

# Agenda Item 11.a.1



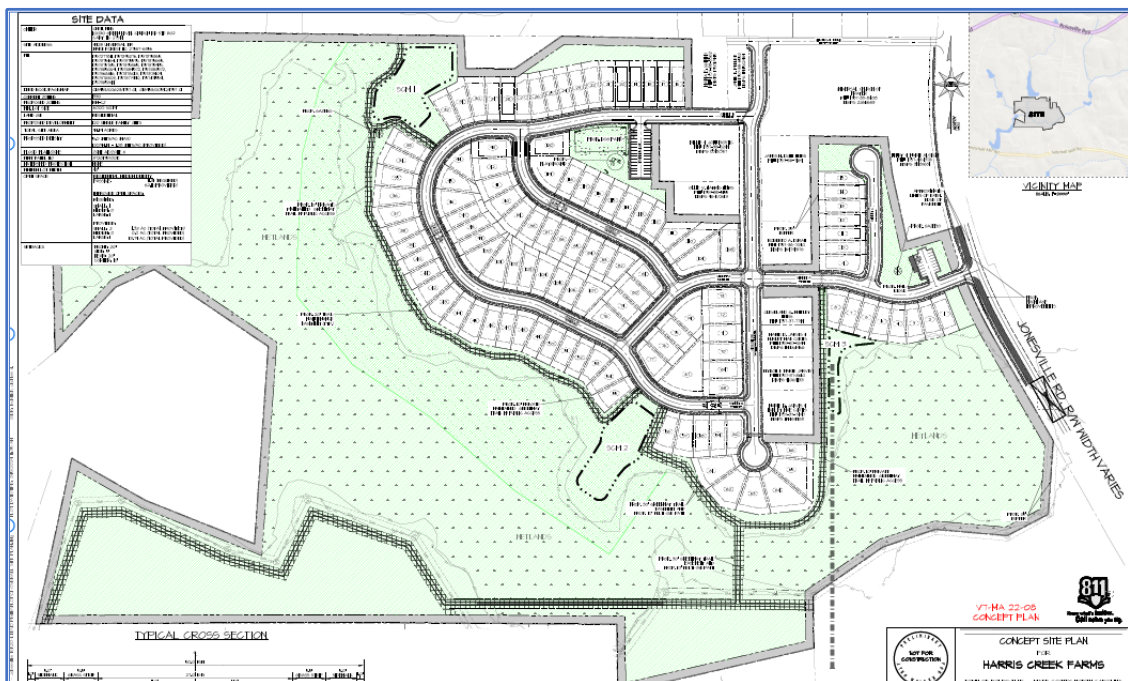
## Memo

**To:** Mayor Currin and Town Board of Commissioners  
**From:** Meredith Gruber, Planning Director & Michael Elabarger, Senior Planner  
**Date:** April 2, 2024  
**Re:** Harris Creek Farm Rezoning (MA 22-05) and Annexation (ANX 22-05)

### Background

#### Rezoning – MA 22-05

The Town of Rolesville Planning Department received a Rezoning (Map Amendment) application in August of 2022 for approximately 93 acres consisting of nineteen tracts of land on the western side of Jonesville Road near Universal Drive. After several revisions, the application request is to change the zoning from Wake County's Residential-30 (R-30) Zoning District to the Town's Land Development Ordinance (LDO) Residential Medium Density Conditional Zoning District (RM-CZ). Below is an image from the Concept Site Plan (Attachment 5), which proposes a maximum of 120 single family detached (SFD) lots. The Concept Site Plan also indicates an intent to provide at least a minimum of forty percent (40%) gross acreage preserved as undisturbed open space; this indicates the Applicant seeks to subdivide the project utilizing LDO Section 3.1.B., Cluster Development; based on the timing of this submittal, that entails the lot dimensions that existed in the LDO before TA 23-02 was adopted on 04/04/2023.



The Rezoning application includes a set of Conditions of Approval (see Attachment 8) and a Concept Site Plan (see Attachment 5).

### **Voluntary Annexation Petition ANX 22-05**

A non-contiguous, voluntary Annexation Petition was submitted, reviewed, and processed simultaneously with the Rezoning application request. There will be a combined Legislative hearing at the Town Board of Commissioners' meeting. The Town Clerk investigated the Sufficiency of the request on December 7, 2022. See Attachment 13 for these files.

### **Neighborhood Meetings**

The Applicant conducted a neighborhood meeting on July 12, 2023, at which there were 24 attendees. The Applicant held an additional Meeting on October 24, 2023, at which there were 10 attendees; see Attachment 9.

### **Comprehensive Plan**

#### **Land Use**

The 2017 Comprehensive Plan Future Land Use map designates the subject property, and the entire area south of Harris Creek to Mitchell Mill Road, as appropriate for **Medium Density Residential** type of land uses, which it describes / defines as:

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*Predominantly single-family residential uses with portion of duplex, townhouse, or multifamily residential. These are lots or tracts at a density range of three to five (3-5) dwelling units per gross acre including preserved open space areas along with limited non-residential uses under planned unit development or form base code provisions.*

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As stated in Land Development Ordinance (LDO) Section 3.1.2.A., Purpose and Intent: *"RM [Residential Medium Density zoning district] implements the Medium Density Residential future land use designation at a density range of three (3) to five (5) dwelling units per acre."*

#### **Community Transportation Plan**

The Town of Rolesville's Community Transportation Plan (CTP, adopted 2021) includes recommendations for Thoroughfares, Collectors, and intersections. There are no plans for new Collector roadways in the vicinity of the subject property, but there is this Thoroughfare Recommendation (page 79/131):

- Jonesville Road is planned to be a 2-lane (with Two Way Left Turn Lane), curb and gutter, bike lanes, and Sidewalks.

Per the Concept Site Plan, the project is proposing one new primary site access (Street A) to Jonesville Road, located south of where Universal Drive lies and the Harris Creek bridge crossing.

#### **Intersection Recommendations**

- There are no intersection recommendations associated with the subject property.

- The closest intersection recommendations are located at Mitchell Mill and Rolesville Roads, for an intersection realignment.

### ***Greenway and Bike Plans***

As per the 2022 Greenway and Bike Plans, proposed pedestrian routes are shown in the following locations:

- A ten-foot (10') private maintained Greenway trail with public access easement, turns into a twenty-foot (20') trail easement before returning to a ten-foot (10') private maintained greenway trail with public access easement is shown on the northwest side of the property, along Harris Creek.

### ***Consistency***

The Applicant's rezoning request is consistent with the Town of Rolesville's Comprehensive Plan for the following reasons:

- The RM district is a direct fulfillment of the Medium Density Residential land use description.
- The proposed 120 Single-family detached lots/units fulfill the core intent of detached dwelling units in the Medium Density Residential land use description.
- The proposed vehicular circulation network is in harmony with / of no conflict with the Town's Community Transportation Plan.
- The proposed Greenways establish pedestrian connections as recommended by Rolesville's Greenway Plan.

## **Traffic**

### ***Traffic Impact Analysis***

The consulting firm, Ramey Kemp Associates (now DRMP), performed the Traffic Impact Analysis (TIA) for this project on behalf of the Town. The TIA was done at the time that the application was requesting development of 68 Single Family Detached and 81 Single family Attached (townhome) housing units. As noted at the top of this Memo, the project conceived in the application has been scaled back to a maximum of 120 single family detached units, replacing 81 Townhome units with 52 single family detached units.

A trip generation letter (Attachment 12) was prepared by DRMP on March 27, 2024; the contents document the change in land use type and density of the proposed Harris Creek Farm rezoning application. The table below compares the trip generation between the approved TIA Concept Site Plan and the latest Concept Site Plan. The table shows a decrease in the total daily trips and a very small increase in the PM peak hour trips upon entering the site.

**Table 1: Trip Generation Comparison**

Land Use (ITE Code)	Intensity	Daily Traffic (vpd)	Weekday AM Peak Hour Trips (vph)		Weekday PM Peak Hour Trips (vph)	
			Enter	Exit	Enter	Exit
Approved TIA Site Plan						
Single-Family Detached Housing (210)	68 DU	708	13	39	44	25
Single-Family Attached Housing (215)	81 DU	568	9	27	26	19
TOTAL		1,276	22	66	70	44
Latest Site Plan						
Single-Family Detached Housing (210)	120 DU	1,193	22	66	74	44
Difference		-83	0	0	4	0

Attachment 10 is the Final Sealed Report dated May 08, 2023. Traffic conditions during weekday AM and PM peak hours were looked at in four (4) scenarios: 2022 Existing Traffic Conditions, 2027 No-build Traffic Conditions, 2027 Build Traffic Conditions and 2027 Build-Improved Traffic Conditions. See excerpted Table E-1 from the TIA report:

**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	Total	Enter	Exit	Total
Single-Family Home (210)	68 DU	708	13	39	52	44	25	69
Single Family Attached (215)	81 DU	568	9	27	36	26	19	45
<b>Total Primary Trips</b>		1,276	22	66	88	70	44	114

Four intersections were studied for capacity analysis and Level of Service (LOS) impact of this development – US 401 Bypass and Jonesville Road; US 401 Bypass and Eastern U-turn location; Mitchell Mill Road and Jonesville Road / Peebles Road and Jonesville Road and Universal Drive.

<b>TIA Summary – Intersection Improvements</b>	
<b>Recommendations</b>	
<p><b>Future Traffic Conditions</b> A growth rate of 0% was used due to the number of developments included in the background traffic and the proximity of some of these developments to the proposed development. The following adjacent developments were identified to be considered under future conditions:</p>	<ul style="list-style-type: none"> <li>• Cobblestone Crossing Mixed-Use (Cobblestone)</li> <li>• Young Street PUD (The Point)</li> <li>• Wheeler Tract (Rolesville Crossing)</li> <li>• Louisbury Road Assemblage</li> <li>• Kalas / Watkins Family Property (Kalas Falls)</li> <li>• 5109 Mitchell Mill</li> <li>• Hills at Harris Creek</li> </ul>
US 401 Bypass and Jonesville Road	<ul style="list-style-type: none"> <li>• Conduct a full signal warrant analysis prior to Full Build-out of the proposed development and install a traffic signal if warranted and approved by NCDOT and Town.</li> </ul>
Mitchell Mill Road and Jonesville Road / Peebles Road	<ul style="list-style-type: none"> <li>• Construct a south-bound (Jonesville Rd) left-turn lane with at least 100 feet of storage and appropriate deceleration and taper.</li> <li>• <i>It should be noted that this improvement was also identified by the 5109 Mitchell Mill Rd and Hills at Harris Creek TIA.</i></li> </ul>
	<ul style="list-style-type: none"> <li>• Construct an eastbound (Mitchell Mill Rd) left-turn lane with at least 100 feet of storage and appropriate deceleration and taper.</li> <li>• <i>It should be noted that this improvement was also identified by the 5109 Mitchell Mill Rd TIA.</i></li> </ul>
	<ul style="list-style-type: none"> <li>• Construct a westbound (Mitchell Mill Road) right-turn lane with at least 100 feet of storage and appropriate deceleration and taper.</li> <li>• <i>It should be noted that this improvement was also identified by the Hills at Harris Creek TIA.</i></li> </ul>
	<ul style="list-style-type: none"> <li>• Conduct a full signal warrant analysis prior to Full Build-out of the proposed development and install a traffic signal if warranted and approved by NCDOT and Town.</li> </ul>
Jonesville Road and Site Drive	<ul style="list-style-type: none"> <li>• Construct the eastbound approach (Site Drive) with one ingress lane and one egress lane.</li> </ul>
	<ul style="list-style-type: none"> <li>• Provide stop control for the eastbound approach (Site Drive).</li> </ul>

### Development Review

The Technical Review Committee (TRC) reviewed three versions of the Rezoning application, with all comments pertinent to the consideration of the proposed districts and the general development plan being resolved. Note that the TRC review of the Concept Site Plan (Attachment 5) was not an LDO subdivision and/or site development regulation review, as it is only a conceptual plan, and not an engineered and dimensioned layout. Should the proposed Zoning Districts be approved, the project would next process an administratively

reviewed/approved Major Preliminary Subdivision Plat (PSP) application, followed by Construction Infrastructure Drawings (CID).

### **Planning Board Recommendation**

At the Planning Board meeting on December 18, 2023, there were eight public speakers in opposition to the rezoning request. One person submitted a letter in support of the rezoning application.

The Planning Board recommended approval of MA 22-08 with a vote of 3 – 1. The dissenting vote was due to the inclusion of townhomes in the proposed Concept Site Plan.

Since the Planning Board meeting in December, the applicant has revised the application to include single family detached lots only.

### **Staff Analysis and Recommendation**

The proposed RM District is committing to far less than the LDO stated maximum densities and far less than the theoretical by-right subdivision yields. Collectively, the gross density of the proposed 120 dwelling units over 93 acres = 1.29 units per acre. The proposed housing type is consistent with the Comprehensive Plan Future Land Use designation of Medium Density Residential, and the proposed density matches the Low Density Future Land Use category.

Staff finds the proposed Rezoning request MA 22-08 is consistent with the Comprehensive Plan and recommends Approval.

### **Consistency and Reasonableness**

As noted above under the Comprehensive Plan section of this report, the rezoning request for the subject parcel is consistent with Rolesville's vision. Map Amendment MA 22-08 is thus consistent with the Comprehensive Plan and other applicable Plans and is therefore reasonable.

### **Proposed Motions**

1. Motion to (approve or deny) rezoning Map Amendment request MA 22-08 – Harris Creek Farms.
2. (Following Approval) Motion to adopt a Plan Consistency Statement and Statement of Reasonableness for MA 22-08.
3. Motion to (approve or deny) the Voluntary Annexation Petition received under G.S. 160A-31 for ANX 22-05 – Harris Creek Farms.

*Or*

4. Motion to continue the legislative hearing for MA 22-08 and ANX 22-05 to a future Town Board of Commissioners' meeting.

### **Attachments**

- 1 Vicinity Map
- 2 Zoning Map
- 3 Future Land Use Map
- 4 Map Amendment Application
- 5 Concept Site Plan, December 15, 2023
- 6 Zoning District Boundaries

- 7 Zoning District Legal Descriptions
- 8 Proposed Conditions of Approval
- 9 Neighborhood Meeting Package, July 12, 2023 and October 14, 2023
- 10 Traffic Impact Analysis (TIA), sealed dated May 8, 2023
- 11 Traffic Impact Analysis (TIA – NCDOT Congestion Management report, June 5, 2023
- 12 Traffic Impact Analysis (TIA), Trip Generation Letter, March 27, 2024
- 13 Annexation Petition and Attachments
- 12 Applicant Presentation

Attachment #1

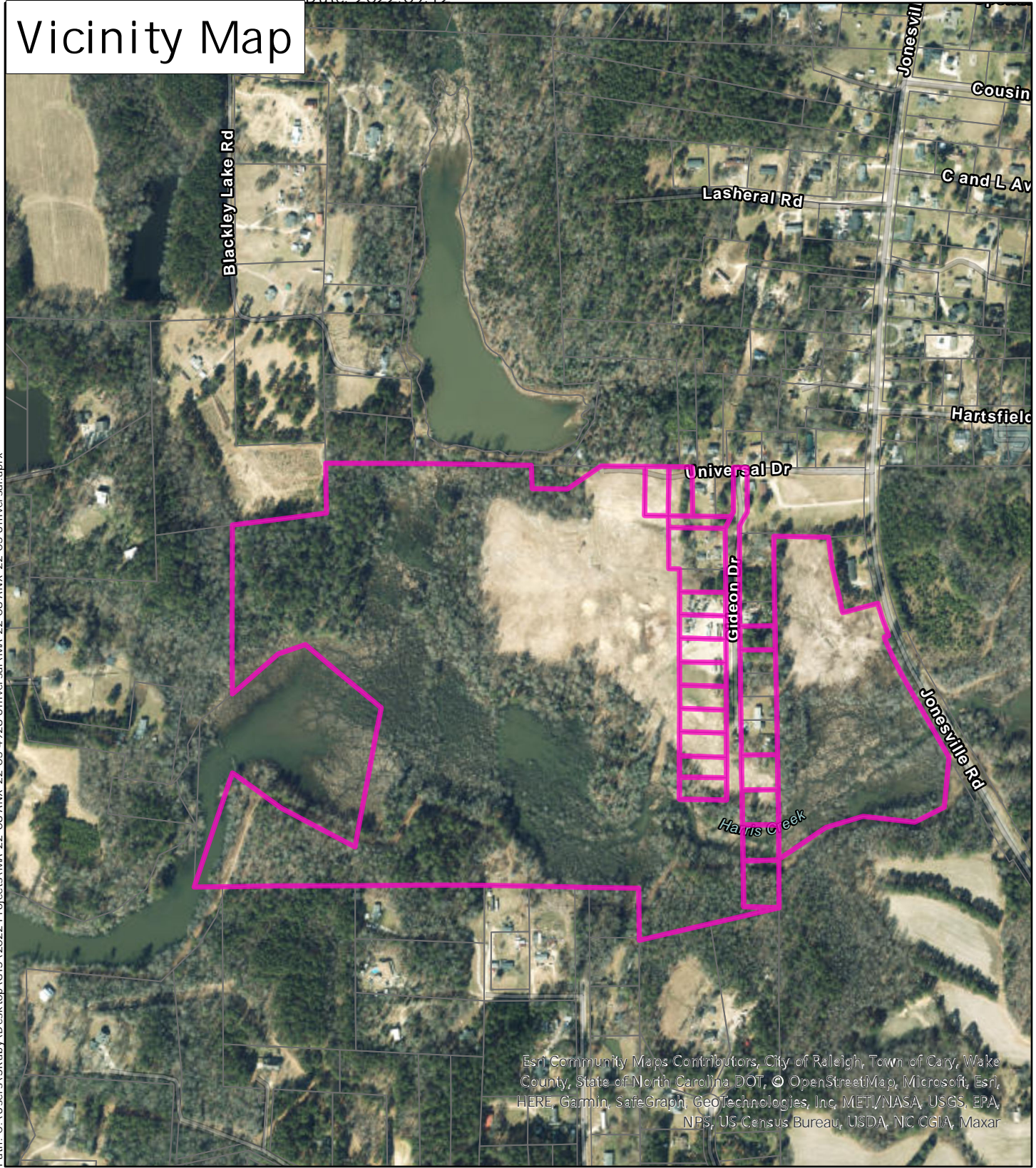


Case: MA 22-08 ANX 22-05 Harris Creek Farms  
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1757375665, 1757375765, 1757375865, 1757375975, 1757385064, 1757384572,  
1757383572, 1757368816, 1757378013, 1757378109, 1757378303, 1757377990,  
1757471559, 1757385349  
Date: 2022.09.12

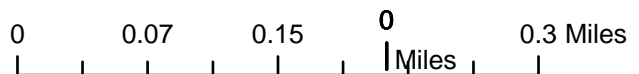
Vicinity Map

Date Saved: 9/12/2022 4:00 PM

Path: C:\Users\Sraby\Desktop\GIS\2022 Projects\MA 22-08 ANX 22-05 4928 Universal\MA 22-08 ANX 22-05 Universal.aprx



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# Attachment #2



Case: MA 22-08 ANX 22-05 Harris Creek Farms

Address: 4928 Universal

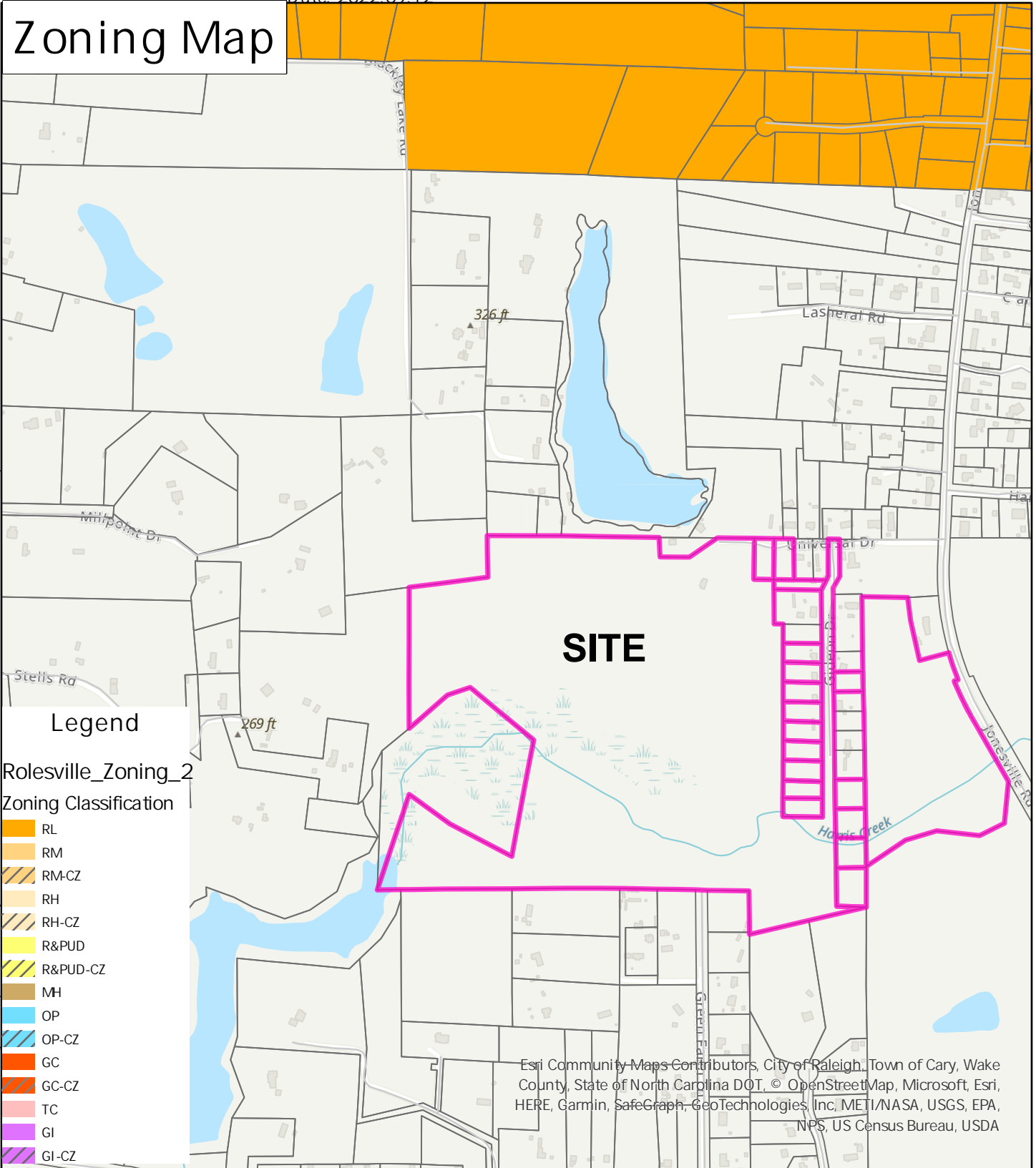
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Date: 2022.09.12

Date Saved: 9/13/2022 4:08 PM

Path: C:\Users\Sraby\Desk top\GIS\2022 Projects\MA 22-08 ANX 22-05 4928 Universal\MA 22-08 ANX 22-05 Universal.aprx

## Zoning Map



### Legend

Rolesville\_Zoning\_2

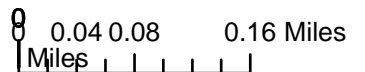
#### Zoning Classification

- RL
- RM
- RM-CZ
- RH
- RH-CZ
- R&PUD
- R&PUD-CZ
- MH
- OP
- OP-CZ
- GC
- GC-CZ
- TC
- GI
- GI-CZ

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**\*Site is approximately 1 mile from Carlton Pointe**



# Attachment #3



Case: MA 22-08 ANX 22-05 Harris Creek Farms

Address: 4928 Universal

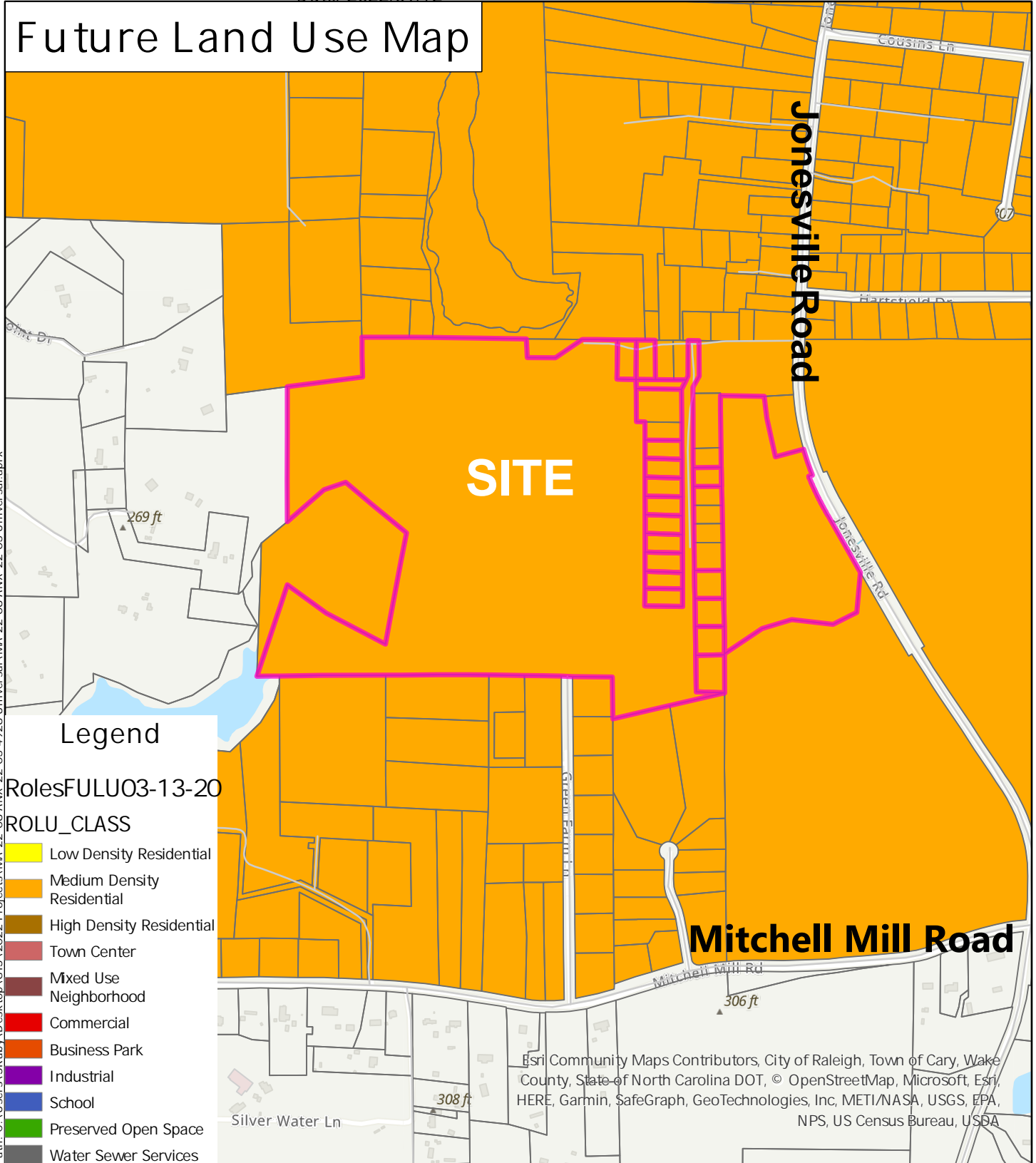
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Date: 2022.09.12

## Future Land Use Map

Date Saved: 9/13/2022 4:16 PM

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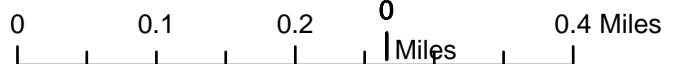
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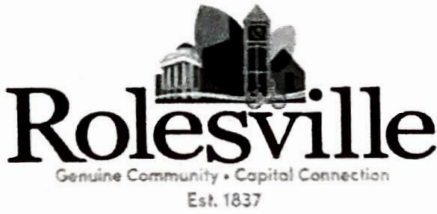
RolesFULU03-13-20

ROLU\_CLASS

- Low Density Residential
- Medium Density Residential
- High Density Residential
- Town Center
- Mixed Use Neighborhood
- Commercial
- Business Park
- Industrial
- School
- Preserved Open Space
- Water Sewer Services

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# Map Amendment Application

## Contact Information

Property Owner CHEN, PING

Address 10030 GREEN LEVEL CHURCH RD STE 802 City/State/Zip CARY NC 27519-8195

Phone 919-798-0429 Email ping@thescgrp.com

Developer The CSC Group, LLC

Contact Name Ping Chen

Address 10030 GREEN LEVEL CHURCH RD STE 802 City/State/Zip CARY NC 27519-8195

Phone 919-798-0429 Email ping@thescgrp.com

## Property Information

Address 4928 UNIVERSAL DR.

Wake County PIN(s) 1757277811, 1757375278, 1757375365, 1757375464, 1757375575, 1757375665, 1757375765, 1757375865, 1757375975, 1757385064, 1757384572, 1757383572, 1757386816, 1757378013, 1757378109, 1757378303, 1757377990, 17574715

Current Zoning District R-30 Requested Zoning District RM and RH

Total Acreage 93.22

## Owner Signature

*I hereby certify that the information contained herein is true and completed. I understand that if any item is found to be otherwise after evidentiary hearing before the Town Board of Commissioners, that the action of the Board may be invalidated.*

Signature [Handwritten Signature] Date 6/8/2022

STATE OF NORTH CAROLINA

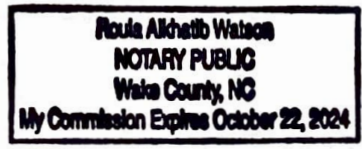
COUNTY OF Wake

I, a Notary Public, do hereby certify that ping chen

personally appeared before me this day and acknowledged the due execution of the foregoing instrument. This the 8th day of June 2022.

My commission expires 10/22/2024.

Signature [Handwritten Signature] Seal

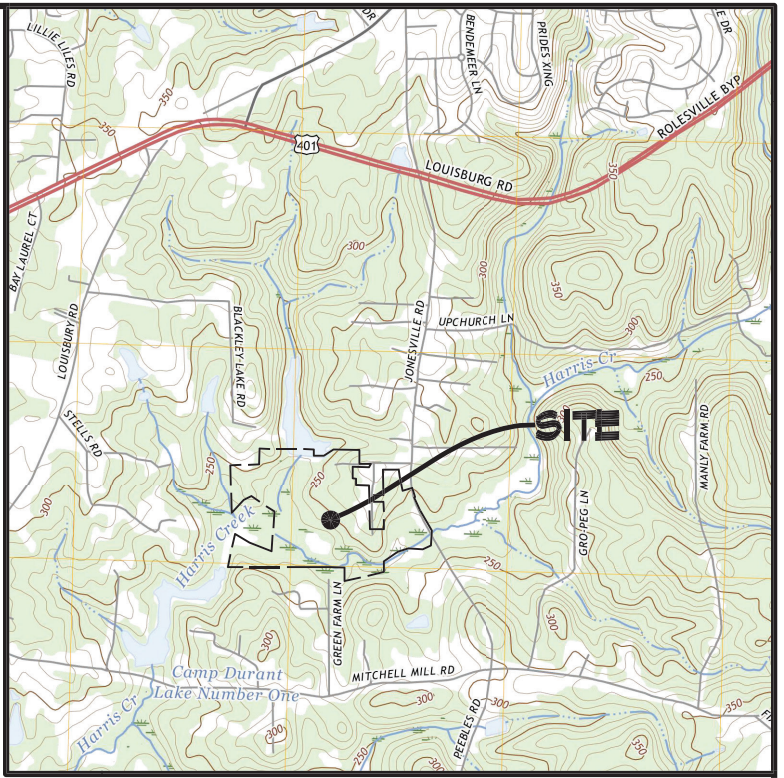
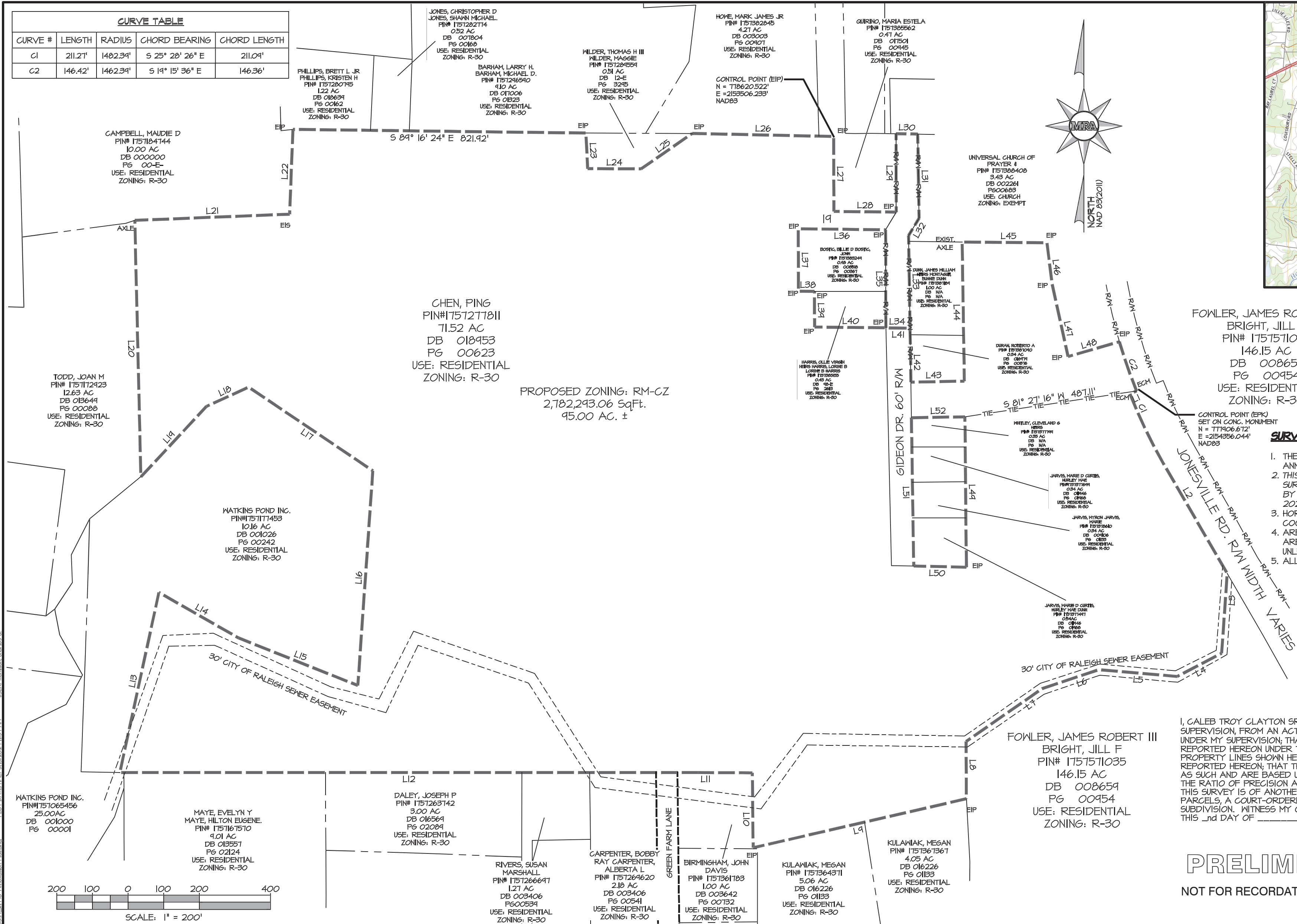


Town of Rolesville Planning



ATTACHMENT 6 - REZONING EXHIBIT

CURVE TABLE				
CURVE #	LENGTH	RADIUS	CHORD BEARING	CHORD LENGTH
C1	211.27'	1482.34'	S 25° 28' 26" E	211.04'
C2	146.42'	1462.34'	S 19° 15' 36" E	146.36'



**VICINITY MAP**

FOWLER, JAMES ROBERT III  
 BRIGHT, JILL F  
 PIN# 175751035  
 146.15 AC  
 DB 008659  
 PG 00954  
 USE: RESIDENTIAL  
 ZONING: R-30

**SURVEY NOTES:**

1. THE PURPOSE OF THIS PLAT IS TO ILLUSTRATE AREA TO BE ANNEXED INTO THE TOWN OF ROLESVILLE CORPORATE LIMITS.
2. THIS MAP IS NOT THE BENEFIT OF A FIELD SURVEY BY THIS SURVEYOR, BUT A REPRESENTATION OF AN AREA SURVEYED BY GIL CLARK SURVEYING SIGNED AND SEALED ON JULY 26, 2022.
3. HORIZONTAL DATUM IS NAD '83/2011 NC STATE PLANE COORDINATES.
4. AREA COMPUTED BY COORDINATE METHOD. ALL DISTANCES ARE HORIZONTAL GROUND DISTANCES IN US SURVEY FEET, UNLESS NOTED OTHERWISE.
5. ALL RIGHT-OF-WAYS ARE PUBLIC, UNLESS NOTED OTHERWISE.

I, CALEB TROY CLAYTON SR., CERTIFY THAT THIS MAP WAS DRAWN UNDER MY SUPERVISION FROM AN ACTUAL GROUND (CONVENTIONAL) AND GPS SURVEY MADE UNDER MY SUPERVISION, THAT THE GPS SURVEY INFORMATION (METADATA) HAS BEEN REPORTED HEREON UNDER THE "SURVEY CONTROL/GRID TIE NOTES", THAT SURVEYED PROPERTY LINES SHOWN HEREON ARE BASED UPON THE DEEDS AND PLATS REPORTED HEREON; THAT THE BOUNDARIES NOT SURVEYED ARE CLEARLY INDICATED AS SUCH AND ARE BASED UPON THE DEEDS AND PLATS REPORTED HEREON; THAT THE RATIO OF PRECISION AS CALCULATED BEFORE ADJUSTMENT IS 1:10,000 ±; THAT THIS SURVEY IS OF ANOTHER CATEGORY, SUCH AS THE RECOMBINATION OF EXISTING PARCELS, A COURT-ORDERED SURVEY, OR OTHER EXCEPTION TO THE DEFINITION OF SUBDIVISION. WITNESS MY ORIGINAL SIGNATURE, REGISTRATION NUMBER AND SEAL THIS 2nd DAY OF \_\_\_\_\_, A.D., 2023.



**PRELIMINARY PLAT**

NOT FOR RECORDATION, CONVEYANCES OR SALES

CALEB TROY CLAYTON SR., PLS N.C. REG. NO.: L-5306

LINE TABLE			LINE TABLE			LINE TABLE			LINE TABLE		
LINE #	BEARING	DISTANCE	LINE #	BEARING	DISTANCE	LINE #	BEARING	DISTANCE	LINE #	BEARING	DISTANCE
L1	S 66° 41' 05" W	20.01'	L16	N 03° 54' 25" E	604.00'	L31	S 00° 53' 13" E	236.00'	L46	S 06° 57' 52" E	113.70'
L2	S 30° 07' 41" E	362.37'	L17	N 56° 00' 58" W	420.00'	L32	S 31° 00' 37" W	56.74'	L47	S 12° 21' 20" E	211.32'
L3	S 03° 57' 30" W	224.27'	L18	S 65° 24' 02" W	130.00'	L33	S 00° 53' 13" E	259.68'	L48	N 73° 55' 50" E	144.95'
L4	S 62° 24' 06" W	140.83'	L19	S 42° 57' 43" W	270.40'	L34	N 84° 21' 02" W	67.80'	L49	S 00° 34' 22" E	421.87'
L5	N 85° 00' 48" W	220.34'	L20	N 01° 21' 15" W	714.72'	L35	N 00° 04' 07" W	275.03'	L50	N 88° 46' 16" W	147.71'
L6	S 71° 32' 01" W	167.91'	L21	N 87° 42' 34" E	434.84'	L36	N 84° 21' 02" W	245.02'	L51	N 00° 53' 13" W	416.01'
L7	S 55° 11' 46" W	260.01'	L22	N 02° 13' 13" E	238.07'	L37	S 00° 04' 07" E	175.02'	L52	N 88° 57' 37" E	150.00'
L8	S 00° 14' 06" E	160.50'	L23	S 02° 47' 46" E	100.00'	L38	S 84° 21' 02" E	45.00'			
L9	S 77° 03' 58" W	613.86'	L24	S 84° 47' 46" E	150.00'	L39	S 00° 04' 07" E	60.00'			
L10	N 00° 34' 34" W	210.00'	L25	N 55° 18' 54" E	174.54'	L40	S 84° 21' 02" E	200.02'			
L11	N 84° 34' 42" W	152.54'	L26	S 88° 43' 46" E	346.94'	L41	N 84° 21' 02" W	67.80'			
L12	N 84° 54' 24" W	162.81'	L27	S 00° 04' 07" E	210.02'	L42	S 00° 53' 14" E	151.52'			
L13	N 12° 14' 25" E	516.70'	L28	S 84° 21' 02" E	175.02'	L43	N 88° 57' 37" E	150.00'			
L14	S 60° 15' 35" E	257.50'	L29	N 00° 10' 25" W	214.87'	L44	N 00° 53' 16" W	340.32'			
L15	S 68° 15' 33" E	360.30'	L30	S 88° 58' 52" E	60.90'	L45	S 84° 32' 03" E	237.94'			

JOB NO.: 21704
SCALE: 1"=200'
DATE: 03-14-2024
DRAWN BY: CDM
REVIEW BY: CTC



**REZONING EXHIBIT**  
 FOR: HARRIS CREEK FARMS  
 #4928 UNIVERSAL DRIVE  
 WAKE FOREST, NC 27587  
 TOWN OF WAKE FOREST - WAKE COUNTY - NORTH CAROLINA

**MORRIS & RITCHIE ASSOCIATES OF NC, PC**  
 ENGINEERS, ARCHITECTS, PLANNERS, SURVEYORS AND LANDSCAPE ARCHITECTS  
 5605 CHAPEL HILL RD, STE 112  
 RALEIGH, NC 27607  
 (984) 200-2103  
 LICENSE # C-4182  
 WWW.MRAGTA.COM  
 © 2021 MORRIS & RITCHIE ASSOCIATES, INC.

**MORRIS & RITCHIE ASSOCIATES OF NC, PC**

AN AFFILIATE OF MORRIS & RITCHIE ASSOCIATES, INC. WHICH PROVIDES ENGINEERING, ARCHITECTURE, PLANNING, SURVEYING & LANDSCAPE ARCHITECTURE THROUGHOUT THE MID-ATLANTIC REGION AND LANDSCAPE ARCHITECTS

**Legal Description – Exhibit “B”****63.87 Acres****Portion of Lands of Ping Chen****Wake Forest Township – Wake County, North Carolina**

All that certain parcel of land lying generally easterly of Jonesville Road, being located in Wake Forest Township, Wake County, North Carolina and being a portion of those lands described in deed dated January 24, 2023 from Ping Chen and Fanxing Li, Grantor to Kenneth Investment, LLC. and recorded in the Land Records of Wake County, North Carolina in Deed Book 19248, page 1884, being more particularly described as follows, to wit:

**Beginning** at a PK nail set in an existing concrete monument on the Southwestern right-of-way of Jonesville Road, having North Carolina state plane coordinates N: 777,906.672 E: 2,154,356.044. Thence, with said right-of way, South 66°41'05" West 20.01 feet to a concrete monument on the Southwestern right-of-way line of Jonesville Road; thence, with said right-of-way and along a curve with a cord bearing distance South 25°28'26" East 211.09 feet and a radius of 1,482.39 feet to an iron pipe; thence along said right-of-way, South 30°07'41" East 362.37 feet to an iron pipe; thence leaving said right-of-way, South 03°57'30" West 224.27 feet to a point; thence, South 62°24'06" West 140.83 feet to a point; thence, North 85°00'48" West 220.39 feet to a point; thence, South 71°32'01" West 167.97 feet to a point; thence, South 55°11'46" West 260.01 feet to a point; thence South 00°19'06" East 160.50 feet to an iron pipe; thence, South 77°03'58" West 613.86 feet to an iron pipe; thence, North 00°39'34" West 210.00 feet to an iron pipe; thence, North 89°39'42" West 152.54 feet to a point; thence, North 89°59'29" West 1,621.81 feet to an iron pipe; thence, North 12°14'25" East 516.70 feet to an iron pipe; thence, South 60°15'35" East 257.50 feet to an iron pipe; thence, South 68°15'35" East 360.30 feet to an iron pipe; thence, North 03°59'25" East 604.00 feet to an iron pipe; thence, North 56°00'58" West 420.00 feet to an iron pipe; thence, South 65°29'02" West 130.00 feet to an iron pipe; thence, South 42°57'43" West 270.40 feet to an iron pipe; thence, North 01°21'15" West 719.72 feet to an axle; thence, North 87°42'39" East 434.84 feet to an iron pipe; thence, North 02°13'13" East 238.07 feet to an iron pipe; thence, South 89°16'24" East 821.92 feet to an iron pipe; thence, South 02°47'46" East 100.00 feet to an iron pipe; thence, South 89°47'46" East 150.00 feet to an iron pipe; thence, North 55°18'54" East 174.59 feet to an iron pipe; thence, South 88°45'46" East 396.99 feet to an iron pipe; thence, South 00°09'07" East 210.02 feet to an iron pipe; thence, South 89°21'02" East 175.02 feet to an iron pipe on the Western right-of-way of Gideon Drive; thence with said right-of-way, North 00°10'25" West 219.87 feet to a point; thence leaving said right of way, South 88°58'52" East 60.90 feet to a point on the Eastern right-of-way of Gideon Drive; thence, with said right-of-way South 00°53'13" East 236.00 feet to a point; thence, South 31°00'37" West 56.74 feet to a point; thence, South 00°53'13" East 259.68 feet to a point; thence, crossing said right-of-way, South 89°21'02" East 67.80 feet to an iron pipe; thence, with said right-of-way North 00°09'07" West 275.03 feet to an iron pipe on the Western right-of-way of Gideon Drive; thence, leaving said right-of-way, North 89°21'02" West 245.02 feet to an iron pipe; thence, South 00°09'07 East 175.02 feet to an iron pipe; thence, South 89°21'02" East 45.00 feet to an iron pipe; thence,

530 Hinton Pond Rd., Suite 104, Knightdale, NC 27545 (984) 200-2103 [www.mragta.com](http://www.mragta.com)

# MORRIS & RITCHIE ASSOCIATES OF NC, PC

AN AFFILIATE OF MORRIS & RITCHIE ASSOCIATES, INC. WHICH PROVIDES ENGINEERING, ARCHITECTURE, PLANNING, SURVEYING & LANDSCAPE ARCHITECTURE THROUGHOUT THE MID-ATLANTIC REGION AND LANDSCAPE ARCHITECTS



South 00°09'07" East 60.08 feet to an iron pipe; thence, South 89°21'02" East 200.02 feet to an iron pipe on the Western right-of-way of Gideon Drive; thence, leaving said right-of-way, South 89°21'02" East 67.80 feet to a point on the Eastern right-of-way of Gideon Drive; thence, with said right-of-way, South 00°53'14" East 151.52 feet to a point; thence leaving said right of way, North 88°57'37" East 150.00 feet to a point; thence, North 00°53'16" West 390.32 feet to an axle; thence, South 89°32'03" East 237.94 feet to an iron pipe; thence, South 06°57'52" East 113.70 feet to a point; thence, South 12°21'20" East 211.32 feet to an iron pipe; thence, North 73°55'50" East 149.95 feet to an iron pipe on the Southwestern right-of-way of Jonesville Road; thence, with said right-of-way and along a curve with a bearing and distance of South 19°15'36" East 146.36 feet and a radius of 1,462.39 feet to the point of beginning. Containing 95.00 AC.±.

Less than and except the following four (4) parcels; 1757-37-7799, 1757-37-7699, 1757-37-8610, and 1757-37-7497, being more particularly described as follows, to wit:

Commencing at a PK nail set in an existing concrete monument on the Southwestern right-of-way of Jonesville Road, having North Carolina state plane coordinates N: 777,906.672 E: 2,154,356.044. Thence, South 81°27'16" West 487.11 feet to the point of beginning; thence, South 00°34'22" East 421.87 feet to a point; thence, North 88°46'16" West 147.79 feet to a point; thence, North 00°53'13" West 416.01 feet to a point; thence North 88°57'37" East 150.00 feet to the point of beginning.

The total area of the **Exhibit "B"** herein described being a portion of Tract 1 as described in deed dated January 24, 2023 from Ping Chen and Fanxing Li, Grantor to Kenneth Investment, LLC. and recorded in the Land Records of Wake County, North Carolina in Deed Book 18953, page 592 and page 623, and containing a total area of 95.00 AC.± and being subject to any and all matters of which a current title package would disclose.



## **HARRIS CREEK FARMS**

### **VOLUNTARY REZONING CONDITIONS**

1. The subject property shall be developed in general compliance with the map amendment (conditional rezoning) concept plan, dated 3/1/2024.

2. The development shall consist of maximum of 120 single-family detached dwelling units/lots as detailed in the map amendment (conditional rezoning) concept plan, dated 3/1/2024.

3. Single family detached dwelling unit facade anti-monotony: in order to promote variation in home appearance, no single-family front façade shall be duplicated for three (3) lots in a row, or directly across the street. For corner lots, this shall apply to the lots diagonally across the intersection.

4. All garage doors shall either contain windows or carriage style adornments.

5. **Single-family detached dwelling units shall:**

A. Be a minimum of 1,500 heated square feet.

B. Have cementitious siding that shall vary in type and color with brick, shakes, board and batten, or stone accents provided as decorative features

C. Have at least two types of finishes on the front: lap siding, masonry, shakes, and board and batten.

7. A homeowners' association (HOA) shall be created, and all open spaces observed in map amendment (conditional rezoning) concept plan, dated 3/1/2024, shall be owned and maintained by the HOA.

8. **Foundations:** All foundations are to be monolithic poured slab foundations. Top of slabs shall be elevated a minimum of 18 inches above finished grade for all dwelling units. All foundations shall be treated with masonry on the front and street-facing sides for a minimum of 10".

9. **Recreational amenities:** the following recreational amenities shall be constructed as observed in map amendment (conditional rezoning) concept plan, dated 3/1/2024. Public greenway (approximately 5,600 linear feet), private multi-use paths (approximately 410 linear feet), gazebos, playgrounds, and a dog park. Amenities shall be built prior to the issuance of the building permit for the 70<sup>th</sup> lot.

10. **Landscaping.** At least twenty percent (20%) of all landscaping required by the LDO, that does not already qualify under LDO Section 6.2, shall utilize plant materials that are listed as native pollinator plants by the North Carolina Wildlife Federation. Where evergreen plantings or street trees are required by the LDO, native pollinator plantings shall not be required. Such plantings shall be clearly shown in construction drawings and installed as part of subdivision infrastructure. Nothing herein shall be constructed to limit the plant materials permitted on individual residential lots.



11. **Sidewalk Easement.** The development shall attempt to procure an easement from the owners of those properties with PINs 1757-48-1376 (Deed Book 19407, Page 984, Wake County Registry) and 1757-38-8408 (Deed Book 2261, Page 683, Wake County Registry), in order to provide a 5'-wide sidewalk running from the development's proposed access to Jonesville Road to the intersection with Universal Drive. If the development procures easements from both property owners, the sidewalk shall be located within said easements and constructed consistent with the Town of Rolesville Transportation Plan, and shall be completed prior to the issuance of the one hundredth (100<sup>th</sup>) building permit. If the development is unable to procure an easement from either property owner prior to the issuance of the first (1<sup>st</sup>) building permit, then the development shall pay a fee-in-lieu for the sidewalk construction to the Town of Rolesville. The fee-in-lieu shall be paid prior to the issuance of the one hundredth (100<sup>th</sup>) building permit.

12. **Universal Drive.** The development shall attempt to procure a minimum 20'-wide access easement (the "Easement") from the owner of that property with PIN 1757-38-8408 (Deed Book 2261, Page 683, Wake County Registry) for vehicular ingress and egress to and from Gideon Drive and Jonesville Road (the "Easement Area"). This Easement shall be recorded with the Wake County Registry. If the Easement is obtained and recorded, the development shall pave the Easement Area with a 20'-wide asphalt surface coat over top of the existing private gravel access drive. The paving shall be completed prior to the issuance of the development's one hundredth (100<sup>th</sup>) building permits. Following completion of the paving, the development shall be responsible for maintenance of the Easement Area; this maintenance responsibility shall expire if Universal Drive is dedicated as public right-of-way. If the development can not obtain and record the Easement before the issuance of the first (1<sup>st</sup>) building permit, then the development shall have no obligation to perform any work described in this Condition.

13. Prior to issuance of the first building permit for a dwelling unit, the development shall donate thirty-five thousand dollars and no cents (\$35,000.00) to Homes for Heroes.

Reviewed and Acknowledged by the Property Owner or Applicant:

\_\_\_\_\_

Printed Name

\_\_\_\_\_

Signature

\_\_\_\_\_

Date

REZONING AND ANNEXATION OF PROPERTY CONSISTING OF +/- 93.609 ACRES,  
LOCATED SOUTHWEST OF THE JONESVILLE ROAD AND UNIVERSAL DRIVE  
INTERSECTION, IN THE TOWN OF ROLESVILLE

REPORT OF MEETING WITH ADJACENT PROPERTY OWNERS AND TENANTS ON  
JULY 12, 2022

Pursuant to applicable provisions of the Unified Development Ordinance, a meeting was held with respect to a potential rezoning and annexation with adjacent neighbors on Wednesday, July 12, 2023, at 6:00 p.m. The property considered for this potential rezoning totals approximately 93.609 acres, and is located along southwest of the Jonesville Road and Universal Drive intersection, in the Town of Rolesville. This meeting was held at virtually via a Zoom Meeting. All owners and tenants of property within 500 feet of the subject property were invited to attend the meeting. Attached hereto as **Exhibit A** is a copy of the neighborhood meeting notice. A copy of the required mailing list for the meeting invitations is attached hereto as **Exhibit B**. A summary of the items discussed at the meeting is attached hereto as **Exhibit C**. Attached hereto as **Exhibit D** is a list of individuals who attended the meeting.

## EXHIBIT A – NEIGHBORHOOD MEETING NOTICE



To: Neighboring Property Owners and Tenants  
From: Samuel Morris  
Date: June 23, 2023  
Re: Virtual Neighborhood Meeting for Annexation and Rezoning of Harris Creek Farm (f.k.a. 4928 Universal) (ANX 22-05 & MA 22-08)

You are invited to attend a virtual meeting to discuss the proposed annexation and rezoning of Harris Creek Farm (f.k.a. 4928 Universal) (ANX 22-05 & MA 22-08). We have scheduled an informational meeting with surrounding neighbors on Wednesday, July 12, 2023 from 6:00 PM until 7:00 PM. This meeting will be held virtually. You can participate online or by telephone.

To join with video:

<https://zoom.us/>  
**Meeting ID:** 871 7347 4235  
**Password:** 922539

To join by telephone:

**+1 646 558 8656**  
**Meeting ID:** 871 7347 4235  
**Password:** 922539

The purpose of this meeting is to discuss the proposed annexation and rezoning of Harris Creek Farm (f.k.a. 4928 Universal) (ANX 22-05 & MA 22-08). The property assemblage totals approximately 93.609 acres in size and is located southwest of the Jonesville Road and Universal Drive intersection.

The property is currently zoned Residential-30 (R-30) under Wake County zoning. The proposed rezoning would change the zoning to Residential Medium Density Conditional Zoning and Residential High Density Conditional Zoning (RM-CZ & RH-CZ) under the Town of Rolesville zoning. The purpose of the rezoning is to allow for the development of single family homes and townhomes.

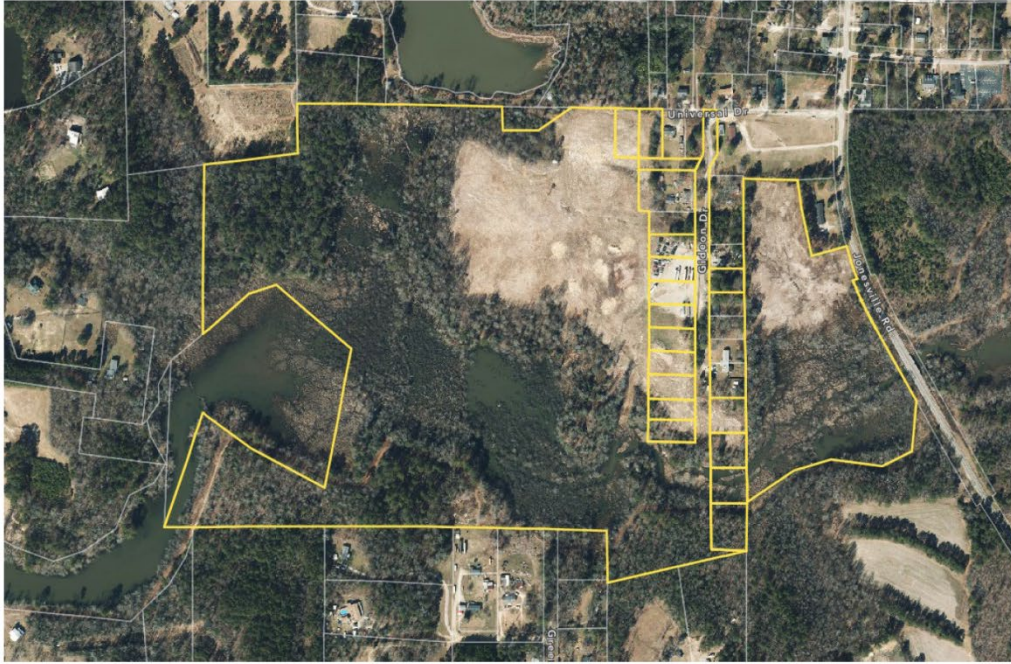
The Town of Rolesville requires a neighborhood meeting involving the owners and tenants of property within 500 feet of the properties during the rezoning process. After the meeting, we will prepare a report for the Planning Department regarding the items discussed at the meeting.

Please do not hesitate to contact me directly if you have any questions or wish to discuss any issues. I can be reached at 919.780.5438 and [smorris@longleaflp.com](mailto:smorris@longleaflp.com). Also, for more information about the rezoning, you may visit <https://www.rolesvillenc.gov/projects/harris-creek-farm-fka-4928-universal> or contact the Town of Rolesville Planning Department at 919.554.6517.

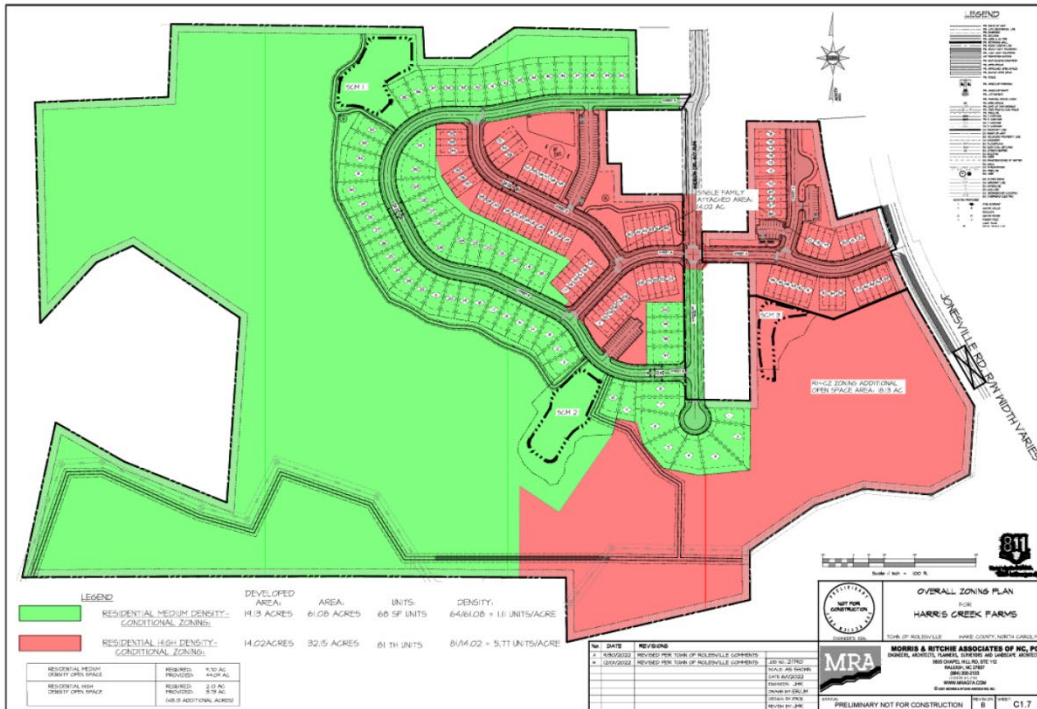
Attached to this invitation are the following materials:

1. Subject Property Current Aerial
2. Proposed Zoning Map

### CURRENT PROPERTY MAP



### PROPOSED ZONING



## EXHIBIT B – NOTICE LIST

HUNT, FERDINAND V HUNT, LYDIA L  
1000 SIMPSON ST APT 6B  
BRONX NY 10459-3348

FERRELL, CHARLES E FERRELL, GRETTA L  
3805 JONESVILLE RD  
WAKE FOREST NC 27587-8181

HOWE, MARK JAMES JR  
PO BOX 61122  
RALEIGH NC 27661-1122

JARVIS, MARIE D CURTIS, HURLEY MAE  
3704 GIDEON DR  
WAKE FOREST NC 27587-6360

JARVIS, MARIE D CURTIS, HURLEY MAE  
3704 GIDEON DR  
WAKE FOREST NC 27587-6360

DONAN, JESUS CORDON, LUCY DONAN  
3617 GREEN FARM LN  
WAKE FOREST NC 27587-6828

WATKINS POND INC  
ANTHONY BRIDGES  
98 BERKSHIRE LN  
HAMPSTEAD NC 28443-0480

TODD, JOAN M  
4180 STELLS RD  
WAKE FOREST NC 27587-6306

POWER ELEVEN CONSTRUCTION LLC  
4125 DURHAM CHAPEL HILL BLVD STE 8A  
DURHAM NC 27707-2666

WILDER, THOMAS H III WILDER, MAGGIE  
104 DARTMOUTH RD APT 326  
RALEIGH NC 27609-8409

HARTSFIELD, ROZELIA J HEIRS  
HATTIE SMITH  
2450 MINERAL SPRINGS RD  
BOYDTON VA 23917-4404

BOUTAVONG, KIT  
3521 WOOD DUCK LN  
WAKE FOREST NC 27587-6874

FERRELL, BRIAN L  
3807 JONESVILLE RD  
WAKE FOREST NC 27587-8181

BIRMINGHAM, JOHN DAVIS  
3636 GREEN FARM LN  
WAKE FOREST NC 27587-6827

PEELER, JAMIE ELIZABETH  
313 SHERWEE DR  
RALEIGH NC 27603-3521

BIRMINGHAM, JOHN D  
3636 GREEN FARM LN  
WAKE FOREST NC 27587-6827

WW OVERTIME LLC  
3728 GIDEON DR  
WAKE FOREST NC 27587-6360

BOYD, KATHERINE B PAYNE, M TRAVIS  
4220 MILLPOINT DR  
WAKE FOREST NC 27587-6377

RIVERS, SUSAN MARSHALL  
3627 GREEN FARM LN  
WAKE FOREST NC 27587-6828

LEE, BRENDA HEIRS  
BRENDX MEEKS  
3861 JONESVILLE RD  
WAKE FOREST NC 27587-8181

PHILLIPS, BRETT L JR PHILLIPS, KRISTEN HOPE  
9237 BLACKLEY LAKE RD  
WAKE FOREST NC 27587-8196

MCGEE, LORIE ANN MCGEE, BILLY RAY  
3621 GREEN FARM LN  
WAKE FOREST NC 27587-6828

ALSTON, HENRY ALSTON, MARIE F  
3741 JONESVILLE RD  
WAKE FOREST NC 27587-8179

PULLEN, MAGGIE H  
C/O SAREN GILMORE  
3833 JONESVILLE RD  
WAKE FOREST NC 27587-8181

FOWLER, JAMES ROBERT III BRIGHT, JILL F  
7400 FOWLER RD  
ZEBULON NC 27597-8318

BOSTIC, BILLIE D BOSTIC, JOHN J  
9413 WHITE CARRIAGE DR  
WAKE FOREST NC 27587-7046

WATKINS POND INC  
ANTHONY BRIDGES  
98 BERKSHIRE LN  
HAMPSTEAD NC 28443-0480

CARTER, LISA CAROL  
3604 GREEN FARM LN  
WAKE FOREST NC 27587-6827

BIRMINGHAM, JOHN D  
3636 GREEN FARM LN  
WAKE FOREST NC 27587-6827

JARVIS, MYRON JARVIS, MARIE  
3704 GIDEON DR  
WAKE FOREST NC 27587-6360

BLACKLEY LAKE FISHING CLUB  
C/O GLENN BARHAM  
9001 BLACKLEY LAKE RD  
WAKE FOREST NC 27587-8110

BURNHAM, ABRAHAM T BURNHAM, KYLA L  
3803 JONESVILLE RD  
WAKE FOREST NC 27587-8181

WHITLEY, CLEVELAND G HEIRS  
DEBRA WHITLEY  
3720 GIDEON DR  
WAKE FOREST NC 27587-6360

CURTIS, HENDELL HEIRS  
4917 UNIVERSAL DR  
WAKE FOREST NC 27587-6357

HARRIS, OLLIE VIRGIN HEIRS HARRIS, LORINE B  
LORINE B HARRIS  
PO BOX 225  
FRANKLINTON NC 27525-0225

KULAWIAK, MEGAN  
3533 WOOD DUCK LN  
WAKE FOREST NC 27587-6874

KULAWIAK, MEGAN  
3533 WOOD DUCK LN  
WAKE FOREST NC 27587-6874

DALEY, JOSEPH P  
3619 GREEN FARM LN  
WAKE FOREST NC 27587-6828

BARHAM, LARRY H. BARHAM, MICHAEL D.  
5821 WILD ORCHID TRL  
RALEIGH NC 27613-8549

PHILLIPS, BRETT LEE JR PHILLIPS, KRISTEN HOPE  
9237 BLACKLEY LAKE RD  
WAKE FOREST NC 27587-8196

DUNN, JAMES WILLIAM HEIRS MONTAGUE,  
BUNNIE DUNN  
2390 W RIVER RD  
FRANKLINTON NC 27525-7217

SMARTT, COLLIN  
147 ROLLING CREEK CIR  
CLAYTON NC 27520-5132

QUIRINO, MARIA ESTELA  
4916 UNIVERSAL DR  
WAKE FOREST NC 27587-6356

KENNETH INVESTMENT LLC  
10030 GREEN LEVEL CHURCH RD STE 802  
CARY NC 27519-8195

KENNETH INVESTMENT LLC  
10030 GREEN LEVEL CHURCH RD STE 802  
CARY NC 27519-8195

KENNETH INVESTMENT LLC  
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CARY NC 27519-8195

KENNETH INVESTMENT LLC  
10030 GREEN LEVEL CHURCH RD STE 802  
CARY NC 27519-8195

KENNETH INVESTMENT LLC  
10030 GREEN LEVEL CHURCH RD STE 802  
CARY NC 27519-8195

SOUTTER, SUSAN R SOUTTER, ROBERT QUENTIN  
3636 BRIDGES POND WAY  
WAKE FOREST NC 27587-5611

WILSON, TIMOTHY LEE  
5409 KNOLLWOOD RD  
RALEIGH NC 27609-4552

JP MORGAN MORTGAGE ACQUISITION CORP  
4817 LONG GREEN DR  
WAKE FOREST NC 27587-5244

GHOLSON, RYAN PATRICK  
7924 MANDREL WAY  
RALEIGH NC 27616-9503

SUAREZ, HELENA TRUSTEE THE HELENA SUAREZ  
FAMILY TRUST  
9660 FALLS OF NEUSE RD # 138-286  
RALEIGH NC 27615-2473

PHILLIPS, BRETT L JR PHILLIPS, KRISTEN H  
9237 BLACKLEY LAKE RD  
WAKE FOREST NC 27587-8196

PHILLIPS, BRETT L JR PHILLIPS, KRISTEN H  
9237 BLACKLEY LAKE RD  
WAKE FOREST NC 27587-8196

GARCIA, SALVADOR  
4901 OLD POOLE RD  
RALEIGH NC 27610

HARTSFIELD, ROZELIA J HEIRS  
HATTIE SMITH  
2450 MINERAL SPRINGS RD  
BOYDTON VA 23917-4404

JONES, CHRISTOPHER D JONES, SHAWN  
MICHAEL  
5108 CHRISTIAN SCHOOL RD  
PANTEGO NC 27860-9255

KENNETH INVESTMENT LLC  
10030 GREEN LEVEL CHURCH RD STE 802  
CARY NC 27519-8195

FERRELL, BRIAN L  
3807 JONESVILLE RD  
WAKE FOREST NC 27587-8181

FERRELL, CHARLES E FERRELL, SHARON R  
3805 JONESVILLE RD  
WAKE FOREST NC 27587-8181

KENNETH INVESTMENT LLC  
10030 GREEN LEVEL CHURCH RD STE 802  
CARY NC 27519-8195

CARPENTER, BOBBY RAY CARPENTER, ALBERTA L  
3629 GREEN FARM LN  
WAKE FOREST NC 27587-6828

RIVERS, SUSAN M  
3627 GREEN FARM LN  
WAKE FOREST NC 27587-6828

HOLLOWAY, ROY D HOLLOWAY, MARTHA L  
3613 GREEN FARM LN  
WAKE FOREST NC 27587-6828

HARTSFIELD, ROZELIA J HEIRS  
HATTIE SMITH  
2450 MINERAL SPRINGS RD  
BOYDTON VA 23917-4404

SOUTTER, SUSAN R SOUTTER, ROBERT QUENTIN  
3636 BRIDGES POND WAY  
WAKE FOREST NC 27587-5611

KENNETH INVESTMENT LLC  
10030 GREEN LEVEL CHURCH RD STE 802  
CARY NC 27519-8195

KENNETH INVESTMENT LLC  
10030 GREEN LEVEL CHURCH RD STE 802  
CARY NC 27519-8195

MAYE, EVELYN Y MAYE, HILTON EUGENE  
4725 MITCHELL MILL RD  
WAKE FOREST NC 27587-7240

NC FARM AND FORAGE LLC  
9261 BLACKLEY LAKE RD  
WAKE FOREST NC 27587-8196

UNIVERSAL CHURCH OF PRAYER &  
4912 UNIVERSAL DR  
WAKE FOREST NC 27587-6356

## EXHIBIT C – MEETING MINUTES

- What is proposed timing for construction to start on the development
  - Developer and attorney explained proposed timeline with development plan and permits
- Would you have plans to do with the area that isn't a part of development?
  - Developer explained that wetland and southern land will remain the way it is (no development)
- How do we plan to avoid pollution from construction to the wells.
  - Developer and engineer explained their precautions in the construction process and state level regulations
- What about the blacktop water runoff and drying wells
  - Engineer explains storm drainage system and pond that will be on site – state mandated process that requires permit from town to avoid flooding downstream properties.
- Worried about runoff into Watkins Pond – What guarantee that it won't "get dirtied up".
  - Engineer explains codes and state mandated permits required to help control effects to the pond. Municipality will also come out to inspect site and silt fence.
- Who is the Developer on this project
  - Attorney explained who the client is and their members
- What is the price point of the townhomes and single-family homes
  - Developer explained projections on cost per unit. Do not have final pricing due to market changes and upgrades
- Will there be any fencing on the wooded areas into the private properties to separate the areas. Worried about people passing through to private property with greenways. Worried about "higher quality resident"
  - Developer and attorney explained - Not projecting fencing due to where the wetlands are. Town of Rolesville will have public easement regarding the greenway – it is up to the Town of Rolesville regarding fencing. Unlikely due to natural features.
- What is going to happen to the property that is not accessible from the road and is not in the wetlands? Will this ever be developed?
  - Developer explains it will not be developed and remained untouched. Units will not be added later to the plan.
- Will the land owner that is located along road next to development be able to access the road?
  - Attorney and developer explained that they will have access in and out as it is today. It is a public road
- The buffer at the NE corner of the development, where the words Universal Dr are on the map, appears to back up to the front yard at 4921 (the last home on the right). Will access to that end of Universal Dr beyond Gideon be cut off?
  - Attorney explained that the owners will still have access to their property. We are not allowed to cut off access. The scope of the rezoning should not effect that.



- Does this project have anything to do with the greenway plan?
  - Attorney explained that we do not have control of greenway development – we give easement to the Town of Rolesville.
- Concerned that diesel fuel will get into the Watkins Pond
  - Engineer explained that the control of the fuel tank will be mandated at a state level by the contractor – this is handled at the construction phase.
- Is the town mandating the developer to address the traffic concerns?
  - Attorney and Developer explained that an Impact analysis was done by Ramey Kemp. The NCDOT signed off on this. Based on increased trips and conditions on site they make recommendations on monitoring and approved intersections. The results will be included in the request. The Town of Rolesville contracts that traffic engineer and the developer and are not associated with the developer
- Are there plans to pave Universal Dr as well as Gideon?
  - The town is requiring developer to pave all of Gideon Drive, not Universal
- Concerned about increased traffic load on Universal Drive
  - Developer explained access points to the development and town requirements
- Will Universal not be eligible for paving?
  - Engineer explained it has not been required by the town to be paved for this development. Not anticipate increased traffic to Universal due to it being unpaved. It is not a public road.
- Who sends out the meeting notifications for the City of Rolesville public hearings?
  - Attorney explained the notices will be coming from the Town of Rolesville. Mailed and signs are typical notification types as well as posted on their website.
- Will there be an HOA with this development?
  - Developer explained there will be an HOA that will maintain open areas as well as amenities.
- Where will the amenities be located within the development?
  - Engineer explained what amenities they are expecting to create and location of same.
- What type of barriers do you see with the proposal plan?
  - Developer and attorney explained that they have met with staff and made modification to address any of these concerns. Also explained there is a good path forward considering policies and overall plan for the Town of Rolesville
- If the church gave permission to be paved on Universal, could it be paved? Do we need to request it be paved with the Town of Rolesville?
  - Attorney explained that yes you can pave it if is your private road
- Residents on Jonesville Road – Concerned about safety on this road for children – there are no sidewalks. How do we get sidewalks put in on that road
  - Attorney and engineer explained improvements can only be made on our property. We can not take other people’s property to create sidewalks. We are only required to improve along out frontage. We are building roadway and sidewalk on the property.
- Will school busses be stopping on Jonesville Road or will it go into the development? Will the roads be able to accommodate this?

- Engineer and developer explained the education department will be making that decision later on in the process. We have not control/make on that decision.
- Has any analysis been done regarding any wildlife in the wetlands on the property?
  - Attorney and engineer explained the open space requirements as well as the other preliminary environmental analysis that are required. The development will be predominantly be taking place in the already cleared areas.
- What measure will be taking place for privacy to neighboring properties? Will there be n natural buffers?
  - Attorney, developer and engineer explained the tree preservation areas and that they will keep trees where they can. There will be vegetative buffers and open space around property line.
- Is there a sidewalk plan along the eastern portion of Gideon Drive?
  - The engineer explained the town street requirements will require sidewalk improvements.
- What is the architectural design for the homes in the development?
  - Developer explained that they will be colonial type design that generally matches other developments in the area. This will not be mandated affordable housing but will be market rate but not luxury
- Neighbors are worried that the prices of the homes are not in line with others in the area – they are too inexpensive compared to the “nice homes” in the area. We are worried about property value decreasing based on this development.
  - Developer and attorney explained that the prices will change in the future based on market rate. It depends on what the market will be like in the next 3-5 years. There will be a range depending on the home type (townhomes and single family).
- Is there a date on the next meeting?
  - Attorney and developer explained that there has not been a meeting set yet. More documentation must be submitted. A link for the Town’s portal was shared in the Zoom chat

## **EXHIBIT D – MEETING ATTENDEES**

1. Sam Morris (Attorney with Longleaf Law Partners)
2. Kaline Shelton (Assistant at Longleaf Law Partners)
3. Steven George (Development Team)
4. Jeremy Keeny (Engineer)
5. Joan Todd
6. Natasha Hayes Smart
7. Marie Jarvis
8. Helena Suarez
9. Collin Smartt
10. Bill Harrell
11. Bryan Yaborough
12. Jackie
13. Lorine Harris
14. Steve
15. Brett
16. 919-453-4522
17. 919-602-5532
18. 919-621-1068
19. 984-204-0897
20. 434-265-0618
21. 919-272-1335
22. 919-438-9979
23. 919-491-6535
24. 919-827-5639



To: Neighboring Property Owners and Tenants  
From: Samuel Morris  
Date: October 13, 2023  
Re: Neighborhood Meeting for Annexation and Rezoning of Harris Creek Farm (f.k.a. 4928 Universal) (ANX 22-05 & MA 22-08)

You are invited to attend a meeting to discuss the proposed annexation and rezoning of Harris Creek Farm (f.k.a. 4928 Universal) (ANX 22-05 & MA 22-08). We have scheduled an informational meeting with surrounding neighbors on October 24, 2023 from 5:30 PM until 6:30 PM at the following location:

**Rolesville Community Center  
514 Southtown Circle  
Rolesville, NC 27571**

The purpose of this meeting is to discuss the proposed annexation and rezoning of Harris Creek Farm (f.k.a. 4928 Universal) (ANX 22-05 & MA 22-08). The property assemblage totals approximately 93 acres in size and is located southwest of the Jonesville Road and Universal Drive intersection.

