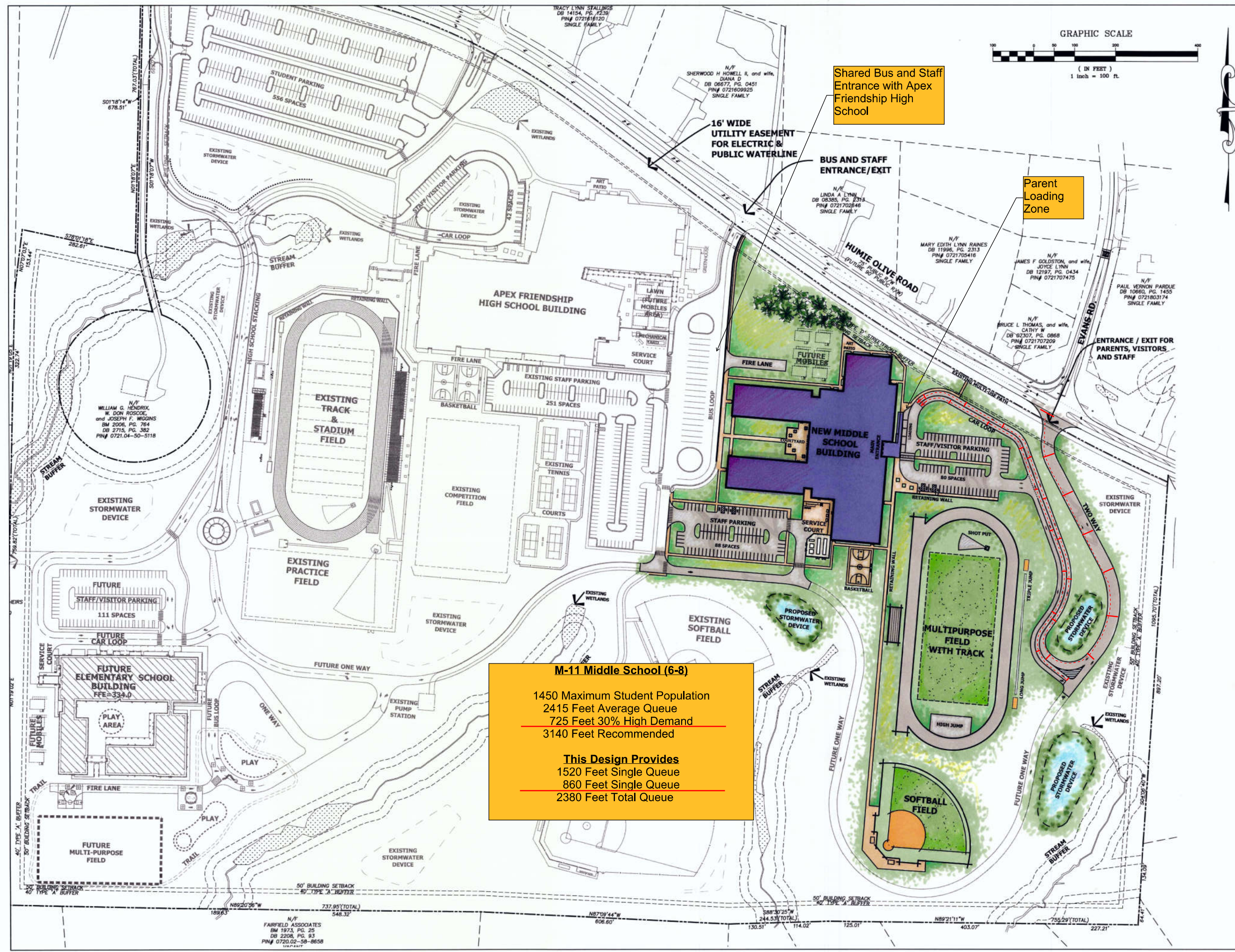
**PRELIMINARY
NOT FOR
CONSTRUCTION**

NO.	ISSUE	DATE
Sheet Information		
Date	6/9/15	
Job Numt	801290.000 (CLH: 14-168)	
Drawn	ZRP	
Checked	KAL	
Approved	KAL	
Title		
OVERALL SITE PLAN		
Sheet		
C-01.00		

**OVERALL
SITE PLAN**

Sheet

C-01.00



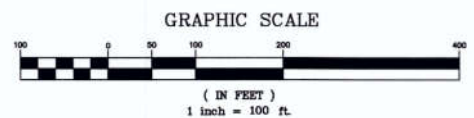
Shared Bus and Staff
Entrance with Apex
Friendship High
School

16' WIDE
UTILITY EASEMENT
FOR ELECTRIC &
PUBLIC WATERLINE

BUS AND STAFF
ENTRANCE / EXIT

Parent
Loading
Zone

M-11 Middle School (6-8)
1450 Maximum Student Population
2415 Feet Average Queue
725 Feet 30% High Demand
3140 Feet Recommended
This Design Provides
1520 Feet Single Queue
860 Feet Single Queue
2380 Feet Total Queue

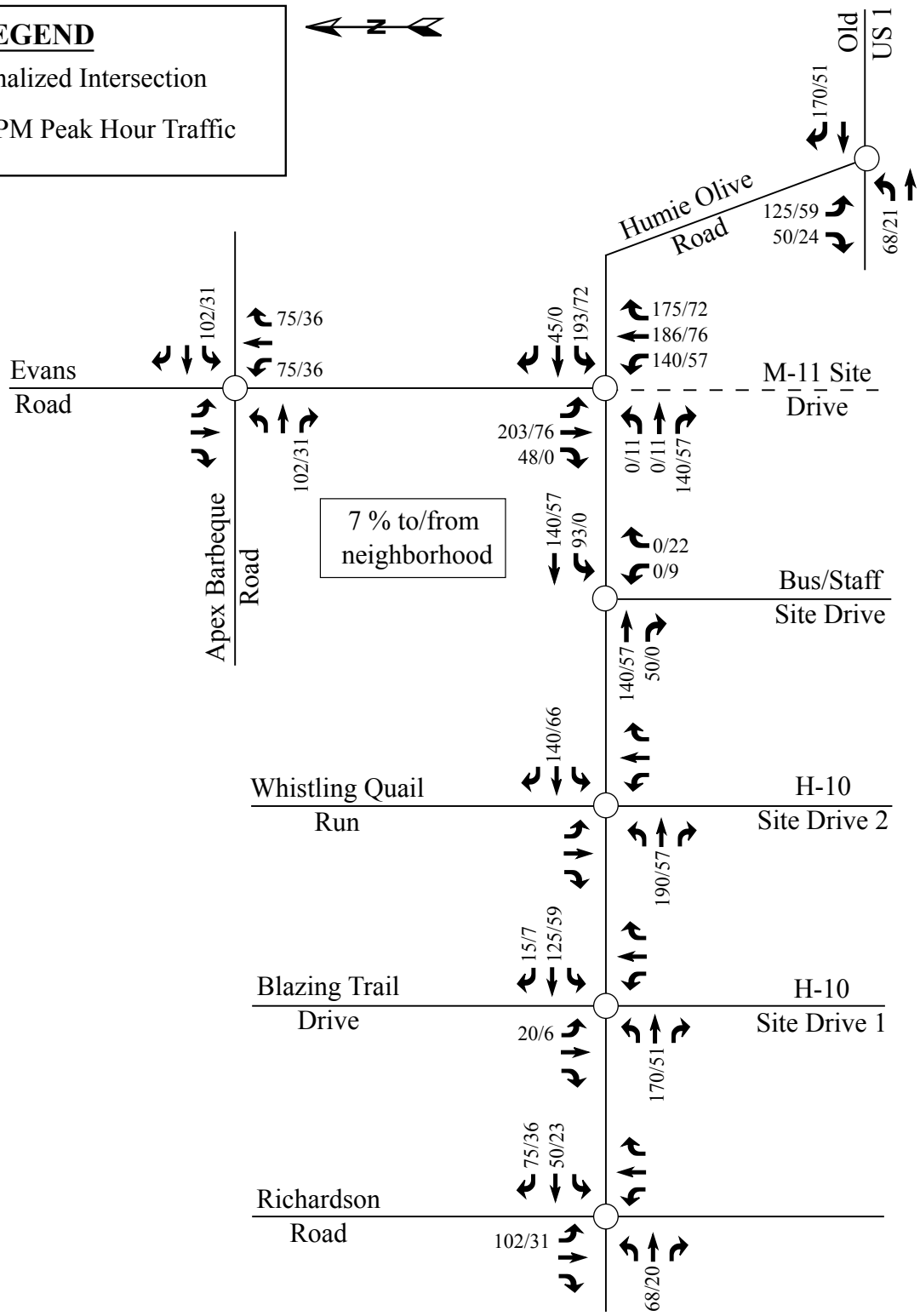
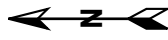


N/F
FAIRFIELD ASSOCIATES
BM 1973, PG. 25
DB 2208, PG. 93
PIN# 0720.02-58-8658

LEGEND

○ Unsignalized Intersection

X / Y → AM / PM Peak Hour Traffic

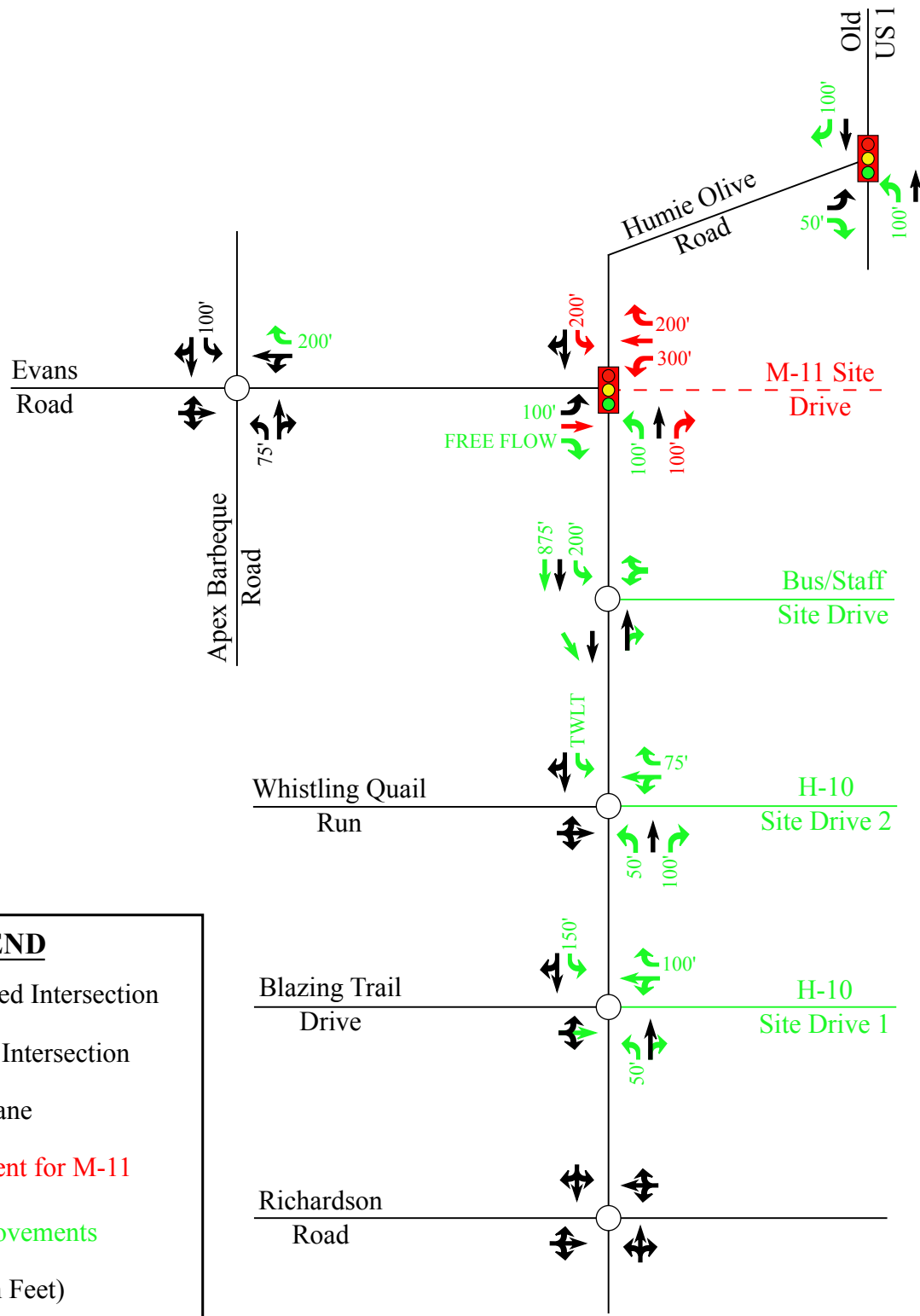
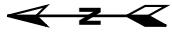


M-11 Middle School
Apex, NC

Primary Site
Trip Assignment

Scale: Not to Scale

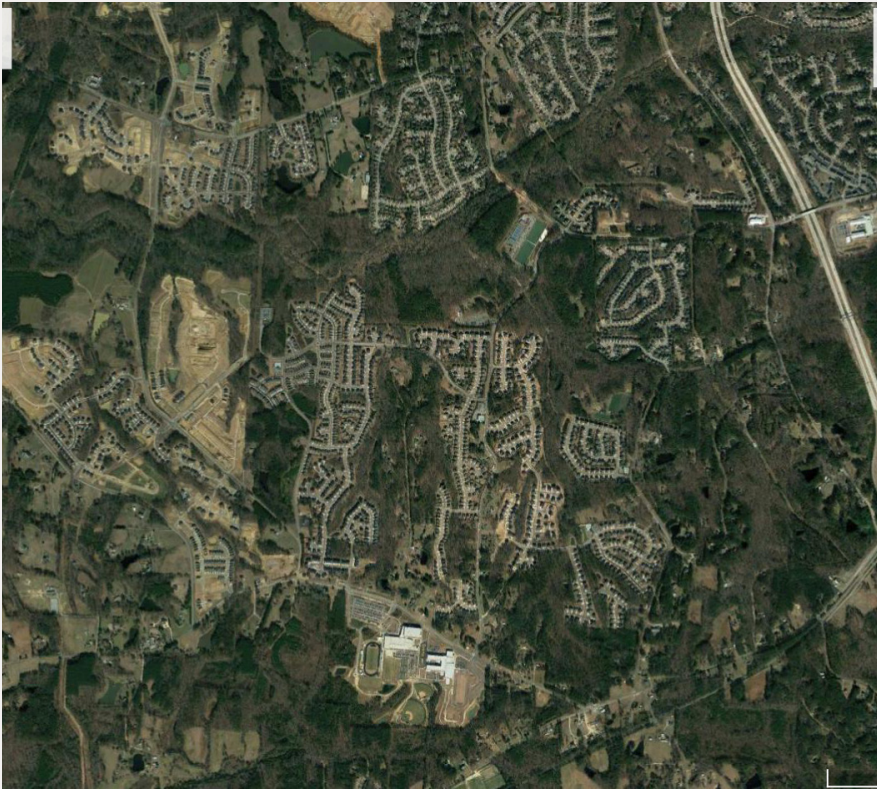
Figure 14



LEGEND

- Unsignalized Intersection
- 🚦 Signalized Intersection
- ➡ Existing Lane
- ➡ Improvement for M-11
- ➡ H-10 Improvements
- X' Storage (In Feet)
- TWLTL Two Way/ Left Turn Lane

	<p>M-11 Middle School Apex, NC</p>	<p>Recommended Lane Configurations</p>	
			<p>Scale: Not to Scale Figure 16</p>



E-41 Elementary School
Traffic Impact Analysis
Apex, North Carolina

TRAFFIC IMPACT ANALYSIS

FOR

E-41 ELEMENTARY SCHOOL UPDATE

LOCATED

IN

Apex, North Carolina

Prepared For:
Wake County Public School System
1429 Rock Quarry Road, Suite 116
Raleigh, NC 27610

Prepared By:
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Raleigh, NC 27609
License #C-0910



08/03/2020

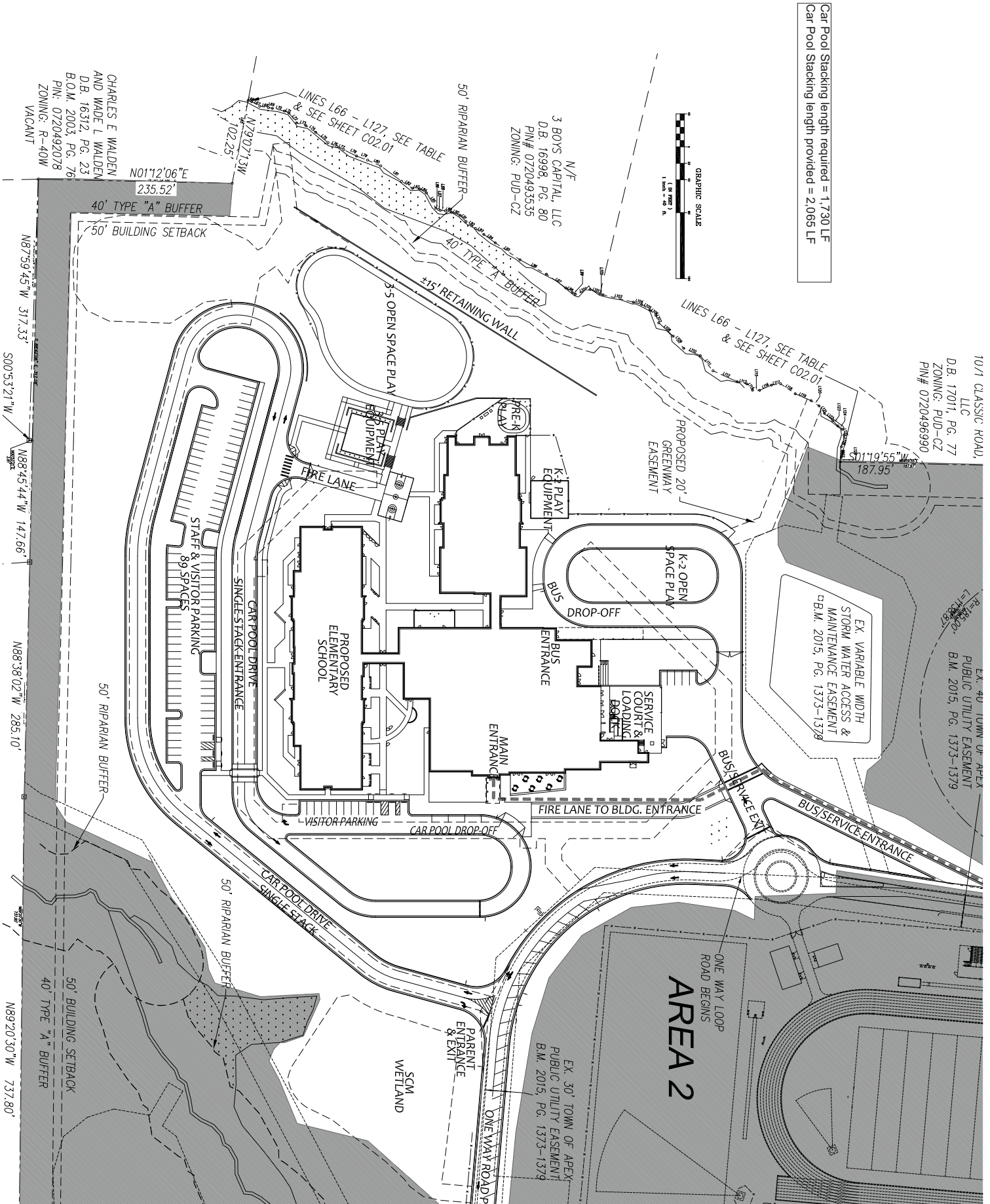
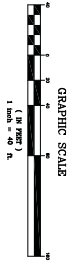
August 2020

