

SPECIAL MEETING NOTICE

Planning Board

NOTICE IS HEREBY GIVEN that a Special Meeting of the Town of Rolesville Planning Board will be held on Monday, September 26, 2022, at 6:00 p.m. The meeting will be held in the Community Center at Town Hall, 502 Southtown Circle, Rolesville, NC. The special meeting will occur prior to the regularly scheduled Planning Board meeting at 7:00 p.m. and is being held for the purpose of facilitating an anticipated long agenda beginning with the Planning Board reviewing Case: MA22-07 503 South Main Street and continuing through the regular meeting agenda. No recess between meetings is expected.



Planning Board Meeting September 26, 2022 6:00 p.m.

Please note the Planning Board meeting is beginning one hour earlier than usual.

AGENDA

A. Call to Order

1. Pledge of Allegiance
2. Invocation
3. Approval of August 22, 2022 Planning Board meeting minutes

B. Regular Agenda

1. MA 22-07 – 503 S. Main Street
2. MA 22-03 – Parker Ridge Rezoning
3. MA 22-06 – 5109 Mitchell Mill Road
4. TA 22-01 – Land Development Ordinance Round 3 Technical Amendments

C. Communications

1. Planning Director's Report
2. Town Attorney's Report
3. Other Business
4. Adjournment

The Town of Rolesville is committed to providing accessible facilities, programs, and services for all people in compliance with the American with Disabilities Act. Should you need assistance or a particular accommodation for this meeting, please contact the ADA Coordinator at 919-556-3506.



Planning Board Meeting

August 22, 2022

7:00 p.m.

MINUTES

PRESENT:

Mark Powers, Chairman
Davion Cross, Board Member
Steve Hill, Board Member
Donnie Lawrence, Board Member
Renorda Pryor, Board Member
Jim Schwartz, Board Member

Michelle Medley,
Commissioner/Planning Board
Liaison
Erin Catlett, Town Attorney
Meredith Gruber, Planning Director

ABSENT:

Mike Moss, Vice-Chairman

A. CALL TO ORDER

Chairman Powers called the meeting to order at 7:01 p.m.

1. Pledge of Allegiance

The Board collectively recited the Pledge of Allegiance.

2. Invocation

Chairman Powers asked for a moment of silence in the absence of Mr. Moss.

3. Approval of August 22, 2022, Planning Board meeting minutes

Moved by Board Member Donnie Lawrence and Seconded by Board Member Renorda Pryor. The motion to approve the minutes of August 22, 2022, carried by unanimous vote.

B. REGULAR AGENDA

1. MA 22-03 – Parker Ridge Rezoning – **Postponed**
2. Land Development Ordinance Round 3 Technical Amendments – Landscape Section

Ms. Gruber discussed LDO Round 3 with the Planning Board members. The discussion focused on amendments to the landscape ordinance including perimeter buffers and vegetation preservation standards. Ms. Gruber noted the Planning Board will be reviewing LDO Round 3 at their next meeting on September 26.

C. COMMUNICATIONS

1. Planning Director's Report

Ms. Gruber gave a staff update with an announcement of Mr. Jordan Prince, Development Support Specialist, and Rachel Harless, Code Enforcement Officer, joining the Planning Department.

Ms. Gruber discussed the possibility of moving the next meeting to an earlier start at 6:00 p.m. due to a heavy agenda.

2. Town Attorney's Report

None at this time.

3. Other Business

None at this time.

4. Adjournment

Board member Donnie Lawrence made a motion to Adjourn, seconded by Member Jim Schwartz, and the motion was carried by unanimous vote. The meeting adjourned at 7:41 p.m.

Mark Powers, Chairman

Meredith Gruber, Planning Director



Memo

To: Planning Board
From: Michael Elabarger, Senior Planner
Date: September 22, 2022
Re: MA 22-07 – 503 South Main Street Rezoning

Background

The Town of Rolesville Planning Department received a Map Amendment (Rezoning) application in July 2022 for a 1.80-acre property located at 503 South Main Street with Wake County PIN 1758784708. The Applicant, Toy Storage LLC, is requesting to rezone the property to the General Commercial (GC) Zoning District of the Land Development Ordinance (LDO) from the existing Residential Low (RL per the LDO) and Residential Planned Unit Development (R&PUD per the retired Unified Development Ordinance, UDO) Districts. The request is for the by-right district - there are no proposed Conditions of Approval nor a concept plan drawing of a future development.

Applicant Justification

The applicant provided the narrative below.

THE SUBJECT PARCEL IS WITHIN THE TOWN'S JURISDICTION AND IS ZONED RL AND R & PUD. THE MAIN STREET VISION PLAN DEPICTS THE AREA IN WHICH THIS PROPERTY IS LOCATED AS THE "VILLAGE CORE". THE ROLESVILLE COMPREHENSIVE PLAN 2017 INDICATES THE FUTURE LAND USE ZONING IS COMMERCIAL.

THE MAP AMENDMENT APPLICATION FOR GENERAL COMMERCIAL (GC) IS REQUESTED TO ALLOW FOR A WIDE RANGE OF USES CONSISTENT WITH ADJACENT PROPERTIES AND THE TOWN'S FUTURE ZONING PLANS.

ADEQUATE PUBLIC INFRASTRUCTURE EXISTS, AND SITE DEVELOPMENT WILL BE IN ACCORDANCE WITH THE TOWN OF ROLESVILLE'S LAND DEVELOPMENT ORDINANCE.

Neighborhood Meeting

The Applicant held a neighborhood meeting at the Rolesville Community Center on September 7, 2022. Nineteen (19) property owners within two hundred fifty (250) feet of the subject property were mailed invitations by the Applicant. Six (6) members of the public attended the meeting; see Attachment 2 for materials for and from that meeting.

Comprehensive Plan

Land Use

The future land use designation of the subject property is 'Commercial'. The applicant's request for the General Commercial zoning district would be consistent with this land use category, which is described in the 2017 Comprehensive Plan as "*Suburban commercial centers serving the daily needs of surrounding residential neighborhoods. They typically are located near roads with a high volume of traffic and key intersections that are designed to be accessed primarily by automobile. These consider other modes of transportation in design choices as well, both internally and externally of the commercial neighborhood. Common types include single tenant buildings on individual lots, single and multi-tenant buildings normally found in shopping centers, or multi-tenant units with big box or anchor retail businesses in commercial shopping facilities.*"

Main Street Vision Plan

The Town of Rolesville developed the Main Street Vision Plan to help the community grow, reestablish a true town center, and reclaim its Main Street. The plan includes five principles and five goals, the following of which are applicable to this rezoning request:

- Principle 5: Quality development/redevelopment must be supported
- Goal 4: Reestablish a town center
- Goal 5: Retain & respect the small-town feel

Changing the zoning of the subject property from two Residential districts to the General Commercial Zoning District (GC) will provide greater potential to meet the principles and goals of the Main Street Vision Plan. Non-residential uses and forms of development typically align better with the type of corridor that South Main Street is, and will be, transforming into over the coming years.

Transportation and Traffic

As per LDO Section 8.C.4., the Land Development Administrator (LDA) may waive the requirement for a Traffic Impact Analysis (TIA) upon determining that a TIA is not necessary to determine needed road improvements, that adequate capacity exists to serve the proposed development, and that no unsafe or hazardous conditions will be created by the development as proposed. The decision shall be documented with specific reasoning provided by the LDA.

- Based on the level of detail available for this Map Amendment (Rezoning), a TIA would be more beneficial at the Site Development Plan stage when additional information and confirmation of development plans are available.
- The Town has been awarded funding from the Locally Administered Projects Program (LAPP) to enhance and revitalize Main Street. The grant project will re-create Highway 401 Business into Rolesville's Main Street and includes streetscape improvements, crosswalks, curb and gutter, new sidewalks, and bicycle transportation enhancements

from Burlington Mills Road to Young Street. The Main Street construction plan design already shows all or some of the pending roadway improvements.

The LDA recommends the TIA be initiated during the Site Development Plan review process.

Development Review

The Technical Review Committee (TRC) reviewed the rezoning request, and there were no correction related comments provided to the applicant.

Staff Recommendation

Based on alignment with the Main Street Vision Plan principles and goals, staff recommends approval of Map Amendment (rezoning) case MA 22-07 - 503 South Main Street.

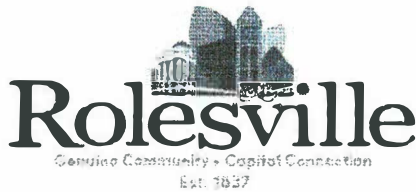
Proposed Motion

Motion to recommend (approval or denial) of rezoning request MA 22-07 - 503 South Main Street

Attachments

	Description	Date
1.	Application	06-29-2022
2.	Neighborhood Meeting information	September 2022
3.	Vicinity Map	n/a
4.	Zoning Map (existing)	n/a
5.	Future Land Use Map	n/a

ATTACHMENT 1



Case No. MA 22-07

Date 06/29/22

Map Amendment Application

Contact Information

Property Owner TOY STORAGE LLC
Address 220 GRESHAM LAKE City/State/Zip RALEIGH NC 27615
Phone 919-604-0505 Email STORIT@AOL.COM

Developer TOY STORAGE LLC
Contact Name ALLEN MASSEY
Address 220 GRESHAM LAKE City/State/Zip RALEIGH NC 27615
Phone 919-604-0505 Email STORIT@AOL.COM

Property Information

Address 503 S. MAIN STREET
Wake County PIN(s) 1758784708
Current Zoning District RL AND R&PD Requested Zoning District GC
Total Acreage 1.80 ACRES

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 E. Allen Massey Date 6.28.22

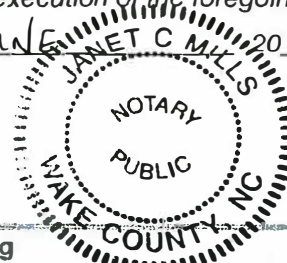
STATE OF NORTH CAROLINA

COUNTY OF WAKE

I, a Notary Public, do hereby certify that E. ALLEN MASSEY
personally appeared before me this day and acknowledged the due execution of the foregoing instrument. This
the 28TH day of JUNE 2022

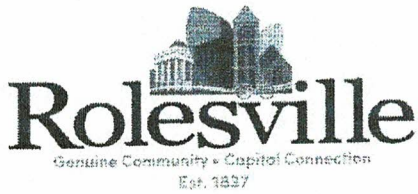
My commission expires 04.29.27

Signature Janet C Mills Seal



Town of Rolesville Planning

PO Box 250 / Rolesville, North Carolina 27571 / RolesvilleNC.gov / 919.554.6517



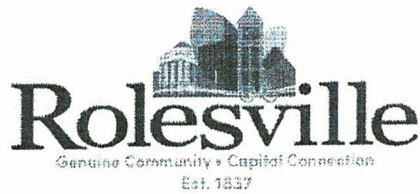
Map Amendment Application

Metes and Bounds Description of Property

SEE ATTACHED METES AND
BOUNDS DESCRIPTION

Town of Rolesville Planning

PO Box 250 / Rolesville, North Carolina 27571 / RolesvilleNC.gov / 919.554.6517



Map Amendment Application

Rezoning Justification

THE SUBJECT PARCEL IS WITHIN THE TOWN'S JURISDICTION AND IS ZONED RL AND R & PUD. THE MAIN STREET VISION PLAN DEPICTS THE AREA IN WHICH THIS PROPERTY IS LOCATED AS THE "VILLAGE CORE." THE ROLESVILLE COMPREHENSIVE PLAN 2017 INDICATES THE FUTURE LAND USE ZONING IS COMMERCIAL.

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ADEQUATE PUBLIC INFRASTRUCTURE EXISTS, AND SITE DEVELOPMENT WILL BE IN ACCORDANCE WITH THE TOWN OF ROLESVILLE'S LAND DEVELOPMENT ORDINANCE.

Property Owner Information

[illegible]

* PROPERTY TO BE REZONED

Town of Rolesville Planning

PO Box 250 / Rolesville, North Carolina 27571 / RolesvilleNC.gov / 919.554.6517

ATTACHMENT 2 - NEIGHBORHOOD MEETING DOCUMENTS

Site Address	REID	OWNER Name	Mailing Address 1		
411 S Main	0198390	Redford Plaza LLC	2306 S Fairview Street	Santa Ana	CA 92704
415 S Main	224459	McDonalds Real Estate CO	PO BOX 182571	Columbus	OH 43218
501 S Main	0224460	2 Smiths LLC	703 S Bickett BLVD	Louisburg	NC 27549
418 S Main	0107605	Getty Leasing Inc	292 Madison Avenue, FL 9	New York	NY 10017
414 S Main	0006012	RP Diehl Properties LLC	1424 Hunting Ridge Road	Raleigh	NC 27615
500 S Main	0182704	Richard C Bartholomew, Shirley B Bartholomew	PO BOX 6	Rolesville	NC 27571
504 S Main	0018947	R Howard Fleming, Dolly H Fleming	7517 Wingfoot Drive	Raleigh	NC 27615
112 S Main	0427730	10580 Ligon Mill Office Plaza Condo, Lloyds of Rolesville LLC	PO Box 638	Wake Forest	NC 27588
250 S Town Cir	0214172	Lloyds of Rolesville LLC	PO Box 638	Wake Forest	NC 27588
511 S Main	0186807	Joyce C Bartholomew	920 N Main Street	Rolesville	NC 27571
513 S Main	0186814	Mildred Joyce Bartholomew	920 N Main Street	Rolesville	NC 27571
515 S Main	0047785	Rolesville One LLP	515 S Main Street	Rolesville	NC 27571
100 Wall Creek Dr	0202169	AMH 2014-3 Borrower LP	30601 Agoura Rd, Ste 300	Agoura Hills	CA 91301
102 Wall Creek Dr	0202168	Joshua R Debnam Jr, Edith Debnam	102 Wall Creek Dr	Rolesville	NC 27571
104 Wall Creek Dr	0202167	Jacqueline Lee-Smith	104 Wall Creek Dr.	Rolesville	NC 27571
101 Wall Creek Dr	0202151	Robert and Babette Tenbuuren	101 Wall Creek Drive	Rolesville	NC 27571
103 Wall Creek Dr	0202152	Lee D McPherson & Samantha K Ward	115 Wellspring Farm Lane	Rolesville	NC 27571
105 Wall Creek Dr	0202153	Linda J Hood, Leroy A Hood	105 Wall Creek Drive	Rolesville	NC 27571
107 Wall Creek Dr	202154	James L Edwards, Joyce P Edwards	107 Wall Creek Drive	Rolesville	NC 27571

August 22, 2022

NEIGHBORHOOD MEETING NOTICE

Dear Property Owner:

By way of this letter, the Applicant, Toy Storage, LLC, wants to officially notify you of a pending Zoning Map Amendment (Case# MA-22-07) for a development adjacent to your property.

The applicant will hold a neighborhood meeting on Wednesday, September 7, 2022 from 4:00 - 6:00 PM to explain their proposal. **The meeting will be held at the Rolesville Community Center, located at 514 Southtown Circle, Rolesville, NC 27571.** Any questions or comments on the proposed project prior to the meeting are welcome.

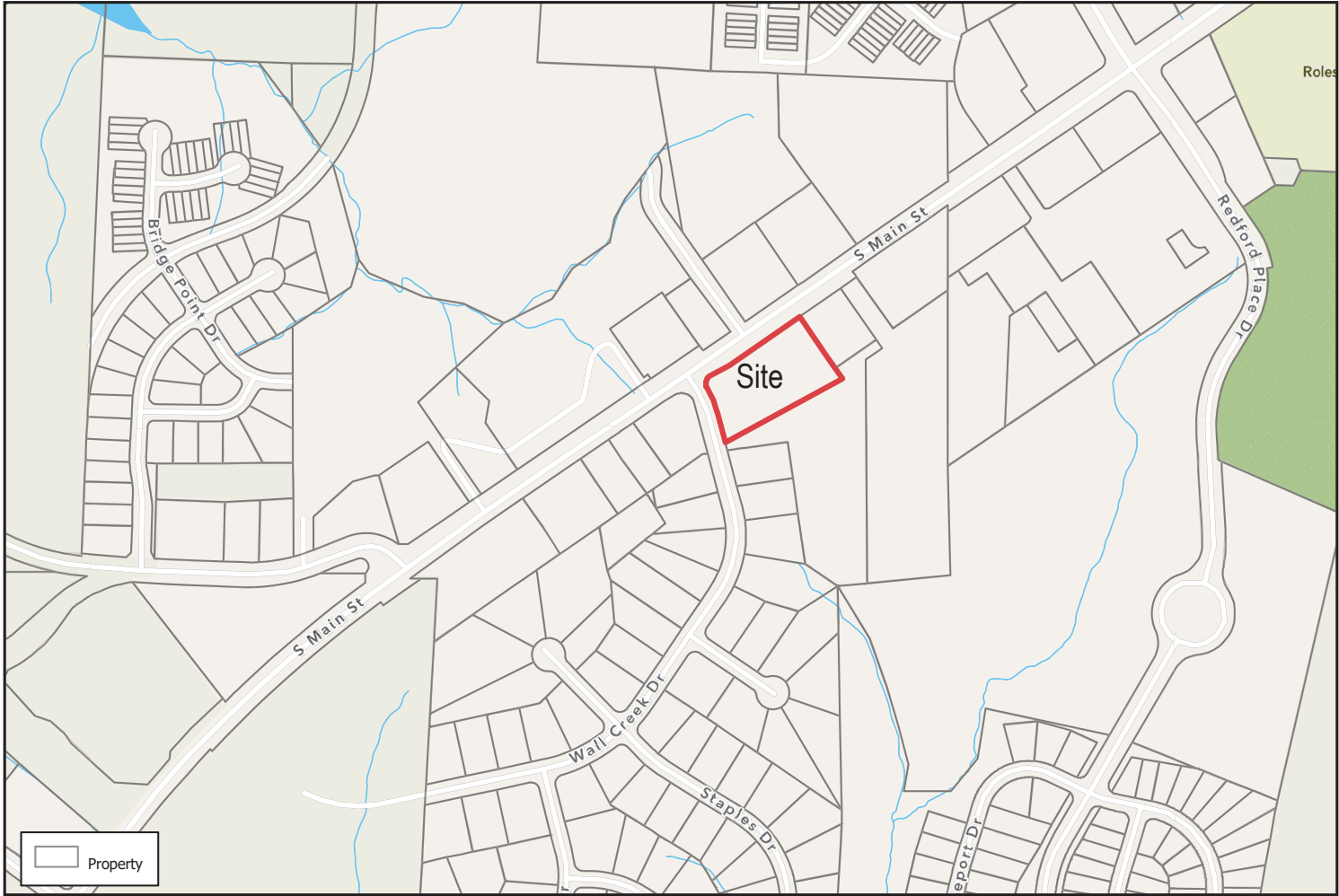
If you are receiving this letter, it is our understanding that you own property or belong to a neighborhood association within 200 feet of the subject property.

This case involves a request to rezone one parcel of land located at 503 Main Street (PIN 0753971388), The Site is currently zoned Residential Low Density (RL) and Residential and Planned Unit Development (R&PUD). This proposal would rezone the Site to General Commercial (GC). Enclosed for your reference is a vicinity map outlining the location of the subject parcel.

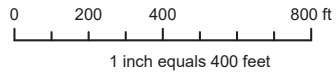
If you have questions, or cannot attend the meeting, but would like further information, please feel free to contact Keith Gettle, PE, by phone: 919.201.3934 or email: Kpgettle@gmail.com

Sincerely,

Keith P. Gettle P.E.



Site Map



Disclaimer
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Neighborhood Meeting

Toy Storage, LLC - Rezoning of 503 S. Main Street

September 7, 2022

4:00 PM – 6:00 PM

Rolesville Community Center

Attendees - Richard Bartholomew, Joe Armistead, Babette Tenbuura, Jackie Wilson, Allen Massey, Cody Buzzell

Jackie met with Richard Bartholomew, local carwash owner, outside of the Town Hall due to mobility issues. Richard stated he had no problems with the proposed zoning change request.

Jackie Wilson is the President of the EMO (Entrance Maintenance) and resident of Wall Creek for 20 years. Prior to the meeting Jackie spoke with Lee and Linda Hood on the phone, they were out of town, but they stated they were okay with general commercial use in the area of discussion. Though Lee & Linda did have questions about the buffering.

Babette Tenbuura – concerns: traffic flow, dumpster location, trash disposal, fencing.

Joe Armistead - voiced full support of the project.

Toy Storage – 503 S. Main St. Rolesville
Neighborhood Meeting

7-Sep-22

4:00 PM – 6:00 PM

Rolesville Community Center

Name: Lee & Linda Hood

Address: WALL CREEK

Comments:

CALLED (BECAUSE THEY WERE OUT OF TOWN
AND SAID THEY HAD QUESTIONS ABOUT
BUFFERING.

Toy Storage – 503 S. Main St. Rolesville

Neighborhood Meeting

7-Sep-22

4:00 PM – 6:00 PM

Rolesville Community Center

Name: Richard Bartholomew

Address:

Comments:

↓
met JACKY WILSON IN THE
TOWN PARKING LOT AND SAID HE
HAD NO ISSUES WITH THE PROPOSED
ZONING CHANGE REQUEST.

Neighborhood Meeting

7-Sep-22

4:00 PM – 6:00 PM

Rolesville Community Center

Name:

Joe Armistead

Address:

507 Fish Pond Ct., Rolesville, NC 27571

Comments:

Fully Support this project.

Toy Storage – 503 S. Main St. Rolesville
Neighborhood Meeting

7-Sep-22

4:00 PM – 6:00 PM

Rolesville Community Center

Name:

Zahette & Robert Tenburen

Address:

101 Wall Creek Dr Rolesville

Comments:

- Traffic into and out of property

- Fencing

- If food facilities - will the trash be away from residential properties. Don't want the smell + pests that come with food.

ATTACHMENT 3



Case: MA 22-07 503 S. Main Street
Address: 503 S. Main Street
PIN 1758784708
Date: 07.05.2022

Vicinity Map

Date Saved: 7/5/2022 3:11 PM

Path: C:\Users\SRaby\NDesk\top\GIS\2022 Projects\MA 22-07 503 S Main Street\MA 22-07 503 S. Main Street.aprx

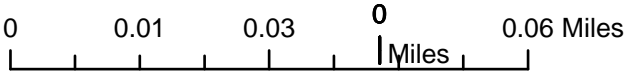
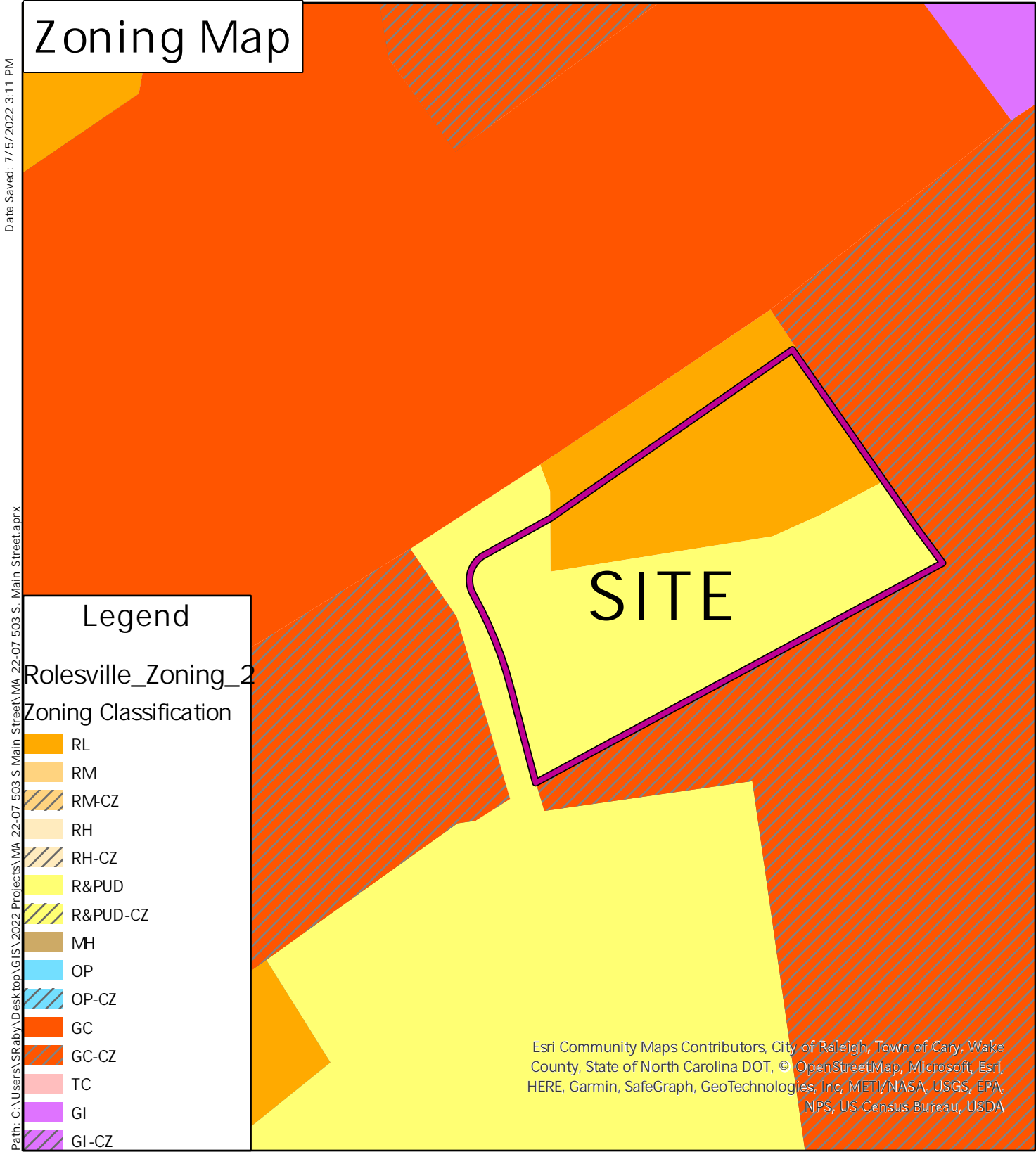


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ATTACHMENT 4



Case: MA 22-07 503 S. Main Street
Address: 503 S. Main Street
PIN 1758784708
Date: 07.05.2022



ATTACHMENT 5



Case: MA 22-07 503 S. Main Street
Address: 503 S. Main Street
PIN 1758784708
Date: 07.05.2022

Future Land Use Map

Date Saved: 7/5/2022 3:11 PM

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Legend

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

SITE

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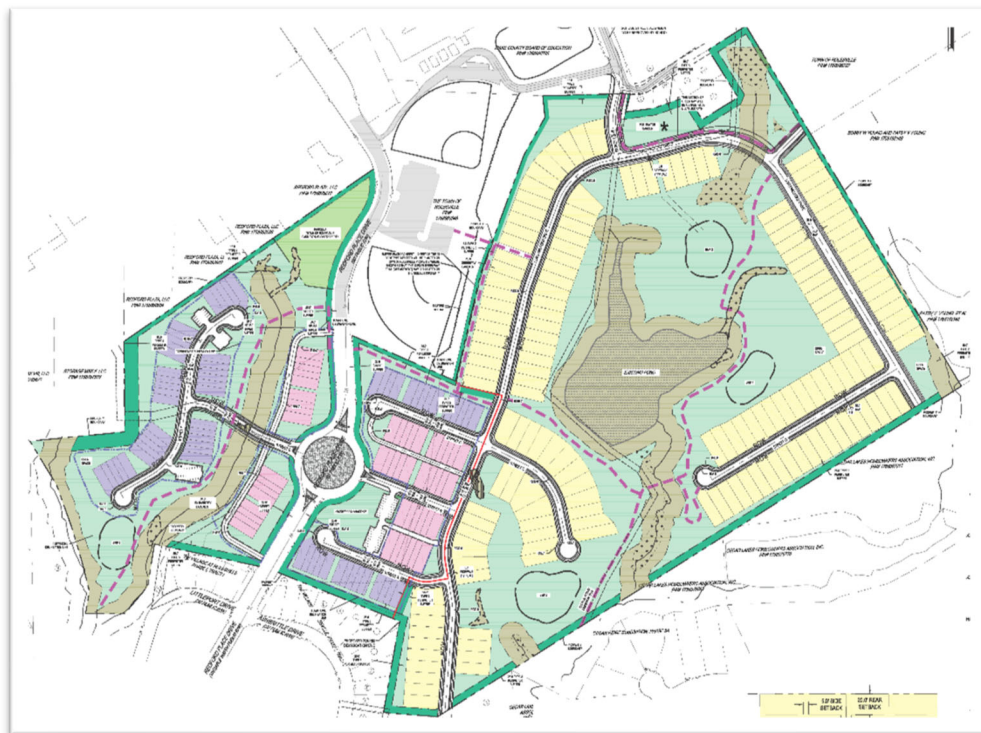


Memo

To: Rolesville Planning Board
From: Meredith Gruber, Planning Director
Date: September 23, 2022
Re: Map Amendment (Rezoning) MA 22-03 Parker Ridge

Background

The Town of Rolesville Planning Department received a Map Amendment (Rezoning) application in February 2022 for 86.89 acres located at 82 School Street, 120 School Street, and 201 Redford Place Drive with Wake County PINs 1758988411, 1758884270, 1768091558, and 1758983710. The applicant, Lennar Carolinas LLC, is requesting to change the zoning from Residential Low (RL) and Residential and Planned Unit Development (R&PUD) to Residential Medium Conditional Zoning District (RM-CZ) and Residential High Conditional Zoning District (RH-CZ). A concept plan showing 162 single family lots at a density of 2.80 units per acre, and 114 townhome lots at a density of 3.93 units per acre, is included as a condition of the rezoning request. The average density of the entire neighborhood is 3.18 units per acre.