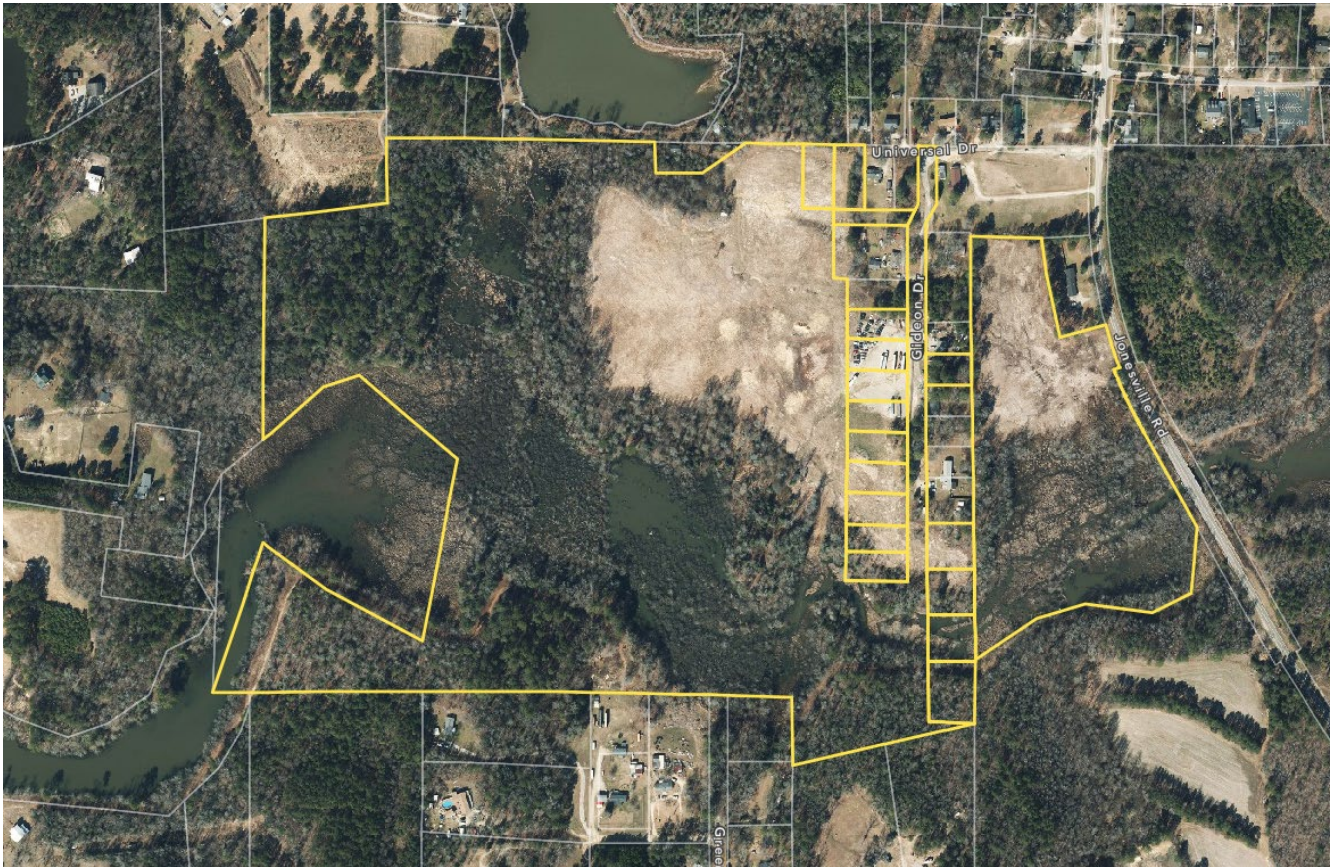
The property is currently zoned Residential-30 (R-30) under Wake County zoning. The proposed rezoning would change the zoning to Residential Medium Density Conditional Zoning and Residential High Density Conditional Zoning (RM-CZ & RH-CZ) under the Town of Rolesville zoning. The purpose of the rezoning is to allow for the development of single family homes and townhomes.

Please do not hesitate to contact me directly if you have any questions or wish to discuss any issues. I can be reached at 919.780.5438 and [smorris@longleaflp.com](mailto:smorris@longleaflp.com). Also, for more information about the rezoning, you may visit <https://www.rolesvillenc.gov/projects/harris-creek-farm-fka-4928-universal> or contact the Town of Rolesville Planning Department at 919.554.6517.

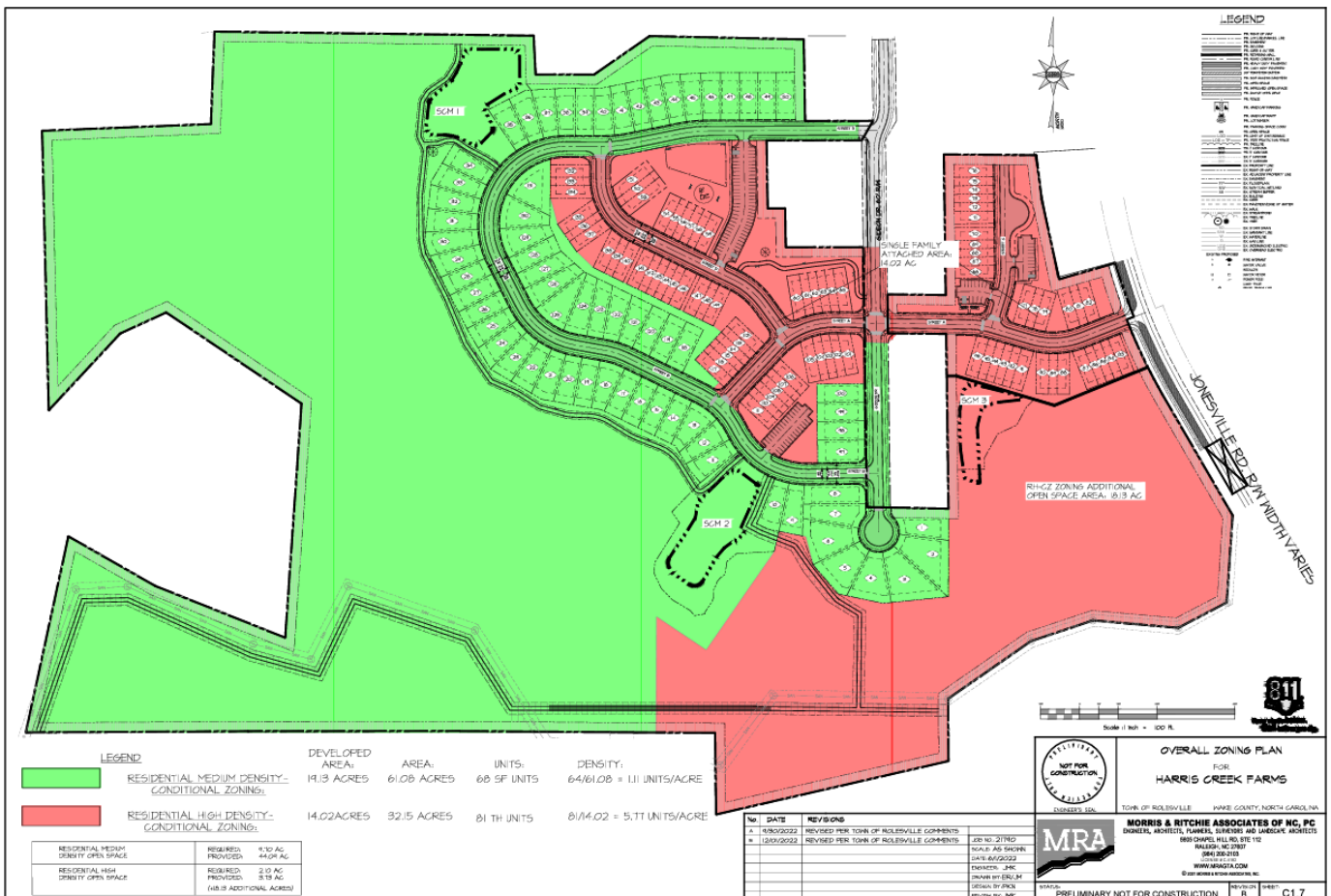
Attached to this invitation are the following materials:

1. Subject Property Current Aerial
2. Proposed Zoning Map

# CURRENT PROPERTY MAP



# PROPOSED ZONING



JONES, CHARLES ALFONSO JONES, ALLIE V  
3800 JONESVILLE RD  
WAKE FOREST NC 27587-8180

JONES, CHARLES E JONES, DARLENE C  
3816 JONESVILLE RD  
WAKE FOREST NC 27587-8180

BADGETT, ROBIN D BADGETT, TANA F  
4817 MITCHELL MILL RD  
WAKE FOREST NC 27587-7242

HUNT, FERDINAND V HUNT, LYDIA L  
1000 SIMPSON ST APT 6B  
BRONX NY 10459-3348

FERRELL, CHARLES E FERRELL, GRETTA L  
3805 JONESVILLE RD  
WAKE FOREST NC 27587-8181

WALKER, ALESHIA FERRELL WALKER, AARON  
5012 HARTSFIELD DR  
WAKE FOREST NC 27587-9638

HOWE, MARK JAMES JR  
PO BOX 61122  
RALEIGH NC 27661-1122

JARVIS, MARIE D CURTIS, HURLEY MAE  
3704 GIDEON DR  
WAKE FOREST NC 27587-6360

JARVIS, MARIE D CURTIS, HURLEY MAE  
3704 GIDEON DR  
WAKE FOREST NC 27587-6360

DONAN, JESUS CORDON, LUCY DONAN  
3617 GREEN FARM LN  
WAKE FOREST NC 27587-6828

WATKINS POND INC  
ANTHONY BRIDGES  
98 BERKSHIRE LN  
HAMPSTEAD NC 28443-0480

PRUDENT, VIRGINIA PRUDENT, ULRICK JR  
3104 BILLIARD CT  
WAKE FOREST NC 27587-9388

TODD, JOAN M  
4180 STELLS RD  
WAKE FOREST NC 27587-6306

FERRELL, BRIAN L  
3807 JONESVILLE RD  
WAKE FOREST NC 27587-8181

PERRY, LISA R  
PO BOX 581  
ROLESVILLE NC 27571-0581

CHAPPELL, CONNIE B PERRY, BETTY ANN  
BLACKLEY  
4025 LOUISBURY RD  
WAKE FOREST NC 27587-8118

POWER ELEVEN CONSTRUCTION LLC  
4125 DURHAM CHAPEL HILL BLVD STE 8A  
DURHAM NC 27707-2666

SESSOMS, JOHN B  
5021 HARTSFIELD DR  
WAKE FOREST NC 27587-9638

WILDER, THOMAS H III WILDER, MAGGIE  
104 DARTMOUTH RD APT 326  
RALEIGH NC 27609-8409

CHRIST HOLINESS CHURCH NUMBER 1  
C/O WILIAM WHITFIELD  
5016 HARTSFIELD DR  
WAKE FOREST NC 27587-9638

BROWN, JAMES A BROWN, SHELBY W  
4141 STELLS RD  
WAKE FOREST NC 27587-5242

GILMORE, JOSEPH H GILMORE, SARAH L  
3833 JONESVILLE RD  
WAKE FOREST NC 27587-8181

ASWELL, FREDRICA T  
3508 GREEN FARM LN  
WAKE FOREST NC 27587-6825

GASPER, REGUGIO TECHICAC  
7817 S COLORADO DR  
RALEIGH NC 27616-0905

JEFFERYS, CHRISTOPHER JEFFERYS, STEPHANIE  
2933 CANDLEHURST LN  
RALEIGH NC 27616-6250

MAYE, HILTON EUGENE MAYE, EVELYN YOUNG  
4725 MITCHELL MILL RD  
WAKE FOREST NC 27587-7240

BERRY, WILLIAM ROSSER BERRY, JULIA D  
9249 BLACKLEY LAKE RD  
WAKE FOREST NC 27587-8196

HARTSFIELD, ROZELIA J HEIRS  
HATTIE SMITH  
2450 MINERAL SPRINGS RD  
BOYDTON VA 23917-4404

HARTSFIELD, ROZELIA J HEIRS  
HATTIE SMITH  
2450 MINERAL SPRINGS RD  
BOYDTON VA 23917-4404

HARTSFIELD, ROZELIA J HEIRS  
HATTIE SMITH  
2450 MINERAL SPRINGS RD  
BOYDTON VA 23917-4404

HARTSFIELD, ROZELIA J HEIRS  
HATTIE SMITH  
2450 MINERAL SPRINGS RD  
BOYDTON VA 23917-4404

PERRY, JAMES DONNELL PERRY, CYNTHIA D  
3869 JONESVILLE RD  
WAKE FOREST NC 27587-8181

HOLLINGSWORTH, JACOB BROOKS  
3509 WOOD DUCK LN  
WAKE FOREST NC 27587-6874

BOUTAVONG, KIT  
3521 WOOD DUCK LN  
WAKE FOREST NC 27587-6874

JONES, ERNESTINE  
3848 JONESVILLE RD  
WAKE FOREST NC 27587-8180

BUGG, SAMUEL WILLIAM  
9245 BLACKLEY LAKE RD  
WAKE FOREST NC 27587-8196

BROWN, JAMES ALLEN BROWN, SHELBY W  
4141 STELLS RD  
WAKE FOREST NC 27587-5242

MEDLIN, LISA C  
3520 BRIDGES POND WAY  
WAKE FOREST NC 27587-5606

FERRELL, BRIAN L  
3807 JONESVILLE RD  
WAKE FOREST NC 27587-8181

HARTSFIELD, MARY HEIRS  
C/O KAREN BUTLER  
3816 7TH ST NW  
WASHINGTON DC 20011-5902

MCDANIEL, STEPHEN MCDANIEL, SHARON K  
4213 MILLPOINT DR  
WAKE FOREST NC 27587-5239

BIRMINGHAM, JOHN DAVIS  
3636 GREEN FARM LN  
WAKE FOREST NC 27587-6827

REEVES, LISA CAROL CARTER  
3604 GREEN FARM LN  
WAKE FOREST NC 27587-6827

MAYE, HILTON EUGENE MAYE, EVELYN RUTH  
4725 MITCHELL MILL RD  
WAKE FOREST NC 27587-7240

PHILLIPS, BRETT L JR PHILLIPS, KRISTEN H  
9237 BLACKLEY LAKE RD  
WAKE FOREST NC 27587-8196

BROWN, WILHELMINIA ANNETTE  
7506 LINNET RD  
WENDELL NC 27591-7279

BROWN, WILHELMINIA ANNETTE  
7506 LINNET RD  
WENDELL NC 27591-7279

BIRMINGHAM, JOHN D  
3636 GREEN FARM LN  
WAKE FOREST NC 27587-6827

LEITSCHUH, KARI DAWN  
4605 MITCHELL MILL RD  
WAKE FOREST NC 27587-7239

RUIZ, ALICIA GUADALUPE  
3857 JONESVILLE RD  
WAKE FOREST NC 27587-8181

WW OVERTIME LLC  
3728 GIDEON DR  
WAKE FOREST NC 27587-6360

MILLER, BERNARD  
3516 WOOD DUCK LN  
WAKE FOREST NC 27587-6873

PRINCE, TINA ATKINS ATKINS, JEFFREY RAY  
PO BOX 111  
WILLOW SPRING NC 27592-0111

BLACKMON, JOE  
4805 MITCHELL MILL RD  
WAKE FOREST NC 27587-7242

TOUTLOFF, KENNETH S TOUTLOFF, BILLIE ANNE  
3512 WOOD DUCK LN  
WAKE FOREST NC 27587-6873

DUNN, WILLIE JEAN  
4821 MITCHELL MILL RD  
WAKE FOREST NC 27587-7242

COVINGTON, LINDA MANNING  
3812 JONESVILLE RD  
WAKE FOREST NC 27587-8180

CHRIST HOLINESS CHURCH  
5016 HARTSFIELD DR  
WAKE FOREST NC 27587-9638

FERRELL, BENJAMIN  
C/O JESSE FERRELL  
248 CALIFORNIA AVE  
PROVIDENCE RI 02905-2815

BOYD, KATHERINE B PAYNE, M TRAVIS  
4220 MILLPOINT DR  
WAKE FOREST NC 27587-6377

RIVERS, SUSAN MARSHALL  
3627 GREEN FARM LN  
WAKE FOREST NC 27587-6828

RIVERS, SUSAN M  
3627 GREEN FARM LN  
WAKE FOREST NC 27587-6828

LEE, BRENDA HEIRS  
BRENDX MEEKS  
3861 JONESVILLE RD  
WAKE FOREST NC 27587-8181

PHILLIPS, BRETT L JR PHILLIPS, KRISTEN HOPE  
9237 BLACKLEY LAKE RD  
WAKE FOREST NC 27587-8196

MCGEE, LORIE ANN MCGEE, BILLY RAY  
3621 GREEN FARM LN  
WAKE FOREST NC 27587-6828

BERGDOLT, BRIAN H  
3612 MEDLIN WOODS RD  
WAKE FOREST NC 27587-7202

COTTON, DIANE MAYO  
5020 MISTLETOE DR  
WAKE FOREST NC 27587-6373

LEE, WILLIE O'KELLY LEE, EDITH M  
3845 JONESVILLE RD  
WAKE FOREST NC 27587-8181

PULLEN, MAGGIE H  
C/O SAREN GILMORE  
3833 JONESVILLE RD  
WAKE FOREST NC 27587-8181

CARPENTER, BOBBY RAY CARPENTER, ALBERTA L  
3629 GREEN FARM LN  
WAKE FOREST NC 27587-6828

CHRIST HOLINESS CHURCH # 1  
C/O WILIAM WHITFIELD  
5016 HARTSFIELD DR  
WAKE FOREST NC 27587-9638

CARELOCK, TABATHA R  
3513 GREEN FARM LN  
WAKE FOREST NC 27587-6826

CARELOCK, TABATHA R  
3513 GREEN FARM LN  
WAKE FOREST NC 27587-6826

FOWLER, JAMES ROBERT III BRIGHT, JILL F  
7400 FOWLER RD  
ZEBULON NC 27597-8318

JONES, TANYA ELISHA  
3517 WOOD DUCK LN  
WAKE FOREST NC 27587-6874

PAYNE, JEFFREY  
3808 JONESVILLE RD  
WAKE FOREST NC 27587-8180

MARTINEZ, ROBERTO ZETINA SANDOVAL,  
MARIA DE LOS ANGELES ORTIZ  
4916 LASHERAL RD  
WAKE FOREST NC 27587-6375

HOLDEN, MARCIE L  
3524 WOOD DUCK LN  
WAKE FOREST NC 27587-6873

VAN GORDER, JAMES  
3200 MAYEVILLE LN  
WAKE FOREST NC 27587-5637

JONES, CHRISTOPHER D JONES, SHAWN  
MICHAEL  
5108 CHRISTIAN SCHOOL RD  
PANTEGO NC 27860-9255

HOCUTT, JOHN E  
3517 GREEN FARM LN  
WAKE FOREST NC 27587-6826

BOSTIC, BILLIE D BOSTIC, JOHN J  
9413 WHITE CARRIAGE DR  
WAKE FOREST NC 27587-7046

WATKINS POND INC  
ANTHONY BRIDGES  
98 BERKSHIRE LN  
HAMPSTEAD NC 28443-0480

CARTER, LISA CAROL  
3604 GREEN FARM LN  
WAKE FOREST NC 27587-6827

BIRMINGHAM, JOHN D  
3636 GREEN FARM LN  
WAKE FOREST NC 27587-6827

JARVIS, MYRON JARVIS, MARIE  
3704 GIDEON DR  
WAKE FOREST NC 27587-6360

BLACKLEY LAKE FISHING CLUB  
C/O GLENN BARHAM  
9001 BLACKLEY LAKE RD  
WAKE FOREST NC 27587-8110

FERRELL, CHARLES E FERRELL, SHARON R  
3805 JONESVILLE RD  
WAKE FOREST NC 27587-8181

BURNHAM, ABRAHAM T BURNHAM, KYLA L  
3803 JONESVILLE RD  
WAKE FOREST NC 27587-8181

JONES, CHARLES E JONES, DARLENE  
3816 JONESVILLE RD  
WAKE FOREST NC 27587-8180



WHITLEY, CLEVELAND G HEIRS  
DEBRA WHITLEY  
3720 GIDEON DR  
WAKE FOREST NC 27587-6360

CURTIS, HENDELL HEIRS  
4917 UNIVERSAL DR  
WAKE FOREST NC 27587-6357

HAUFLER, DARREL EUGENE  
4340 MILLPOINT DR  
WAKE FOREST NC 27587-6384

HARRIS, OLLIE VIRGIN HEIRS HARRIS, LORINE B  
LORINE B HARRIS  
PO BOX 225  
FRANKLINTON NC 27525-0225

CHRIST HOLINESS CHURCH NUMBER 1  
5016 HARTSFIELD DR  
WAKE FOREST NC 27587-9638

KULAWIAK, MEGAN  
3533 WOOD DUCK LN  
WAKE FOREST NC 27587-6874

KULAWIAK, MEGAN  
3533 WOOD DUCK LN  
WAKE FOREST NC 27587-6874

GREENE, JOE L  
6415 HAWTHORNE ST  
HYATTSVILLE MD 20785-1711

DALEY, JOSEPH P  
3619 GREEN FARM LN  
WAKE FOREST NC 27587-6828

BARHAM, LARRY H. BARHAM, MICHAEL D.  
5821 WILD ORCHID TRL  
RALEIGH NC 27613-8549

PHILLIPS, BRETT LEE JR PHILLIPS, KRISTEN HOPE  
9237 BLACKLEY LAKE RD  
WAKE FOREST NC 27587-8196

DUNN, JAMES WILLIAM HEIRS MONTAGUE,  
BUNNIE DUNN  
2390 W RIVER RD  
FRANKLINTON NC 27525-7217

PERRY, ELWOOD RYAN  
2004 TRAWICK RD  
RALEIGH NC 27604-3841

ALSTON, CHRISTOPHER  
2172 WARRENTON RD  
HENDERSON NC 27537-9359

QUIRINO, MARIA ESTELA  
4916 UNIVERSAL DR  
WAKE FOREST NC 27587-6356

KENNETH INVESTMENT LLC  
10030 GREEN LEVEL CHURCH RD STE 802  
CARY NC 27519-8195

KENNETH INVESTMENT LLC  
10030 GREEN LEVEL CHURCH RD STE 802  
CARY NC 27519-8195

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10030 GREEN LEVEL CHURCH RD STE 802  
CARY NC 27519-8195

KENNETH INVESTMENT LLC  
10030 GREEN LEVEL CHURCH RD STE 802  
CARY NC 27519-8195

ROUSE, ELLEN CURTIS  
4009 TRESKO XING  
RALEIGH NC 27616-8473

HOLLOWAY, ROY D HOLLOWAY, MARTHA L  
3613 GREEN FARM LN  
WAKE FOREST NC 27587-6828

SOUTTER, SUSAN R SOUTTER, ROBERT QUENTIN  
3636 BRIDGES POND WAY  
WAKE FOREST NC 27587-5611

KELLY, NICOLAS KELLY, PEARLINE L  
5025 HARTSFIELD DR  
WAKE FOREST NC 27587-9638

WILSON, TIMOTHY LEE  
5409 KNOLLWOOD RD  
RALEIGH NC 27609-4552

JP MORGAN MORTGAGE ACQUISITION CORP  
4817 LONG GREEN DR  
WAKE FOREST NC 27587-5244

GHOLSON, RYAN PATRICK  
7924 MANDREL WAY  
RALEIGH NC 27616-9503

SUAREZ, HELENA TRUSTEE THE HELENA SUAREZ  
FAMILY TRUST  
9660 FALLS OF NEUSE RD # 138-286  
RALEIGH NC 27615-2473

INTROINVEST LLC  
4921 UNIVERSAL DR  
WAKE FOREST NC 27587-6357

TYNER, BRENDA W TRUSTEE NANCY H WATKINS  
IRREVOCABLE TRUST  
PO BOX 221  
ROLESVILLE NC 27571-0221

PHILLIPS, BRETT L JR PHILLIPS, KRISTEN H  
9237 BLACKLEY LAKE RD  
WAKE FOREST NC 27587-8196

PHILLIPS, BRETT L JR PHILLIPS, KRISTEN H  
9237 BLACKLEY LAKE RD  
WAKE FOREST NC 27587-8196

GARCIA, SALVADOR  
4901 OLD POOLE RD  
RALEIGH NC 27610

SOUTTER, SUSAN R SOUTTER, ROBERT QUENTIN  
3636 BRIDGES POND WAY  
WAKE FOREST NC 27587-5611

KENNETH INVESTMENT LLC  
10030 GREEN LEVEL CHURCH RD STE 802  
CARY NC 27519-8195

KENNETH INVESTMENT LLC  
10030 GREEN LEVEL CHURCH RD STE 802  
CARY NC 27519-8195

BERRY, WILLIAM R BERRY, JULIA D  
9241 BLACKLEY LAKE RD  
WAKE FOREST NC 27587-8196

NC FARM AND FORAGE LLC  
9261 BLACKLEY LAKE RD  
WAKE FOREST NC 27587-8196

MAYE, EVELYN Y MAYE, HILTON EUGENE  
4725 MITCHELL MILL RD  
WAKE FOREST NC 27587-7240

UNIVERSAL CHURCH OF PRAYER &  
4912 UNIVERSAL DR  
WAKE FOREST NC 27587-6356

REZONING AND ANNEXATION OF PROPERTY CONSISTING OF +/- 93 ACRES,  
LOCATED SOUTHWEST OF THE JONESVILLE ROAD AND UNIVERSAL DRIVE  
INTERSECTION, IN THE TOWN OF ROLESVILLE

REPORT OF MEETING WITH ADJACENT PROPERTY OWNERS AND TENANTS ON  
OCTOBER 24, 2022

Pursuant to applicable provisions of the Unified Development Ordinance, a meeting was held with respect to a potential rezoning and annexation with adjacent neighbors on Tuesday, October 24, 2023, at 5:30 p.m. The property considered for this potential rezoning totals approximately 93 acres and is located southwest of the Jonesville Road and Universal Drive intersection, in the Town of Rolesville. This meeting was held at the Rolesville Community Center. All owners and tenants of property within 1000 feet of the subject property were invited to attend the meeting. Attached hereto as **Exhibit A** is a copy of the neighborhood meeting notice. A copy of the required mailing list for the meeting invitations is attached hereto as **Exhibit B**. A summary of the items discussed at the meeting is attached hereto as **Exhibit C**. Attached hereto as **Exhibit D** is a list of individuals who attended the meeting.

**EXHIBIT A – NEIGHBORHOOD MEETING NOTICE**



To: Neighboring Property Owners and Tenants  
From: Samuel Morris  
Date: October 13, 2023  
Re: Neighborhood Meeting for Annexation and Rezoning of Harris Creek Farm (f.k.a. 4928 Universal) (ANX 22-05 & MA 22-08)

You are invited to attend a meeting to discuss the proposed annexation and rezoning of Harris Creek Farm (f.k.a. 4928 Universal) (ANX 22-05 & MA 22-08). We have scheduled an informational meeting with surrounding neighbors on October 24, 2023 from 5:30 PM until 6:30 PM at the following location:

**Rolesville Community Center  
514 Southtown Circle  
Rolesville, NC 27571**

The purpose of this meeting is to discuss the proposed annexation and rezoning of Harris Creek Farm (f.k.a. 4928 Universal) (ANX 22-05 & MA 22-08). The property assemblage totals approximately 93 acres in size and is located southwest of the Jonesville Road and Universal Drive intersection.

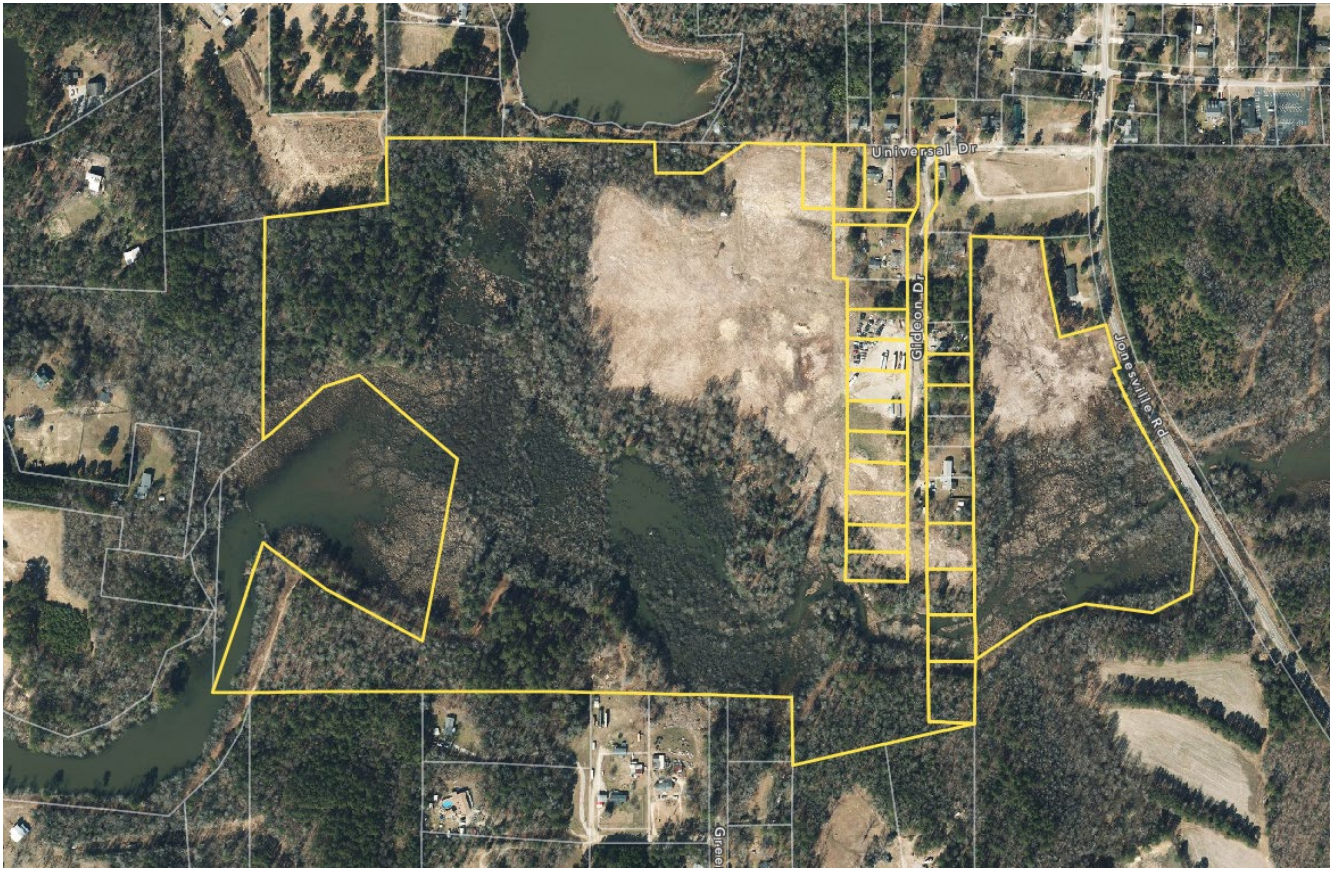
The property is currently zoned Residential-30 (R-30) under Wake County zoning. The proposed rezoning would change the zoning to Residential Medium Density Conditional Zoning and Residential High Density Conditional Zoning (RM-CZ & RH-CZ) under the Town of Rolesville zoning. The purpose of the rezoning is to allow for the development of single family homes and townhomes.

Please do not hesitate to contact me directly if you have any questions or wish to discuss any issues. I can be reached at 919.780.5438 and [smorris@longleaflp.com](mailto:smorris@longleaflp.com). Also, for more information about the rezoning, you may visit <https://www.rolesvillenc.gov/projects/harris-creek-farm-fka-4928-universal> or contact the Town of Rolesville Planning Department at 919.554.6517.

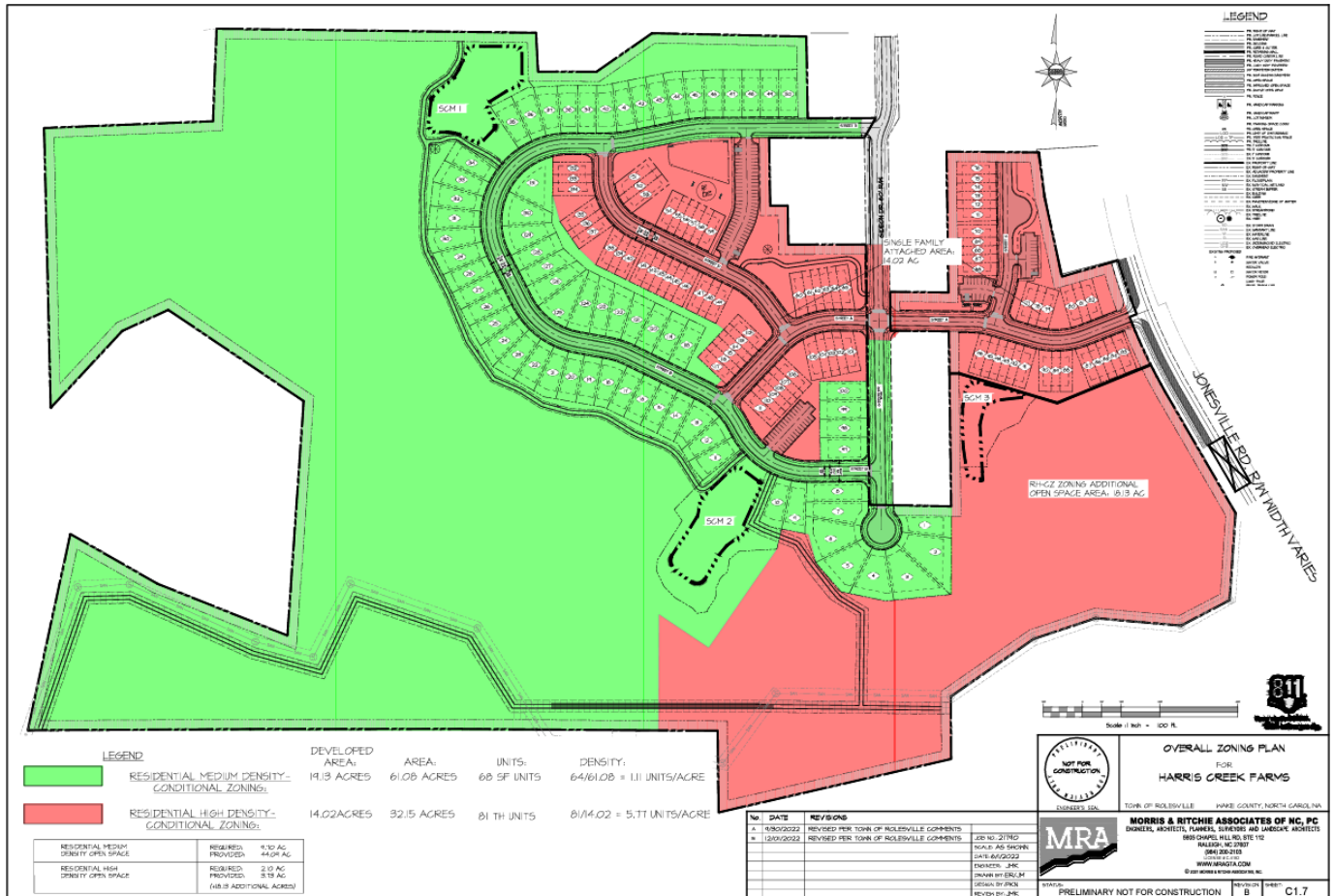
Attached to this invitation are the following materials:

1. Subject Property Current Aerial
2. Proposed Zoning Map

CURRENT PROPERTY MAP



PROPOSED ZONING



**EXHIBIT B – NOTICE LIST**

JONES, CHARLES ALFONSO JONES, ALLIE V  
3800 JONESVILLE RD  
WAKE FOREST NC 27587-8180

JONES, CHARLES E JONES, DARLENE C  
3816 JONESVILLE RD  
WAKE FOREST NC 27587-8180

BADGETT, ROBIN D BADGETT, TANA F  
4817 MITCHELL MILL RD  
WAKE FOREST NC 27587-7242

HUNT, FERDINAND V HUNT, LYDIA L  
1000 SIMPSON ST APT 6B  
BRONX NY 10459-3348

FERRELL, CHARLES E FERRELL, GRETTA L  
3805 JONESVILLE RD  
WAKE FOREST NC 27587-8181

WALKER, ALESHIA FERRELL WALKER, AARON  
5012 HARTSFIELD DR  
WAKE FOREST NC 27587-9638

HOWE, MARK JAMES JR  
PO BOX 61122  
RALEIGH NC 27661-1122

JARVIS, MARIE D CURTIS, HURLEY MAE  
3704 GIDEON DR  
WAKE FOREST NC 27587-6360

JARVIS, MARIE D CURTIS, HURLEY MAE  
3704 GIDEON DR  
WAKE FOREST NC 27587-6360

DONAN, JESUS CORDON, LUCY DONAN  
3617 GREEN FARM LN  
WAKE FOREST NC 27587-6828

WATKINS POND INC  
ANTHONY BRIDGES  
98 BERKSHIRE LN  
HAMPSTEAD NC 28443-0480

PRUDENT, VIRGINIA PRUDENT, ULRICK JR  
3104 BILLIARD CT  
WAKE FOREST NC 27587-9388

TODD, JOAN M  
4180 STELLS RD  
WAKE FOREST NC 27587-6306

FERRELL, BRIAN L  
3807 JONESVILLE RD  
WAKE FOREST NC 27587-8181

PERRY, LISA R  
PO BOX 581  
ROLESVILLE NC 27571-0581

CHAPPELL, CONNIE B PERRY, BETTY ANN  
BLACKLEY  
4025 LOUISBURY RD  
WAKE FOREST NC 27587-8118

POWER ELEVEN CONSTRUCTION LLC  
4125 DURHAM CHAPEL HILL BLVD STE 8A  
DURHAM NC 27707-2666

SESSOMS, JOHN B  
5021 HARTSFIELD DR  
WAKE FOREST NC 27587-9638

WILDER, THOMAS H III WILDER, MAGGIE  
104 DARTMOUTH RD APT 326  
RALEIGH NC 27609-8409

CHRIST HOLINESS CHURCH NUMBER 1  
C/O WILIAM WHITFIELD  
5016 HARTSFIELD DR  
WAKE FOREST NC 27587-9638

BROWN, JAMES A BROWN, SHELBY W  
4141 STELLS RD  
WAKE FOREST NC 27587-5242

GILMORE, JOSEPH H GILMORE, SARAH L  
3833 JONESVILLE RD  
WAKE FOREST NC 27587-8181

ASWELL, FREDRICA T  
3508 GREEN FARM LN  
WAKE FOREST NC 27587-6825

GASPER, REGUGIO TECHICAC  
7817 S COLORADO DR  
RALEIGH NC 27616-0905

JEFFERYS, CHRISTOPHER JEFFERYS, STEPHANIE  
2933 CANDLEHURST LN  
RALEIGH NC 27616-6250

MAYE, HILTON EUGENE MAYE, EVELYN YOUNG  
4725 MITCHELL MILL RD  
WAKE FOREST NC 27587-7240

BERRY, WILLIAM ROSSER BERRY, JULIA D  
9249 BLACKLEY LAKE RD  
WAKE FOREST NC 27587-8196

HARTSFIELD, ROZELIA J HEIRS  
HATTIE SMITH  
2450 MINERAL SPRINGS RD  
BOYDTON VA 23917-4404

HARTSFIELD, ROZELIA J HEIRS  
HATTIE SMITH  
2450 MINERAL SPRINGS RD  
BOYDTON VA 23917-4404

HARTSFIELD, ROZELIA J HEIRS  
HATTIE SMITH  
2450 MINERAL SPRINGS RD  
BOYDTON VA 23917-4404



HARTSFIELD, ROZELIA J HEIRS  
HATTIE SMITH  
2450 MINERAL SPRINGS RD  
BOYDTON VA 23917-4404

PERRY, JAMES DONNELL PERRY, CYNTHIA D  
3869 JONESVILLE RD  
WAKE FOREST NC 27587-8181

HOLLINGSWORTH, JACOB BROOKS  
3509 WOOD DUCK LN  
WAKE FOREST NC 27587-6874

BOUTAVONG, KIT  
3521 WOOD DUCK LN  
WAKE FOREST NC 27587-6874

JONES, ERNESTINE  
3848 JONESVILLE RD  
WAKE FOREST NC 27587-8180

BUGG, SAMUEL WILLIAM  
9245 BLACKLEY LAKE RD  
WAKE FOREST NC 27587-8196

BROWN, JAMES ALLEN BROWN, SHELBY W  
4141 STELLS RD  
WAKE FOREST NC 27587-5242

MEDLIN, LISA C  
3520 BRIDGES POND WAY  
WAKE FOREST NC 27587-5606

FERRELL, BRIAN L  
3807 JONESVILLE RD  
WAKE FOREST NC 27587-8181

HARTSFIELD, MARY HEIRS  
C/O KAREN BUTLER  
3816 7TH ST NW  
WASHINGTON DC 20011-5902

MCDANIEL, STEPHEN MCDANIEL, SHARON K  
4213 MILLPOINT DR  
WAKE FOREST NC 27587-5239

BIRMINGHAM, JOHN DAVIS  
3636 GREEN FARM LN  
WAKE FOREST NC 27587-6827

REEVES, LISA CAROL CARTER  
3604 GREEN FARM LN  
WAKE FOREST NC 27587-6827

MAYE, HILTON EUGENE MAYE, EVELYN RUTH  
4725 MITCHELL MILL RD  
WAKE FOREST NC 27587-7240

PHILLIPS, BRETT L JR PHILLIPS, KRISTEN H  
9237 BLACKLEY LAKE RD  
WAKE FOREST NC 27587-8196

BROWN, WILHELMINIA ANNETTE  
7506 LINNET RD  
WENDELL NC 27591-7279

BROWN, WILHELMINIA ANNETTE  
7506 LINNET RD  
WENDELL NC 27591-7279

BIRMINGHAM, JOHN D  
3636 GREEN FARM LN  
WAKE FOREST NC 27587-6827

LEITSCHUH, KARI DAWN  
4605 MITCHELL MILL RD  
WAKE FOREST NC 27587-7239

RUIZ, ALICIA GUADALUPE  
3857 JONESVILLE RD  
WAKE FOREST NC 27587-8181

WW OVERTIME LLC  
3728 GIDEON DR  
WAKE FOREST NC 27587-6360

MILLER, BERNARD  
3516 WOOD DUCK LN  
WAKE FOREST NC 27587-6873

PRINCE, TINA ATKINS ATKINS, JEFFREY RAY  
PO BOX 111  
WILLOW SPRING NC 27592-0111

BLACKMON, JOE  
4805 MITCHELL MILL RD  
WAKE FOREST NC 27587-7242

TOUTLOFF, KENNETH S TOUTLOFF, BILLIE ANNE  
3512 WOOD DUCK LN  
WAKE FOREST NC 27587-6873

DUNN, WILLIE JEAN  
4821 MITCHELL MILL RD  
WAKE FOREST NC 27587-7242

COVINGTON, LINDA MANNING  
3812 JONESVILLE RD  
WAKE FOREST NC 27587-8180

CHRIST HOLINESS CHURCH  
5016 HARTSFIELD DR  
WAKE FOREST NC 27587-9638

FERRELL, BENJAMIN  
C/O JESSE FERRELL  
248 CALIFORNIA AVE  
PROVIDENCE RI 02905-2815

BOYD, KATHERINE B PAYNE, M TRAVIS  
4220 MILLPOINT DR  
WAKE FOREST NC 27587-6377

RIVERS, SUSAN MARSHALL  
3627 GREEN FARM LN  
WAKE FOREST NC 27587-6828

RIVERS, SUSAN M  
3627 GREEN FARM LN  
WAKE FOREST NC 27587-6828

LEE, BRENDA HEIRS  
BRENDEX MEEKS  
3861 JONESVILLE RD  
WAKE FOREST NC 27587-8181

PHILLIPS, BRETT L JR PHILLIPS, KRISTEN HOPE  
9237 BLACKLEY LAKE RD  
WAKE FOREST NC 27587-8196

MCGEE, LORIE ANN MCGEE, BILLY RAY  
3621 GREEN FARM LN  
WAKE FOREST NC 27587-6828

BERGDOLT, BRIAN H  
3612 MEDLIN WOODS RD  
WAKE FOREST NC 27587-7202

COTTON, DIANE MAYO  
5020 MISTLETOE DR  
WAKE FOREST NC 27587-6373

LEE, WILLIE O'KELLY LEE, EDITH M  
3845 JONESVILLE RD  
WAKE FOREST NC 27587-8181

PULLEN, MAGGIE H  
C/O SAREN GILMORE  
3833 JONESVILLE RD  
WAKE FOREST NC 27587-8181

CARPENTER, BOBBY RAY CARPENTER, ALBERTA L  
3629 GREEN FARM LN  
WAKE FOREST NC 27587-6828

CHRIST HOLINESS CHURCH # 1  
C/O WILIAM WHITFIELD  
5016 HARTSFIELD DR  
WAKE FOREST NC 27587-9638

CARELOCK, TABATHA R  
3513 GREEN FARM LN  
WAKE FOREST NC 27587-6826

CARELOCK, TABATHA R  
3513 GREEN FARM LN  
WAKE FOREST NC 27587-6826

FOWLER, JAMES ROBERT III BRIGHT, JILL F  
7400 FOWLER RD  
ZEBULON NC 27597-8318

JONES, TANYA ELISHA  
3517 WOOD DUCK LN  
WAKE FOREST NC 27587-6874

PAYNE, JEFFREY  
3808 JONESVILLE RD  
WAKE FOREST NC 27587-8180

MARTINEZ, ROBERTO ZETINA SANDOVAL,  
MARIA DE LOS ANGELES ORTIZ  
4916 LASHERAL RD  
WAKE FOREST NC 27587-6375

HOLDEN, MARCIE L  
3524 WOOD DUCK LN  
WAKE FOREST NC 27587-6873

VAN GORDER, JAMES  
3200 MAYEVILLE LN  
WAKE FOREST NC 27587-5637

JONES, CHRISTOPHER D JONES, SHAWN  
MICHAEL  
5108 CHRISTIAN SCHOOL RD  
PANTEGO NC 27860-9255

HOCUTT, JOHN E  
3517 GREEN FARM LN  
WAKE FOREST NC 27587-6826

BOSTIC, BILLIE D BOSTIC, JOHN J  
9413 WHITE CARRIAGE DR  
WAKE FOREST NC 27587-7046

WATKINS POND INC  
ANTHONY BRIDGES  
98 BERKSHIRE LN  
HAMPSTEAD NC 28443-0480

CARTER, LISA CAROL  
3604 GREEN FARM LN  
WAKE FOREST NC 27587-6827

BIRMINGHAM, JOHN D  
3636 GREEN FARM LN  
WAKE FOREST NC 27587-6827

JARVIS, MYRON JARVIS, MARIE  
3704 GIDEON DR  
WAKE FOREST NC 27587-6360

BLACKLEY LAKE FISHING CLUB  
C/O GLENN BARHAM  
9001 BLACKLEY LAKE RD  
WAKE FOREST NC 27587-8110

FERRELL, CHARLES E FERRELL, SHARON R  
3805 JONESVILLE RD  
WAKE FOREST NC 27587-8181

BURNHAM, ABRAHAM T BURNHAM, KYLA L  
3803 JONESVILLE RD  
WAKE FOREST NC 27587-8181

JONES, CHARLES E JONES, DARLENE  
3816 JONESVILLE RD  
WAKE FOREST NC 27587-8180

WHITLEY, CLEVELAND G HEIRS  
DEBRA WHITLEY  
3720 GIDEON DR  
WAKE FOREST NC 27587-6360

CURTIS, HENDELL HEIRS  
4917 UNIVERSAL DR  
WAKE FOREST NC 27587-6357

HAUFLER, DARREL EUGENE  
4340 MILLPOINT DR  
WAKE FOREST NC 27587-6384

HARRIS, OLLIE VIRGIN HEIRS HARRIS, LORINE B  
LORINE B HARRIS  
PO BOX 225  
FRANKLINTON NC 27525-0225

CHRIST HOLINESS CHURCH NUMBER 1  
5016 HARTSFIELD DR  
WAKE FOREST NC 27587-9638

KULAWIAK, MEGAN  
3533 WOOD DUCK LN  
WAKE FOREST NC 27587-6874

KULAWIAK, MEGAN  
3533 WOOD DUCK LN  
WAKE FOREST NC 27587-6874

GREENE, JOE L  
6415 HAWTHORNE ST  
HYATTSVILLE MD 20785-1711

DALEY, JOSEPH P  
3619 GREEN FARM LN  
WAKE FOREST NC 27587-6828

BARHAM, LARRY H. BARHAM, MICHAEL D.  
5821 WILD ORCHID TRL  
RALEIGH NC 27613-8549

PHILLIPS, BRETT LEE JR PHILLIPS, KRISTEN HOPE  
9237 BLACKLEY LAKE RD  
WAKE FOREST NC 27587-8196

DUNN, JAMES WILLIAM HEIRS MONTAGUE,  
BUNNIE DUNN  
2390 W RIVER RD  
FRANKLINTON NC 27525-7217

PERRY, ELWOOD RYAN  
2004 TRAWICK RD  
RALEIGH NC 27604-3841

ALSTON, CHRISTOPHER  
2172 WARRENTON RD  
HENDERSON NC 27537-9359

QUIRINO, MARIA ESTELA  
4916 UNIVERSAL DR  
WAKE FOREST NC 27587-6356

KENNETH INVESTMENT LLC  
10030 GREEN LEVEL CHURCH RD STE 802  
CARY NC 27519-8195

KENNETH INVESTMENT LLC  
10030 GREEN LEVEL CHURCH RD STE 802  
CARY NC 27519-8195

KENNETH INVESTMENT LLC  
10030 GREEN LEVEL CHURCH RD STE 802  
CARY NC 27519-8195

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CARY NC 27519-8195

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CARY NC 27519-8195

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CARY NC 27519-8195

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CARY NC 27519-8195

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CARY NC 27519-8195

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CARY NC 27519-8195

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CARY NC 27519-8195

KENNETH INVESTMENT LLC  
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CARY NC 27519-8195

KENNETH INVESTMENT LLC  
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CARY NC 27519-8195

KENNETH INVESTMENT LLC  
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CARY NC 27519-8195

KENNETH INVESTMENT LLC  
10030 GREEN LEVEL CHURCH RD STE 802  
CARY NC 27519-8195

KENNETH INVESTMENT LLC  
10030 GREEN LEVEL CHURCH RD STE 802  
CARY NC 27519-8195

ROUSE, ELLEN CURTIS  
4009 TRESKO XING  
RALEIGH NC 27616-8473

HOLLOWAY, ROY D HOLLOWAY, MARTHA L  
3613 GREEN FARM LN  
WAKE FOREST NC 27587-6828

SOUTTER, SUSAN R SOUTTER, ROBERT QUENTIN  
3636 BRIDGES POND WAY  
WAKE FOREST NC 27587-5611

KELLY, NICOLAS KELLY, PEARLINE L  
5025 HARTSFIELD DR  
WAKE FOREST NC 27587-9638

WILSON, TIMOTHY LEE  
5409 KNOLLWOOD RD  
RALEIGH NC 27609-4552

JP MORGAN MORTGAGE ACQUISITION CORP  
4817 LONG GREEN DR  
WAKE FOREST NC 27587-5244

GHOLSON, RYAN PATRICK  
7924 MANDREL WAY  
RALEIGH NC 27616-9503

SUAREZ, HELENA TRUSTEE THE HELENA SUAREZ  
FAMILY TRUST  
9660 FALLS OF NEUSE RD # 138-286  
RALEIGH NC 27615-2473

INTROINVEST LLC  
4921 UNIVERSAL DR  
WAKE FOREST NC 27587-6357

TYNER, BRENDA W TRUSTEE NANCY H WATKINS  
IRREVOCABLE TRUST  
PO BOX 221  
ROLESVILLE NC 27571-0221

PHILLIPS, BRETT L JR PHILLIPS, KRISTEN H  
9237 BLACKLEY LAKE RD  
WAKE FOREST NC 27587-8196

PHILLIPS, BRETT L JR PHILLIPS, KRISTEN H  
9237 BLACKLEY LAKE RD  
WAKE FOREST NC 27587-8196

GARCIA, SALVADOR  
4901 OLD POOLE RD  
RALEIGH NC 27610

SOUTTER, SUSAN R SOUTTER, ROBERT QUENTIN  
3636 BRIDGES POND WAY  
WAKE FOREST NC 27587-5611

KENNETH INVESTMENT LLC  
10030 GREEN LEVEL CHURCH RD STE 802  
CARY NC 27519-8195

KENNETH INVESTMENT LLC  
10030 GREEN LEVEL CHURCH RD STE 802  
CARY NC 27519-8195

BERRY, WILLIAM R BERRY, JULIA D  
9241 BLACKLEY LAKE RD  
WAKE FOREST NC 27587-8196

NC FARM AND FORAGE LLC  
9261 BLACKLEY LAKE RD  
WAKE FOREST NC 27587-8196

MAYE, EVELYN Y MAYE, HILTON EUGENE  
4725 MITCHELL MILL RD  
WAKE FOREST NC 27587-7240

UNIVERSAL CHURCH OF PRAYER &  
4912 UNIVERSAL DR  
WAKE FOREST NC 27587-6356

## EXHIBIT C – MEETING MINUTES

- **Introduction of Development Team:**

- Developer Steve George with The CSC Group, Attorney Samuel Morris with Longleaf Law Partners, and Engineer Jeremy Keeney with Morris & Ritchie Associates.

- **Development Team Presentation:**

- Purpose of this neighborhood meeting and past meetings.
- Discussion regarding rezoning and annexation process in Rolesville.
- Description and location of the Subject Property.
- Discussion regarding current zoning of the property under Wake County.
- Discussion regarding Rolesville Future Land Use Map and Comprehensive Plan guidance
- Description of proposed rezoning and reasons for the request.
- Explanation of proposed building types and densities on the Subject Property.
- Discussion regarding wetlands and open space that will be preserved on the property.
- Forecast future meetings and public hearings.

- **Q & A:**

- What is the name of the development company?
  - The CSC Group, which is a local real estate development group.
- What is the price point and square footage of the townhomes and single-family homes?
  - Developer explained potential projections on cost per unit for townhouses and detached units. They will likely be between 1,800 and 3,000 square feet. Do not have final pricing due to potential market changes.
- Was there a traffic impact analysis?
  - The development team explained that a Traffic Impact Analysis was done by Ramey Kemp, who was retained by the Town. The NCDOT signed off on this. Based on increased trips and conditions on site they make

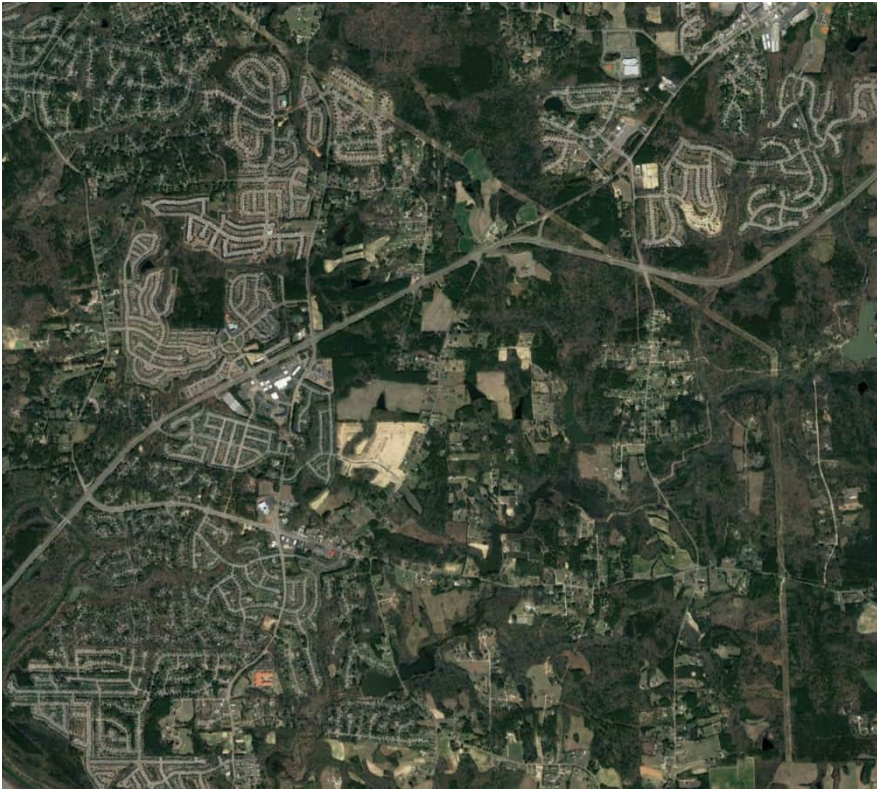
recommendations on monitoring and approved intersections. The results and requirements have been included in the rezoning request.

- Will Universal Dr Gideon Dr be paved/improved?
  - The town is requiring the developer to pave and improve all of Gideon Drive, not Universal, but we are working privately with the Church regarding Universal Drive.
- What measure will be taking place for privacy to neighboring properties? Will there be any natural buffers?
  - The development team explained that there will be 25' vegetative buffers around all adjacent private property.
- Will there be sidewalks Gideon Drive?
  - The engineer explained the town street requirements will require sidewalk improvements along Gideon.
- What is proposed timeline for the development?
  - Development team explained the typical rezoning timeline with development plan and permits, and that construction would not likely occur over a year.
- Inquiry regarding the size, location, and purpose of stormwater ponds.
  - The engineer explained the details and purpose of the proposed stormwater pond.
- Questions regarding density, configuration, and approval process for nearby Mitchell Mill Reserve development.
  - The development team explained the details and nature of the approved Mithcell Mill Reserve case. Engineer explained that background traffic data from that rezoning was considered and used during our TIA.
- Will the homes be built-to-rent, or will they be for sale? What is to stop an owner from renting out a unit that they purchase?
  - The homes will be for sale. NC law limits the ability to prohibit people from leasing their property. Individual owners could buy a unit as an investment.

## **EXHIBIT D – MEETING ATTENDEES**

1. Sam Morris
2. Steven George
3. Jeremy Keeny
4. John Birmingham
5. Guy Jones
6. Myron Jarvis
7. Marie Jarvis
8. Matthew Jarvis
9. Darlene Jones
10. Bryan Harris

**RAMEY KEMP ASSOCIATES**  
*TOGETHER WE ARE LIMITLESS*



Harris Creek Farm  
**Traffic Impact Analysis**  
**Rolesville, North Carolina**



# TRAFFIC IMPACT ANALYSIS

FOR

## HARRIS CREEK FARM

LOCATED

IN

## ROLESVILLE, NORTH CAROLINA

Prepared For:  
Town of Rolesville  
502 Southtown Circle  
Rolesville, NC 27571

Prepared By:  
Infrastructure Consulting Services, Inc.  
*dba*

**Ramey Kemp Associates**  
5808 Faringdon Place  
Raleigh, NC 27609  
License #F-1489



MAY 2023

RKA Project No. 20498 - 009

Prepared By: DAR

Reviewed By: JAE

**TRAFFIC IMPACT ANALYSIS**  
**HARRIS CREEK FARM**  
**ROLESVILLE, NORTH CAROLINA**

**EXECUTIVE SUMMARY**

**1. Development Overview**

A Traffic Impact Analysis (TIA) was conducted for the proposed Harris Creek Farm development in accordance with the Town of Rolesville (Town) Land Development Ordinance (LDO) and North Carolina Department of Transportation (NCDOT) capacity analysis guidelines. The proposed development, anticipated to be completed in 2027, is to be located on the west side of Jonesville Road near Universal Drive in Rolesville, NC. The proposed development is expected to consist of 68 single-family homes and 81 townhomes. Site access is proposed via two (2) full-movement driveway connections: one on Universal Drive and one on Jonesville Road approximately 700 feet south of Universal Drive.

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

- 2022 Existing Traffic Conditions
- 2027 No-Build Traffic Conditions
- 2027 Build Traffic Conditions
- 2027 Build-Improved Traffic Conditions

**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:

- US 401 Bypass and Jonesville Road
- US 401 Bypass and Eastern U-Turn Location
- Mitchell Mill Road and Jonesville Road / Peebles Road
- Jonesville Road and Universal Drive

Existing peak hour traffic volumes were determined based on traffic counts conducted at the study intersections listed above except for Jonesville Road and Universal Drive, in November of 2021 during typical weekday AM (7:00 AM – 9:00 AM) and PM (4:00 PM – 6:00 PM) peak periods, while schools were in session for in-person learning.

Existing peak hour turning movement volumes at the intersection of Jonesville Road and Universal Drive were estimated by generating and assigning trips for the nine (9) homes that are accessed via Universal Drive. It was estimated that there will be 8 AM trips: 2 enter 6 exit and 10 PM trips: 7 enter 3 exit. The trips were distributed to the north and south along Jonesville Road the same as site trips. Through traffic volumes were balanced from the Mitchell Mill Road/Jonesville Road intersection.

Previously collected counts from the year 2021 were projected to the 2022 existing analysis year using a compounded annual growth rate of 2%. 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 68 single-family homes and 81 townhomes,. 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*, 11<sup>th</sup> 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	Total	Enter	Exit	Total
Single-Family Home (210)	68 DU	708	13	39	52	44	25	69
Single Family Attached (215)	81 DU	568	9	27	36	26	19	45
<b>Total Primary Trips</b>		<b>1,276</b>	<b>22</b>	<b>66</b>	<b>88</b>	<b>70</b>	<b>44</b>	<b>114</b>

#### 4. Future Traffic Conditions

Through coordination with the Town and NCDOT, it was determined that an annual growth rate of 0% would be used to generate 2027 projected weekday AM and PM peak hour traffic volumes. A growth rate of 0% was used due to the number of developments included in the background traffic and the proximity of some of these developments to the proposed development. The following adjacent developments were identified to be considered under future conditions:

- Cobblestone Crossing Mixed-Use (Cobblestone)
- Young Street PUD (The Point)
- Wheeler Tract (Rolesville Crossing)
- Louisbury Road Assemblage
- Kalas / Watkins Family Property (Kalas Falls)
- 5109 Mitchell Mill
- Hills at Harris Creek

#### 5. Capacity Analysis Summary

The analysis considered weekday AM and PM peak hour traffic for 2022 existing, 2027 no-build, 2027 build, and 2027 build-improved conditions. Refer to Section 7 of the TIA 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.

##### **Recommended Improvements by Developer**

###### US 401 Bypass and Jonesville Road

- Conduct a full signal warrant analysis prior to full build-out of the proposed development and install a traffic signal if warranted and approved by the Town and NCDOT.

US 401 Bypass and Eastern U-Turn Location

- Conduct a full signal warrant analysis prior to full build-out of the proposed development and install a traffic signal if warranted and approved by the Town and NCDOT.

Mitchell Mill Road and Jonesville Road / Peebles Road

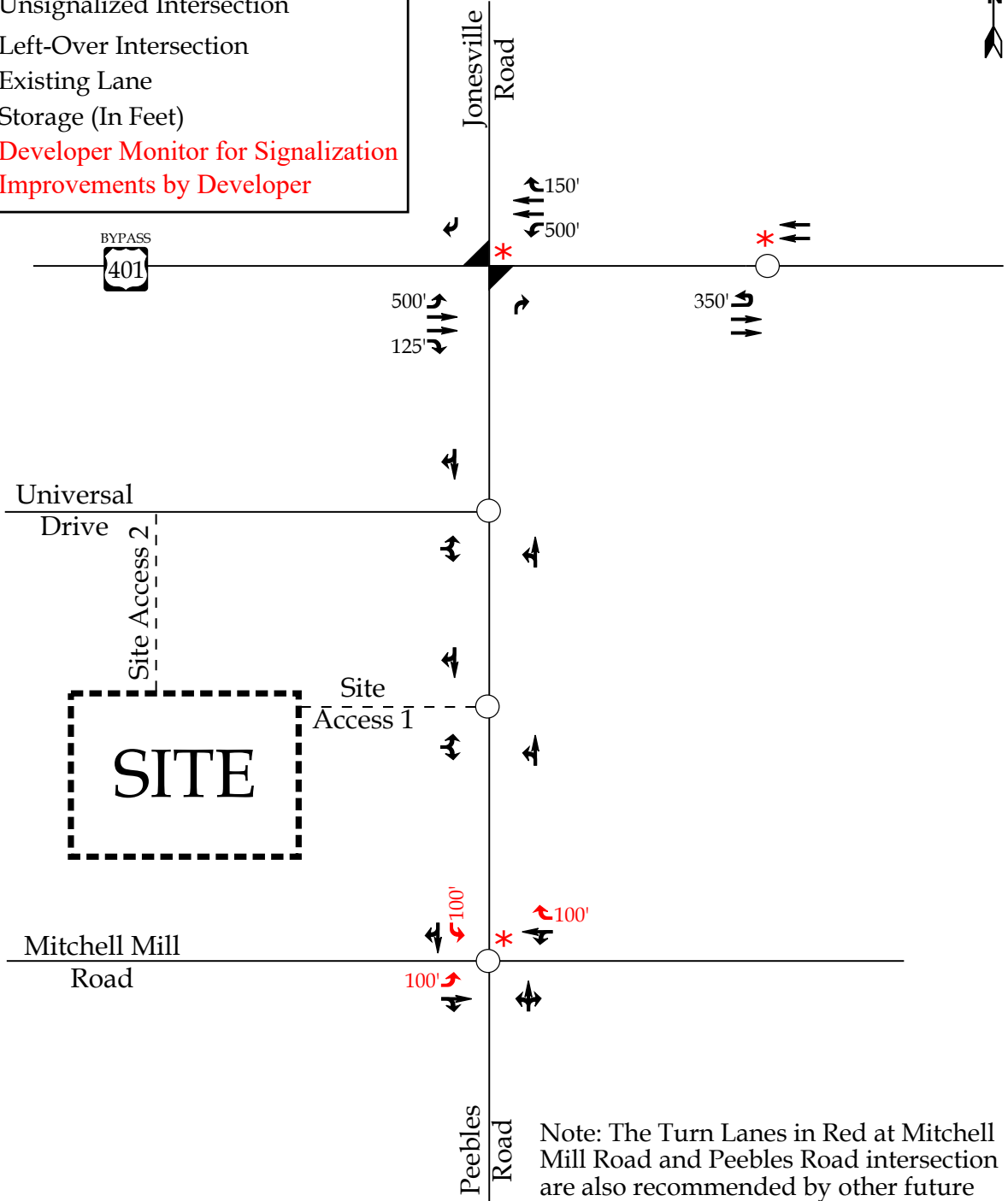
- Construct a southbound (Jonesville Road) left-turn lane with at least 100 feet of storage and appropriate decel and taper.
  - It should be noted that this improvement was also identified by the 5109 Mitchell Mill Road TIA and Hills at Harris Creek TIA
- Construct a westbound (Mitchell Mill Road) right-turn lane with at least 100 feet of storage and appropriate decel and taper.
  - It should be noted that this improvement was also identified by the Hills at Harris Creek TIA
- Construct an eastbound (Mitchell Mill Road) left-turn lane with at least 100 feet of storage and appropriate decel and taper.
  - It should be noted that this improvement was also identified by the 5109 Mitchell Mill Road TIA
- Conduct a full signal warrant analysis prior to full build-out of the proposed development and install a traffic signal if warranted and approved by the Town and NCDOT.

Jonesville Road and Site Drive

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

**LEGEND**

- Unsignalized Intersection
- ◄ Left-Over Intersection
- Existing Lane
- x' Storage (In Feet)
- \* Developer Monitor for Signalization
- Improvements by Developer



Note: The Turn Lanes in Red at Mitchell Mill Road and Peebles Road intersection are also recommended by other future developments



Harris Creek Farm  
Rolesville, NC

Recommended Lane  
Configurations

Scale: Not to Scale Figure E-1

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- Appendix A: Scoping Documentation
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**TRAFFIC IMPACT ANALYSIS**  
**HARRIS CREEK FARM**  
**ROLESVILLE, NORTH CAROLINA**

**1. INTRODUCTION**

The contents of this report present the findings of the Traffic Impact Analysis (TIA) conducted for the proposed Harris Creek Farm development in Rolesville, North Carolina. The proposed development, anticipated to be completed in 2027, is to be located on the west side of Jonesville Road near Universal Drive in Rolesville, NC. The proposed development is expected to consist of 68 single-family homes and 81 townhomes. 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 study analyzes traffic conditions during the weekday AM and PM peak hours for the following scenarios:

- 2022 Existing Traffic Conditions
- 2027 No-Build Traffic Conditions
- 2027 Build Traffic Conditions

**1.1. Site Location and Study Area**

The proposed development is to be located on the west side of Jonesville Road near Universal Drive in Rolesville, NC. 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 Rolesville (Town) and consists of the following existing intersections:

- US 401 Bypass and Jonesville Road
- US 401 Bypass and Eastern U-Turn Location
- Jonesville Road and Universal Drive
- Mitchell Mill Road and Jonesville Road / Peebles Road

Refer to Appendix A for the approved scoping documentation.

### **1.2. Proposed Land Use and Site Access**

The site is to be located on the west side of Jonesville Road near Universal Drive. The proposed development is anticipated to be completed in 2027, and is assumed to consist of the following uses:

- 68 single-family homes
- 81 townhomes

Site access to the proposed development is expected to be provided via two (2) full-movement driveway connections: one on Universal Drive and one on Jonesville Road approximately 700 feet south of Universal Drive. 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.

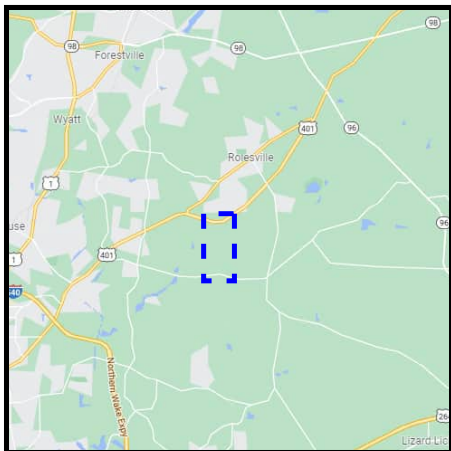
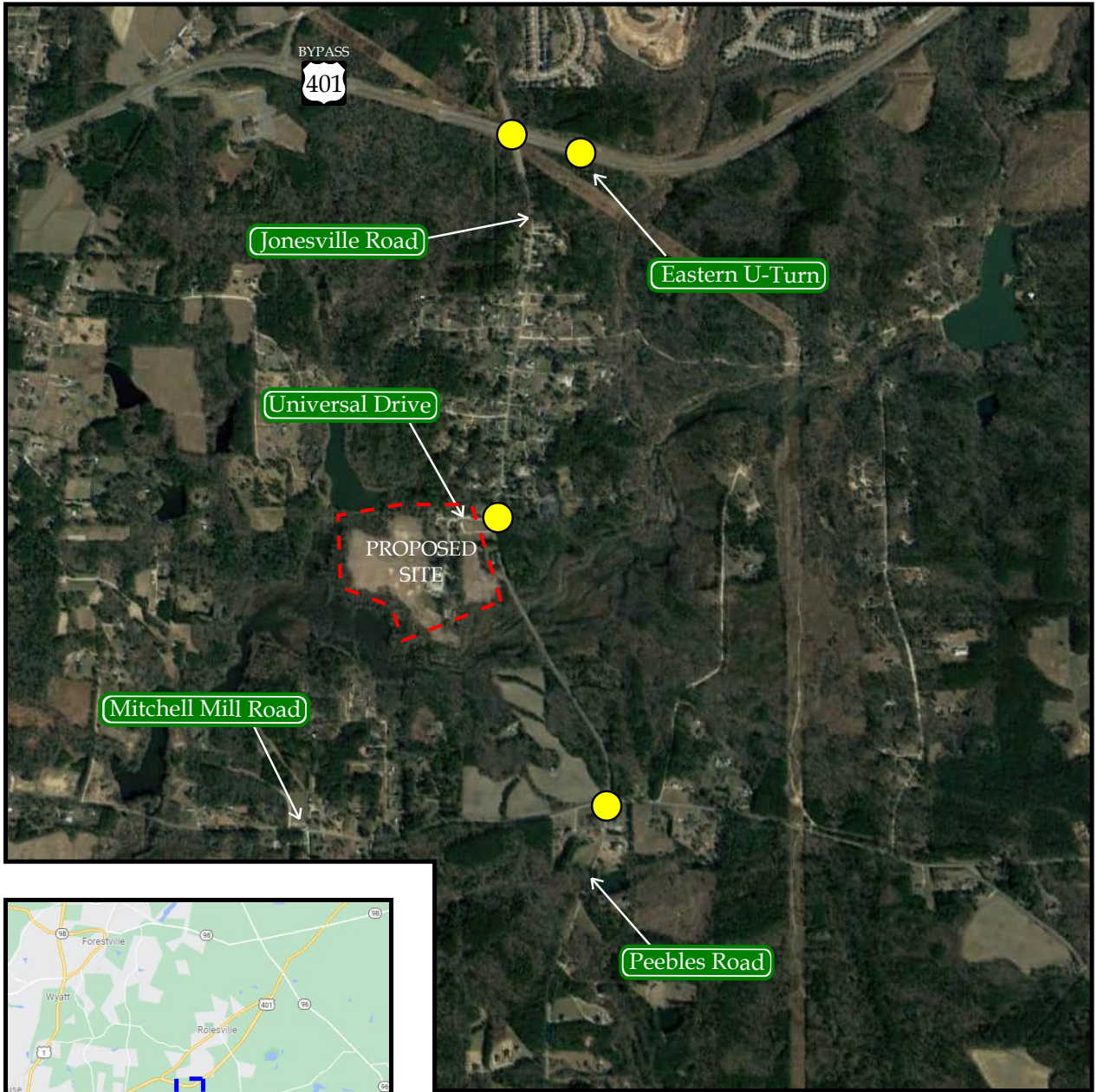
### **1.4. Existing Roadways**

Existing lane configurations (number of traffic lanes on each intersection approach), 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**

<b>Road Name</b>	<b>Route Number</b>	<b>Typical Cross-Section</b>	<b>Speed Limit</b>	<b>Maintained By</b>	<b>2019 AADT (vpd)</b>
US 401 Bypass		4-lane divided	55 mph	NCDOT	17,500
Jonesville Road	SR 2226	2-lane undivided	35 mph / 45 mph	NCDOT	2,210*
Mitchell Mill Road	SR 2224	2-lane undivided	45 mph	NCDOT	4,000
Peebles Road	SR 2929	2-lane undivided	45 mph	NCDOT	1,700*

\*ADT based on 2022 existing traffic volumes and assuming the weekday PM peak hour volume is 10% of the average daily traffic.