RKA Project No. 19153

Prepared By: MLS

Reviewed By: JTR

Car Pool Stacking length required = 1,730 LF
 Car Pool Stacking length provided = 2,065 LF



10/1 CLASSIC ROAD, LLC
 D.B. 17011, PG. 77
 ZONING: PUD-CZ
 PIN# 0720496990

EX. VARIABLE WIDTH
 STORM WATER ACCESS &
 MAINTENANCE EASEMENT
 B.M. 2015, PG. 1373-1379

EX. 40' TOWN OF APEX
 PUBLIC UTILITY EASEMENT
 B.M. 2015, PG. 1373-1379

EX. 30' TOWN OF APEX
 PUBLIC UTILITY EASEMENT
 B.M. 2015, PG. 1373-1379

AREA 2

CHARLES E WALDEN
 AND WADE L WALDEN
 D.B. 16312, PG. 23
 B.O.M. 2003, PG. 76
 PIN: 0720492078
 ZONING: R-40W
 VACANT

N01°12'06"E
 235.52'
 40' TYPE "A" BUFFER
 50' BUILDING SETBACK

N87°59'45"W 317.33'

S00°53'21"W

N88°45'44"W 147.66'

N88°38'02"W 285.10'

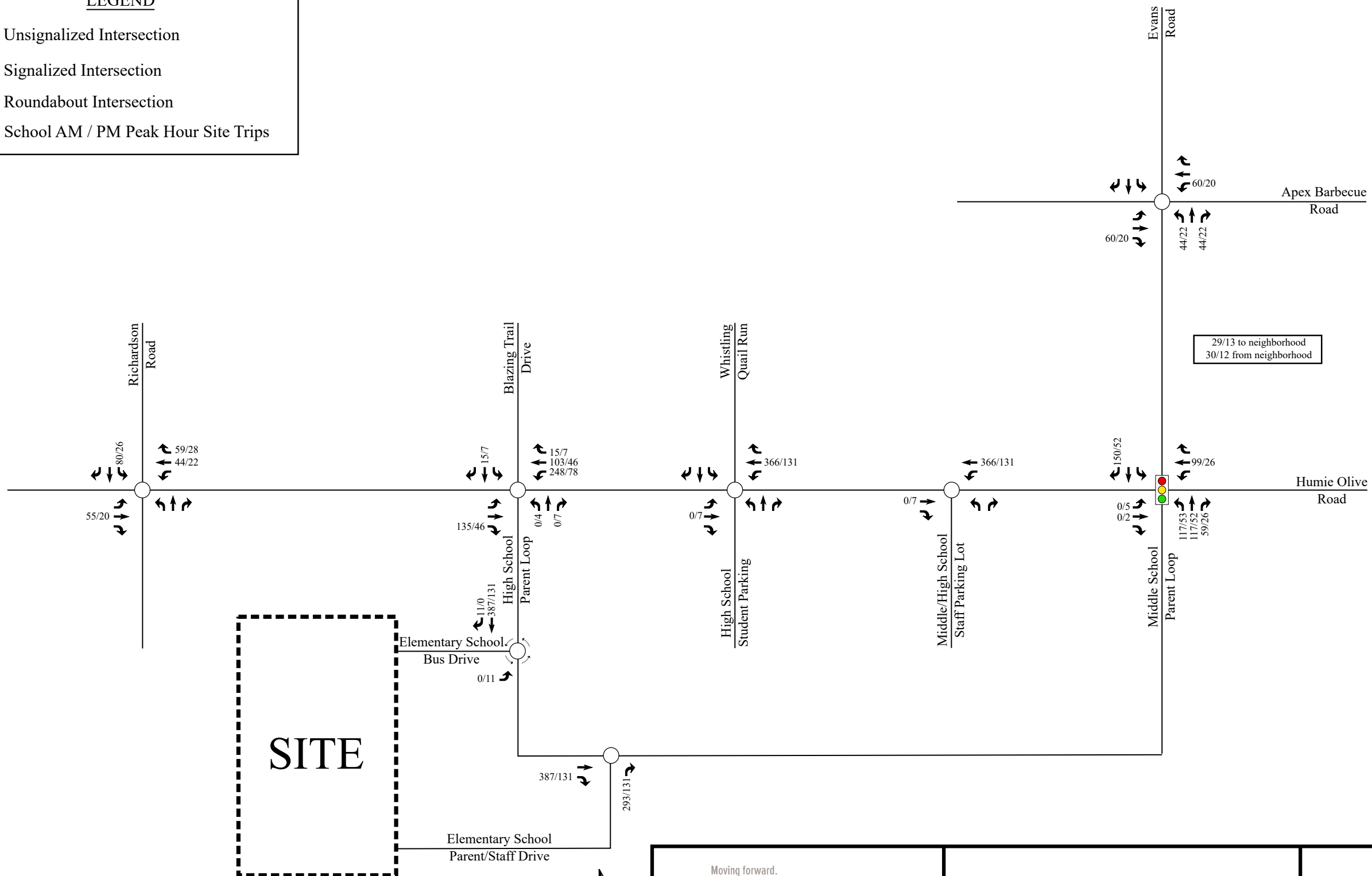
N89°20'30"W 737.80'

50' RIPARIAN BUFFER
 40' TYPE "A" BUFFER
 50' BUILDING SETBACK

N89°20'30"W 737.80'

LEGEND

- Unsignalized Intersection
- 🚦 Signalized Intersection
- 🔄 Roundabout Intersection
- X/Y → School AM / PM Peak Hour Site Trips



SITE








E-41 Elementary School
Apex, NC

Total Trip
Assignment

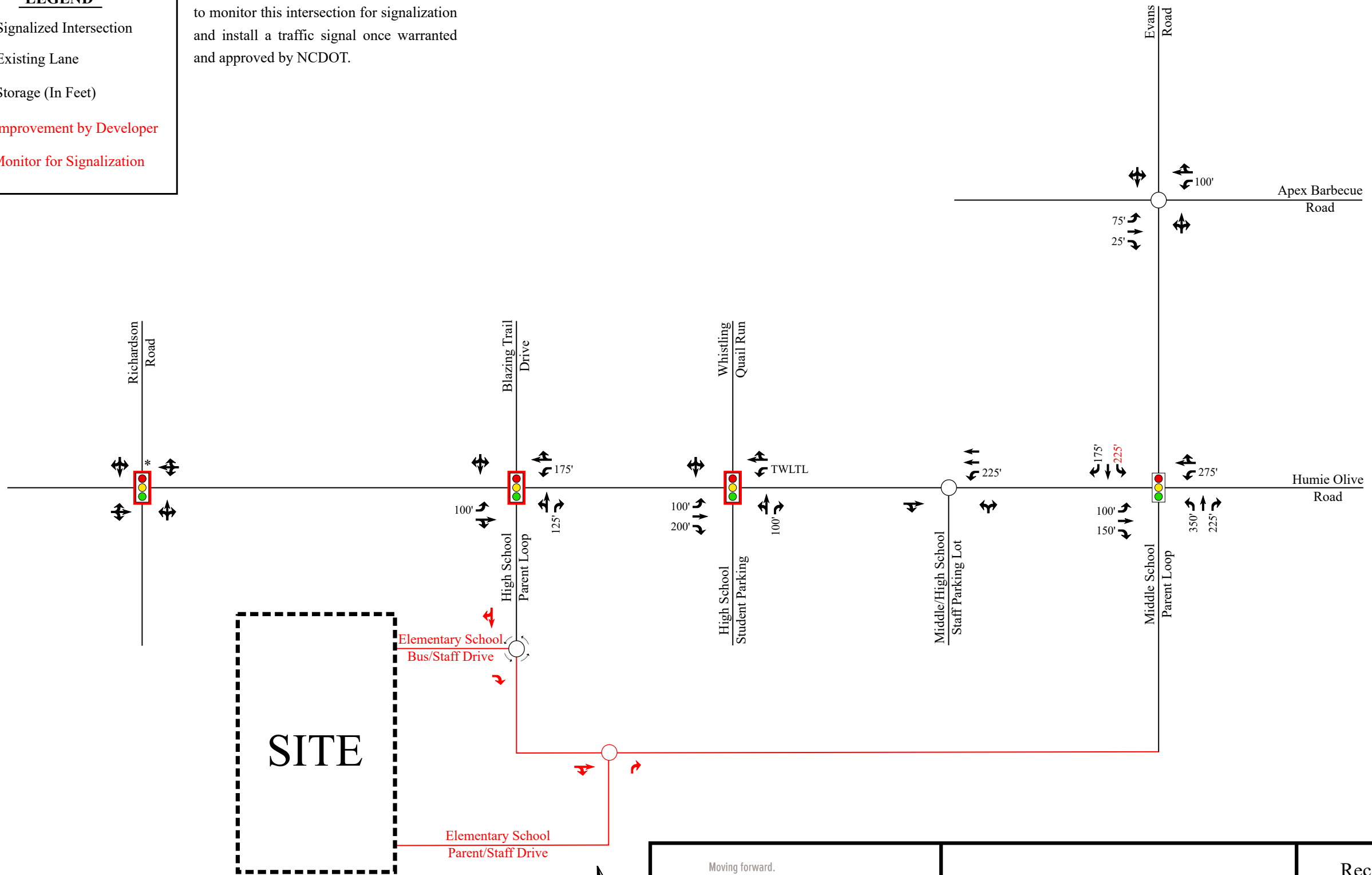
Scale: Not to Scale

Figure 9d

LEGEND

-  Signalized Intersection
-  Existing Lane
-  Storage (In Feet)
-  Improvement by Developer
-  Monitor for Signalization

*Note: Friendship Station is also committed to monitor this intersection for signalization and install a traffic signal once warranted and approved by NCDOT.



E-41 Elementary School
Apex, NC

Recommended Lane
Configurations

Scale: Not to Scale

Figure 11

Pleasant Park

Apex, NC

PREPARED FOR



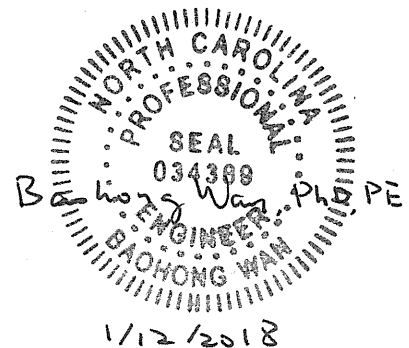
c/o Jason Bertoncino, PE, LEED AP
115 MacKenan Drive
Cary, NC 27511

PREPARED BY



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919.829.0328

January 12, 2018





January 24, 2018

Baohong Wan, PhD, P.E.

bwana@vhb.com

VHB Engineering NC, P.C. (C-3705)
940 Main Campus Drive, Suite 500
Raleigh, NC 27606

Subject: **Staff summary and comments for the Pleasant Park TIA, 01/15/18**

Dr. Wan:

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 access to the development through separate ingress and egress points on Pleasant Plains Road. In addition to studying the ingress and egress driveways, the following intersections are also included in the TIA for analysis:

- SR 1011 (Old US Highway 1) and SR 1170 (Pleasant Plains Road)
- SR 1011 (Old US Highway 1) and SR 1149 (Friendship Road)

Trip Generation

Based on traffic patterns at other similar facilities in the region, the weekday PM peak and the Saturday midday peak were determined to be the critical peaks for developing trip generation volumes. The proposed development is anticipated to generate approximately 149 new trips entering and 188 new trips exiting the site during the weekday PM peak hour and 124 new trips entering and 144 new trips exiting the site during the Saturday midday peak hour. The development is expected to add a total of 1,659 new weekday trips and 2,200 new Saturday trips to the adjacent roadway network.

Background traffic

Background traffic consists of 3% annual background traffic growth from base year (2016) compounded to build out year (2020), and the following 15 approved developments:

- McKenzie Ridge (McKenzie Meadows PUD)
- Parkside at Bella Casa
- Arcadia Ridge West PUD
- Stillwater (Womble Tract Development)
- Apex Friendship (H-10) High School
- Buckhorn (Goodwin-MacNair Property)

TOWN OF APEX

The Peak of Good Living

PO Box 250 Apex, NC 27502 | (919) 249-3400 | www.apexnc.org

- Jordan Manors (Finkle and Haus Assemblage)
- Jordan Pointe (Lawrence Assemblage Residential Development)
- Holland Road Property (Siena & Verona at Bella Casa)
- Apex Friendship (M-11) Middle School
- Deer Creek PUD
- The Manors at Bella Cassa
- Woodbury (Bristol Property)
- Richardson West (Lawrence Assemblage)
- West Village (Phase I)

Trip Distribution and Assignment

Trip distribution to and from the development is as follows:

- 65% to/from the east via Old US 1
- 25% to/from the west via Old US 1
- 10% to/from the south via Friendship 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 4 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 2016** - Existing year 2016 traffic.
- **No Build 2020** – Projected year (2020) with background growth, approved development traffic from others, and projected transportation improvements by others where applicable.
- **Build 2020** – Projected year (2020) with background traffic, site build-out traffic, projected transportation improvements by others, and recommended transportation improvements from the *2016 Access Study for Pleasant Park*.
- **Future 2020** - Projected year (2020) with background traffic and site build-out traffic with projected transportation improvements by others, and recommended improvements by the development.