The applicant has proposed the following conditions as part of the Parker Ridge rezoning request:

1. Development of the property shall be in substantial conformance with the accompanying Exhibit C Concept Plan. Locations shown for committed elements including, but not limited to greenways, streets, and open areas shown on Exhibit C are conceptual and provided for illustration and context only. Final locations of elements shall be determined at subsequent stages of approval.
2. The following uses shall be prohibited on the portion of the property zoned Residential High Density (the "RH Parcel"):
 - a. Family Care Facility
 - b. Live-Work Unit
 - c. Residential Care (ALF, ILF, CCF)
 - d. Telecommunications Tower
3. The RH Parcel shall have a maximum of 120 townhouse dwellings.
4. The following uses shall be prohibited on the portion of the property zoned Residential Medium Density (the "RM Parcel"):
 - a. Family Care Facility
 - b. Telecommunications Tower
5. The RM Parcel shall have a maximum of 170 single-family detached dwellings.
6. A single family detached home shall be developed and donated as part of Wounded Warrior Homes, Operation Coming Home, Operation Finally Home, or similar organization providing homes to veterans.
7. The development shall include at least one pollinator garden.
8. Perimeter buffers shall be provided as shown on the Concept plan. Type 3 and Type 4 perimeter buffers may include 6' fences instead of walls.
9. All single family detached dwellings shall have the following features:
 - a. A 2 car garage;
 - b. All garage doors shall have windows;
 - c. A minimum 24" stone or masonry water table;
 - d. If masonry is not the predominant first floor finish, then the front elevation shall have 2 types of siding. For example, horizontal siding may be combined with shake/board and batten;
 - e. Roof pitches on the main roof will have a pitch between 5 on 12 and 12 on 12;
 - f. Roof materials shall be asphalt shingles, metal, copper or wood;
 - g. Minimum 12" front overhangs;
 - h. A covered stoop or porch at least 20 sf and 5 ft deep;
 - i. Shutters or window trim shall be on front façade windows;
 - j. A minimum 64 sf rear patio;
 - k. At least one window on each side elevation; and
 - l. A varied color palette shall be used throughout the subdivision.

10. All townhouse dwellings shall have the following features:
 - a. A 1 or 2 car garage;
 - b. A minimum 24" stone or masonry water table;
 - c. If masonry is not the predominant first floor finish, then the front elevation shall have 2 types of siding. For example, horizontal siding may be combined with shake/board and batten;
 - d. Roof materials shall be asphalt shingles, metal, copper or wood;
 - e. Minimum 12" front overhangs;
 - f. A covered stoop or porch at least 20 sf and 5 ft deep;
 - g. Shutters or window trim shall be on front façade windows;
 - h. A minimum 64 sf rear patio;
 - i. At least one window on each side elevation (excluding interior units); and
 - j. A varied color palette shall be used throughout the subdivision.
11. The developer shall offer to dedicate the section of land labeled as "Parcel – A – Town of Rolesville Park Expansion" on the Concept Plan for use as a public park. This land shall count toward open space requirements for the overall development.

Applicant Justification

The applicant provided the justification statement below for their rezoning request. The complete application is included as an attachment.

Parker Ridge is a proposed residential development with a combination of single family detached and single family attached (townhouse) uses. Parker Ridge will benefit the public by creating more housing choices and needed housing supply in a key location near downtown Rolesville. The request will allow for development that is consistent with nearby neighborhoods and will complement the established character of the surrounding area. Parker Ridge includes a significant amount of open space, offsetting any impacts of the development and preserving the natural features of the site. Parker Ridge is consistent with the Town of Rolesville's long range plans and will further the Town's goals outlined in the Rolesville Comprehensive Plan.

Parker Ridge is consistent with the Future Land Use Map. The subject property is designated as High Density Residential on the Future Land Use Map. (Comprehensive Plan p. 39) This category contemplates mixed use neighborhoods consisting of single family, duplex, condominium, townhouse, or multifamily residential uses. (Comprehensive Plan p. 37) Parker Ridge will include the desired mixture of uses, with a combination of single family detached and single family attached uses, accompanied by substantial open space.

Parker Ridge also fulfills the following additional goals of the Comprehensive Plan:

Major Recommendation: Create a Diversity of New Houses, but Ensure High Quality and Limited Locations for Multi-Family Units. The Comprehensive Plan calls for more dense residential uses in limited, appropriate locations including locations closer to Main Street and areas closer to downtown. Parker Ridge is in close proximity to Main Street and Downtown. The site is a short walking distance from the many services and business currently located along Main Street and is an appropriate location for the proposed mix of residential uses.

Major Recommendation: *Celebrate Downtown*. The Comprehensive Plan seeks mixed use development, including diverse housing options, near downtown to activate the downtown core. Parker Ridge will offer a mix of residential uses in the vicinity of the downtown core, in a location walkable to existing commercial development and will help to activate the downtown core.

Neighborhood Meeting

The applicant held a neighborhood meeting on August 10, 2022 at the Rolesville Community Center. Meeting minutes are included as an attachment.

Comprehensive Plan

Land Use

The Future Land Use Map shows the subject parcels as High Density Residential, which is described as a mixed use neighborhood of single family, duplex, condominium, townhouse, or multifamily residential. These are lots or tracts at a density range of six to twelve dwelling units per acre including preserved open space areas.

Single family and townhome dwellings are residential types listed in the High Density Residential land use category definition; however, the average density for the proposed development is 3.18 units per acre which falls in the Medium Density Residential range.

Community Transportation Plan

The Town of Rolesville's Community Transportation Plan includes recommendations for thoroughfares, collectors, and intersections.

Thoroughfare Recommendations

- The subject property has no frontage on any thoroughfare roadways.
- The closest thoroughfares the proposed development are Main Street and Young Street.

Collector Recommendations

- Redford Place Drive is an existing collector roadway that passes through the proposed Parker Ridge development.
- School Street is proposed to continue through the subject property and is shown on the Parker Ridge Concept Plan.
- Another collector is proposed to connect School Street to Young Street, and a street stub is shown on the Parker Ridge Concept Plan.

Intersection Recommendations

- There are no intersection recommendations associated with the subject property.
- The closest intersection recommendations are located at Main Street and Redford Place Drive as well as at Main Street and Young Street.

Greenway Plan

As per the 2022 Greenway Plan, proposed greenways are shown in the following locations:

- Along the northwestern side of Redford Place Drive
- Running north-south through the single family portion of the proposed development

- In addition, a greenway connection is shown through the park between the proposed townhome portion and single family portion of the development.

Consistency

The applicant's request for 162 single family lots and 114 townhome lots at an average density of 3.18 units is consistent with the Town of Rolesville's Comprehensive Plan for the following reasons:

- The proposed housing types, single family and townhomes, are consistent with the High Density Residential land use category
- Community Transportation Plan collector recommendations are reasonably illustrated in the rezoning concept plan
- Greenways are shown as recommended in the 2022 Greenway Plan

The applicant's request may not be consistent with the Town's Comprehensive Plan for the following reason:

- The proposed density for the single family portion of Parker Ridge is 2.80 units per acre and for the townhome portion is 3.93 units per acre. The average density of 3.18 units per acre is lower than the High Density Residential land use category's typical density of 6 – 12 units per acre.
- The collector street design may function better with School Street being the primary route with Long Melford Drive forming a T-intersection on the western side.

Traffic

Traffic Impact Analysis

The consultant firm Stantec performed the Traffic Impact Analysis for this project on behalf of the Applicant and the Town; see Attachment 8 for the Final Report dated August 15, 2022. Traffic counts were obtained on Thursday, June 9, 2022 at four locations. The project inputs were 162 single-family (detached) homes and 114 townhomes, with build-out anticipated in 2028. Primary access is described as coming from the Redford Place roundabout, with an additional access (Concept Plan Street D) via extension of School Street from S. Main Street.

TIA Summary - Trip generation	<i>Entering</i>	<i>Existing</i>	<i>Total</i>
AM Peak (7-9 am)	47	123	170
PM Peak (4-6 pm)	134	86	220
Weekday Daily Trips	--	--	2,391

Five intersections were studied for capacity analysis and level of service impact of this development.

TIA Summary – Intersection Improvements	
South Main at Old Rogers / School St.	No Improvements. * <i>Southbound Old Rogers should consider RI/RO.</i>
South Main at Redford Place / Roger Rd.	No Improvements - Intersection functions at LOS E under (existing) No Build and Build scenarios at PM Peak.

School St at School driveway/ Scarboro driveway	No Improvements
Redford Place at School driveway	No Improvements
Redford Place at (Development) Access A / Access B	Construct new streets at opposite sides of roundabout, with 100' minimal internal protective stems

Development Review

The Technical Review Committee (TRC) reviewed this rezoning request and concept plan.

- The only outstanding item is further discussion about greenway alignment details.

Staff Recommendation

Staff finds that the proposed rezoning request and associated residential project is generally consistent with the Comprehensive Plan on many fronts but could more greatly fulfill the High Density Residential vision with a varied, denser housing and an overall mixed use development.

Staff may recommend approval with the following changes:

- Remove applicant's Condition 8: Perimeter buffers shall be provided as shown on the Concept plan. Type 3 and Type 4 perimeter buffers may include 6' fences instead of walls.
- Redesign collector street with School Street being the primary route and Long Melford Drive forming at T-intersection on the western side of the single family residential layout.

Proposed Motion

Motion to recommend (approval or denial) of rezoning request MA 22-03 Parker Ridge.

Attachments

1	Application
2	Vicinity Map
3	Future Land Use Map
4	Zoning Map
5	Neighborhood Meeting Minutes
6	Concept Plan
7	Conditions
8	Traffic Impact Analysis



Map Amendment Application

Contact Information

Property Owner See attached addendum for all owner contact information

Address See attached addendum City/State/Zip See attached addendum

Phone See attached addendum Email See attached addendum

Developer Lennar Carolinas LLC c/o Collier Marsh

Contact Name Collier Marsh

Address 301 Fayetteville Street City/State/Zip Raleigh, NC 27601

Phone 919-835-4663 Email colliermarsh@parkerpoe.com

Property Information

Address 82 School Street, 201 Redford Place Drive, and 120 School Street (See attached addendum for additional information by parcel)

Wake County PIN(s) 1758988411, 1758884270, 1768091558, and 1758983710

Current Zoning District RL, R and PUD Requested Zoning District RM and RH

Total Acreage 88.36

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 Dr. Phil P. L. Date 12-29-2021

STATE OF NORTH CAROLINA

COUNTY OF Wake

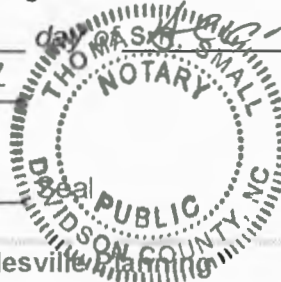
I, a Notary Public, do hereby certify that William Arnold Power Jr.

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

the 29 day of December 20 21

My commission expires 1-7-2022

Signature [Signature]



Town of Rolesville Planning



Case No. _____

Date _____

Map Amendment Application

Contact Information

Property Owner See attached addendum for all owner contact informationAddress See attached addendumCity/State/Zip See attached addendumPhone See attached addendumEmail See attached addendumDeveloper Lennar Carolinas LLC c/o Collier MarshContact Name Collier MarshAddress 301 Fayetteville StreetCity/State/Zip Raleigh, NC 27601Phone 919-835-4663Email colliermarsh@parkerpoe.com

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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 W. Mark R. L. Date 12-29-2021

STATE OF NORTH CAROLINA

COUNTY OF GallatinI, a Notary Public, do hereby certify that William Mark Parker Jrpersonally appeared before me this day and acknowledged the due execution of the foregoing instrument. This the 29 day of December 20 21.My commission expires 1-7-2022Signature [Signature]

Town of Rolesville Planning



Case No. _____

Date _____

Map Amendment Application

Contact Information

Property Owner See attached addendum for all owner contact information

Address See attached addendum

City/State/Zip See attached addendum

Phone See attached addendum

Email See attached addendum

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Contact Name Collier Marsh

Address 301 Fayetteville Street

City/State/Zip Raleigh, NC 27601

Phone 919-835-4663

Email colliermarsh@parkerpoe.com

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Current Zoning District RL, R and PUD

Requested Zoning District RM and RH

Total Acreage 88.36

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 Catherine Faye Parker Date 12/29/2021

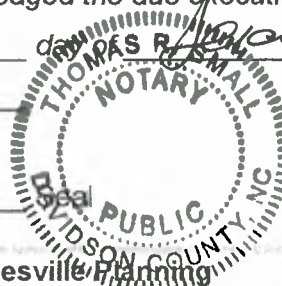
STATE OF NORTH CAROLINA

COUNTY OF Gallatin

I, a Notary Public, do hereby certify that Catherine Faye Parker
personally appeared before me this day and acknowledged the due execution of the foregoing instrument. This
the 29 day of December, 20 21.

My commission expires 1-7-2027

Signature [Signature]



Town of Rolesville Planning



Case No. _____

Date _____

Map Amendment Application

Contact Information

Property Owner See attached addendum for all owner contact information

Address See attached addendum City/State/Zip See attached addendum

Phone See attached addendum Email See attached addendum

Developer Lennar Carolinas LLC c/o Collier Marsh

Contact Name Collier Marsh

Address 301 Fayetteville Street City/State/Zip Raleigh, NC 27601

Phone 919-835-4663 Email colliermarsh@parkerpoe.com

Property Information

Address 82 School Street, 201 Redford Place Drive, and 120 School Street (See attached addendum for additional information by parcel)


Wake County PIN(s) 1758988411, 1758884270, and 1758983710

Current Zoning District RL, R and PUD Requested Zoning District RM and RH

Total Acreage 88.36

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  Date 12/21/21

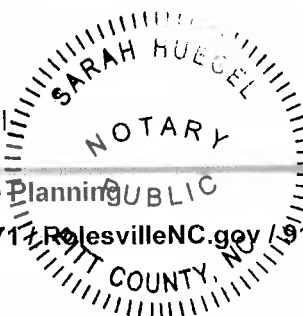
STATE OF NORTH CAROLINA

COUNTY OF DH

I, a Notary Public, do hereby certify that Thomas Glenon
personally appeared before me this day and acknowledged the due execution of the foregoing instrument. This
the 21st day of December 2021

My commission expires 12/2025

Signature  Seal



Town of Rolesville Planning

PO Box 250 / Rolesville, North Carolina 27571 / RolesvilleNC.gov / 919.554.6517

Metes and Bounds Description of Property

See attached Exhibit B

This image shows a full page of blank, lined paper. It features approximately 20 evenly spaced horizontal black lines across its entire width. The lines are thin and consistent in thickness. There are no margins, text, or other markings on the page.

Rezoning Justification

See attached addendum

EXHIBIT A
to
School Street Rezoning Application
Property and Owner Contact Information

Wake County PIN: 1758988411

Address: 82 School Street, Rolesville, NC 27571
Current Zoning District: RL
Requested Zoning District: RM and RH
Total Acreage: 60.97 acres
Property Owner: W. Harold Parker Jr and Catherine Faye Parker
Owner Mailing Address: 149 Stonebridge Drive
City/State/Zip: New London, NC 28127
Phone: N/A
Email: N/A

Wake County PIN: 1768091558

Address: 0 School Street, Rolesville, NC 27571
Current Zoning District: RL
Requested Zoning District: RM
Total Acreage: 0.14 acres
Property Owner: W. Harold Parker Jr and Catherine Faye Parker
Owner Mailing Address: 149 Stonebridge Drive
City/State/Zip: New London, NC 28127
Phone: N/A
Email: N/A

Wake County PIN: 1758884270

Address: 201 Redford Place Drive, Rolesville, NC 27571
Current Zoning District: R and PUD
Requested Zoning District: RH
Total Acreage: 26.99 acres
Property Owner: Rolesville Development LLC
Owner Mailing Address: PO Box 30803
City/State/Zip: Greenville, NC 27833
Phone: N/A
Email: N/A

Wake County PIN: 1758983710

Address: 120 School Street, Rolesville, NC 27571
Current Zoning District: RL
Requested Zoning District: RM
Total Acreage: 0.4 acres
Property Owner: W. Harold Parker, Jr.
Owner Mailing Address: 149 Stonebridge Drive
City/State/Zip: New London, NC 28127
Phone: N/A
Email: N/A

Rezoning Justification

Parker Ridge is a proposed residential development with a combination of single family detached and single family attached (townhouse) uses. Parker Ridge will benefit the public by creating more housing choices and needed housing supply in a key location near downtown Rolesville. The request will allow for development that is consistent with nearby neighborhoods and will complement the established character of the surrounding area. Parker Ridge includes a significant amount of open space, offsetting any impacts of the development and preserving the natural features of the site. Parker Ridge is consistent with the Town of Rolesville's long range plans and will further the Town's goals outlined in the Rolesville Comprehensive Plan.

Parker Ridge is consistent with the Future Land Use Map. The subject property is designated as High Density Residential on the Future Land Use Map. (Comprehensive Plan p. 39) This category contemplates mixed use neighborhoods consisting of single family, duplex, condominium, townhouse or multifamily residential uses. (Comprehensive Plan p. 37) Parker Ridge will include the desired mixture of uses, with a combination of single family detached and single family attached uses, accompanied by substantial open space.

Parker Ridge also fulfills the following additional goals of the Comprehensive Plan:

Major Recommendation: *Create a Diversity of New Houses, but Ensure High Quality and Limited Locations for Multi-Family Units.* The Comprehensive Plan calls for more dense residential uses in limited, appropriate locations including locations closer to Main Street and areas closer to downtown. Parker Ridge is in close proximity to Main Street and Downtown. The site is a short walking distance from the many services and business currently located along Main Street and is an appropriate location for the proposed mix of residential uses.

Major Recommendation: *Celebrate Downtown.* The Comprehensive Plan seeks mixed use development, including diverse housing options, near downtown to activate the downtown core. Parker Ridge will offer a mix of residential uses in the vicinity of the downtown core, in a location walkable to existing commercial development and will help to activate the downtown core.

Attachment 2

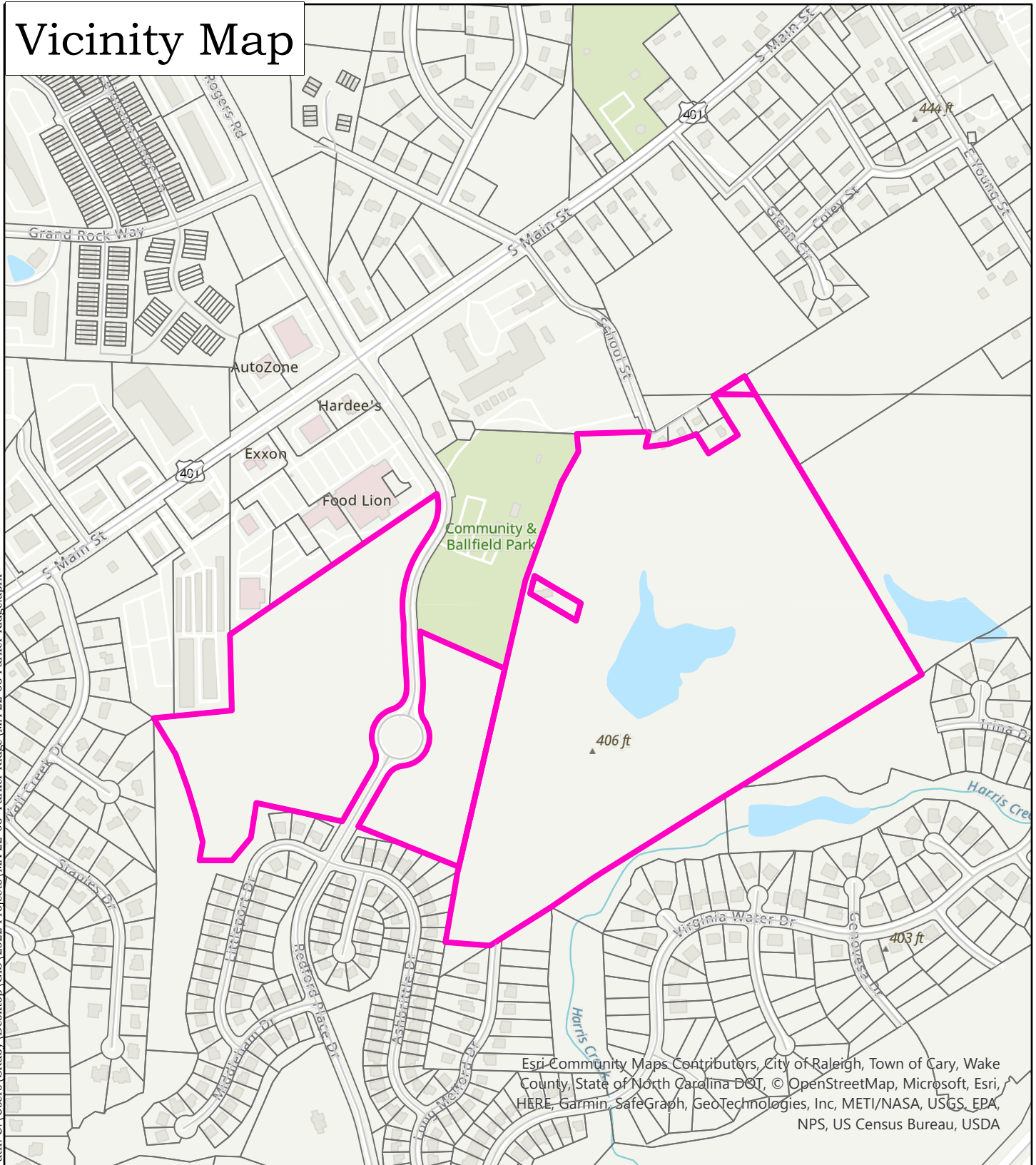


Case: MA 22-03 Parker Ridge
Address: 82 School St., 0 School St., 201 Redford Place Dr., 120 School St.
PIN 1758988411; 1768091558; 1758884270; 1758983710
Date: 04.18.2022

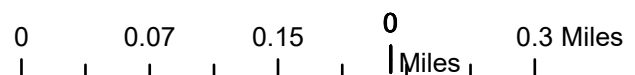
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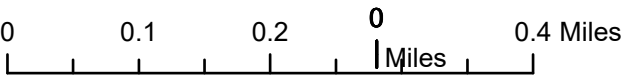
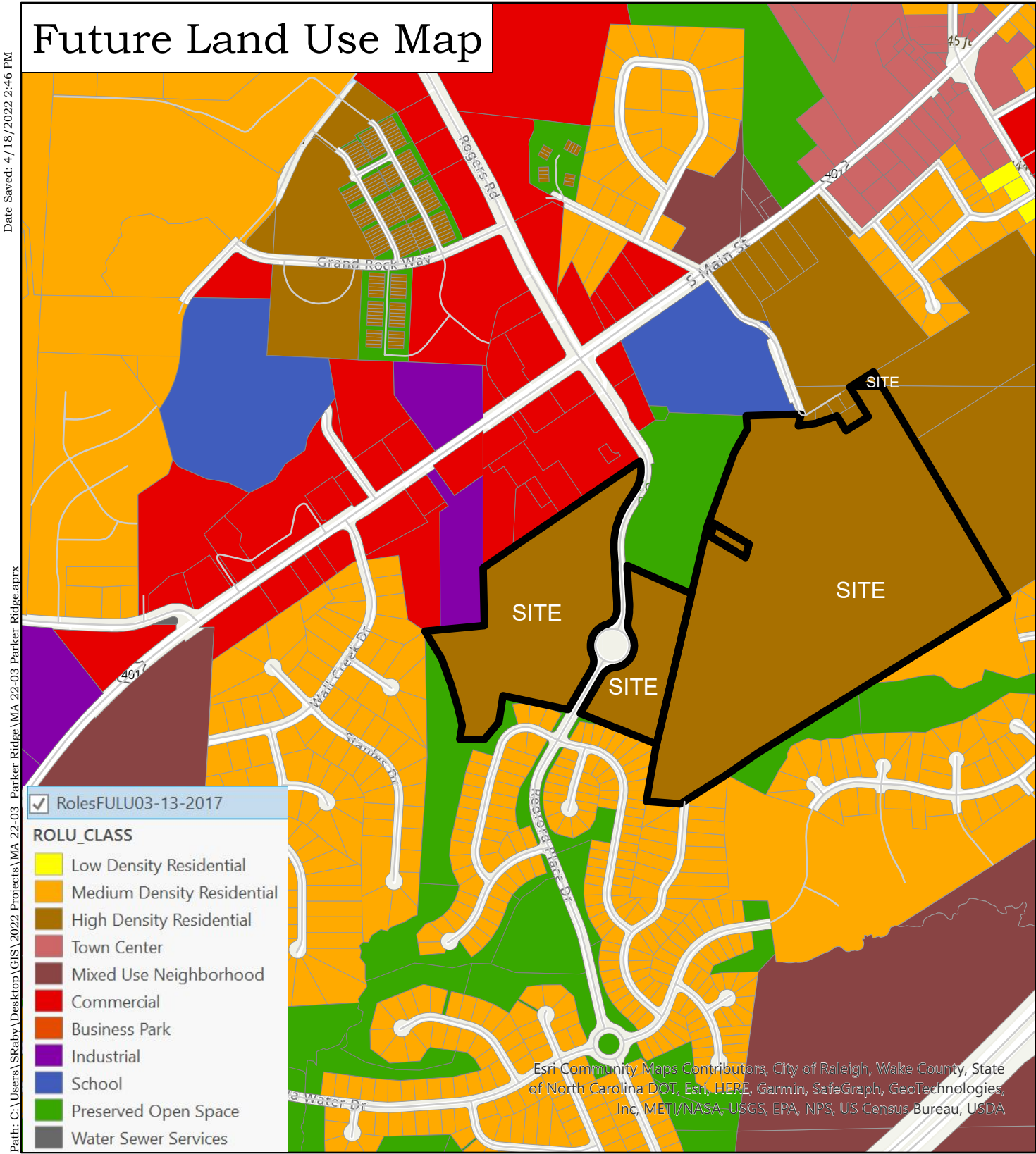
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Attachment 3



Case: MA 22-03 Parker Ridge
Address: 82 School St., 0 School St., 201 Redford Place Dr., 120 School St.
PIN 1758988411; 1768091558; 1758884270; 1758983710
Date: 04.18.2022



Attachment 4



Case: MA 22-03 Parker Ridge
Address: 82 School St., 0 School St., 201 Redford Place Dr., 120 School St.
PIN 1758988411; 1768091558; 1758884270; 1758983710
Date: 04.18.2022

Zoning Map

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☒ Rolesville_Zoning_2021

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

Esri Community Maps Contributors, City of Raleigh, Wake County, State of North Carolina DOT, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA



0 0.1 0.2 0.4 Miles

Parker Ridge**August 10, 2022 Neighborhood Meeting Minutes**

The Applicant held a neighborhood meeting for the Parker Ridge rezoning at the Town of Rolesville Community Center on August 10th, 2022. The following members of the project team were in attendance to present and answer questions: Charlie Yokley from Lennar, Michael Taylor from Lennar, Kelly Race from BGE, and Collier Marsh from Parker Poe. Approximately 15 neighbors were in attendance. Collier Marsh began by introducing the project team, gave an overview of the rezoning process, and then described the proposed rezoning. The floor was then opened to questions from the attending neighbors. The following is a summary of the questions asked by neighbors and the applicant's responses.