**LEGEND**

- - - Proposed Site Location
- Existing Study Intersection
- - - Study Area



Harris Creek Farm  
Rolesville, NC


Site Location Map

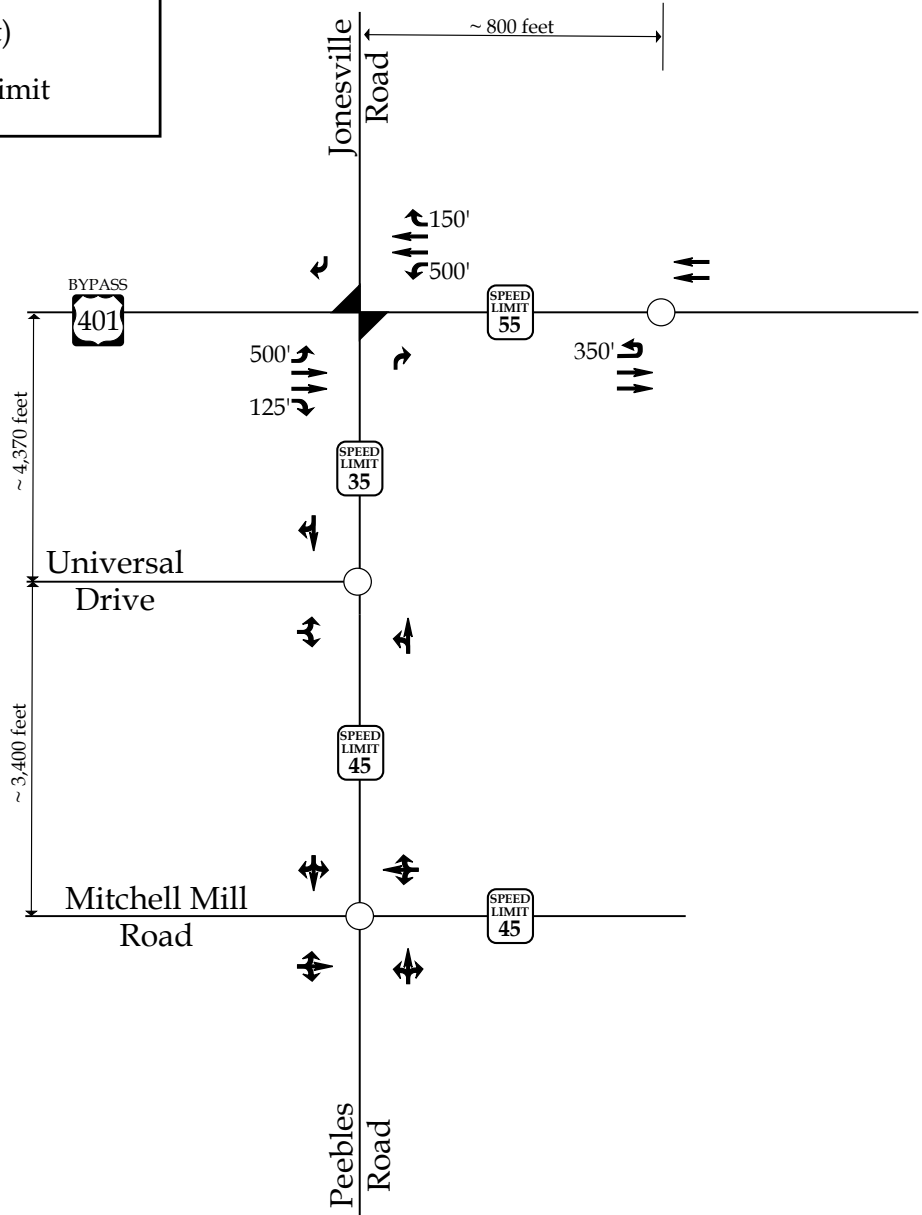
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Figure 1



**LEGEND**

- Unsignalized Intersection
- ◼ Left-Over Intersection
- ➔ Existing Lane
- x' Storage (In Feet)
-  Posted Speed Limit



Harris Creek Farm  
Rolesville, NC

2022 Existing  
Lane Configurations

Scale: Not to Scale Figure 3



## **2. 2022 EXISTING PEAK HOUR CONDITIONS**

### **2.1. 2022 Existing Peak Hour Traffic Volumes**

Existing peak hour traffic volumes were determined based on previously collected traffic counts conducted at the study intersections listed below, in November of 2021 during typical weekday AM (7:00 AM – 9:00 AM) and PM (4:00 PM – 6:00 PM) peak periods, while schools were in session for in-person learning:

- US 401 Bypass and Jonesville Road
- US 401 Bypass and Eastern U-Turn Location
- Mitchell Mill Road and Jonesville Road / Peebles Road

Previously collected counts from the year 2021 were projected to the 2022 existing analysis year using a compounded annual growth rate of 2%.

Existing peak hour turning movement volumes at the intersection of Jonesville Road and Universal Drive were estimated by generating and assigning trips for the nine (9) homes that are accessed via Universal Drive. It was estimated that there will be 8 AM trips: 2 enter 6 exit and 10 PM trips: 7 enter 3 exit. The trips were distributed to the north and south along Jonesville Road the same as site trips. Through traffic volumes were balanced from the Mitchell Mill Road/Jonesville Road intersection.

Weekday AM and PM traffic volumes were balanced between study intersections, where appropriate. Refer to Figure 4 for 2022 existing weekday AM and PM peak hour traffic volumes. A copy of the count data is located in Appendix B of this report.

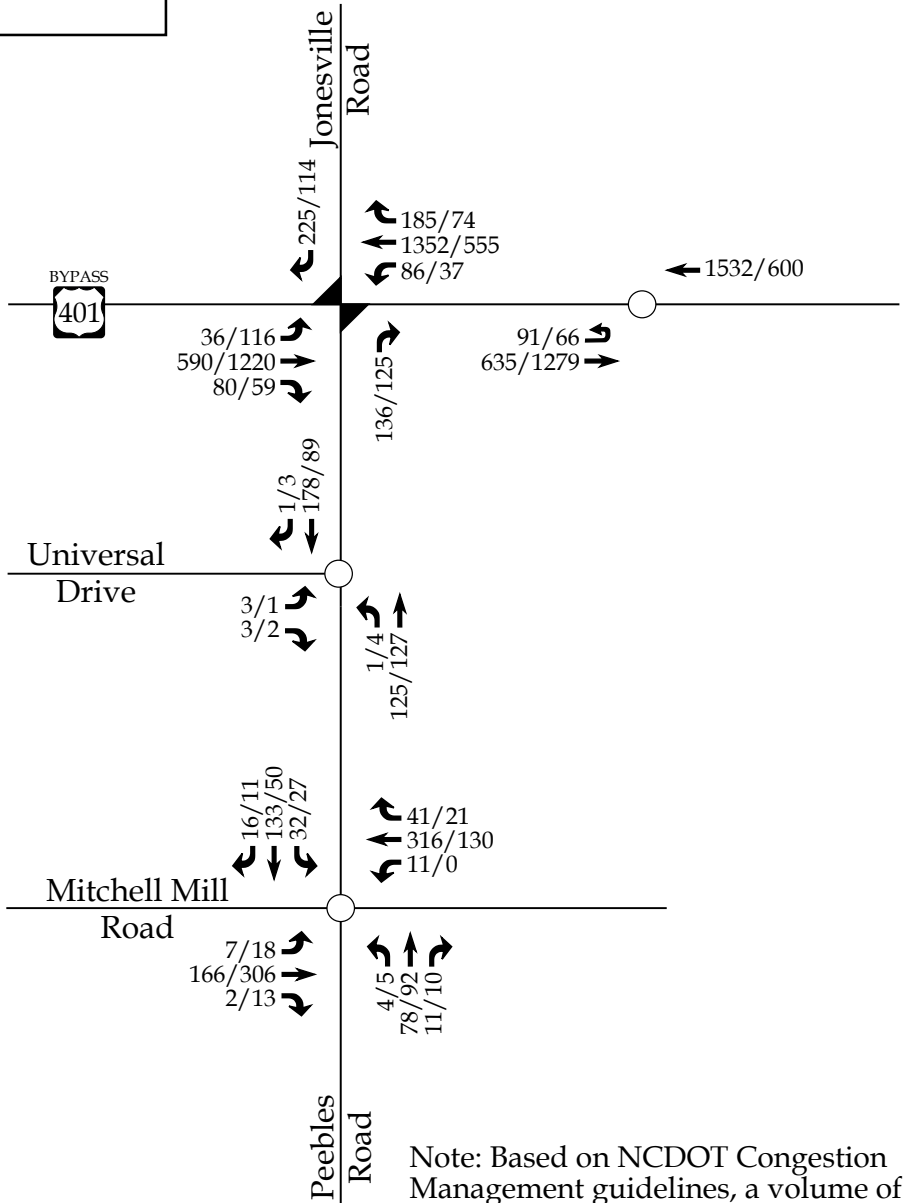
### **2.2. Analysis of 2022 Existing Peak Hour Traffic Conditions**

The 2022 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. The results of the analysis are presented in Section 7 of this report.



**LEGEND**

- Unsignalized Intersection
- ◄ Left-Over Intersection
- X / Y → Weekday AM / PM Peak Hour Traffic



Note: Based on NCDOT Congestion Management guidelines, a volume of 4 vehicles per hour (vph) was analyzed for any movement with less than 4 vph.

	<p>Harris Creek Farm Rolesville, NC</p>	<p>2022 Existing Peak Hour Traffic</p>	
		<p>Scale: Not to Scale</p>	<p>Figure 4</p>

### **3. 2027 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 NCDOT and the Town, it was determined that an annual growth rate of 0% would be used to generate 2027 projected weekday AM and PM peak hour traffic volumes. A growth rate of 0% was used due to the number of developments included in the background traffic and the proximity of some of these developments to the proposed development. Refer to Figure 5 for 2027 projected peak hour traffic.

#### **3.2. Adjacent Development Traffic**

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

- Cobblestone Crossing Mixed-Use (Cobblestone)
- Young Street PUD (The Point)
- Wheeler Tract (Rolesville Crossing)
- Louisbury Road Assemblage
- Kalas / Watkins Family Property (Kalas Falls)
- 5109 Mitchell Mill
- Hills at Harris Creek

Table 2, on the following page, provides a summary of the adjacent developments. Adjacent development trips are shown in Figure 6. Adjacent development information can be found in Appendix C.

**Table 2: Adjacent Development Information**

<b>Development Name</b>	<b>Location</b>	<b>Build-Out Year</b>	<b>Land Use / Intensity</b>	<b>TIA Performed</b>
Cobblestone Crossing Mixed-Use	Northwest quadrant of the intersection of Main Street and Young Street	2023	180 multi-family homes 18,200 sq. ft. municipal flex space 50,000 sq. ft. general retail	March 2021 by RKA
Young Street PUD	Along both sides of US 401 Bypass west of Young Street	2025	96 single-family homes 525 single-family homes 320 multi-family homes 122,800 sq. ft. general retail	June 2019 by Kimley Horn
Wheeler Tract	Northeast quadrant of the intersection of Rolesville Road and Mitchell Mill Road	2026	233 single-family homes 125 multi-family homes	June 2019 by RKA
Louisbury Road Assemblage	West of Louisbury Road and south of Stells Road	2025	152 single-family homes	May 2020 by RKA
Kalas / Watkins Family Property	Along the west side of Rolesville Road, north of Mitchell Mill Road	2025	439 single-family homes 96 multi-family homes	August 2019 by Stantec
5109 Mitchell Mill	Along both sides of Jonesville Road north of Mitchell Mill Road	2028	69 single-family homes 195 single-family homes 129 multi-family homes 50,000 sq. ft. shopping center	August 2022 by RKA
Hills at Harris Creek	North of Mitchell Mill Road, west of Manly Farm Road and east of Gro Peg Lane	2027	211 single-family homes 109 multi-family homes 25,400 sq. ft. general retail	May 2022 by RKA

### **3.3. Future Roadway Improvements**

Based on coordination with NCDOT and the Town, it was determined there were two previously approved TIA's that recommended roadway improvements that were considered under future conditions with this study. Both developments are to construct improvements at the intersection of Jonesville Road and Mitchell Mill Road. An exclusive eastbound left-turn lane was identified in the 5109 Mitchell Mill Road TIA. An exclusive westbound right-turn lane was identified in the Hills at Harris Creek TIA. In both the 5109 Mitchell Mill Road TIA and the Hills at Harris Creek TIA an exclusive southbound left-turn lane improvement was identified. It should be noted that per the Rolesville Community Transportation Plan (dated May 2022), the ultimate cross-section of Jonesville Road is identified as a 2-lane roadway with a center two-way-left-turn-lane (TWLTL) and Mitchell Mill Road is identified as a 4-lane median-divided roadway.

### **3.4. 2027 No-Build Peak Hour Traffic Volumes**

The 2027 no-build traffic volumes were determined by projecting the 2022 existing peak hour traffic to the year 2027 and adding the adjacent development trips. Refer to Figure 7 for an illustration of the 2027 no-build peak hour traffic volumes at the study intersections.

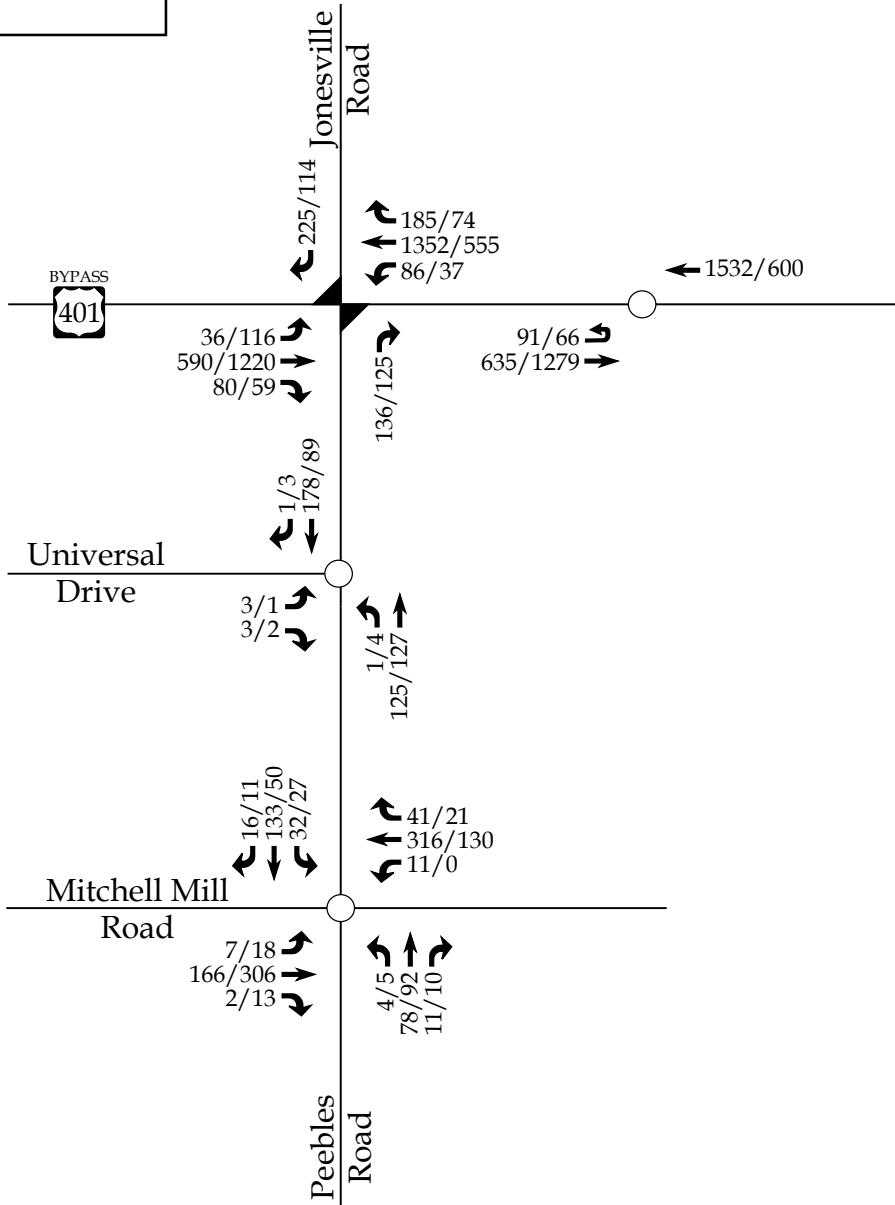
### **3.5. Analysis of 2027 No-Build Peak Hour Traffic Conditions**

The 2027 no-build AM and PM peak hour traffic volumes at the study intersections were analyzed with existing geometric roadway conditions and traffic control. The analysis results are presented in Section 7 of this report.



**LEGEND**

- Unsignalized Intersection
- ◄ Left-Over Intersection
- X/Y → Weekday AM / PM Peak Hour Traffic



RAMEY KEMP ASSOCIATES

Harris Creek Farm  
Rolesville, NC

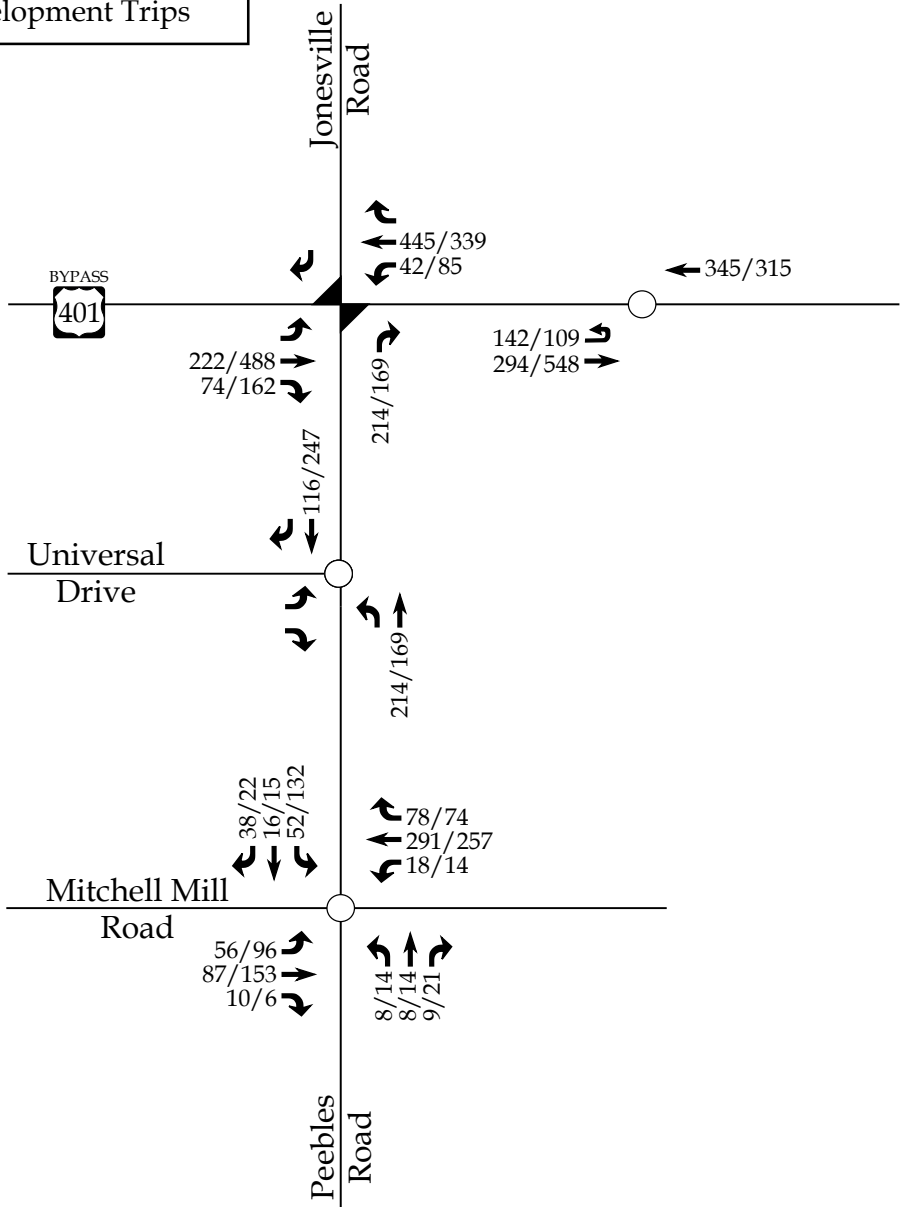
2027 Projected  
Peak Hour Traffic

Scale: Not to Scale

Figure 5

**LEGEND**

- Unsignalized Intersection
- ◄ Left-Over Intersection
- X / Y → Weekday AM / PM Peak Hour Adjacent Development Trips



Harris Creek Farm  
Rolesville, NC

Peak Hour Adjacent  
Development Trips

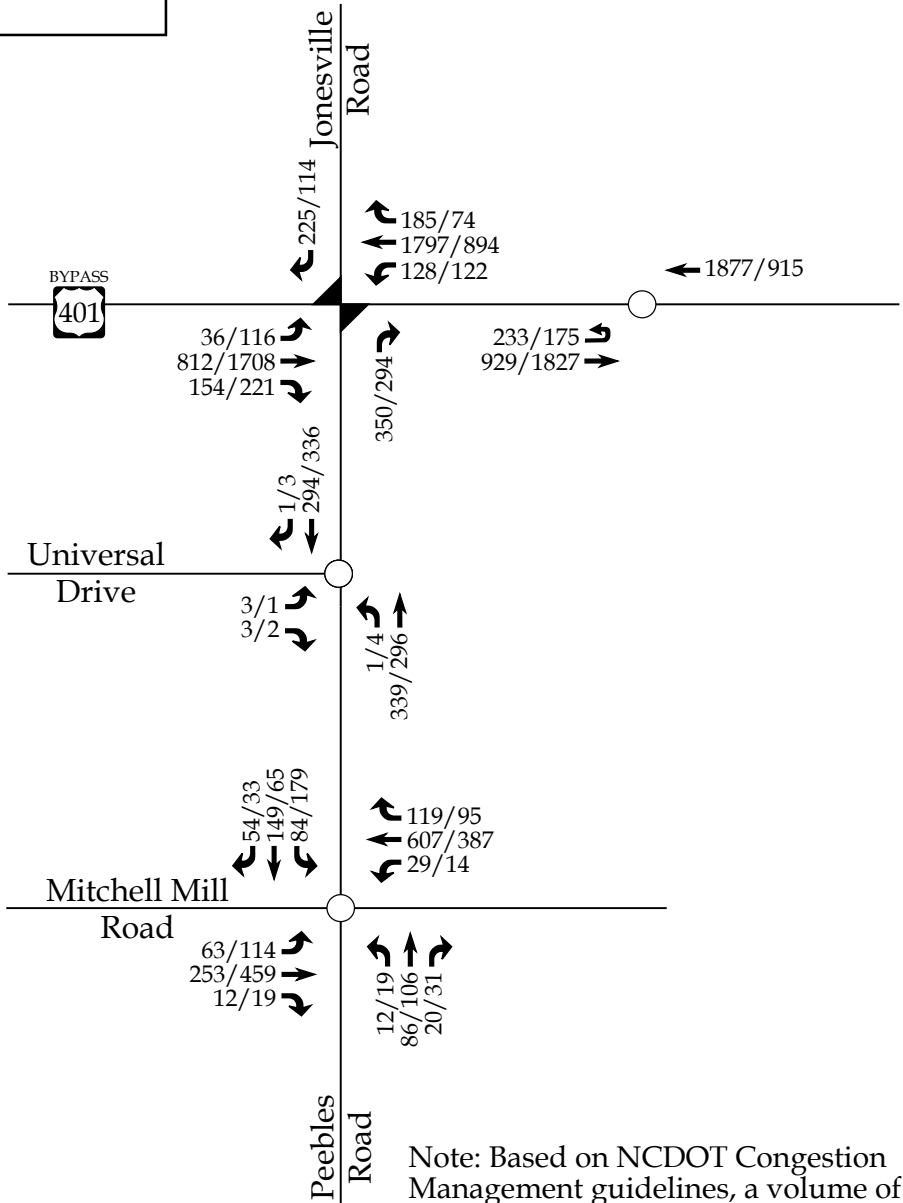
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Figure 6




**LEGEND**

- Unsignalized Intersection
- ◄ Left-Over Intersection
- X / Y → Weekday AM / PM Peak Hour Traffic



Note: Based on NCDOT Congestion Management guidelines, a volume of 4 vehicles per hour (vph) was analyzed for any movement with less than 4 vph.

	<p>Harris Creek Farm Rolesville, NC</p>	<p>2027 No-Build Peak Hour Traffic</p>	
		<p>Scale: Not to Scale</p>	<p>Figure 7</p>



**4. SITE TRIP GENERATION AND DISTRIBUTION**

**4.1. Trip Generation**

The proposed development is assumed to consist of 68 single-family homes and 81 townhomes. 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*, 11th 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	Total	Enter	Exit	Total
Single-Family Home (210)	68 DU	708	13	39	52	44	25	69
Single Family Attached (215)	81 DU	568	9	27	36	26	19	45
<b>Total Primary Trips</b>		<b>1,276</b>	<b>22</b>	<b>66</b>	<b>88</b>	<b>70</b>	<b>44</b>	<b>114</b>

It is estimated that the proposed development will generate approximately 1,276 total site trips on the roadway network during a typical 24-hour weekday period. Of the daily traffic volume, it is anticipated that 88 trips (22 entering and 66 exiting) will occur during the weekday AM peak hour and 114 trips (70 entering and 44 exiting) will occur during the weekday PM peak hour.

#### 4.2. Site Trip Distribution and Assignment

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

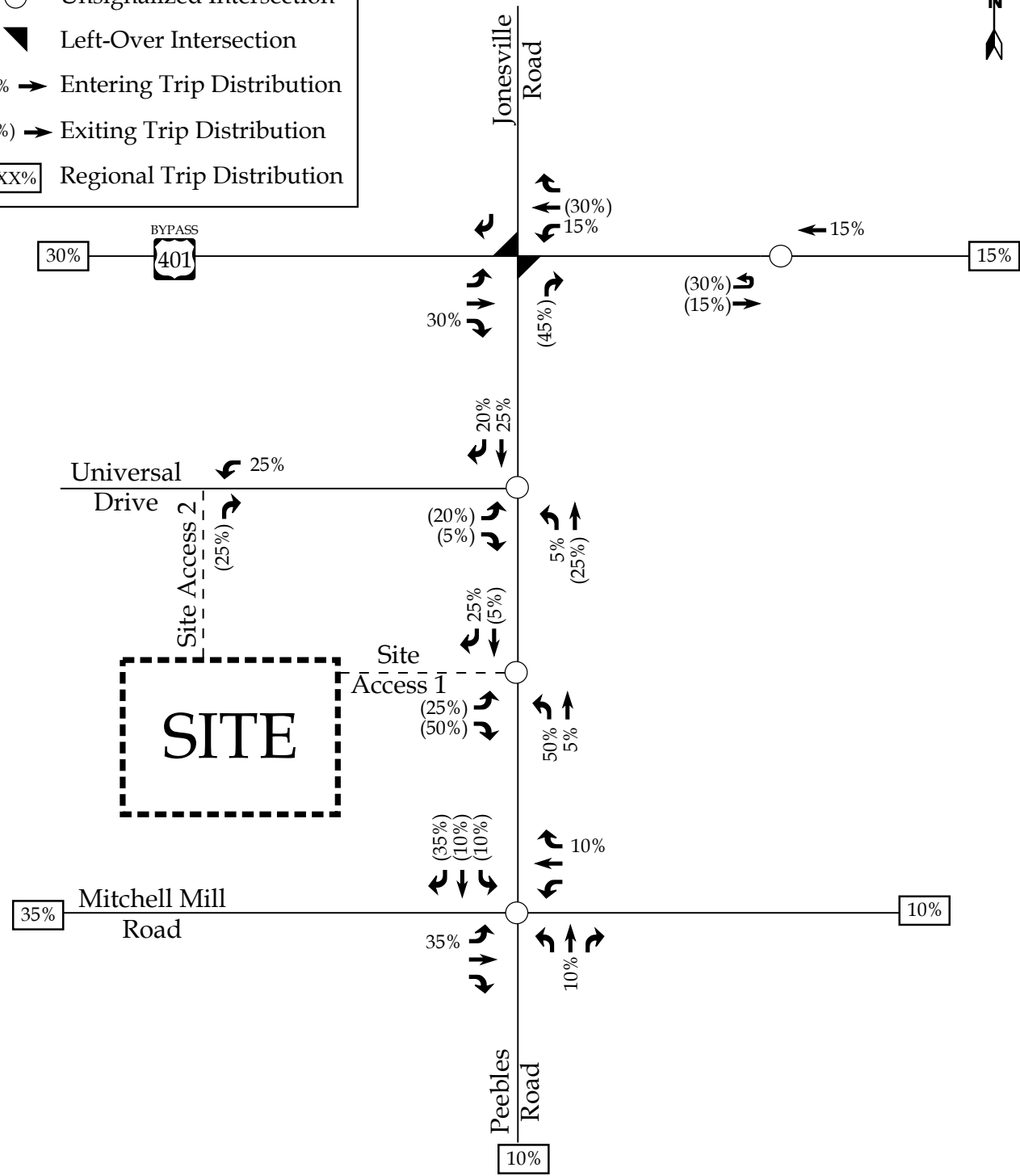
It is estimated that the residential site trips will be regionally distributed as follows:

- 35% to/from the west via Mitchell Mill Road
- 30% to/from the west via US 401 Bypass
- 15% to/from the east via US 401 Bypass
- 10% to/from the south via Peebles Road
- 10% to/from the east via Mitchell Mill Road

The site trip distribution is shown in Figure 8 and the peak hour site trip assignment is shown in Figure 9.

**LEGEND**

- Unsignalized Intersection
- ◄ Left-Over Intersection
- X% → Entering Trip Distribution
- (Y%) → Exiting Trip Distribution
- XX% Regional Trip Distribution



Harris Creek Farm  
Rolesville, NC

Site Trip Distribution

Scale: Not to Scale

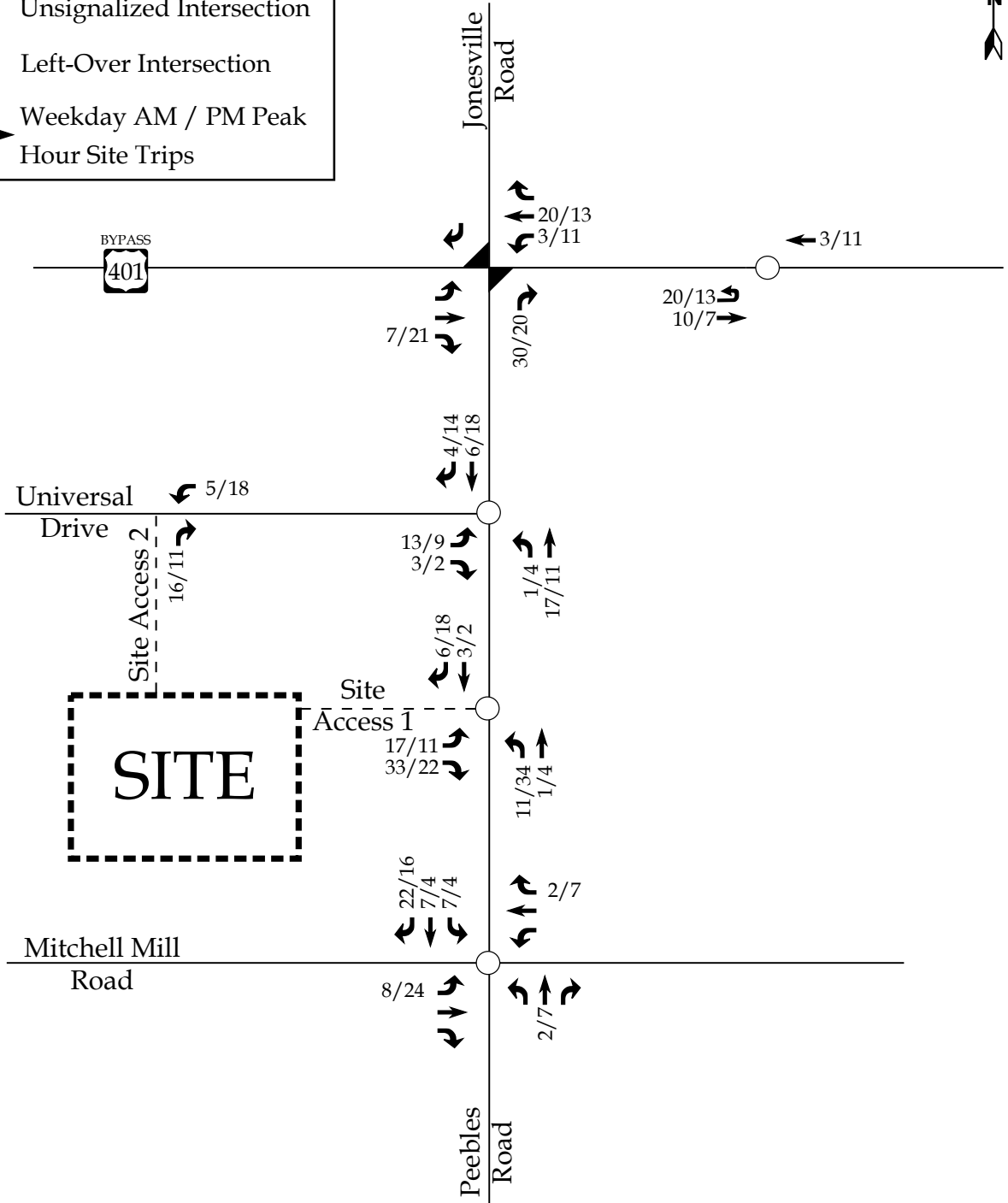
Figure 8

**LEGEND**

○ Unsignalized Intersection

▲ Left-Over Intersection

X/Y → Weekday AM / PM Peak Hour Site Trips



Harris Creek Farm  
Rolesville, NC

Site Trip Assignment

Scale: Not to Scale

Figure 9

## **5. 2027 BUILD TRAFFIC CONDITIONS**

### **5.1. 2027 Build Peak Hour Traffic Volumes**

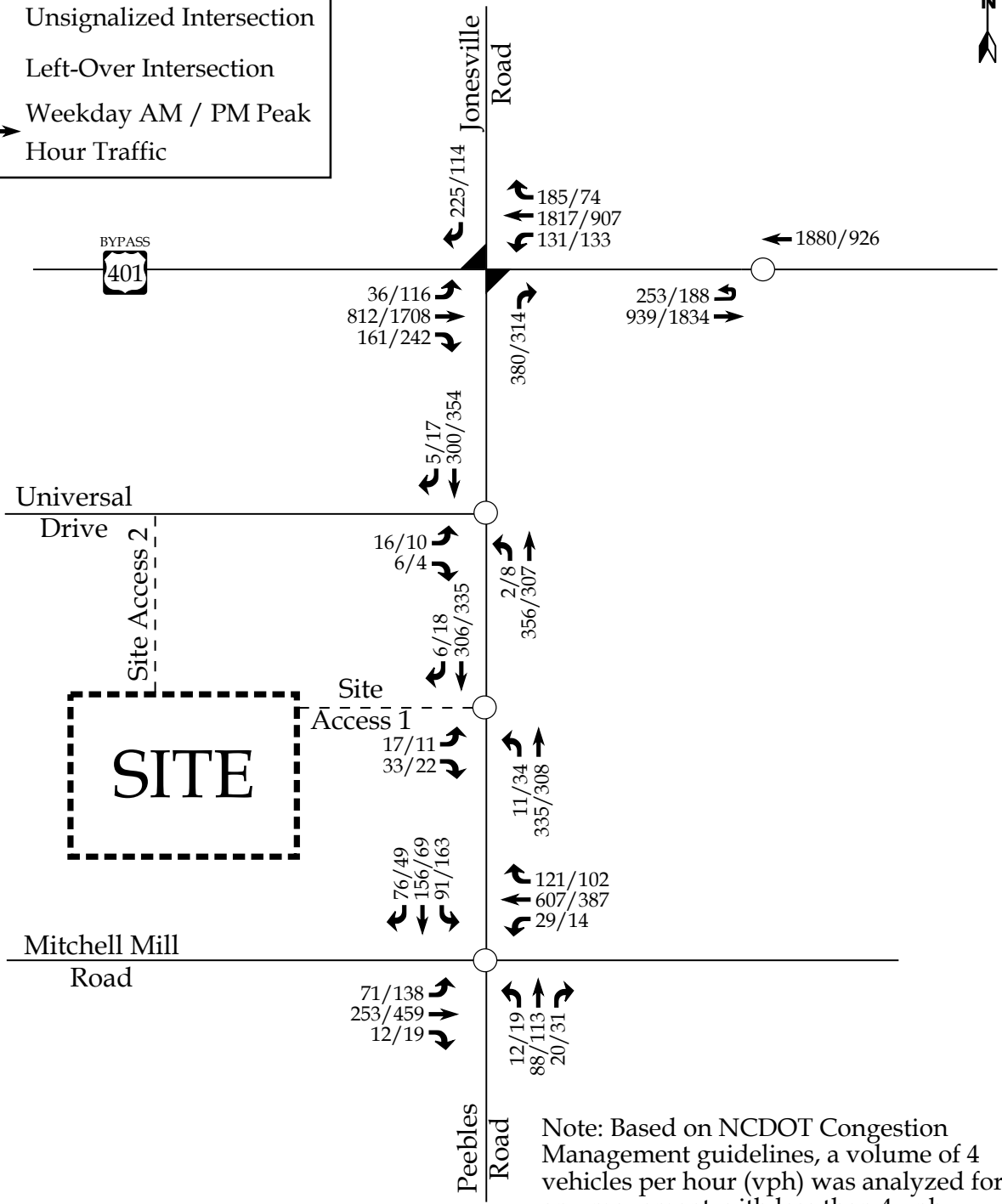
To estimate traffic conditions with the site fully built-out, the total site trips were added to the 2027 no-build traffic volumes to determine the 2027 build traffic volumes. Refer to Figure 10 for an illustration of the 2027 build peak hour traffic volumes with the proposed site fully developed.

### **5.2. Analysis of 2027 Build Peak Hour Traffic Conditions**

Study intersections were analyzed with the 2027 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
- ◄ Left-Over Intersection
- X/Y → Weekday AM / PM Peak Hour Traffic



Note: Based on NCDOT Congestion Management guidelines, a volume of 4 vehicles per hour (vph) was analyzed for any movement with less than 4 vph.



Harris Creek Farm  
Rolesville, NC

2027 Build  
Peak Hour Traffic

Scale: Not to Scale | Figure 10

**6. TRAFFIC ANALYSIS PROCEDURE**

Study intersections were analyzed using the methodology outlined in the *Highway Capacity Manual* (HCM), 6<sup>th</sup> 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 11), was used to complete the analyses for most of the study area intersections. Please note that the unsignalized capacity analysis does not provide an overall level of service for an intersection; only delay for an approach with a conflicting movement.

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

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

UNIGNALIZED 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 Town LDO and NCDOT Congestions Management Guidelines.

**7. CAPACITY ANALYSIS**

**7.1. US 401 Bypass and Jonesville Road**

The existing unsignalized intersection of US 401 Bypass Road and Jonesville Road was analyzed under 2022 existing, 2027 no-build, and 2027 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 D for the Synchro capacity analysis reports.

**Table 5: Analysis Summary of US 401 Bypass and Jonesville 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)
2022 Existing	EB WB* NB	2 TH, 1 RT 1 LT 1 RT	-- C <sup>1</sup> B <sup>2</sup>	N/A	-- E <sup>1</sup> C <sup>2</sup>	N/A
	EB** WB SB	1 LT 2 TH, 1 RT 1 RT	F <sup>1</sup> -- E <sup>2</sup>	N/A	C <sup>1</sup> -- B <sup>2</sup>	N/A
2027 No-Build	EB WB* NB	2 TH, 1 RT 1 LT 1 RT	-- D <sup>1</sup> D <sup>2</sup>	N/A	-- F <sup>1</sup> F <sup>2</sup>	N/A
	EB** WB SB	1 LT 2 TH, 1 RT 1 RT	F <sup>1</sup> -- F <sup>2</sup>	N/A	E <sup>1</sup> -- B <sup>2</sup>	N/A
2027 Build	EB WB* NB	2 TH, 1 RT 1 LT 1 RT	-- D <sup>1</sup> D <sup>2</sup>	N/A	-- F <sup>1</sup> F <sup>2</sup>	N/A
	EB** WB SB	1 LT 2 TH, 1 RT 1 RT	F <sup>1</sup> -- F <sup>2</sup>	N/A	E <sup>1</sup> -- B <sup>2</sup>	N/A
2027 Build-Improved	EB WB* NB	2 TH, 1 RT 1 LT 1 RT	B B B	B (16)	B D C	C (23)
	EB** WB SB	1 LT 2 TH, 1 RT 1 RT	F <sup>1</sup> -- F <sup>2</sup>	N/A	E <sup>1</sup> -- B <sup>2</sup>	N/A

\*Synchro analyzed the WB left-turns as SB through movements due to the nature of the superstreet and synchro limitations.

\*\*Synchro analyzed the EB left-turns as NB through movements due to the nature of the superstreet and synchro limitations.

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



Capacity analysis of 2022 existing traffic conditions indicates that the major-street left-turn movements and minor-street approaches are expected to operate at LOS D or better with the exception of the eastbound left-turn movement during the weekday AM peak hour (LOS F), the westbound left-turn movement during the weekday PM peak hour (LOS E), and the southbound minor-street approach during the weekday AM peak hour (LOS E).

Under 2027 no-build and 2027 build traffic conditions, the major-street left-turn movements are expected to operate at LOS E/F during the weekday AM and PM peak hours with the exception of the westbound left-turn movement during the weekday AM peak hour (LOS D) under 2027 no-build and 2027 build traffic conditions. The minor-street approaches are expected to operate at LOS E/F during the weekday AM and PM peak hours with the exception of the northbound approach during the weekday AM peak hour (LOS D) and the southbound approach during the weekday PM peak hour (LOS B) under 2027 no-build and 2027 build traffic conditions. It should be noted that the proposed development is expected to account for approximately 2% of the overall traffic at this intersection during the weekday AM and PM peak hours. The proposed development is expected to account for 8% and 6% of the northbound right movements during the AM and PM peak hours, respectively.

Due to the poor levels-of-service expected at this intersection, a traffic signal was considered under 2027 build traffic conditions to achieve acceptable levels of service. Weekday AM and PM peak hour traffic volumes were utilized in evaluating the potential need for signalization based on the guidelines contained within the *Manual on Uniform Traffic Control Devices* (MUTCD) and within the *Guidelines for Signalization of Intersections with Two or Three Approaches Final Report*, published by ITRE. Based on a review of the peak hour signal warrant at this intersection, the intersection is expected to meet the peak hour warrant for both the weekday AM and PM peak hours under 2027 no-build and 2027 build traffic conditions. It is not expected that this intersection would satisfy the MUTCD 8-hour (warrant 1) or 4-hour (warrant 2) warrants, which NCDOT favors for installation of a traffic signal. These longer period warrants are not typically met for residential areas due to the distinct peak traffic periods for these types of development. Based on a review of ITRE 95<sup>th</sup> percentile queue length calculations, the northbound right-turn movement demand is expected to be over 85%

capacity during the weekday AM peak hour and exceed capacity during the weekday PM peak hour under 2027 no-build and 2027 build traffic conditions. Refer to Appendix J for a copy of the MUTCD warrants and the ITRE 95<sup>th</sup> percentile queue length calculations.

Based on the Town's LDO, improvements must be identified to maintain no-build levels-of-service under build traffic conditions or to limit the degradation to less than a five percent increase in total delay on any approach for those operating at failing levels-of-service under no-build traffic conditions. Therefore, additional turn-lanes were considered for the northbound right-turn and westbound left-turn movements at this intersection to achieve acceptable operation per the Town's LDO. However, additional turn-lanes are not a realistic or practical improvement at an unsignalized intersection operating with superstreet configurations.

Based on the Town's LDO, it is recommended that this intersection be monitored for signalization and a full signal warrant analysis be conducted prior to the full build-out of the proposed development and install a traffic signal if warranted and approved by the Town and NCDOT. With signalization, it is expected that this intersection will operate at acceptable levels-of-service during the weekday AM and PM peak hours.

### 7.2. US 401 Bypass and Eastern U-Turn Location

The existing unsignalized intersection of US 401 Bypass and Eastern U-Turn Location was analyzed under 2022 existing, 2027 no-build, and 2027 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 E for the Synchro capacity analysis reports.

**Table 6: Analysis Summary of US 401 Bypass and Eastern U-Turn Location**

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)
2022 Existing	EB* WB	1 UT 2 TH	C <sup>1</sup> --	N/A	B <sup>1</sup> --	N/A
2027 No-Build	EB* WB	1 UT 2 TH	F <sup>1</sup> --	N/A	C <sup>1</sup> --	N/A
2027 Build	EB* WB	1 UT 2 TH	F <sup>1</sup> --	N/A	C <sup>1</sup> --	N/A
2027 Build – Improved	EB* WB	1 UT 2 TH	D B	C (21)	B A	B (11)

\*Synchro analyzed the EB u-turn as a NB left-turn movement due to the nature of the superstreet and synchro limitations.

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

Capacity analysis of 2022 existing and 2027 no-build traffic conditions indicates that the major-street u-turn movement is expected to operate at LOS C or better during the weekday AM and PM peak hours, with the exception of the weekday AM peak hour under 2027 no-build conditions (LOS F).

Under 2027 build traffic conditions, the major-street u-turn movement is expected to operate at LOS F during the weekday AM peak hour and at LOS C during the weekday PM peak hour. It should be noted that the proposed development is expected to account for approximately 1% of the overall traffic at this intersection during the weekday AM and PM peak hours. The proposed development is expected to account for approximately 8% and 7%

of the overall eastbound u-turn movements at this intersection during the weekday AM and PM peak hours, respectively.

Due to the poor levels-of-service expected at this intersection, a traffic signal was considered under 2027 build traffic conditions to achieve acceptable levels of service. Weekday AM and PM peak hour traffic volumes were utilized in evaluating the potential need for signalization based on the guidelines contained within the *Manual on Uniform Traffic Control Devices* (MUTCD) and within the *Guidelines for Signalization of Intersections with Two or Three Approaches Final Report*, published by ITRE. Based on a review of signal warrants at this intersection, the peak hour warrant (warrant 3) from the MUTCD is expected to be met for the weekday AM peak hour under 2027 no-build and build traffic conditions. It is not expected that this intersection would satisfy the MUTCD 8-hour (warrant 1) or 4-hour (warrant 2) warrants, which NCDOT favors for installation of a traffic signal. These longer period warrants are not typically met for residential areas due to the distinct peak traffic periods for these types of development. Based on a review of ITRE 95<sup>th</sup> percentile queue length calculations, the eastbound u-turn movement demand is expected to exceed capacity during the weekday AM peak hour under 2027 no-build and 2027 build traffic conditions. Refer to Appendix J for a copy of the MUTCD warrants and the ITRE 95<sup>th</sup> percentile queue length calculations.

Based on the Town's LDO, improvements must be identified to maintain no-build levels-of-service under build traffic conditions or to limit the degradation to less than a five percent increase in total delay on any approach for those operating at failing levels-of-service under no-build traffic conditions. Therefore, additional turn-lanes were considered for the eastbound u-turn movement at this intersection to achieve acceptable operation per the Town's LDO. However, additional turn-lanes are not a realistic or practical improvement at an unsignalized intersection operating with superstreet configurations.

Based on the Town's LDO, it is recommended that this intersection be monitored for signalization and a full signal warrant analysis be conducted prior to the full build-out of the proposed development and install a traffic signal if warranted and approved by the Town

and NCDOT. With signalization, it is expected that this intersection will operate at acceptable levels-of-service during the weekday AM and PM peak hours.

### 7.3. Mitchell Mill Road and Jonesville Road / Peebles Road

The existing unsignalized four-way stop intersection of Mitchell Mill Road and Jonesville Road / Peebles Road was analyzed under 2022 existing, 2027 no-build, and 2027 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 F for the Synchro capacity analysis reports.

**Table 7: Analysis Summary of Mitchell Mill Road and Jonesville Road / Peebles 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)
2022 Existing	EB WB NB SB	1 LT-TH-RT 1 LT-TH-RT 1 LT-TH-RT 1 LT-TH-RT	B <sup>1</sup> B <sup>1</sup> B <sup>1</sup> B <sup>1</sup>	B (13)	B <sup>1</sup> A <sup>1</sup> A <sup>1</sup> A <sup>1</sup>	B (11)
2027 No-Build	EB WB NB SB	1 LT, 1 TH-RT 1 LT-TH, 1 RT 1 LT-TH-RT 1 LT, 1 TH-RT	C <sup>1</sup> F <sup>1</sup> C <sup>1</sup> C <sup>1</sup>	F (95)	F <sup>1</sup> E <sup>1</sup> C <sup>1</sup> C <sup>1</sup>	F (57)
2027 Build	EB WB NB SB	1 LT, 1 TH-RT 1 LT-TH, 1 RT 1 LT-TH-RT 1 LT, 1 TH-RT	C <sup>1</sup> F <sup>1</sup> C <sup>1</sup> C <sup>1</sup>	F (104)	F <sup>1</sup> F <sup>1</sup> C <sup>1</sup> C <sup>1</sup>	F (61)
2027 Build - Improved	EB WB NB SB	1 LT, 1 TH-RT 1 LT-TH, 1 RT 1 LT-TH-RT 1 LT, 1 TH-RT	A B B C	B (14)	B B B B	B (13)

1. Level of service for all-way stop controlled approach.

Capacity analysis of 2022 existing indicates that the intersection is expected to operate at an overall LOS B or better during the weekday AM and PM peak hours. Under 2027 no-build and 2027 build traffic conditions, this intersection is expected to operate at an overall LOS F during the weekday AM and PM peak hours. It should be noted that the proposed development is expected to account for approximately 3% and 4% of the overall traffic at this

intersection during the weekday AM and PM peak hours, respectively. The proposed development is expected to account for approximately 11% and 17% of the eastbound left movement and 17% and 7% of the westbound right movements during the weekday AM and PM peak hours, respectively.

Several turn lanes expected to be constructed by adjacent developments were included in the 2027 no-build and 2027 build scenarios. An exclusive eastbound left-turn lane was identified in the 5109 Mitchell Mill Road TIA. An exclusive westbound right-turn lane was identified in the Hills at Harris Creek TIA. In both the 5109 Mitchell Mill Road TIA and the Hills at Harris Creek TIA an exclusive southbound left-turn lane improvement was identified.

Due to the poor levels-of-service expected at this intersection, a traffic signal was considered under 2027 build traffic conditions to achieve acceptable levels-of-service. The peak hour warrant (warrant 3) from the *Manual on Uniform Traffic Control Devices* (MUTCD) was considered. Based on a review of the peak hour signal warrant at this intersection, the intersection is expected to meet the peak hour warrant for both the weekday AM and PM peak hours under 2027 no-build and 2027 build traffic conditions. It is not expected that this intersection would satisfy the MUTCD 8-hour (warrant 1) or 4-hour (warrant 2) warrants, which NCDOT favors for installation of a traffic signal. These longer period warrants are not typically met for residential areas due to the distinct peak traffic periods for these types of development. Refer to Appendix J for a copy of the MUTCD warrants.

Based on the Town's LDO, it is recommended that this intersection be monitored for signalization and a full signal warrant analysis be conducted prior to the full build-out of the proposed development and install a traffic signal if warranted and approved by the Town and NCDOT. With signalization, it is expected that this intersection will operate at acceptable levels-of-service during the weekday AM and PM peak hours.

### 7.4. Jonesville Road and Universal Drive

The existing unsignalized intersection of Jonesville Road and Universal Drive was analyzed under 2027 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 G for the synchro capacity analysis reports.

**Table 8: Analysis Summary of Jonesville Road and Universal Drive**

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)
2022 Existing	EB NB SB	1 LT-RT 1 LT-TH 1 TH-RT	A <sup>2</sup> A <sup>1</sup> --	N/A	A <sup>2</sup> A <sup>1</sup> --	N/A
2027 No-Build	EB NB SB	1 LT-RT 1 LT-TH 1 TH-RT	B <sup>2</sup> A <sup>1</sup> --	N/A	B <sup>2</sup> A <sup>1</sup> --	N/A
2027 Build	EB NB SB	1 LT-RT 1 LT-TH 1 TH-RT	B <sup>2</sup> A <sup>1</sup> --	N/A	B <sup>2</sup> A <sup>1</sup> --	N/A

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

Capacity analysis of 2027 build traffic conditions indicates that the major-street left-turn movement is expected to operate at LOS A during the weekday AM and PM peak hours. The minor-street approach is expected to operate at LOS B or better during the weekday AM and PM peak hours.

Right and left-turn lanes were considered based on the NCDOT *Policy on Street and Driveway Access to North Carolina Highways*. Based on the estimated low volume of right-turn and left-turn movements into the proposed development at this intersection, exclusive right-turn and left-turn lanes are not recommended. Refer to Appendix I for a copy of the turn lane warrants. No improvements are recommended by the developer.



**7.5. Jonesville Road and Site Drive**

The proposed intersection of Jonesville Road and Site Drive was analyzed under 2027 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 H for the synchro capacity analysis reports.

**Table 9: Analysis Summary of Jonesville Road and Site Drive**

ANALYSIS SCENARIO	A P P R O A C H	LANE CONFIGURATIONS	WEEKDAY AM PEAK HOUR LEVEL OF SERVICE		WEEKDAY PM PEAK HOUR LEVEL OF SERVICE	
			Approach	Overall (seconds)	Approach	Overall (seconds)
2027 Build	EB NB SB	1 LT-RT 1 LT-TH 1 TH-RT	B <sup>2</sup> A <sup>1</sup> --	N/A	B <sup>2</sup> A <sup>1</sup> --	N/A

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

Capacity analysis of 2027 build traffic conditions indicates that the major-street left-turn movement is expected to operate at LOS A during the weekday AM and PM peak hours. The minor-street approach is expected to operate at LOS B or better during the weekday AM and PM peak hours.

Right and left-turn lanes were considered based on the NCDOT *Policy on Street and Driveway Access to North Carolina Highways*. Based on the estimated low volume of right-turn and left-turn movements into the proposed development at this intersection, exclusive right-turn and left-turn lanes are not recommended. Refer to Appendix I for a copy of the turn lane warrants. No improvements are recommended by the developer.

## 8. CONCLUSIONS

This Traffic Impact Analysis was conducted to determine the potential traffic impacts of the proposed Harris Creek Farm development to be located on the west side of Jonesville Road near Universal Drive in Rolesville, North Carolina. The development is expected to consist of 68 single-family homes and 81 townhomes and to be built-out in 2027. Site access is proposed via two (2) full-movement driveway connections: one on Universal Drive and one on Jonesville Road approximately 700 feet south of Universal Drive.

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

- 2022 Existing Traffic Conditions
- 2027 No-Build Traffic Conditions
- 2027 Build Traffic Conditions

### Trip Generation

It is estimated that the proposed development will generate approximately 1,276 site trips on the roadway network during a typical 24-hour weekday period. Of the daily traffic volume, it is anticipated that 88 trips (22 entering and 66 exiting) will occur during the weekday AM peak hour and 114 trips (70 entering and 44 exiting) will 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 those identified in Section 7 of this report.

## 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 11 for an illustration of the recommended lane configurations for the proposed development.

### **Recommended Improvements by Developer**

#### US 401 Bypass and Jonesville Road

- Conduct a full signal warrant analysis prior to full build-out of the proposed development and install a traffic signal if warranted and approved by the Town and NCDOT.

#### US 401 Bypass and Eastern U-Turn Location

- Conduct a full signal warrant analysis prior to full build-out of the proposed development and install a traffic signal if warranted and approved by the Town and NCDOT.

#### Mitchell Mill Road and Jonesville Road / Peebles Road

- Construct a southbound (Jonesville Road) left-turn lane with at least 100 feet of storage and appropriate decel and taper.
  - It should be noted that this improvement was also identified by the 5109 Mitchell Mill Road TIA and Hills at Harris Creek TIA
- Construct a westbound (Mitchell Mill Road) right-turn lane with at least 100 feet of storage and appropriate decel and taper.
  - It should be noted that this improvement was also identified by the Hills at Harris Creek TIA
- Construct an eastbound (Mitchell Mill Road) left-turn lane with at least 100 feet of storage and appropriate decel and taper.
  - It should be noted that this improvement was also identified by the 5109 Mitchell Mill Road TIA

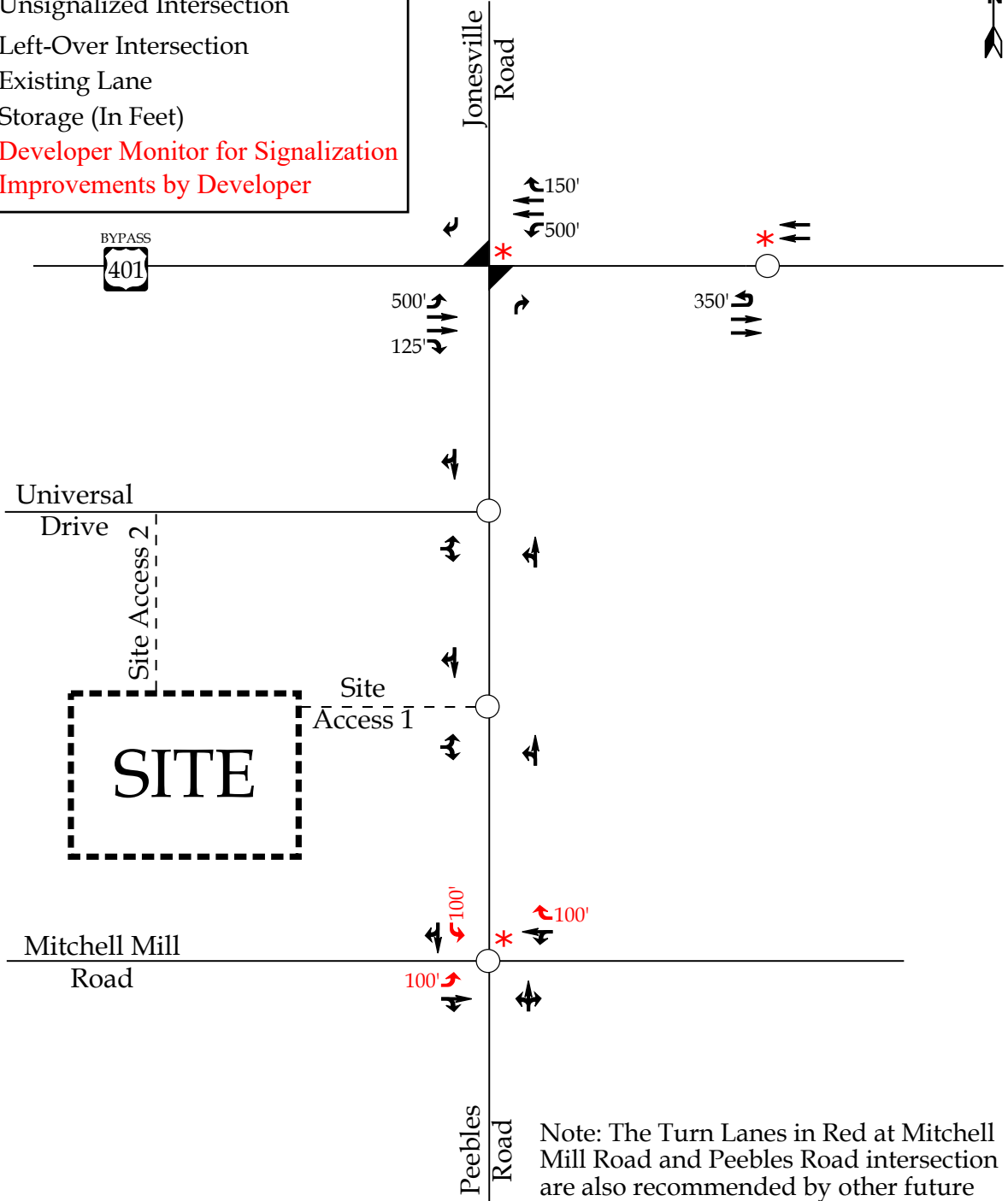
- Conduct a full signal warrant analysis prior to full build-out of the proposed development and install a traffic signal if warranted and approved by the Town and NCDOT.

Jonesville Road and Site Drive

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

**LEGEND**

- Unsignalized Intersection
- ◄ Left-Over Intersection
- Existing Lane
- x' Storage (In Feet)
- \* Developer Monitor for Signalization
- Improvements by Developer



Note: The Turn Lanes in Red at Mitchell Mill Road and Peebles Road intersection are also recommended by other future developments



Harris Creek Farm  
Rolesville, NC

Recommended Lane  
Configurations

Scale: Not to Scale | Figure 11

# **TECHNICAL APPENDIX**

# **APPENDIX A**

## **SCOPING DOCUMENTATION**

# RAMEY KEMP ASSOCIATES

TOGETHER WE ARE LIMITLESS

T 919 872 5115

5808 Faringdon Pl,  
Raleigh, NC 27609

March 17, 2023

Jeremy L. Warren, PE  
NCDOT District 1 Engineer  
4009 District Drive  
Raleigh, NC 27507  
[jlwarren@ncdot.gov](mailto:jlwarren@ncdot.gov)  
[Sent via Email]

Reference: Harris Creek Farm  
Rolesville, North Carolina

Subject: Memorandum of Understanding for TIA Report

Dear Mr. Warren:

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 Harris Creek Farm development in Rolesville, North Carolina. The proposed development is to be located on the west side of Jonesville Road near Universal Drive in Rolesville, NC. The development is expected to consist of 68 single-family homes and 81 townhomes and is anticipated to be built out by 2027. Refer to the attached site location map. Site access to the proposed development is expected to be provided via two (2) full-movement driveway connections: one on Jonesville Road and one on Universal Drive. Refer to the attachments for a copy of the preliminary site plan.

## Study Area

The study area is proposed to consist of the following intersections:

- Mitchell Mill Road & Jonesville Road / Peebles Road (unsignalized)
- US 401 Bypass and Jonesville Road (unsignalized)
- US 401 Bypass and Eastern U-Turn Location (unsignalized)
- Jonesville Road and Universal Drive (unsignalized)
- Jonesville Road and Site Driveway (unsignalized)



### Existing Traffic Volumes

Existing peak hour traffic volumes will be determined based on previously collected traffic counts at the study intersections below, in November 2021 during typical weekday AM (7:00 AM – 9:00 AM) and PM (4:00 PM – 6:00 PM) peak periods, while schools were in session for in-person learning:

- Mitchell Mill Road & Jonesville Road / Peebles Road
- US 401 Bypass and Jonesville Road
- US 401 Bypass and Eastern U-Turn Location

These previously collected counts will be projected to the year 2022 using a compounded annual growth rate of 2%.

Existing peak hour turning movement volumes at the intersection of Jonesville Road and Universal Drive will be estimated by generating and assigning trips for the nine (9) homes that are accessed via Universal Drive (AM trips: 2 enter 6 exit and PM trips: 7 enter 3 exit, distributed to the north and south along Jonesville Road the same as site trips). Through traffic volumes will be balanced from the Mitchell Mill Road/Jonesville Road intersection.

Refer to the attachments for an illustration of 2022 existing peak hour traffic volumes.

### Background Traffic Volumes

Background traffic volumes will be determined by projecting 2022 existing traffic volumes to the year 2027 using a 0% annual growth rate. A growth rate of 0% will be used due to the number of developments included in the background traffic and the proximity of some of these developments to the proposed development. It is assumed that the following adjacent developments are to be included in this study:

- Cobblestone Crossing Mixed-Use (Cobblestone)
- Young Street PUD (The Point)
- Wheeler Tract (Rolesville Crossing)
- Louisbury Road Assemblage
- Kalas / Watkins Family Property (Kalas Falls)
- 5109 Mitchell Mill
- Hills at Harris Creek

### Future Roadway Improvements

There are no future roadway improvements within the study area to consider under future traffic conditions.

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*, 11<sup>th</sup> Edition. Refer to Table 1, on the following page, for a summary of the proposed site trip generation for full buildout of the proposed development.

Table 1: 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	Total	Enter	Exit	Total
Single-Family Home (210)	68 DU	710	13	39	52	44	25	69
Multi-Family Home (Low-Rise) (220)	81 DU	568	9	27	36	26	19	45
Total Trips		1,268	22	66	88	70	44	114

It is estimated that the proposed development will generate approximately 1,268 site trips on the roadway network during a typical 24-hour weekday period. Of the daily traffic volume, it is anticipated that 88 trips (22 entering and 66 exiting) will occur during the weekday AM peak hour and 114 trips (70 entering and 44 exiting) will occur during the weekday PM peak hour.

Trip Distribution and Assignment

Site trips are distributed based on the locations of existing traffic patterns, population centers adjacent to the study area, and engineering judgment. A summary of the overall distributions is below.

Residential

- 30% to/from the west via US 401 Bypass
- 15% to/from the east via US 401 Bypass
- 10% to/from the south via Peebles Road
- 35% to/from the west via Mitchell Mill Road
- 10% to/from the east via Mitchell Mill Road

Refer to the attached site trip distribution figure.



## Analysis Scenarios

All capacity analyses will be performed utilizing Synchro (Version 11). All study intersections will be analyzed during the weekday AM and PM peak hours under the following proposed traffic scenarios:

- 2022 Existing Traffic Conditions
- 2027 No-Build Traffic Conditions
- 2027 Build Traffic Conditions

## Report

The TIA report will be prepared based on the Town and NCDOT requirements.

If you find this memorandum of understanding acceptable, please let me know so that we may include it in the TIA report. If you have any questions or concerns, please do not hesitate to contact me.

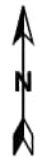
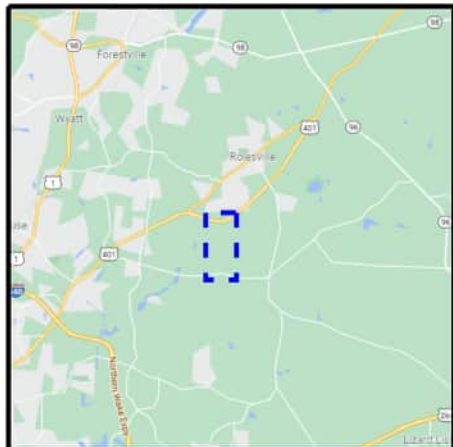
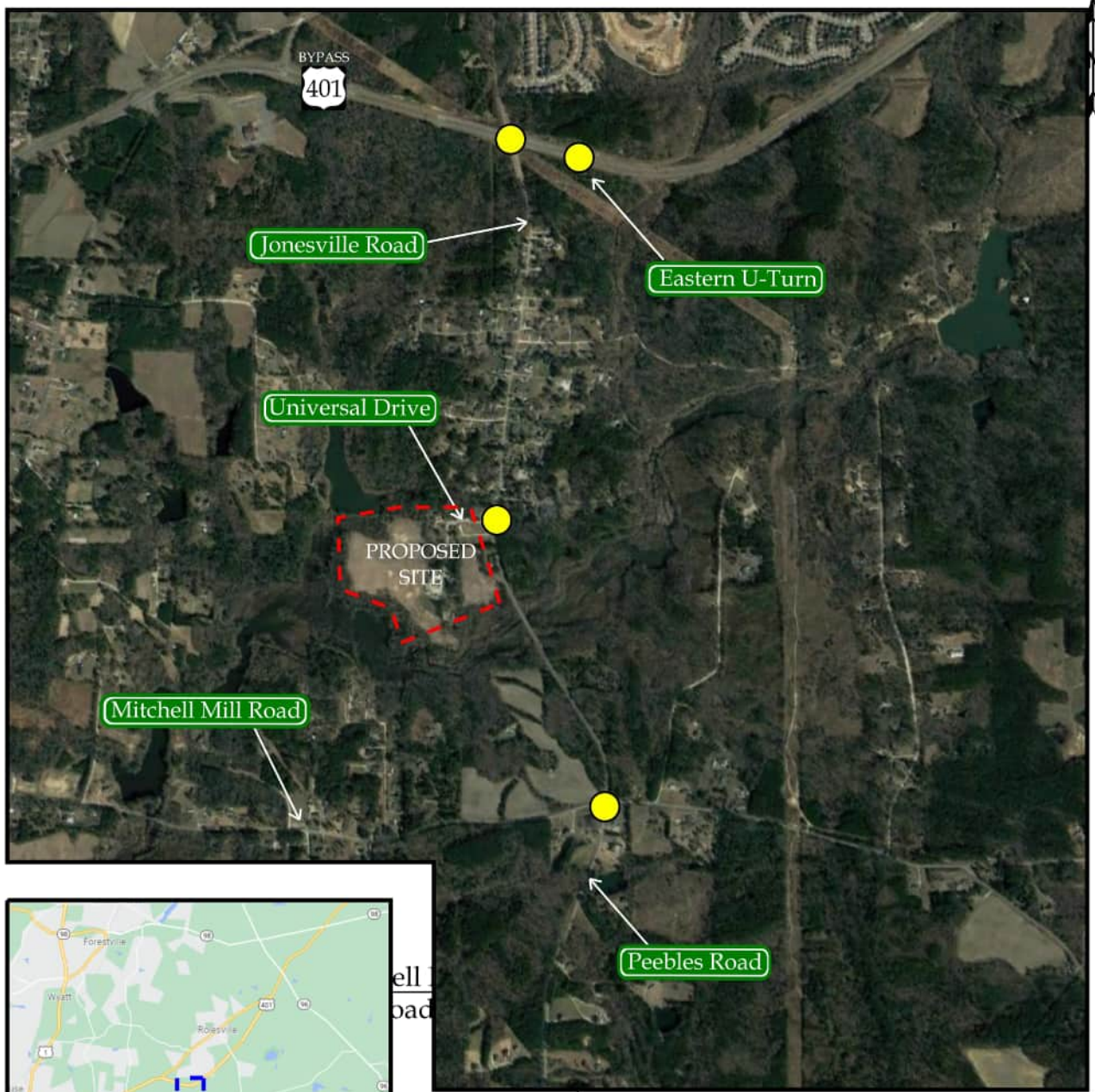
Sincerely,  
*Ramey Kemp Associates,*



J. Andrew Eagle, PE, PTOE  
Senior Traffic Engineering Project Manager

Attachments:      Site Location Map  
                          Site Plan  
                          2022 Existing Traffic Volumes Figure  
                          Proposed Site Trip Distribution Figure

cc:      Matthew J. Nolfo, NCDOT  
            Holt Willis, NCDOT  
            Clarence Bunting, NCDOT  
            Nicholas Lineberger, NCDOT  
            Daniel Collins, NCDOT  
            Meredith Gruber, Town of Rolesville  
            Michael Elabarger, Town of Rolesville



Peebles  
Road

**LEGEND**

- - - Proposed Site Location
- Existing Study Intersection
- - - Study Area



Harris Creek Farm  
Rolesville, NC

Site Location Map  
Scale: Not to Scale Figure 1

# REZONING AND ANNEXATION FOR JONESVILLE ROAD

ROLESVILLE, NORTH CAROLINA

CASE NUMBER:  
MA 22-08

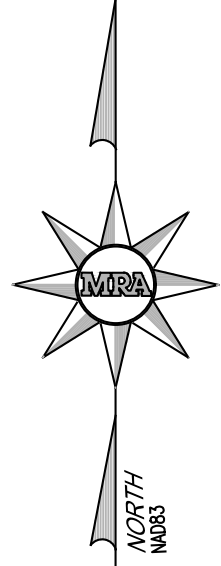
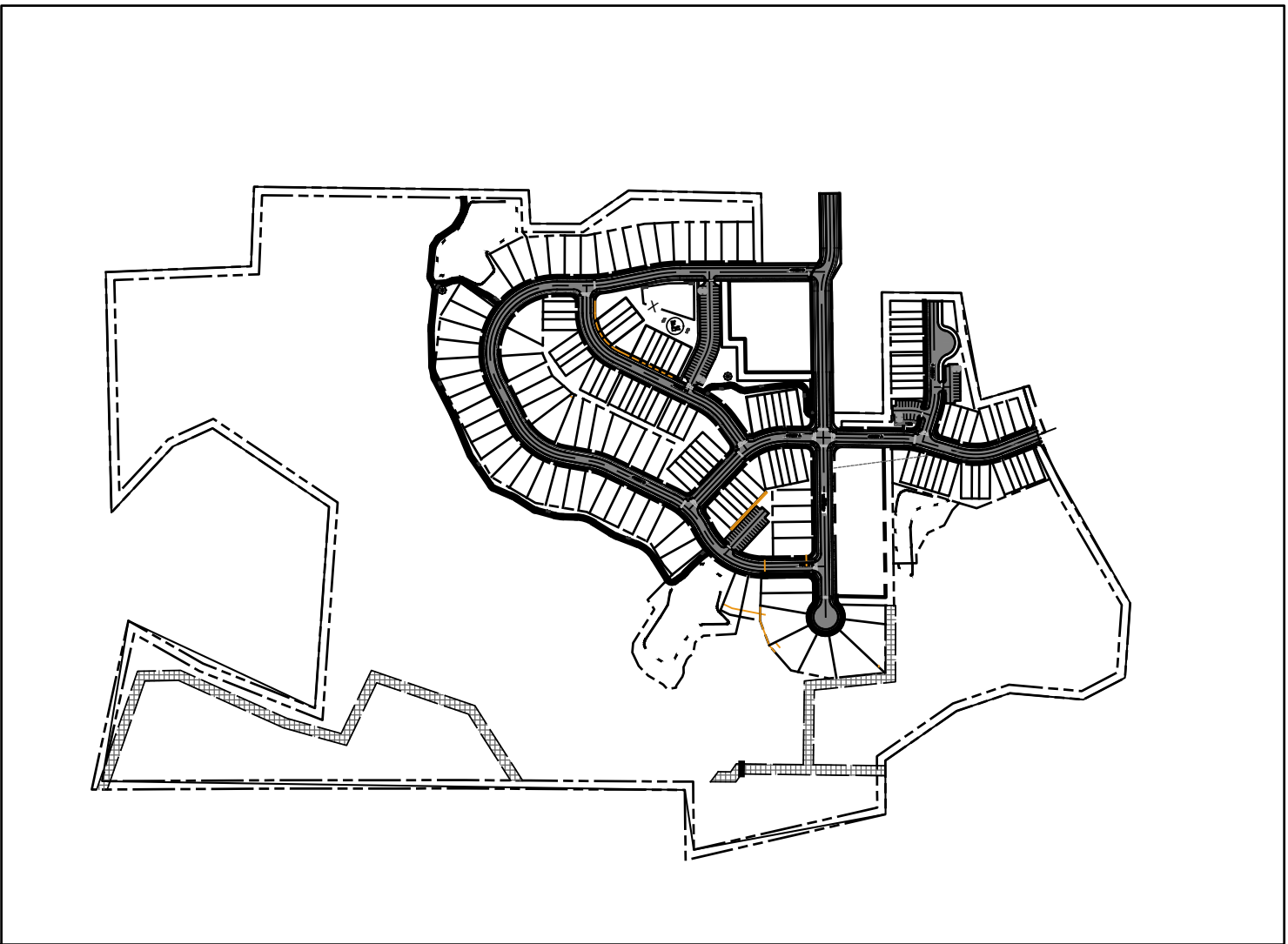


VICINITY MAP  
SCALE: 1" = 2000'

**AGENCY CONTACTS**

- A. Town of Rolesville  
Planning Department  
502 Southtown Circle  
Rolesville, NC 27571
- B. Wake County  
Watershed Management  
Waverly F. Akins Building  
337 S. Salisbury St  
Raleigh, NC 27601  
Contact: Karyn Pageau  
Phone: (919)-796-8769  
Email: karyn.pageau@wakegov.com
- C. City of Raleigh Public Utilities Department  
One Exchange Plaza  
Suite 620  
Raleigh, NC 27601  
P.O. Box 590  
Raleigh, NC 27602  
Phone: 919-996-3245  
Email: publicutilityinfo@raleighnc.gov
- D. NCDOT  
Division 5, District 1 Office  
4009 District Drive  
Raleigh, NC 27607  
Contact: Amy Neldringhaus, District Engineer  
Phone: 919-733-3213  
Email: anneldringhaus@ncdot.gov

Sheet List Table			
Sheet Number	Sheet Title	Date	Revised Date
C0.0	COVER - REZONING	8/1/2022	9/30/2022
C0.1	EXISTING CONDITIONS	8/1/2022	9/30/2022
C1.0	OVERALL SITE PLAN	8/1/2022	9/30/2022
C1.1	SITE PLAN - SHEET 1 OF 6	8/01/2022	9/30/2022
C1.2	SITE PLAN - SHEET 2 OF 6	8/1/2022	9/30/2022
C1.3	SITE PLAN - SHEET 3 OF 6	8/1/2022	9/30/2022
C1.4	SITE PLAN - SHEET 4 OF 6	8/1/2022	9/30/2022
C1.5	SITE PLAN - SHEET 5 OF 6	8/1/2022	9/30/2022
C1.6	SITE PLAN - SHEET 6 OF 6	8/1/2022	9/30/2022
C1.7	OVERALL ZONING PLAN	8/1/2022	9/30/2022



KEY MAP

SCALE: 1" = 500'



SCALE 1" = 500'

**SITE DATA**

OWNER	CHEN, PING 10030 GREEN LEVEL CHURCH RD STE 802 CARY NC 27594
SITE ADDRESS	4128 UNIVERSAL DR WAKE FOREST NC 27587-6356
PIN	175121181, 1751315216, 1751315865, 1751315464, 1751315515, 1751315665, 1751315765, 1751315865, 1751315945, 1751385064, 1751384912, 1751383572, 1751368816, 1751318013, 1751318104, 1751318303, 1751311990, 1751411554, 1751385344
DEED BOOK/PAGE/MAP	018453/00623/1151 01, 018453/00542/1151 01
CURRENT ZONING	R30
PROPOSED ZONING	RM, RH
MIN. LOT SIZE	5000 SQ FT (SINGLE FAMILY CLUSTER) 2000 SQ FT (TOWNHOMES)
LAND USE	RESIDENTIAL
PROPOSED DEVELOPMENT	144 UNITS 68 SINGLE FAMILY UNITS 81 TOWNHOUSE UNITS
TOTAL SITE AREA	93.23 ACRES
RESIDENTIAL HIGH DENSITY	32.15 ACRES (14.02 AC. + 18.12 AC (ADDITIONAL OPEN SPACE))
RESIDENTIAL MEDIUM DENSITY	61.08 ACRES
PROPOSED DENSITY	TOWNHOMES (RH) 4.0 UNITS/AC (MAX) 81/4.02 = 5.11 UNITS/AC (PROVIDED) SINGLE FAMILY (RM) 5.0 UNITS/AC (MAX) 68/61.08 = 1.11 UNITS/AC (PROVIDED)
FLOOD PLAIN/ZONE	ZONE AE/ZONE X 5120175100J
FIRM PANEL NO	NONE
WATERSHED PROTECTION	20' TOWNHOMES 40' SINGLE FAMILY (CLUSTER)
MINIMUM LOT WIDTH	20' TOWNHOMES 40' SINGLE FAMILY (CLUSTER)
OPEN SPACE	RESIDENTIAL HIGH DENSITY PASSIVE: 2.10 (REQUIRED) 14.95 (PROVIDED) RESIDENTIAL MEDIUM DENSITY PASSIVE: 4.70 (REQUIRED) 44.09 (PROVIDED)  IMPROVED OPEN SPACES: REQUIRED: SMALL: 1 MEDIUM: 2 LARGE: 0  SMALL: 1 0.73 AC (TOTAL PROVIDED) MEDIUM: 1 1.01 AC (TOTAL PROVIDED) LARGE: 1 13.74 AC (TOTAL PROVIDED)
PARKING	REQUIRED: 2.0/DWELLING UNIT PLUS 0.25 GUEST SPACES/DWELLING UNIT 81 UNITS X 2.25 = 183 SPOTS  PROVIDED: 81 UNITS X 1 (DRIVEWAY) = 81 SPOTS PARKING LOTS = 116 SPOTS TOTAL PROVIDED = 197 SPOTS
SETBACKS	TOWNHOMES: FRONT: 20' SIDE: 10' REAR: 15' CORNER: 15' MIN. WIDTH BETWEEN STRUCTURES: 30'  SINGLE FAMILY (CLUSTER): FRONT: 20' SIDE: 5' REAR: 20' CORNER: 10' (CLUSTER)

**PROJECT TEAM**

- DEVELOPER/OWNER: THE CSC GROUP LLC  
10030 GREEN LEVEL CHURCH RD STE 802  
CARY NC 27594  
ATTN: PING CHENG  
919-748-0424
- LAND PLANNERS, CIVIL ENGINEERS: MORRIS & RITCHE ASSOCIATES OF NC, PC  
5605 CHAPEL HILL ROAD, SUITE 112  
RALEIGH, NC 27607  
ATTN: MR. JEREMY M KEENEY, PE, PLS
- SURVEYOR: MORRIS & RITCHE ASSOCIATES OF NC, PC  
5605 CHAPEL HILL ROAD, SUITE 112  
RALEIGH, NC 27607  
ATTN: MR. JEREMY M KEENEY, PE, PLS
- ENVIRON. CONSULTANT: MORRIS & RITCHE ASSOCIATES OF NC, PC  
5605 CHAPEL HILL ROAD, SUITE 112  
RALEIGH, NC 27607  
ATTN: MR. JAMIE B. GUERRERO, PE, CPSWQ

FOR SITE PLAN REVIEW ONLY  
NOT FOR CONSTRUCTION  
PLAN IS SUBJECT TO REVISIONS  
DURING THE CONSTRUCTION  
APPROVAL PROCESS

**STREET DATA**

STREET A	1,200 LF
STREET B	2,368 LF
STREET C	450 LF
STREET D	743 LF

No.	DATE	REVISIONS
A	9/30/2022	REVISED PER TOWN OF ROLESVILLE COMMENTS
		JOB NO. 21790
		SCALE: AS SHOWN
		DATE: 6/1/2022
		ENGINEER: JMK
		DRAWN BY: ER/JJM
		DESIGN BY: DC
		REVIEW BY: JMK



COVER - REZONING  
FOR  
JONESVILLE ROAD

TOWN OF ROLESVILLE WAKE COUNTY, NORTH CAROLINA



**MORRIS & RITCHE ASSOCIATES OF NC, PC**  
ENGINEERS, ARCHITECTS, PLANNERS, SURVEYORS AND LANDSCAPE ARCHITECTS  
5605 CHAPEL HILL RD, STE 112  
RALEIGH, NC 27607  
(984) 200-2103  
LICENSE # C-4182  
WWW.MRAGTA.COM  
© 2022 MORRIS & RITCHE ASSOCIATES, INC.