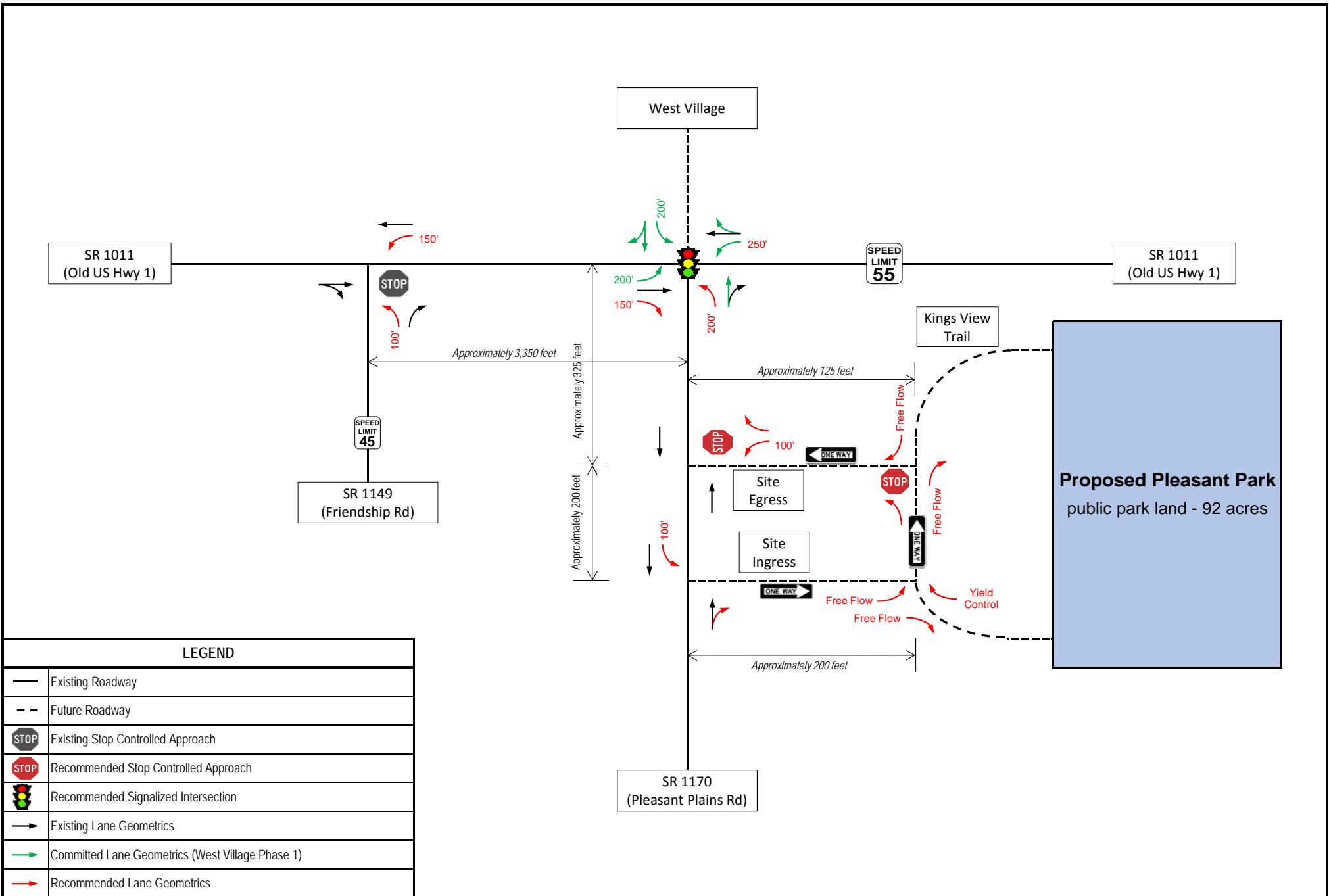


Figure ES
Future (2020) Lane Geometrics and Traffic Control

Pleasant Park
Apex, NC



APPENDIX E

CAPACITY ANALYSIS CALCULATIONS

HUMIE OLIVE ROAD

&

OLD US HIGHWAY 1

Lanes, Volumes, Timings

2021 Existing AM

1: Vicious Fishes Brewery Driveway/Humie Olive Road & Old US Highway 1

03/09/2021

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	280	4	4	172	156	4	4	4	200	4	12
Future Volume (vph)	15	280	4	4	172	156	4	4	4	200	4	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		0	100		150	0		0	0		150
Storage Lanes	1		0	1		1	0		0	0		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.998				0.850		0.955				0.850
Flt Protected	0.950			0.950				0.984			0.953	
Satd. Flow (prot)	1770	1859	0	1770	1863	1583	0	1750	0	0	1775	1583
Flt Permitted	0.473			0.554				0.900			0.722	
Satd. Flow (perm)	881	1859	0	1032	1863	1583	0	1601	0	0	1345	1583
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		55			55			25			45	
Link Distance (ft)		1103			867			1036			1067	
Travel Time (s)		13.7			10.7			28.3			16.2	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	17	311	4	4	191	173	4	4	4	222	4	13
Shared Lane Traffic (%)												
Lane Group Flow (vph)	17	315	0	4	191	173	0	12	0	0	226	13
Turn Type	pm+pt	NA		D.Pm	NA	Perm	Perm	NA		Perm	NA	pm+ov
Protected Phases	5	2			6			8			4	5
Permitted Phases	2			2		6	8			4		4
Detector Phase	5	2		2	6	6	8	8		4	4	5
Switch Phase												
Minimum Initial (s)	7.0	14.0		14.0	14.0	14.0	7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	11.9	21.0		21.0	21.0	21.0	13.3	13.3		13.1	13.1	11.9
Total Split (s)	15.0	90.0		90.0	90.0	90.0	30.0	30.0		30.0	30.0	15.0
Total Split (%)	11.1%	66.7%		66.7%	66.7%	66.7%	22.2%	22.2%		22.2%	22.2%	11.1%
Maximum Green (s)	10.1	83.0		83.0	83.0	83.0	23.7	23.7		23.9	23.9	10.1
Yellow Time (s)	3.0	5.2		5.2	5.2	5.2	3.2	3.2		4.3	4.3	3.0
All-Red Time (s)	1.9	1.8		1.8	1.8	1.8	3.1	3.1		1.8	1.8	1.9
Lost Time Adjust (s)	0.1	-2.0		-2.0	-2.0	-2.0		-1.3			-1.1	0.1
Total Lost Time (s)	5.0	5.0		5.0	5.0	5.0		5.0			5.0	5.0
Lead/Lag	Lead				Lag	Lag						Lead
Lead-Lag Optimize?	Yes				Yes	Yes						Yes
Vehicle Extension (s)	2.0	6.0		6.0	6.0	6.0	2.0	2.0		2.0	2.0	2.0
Minimum Gap (s)	2.0	3.4		3.4	3.4	3.4	2.0	2.0		2.0	2.0	2.0
Time Before Reduce (s)	0.0	15.0		15.0	15.0	15.0	0.0	0.0		0.0	0.0	0.0
Time To Reduce (s)	0.0	45.0		45.0	45.0	45.0	0.0	0.0		0.0	0.0	0.0
Recall Mode	None	Min		Min	Min	Min	None	None		None	None	None
Act Effct Green (s)	20.5	20.5		20.5	16.5	16.5		16.5			16.5	28.8
Actuated g/C Ratio	0.43	0.43		0.43	0.35	0.35		0.35			0.35	0.61
v/c Ratio	0.03	0.39		0.01	0.29	0.31		0.02			0.48	0.01
Control Delay	7.8	10.9		7.5	15.3	16.0		12.5			17.6	5.7
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0			0.0	0.0
Total Delay	7.8	10.9		7.5	15.3	16.0		12.5			17.6	5.7

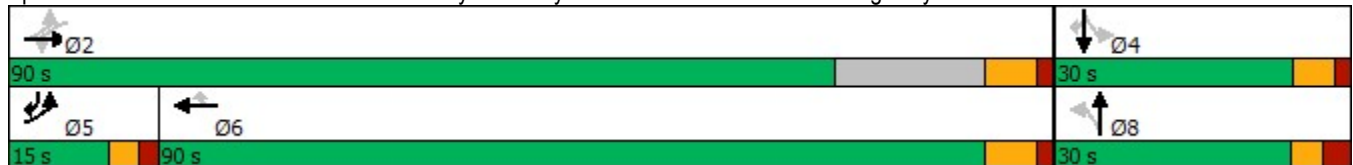
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	A	B		A	B	B		B			B	A
Approach Delay		10.7			15.6			12.5			17.0	
Approach LOS		B			B			B			B	
Queue Length 50th (ft)	3	57		1	32	29		2			38	1
Queue Length 95th (ft)	11	107		4	99	94		12			119	8
Internal Link Dist (ft)		1023			787			956			987	
Turn Bay Length (ft)	200			100		150						150
Base Capacity (vph)	574	1859		1032	1863	1583		869			730	1069
Starvation Cap Reductn	0	0		0	0	0		0			0	0
Spillback Cap Reductn	0	0		0	0	0		0			0	0
Storage Cap Reductn	0	0		0	0	0		0			0	0
Reduced v/c Ratio	0.03	0.17		0.00	0.10	0.11		0.01			0.31	0.01

Intersection Summary

Area Type: Other
 Cycle Length: 135
 Actuated Cycle Length: 47.3
 Natural Cycle: 55
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.48
 Intersection Signal Delay: 14.2
 Intersection Capacity Utilization 41.3%
 Analysis Period (min) 15

Intersection LOS: B
 ICU Level of Service A

Splits and Phases: 1: Vicious Fishes Brewery Driveway/Humie Olive Road & Old US Highway 1



Lanes, Volumes, Timings

2021 Existing PM

1: Vicious Fishes Brewery Driveway/Humie Olive Road & Old US Highway 1

03/09/2021

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	183	4	4	284	257	4	4	4	181	4	22
Future Volume (vph)	17	183	4	4	284	257	4	4	4	181	4	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		0	100		150	0		0	0		150
Storage Lanes	1		0	1		1	0		0	0		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.997				0.850		0.955				0.850
Flt Protected	0.950			0.950				0.984			0.953	
Satd. Flow (prot)	1770	1857	0	1770	1863	1583	0	1750	0	0	1775	1583
Flt Permitted	0.394			0.628				0.896			0.722	
Satd. Flow (perm)	734	1857	0	1170	1863	1583	0	1594	0	0	1345	1583
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		55			55			25			45	
Link Distance (ft)		1103			867			1036			1067	
Travel Time (s)		13.7			10.7			28.3			16.2	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	19	203	4	4	316	286	4	4	4	201	4	24
Shared Lane Traffic (%)												
Lane Group Flow (vph)	19	207	0	4	316	286	0	12	0	0	205	24
Turn Type	pm+pt	NA		D.Pm	NA	Perm	Perm	NA		Perm	NA	pm+ov
Protected Phases	5	2			6			8			4	5
Permitted Phases	2			2		6	8			4		4
Detector Phase	5	2		2	6	6	8	8		4	4	5
Switch Phase												
Minimum Initial (s)	7.0	14.0		14.0	14.0	14.0	7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	11.9	21.0		21.0	21.0	21.0	13.3	13.3		13.1	13.1	11.9
Total Split (s)	15.0	90.0		90.0	90.0	90.0	30.0	30.0		30.0	30.0	15.0
Total Split (%)	11.1%	66.7%		66.7%	66.7%	66.7%	22.2%	22.2%		22.2%	22.2%	11.1%
Maximum Green (s)	10.1	83.0		83.0	83.0	83.0	23.7	23.7		23.9	23.9	10.1
Yellow Time (s)	3.0	5.2		5.2	5.2	5.2	3.2	3.2		4.3	4.3	3.0
All-Red Time (s)	1.9	1.8		1.8	1.8	1.8	3.1	3.1		1.8	1.8	1.9
Lost Time Adjust (s)	0.1	-2.0		-2.0	-2.0	-2.0		-1.3			-1.1	0.1
Total Lost Time (s)	5.0	5.0		5.0	5.0	5.0		5.0			5.0	5.0
Lead/Lag	Lead				Lag	Lag						Lead
Lead-Lag Optimize?	Yes				Yes	Yes						Yes
Vehicle Extension (s)	2.0	6.0		6.0	6.0	6.0	2.0	2.0		2.0	2.0	2.0
Minimum Gap (s)	2.0	3.4		3.4	3.4	3.4	2.0	2.0		2.0	2.0	2.0
Time Before Reduce (s)	0.0	15.0		15.0	15.0	15.0	0.0	0.0		0.0	0.0	0.0
Time To Reduce (s)	0.0	45.0		45.0	45.0	45.0	0.0	0.0		0.0	0.0	0.0
Recall Mode	None	Min		Min	Min	Min	None	None		None	None	None
Act Effct Green (s)	26.5	26.5		26.5	20.4	20.4		15.0			15.0	27.6
Actuated g/C Ratio	0.51	0.51		0.51	0.39	0.39		0.29			0.29	0.53
v/c Ratio	0.04	0.22		0.01	0.43	0.46		0.03			0.53	0.03
Control Delay	6.8	7.9		6.8	16.2	17.2		16.4			23.4	9.0
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0			0.0	0.0
Total Delay	6.8	7.9		6.8	16.2	17.2		16.4			23.4	9.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	A	A		A	B	B		B			C	A
Approach Delay		7.8			16.6			16.4			21.9	
Approach LOS		A			B			B			C	
Queue Length 50th (ft)	3	31		1	83	76		3			58	4
Queue Length 95th (ft)	11	71		4	162	154		14			130	16
Internal Link Dist (ft)		1023			787			956			987	
Turn Bay Length (ft)	200			100		150						150
Base Capacity (vph)	584	1857		1170	1863	1583		812			685	939
Starvation Cap Reductn	0	0		0	0	0		0			0	0
Spillback Cap Reductn	0	0		0	0	0		0			0	0
Storage Cap Reductn	0	0		0	0	0		0			0	0
Reduced v/c Ratio	0.03	0.11		0.00	0.17	0.18		0.01			0.30	0.03

Intersection Summary

Area Type: Other
 Cycle Length: 135
 Actuated Cycle Length: 52.1
 Natural Cycle: 50
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.53
 Intersection Signal Delay: 15.9
 Intersection Capacity Utilization 40.2%
 Analysis Period (min) 15

Intersection LOS: B
 ICU Level of Service A

Splits and Phases: 1: Vicious Fishes Brewery Driveway/Humie Olive Road & Old US Highway 1



Lanes, Volumes, Timings

2025 No-Build AM

1: Vicious Fishes Brewery Driveway/Humie Olive Road & Old US Highway 1

03/09/2021

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	259	328	4	4	201	849	4	4	5	469	4	121
Future Volume (vph)	259	328	4	4	201	849	4	4	5	469	4	121
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		0	100		150	0		0	0		150
Storage Lanes	1		0	1		1	0		0	0		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.998				0.850		0.942				0.850
Flt Protected	0.950			0.950				0.986			0.953	
Satd. Flow (prot)	1770	1859	0	1770	1863	1583	0	1730	0	0	1775	1583
Flt Permitted	0.566			0.519				0.536			0.718	
Satd. Flow (perm)	1054	1859	0	967	1863	1583	0	941	0	0	1337	1583
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		55			55			25			45	
Link Distance (ft)		1103			867			1036			1067	
Travel Time (s)		13.7			10.7			28.3			16.2	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	288	364	4	4	223	943	4	4	6	521	4	134
Shared Lane Traffic (%)												
Lane Group Flow (vph)	288	368	0	4	223	943	0	14	0	0	525	134
Turn Type	pm+pt	NA		D.Pm	NA	Perm	Perm	NA		Perm	NA	pm+ov
Protected Phases	5	2			6			8			4	5
Permitted Phases	2			2		6	8			4		4
Detector Phase	5	2		2	6	6	8	8		4	4	5
Switch Phase												
Minimum Initial (s)	7.0	14.0		14.0	14.0	14.0	7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	11.9	21.0		21.0	21.0	21.0	13.3	13.3		13.1	13.1	11.9
Total Split (s)	15.0	90.0		90.0	90.0	90.0	30.0	30.0		30.0	30.0	15.0
Total Split (%)	11.1%	66.7%		66.7%	66.7%	66.7%	22.2%	22.2%		22.2%	22.2%	11.1%
Maximum Green (s)	10.1	83.0		83.0	83.0	83.0	23.7	23.7		23.9	23.9	10.1
Yellow Time (s)	3.0	5.2		5.2	5.2	5.2	3.2	3.2		4.3	4.3	3.0
All-Red Time (s)	1.9	1.8		1.8	1.8	1.8	3.1	3.1		1.8	1.8	1.9
Lost Time Adjust (s)	0.1	-2.0		-2.0	-2.0	-2.0		-1.3			-1.1	0.1
Total Lost Time (s)	5.0	5.0		5.0	5.0	5.0		5.0			5.0	5.0
Lead/Lag	Lead				Lag	Lag						Lead
Lead-Lag Optimize?	Yes				Yes	Yes						Yes
Vehicle Extension (s)	2.0	6.0		6.0	6.0	6.0	2.0	2.0		2.0	2.0	2.0
Minimum Gap (s)	2.0	3.4		3.4	3.4	3.4	2.0	2.0		2.0	2.0	2.0
Time Before Reduce (s)	0.0	15.0		15.0	15.0	15.0	0.0	0.0		0.0	0.0	0.0
Time To Reduce (s)	0.0	45.0		45.0	45.0	45.0	0.0	0.0		0.0	0.0	0.0
Recall Mode	None	Min		Min	Min	Min	None	None		None	None	None
Act Effct Green (s)	95.1	95.1		95.1	80.0	80.0		25.1			25.1	40.2
Actuated g/C Ratio	0.73	0.73		0.73	0.61	0.61		0.19			0.19	0.31
v/c Ratio	0.35	0.27		0.01	0.19	0.97		0.08			2.04	0.27
Control Delay	6.8	6.4		4.5	11.3	46.9		47.0			509.4	37.6
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0			0.0	0.0
Total Delay	6.8	6.4		4.5	11.3	46.9		47.0			509.4	37.6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	A	A		A	B	D		D			F	D
Approach Delay		6.6			40.0			47.0			413.5	
Approach LOS		A			D			D			F	
Queue Length 50th (ft)	69	92		1	77	714		10			~730	91
Queue Length 95th (ft)	100	130		4	116	#1066		31			#954	149
Internal Link Dist (ft)		1023			787			956			987	
Turn Bay Length (ft)	200			100		150						150
Base Capacity (vph)	824	1434		746	1221	1037		181			257	488
Starvation Cap Reductn	0	0		0	0	0		0			0	0
Spillback Cap Reductn	0	0		0	0	0		0			0	0
Storage Cap Reductn	0	0		0	0	0		0			0	0
Reduced v/c Ratio	0.35	0.26		0.01	0.18	0.91		0.08			2.04	0.27

Intersection Summary

Area Type: Other
 Cycle Length: 135
 Actuated Cycle Length: 130.3
 Natural Cycle: 150
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 2.04
 Intersection Signal Delay: 129.7
 Intersection Capacity Utilization 85.3%
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 1: Vicious Fishes Brewery Driveway/Humie Olive Road & Old US Highway 1



Lanes, Volumes, Timings

2025 No-Build PM

1: Vicious Fishes Brewery Driveway/Humie Olive Road & Old US Highway 1

03/09/2021

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	117	214	4	4	332	353	4	4	4	278	4	148
Future Volume (vph)	117	214	4	4	332	353	4	4	4	278	4	148
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		0	100		150	0		0	0		150
Storage Lanes	1		0	1		1	0		0	0		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.998				0.850		0.955				0.850
Flt Protected	0.950			0.950				0.984			0.953	
Satd. Flow (prot)	1770	1859	0	1770	1863	1583	0	1750	0	0	1775	1583
Flt Permitted	0.295			0.601				0.906			0.721	
Satd. Flow (perm)	550	1859	0	1120	1863	1583	0	1612	0	0	1343	1583
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		55			55			25			45	
Link Distance (ft)		1103			867			1036			1067	
Travel Time (s)		13.7			10.7			28.3			16.2	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	130	238	4	4	369	392	4	4	4	309	4	164
Shared Lane Traffic (%)												
Lane Group Flow (vph)	130	242	0	4	369	392	0	12	0	0	313	164
Turn Type	pm+pt	NA		D.Pm	NA	Perm	Perm	NA		Perm	NA	pm+ov
Protected Phases	5	2			6			8			4	5
Permitted Phases	2			2		6	8			4		4
Detector Phase	5	2		2	6	6	8	8		4	4	5
Switch Phase												
Minimum Initial (s)	7.0	14.0		14.0	14.0	14.0	7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	11.9	21.0		21.0	21.0	21.0	13.3	13.3		13.1	13.1	11.9
Total Split (s)	15.0	90.0		90.0	90.0	90.0	30.0	30.0		30.0	30.0	15.0
Total Split (%)	11.1%	66.7%		66.7%	66.7%	66.7%	22.2%	22.2%		22.2%	22.2%	11.1%
Maximum Green (s)	10.1	83.0		83.0	83.0	83.0	23.7	23.7		23.9	23.9	10.1
Yellow Time (s)	3.0	5.2		5.2	5.2	5.2	3.2	3.2		4.3	4.3	3.0
All-Red Time (s)	1.9	1.8		1.8	1.8	1.8	3.1	3.1		1.8	1.8	1.9
Lost Time Adjust (s)	0.1	-2.0		-2.0	-2.0	-2.0		-1.3			-1.1	0.1
Total Lost Time (s)	5.0	5.0		5.0	5.0	5.0		5.0			5.0	5.0
Lead/Lag	Lead				Lag	Lag						Lead
Lead-Lag Optimize?	Yes				Yes	Yes						Yes
Vehicle Extension (s)	2.0	6.0		6.0	6.0	6.0	2.0	2.0		2.0	2.0	2.0
Minimum Gap (s)	2.0	3.4		3.4	3.4	3.4	2.0	2.0		2.0	2.0	2.0
Time Before Reduce (s)	0.0	15.0		15.0	15.0	15.0	0.0	0.0		0.0	0.0	0.0
Time To Reduce (s)	0.0	45.0		45.0	45.0	45.0	0.0	0.0		0.0	0.0	0.0
Recall Mode	None	Min		Min	Min	Min	None	None		None	None	None
Act Effct Green (s)	38.4	38.4		38.4	24.7	24.7		25.2			25.2	38.9
Actuated g/C Ratio	0.52	0.52		0.52	0.34	0.34		0.34			0.34	0.53
v/c Ratio	0.30	0.25		0.01	0.59	0.74		0.02			0.68	0.20
Control Delay	10.6	10.1		7.8	24.4	30.8		19.6			32.4	11.4
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0			0.0	0.0
Total Delay	10.6	10.1		7.8	24.4	30.8		19.6			32.4	11.4