Question: What is the timeframe for development.

Applicant Response: There are several steps to go in the process. We are currently in the rezoning process, which is followed by the site plan process. We are targeting early 2024 for the start of construction.

Question: How tall will the Townhomes be?

Applicant Response: Two stories.

Question: What is the project's open space?

Applicant Response: Open space includes all of the open land outside of individual lots and street rights of way. In this project, the open space includes environmentally sensitive areas, greenways, buffers, and other open areas.

Question: Will there be buffers provided at the perimeter of the development adjacent to Villages of Rolesville?

Applicant Response: Yes, we are proposing buffers along our perimeter. Along the Villages of Rolesville Boundary, we are proposing a 25' Type 3 perimeter buffer.

Question: How does the project address traffic in the area?

Applicant Response: The Town has completed its Traffic Impact Analysis and did not recommend any offsite traffic improvements. We have engaged our own traffic engineer to review the Town's Traffic Impact Analysis.

PARKER RIDGE NEIGHBORHOOD MEETING MINUTES

Question: Have you evaluated the School Street access and backups related to student drop offs?

Applicant Response: Yes, we are working with Wake County Schools to see what can be done.

Question: Where will construction traffic go?

Applicant Response: Construction traffic will be directed to use main roads where possible and avoid neighborhood streets. Lennar has onsite construction managers to ensure rules are followed.

Question: Will the project require blasting? What procedures are followed?

Applicant Response: We do expect some blasting due to existing rock. There are extensive requirements for blasting, including permitting and notice requirements that must be followed.

Question: What will happen to environmentally sensitive areas?

Applicant Response: Environmentally sensitive areas are being preserved and, where possible, activated with greenway trails for the public to enjoy.

Question: Will greenways run through neighboring properties?

Applicant Response: No. The greenways we are proposing are entirely on our property and have been coordinated with the Town.

Question: Can fences be added in buffers?

Applicant Response: We can look into adding fences where they are not already being provided.

After the question and answer session, the applicant team had informal discussions with several neighbors and the meeting concluded at 7:30 pm

CONCEPT PLAN FOR
PARKER RIDGE
EXHIBIT C
82 SCHOOL STREET
ROLESVILLE, NORTH CAROLINA 27571

SHEET LIST TABLE	
SHEET NUMBER	SHEET TITLE
C0-0	COVER SHEET
C1-0	EXISTING CONDITIONS
C1-1	EXISTING CONDITIONS
C2-0	PROPOSED ZONING DISTRICT
C3-0	OVERALL CONCEPT PLAN
C3-1	ENLARGED CONCEPT PLAN
C3-2	ENLARGED CONCEPT PLAN

811
Know what's below.
Call before you dig.



DESIGNED BY: SL/KH

DRAWN BY: SL/KH

REVIEWED BY: SL

09/08/2022

03/31/2022

REV

PER TOWN OF ROLESVILLE COMMENTS

DATE

DESCRIPTION

BCE

5440 WADE PARK BLVD, SUITE 102
RALEIGH NC 27607
WWW.BCEINC.COM
NC LICENSE #C-4397

LENNAR

CORPORAION

1100 PERIMETER PARK DRIVE, SUITE 112
MORRISVILLE / NORTH CAROLINA / 27560

PARKER RIDGE

MASTER PLAN

82 SCHOOL STREET
ROLESVILLE / NORTH CAROLINA / 27571

OVERALL SITE PLAN

NOT FOR CONSTRUCTION

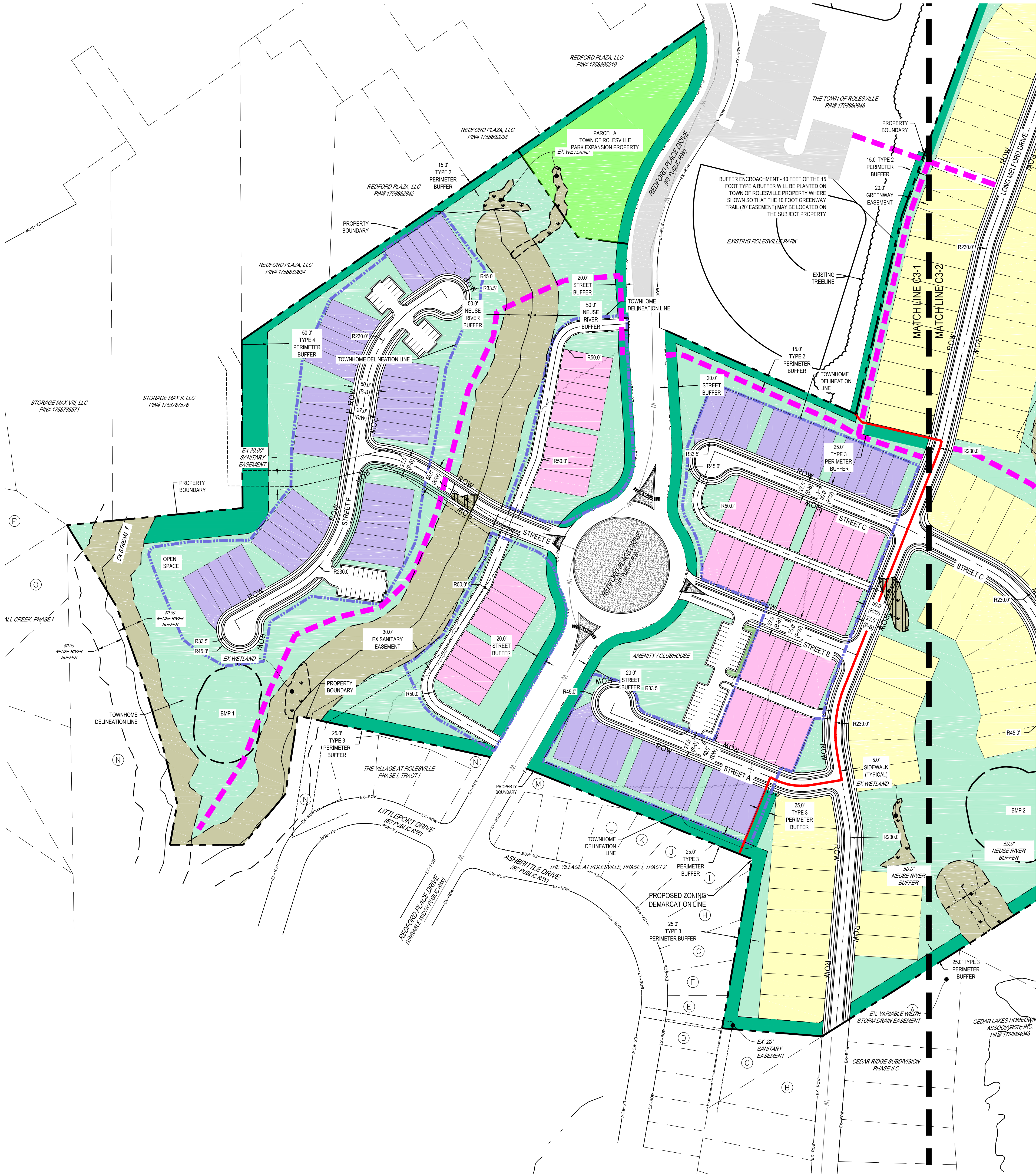
FILE NUMBER:
8430-03

DATE: 02/03/2022

C3-0



Know what's below.
Call before you dig.



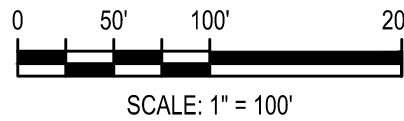
LEGEND

- PUBLIC GREENWAY (EST. 10' TRAIL IN 20' ESMT)
- PERIMETER BUFFERS
- OPEN SPACE
- ENVIRONMENTAL AREAS
- PROPOSED ZONING LINE
- TOWNHOME TRACT AREA
- SINGLE FAMILY
- TOWNHOME
- TOWNHOME (ALLEY)

LOCATIONS SHOWN FOR COMMITTED ELEMENTS INCLUDING, BUT NOT LIMITED TO GREENWAYS, STREETS, AND OPEN AREAS ARE CONCEPTUAL AND PROVIDED FOR ILLUSTRATION AND CONTEXT ONLY. FINAL LOCATIONS OF ELEMENTS SHALL BE DETERMINED AT SUBSEQUENT STAGES OF APPROVAL.

ADJOINING PROPERTY OWNERS

(A) MARQUIS BRYANT PIN# 1758872232	(G) GARY W. PARRISH & CHARLINE T. PARRISH PIN# 1758876325	(M) THE VILLAGE AT ROLESVILLE HOMEOWNERS ASSOCIATION, INC. PIN# 1758875606	(S) RICHARD E. DUNN ET AL. (HEIRS OF JAMRY CATHRYN DUNN) PIN# 1758889444
(B) JOHN SHANNON POPE & ALICIA POPE PIN# 1758873008	(H) THOMAS E. AUGUSTINE & KATHARINE THERESA SILEO AUGUSTINE PIN# 1758878431	(N) THE VILLAGE AT ROLESVILLE HOMEOWNERS ASSOCIATION, INC. PIN# 1758777301	(T) ALBERT EMERY BURKE & KIMBERLY LUANNE BURKE PIN# 1758880348
(C) JOHN SHANNON POPE & ALICIA POPE PIN# 1758878113	(I) THURMAN GREENE MILLER, JR. & SALLY EVERHART MILLER PIN# 1758878407	(O) KENNETH LEE TURNER & ANN JOHNSTON TURNER PIN# 1758784082	(U) ALBERT EMERY BURKE & KIMBERLY LUANNE BURKE PIN# 1758880437
(D) WANDA ELOISE JONES PIN# 1758878107	(J) PAUL D. HEWITT & TAMMY J. HEWITT PIN# 1758877251	(P) JAMES L. EDWARDS & JOYCE P. EDWARDS PIN# 1758784108	(V) EDWARD W. SCARBORO, JR. ET AL. PIN# 1758888560
(E) SUSAN JOHNSON PIN# 1758878213	(K) ESTHER EIFERT PIN# 1758876594	(Q) DOROTHY JONES PENDER ET AL. (HEIRS OF DOROTHY D. JONES) PIN# 1758887386	
(F) ANDRE KELLY & ARTEMISIA KELLY PIN# 1758878218	(L) NR02 UMEL O & DOMINIC UGORJI PIN# 1758876546	(R) MICHAEL T. DERHAM ET AL. (HEIRS OF RUTH UPCHURCH DERHAM) PIN# 1758888480	



NOT FOR CONSTRUCTION
FILE NUMBER:
8430-03
DATE: 02/03/2022
C3-1

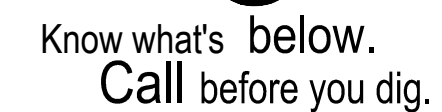
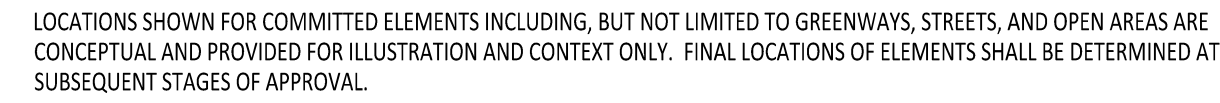
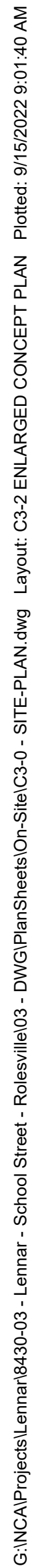
ENLARGED SITE PLAN
1 OF #

PARKER RIDGE
MASTER PLAN
82 SCHOOL STREET
ROLESVILLE / NORTH CAROLINA / 27571

LENNAR
CORPORAION
1100 PERIMETER PARK DRIVE, SUITE 112
MORRISVILLE / NORTH CAROLINA / 27560

BCE
5440 WADE PARK BLVD, SUITE 102
RALEIGH NC 27607
WWW.BCEINC.COM
NC LICENSE #C-4397

DESIGNED BY:	SL/KH
DRAWN BY:	SL/KH
REVIEWED BY:	SL
DATE	09/08/2022
PER TOWN OF ROLESVILLE COMMENTS	03/31/2022
DESCRIPTION	



NOT FOR CONSTRUCTION
FILE NUMBER: 8430-03
DATE: 02/03/2022
C3-2

EXHIBIT D
to Parker Ridge Rezoning Application
Proposed Conditions
Rev. 3 – September 19, 2022

1. Development of the property shall be in substantial conformance with the accompanying Exhibit C Concept Plan. Locations shown for committed elements including, but not limited to greenways, streets, and open areas shown on Exhibit C are conceptual and provided for illustration and context only. Final locations of elements shall be determined at subsequent stages of approval.
2. The following uses shall be prohibited on the portion of the property zoned Residential High Density (the “RH Parcel”):
 - a. Family Care Facility
 - b. Live-Work Unit
 - c. Residential Care (ALF, ILF, CCF)
 - d. Telecommunications Tower
3. The RH Parcel shall have a maximum of 120 townhouse dwellings.
4. The following uses shall be prohibited on the portion of the property zoned Residential Medium Density (the “RM Parcel”):
 - a. Family Care Facility
 - b. Telecommunications Tower
5. The RM Parcel shall have a maximum of 170 single-family detached dwellings.
6. A single family detached home shall be developed and donated as part of Wounded Warrior Homes, Operation Coming Home, Operation Finally Home, or similar organization providing homes to veterans.
7. The development shall include at least one pollinator garden.
8. Perimeter buffers shall be provided as shown on the Concept plan. Type 3 and Type 4 perimeter buffers may include 6’ fences instead of walls.
9. All single family detached dwellings shall have the following features:
 - a. A 2 car garage;
 - b. All garage doors shall have windows;
 - c. A minimum 24” stone or masonry water table;
 - d. If masonry is not the predominant first floor finish, then the front elevation shall have 2 types of siding. For example, horizontal siding may be combined with shake/board and batten;

- e. Roof pitches on the main roof will have a pitch between 5 on 12 and 12 on 12;
 - f. Roof materials shall be asphalt shingles, metal, copper or wood;
 - g. Minimum 12" front overhangs;
 - h. A covered stoop or porch at least 20 sf and 5 ft deep;
 - i. Shutters or window trim shall be on front façade windows;
 - j. A minimum 64 sf rear patio;
 - k. At least one window on each side elevation; and
 - l. A varied color palette shall be used throughout the subdivision.
10. All townhouse dwellings shall have the following features:
- a. A 1 or 2 car garage;
 - b. A minimum 24" stone or masonry water table;
 - c. If masonry is not the predominant first floor finish, then the front elevation shall have 2 types of siding. For example, horizontal siding may be combined with shake/board and batten;
 - d. Roof materials shall be asphalt shingles, metal, copper or wood;
 - e. Minimum 12" front overhangs;
 - f. A covered stoop or porch at least 20 sf and 5 ft deep;
 - g. Shutters or window trim shall be on front façade windows;
 - h. A minimum 64 sf rear patio;
 - i. At least one window on each side elevation (excluding interior units); and
 - j. A varied color palette shall be used throughout the subdivision.
11. The developer shall offer to dedicate the section of land labeled as "Parcel – A – Town of Rolesville Park Expansion" on the Concept Plan for use as a public park. This land shall count toward open space requirements for the overall development.



**Parker Ridge
Traffic Impact Analysis**
Rolesville, North Carolina

August 15, 2022

Prepared for:

Town of Rolesville
502 Southtown Circle
Rolesville, NC 27571

Applicant:


Lennar Carolinas LLC
301 Fayetteville Street
Raleigh, NC 27601

Prepared by:

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

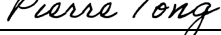
Sign-off Sheet

This document entitled Parker Ridge Traffic Impact Analysis was prepared by Stantec Consulting Services Inc. ("Stantec") for the account of Town of Rolesville (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 

(signature)

Maggie Rogers

Reviewed by 

(signature)

Pierre Tong, PE

Approved by 

(signature)

Matt Peach, PE, PTOE



8/15/2022

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Executive Summary

The proposed Parker Ridge Development is located on both sides of Redford Place Drive south of US 401 Business (South Main Street) in Rolesville, NC. The proposed development will consist of 162 single-family homes and 114 townhomes. The development is anticipated to be completed in 2028.

The development is expected to generate 2,391 new trips per average weekday. In the AM and PM peak hours, the development is expected to generate 170 AM peak hour trips (47 entering and 123 exiting) and 220 PM peak hour trips (134 entering and 86 exiting).

Access to the site is envisioned to be provided by adding an eastbound and westbound approach to the existing roundabout on Redford Place Drive, located approximately 1,100 feet south of the school driveway. Additional access will be located on School Street just south of the Rolesville Elementary School and future Scarboro development driveways.

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

- 2022 Existing;
- 2028 No-Build;
- 2028 Build; and
- 2028 Build with Improvements.

Capacity analysis for the AM and PM peak hours in each scenario were performed for the following intersections:

- Old Rogers Road / School Street at South Main Street (US 401 Business);
- Redford Place Drive / Rogers Road at South Main Street (US 401 Business);
- School Street at School Driveway / Scarboro Driveway;
- Redford Place Drive at School Driveway; and
- Redford Place Drive at Access A / Access B.

Table ES-1 shows a summary of the capacity analysis results included in this Traffic Impact Analysis (TIA).



Table ES-1: Level of Service Summary Table

Level of Service (Delay, sec/veh)	2022 Existing		2028 No-Build		2028 Build	
	AM	PM	AM	PM	AM	PM
Old Rogers Road / School Street at South Main Street (US 401 Business)	C (22.5)	D (28.7)	F (70.7)	E (47.7)	F (63.5)	F (580.5)
Redford Place Drive / Rogers Road at South Main Street (US 401 Business)	D (35.2)	D (36.2)	D (51.8)	E (58.5)	D (55.0)	E (62.7)
School Street at School Driveway / Scarborough Driveway	-	-	A (8.9)	A (8.6)	A (9.0)	A (8.8)
Redford Place Drive at School Driveway	B (10.5)	A (9.7)	B (11.2)	B (10.3)	B (12.8)	B (11.1)
Redford Place Drive at Access A / Access B	-	-	-	-	A (4.1)	A (4.4)

With the addition of traffic generated by the proposed development, the northbound School Street approach of the South Main Street at Old Rogers Road / School Street intersection increases in delay such that LOS degrades from E to F. It is not uncommon for unsignalized side-street approaches to operate with high delays during peak periods. As traffic on Main Street does not stop, the overall delay at the intersection is relatively low at 2.3 seconds per vehicle in the AM peak hour and 18.9 seconds in the PM peak hour. If high delays are experienced on the stop-controlled approaches, drivers may opt for alternative routes. Even so, the intersection was evaluated for potential improvements due to meet the requirements of the LDO:

- The installation of a traffic signal would improve the LOS of the side streets significantly. This, however, is not anticipated to be permitted by NCDOT due to the proximity of the intersection to the adjacent signalized intersection of South Main Street at Redford Place Drive/Rogers Road, as well as the low traffic volumes on the side-street approaches of Old Rogers Road and School Street which are not anticipated to meet the warrants for installation of a traffic signal included in the Manual on Uniform Traffic Control Devices (MUTCD).
- The construction of dedicated left-turn turn-lanes on Old Rogers Road and School Street reduces delay but does not mitigate the impact of the proposed development. This is attributed to low volumes of traffic on the side-street approaches and high through volumes on South Main Street. The installation of turn lanes may also impact adjacent property owners. As a result, the installation of turn lanes on Old Rogers Road and School Street is not recommended.
- Converting the southbound approach of Old Rogers Road to right-in / right-out access by installing channelization was shown to reduce delays on the side streets such that School Street is anticipated to operate at LOS C and Old Rogers Road is anticipated to operate at LOS B during the PM peak hour. This would require left turns from Old Rogers Road to be redirected to Rogers Road and use the traffic signal at the intersection of South Main Street at Redford Place Drive / Rogers Road; increasing travel time for existing vehicles on the Old Rogers Road approach. Furthermore, the restriction of access without the



PARKER RIDGE TRAFFIC IMPACT ANALYSIS

installation of a median has only limited effectiveness. As a result, the restriction of access is not recommended.

Therefore, no improvements are recommended at the South Main Street at Old Rogers Road / School Street intersection in conjunction with this development. Consideration should be made for limiting the southbound Old Rogers Road approach to right-in / right-out-only access in the future.

The signalized intersection of South Main Street at Redford Place Drive / Rogers Road operates at LOS E during the PM peak hour in both the no-build and build scenarios. In this instance, the LDO requires mitigation if the proposed development causes the LOS to fall to the next lower letter grade. As the intersection operates at LOS E during both the no-build and build scenarios, no improvements are recommended at this intersection.

The following improvements are recommended to be constructed as part of the Parker Ridge Development:

Old Rogers Road / School Street at South Main Street

- No improvements are recommended at this intersection.

Redford Place Drive / Rogers Road at South Main Street

- No improvements are recommended at this intersection

School Street at School Driveway / Scarborough Driveway

- No improvements are recommended at this intersection

Redford Place Drive at School Driveway

- No improvements are recommended at this intersection

Redford Place Drive at Access A / Access B

- Construct Access A and Access B at the existing roundabout along Redford Place Drive south of the School Driveway intersection. Both intersections should have a minimum internal protective stem of 100 feet.

These recommendations are illustrated in Figure ES-1.