STATUS: PRELIMINARY NOT FOR CONSTRUCTION REVISION: A SHEET: C0.0

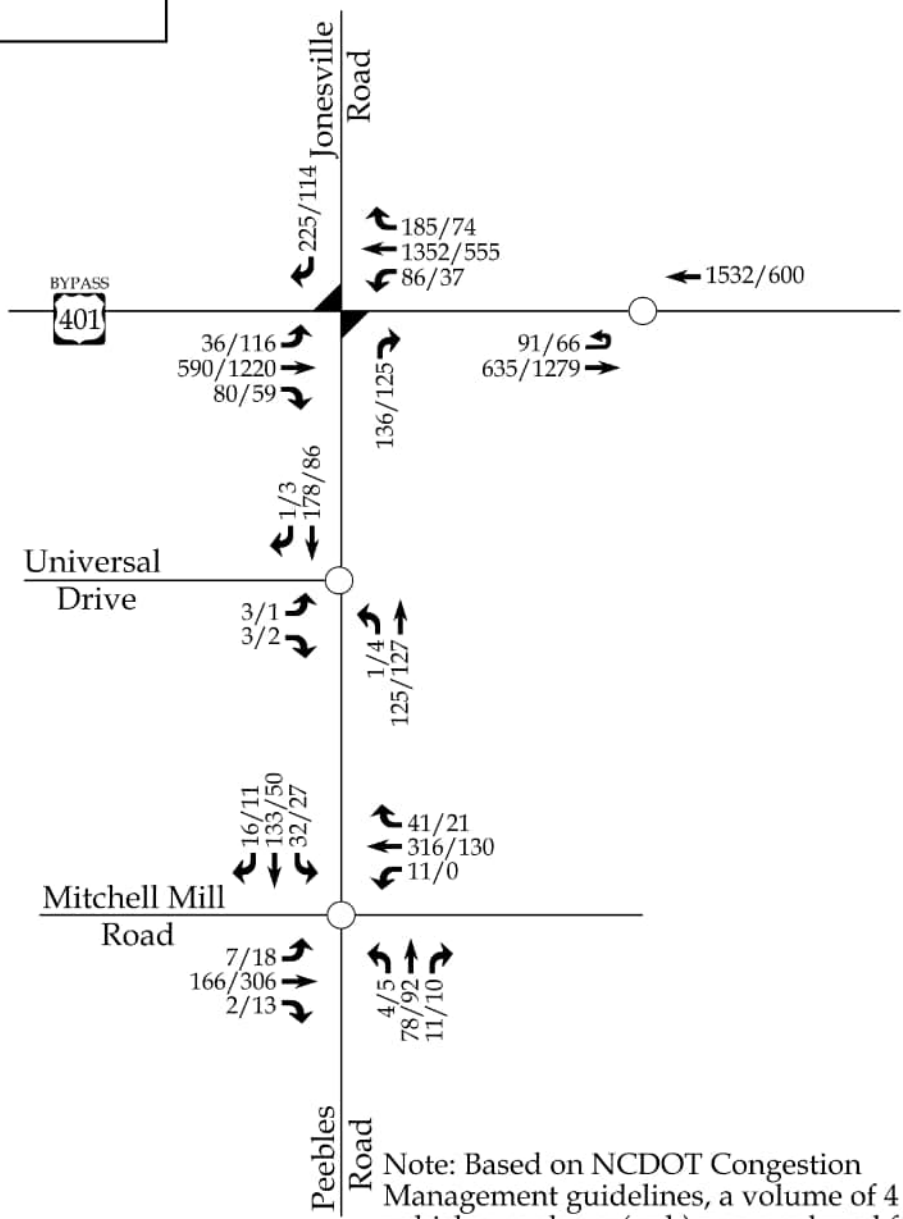
S:\PROJECTS\CY 2021\21790 - Jonesville RA\20-LDE\10 Prelim\PILOT\CO-COVER.dwg, 9/30/2022 2:46:01 PM, Copyright 2022 Morris & Ritchie Associates, Inc.





**LEGEND**

- Unsignalized Intersection
- ◄ Left-Over Intersection
- X/Y → Weekday AM / PM Peak Hour Traffic



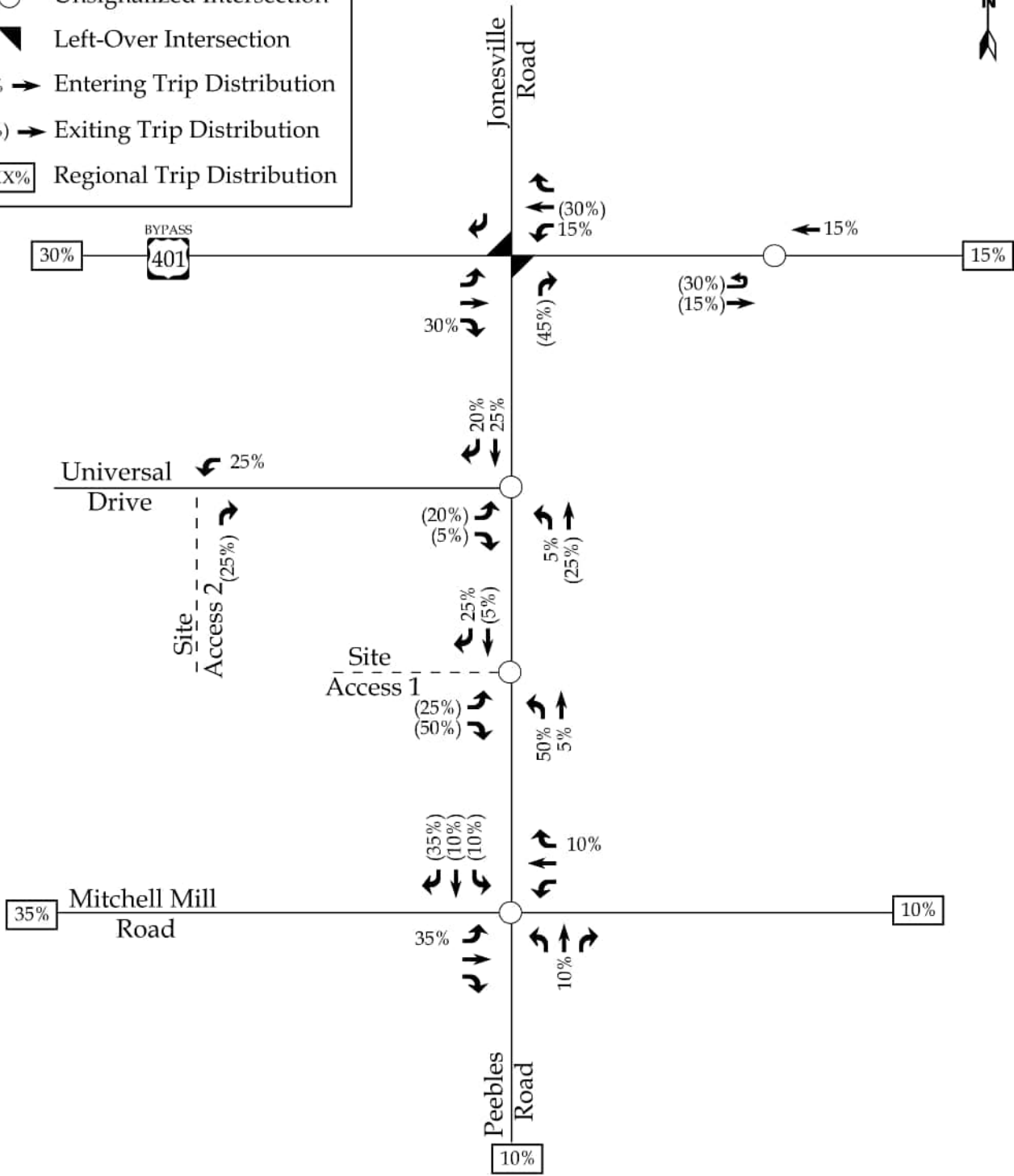
Note: Based on NCDOT Congestion Management guidelines, a volume of 4 vehicles per hour (vph) was analyzed for any movement with less than 4 vph.

	<p>Harris Creek Farm Rolesville, NC</p>	<p>2022 Existing Peak Hour Traffic</p>	
		<p>Scale: Not to Scale</p>	<p>Figure 4</p>



**LEGEND**

- Unsignalized Intersection
- ◄ Left-Over Intersection
- x% → Entering Trip Distribution
- (Y%) → Exiting Trip Distribution
- ▭ XX% Regional Trip Distribution



	Harris Creek Farm Rolesville, NC	Site Trip Distribution	
		Scale: Not to Scale	Figure 8

# **APPENDIX B**

## **TRAFFIC COUNTS**



TRAFFIC DATA COLLECTION

File Name : Rolesville(US 401 and Jonesville)AM Peak  
 Site Code :  
 Start Date : 11/9/2021  
 Page No : 1

Groups Printed- Cars + - Trucks

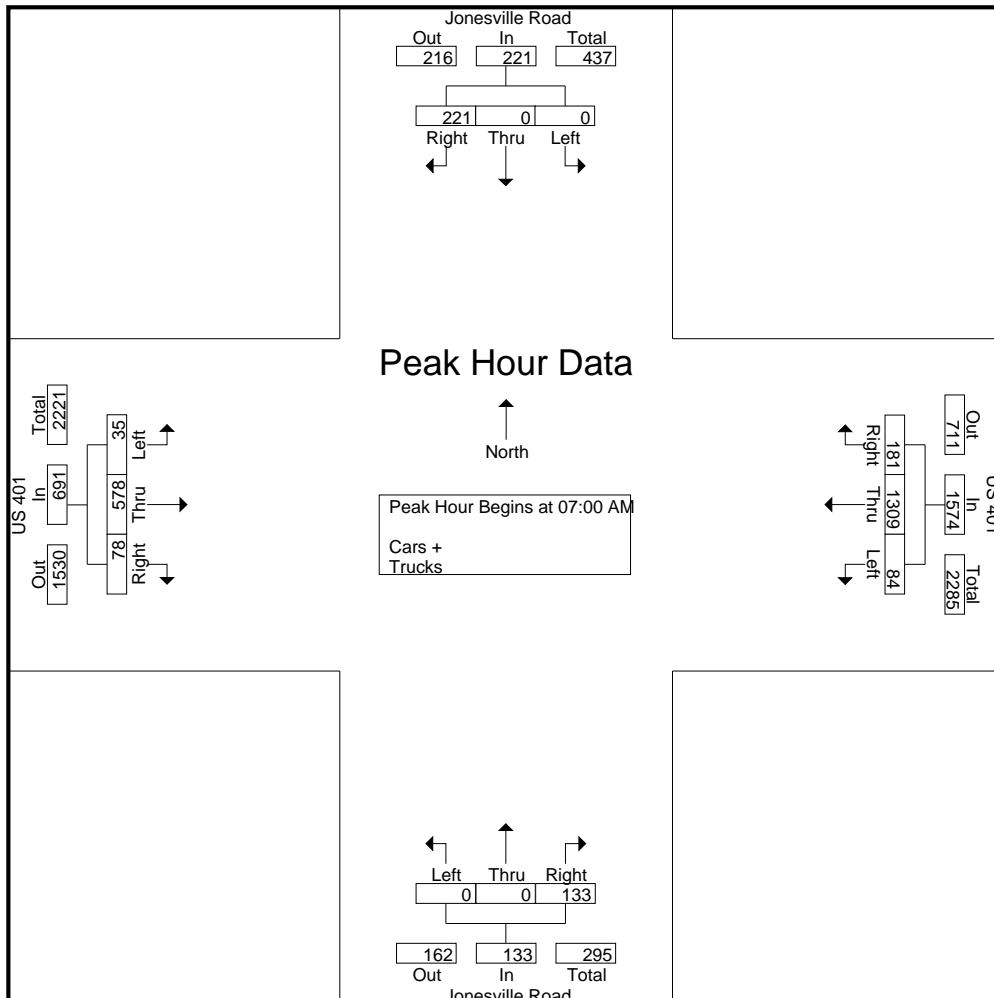
Start Time	Jonesville Road Southbound				US 401 Westbound				Jonesville Road Northbound				US 401 Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
07:00 AM	63	0	0	63	24	380	21	425	23	0	0	23	18	182	3	203	714
07:15 AM	42	0	0	42	39	362	24	425	37	0	0	37	11	125	7	143	647
07:30 AM	51	0	0	51	80	318	23	421	48	0	0	48	24	136	15	175	695
07:45 AM	65	0	0	65	38	249	16	303	25	0	0	25	25	135	10	170	563
Total	221	0	0	221	181	1309	84	1574	133	0	0	133	78	578	35	691	2619
08:00 AM	61	0	0	61	26	236	13	275	23	0	0	23	30	120	10	160	519
08:15 AM	36	0	0	36	12	233	9	254	16	0	0	16	13	94	9	116	422
08:30 AM	24	0	0	24	10	213	5	228	9	0	0	9	6	91	3	100	361
08:45 AM	28	0	0	28	9	145	5	159	10	0	0	10	11	85	2	98	295
Total	149	0	0	149	57	827	32	916	58	0	0	58	60	390	24	474	1597
Grand Total	370	0	0	370	238	2136	116	2490	191	0	0	191	138	968	59	1165	4216
Apprch %	100	0	0		9.6	85.8	4.7		100	0	0		11.8	83.1	5.1		
Total %	8.8	0	0	8.8	5.6	50.7	2.8	59.1	4.5	0	0	4.5	3.3	23	1.4	27.6	
Cars +	366	0	0	366	233	2094	114	2441	188	0	0	188	135	916	57	1108	4103
% Cars +	98.9	0	0	98.9	97.9	98	98.3	98	98.4	0	0	98.4	97.8	94.6	96.6	95.1	97.3
Trucks	4	0	0	4	5	42	2	49	3	0	0	3	3	52	2	57	113
% Trucks	1.1	0	0	1.1	2.1	2	1.7	2	1.6	0	0	1.6	2.2	5.4	3.4	4.9	2.7



TRAFFIC DATA COLLECTION

File Name : Rolesville(US 401 and Jonesville)AM Peak  
 Site Code :  
 Start Date : 11/9/2021  
 Page No : 2

Start Time	Jonesville Road Southbound				US 401 Westbound				Jonesville Road Northbound				US 401 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 07:00 AM																	
07:00 AM	63	0	0	63	24	380	21	425	23	0	0	23	18	182	3	203	714
07:15 AM	42	0	0	42	39	362	24	425	37	0	0	37	11	125	7	143	647
07:30 AM	51	0	0	51	80	318	23	421	48	0	0	48	24	136	15	175	695
07:45 AM	65	0	0	65	38	249	16	303	25	0	0	25	25	135	10	170	563
Total Volume	221	0	0	221	181	1309	84	1574	133	0	0	133	78	578	35	691	2619
% App. Total	100	0	0		11.5	83.2	5.3		100	0	0		11.3	83.6	5.1		
PHF	.850	.000	.000	.850	.566	.861	.875	.926	.693	.000	.000	.693	.780	.794	.583	.851	.917





TRAFFIC DATA COLLECTION

File Name : Rolesville(US 401 and Jonesville)PM Peak  
 Site Code :  
 Start Date : 11/9/2021  
 Page No : 1

Groups Printed- Cars + - Trucks

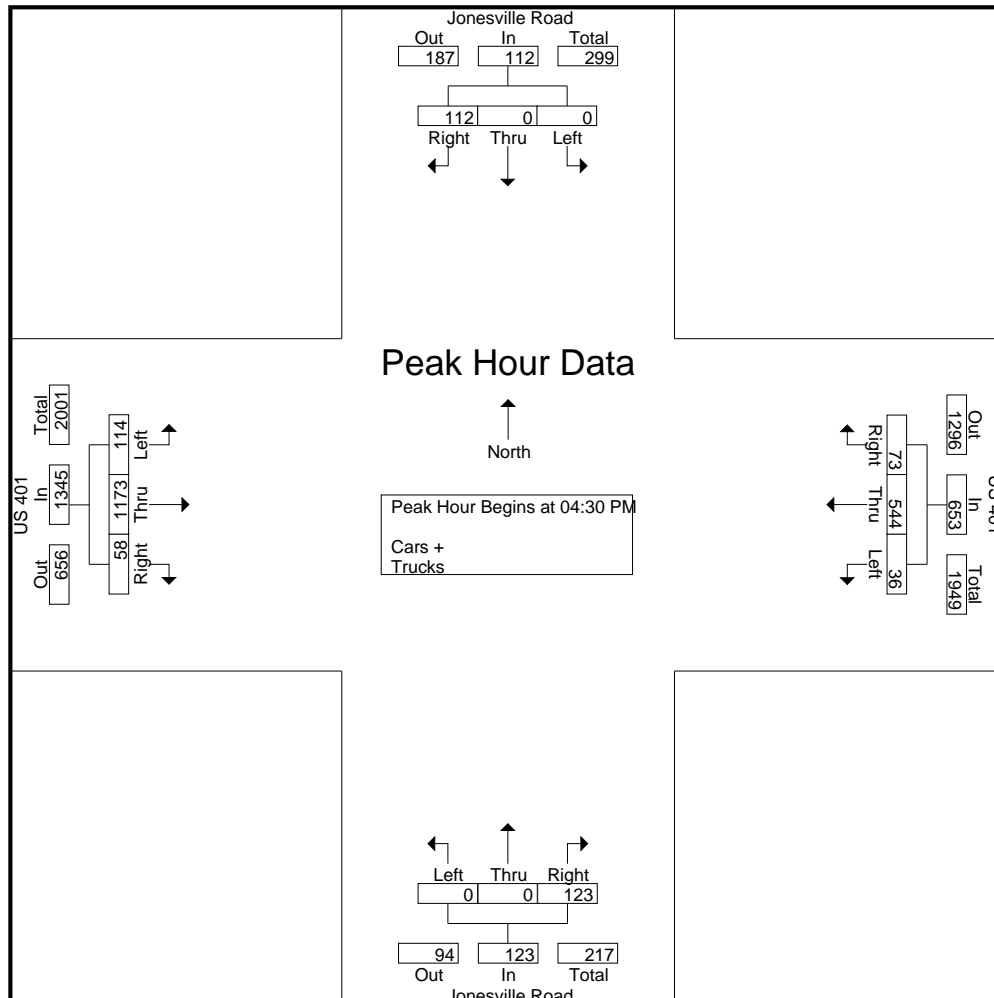
Start Time	Jonesville Road Southbound				US 401 Westbound				Jonesville Road Northbound				US 401 Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
04:00 PM	47	0	0	47	13	124	6	143	21	0	0	21	37	217	22	276	487
04:15 PM	34	0	0	34	13	119	6	138	26	0	0	26	15	231	20	266	464
04:30 PM	30	0	0	30	19	118	12	149	32	0	0	32	12	291	28	331	542
04:45 PM	15	0	0	15	22	137	6	165	32	0	0	32	8	303	30	341	553
Total	126	0	0	126	67	498	30	595	111	0	0	111	72	1042	100	1214	2046
05:00 PM	37	0	0	37	10	143	7	160	23	0	0	23	23	322	30	375	595
05:15 PM	30	0	0	30	22	146	11	179	36	0	0	36	15	257	26	298	543
05:30 PM	39	0	0	39	20	145	3	168	34	0	0	34	23	262	14	299	540
05:45 PM	24	0	0	24	10	112	9	131	22	0	0	22	11	227	21	259	436
Total	130	0	0	130	62	546	30	638	115	0	0	115	72	1068	91	1231	2114
Grand Total	256	0	0	256	129	1044	60	1233	226	0	0	226	144	2110	191	2445	4160
Apprch %	100	0	0		10.5	84.7	4.9		100	0	0		5.9	86.3	7.8		
Total %	6.2	0	0	6.2	3.1	25.1	1.4	29.6	5.4	0	0	5.4	3.5	50.7	4.6	58.8	
Cars +	252	0	0	252	127	1020	60	1207	223	0	0	223	142	2051	191	2384	4066
% Cars +	98.4	0	0	98.4	98.4	97.7	100	97.9	98.7	0	0	98.7	98.6	97.2	100	97.5	97.7
Trucks	4	0	0	4	2	24	0	26	3	0	0	3	2	59	0	61	94
% Trucks	1.6	0	0	1.6	1.6	2.3	0	2.1	1.3	0	0	1.3	1.4	2.8	0	2.5	2.3



TRAFFIC DATA COLLECTION

File Name : Rolesville(US 401 and Jonesville)PM Peak  
 Site Code :  
 Start Date : 11/9/2021  
 Page No : 2

Start Time	Jonesville Road Southbound				US 401 Westbound				Jonesville Road Northbound				US 401 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 04:30 PM																	
04:30 PM	30	0	0	30	19	118	12	149	32	0	0	32	12	291	28	331	542
04:45 PM	15	0	0	15	22	137	6	165	32	0	0	32	8	303	30	341	553
05:00 PM	37	0	0	37	10	143	7	160	23	0	0	23	23	322	30	375	595
05:15 PM	30	0	0	30	22	146	11	179	36	0	0	36	15	257	26	298	543
Total Volume	112	0	0	112	73	544	36	653	123	0	0	123	58	1173	114	1345	2233
% App. Total	100	0	0		11.2	83.3	5.5		100	0	0		4.3	87.2	8.5		
PHF	.757	.000	.000	.757	.830	.932	.750	.912	.854	.000	.000	.854	.630	.911	.950	.897	.938





TRAFFIC DATA COLLECTION

File Name : Rolesville(US 401 and Eastern U Turn)AM Peak  
 Site Code :  
 Start Date : 11/9/2021  
 Page No : 1

Groups Printed- Cars + - Trucks

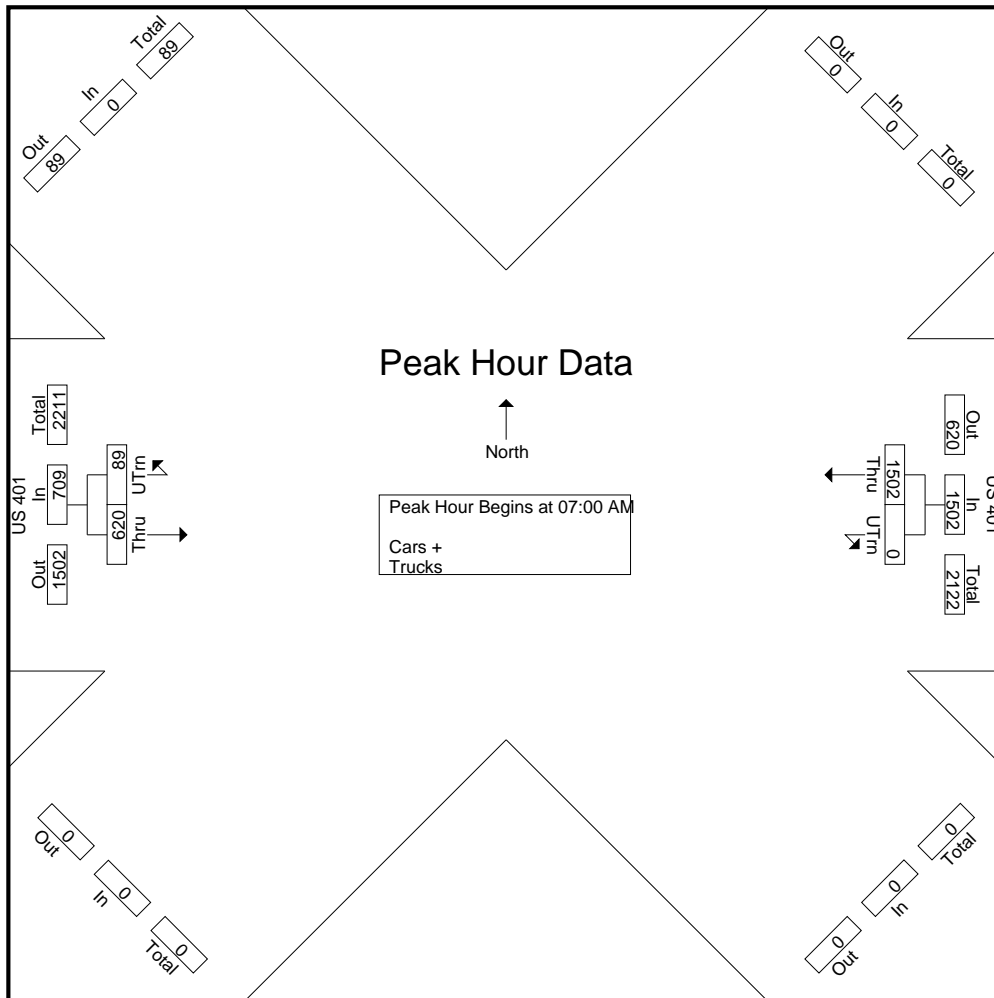
Start Time	US 401 Westbound			US 401 Eastbound			Int. Total
	Thru	UTrn	App. Total	Thru	UTrn	App. Total	
07:00 AM	421	0	421	198	12	210	631
07:15 AM	410	0	410	136	24	160	570
07:30 AM	392	0	392	149	36	185	577
07:45 AM	279	0	279	137	17	154	433
Total	1502	0	1502	620	89	709	2211
08:00 AM	253	0	253	130	20	150	403
08:15 AM	243	0	243	98	13	111	354
08:30 AM	223	0	223	94	7	101	324
08:45 AM	147	0	147	85	9	94	241
Total	866	0	866	407	49	456	1322
Grand Total	2368	0	2368	1027	138	1165	3533
Apprch %	100	0		88.2	11.8		
Total %	67	0	67	29.1	3.9	33	
Cars +	2318	0	2318	973	136	1109	3427
% Cars +	97.9	0	97.9	94.7	98.6	95.2	97
Trucks	50	0	50	54	2	56	106
% Trucks	2.1	0	2.1	5.3	1.4	4.8	3



TRAFFIC DATA COLLECTION

File Name : Rolesville(US 401 and Eastern U Turn)AM Peak  
 Site Code :  
 Start Date : 11/9/2021  
 Page No : 2

Start Time	US 401 Westbound			US 401 Eastbound			Int. Total
	Thru	UTrn	App. Total	Thru	UTrn	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1							
Peak Hour for Entire Intersection Begins at 07:00 AM							
07:00 AM	421	0	421	198	12	210	631
07:15 AM	410	0	410	136	24	160	570
07:30 AM	392	0	392	149	36	185	577
07:45 AM	279	0	279	137	17	154	433
Total Volume	1502	0	1502	620	89	709	2211
% App. Total	100	0		87.4	12.6		
PHF	.892	.000	.892	.783	.618	.844	.876







TRAFFIC DATA COLLECTION

File Name : Rolesville(US 401 and Eastern U Turn)PM Peak  
 Site Code :  
 Start Date : 11/9/2021  
 Page No : 1

Groups Printed- Cars + - Trucks

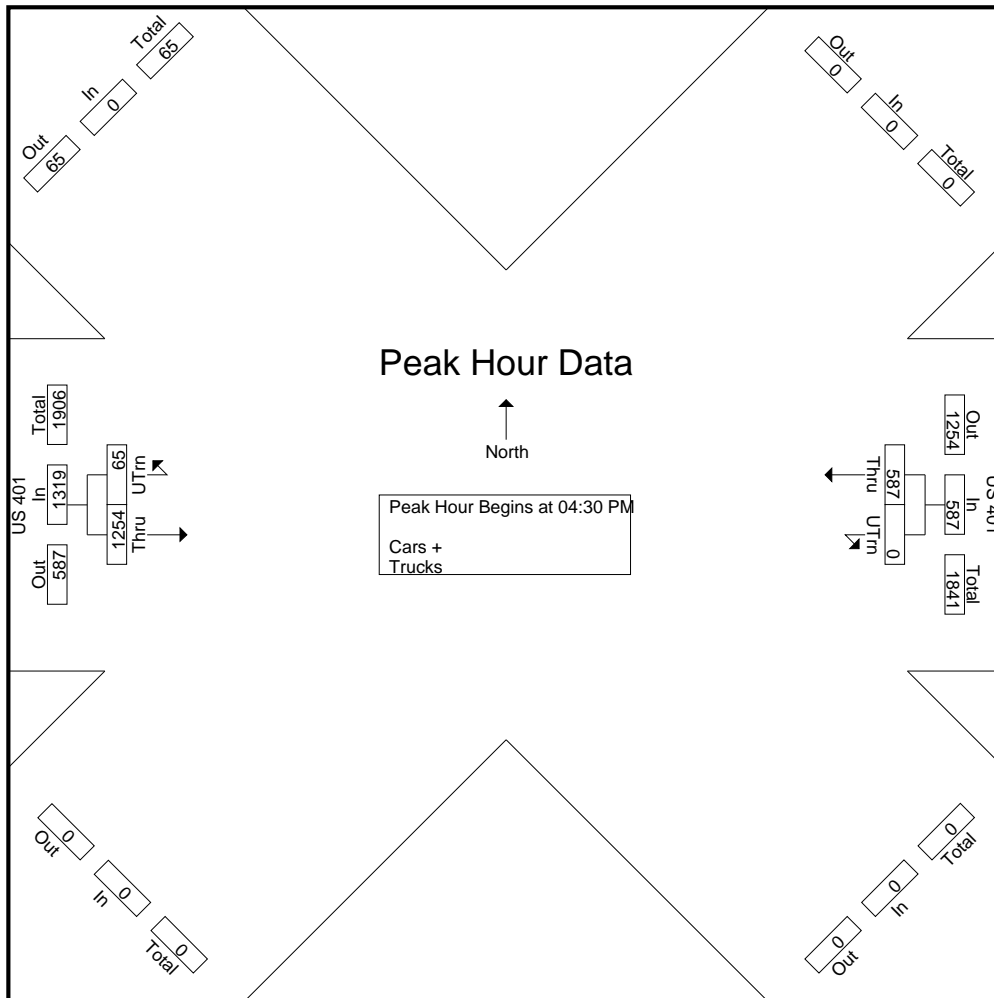
Start Time	US 401 Westbound			US 401 Eastbound			Int. Total
	Thru	UTrn	App. Total	Thru	UTrn	App. Total	
04:00 PM	130	0	130	240	12	252	382
04:15 PM	128	0	128	237	15	252	380
04:30 PM	129	0	129	311	19	330	459
04:45 PM	149	0	149	317	19	336	485
Total	536	0	536	1105	65	1170	1706
05:00 PM	149	0	149	342	8	350	499
05:15 PM	160	0	160	284	19	303	463
05:30 PM	161	0	161	273	22	295	456
05:45 PM	120	0	120	235	12	247	367
Total	590	0	590	1134	61	1195	1785
Grand Total	1126	0	1126	2239	126	2365	3491
Apprch %	100	0		94.7	5.3		
Total %	32.3	0	32.3	64.1	3.6	67.7	
Cars +	1101	0	1101	2175	125	2300	3401
% Cars +	97.8	0	97.8	97.1	99.2	97.3	97.4
Trucks	25	0	25	64	1	65	90
% Trucks	2.2	0	2.2	2.9	0.8	2.7	2.6



TRAFFIC DATA COLLECTION

File Name : Rolesville(US 401 and Eastern U Turn)PM Peak  
 Site Code :  
 Start Date : 11/9/2021  
 Page No : 2

Start Time	US 401 Westbound			US 401 Eastbound			Int. Total
	Thru	UTrn	App. Total	Thru	UTrn	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1							
Peak Hour for Entire Intersection Begins at 04:30 PM							
04:30 PM	129	0	129	311	19	330	459
04:45 PM	149	0	149	317	19	336	485
05:00 PM	149	0	149	342	8	350	499
05:15 PM	160	0	160	284	19	303	463
Total Volume	587	0	587	1254	65	1319	1906
% App. Total	100	0		95.1	4.9		
PHF	.917	.000	.917	.917	.855	.942	.955





TRAFFIC DATA COLLECTION

File Name : Rolesville(Jonesville and Mitchell Mill)AM Peak  
 Site Code :  
 Start Date : 11/30/2021  
 Page No : 1

Groups Printed- Cars + - Trucks

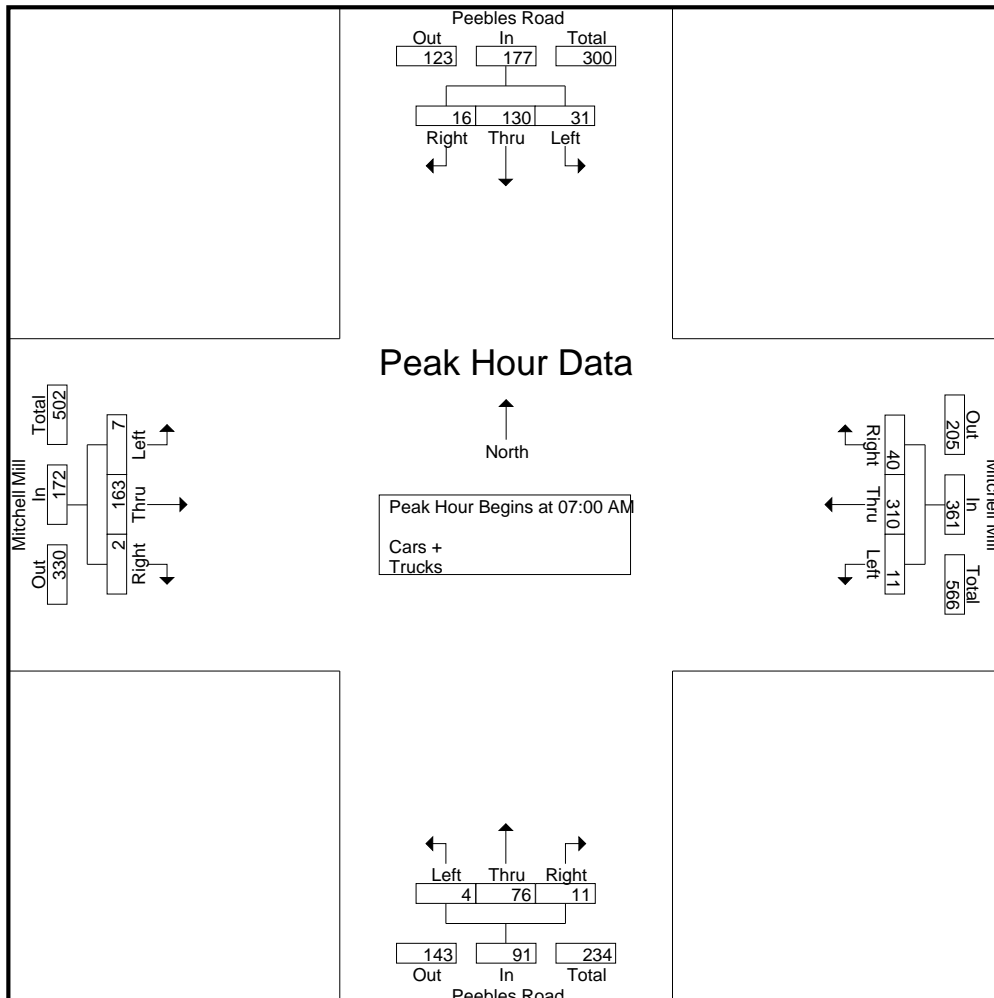
Start Time	Peebles Road Southbound				Mitchell Mill Westbound				Peebles Road Northbound				Mitchell Mill Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
07:00 AM	4	17	13	34	8	73	5	86	6	11	3	20	0	74	1	75	215
07:15 AM	4	36	7	47	8	101	2	111	3	26	1	30	0	32	1	33	221
07:30 AM	6	34	5	45	16	87	3	106	0	24	0	24	1	33	1	35	210
07:45 AM	2	43	6	51	8	49	1	58	2	15	0	17	1	24	4	29	155
Total	16	130	31	177	40	310	11	361	11	76	4	91	2	163	7	172	801
08:00 AM	7	31	12	50	4	53	1	58	1	8	2	11	0	28	3	31	150
08:15 AM	12	17	3	32	1	37	1	39	1	7	0	8	1	24	1	26	105
08:30 AM	6	4	2	12	3	49	2	54	1	4	2	7	0	19	0	19	92
08:45 AM	1	13	3	17	4	32	1	37	1	3	1	5	1	18	2	21	80
Total	26	65	20	111	12	171	5	188	4	22	5	31	2	89	6	97	427
Grand Total	42	195	51	288	52	481	16	549	15	98	9	122	4	252	13	269	1228
Apprch %	14.6	67.7	17.7		9.5	87.6	2.9		12.3	80.3	7.4		1.5	93.7	4.8		
Total %	3.4	15.9	4.2	23.5	4.2	39.2	1.3	44.7	1.2	8	0.7	9.9	0.3	20.5	1.1	21.9	
Cars +	42	195	50	287	52	479	16	547	15	98	9	122	4	249	13	266	1222
% Cars +	100	100	98	99.7	100	99.6	100	99.6	100	100	100	100	100	98.8	100	98.9	99.5
Trucks	0	0	1	1	0	2	0	2	0	0	0	0	0	3	0	3	6
% Trucks	0	0	2	0.3	0	0.4	0	0.4	0	0	0	0	0	1.2	0	1.1	0.5



TRAFFIC DATA COLLECTION

File Name : Rolesville(Jonesville and Mitchell Mill)AM Peak  
 Site Code :  
 Start Date : 11/30/2021  
 Page No : 2

Start Time	Peebles Road Southbound				Mitchell Mill Westbound				Peebles Road Northbound				Mitchell Mill 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 07:00 AM																	
07:00 AM	4	17	13	34	8	73	5	86	6	11	3	20	0	74	1	75	215
07:15 AM	4	36	7	47	8	101	2	111	3	26	1	30	0	32	1	33	221
07:30 AM	6	34	5	45	16	87	3	106	0	24	0	24	1	33	1	35	210
07:45 AM	2	43	6	51	8	49	1	58	2	15	0	17	1	24	4	29	155
Total Volume	16	130	31	177	40	310	11	361	11	76	4	91	2	163	7	172	801
% App. Total	9	73.4	17.5		11.1	85.9	3		12.1	83.5	4.4		1.2	94.8	4.1		
PHF	.667	.756	.596	.868	.625	.767	.550	.813	.458	.731	.333	.758	.500	.551	.438	.573	.906





TRAFFIC DATA COLLECTION

File Name : Rolesville(Jonesville and Mitchell Mill)PM Peak  
 Site Code :  
 Start Date : 11/30/2021  
 Page No : 1

Groups Printed- Cars + - Trucks

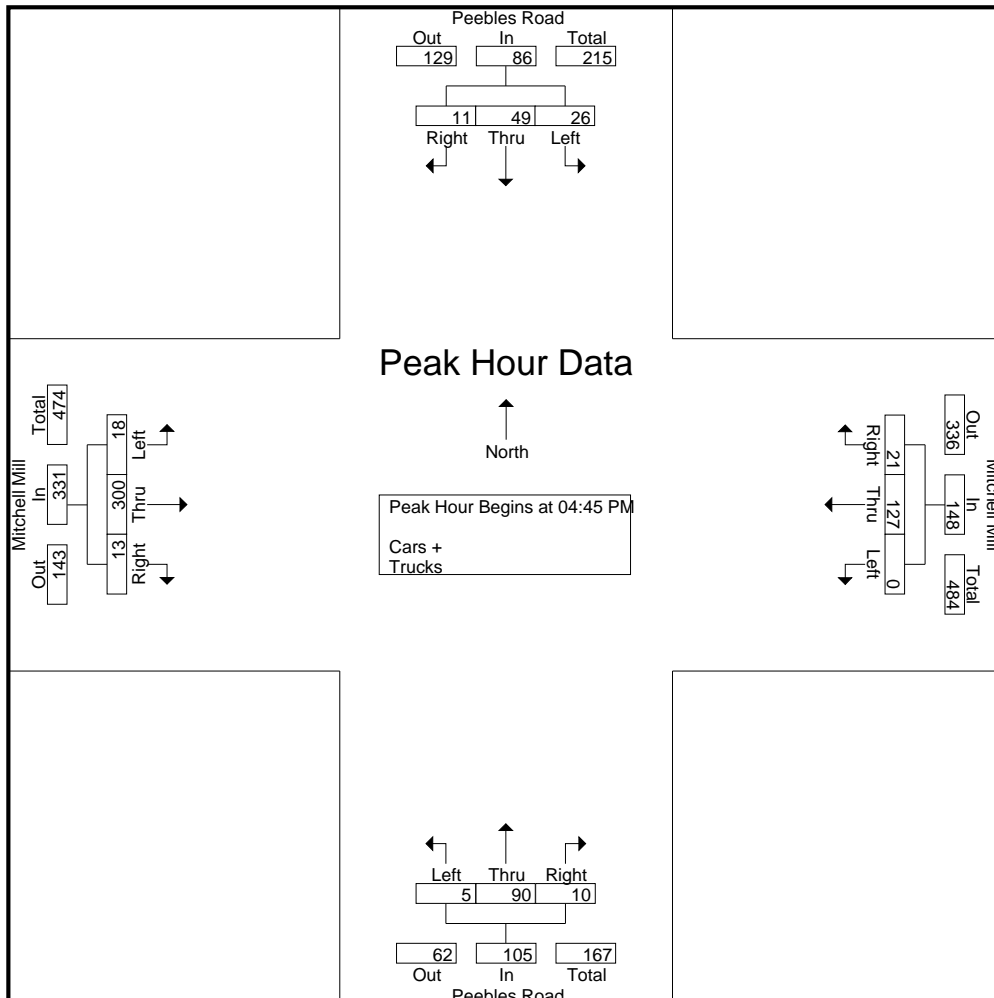
Start Time	Peebles Road Southbound				Mitchell Mill Westbound				Peebles Road Northbound				Mitchell Mill Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
04:00 PM	7	11	13	31	6	25	1	32	1	14	1	16	2	44	6	52	131
04:15 PM	6	11	4	21	2	27	2	31	1	17	3	21	1	62	4	67	140
04:30 PM	3	13	3	19	4	30	2	36	0	27	1	28	3	64	3	70	153
04:45 PM	2	8	5	15	4	37	0	41	3	18	0	21	3	71	3	77	154
Total	18	43	25	86	16	119	5	140	5	76	5	86	9	241	16	266	578
05:00 PM	1	15	6	22	5	31	0	36	3	19	2	24	1	78	5	84	166
05:15 PM	3	15	6	24	4	23	0	27	3	26	1	30	4	89	7	100	181
05:30 PM	5	11	9	25	8	36	0	44	1	27	2	30	5	62	3	70	169
05:45 PM	1	7	4	12	2	21	1	24	2	13	2	17	4	55	6	65	118
Total	10	48	25	83	19	111	1	131	9	85	7	101	14	284	21	319	634
Grand Total	28	91	50	169	35	230	6	271	14	161	12	187	23	525	37	585	1212
Apprch %	16.6	53.8	29.6		12.9	84.9	2.2		7.5	86.1	6.4		3.9	89.7	6.3		
Total %	2.3	7.5	4.1	13.9	2.9	19	0.5	22.4	1.2	13.3	1	15.4	1.9	43.3	3.1	48.3	
Cars +	28	91	50	169	35	229	6	270	14	161	12	187	23	524	37	584	1210
% Cars +	100	100	100	100	100	99.6	100	99.6	100	100	100	100	100	99.8	100	99.8	99.8
Trucks	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1	2
% Trucks	0	0	0	0	0	0.4	0	0.4	0	0	0	0	0	0.2	0	0.2	0.2



TRAFFIC DATA COLLECTION

File Name : Rolesville(Jonesville and Mitchell Mill)PM Peak  
 Site Code :  
 Start Date : 11/30/2021  
 Page No : 2

Start Time	Peebles Road Southbound				Mitchell Mill Westbound				Peebles Road Northbound				Mitchell Mill 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	2	8	5	15	4	37	0	41	3	18	0	21	3	71	3	77	154
05:00 PM	1	15	6	22	5	31	0	36	3	19	2	24	1	78	5	84	166
05:15 PM	3	15	6	24	4	23	0	27	3	26	1	30	4	89	7	100	181
05:30 PM	5	11	9	25	8	36	0	44	1	27	2	30	5	62	3	70	169
Total Volume	11	49	26	86	21	127	0	148	10	90	5	105	13	300	18	331	670
% App. Total	12.8	57	30.2		14.2	85.8	0		9.5	85.7	4.8		3.9	90.6	5.4		
PHF	.550	.817	.722	.860	.656	.858	.000	.841	.833	.833	.625	.875	.650	.843	.643	.828	.925



# **APPENDIX C**

## **ADJACENT DEVELOPMENT INFORMATION**

# TRAFFIC IMPACT ANALYSIS

FOR

## COBBLESTONE CROSSING MIXED-USE

LOCATED

IN

## ROLESVILLE, NORTH CAROLINA

Prepared For:  
Town of Rolesville  
502 Southtown Circle  
Rolesville, NC 27571

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



MARCH 2021

RKA Project No. 20498




Prepared By: TF

Reviewed By: MK





**LEGEND**

-  Proposed Site Location
-  Study Intersection
-  Study Area



Cobblestone Crossing  
Mixed-Use  
Rolesville, NC

Site Location Map	
Scale: Not to Scale	Figure 1

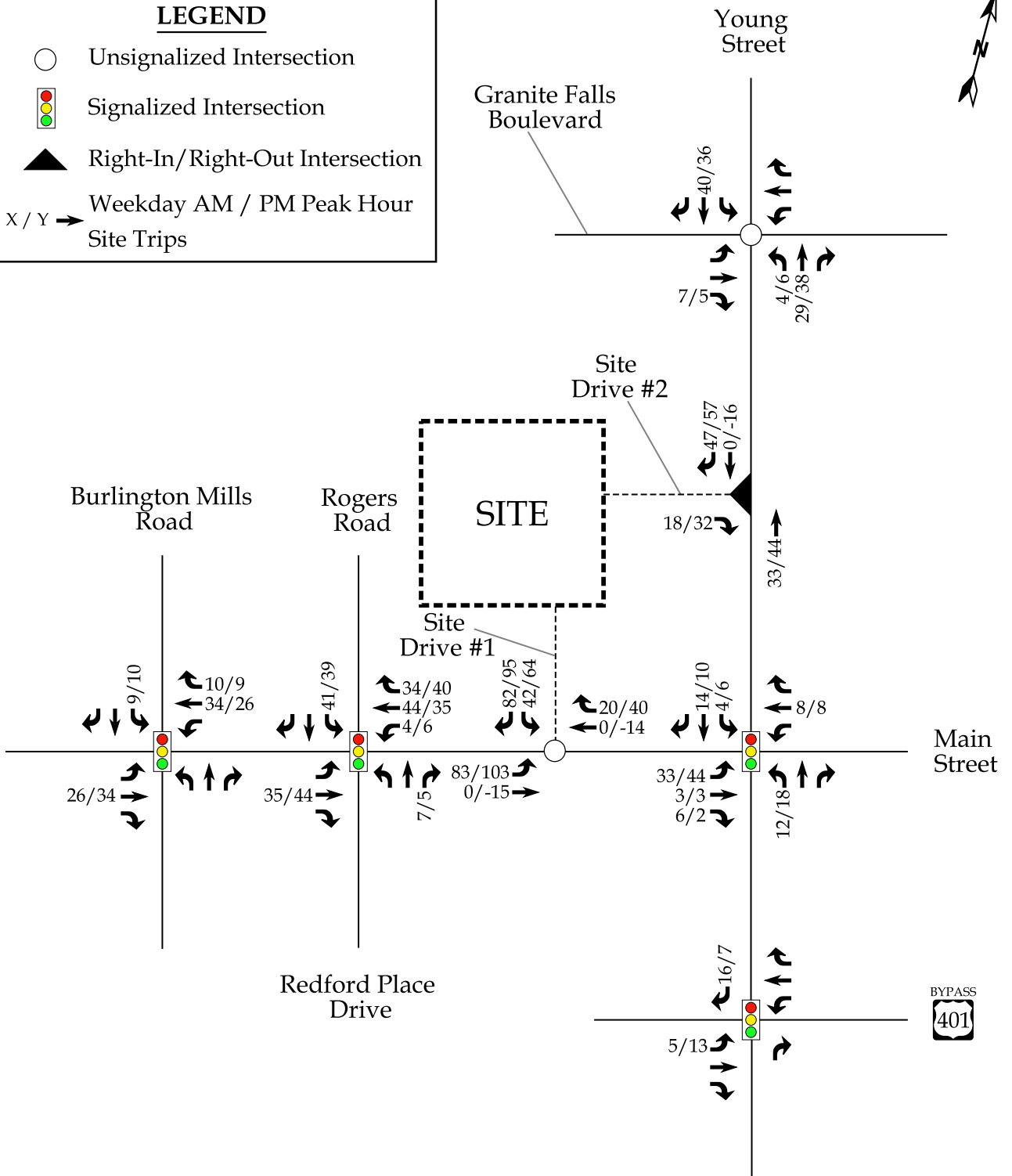
**LEGEND**

○ Unsignalized Intersection

🚦 Signalized Intersection

▲ Right-In/Right-Out Intersection

X / Y → Weekday AM / PM Peak Hour Site Trips



BYPASS  
401



Cobblestone Crossing  
Mixed-Use  
Rolesville, NC

Total Site Trip  
Assignment

Scale: Not to Scale Figure 12

## 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 14 for an illustration of the recommended lane configuration for the proposed development.

### Improvements by STIP U-6241

STIP U-6241 is expected to realign Burlington Mills Road and install a traffic signal at the relocated intersection on Main Street. STIP U-6241 is also expected to provide improvements to the pedestrian and bike facilities along Main Street and add a concrete median island along Main Street west of Rogers Road. These improvements associated with STIP U-6241 will alter the existing lane configurations at the study intersections along Main Street.

### Recommended Improvements by Developer

#### Main Street and Site Drive 1

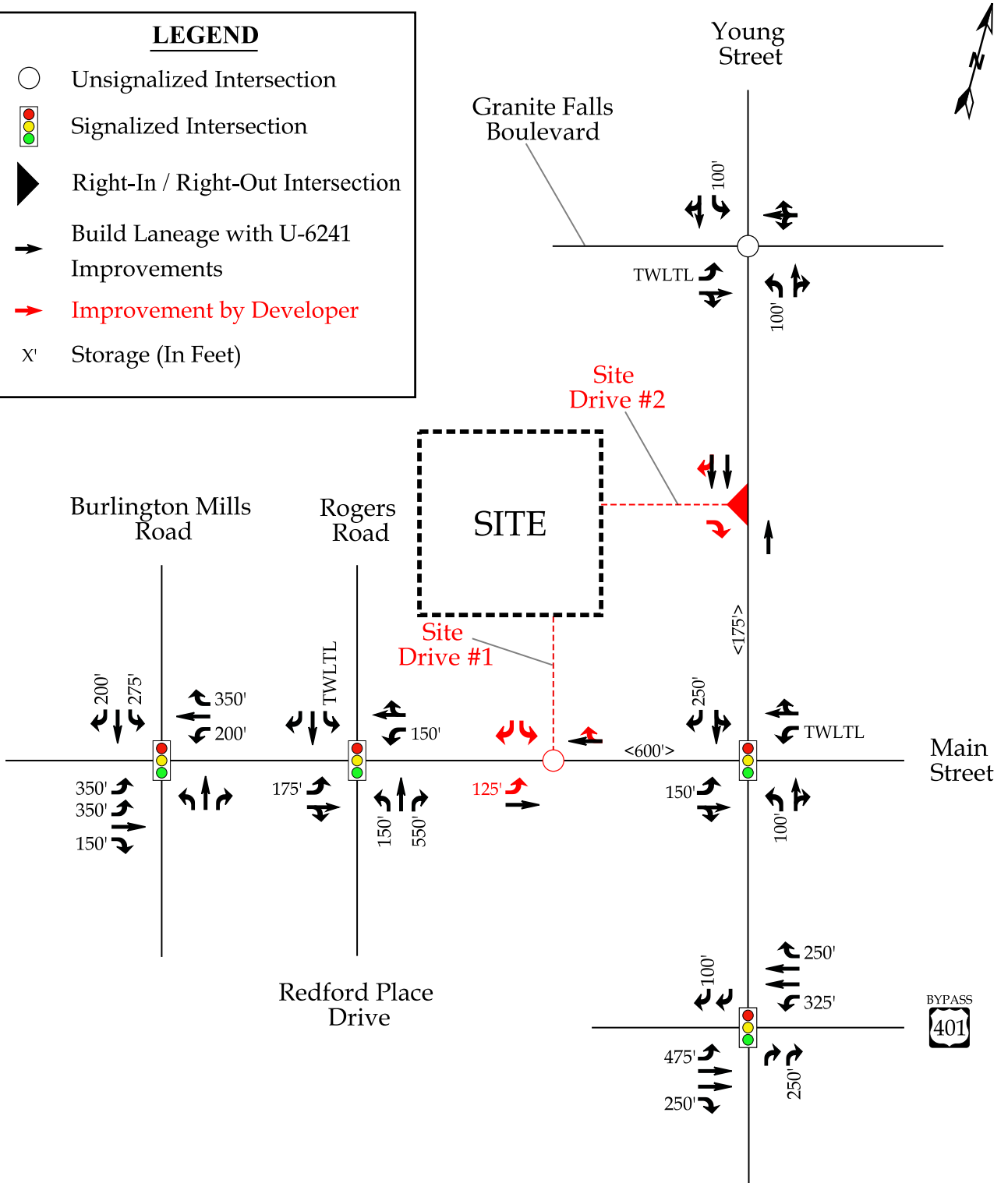
- Construct the southbound approach with one ingress and two egress lanes.
- Provide stop control for the southbound approach.
- Install an eastbound left-turn lane with at least 125 feet of storage and appropriate decel and taper.

#### Young Street and Site Drive 2

- Construct the eastbound approach with one ingress and egress lane.
- Provide stop control for the eastbound approach.

**LEGEND**

- Unsignalized Intersection
- ◫ Signalized Intersection
- ▶ Right-In / Right-Out Intersection
- ➔ Build Laneage with U-6241 Improvements
- ➔ Improvement by Developer
- X' Storage (In Feet)



Moving forward.



RAMEY KEMP ASSOCIATES

Cobblestone Crossing  
Mixed-Use  
Rolesville, NC

Recommended Lane  
Configurations

Scale: Not to Scale

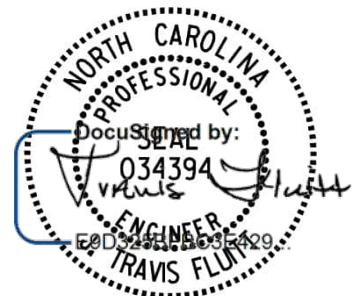
Figure 14

Revised Traffic Impact Analysis for  
**Young Street PUD**  
Rolesville, North Carolina

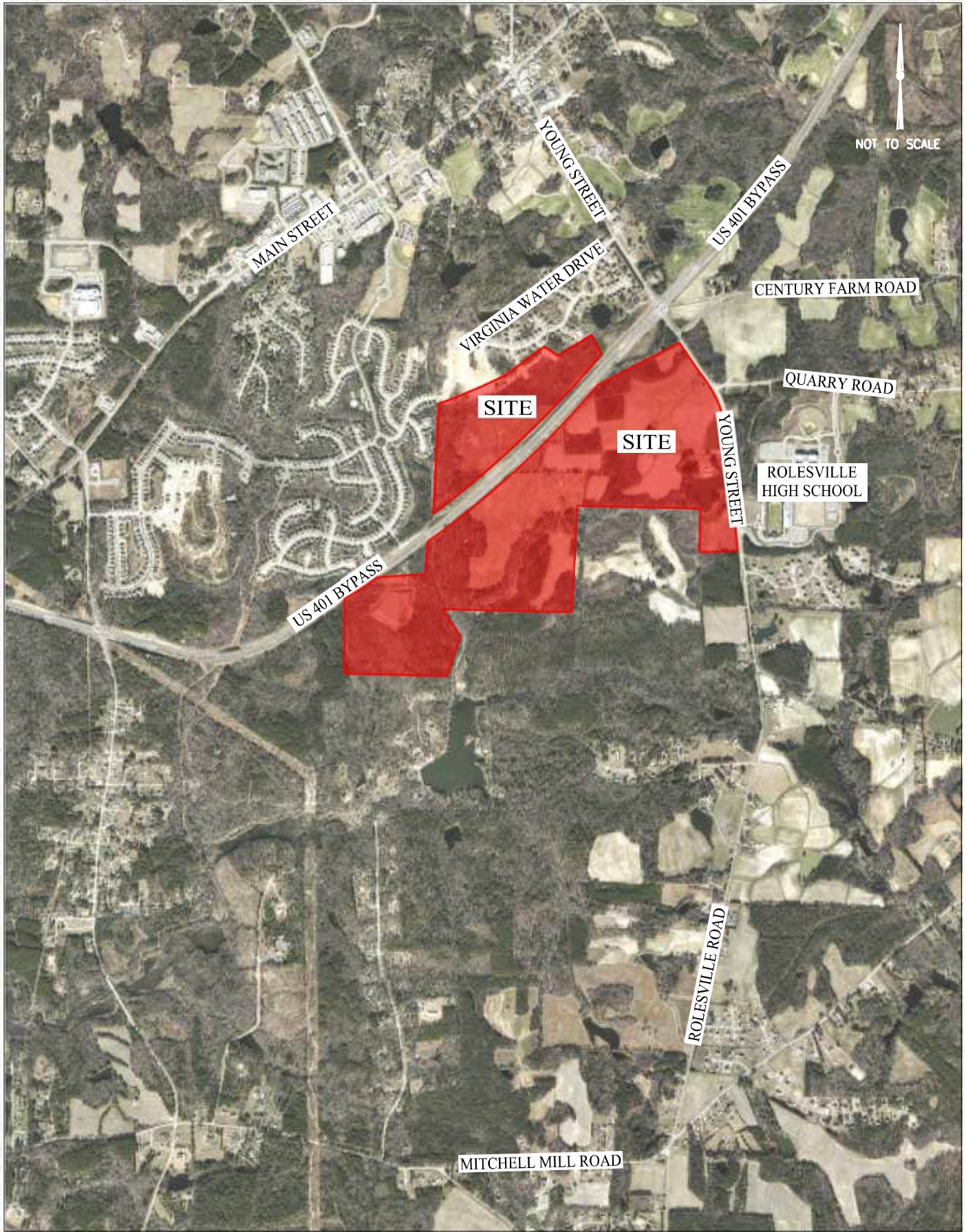
Prepared for:  
Ashton Woods  
Raleigh, North Carolina

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

June 2019  
015956012



6/13/2019



YOUNG STREET PUD  
 ROLESVILLE, NC  
 TRAFFIC IMPACT ANALYSIS

SITE LOCATION

FIGURE  
 1

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

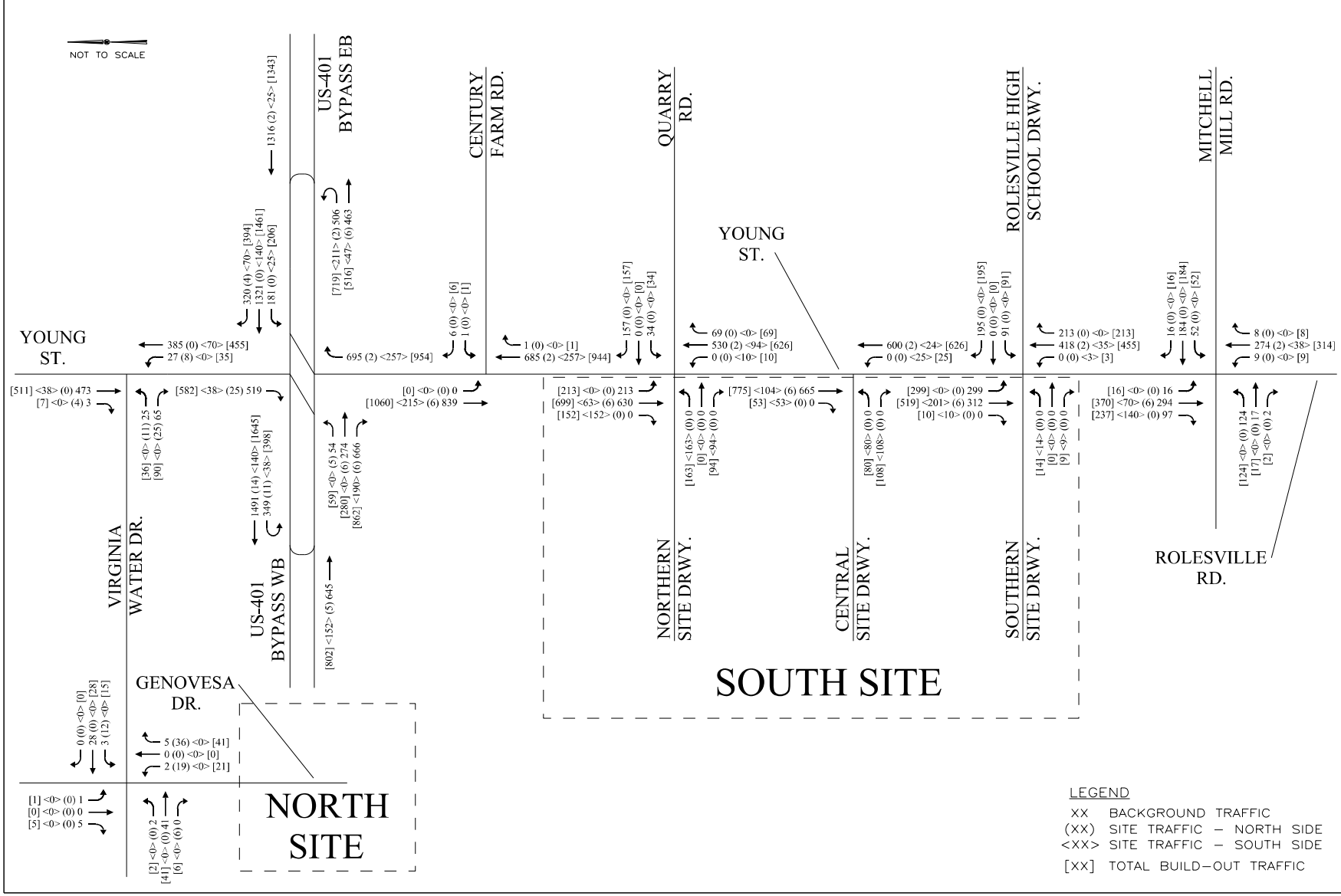
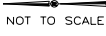


FIGURE 14

PROJECTED (2025) BUILD-OUT AM PEAK HOUR TRAFFIC VOLUMES - COMMERCIAL BUILD-OUT

YOUNG STREET PUD ROLESVILLE, NC TRAFFIC IMPACT ANALYSIS



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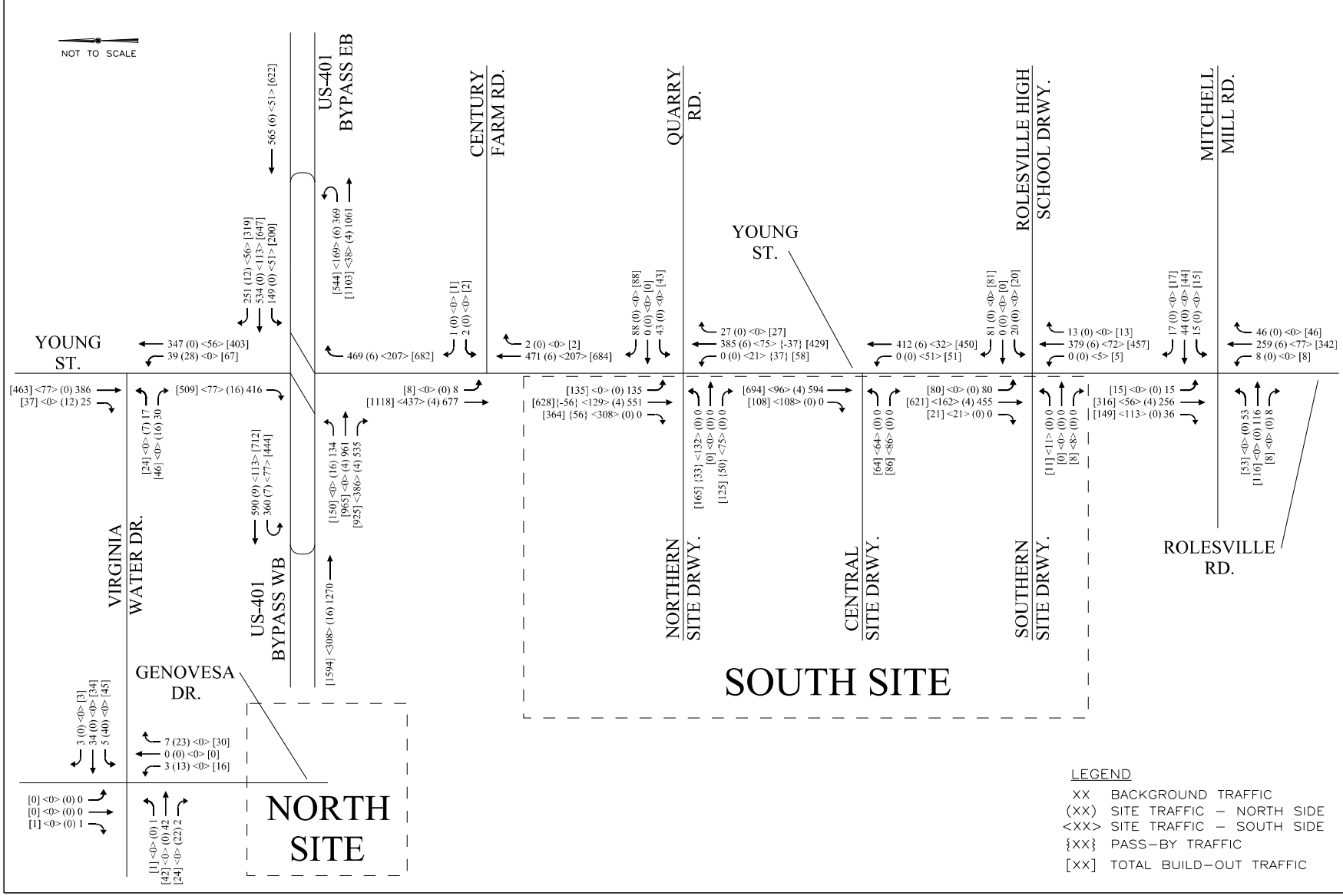
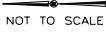


FIGURE  
16

PROJECTED (2025)  
BUILD-OUT PM PEAK HOUR  
TRAFFIC VOLUMES -  
COMMERCIAL BUILD-OUT

YOUNG STREET PUD  
ROLESVILLE, NC  
TRAFFIC IMPACT ANALYSIS



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## 7.0 Recommendations

### Residential Build-out

The following improvements are recommended to be performed to accommodate projected site traffic volumes at build-out of the residential portion of the development:

#### US 401 Bypass:

- Coordinate the traffic signals at the intersections of US 401 at Young Street and the Superstreet U-turns

#### Young Street at Quarry Road/North Site Driveway:

- Construct a northbound left-turn lane on Young Street with 100 feet of storage and appropriate tapers
- Construct a southbound right-turn lane on Young Street with 100 feet of storage and appropriate tapers
- Restripe the existing westbound left-turn lane on Quarry Road to a shared left/through lane
- Provide an exclusive left-turn lane with 275 feet of storage and appropriate tapers and a shared through/right lane on the North Site Driveway
- Install a traffic signal when warranted

#### Young Street at Central Site Driveway:

- Construct a northbound left-turn lane on Young Street with 100 feet of storage and appropriate tapers
- Construct a southbound right-turn lane on Young Street with 100 feet of storage and appropriate tapers
- Provide exclusive left and right-turn lanes on the Central Site Driveway with 125 feet of storage and appropriate tapers for the left-turn lane

#### Young Street at Rolesville High School Driveway/South Site Driveway:

- Construct a northbound left-turn lane on Young Street with 50 feet of storage and appropriate tapers
- Provide one egress lane on the South Site Driveway

#### Rolesville Road at Mitchell Mill Road:

- Install a traffic signal when warranted

Analyses indicate that with the recommended improvements in place, all of the study intersections except for Young Street at Century Farm Road and Young Street at Rolesville High School Driveway/South Site Driveway are expected to operate at an acceptable LOS at build-out of the residential-only phase of the development.

Analyses indicate that the intersection of Young Street at Century Farm Road is expected to operate with long delays on the minor street approach (Century Farm Road) in the AM peak hour at project build-out. However, it is typical for stop sign controlled side streets and driveways intersecting major streets to experience long delays during peak hours while the majority of the traffic moving through the intersection on the major street experiences little or no delay. SimTraffic traffic simulations indicate that no queuing issues are expected at this intersection.

Analyses indicate that the intersection of Young Street at the Rolesville High School Driveway/South Site Driveway is expected to operate with long delays on the minor street approach (Rolesville High School Driveway) in the AM peak hour and school PM peak hour with or without the proposed project in place in the study year 2025. SimTraffic traffic simulations also indicate the possibility of long queues on the westbound left-turn movement at this intersection in the AM peak hour and school PM peak hour. However, it is typical for stop sign controlled side streets and driveways intersecting major streets to experience long delays during peak hours, while the majority of the traffic moving through the intersection on the major street experiences little or no delay. This intersection is not expected to meet 4-hour or 8-hour MUTCD traffic signal warrants.

### **Commercial Build-out**

The following additional improvements are recommended to be performed in addition to those recommended above for the residential phase to accommodate projected site traffic volumes when the retail portion of the site is developed:

#### US 401 Bypass Eastbound at Young Street:

- Extend the storage of the existing eastbound right-turn lane on US 401 Bypass by approximately 175 feet to provide 400 feet of storage and appropriate tapers

#### Young Street at Quarry Road/North Site Driveway:

- Construct a northbound right-turn lane on Young Street with 100 feet of storage and appropriate tapers
- Modify the traffic signal to accommodate the additional laneage

Analyses indicate that with the recommended improvements in place, all of the study intersections except for Young Street at Century Farm Road, Young Street at the Central Site Driveway, and Young Street at Rolesville High School Driveway/South Site Driveway are expected to operate at acceptable LOS at commercial build-out of the development.

Analyses indicate that the intersection of Young Street at Century Farm Road is expected to operate with long delays on the minor street approach (Century Farm Road) in the AM peak hour at project build-out. It is typical for stop sign controlled side streets and driveways intersecting major streets to experience long delays during peak hours, while the majority of the traffic moving through the intersection on the major street experiences little or no delay. SimTraffic

traffic simulations indicate that short queues are likely on the minor street approach in the AM peak hour at commercial build-out.

Analyses indicate that the intersection of Young Street at the Central Site Driveway is expected to operate with long delays on the minor street approach (Central Site Driveway) in the AM peak hour in the commercial build-out traffic condition. It is typical for stop sign controlled side streets and driveways intersecting major streets to experience long delays during peak hours, while the majority of the traffic moving through the intersection on the major street experiences little or no delay. SimTraffic traffic simulations indicate the possibility of long queues on the eastbound left-turn movement at this intersection in the AM peak hour in the commercial build-out condition.

Analyses indicate that the intersection of Young Street at the Rolesville High School Driveway/South Site Driveway is expected to operate with long delays on the minor street approach (Rolesville High School Driveway) in the AM peak hour and school PM peak hour with or without the proposed project in place in the study year 2025. SimTraffic traffic simulations also indicate the possibility of long queues on the westbound left-turn movement at this intersection in the AM peak hour and school PM peak hour. However, it is typical for stop sign controlled side streets and driveways intersecting major streets to experience long delays during peak hours, while the majority of the traffic moving through the intersection on the major street experiences little or no delay. This intersection is not expected to meet 4-hour or 8-hour MUTCD traffic signal warrants.