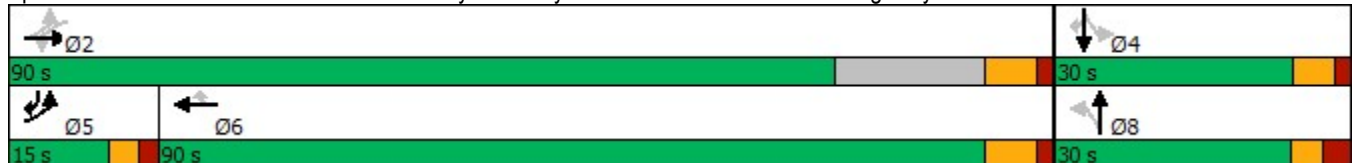
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	B	B		A	C	C		B			C	B
Approach Delay		10.2			27.6			19.6			25.1	
Approach LOS		B			C			B			C	
Queue Length 50th (ft)	28	56		1	137	155		4			122	37
Queue Length 95th (ft)	53	93		5	219	254		17			#280	86
Internal Link Dist (ft)		1023			787			956			987	
Turn Bay Length (ft)	200			100		150						150
Base Capacity (vph)	453	1859		1120	1863	1583		552			460	867
Starvation Cap Reductn	0	0		0	0	0		0			0	0
Spillback Cap Reductn	0	0		0	0	0		0			0	0
Storage Cap Reductn	0	0		0	0	0		0			0	0
Reduced v/c Ratio	0.29	0.13		0.00	0.20	0.25		0.02			0.68	0.19

Intersection Summary

Area Type: Other
 Cycle Length: 135
 Actuated Cycle Length: 73.7
 Natural Cycle: 60
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.74
 Intersection Signal Delay: 22.8
 Intersection Capacity Utilization 58.7%
 Analysis Period (min) 15
 Intersection LOS: C
 ICU Level of Service B

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 1: Vicious Fishes Brewery Driveway/Humie Olive Road & Old US Highway 1



Lanes, Volumes, Timings

2025 Build AM

1: Vicious Fishes Brewery Driveway/Humie Olive Road & Old US Highway 1

03/09/2021

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	323	313	4	4	231	849	4	4	5	474	4	128
Future Volume (vph)	323	313	4	4	231	849	4	4	5	474	4	128
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		0	100		150	0		0	0		150
Storage Lanes	1		0	1		1	0		0	0		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.998				0.850		0.942				0.850
Flt Protected	0.950			0.950				0.986			0.953	
Satd. Flow (prot)	1770	1859	0	1770	1863	1583	0	1730	0	0	1775	1583
Flt Permitted	0.540			0.530				0.535			0.718	
Satd. Flow (perm)	1006	1859	0	987	1863	1583	0	939	0	0	1337	1583
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		55			55			25			45	
Link Distance (ft)		1103			593			1036			1016	
Travel Time (s)		13.7			7.4			28.3			15.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	359	348	4	4	257	943	4	4	6	527	4	142
Shared Lane Traffic (%)												
Lane Group Flow (vph)	359	352	0	4	257	943	0	14	0	0	531	142
Turn Type	pm+pt	NA		D.Pm	NA	Perm	Perm	NA		Perm	NA	pm+ov
Protected Phases	5	2			6			8			4	5
Permitted Phases	2			2		6	8			4		4
Detector Phase	5	2		2	6	6	8	8		4	4	5
Switch Phase												
Minimum Initial (s)	7.0	14.0		14.0	14.0	14.0	7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	11.9	21.0		21.0	21.0	21.0	13.3	13.3		13.1	13.1	11.9
Total Split (s)	15.0	90.0		90.0	90.0	90.0	30.0	30.0		30.0	30.0	15.0
Total Split (%)	11.1%	66.7%		66.7%	66.7%	66.7%	22.2%	22.2%		22.2%	22.2%	11.1%
Maximum Green (s)	10.1	83.0		83.0	83.0	83.0	23.7	23.7		23.9	23.9	10.1
Yellow Time (s)	3.0	5.2		5.2	5.2	5.2	3.2	3.2		4.3	4.3	3.0
All-Red Time (s)	1.9	1.8		1.8	1.8	1.8	3.1	3.1		1.8	1.8	1.9
Lost Time Adjust (s)	0.1	-2.0		-2.0	-2.0	-2.0		-1.3			-1.1	0.1
Total Lost Time (s)	5.0	5.0		5.0	5.0	5.0		5.0			5.0	5.0
Lead/Lag	Lead				Lag	Lag						Lead
Lead-Lag Optimize?	Yes				Yes	Yes						Yes
Vehicle Extension (s)	2.0	6.0		6.0	6.0	6.0	2.0	2.0		2.0	2.0	2.0
Minimum Gap (s)	2.0	3.4		3.4	3.4	3.4	2.0	2.0		2.0	2.0	2.0
Time Before Reduce (s)	0.0	15.0		15.0	15.0	15.0	0.0	0.0		0.0	0.0	0.0
Time To Reduce (s)	0.0	45.0		45.0	45.0	45.0	0.0	0.0		0.0	0.0	0.0
Recall Mode	None	Min		Min	Min	Min	None	None		None	None	None
Act Effct Green (s)	95.4	95.4		95.4	80.4	80.4		25.1			25.1	40.2
Actuated g/C Ratio	0.73	0.73		0.73	0.62	0.62		0.19			0.19	0.31
v/c Ratio	0.45	0.26		0.01	0.22	0.97		0.08			2.07	0.29
Control Delay	7.8	6.3		4.5	11.6	46.5		47.0			521.7	38.0
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0			0.0	0.0
Total Delay	7.8	6.3		4.5	11.6	46.5		47.0			521.7	38.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	A	A		A	B	D		D			F	D
Approach Delay		7.1			38.9			47.0			419.6	
Approach LOS		A			D			D			F	
Queue Length 50th (ft)	91	87		1	91	714		10			~741	96
Queue Length 95th (ft)	128	123		4	134	#1066		31			#965	157
Internal Link Dist (ft)		1023			513			956			936	
Turn Bay Length (ft)	200			100		150						150
Base Capacity (vph)	793	1430		759	1218	1034		180			257	487
Starvation Cap Reductn	0	0		0	0	0		0			0	0
Spillback Cap Reductn	0	0		0	0	0		0			0	0
Storage Cap Reductn	0	0		0	0	0		0			0	0
Reduced v/c Ratio	0.45	0.25		0.01	0.21	0.91		0.08			2.07	0.29

Intersection Summary

Area Type: Other
 Cycle Length: 135
 Actuated Cycle Length: 130.6
 Natural Cycle: 150
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 2.07
 Intersection Signal Delay: 128.7
 Intersection Capacity Utilization 88.8%
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 1: Vicious Fishes Brewery Driveway/Humie Olive Road & Old US Highway 1



Lanes, Volumes, Timings

2025 Build PM

1: Vicious Fishes Brewery Driveway/Humie Olive Road & Old US Highway 1

03/09/2021

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	170	202	4	4	360	353	4	4	4	284	4	155
Future Volume (vph)	170	202	4	4	360	353	4	4	4	284	4	155
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		0	100		150	0		0	0		150
Storage Lanes	1		0	1		1	0		0	0		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.997				0.850		0.955				0.850
Flt Protected	0.950			0.950				0.984			0.953	
Satd. Flow (prot)	1770	1857	0	1770	1863	1583	0	1750	0	0	1775	1583
Flt Permitted	0.262			0.615				0.905			0.720	
Satd. Flow (perm)	488	1857	0	1146	1863	1583	0	1610	0	0	1341	1583
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		55			55			25			45	
Link Distance (ft)		1103			593			1036			1016	
Travel Time (s)		13.7			7.4			28.3			15.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	189	224	4	4	400	392	4	4	4	316	4	172
Shared Lane Traffic (%)												
Lane Group Flow (vph)	189	228	0	4	400	392	0	12	0	0	320	172
Turn Type	pm+pt	NA		D.Pm	NA	Perm	Perm	NA		Perm	NA	pm+ov
Protected Phases	5	2			6			8			4	5
Permitted Phases	2			2		6	8			4		4
Detector Phase	5	2		2	6	6	8	8		4	4	5
Switch Phase												
Minimum Initial (s)	7.0	14.0		14.0	14.0	14.0	7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	11.9	21.0		21.0	21.0	21.0	13.3	13.3		13.1	13.1	11.9
Total Split (s)	15.0	90.0		90.0	90.0	90.0	30.0	30.0		30.0	30.0	15.0
Total Split (%)	11.1%	66.7%		66.7%	66.7%	66.7%	22.2%	22.2%		22.2%	22.2%	11.1%
Maximum Green (s)	10.1	83.0		83.0	83.0	83.0	23.7	23.7		23.9	23.9	10.1
Yellow Time (s)	3.0	5.2		5.2	5.2	5.2	3.2	3.2		4.3	4.3	3.0
All-Red Time (s)	1.9	1.8		1.8	1.8	1.8	3.1	3.1		1.8	1.8	1.9
Lost Time Adjust (s)	0.1	-2.0		-2.0	-2.0	-2.0		-1.3			-1.1	0.1
Total Lost Time (s)	5.0	5.0		5.0	5.0	5.0		5.0			5.0	5.0
Lead/Lag	Lead				Lag	Lag						Lead
Lead-Lag Optimize?	Yes				Yes	Yes						Yes
Vehicle Extension (s)	2.0	6.0		6.0	6.0	6.0	2.0	2.0		2.0	2.0	2.0
Minimum Gap (s)	2.0	3.4		3.4	3.4	3.4	2.0	2.0		2.0	2.0	2.0
Time Before Reduce (s)	0.0	15.0		15.0	15.0	15.0	0.0	0.0		0.0	0.0	0.0
Time To Reduce (s)	0.0	45.0		45.0	45.0	45.0	0.0	0.0		0.0	0.0	0.0
Recall Mode	None	Min		Min	Min	Min	None	None		None	None	None
Act Effct Green (s)	39.6	39.6		39.6	25.2	25.2		25.2			25.2	39.6
Actuated g/C Ratio	0.53	0.53		0.53	0.34	0.34		0.34			0.34	0.53
v/c Ratio	0.45	0.23		0.01	0.64	0.74		0.02			0.71	0.21
Control Delay	12.5	9.8		7.8	25.8	30.7		20.0			34.5	11.6
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0			0.0	0.0
Total Delay	12.5	9.8		7.8	25.8	30.7		20.0			34.5	11.6

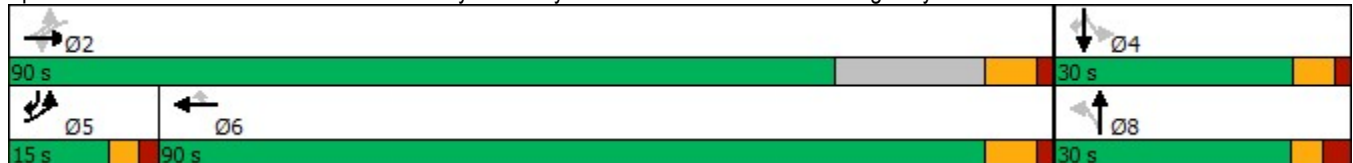
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	B	A		A	C	C		B			C	B
Approach Delay		11.0			28.1			20.0			26.5	
Approach LOS		B			C			B			C	
Queue Length 50th (ft)	43	52		1	156	159		4			130	40
Queue Length 95th (ft)	74	87		5	241	254		17			#292	91
Internal Link Dist (ft)		1023			513			956			936	
Turn Bay Length (ft)	200			100		150						150
Base Capacity (vph)	430	1857		1146	1863	1583		541			451	852
Starvation Cap Reductn	0	0		0	0	0		0			0	0
Spillback Cap Reductn	0	0		0	0	0		0			0	0
Storage Cap Reductn	0	0		0	0	0		0			0	0
Reduced v/c Ratio	0.44	0.12		0.00	0.21	0.25		0.02			0.71	0.20

Intersection Summary

Area Type: Other
 Cycle Length: 135
 Actuated Cycle Length: 74.9
 Natural Cycle: 60
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.74
 Intersection Signal Delay: 23.4
 Intersection Capacity Utilization 63.5%
 Analysis Period (min) 15
 Intersection LOS: C
 ICU Level of Service B

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 1: Vicious Fishes Brewery Driveway/Humie Olive Road & Old US Highway 1



APPENDIX F

CAPACITY ANALYSIS CALCULATIONS

HOLLAND ROAD

&

OLD US HIGHWAY 1

Intersection

Int Delay, s/veh 1.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		4	1		4	
Traffic Vol, veh/h	12	472	320	25	43	9
Future Vol, veh/h	12	472	320	25	43	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	13	524	356	28	48	10

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	384	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.12	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.218	-	-
Pot Cap-1 Maneuver	1174	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1174	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	18.3
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1174	-	-	-	328
HCM Lane V/C Ratio	0.011	-	-	-	0.176
HCM Control Delay (s)	8.1	0	-	-	18.3
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.6

Intersection

Int Delay, s/veh 1.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	24	342	523	51	39	19
Future Vol, veh/h	24	342	523	51	39	19
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	27	380	581	57	43	21

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	638	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.12	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.218	-	-
Pot Cap-1 Maneuver	946	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	946	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0.6	0	20.7
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	946	-	-	-	293
HCM Lane V/C Ratio	0.028	-	-	-	0.22
HCM Control Delay (s)	8.9	0	-	-	20.7
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	0.8

Intersection

Int Delay, s/veh	8.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↖	↗		↘	
Traffic Vol, veh/h	17	784	1036	29	50	16
Future Vol, veh/h	17	784	1036	29	50	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	19	871	1151	32	56	18

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	1183	0	-	0	2076 1167
Stage 1	-	-	-	-	1167 -
Stage 2	-	-	-	-	909 -
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	590	-	-	-	59 236
Stage 1	-	-	-	-	296 -
Stage 2	-	-	-	-	393 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	590	-	-	-	~ 55 236
Mov Cap-2 Maneuver	-	-	-	-	~ 55 -
Stage 1	-	-	-	-	278 -
Stage 2	-	-	-	-	393 -

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	236.8
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	590	-	-	-	68
HCM Lane V/C Ratio	0.032	-	-	-	1.078
HCM Control Delay (s)	11.3	0	-	-	236.8
HCM Lane LOS	B	A	-	-	F
HCM 95th %tile Q(veh)	0.1	-	-	-	5.6

Notes

~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection

Int Delay, s/veh 2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		4	1		1	
Traffic Vol, veh/h	28	466	664	60	46	22
Future Vol, veh/h	28	466	664	60	46	22
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	31	518	738	67	51	24

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	805	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.12	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.218	-	-
Pot Cap-1 Maneuver	819	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	819	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0.5	0	34.9
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	819	-	-	-	194
HCM Lane V/C Ratio	0.038	-	-	-	0.389
HCM Control Delay (s)	9.6	0	-	-	34.9
HCM Lane LOS	A	A	-	-	D
HCM 95th %tile Q(veh)	0.1	-	-	-	1.7

Intersection

Int Delay, s/veh 81.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		4	1		4	
Traffic Vol, veh/h	17	774	1096	39	136	16
Future Vol, veh/h	17	774	1096	39	136	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	19	860	1218	43	151	18

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	1261	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.12	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.218	-	-
Pot Cap-1 Maneuver	551	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	551	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	\$ 1118.7
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	551	-	-	-	54
HCM Lane V/C Ratio	0.034	-	-	-	3.128
HCM Control Delay (s)	11.8	0	-	-	\$ 1118.7
HCM Lane LOS	B	A	-	-	F
HCM 95th %tile Q(veh)	0.1	-	-	-	17.9

Notes

~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection

Int Delay, s/veh 10.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		4	1		4	
Traffic Vol, veh/h	28	460	718	83	109	22
Future Vol, veh/h	28	460	718	83	109	22
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	31	511	798	92	121	24

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	890	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.12	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.218	-	-
Pot Cap-1 Maneuver	761	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	761	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0.6	0	108.9
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	761	-	-	-	158
HCM Lane V/C Ratio	0.041	-	-	-	0.921
HCM Control Delay (s)	9.9	0	-	-	108.9
HCM Lane LOS	A	A	-	-	F
HCM 95th %tile Q(veh)	0.1	-	-	-	6.7

Intersection

Int Delay, s/veh	67.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↙	↑	↘		↙	↘
Traffic Vol, veh/h	17	774	1096	39	136	16
Future Vol, veh/h	17	774	1096	39	136	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	75	-	-	-	0	200
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	19	860	1218	43	151	18

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	1261	0	-	0	2138 1240
Stage 1	-	-	-	-	1240 -
Stage 2	-	-	-	-	898 -
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	551	-	-	-	~ 54 214
Stage 1	-	-	-	-	273 -
Stage 2	-	-	-	-	398 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	551	-	-	-	~ 52 214
Mov Cap-2 Maneuver	-	-	-	-	~ 52 -
Stage 1	-	-	-	-	264 -
Stage 2	-	-	-	-	398 -

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	\$ 921.3
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	551	-	-	-	52	214
HCM Lane V/C Ratio	0.034	-	-	-	2.906	0.083
HCM Control Delay (s)	11.8	-	-	-	\$ 1026.9	23.3
HCM Lane LOS	B	-	-	-	F	C
HCM 95th %tile Q(veh)	0.1	-	-	-	15.9	0.3

Notes

~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection

Int Delay, s/veh 7.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↘	↑	↗		↘	↗
Traffic Vol, veh/h	28	460	718	83	109	22
Future Vol, veh/h	28	460	718	83	109	22
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	75	-	-	-	0	200
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	31	511	798	92	121	24

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	890	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.12	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.218	-	-
Pot Cap-1 Maneuver	761	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	761	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0.6	0	82.7
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	761	-	-	-	145	363
HCM Lane V/C Ratio	0.041	-	-	-	0.835	0.067
HCM Control Delay (s)	9.9	-	-	-	96.2	15.6
HCM Lane LOS	A	-	-	-	F	C
HCM 95th %tile Q(veh)	0.1	-	-	-	5.4	0.2

APPENDIX G

CAPACITY ANALYSIS CALCULATIONS

FRIENSHIP ROAD

&

OLD US HIGHWAY 1

Intersection

Int Delay, s/veh 2.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	480	35	31	308	37	78
Future Vol, veh/h	480	35	31	308	37	78
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	533	39	34	342	41	87

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	572
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.12
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.218
Pot Cap-1 Maneuver	-	-	1001
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1001
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.8	17.8
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	407	-	-	1001	-
HCM Lane V/C Ratio	0.314	-	-	0.034	-
HCM Control Delay (s)	17.8	-	-	8.7	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	1.3	-	-	0.1	-

Intersection

Int Delay, s/veh 3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	325	56	62	509	65	39
Future Vol, veh/h	325	56	62	509	65	39
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	361	62	69	566	72	43

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	423
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.12
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.218
Pot Cap-1 Maneuver	-	-	1136
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1136
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.9	25.6
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	288	-	-	1136	-
HCM Lane V/C Ratio	0.401	-	-	0.061	-
HCM Control Delay (s)	25.6	-	-	8.4	0
HCM Lane LOS	D	-	-	A	A
HCM 95th %tile Q(veh)	1.9	-	-	0.2	-

Intersection

Int Delay, s/veh	7					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔		↔	↑	↔	↔
Traffic Vol, veh/h	791	44	36	1017	48	91
Future Vol, veh/h	791	44	36	1017	48	91
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	150	-	100	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	879	49	40	1130	53	101