Figure ES-1: Recommended Improvements

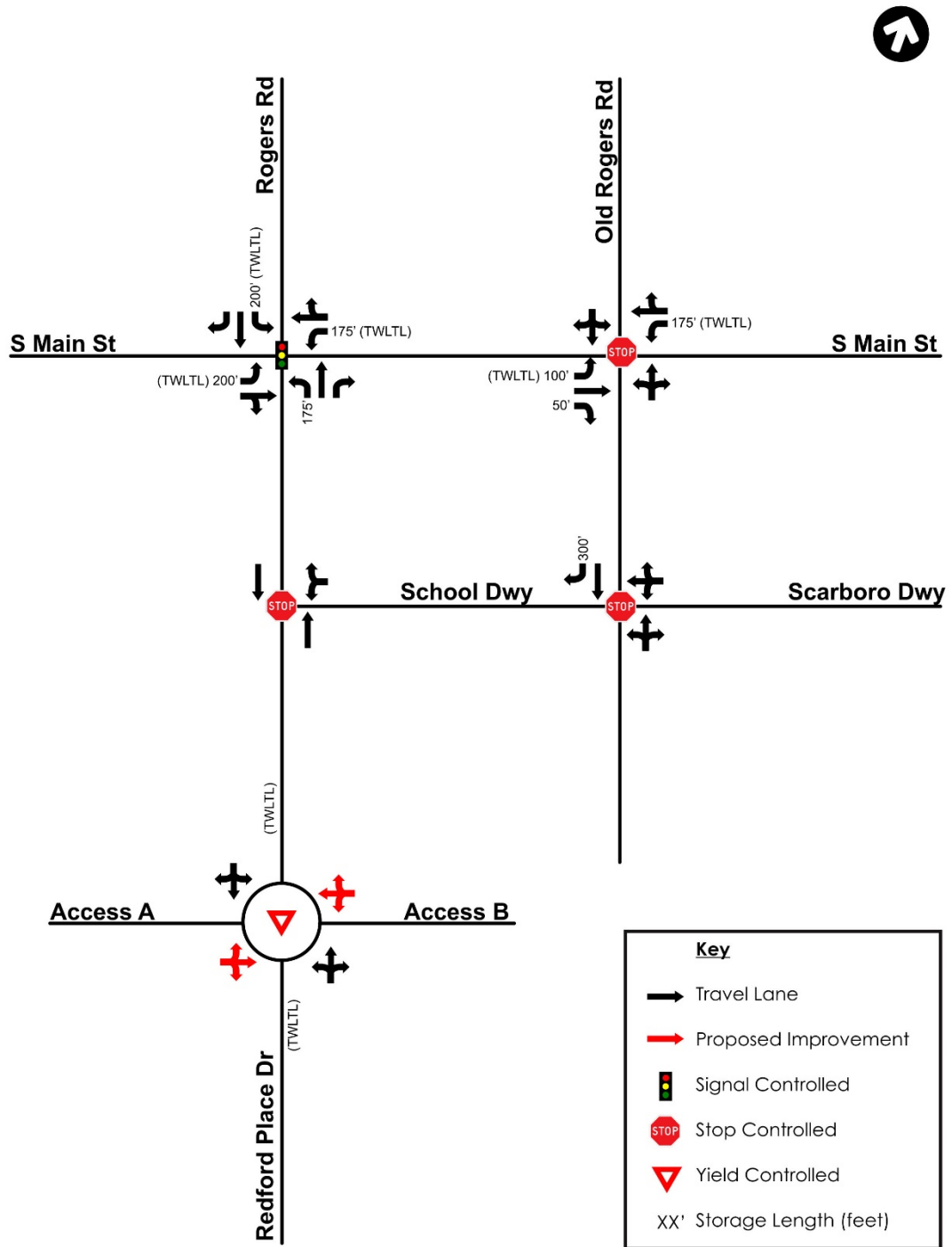


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PARKER RIDGE TRAFFIC IMPACT ANALYSIS

Introduction
August 15, 2022

1.0 INTRODUCTION

The purpose of this report is to evaluate the transportation impacts of the proposed Parker Ridge development located on the east and west sides of Redford Place Drive, south of Main Street in Rolesville, NC. The project location is shown below in Figure 1.

This report evaluates the feasibility of the adjacent transportation system to accommodate the total Build traffic demands of the proposed development for the Build year of 2028. The proposed development will consist of 162 single-family homes and 114 townhouses.

Trip generation, trip distribution, and traffic analysis for the following AM and PM peak hour scenarios are included in this study:

- 2022 Existing;
- 2028 No-Build;
- 2028 Build; and
- 2028 Build Improved.

Figure 2 shows the conceptual site plan prepared by BGE. An electronic copy of the site plan is provided in the appendix.



PARKER RIDGE TRAFFIC IMPACT ANALYSIS

Introduction
August 15, 2022

Figure 1: Site Location

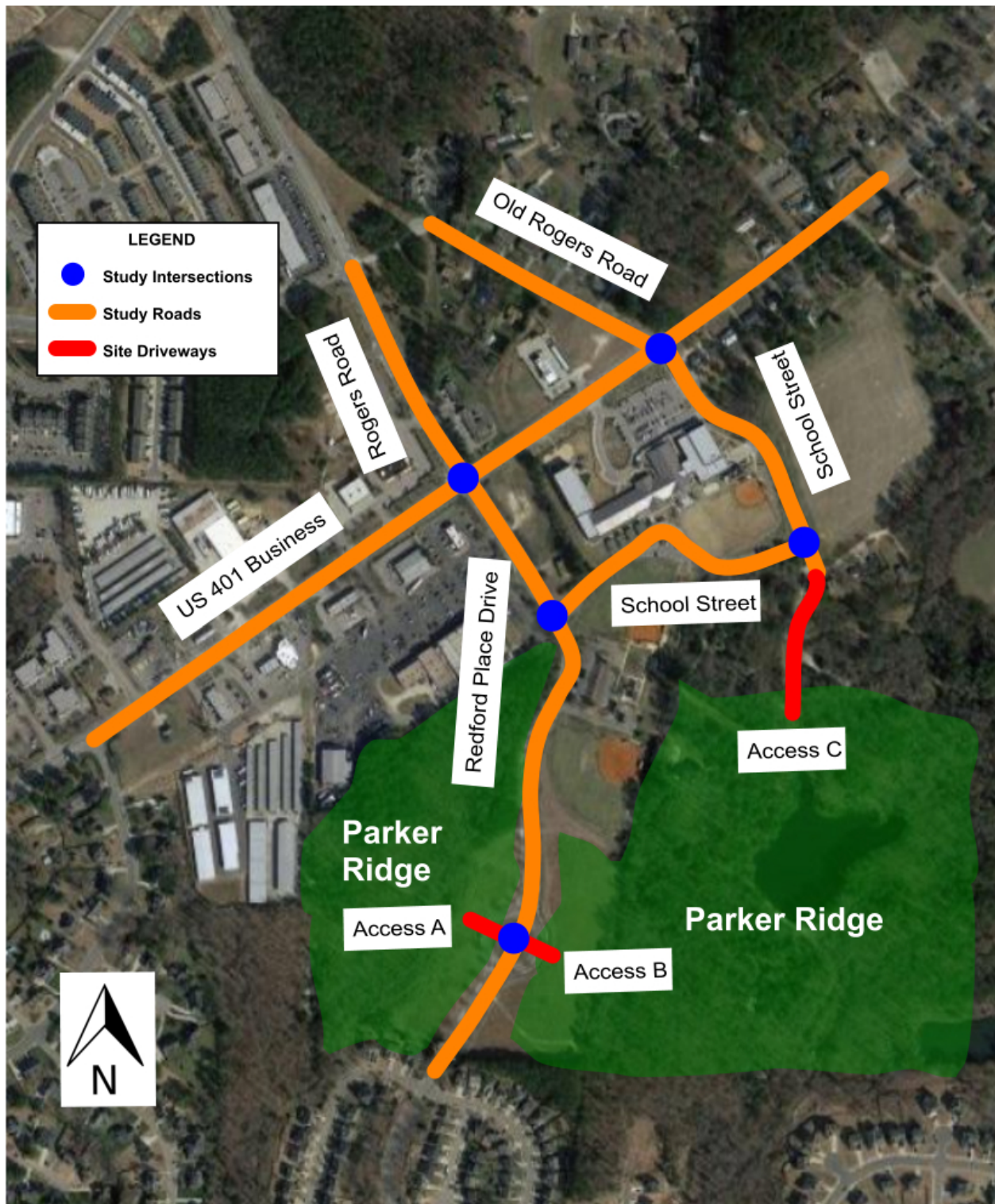
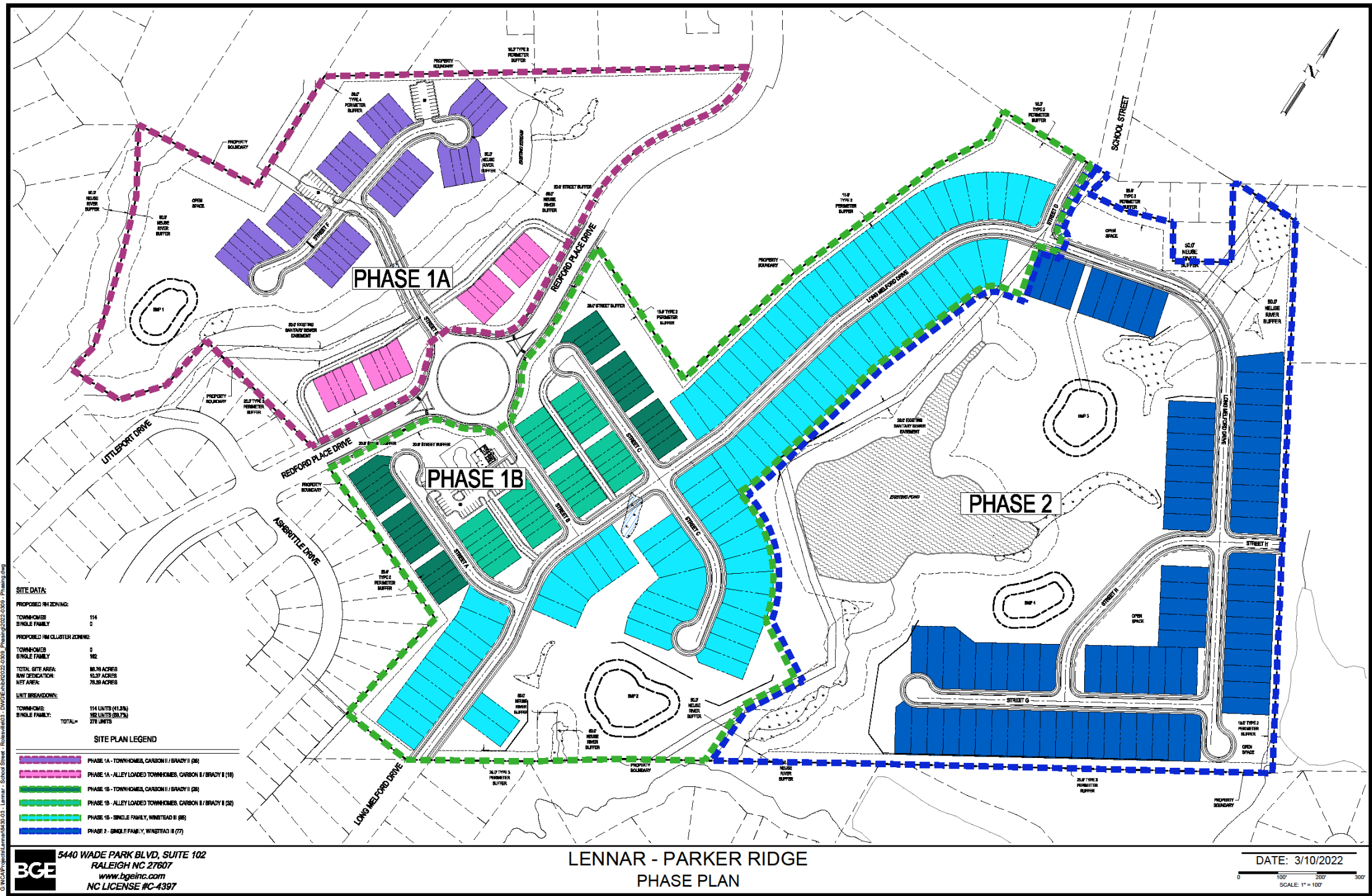


Figure 2: Site Plan



PARKER RIDGE TRAFFIC IMPACT ANALYSIS

Inventory of Traffic Conditions
August 15, 2022

2.0 INVENTORY OF TRAFFIC CONDITIONS

2.1 STUDY AREA

Stantec coordinated with the Town of Rolesville to determine the appropriate study area and assumptions. The following intersections were agreed upon to be analyzed to determine the impacts associated with this development.

- Old Rogers Road / School Street at South Main Street (US 401 Business);
- Redford Place Drive / Rogers Road at South Main Street (US 401 Business);
- School Street at School Driveway / Scarboro Driveway;
- Redford Place Drive at School Driveway; and
- Redford Place Drive at Access A / Access B.

2.2 PROPOSED ACCESS

Access to the site is envisioned to be provided by adding eastbound and westbound approaches to the existing roundabout on Redford Place Drive, located approximately 1,100 feet south of the school driveway. Additional access will be located on School Street just south of the Rolesville Elementary School and future Scarboro development driveways.

2.3 EXISTING CONDITIONS

Table 1 provides a detailed description of the existing study area roadway network. All functional classification and average annual daily traffic (AADT) information were obtained from the North Carolina Department of Transportation (NCDOT).



PARKER RIDGE TRAFFIC IMPACT ANALYSIS

Inventory of Traffic Conditions
August 15, 2022

Table 1: Existing Conditions

Road Name	Road Number	Primary Cross-Section	Functional Classification ¹	2020 AADT ² (vpd)	Speed Limit (mph)	Maintenance Agency
Main Street	US 401 Business	Two-Lane W/ TWLTL*	Principal Arterial	9,400 (east of Rogers) 12,000 (west of Rogers)	35	NCDOT
Old Rogers Road	-	Two-Lane Undivided	Local Road	-	35	Town of Rolesville
Redford Place Drive	-	Two-Lane Undivided	Local Road	-	25	Town of Rolesville
Rogers Road	SR 2052	Four-Lane w/TWLTL	Major Collector	7,600	35	NCDOT
School Driveway	-	Two-Lane One-Way	Private Driveway	-	-	WCPSS
School Street	-	Two-Lane Undivided	Local Road	-	35	WCPSS

*TWLTL = Continuous Two-Way Left-Turn Lane

The existing lane configuration and traffic control for the study area intersections are illustrated in Figure 3.

2.4 FUTURE CONDITIONS

The NCDOT U-6241 project proposes to realign Burlington Mills Road and construct a new intersection with South Main Street (US 401 Business). U-6241 is also expected to provide improvements to the pedestrian and bike facilities along Main Street and add a concrete median along Main Street west of Rogers Road. As part of the project, geometric improvements will be made to Main Street in the study area, notably, removing the dedicated westbound right turn lane at the Main Street & Rogers Road/Redford Place Drive intersection and re-striping the existing westbound through lane to a shared thru-right turn lane. The construction year of this project is 2022.

In addition, the Scarboro development will construct a new driveway along School Street, at the existing School Street & School Driveway intersection. The Scarboro development is discussed in more detail in Section 4.3

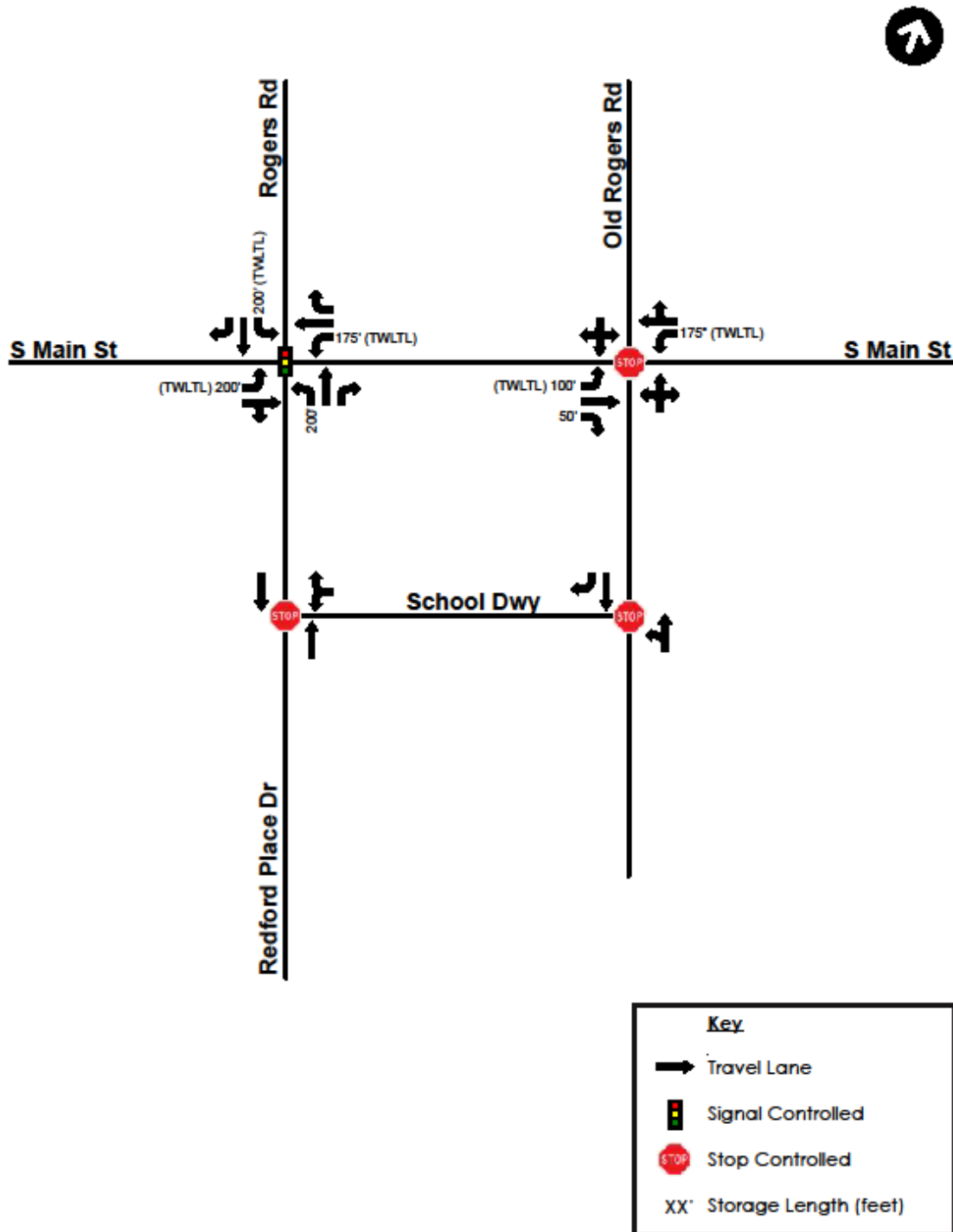
The future year lane configuration and traffic control for the study area intersections are illustrated in Figure 5.



PARKER RIDGE TRAFFIC IMPACT ANALYSIS

Inventory of Traffic Conditions
August 15, 2022

Figure 3: 2022 Existing Lanes and Traffic Control



PARKER RIDGE TRAFFIC IMPACT ANALYSIS

Inventory of Traffic Conditions
August 15, 2022

Figure 4: 2028 No-Build Lanes and Traffic Control

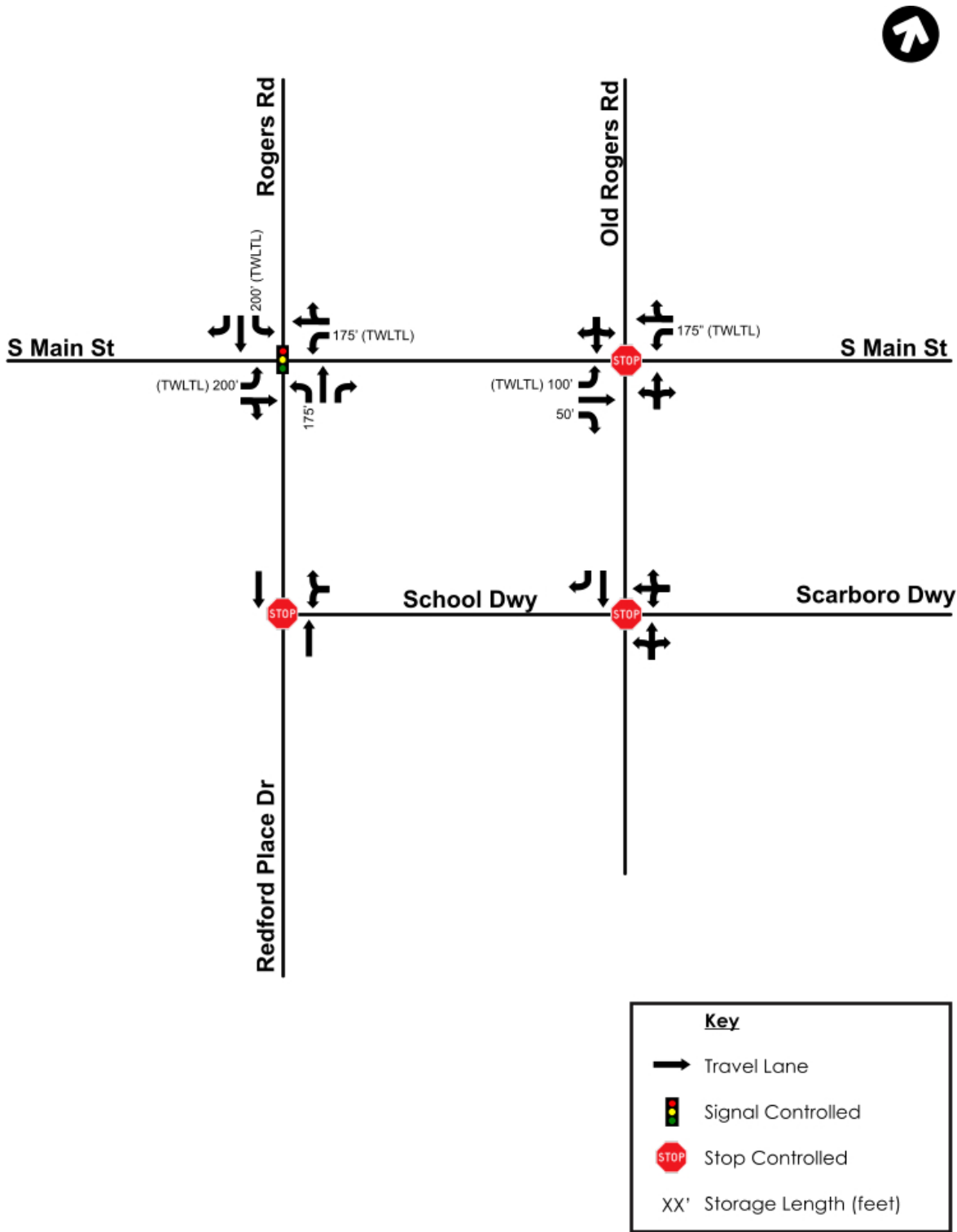


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3.0 TRIP GENERATION AND DISTRIBUTION

3.1 TRIP GENERATION

Table 2 below shows the number of anticipated trips that will be generated by the proposed development. These values are calculated using the 11th Edition of the Institute of Transportation Engineers Trip Generation Manual³. No internal capture or pass-by reductions are expected with these land uses.

Table 2: Trip Generation

Land Use	Size	Daily			AM Peak			PM Peak		
		Total	Enter	Exit	Total	Enter	Exit	Total	Enter	Exit
Single-Family Detached Housing (LUC 210)	162 Units	1573	786	787	116	30	86	156	98	58
Single-Family Attached Housing (LUC 215)	114 Units	818	409	409	54	17	37	64	36	28
Total Trips Generated		2391	1195	1196	170	47	123	220	134	86

3.2 SITE TRIP DISTRIBUTION

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

- 50% to/from the west on Main Street;
- 25% to/from the east on Main Street; and
- 25% to/from the north on Rogers Road.

These percentages were developed using a combination of existing traffic volume counts, historic average annual daily traffic (AADT) recordings provided by NCDOT, and engineering judgment. Figure 5 shows the distribution described above as well as the turning movement percentages at each intersection. Figure 6 shows the actual trips that are expected to be generated through the study area intersections.



PARKER RIDGE TRAFFIC IMPACT ANALYSIS

Trip Generation and Distribution
August 15, 2022

Figure 5: Site Trip Distribution

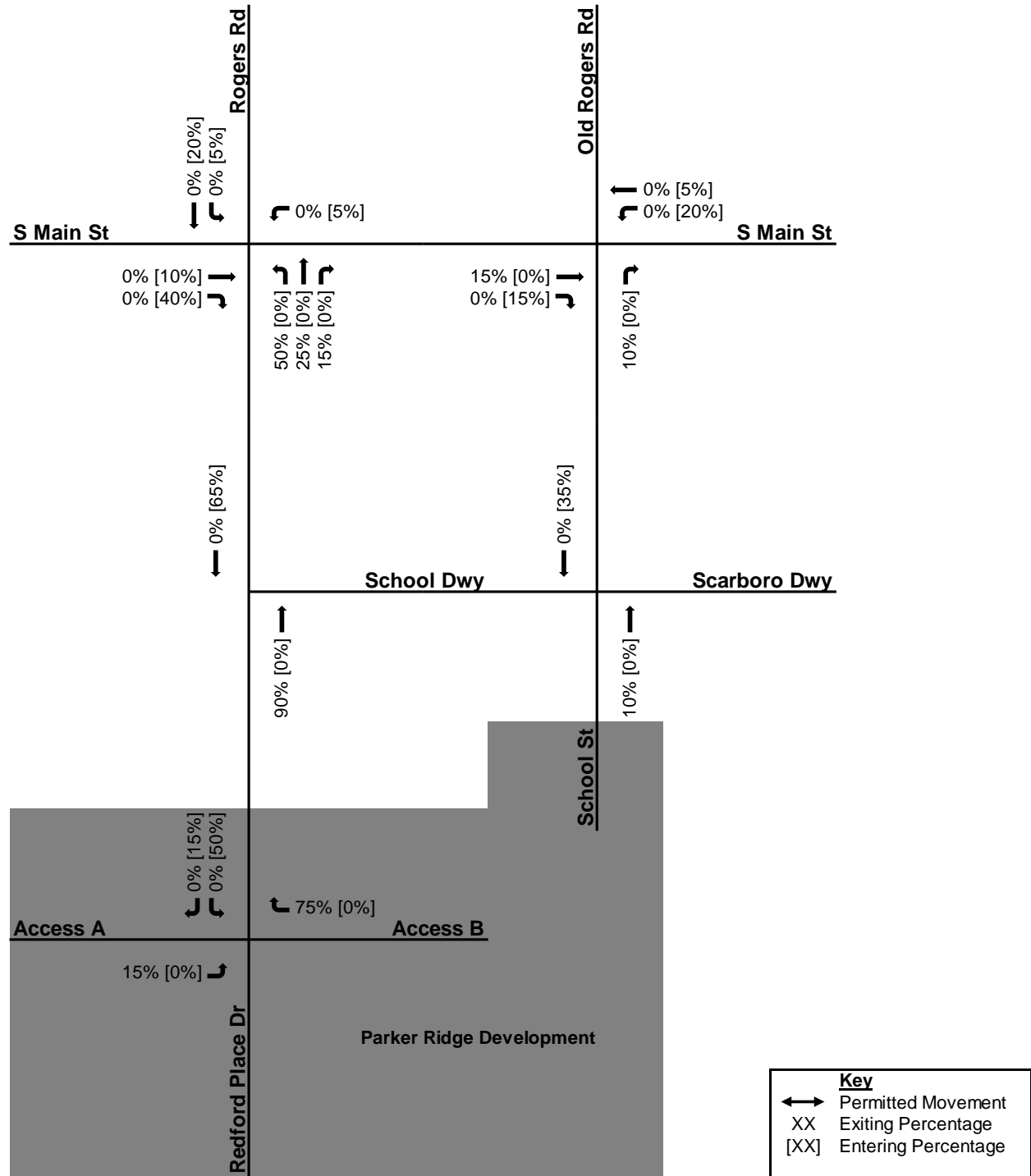


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PARKER RIDGE TRAFFIC IMPACT ANALYSIS