As shown in the analysis, the impact of site traffic associated with the commercial build-out of this proposed PUD is generally consistent with the currently-approved PUD for the site. The proposed PUD is expected to generate no more than 50 additional peak hour trips in each of the studied peak hours compared to the approved PUD, and delays at commercial build-out of both plans are generally consistent at each of the study intersections.

The recommended laneage for the development is shown on **Figure 17**.

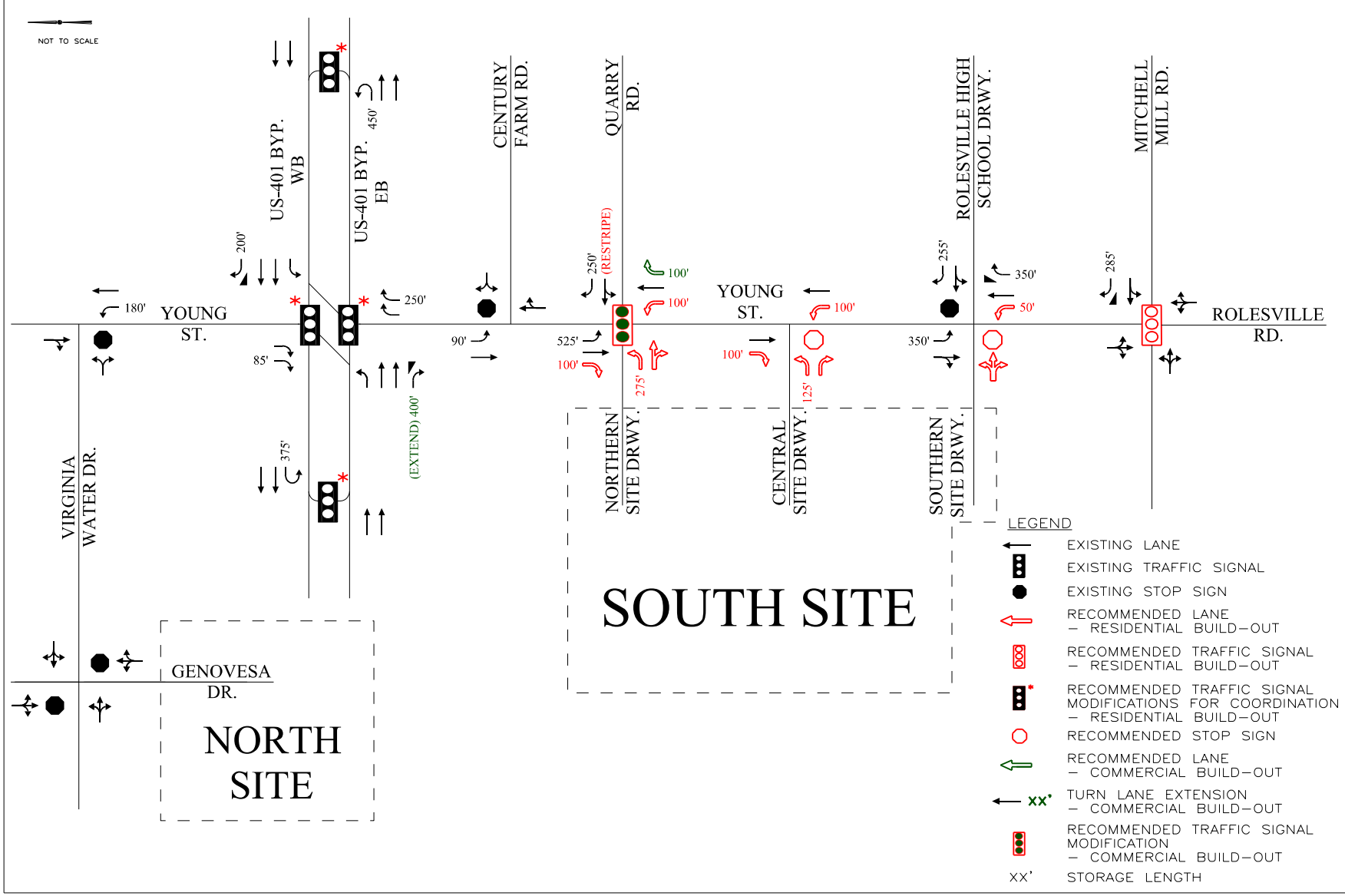


FIGURE 17

RECOMMENDED ROADWAY LANEAGE

YOUNG STREET PUD  
ROLESVILLE, NC  
TRAFFIC IMPACT ANALYSIS



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# TRAFFIC IMPACT ANALYSIS

FOR

## WHEELER TRACT

LOCATED

IN

## ROLESVILLE, NC

Prepared For:  
Hopper Communities  
173 Paraggi Court  
Clayton, NC 27527

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

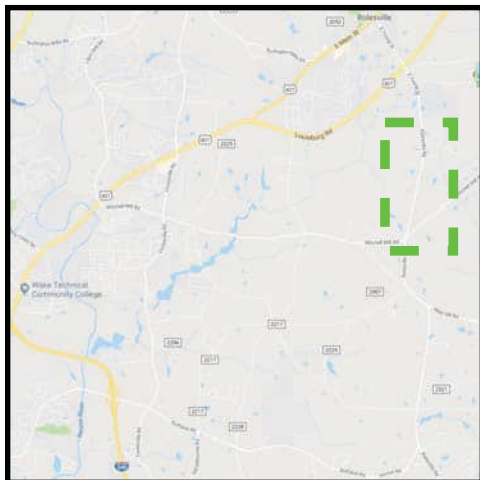
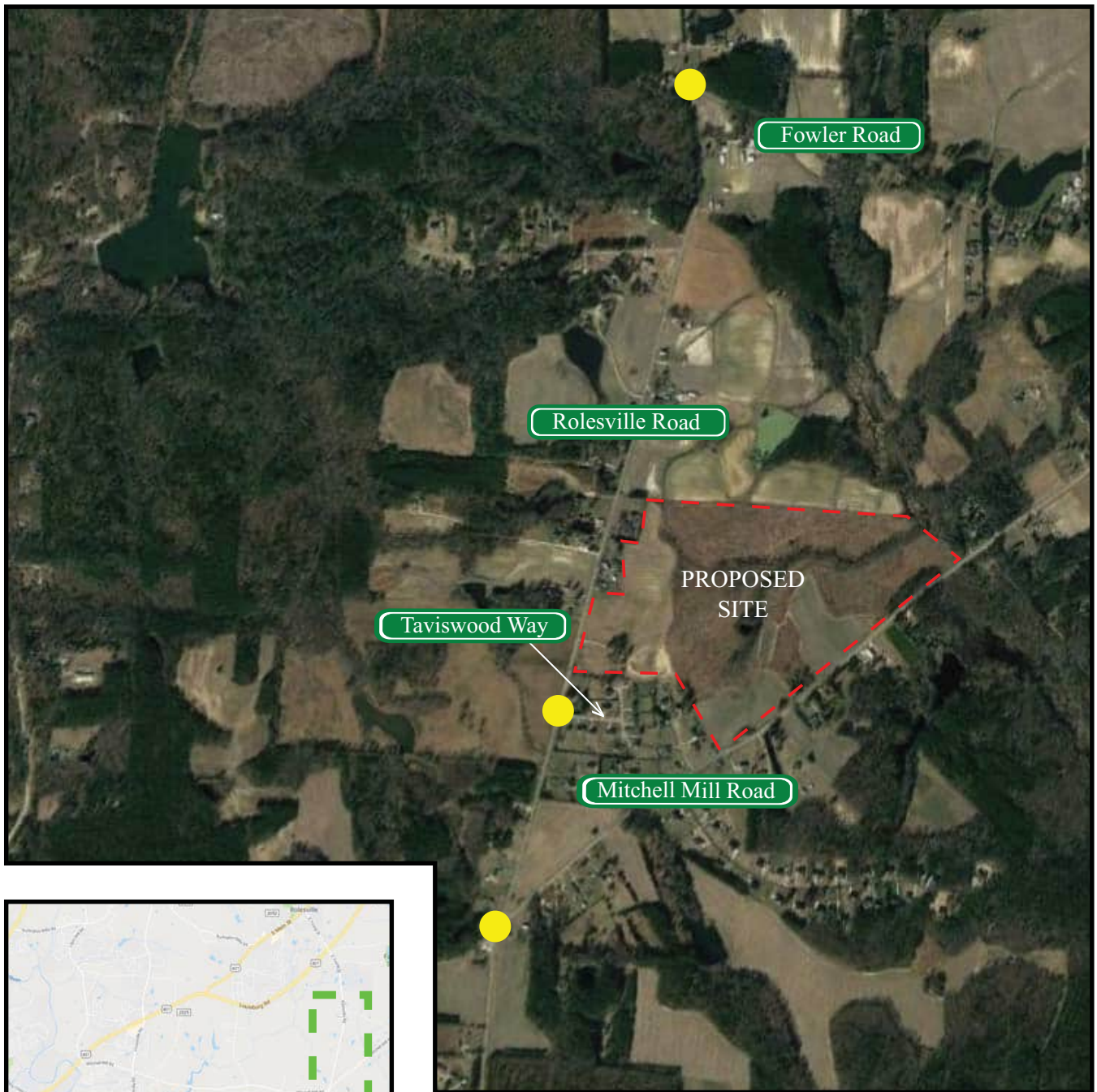
June 2019






RKA Project No. 19045

Prepared By: CAB

Reviewed By: JTR



**LEGEND**

-  Proposed Site Location
-  Study Intersection
-  Study Area



Wheeler Tract  
Rolesville, NC

Site Location Map

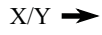
Scale: Not to Scale

Figure 1

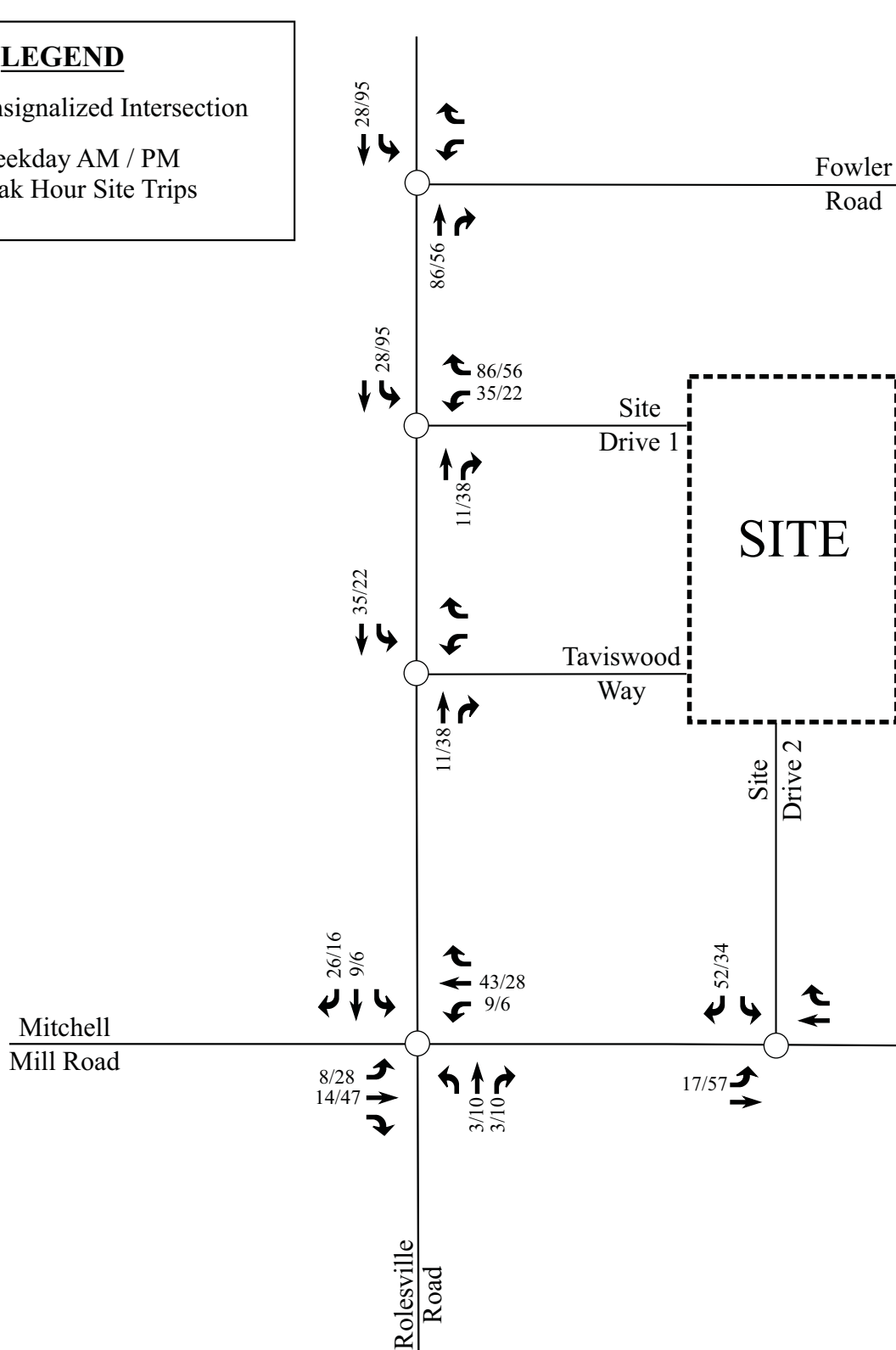
**LEGEND**



Unsignalized Intersection



Weekday AM / PM  
Peak Hour Site Trips



Wheeler Tract  
Rolesville, NC

Site  
Trip Assignment

Scale: Not to Scale

Figure 9

## 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 11 for an illustration of the recommended lane configuration for the proposed development.

### **Recommended Improvements by Developer**

#### Rolesville Road and Mitchell Mill Road

- Monitor intersection for signalization.

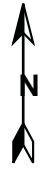
#### Rolesville Road and Site Drive 1

- Provide site access via a full movement intersection with one ingress lane and one egress lane.
- Provide stop control for westbound Site Drive 1 approach.
- Provide a designated southbound left-turn lane with at least 100 feet of storage and appropriate deceleration and taper.

#### Mitchell Mill Road and Site Drive 2

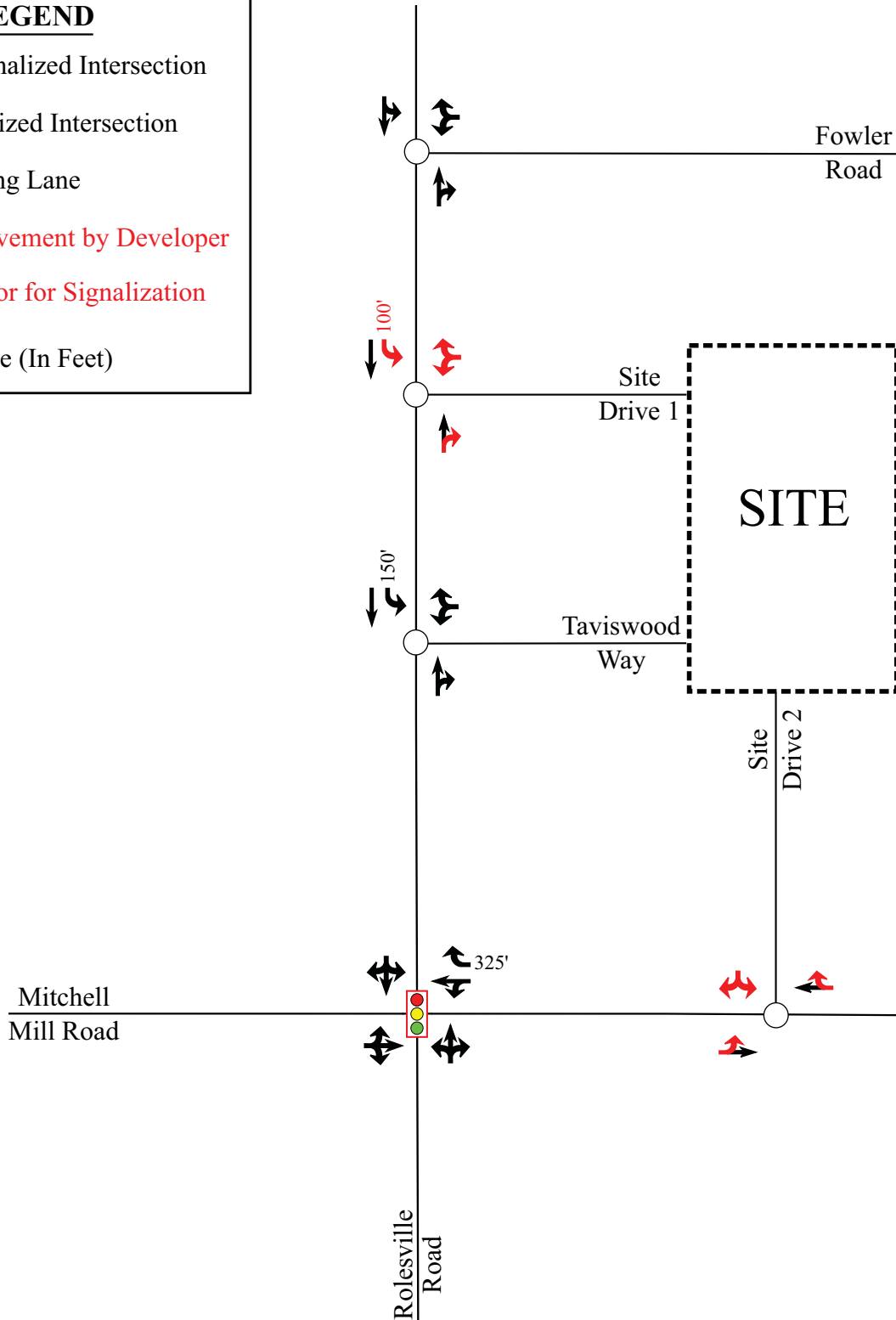
- Provide site access via a full movement intersection with one ingress lane and one egress lane.
- Provide stop control for southbound Site Drive 2 approach.





**LEGEND**

- Unsignalized Intersection
- 🚦 Signalized Intersection
- ➡ Existing Lane
- ➡ Improvement by Developer
- 🚦 Monitor for Signalization
- X' Storage (In Feet)



Wheeler Tract  
Rolesville, NC

Recommended  
Lane Configurations

Scale: Not to Scale

Figure 11

# TRAFFIC IMPACT ANALYSIS

FOR

## LOUISBURY ROAD ASSEMBLAGE

LOCATED

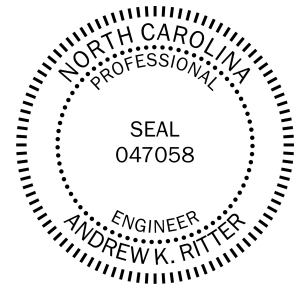
IN

**RALEIGH, NC**

Prepared For:  
McAdams Company  
2905 Meridian Parkway  
Durham, NC 27713

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

*Andrew Kyle Ritter*



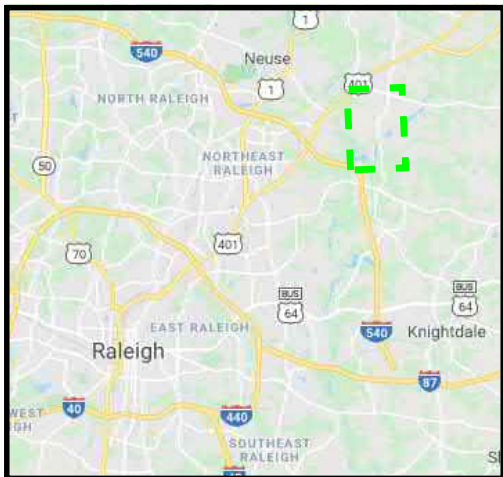
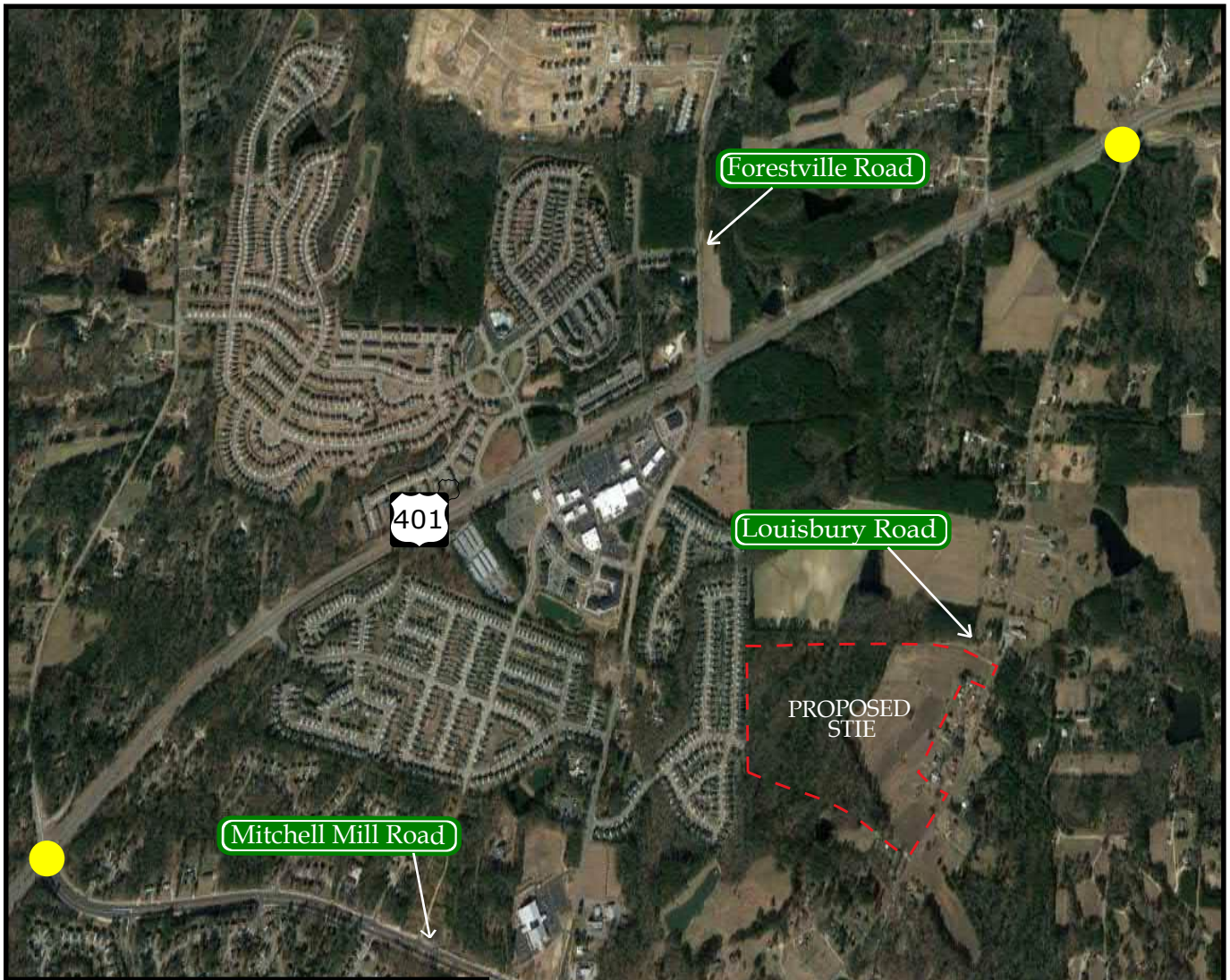
5/8/2020

May 2020




RKA Project No. 19418

Prepared By: DT

Reviewed By: DR



**LEGEND**

-  Proposed Site Location
-  Study Intersection
-  Study Area



Louisbury Road Assemblage  
Raleigh, NC

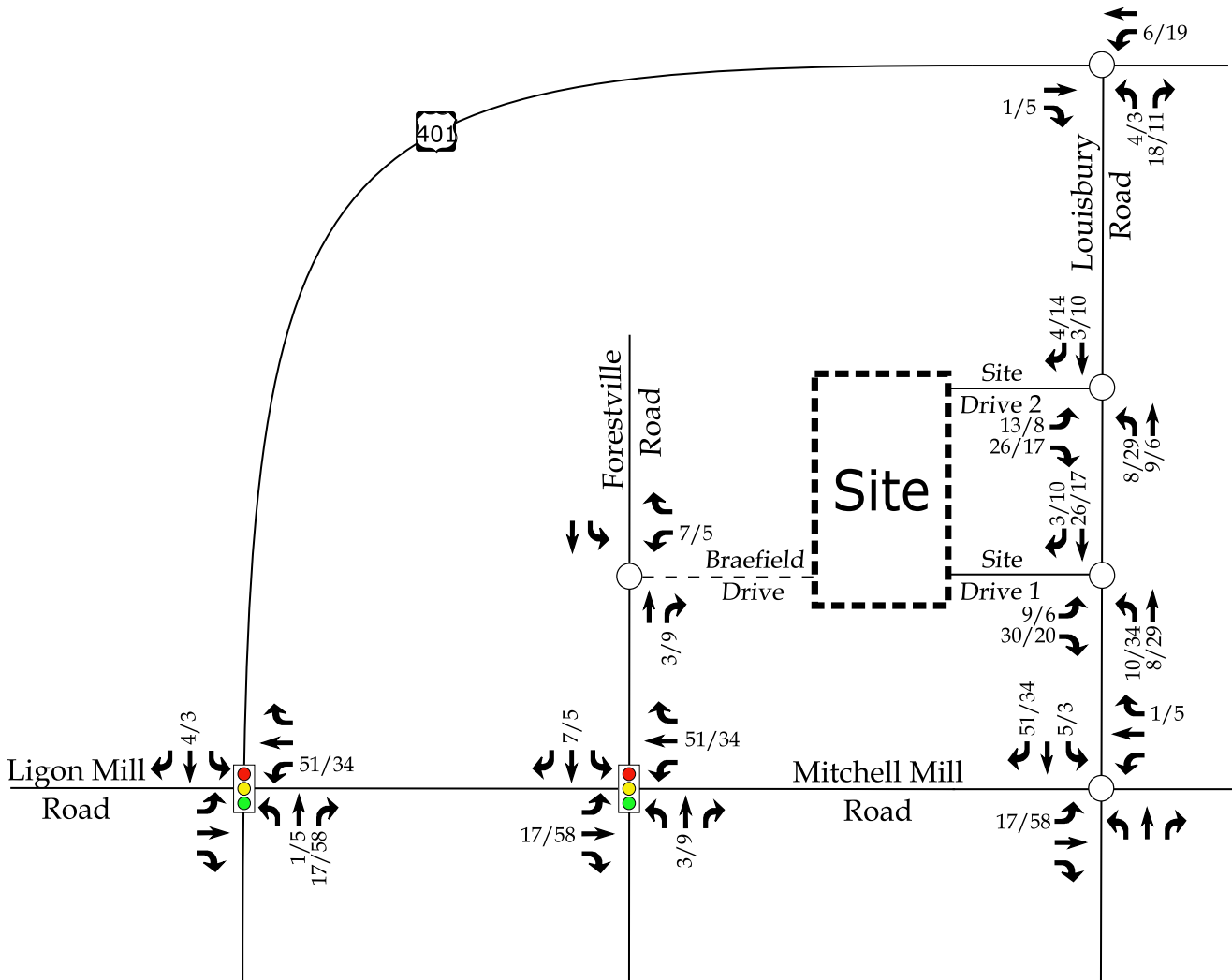
Site Location Map

Scale: Not to Scale

Figure 1

**LEGEND**

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



Louisbury Road Assemblage  
Raleigh, NC

Site Trip Assignment

Scale: Not to Scale	Figure 7
---------------------	----------

## 12. 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 9 for an illustration of the recommended lane configuration for the proposed development.

### Recommended Improvements by Developer

#### Mitchell Mill Road and Louisbury Road

- Monitor for signalization after site is constructed.

#### US 401 and Louisbury Road

- Per NCDOT, extend northbound left turn lane to 175' of storage.
- Monitor for signalization after site is constructed.

#### Louisbury Road and Site Drive 1

- Provide site access via full movement intersection with one (1) ingress lane and one (1) egress lane.
- Per NCDOT, provide northbound left turn lane with 100' of storage.
- Provide stop control for eastbound approach.

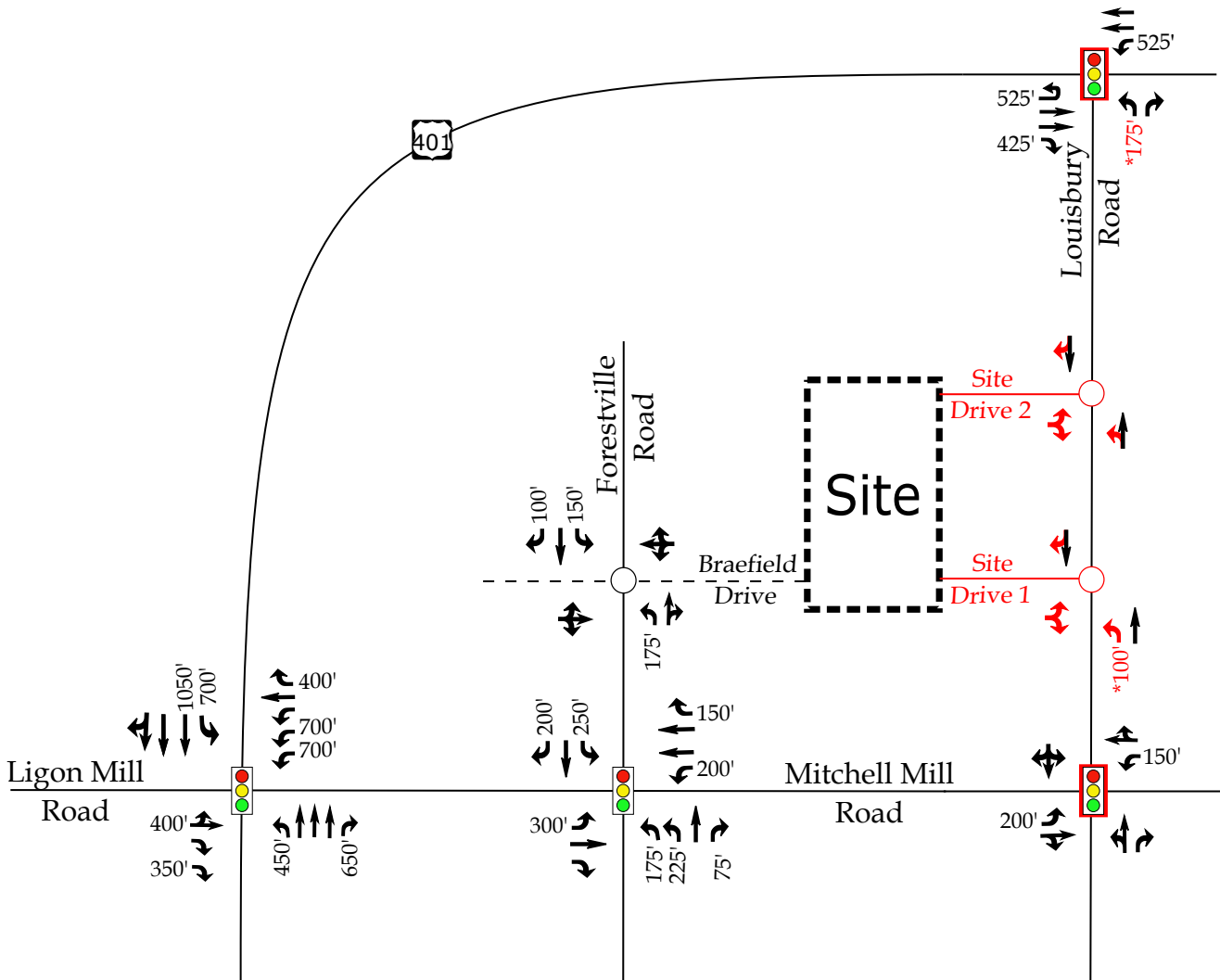
#### Louisbury Road and Site Drive 2

- Provide site access via full movement intersection with one (1) ingress lane and one (1) egress lane.
- Provide stop control for eastbound approach.

**LEGEND**

- Unsignalized Intersection
- 🚦 Signalized Intersection
- 🚦 (Red Box) Monitor for Signalization at Full Build-Out
- ➡ Existing Lane
- ➡ (Red) Improvement by Developer
- X' Storage (In Feet)

\*Based on NCDOT Review



Moving forward.



Louisbury Road Assemblage  
Raleigh, NC

Recommended  
Lane Configurations

Scale: Not to Scale | Figure 9



**Kalas / Watkins Family Property  
Traffic Impact Analysis**

Rolesville Road, Rolesville, North Carolina

August 24, 2019

Prepared for:

Mitchell Mill Road Investors LLC  
PO Box 3557  
Cary, NC 27519

Prepared by:

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

# Sign-off Sheet

This document entitled Kalas / Watkins Family Property Traffic Impact Analysis was prepared by Stantec Consulting Services Inc. ("Stantec") for the account of Mitchell Mill Road Investors LLC (the "Client"). Any reliance on this document by any third party is strictly prohibited. The material in it reflects Stantec's professional judgment in light of the scope, schedule and other limitations stated in the document and in the contract between Stantec and the Client. The opinions in the document are based on conditions and information existing at the time the document was published and do not take into account any subsequent changes. In preparing the document, Stantec did not verify information supplied to it by others. Any use which a third party makes of this document is the responsibility of such third party. Such third party agrees that Stantec shall not be responsible for costs or damages of any kind, if any, suffered by it or any other third party as a result of decisions made or actions taken based on this document.

Prepared by Maggie J Rogers  
(signature)

**Maggie Rogers**  
Reviewed by [Signature]  
(signature)

**Matt Peach, PE, PTOE**  
Approved by Christa Greene  
(signature)

**Christa Greene, PE**





## 1.0 INTRODUCTION

The purpose of this report is to evaluate the transportation impacts of the proposed Kalas / Watkins Family Property development located on the west side of Rolesville Road just north of Mitchell Mill Road in Rolesville, NC. The project location is shown below in Figure 1.

Figure 1: Site Location

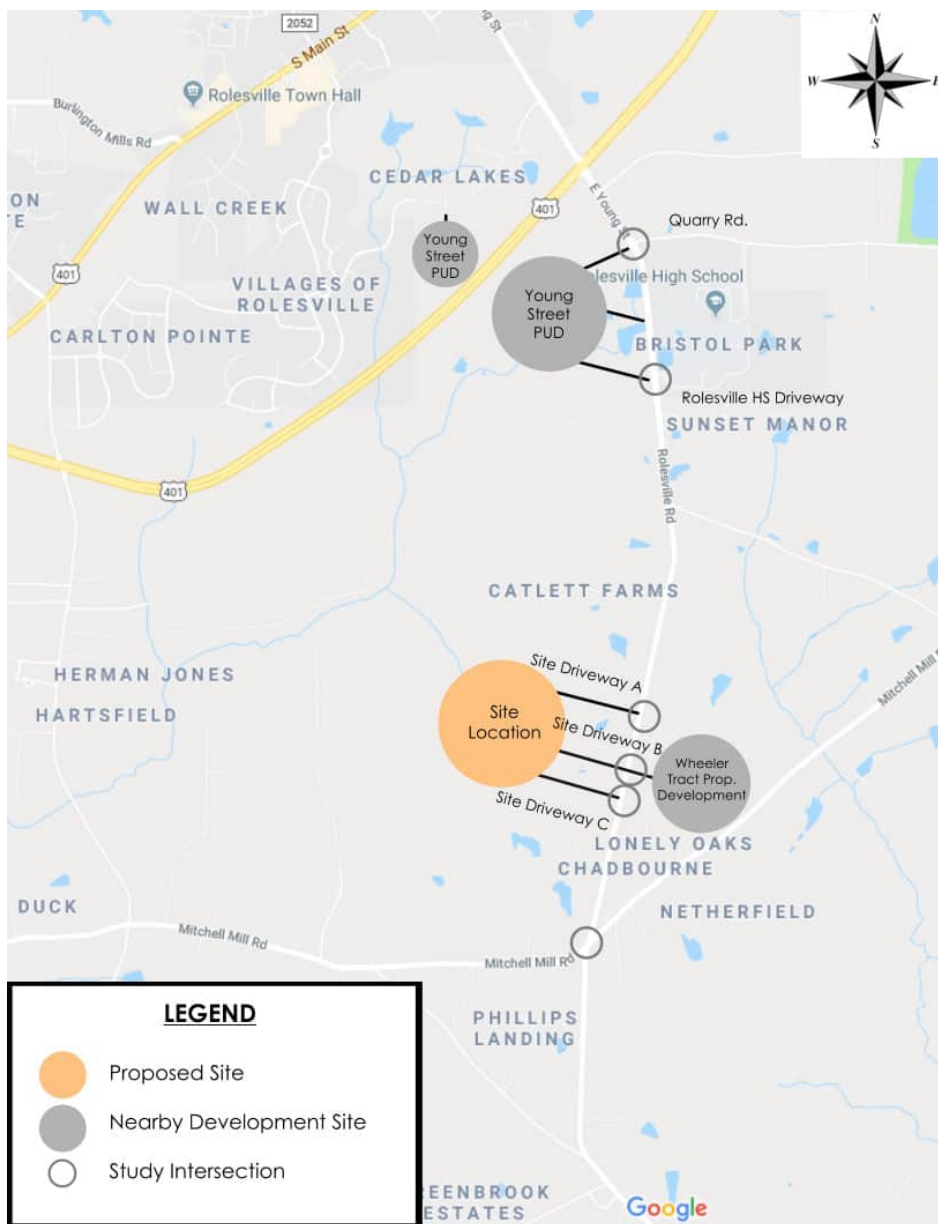
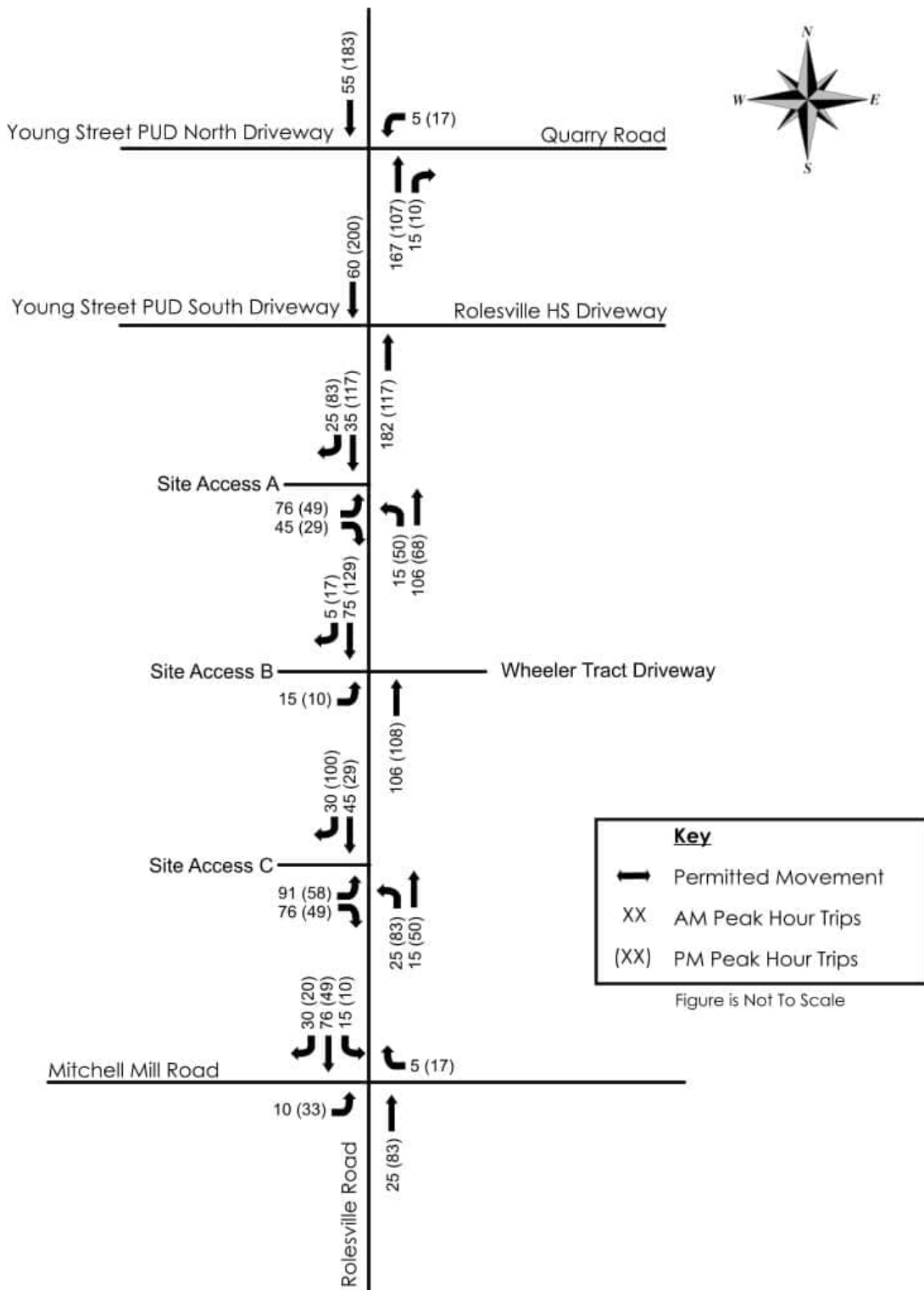


Figure 6: Site Trip Assignment



## 5.4 2025 BUILD WITH IMPROVEMENTS

Geometric improvements such as the installation of turn-lanes are recommended and therefore analyzed in this scenario. These items are listed below as well as in the recommendations section.

### Rolesville Road at Site Driveway A

- Construct Driveway A as a full-movement access point onto Rolesville Road with one ingress lane and one egress lane.
- Construct an exclusive eastbound right-turn lane with 100 feet of full-width storage and appropriate taper on Driveway A.
- Construct an exclusive northbound left-turn lane with 100 feet of full-width storage and appropriate taper on Rolesville Road.
- Construct an exclusive southbound right-turn lane with 100 feet of full-width storage and appropriate taper on Rolesville Road.

### Rolesville Road at Site Driveway B / Wheeler Tract Driveway

- Construct Driveway B as a full-movement access point onto Rolesville Road with one ingress lane and one egress lane.
- Construct an exclusive northbound left-turn lane with 100 feet of full-width storage and appropriate taper on Rolesville Road.
- Construct an exclusive southbound right-turn lane with 50 feet of full-width storage and appropriate taper on Rolesville Road.

### Rolesville Road at Site Driveway C

- Construct Driveway C as a full-movement access point onto Rolesville Road with one ingress lane and one egress lane.
- Construct an exclusive eastbound right-turn lane with 100 feet of full-width storage and appropriate taper on Driveway C.
- Construct an exclusive northbound left-turn lane with 100 feet of full-width storage and appropriate taper on Rolesville Road.
- Construct an exclusive southbound right-turn lane with 100 feet of full-width storage and appropriate taper on Rolesville Road.

Accordingly, all study area intersections and approaches operate at acceptable levels of service with the following exceptions:

- The east and westbound approaches to the intersection of Rolesville Road at Rolesville High School Driveway / Young Street PUD Southern Driveway operates at LOS F in the AM peak hour. This causes high overall delays at the intersection. Furthermore, the eastbound approach operates at LOS F and westbound approach operates at LOS E in the PM peak hour.
- The east and westbound approaches at the intersection of Rolesville Road at Site Driveway B / Wheeler Tract Driveway operate at LOS E in the AM peak hour.

The east and westbound approaches to the intersection of Rolesville Road at Rolesville High School Driveway / Young Street PUD Southern Driveway performs unacceptably across analysis scenarios. These delays can be



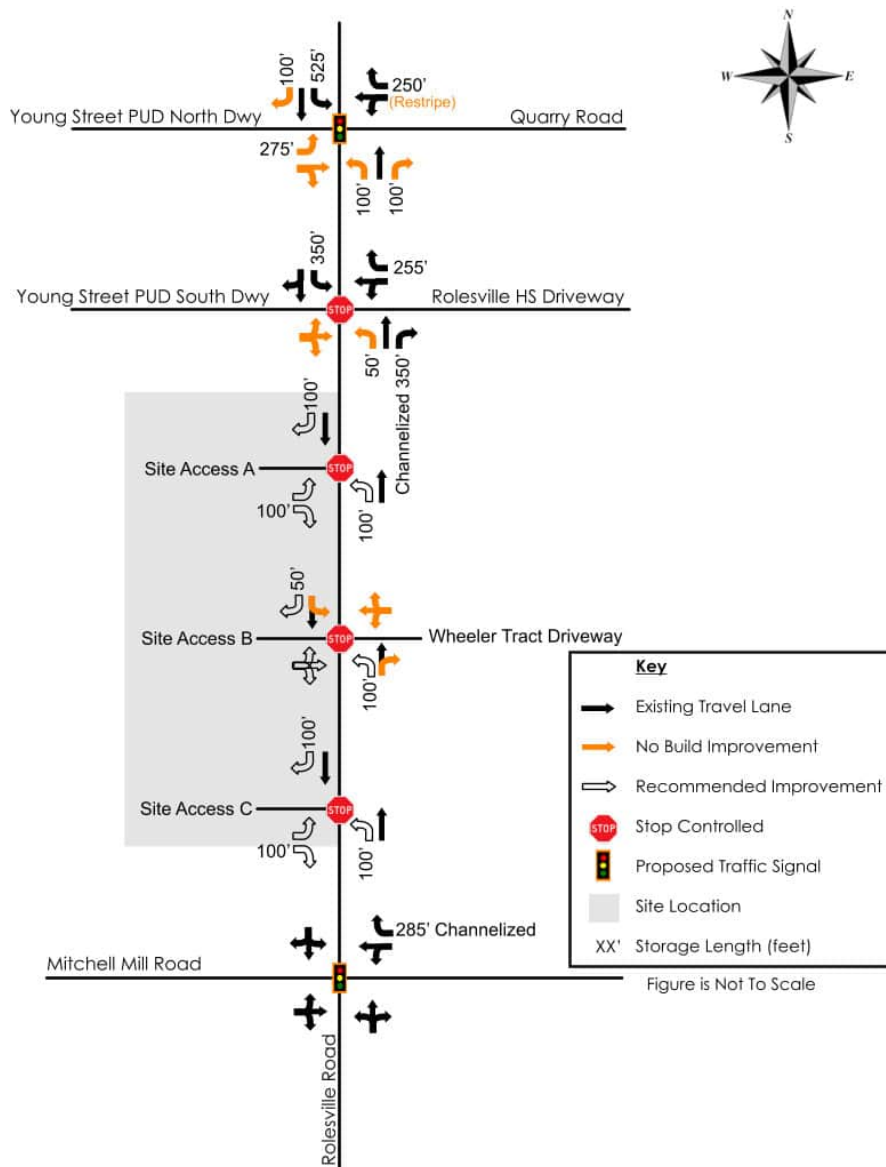
# KALAS / WATKINS FAMILY PROPERTY TRAFFIC IMPACT ANALYSIS

Traffic Analysis  
August 24, 2019

attributed to both the Young Street PUD and High School traffic on the side street approaches. The Kalas / Watkins development is projected to only add through volumes to the intersection and are anticipated to have a minimal impact on overall delays at this intersection.

Delays on the eastbound approach of Site Driveway B at Rolesville Road can be attributed to high thru volumes on Rolesville Road during the AM peak hour. Traffic volumes using this approach are anticipated to be minor (i.e. 15 vehicles in the AM peak hour and 10 vehicles in the PM peak hour) and side street delays should dissipate after High School Traffic passes through the network. Table 8 lists the results of the capacity analysis under the 2025 build-improved traffic conditions. The recommended improvements are illustrated in figure 14.

**Figure 14: Recommended Improvements**



# TRAFFIC IMPACT ANALYSIS

FOR

## 5109 MITCHELL MILL ROAD

LOCATED

IN

## ROLESVILLE, NORTH CAROLINA

Prepared For:  
Town of Rolesville  
502 Southtown Circle  
Rolesville, NC 27571

Prepared By:  
Infrastructure Consulting Services, Inc.  
*dba*

**Ramey Kemp Associates**  
5808 Faringdon Place  
Raleigh, NC 27609  
License #F-1489

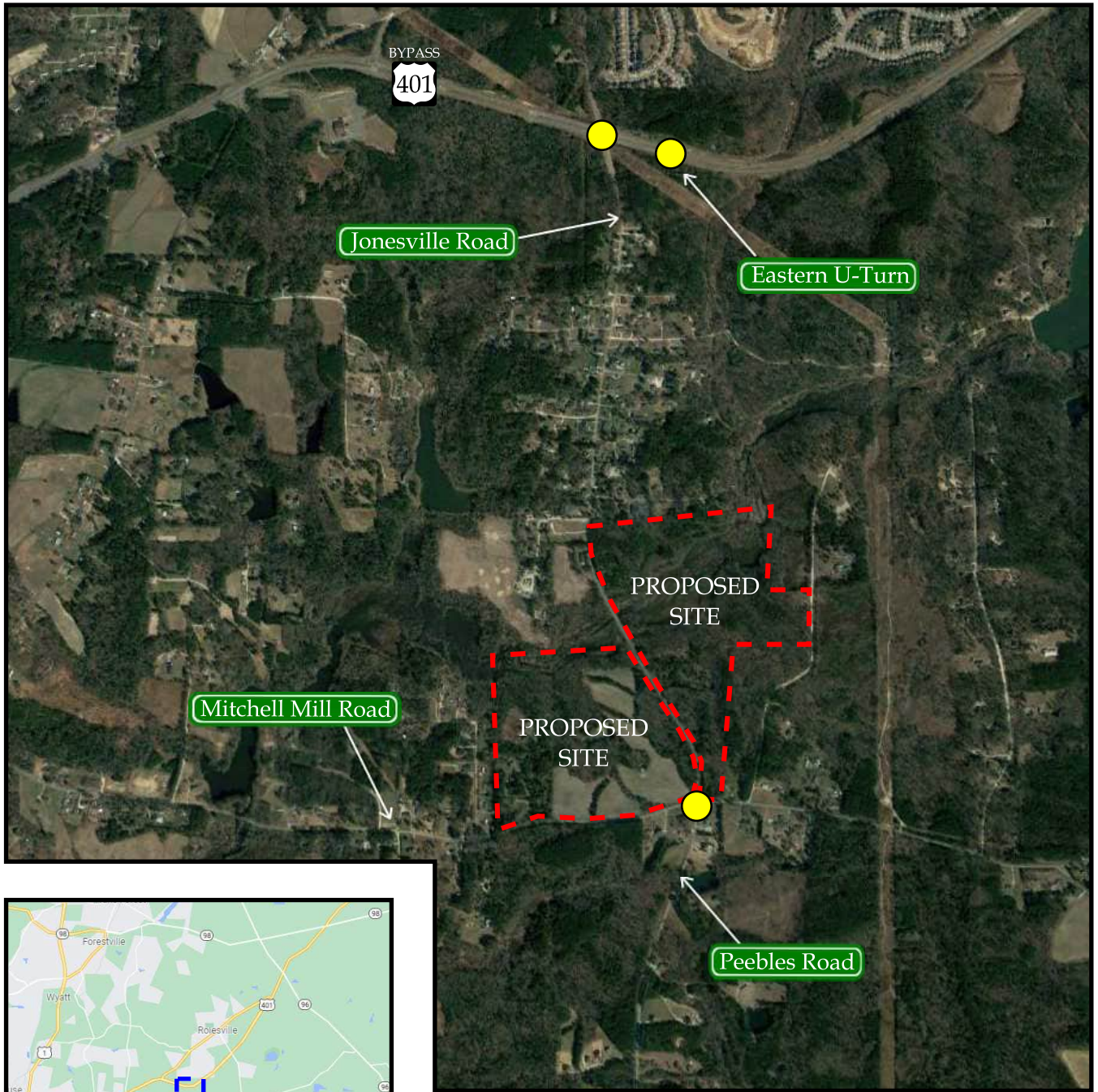


AUGUST 2022

RKA Project No. 20498 - 004

Prepared By: TF

Reviewed By: CH



**LEGEND**

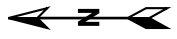
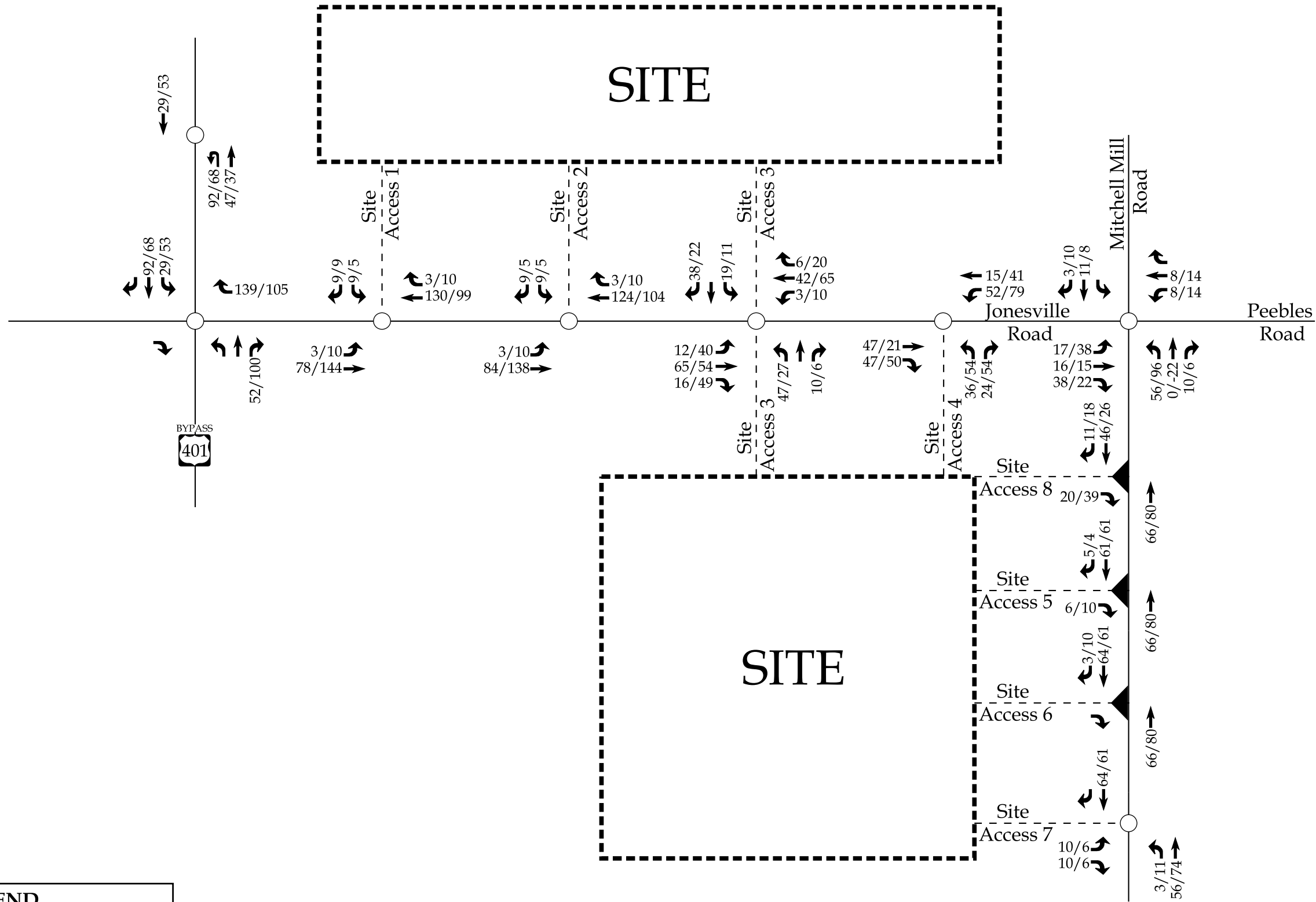
- Proposed Site Location
- Study Intersection
- Study Area



5109 Mitchell Mill Road  
Rolesville, NC

Site Location Map

Scale: Not to Scale    Figure 1



**LEGEND**

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

**RKA**  
RAMEY KEMP ASSOCIATES

5109 Mitchell Mill Road  
Rolesville, NC

Total Site Trip Assignment	
Scale: Not to Scale	Figure 12

## 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 14 for an illustration of the recommended lane configurations for the proposed development.

### **Recommended Improvements by Developer**

#### Required Frontage Improvements per Rolesville Community Transportation Plan

- Widen Jonesville Road along the site frontage between Site Access 1 and Mitchell Mill Road to this roadway's ultimate section (2-lane w/ TWLTL).
- Widen one-half section of Mitchell Mill Road along the site frontage to this roadway's ultimate section (4-lane median divided).

#### US 401 Bypass and Jonesville Road

- Conduct a full signal warrant analysis prior to full build-out of the proposed development and install a traffic signal if warranted and approved by the Town and NCDOT.

#### US 401 Bypass and Eastern U-Turn Location

- Conduct a full signal warrant analysis prior to full build-out of the proposed development and install a traffic signal if warranted and approved by the Town and NCDOT.

#### Mitchell Mill Road and Jonesville Road / Peebles Road

- Construct a southbound (Jonesville Road) left-turn lane with at least 100 feet of storage and appropriate decel and taper.
- Construct an eastbound (Mitchell Mill Road) left-turn lane with at least 100 feet of storage and appropriate decel and taper.
- Conduct a full signal warrant analysis prior to full build-out of the proposed development and install a traffic signal if warranted and approved by the Town and NCDOT.



### Jonesville Road and Site Access 1

- Construct the westbound approach (Site Access 1) with one ingress lane and one egress lane.
- Provide stop-control for the westbound approach (Site Access 1).
- Construct a southbound (Jonesville Road) left-turn lane with at least 100 feet of storage and appropriate decel and taper.

### Jonesville Road and Site Access 2

- Construct the westbound approach (Site Access 2) with one ingress lane and one egress lane.
- Provide stop-control for the westbound approach (Site Access 2).
- Construct a northbound (Jonesville Road) right-turn lane with at least 100 feet of storage and appropriate decel and taper.
- Construct a southbound (Jonesville Road) left-turn lane with at least 100 feet of storage and appropriate decel and taper.

### Jonesville Road and Site Access 3

- Construct the eastbound and westbound approaches (Site Access 3) with one ingress lane and one egress lane.
- Provide stop-control for the eastbound and westbound approaches (Site Access 3).
- Construct a northbound (Jonesville Road) left-turn lane with at least 100 feet of storage and appropriate decel and taper.
- Construct a northbound (Jonesville Road) right-turn lane with at least 100 feet of storage and appropriate decel and taper.
- Construct a southbound (Jonesville Road) left-turn lane with at least 100 feet of storage and appropriate decel and taper.
- Construct a southbound (Jonesville Road) right-turn lane with at least 100 feet of storage and appropriate decel and taper.

#### Jonesville Road and Site Access 4

- Construct the eastbound approach (Site Access 4) with one ingress lane and one egress lane.
- Provide stop-control for the eastbound approach (Site Access 4).
- Construct a northbound (Jonesville Road) left-turn lane with at least 100 feet of storage and appropriate decel and taper.
- Construct a southbound (Jonesville Road) right-turn lane with at least 100 feet of storage and appropriate decel and taper.

#### Mitchell Mill Road and Site Access 5

- Construct the southbound approach (Site Access 5) with one ingress lane and one egress lane striped as an exclusive right-turn lane.
- Provide stop-control for the southbound approach (Site Access 5). This proposed intersection will be restricted to right-in/right-out operations.
- Construct an exclusive westbound (Mitchell Mill Road) right-turn lane with at least 100 feet of storage and appropriate decel and taper.

#### Mitchell Mill Road and Site Access 6

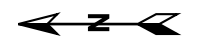
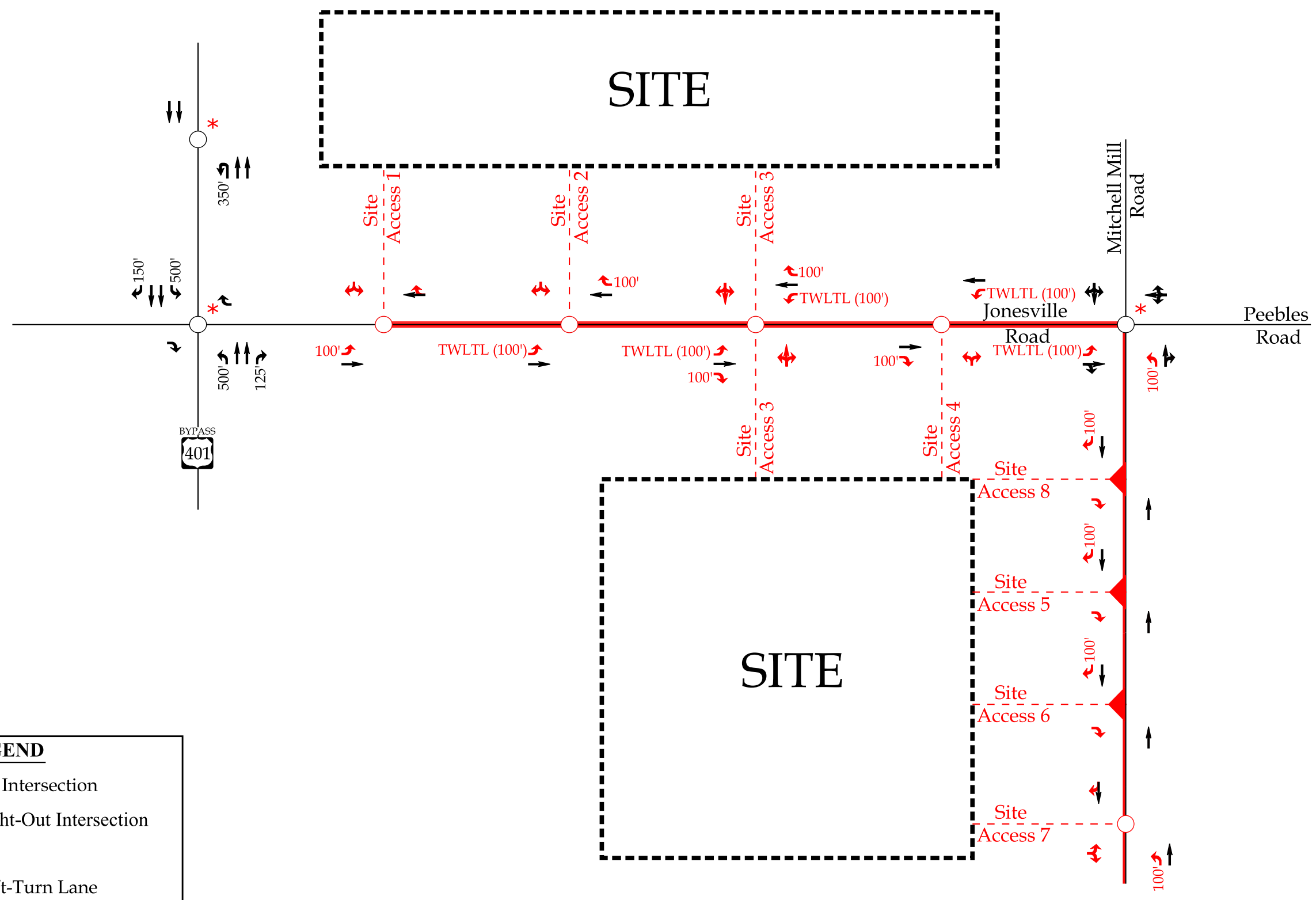
- Construct the southbound approach (Site Access 6) with one ingress lane and one egress lane striped as an exclusive right-turn lane.
- Provide stop-control for the southbound approach (Site Access 6). This proposed intersection will be restricted to right-in/right-out operations.
- Construct an exclusive westbound (Mitchell Mill Road) right-turn lane with at least 100 feet of storage and appropriate decel and taper.

#### Mitchell Mill Road and Site Access 7

- Construct the southbound approach (Site Access 7) with one ingress lane and one egress lane.
- Provide stop-control for the southbound approach (Site Access 7)
- Construct an exclusive eastbound (Mitchell Mill Road) left-turn lane with at least 100 feet of storage and appropriate decel and taper.

Mitchell Mill Road and Site Access 8

- Construct the southbound approach (Site Access 8) with one ingress lane and one egress lane striped as an exclusive right-turn lane.
- Provide stop-control for the southbound approach (Site Access 8). This proposed intersection will be restricted to right-in/right-out operations.
- Construct an exclusive westbound (Mitchell Mill Road) right-turn lane with at least 100 feet of storage and appropriate decel and taper.



LEGEND	
○	Unsignalized Intersection
▲	Right-In / Right-Out Intersection
→	Existing Lane
TWLTL	Two-Way Left-Turn Lane
*	Developer Monitor for Signalization
→	Improvement by Developer
—	Frontage Widening Requirement**
x'	Storage (In Feet)

\*\*Refer to Section 9 of the report for more information



5109 Mitchell Mill Road  
Rolesville, NC

Recommended Lane Configurations	
Scale: Not to Scale	Figure E-1

# TRAFFIC IMPACT ANALYSIS

FOR

## HILLS AT HARIS CREEK

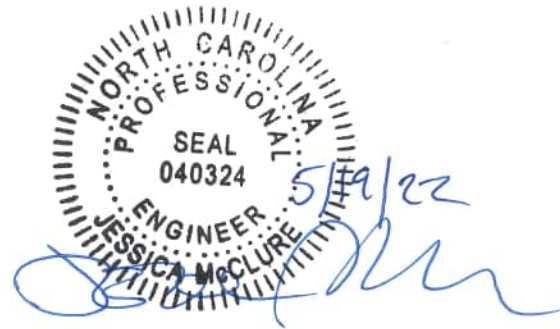
LOCATED

IN

## ROLESVILLE, NORTH CAROLINA

Prepared For:  
Town of Rolesville  
502 Southtown Circle  
Rolesville, NC 27571

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

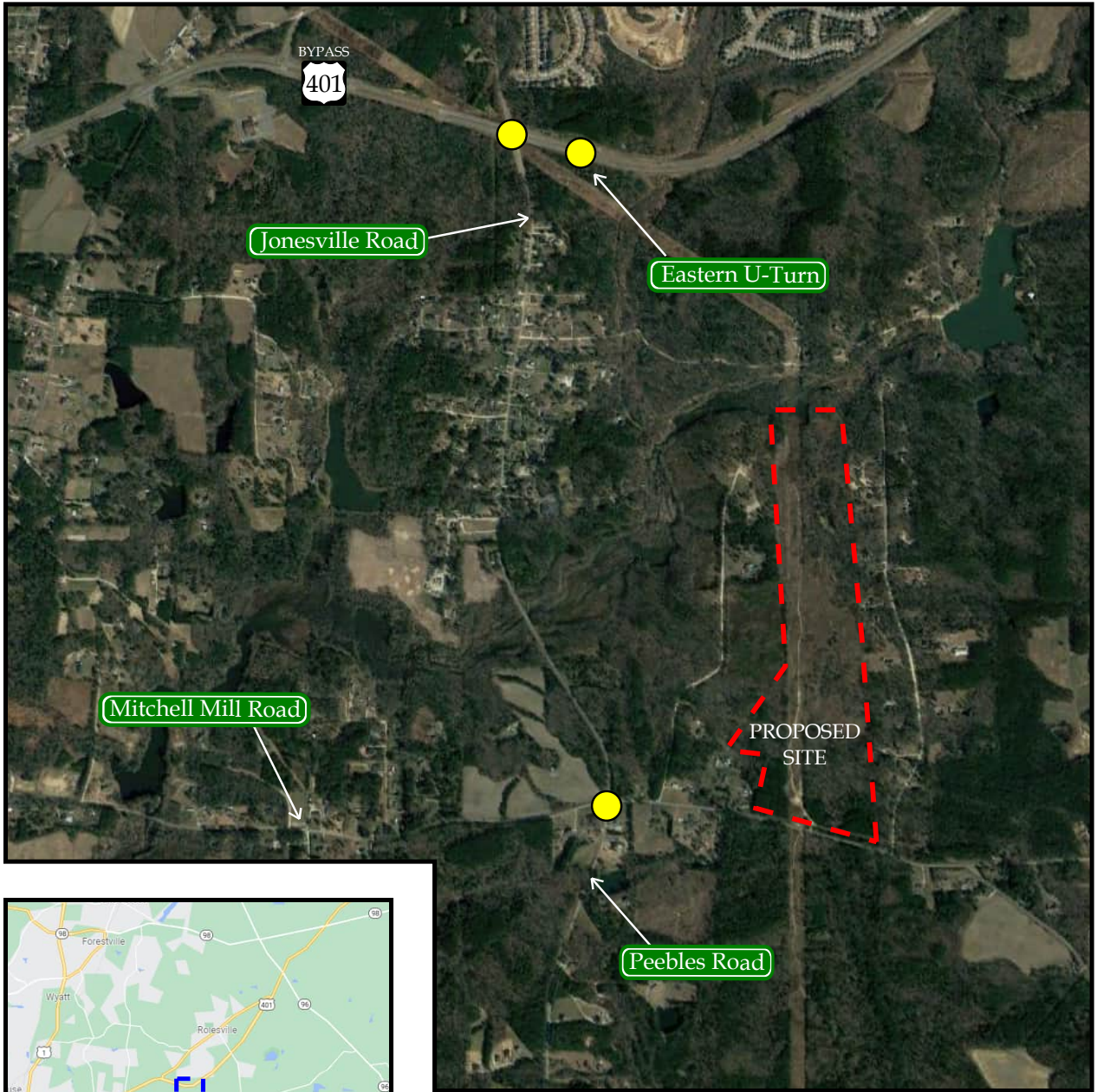


MAY 2022

RKA Project No. 20498 - 005

Prepared By: TF

Reviewed By: JMC



**LEGEND**

- - - Proposed Site Location
- Study Intersection
- - - Study Area



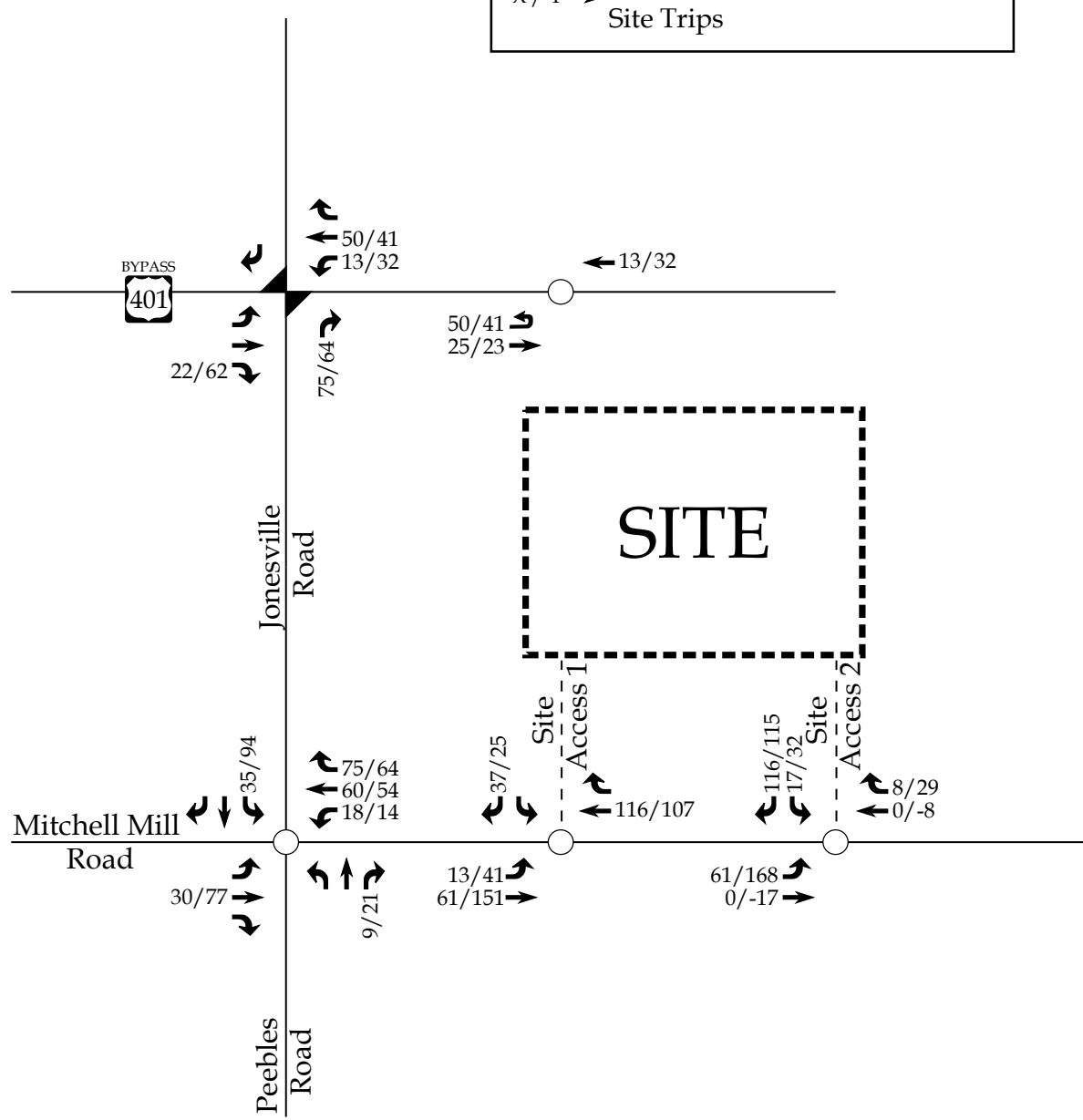
Hills at Harris Creek  
Rolesville, NC


Site Location Map

Scale: Not to Scale    Figure 1

**LEGEND**

- Unsignalized Intersection
- ◄ Left-Over Intersection
- X / Y → Weekday AM / PM Peak Hour Site Trips



	Hills at Harris Creek Rolesville, NC	Total Site Trip Assignment	
		Scale: Not to Scale	Figure 12

## 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 14 for an illustration of the recommended lane configurations for the proposed development.

### **Recommended Improvements by Developer**

#### Required Frontage Improvements per Rolesville Community Transportation Plan

- Widen one-half section of Mitchell Mill Road along the site frontage to this roadway's ultimate section (4-lane median divided).

#### US 401 Bypass and Jonesville Road

- Conduct a full signal warrant analysis prior to full build-out of the proposed development and install a traffic signal if warranted and approved by the Town and NCDOT.

#### US 401 Bypass and Eastern U-Turn Location

- Conduct a full signal warrant analysis prior to full build-out of the proposed development and install a traffic signal if warranted and approved by the Town and NCDOT.

#### Mitchell Mill Road and Jonesville Road / Peebles Road

- Construct a southbound (Jonesville Road) left-turn lane with at least 100 feet of storage and appropriate decel and taper.
  - It should be noted that this improvement was also identified by the 5109 Mitchell Mill Road TIA.
- Construct a westbound (Mitchell Mill Road) right-turn lane with at least 100 feet of storage and appropriate decel and taper.
- Conduct a full signal warrant analysis prior to full build-out of the proposed development and install a traffic signal if warranted and approved by the Town and NCDOT.