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	928
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.12
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.218
Pot Cap-1 Maneuver	-	-	737
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	737
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	99.5
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	53	335	-	-	737	-
HCM Lane V/C Ratio	1.006	0.302	-	-	0.054	-
HCM Control Delay (s)	249.7	20.3	-	-	10.2	-
HCM Lane LOS	F	C	-	-	B	-
HCM 95th %tile Q(veh)	4.5	1.2	-	-	0.2	-

Notes

~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection

Int Delay, s/veh	5.8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔		↔	↑	↔	↔
Traffic Vol, veh/h	427	85	73	632	91	46
Future Vol, veh/h	427	85	73	632	91	46
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	150	-	100	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	474	94	81	702	101	51

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	568	0	1385 521
Stage 1	-	-	-	-	521 -
Stage 2	-	-	-	-	864 -
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	-	-	1004	-	158 555
Stage 1	-	-	-	-	596 -
Stage 2	-	-	-	-	413 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1004	-	145 555
Mov Cap-2 Maneuver	-	-	-	-	145 -
Stage 1	-	-	-	-	596 -
Stage 2	-	-	-	-	380 -

Approach	EB	WB	NB
HCM Control Delay, s	0	0.9	52.7
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	145	555	-	-	1004	-
HCM Lane V/C Ratio	0.697	0.092	-	-	0.081	-
HCM Control Delay (s)	73.2	12.1	-	-	8.9	-
HCM Lane LOS	F	B	-	-	A	-
HCM 95th %tile Q(veh)	4	0.3	-	-	0.3	-

Intersection

Int Delay, s/veh	18.9					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔		↔	↑	↔	↔
Traffic Vol, veh/h	853	58	36	1067	68	91
Future Vol, veh/h	853	58	36	1067	68	91
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	150	-	100	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	948	64	40	1186	76	101

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	1012	0	2246 980
Stage 1	-	-	-	-	980 -
Stage 2	-	-	-	-	1266 -
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	-	-	685	-	~ 46 303
Stage 1	-	-	-	-	364 -
Stage 2	-	-	-	-	265 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	685	-	~ 43 303
Mov Cap-2 Maneuver	-	-	-	-	~ 43 -
Stage 1	-	-	-	-	364 -
Stage 2	-	-	-	-	250 -

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	255.7
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	43	303	-	-	685	-
HCM Lane V/C Ratio	1.757	0.334	-	-	0.058	-
HCM Control Delay (s)	\$ 567.6	22.7	-	-	10.6	-
HCM Lane LOS	F	C	-	-	B	-
HCM 95th %tile Q(veh)	7.7	1.4	-	-	0.2	-

Notes

~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection

Int Delay, s/veh	11.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	470	99	73	693	107	46
Future Vol, veh/h	470	99	73	693	107	46
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	150	-	100	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	522	110	81	770	119	51

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	632	0	1509 577
Stage 1	-	-	-	-	577 -
Stage 2	-	-	-	-	932 -
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	-	-	951	-	133 516
Stage 1	-	-	-	-	562 -
Stage 2	-	-	-	-	383 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	951	-	122 516
Mov Cap-2 Maneuver	-	-	-	-	122 -
Stage 1	-	-	-	-	562 -
Stage 2	-	-	-	-	350 -

Approach	EB	WB	NB
HCM Control Delay, s	0	0.9	103.6
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	122	516	-	-	951	-
HCM Lane V/C Ratio	0.974	0.099	-	-	0.085	-
HCM Control Delay (s)	142.7	12.7	-	-	9.1	-
HCM Lane LOS	F	B	-	-	A	-
HCM 95th %tile Q(veh)	6.5	0.3	-	-	0.3	-

APPENDIX H

CAPACITY ANALYSIS CALCULATIONS

HOLLAND ROAD

&

KELLY ROAD

Intersection

Int Delay, s/veh 2.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
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Lane Configurations						
Traffic Vol, veh/h	72	12	6	132	98	37
Future Vol, veh/h	72	12	6	132	98	37
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	80	13	7	147	109	41

Major/Minor	Minor2	Major1	Major2
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Conflicting Flow All	291	130	150	0	-	0
Stage 1	130	-	-	-	-	-
Stage 2	161	-	-	-	-	-
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	700	920	1431	-	-	-
Stage 1	896	-	-	-	-	-
Stage 2	868	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	697	920	1431	-	-	-
Mov Cap-2 Maneuver	697	-	-	-	-	-
Stage 1	892	-	-	-	-	-
Stage 2	868	-	-	-	-	-

Approach	EB	NB	SB
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HCM Control Delay, s	10.7	0.3	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
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Capacity (veh/h)	1431	-	722	-	-
HCM Lane V/C Ratio	0.005	-	0.129	-	-
HCM Control Delay (s)	7.5	0	10.7	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.4	-	-

Intersection

Int Delay, s/veh 2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	66	7	8	145	161	75
Future Vol, veh/h	66	7	8	145	161	75
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	73	8	9	161	179	83

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	400	221	262	0	-	0
Stage 1	221	-	-	-	-	-
Stage 2	179	-	-	-	-	-
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	606	819	1302	-	-	-
Stage 1	816	-	-	-	-	-
Stage 2	852	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	601	819	1302	-	-	-
Mov Cap-2 Maneuver	601	-	-	-	-	-
Stage 1	809	-	-	-	-	-
Stage 2	852	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.7	0.4	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1302	-	617	-	-
HCM Lane V/C Ratio	0.007	-	0.131	-	-
HCM Control Delay (s)	7.8	0	11.7	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.5	-	-

Intersection

Int Delay, s/veh 2.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
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Lane Configurations						
Traffic Vol, veh/h	84	14	7	154	115	43
Future Vol, veh/h	84	14	7	154	115	43
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
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	93	16	8	171	128	48

Major/Minor	Minor2	Major1	Major2
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Conflicting Flow All	339	152	176	0	-	0
Stage 1	152	-	-	-	-	-
Stage 2	187	-	-	-	-	-
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	657	894	1400	-	-	-
Stage 1	876	-	-	-	-	-
Stage 2	845	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	653	894	1400	-	-	-
Mov Cap-2 Maneuver	653	-	-	-	-	-
Stage 1	871	-	-	-	-	-
Stage 2	845	-	-	-	-	-

Approach	EB	NB	SB
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HCM Control Delay, s	11.3	0.3	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
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Capacity (veh/h)	1400	-	679	-	-
HCM Lane V/C Ratio	0.006	-	0.16	-	-
HCM Control Delay (s)	7.6	0	11.3	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.6	-	-

Intersection

Int Delay, s/veh	2.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	77	8	9	170	188	88
Future Vol, veh/h	77	8	9	170	188	88
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	86	9	10	189	209	98

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	467	258	307	0	0
Stage 1	258	-	-	-	-
Stage 2	209	-	-	-	-
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	554	781	1254	-	-
Stage 1	785	-	-	-	-
Stage 2	826	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	549	781	1254	-	-
Mov Cap-2 Maneuver	549	-	-	-	-
Stage 1	778	-	-	-	-
Stage 2	826	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.6	0.4	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1254	-	565	-	-
HCM Lane V/C Ratio	0.008	-	0.167	-	-
HCM Control Delay (s)	7.9	0	12.6	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.6	-	-

Intersection

Int Delay, s/veh	3.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	119	14	7	154	115	78
Future Vol, veh/h	119	14	7	154	115	78
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	132	16	8	171	128	87

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	359	172	215	0	0
Stage 1	172	-	-	-	-
Stage 2	187	-	-	-	-
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	640	872	1355	-	-
Stage 1	858	-	-	-	-
Stage 2	845	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	636	872	1355	-	-
Mov Cap-2 Maneuver	636	-	-	-	-
Stage 1	852	-	-	-	-
Stage 2	845	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.1	0.3	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1355	-	655	-	-
HCM Lane V/C Ratio	0.006	-	0.226	-	-
HCM Control Delay (s)	7.7	0	12.1	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.9	-	-

Intersection

Int Delay, s/veh	2.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	104	8	9	170	188	124
Future Vol, veh/h	104	8	9	170	188	124
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	116	9	10	189	209	138

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	487	278	347	0	0
Stage 1	278	-	-	-	-
Stage 2	209	-	-	-	-
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	540	761	1212	-	-
Stage 1	769	-	-	-	-
Stage 2	826	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	535	761	1212	-	-
Mov Cap-2 Maneuver	535	-	-	-	-
Stage 1	762	-	-	-	-
Stage 2	826	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.5	0.4	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1212	-	547	-	-
HCM Lane V/C Ratio	0.008	-	0.228	-	-
HCM Control Delay (s)	8	0	13.5	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.9	-	-

APPENDIX I

CAPACITY ANALYSIS CALCULATIONS

HOLLAND ROAD

&

SITE DRIVE 1

Intersection

Int Delay, s/veh	3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	48	8	15	41	106	4
Future Vol, veh/h	48	8	15	41	106	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	53	9	17	46	118	4

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	200	120	122	0	0
Stage 1	120	-	-	-	-
Stage 2	80	-	-	-	-
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	789	931	1465	-	-
Stage 1	905	-	-	-	-
Stage 2	943	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	780	931	1465	-	-
Mov Cap-2 Maneuver	780	-	-	-	-
Stage 1	894	-	-	-	-
Stage 2	943	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.9	2	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1465	-	799	-	-
HCM Lane V/C Ratio	0.011	-	0.078	-	-
HCM Control Delay (s)	7.5	0	9.9	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.3	-	-

Intersection

Int Delay, s/veh	2.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	40	4	29	82	103	9
Future Vol, veh/h	40	4	29	82	103	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	44	4	32	91	114	10

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	274	119	124	0	0
Stage 1	119	-	-	-	-
Stage 2	155	-	-	-	-
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	716	933	1463	-	-
Stage 1	906	-	-	-	-
Stage 2	873	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	700	933	1463	-	-
Mov Cap-2 Maneuver	700	-	-	-	-
Stage 1	885	-	-	-	-
Stage 2	873	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.4	2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1463	-	716	-	-
HCM Lane V/C Ratio	0.022	-	0.068	-	-
HCM Control Delay (s)	7.5	0	10.4	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.2	-	-

APPENDIX J

CAPACITY ANALYSIS CALCULATIONS

HOLLAND ROAD

&

SITE DRIVE 2

Intersection

Int Delay, s/veh 3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑	↘	
Traffic Vol, veh/h	0	83	0	56	69	45
Future Vol, veh/h	0	83	0	56	69	45
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	92	0	62	77	50

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	-	102	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	6.22	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	3.318	-
Pot Cap-1 Maneuver	0	953	0
Stage 1	0	-	0
Stage 2	0	-	0
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	953	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.2	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	953	-	-
HCM Lane V/C Ratio	-	0.097	-	-
HCM Control Delay (s)	-	9.2	-	-
HCM Lane LOS	-	A	-	-
HCM 95th %tile Q(veh)	-	0.3	-	-

Intersection

Int Delay, s/veh 2.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑	↘	
Traffic Vol, veh/h	0	67	0	111	64	43
Future Vol, veh/h	0	67	0	111	64	43
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	74	0	123	71	48

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	-	95	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	6.22	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	3.318	-
Pot Cap-1 Maneuver	0	962	0
Stage 1	0	-	0
Stage 2	0	-	0
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	962	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.1	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT EBLn1	SBT	SBR
Capacity (veh/h)	- 962	-	-
HCM Lane V/C Ratio	- 0.077	-	-
HCM Control Delay (s)	- 9.1	-	-
HCM Lane LOS	- A	-	-
HCM 95th %tile Q(veh)	- 0.3	-	-

APPENDIX K

CAPACITY ANALYSIS CALCULATIONS

OLD US HIGHWAY 1

&

SITE DRIVE 3

Intersection

Int Delay, s/veh 0.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑			↑
Traffic Vol, veh/h	0	791	1021	91	0	61
Future Vol, veh/h	0	791	1021	91	0	61
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	879	1134	101	0	68

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	-	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	-
Pot Cap-1 Maneuver	0	-	0
Stage 1	0	-	0
Stage 2	0	-	0
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	27.1
HCM LOS			D

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	230
HCM Lane V/C Ratio	-	-	-	0.295
HCM Control Delay (s)	-	-	-	27.1
HCM Lane LOS	-	-	-	D
HCM 95th %tile Q(veh)	-	-	-	1.2

Intersection

Int Delay, s/veh 1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑			↑
Traffic Vol, veh/h	0	488	631	109	0	83
Future Vol, veh/h	0	488	631	109	0	83
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	542	701	121	0	92

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	-	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	-
Pot Cap-1 Maneuver	0	-	0
Stage 1	0	-	0
Stage 2	0	-	0
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	16.5
HCM LOS			C

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	405
HCM Lane V/C Ratio	-	-	-	0.228
HCM Control Delay (s)	-	-	-	16.5
HCM Lane LOS	-	-	-	C
HCM 95th %tile Q(veh)	-	-	-	0.9

APPENDIX L

CAPACITY ANALYSIS CALCULATIONS

HUMIE OLIVE ROAD

&

SITE DRIVE 4

Intersection

Int Delay, s/veh	8.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↘	↗	↑	↗	↘	↑
Traffic Vol, veh/h	48	56	1097	75	89	554
Future Vol, veh/h	48	56	1097	75	89	554
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	150	0	-	75	175	-
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	53	62	1219	83	99	616

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	2033	1219	0	0	1302
Stage 1	1219	-	-	-	-
Stage 2	814	-	-	-	-
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	63	220	-	-	532
Stage 1	279	-	-	-	-
Stage 2	436	-	-	-	-
Platoon blocked, %					
Mov Cap-1 Maneuver	~ 51	220	-	-	532
Mov Cap-2 Maneuver	~ 51	-	-	-	-
Stage 1	279	-	-	-	-
Stage 2	355	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	138.8	0	1.8
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	51	220	532
HCM Lane V/C Ratio	-	-	1.046	0.283	0.186
HCM Control Delay (s)	-	-	268.4	27.7	13.3
HCM Lane LOS	-	-	F	D	B
HCM 95th %tile Q(veh)	-	-	4.6	1.1	0.7

Notes

~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection

Int Delay, s/veh	2.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↘	↗	↑	↗	↘	↑
Traffic Vol, veh/h	42	43	465	58	77	397
Future Vol, veh/h	42	43	465	58	77	397
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	150	0	-	75	175	-
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	47	48	517	64	86	441

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	1130	517	0	0	581
Stage 1	517	-	-	-	-
Stage 2	613	-	-	-	-
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	225	558	-	-	993
Stage 1	598	-	-	-	-
Stage 2	541	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	205	558	-	-	993
Mov Cap-2 Maneuver	205	-	-	-	-
Stage 1	598	-	-	-	-
Stage 2	494	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	19.8	0	1.5
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	205	558	993	-
HCM Lane V/C Ratio	-	-	0.228	0.086	0.086	-
HCM Control Delay (s)	-	-	27.7	12.1	9	-
HCM Lane LOS	-	-	D	B	A	-
HCM 95th %tile Q(veh)	-	-	0.8	0.3	0.3	-

APPENDIX M

SIMTRAFFIC QUEUING REPORTS

Queuing and Blocking Report
2021 Existing AM

03/09/2021

Intersection: 1: Vicious Fishes Brewery Driveway/Humie Olive Road & Old US Highway 1

Movement	EB	EB	WB	WB	NB	SB	SB
Directions Served	L	TR	T	R	LTR	LT	R
Maximum Queue (ft)	29	54	67	108	29	101	46
Average Queue (ft)	2	11	20	28	9	55	8
95th Queue (ft)	11	34	53	70	30	98	28
Link Distance (ft)		1012	822		998	984	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	200			150			150
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 2: Old US Highway 1 & Holland Road

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	53	38
Average Queue (ft)	5	11
95th Queue (ft)	25	28
Link Distance (ft)	822	3940
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 3: Friendship Road & Old US Highway 1

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (ft)	31	83
Average Queue (ft)	7	33
95th Queue (ft)	26	54
Link Distance (ft)	1016	1068
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 4: Kelly Road & Holland Road

Movement	EB
Directions Served	LR
Maximum Queue (ft)	51
Average Queue (ft)	28
95th Queue (ft)	45
Link Distance (ft)	1934
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 0

Queuing and Blocking Report
2021 Existing PM

03/09/2021

Intersection: 1: Vicious Fishes Brewery Driveway/Humie Olive Road & Old US Highway 1

Movement	EB	EB	WB	WB	NB	SB	SB
Directions Served	L	TR	T	R	LTR	LT	R
Maximum Queue (ft)	29	50	86	106	29	117	26
Average Queue (ft)	2	3	38	42	10	54	12
95th Queue (ft)	13	19	79	88	32	97	31
Link Distance (ft)		1012	822		998	984	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	200			150			150
Storage Blk Time (%)			0				
Queuing Penalty (veh)			0				

Intersection: 2: Old US Highway 1 & Holland Road

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	53	57
Average Queue (ft)	13	19
95th Queue (ft)	45	44
Link Distance (ft)	822	3940
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 3: Friendship Road & Old US Highway 1

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (ft)	158	131
Average Queue (ft)	21	41
95th Queue (ft)	80	89
Link Distance (ft)	1016	1068
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 4: Kelly Road & Holland Road

Movement	EB
Directions Served	LR
Maximum Queue (ft)	74
Average Queue (ft)	28
95th Queue (ft)	53
Link Distance (ft)	1934
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 0

Queuing and Blocking Report
2025 No-Build AM

03/09/2021

Intersection: 1: Vicious Fishes Brewery Driveway/Humie Olive Road & Old US Highway 1

Movement	EB	EB	WB	WB	WB	NB	SB	SB
Directions Served	L	TR	L	T	R	LTR	LT	R
Maximum Queue (ft)	300	1051	26	838	250	50	1036	250
Average Queue (ft)	278	760	2	784	249	14	1002	160
95th Queue (ft)	357	1373	12	944	252	41	1017	341
Link Distance (ft)		1012		822		998	984	
Upstream Blk Time (%)		47		14			95	
Queuing Penalty (veh)		0		151			0	
Storage Bay Dist (ft)	200		100		150			150
Storage Blk Time (%)	77	0		0	44		83	
Queuing Penalty (veh)	256	0		0	90		101	

Intersection: 2: Old US Highway 1 & Holland Road

Movement	EB	WB	SB
Directions Served	LT	TR	LR
Maximum Queue (ft)	330	129	746
Average Queue (ft)	32	99	392
95th Queue (ft)	156	172	677
Link Distance (ft)	822	112	3938
Upstream Blk Time (%)		17	
Queuing Penalty (veh)		182	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 3: Friendship Road & Old US Highway 1

Movement	EB	WB	WB	NB	NB
Directions Served	TR	L	T	L	R
Maximum Queue (ft)	30	250	1039	199	1097
Average Queue (ft)	2	74	423	133	438
95th Queue (ft)	13	237	965	245	1135
Link Distance (ft)	112		1005		1063
Upstream Blk Time (%)			5		19
Queuing Penalty (veh)			0		0
Storage Bay Dist (ft)		150		100	
Storage Blk Time (%)			27	63	0
Queuing Penalty (veh)			10	57	0