Trip Generation and Distribution
August 15, 2022

Figure 6: Site Trip Assignment

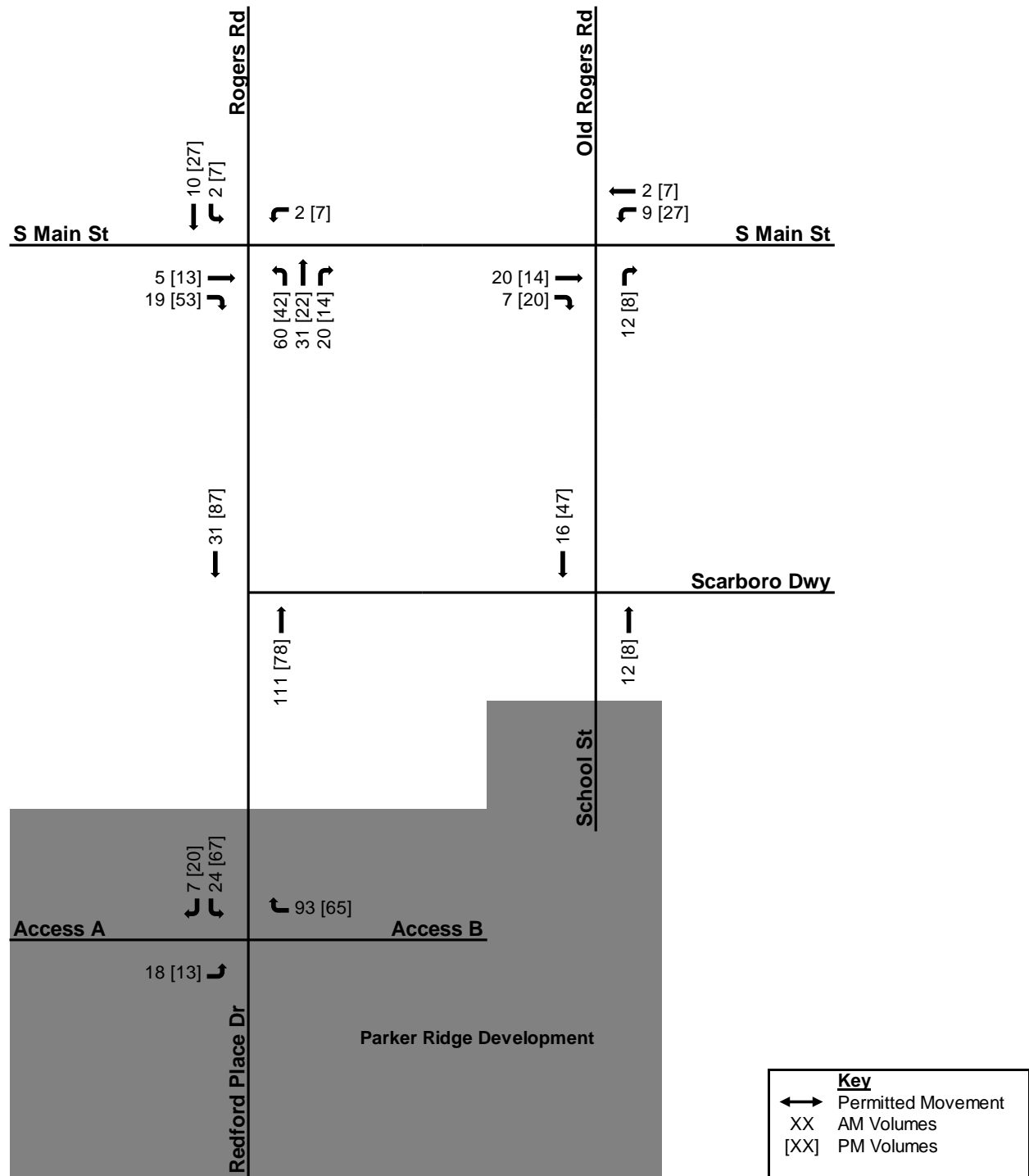


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4.0 TRAFFIC VOLUMES

4.1 DATA COLLECTION

AM (7:00 – 9:45 AM) and PM (4:00 – 6:00 PM) turning movement counts were collected on Thursday, June 9, 2022, at the following intersections:

- Old Rogers Road / School Street at South Main Street (US 401 Business);
- Redford Place Drive / Rogers Road at South Main Street (US 401 Business);
- School Street at School Driveway / Scarboro Driveway; and
- Redford Place Drive at School Driveway.

Raw count data for these locations are included in the appendix.

Traffic volumes were not balanced due to the high-volume driveways between study intersections. Notably, the school entrance located on Main Street as well as the shopping center driveway along Redford Place Drive. The Existing (2022) traffic volumes are shown in Figure 7.

4.2 NO-BUILD TRAFFIC VOLUMES

The count data was grown by two percent (2%) per year to estimate traffic growth from 2022 to 2028. The historical growth traffic volumes were added to the existing volumes to determine the 2028 No-Build traffic volumes. Three approved developments in the vicinity of the study area were accounted for in this traffic analysis as discussed in the following sections. The 2028 No-Build traffic volumes are shown in Figure 11.

4.2.1 Cobblestone

Cobblestone is a mixed-use development proposed in the northwest quadrant of the intersection of Main Street & Young Street. The proposed development is expected to consist of 180 apartments, 18,200 square feet of municipal flex space, and 50,000 square feet of retail space. It is estimated to be built by 2023. The trips attributed to the Cobblestone approved development are shown in Figure 8. A copy of the *Traffic Impact Analysis for Cobblestone Crossing Mixed-Use* (Ramey Kemp & Associates, March 2021) is provided in the appendix.

4.2.2 Redford Place

Redford Place is a proposed 3-story, 19,500 square foot, mixed-use building with the top two stories being a medical/dental office and the ground-floor consisting of retail uses. The development is located on the east side of Redford Place Drive south of Main Street. The trips attributed to the Redford Place development are shown in Figure 9. A copy of the *Redford Place Traffic Impact Analysis* (Stantec, October 2019) is provided in the appendix.

As part of the Redford Place development, the storage of the northbound left-turn lane at the Main Street & Rogers Road development will be reduced from 200 feet to 175 feet of full-width storage, to accommodate the installation of a southbound left-turn lane on Redford Place Drive at the Site Driveway.



PARKER RIDGE TRAFFIC IMPACT ANALYSIS

Traffic Volumes
August 15, 2022

4.2.3 Scarborough Property

Scarboro Property is a proposed development expected to consist of 240 units of senior adult housing. The trips attributed to the Scarboro Property development are shown in Figure 10. A copy of the *Site Analysis – Scarboro Property* (Ramey Kemp Associates, May 2021) is provided in the appendix. A new site driveway will be built on School Street at the existing School Street & School Driveway intersection.

4.3 BUILD TRAFFIC VOLUMES

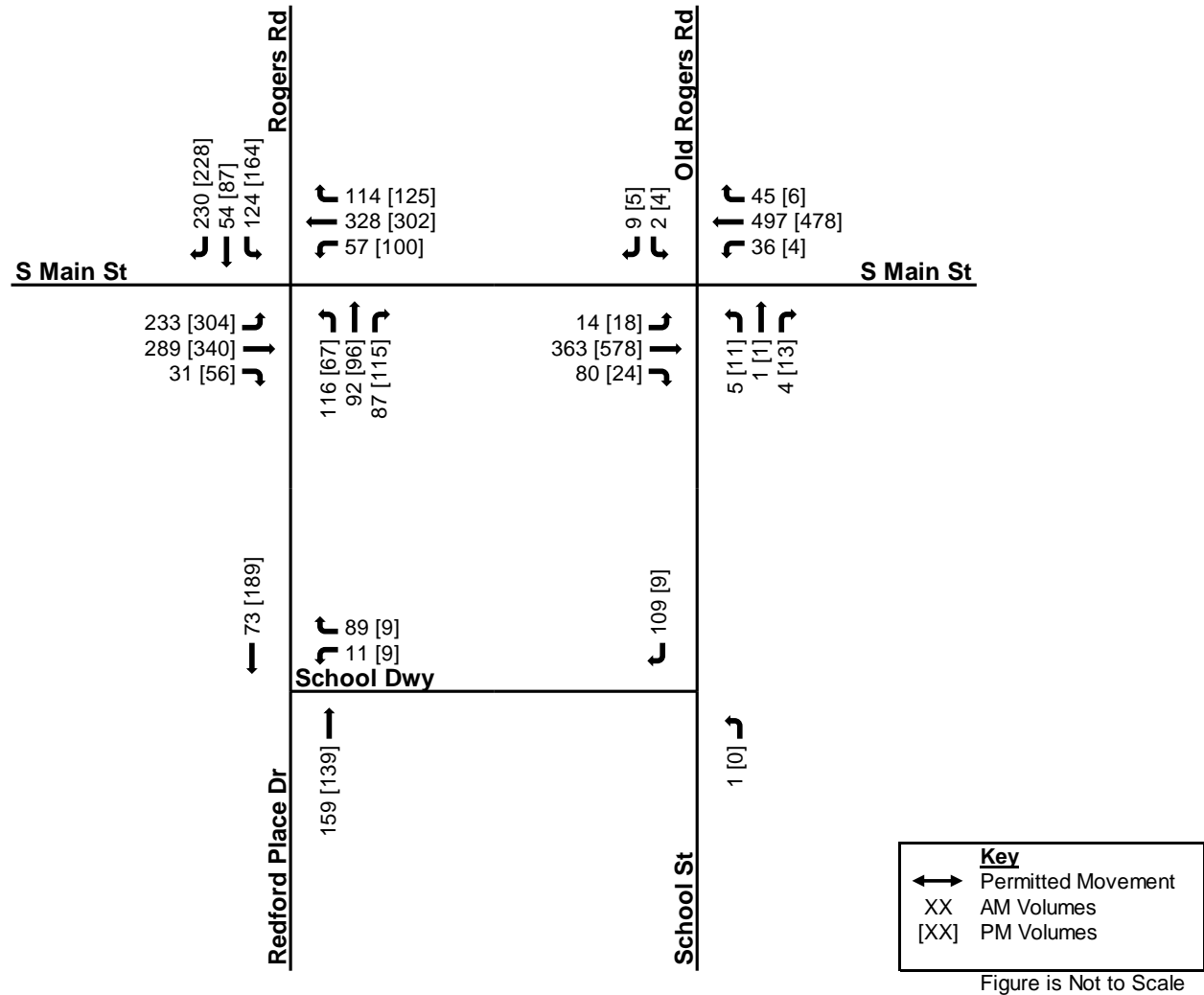
The 2028 Build traffic volumes include the 2028 No-Build traffic, approved development traffic, and the proposed development traffic discussed in section 3.0. The 2028 Build traffic volumes are shown in Figure 12.



PARKER RIDGE TRAFFIC IMPACT ANALYSIS

Traffic Volumes
August 15, 2022

Figure 7: 2022 Existing Traffic Volumes



PARKER RIDGE TRAFFIC IMPACT ANALYSIS

Traffic Volumes
August 15, 2022

Figure 8: Cobblestone Approved Development Volumes

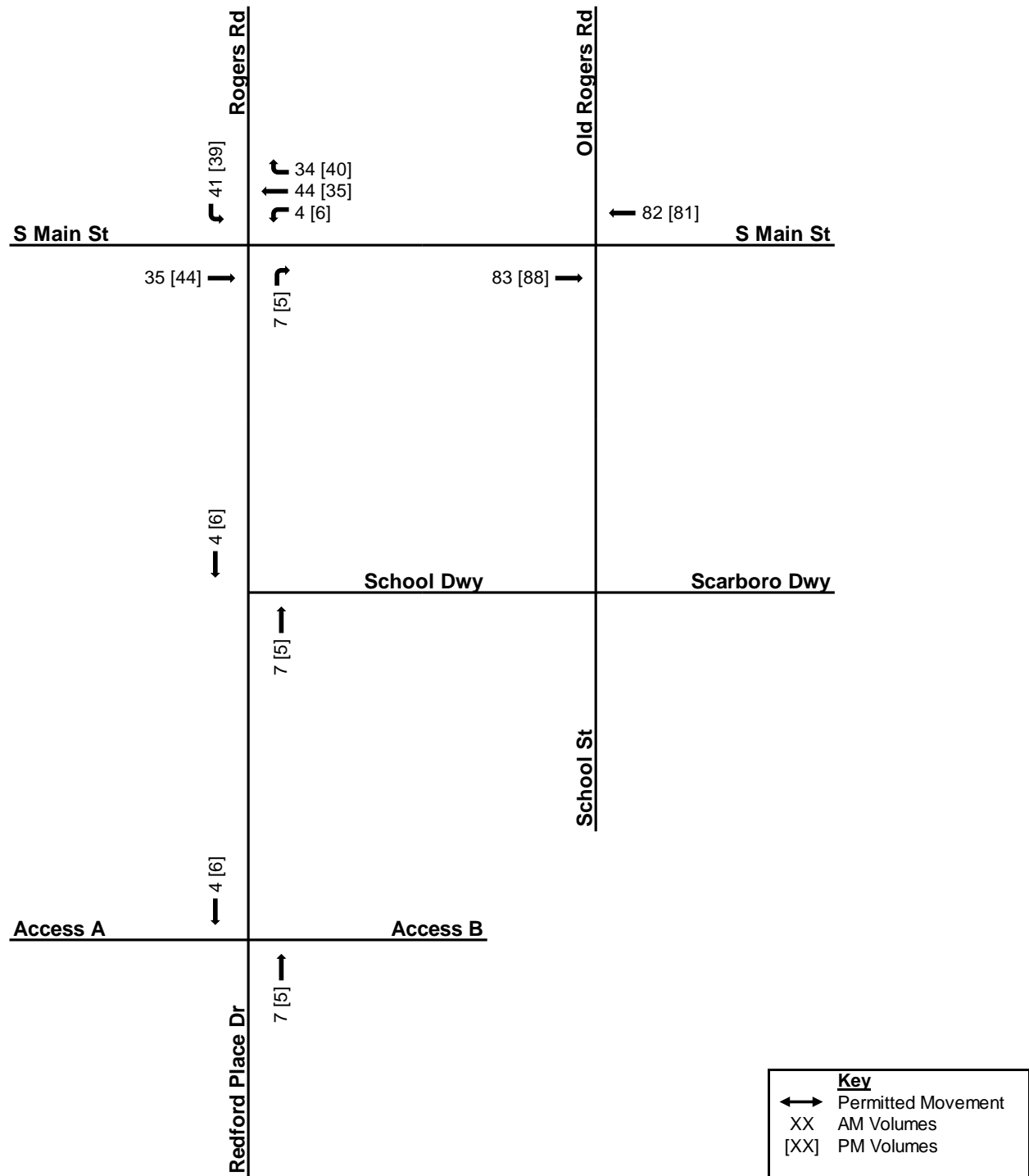


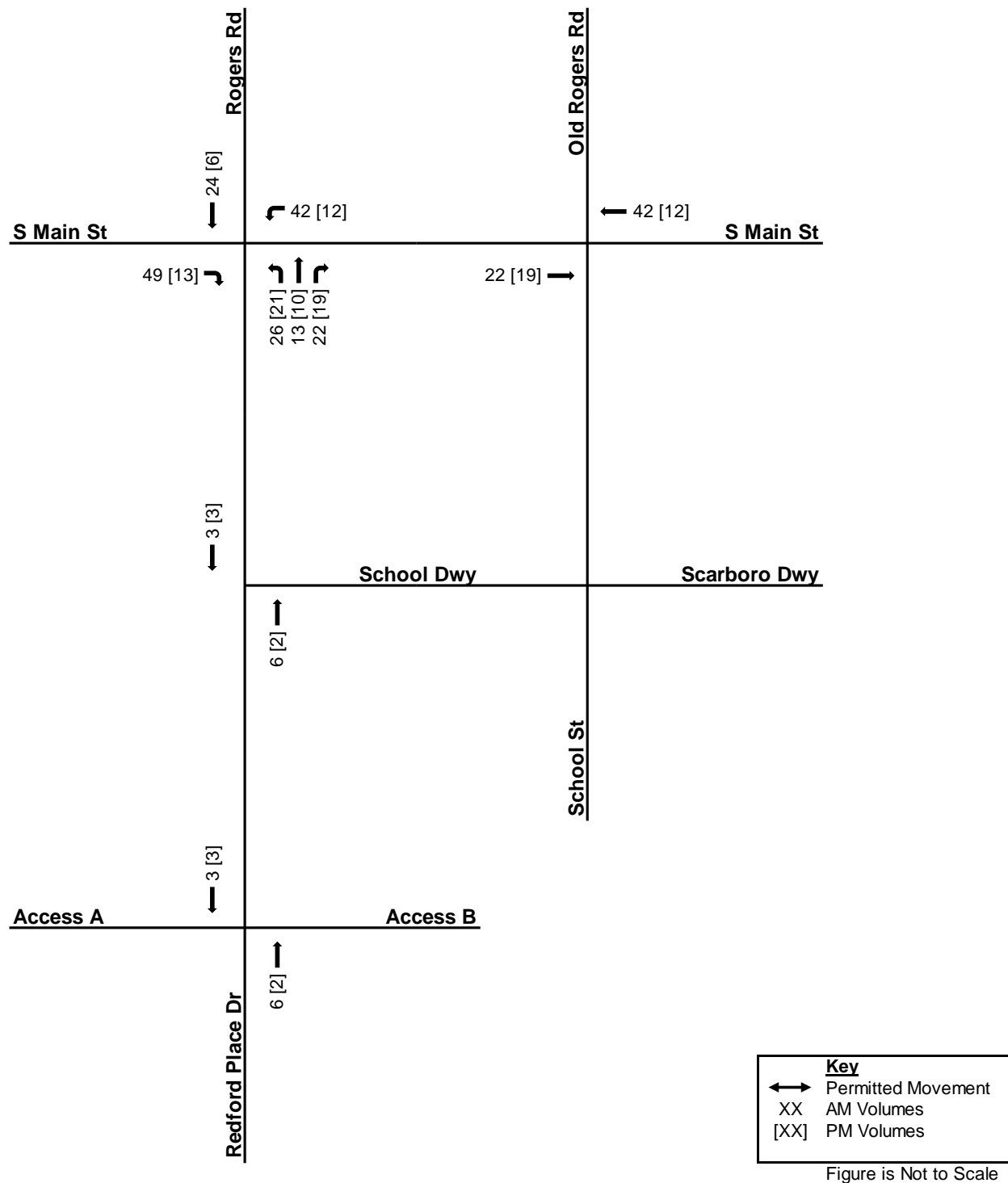
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PARKER RIDGE TRAFFIC IMPACT ANALYSIS

Traffic Volumes
August 15, 2022

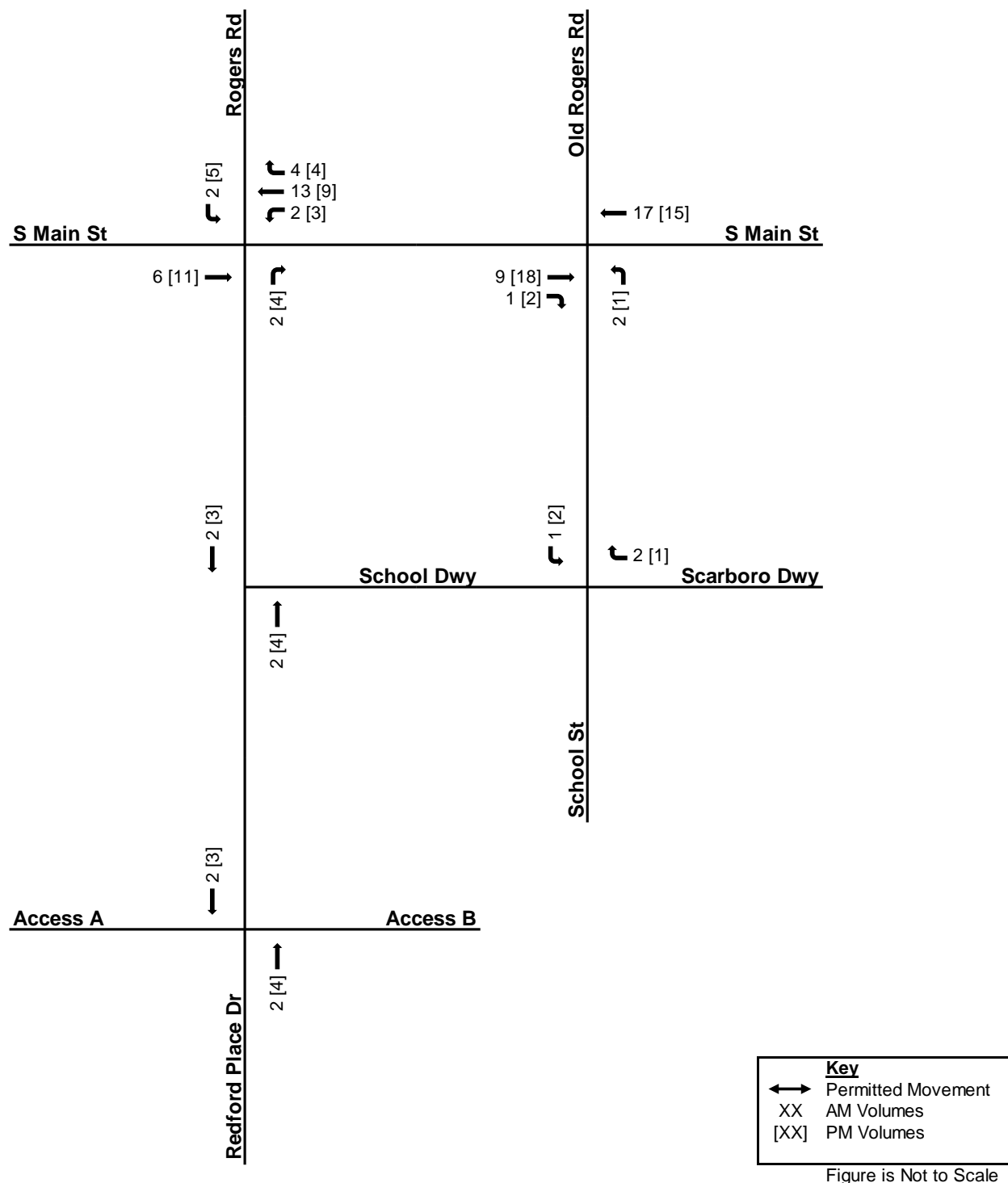
Figure 9: Redford Approved Development Volumes



PARKER RIDGE TRAFFIC IMPACT ANALYSIS

Traffic Volumes
August 15, 2022

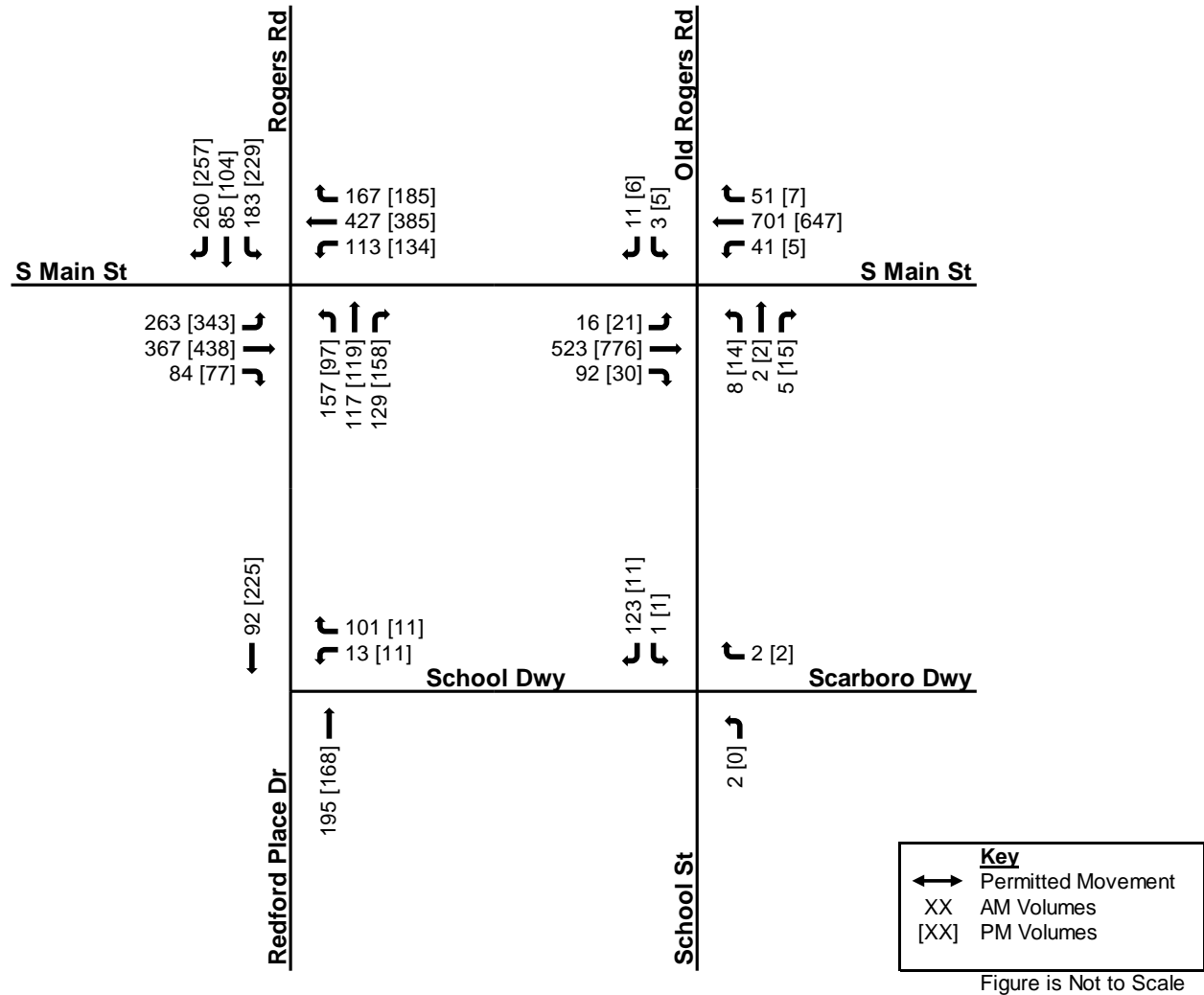
Figure 10: Scarborough Approved Development Volumes