**Mitchell Mill Road and Site Access 1**

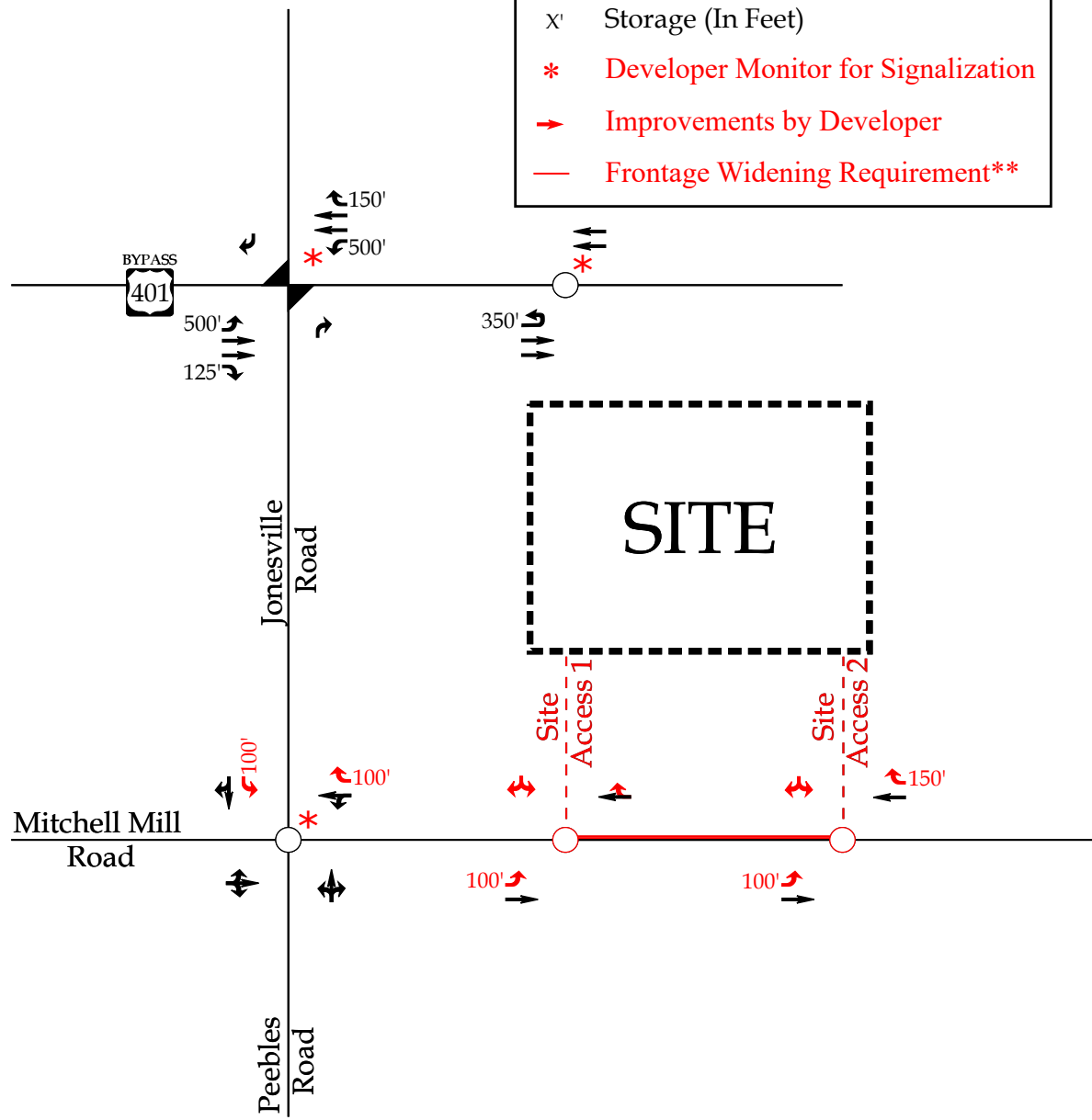
- Construct the southbound approach (Site Access 1) with one ingress lane and one egress lane.
- Provide stop-control for the southbound approach (Site Access 1).
- Construct an eastbound (Mitchell Mill Road) left-turn lane with at least 100 feet of storage and appropriate decel and taper.

**Mitchell Mill Road and Site Access 2**


- Construct the southbound approach (Site Access 2) with one ingress lane and one egress lane.
- Provide stop-control for the southbound approach (Site Access 2).
- Construct an eastbound (Mitchell Mill Road) left-turn lane with at least 150 feet of storage and appropriate decel and taper.
- Construct a westbound (Mitchell Mill Road) right-turn lane with at least 100 feet of storage and appropriate decel and taper.

**LEGEND**

- Unsignalized Intersection
- ◄ Left-Over Intersection
- Existing Lane
- x' Storage (In Feet)
- \* Developer Monitor for Signalization
- Improvements by Developer
- Frontage Widening Requirement\*\*



\*\*Refer to Section 9 of the report for more information

	<p>Hills at Harris Creek Rolesville, NC</p>	<p>Recommended Lane Configurations</p>	
			<p>Scale: Not to Scale</p>

# **APPENDIX D**

**CAPACITY ANALYSIS CALCULATIONS**

**US 401 BYPASS**

**&**

**JONESVILLE ROAD**

HCM 6th TWSC  
 1: Jonesville Road/WB Left-Over & US 401 Bypass EB

2022 Existing  
 Timing Plan: AM Peak Hour

Intersection												
Int Delay, s/veh	3.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑						↑		↑	
Traffic Vol, veh/h	0	590	80	0	0	0	0	0	136	0	86	0
Future Vol, veh/h	0	590	80	0	0	0	0	0	136	0	86	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	Yield	-	-	None	-	-	None	-	-	None
Storage Length	-	-	125	-	-	-	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	656	89	0	0	0	0	0	151	0	96	0

Major/Minor	Major1			Minor1			Minor2		
Conflicting Flow All	-	0	0	-	-	328	-	656	-
Stage 1	-	-	-	-	-	-	-	0	-
Stage 2	-	-	-	-	-	-	-	656	-
Critical Hdwy	-	-	-	-	-	6.94	-	6.54	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	5.54	-
Follow-up Hdwy	-	-	-	-	-	3.32	-	4.02	-
Pot Cap-1 Maneuver	0	-	-	0	0	668	0	384	0
Stage 1	0	-	-	0	0	-	0	-	0
Stage 2	0	-	-	0	0	-	0	460	0
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	-	-	668	-	384	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	384	-
Stage 1	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	460	-

Approach	EB	NB	SB
HCM Control Delay, s	0	12	17.5
HCM LOS		B	C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	SBLn1
Capacity (veh/h)	668	-	-	384
HCM Lane V/C Ratio	0.226	-	-	0.249
HCM Control Delay (s)	12	-	-	17.5
HCM Lane LOS	B	-	-	C
HCM 95th %tile Q(veh)	0.9	-	-	1

Intersection												
Int Delay, s/veh	2.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑						↑		↑	
Traffic Vol, veh/h	0	1220	59	0	0	0	0	0	125	0	37	0
Future Vol, veh/h	0	1220	59	0	0	0	0	0	125	0	37	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	Yield	-	-	None	-	-	None	-	-	None
Storage Length	-	-	125	-	-	-	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	1356	66	0	0	0	0	0	139	0	41	0

Major/Minor	Major1			Minor1			Minor2		
Conflicting Flow All	-	0	0	-	-	678	-	1356	-
Stage 1	-	-	-	-	-	-	-	0	-
Stage 2	-	-	-	-	-	-	-	1356	-
Critical Hdwy	-	-	-	-	-	6.94	-	6.54	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	5.54	-
Follow-up Hdwy	-	-	-	-	-	3.32	-	4.02	-
Pot Cap-1 Maneuver	0	-	-	0	0	395	0	148	0
Stage 1	0	-	-	0	0	-	0	-	0
Stage 2	0	-	-	0	0	-	0	216	0
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	-	-	395	-	148	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	148	-
Stage 1	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	216	-

Approach	EB	NB	SB
HCM Control Delay, s	0	19	38.4
HCM LOS		C	E

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	SBLn1
Capacity (veh/h)	395	-	-	148
HCM Lane V/C Ratio	0.352	-	-	0.278
HCM Control Delay (s)	19	-	-	38.4
HCM Lane LOS	C	-	-	E
HCM 95th %tile Q(veh)	1.6	-	-	1.1

Intersection												
Int Delay, s/veh	8.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑						↑		↑	
Traffic Vol, veh/h	0	812	154	0	0	0	0	0	350	0	128	0
Future Vol, veh/h	0	812	154	0	0	0	0	0	350	0	128	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	Yield	-	-	None	-	-	None	-	-	None
Storage Length	-	-	125	-	-	-	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	902	171	0	0	0	0	0	389	0	142	0

Major/Minor	Major1			Minor1			Minor2		
Conflicting Flow All	-	0	0	-	-	451	-	902	-
Stage 1	-	-	-	-	-	-	-	0	-
Stage 2	-	-	-	-	-	-	-	902	-
Critical Hdwy	-	-	-	-	-	6.94	-	6.54	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	5.54	-
Follow-up Hdwy	-	-	-	-	-	3.32	-	4.02	-
Pot Cap-1 Maneuver	0	-	-	0	0	556	0	276	0
Stage 1	0	-	-	0	0	-	0	-	0
Stage 2	0	-	-	0	0	-	0	355	0
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	-	-	556	-	276	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	276	-
Stage 1	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	355	-

Approach	EB	NB	SB
HCM Control Delay, s	0	25.2	31.1
HCM LOS		D	D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	SBLn1
Capacity (veh/h)	556	-	-	276
HCM Lane V/C Ratio	0.699	-	-	0.515
HCM Control Delay (s)	25.2	-	-	31.1
HCM Lane LOS	D	-	-	D
HCM 95th %tile Q(veh)	5.5	-	-	2.7

Intersection												
Int Delay, s/veh	52.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑						↑		↑	
Traffic Vol, veh/h	0	1708	221	0	0	0	0	0	294	0	122	0
Future Vol, veh/h	0	1708	221	0	0	0	0	0	294	0	122	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	Yield	-	-	None	-	-	None	-	-	None
Storage Length	-	-	125	-	-	-	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	1898	246	0	0	0	0	0	327	0	136	0

Major/Minor	Major1			Minor1			Minor2		
Conflicting Flow All	-	0	0	-	-	949	-	1898	-
Stage 1	-	-	-	-	-	-	-	0	-
Stage 2	-	-	-	-	-	-	-	1898	-
Critical Hdwy	-	-	-	-	-	6.94	-	6.54	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	5.54	-
Follow-up Hdwy	-	-	-	-	-	3.32	-	4.02	-
Pot Cap-1 Maneuver	0	-	-	0	0	~ 261	0	~ 69	0
Stage 1	0	-	-	0	0	-	0	-	0
Stage 2	0	-	-	0	0	-	0	~ 116	0
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	-	-	~ 261	-	~ 69	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	~ 69	-
Stage 1	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	~ 116	-

Approach	EB	NB	SB
HCM Control Delay, s	0	180.2	\$ 579.5
HCM LOS		F	F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	SBLn1
Capacity (veh/h)	261	-	-	69
HCM Lane V/C Ratio	1.252	-	-	1.965
HCM Control Delay (s)	180.2	-	-	\$ 579.5
HCM Lane LOS	F	-	-	F
HCM 95th %tile Q(veh)	15.9	-	-	12.4

Notes  
 ~: Volume exceeds capacity    \$: Delay exceeds 300s    +: Computation Not Defined    \*: All major volume in platoon

Intersection												
Int Delay, s/veh	10.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑						↑		↑	
Traffic Vol, veh/h	0	812	161	0	0	0	0	0	380	0	131	0
Future Vol, veh/h	0	812	161	0	0	0	0	0	380	0	131	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	Yield	-	-	None	-	-	None	-	-	None
Storage Length	-	-	125	-	-	-	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	-	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	902	179	0	0	0	0	0	422	0	146	0

Major/Minor	Major1			Minor1			Minor2		
Conflicting Flow All	-	0	0	-	-	451	-	902	-
Stage 1	-	-	-	-	-	-	-	0	-
Stage 2	-	-	-	-	-	-	-	902	-
Critical Hdwy	-	-	-	-	-	6.94	-	6.54	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	5.54	-
Follow-up Hdwy	-	-	-	-	-	3.32	-	4.02	-
Pot Cap-1 Maneuver	0	-	-	0	0	556	0	276	0
Stage 1	0	-	-	0	0	-	0	-	0
Stage 2	0	-	-	0	0	-	0	355	0
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	-	-	556	-	276	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	276	-
Stage 1	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	355	-

Approach	EB	NB	SB
HCM Control Delay, s	0	29.1	31.7
HCM LOS		D	D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	SBLn1
Capacity (veh/h)	556	-	-	276
HCM Lane V/C Ratio	0.759	-	-	0.527
HCM Control Delay (s)	29.1	-	-	31.7
HCM Lane LOS	D	-	-	D
HCM 95th %tile Q(veh)	6.7	-	-	2.9



Intersection												
Int Delay, s/veh	64.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑						↑		↑	
Traffic Vol, veh/h	0	1708	242	0	0	0	0	0	314	0	133	0
Future Vol, veh/h	0	1708	242	0	0	0	0	0	314	0	133	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	Yield	-	-	None	-	-	None	-	-	None
Storage Length	-	-	125	-	-	-	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	-	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	1898	269	0	0	0	0	0	349	0	148	0

Major/Minor	Major1			Minor1			Minor2		
Conflicting Flow All	-	0	0	-	-	949	-	1898	-
Stage 1	-	-	-	-	-	-	-	0	-
Stage 2	-	-	-	-	-	-	-	1898	-
Critical Hdwy	-	-	-	-	-	6.94	-	6.54	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	5.54	-
Follow-up Hdwy	-	-	-	-	-	3.32	-	4.02	-
Pot Cap-1 Maneuver	0	-	-	0	0	~ 261	0	~ 69	0
Stage 1	0	-	-	0	0	-	0	-	0
Stage 2	0	-	-	0	0	-	0	~ 116	0
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	-	-	~ 261	-	~ 69	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	~ 69	-
Stage 1	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	~ 116	-

Approach	EB	NB	SB
HCM Control Delay, s	0	213	\$ 655
HCM LOS		F	F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	SBLn1
Capacity (veh/h)	261	-	-	69
HCM Lane V/C Ratio	1.337	-	-	2.142
HCM Control Delay (s)	213	-	-	\$ 655
HCM Lane LOS	F	-	-	F
HCM 95th %tile Q(veh)	18.2	-	-	13.8

Notes  
 ~: Volume exceeds capacity    \$: Delay exceeds 300s    +: Computation Not Defined    \*: All major volume in platoon

Lanes, Volumes, Timings  
 1: Jonesville Road/WB Left-Over & US 401 Bypass EB

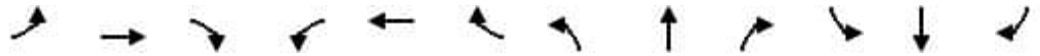
2027 Build - Improved  
 Timing Plan: AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑						↑		↑	
Traffic Volume (vph)	0	812	161	0	0	0	0	0	380	0	131	0
Future Volume (vph)	0	812	161	0	0	0	0	0	380	0	131	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		125	0		0	0		0	0		0
Storage Lanes	0		1	0		0	0		1	0		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850						0.865			
Flt Protected												
Satd. Flow (prot)	0	3539	1583	0	0	0	0	0	1611	0	1863	0
Flt Permitted												
Satd. Flow (perm)	0	3539	1583	0	0	0	0	0	1611	0	1863	0
Right Turn on Red			No			No			No	No		No
Satd. Flow (RTOR)												
Link Speed (mph)		55			55			35				45
Link Distance (ft)		278			727			1295				275
Travel Time (s)		3.4			9.0			25.2				4.2
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)	0	902	179	0	0	0	0	0	422	0	146	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	902	179	0	0	0	0	0	422	0	146	0
Turn Type		NA	Perm						Prot		NA	
Protected Phases		2							4		4	
Permitted Phases			2									
Detector Phase		2	2						4		4	
Switch Phase												
Minimum Initial (s)		14.0	14.0						7.0		7.0	
Minimum Split (s)		21.0	21.0						14.0		14.0	
Total Split (s)		28.0	28.0						32.0		32.0	
Total Split (%)		46.7%	46.7%						53.3%		53.3%	
Maximum Green (s)		21.0	21.0						25.0		25.0	
Yellow Time (s)		5.0	5.0						5.0		5.0	
All-Red Time (s)		2.0	2.0						2.0		2.0	
Lost Time Adjust (s)		-2.0	-2.0						-2.0		-2.0	
Total Lost Time (s)		5.0	5.0						5.0		5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0	3.0						3.0		3.0	
Recall Mode		None	None						Min		Min	
Act Effct Green (s)		20.8	20.8						20.4		20.4	
Actuated g/C Ratio		0.40	0.40						0.40		0.40	
v/c Ratio		0.63	0.28						0.66		0.20	
Control Delay		15.5	13.2						18.6		11.0	
Queue Delay		0.0	0.0						0.0		0.0	
Total Delay		15.5	13.2						18.6		11.0	
LOS		B	B						B		B	
Approach Delay		15.1						18.6			11.0	
Approach LOS		B						B			B	

Lanes, Volumes, Timings  
 1: Jonesville Road/WB Left-Over & US 401 Bypass EB

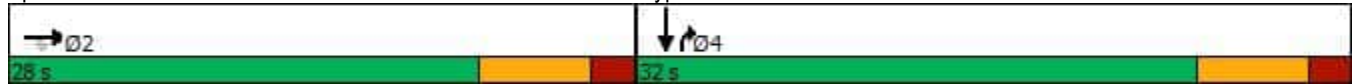
2027 Build - Improved  
 Timing Plan: AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)		114	36						107		30	
Queue Length 95th (ft)		194	84						187		59	
Internal Link Dist (ft)		198			647			1215			195	
Turn Bay Length (ft)			125									
Base Capacity (vph)		1629	728						870		1006	
Starvation Cap Reductn		0	0						0		0	
Spillback Cap Reductn		0	0						0		0	
Storage Cap Reductn		0	0						0		0	
Reduced v/c Ratio		0.55	0.25						0.49		0.15	

Intersection Summary	
Area Type:	Other
Cycle Length:	60
Actuated Cycle Length:	51.4
Natural Cycle:	40
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.66
Intersection Signal Delay:	15.6
Intersection LOS:	B
Intersection Capacity Utilization	58.7%
ICU Level of Service	B
Analysis Period (min)	15

Splits and Phases: 1: Jonesville Road/WB Left-Over & US 401 Bypass EB



Lanes, Volumes, Timings  
 1: Jonesville Road/WB Left-Over & US 401 Bypass EB

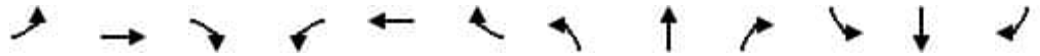
2027 Build - Improved  
 Timing Plan: PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑						↑		↑	
Traffic Volume (vph)	0	1708	242	0	0	0	0	0	314	0	133	0
Future Volume (vph)	0	1708	242	0	0	0	0	0	314	0	133	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		125	0		0	0		0	0		0
Storage Lanes	0		1	0		0	0		1	0		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850						0.865			
Flt Protected												
Satd. Flow (prot)	0	3539	1583	0	0	0	0	0	1611	0	1863	0
Flt Permitted												
Satd. Flow (perm)	0	3539	1583	0	0	0	0	0	1611	0	1863	0
Right Turn on Red			No			No			No	No		No
Satd. Flow (RTOR)												
Link Speed (mph)		55			55			35				45
Link Distance (ft)		278			727			1295				275
Travel Time (s)		3.4			9.0			25.2				4.2
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)	0	1898	269	0	0	0	0	0	349	0	148	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1898	269	0	0	0	0	0	349	0	148	0
Turn Type		NA	Perm						Prot		NA	
Protected Phases		2							4		4	
Permitted Phases			2									
Detector Phase		2	2						4		4	
Switch Phase												
Minimum Initial (s)		14.0	14.0						7.0		7.0	
Minimum Split (s)		21.0	21.0						14.0		14.0	
Total Split (s)		40.0	40.0						20.0		20.0	
Total Split (%)		66.7%	66.7%						33.3%		33.3%	
Maximum Green (s)		33.0	33.0						13.0		13.0	
Yellow Time (s)		5.0	5.0						5.0		5.0	
All-Red Time (s)		2.0	2.0						2.0		2.0	
Lost Time Adjust (s)		-2.0	-2.0						-2.0		-2.0	
Total Lost Time (s)		5.0	5.0						5.0		5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0	3.0						3.0		3.0	
Recall Mode		None	None						Min		Min	
Act Effct Green (s)		35.0	35.0						15.0		15.0	
Actuated g/C Ratio		0.58	0.58						0.25		0.25	
v/c Ratio		0.92	0.29						0.87		0.32	
Control Delay		20.8	7.3						46.6		20.6	
Queue Delay		0.0	0.0						0.0		0.0	
Total Delay		20.8	7.3						46.6		20.6	
LOS		C	A						D		C	
Approach Delay		19.1						46.6			20.6	
Approach LOS		B						D			C	

Lanes, Volumes, Timings  
 1: Jonesville Road/WB Left-Over & US 401 Bypass EB

2027 Build - Improved  
 Timing Plan: PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)		285	43						121		44	
Queue Length 95th (ft)		#481	78						#254		87	
Internal Link Dist (ft)		198			647			1215			195	
Turn Bay Length (ft)			125									
Base Capacity (vph)		2064	923						402		465	
Starvation Cap Reductn		0	0						0		0	
Spillback Cap Reductn		0	0						0		0	
Storage Cap Reductn		0	0						0		0	
Reduced v/c Ratio		0.92	0.29						0.87		0.32	

**Intersection Summary**

Area Type: Other

Cycle Length: 60

Actuated Cycle Length: 60

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.92

Intersection Signal Delay: 22.8      Intersection LOS: C

Intersection Capacity Utilization 75.0%      ICU Level of Service D

Analysis Period (min) 15

# 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

Splits and Phases: 1: Jonesville Road/WB Left-Over & US 401 Bypass EB



HCM 6th TWSC  
 7: EB Left-Over/Jonesville Road & US 401 Bypass WB

2022 Existing  
 Timing Plan: AM Peak Hour

Intersection												
Int Delay, s/veh	6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑	↑		↑				↑
Traffic Vol, veh/h	0	0	0	0	1352	185	0	36	0	0	0	225
Future Vol, veh/h	0	0	0	0	1352	185	0	36	0	0	0	225
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	150	-	-	-	-	-	0
Veh in Median Storage, #	-	1	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	1502	206	0	40	0	0	0	250

Major/Minor	Major2	Minor1	Minor2
Conflicting Flow All	-	-	0
Stage 1	-	-	0
Stage 2	-	-	1708
Critical Hdwy	-	-	6.54
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	5.54
Follow-up Hdwy	-	-	4.02
Pot Cap-1 Maneuver	0	-	0
Stage 1	0	-	0
Stage 2	0	-	0
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	90
Mov Cap-2 Maneuver	-	-	90
Stage 1	-	-	-
Stage 2	-	-	145

Approach	WB	NB	SB
HCM Control Delay, s	0	73.7	36.5
HCM LOS		F	E

Minor Lane/Major Mvmt	NBLn1	WBT	WBR	SBLn1
Capacity (veh/h)	90	-	-	353
HCM Lane V/C Ratio	0.444	-	-	0.708
HCM Control Delay (s)	73.7	-	-	36.5
HCM Lane LOS	F	-	-	E
HCM 95th %tile Q(veh)	1.9	-	-	5.2

HCM 6th TWSC  
 7: EB Left-Over/Jonesville Road & US 401 Bypass WB

2022 Existing  
 Timing Plan: PM Peak Hour

Intersection												
Int Delay, s/veh	4.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑	↑		↑				↑
Traffic Vol, veh/h	0	0	0	0	555	74	0	116	0	0	0	114
Future Vol, veh/h	0	0	0	0	555	74	0	116	0	0	0	114
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	150	-	-	-	-	-	0
Veh in Median Storage, #	-	1	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	617	82	0	129	0	0	0	127

Major/Minor	Major2	Minor1	Minor2
Conflicting Flow All	-	-	0
Stage 1	-	-	0
Stage 2	-	-	699
Critical Hdwy	-	-	6.54
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	5.54
Follow-up Hdwy	-	-	4.02
Pot Cap-1 Maneuver	0	-	0
Stage 1	0	-	0
Stage 2	0	-	440
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	362
Mov Cap-2 Maneuver	-	-	362
Stage 1	-	-	-
Stage 2	-	-	440

Approach	WB	NB	SB
HCM Control Delay, s	0	20.3	11.4
HCM LOS		C	B

Minor Lane/Major Mvmt	NBLn1	WBT	WBR	SBLn1
Capacity (veh/h)	362	-	-	687
HCM Lane V/C Ratio	0.356	-	-	0.184
HCM Control Delay (s)	20.3	-	-	11.4
HCM Lane LOS	C	-	-	B
HCM 95th %tile Q(veh)	1.6	-	-	0.7

Intersection												
Int Delay, s/veh	15.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑	↑		↑				↑
Traffic Vol, veh/h	0	0	0	0	1797	185	0	36	0	0	0	225
Future Vol, veh/h	0	0	0	0	1797	185	0	36	0	0	0	225
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	150	-	-	-	-	-	0
Veh in Median Storage, #	-	1	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	1997	206	0	40	0	0	0	250

Major/Minor	Major2	Minor1	Minor2
Conflicting Flow All	-	-	0
Stage 1	-	-	0
Stage 2	-	-	2203
Critical Hdwy	-	-	6.54
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	5.54
Follow-up Hdwy	-	-	4.02
Pot Cap-1 Maneuver	0	-	0
Stage 1	0	-	0
Stage 2	0	-	0
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	44
Mov Cap-2 Maneuver	-	-	44
Stage 1	-	-	-
Stage 2	-	-	81

Approach	WB	NB	SB
HCM Control Delay, s	0	250.5	110.8
HCM LOS		F	F

Minor Lane/Major Mvmt	NBLn1	WBT	WBR	SBLn1
Capacity (veh/h)	44	-	-	242
HCM Lane V/C Ratio	0.909	-	-	1.033
HCM Control Delay (s)	250.5	-	-	110.8
HCM Lane LOS	F	-	-	F
HCM 95th %tile Q(veh)	3.6	-	-	10.2

Notes  
 ~: Volume exceeds capacity    \$: Delay exceeds 300s    +: Computation Not Defined    \*: All major volume in platoon



Intersection												
Int Delay, s/veh	5.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑	↑		↑				↑
Traffic Vol, veh/h	0	0	0	0	894	74	0	116	0	0	0	114
Future Vol, veh/h	0	0	0	0	894	74	0	116	0	0	0	114
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	150	-	-	-	-	-	0
Veh in Median Storage, #	-	1	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	993	82	0	129	0	0	0	127

Major/Minor	Major2	Minor1	Minor2
Conflicting Flow All	-	-	0
Stage 1	-	-	0
Stage 2	-	-	1075
Critical Hdwy	-	-	6.54
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	5.54
Follow-up Hdwy	-	-	4.02
Pot Cap-1 Maneuver	0	-	0
Stage 1	0	-	0
Stage 2	0	-	294
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	218
Mov Cap-2 Maneuver	-	-	218
Stage 1	-	-	-
Stage 2	-	-	294

Approach	WB	NB	SB
HCM Control Delay, s	0	42.9	14.2
HCM LOS		E	B

Minor Lane/Major Mvmt	NBLn1	WBT	WBR	SBLn1
Capacity (veh/h)	218	-	-	519
HCM Lane V/C Ratio	0.591	-	-	0.244
HCM Control Delay (s)	42.9	-	-	14.2
HCM Lane LOS	E	-	-	B
HCM 95th %tile Q(veh)	3.3	-	-	0.9

Intersection												
Int Delay, s/veh	15.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑	↑		↑				↑
Traffic Vol, veh/h	0	0	0	0	1817	185	0	36	0	0	0	225
Future Vol, veh/h	0	0	0	0	1817	185	0	36	0	0	0	225
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	150	-	-	-	-	-	0
Veh in Median Storage, #	14745600	-	-	0	-	-	0	-	-	0	-	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	2019	206	0	40	0	0	0	250

Major/Minor	Major2	Minor1	Minor2
Conflicting Flow All	-	-	0
Stage 1	-	-	0
Stage 2	-	-	2225
Critical Hdwy	-	-	6.54
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	5.54
Follow-up Hdwy	-	-	4.02
Pot Cap-1 Maneuver	0	-	0
Stage 1	0	-	0
Stage 2	0	-	0
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	43
Mov Cap-2 Maneuver	-	-	43
Stage 1	-	-	-
Stage 2	-	-	79

Approach	WB	NB	SB
HCM Control Delay, s	0	260.9	116.8
HCM LOS		F	F

Minor Lane/Major Mvmt	NBLn1	WBT	WBR	SBLn1
Capacity (veh/h)	43	-	-	238
HCM Lane V/C Ratio	0.93	-	-	1.05
HCM Control Delay (s)	260.9	-	-	116.8
HCM Lane LOS	F	-	-	F
HCM 95th %tile Q(veh)	3.7	-	-	10.5

Notes  
 ~: Volume exceeds capacity    \$: Delay exceeds 300s    +: Computation Not Defined    \*: All major volume in platoon

Intersection												
Int Delay, s/veh	5.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑	↑		↑				↑
Traffic Vol, veh/h	0	0	0	0	907	74	0	116	0	0	0	114
Future Vol, veh/h	0	0	0	0	907	74	0	116	0	0	0	114
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	150	-	-	-	-	-	0
Veh in Median Storage, #	747	1104	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	1008	82	0	129	0	0	0	127

Major/Minor	Major2	Minor1	Minor2
Conflicting Flow All	-	0	1090
Stage 1	-	-	0
Stage 2	-	-	1090
Critical Hdwy	-	-	6.54
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	5.54
Follow-up Hdwy	-	-	4.02
Pot Cap-1 Maneuver	0	0	214
Stage 1	0	0	0
Stage 2	0	0	289
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	214
Mov Cap-2 Maneuver	-	-	214
Stage 1	-	-	-
Stage 2	-	-	289

Approach	WB	NB	SB
HCM Control Delay, s	0	44.4	14.3
HCM LOS		E	B

Minor Lane/Major Mvmt	NBLn1	WBT	WBR	SBLn1
Capacity (veh/h)	214	-	-	513
HCM Lane V/C Ratio	0.602	-	-	0.247
HCM Control Delay (s)	44.4	-	-	14.3
HCM Lane LOS	E	-	-	B
HCM 95th %tile Q(veh)	3.4	-	-	1

# **APPENDIX E**

**CAPACITY ANALYSIS CALCULATIONS**

**US 401 BYPASS**

**&**

**EASTERN U-TURN LOCATION**

Intersection						
Int Delay, s/veh	1.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations				↑↑	↔	
Traffic Vol, veh/h	0	0	0	1532	91	0
Future Vol, veh/h	0	0	0	1532	91	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	2	-	-	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	0	0	1702	101	0

Major/Minor	Major2	Minor1
Conflicting Flow All	-	851
Stage 1	-	0
Stage 2	-	851
Critical Hdwy	-	6.84
Critical Hdwy Stg 1	-	-
Critical Hdwy Stg 2	-	5.84
Follow-up Hdwy	-	3.52
Pot Cap-1 Maneuver	0	299
Stage 1	0	0
Stage 2	0	379
Platoon blocked, %	-	-
Mov Cap-1 Maneuver	-	299
Mov Cap-2 Maneuver	-	299
Stage 1	-	-
Stage 2	-	379

Approach	WB	NB
HCM Control Delay, s	0	23.1
HCM LOS		C

Minor Lane/Major Mvmt	NBLn1	WBT
Capacity (veh/h)	299	-
HCM Lane V/C Ratio	0.338	-
HCM Control Delay (s)	23.1	-
HCM Lane LOS	C	-
HCM 95th %tile Q(veh)	1.4	-

Intersection						
Int Delay, s/veh	1.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations				↑↑	↗	
Traffic Vol, veh/h	0	0	0	600	66	0
Future Vol, veh/h	0	0	0	600	66	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	2	-	-	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	0	0	667	73	0

Major/Minor	Major2	Minor1
Conflicting Flow All	-	- 334
Stage 1	-	- 0
Stage 2	-	- 334
Critical Hdwy	-	- 6.84
Critical Hdwy Stg 1	-	- -
Critical Hdwy Stg 2	-	- 5.84
Follow-up Hdwy	-	- 3.52
Pot Cap-1 Maneuver	0	- 636
Stage 1	0	- - 0
Stage 2	0	- 697
Platoon blocked, %		-
Mov Cap-1 Maneuver	-	- 636
Mov Cap-2 Maneuver	-	- 636
Stage 1	-	- -
Stage 2	-	- 697

Approach	WB	NB
HCM Control Delay, s	0	11.4
HCM LOS		B

Minor Lane/Major Mvmt	NBLn1	WBT
Capacity (veh/h)	636	-
HCM Lane V/C Ratio	0.115	-
HCM Control Delay (s)	11.4	-
HCM Lane LOS	B	-
HCM 95th %tile Q(veh)	0.4	-

Intersection						
Int Delay, s/veh	16.8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations				↑↑	↑	
Traffic Vol, veh/h	0	0	0	1877	233	0
Future Vol, veh/h	0	0	0	1877	233	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	2	-	-	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	0	0	2086	259	0

Major/Minor	Major2	Minor1
Conflicting Flow All	-	- 1043
Stage 1	-	- 0
Stage 2	-	- 1043
Critical Hdwy	-	- 6.84
Critical Hdwy Stg 1	-	- -
Critical Hdwy Stg 2	-	- 5.84
Follow-up Hdwy	-	- 3.52
Pot Cap-1 Maneuver	0	- ~ 225
Stage 1	0	- - 0
Stage 2	0	- 300
Platoon blocked, %		-
Mov Cap-1 Maneuver	-	- ~ 225
Mov Cap-2 Maneuver	-	- ~ 225
Stage 1	-	- -
Stage 2	-	- 300

Approach	WB	NB
HCM Control Delay, s	0	152
HCM LOS		F

Minor Lane/Major Mvmt	NBLn1	WBT
Capacity (veh/h)	225	-
HCM Lane V/C Ratio	1.151	-
HCM Control Delay (s)	152	-
HCM Lane LOS	F	-
HCM 95th %tile Q(veh)	12.2	-

Notes  
~: Volume exceeds capacity    \$: Delay exceeds 300s    +: Computation Not Defined    \*: All major volume in platoon

Intersection						
Int Delay, s/veh	2.7					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations				↑↑	↗	
Traffic Vol, veh/h	0	0	0	915	175	0
Future Vol, veh/h	0	0	0	915	175	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	2	-	-	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	0	0	1017	194	0

Major/Minor	Major2	Minor1
Conflicting Flow All	-	- 509
Stage 1	-	- 0
Stage 2	-	- 509
Critical Hdwy	-	- 6.84
Critical Hdwy Stg 1	-	- -
Critical Hdwy Stg 2	-	- 5.84
Follow-up Hdwy	-	- 3.52
Pot Cap-1 Maneuver	0	- 494
Stage 1	0	- - 0
Stage 2	0	- 569
Platoon blocked, %		-
Mov Cap-1 Maneuver	-	- 494
Mov Cap-2 Maneuver	-	- 494
Stage 1	-	- -
Stage 2	-	- 569

Approach	WB	NB
HCM Control Delay, s	0	16.9
HCM LOS		C

Minor Lane/Major Mvmt	NBLn1	WBT
Capacity (veh/h)	494	-
HCM Lane V/C Ratio	0.394	-
HCM Control Delay (s)	16.9	-
HCM Lane LOS	C	-
HCM 95th %tile Q(veh)	1.9	-



Intersection						
Int Delay, s/veh	22.5					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations				↑↑	↑	
Traffic Vol, veh/h	0	0	0	1880	253	0
Future Vol, veh/h	0	0	0	1880	253	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	-	-	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	0	0	2089	281	0

Major/Minor	Major2	Minor1
Conflicting Flow All	-	- 1045
Stage 1	-	- 0
Stage 2	-	- 1045
Critical Hdwy	-	- 6.84
Critical Hdwy Stg 1	-	- -
Critical Hdwy Stg 2	-	- 5.84
Follow-up Hdwy	-	- 3.52
Pot Cap-1 Maneuver	0	- ~ 224
Stage 1	0	- - 0
Stage 2	0	- 300
Platoon blocked, %		-
Mov Cap-1 Maneuver	-	- ~ 224
Mov Cap-2 Maneuver	-	- ~ 224
Stage 1	-	- -
Stage 2	-	- 300

Approach	WB	NB
HCM Control Delay, s	0	189.6
HCM LOS		F

Minor Lane/Major Mvmt	NBLn1	WBT
Capacity (veh/h)	224	-
HCM Lane V/C Ratio	1.255	-
HCM Control Delay (s)	189.6	-
HCM Lane LOS	F	-
HCM 95th %tile Q(veh)	14.4	-

Notes  
 ~: Volume exceeds capacity    \$: Delay exceeds 300s    +: Computation Not Defined    \*: All major volume in platoon

Intersection						
Int Delay, s/veh	3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations				↑↑	↔	
Traffic Vol, veh/h	0	0	0	926	188	0
Future Vol, veh/h	0	0	0	926	188	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	-	-	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	0	0	1029	209	0

Major/Minor	Major2	Minor1
Conflicting Flow All	-	- 515
Stage 1	-	- 0
Stage 2	-	- 515
Critical Hdwy	-	- 6.84
Critical Hdwy Stg 1	-	- -
Critical Hdwy Stg 2	-	- 5.84
Follow-up Hdwy	-	- 3.52
Pot Cap-1 Maneuver	0	- 489
Stage 1	0	- - 0
Stage 2	0	- 565
Platoon blocked, %		-
Mov Cap-1 Maneuver	-	- 489
Mov Cap-2 Maneuver	-	- 489
Stage 1	-	- -
Stage 2	-	- 565

Approach	WB	NB
HCM Control Delay, s	0	17.7
HCM LOS		C

Minor Lane/Major Mvmt	NBLn1	WBT
Capacity (veh/h)	489	-
HCM Lane V/C Ratio	0.427	-
HCM Control Delay (s)	17.7	-
HCM Lane LOS	C	-
HCM 95th %tile Q(veh)	2.1	-

Lanes, Volumes, Timings  
2: Eastern U-Turn & US 401 Bypass WB

2027 Build - Improved  
Timing Plan: AM Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations				↑↑	↑	
Traffic Volume (vph)	0	0	0	1880	253	0
Future Volume (vph)	0	0	0	1880	253	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	1.00
<b>Fr</b>						
Flt Protected					0.950	
Satd. Flow (prot)	0	0	0	3539	1770	0
Flt Permitted					0.950	
Satd. Flow (perm)	0	0	0	3539	1770	0
Right Turn on Red		No			No	No
Satd. Flow (RTOR)						
Link Speed (mph)	55			55	45	
Link Distance (ft)	520			1076	100	
Travel Time (s)	6.4			13.3	1.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	0	2089	281	0
<b>Shared Lane Traffic (%)</b>						
Lane Group Flow (vph)	0	0	0	2089	281	0
Turn Type				NA	Prot	
Protected Phases				6	8	
Permitted Phases						
Detector Phase				6	8	
<b>Switch Phase</b>						
Minimum Initial (s)				14.0	7.0	
Minimum Split (s)				21.0	14.0	
Total Split (s)				44.0	16.0	
Total Split (%)				73.3%	26.7%	
Maximum Green (s)				37.0	9.0	
Yellow Time (s)				5.0	5.0	
All-Red Time (s)				2.0	2.0	
Lost Time Adjust (s)				-2.0	-2.0	
Total Lost Time (s)				5.0	5.0	
<b>Lead/Lag</b>						
Lead-Lag Optimize?						
Vehicle Extension (s)				3.0	3.0	
Recall Mode				None	Min	
Act Effct Green (s)				39.0	11.0	
Actuated g/C Ratio				0.65	0.18	
v/c Ratio				0.91	0.87	
Control Delay				16.9	53.0	
Queue Delay				0.0	0.0	
Total Delay				16.9	53.0	
LOS				B	D	
Approach Delay				16.9	53.0	
Approach LOS				B	D	
Queue Length 50th (ft)				280	100	
Queue Length 95th (ft)				#513	#221	
Internal Link Dist (ft)	440			996	20	

Lanes, Volumes, Timings  
 2: Eastern U-Turn & US 401 Bypass WB

2027 Build - Improved  
 Timing Plan: AM Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Turn Bay Length (ft)						
Base Capacity (vph)				2300	324	
Starvation Cap Reductn				0	0	
Spillback Cap Reductn				0	0	
Storage Cap Reductn				0	0	
Reduced v/c Ratio				0.91	0.87	

Intersection Summary

Area Type: Other  
 Cycle Length: 60  
 Actuated Cycle Length: 60  
 Natural Cycle: 60  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 0.91  
 Intersection Signal Delay: 21.2  
 Intersection LOS: C  
 Intersection Capacity Utilization 74.3%  
 ICU Level of Service D  
 Analysis Period (min) 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

Splits and Phases: 2: Eastern U-Turn & US 401 Bypass WB



Lanes, Volumes, Timings  
 2: Eastern U-Turn & US 401 Bypass WB

2027 Build - Improved  
 Timing Plan: PM Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations				↑↑	↘	
Traffic Volume (vph)	0	0	0	926	188	0
Future Volume (vph)	0	0	0	926	188	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	1.00
Fr						
Flt Protected					0.950	
Satd. Flow (prot)	0	0	0	3539	1770	0
Flt Permitted					0.950	
Satd. Flow (perm)	0	0	0	3539	1770	0
Right Turn on Red		No			No	No
Satd. Flow (RTOR)						
Link Speed (mph)	55			55	45	
Link Distance (ft)	520			1076	100	
Travel Time (s)	6.4			13.3	1.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	0	1029	209	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	1029	209	0
Turn Type				NA	Prot	
Protected Phases				6	8	
Permitted Phases						
Detector Phase				6	8	
Switch Phase						
Minimum Initial (s)				14.0	7.0	
Minimum Split (s)				21.0	14.0	
Total Split (s)				38.0	22.0	
Total Split (%)				63.3%	36.7%	
Maximum Green (s)				31.0	15.0	
Yellow Time (s)				5.0	5.0	
All-Red Time (s)				2.0	2.0	
Lost Time Adjust (s)				-2.0	-2.0	
Total Lost Time (s)				5.0	5.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)				3.0	3.0	
Recall Mode				None	Min	
Act Effct Green (s)				22.7	12.7	
Actuated g/C Ratio				0.50	0.28	
v/c Ratio				0.59	0.42	
Control Delay				9.9	17.9	
Queue Delay				0.0	0.0	
Total Delay				9.9	17.9	
LOS				A	B	
Approach Delay				9.9	17.9	
Approach LOS				A	B	
Queue Length 50th (ft)				87	43	
Queue Length 95th (ft)				157	111	
Internal Link Dist (ft)	440			996	20	

Lanes, Volumes, Timings  
 2: Eastern U-Turn & US 401 Bypass WB

2027 Build - Improved  
 Timing Plan: PM Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Turn Bay Length (ft)						
Base Capacity (vph)				2642	680	
Starvation Cap Reductn				0	0	
Spillback Cap Reductn				0	0	
Storage Cap Reductn				0	0	
Reduced v/c Ratio				0.39	0.31	

Intersection Summary	
Area Type:	Other
Cycle Length:	60
Actuated Cycle Length:	45.7
Natural Cycle:	40
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.59
Intersection Signal Delay:	11.2
Intersection LOS:	B
Intersection Capacity Utilization	44.3%
ICU Level of Service	A
Analysis Period (min)	15

Splits and Phases: 2: Eastern U-Turn & US 401 Bypass WB



# **APPENDIX F**

**CAPACITY ANALYSIS CALCULATIONS**

**MITCHELL MILL ROAD**

**&**

**JONESVILLE ROAD / PEEBLES ROAD**

HCM 6th AWSC  
3: Peebles Road/Jonesville Road & Mitchell Mill Road

2022 Existing  
Timing Plan: AM Peak Hour

Intersection	
Intersection Delay, s/veh	12.7
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	7	166	2	11	316	41	4	78	11	32	133	16
Future Vol, veh/h	7	166	2	11	316	41	4	78	11	32	133	16
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	8	184	2	12	351	46	4	87	12	36	148	18
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	10.8	14.8	10.1	11.4
HCM LOS	B	B	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	4%	4%	3%	18%
Vol Thru, %	84%	95%	86%	73%
Vol Right, %	12%	1%	11%	9%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	93	175	368	181
LT Vol	4	7	11	32
Through Vol	78	166	316	133
RT Vol	11	2	41	16
Lane Flow Rate	103	194	409	201
Geometry Grp	1	1	1	1
Degree of Util (X)	0.168	0.294	0.576	0.318
Departure Headway (Hd)	5.843	5.438	5.074	5.691
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	612	659	711	631
Service Time	3.897	3.483	3.111	3.736
HCM Lane V/C Ratio	0.168	0.294	0.575	0.319
HCM Control Delay	10.1	10.8	14.8	11.4
HCM Lane LOS	B	B	B	B
HCM 95th-tile Q	0.6	1.2	3.7	1.4



HCM 6th AWSC  
 3: Peebles Road/Jonesville Road & Mitchell Mill Road

2022 Existing  
 Timing Plan: PM Peak Hour

Intersection	
Intersection Delay, s/veh	10.8
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	18	306	13	0	130	21	5	92	10	27	50	11
Future Vol, veh/h	18	306	13	0	130	21	5	92	10	27	50	11
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	20	340	14	0	144	23	6	102	11	30	56	12
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	12.2	9.4	9.5	9.4
HCM LOS	B	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	5%	5%	0%	31%
Vol Thru, %	86%	91%	86%	57%
Vol Right, %	9%	4%	14%	12%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	107	337	151	88
LT Vol	5	18	0	27
Through Vol	92	306	130	50
RT Vol	10	13	21	11
Lane Flow Rate	119	374	168	98
Geometry Grp	1	1	1	1
Degree of Util (X)	0.175	0.488	0.227	0.146
Departure Headway (Hd)	5.3	4.694	4.868	5.368
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	669	760	730	660
Service Time	3.395	2.76	2.948	3.464
HCM Lane V/C Ratio	0.178	0.492	0.23	0.148
HCM Control Delay	9.5	12.2	9.4	9.4
HCM Lane LOS	A	B	A	A
HCM 95th-tile Q	0.6	2.7	0.9	0.5

Intersection	
Intersection Delay, s/veh	95.4
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	63	253	12	29	607	119	12	86	20	84	149	54
Future Vol, veh/h	63	253	12	29	607	119	12	86	20	84	149	54
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	70	281	13	32	674	132	13	96	22	93	166	60
Number of Lanes	1	1	0	0	1	1	0	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	2	2
HCM Control Delay	19.9	170.3	16.1	17.2
HCM LOS	C	F	C	C

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	10%	100%	0%	5%	0%	100%	0%
Vol Thru, %	73%	0%	95%	95%	0%	0%	73%
Vol Right, %	17%	0%	5%	0%	100%	0%	27%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	118	63	265	636	119	84	203
LT Vol	12	63	0	29	0	84	0
Through Vol	86	0	253	607	0	0	149
RT Vol	20	0	12	0	119	0	54
Lane Flow Rate	131	70	294	707	132	93	226
Geometry Grp	6	7	7	7	7	7	7
Degree of Util (X)	0.302	0.152	0.597	1.372	0.229	0.215	0.476
Departure Headway (Hd)	9.162	8.438	7.887	6.988	6.248	9.036	8.326
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	395	428	462	516	570	399	435
Service Time	7.162	6.138	5.587	4.777	4.036	6.736	6.026
HCM Lane V/C Ratio	0.332	0.164	0.636	1.37	0.232	0.233	0.52
HCM Control Delay	16.1	12.6	21.6	200.1	10.9	14.2	18.4
HCM Lane LOS	C	B	C	F	B	B	C
HCM 95th-tile Q	1.3	0.5	3.8	31.9	0.9	0.8	2.5

Intersection	
Intersection Delay, s/veh	57.2
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↶	↷			↶	↷		↷		↶	↷	
Traffic Vol, veh/h	114	459	19	14	387	95	19	106	31	159	65	33
Future Vol, veh/h	114	459	19	14	387	95	19	106	31	159	65	33
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	127	510	21	16	430	106	21	118	34	177	72	37
Number of Lanes	1	1	0	0	1	1	0	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	2	2
HCM Control Delay	90.6	50	19.2	17.4
HCM LOS	F	E	C	C

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	12%	100%	0%	3%	0%	100%	0%
Vol Thru, %	68%	0%	96%	97%	0%	0%	66%
Vol Right, %	20%	0%	4%	0%	100%	0%	34%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	156	114	478	401	95	159	98
LT Vol	19	114	0	14	0	159	0
Through Vol	106	0	459	387	0	0	65
RT Vol	31	0	19	0	95	0	33
Lane Flow Rate	173	127	531	446	106	177	109
Geometry Grp	6	7	7	7	7	7	7
Degree of Util (X)	0.429	0.289	1.13	0.95	0.204	0.443	0.251
Departure Headway (Hd)	9.353	8.206	7.661	7.994	7.251	9.428	8.662
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	388	438	473	459	498	385	417
Service Time	7.353	5.959	5.414	5.694	4.951	7.128	6.362
HCM Lane V/C Ratio	0.446	0.29	1.123	0.972	0.213	0.46	0.261
HCM Control Delay	19.2	14.3	108.8	59	11.8	19.4	14.2
HCM Lane LOS	C	B	F	F	B	C	B
HCM 95th-tile Q	2.1	1.2	18.4	11.3	0.8	2.2	1

Intersection	
Intersection Delay, s/veh	104
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗			↖	↗		↔		↖	↗	
Traffic Vol, veh/h	71	253	12	29	607	121	12	88	20	91	156	76
Future Vol, veh/h	71	253	12	29	607	121	12	88	20	91	156	76
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	79	281	13	32	674	134	13	98	22	101	173	84
Number of Lanes	1	1	0	0	1	1	0	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	2	2
HCM Control Delay	20.8	191.1	16.7	19
HCM LOS	C	F	C	C

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	10%	100%	0%	5%	0%	100%	0%
Vol Thru, %	73%	0%	95%	95%	0%	0%	67%
Vol Right, %	17%	0%	5%	0%	100%	0%	33%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	120	71	265	636	121	91	232
LT Vol	12	71	0	29	0	91	0
Through Vol	88	0	253	607	0	0	156
RT Vol	20	0	12	0	121	0	76
Lane Flow Rate	133	79	294	707	134	101	258
Geometry Grp	6	7	7	7	7	7	7
Degree of Util (X)	0.313	0.176	0.611	1.43	0.244	0.234	0.545
Departure Headway (Hd)	9.455	8.699	8.147	7.283	6.541	9.17	8.414
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	383	415	448	502	553	394	430
Service Time	7.455	6.399	5.847	4.983	4.241	6.87	6.114
HCM Lane V/C Ratio	0.347	0.19	0.656	1.408	0.242	0.256	0.6
HCM Control Delay	16.7	13.2	22.8	225.3	11.3	14.6	20.7
HCM Lane LOS	C	B	C	F	B	B	C
HCM 95th-tile Q	1.3	0.6	4	34.3	1	0.9	3.2

Intersection	
Intersection Delay, s/veh	60.9
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗			↖	↗		↔		↖	↗	
Traffic Vol, veh/h	138	459	19	14	387	102	19	113	31	163	69	49
Future Vol, veh/h	138	459	19	14	387	102	19	113	31	163	69	49
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	153	510	21	16	430	113	21	126	34	181	77	54
Number of Lanes	1	1	0	0	1	1	0	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	2	2
HCM Control Delay	96.6	54.4	20.2	18
HCM LOS	F	F	C	C

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	12%	100%	0%	3%	0%	100%	0%
Vol Thru, %	69%	0%	96%	97%	0%	0%	58%
Vol Right, %	19%	0%	4%	0%	100%	0%	42%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	163	138	478	401	102	163	118
LT Vol	19	138	0	14	0	163	0
Through Vol	113	0	459	387	0	0	69
RT Vol	31	0	19	0	102	0	49
Lane Flow Rate	181	153	531	446	113	181	131
Geometry Grp	6	7	7	7	7	7	7
Degree of Util (X)	0.455	0.358	1.159	0.973	0.225	0.459	0.304
Departure Headway (Hd)	9.533	8.403	7.857	8.211	7.466	9.559	8.735
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	380	428	462	446	484	379	414
Service Time	7.533	6.158	5.612	5.911	5.166	7.259	6.435
HCM Lane V/C Ratio	0.476	0.357	1.149	1	0.233	0.478	0.316
HCM Control Delay	20.2	15.8	119.9	65.1	12.3	20.1	15.2
HCM Lane LOS	C	C	F	F	B	C	C
HCM 95th-tile Q	2.3	1.6	19.3	11.9	0.9	2.3	1.3

Lanes, Volumes, Timings  
3: Peebles Road/Jonesville Road & Mitchell Mill Road

2027 Build - Improved  
Timing Plan: AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	71	253	12	29	607	121	12	88	20	91	156	76
Future Volume (vph)	71	253	12	29	607	121	12	88	20	91	156	76
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	0		100	0		0	100		0
Storage Lanes	1		0	0		1	0		0	1		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.993				0.850		0.978			0.951	
Flt Protected	0.950				0.998			0.995		0.950		
Satd. Flow (prot)	1770	1850	0	0	1859	1583	0	1813	0	1770	1771	0
Flt Permitted	0.247				0.976			0.946		0.785		
Satd. Flow (perm)	460	1850	0	0	1818	1583	0	1723	0	1462	1771	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		1536			1126			1017			1092	
Travel Time (s)		23.3			17.1			15.4			16.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	79	281	13	32	674	134	13	98	22	101	173	84
Shared Lane Traffic (%)												
Lane Group Flow (vph)	79	294	0	0	706	134	0	133	0	101	257	0
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			6			8				4
Permitted Phases	2			6		6	8			4		
Detector Phase	2	2		6	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	12.0	12.0		12.0	12.0	12.0	7.0	7.0		7.0	7.0	
Minimum Split (s)	19.0	19.0		19.0	19.0	19.0	14.0	14.0		14.0	14.0	
Total Split (s)	40.0	40.0		40.0	40.0	40.0	20.0	20.0		20.0	20.0	
Total Split (%)	66.7%	66.7%		66.7%	66.7%	66.7%	33.3%	33.3%		33.3%	33.3%	
Maximum Green (s)	33.0	33.0		33.0	33.0	33.0	13.0	13.0		13.0	13.0	
Yellow Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0			-2.0	-2.0		-2.0		-2.0	-2.0	
Total Lost Time (s)	5.0	5.0			5.0	5.0		5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	Min	Min		Min	Min	
Act Effct Green (s)	26.5	26.5			26.5	26.5		13.3		13.3	13.3	
Actuated g/C Ratio	0.53	0.53			0.53	0.53		0.26		0.26	0.26	
v/c Ratio	0.33	0.30			0.74	0.16		0.29		0.26	0.55	
Control Delay	10.9	7.4			14.4	6.5		19.1		19.1	23.0	
Queue Delay	0.0	0.0			0.0	0.0		0.0		0.0	0.0	
Total Delay	10.9	7.4			14.4	6.5		19.1		19.1	23.0	
LOS	B	A			B	A		B		B	C	
Approach Delay		8.2			13.2			19.1			21.9	
Approach LOS		A			B			B			C	

Lanes, Volumes, Timings  
 3: Peebles Road/Jonesville Road & Mitchell Mill Road

2027 Build - Improved  
 Timing Plan: AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)	12	45			150	19		32		24	67	
Queue Length 95th (ft)	37	81			258	40		80		65	147	
Internal Link Dist (ft)		1456			1046			937			1012	
Turn Bay Length (ft)	100					100				100		
Base Capacity (vph)	333	1342			1319	1148		536		455	552	
Starvation Cap Reductn	0	0			0	0		0		0	0	
Spillback Cap Reductn	0	0			0	0		0		0	0	
Storage Cap Reductn	0	0			0	0		0		0	0	
Reduced v/c Ratio	0.24	0.22			0.54	0.12		0.25		0.22	0.47	

Intersection Summary

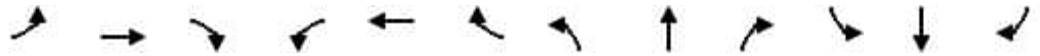
Area Type:	Other
Cycle Length:	60
Actuated Cycle Length:	50.2
Natural Cycle:	50
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.74
Intersection Signal Delay:	14.4
Intersection LOS:	B
Intersection Capacity Utilization	76.2%
ICU Level of Service	D
Analysis Period (min)	15

Splits and Phases: 3: Peebles Road/Jonesville Road & Mitchell Mill Road



Lanes, Volumes, Timings  
 3: Peebles Road/Jonesville Road & Mitchell Mill Road

2027 Build - Improved  
 Timing Plan: PM Peak Hour

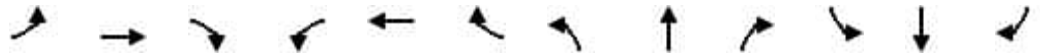


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	138	459	19	14	387	102	19	113	31	163	69	49
Future Volume (vph)	138	459	19	14	387	102	19	113	31	163	69	49
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	0		100	0		0	100		0
Storage Lanes	1		0	0		1	0		0	1		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.994				0.850		0.975			0.938	
Flt Protected	0.950				0.998			0.994		0.950		
Satd. Flow (prot)	1770	1852	0	0	1859	1583	0	1805	0	1770	1747	0
Flt Permitted	0.436				0.973			0.951		0.728		
Satd. Flow (perm)	812	1852	0	0	1812	1583	0	1727	0	1356	1747	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		1536			1126			1017			1092	
Travel Time (s)		23.3			17.1			15.4			16.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	153	510	21	16	430	113	21	126	34	181	77	54
Shared Lane Traffic (%)												
Lane Group Flow (vph)	153	531	0	0	446	113	0	181	0	181	131	0
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			6			8				4
Permitted Phases	2			6		6	8			4		
Detector Phase	2	2		6	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	12.0	12.0		12.0	12.0	12.0	7.0	7.0		7.0	7.0	
Minimum Split (s)	19.0	19.0		19.0	19.0	19.0	14.0	14.0		14.0	14.0	
Total Split (s)	36.0	36.0		36.0	36.0	36.0	24.0	24.0		24.0	24.0	
Total Split (%)	60.0%	60.0%		60.0%	60.0%	60.0%	40.0%	40.0%		40.0%	40.0%	
Maximum Green (s)	29.0	29.0		29.0	29.0	29.0	17.0	17.0		17.0	17.0	
Yellow Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0			-2.0	-2.0		-2.0		-2.0	-2.0	
Total Lost Time (s)	5.0	5.0			5.0	5.0		5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	Min	Min		Min	Min	
Act Effct Green (s)	21.1	21.1			21.1	21.1		13.9		13.9	13.9	
Actuated g/C Ratio	0.46	0.46			0.46	0.46		0.31		0.31	0.31	
v/c Ratio	0.41	0.62			0.53	0.15		0.34		0.44	0.25	
Control Delay	12.4	13.1			11.6	8.0		15.8		18.1	14.8	
Queue Delay	0.0	0.0			0.0	0.0		0.0		0.0	0.0	
Total Delay	12.4	13.1			11.6	8.0		15.8		18.1	14.8	
LOS	B	B			B	A		B		B	B	
Approach Delay		12.9			10.9			15.8			16.7	
Approach LOS		B			B			B			B	



Lanes, Volumes, Timings  
 3: Peebles Road/Jonesville Road & Mitchell Mill Road

2027 Build - Improved  
 Timing Plan: PM Peak Hour

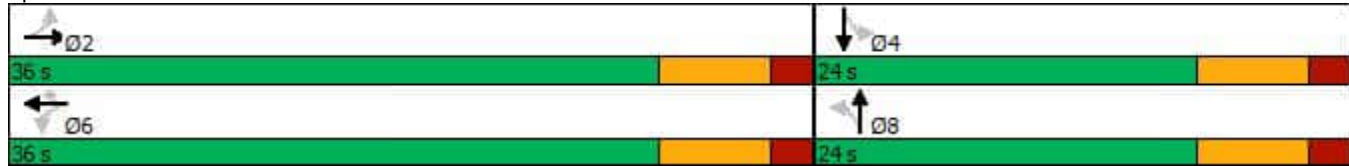


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)	23	92			73	15		34		35	24	
Queue Length 95th (ft)	68	198			160	41		95		101	71	
Internal Link Dist (ft)		1456			1046			937			1012	
Turn Bay Length (ft)	100					100				100		
Base Capacity (vph)	581	1326			1297	1133		758		595	766	
Starvation Cap Reductn	0	0			0	0		0		0	0	
Spillback Cap Reductn	0	0			0	0		0		0	0	
Storage Cap Reductn	0	0			0	0		0		0	0	
Reduced v/c Ratio	0.26	0.40			0.34	0.10		0.24		0.30	0.17	

Intersection Summary

Area Type:	Other
Cycle Length:	60
Actuated Cycle Length:	45.5
Natural Cycle:	40
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.62
Intersection Signal Delay:	13.2
Intersection LOS:	B
Intersection Capacity Utilization	81.0%
ICU Level of Service	D
Analysis Period (min)	15

Splits and Phases: 3: Peebles Road/Jonesville Road & Mitchell Mill Road



# **APPENDIX G**

## **CAPACITY ANALYSIS CALCULATIONS**

**Jonesville Road**

**&**

**Universal Drive**

Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		T
Traffic Vol, veh/h	3	3	1	125	178	1
Future Vol, veh/h	3	3	1	125	178	1
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	3	3	1	139	198	1

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	340	199	199	0	-
Stage 1	199	-	-	-	-
Stage 2	141	-	-	-	-
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	656	842	1373	-	-
Stage 1	835	-	-	-	-
Stage 2	886	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	655	842	1373	-	-
Mov Cap-2 Maneuver	655	-	-	-	-
Stage 1	834	-	-	-	-
Stage 2	886	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.9	0.1	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1373	-	737	-	-
HCM Lane V/C Ratio	0.001	-	0.009	-	-
HCM Control Delay (s)	7.6	0	9.9	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			W	W	
Traffic Vol, veh/h	1	2	4	127	89	3
Future Vol, veh/h	1	2	4	127	89	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	2	4	141	99	3

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	250	101	102	0	0
Stage 1	101	-	-	-	-
Stage 2	149	-	-	-	-
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	739	954	1490	-	-
Stage 1	923	-	-	-	-
Stage 2	879	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	737	954	1490	-	-
Mov Cap-2 Maneuver	737	-	-	-	-
Stage 1	920	-	-	-	-
Stage 2	879	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.2	0.2	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1490	-	869	-	-
HCM Lane V/C Ratio	0.003	-	0.004	-	-
HCM Control Delay (s)	7.4	0	9.2	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			W	W	
Traffic Vol, veh/h	3	3	1	339	294	1
Future Vol, veh/h	3	3	1	339	294	1
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	3	3	1	377	327	1

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	707	328	328	0	-	0
Stage 1	328	-	-	-	-	-
Stage 2	379	-	-	-	-	-
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	402	713	1232	-	-	-
Stage 1	730	-	-	-	-	-
Stage 2	692	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	402	713	1232	-	-	-
Mov Cap-2 Maneuver	402	-	-	-	-	-
Stage 1	729	-	-	-	-	-
Stage 2	692	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.1	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1232	-	514	-	-
HCM Lane V/C Ratio	0.001	-	0.013	-	-
HCM Control Delay (s)	7.9	0	12.1	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	1	2	4	296	336	3
Future Vol, veh/h	1	2	4	296	336	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	2	4	329	373	3

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	712	375	376	0	-	0
Stage 1	375	-	-	-	-	-
Stage 2	337	-	-	-	-	-
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	399	671	1182	-	-	-
Stage 1	695	-	-	-	-	-
Stage 2	723	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	397	671	1182	-	-	-
Mov Cap-2 Maneuver	397	-	-	-	-	-
Stage 1	692	-	-	-	-	-
Stage 2	723	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.6	0.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1182	-	546	-	-
HCM Lane V/C Ratio	0.004	-	0.006	-	-
HCM Control Delay (s)	8.1	0	11.6	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			W	W	
Traffic Vol, veh/h	16	6	2	356	300	5
Future Vol, veh/h	16	6	2	356	300	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
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	18	7	2	396	333	6

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	736	336	339	0	-	0
Stage 1	336	-	-	-	-	-
Stage 2	400	-	-	-	-	-
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	386	706	1220	-	-	-
Stage 1	724	-	-	-	-	-
Stage 2	677	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	385	706	1220	-	-	-
Mov Cap-2 Maneuver	385	-	-	-	-	-
Stage 1	723	-	-	-	-	-
Stage 2	677	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.7	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1220	-	439	-	-
HCM Lane V/C Ratio	0.002	-	0.056	-	-
HCM Control Delay (s)	8	0	13.7	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			W	W	
Traffic Vol, veh/h	10	4	8	307	354	17
Future Vol, veh/h	10	4	8	307	354	17
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	11	4	9	341	393	19

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	762	403	412	0	-	0
Stage 1	403	-	-	-	-	-
Stage 2	359	-	-	-	-	-
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	373	647	1147	-	-	-
Stage 1	675	-	-	-	-	-
Stage 2	707	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	369	647	1147	-	-	-
Mov Cap-2 Maneuver	369	-	-	-	-	-
Stage 1	668	-	-	-	-	-
Stage 2	707	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.9	0.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1147	-	421	-	-
HCM Lane V/C Ratio	0.008	-	0.037	-	-
HCM Control Delay (s)	8.2	0	13.9	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-



# **APPENDIX H**

## **CAPACITY ANALYSIS CALCULATIONS**

**Jonesville Road**

**&**

**Site Drive**

Intersection						
Int Delay, s/veh	1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	17	33	11	335	306	6
Future Vol, veh/h	17	33	11	335	306	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	50	-	-	-
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	37	12	372	340	7

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	740	344	347	0	-	0
Stage 1	344	-	-	-	-	-
Stage 2	396	-	-	-	-	-
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	384	699	1212	-	-	-
Stage 1	718	-	-	-	-	-
Stage 2	680	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	380	699	1212	-	-	-
Mov Cap-2 Maneuver	380	-	-	-	-	-
Stage 1	711	-	-	-	-	-
Stage 2	680	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.4	0.3	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1212	-	544	-	-
HCM Lane V/C Ratio	0.01	-	0.102	-	-
HCM Control Delay (s)	8	-	12.4	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.3	-	-

Intersection						
Int Delay, s/veh	1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	11	22	34	308	335	18
Future Vol, veh/h	11	22	34	308	335	18
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	-	50	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	12	24	38	342	372	20

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	800	382	392	0	-	0
Stage 1	382	-	-	-	-	-
Stage 2	418	-	-	-	-	-
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	354	665	1167	-	-	-
Stage 1	690	-	-	-	-	-
Stage 2	664	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	342	665	1167	-	-	-
Mov Cap-2 Maneuver	342	-	-	-	-	-
Stage 1	667	-	-	-	-	-
Stage 2	664	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.7	0.8	0
HCM LOS	B		

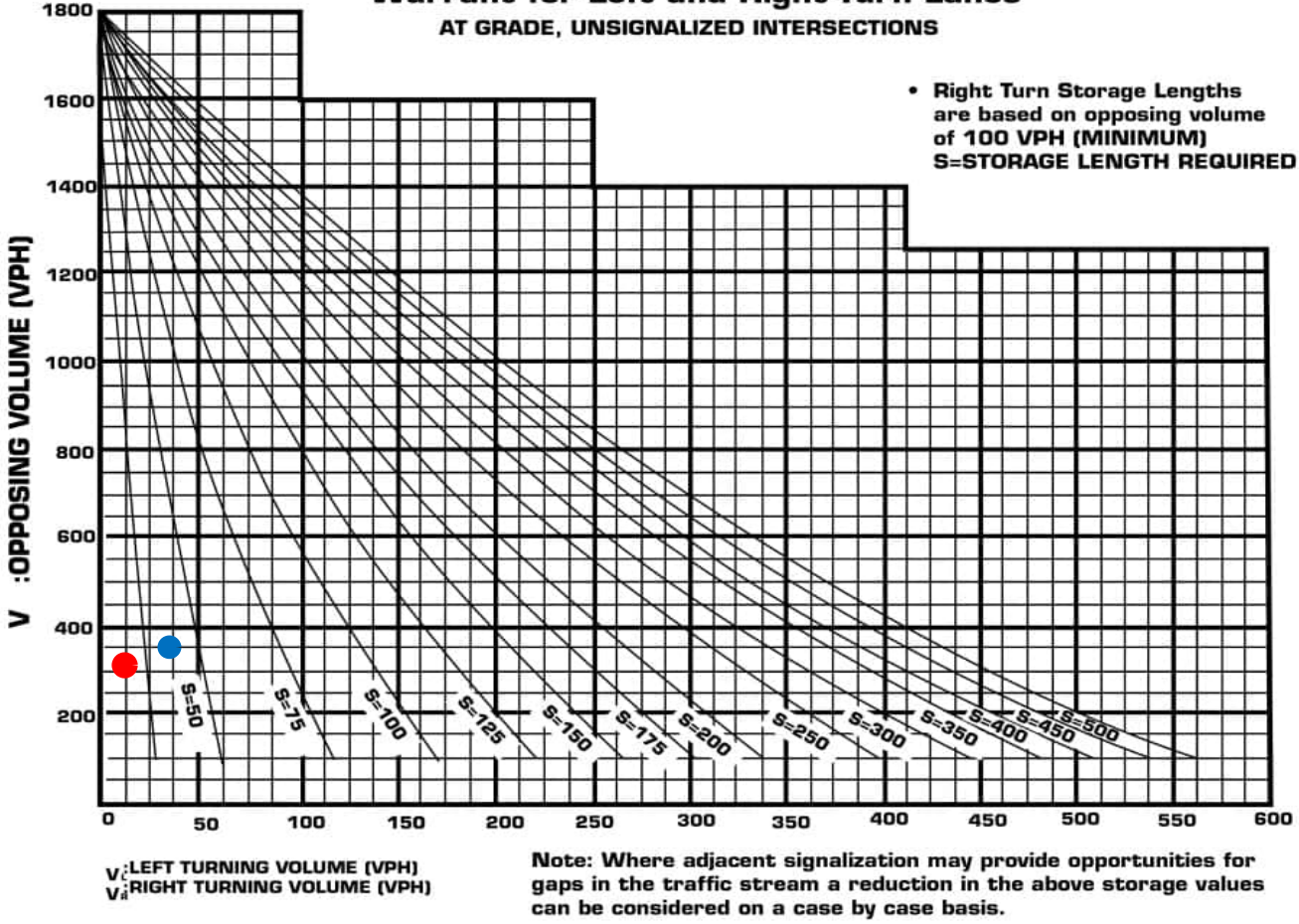
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1167	-	506	-	-
HCM Lane V/C Ratio	0.032	-	0.072	-	-
HCM Control Delay (s)	8.2	-	12.7	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.2	-	-

# **APPENDIX I**

## **TURN LANE WARRANTS**

HARRIS CREEK FARM  
TURN LANE STORAGE WARRANTS

**Warrant for Left and Right-Turn Lanes**  
AT GRADE, UNSIGNALIZED INTERSECTIONS



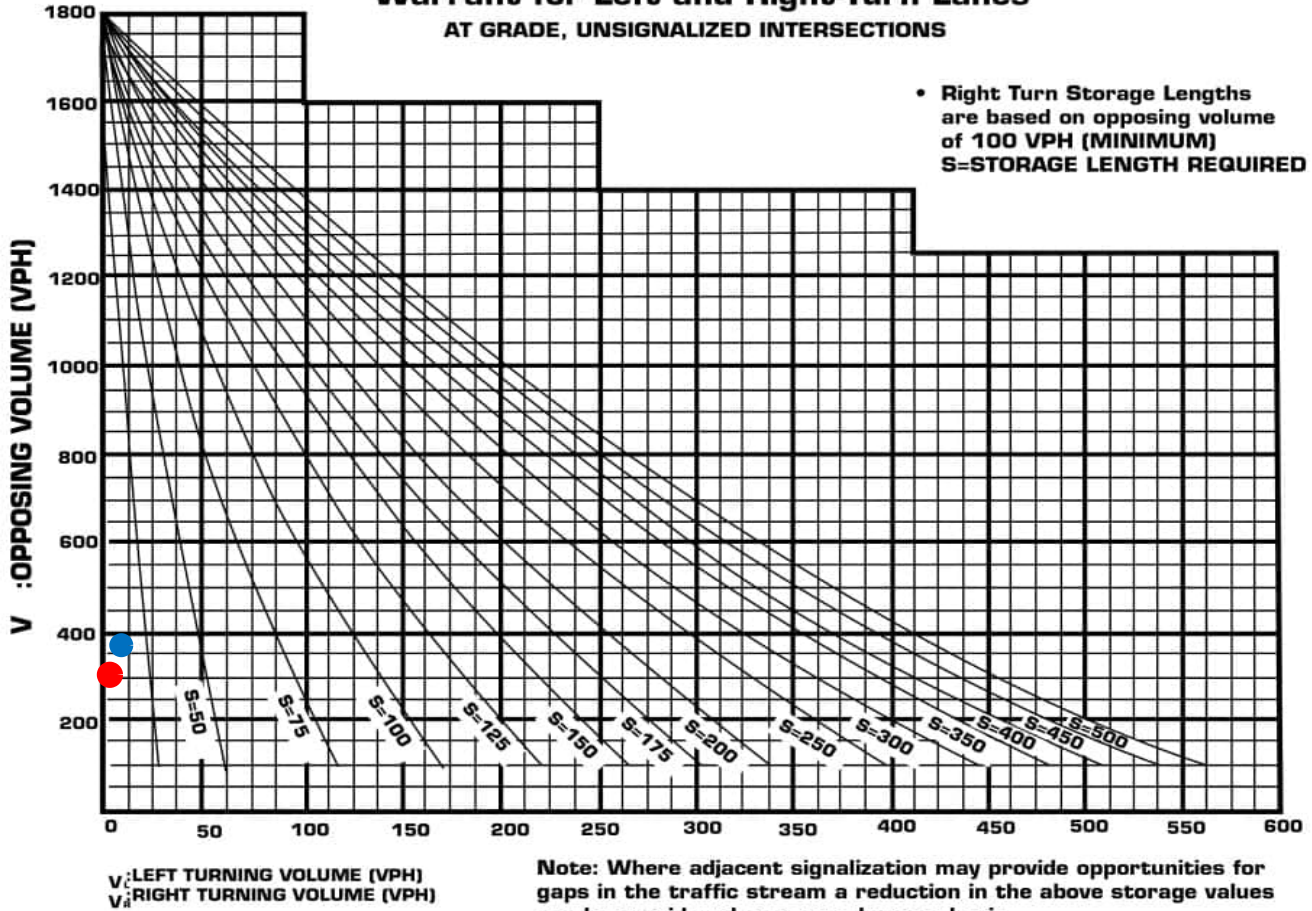
Policy On Street And Driveway Access to North Carolina Highways

INTERSECTION: Jonesville Road & Site Drive

SCENARIO	Movement	Turn Lane	Turning Volume (V <sub>R</sub> /V <sub>L</sub> )	Approach / Opposing Volume (V <sub>A</sub> /V <sub>O</sub> )	Symbol
AM Build	NBL	Left	11	312	●
PM Build	NBL	Left	34	353	●
					●
					●

HARRIS CREEK FARM  
TURN LANE STORAGE WARRANTS

**Warrant for Left and Right-Turn Lanes**  
AT GRADE, UNSIGNALIZED INTERSECTIONS



Policy On Street And Driveway Access to North Carolina Highways

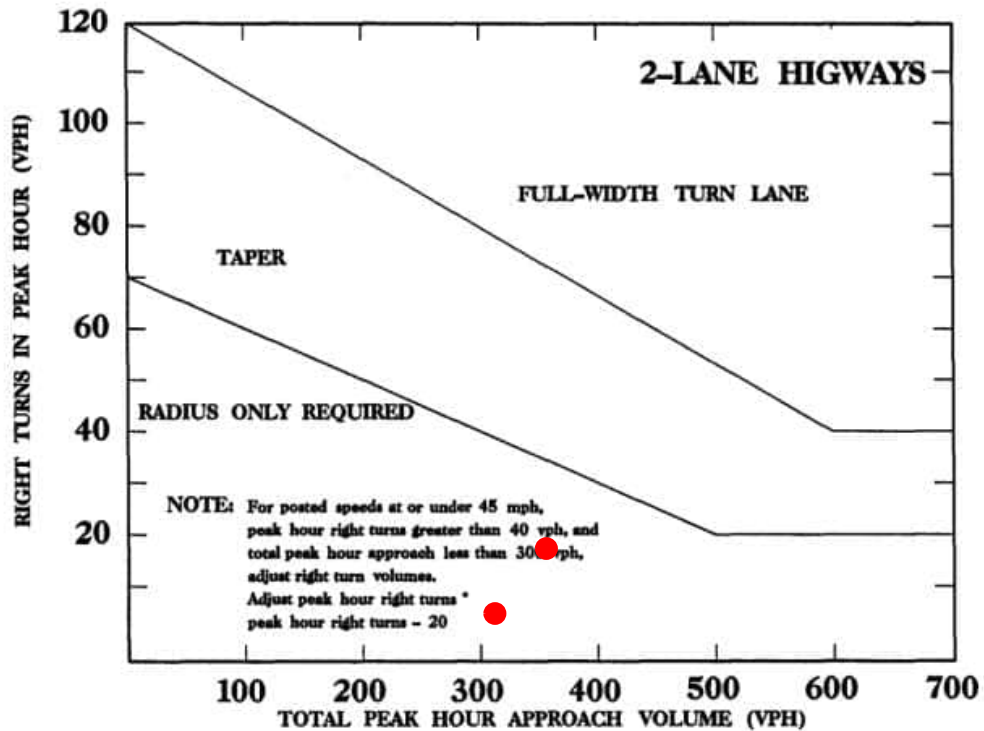
INTERSECTION: Jonesville Road & Univeral Drive

SCENARIO	Movement	Turn Lane	Turning Volume (V <sub>r</sub> /V <sub>l</sub> )	Approach / Opposing Volume (V <sub>A</sub> /V <sub>O</sub> )	Symbol
AM Build	NBL	Left	2	305	●
PM Build	NBL	Left	8	371	●
					●
					●

## Jonesville Road and Site Drive

2027 Build				
Peak Hour	Approach	Right Turn Volume	Approach Volume	Warranted?
AM	Southbound	6	312	No
PM	Southbound	18	353	No

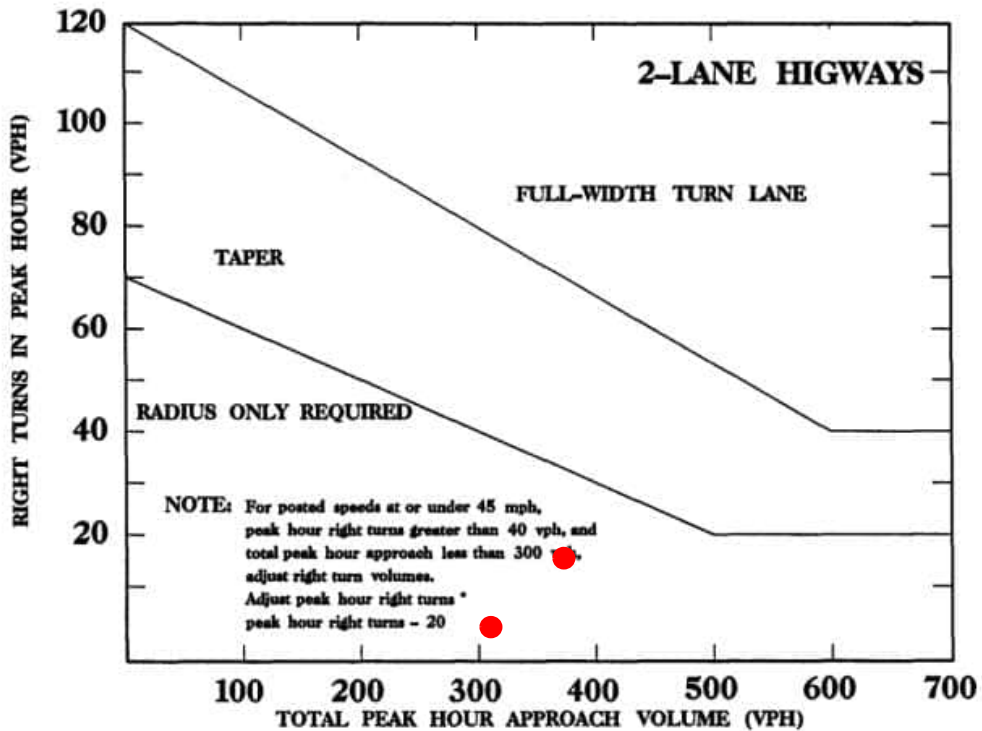
### RIGHT TURN LANE WARRANTS



## Jonesville Road and Universal Drive

2027 Build				
Peak Hour	Approach	Right Turn Volume	Approach Volume	Warranted?
AM	Southbound	5	305	No
PM	Southbound	17	371	No

### RIGHT TURN LANE WARRANTS





# **APPENDIX J**

## **MUTCD / ITRE SIGNAL WARRANT ANALYSIS**

# Traffic Signal Warrant Analysis

## Warrants 1 - 3 (Volume Warrants)

Project Name	Harris Creek Farm
Project/File #	20498 - 09
Scenario	2027 No-Build

Intersection Information			
Major Street (E/W Road)	US 401 Bypass	Minor Street (N/S Road)	Jonesville Road / WB Left-Over
Analyzed with	2 or more approach lanes	Analyzed with	1 Approach Lane
Total Approach Volume	2895 vehicles	Total Approach Volume	894 vehicles
Total Ped/Bike Volume	0 crossings	Total Ped/Bike Volume	0 crossings
Right turn reduction of	0 percent applied	Right turn reduction of	100 percent applied

No high speed or isolated community reduction applied to the Volume Warrant thresholds.