Intersection: 4: Kelly Road & Holland Road

Movement	EB
Directions Served	LR
Maximum Queue (ft)	52
Average Queue (ft)	31
95th Queue (ft)	44
Link Distance (ft)	1934
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 847

Intersection: 1: Vicious Fishes Brewery Driveway/Humie Olive Road & Old US Highway 1

Movement	EB	EB	WB	WB	WB	NB	SB	SB
Directions Served	L	TR	L	T	R	LTR	LT	R
Maximum Queue (ft)	85	122	21	177	204	29	230	114
Average Queue (ft)	25	21	1	83	94	10	106	59
95th Queue (ft)	62	67	9	148	165	31	182	110
Link Distance (ft)		1012		822		998	984	
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	200		100		150			150
Storage Blk Time (%)				4	2		1	
Queuing Penalty (veh)				13	6		2	

Intersection: 2: Old US Highway 1 & Holland Road

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	356	58
Average Queue (ft)	84	23
95th Queue (ft)	271	52
Link Distance (ft)	822	3938
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 3: Friendship Road & Old US Highway 1

Movement	EB	WB	NB	NB
Directions Served	TR	L	L	R
Maximum Queue (ft)	22	52	172	114
Average Queue (ft)	1	25	61	24
95th Queue (ft)	10	54	123	57
Link Distance (ft)	112			1063
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)		150	100	
Storage Blk Time (%)			6	0
Queuing Penalty (veh)			3	0

Intersection: 4: Kelly Road & Holland Road

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	94	26
Average Queue (ft)	30	2
95th Queue (ft)	56	12
Link Distance (ft)	1934	991
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 25

Intersection: 1: Vicious Fishes Brewery Driveway/Humie Olive Road & Old US Highway 1

Movement	EB	EB	WB	WB	WB	NB	SB	SB
Directions Served	L	TR	L	T	R	LTR	LT	R
Maximum Queue (ft)	300	1078	26	556	250	69	503	250
Average Queue (ft)	300	1032	1	500	249	15	493	172
95th Queue (ft)	300	1048	9	602	255	43	499	353
Link Distance (ft)		1014		538		998	488	
Upstream Blk Time (%)		94		5			66	
Queuing Penalty (veh)		0		52			397	
Storage Bay Dist (ft)	200		100		150			150
Storage Blk Time (%)	95			1	41		83	
Queuing Penalty (veh)	300			12	96		106	

Intersection: 2: Old US Highway 1 & Holland Road

Movement	EB	WB	SB
Directions Served	LT	TR	LR
Maximum Queue (ft)	229	121	276
Average Queue (ft)	74	10	273
95th Queue (ft)	233	60	275
Link Distance (ft)	225	115	272
Upstream Blk Time (%)	7	0	92
Queuing Penalty (veh)	55	4	140
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 3: Friendship Road & Old US Highway 1

Movement	WB	WB	NB	NB
Directions Served	L	T	L	R
Maximum Queue (ft)	51	140	200	261
Average Queue (ft)	9	6	115	84
95th Queue (ft)	33	50	194	209
Link Distance (ft)		1005		1064
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	150		100	
Storage Blk Time (%)		0	46	2
Queuing Penalty (veh)		0	42	1

Intersection: 4: Kelly Road & Holland Road

Movement	EB
Directions Served	LR
Maximum Queue (ft)	54
Average Queue (ft)	32
95th Queue (ft)	52
Link Distance (ft)	1934
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 5: Holland Road & Site Drive 1

Movement	EB	SB
Directions Served	LR	TR
Maximum Queue (ft)	588	1388
Average Queue (ft)	159	329
95th Queue (ft)	463	1034
Link Distance (ft)	986	2997
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 6: Holland Road & Site Drive 2

Movement	EB	SB
Directions Served	R	TR
Maximum Queue (ft)	992	549
Average Queue (ft)	647	474
95th Queue (ft)	1200	667
Link Distance (ft)	977	538
Upstream Blk Time (%)	32	49
Queuing Penalty (veh)	0	56
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 7: Old US Highway 1 & Site Drive 3

Movement	EB	WB	WB	SB
Directions Served	T	T	R	R
Maximum Queue (ft)	549	231	175	345
Average Queue (ft)	62	74	6	174
95th Queue (ft)	306	204	58	371
Link Distance (ft)	538	225		935
Upstream Blk Time (%)	2	1		
Queuing Penalty (veh)	12	10		
Storage Bay Dist (ft)			75	
Storage Blk Time (%)		7		
Queuing Penalty (veh)		7		

Intersection: 8: Humie Olive Road & Site Drive 4

Movement	WB	WB	NB	NB	SB	SB
Directions Served	L	R	T	R	L	T
Maximum Queue (ft)	247	968	20	22	275	1058
Average Queue (ft)	210	607	1	1	178	935
95th Queue (ft)	296	1190	7	10	375	1295
Link Distance (ft)		953	488			1006
Upstream Blk Time (%)		40				73
Queuing Penalty (veh)		0				0
Storage Bay Dist (ft)	150			75	175	
Storage Blk Time (%)	88					81
Queuing Penalty (veh)	49					72

Network Summary

Network wide Queuing Penalty: 1412

Intersection: 1: Vicious Fishes Brewery Driveway/Humie Olive Road & Old US Highway 1

Movement	EB	EB	WB	WB	WB	NB	SB	SB
Directions Served	L	TR	L	T	R	LTR	LT	R
Maximum Queue (ft)	93	56	26	275	219	50	213	112
Average Queue (ft)	42	11	1	100	106	8	106	58
95th Queue (ft)	73	39	9	193	184	30	172	101
Link Distance (ft)		1015		538		998	484	
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	200		100		150			150
Storage Blk Time (%)				4	4		2	
Queuing Penalty (veh)				15	14		3	

Intersection: 2: Old US Highway 1 & Holland Road

Movement	EB	WB	SB
Directions Served	LT	TR	LR
Maximum Queue (ft)	226	22	279
Average Queue (ft)	43	2	201
95th Queue (ft)	133	13	348
Link Distance (ft)	225	115	272
Upstream Blk Time (%)	1		37
Queuing Penalty (veh)	3		48
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 3: Friendship Road & Old US Highway 1

Movement	EB	WB	NB	NB
Directions Served	TR	L	L	R
Maximum Queue (ft)	22	53	190	171
Average Queue (ft)	1	27	84	38
95th Queue (ft)	7	51	166	105
Link Distance (ft)	115			1064
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)		150	100	
Storage Blk Time (%)			25	0
Queuing Penalty (veh)			11	0

Intersection: 4: Kelly Road & Holland Road

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	74	27
Average Queue (ft)	34	3
95th Queue (ft)	61	16
Link Distance (ft)	1934	991
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 5: Holland Road & Site Drive 1

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	48	26
Average Queue (ft)	25	3
95th Queue (ft)	46	18
Link Distance (ft)	986	538
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 6: Holland Road & Site Drive 2

Movement	EB	SB
Directions Served	R	TR
Maximum Queue (ft)	175	117
Average Queue (ft)	68	18
95th Queue (ft)	143	64
Link Distance (ft)	977	538
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 7: Old US Highway 1 & Site Drive 3

Movement	SB
Directions Served	R
Maximum Queue (ft)	43
Average Queue (ft)	26
95th Queue (ft)	42
Link Distance (ft)	935
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 8: Humie Olive Road & Site Drive 4

Movement	WB	WB	NB	SB
Directions Served	L	R	R	L
Maximum Queue (ft)	52	50	22	53
Average Queue (ft)	24	24	1	18
95th Queue (ft)	52	49	10	48
Link Distance (ft)		953		
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	150		75	175
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 94

Queuing and Blocking Report
 2025 Build AM with Improvements

03/10/2021

Intersection: 1: Vicious Fishes Brewery Driveway/Humie Olive Road & Old US Highway 1

Movement	EB	EB	WB	WB	WB	NB	SB	SB
Directions Served	L	TR	L	T	R	LTR	LT	R
Maximum Queue (ft)	300	1078	27	555	250	50	504	250
Average Queue (ft)	300	1033	2	541	248	10	436	127
95th Queue (ft)	300	1048	13	548	254	35	577	299
Link Distance (ft)		1014		538		998	488	
Upstream Blk Time (%)		95		34			18	
Queuing Penalty (veh)		0		367			107	
Storage Bay Dist (ft)	200		100		150			150
Storage Blk Time (%)	96			9	55		57	
Queuing Penalty (veh)	304			73	129		73	

Intersection: 2: Old US Highway 1 & Holland Road

Movement	EB	WB	SB	SB
Directions Served	L	TR	L	R
Maximum Queue (ft)	50	125	280	200
Average Queue (ft)	9	110	274	31
95th Queue (ft)	33	160	280	144
Link Distance (ft)		112	269	
Upstream Blk Time (%)		26	94	
Queuing Penalty (veh)		290	142	
Storage Bay Dist (ft)	75			200
Storage Blk Time (%)			100	1
Queuing Penalty (veh)			16	1

Intersection: 3: Friendship Road & Old US Highway 1

Movement	EB	WB	WB	NB	NB
Directions Served	TR	L	T	L	R
Maximum Queue (ft)	22	249	1044	200	1064
Average Queue (ft)	1	42	744	182	793
95th Queue (ft)	7	177	1421	221	1408
Link Distance (ft)	112		1005		1063
Upstream Blk Time (%)			33		57
Queuing Penalty (veh)			0		0
Storage Bay Dist (ft)		150		100	
Storage Blk Time (%)			33		93
Queuing Penalty (veh)			12		85

Intersection: 4: Kelly Road & Holland Road

Movement	EB
Directions Served	LR
Maximum Queue (ft)	74
Average Queue (ft)	31
95th Queue (ft)	51
Link Distance (ft)	1934
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 5: Holland Road & Site Drive 1

Movement	EB	SB
Directions Served	LR	TR
Maximum Queue (ft)	696	1366
Average Queue (ft)	212	318
95th Queue (ft)	584	1009
Link Distance (ft)	986	2997
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 6: Holland Road & Site Drive 2

Movement	EB	SB
Directions Served	R	TR
Maximum Queue (ft)	992	541
Average Queue (ft)	663	464
95th Queue (ft)	1199	666
Link Distance (ft)	977	538
Upstream Blk Time (%)	27	54
Queuing Penalty (veh)	0	61
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 7: Old US Highway 1 & Site Drive 3

Movement	WB	WB	SB
Directions Served	T	R	R
Maximum Queue (ft)	231	175	952
Average Queue (ft)	217	70	612
95th Queue (ft)	254	210	1179
Link Distance (ft)	214		937
Upstream Blk Time (%)	25		40
Queuing Penalty (veh)	281		0
Storage Bay Dist (ft)		75	
Storage Blk Time (%)	44		
Queuing Penalty (veh)	40		

Intersection: 8: Humie Olive Road & Site Drive 4

Movement	WB	WB	NB	SB	SB
Directions Served	L	R	R	L	T
Maximum Queue (ft)	113	106	41	275	547
Average Queue (ft)	51	37	1	75	163
95th Queue (ft)	108	71	14	213	460
Link Distance (ft)		953			1006
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	150		75	175	
Storage Blk Time (%)					15
Queuing Penalty (veh)					14

Network Summary

Network wide Queuing Penalty: 1995

Queuing and Blocking Report
 2025 Build PM with Improvements

03/11/2021

Intersection: 1: Vicious Fishes Brewery Driveway/Humie Olive Road & Old US Highway 1

Movement	EB	EB	WB	WB	NB	SB	SB
Directions Served	L	TR	T	R	LTR	LT	R
Maximum Queue (ft)	118	56	218	246	50	244	116
Average Queue (ft)	44	14	107	100	9	116	54
95th Queue (ft)	91	42	182	175	35	207	104
Link Distance (ft)		1015	538		998	484	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	200			150			150
Storage Blk Time (%)			9	1		6	
Queuing Penalty (veh)			31	5		9	

Intersection: 2: Old US Highway 1 & Holland Road

Movement	EB	SB	SB
Directions Served	L	L	R
Maximum Queue (ft)	52	278	269
Average Queue (ft)	20	205	48
95th Queue (ft)	48	334	211
Link Distance (ft)		269	
Upstream Blk Time (%)		28	0
Queuing Penalty (veh)		37	0
Storage Bay Dist (ft)	75		200
Storage Blk Time (%)		51	
Queuing Penalty (veh)		11	

Intersection: 3: Friendship Road & Old US Highway 1

Movement	EB	WB	NB	NB
Directions Served	TR	L	L	R
Maximum Queue (ft)	22	53	200	304
Average Queue (ft)	1	27	97	68
95th Queue (ft)	10	49	201	218
Link Distance (ft)	112			1063
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)		150	100	
Storage Blk Time (%)			27	0
Queuing Penalty (veh)			12	0

Intersection: 4: Kelly Road & Holland Road

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	99	27
Average Queue (ft)	34	3
95th Queue (ft)	62	16
Link Distance (ft)	1934	991
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 5: Holland Road & Site Drive 1

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	48	25
Average Queue (ft)	25	1
95th Queue (ft)	46	8
Link Distance (ft)	986	538
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 6: Holland Road & Site Drive 2

Movement	EB	SB
Directions Served	R	TR
Maximum Queue (ft)	113	115
Average Queue (ft)	42	14
95th Queue (ft)	80	63
Link Distance (ft)	977	538
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 7: Old US Highway 1 & Site Drive 3

Movement	SB
Directions Served	R
Maximum Queue (ft)	52
Average Queue (ft)	35
95th Queue (ft)	52
Link Distance (ft)	937
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 8: Humie Olive Road & Site Drive 4

Movement	WB	WB	NB	SB
Directions Served	L	R	R	L
Maximum Queue (ft)	70	50	22	64
Average Queue (ft)	27	23	1	25
95th Queue (ft)	62	48	7	59
Link Distance (ft)		953		
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	150		75	175
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 106

PLANNING BOARD REPORT TO TOWN COUNCIL
Rezoning Case: 21CZ14 Holland Road Mixed Use Assembly PUD

Planning Board Meeting Date: February 14, 2022



Report Requirements:

Per NCGS §160D-604(b), all proposed amendments to the zoning ordinance or zoning map shall be submitted to the Planning Board for review and comment. If no written report is received from the Planning Board within 30 days of referral of the amendment to the Planning Board, the Town Council may act on the amendment without the Planning Board report. The Town Council is not bound by the recommendations, if any, of the Planning Board.

Per NCGS §160D-604(d), the Planning Board shall advise and comment on whether the proposed action 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: 28.68
PIN(s): 720998487, 0730091779, 0730095707, 0731004075, 0731001087, 0731003359, 0720992587
Current Zoning: Rural Residential (RR)
Proposed Zoning: Planned Unit Development-Conditional Zoning (PUD-CZ)
Current 2045 Land Use Map: Medium Density Residential, Medium/High Density Residential, and Commercial Services
If rezoned as proposed, the 2045 Land Use Map Designation will change to: Medium Density Residential and Commercial Services
Town Limits: ETJ

Applicable Officially Adopted Plans:

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

2045 Land Use Map
 Consistent Inconsistent Reason: _____

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

Consistent Inconsistent Reason: _____

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

Consistent Inconsistent Reason: _____

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

Consistent Inconsistent Reason: _____

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

Consistent Inconsistent Reason: _____

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

Consistent Inconsistent Reason: _____

PLANNING BOARD REPORT TO TOWN COUNCIL

Rezoning Case: 21CZ14 Holland Road Mixed Use Assembly PUD

Planning Board Meeting Date: February 14, 2022



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 of rezoning with 3 additional condition
Introduced by Planning Board member: Ryan Akers
Seconded by Planning Board member: Keith Braswell

- 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:

See attached document "21CZ14 Additional Conditions Offered by Applicant".

- Denial:* the project is not consistent with all applicable officially adopted plans and/or the applicable legislative considerations as noted above.

With 5 Planning Board Member(s) voting "aye"

With 2 Planning Board Member(s) voting "no"

Reasons for dissenting votes:

Sherman - 1) affect on Wake County schools, 2) all conditions added should have been addressed prior to coming to Planning Board, and 3) concerns regarding affordable housing.

Boyle - 1) staff recommendation for denial because affordable housing conditions not included early enough for Housing staff to review; not comfortable supporting rezoning without that review.

This report reflects the recommendation of the Planning Board, this the 14th day of February 2022.

Attest:

Reginald Skinner, Planning Board Chair

Dianne Khin

Digitally signed by Dianne Khin
Date: 2022.02.14 18:44:09
-05'00'

Dianne Khin, Director of Planning and
Community Development

21CZ14 Additional Conditions Offered by Applicant:

1. There shall be a 30' type E buffer along Old HWY 1. For residential development along Holland Road, there shall be a 30' Type B Buffer. For nonresidential development along Holland Road, there shall be a 30' Type E buffer.
2. A signal warrant analysis for the intersection of Holland Road and Old HWY 1 shall be performed by the applicant prior to the platting of the 100th lot platted within the development and developer shall install a traffic signal if permitted by NCDOT at that time. If a traffic signal is not permitted by NCDOT at that time then developer shall have no future responsibility for a traffic signal.
3. Development of the property shall include two (2) homes at 100% of the Wake County AMI.



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

**PUBLIC NOTIFICATION
OF PUBLIC HEARINGS**
CONDITIONAL ZONING #21CZ14
Holland Road Mixed Use Assembly PUD

Pursuant to the provisions of North Carolina General Statutes §1600-602 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 of the Town of Apex. The purpose of these hearings is to consider the following:

Applicant: Geno Ray, LG Investments, Inc.
Authorized Agent: Jeff Roach, Peak Engineering & Design, PLLC.
Property Addresses: 2236 Old US 1 Hwy; 1001 & 1004, & 1005 Red Cardinal Lane; 3104 & 3116 Holland Road; 7528 Humie Olive Road
Acreage: ±28.68 acres
Property Identification Numbers (PINs): 0720998487, 0730091779, 0730095707, 0731004075, 0731001087, 0731003359, 0720992587
Current 2045 Land Use Map Designation: Medium Density Residential, Medium/High Density Residential, and Commercial Services
If rezoned as proposed, the 2045 Land Use Map Designation will change to: Medium Density Residential and Commercial Services
Existing Zoning of Properties: Rural Residential (RR)
Proposed Zoning of Properties: Planned Unit Development-Conditional Zoning (PUD-CZ)

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

Planning Board Public Hearing Date and Time: February 14, 2022 4:30 PM
You may attend the meeting in person or view the meeting through the Town's YouTube livestream at: <https://www.youtube.com/c/townofapexgov>. Please visit www.apexnc.org on the day of the meeting to confirm whether the meeting will be held in-person or remotely.