PARKER RIDGE TRAFFIC IMPACT ANALYSIS

Traffic Volumes
August 15, 2022

Figure 11: 2028 No-Build Traffic Volumes



PARKER RIDGE TRAFFIC IMPACT ANALYSIS

Traffic Volumes
August 15, 2022

Figure 12: 2028 Build Traffic Volumes

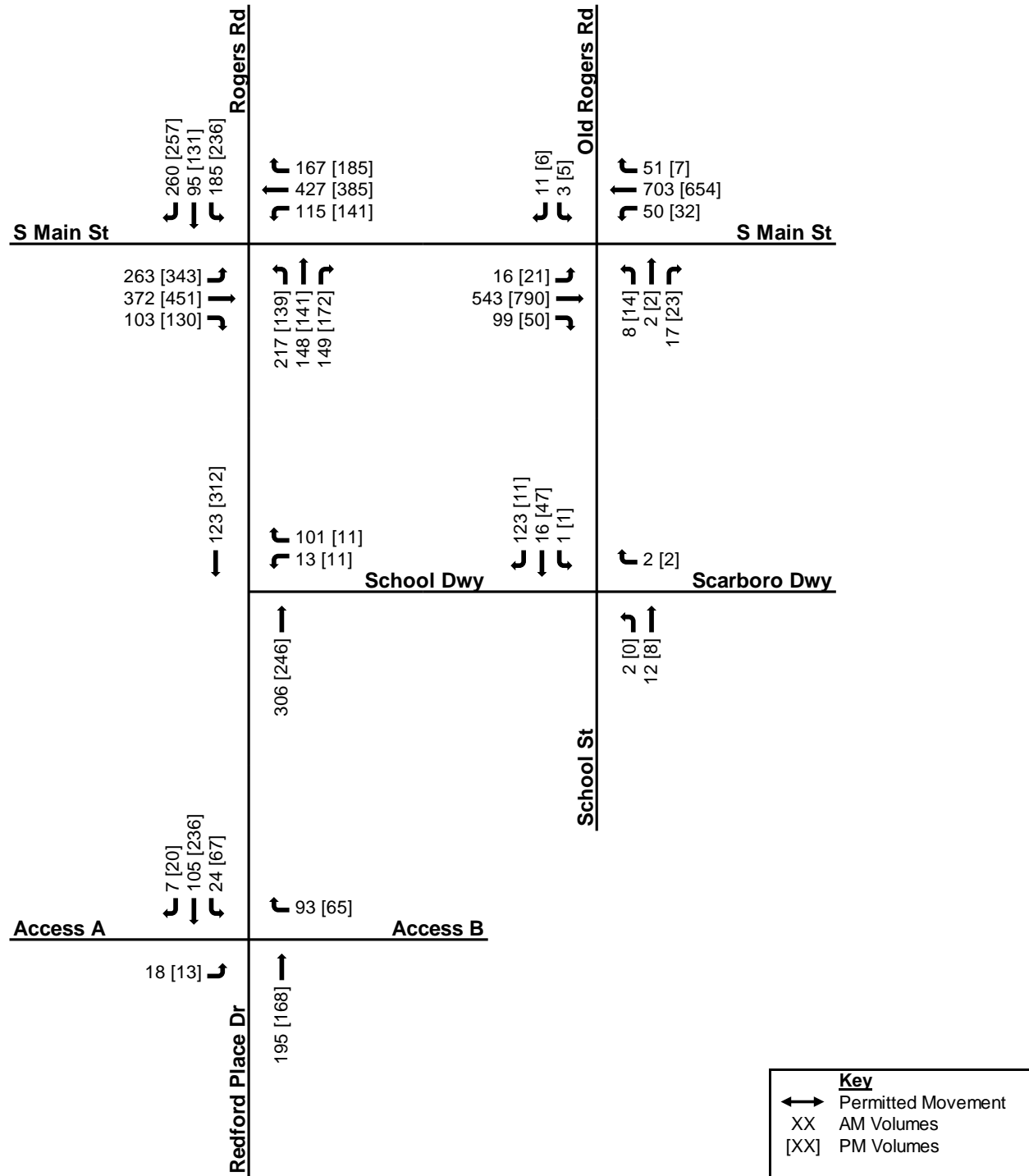


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5.0 TRAFFIC ANALYSIS

Capacity analyses were performed for the roadway network in the study area. The traffic analysis program Synchro Version 10 and SIDRA Intersection 9 was used to analyze all signalized and stop-controlled intersections according to methods put forth by the Transportation Research Board's Highway Capacity Manual⁴ (HCM). The HCM defines capacity as the "maximum rate or flow at which persons or vehicles can be reasonably expected to traverse a point or uniform section of a line or roadway during a specified period under prevailing roadway, traffic, and control conditions, usually expressed as vehicles per lane per hour."

Level of service (LOS) is a term used to describe different traffic conditions and is defined as a "qualitative measure describing operational conditions within a traffic stream, and their perception by motorists or passengers." LOS varies from Level A, representing free flow, to Level F where traffic breakdown conditions are evident. At an unsignalized intersection, the primary traffic on the main roadway is virtually uninterrupted. Therefore, the overall delay for the intersection is usually less than what is calculated for the minor street movements. The overall intersection delay and the delay for the intersections' minor movement(s) are reported in the summary tables of this report. LOS D is acceptable for signalized intersections in suburban areas during peak periods. For unsignalized intersections, it is common for some of the minor street movements or approaches to be operating at LOS F during peak hour conditions and that is not necessarily indicative of an area that requires improvements.

Capacity analyses were completed following *NCDOT Capacity Analysis Guidelines*⁵ as well as the *Draft NCDOT Capacity Analysis Guidelines Best Practices*⁶. Table 3 presents the criteria of each LOS as indicated in the HCM.

Table 3: Level of Service Criteria

Level of Service (LOS)	Signalized Intersection Control Delay (seconds / vehicle)	Unsignalized Intersection Control Delay (seconds / vehicle)
A	≤ 10	≤ 10
B	>10 and ≤ 20	>10 and ≤ 15
C	>20 and ≤ 35	>15 and ≤ 25
D	>35 and ≤ 55	>25 and ≤ 35
E	>55 and ≤ 80	>35 and ≤ 50
F	>80	>50

The Town of Rolesville's Land Development Ordinance⁷, section 8.E, establishes the following Level of Service Standards:

1. *The traffic impact analysis must demonstrate that the proposed development would not cause build-out-year, peak-hour levels of service on any arterial or collector road or intersection within the study area to fall below Level of Service (LOS) "D," as defined by the latest edition of the Highway Capacity Manual, or, where the existing level of service is already LOS "E" that the proposed development would not cause the LOS to fall to the next lower letter grade.*



PARKER RIDGE TRAFFIC IMPACT ANALYSIS

Traffic Analysis
August 15, 2022

2. *If the road segment or intersection is already LOS "F," the traffic impact analysis must demonstrate that the proposed development, with any proposed improvements, would not cause build-out year peak-hour operation to degrade more than five (5) percent of the total delay on any intersection approach.*

Capacity analyses were performed for the following conditions:

- 2022 Existing;
- 2028 No-Build;
- 2028 Build; and
- 2028 Build with Improvements.

Peak hour factors for all analysis scenarios were set to 0.9 with one exception. That is, all movements into and out of Rolesville Elementary School utilize a peak hour factor of 0.5 per NCDOT Municipal School Transportation Assistance.

All Synchro and SIDRA files and detailed printouts can be found in the appendix. A summary of the results of the analyses is provided in the following sub-sections.






PARKER RIDGE TRAFFIC IMPACT ANALYSIS

Traffic Analysis
August 15, 2022

5.1 2022 EXISTING

In the base year of 2022 under the existing geometric conditions, all study intersections and approaches operate at an acceptable LOS. Synchro LOS and delay results for the 2022 Existing analysis scenario are listed in Table 4.

Table 4: 2022 Existing Level of Service and Delay

Intersection		Approach	Lane Group	Delay (sec. / veh.)		Level of Service (LOS)		95th % Queue (feet)		Max. Obs. Queue (feet)	
				AM	PM	AM	PM	AM	PM	AM	PM
	Old Rogers Road / School Street at South Main Street (US 401 Business)	EB	L	8.8	8.6	A	A	0	3	18	19
		WB	L	8.5	9.0	A	A	3	0	32	26
		NB	LTR	22.5	27.8	C	D	5	15	30	43
		SB	LTR	21.1	28.7	C	D	8	8	43	33
	Redford Place Drive / Rogers Road at South Main Street (US 401 Business)	Overall		35.2	36.2	D	D				
		EB	L	21.0	28.4	C	C	188	291	180	280
			TR	18.4	24.7	B	C	262	392	206	309
		WB	L	25.7	30.8	C	C	71	119	116	177
			T	29.2	31.3	C	C	350	341	288	289
			R	8.7	8.6	A	A	55	59	112	101
		NB	L	52.9	47.3	D	D	152	93	185	128
			T	70.5	70.9	E	E	133	137	169	184
			R	42.1	41.6	D	D	108	131	170	200
		SB	L	75.8	71.5	E	E	170	207	185	221
			T	66.0	59.4	E	E	90	127	101	197
			R	42.4	35.5	D	D	224	212	255	282
	Redford Place Drive at School Driveway	WB	LR	10.5	9.7	B	A	23	3	81	29



5.2 2028 NO-BUILD

In the 2028 No-Build conditions, the analysis assumes the improvements associated with the approved developments and NCDOT projects are constructed. These improvements were discussed in Sections 2.4 and 4.2, but are also listed below:

South Main Street at Redford Place Drive/Rogers Road

- Remove existing westbound dedicated right-turn lane.
- Reduce the storage of the northbound left-turn lane from 200 feet to 175 feet of full-width storage.

School Street at School Driveway/Scarboro Driveway.

- Construct a stop-controlled westbound approach at the intersection for access to the Scarboro Property development.

In the future year 2028, the following intersections and movements operate at a LOS E or F:

The Main Street & Redford Place Drive/Rogers Road intersection operates at LOS E in the PM peak hours. The minor northbound and southbound approaches at the Main Street & Old Rogers Road/School Street intersection operate at LOS F in the AM peak hour and LOS E in the PM peak hour.

The northbound through and southbound left movements at the Main Street & Redford Place Drive/Rogers Road intersection operate at LOS F in both peak hours and the eastbound left movement operates at LOS F in the PM peak hour.





Synchro LOS and delay results for the 2028 No-Build analysis scenario are listed in Table 5.



PARKER RIDGE TRAFFIC IMPACT ANALYSIS

Traffic Analysis
August 15, 2022

Table 5: 2028 No-Build Level of Service and Delay

Intersection		Approach	Lane Group	Delay (sec. / veh.)		Level of Service (LOS)		95th % Queue (feet)		Max. Obs. Queue (feet)	
				AM	PM	AM	PM	AM	PM	AM	PM
	Old Rogers Road / School Street at South Main Street (US 401 Business)	EB	L	9.6	9.2	A	A	3	3	32	33
		WB	L	9.4	9.8	A	A	5	0	45	24
		NB	LTR	70.7	47.7	F	E	23	30	40	60
		SB	LTR	51.5	41.9	F	E	20	13	38	42
	Redford Place Drive / Rogers Road at South Main Street (US 401 Business)	Overall		51.8	58.5	D	E				
		EB	L	72.0	80.1	E	F	385	498	298	300
			TR	24.9	29.3	C	C	393	477	506	837
		WB	L	61.6	61.4	E	E	157	179	275	275
			TR	45.4	59.3	D	E	637	690	672	745
		NB	L	69.7	60.2	E	E	247	142	245	198
			T	96.8	119.6	F	F	226	229	231	266
			R	40.9	41.5	D	D	154	182	189	243
		SB	L	80.0	96.0	F	F	290	363	258	298
			T	69.2	62.6	E	E	138	149	244	518
			R	39.8	31.9	D	C	284	251	287	267
	School Street at School Driveway / Scarboro Driveway	WB	LTR	8.9	8.6	A	A	3	3	30	29
		NB	LTR	7.8	7.3	A	A	0	0	0	0
		SB	LT	7.2	7.2	A	A	0	0	0	0
	Redford Place Drive at School Driveway	WB	LR	11.2	10.3	B	B	30	5	80	50



PARKER RIDGE TRAFFIC IMPACT ANALYSIS

Traffic Analysis
August 15, 2022

5.3 2028 BUILD

This analysis scenario evaluates traffic operations under the increased traffic demands associated with the proposed Parker Ridge development. Similar to the 2028 No-Build scenario, the Main Street & Redford Place Drive/Rogers Road intersection operates at LOS E in the PM peak hour. The northbound through movement operates at LOS F in both peak hours, the northbound left movement operates at LOS F in the AM peak hour, and the eastbound left and southbound left movements operate at LOS F in the PM peak hour.

The westbound queue along Main Street from the Redford Place Drive/Rogers Road intersection extends into the Main Street & Old Rogers Road/School Street intersection during the PM peak hour, preventing lefts and throughs from being made from the northbound School Street and southbound Old Rogers Road intersection. As a result, delays from these approaches exceed 400 seconds in the PM peak hour.

The roundabout at the Redford Place Drive & Access A/Access B intersection operates at LOS A in both peak hours.






Capacity analysis results for the 2028 Build analysis scenario are listed in Table 6.



PARKER RIDGE TRAFFIC IMPACT ANALYSIS

Traffic Analysis
August 15, 2022

Table 6: 2028 Build Level of Service and Delay

Intersection		Approach	Lane Group	Delay (sec. / veh.)		Level of Service (LOS)		95th % Queue (feet)		Max. Obs. Queue (feet)	
				AM	PM	AM	PM	AM	PM	AM	PM
	Old Rogers Road / School Street at South Main Street (US 401 Business)	EB	L	9.6	9.3	A	A	3	3	27	71
		WB	L	9.6	11.3	A	B	5	5	48	127
		NB	LTR	58.8	580.5	F	F	33	133	47	182
		SB	LTR	63.5	410	F	F	23	58	47	100
	Redford Place Drive / Rogers Road at South Main Street (US 401 Business)	Overall		55.0	62.7	D	E				
		EB	L	79.8	86.9	E	F	385	498	300	300
			TR	28.4	32.4	C	C	428	553	544	1000*
		WB	L	61.9	77.0	E	E	160	225	275	275
			TR	52.0	65.3	D	E	705	714	782	1262*
		NB	L	82.9	68.9	F	E	339	219	268	264
			T	86.2	105.9	F	F	254	254	368	344
			R	28.3	43.5	C	D	124	202	186	248
		SB	L	78.3	103.8	E	F	285	378	259	298
			T	69.3	65.9	E	E	151	180	250	512
R	34.4		31.3	C	C	196	248	244	252		
	School Street at School Driveway / Scarborough Driveway	WB	LTR	9.0	8.8	A	A	3	3	34	27
		NB	LTR	7.8	7.4	A	A	0	0	0	0
		SB	LT	7.3	7.2	A	A	0	0	0	0
	Redford Place Drive at School Driveway	WB	LR	12.8	11.1	B	B	35	5	86	39
	Redford Place Drive at Access A / Access B	Overall		4.1	4.4	A	A				
		EB	LTR	3.6	4.2	A	A	3	3	27	26
		WB	LTR	4.7	4.3	A	A	16	11	40	38
		NB	LTR	4.3	4.5	A	A	26	24	34	48
		SB	LTR	3.4	4.3	A	A	15	39	17	61
* Queue Extends Off SimTraffic Network or Into Next Intersection											



5.4 2028 BUILD IMPROVED

5.4.1 South Main Street at Old Rogers Road / School Street

With the addition of traffic generated by the proposed development, the northbound approach of School Street at South Main Street increases in delay such that LOS degrades from E to F. It is not uncommon for unsignalized side-street approaches to operate with high delays during peak periods. As traffic on Main Street does not stop, the overall delay at the intersection is relatively low at 2.3 seconds per vehicle in the AM peak hour and 18.9 seconds in the PM peak hour. If high delays are experienced on the stop-controlled approaches, drivers may opt for alternative routes. Even so, the intersection was evaluated for potential improvements due to meet the requirements of the LDO⁷. What follows is a discussion of each possible improvement at the intersection:

5.4.1.1 Installation of a Traffic Signal

The installation of a traffic signal would improve the LOS of the side streets significantly. This, however, is not anticipated to be permitted by NCDOT due to the following:

- The proximity of the intersection to the adjacent signalized intersection of South Main Street at Redford Place Drive / Rogers Road
- Traffic volumes on the side-street approaches of Old Rogers Road and School Street are low and are not anticipated to meet the warrants for installation of a traffic signal included in the Manual on Uniform Traffic Control Devices (MUTCD)⁸.

5.4.1.2 Installation of Turn Lanes

The construction of dedicated left-turn turn-lanes on Old Rogers Road and School Street reduces delay but does not mitigate the impact of the proposed development. This is attributed to low volumes of traffic on the side-street approaches and high through volumes on South Main Street. The installation of turn lanes may also impact adjacent property owners. As a result, the installation of turn lanes on Old Rogers Road and School Street is not recommended.

5.4.1.3 Restriction of Access

Converting the southbound approach of Old Rogers Road to right-in / right-out access by installing channelization was shown to reduce delays on the side streets such that School Street is anticipated to operate at LOS C and Old Rogers Road is anticipated to operate at LOS B during the PM peak hour.

This would require left turns from Old Rogers Road to be redirected to Rogers Road and use the traffic signal at the intersection of South Main Street at Redford Place Drive / Rogers Road; increasing travel time for existing vehicles on the Old Rogers Road approach. Furthermore, the restriction of access without the installation of a median has only limited effectiveness. As a result, the restriction of access is not recommended.

Therefore, no improvements are recommended at this intersection in conjunction with this development. Consideration should be made for limiting the southbound Old Rogers Road approach to right-in / right-out-only access in the future.



PARKER RIDGE TRAFFIC IMPACT ANALYSIS

Traffic Analysis
August 15, 2022

5.4.2 South Main Street at Redford Place Drive / Rogers Road

The signalized intersection of South Main Street at Redford Place Drive / Rogers Road operates at LOS E during the PM peak hour in both the no-build and build scenarios. In this instance, the LDO requires mitigation if the proposed development causes the LOS to fall to the next lower letter grade. As the intersection operates at LOS E during both the no-build and build scenarios, no improvements are recommended at this intersection.



6.0 RECOMMENDATIONS

The following improvements are recommended as part of the Parker Ridge development.

Old Rogers Road / School Street at South Main Street

- No improvements are recommended at this intersection

Redford Place Drive / Rogers Road at South Main Street

- No improvements are recommended at this intersection

School Street at School Driveway / Scarborough Driveway

- No improvements are recommended at this intersection

Redford Place Drive at School Driveway

- No improvements are recommended at this intersection

Redford Place Drive at Access A / Access B

- Construct Access A and Access B at the existing roundabout along Redford Place Drive south of the School Driveway intersection. Both intersections should have a minimum internal protective stem of 100 feet.

The recommended improvements are illustrated in Figure 13.



PARKER RIDGE TRAFFIC IMPACT ANALYSIS

Recommendations
August 15, 2022

Figure 13: Recommended Improvements

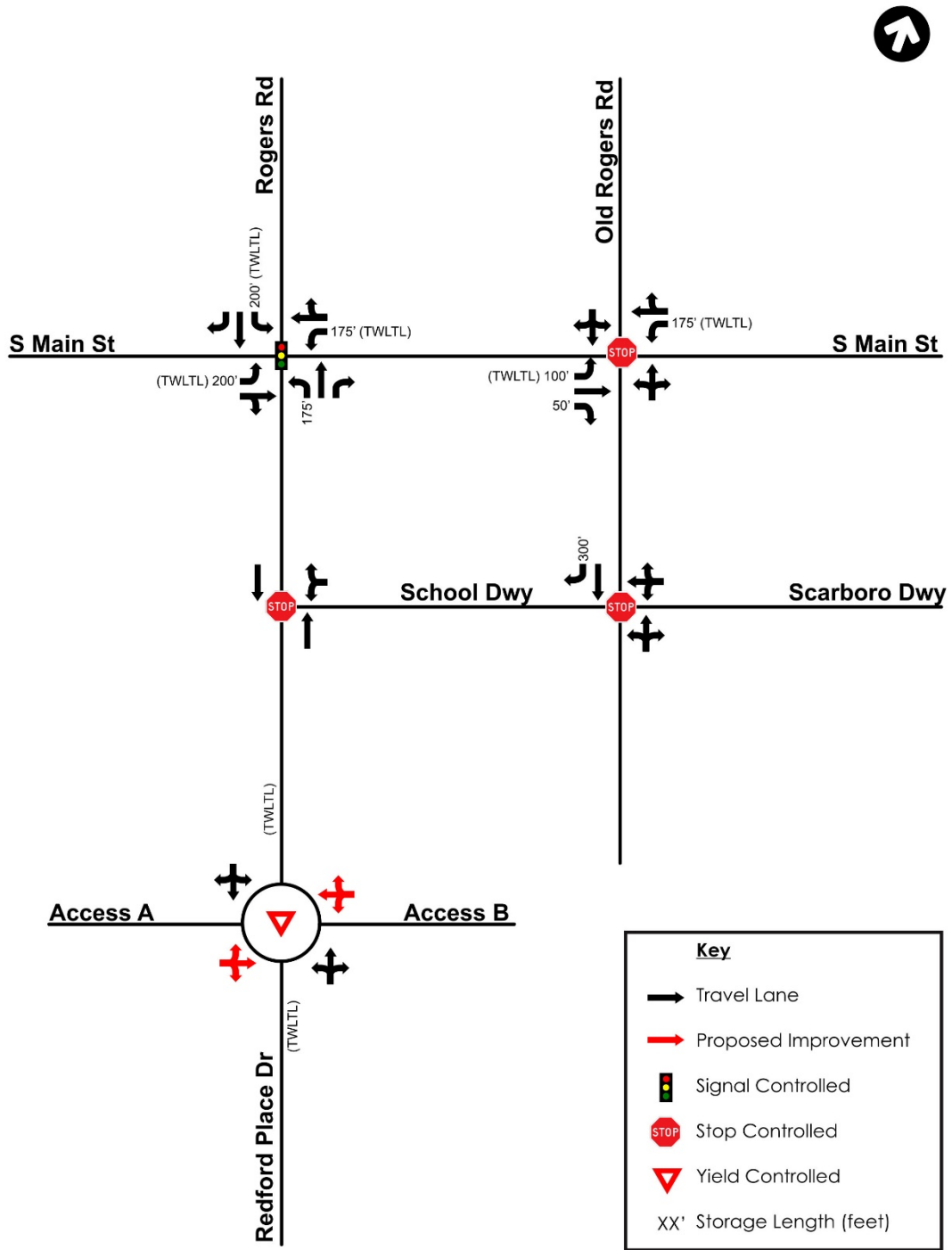


Figure is Not To Scale



PARKER RIDGE TRAFFIC IMPACT ANALYSIS

References

August 15, 2022

7.0 REFERENCES

¹ **NCDOT Functional Classification Map**,

<http://ncdot.maps.arcgis.com/home/webmap/viewer.html?layers=029a9a9fe26e43d687d30cd3c08b1792>

² **2020 NCDOT Average Daily Traffic Volumes**,

<https://ncdot.maps.arcgis.com/apps/webappviewer/index.html?id=964881960f0549de8c3583bf46ef5ed4>

³ **Trip Generation (11th Edition)**, Institute of Transportation Engineers (ITE), September 2021.

⁴ **Highway Capacity Manual 6th Edition: A Guide for Multimodal Mobility Analysis**. Washington D.C.: Transportation Research Board, 2016.

⁵ **NCDOT Capacity Analysis Guidelines**. North Carolina Department of Transportation (NCDOT), March 2022, <https://connect.ncdot.gov/resources/safety/Congestion%20Mngmt%20and%20Signing/Standards%20-%20Capacity%20Analysis%20Guidelines.pdf>

⁶ **Draft NCDOT Capacity Analysis Guidelines: Best Practices**. North Carolina Department of Transportation (NCDOT), March 2022, <https://connect.ncdot.gov/resources/safety/Congestion%20Mngmt%20and%20Signing/Best%20Practices%20-%20Capacity%20Analysis%20Guidelines.pdf>

⁷ **Land Development Ordinance**. Town of Rolesville, June 1, 2021, <https://www.rolesvillenc.gov/code-ordinances>

⁸ **Manual on Uniform Traffic Control Devices (MUTCD)**. Federal Highway Administration, May 2012, https://mutcd.fhwa.dot.gov/kno_2009r1r2.htm

8.0 APPENDIX

- Scoping Correspondence
- Site Plan
- Raw Traffic Count Data
- Approved Development Information
- Traffic Volume Calculations
- Synchro Files
- Synchro & SimTraffic Reports
- SIDRA files





Memo

To: Rolesville Planning Board
From: Michael Elabarger, Senior Planner
Date: September 23, 2022
Re: Map Amendment (Rezoning) MA 22-06 5109 Mitchell Mill

Background

The Town of Rolesville Planning Department received a Map Amendment (Rezoning) application in March 2022 for 139.054 acres located at 5109 Mitchell Mill Road, being Wake County PINs 1757571035. The applicant, Hopper Communities, is requesting to change the zoning from Wake County R-30 District to the Town's Land Development Ordinance (LDO) Neighborhood Center – Conditional District (NC-CZ) and Residential Medium Density – Conditional District (RM-CZ). A set of Conditions of Approval and a Concept Plan are included (see Attachments 2 and 3). Associated Voluntary Annexation Petition (ANX 22-03) is being processed as the property is not currently in the Town corporate limits.

Request

The Applicant is requesting to rezone the property into two distinct Zoning Districts (which are neatly separated by Jonesville Road) to create a residential neighborhood comprising single-family detached and attached (townhomes) dwelling units along with a commercial node at the northwest corner of the Jonesville/Mitchell Mill intersection. The development would include multiple amenities both exclusively for the neighborhood residents and for the general public. The Residential Medium Density (RM) District would be wholly single-family detached dwellings, likely subdivided under the "Cluster" option (See Analysis section). The Neighborhood Center (NC) District permits both residential and non-residential uses and has a clause to ensure that non-residential development is pursued before all the residential is developed. Both Districts are requested as "Conditional Districts" which allows the Applicant to offer and commit to details that may be above and beyond minimum/maximum standards that would apply at later stages of development. The project triggers many Transportation improvements to Jonesville Road and Mitchell Mill Road per the TIA, and these are addressed in the proposed Conditions (and detailed further in this memo).

Highlights of the Proposed Conditions of Approval (Attachment 2):

1. Maximum dwelling unit count of 398, with maximum Attached (townhome) units of 134.
2. Recreational Amenities per the Concept plan and delivery of pool/amenity center, playground, and dog park by time of issuance of 150th dwelling unit Certificate of Occupancy.
3. Transportation improvements per the TIA recommendations.

4. Single family detached foundation detail and minimum square footage; Attached (townhome) limit to 6 dwellings per building and minimum square footage.
5. Multi-family dwelling units restricted to upper-story location over ground floor commercial uses in NC-CZ district portion.

Applicant Justification

The Applicant provided a written justification statement for the rezoning request – please see page 11 (of 11) of Attachment 1.

Neighborhood Meeting

The Applicant held an on-line neighborhood meeting on June 20, 2022; there were no attendees. A summary memo is included as Attachment 4.