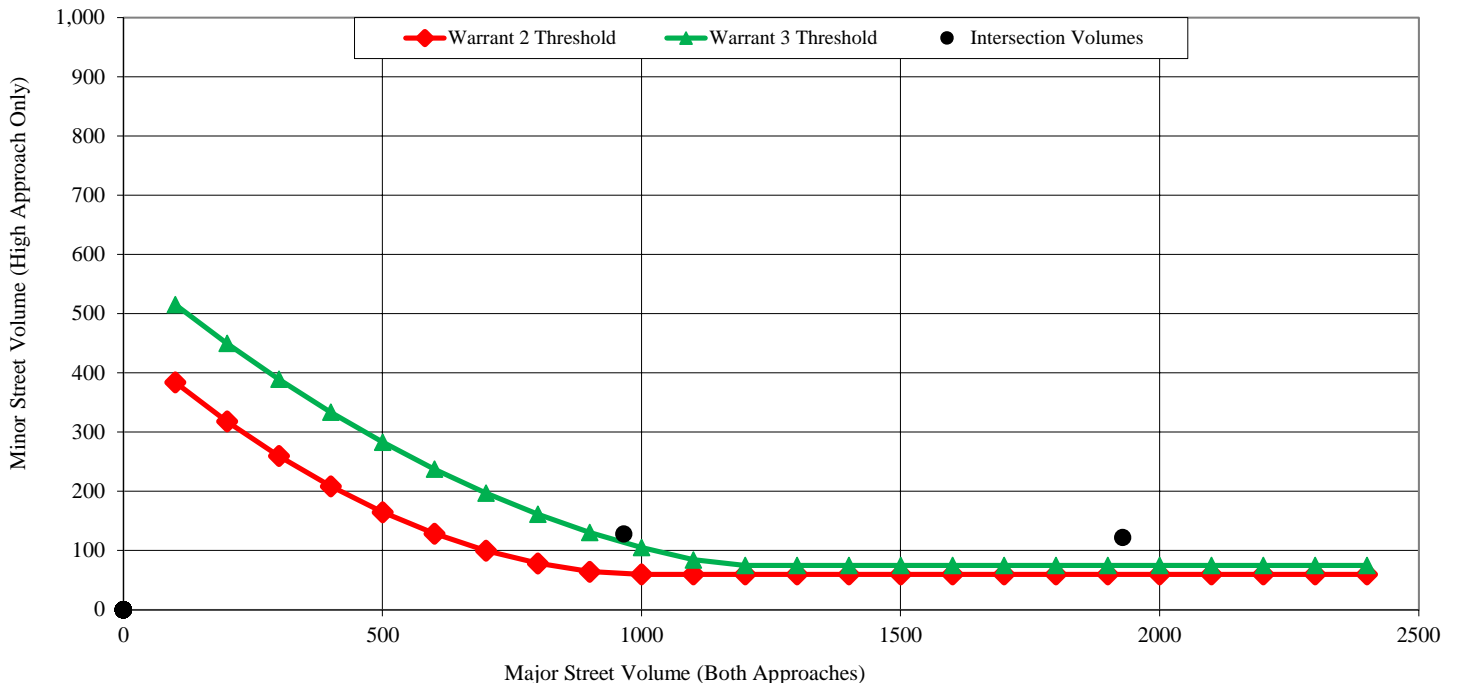
Warrant 1, Eight Hour Vehicular Volume			
	Condition A	Condition B	Condition A+B*
Condition Satisfied?	Not Satisfied	Not Satisfied	Not Satisfied
Required values reached for	2 hours	2 hours	2 (Cond. A) & 2 (Cond. B)
Criteria - Major Street (veh/hr)	420	630	336 (Cond. A) & 504 (Cond. B)
Criteria - Minor Street (veh/hr)	105	53	84 (Cond. A) & 42 (Cond. B)

\* Should be applied only after an adequate trial of other alternatives that could cause less delay and inconvenience to traffic has failed to solve the traffic problems.

Warrant 2, Four Hour Vehicular Volume	
Condition Satisfied?	Not Satisfied
Required values reached for	2 hours
Criteria	See Figure Below

Warrant 3, Peak Hour Vehicular Volume		
	Condition A	Condition B
Condition Satisfied?	Not Satisfied	Satisfied
Required values reached for	2051 total, 122 minor, 0 delay	2 hours
Criteria - Total Approach Volume (veh in one hour)	800	See Figure Below
Criteria - Minor Street High Side Volume (veh in one hour)	100	
Criteria - Minor Street High Side Delay (veh-hrs)	4	

Figure 4C-2 (Warrant 2 - 70% Factor) & Figure 4C-4 (Warrant 3 - 70% Factor)



# Traffic Signal Warrant Analysis

## Warrants 1 - 3 (Volume Warrants)

Project Name	Harris Creek Farm
Project/File #	20498 - 09
Scenario	2027 Build

Intersection Information			
Major Street (E/W Road)	US 401 Bypass	Minor Street (N/S Road)	Jonesville Road / WB Left-Over
Analyzed with	2 or more approach lanes	Analyzed with	1 Approach Lane
Total Approach Volume	2923 vehicles	Total Approach Volume	958 vehicles
Total Ped/Bike Volume	0 crossings	Total Ped/Bike Volume	0 crossings
Right turn reduction of	0 percent applied	Right turn reduction of	100 percent applied

No high speed or isolated community reduction applied to the Volume Warrant thresholds.

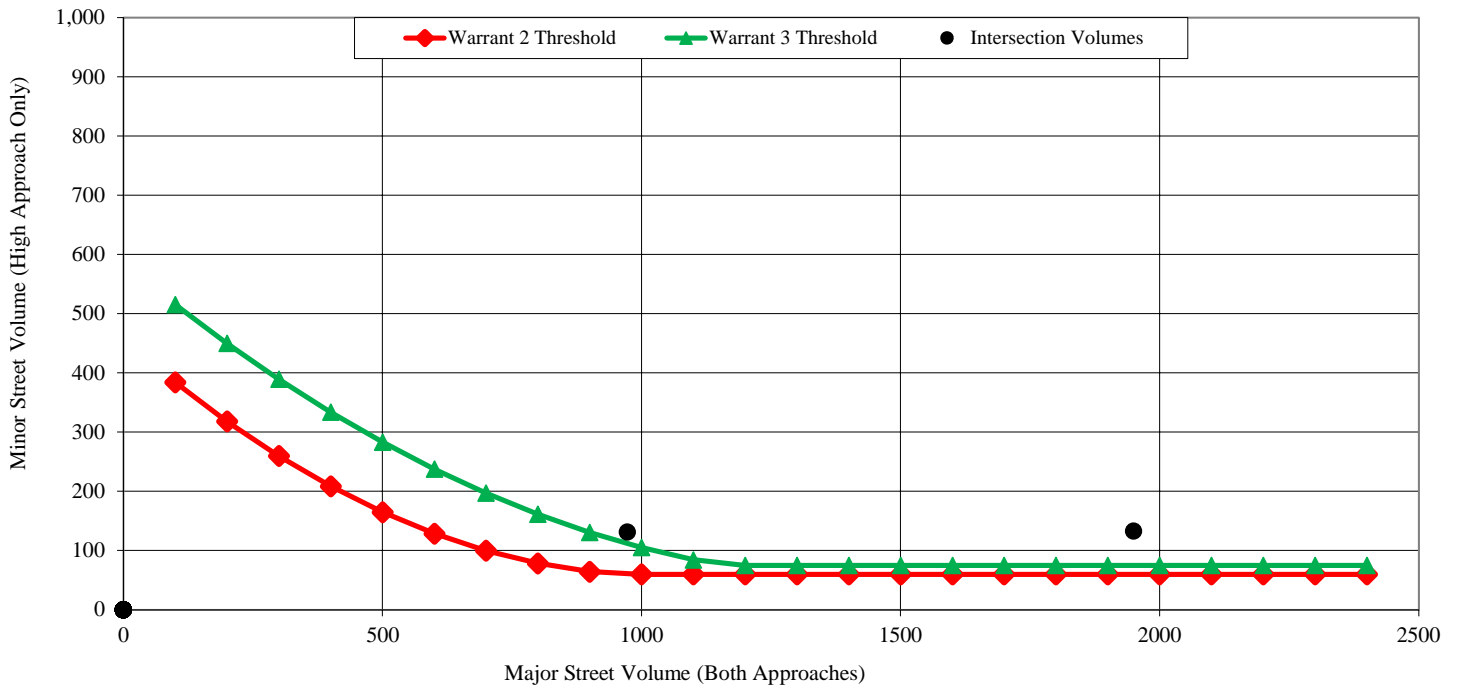
Warrant 1, Eight Hour Vehicular Volume			
	Condition A	Condition B	Condition A+B*
Condition Satisfied?	Not Satisfied	Not Satisfied	Not Satisfied
Required values reached for	2 hours	2 hours	2 (Cond. A) & 2 (Cond. B)
Criteria - Major Street (veh/hr)	420	630	336 (Cond. A) & 504 (Cond. B)
Criteria - Minor Street (veh/hr)	105	53	84 (Cond. A) & 42 (Cond. B)

\* Should be applied only after an adequate trial of other alternatives that could cause less delay and inconvenience to traffic has failed to solve the traffic problems.

Warrant 2, Four Hour Vehicular Volume	
Condition Satisfied?	Not Satisfied
Required values reached for	2 hours
Criteria	See Figure Below

Warrant 3, Peak Hour Vehicular Volume		
	Condition A	Condition B
Condition Satisfied?	Not Satisfied	Satisfied
Required values reached for	2083 total, 133 minor, 0 delay	2 hours
Criteria - Total Approach Volume (veh in one hour)	800	See Figure Below
Criteria - Minor Street High Side Volume (veh in one hour)	100	
Criteria - Minor Street High Side Delay (veh-hrs)	4	

Figure 4C-2 (Warrant 2 - 70% Factor) & Figure 4C-4 (Warrant 3 - 70% Factor)



# Traffic Signal Warrant Analysis

## Warrants 1 - 3 (Volume Warrants)

Project Name	Harris Creek Farm
Project/File #	20498 - 09
Scenario	2022 Existing

Intersection Information			
Major Street (E/W Road)	US 401 Bypass	Minor Street (N/S Road)	Eastern U-Turn Location
Analyzed with	2 or more approach lanes	Analyzed with	1 Approach Lane
Total Approach Volume	2132 vehicles	Total Approach Volume	157 vehicles
Total Ped/Bike Volume	0 crossings	Total Ped/Bike Volume	0 crossings
Right turn reduction of	0 percent applied	Right turn reduction of	0 percent applied

No high speed or isolated community reduction applied to the Volume Warrant thresholds.

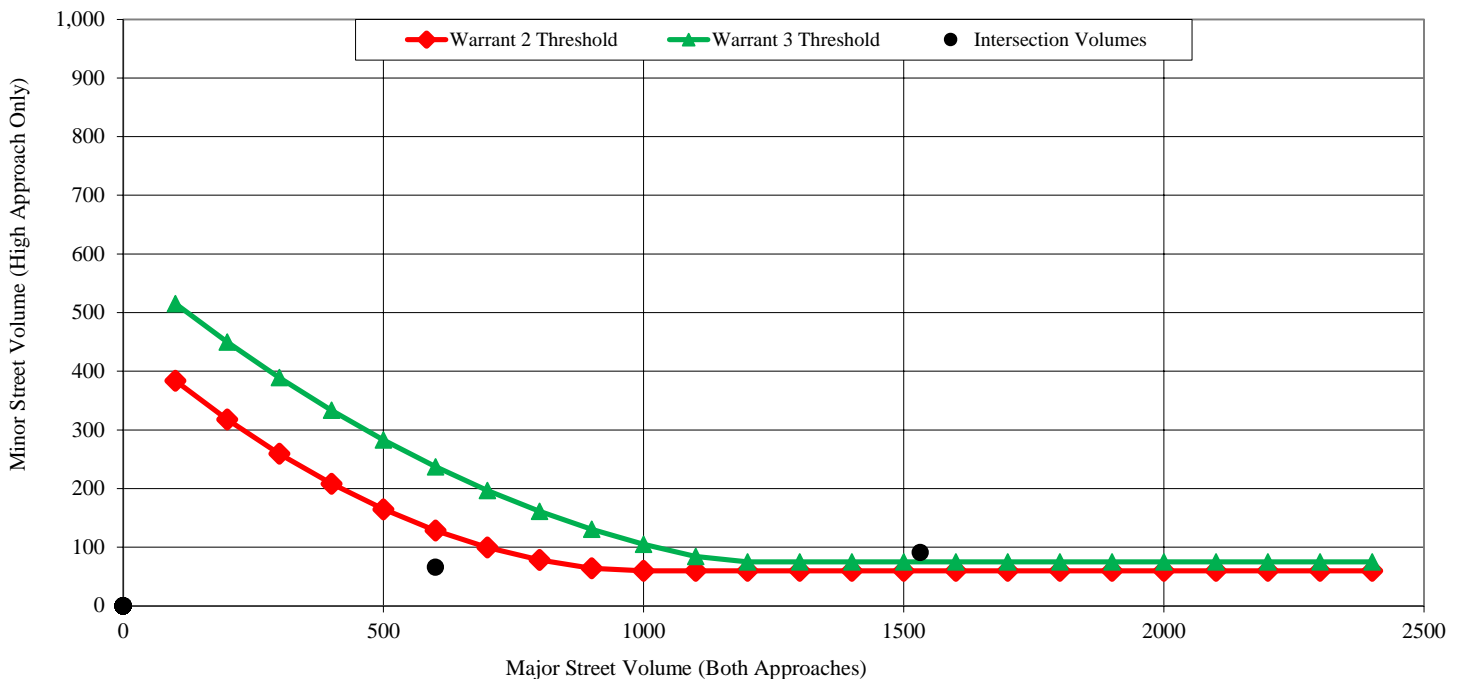
Warrant 1, Eight Hour Vehicular Volume			
	Condition A	Condition B	Condition A+B*
Condition Satisfied?	Not Satisfied	Not Satisfied	Not Satisfied
Required values reached for	0 hours	1 hour	1 (Cond. A) & 2 (Cond. B)
Criteria - Major Street (veh/hr)	420	630	336 (Cond. A) & 504 (Cond. B)
Criteria - Minor Street (veh/hr)	105	53	84 (Cond. A) & 42 (Cond. B)

\* Should be applied only after an adequate trial of other alternatives that could cause less delay and inconvenience to traffic has failed to solve the traffic problems.

Warrant 2, Four Hour Vehicular Volume	
Condition Satisfied?	Not Satisfied
Required values reached for	1 hour
Criteria	See Figure Below

Warrant 3, Peak Hour Vehicular Volume		
	Condition A	Condition B
Condition Satisfied?	Not Satisfied	Satisfied
Required values reached for	1623 total, 91 minor, 0 delay	1 hour
Criteria - Total Approach Volume (veh in one hour)	650	See Figure Below
Criteria - Minor Street High Side Volume (veh in one hour)	100	
Criteria - Minor Street High Side Delay (veh-hrs)	4	

Figure 4C-2 (Warrant 2 - 70% Factor) & Figure 4C-4 (Warrant 3 - 70% Factor)



# Traffic Signal Warrant Analysis

## Warrants 1 - 3 (Volume Warrants)

Project Name	Harris Creek Farm
Project/File #	20498 - 09
Scenario	2027 No-Build

Intersection Information			
Major Street (E/W Road)	US 401 Bypass	Minor Street (N/S Road)	Eastern U-Turn Location
Analyzed with	2 or more approach lanes	Analyzed with	1 Approach Lane
Total Approach Volume	2792 vehicles	Total Approach Volume	408 vehicles
Total Ped/Bike Volume	0 crossings	Total Ped/Bike Volume	0 crossings
Right turn reduction of	0 percent applied	Right turn reduction of	0 percent applied

No high speed or isolated community reduction applied to the Volume Warrant thresholds.

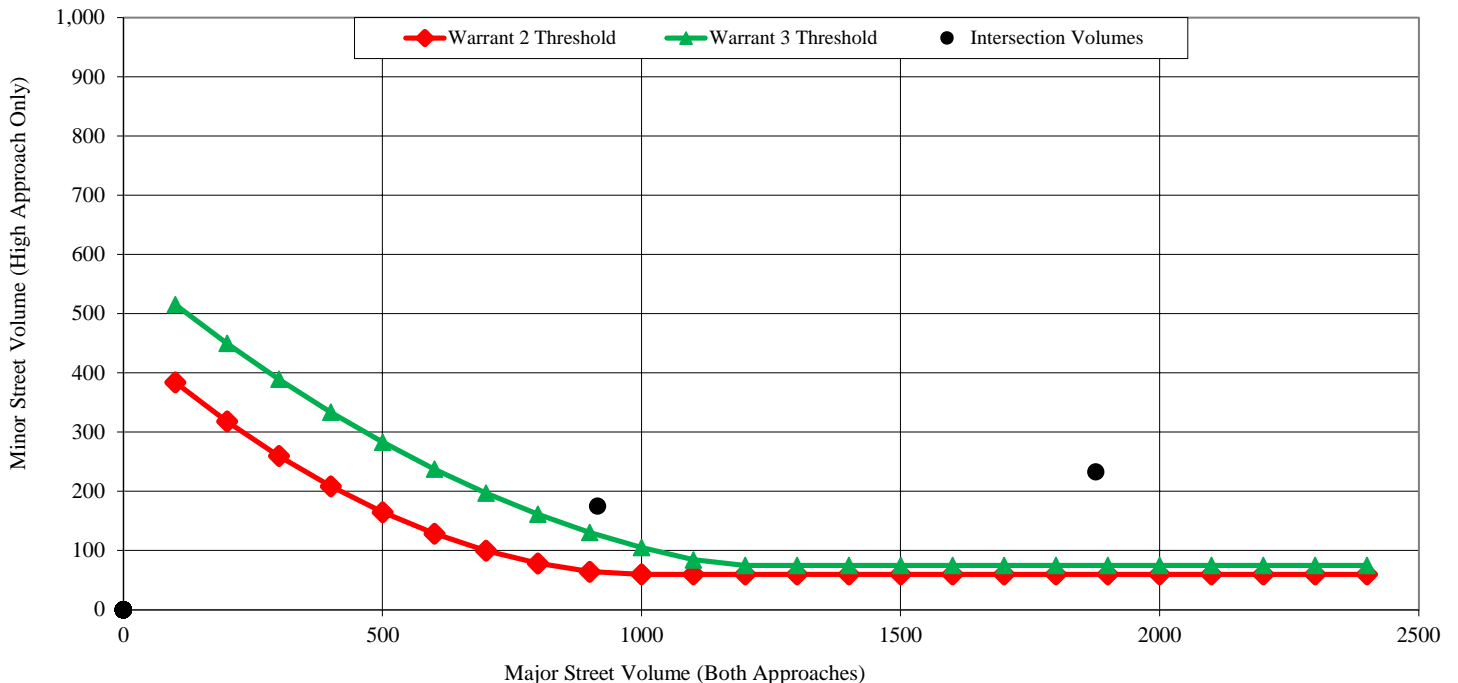
Warrant 1, Eight Hour Vehicular Volume			
	Condition A	Condition B	Condition A+B*
Condition Satisfied?	Not Satisfied	Not Satisfied	Not Satisfied
Required values reached for	2 hours	2 hours	2 (Cond. A) & 2 (Cond. B)
Criteria - Major Street (veh/hr)	420	630	336 (Cond. A) & 504 (Cond. B)
Criteria - Minor Street (veh/hr)	105	53	84 (Cond. A) & 42 (Cond. B)

\* Should be applied only after an adequate trial of other alternatives that could cause less delay and inconvenience to traffic has failed to solve the traffic problems.

Warrant 2, Four Hour Vehicular Volume	
Condition Satisfied?	Not Satisfied
Required values reached for	2 hours
Criteria	See Figure Below

Warrant 3, Peak Hour Vehicular Volume		
	Condition A	Condition B
Condition Satisfied?	Not Satisfied	Satisfied
Required values reached for	2110 total, 233 minor, 0 delay	2 hours
Criteria - Total Approach Volume (veh in one hour)	650	See Figure Below
Criteria - Minor Street High Side Volume (veh in one hour)	100	
Criteria - Minor Street High Side Delay (veh-hrs)	4	

Figure 4C-2 (Warrant 2 - 70% Factor) & Figure 4C-4 (Warrant 3 - 70% Factor)



# Traffic Signal Warrant Analysis

## Warrants 1 - 3 (Volume Warrants)

Project Name	Harris Creek Farm
Project/File #	20498 - 09
Scenario	2027 Build

Intersection Information			
Major Street (E/W Road)	US 401 Bypass	Minor Street (N/S Road)	Eastern U-Turn Location
Analyzed with	2 or more approach lanes	Analyzed with	1 Approach Lane
Total Approach Volume	2806 vehicles	Total Approach Volume	441 vehicles
Total Ped/Bike Volume	0 crossings	Total Ped/Bike Volume	0 crossings
Right turn reduction of	0 percent applied	Right turn reduction of	0 percent applied

No high speed or isolated community reduction applied to the Volume Warrant thresholds.

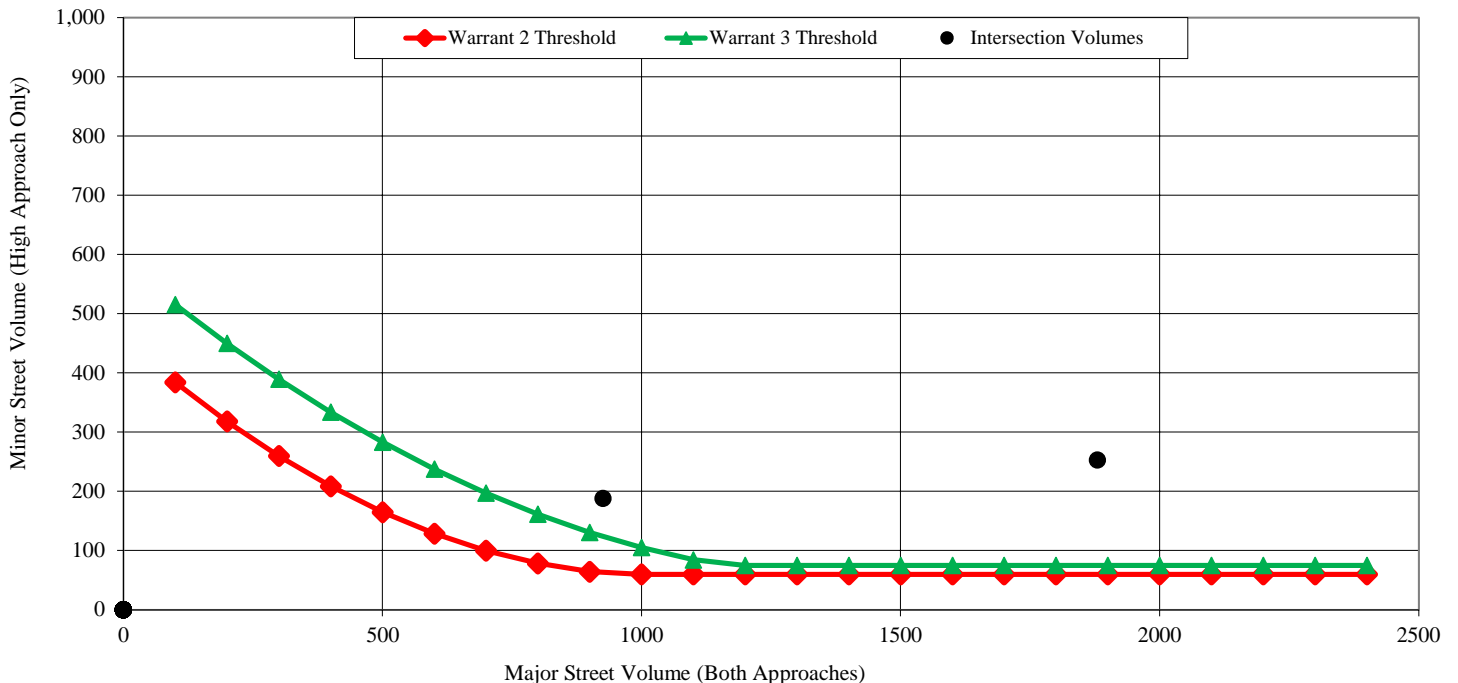
Warrant 1, Eight Hour Vehicular Volume			
	Condition A	Condition B	Condition A+B*
Condition Satisfied?	Not Satisfied	Not Satisfied	Not Satisfied
Required values reached for	2 hours	2 hours	2 (Cond. A) & 2 (Cond. B)
Criteria - Major Street (veh/hr)	420	630	336 (Cond. A) & 504 (Cond. B)
Criteria - Minor Street (veh/hr)	105	53	84 (Cond. A) & 42 (Cond. B)

\* Should be applied only after an adequate trial of other alternatives that could cause less delay and inconvenience to traffic has failed to solve the traffic problems.

Warrant 2, Four Hour Vehicular Volume	
Condition Satisfied?	Not Satisfied
Required values reached for	2 hours
Criteria	See Figure Below

Warrant 3, Peak Hour Vehicular Volume		
	Condition A	Condition B
Condition Satisfied?	Not Satisfied	Satisfied
Required values reached for	2133 total, 253 minor, 0 delay	2 hours
Criteria - Total Approach Volume (veh in one hour)	650	See Figure Below
Criteria - Minor Street High Side Volume (veh in one hour)	100	
Criteria - Minor Street High Side Delay (veh-hrs)	4	

Figure 4C-2 (Warrant 2 - 70% Factor) & Figure 4C-4 (Warrant 3 - 70% Factor)



# Traffic Signal Warrant Analysis

## Warrants 1 - 3 (Volume Warrants)

Project Name	Harris Creek Farm
Project/File #	20498 - 09
Scenario	2022 Existing

Intersection Information			
Major Street (E/W Road)	Mitchell Mill Road	Minor Street (N/S Road)	Jonesville Road
Analyzed with	1 approach lane	Analyzed with	1 Approach Lane
Total Approach Volume	1031 vehicles	Total Approach Volume	469 vehicles
Total Ped/Bike Volume	0 crossings	Total Ped/Bike Volume	0 crossings
Right turn reduction of	0 percent applied	Right turn reduction of	0 percent applied

No high speed or isolated community reduction applied to the Volume Warrant thresholds.

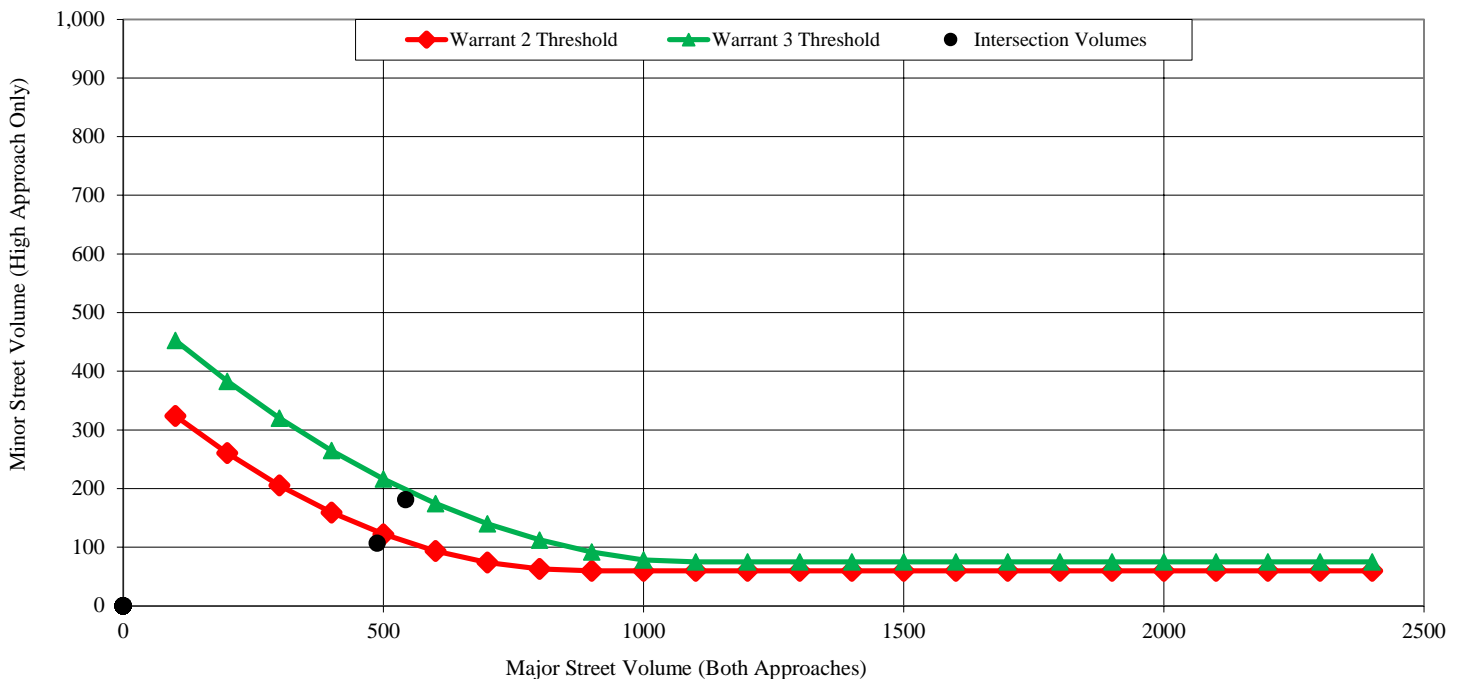
Warrant 1, Eight Hour Vehicular Volume			
	Condition A	Condition B	Condition A+B*
Condition Satisfied?	Not Satisfied	Not Satisfied	Not Satisfied
Required values reached for	2 hours	1 hour	2 (Cond. A) & 2 (Cond. B)
Criteria - Major Street (veh/hr)	350	525	280 (Cond. A) & 420 (Cond. B)
Criteria - Minor Street (veh/hr)	105	53	84 (Cond. A) & 42 (Cond. B)

\* Should be applied only after an adequate trial of other alternatives that could cause less delay and inconvenience to traffic has failed to solve the traffic problems.

Warrant 2, Four Hour Vehicular Volume	
Condition Satisfied?	Not Satisfied
Required values reached for	1 hour
Criteria	See Figure Below

Warrant 3, Peak Hour Vehicular Volume		
	Condition A	Condition B
Condition Satisfied?	Not Satisfied	Not Satisfied
Required values reached for	817 total, 181 minor, 0 delay	0 hours
Criteria - Total Approach Volume (veh in one hour)	800	See Figure Below
Criteria - Minor Street High Side Volume (veh in one hour)	100	
Criteria - Minor Street High Side Delay (veh-hrs)	4	

Figure 4C-2 (Warrant 2 - 70% Factor) & Figure 4C-4 (Warrant 3 - 70% Factor)



# Traffic Signal Warrant Analysis

## Warrants 1 - 3 (Volume Warrants)

Project Name	Harris Creek Farm
Project/File #	20498 - 09
Scenario	2027 No-Build

Intersection Information			
Major Street (E/W Road)	Mitchell Mill Road	Minor Street (N/S Road)	Jonesville Road
Analyzed with	1 approach lane	Analyzed with	1 Approach Lane
Total Approach Volume	2171 vehicles	Total Approach Volume	818 vehicles
Total Ped/Bike Volume	0 crossings	Total Ped/Bike Volume	0 crossings
Right turn reduction of	0 percent applied	Right turn reduction of	0 percent applied

No high speed or isolated community reduction applied to the Volume Warrant thresholds.

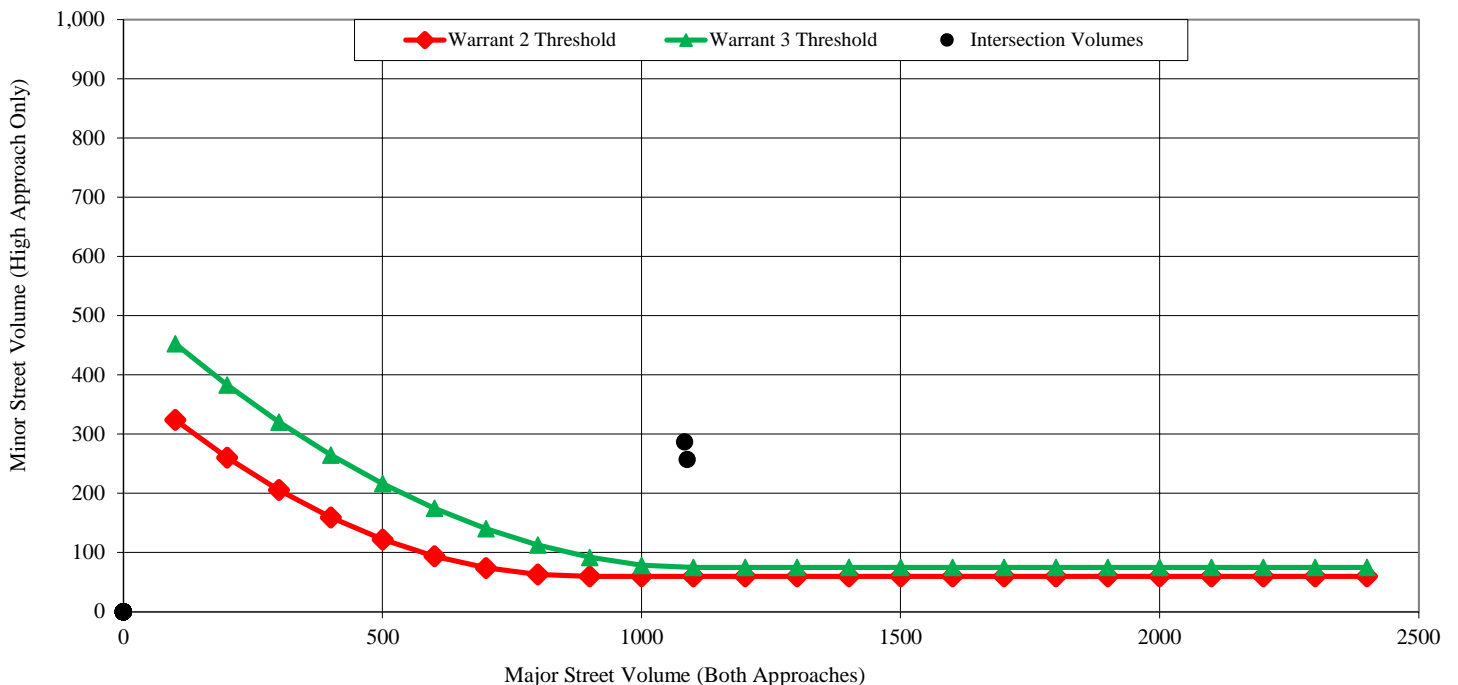
Warrant 1, Eight Hour Vehicular Volume			
	Condition A	Condition B	Condition A+B*
Condition Satisfied?	Not Satisfied	Not Satisfied	Not Satisfied
Required values reached for	2 hours	2 hours	2 (Cond. A) & 2 (Cond. B)
Criteria - Major Street (veh/hr)	350	525	280 (Cond. A) & 420 (Cond. B)
Criteria - Minor Street (veh/hr)	105	53	84 (Cond. A) & 42 (Cond. B)

\* Should be applied only after an adequate trial of other alternatives that could cause less delay and inconvenience to traffic has failed to solve the traffic problems.

Warrant 2, Four Hour Vehicular Volume	
Condition Satisfied?	Not Satisfied
Required values reached for	2 hours
Criteria	See Figure Below

Warrant 3, Peak Hour Vehicular Volume		
	Condition A	Condition B
Condition Satisfied?	Not Satisfied	Satisfied
Required values reached for	1488 total, 287 minor, 0 delay	2 hours
Criteria - Total Approach Volume (veh in one hour)	800	See Figure Below
Criteria - Minor Street High Side Volume (veh in one hour)	100	
Criteria - Minor Street High Side Delay (veh-hrs)	4	

Figure 4C-2 (Warrant 2 - 70% Factor) & Figure 4C-4 (Warrant 3 - 70% Factor)





# Traffic Signal Warrant Analysis

## Warrants 1 - 3 (Volume Warrants)

Project Name	Harris Creek Farm
Project/File #	20498 - 09
Scenario	2027 Build

Intersection Information			
Major Street (E/W Road)	Mitchell Mill Road	Minor Street (N/S Road)	Jonesville Road
Analyzed with	1 approach lane	Analyzed with	1 Approach Lane
Total Approach Volume	2212 vehicles	Total Approach Volume	887 vehicles
Total Ped/Bike Volume	0 crossings	Total Ped/Bike Volume	0 crossings
Right turn reduction of	0 percent applied	Right turn reduction of	0 percent applied

No high speed or isolated community reduction applied to the Volume Warrant thresholds.

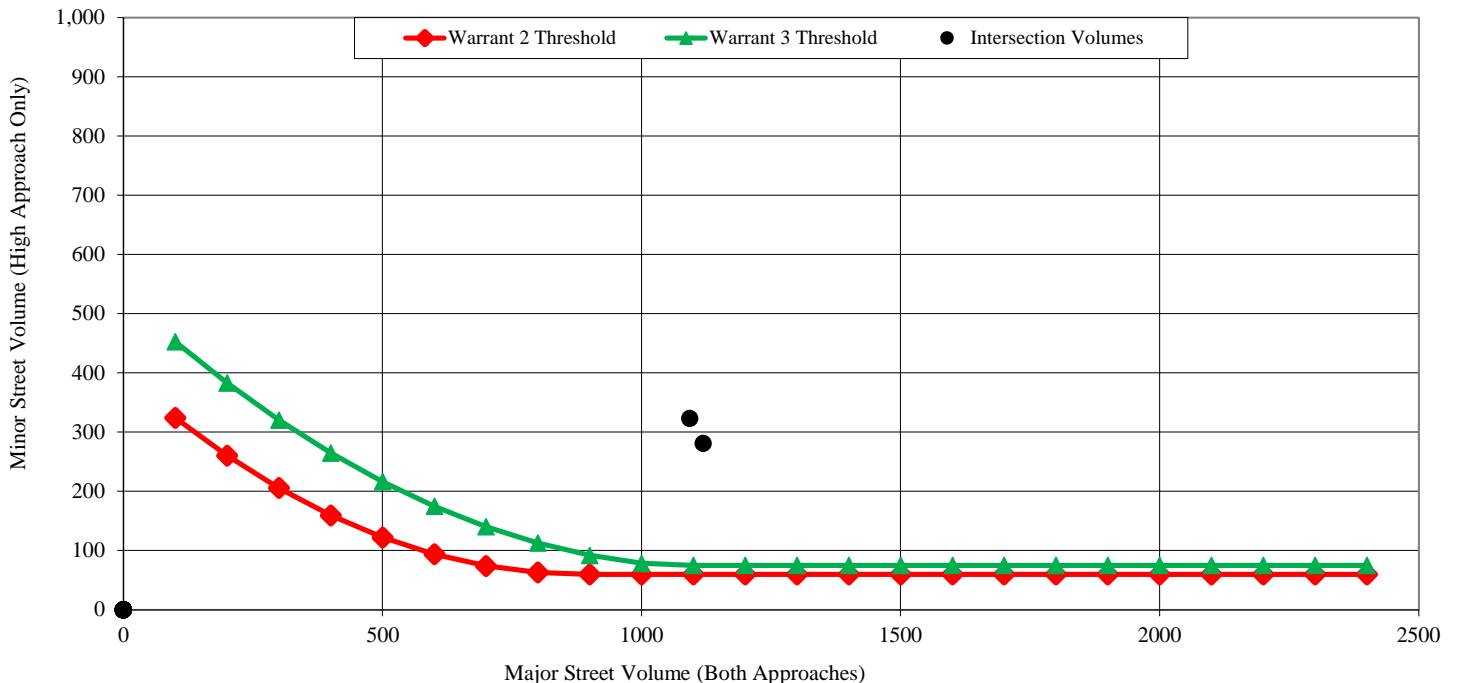
Warrant 1, Eight Hour Vehicular Volume			
	Condition A	Condition B	Condition A+B*
Condition Satisfied?	Not Satisfied	Not Satisfied	Not Satisfied
Required values reached for	2 hours	2 hours	2 (Cond. A) & 2 (Cond. B)
Criteria - Major Street (veh/hr)	350	525	280 (Cond. A) & 420 (Cond. B)
Criteria - Minor Street (veh/hr)	105	53	84 (Cond. A) & 42 (Cond. B)

\* Should be applied only after an adequate trial of other alternatives that could cause less delay and inconvenience to traffic has failed to solve the traffic problems.

Warrant 2, Four Hour Vehicular Volume	
Condition Satisfied?	Not Satisfied
Required values reached for	2 hours
Criteria	See Figure Below

Warrant 3, Peak Hour Vehicular Volume		
	Condition A	Condition B
Condition Satisfied?	Not Satisfied	Satisfied
Required values reached for	1536 total, 323 minor, 0 delay	2 hours
Criteria - Total Approach Volume (veh in one hour)	800	See Figure Below
Criteria - Minor Street High Side Volume (veh in one hour)	100	
Criteria - Minor Street High Side Delay (veh-hrs)	4	

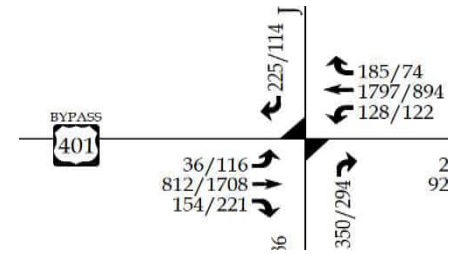
Figure 4C-2 (Warrant 2 - 70% Factor) & Figure 4C-4 (Warrant 3 - 70% Factor)



## US 401 Bypass & Jonesville Road [Minor-Street Right-Turn] [No-Build]

AM Peak Hour				
vph	g/c	a	b	c
720	0.7	0.00004	0.0108	0.2587
812	0.7	3.5E-05	0.010033	0.310936
900	0.7	0.00003	0.0093	0.3609

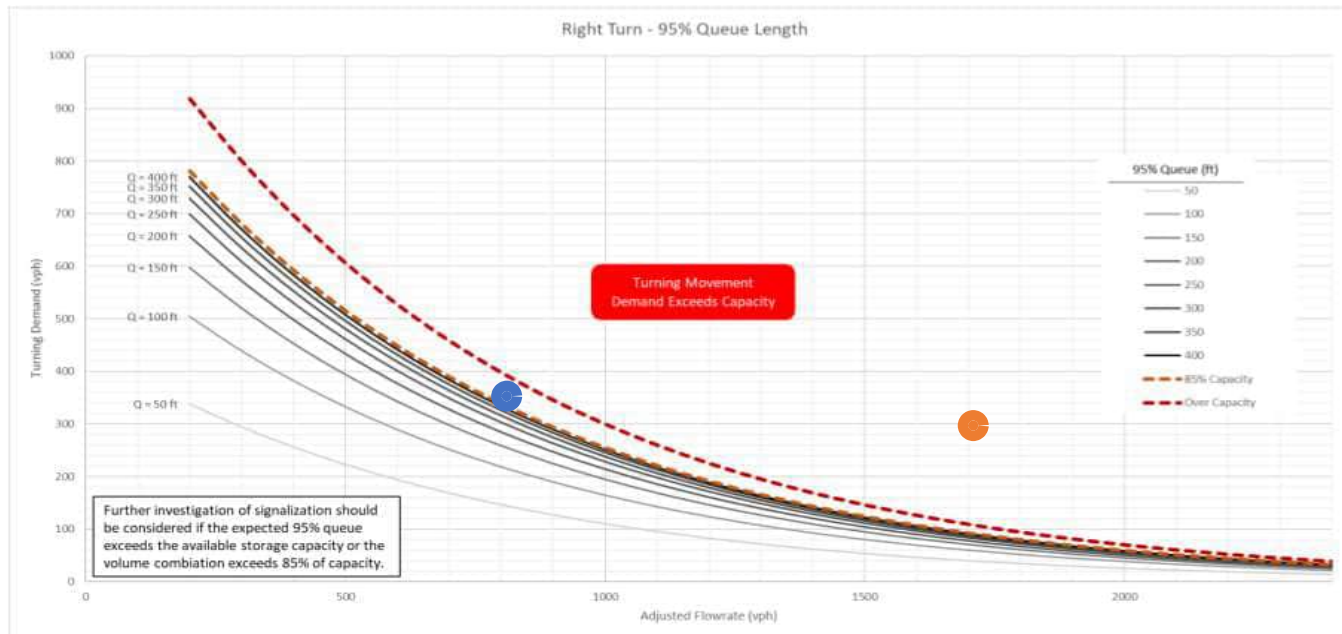
CVAF	1
Conflicting Volume (vph)	812
Adjusted Conflicting (vph)	812
Turning Volume (vph)	350



PM Peak Hour				
vph	g/c	a	b	c
1620	0.7	0.00004	0.0108	0.2587
1708	0.7	3.5E-05	0.010067	0.308664
1800	0.7	0.00003	0.0093	0.3609

CVAF	1
Conflicting Volume (vph)	1708
Adjusted Conflicting (vph)	1708
Turning Volume (vph)	294

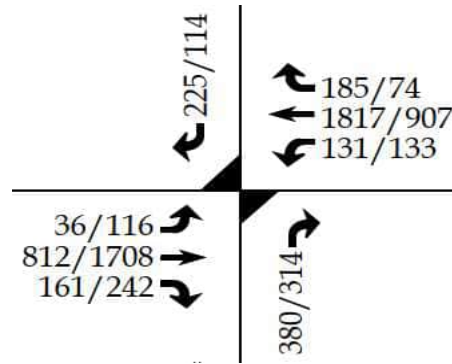
Distance to Upstream Signal	8800	ft
Posted Speed Limit	55	mph
Travel Time	109.09	s



## US 401 Bypass & Jonesville Road [Minor-Street Right-Turn] [Build]

AM Peak Hour				
vph	g/c	a	b	c
720	0.7	0.00004	0.0108	0.2587
812	0.7	3.5E-05	0.010033	0.310936
900	0.7	0.00003	0.0093	0.3609

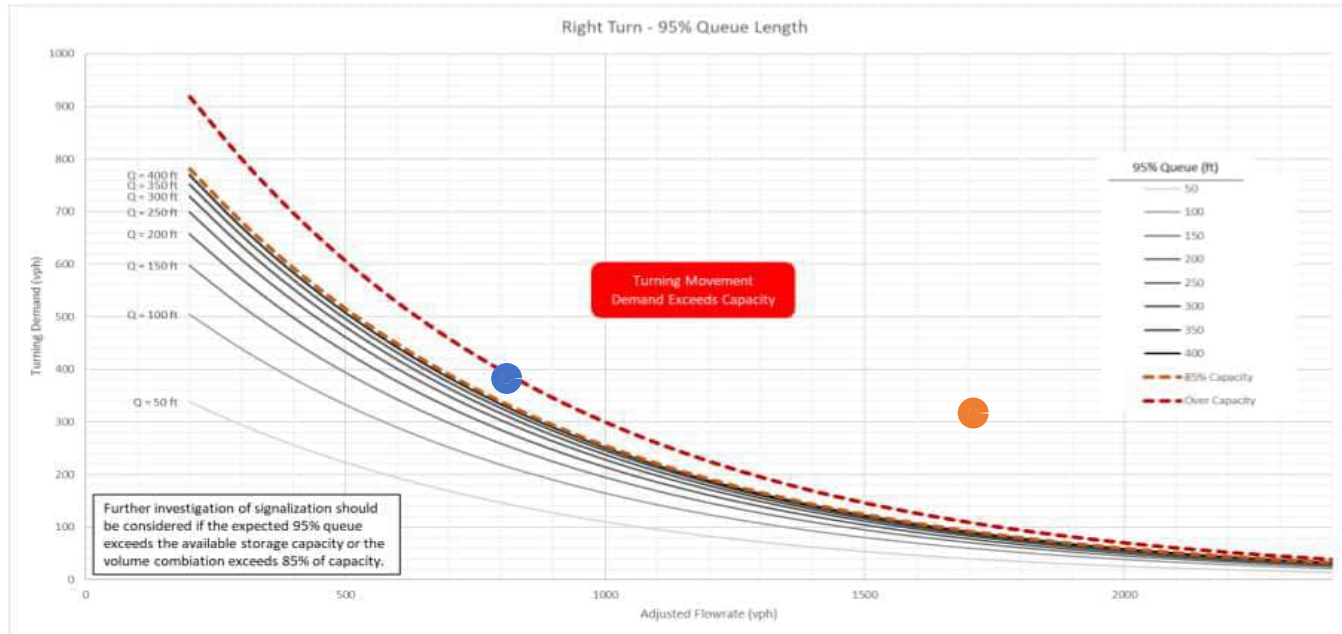
CVAF	
CVAF	1
Conflicting Volume (vph)	812
Adjusted Conflicting (vph)	812
Turning Volume (vph)	380



PM Peak Hour				
vph	g/c	a	b	c
1620	0.7	0.00004	0.0108	0.2587
1708	0.7	3.5E-05	0.010067	0.308664
1800	0.7	0.00003	0.0093	0.3609

CVAF	
CVAF	1
Conflicting Volume (vph)	1708
Adjusted Conflicting (vph)	1708
Turning Volume (vph)	314

Distance to Upstream Signal	8800	ft
Posted Speed Limit	55	mph
Travel Time	109.09	s



## US 401 Bypass & Jonesville Road [Major-Street Left-Turn] [No-Build]

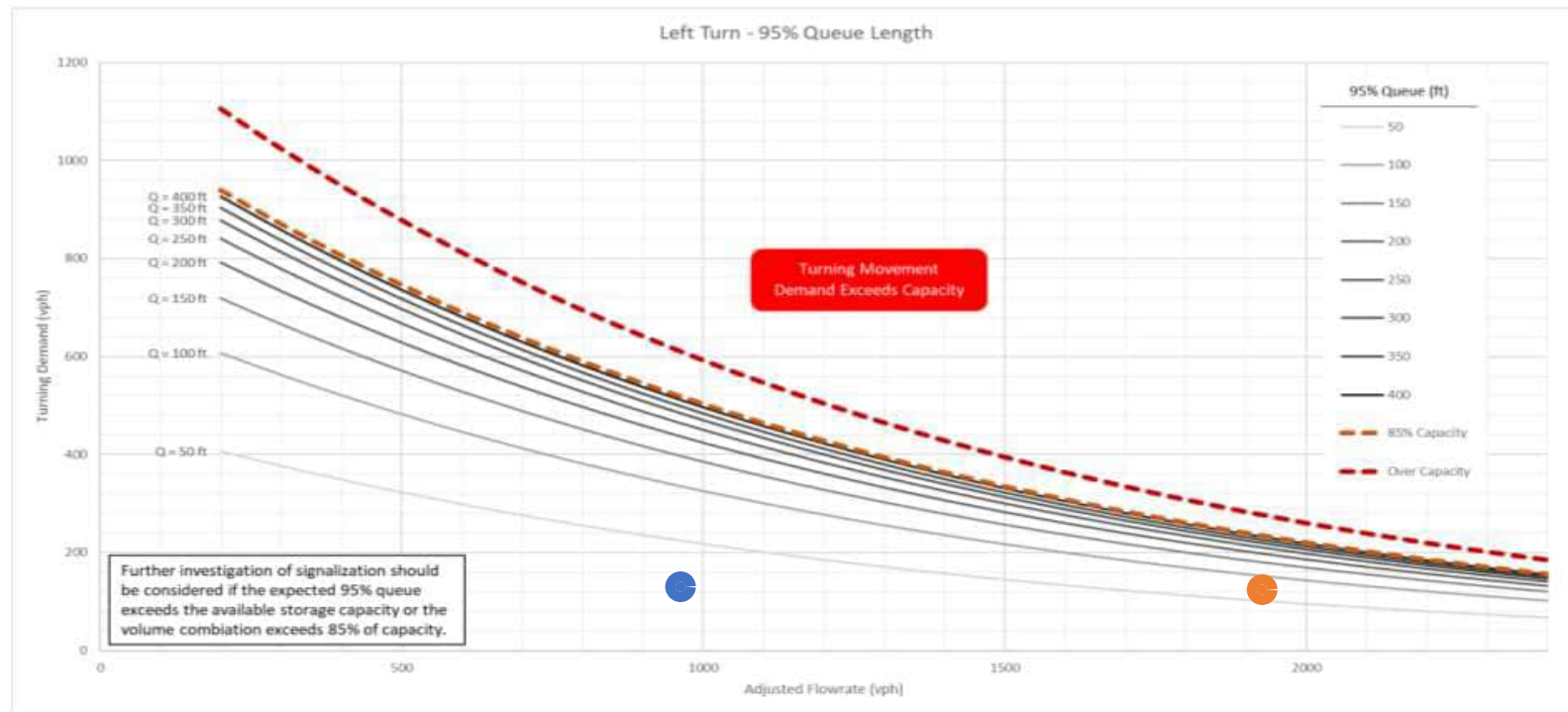
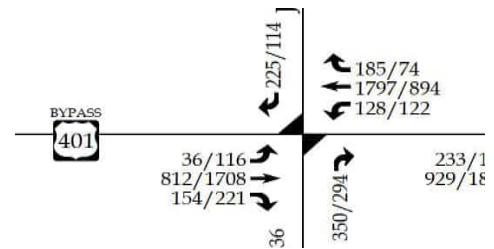
AM Peak Hour				
vph	g/c	a	b	c
900	0.7	0.00004	0.0097	0.4284
966	0.7	4.0E-05	0.00915	0.46261
1080	0.7	0.00004	0.0082	0.5217

CVAF	1
Conflicting Volume (vph)	966
Adjusted Conflicting (vph)	966
Turning Volume (vph)	128

PM Peak Hour				
vph	g/c	a	b	c
1800	0.7	0.00004	0.0097	0.4284
1929	0.7	4.0E-05	0.008625	0.495265
1980	0.7	0.00004	0.0082	0.5217

CVAF	1
Conflicting Volume (vph)	1929
Adjusted Conflicting (vph)	1929
Turning Volume (vph)	122

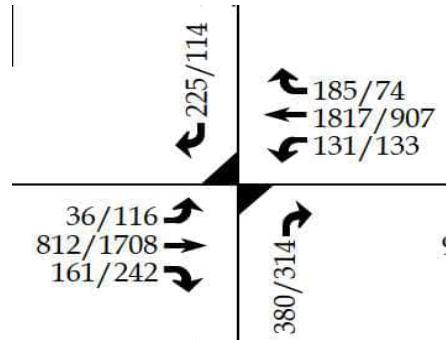
Distance to Upstream Signal	8800	ft
Posted Speed Limit	55	mph
Travel Time	109.09	s



## US 401 Bypass & Jonesville Road [Major-Street Left-Turn] [Build]

AM Peak Hour				
vph	g/c	a	b	c
900	0.7	0.00004	0.0097	0.4284
973	0.7	4.0E-05	0.009092	0.466238
1080	0.7	0.00004	0.0082	0.5217

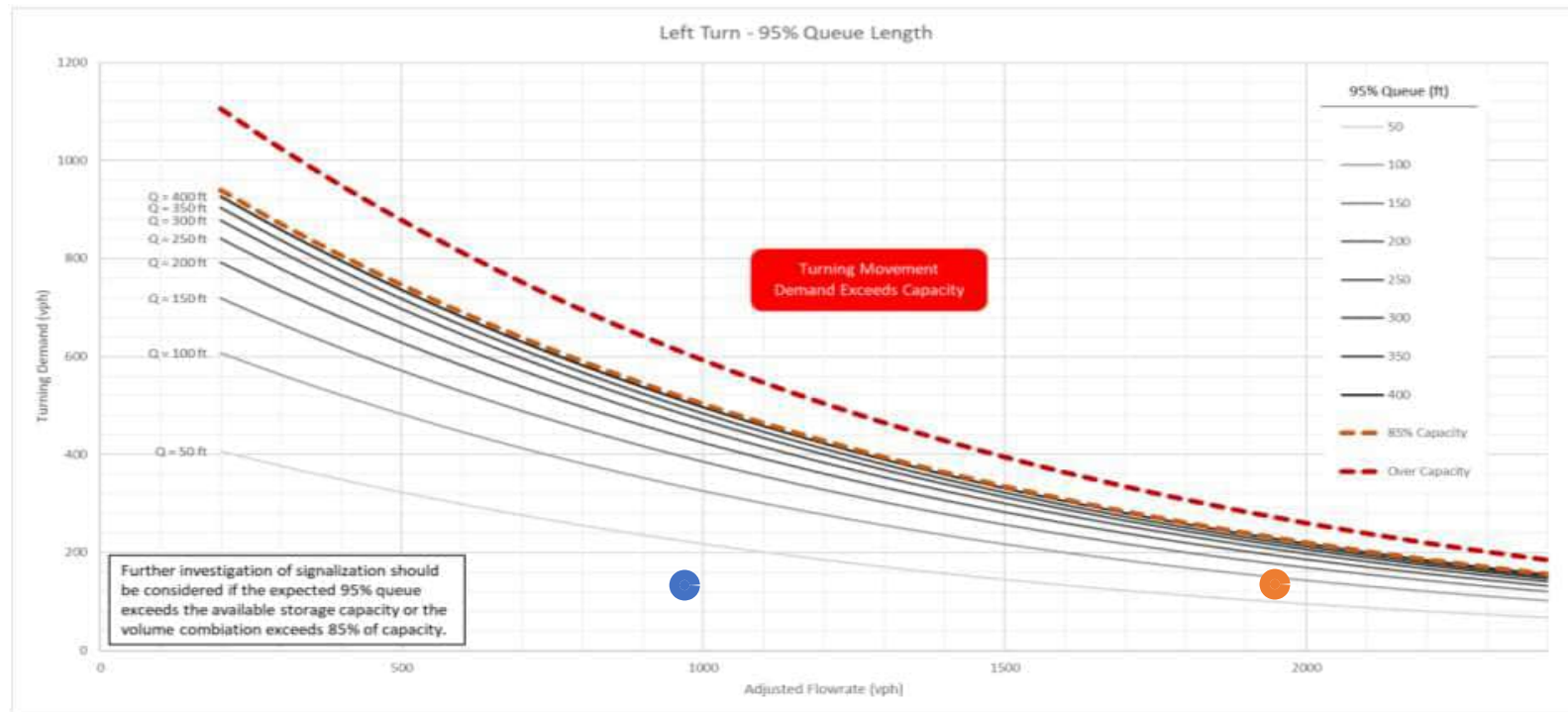
CVAF	1
Conflicting Volume (vph)	973
Adjusted Conflicting (vph)	973
Turning Volume (vph)	131



PM Peak Hour				
vph	g/c	a	b	c
1800	0.7	0.00004	0.0097	0.4284
1950	0.7	4.0E-05	0.00845	0.50615
1980	0.7	0.00004	0.0082	0.5217

CVAF	1
Conflicting Volume (vph)	1950
Adjusted Conflicting (vph)	1950
Turning Volume (vph)	133

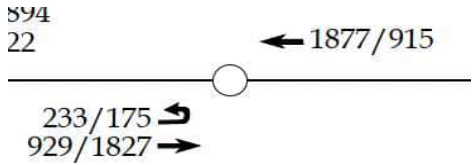
Distance to Upstream Signal	8800	ft
Posted Speed Limit	55	mph
Travel Time	109.09	s



# US 401 Bypass & Eastern U-Turn Location [Major-Street U-Turn] [No-Build]

AM Peak Hour				
vph	g/c	a	b	c
1800	0.7	0.00003	0.0072	0.5106
1877	0.7	3.0E-05	0.007114	0.522064
1980	0.7	0.00003	0.007	0.5374

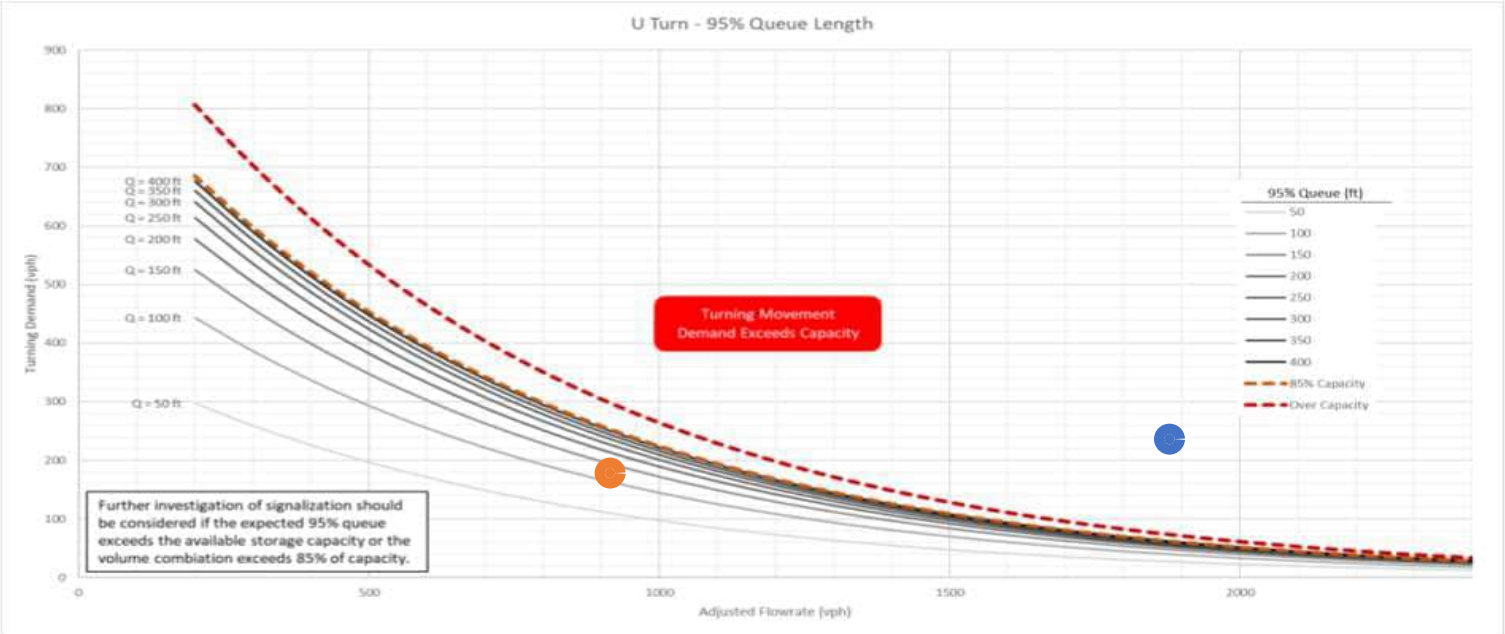
CVAF	
Conflicting Volume (vph)	1877
Adjusted Conflicting (vph)	1877
Turning Volume (vph)	233



PM Peak Hour				
vph	g/c	a	b	c
900	0.7	0.00003	0.0072	0.5106
915	0.7	3.0E-05	0.007183	0.512833
1080	0.7	0.00003	0.007	0.5374

CVAF	
Conflicting Volume (vph)	915
Adjusted Conflicting (vph)	915
Turning Volume (vph)	175

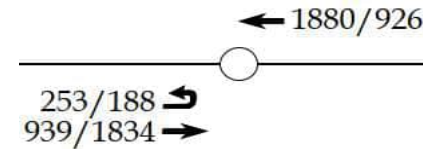
Distance to Upstream Signal	10000	ft
Posted Speed Limit	55	mph
Travel Time	123.97	s



## US 401 Bypass & Eastern U-Turn Location [Major-Street U-Turn] [Build]

AM Peak Hour				
vph	g/c	a	b	c
1800	0.7	0.00003	0.0072	0.5106
1880	0.7	3.0E-05	0.007111	0.522511
1980	0.7	0.00003	0.007	0.5374

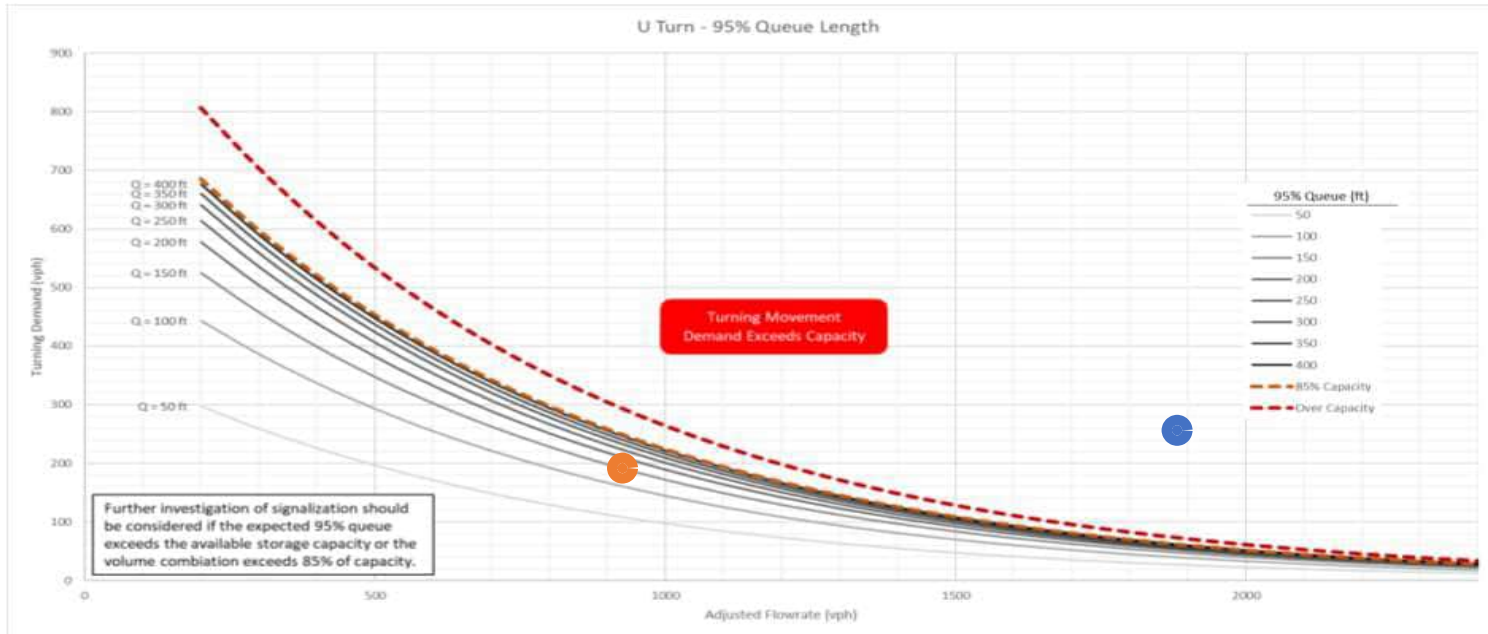
CVAF	1
Conflicting Volume (vph)	1880
Adjusted Conflicting (vph)	1880
Turning Volume (vph)	253



PM Peak Hour				
vph	g/c	a	b	c
900	0.7	0.00003	0.0072	0.5106
926	0.7	3.0E-05	0.007171	0.514471
1080	0.7	0.00003	0.007	0.5374

CVAF	1
Conflicting Volume (vph)	926
Adjusted Conflicting (vph)	926
Turning Volume (vph)	188

Distance to Upstream Signal	10000	ft
Posted Speed Limit	55	mph
Travel Time	123.97	s









STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION

Roy Cooper  
Governor

J. Eric Boyette  
Secretary

June 5, 2023

# Harris Creek Farm Development

## Traffic Impact Analysis Review Report Congestion Management Section

TIA Project: SC-2023-115  
Division: 5  
County: Wake



**Nicholas C. Lineberger, P.E. Regional Engineer**  
**Charles V. Sorrell, Project Engineer**  
**Daniel W. Collins, Project Design Engineer**

## Harris Creek Farm Development

SC-2023-115

Rolesville

Wake County

Per your request, the Congestion Management Section (CMS) of the Transportation Mobility and Safety Division has completed a review of the subject site. The comments and recommendations contained in this review are based on data for background conditions presented in the Traffic Impact Analysis (TIA) and are subject to the approval of the local District Engineer's Office and appropriate local authorities.

Date Initially Received by CMS	05/08/23	Date of Site Plan	09/30/22
Date of Complete Information	05/08/23	Date of Sealed TIA	05/08/23

## Proposed Development

The TIA assumes the development is completed by 2027 and consists of the following:

Land Use	Land Use Code	Size
Single-Family Detached Housing	210	68 d.u.
Single-Family Attached Housing	215	81 d.u.

## Trip Generation - Unadjusted Volumes During a Typical Weekday

	IN	OUT	TOTAL
AM Peak Hour	22	66	88
PM Peak Hour	70	44	114
Daily Trips			1,276

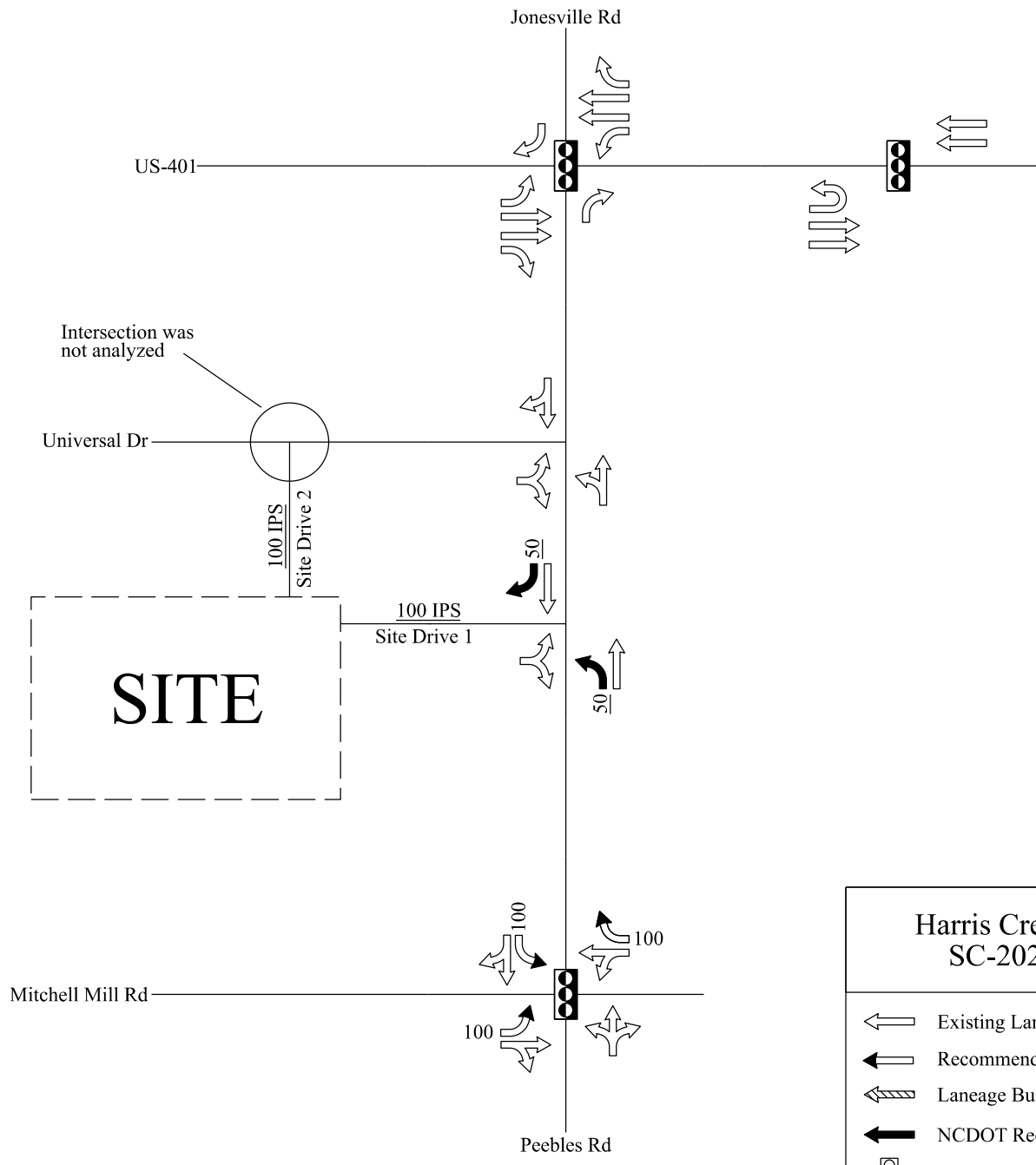
## General Reference

For reference to various documents applicable to this review please reference the following link: <https://connect.ncdot.gov/resources/safety/Pages/Congestion-Management.aspx>

Once the driveway permit has been approved and issued, a copy of the final driveway permit requirements should be forwarded to this office. If we can provide further assistance, please contact the Congestion Management Section.

## Signalization

We defer to the District Engineer, the Division Traffic Engineer, and the Regional Traffic Engineer for final decisions regarding signalization.