If you are unable to attend, you may provide a written statement by email to public_hearing@apexnc.org, or submit it to the clerk of the Planning Board, Jeri Pederson (73 Hunter Street or USPS mail - P.O. Box 250, Apex, NC 27502), at least two business days prior to the Planning Board vote. You must provide your name and address for the record. The written statements will be delivered to the Planning Board prior to their vote. Please include the Public Hearing name in the subject line.

In the event that the Planning Board meeting is held remotely or with at least one member attending virtually, written comments may be submitted up to 24 hours prior to the scheduled time of the meeting per NCGS §166A-19.24 according to the methods specified above. Virtual meetings may be viewed via the Town's YouTube livestream at <https://www.youtube.com/c/townofapexgov>.

A separate notice of the Town Council public hearing on this project will be mailed and posted in order to comply with State public notice requirements.

Vicinity Map:



Property owners, tenants, and neighborhood associations within 300 feet of the proposed conditional zoning have been sent this notice via first class mail. All interested parties may submit comments with respect to the application by the means specified above. In addition to the above map, the location of the property may be viewed online at <https://maps.zalophnc.gov/umaps>. The 2045 Land Use Map may be viewed online at www.apexnc.org/DocumentCenter/View/478. You may call 919-249-3426, Department of Planning and Community Development, with questions or for further information. To view the petition and related documents on-line: <https://www.apexnc.org/DocumentCenter/View/35534>.

Dianne F. Khin, AICP
Director of Planning and Community Development



TOWN OF APEX
PO BOX 250
APEX, NORTH CAROLINA 27502
TELÉFONO 919-249-3426

NOTIFICACIÓN PÚBLICA DE AUDIENCIAS PÚBLICAS
ORDENAMIENTO TERRITORIAL CONDICIONAL #21CZ14
Holland Road Mixed Use Assembly PUD (Desarrollo de
Unidad Planificada)

De conformidad con las disposiciones de los Estatutos Generales de Carolina del Norte §1600-602 y con la Sección 2.2.11 de la Ordenanza de Desarrollo Unificado (UDO) del ayuntamiento de Apex, por la presente se notifican las audiencias públicas ante la Junta de Planificación de Apex. El propósito de estas audiencias es considerar lo siguiente:

- Solicitante:** Geno Ray, LG Investments, Inc.
- Agente autorizado:** Jeff Roach, Peak Engineering & Design, PLLC.
- Dirección de las propiedades:** 2236 Old US 1 Hwy; 1001 & 1004, & 1005 Red Cardinal Lane; 3104 & 3116 Holland Road; 7528 Humie Olive Road
- Superficie:** ±28.68 acres
- Números de identificación de las propiedades:** 0720998487, 0730091779, 0730095707, 0731004075, 0731001087, 0731003359, 0720992587
- Designación actual en el Mapa de Uso Territorial para 2045:** Medium Density Residential, Medium/High Density Residential, and Commercial Services
- Si se aprueba el cambio de zonificación como se propone, el Mapa de Uso Territorial para el 2045 cambiará a:** Medium Density Residential and Commercial Services
- Ordenamiento territorial existente de las propiedades:** Rural Residential (RR)
- Ordenamiento territorial propuesto para las propiedades:** Planned Unit Development-Conditional Zoning (PUD-CZ)

Lugar de la audiencia pública: Ayuntamiento de Apex
Cámara del Consejo, 2º piso
73 Hunter Street, Apex, Carolina del Norte

Fecha y hora de la audiencia pública de la Junta de Planificación: 14 de febrero de 2022 4:30 P.M.
Puede asistir a la reunión de manera presencial o seguir la transmisión en directo por YouTube a través del siguiente enlace: <https://www.youtube.com/c/townofapexgov>. Por favor visite www.apexnc.org el día de la reunión para confirmar si la reunión se llevará a cabo de manera presencial o remotamente.

Si no puede asistir, puede enviar una declaración escrita por correo electrónico a public_hearing@apexnc.org, o presentarla a la secretaria de la Junta de Planificación, Jeri Pederson (73 Hunter Street o por correo USPS a P.O. Box 250, Apex, NC 27502), al menos dos días hábiles antes de la votación de la Junta de Planificación. Debe proporcionar su nombre y dirección para que conste en el registro. Las declaraciones escritas se entregarán a la Junta de Planificación antes de la votación. No olvide incluir el nombre de la audiencia pública en el asunto.

En caso de que la reunión de la Junta de Planificación se lleve a cabo remotamente o que por lo menos uno de los miembros asista virtualmente, se permite presentar comentarios por escrito hasta 24 horas antes de la hora programada de la reunión según los estatutos de Carolina del Norte NCGS §166A-19.24 siguiendo los métodos especificados anteriormente. Las reuniones virtuales se pueden seguir en la transmisión en directo por YouTube a través del siguiente enlace: <https://www.youtube.com/c/townofapexgov>.

De conformidad con los requisitos estatales de notificaciones públicas, se enviará por correo y se publicará por separado una notificación de la audiencia pública del Consejo Municipal sobre este proyecto.

Mapa de las inmediaciones:



Los propietarios, inquilinos y asociaciones de vecinos en un radio de 300 pies del Ordenamiento Territorial Condicional propuesto han recibido esta notificación por correo postal de primera clase. Todas las partes interesadas pueden presentar comentarios sobre la solicitud a través de los medios especificados anteriormente. La ubicación de la propiedad también puede verse aquí: <https://maps.zoninginfo.com/maps>. Puede ver el Mapa de Uso Territorial para 2045 aquí: www.apexnc.org/DocumentCenter/View/4278. Si tiene preguntas o desea obtener más información, puede comunicarse con el Departamento de Planificación y Desarrollo Comunitario al 919-249-3426. Puede ver la solicitud y otros documentos relacionados aquí: <https://www.apexnc.org/DocumentCenter/View/35534>.

Dianne F. Khin, AICP
Directora de Planificación y Desarrollo Comunitario



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

**PUBLIC NOTIFICATION
 OF PUBLIC HEARINGS**
 CONDITIONAL ZONING #21CZ14
 Holland Road Mixed Use Assembly PUD

Pursuant to the provisions of North Carolina General Statutes §160D-602 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 of the Town of Apex. The purpose of these hearings is to consider the following:

- Applicant:** Geno Ray, LG Investments, Inc.
- Authorized Agent:** Jeff Roach, Peak Engineering & Design, PLLC.
- Property Addresses:** 2236 Old US 1 Hwy; 1001 & 1004, & 1005 Red Cardinal Lane; 3104 & 3116 Holland Road; 7528 Humie Olive Road
- Acreage:** ±28.68 acres
- Property Identification Numbers (PINs):** 0720998487, 0730091779, 0730095707, 0731004075, 0731001087, 0731003359, 0720992587
- Current 2045 Land Use Map Designation:** Medium Density Residential, Medium/High Density Residential, and Commercial Services
- If rezoned as proposed, the 2045 Land Use Map Designation will change to:** Medium Density Residential and Commercial Services
- Existing Zoning of Properties:** Rural Residential (RR)
- Proposed Zoning of Properties:** Planned Unit Development-Conditional Zoning (PUD-CZ)

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

Planning Board Public Hearing Date and Time: February 14, 2022 4:30 PM

You may attend the meeting in person or view the meeting through the Town’s YouTube livestream at: <https://www.youtube.com/c/townofapexgov>. Please visit www.apexnc.org on the day of the meeting to confirm whether the meeting will be held in-person or remotely.

If you are unable to attend, you may provide a written statement by email to public.hearing@apexnc.org, or submit it to the clerk of the Planning Board, Jeri Pederson (73 Hunter Street or USPS mail - P.O. Box 250, Apex, NC 27502), at least two business days prior to the Planning Board vote. You must provide your name and address for the record. The written statements will be delivered to the Planning Board prior to their vote. Please include the Public Hearing name in the subject line.

In the event that the Planning Board meeting is held remotely or with at least one member attending virtually, written comments may be submitted up to 24 hours prior to the scheduled time of the meeting per NCGS §166A-19.24 according to the methods specified above. Virtual meetings may be viewed via the Town’s YouTube livestream at <https://www.youtube.com/c/townofapexgov>.

A separate notice of the Town Council public hearing on this project will be mailed and posted in order to comply with State public notice requirements.

Vicinity Map:



Property owners, tenants, and neighborhood associations within 300 feet of the proposed conditional zoning have been sent this notice via first class mail. All interested parties may submit comments with respect to the application by the means specified above. In addition to the above map, the location of the property may be viewed online at <https://maps.raleighnc.gov/imaps>. The 2045 Land Use Map may be viewed online at www.apexnc.org/DocumentCenter/View/478. You may call 919-249-3426, Department of Planning and Community Development, with questions or for further information. To view the petition and related documents on-line: <https://www.apexnc.org/DocumentCenter/View/35534>.

Dianne F. Khin, AICP
 Director of Planning and Community Development



TOWN OF APEX

PO BOX 250
APEX, NORTH CAROLINA 27502
TELÉFONO 919-249-3426

NOTIFICACIÓN PÚBLICA DE AUDIENCIAS PÚBLICAS

ORDENAMIENTO TERRITORIAL CONDICIONAL #21CZ14
Holland Road Mixed Use Assembly PUD (Desarrollo de
Unidad Planificada)

De conformidad con las disposiciones de los Estatutos Generales de Carolina del Norte §160D-602 y con la Sección 2.2.11 de la Ordenanza de Desarrollo Unificado (UDO) del ayuntamiento de Apex, por la presente se notifican las audiencias públicas ante la Junta de Planificación de Apex. El propósito de estas audiencias es considerar lo siguiente:

Solicitante: Geno Ray, LG Investments, Inc.

Agente autorizado: Jeff Roach, Peak Engineering & Design, PLLC.

Dirección de las propiedades: 2236 Old US 1 Hwy; 1001 & 1004, & 1005 Red Cardinal Lane; 3104 & 3116 Holland Road; 7528 Humie Olive Road

Superficie: ±28.68 acres

Números de identificación de las propiedades: 0720998487, 0730091779, 0730095707, 0731004075, 0731001087, 0731003359, 0720992587

Designación actual en el Mapa de Uso Territorial para 2045: Medium Density Residential, Medium/High Density Residential, and Commercial Services

Si se aprueba el cambio de zonificación como se propone, el Mapa de Uso Territorial para el 2045 cambiará a: Medium Density Residential and Commercial Services

Ordenamiento territorial existente de las propiedades: Rural Residential (RR)

Ordenamiento territorial propuesto para las propiedades: Planned Unit Development-Conditional Zoning (PUD-CZ)

Lugar de la audiencia pública: Ayuntamiento de Apex
Cámara del Consejo, 2º piso
73 Hunter Street, Apex, Carolina del Norte

Fecha y hora de la audiencia pública de la Junta de Planificación: 14 de febrero de 2022 4:30 P.M.

Puede asistir a la reunión de manera presencial o seguir la transmisión en directo por YouTube a través del siguiente enlace: <https://www.youtube.com/c/townofapexgov>. Por favor visite www.apexnc.org el día de la reunión para confirmar si la reunión se llevará a cabo de manera presencial o remotamente.

Si no puede asistir, puede enviar una declaración escrita por correo electrónico a public.hearing@apexnc.org, o presentarla a la secretaria de la Junta de Planificación, Jeri Pederson (73 Hunter Street o por correo USPS a P.O. Box 250, Apex, NC 27502), al menos dos días hábiles antes de la votación de la Junta de Planificación. Debe proporcionar su nombre y dirección para que conste en el registro. Las declaraciones escritas se entregarán a la Junta de Planificación antes de la votación. No olvide incluir el nombre de la audiencia pública en el asunto.

En caso de que la reunión de la Junta de Planificación se lleve a cabo remotamente o que por lo menos uno de los miembros asista virtualmente, se permite presentar comentarios por escrito hasta 24 horas antes de la hora programada de la reunión según los estatutos de Carolina del Norte NCGS §166A-19.24 siguiendo los métodos especificados anteriormente. Las reuniones virtuales se pueden seguir en la transmisión en directo por YouTube a través del siguiente enlace: <https://www.youtube.com/c/townofapexgov>.

De conformidad con los requisitos estatales de notificaciones públicas, se enviará por correo y se publicará por separado una notificación de la audiencia pública del Consejo Municipal sobre este proyecto.

Mapa de las inmediaciones:



Los propietarios, inquilinos y asociaciones de vecinos en un radio de 300 pies del Ordenamiento Territorial Condicional propuesto han recibido esta notificación por correo postal de primera clase. Todas las partes interesadas pueden presentar comentarios sobre la solicitud a través de los medios especificados anteriormente. La ubicación de la propiedad también puede verse aquí: <https://maps.raleighnc.gov/imaps>. Puede ver el Mapa de Uso Territorial para 2045 aquí: www.apexnc.org/DocumentCenter/View/478. Si tiene preguntas o desea obtener más información, puede comunicarse con el Departamento de Planificación y Desarrollo Comunitario al 919-249-3426. Puede ver la solicitud y otros documentos relacionados aquí: <https://www.apexnc.org/DocumentCenter/View/35534>.

Dianne F. Khin, AICP
Directora de Planificación y Desarrollo Comunitario

Fechas de publicación: 28 de enero - 14 de febrero de 2022



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: Conditional Zoning #21CZ14
Holland Road Mixed Use Assembly PUD
Project Location: 2236 Old US 1 HWY; 1001 & 1004, & 1005 Red Cardinal Lane; 3104 &
3116 Holland Road; 7528 Humie Olive Road
Applicant or Authorized Agent: Jeff Roach, PE
Firm: Peak Engineering & Design, PLLC

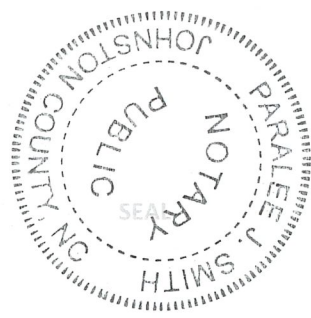
This is to certify that I, as Director of Planning and Community Development, mailed or caused to have mailed by first class postage for the above mentioned project on January 28, 2022, a notice containing the time and place, location, nature and scope of the application, where additional information may be obtained, and the opportunity for interested parties to be heard, to the property owners and tenants within 300' of the land subject to notification. I further certify that I relied on Wake County Tax Assessor information and the Town of Apex Master Address Repository provided to me by Town of Apex GIS Staff as to accuracy of the list and accuracy of mailing addresses of property owners and tenants within 300' of the land subject to notification.

1-28-2022
Date

Armand Bruce for Dianne Khin
Director of Planning and Community Development

STATE OF NORTH CAROLINA
COUNTY OF WAKE

Sworn and subscribed before me, Paralee J Smith, a Notary Public for the above
State and County, this the 28 day of January, 202 2.



Paralee J Smith
Notary Public

My Commission Expires: 9 / 12 / 2023



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

**PUBLIC NOTIFICATION
OF PUBLIC HEARINGS**
CONDITIONAL ZONING #21CZ14
Holland Road Mixed Use Assembly PUD

Pursuant to the provisions of North Carolina General Statutes §1600-602 and to the Town of Apex Unified Development Ordinance (UDO) Section 2.2.11, notice is hereby given of public hearings before the Town Council of the Town of Apex. The purpose of these hearings is to consider the following:

- Applicant:** Geno Ray, LG Investments, Inc.
- Authorized Agent:** Jeff Roach, Peak Engineering & Design, PLLC.
- Property Addresses:** 42236 Old US 1 Hwy; 1001 & 1004, & 1005 Red Cardinal Lane; 3104 & 3116 Holland Road; 7528 Humie Olive Road
- Acreage:** 128.68 acres
- Property Identification Numbers (PINs):** 0720998487, 0730091779, 0730095707, 0731004075, 0731001087, 0731003359, 0720992587
- Current 2045 Land Use Map Designation:** Medium Density Residential, Medium/High Density Residential, and Commercial Services
- If rezoned as proposed, the 2045 Land Use Map Designation will change to:** Medium Density Residential and Commercial Services
- Existing Zoning of Properties:** Rural Residential (RR)
- Proposed Zoning of Properties:** Planned Unit Development-Conditional Zoning (PUD-CZ)
- Public Hearing Location:** Apex Town Hall
Council Chamber, 2nd Floor
73 Hunter Street, Apex, North Carolina

Comments received prior to the Planning Board public hearing will not be provided to the Town Council. Separate comments for the Town Council public hearing must be provided by the deadline specified below.

Town Council Public Hearing Date and Time: March 8, 2022 6:00 PM

You may attend the meeting in person or view the meeting through the Town's YouTube livestream at: <https://www.youtube.com/c/townofapexgov>. Please visit www.apexnc.org on the day of the meeting to confirm whether the meeting will be held in-person or remotely.

If you are unable to attend, you may provide a written statement by email to public.hearing@apexnc.org, or submit it to the Deputy Town Clerk, Tesa Silver (73 Hunter Street or USPS mail - P.O. Box 250, Apex, NC 27502), at least two business days prior to the Town Council vote. You must provide your name and address for the record. The written statements will be delivered to the Town Council members prior to their vote. Please include the Public Hearing name in the subject line.

In the event that the Town Council meeting is held remotely or with at least one member attending virtually, written comments may be submitted up to 24 hours prior to the scheduled time of the meeting per NCGS §166A-19.24 according to the methods specified above. Virtual meetings may be viewed via the Town's YouTube livestream at <https://www.youtube.com/c/townofapexgov>.

Vicinity Map:



Property owners, tenants, and neighborhood associations within 300 feet of the proposed conditional zoning have been sent this notice via first class mail. All interested parties may submit comments with respect to the application by the means specified above. In addition to the above map, the location of the property may be viewed online at <https://maps.rain@hnc.gov/imagery>. The 2045 Land Use Map may be viewed online at www.apexnc.org/DocumentCenter/View/478. You may call 919-249-3426, Department of Planning and Community Development, with questions or for further information. To view the petition and related documents on-line: <https://www.apexnc.org/DocumentCenter/View/35534>

Dianne F. Khin, AICP
Director of Planning and Community Development



TOWN OF APEX
 PO BOX 250
 APEX, NORTH CAROLINA 27502
 TELEFONO 919-249-3426

NOTIFICACIÓN PÚBLICA DE AUDIENCIAS PÚBLICAS
 ORDENAMIENTO TERRITORIAL CONDICIONAL #21CZ14
 Holland Road Mixed Use Assembly PUD (Desarrollo de
 Unidad Planificada)

De conformidad con las disposiciones de los Estatutos Generales de Carolina del Norte §1600-602 y con la Sección 2.2.11 de la Ordenanza de Desarrollo Unificado (UDO) del ayuntamiento de Apex, por la presente se notifican las audiencias públicas ante el Consejo Municipal del Ayuntamiento de Apex. El propósito de estas audiencias es considerar lo siguiente:

Solicitante: Geno Ray, LG Investments, Inc.
Agente autorizado: Jeff Roach, Peak Engineering & Design, PLLC.
Dirección de las propiedades: 2236 Old US 1 Hwy; 1001 & 1004, & 1005 Red Cardinal Lane; 3104 & 3116 Holland Road; 7528 Humie Olive Road
Superficie: ±28.68 acres
Números de identificación de las propiedades: 0720998487, 0730091779, 0730095707, 0731004075, 0731001087, 0731003359, 0720992587
Designación actual en el Mapa de Uso Territorial para 2045: Medium Density Residential, Medium/High Density Residential, and Commercial Services
Si se aprueba el cambio de zonificación como se propone, el Mapa de Uso Territorial para el 2045 cambiará a: Medium Density Residential and Commercial Services
Ordenamiento territorial existente de las propiedades: Rural Residential (RR)
Ordenamiento territorial propuesto para las propiedades: Planned Unit Development-Conditional Zoning (PUD-CZ)

Lugar de la audiencia pública: Ayuntamiento de Apex
 Cámara del Consejo, 2º piso
 73 Hunter Street, Apex, Carolina del Norte

Los comentarios recibidos antes de la audiencia pública de la Junta de Planificación no se proporcionarán al Consejo Municipal. Los comentarios para la audiencia pública del Consejo Municipal deben presentarse por separado en el plazo especificado a continuación.