Comprehensive Plan

Land Use

The Future Land Use Map identifies the subject parcel, and the entire general vicinity of Mitchell Mill/Jonesville Road as appropriate for Medium Density Residential uses and development pattern. This category is described as predominately single-family residential uses with portions of duplex, townhouse, or multifamily residential. These are lots or tracts at a density range of three to five (3-5) dwelling units per acre.

Transportation and Traffic

The project proposes development on one or both sides of two State Roads - Jonesville Road (aka State Road 226) and Mitchell Mill Road (aka State Road 2224) - that totals approximately 1.4 miles of frontage:

- Approximately 1,900 feet on the north side of Mitchell Mill;
- Approximately 2,000 feet on both sides of Jonesville Road, from the intersection with Mitchell Mill;
- Approximately 1,400 feet on the east side of Jonesville Road to the north.

The scope of the project – nearly 400 dwelling units and 8 acres of non-residential uses – met the LDO thresholds for requiring a Traffic Impact Analysis (TIA), and this was performed by Ramey Kemp Associates during 2022 (see Attachment 5). The study contemplated a project of 264 single-family detached lots, 129 townhomes, and 50,000 square feet of general retail space. Driveway connections studied were Four (4) full movement connections to Jonesville Road, and then one (1) full movement and three (3) right-in/right-out (RIRO) connections to Mitchell Mill Road.

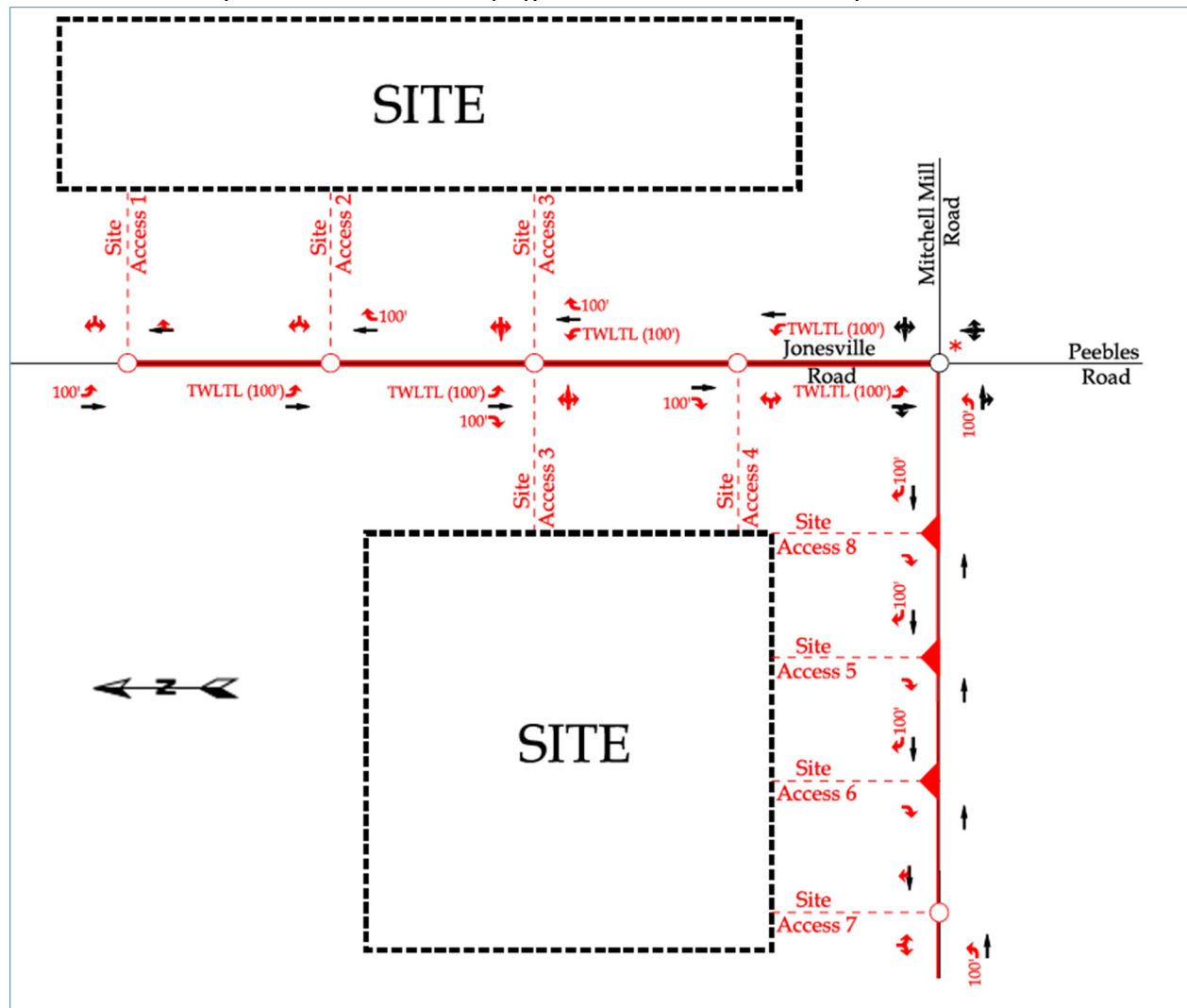
Per the Town of Rolesville's Community Transportation Plan (2021), the Thoroughfare recommendations for these existing major roadways are:

- Jonesville Road -- a Two-lane (2) with Two-way Left Turn Lane, curb and gutter, Bike Lanes, and sidewalks.
- Mitchell Mill Road – a Four-lane (4) divided (Raised Median – Narrow) with Curb and Gutter, Bike Lanes, and Sidewalk

The TIA resulted in these general trip generations from the project (excerpted from TIA):

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)	264 DU	2,540	48	144	192	163	95	258
Multi-Family Home (Low-Rise) (220)	129 DU	934	14	47	61	47	27	74
Shopping Center (820)	50 KSF	3,752	110	67	177	156	169	325
Total Trips		7,226	172	258	430	366	291	657

Below is an excerpt from the TIA identifying the various 'Site Access' points. North is to the left.



The TIA Recommended 12 distinct improvements which are generally described as:

1. **Frontage Improvements:**
 - a. Jonesville Road – widen between Mitchell Mill and Site Access 1 to ultimate Section (Two-lane + two-way left turn lane)
 - b. Mitchell Mill – widen along site frontage to One-Half section of ultimate Section (Four-lane median divided).
2. **401 Bypass & Jonesville Road intersection (to the north):**
 - a. Conduct Full Signal Warrant analysis prior to full build-out / Install Traffic Signal If Warranted & Approved by Town/NCDOT.
3. **401 Bypass & Eastern U-Turn Location:**
 - a. Conduct Full Signal Warrant analysis prior to full build-out / Install Traffic Signal If Warranted & Approved by Town/NCDOT.
4. **Mitchell Mill Road and Jonesville Road/Peebles Road intersection:**
 - a. Construct southbound (on Jonesville) Left-turn Lane with min. 100' of storage + deceleration and taper.
 - b. Construction eastbound (on Mitchell Mill Road) Left-turn Lane with min. 100' of storage + deceleration and taper.
 - c. Conduct Full Signal Warrant analysis prior to full build-out / Install Traffic Signal If Warranted & Approved by Town/NCDOT.
5. **Jonesville Road and Site Access 1:**
 - a. Construct Westbound approach (Site Access 1) w/ 1 Ingress Lane/1 Egress Lane.
 - b. Provide Stop-control for westbound approach (Site Access 1).
 - c. Construct Southbound (Jonesville Rd) Left-turn Lane with min. 100' of storage + deceleration and taper.
6. **Jonesville Road and Site Access 2:**
 - a. Construct Westbound approach (Site Access 2) w/ 1 Ingress Lane/1 Egress Lane.
 - b. Provide Stop-control for westbound approach (Site Access 2).
 - c. Construct Northbound (Jonesville Rd) Right-turn Lane with min. 100' of storage + deceleration and taper.
 - d. Construct Southbound (Jonesville Rd) Left-turn Lane with min. 100' of storage + deceleration and taper.
7. **Jonesville Road and Site Access 3:**
 - a. Construct an Eastbound & Westbound approach (Site Access 3) w/ 1 Ingress Lane/1 Egress Lane.
 - b. Provide Stop-control for Eastbound & Westbound approach (Site Access 3).
 - c. Construct a Northbound (Jonesville Rd) Left-turn Lane with min. 100' of storage + deceleration and taper.
 - d. Construct a Northbound (Jonesville Rd) Right-turn Lane with min. 100' of storage + deceleration and taper.
 - e. Construct a Southbound (Jonesville Rd) Left-turn Lane with min. 100' of storage + deceleration and taper.
 - f. Construct a Southbound (Jonesville Rd) Right-turn Lane with min. 100' of storage + deceleration and taper.
8. **Jonesville Road and Site Access 4:**
 - a. Construct Eastbound approach (Site Access 4) w/ 1 Ingress Lane/1 Egress Lane.
 - b. Provide Stop-control for the Eastbound approach (Site Access 4).
 - c. Construct a Northbound (Jonesville Rd) Left-turn Lane with min. 100' of storage + deceleration and taper.

- d. Construct a Southbound (Jonesville Rd) Right-turn Lane with min. 100' of storage + deceleration and taper.
- 9. **Mitchell Mill Road and Site Access 5:**
 - a. Construct Southbound approach (Site access 5) with 1 Ingress Lane / 1 Egress Lane striped as an exclusive Right-Turn Lane.
 - b. Provide Stop-control for Southbound approach (Site Access 5). This proposed intersection will be restricted to RIRO operations.
 - c. Construct exclusive Westbound (Mitchell Mill Road) Right-turn Lane with min. 100' of storage + deceleration and taper.
- 10. **Mitchell Mill Road and Site Access 6:**
 - a. Construct Southbound approach (Site Access 6) with 1 Ingress Lane / 1 Egress Lane striped as exclusive Right-Turn Lane.
 - b. Provide Stop-control for Southbound approach (Site Access 6). This proposed intersection will be restricted to RIRO operations.
 - c. Construct exclusive Westbound (Mitchell Mill Road) Right-turn Lane with min. 100' of storage + deceleration and taper.
- 11. **Mitchell Mill Road and Site Access 7:**
 - a. Construct Southbound approach (Site Access 7) with 1 Ingress Lane / 1 Egress Lane
 - b. Provide Stop-control for Southbound approach (Site Access 7).
 - c. Construct exclusive Eastbound (Mitchell Mill Road) Left-turn Lane with min. 100' of storage + deceleration and taper.
- 12. **Mitchell Mill Road and Site Access 8:**
 - a. Construct Southbound approach (Site Access 8) with 1 Ingress Lane / 1 Egress Lane striped as exclusive Right-Turn Lane.
 - b. Provide Stop-control for Southbound approach (Site Access 8). This proposed intersection will be restricted to RIRO operations.
 - c. Construct exclusive Westbound (Mitchell Mill Road) Right-turn Lane with min. 100' of storage + deceleration and taper.

Through the TRC Staff review, it was identified that most proposed new public streets within the project will be 50' right-of-way (typical residential streets), with the exception of the main East-West roadway through both sides of the project. This roadway would be developed as a 60' right-of-way Residential Collector – the 'stub' to the east would connect to PIN 1757770396, where an existing easement cart-way names 'Gro Peg Lane' exists; to the west it would both stub to PIN 1757367367 and continues due south to an intersection with Mitchell Mill Road (Site Access 7 per the TIA). The western stub could in the future be extended by those property owners west approximately 800 feet where it would intersect with State Road 2986 (aka Green Farm Lane).

Staff Analysis

The application seeks to 'split-zone' the subject property along the natural break created by Jonesville Road. Both requested Districts are sought to be "Conditional" districts per LDO Section 3.3, which allows an Applicant to propose, and the Town to consider, additional conditions or restrictions on the range of allowable principal uses, use standards, intensities, development standards, etc. The proposed Concept Plan (Attachment 3) is part of the Conditions and represents a conceptual layout and rendering of how the project may be built; it is not a preliminary subdivision plat or any form of "site plan" that has been vetted against the LDO for buildable compliance. This projects next step after attaining LDO Zoning District(s) is a Preliminary

Subdivision Plat, followed by Construction Infrastructure Plans. Non-residential development requires Site Development Plan review and approval also.

Neighborhood Center District (LDO Section 3.4.3.)

The land area for this district is approximately 55 acres and comprises the area of the property west of Jonesville Road. This would entail approximately 69 single-family detached and 119 townhomes dwelling units, and the approximately 8 acre site for non-residential development at the Jonesville/Mitchell Mill corner. This area would comprise all the townhomes contemplated. Table 3.4.3. states the maximum density of dwelling units in NC is 8 units/acre. The gross density of (all) dwelling units in the NC District is approximately 3.4 per acre; if removing the approximately 8 acres of non-residential, the density slightly increases to 4 dwelling units per acre, which is one-half of the permitted maximum.

Non-residential uses have a 'timing of development' requirement; Section 3.4.3.D.4. requires at least 25% of non-residential square footage to be achieved Building Permit issuance by the time that 50% of residential units achieve Building Permit issuance. Section 3.4.3.D.5. requires 50% of non-residential square footage to attain Building permits before remaining residential units can attain Building Permits.

Residential Medium Density District (LDO Section 3.1.2)

The land area for this district is approximately 86 acres and comprises the area of the property east of Jonesville Road. The lot development is in 3 distinct areas, with one on the far north side of the Harris Creek environmental area. The Concept Plan indicates that, at the preliminary subdivision plat point, the intention is to subdivide utilizing the Cluster options that are part of Table 3.1.2. within the RM district development standards. The Cluster option increases Density maximum (from 3 units per acre to 5), reduces minimum building setbacks, reduces lot width minimum by over half (from 85' to 40') and reduces the minimum lot area by two-thirds (from 15,000 SF to 5,000 SF). The proposed Concept Plan identifies that by exercising the Cluster option, approximately 42 of the 86 acres (49%) would be undeveloped and is generally contiguous as well. Lot density calculates to 2.2 dwelling units per acre, thus utilizing the reduced / lesser standards does not increase density, but rather equates to more undeveloped land area (ie open space).

TIA Results

Staff concurs with the recommendation improvements contained within the TIA and find that they demonstrate rational mitigation of impacts from the proposed scope and intensity of development on the area roadways.

Consistency

The applicant's request for a combination of Residential Medium (RM) and Neighborhood Center (NC) districts, conditioned to a project for up to 398 residential dwelling units and ~8 acres of non-residential development (which could include upper-story multi-family dwelling units), at calculated residential densities less than the maximums permitted by the respective proposed Zoning Districts, is consistent with the Town of Rolesville's Comprehensive Plan.

Development Review

The Technical Review Committee (TRC) reviewed three submittals of this rezoning request and associated Conditions of Approval and concept plan. There are no remaining outstanding comments to be addressed at this stage of development.

Staff Recommendation

Based on consistency with the Comprehensive Plan and mitigation of expected impacts, Staff recommends approval of MA 22-06 5109 Mitchell Mill.

Proposed Motion

Motion to recommend (approval or denial) of rezoning request of MA 22-06 5109 Mitchell Mill.

Attachments

	Description	Date
1	Application (i.e. Exhibit A, B, C)	March 2022
2	Conditions (i.e. Exhibit D)	09-23-2022
3	Concept Plan (i.e. Exhibits 1 & 2)	Revised dated 09-23-2022
4	Neighborhood Meeting documents	June 2022
5	Traffic Impact Analysis (TIA) Final report	Final version, dated August 2022
6	Vicinity Map	2022
7	Existing Zoning Map	2021
8	Future Land Use Map	2017 Comprehensive Plan

ATTACHMENT 1 - APPLICATION AND EXHIBITS A, B, C



Case No. MA 22-06

Date March 2022

Map Amendment Application

Contact Information

Property Owner Please see attached Exhibit A.

Address City/State/Zip

Phone Email

Developer Hopper Communities

Contact Name Beth Trahos, Nelson Mullins

Address 4140 Parklake Avenue, Suite 200 City/State/Zip Raleigh, NC 27612

Phone 919.329.3884 Email beth.trahos@nelsonmullins.com

Property Information

Address 5109 Mitchell Mill Road, Wake Forest, North Carolina 27587-7246

Wake County PIN(s) 1757 5 103 5

Current Zoning District Wake County R-30 Requested Zoning District NC CD

Total Acreage 139.054 acres

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 Date 2-28-22

STATE OF NORTH CAROLINA

COUNTY OF Wake

I, a Notary Public, do hereby certify that James Robert Fowler III

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

the 28th day of February 2022

My commission expires 8-22-2023

Signature Seal

Shawn E. Scarborough
NOTARY PUBLIC
WAKE COUNTY, N.C.
My Commission Expires 08-22-2023

Town of Rolesville Planning

PO Box 250 / Rolesville, North Carolina 27571 / RolesvilleNC.gov / 919.554.6517



Case No. _____

Date _____

Map Amendment Application

Contact Information

Property Owner Please see attached Exhibit A.

Address _____ City/State/Zip _____

Phone _____ Email _____

Developer Hopper CommunitiesContact Name Beth Trahos, Nelson MullinsAddress 4140 Parklake Avenue, Suite 200 City/State/Zip Raleigh, NC 27612Phone 919.329.3884 Email beth.trahos@nelsonmullins.com

Property Information

Address 5109 Mitchell Mill Road, Wake Forest, North Carolina 27587-7246Wake County PIN(s) 1757 57 1035Current Zoning District Wake County R-30 Requested Zoning District NC CDTotal Acreage 139.054± acres

Owner Signature

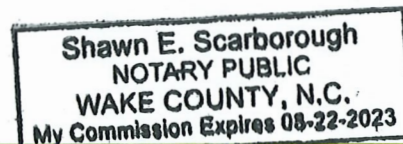
I hereby certify that the information contained herein is true and completed. I understand that if any item is found to be otherwise after evidentiary hearing before the Town Board of Commissioners, that the action of the Board may be invalidated.

Signature Leigh Fowler Date 2/28/2022

STATE OF NORTH CAROLINA

COUNTY OF Wake

I, a Notary Public, do hereby certify that Leigh Fowler
personally appeared before me this day and acknowledged the due execution of the foregoing instrument. This
the 28th day of February 2022.

My commission expires 8-22-2023.Signature Shawn E. Scarborough Seal

Town of Rolesville Planning

PO Box 250 / Rolesville, North Carolina 27571 / RolesvilleNC.gov / 919.554.6517



Case No. _____

Date _____

Map Amendment Application

Contact Information

Property Owner Please see attached Exhibit A.

Address _____ City/State/Zip _____

Phone _____ Email _____

Developer Hopper CommunitiesContact Name Beth Trahos, Nelson MullinsAddress 4140 Parklake Avenue, Suite 200 City/State/Zip Raleigh, NC 27612Phone 919.329.3884 Email beth.trahos@nelsonmullins.com

Property Information

Address 5109 Mitchell Mill Road, Wake Forest, North Carolina 27587-7246Wake County PIN(s) 1757 57 1035Current Zoning District Wake County R-30 Requested Zoning District NC CDTotal Acreage 139.054± acres

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 Dana Bright Date 2/28/22

STATE OF NORTH CAROLINA

COUNTY OF Wake

I, a Notary Public, do hereby certify that Dana Bright
personally appeared before me this day and acknowledged the due execution of the foregoing instrument. This
the 28th day of February 2022.

My commission expires 8-22-2023.Signature Shawn E. Scarborough Seal

Shawn E. Scarborough
NOTARY PUBLIC
WAKE COUNTY, N.C.
My Commission Expires 08-22-2023

Town of Rolesville Planning

PO Box 250 / Rolesville, North Carolina 27571 / RolesvilleNC.gov / 919.554.6517



Case No. _____

Date _____

Map Amendment Application

Contact Information

Property Owner Please see attached Exhibit A.

Address _____ City/State/Zip _____

Phone _____ Email _____

Developer Hopper Communities

Contact Name Beth Trahos, Nelson Mullins

Address 4140 Parklake Avenue, Suite 200 City/State/Zip Raleigh, NC 27612

Phone 919.329.3884 Email beth.trahos@nelsonmullins.com

Property Information

Address 5109 Mitchell Mill Road, Wake Forest, North Carolina 27587-7246

Wake County PIN(s) 1757 57 1035

Current Zoning District Wake County R-30 Requested Zoning District NC CD

Total Acreage 139.054± acres

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 *Randy Bright* Date 2/28/22

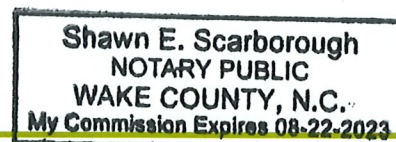
STATE OF NORTH CAROLINA

COUNTY OF Wake

I, a Notary Public, do hereby certify that Randy Bright personally appeared before me this day and acknowledged the due execution of the foregoing instrument. This the 28th day of February 20 22.

My commission expires March 8-22-2023.

Signature *Shawn E. Scarborough* Seal



Town of Rolesville Planning

PO Box 250 / Rolesville, North Carolina 27571 / RolesvilleNC.gov / 919.554.6517



Case No. _____

Date 2/28/22

Map Amendment Application

Contact Information

Property Owner Please see attached Exhibit A.

Address _____ City/State/Zip _____

Phone _____ Email _____

Developer Hopper CommunitiesContact Name Beth Trahos, Nelson MullinsAddress 4140 Parklake Avenue, Suite 200 City/State/Zip Raleigh, NC 27612Phone 919.329.3884 Email beth.trahos@nelsonmullins.com

Property Information

Address 5109 Mitchell Mill Road, Wake Forest, North Carolina 27587-7246Wake County PIN(s) 1757 57 1035Current Zoning District Wake County R-30 Requested Zoning District NC CDTotal Acreage 139.054± acres

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 [Signature] Date 2/28/22

STATE OF NORTH CAROLINA

COUNTY OF Wake

I, a Notary Public, do hereby certify that Griny Wheeler
personally appeared before me this day and acknowledged the due execution of the foregoing instrument. This
the 28th day of February 20 22.

My commission expires 10/18/2026.Signature [Signature] Seal

STEPHEN M. SCHMOEGER
NOTARY PUBLIC
WAKE COUNTY, N.C.
My Commission Expires 10/18/2026

Town of Rolesville Planning

PO Box 250 / Rolesville, North Carolina 27571 / RolesvilleNC.gov / 919.554.6517



Case No. _____
Date 2/28/22

Map Amendment Application

Contact Information

Property Owner Please see attached Exhibit A.

Address _____ City/State/Zip _____

Phone _____ Email _____

Developer Hopper Communities

Contact Name Beth Trahos, Nelson Mullins

Address 4140 Parklake Avenue, Suite 200 City/State/Zip Raleigh, NC 27612

Phone 919.329.3884 Email beth.trahos@nelsonmullins.com

Property Information

Address 5109 Mitchell Mill Road, Wake Forest, North Carolina 27587-7246

Wake County PIN(s) 1757 57 1035

Current Zoning District Wake County R-30 Requested Zoning District NC CD

Total Acreage 139.054± acres

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 Stephen Wheeler Date 2/28/2022

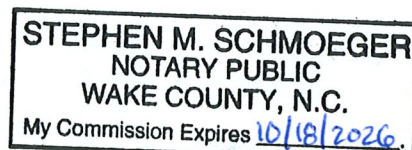
STATE OF NORTH CAROLINA

COUNTY OF Wake

I, a Notary Public, do hereby certify that Stephen Wheeler
personally appeared before me this day and acknowledged the due execution of the foregoing instrument. This
the 28th *day of* February *20* 22.

My commission expires 10/18/2026.

Signature Stephen M. Schmoeger Seal



Town of Rolesville Planning

PO Box 250 / Rolesville, North Carolina 27571 / RolesvilleNC.gov / 919.554.6517

EXHIBIT A

	PIN: 1767 57 1035
Contact Information:	Dana and Randy Bright Giny and Stephen Wheeler Leigh and James Robert Fowler III 7928 Sutterton Court Raleigh, NC 27615
Property Address:	5109 Mitchell Mill Road
Current Zoning District:	R-30
Requested Zoning District:	NC CD
Total Acreage:	139.054

EXHIBIT B

LEGAL DESCRIPTION

146.812 GROSS ACRES

POINT OF BEGINNING BEING NEW PK NAIL IN CENTERLINE OF JONESVILLE ROAD
LOCATED SOUTH 03 DEGREES 39 MINUTES 27 SECONDS EAST 6691.07' FROM NCGS MONUMENT
"SCARBORO" NAD 83 NC GRID COORDINATES N = 785291.32 E = 2153832.22

THENCE South 81 degrees 13 minutes 36 seconds East for a distance of 581.67 feet to a new iron pipe

THENCE South 84 degrees 14 minutes 11 seconds East for a distance of 254.17 feet to an eip;

THENCE South 81 degrees 44 minutes 51 seconds East for a distance of 203.47 feet to an eip;

THENCE South 81 degrees 50 minutes 46 seconds East for a distance of 221.49 feet to an eip;

THENCE South 79 degrees 18 minutes 42 seconds East for a distance of 440.70 feet to an eip;

THENCE North 25 degrees 12 minutes 36 seconds East for a distance of 0.99 feet to a new iron pipe;

THENCE South 80 degrees 54 minutes 24 seconds East for a distance of 467.97 feet to an eip;

THENCE South 08 degrees 18 minutes 30 seconds West for a distance of 692.28 feet to an eip;

THENCE South 08 degrees 17 minutes 36 seconds West for a distance of 259.85 feet to an eip;

THENCE South 79 degrees 39 minutes 38 seconds East for a distance of 298.45 feet to an eip;

THENCE South 08 degrees 28 minutes 21 seconds West for a distance of 557.14 feet to an eip;

THENCE North 78 degrees 03 minutes 15 seconds West for a distance of 473.68 feet to an eip;

THENCE North 67 degrees 03 minutes 12 seconds West for a distance of 535.05 feet to an eip;

THENCE South 06 degrees 26 minutes 42 seconds West for a distance of 1705.50 feet to a new pk nail in centerline of Mitchell Mill Rd.;

THENCE North 83 degrees 37 minutes 41 seconds West for a distance of 100.67 feet to a new mag nail in cl rd;

THENCE North 85 degrees 33 minutes 48 seconds West for a distance of 96.77 feet to a new mag nail in cl rd;

THENCE North 87 degrees 17 minutes 52 seconds West for a distance of 60.47 feet to a new mag cl intersection of Jonesville Rd. and Mitchell Mill Rd.;

THENCE North 89 degrees 20 minutes 37 seconds West for a distance of 99.85 feet to a new mag nail in cl rd;

THENCE South 86 degrees 08 minutes 11 seconds West for a distance of 100.39 feet to a new mag nail in cl rd;

THENCE South 81 degrees 56 minutes 47 seconds West for a distance of 105.02 feet to a new mag nail in cl rd;

THENCE South 78 degrees 57 minutes 50 seconds West for a distance of 103.53 feet to a new mag nail in cl rd;
THENCE South 77 degrees 26 minutes 26 seconds West for a distance of 102.89 feet to a new mag nail in cl rd;
THENCE South 79 degrees 32 minutes 41 seconds West for a distance of 77.32 feet to a new mag cl rd;
THENCE South 85 degrees 34 minutes 24 seconds West for a distance of 67.43 feet to a new mag nail;
THENCE North 07 degrees 04 minutes 28 seconds East for a distance of 19.75 feet to an eip;
THENCE South 88 degrees 31 minutes 32 seconds West for a distance of 563.89 feet to an eip;
THENCE South 83 degrees 02 minutes 24 seconds West for a distance of 446.06 feet to an eip;
THENCE North 07 degrees 09 minutes 19 seconds East for a distance of 160.38 feet to an eip;
THENCE North 06 degrees 58 minutes 12 seconds East for a distance of 1599.62 feet to a new iron pipe;
THENCE South 81 degrees 18 minutes 24 seconds East for a distance of 4.60 feet to a point;
THENCE North 62 degrees 11 minutes 46 seconds East for a distance of 259.13 feet to a point;
THENCE North 79 degrees 20 minutes 16 seconds East for a distance of 165.95 feet to a point;
THENCE South 77 degrees 22 minutes 09 seconds East for a distance of 220.98 feet to a point;
THENCE North 69 degrees 21 minutes 06 seconds East for a distance of 141.50 feet to a point;
THENCE North 11 degrees 29 minutes 46 seconds East for a distance of 308.82 feet to a new mag nail in c/l of Jonesville Rd.;
THENCE North 22 degrees 16 minutes 48 seconds West for a distance of 76.10 feet to a new mag nail in cl bridge;
THENCE North 21 degrees 58 minutes 57 seconds West for a distance of 253.76 feet to a new mag nail in cl rd;
THENCE North 18 degrees 49 minutes 53 seconds West for a distance of 116.90 feet to a new mag nail in cl rd;
THENCE North 14 degrees 15 minutes 58 seconds West for a distance of 104.69 feet to a new mag cl rd;
THENCE North 09 degrees 44 minutes 06 seconds West for a distance of 111.66 feet to a new mag nail in cl rd;
THENCE North 05 degrees 39 minutes 55 seconds West for a distance of 103.00 feet to a new mag cl rd;
THENCE North 01 degrees 56 minutes 23 seconds West for a distance of 102.51 feet to a new mag nail in cl rd;
THENCE North 02 degrees 41 minutes 02 seconds East for a distance of 106.93 feet to a new mag nail in cl rd;
THENCE North 07 degrees 04 minutes 34 seconds East for a distance of 108.26 feet to a new mag nail in cl rd;
THENCE North 09 degrees 32 minutes 21 seconds East for a distance of 126.39 feet to point of beginning;

Together with and subject to covenants, easements, and restrictions of record.