### Harris Creek Farm SC-2023-115

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



March 27, 2024

**Meredith Gruber, PLA, AICP**  
**Town of Rolesville**  
**502 Southtown Circle**  
**Rolesville, NC 27571**  
**P: 919-554-6517**  
**E: Meredith.gruber@rolesville.nc.gov**

**Reference: Harris Creek Farm – Rolesville, NC**

**Subject: Trip Generation**

Dear Ms. Gruber:

The contents of this letter document the change in land use type and density of the proposed Harris Creek Farm development. A traffic impact analysis (TIA) for this development was sealed on May 8, 2023 and subsequently approved by the North Carolina Department of Transportation (NCDOT). The TIA assumed the development would consist of 68 single-family detached homes, and 81 townhomes. The site plan has changed, and now proposes 120 single-family detached homes. This letter compares the trip generation used in the TIA with new calculations based on the latest site plan.

### **Site Location and Development Plan**

The site is located on the west side of Jonesville Road near Universal Drive. Two driveways are proposed: one on Jonesville Road, and one on Universal Drive. Both are full access intersections with stop control on the driveway. The development proposes 120 single-family detached homes. The latest site plan is attached.

### **Trip Generation Comparison**

The trip generation used in the approved TIA was compared with new calculations based on the latest site plan. The approved TIA assumed the development would consist of 68 single-family detached homes, and 81 townhomes. The site plan has changed, and now proposes 120 single-family detached homes.

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*, 11.1 Edition. Table 1 provides a trip generation comparison between the approved TIA site plan and the latest site plan.

**Table 1: Trip Generation Comparison**

Land Use (ITE Code)	Intensity	Daily Traffic (vpd)	Weekday AM Peak Hour Trips (vph)		Weekday PM Peak Hour Trips (vph)	
			Enter	Exit	Enter	Exit
<b>Approved TIA Site Plan</b>						
Single-Family Detached Housing (210)	68 DU	708	13	39	44	25
Single-Family Attached Housing (215)	81 DU	568	9	27	26	19
TOTAL		1,276	22	66	70	44
<b>Latest Site Plan</b>						
Single-Family Detached Housing (210)	120 DU	1,193	22	66	74	44
<b>Difference</b>		-83	0	0	4	0

The trip generation based on the latest site plan is nearly the same as that used in the approved TIA. Daily trips are 83 vehicles lower. The number of trips entering during the PM peak hour are 4 vehicles higher. This increase is not enough to change the recommendations of the approved TIA. All other values are the same.

## Conclusion

A TIA for this development was sealed on May 8, 2023 and subsequently approved by NCDOT. The TIA assumed the development would consist of 68 single-family detached homes, and 81 townhomes. The site plan has changed, and now proposes 120 single-family detached homes. The trip generation used in the approved TIA was compared with new calculations based on the latest site plan. The latest site plan is expected to generate 83 fewer daily trips. The number of trips entering during the PM peak hour are expected to be 4 vehicles higher. This increase is not enough to change the recommendations of the approved TIA. All other trip generation values are equal.

If you should have any questions regarding this analysis, please contact me at (704) 549-4260.

Sincerely,

A handwritten signature in black ink that reads "J. Andrew Eagle".

J. Andrew Eagle, PE, PTOE

Senior Traffic Engineering Project Manager

DRMP, Inc.

License #F-1489

## Attachments

- Latest Site Plan

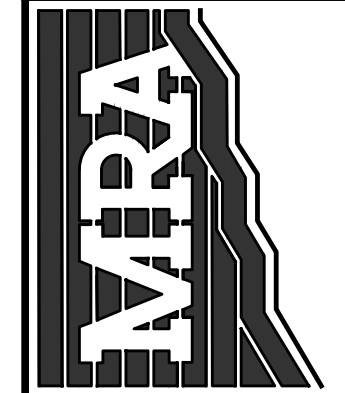




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DATE	REVISIONS

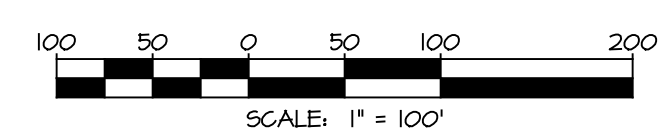
**MORRIS & RITCHIE ASSOCIATES OF NC, PC**  
 ENGINEERS, PLANNERS, SURVEYORS AND LANDSCAPE ARCHITECTS  
 5605 CHAPEL HILL RD, STE 112  
 RALEIGH, NC 27607  
 (984) 200-2103  
 MIRAGTA.COM  
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PRELIMINARY  
 NOT FOR CONSTRUCTION

CONCEPT SKETCH  
 JONESVILLE ROAD SUBDIVISION  
 CONCEPT

JOB NO.:	
SCALE: 1" = 100'	
DATE: 05/03/2022	
DRAWN BY:	
DESIGN BY:	
REVIEW BY:	
SHEET: 1 OF 1	





# TOWN OF ROLESVILLE PETITION FOR ANNEXATION

The items below are required in order to complete your application and shall be submitted when the application is filed.

1. A complete copy of the last deed of record for proof of ownership
2. An annexation boundary plat/map for recordation at the Wake County Register of Deeds Office (mylar plat) prepared by a professional land surveyor showing the boundaries of the area or property for annexation into the Town of Rolesville.
3. A complete copy of the written metes and bounds description based on the annexation boundary plat/map.

## SECTION 1 -

Is the area contiguous with the existing primary corporate limits? Satellite corporate limits is not primary.  Yes or  No

*Note: If the land is contiguous to any existing corporate limits, the proposed annexation boundary will include all intervening right-of-ways for streets, easements, and other areas as stated in North Carolina General Statute §160-131(1).*

## SECTION 2 - VESTED

NC General Statutes require petitioners of both contiguous and non-contiguous annexations to file a signed statement declaring whether vested rights have been established in accordance with G.S. 160A-385.1 or 153A-344.1 for properties subject to the petition. Do you

declare vested rights for the property subject to this petition?  Yes or  No

## SECTION 3 - PROPERTY

PIN Number	Real Estate ID Number	Deed Book Number	Page Number	Acreage To Be Annexed	Wake County Assessed Value
1757277811	0057413	DB 018953	PG 00623	71.52	\$1,061,940
1757375276	0057448	DB 018953	PG 00623	0.44	\$8,000
1757375365	0057447	DB 018953	PG 00623	0.41	\$8,000
1757375464	0057446	DB 018953	PG 00623	0.48	\$8,000
1757375575	0057445	DB 018953	PG 00623	0.45	\$19,200
1757375665	0057444	DB 018953	PG 00623	0.46	\$19,200
1757375765	0057443	DB 018953	PG 00623	0.46	\$19,200
1757375865	0057442	DB 018953	PG 00623	0.46	\$19,200
1757375975	0057441	DB 018953	PG 00623	0.46	\$19,200
1757385064	0057440	DB 018953	PG 00623	0.45	\$19,200
1757384572	0057429	DB 018953	PG 00623	0.49	\$19,200
1757383572	0057430	DB 018953	PG 00623	0.48	\$19,200
1757368816	0057438	DB 018953	PG 00623	0.69	\$8,000
1757378013	0057437	DB 018953	PG 00623	0.54	\$8,000
1757378109	0057436	DB 018953	PG 00623	0.53	\$8,000
1757378303	0057435	DB 018953	PG 00623	0.53	\$8,000
1757377990	0057431	DB 018953	PG 00623	0.35	\$19,200
1757471559	0345866	DB 018963	PG 00592	14.90	\$187,099
1757385349	0057439	DB 018953	PG 00623	0.28	\$19,200



**SECTION 4 - SIGNATURES AND VERIFICATION**

We, the undersigned owners of the real properties contained in the metes and bounds description and plat/map attached hereto, respectfully request that the area described above be annexed and made part of the Town of Rolesville, North Carolina. By signing below, we acknowledge that all information is correct.

- If property owned by INDIVIDUALS (NOTE: All legal owners must sign including both husband and wife)

*[Signature]* 6/8/2022  
 Signature of Owner #1 CHEN, PING Date Signed  
10030 GREEN LEVEL CHURCH RD STE 802  
 Signature of Owner #2 CARY NC 27519-8195 Date Signed

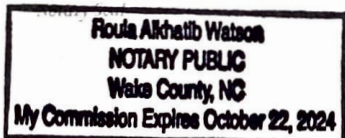
- If property owned by a COMPANY OR CORPORATION (NOTE: The company or corporation must be legally registered with the State of North Carolina – Office of the Secretary of State)

\_\_\_\_\_  
 Name of Corporation  
 \_\_\_\_\_  
 Printed Name of Registered Agent Signature of Registered Agent  
 \_\_\_\_\_  
 Address, State, Zip of Registered Office:

North Carolina, Wake County

I, Paula Alkhatib Watson Notary Public for said County and State, do hereby certify that the above signed individual(s) appeared before me this day and signed the foregoing instrument. Witness my hand and official seal, this 8th day of June, 2022.

*Paula Alkhatib Watson*  
 Notary Public  
 My commission expires: 10/22/2024



# MORRIS & RITCHIE ASSOCIATES OF NC, PC

AN AFFILIATE OF MORRIS & RITCHIE ASSOCIATES, INC. WHICH PROVIDES ENGINEERING, ARCHITECTURE, PLANNING, SURVEYING & LANDSCAPE ARCHITECTURE THROUGHOUT THE MID-ATLANTIC REGION AND LANDSCAPE ARCHITECTS



**Legal Description - New Parcel**  
**93.609 Acres**  
**Portion of Lands of Ping Chen**  
**Wake Forest Township – Wake County, North Carolina**

All that certain parcel of land lying generally easterly of Jonesville Road, being located in Wake Forest Township, Wake County, North Carolina and being a portion of those lands described in deed dated March 11, 2022 from Jerri Jo Miller, Tammy Gower Batts, Clifton Edward Blackley and spouse Joetta May Blackley, Grantor to Ping Chen and recorded in the Land Records of Wake County, North Carolina in Deed Book 18953, page 592 and page 623, being more particularly described as follows, to wit:

**Beginning** at a PK nail set in an existing concrete monument on the Southwestern right-of-way of Jonesville Road, having North Carolina state plane coordinates N: 777,906.672 E: 2,154,356.044. Thence, with said right-of way, South 68°36'32" West 20 feet to a concrete monument on the Southwestern right-of-way line of Jonesville Road; thence, with said right-of-way and along a curve with a cord bearing distance South 25°28'26" East 211.09 feet and a radius of 1,482.39 feet to an iron pipe; thence along said right-of-way, South 30°07'39" East 362.89 feet to an iron pipe; thence leaving said right-of-way, South 03°57'31" West 224.45 feet to a point; thence, South 62°24'06" West 140.83 feet to a point; thence, North 85°00'48" West 220.39 feet to a point; thence, South 71°32'01" West 167.97 feet to a point; thence, South 55°11'46" West 260.01 feet to a point; thence South 00°19'06" East to an iron pipe; thence, South 77°03'58" West 613.86 feet to an iron pipe; thence, North 00°39'34" West 210.00 feet to an iron pipe; thence, North 89°39'42" West 210.07 feet to an iron pipe; thence, North 89°33'15" West 60.01 feet to an iron pipe; thence, North 89°33'15" West 194.65 feet to an iron pipe; thence, North 89°37'28" West 192.36 feet to an iron pipe; thence, South 89°58'04" West 545.58 feet to an iron pipe; thence, South 89°41'47" West 571.90 feet to an iron pipe; thence, North 12°14'25" East 513.70 feet to an iron pipe; thence, South 60°15'35" East 257.50 feet to an iron pipe; thence, South 68°15'35" East 360.30 feet to an iron pipe; thence, North 03°35'25" East 604.00 feet to an iron pipe; thence, North 56°00'58" West 420.00 feet to an iron pipe; thence, South 65°29'02" West 130.00 feet to an iron pipe; thence, South 42°57'43" West 270.40 feet to an iron pipe; thence, North 01°21'15" West 719.72 feet to an axle; thence, North 87°42'39" East 434.84 feet to an iron pipe; thence, North 02°13'13" East 238.07 feet to an iron pipe; thence, South 89°16'24" East 821.92 feet to an iron pipe; thence, South 02°47'46" East 100.00 feet to an iron pipe; thence, South 89°47'46" East 150.00 feet to an iron pipe; thence, North 55°18'54" East 174.59 feet to an iron pipe; thence, South 88°45'46" East 396.99 feet to an iron pipe; thence, South 00°09'07" East 210.02 feet to an iron pipe; thence, South 89°21'02" East 175.02 feet to an iron pipe on the Western right-of-way of Gideon Drive; thence with said right-of-way, South 31°00'37" West 57.95 feet to an iron pipe; thence leaving said right of way, North 89°21'02" West 245.02 feet to an iron pipe; thence, South 00°09'07" East 175.02 feet to an iron pipe; thence, South 89°21'02" East 45.00 feet to an iron pipe; thence, South 00°09'07" East 100.01 feet to an iron pipe; thence, South 89°21'02" East 200.02 feet to an iron pipe on the Western right-of-way of Gideon Drive; thence with said right-of-way, South 01°21'41" East

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Abingdon, MD ♦ Baltimore, MD ♦ Laurel, MD ♦ Towson, MD ♦ Georgetown, DE ♦ New Castle, DE ♦ Leesburg, VA ♦ Raleigh, NC  
(410) 515-9000 (443) 490-7201 (410) 792-9792 (410) 821-1690 (302) 855-5734 (302) 326-2200 (703) 994-4047 (984) 200-2103

# MORRIS & RITCHIE ASSOCIATES OF NC, PC

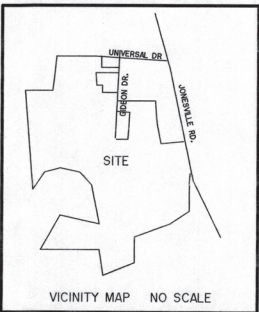
AN AFFILIATE OF MORRIS & RITCHIE ASSOCIATES, INC. WHICH PROVIDES ENGINEERING, ARCHITECTURE, PLANNING, SURVEYING & LANDSCAPE ARCHITECTURE THROUGHOUT THE MID-ATLANTIC REGION AND LANDSCAPE ARCHITECTS



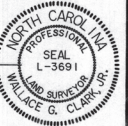
667.14 feet to a point; thence crossing and leaving said right of way, South 88°47'24" East 210.08 feet to an iron pipe; thence North 00°34'22" West 421.87 feet to a point; thence, South 88°57'37" West 150.00 feet to a point on the Eastern right-of-way of Gideon Drive; thence with said right-of-way, North 00°53'13" West 100.00 feet to a point; thence leaving said right-of-way, North 88°57'37" East 150.00 feet to a point; thence, North 00°53'16" West 390.32 feet to an axle; thence, South 89°32'03" East 237.94 feet to a point; thence, South 06°57'52" East 113.70 feet to a point; thence, South 12°21'20" East 211.32 feet to an iron pipe; thence, North 73°55'50" East 149.95 feet to an iron pipe on the Southwestern right-of-way of Jonesville Road; thence, with said right-of-way and along a curve with a bearing and distance of South 19°15'36" East 146.36 feet and a radius of 1,462.39 feet to the point of beginning. Containing **93.609 AC.±**.

The total area of the **New Parcel 1** herein described being a portion of Tract 1 as described in deed dated March 11, 2022 from Jerri Jo Miller, Tammy Gower Batts, Clifton Edward Blackley and spouse Joetta May Blackley, Grantor to Ping Chen and recorded in the Land Records of Wake County, North Carolina in Deed Book 18953, page 592 and page 623, and containing a total area of **93.609 AC.±** and being subject to any and all matters of which a current title package would disclose.

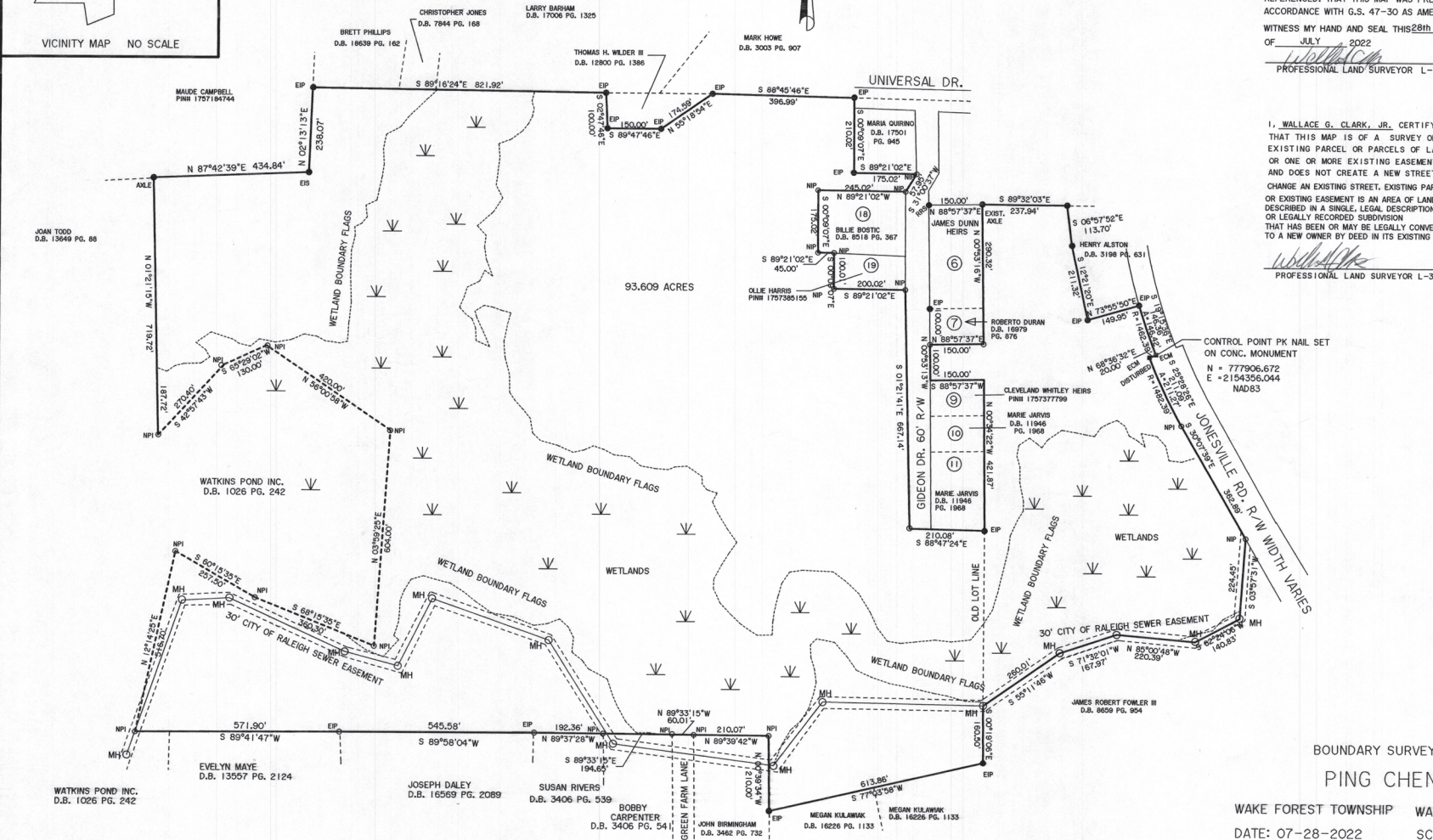




I, WALLACE G. CLARK, JR., CERTIFY THAT THIS PLAT WAS DRAWN UNDER MY SUPERVISION OF AN ACTUAL SURVEY MADE UNDER MY SUPERVISION. THAT THE RATIO OF PRECISION AS CALCULATED IS 1:10,000. THAT THE BOUNDARIES NOT SURVEYED ARE SHOWN AS BROKEN LINES PLOTTED FROM INFORMATION FOUND IN BOOKS REFERENCED. THAT THIS MAP WAS PREPARED IN ACCORDANCE WITH G.S. 47-30 AS AMENDED. WITNESS MY HAND AND SEAL THIS 28th DAY OF JULY, 2022



I, WALLACE G. CLARK, JR., CERTIFY THAT THIS MAP IS OF A SURVEY OF AN EXISTING PARCEL OR PARCELS OF LAND OR ONE OR MORE EXISTING EASEMENTS AND DOES NOT CREATE A NEW STREET OR CHANGE AN EXISTING STREET, EXISTING PARCEL OR EXISTING EASEMENT IS AN AREA OF LAND DESCRIBED IN A SINGLE, LEGAL DESCRIPTION OR LEGALLY RECORDED SUBDIVISION THAT HAS BEEN OR MAY BE LEGALLY CONVEYED TO A NEW OWNER BY DEED IN ITS EXISTING CONFIGURATION.

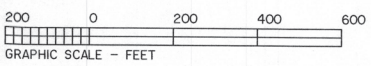


THIS MAP IS A COMPOSITE BOUNDARY OF THE FOLLOWING PARCELS.  
 PID# 0057413, 0057429, 0057430, 0057440, 0057441, 0057442, 0057443, 0057444, 0057445, 0057446, 0057447, 0057448, 0057435, 0057436, 0057437, 0057438, 0057439, 0345886, 0057431

BOUNDARY SURVEY FOR  
PING CHEN

WAKE FOREST TOWNSHIP WAKE COUNTY, N.C.  
DATE: 07-28-2022 SCALE: 1" = 200'

GIL CLARK SURVEYING L.I.C. F-0739  
P.O. BOX 1243  
KNIGHTDALE, NORTH CAROLINA 27545  
TEL (919) 266-9711 FAX (919) 266-9732



NOTE: ALL WETLANDS FLAGS WERE DELINEATED BY ECOTEX

**NORTH CAROLINA  
GENERAL WARRANTY DEED**

---

Excise Tax: **\$ 0.00** Recording Time, Book and Page  
Account No. Parcel Identifier No. 0057413, 0057429, 0057430, 0057431, 0057435, 0057436, 0057437,  
0057438, 0057439, 0057440, 057441, 0057442, 057443, 0057444, 0057445, 0057446, 0057447, 0057448,  
0345866 and 0122598

---

Mail after recording to: GRANTEES @ 10030 Green Level Church Road Suite 802, #149, Cary, NC 27519  
This instrument was prepared by: Ewing Law Center, P.C. (Carey L. Ewing, Esq.) without benefit of a title examination.

---

THIS DEED made this 24<sup>th</sup> day of January, 2023 by and between

---

**GRANTOR**

**Ping Chen and Fanxing Li, a Married Couple  
10030 Green Level Church Road Suite 802, #149, Cary, NC 27519**

---

**GRANTEE**

**Kenneth Investment, LLC, a North Carolina Limited Liability Company  
10030 Green Level Church Road Suite 802, #149, Cary, NC 27519**

---

The designation Grantor and Grantee as used herein shall include said parties, their heirs, successors, and assigns, and include singular, plural, masculine, feminine or neuter as required by context.

WITNESSETH, that the Grantors, for a valuable consideration paid by the Grantee, the receipt of which is hereby acknowledged, has and by these presents does grant, bargain, sell and convey unto the Grantee in fee simple, all that certain lot or parcel of land and more particularly described as follows:

submitted electronically by "Ewing Law Center, PC"  
in compliance with North Carolina statutes governing recordable documents  
and the terms of the submitter agreement with the Wake County Register of Deeds.

**SEE ATTACHED EXHIBIT A**

The described property is more commonly known as:

**TRACT 1:** All or a portion of the property hereinabove described was acquired by Grantors by instrument recorded in Book 18953, Page 623, Wake County Registry. A map showing the above described property is recorded in Book of Maps 1971, Volume II, Page 127, Wake County Registry.

**TRACT 2:** All or a portion of the property hereinabove described was acquired by Grantors by instrument recorded in Book 18953, Page 592, Wake County Registry. A map showing the above described property is recorded in Book of Maps 2007, Page 1224, Wake County Registry.

**TRACT 3:** All or a portion of the property hereinabove described was acquired by Grantors by instrument recorded in Book 18943, Page 2656, Wake County Registry. A map showing the above described property is recorded in Book of Maps 1982, Page 473, Wake County Registry.


The above described property  does  does not include the primary residence of the Grantors.


TO HAVE AND TO HOLD the aforesaid lot or parcel of land and all privileges and appurtenances thereto belonging to the Grantee in fee simple.

And the Grantors covenants with the Grantee, that Grantors are seized of the premises in fee simple, has the right to convey the same in fee simple, that title is marketable and free and clear of all encumbrances, and that Grantors will warrant and defend the title against the lawful claims of all persons whomsoever except for the exceptions hereinafter stated.

Title to the property hereinabove described is subject to the following exceptions: NONE KNOWN.

**IN WITNESS WHEREOF, the Grantors has hereunto set his hand and seal, or if corporate, has caused this instrument to be signed in its corporate name by its duly authorized officer(s), the day and year first above written.**


  
\_\_\_\_\_  
Ping Chen

  
\_\_\_\_\_  
Fanxing Li

STATE OF NORTH CAROLINA  
COUNTY OF DURHAM

I, CAREY L. EWING, a Notary Public for DURHAM County, State of NORTH CAROLINA, certify that Ping Chen and Fanxing Li, personally appeared before me this day, acknowledging to me that he/she/they signed the foregoing document: NORTH CAROLINA GENERAL WARRANTY DEED. Witness my hand and official stamp or seal, this the 24<sup>th</sup> day of January, 2023.

My Commission Expires: 06/13/2027

  
\_\_\_\_\_  
NOTARY PUBLIC: CAREY L. EWING

Carey L. Ewing  
NOTARY PUBLIC  
Durham County, N.C.

## Exhibit "A"

**TRACT 1:**

BEGINNING at a new iron pipe located in a gravel private road known as "Universal Road", which iron pipe is located South 85° 36' 09" East 766.15 feet from the intersection of the center lines of Jonesville Road and Universal Road; thence South 4° 41' 55" West 210.02 feet to a new iron pipe; thence South 84° 30' 00" East 175.02 feet to a new iron pipe; then South 35° 51' 39" West 57.95 feet to a new iron pipe; thence 84° 30' 00" East 175.02 feet to a new iron pipe; thence North 84° 30' 00" West 245.02 feet to a new iron pipe; thence South 04° 41' 55" West 175.03 feet to a new iron pipe; thence South 84° 30' 00" East 45.00 feet to a new iron pipe; thence South 04° 41' 55" West 100.01 feet to a new iron pipe; thence South 84° 30' 00" East 200.02 feet to a new iron pipe; thence 04° 41' 55" West 669.02 feet to a new iron pipe; thence South 84° 30' 00" East 200.00 feet to a new iron pipe; thence South 04° 41' 55" West 649.26 feet to an existing iron pipe; thence South 80° 50' 51" West 613.86 feet to an existing iron pipe; thence North 04° 00' 42" East 221.14 feet to a new iron pipe; thence North 84° 47' 09" West 656.86 feet to an existing iron pipe; thence North 85° 13' 27" West 545.51 feet to an existing iron pipe; thence North 85° 27' 18" West 571.35 feet to an existing iron pipe; thence North 16° 54' 52" East 516.50 feet to a new iron pipe; thence South 55° 35' 08" East 257.50 feet to a new iron pipe; then South 63° 35' 08" East 360.30 feet to a new iron pipe; thence North 08° 39' 52" East 604.00 feet to appoint; thence North 51° 35' 08" West 420.00 to a point; thence South 69° 54' 52" West 130.00 feet to a point; thence South 47° 24' 52" West 270.50 feet to a point; thence North 03° 24' 52" East 719.72 to an existing iron bar; thence South 87° 31' 14" East 434.72 to an existing iron pipe; thence North 06° 54' 46" East 238.00 feet to a new iron pipe; thence South 84° 30' 00" East 850.00 feet to a new iron pipe; thence South 02° 30' 00" West 100.00 feet to a new iron pipe; thence South 84° 30' 00" East 150.00 feet to a new iron pipe; thence North 02° 30' 00" East 100.00 feet to a new iron pipe; thence South 84° 30' 00" East 542.15 feet to a new iron pipe, the point and place of beginning, and being that tract of 78.289 acres in size, more or less, as shown on that map entitled "Survey for June M. Privette Heirs", prepared by W. Graham Cawthorne, Jr., R.L.S., and dated April 28, 1993.

In addition, being all of that real property described as Lot 8 according to that map entitled "Plot of farm belonging to June M. and Mary C. Privette", prepared by Pittman Estelle on February 6, 1947, and revised by T.M. Arrington, Jr., R.L.S., on March 18, 1964, and March 26, 1969, a copy of which is recorded in Wake County Book of Maps 1971, Volume II, Page 127.

Parcel ID #: 0057413, 0057429, 0057430, 0057431, 0057435, 0057436, 0057437, 0057438, 0057439, 0057440, 057441, 0057442, 057443, 0057444, 0057445, 0057446, 0057447, 0057448.

**TRACT 2:**

BEING all of that certain tract of land containing 14.90 acres and being designated as Lot No. 1, according to map recorded in Book of Maps 2007, Page 1224, Wake County Registry.

Parcel ID #: 0345866

**TRACT 3:**

BEING all of Tract 4, as depicted on a map entitled "Property Surveyed for Leonard Dean Estate", dated February 16, 1982, prepared by Mullen, Williamss, & Pearce, P.A., Registered Land Surveyors, and recorded in Book of Maps 1982, Page 473, Wake County Registry.

Parcel # 0122598



**CERTIFICATE OF SUFFICIENCY**

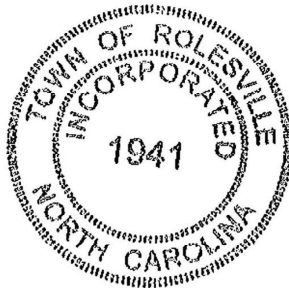
**ANX22-05 - Harris Creek Farm**

To the Board of Commissioners of the Town of Rolesville, North Carolina:

I, Robin E. Peyton, Town Clerk, do hereby certify that I have investigated the attached petition and hereby make the following findings:

- a. The petition contains an adequate property description of the area(s) proposed for annexation.
- b. The area described in the petition is contiguous to the Town of Rolesville primary corporate limits as required by G.S. 160A-31.
- c. The petition is signed by all owners of real property lying in the area described therein.

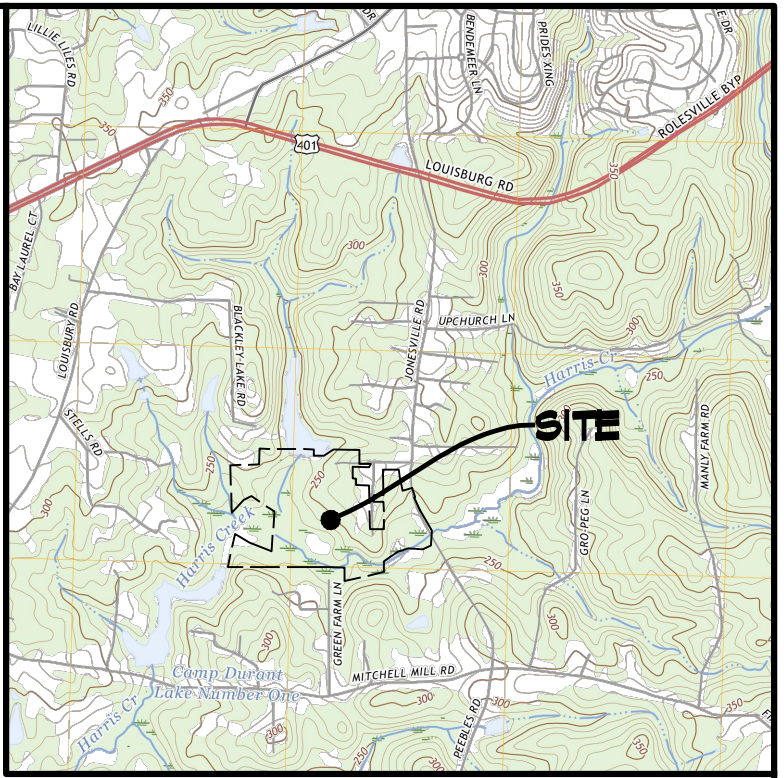
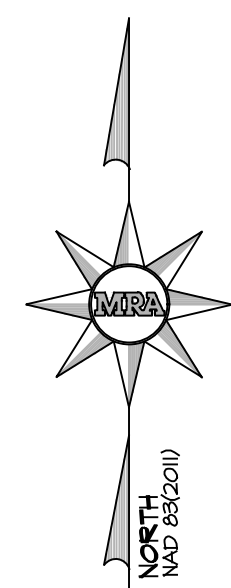
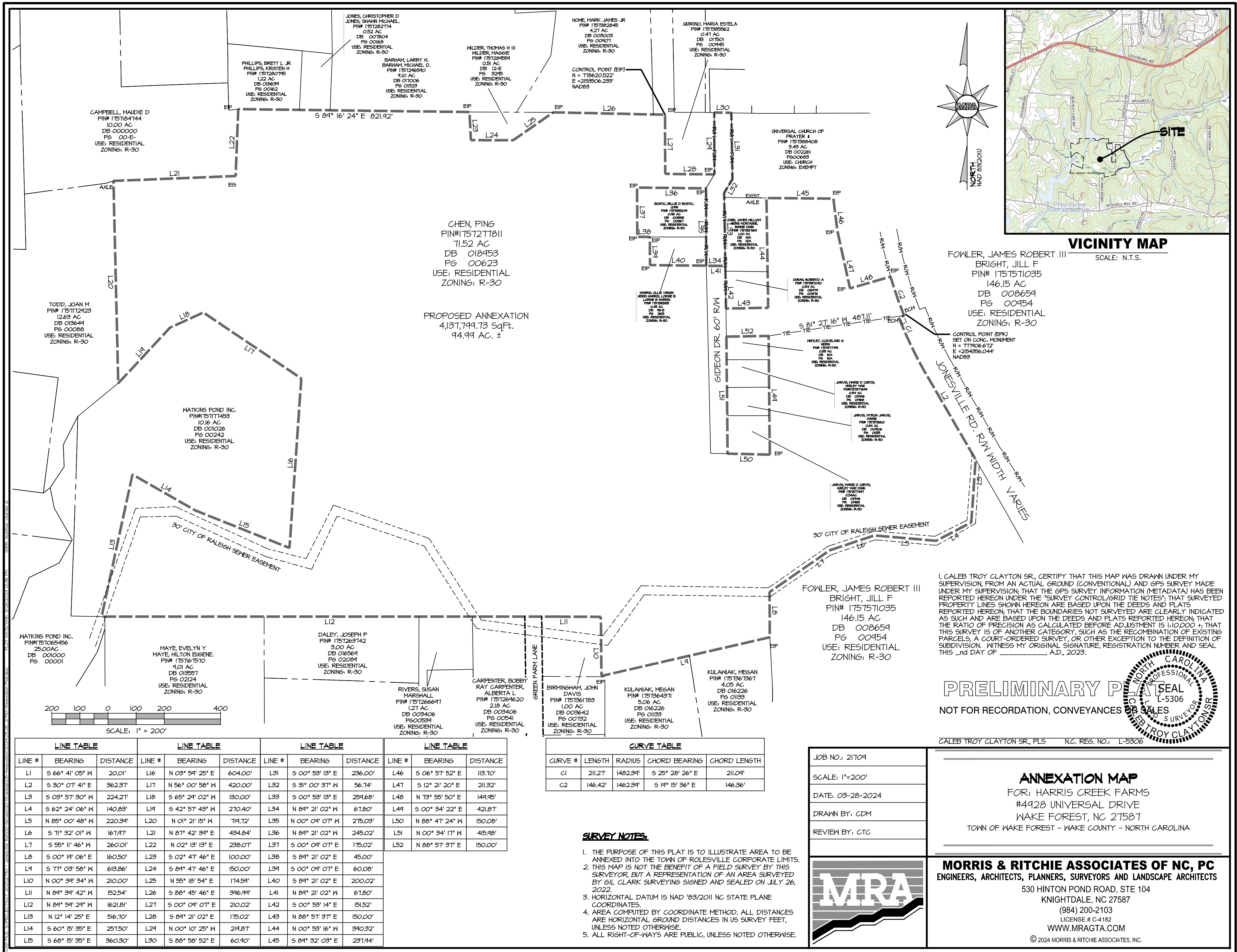
In witness whereof, I have hereunto set my hand and affixed the seal of the Town of Rolesville, this 7th day of December, 2022



*Robin E. Peyton*

---

Robin E. Peyton  
Town Clerk



**VICINITY MAP**

FOWLER, JAMES ROBERT III  
BRIGHT, JILL F  
PIN# 175751035  
146.15 AC  
DB 008659  
PG 00954  
USE: RESIDENTIAL  
ZONING: R-30

SCALE: N.T.S.

TODD, JOAN M  
PIN# 175712423  
12.63 AC  
DB 013641  
PG 00088  
USE: RESIDENTIAL  
ZONING: R-30

CAMPBELL, MAUDIE D  
PIN# 1757184744  
10.00 AC  
DB 000000  
PG 00-E  
USE: RESIDENTIAL  
ZONING: R-30

PHILLIPS, BRETT L JR  
PHILLIPS, KRISTEN H  
PIN# 1757280785  
1.22 AC  
DB 016691  
PG 00162  
USE: RESIDENTIAL  
ZONING: R-30

JONES, CHRISTOPHER D  
JONES, SHAWN MICHAEL  
PIN# 1757282714  
0.52 AC  
DB 007804  
PG 00160  
USE: RESIDENTIAL  
ZONING: R-30

BARHAM, LARRY H  
BARHAM, MICHAEL D.  
PIN# 1757265940  
4.10 AC  
DB 017006  
PG 01523  
USE: RESIDENTIAL  
ZONING: R-30

WILDER, THOMAS H III  
WILDER, MAGGIE  
PIN# 1757284954  
0.51 AC  
DB 02-E  
PG 3285  
USE: RESIDENTIAL  
ZONING: R-30

HOME, MARK JAMES JR  
PIN# 1757302845  
4.21 AC  
DB 008003  
PG 00401  
USE: RESIDENTIAL  
ZONING: R-30

QUIRINO, MARIA ESTELA  
PIN# 1757305562  
0.47 AC  
DB 015501  
PG 00445  
USE: RESIDENTIAL  
ZONING: R-30

CHEN, PING  
PIN# 1757277811  
71.52 AC  
DB 018953  
PG 00623  
USE: RESIDENTIAL  
ZONING: R-30

PROPOSED ANNEXATION  
4,137,191.73 SqFt.  
94.99 AC. ±

WATKINS POND INC.  
PIN# 175711453  
10.16 AC  
DB 001026  
PG 00242  
USE: RESIDENTIAL  
ZONING: R-30

AXLE

BOSTIC, BILLY D BOSTIC, JOHN  
PIN# 1757305244  
0.08 AC  
DB 000808  
PG 00081  
USE: RESIDENTIAL  
ZONING: R-30

HARRIS, OLLE VIRGIN  
HARRIS, LORNE B  
LORNE B HARRIS  
PIN# 17573055  
0.45 AC  
DB 02-E  
PG 2818  
USE: RESIDENTIAL  
ZONING: R-30

UNIVERSAL CHURCH OF PRAYER I  
PIN# 1757308408  
3.43 AC  
DB 000261  
PG 00083  
USE: CHURCH  
ZONING: EXH-FT

DAN, JAMES WILLIAM  
DANIEL DAN  
PIN# 17573054  
1.02 AC  
DB 000808  
PG 00081  
USE: RESIDENTIAL  
ZONING: R-30

DURAL, ROBERT A  
PIN# 175730540  
0.44 AC  
DB 000808  
PG 00081  
USE: RESIDENTIAL  
ZONING: R-30

HITLEY, CLEVELAND  
PIN# 17573054  
0.08 AC  
DB 000808  
PG 00081  
USE: RESIDENTIAL  
ZONING: R-30

JARVIS, MARIE D  
PIN# 17573054  
0.08 AC  
DB 000808  
PG 00081  
USE: RESIDENTIAL  
ZONING: R-30

JARVIS, MITCHELL  
PIN# 17573054  
0.08 AC  
DB 000808  
PG 00081  
USE: RESIDENTIAL  
ZONING: R-30

JARVIS, MARIE D  
HITLEY, MARIE DAN  
PIN# 17573054  
0.08 AC  
DB 000808  
PG 00081  
USE: RESIDENTIAL  
ZONING: R-30

WATKINS POND INC.  
PIN# 1757065456  
25.00 AC  
DB 001000  
PG 00001

MAYE, EVELYN Y  
MAYE, HILTON EUGENE  
PIN# 1757167510  
4.01 AC  
DB 013557  
PG 02124  
USE: RESIDENTIAL  
ZONING: R-30

DALEY, JOSEPH P  
PIN# 1757263742  
3.00 AC  
DB 016564  
PG 02094  
USE: RESIDENTIAL  
ZONING: R-30

RIVERS, SUSAN  
MARSHALL  
PIN# 1757266647  
1.27 AC  
DB 003406  
PG 00534  
USE: RESIDENTIAL  
ZONING: R-30

CARPENTER, BOBBY  
RAY CARPENTER,  
ALBERTA L  
PIN# 1757269620  
2.18 AC  
DB 003406  
PG 00541  
USE: RESIDENTIAL  
ZONING: R-30

BIRMINGHAM, JOHN  
DAVIS  
PIN# 1757361783  
1.00 AC  
DB 003642  
PG 00732  
USE: RESIDENTIAL  
ZONING: R-30

KULAWIAK, MEGAN  
PIN# 1757364371  
5.06 AC  
DB 016226  
PG 01133  
USE: RESIDENTIAL  
ZONING: R-30

KULAWIAK, MEGAN  
PIN# 1757367367  
4.05 AC  
DB 016226  
PG 01133  
USE: RESIDENTIAL  
ZONING: R-30

FOWLER, JAMES ROBERT III  
BRIGHT, JILL F  
PIN# 175751035  
146.15 AC  
DB 008659  
PG 00954  
USE: RESIDENTIAL  
ZONING: R-30

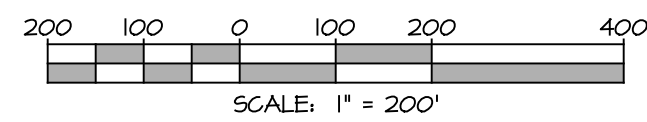
I, CALEB TROY CLAYTON SR., CERTIFY THAT THIS MAP WAS DRAWN UNDER MY SUPERVISION FROM AN ACTUAL GROUND (CONVENTIONAL) AND GPS SURVEY MADE UNDER MY SUPERVISION, THAT THE GPS SURVEY INFORMATION (METADATA) HAS BEEN REPORTED HEREON UNDER THE "SURVEY CONTROL/GRID TIE NOTES", THAT SURVEYED PROPERTY LINES SHOWN HEREON ARE BASED UPON THE DEEDS AND PLATS REPORTED HEREON; THAT THE BOUNDARIES NOT SURVEYED ARE CLEARLY INDICATED AS SUCH AND ARE BASED UPON THE DEEDS AND PLATS REPORTED HEREON; THAT THE RATIO OF PRECISION AS CALCULATED BEFORE ADJUSTMENT IS 1:10,000 ±; THAT THIS SURVEY IS OF ANOTHER CATEGORY, SUCH AS THE RECOMBINATION OF EXISTING PARCELS, A COURT-ORDERED SURVEY, OR OTHER EXCEPTION TO THE DEFINITION OF SUBDIVISION. WITNESS MY ORIGINAL SIGNATURE, REGISTRATION NUMBER AND SEAL THIS 2nd DAY OF \_\_\_\_\_, A.D., 2023.



PRELIMINARY PLAT

NOT FOR RECORDATION, CONVEYANCES OR SALES

CALEB TROY CLAYTON SR., PLS N.C. REG. NO.: L-5306

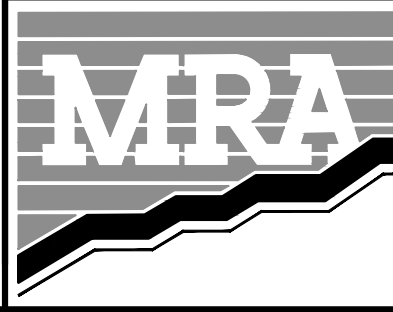


LINE TABLE			LINE TABLE			LINE TABLE			LINE TABLE		
LINE #	BEARING	DISTANCE	LINE #	BEARING	DISTANCE	LINE #	BEARING	DISTANCE	LINE #	BEARING	DISTANCE
L1	S 66° 41' 05" W	20.01'	L16	N 03° 54' 25" E	604.00'	L31	S 00° 53' 13" E	236.00'	L46	S 06° 57' 52" E	113.70'
L2	S 30° 07' 41" E	362.37'	L17	N 56° 00' 58" W	420.00'	L32	S 31° 00' 37" W	56.74'	L47	S 12° 21' 20" E	211.32'
L3	S 03° 57' 30" W	224.27'	L18	S 65° 24' 02" W	130.00'	L33	S 00° 53' 13" E	259.68'	L48	N 73° 55' 50" E	149.95'
L4	S 62° 24' 06" W	140.83'	L19	S 42° 57' 43" W	270.40'	L34	N 84° 21' 02" W	67.80'	L49	S 00° 34' 22" E	421.87'
L5	N 85° 00' 48" W	220.34'	L20	N 01° 21' 15" W	719.72'	L35	N 00° 04' 07" W	275.03'	L50	N 88° 47' 24" W	150.08'
L6	S 71° 32' 01" W	167.91'	L21	N 87° 42' 34" E	434.84'	L36	N 84° 21' 02" W	245.02'	L51	N 00° 34' 17" W	415.98'
L7	S 55° 11' 46" W	260.01'	L22	N 02° 13' 13" E	238.07'	L37	S 00° 04' 07" E	175.02'	L52	N 80° 57' 37" E	150.00'
L8	S 00° 14' 06" E	160.50'	L23	S 02° 47' 46" E	100.00'	L38	S 84° 21' 02" E	45.00'			
L9	S 77° 03' 58" W	613.86'	L24	S 84° 47' 46" E	150.00'	L39	S 00° 04' 07" E	60.08'			
L10	N 00° 34' 34" W	210.00'	L25	N 55° 18' 54" E	174.54'	L40	S 84° 21' 02" E	200.02'			
L11	N 84° 34' 42" W	152.54'	L26	S 88° 43' 46" E	346.94'	L41	N 84° 21' 02" W	67.80'			
L12	N 84° 54' 24" W	162.81'	L27	S 00° 04' 07" E	210.02'	L42	S 00° 53' 14" E	151.52'			
L13	N 12° 14' 25" E	516.70'	L28	S 84° 21' 02" E	175.02'	L43	N 88° 57' 37" E	150.00'			
L14	S 60° 15' 35" E	257.50'	L29	N 00° 10' 25" W	219.87'	L44	N 00° 53' 16" W	340.32'			
L15	S 68° 15' 35" E	360.30'	L30	S 88° 58' 52" E	60.90'	L45	S 84° 32' 03" E	237.94'			

CURVE TABLE				
CURVE #	LENGTH	RADIUS	CHORD BEARING	CHORD LENGTH
C1	211.27'	1482.34'	S 25° 28' 26" E	211.04'
C2	146.42'	1462.34'	S 14° 15' 36" E	146.36'

**SURVEY NOTES**

- THE PURPOSE OF THIS PLAT IS TO ILLUSTRATE AREA TO BE ANNEXED INTO THE TOWN OF ROLESVILLE CORPORATE LIMITS.
- THIS MAP IS NOT THE BENEFIT OF A FIELD SURVEY BY THIS SURVEYOR, BUT A REPRESENTATION OF AN AREA SURVEYED BY GIL CLARK SURVEYING SIGNED AND SEALED ON JULY 26, 2022.
- HORIZONTAL DATUM IS NAD '83/2011 NC STATE PLANE COORDINATES.
- AREA COMPUTED BY COORDINATE METHOD. ALL DISTANCES ARE HORIZONTAL GROUND DISTANCES IN US SURVEY FEET, UNLESS NOTED OTHERWISE.
- ALL RIGHT-OF-WAYS ARE PUBLIC, UNLESS NOTED OTHERWISE.



**ANNEXATION MAP**  
FOR: HARRIS CREEK FARMS  
#4928 UNIVERSAL DRIVE  
WAKE FOREST, NC 27587  
TOWN OF WAKE FOREST - WAKE COUNTY - NORTH CAROLINA

**MORRIS & RITCHIE ASSOCIATES OF NC, PC**  
ENGINEERS, ARCHITECTS, PLANNERS, SURVEYORS AND LANDSCAPE ARCHITECTS  
530 HINTON POND ROAD, STE 104  
KNIGHTDALE, NC 27587  
(984) 200-2103  
LICENSE # C-4182  
WWW.MRAGTA.COM  
© 2024 MORRIS & RITCHIE ASSOCIATES, INC.

# MORRIS & RITCHIE ASSOCIATES OF NC, PC

AN AFFILIATE OF MORRIS & RITCHIE ASSOCIATES, INC. WHICH PROVIDES ENGINEERING, ARCHITECTURE, PLANNING, SURVEYING & LANDSCAPE ARCHITECTURE THROUGHOUT THE MID-ATLANTIC REGION AND LANDSCAPE ARCHITECTS



## Legal Description – Annexation Map

94.99 Acres

Portion of Lands of Ping Chen

Wake Forest Township – Wake County, North Carolina

All that certain parcel of land lying generally easterly of Jonesville Road, being located in Wake Forest Township, Wake County, North Carolina and being a portion of those lands described in deed dated January 24, 2023 from Ping Chen and Fanxing Li, Grantor to Kenneth Investment, LLC. and recorded in the Land Records of Wake County, North Carolina in Deed Book 19248, page 1884, being more particularly described as follows, to wit:

**Beginning** at a PK nail set in an existing concrete monument on the Southwestern right-of-way of Jonesville Road, having North Carolina state plane coordinates N: 777,906.672 E: 2,154,356.044. Thence, with said right-of way, South 66°41'05" West 20.01 feet to a concrete monument on the Southwestern right-of-way line of Jonesville Road; thence, with said right-of-way and along a curve with a cord bearing distance South 25°28'26" East 211.09 feet and a radius of 1,482.39 feet to an iron pipe; thence along said right-of-way, South 30°07'41" East 362.37 feet to an iron pipe; thence leaving said right-of-way, South 03°57'30" West 224.27 feet to a point; thence, South 62°24'06" West 140.83 feet to a point; thence, North 85°00'48" West 220.39 feet to a point; thence, South 71°32'01" West 167.97 feet to a point; thence, South 55°11'46" West 260.01 feet to a point; thence South 00°19'06" East 160.50 feet to an iron pipe; thence, South 77°03'58" West 613.86 feet to an iron pipe; thence, North 00°39'34" West 210.00 feet to an iron pipe; thence, North 89°39'42" West 152.54 feet to a point; thence, North 89°59'29" West 1,621.81 feet to an iron pipe; thence, North 12°14'25" East 516.70 feet to an iron pipe; thence, South 60°15'35" East 257.50 feet to an iron pipe; thence, South 68°15'35" East 360.30 feet to an iron pipe; thence, North 03°59'25" East 604.00 feet to an iron pipe; thence, North 56°00'58" West 420.00 feet to an iron pipe; thence, South 65°29'02" West 130.00 feet to an iron pipe; thence, South 42°57'43" West 270.40 feet to an iron pipe; thence, North 01°21'15" West 719.72 feet to an axle; thence, North 87°42'39" East 434.84 feet to an iron pipe; thence, North 02°13'13" East 238.07 feet to an iron pipe; thence, South 89°16'24" East 821.92 feet to an iron pipe; thence, South 02°47'46" East 100.00 feet to an iron pipe; thence, South 89°47'46" East 150.00 feet to an iron pipe; thence, North 55°18'54" East 174.59 feet to an iron pipe; thence, South 88°45'46" East 396.99 feet to an iron pipe; thence, South 00°09'07" East 210.02 feet to an iron pipe; thence, South 89°21'02" East 175.02 feet to an iron pipe on the Western right-of-way of Gideon Drive; thence with said right-of-way, North 00°10'25" West 219.87 feet to a point; thence leaving said right of way, South 88°58'52" East 60.90 feet to a point on the Eastern right-of-way of Gideon Drive; thence, with said right-of-way South 00°53'13" East 236.00 feet to a point; thence, South 31°00'37" West 56.74 feet to a point; thence, South 00°53'13" East 259.68 feet to a point; thence, crossing said right-of-way, South 89°21'02" East 67.80 feet to an iron pipe; thence, with said right-of-way North 00°09'07" West 275.03 feet to an iron pipe on the Western right-of-way of Gideon Drive; thence, leaving said right-of-way, North 89°21'02" West 245.02 feet to an iron pipe; thence, South 00°09'07 East 175.02 feet to an iron pipe; thence, South 89°21'02" East 45.00 feet to an iron pipe; thence,

530 Hinton Pond Rd., Suite 104, Knightdale, NC 27545 (984) 200-2103 www.mragta.com

Abingdon, MD ♦ Baltimore, MD ♦ Laurel, MD ♦ Towson, MD ♦ Georgetown, DE ♦ New Castle, DE ♦ Leesburg, VA ♦ Raleigh, NC  
(410) 515-9000 (443) 490-7201 (410) 792-9792 (410) 821-1690 (302) 855-5734 (302) 326-2200 (703) 994-4047 (984) 200-2103

# MORRIS & RITCHIE ASSOCIATES OF NC, PC

AN AFFILIATE OF MORRIS & RITCHIE ASSOCIATES, INC. WHICH PROVIDES ENGINEERING, ARCHITECTURE, PLANNING, SURVEYING & LANDSCAPE ARCHITECTURE THROUGHOUT THE MID-ATLANTIC REGION AND LANDSCAPE ARCHITECTS



South 00°09'07" East 60.08 feet to an iron pipe; thence, South 89°21'02" East 200.02 feet to an iron pipe on the Western right-of-way of Gideon Drive; thence, leaving said right-of-way, South 89°21'02" East 67.80 feet to a point on the Eastern right-of-way of Gideon Drive; thence, with said right-of-way, South 00°53'14" East 151.52 feet to a point; thence leaving said right of way, North 88°57'37" East 150.00 feet to a point; thence, North 00°53'16" West 390.32 feet to an axle; thence, South 89°32'03" East 237.94 feet to an iron pipe; thence, South 06°57'52" East 113.70 feet to a point; thence, South 12°21'20" East 211.32 feet to an iron pipe; thence, North 73°55'50" East 149.95 feet to an iron pipe on the Southwestern right-of-way of Jonesville Road; thence, with said right-of-way and along a curve with a bearing and distance of South 19°15'36" East 146.36 feet and a radius of 1,462.39 feet to the point of beginning. Containing 94.99 AC.±.

Less than and except the following four (4) parcels; 1757-37-7799, 1757-37-7699, 1757-37-8610, and 1757-37-7497, being more particularly described as follows, to wit:

Commencing at a PK nail set in an existing concrete monument on the Southwestern right-of-way of Jonesville Road, having North Carolina state plane coordinates N: 777,906.672 E: 2,154,356.044. Thence, South 81°27'16" West 487.11 feet to the point of beginning; thence, South 00°34'22" East 421.87 feet to a point; thence, North 88°47'24" West 150.08 feet to a point; thence, North 00°34'17" West 415.98 feet to a point; thence North 88°57'37" East 150.00 feet to the point of beginning.

The total area of the **Exhibit "B"** herein described being a portion of Tract 1 as described in deed dated January 24, 2023 from Ping Chen and Fanxing Li, Grantor to Kenneth Investment, LLC. and recorded in the Land Records of Wake County, North Carolina in Deed Book 18953, page 592 and page 623, and containing a total area of 94.99 AC.± and being subject to any and all matters of which a current title package would disclose.



# Harris Creek Farm

## ANX 22-05 & MA 22-08

Town of Rolesville Board of Commissioners

April 2, 2024

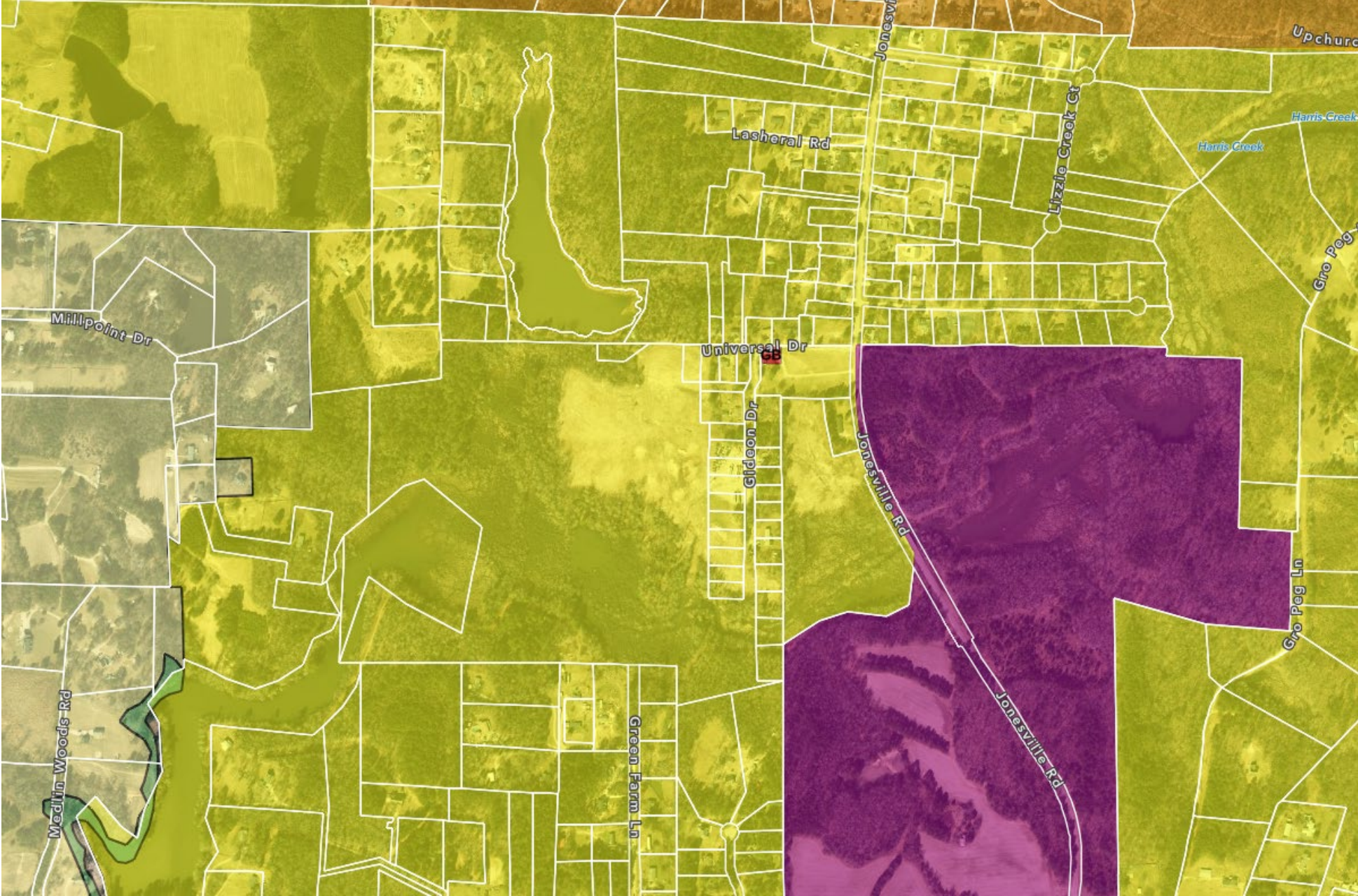
# Overview

- Property Size: Approximately 94.19 acres
- Street Frontage: Jonesville Road
- Current Zoning: R-30 (Wake County)
- Future Land Use: Moderate Scale Residential
- Proposed Zoning: Residential Medium Density Conditional Zoning (RM-CZ)
- Request is **consistent** with Rolesville Comprehensive Plan

# Existing Conditions

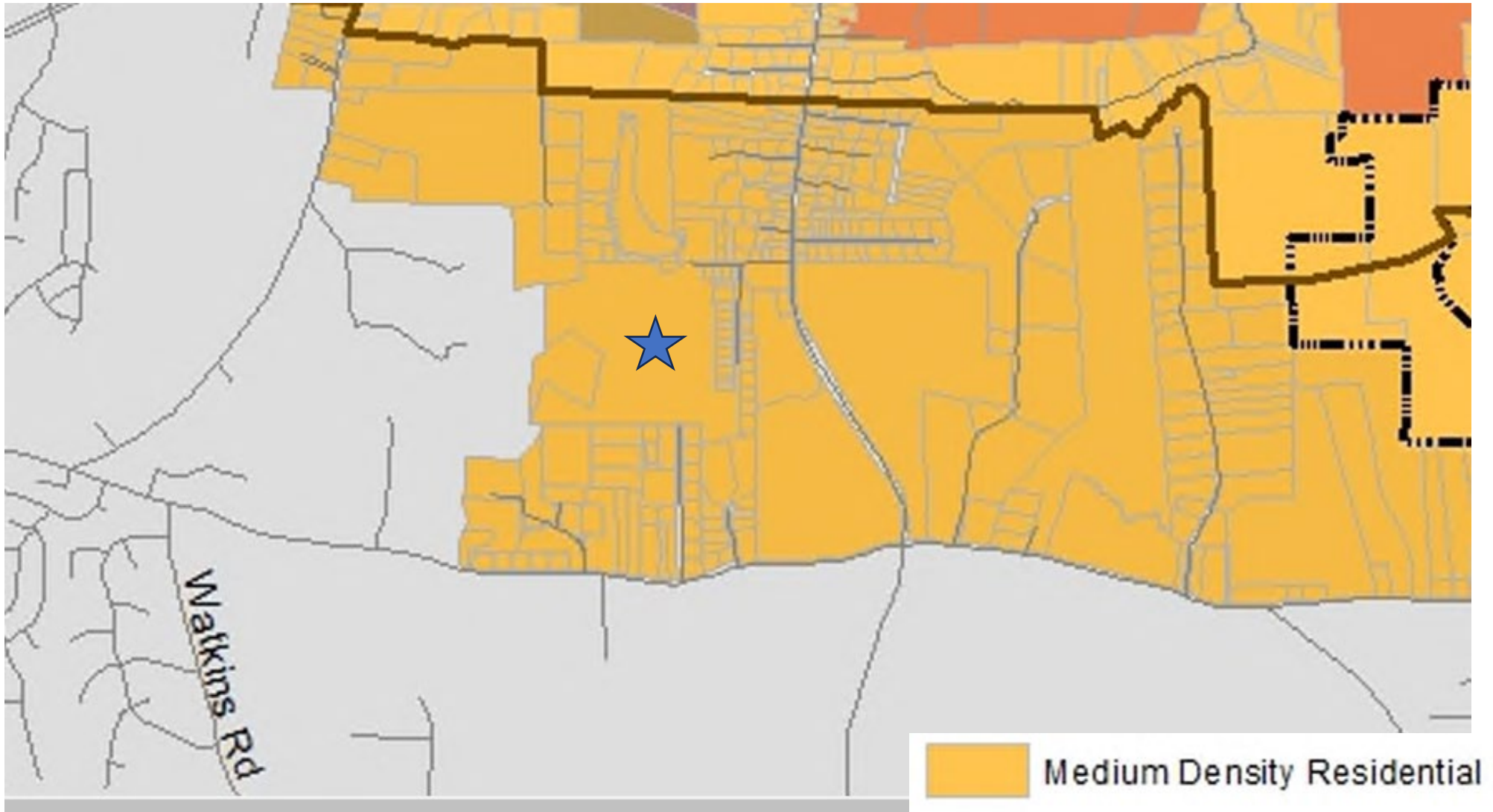


# Current Zoning





# Future Land Use Map





# Reserve at Mitchell Mill

(Approved Jan. 2023)

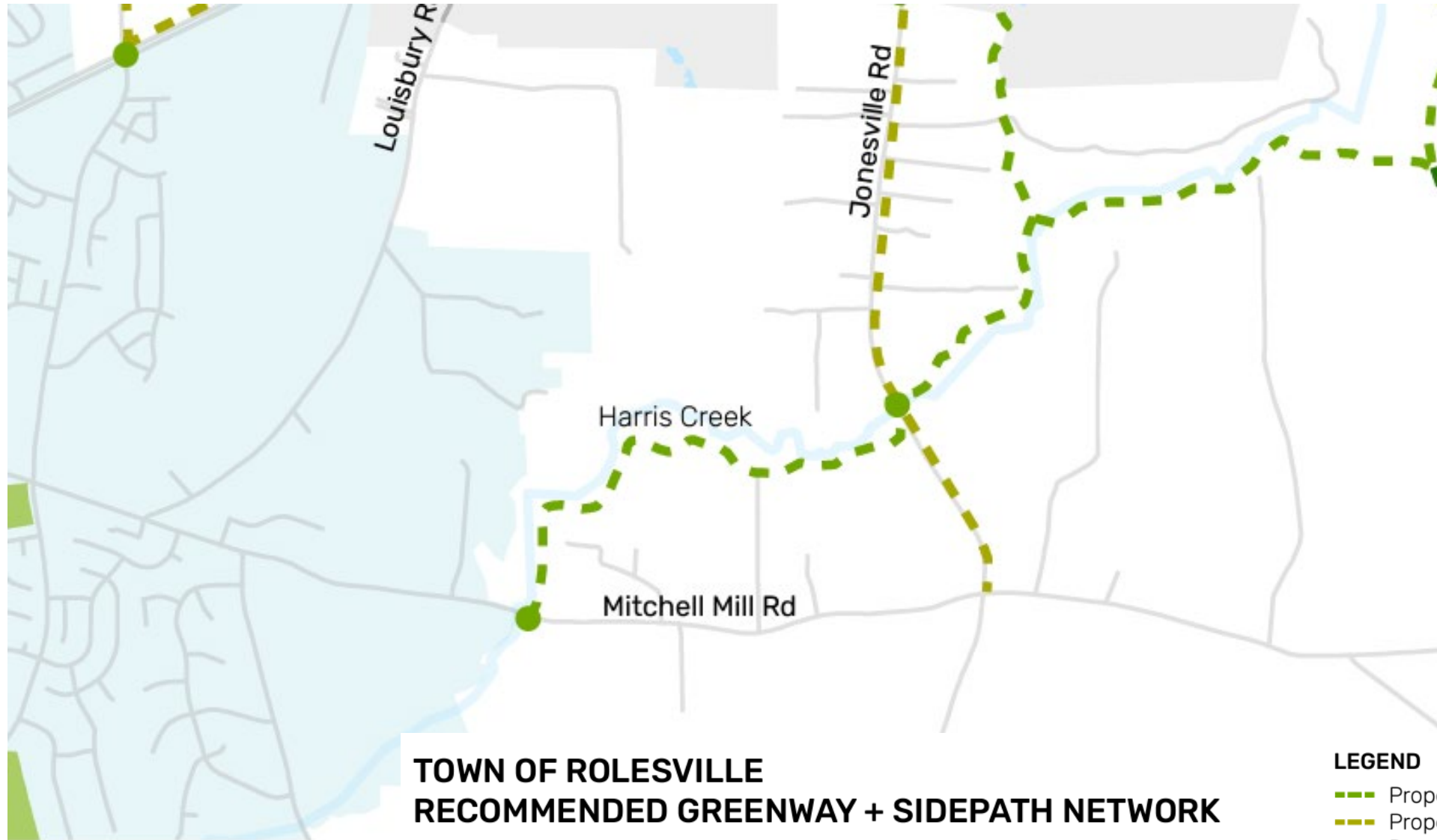
**141 Acres**

**379 Residential Units**

- 119 Townhomes
- 260 Single Family Homes



# Greenway Map



## HARRIS CREEK FARMS

### **VOLUNTARY REZONING CONDITIONS**

1. The subject property shall be developed in general compliance with the map amendment (conditional rezoning) concept plan, dated 3/1/2024.
2. The development shall consist of maximum of 120 single-family detached dwelling units/lots as detailed in the map amendment (conditional rezoning) concept plan, dated 3/1/2024.
3. Single family detached dwelling unit facade anti-monotony: in order to promote variation in home appearance, no single-family front façade shall be duplicated for three (3) lots in a row, or directly across the street. For corner lots, this shall apply to the lots diagonally across the intersection.
4. All garage doors shall either contain windows or carriage style adornments.
5. **Single-family detached dwelling units shall:**
  - A. Be a minimum of 1,500 heated square feet.
  - B. Have cementitious siding that shall vary in type and color with brick, shakes, board and batten, or stone accents provided as decorative features
  - C. Have at least two types of finishes on the front: lap siding, masonry, shakes, and board and batten.
7. A homeowners' association (HOA) shall be created, and all open spaces observed in map amendment (conditional rezoning) concept plan, dated 3/1/2024, shall be owned and maintained by the HOA.
8. **Foundations:** All foundations are to be monolithic poured slab foundations. Top of slabs shall be elevated a minimum of 18 inches above finished grade for all dwelling units. All foundations shall be treated with masonry on the front and street-facing sides for a minimum of 10".
9. **Recreational amenities:** the following recreational amenities shall be constructed as observed in map amendment (conditional rezoning) concept plan, dated 3/1/2024. Public greenway (approximately 5,600 linear feet), private multi-use paths (approximately 410 linear feet), gazebos, playgrounds, and a dog park. Amenities shall be built prior to the issuance of the building permit for the 70<sup>th</sup> lot.
10. **Landscaping.** At least twenty percent (20%) of all landscaping required by the LDO, that does not already qualify under LDO Section 6.2, shall utilize plant materials that are listed as native pollinator plants by the North Carolina Wildlife Federation. Where evergreen plantings or street trees are required by the LDO, native pollinator plantings shall not be required. Such plantings shall be clearly shown in construction drawings and installed as part of subdivision infrastructure. Nothing herein shall be constructed to limit the plant materials permitted on individual residential lots.

11. **Sidewalk Easement**. The development shall attempt to procure an easement from the owners of those properties with PINs 1757-48-1376 (Deed Book 19407, Page 984, Wake County Registry) and 1757-38-8408 (Deed Book 2261, Page 683, Wake County Registry), in order to provide a 5'-wide sidewalk running from the development's proposed access to Jonesville Road to the intersection with Universal Drive. If the development procures easements from both property owners, the sidewalk shall be located within said easements and constructed consistent with the Town of Rolesville Transportation Plan, and shall be completed prior to the issuance of the one hundredth (100<sup>th</sup>) building permit. If the development is unable to procure an easement from either property owner prior to the issuance of the first (1<sup>st</sup>) building permit, then the development shall pay a fee-in-lieu for the sidewalk construction to the Town of Rolesville. The fee-in-lieu shall be paid prior to the issuance of the one hundredth (100<sup>th</sup>) building permit.

12. **Universal Drive**. The development shall attempt to procure a minimum 20'-wide access easement (the "Easement") from the owner of that property with PIN 1757-38-8408 (Deed Book 2261, Page 683, Wake County Registry) for vehicular ingress and egress to and from Gideon Drive and Jonesville Road (the "Easement Area"). This Easement shall be recorded with the Wake County Registry. If the Easement is obtained and recorded, the development shall pave the Easement Area with a 20'-wide asphalt surface coat over top of the existing private gravel access drive. The paving shall be completed prior to the issuance of the development's one hundredth (100<sup>th</sup>) building permits. Following completion of the paving, the development shall be responsible for maintenance of the Easement Area; this maintenance responsibility shall expire if Universal Drive is dedicated as public right-of-way. If the development can not obtain and record the Easement before the issuance of the first (1<sup>st</sup>) building permit, then the development shall have no obligation to perform any work described in this Condition.

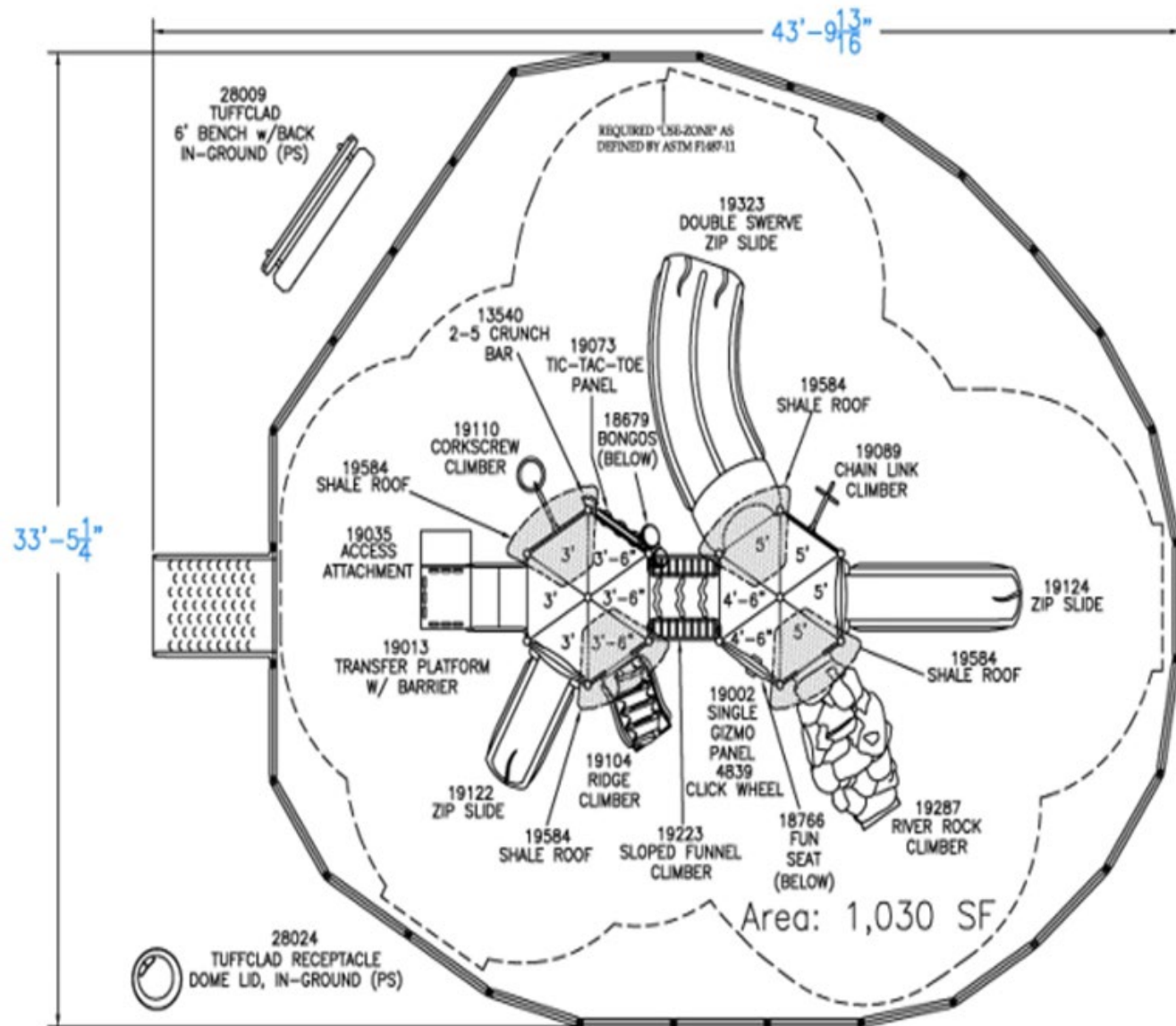
13. Prior to issuance of the first building permit for a dwelling unit, the development shall donate thirty-five thousand dollars and no cents (\$35,000.00) to Homes for Heroes.











**GameTime**  
 Entering Childhood Through Play.  
 150 PlayCore Drive SE  
 Fort Payne, AL 35967  
 www.gametime.com



NVR - Ryan Homes  
 Age 2-5 or 5-12 Play Area  
 Option - B  
 Representative  
 Steve Lienesch, Cunningham Recreation

This play equipment is recommended for children ages 2-5 & Up

Minimum Area Required:  
 Scale: N/A  
 This drawing can be scaled only when in an 8 1/2" x 11" format

**IMPORTANT:** Soft resilient surfacing should be placed in the use zones of all equipment, as specified for each type of equipment, and at depths to meet the critical fall heights as specified by the U.S. consumer Product Safety Commission, ASTM standard F 1487 and Canadian Standard CAN/CSA-Z-614

Drawn By:  
 BFW  
 Date:  
 11-07-2016  
 Drawing Name:  
 85134-01



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JOB NO.:	SCALE: 1" = 100'	DATE: 05/03/2022	DRAWN BY:	CHECK BY:	REVISIONS:
	DATE:				
<p><b>MORRIS &amp; RITCHIE ASSOCIATES OF NC, PC</b>          ENGINEERS, LANDSCAPE ARCHITECTS AND LANDSCAPE ARCHITECTS          8000 CHARLES HILL RD, SUITE 112          RALEIGH, NC 27615          (919) 883-3300</p>					
<p><b>MIRA</b></p>					
<p><b>PRELIMINARY</b>          for risk construction</p>					
<p><b>CONCEPT SKETCH</b>          JONESVILLE ROAD SUBDIVISION          CONCEPT</p>					
<p>01000 MORRIS &amp; RITCHIE ASSOCIATES OF NC, PC</p>					
<p>11027 1 of 1</p>					