Fecha y hora de la audiencia pública del Consejo Municipal: 8 de marzo de 2022 6:00 P.M.

Puede asistir a la reunión de manera presencial o seguir la transmisión en directo por YouTube a través del siguiente enlace: <https://www.youtube.com/c/townofapexgov>. Por favor visite www.apexnc.org el día de la reunión para confirmar si la reunión se llevará a cabo de manera presencial o remotamente.

Si no puede asistir, puede enviar una declaración escrita por correo electrónico a public.hearing@apexnc.org, o presentarla a la secretaria municipal adjunta, Tessa Silver (73 Hunter Street o por correo USPS a P.O. Box 250, Apex, NC 27502), al menos dos días hábiles antes de la votación del Consejo Municipal. Debe proporcionar su nombre y dirección para que conste en el registro. Las declaraciones escritas se entregarán al Consejo Municipal antes de la votación. No olvide incluir el nombre de la audiencia pública en el asunto.

En caso de que la reunión del Consejo Municipal se lleve a cabo remotamente o que por lo menos uno de los miembros asista virtualmente, se permite presentar comentarios por escrito hasta 24 horas antes de la hora programada de la reunión según los estatutos de Carolina del Norte NCGS §166A-19.24 siguiendo los métodos especificados anteriormente. Las reuniones virtuales se pueden seguir en la transmisión en directo por YouTube a través del siguiente enlace: <https://www.youtube.com/c/townofapexgov>.

Mapa de las inmediaciones:



Los propietarios, inquilinos y asociaciones de vecinos en un radio de 300 pies del Ordenamiento Territorial Condicional propuesto han recibido esta notificación por correo postal de primera clase. Todas las partes interesadas pueden presentar comentarios sobre la solicitud a través de los medios especificados anteriormente. La ubicación de la propiedad también puede verse aquí: <https://maps.raleighnc.gov/imagps>. Puede ver el Mapa de Uso Territorial para 2045 aquí: www.apexnc.org/DocumentCenter/View/478. Si tiene preguntas o desea obtener más información, puede comunicarse con el Departamento de Planificación y Desarrollo Comunitario al 919-249-3426. Puede ver la solicitud y otros documentos relacionados aquí: <https://www.apexnc.org/DocumentCenter/View/35534>.

Dianne F. Khin, AICP
 Directora de Planificación y Desarrollo Comunitario



TOWN OF APEX

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

PUBLIC NOTIFICATION OF PUBLIC HEARINGS

CONDITIONAL ZONING #21CZ14
Holland Road Mixed Use Assembly PUD

Pursuant to the provisions of North Carolina General Statutes §160D-602 and to the Town of Apex Unified Development Ordinance (UDO) Section 2.2.11, notice is hereby given of public hearings before the Town Council of the Town of Apex. The purpose of these hearings is to consider the following:

Applicant: Geno Ray, LG Investments, Inc.

Authorized Agent: Jeff Roach, Peak Engineering & Design, PLLC.

Property Addresses: 42236 Old US 1 Hwy; 1001 & 1004, & 1005 Red Cardinal Lane; 3104 & 3116 Holland Road; 7528 Humie Olive Road

Acreage: ±28.68 acres

Property Identification Numbers (PINs): 0720998487, 0730091779, 0730095707, 0731004075, 0731001087, 0731003359, 0720992587

Current 2045 Land Use Map Designation: Medium Density Residential, Medium/High Density Residential, and Commercial Services

If rezoned as proposed, the 2045 Land Use Map Designation will change to: Medium Density Residential and Commercial Services

Existing Zoning of Properties: Rural Residential (RR)

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

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

Comments received prior to the Planning Board public hearing will not be provided to the Town Council. Separate comments for the Town Council public hearing must be provided by the deadline specified below.

Town Council Public Hearing Date and Time: March 8, 2022 6:00 PM

You may attend the meeting in person or view the meeting through the Town's YouTube livestream at: <https://www.youtube.com/c/townofapexgov>. Please visit www.apexnc.org on the day of the meeting to confirm whether the meeting will be held in-person or remotely.

If you are unable to attend, you may provide a written statement by email to public.hearing@apexnc.org, or submit it to the Deputy Town Clerk, Tesa Silver (73 Hunter Street or USPS mail - P.O. Box 250, Apex, NC 27502), at least two business days prior to the Town Council vote. You must provide your name and address for the record. The written statements will be delivered to the Town Council members prior to their vote. Please include the Public Hearing name in the subject line.

In the event that the Town Council meeting is held remotely or with at least one member attending virtually, written comments may be submitted up to 24 hours prior to the scheduled time of the meeting per NCGS §166A-19.24 according to the methods specified above. Virtual meetings may be viewed via the Town's YouTube livestream at <https://www.youtube.com/c/townofapexgov>.

Vicinity Map:



Property owners, tenants, and neighborhood associations within 300 feet of the proposed conditional zoning have been sent this notice via first class mail. All interested parties may submit comments with respect to the application by the means specified above. In addition to the above map, the location of the property may be viewed online at <https://maps.raleighnc.gov/imaps>. The 2045 Land Use Map may be viewed online at www.apexnc.org/DocumentCenter/View/478. You may call 919-249-3426, Department of Planning and Community Development, with questions or for further information. To view the petition and related documents on-line: <https://www.apexnc.org/DocumentCenter/View/35534>.

Dianne F. Khin, AICP
Director of Planning and Community Development



TOWN OF APEX

PO BOX 250
APEX, NORTH CAROLINA 27502
TELÉFONO 919-249-3426

NOTIFICACIÓN PÚBLICA DE AUDIENCIAS PÚBLICAS

ORDENAMIENTO TERRITORIAL CONDICIONAL #21CZ14
Holland Road Mixed Use Assembly PUD (Desarrollo de
Unidad Planificada)

De conformidad con las disposiciones de los Estatutos Generales de Carolina del Norte §160D-602 y con la Sección 2.2.11 de la Ordenanza de Desarrollo Unificado (UDO) del ayuntamiento de Apex, por la presente se notifican las audiencias públicas ante el Consejo Municipal del Ayuntamiento de Apex. El propósito de estas audiencias es considerar lo siguiente:

Solicitante: Geno Ray, LG Investments, Inc.

Agente autorizado: Jeff Roach, Peak Engineering & Design, PLLC.

Dirección de las propiedades: 2236 Old US 1 Hwy; 1001 & 1004, & 1005 Red Cardinal Lane; 3104 & 3116 Holland Road; 7528 Humie Olive Road

Superficie: ±28.68 acres

Números de identificación de las propiedades: 0720998487, 0730091779, 0730095707, 0731004075, 0731001087, 0731003359, 0720992587

Designación actual en el Mapa de Uso Territorial para 2045: Medium Density Residential, Medium/High Density Residential, and Commercial Services

Si se aprueba el cambio de zonificación como se propone, el Mapa de Uso Territorial para el 2045 cambiará a: Medium Density Residential and Commercial Services

Ordenamiento territorial existente de las propiedades: Rural Residential (RR)

Ordenamiento territorial propuesto para las propiedades: Planned Unit Development-Conditional Zoning (PUD-CZ)

Lugar de la audiencia pública: Ayuntamiento de Apex

Cámara del Consejo, 2º piso

73 Hunter Street, Apex, Carolina del Norte

Los comentarios recibidos antes de la audiencia pública de la Junta de Planificación no se proporcionarán al Consejo Municipal. Los comentarios para la audiencia pública del Consejo Municipal deben presentarse por separado en el plazo especificado a continuación.

Fecha y hora de la audiencia pública del Consejo Municipal: 8 de marzo de 2022 6:00 P.M.

Puede asistir a la reunión de manera presencial o seguir la transmisión en directo por YouTube a través del siguiente enlace: <https://www.youtube.com/c/townofapexgov>. Por favor visite www.apexnc.org el día de la reunión para confirmar si la reunión se llevará a cabo de manera presencial o remotamente.

Si no puede asistir, puede enviar una declaración escrita por correo electrónico a public.hearing@apexnc.org, o presentarla a la secretaria municipal adjunta, Tesa Silver (73 Hunter Street o por correo USPS a P.O. Box 250, Apex, NC 27502), al menos dos días hábiles antes de la votación del Consejo Municipal. Debe proporcionar su nombre y dirección para que conste en el registro. Las declaraciones escritas se entregarán al Consejo Municipal antes de la votación. No olvide incluir el nombre de la audiencia pública en el asunto.

En caso de que la reunión del Consejo Municipal se lleve a cabo remotamente o que por lo menos uno de los miembros asista virtualmente, se permite presentar comentarios por escrito hasta 24 horas antes de la hora programada de la reunión según los estatutos de Carolina del Norte NCGS §166A-19.24 siguiendo los métodos especificados anteriormente. Las reuniones virtuales se pueden seguir en la transmisión en directo por YouTube a través del siguiente enlace: <https://www.youtube.com/c/townofapexgov>.

Mapa de las inmediaciones:



Los propietarios, inquilinos y asociaciones de vecinos en un radio de 300 pies del Ordenamiento Territorial Condicional propuesto han recibido esta notificación por correo postal de primera clase. Todas las partes interesadas pueden presentar comentarios sobre la solicitud a través de los medios especificados anteriormente. La ubicación de la propiedad también puede verse aquí: <https://maps.raleighnc.gov/imaps>. Puede ver el Mapa de Uso Territorial para 2045 aquí: www.apexnc.org/DocumentCenter/View/478. Si tiene preguntas o desea obtener más información, puede comunicarse con el Departamento de Planificación y Desarrollo Comunitario al 919-249-3426. Puede ver la solicitud y otros documentos relacionados aquí: <https://www.apexnc.org/DocumentCenter/View/35534>.

Dianne F. Khin, AICP

Directora de Planificación y Desarrollo Comunitario

Fechas de publicación: 15 de febrero - 8 de marzo de 2022



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: Conditional Zoning #21CZ14
 Holland Road Mixed Use Assembly PUD

Project Location: 2236 Old US 1 HWY; 1001 & 1004, & 1005 Red Cardinal Lane; 3104 & 3116
 Holland Road; 7528 Humie Olive Road

Applicant or Authorized Agent: Jeff Roach, PE

Firm: Peak Engineering & Design, PLLC

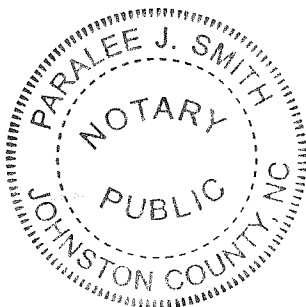
This is to certify that I, as Director of Planning and Community Development, mailed or caused to have mailed by first class postage for the above mentioned project on February 15, 2022, a notice containing the time and place, location, nature and scope of the application, where additional information may be obtained, and the opportunity for interested parties to be heard, to the property owners and tenants within 300' of the land subject to notification. I further certify that I relied on Wake County Tax Assessor information and the Town of Apex Master Address Repository provided to me by Town of Apex GIS Staff as to accuracy of the list and accuracy of mailing addresses of property owners and tenants within 300' of the land subject to notification.

2-17-22
 Date

Arande Bence for Dianne Klein
 Director of Planning and Community Development

STATE OF NORTH CAROLINA
 COUNTY OF WAKE

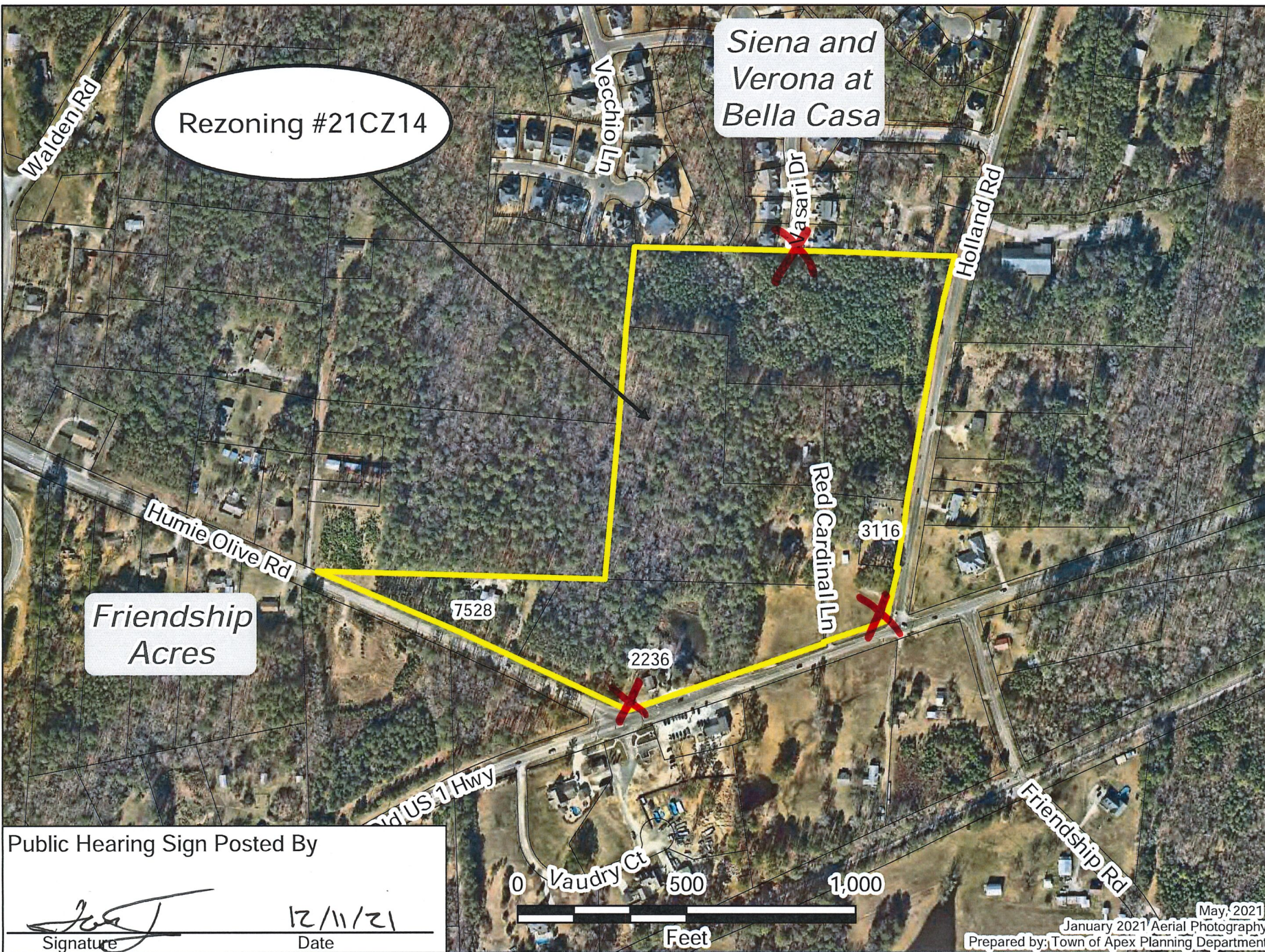
Sworn and subscribed before me, *Paralee J Smith*, a Notary Public for the above
 State and County, this the 17 day of February, 2022.



Paralee J Smith
 Notary Public

My Commission Expires: 9, 12, 2023

SVE



Rezoning #21CZ14

Siena and Verona at Bella Casa

Friendship Acres

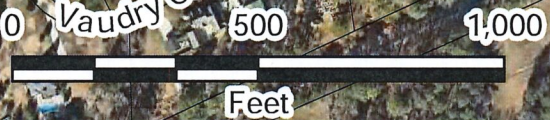
Public Hearing Sign Posted By

[Signature]

Signature

12/11/21

Date



May, 2021

January 2021 Aerial Photography

Prepared by: Town of Apex Planning Department



**WAKE COUNTY
PUBLIC SCHOOL SYSTEM**

Student Assignment

5625 Dillard Drive
Cary, NC, 27518
Email: studentassignment@wcpss.net

tel: (919) 431-7333
fax: (919) 694-7753

Dianne Khin, AICP
Director, Department of Planning and Community Development
Town of Apex
Dianne.Khin@apexnc.org

Dear Dianne,

The Wake County Public School System (WCPSS) Office of School Assignment received information about a proposed rezoning/development within the Town of Apex planning area. We are providing this letter to share information about WCPSS’s capacity related to the proposal. The following information about the proposed rezoning/development was provided through the Wake County Residential Development Notification database:

- Date of application: May 3, 2021
- Name of development: 21CZ14 Holland Road Mixed Use Assembly PUD
- Address of rezoning/development: 7528 Humie Olive Rd; 2236 Old US 1 Hwy; 1001, 1004, and 1005 Red Cardinal Lane; 3104 and 3116 Holland Rd
- Total number of proposed residential units: 110
- Type(s) of residential units proposed: Single-family detached (10) and townhomes (100)

Based on the information received at the time of application, the Office of School Assignment is providing the following assessment of possible impacts to the Wake County Public School System:

- Schools at all grade levels within the current assignment area for the proposed rezoning/development are anticipated to have sufficient capacity for future students.
- Schools at the following grade levels within the current assignment area for the proposed rezoning/development are anticipated to have insufficient capacity for future students; transportation to schools outside of the current assignment area should be anticipated:
 - Elementary Middle High

The following mitigation of capacity concerns due to school construction or expansion is anticipated:

- Not applicable – existing school capacity is anticipated to be sufficient.
- School expansion or construction within the next five years is not anticipated to address concerns.
- School expansion or construction within the next five years may address concerns at these grade levels:
 - Elementary Middle High

Thank you for sharing this information with the Town of Apex Planning Board and Town Council as they consider the proposed rezoning/development.

Sincerely,
Glenn Carrozza 02/11/22