Said property contains 146.812 acres more or less as shown of map by Williams-Pearce & Associates, PA entitled "Property survey for James Robert Fowler III and Jill F. Bright", dated 02-11-2022.

EXHIBIT C

STATE OF NORTH CAROLINA

**BEFORE THE TOWN OF
ROLESVILLE BOARD OF
COMMISSIONERS AND
PLANNING BOARD**

COUNTY OF WAKE

ZONING MAP AMENDMENT

In support of a petition to zone the subject property Mixed Use Neighborhood Center Conditional Zoning District, the applicant offers the following information:

The subject property is approximately 139± acres located on both sides of Jonesville Road north of its intersection with Mitchell Mill Road. The property is currently zoned R-30 by Wake County, a rural holding district. The subject property is planned to come into the Town of Rolesville and to be development as a part of the town. It is located on the southern edge of Rolesville in close proximity to the more urban areas of east Raleigh.

The proposed zoning is Mixed Use Neighborhood Center Conditional District. The Future Land Use Map designates the subject property for Medium Density Residential. Medium Density Residential is described as “[p]redominantly single family residential uses with portions of duplex, townhouse or multifamily residential. These are lots or tracts at a density range of three to five dwelling units per gross acre including preserved open spaces areas along with limited non-residential uses under planned unit development or form base code provisions.” The proposed community includes a mix of housing types (single-family detached homes and townhomes) and is within the density levels recommended by the Comprehensive Plan.

The Town Board of Commissioners has indicated a desire to include more commercial uses within Rolesville. The proposed zoning includes 8.27± acres in the northwest quadrant of the intersection of Mitchell Mill Road and Jonesville Roads as a neighborhood center. In addition this site is approximately one-mile from the Wallbrook mixed-use development with 265,000 square feet of commercial space, including a Publix grocery store

The zoning includes commitments for a community pool, playground, dog park, a public greenway connection as shown on the Town’s Open Space and Greenway Plan. Harris Creek will be preserved as a part of approximately 60 acres of open space on the subject property.

The proposed rezoning is in accordance with the Comprehensive Plan and reasonable and in the public interest. We request your support for the proposed zoning.

Exhibit D
Mixed-Use Neighborhood Center Conditional Zoning District (NC-CZ)
and Residential Medium Density Conditional Zoning District (RM-CZ)
Zoning Conditions

Conditions Applicable to the entire property:

1. The subject property shall be developed generally in accordance with the sketch plan attached hereto as Exhibit 1 and incorporated herein as if fully set out. The approximately 55± acre portion of the subject property located west of Jonesville Road and further described as Parcel 1 on the attached Exhibit 2 attached hereto shall be zoned NC-CZ and the approximately 86± acre portion of the property located east of Jonesville Road and further described as Parcel 2 on Exhibit 2 attached hereto shall be zoned RM-CZ.
2. The total number of dwellings on the subject property shall not exceed 398 dwelling units and no more than 134 of these dwellings shall be permitted to be Dwellings, Single Family, Attached (townhomes.)
3. Recreational Amenities: The following recreational amenities shall be provided generally as shown on the attached Exhibit 1 as a part of the development of the subject property and dedicated to the Homeowner's Association except for the public greenway which shall be dedicated as such to the Town of Rolesville:
 - a. A swimming pool and cabana, including changing rooms and restrooms shall be constructed prior to the issuance of the 150th certificate of occupancy for a dwelling unit;

These zoning conditions have been voluntarily offered by the property owner. All property owners must sign each condition page. This page may be photocopied if additional space is needed.

Signature: _____

Print Name: Dana Bright

Date: _____

Signature: _____

Print Name: Randy Bright

Date: _____

Signature: _____

Print Name: Giny Wheeler

Date: _____

Signature: _____

Print Name: Stephen Wheeler

Date: _____

Signature: _____

Print Name: Leigh Fowler

Date: _____

Signature: _____

Print Name: James Robert Fowler III

Date: _____

- b. At least one fenced playground shall be constructed prior to the issuance of the 150th certificate of occupancy for a dwelling unit ;
 - c. At least one fenced dog park shall be constructed prior to the issuance of the 150th certificate of occupancy for a dwelling unit; and
 - d. Public greenway on a greenway easement at least 25' wide with paved trails at least ten feet wide (10') shall be constructed generally as shown on the attached Exhibit 1.
4. Transportation Improvements: To address transportation impacts reasonably expected to be generated by the development, the following road improvements shall be installed as recommended by the 5109 Mitchell Mill Road Traffic Impact Analysis, prepared by Ramey Kemp & Associates for the Town of Rolesville, a copy of which is on file with the Town of Rolesville.
- a. Jonesville Road:
 - i. Widen Jonesville Road along the site frontage between Site Access 1 and Site Access 2 to the roadways ultimate cross section per Rolesville Community Transportation Plan, 2 lanes with two-way left turn lanes; and
 - ii. Widen Jonesville Road along the site frontage between Site Access 3 and Mitchell Mill Road to the roadways ultimate cross section per Rolesville Community Transportation Plan, 2 lanes with two-way left turn lanes.
 - b. Mitchell Mill Road:
 - i. Widen one-half section along the site frontage to this roadway's ultimate cross-section per the Rolesville Community Transportation Plan, 4-lane median divided.

These zoning conditions have been voluntarily offered by the property owner. All property owners must sign each condition page. This page may be photocopied if additional space is needed.

Signature: _____

Print Name: Dana Bright

Date:

Signature: _____

Print Name: Randy Bright

Date:

Signature: _____

Print Name: Giny Wheeler

Date:

Signature: _____

Print Name: Stephen Wheeler

Date:

Signature: _____

Print Name: Leigh Fowler

Date:

Signature: _____

Print Name: James Robert Fowler III

Date:

- c. Mitchell Mill Road and Jonesville Road/Peebles Road:
 - i. Provide a southbound (Jonesville Road) left turn lane with at least 100 feet of storage and appropriate decel and taper; and
 - ii. Construct an eastbound (Mitchell Mill Road) left-turn lane with at least 100 feet of storage and appropriate decel and taper.
- d. Jonesville Road and Site Access 1:
 - i. Construct the westbound approach (Site Access 1) with one ingress lane and one egress lane;
 - ii. Provide stop-control for westbound approach (Site Access 1); and
 - iii. Construct a southbound (Jonesville Road) left-turn lane with at least 100 feet of storage and appropriate decel and taper.
- e. Jonesville Road and Site Access 2:
 - i. Construct the westbound approach (Site Access 2) with one ingress lane and one egress lane;
 - ii. Provide stop-control for westbound approach (Site Access 2); and
 - iii. Construct a southbound (Jonesville Road) left-turn lane with at least 100 feet of storage and appropriate decel and taper.
- f. Jonesville Road and Site Access 3:
 - i. Construct the eastbound and westbound approaches (Site Access 3) with one ingress lane and one egress lane;
 - ii. Provide stop-control for eastbound and westbound approach (Site Access 3);
 - iii. Construct northbound (Jonesville Road) left-turn lane with at least 100 feet of storage and appropriate decel and taper;

These zoning conditions have been voluntarily offered by the property owner. All property owners must sign each condition page. This page may be photocopied if additional space is needed.

Signature: _____

Print Name: Dana Bright

Date:

Signature: _____

Print Name: Randy Bright

Date:

Signature: _____

Print Name: Giny Wheeler

Date:

Signature: _____

Print Name: Stephen Wheeler

Date:

Signature: _____

Print Name: Leigh Fowler

Date:

Signature: _____

Print Name: James Robert Fowler III

Date:

- iv. Construct northbound (Jonesville Road) right-turn lane with at least 100 feet of storage and appropriate decel and taper;
 - v. Construct a southbound (Jonesville Road) left-turn lane with at least 100 feet of storage and appropriate decel and taper; and
 - vi. Construct a southbound (Jonesville Road) right-turn lane with at least 100 feet of storage and appropriate decel and taper.
- g. Jonesville Road and Site Access 4:
- i. Construct the eastbound approach (Site Access 4) with one ingress lane and one egress lane;
 - ii. Provide stop-control for eastbound approach (Site Access 4);
 - iii. Provide a northbound (Jonesville Road) left-turn lane with at least 100 feet of storage and appropriate decel and taper; and
 - iv. Provide a southbound (Jonesville Road) right-turn lane with at least 100 feet of storage and appropriate decel and taper.
- h. Michell Mill and Site Access 5:
- i. Construct the southbound approach (Site Access 5) with one ingress lane and one egress lane striped as an exclusive right-turn lane;
 - ii. Provide stop-control for southbound approach (Site Access 5) restricted to right-in, right-out operations; and
 - iii. Construct an exclusive westbound (Mitchell Mill Road) right-turn lane with at least 100 feet of storage and appropriate decel and taper.
- i. Mitchell Mill and Site Access 6:
- i. Construct the southbound approach (Site Access 6) with one ingress lane and one egress lane striped as an exclusive right-turn lane; and

These zoning conditions have been voluntarily offered by the property owner. All property owners must sign each condition page. This page may be photocopied if additional space is needed.

Signature: _____

Print Name: Dana Bright

Date:

Signature: _____

Print Name: Randy Bright

Date:

Signature: _____

Print Name: Giny Wheeler

Date:

Signature: _____

Print Name: Stephen Wheeler

Date:

Signature: _____

Print Name: Leigh Fowler

Date:

Signature: _____

Print Name: James Robert Fowler III

Date:

- ii. Provide stop-control for southbound approach (Site Access 6) restricted to right-in, right-out operations.
- j. Mitchell Mill and Site Access 7:
 - i. Construct the southbound approach (Site Access 7) with one ingress lane and one egress lane;
 - ii. Provide stop-control for southbound approach (Site Access 7); and
 - iii. Construct an exclusive eastbound (Mitchell Mill Road) left-turn lane with at least 100 feet of storage and appropriate decel and taper.
- k. Mitchell Mill Road and Site Access 8:
 - i. Construct the southbound approach (Site Access 8) with one ingress lane and one egress lane striped as an exclusive right-turn lane;
 - ii. Provide stop-control for southbound approach (Site Access 8). This proposed intersection will be restricted to right-in/right-out operations; and
 - iii. Construct an exclusive westbound (Mitchell Mill Road) right-turn lane with at least 100 feet of storage and appropriate decel and taper.

Conditions Applicable to Dwelling, Single Family, Detached only:

- 5. All homes shall include either crawl space foundations or stem wall foundations. Any stem wall foundations shall have a brick or stone veneer on all sides facing a public street.
- 6. The minimum building square footage shall be 2,000 square feet.

Conditions Applicable to Dwellings, Single Family, Attached (townhomes) only:

- 7. No Dwelling, Single Family, Attached (townhome) building shall exceed six (6) dwellings.

These zoning conditions have been voluntarily offered by the property owner. All property owners must sign each condition page. This page may be photocopied if additional space is needed.

Signature: _____

Print Name: Dana Bright

Date:

Signature: _____

Print Name: Randy Bright

Date:

Signature: _____

Print Name: Giny Wheeler

Date:

Signature: _____

Print Name: Stephen Wheeler

Date:

Signature: _____

Print Name: Leigh Fowler

Date:

Signature: _____

Print Name: James Robert Fowler III

Date:

8. The minimum building square footage for townhomes shall be 1,200 square feet.

Conditions Applicable to the NC-CZ District only:

9. All uses permitted in the Neighborhood Center Mixed-Use district shall be permitted within the NC-CZ except Dwellings, Multiple Family (apartments) shall only be permitted in buildings with commercial uses located on the ground floor.

These zoning conditions have been voluntarily offered by the property owner. All property owners must sign each condition page. This page may be photocopied if additional space is needed.

Signature: _____

Print Name: Dana Bright

Date:

Signature: _____

Print Name: Randy Bright

Date:

Signature: _____

Print Name: Giny Wheeler

Date:

Signature: _____

Print Name: Stephen Wheeler

Date:

Signature: _____

Print Name: Leigh Fowler

Date:

Signature: _____

Print Name: James Robert Fowler III

Date:

Exhibit 1 (pg 1 of 2)

5109 MITCHELL MILL RD

REZONING PLAN

ROLESVILLE, NORTH CAROLINA 27587
WAKE COUNTY

OWNER:
JAMES FOWLER, JILL BRIGHT
7400 FOWLER RD
ZEBULON, NC 27587

DEVELOPER:
HOPPER COMMUNITIES, INC
1616 CLEVELAND AVE
CHARLOTTE, NC 28203

CIVIL ENGINEER:
TIMMONS GROUP
PATRICK BARBEAU, P.E.
5410 TRINITY ROAD; SUITE 102
RALEIGH, NC 27607
PH: (919) 866-4512
PATRICK.BARBEAU@TIMMONS.COM

BUFFER/WETLAND:
SOIL AND ENVIRONMENTAL CONSULTANTS, PA
STEVEN BALL, RF, PWS
8412 FALLS OF NEUSE RD SUITE 104
RALEIGH, NC 27615
PH: (919) 846-5900
SBALL@SANDEC.COM



VICINITY MAP
NTS

Sheet List Table	
Sheet Number	Sheet Title
C-01	CONCEPT SITE PLAN
C-02	CONCEPT MASTER PLAN

ATTACHMENT 3 - CONCEPT PLAN (3 SHEETS)



811 KNOW WHAT'S BELOW.
CALL 811 BEFORE YOU DIG.

TIMMONS GROUP NORTH CAROLINA LICENSE NO. C-1652 5109 MITCHELL MILL RD ROLESVILLE - WAKE COUNTY - NORTH CAROLINA		DATE: 07/01/2022 DRAWN BY: JZZ CHECKED BY: P. BARBEAU DESIGNED BY: P. BARBEAU SCALE: AS SHOWN	COVER SHEET
THIS DRAWING PREPARED AT THE RALEIGH OFFICE 5410 Trinity Road, Suite 102, Raleigh, NC 27607 TEL: 919 866 4512 FAX: 919 833 3124 WWW.TIMMONSGROUP.COM		REVISIONS FROM TOWN OF ROLESVILLE REVIEW COMMENTS DATE: 08/23/2022 BY: P. BARBEAU REVISIONS FROM TOWN OF ROLESVILLE REVIEW COMMENTS	
YOUR VISION ADOPTED THROUGH OURS.		PRELIMINARY NOT FOR CONSTRUCTION	

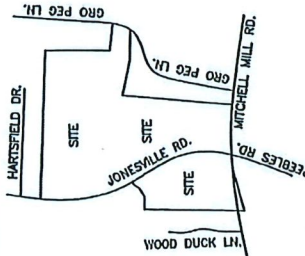
PRELIMINARY - NOT RELEASED FOR CONSTRUCTION

Exhibit 1 (pg 2 of 2)



Exhibit 2

PROPERTY ADDRESS:
5109 MITCHELL MILL RD.
WAKE FOREST, NC 27587



VICINITY MAP

PIN: 1757-57-1085

REFERENCE: BOM 1982 PG 656 & 656
BOM 2007 PG 1224
BOM 1991 PG 127
BOM 1996 PG 524
BOM 1998 PG 1210
BOM 1999 PG 1216
BOM 1999 PG 894
BOM 1999 PG 1474
BOM 1999 PG 343
BOM 1999 PG 396
BOM 1999 PG 356
BOM 1999 PG 868
BOM 2013 PG 868

NOTE: AREA COMPUTED BY COORDINATE METHOD.

NOTE: NO NCSS MONUMENT WITHIN 2000'.

NOTE: THIS PROPERTY IS SUBJECT TO EASEMENTS AND RESTRICTIONS OF RECORD.

NOTE: ALL BEARING ARE ACCORDING TO MAGNETIC BEARINGS.

COUNTY	BEARING	DISTANCE
1	S 89° 15' 30" E	100.00
2	S 89° 15' 30" E	100.00
3	S 89° 15' 30" E	100.00
4	S 89° 15' 30" E	100.00
5	S 89° 15' 30" E	100.00
6	S 89° 15' 30" E	100.00
7	S 89° 15' 30" E	100.00
8	S 89° 15' 30" E	100.00
9	S 89° 15' 30" E	100.00
10	S 89° 15' 30" E	100.00
11	S 89° 15' 30" E	100.00
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61	S 89° 15' 30" E	100.00
62	S 89° 15' 30" E	100.00
63	S 89° 15' 30" E	100.00
64	S 89° 15' 30" E	100.00
65	S 89° 15' 30" E	100.00
66	S 89° 15' 30" E	100.00
67	S 89° 15' 30" E	100.00
68	S 89° 15' 30" E	100.00
69	S 89° 15' 30" E	100.00
70	S 89° 15' 30" E	100.00
71	S 89° 15' 30" E	100.00
72	S 89° 15' 30" E	100.00
73	S 89° 15' 30" E	100.00
74	S 89° 15' 30" E	100.00
75	S 89° 15' 30" E	100.00
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83	S 89° 15' 30" E	100.00
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96	S 89° 15' 30" E	100.00
97	S 89° 15' 30" E	100.00
98	S 89° 15' 30" E	100.00
99	S 89° 15' 30" E	100.00
100	S 89° 15' 30" E	100.00

DANNY O. WILLIAMS, Professional Land Surveyor No. L-2847, certify that this plat 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, easement, or other interest in land, and that the plat is a true and correct copy of the original survey as recorded in the public records of Wake County, North Carolina, and that the plat was prepared in accordance with the provisions of the North Carolina Surveying Act of 1977, as amended, and that the original survey was recorded in the public records of Wake County, North Carolina, on the 11th day of FEBRUARY, A.D., 2022.

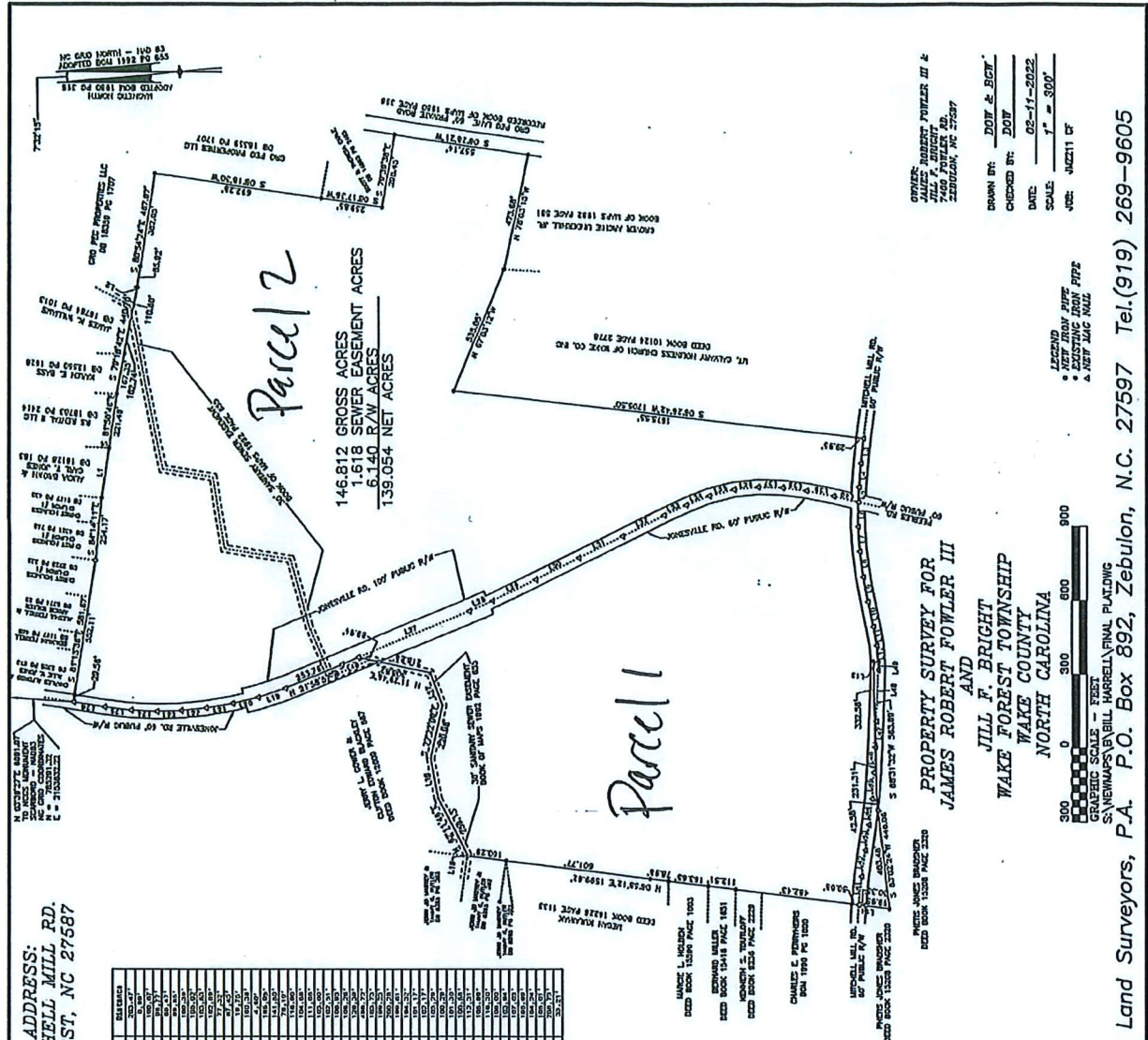


Seal or Stamp

I, Danny O. Williams, Professional Land Surveyor No. L-2847, certify that this plat 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, easement, or other interest in land, and that the plat is a true and correct copy of the original survey as recorded in the public records of Wake County, North Carolina, and that the plat was prepared in accordance with the provisions of the North Carolina Surveying Act of 1977, as amended, and that the original survey was recorded in the public records of Wake County, North Carolina, on the 11th day of FEBRUARY, A.D., 2022.



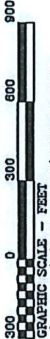
Seal or Stamp



OWNER: JAMES ROBERT FOWLER III & JILL F. BRIGHT
1468 FOWLER RD.
ZEBULON, NC 27587

DRAWN BY: DOW & BCT
CHECKED BY: DOW
DATE: 02-11-2022
SCALE: 1" = 300'
JOB: JAZZ11 07

LEGEND
• NEW IRON PIPE
• EXISTING IRON PIPE
• NEW 12" DUCT



GRAPHIC SCALE - FEET
S:\NEWMAPS\B\BILL HARRELL\FINAL PLATING

WILLIAMS-Pearce and Assoc., Professional Land Surveyors, P.A. P.O. Box 892, Zebulon, N.C. 27587 Tel.(919) 269-9605

ATTACHMENT 2 - NEIGHBORHOOD MEETING DOCUMENTS

OWNER	ADDR1	ADDR2
JONES, CHARLES ALFONSO JONES, ALLIE V	3800 JONESVILLE RD	WAKE FOREST NC 27587-8180
WALKER, ALESHIA FERRELL WALKER, AARON	5012 HARTSFIELD DR	WAKE FOREST NC 27587-9638
JONES, ALICIA BROWN JONES, CARL T	5028 HARTSFIELD DR	WAKE FOREST NC 27587-9638
HONEYCUTT, CURTIS L HONEYCUTT, CHARITY M	5100 MITCHELL MILL RD	WAKE FOREST NC 27587-7247
HONEYCUTT, TODD KENDALL	5104 MITCHELL MILL RD	WAKE FOREST NC 27587-7247
CARLE, SCOTT CARLE, THERESA	PO BOX 371	WAKE FOREST NC 27588-0371
CHRIST HOLINESS CHURCH NUMBER 1 C/O WILLIAM WHITFIELD	5016 HARTSFIELD DR	WAKE FOREST NC 27587-9638
HARTSFIELD, ROZELIA J HEIRS C/O HATTIE SMITH	2450 MINERAL SPRINGS RD	BOYDTON VA 23917-4404
BASS, KAREN E	1601 BASS RD	WENDELL NC 27591-6403
CHEN, PING	10030 GREEN LEVEL CHURCH RD STE 802	CARY NC 27519-8195
BRADSHAW, PHETIS JONES	PO BOX 203	ROLESVILLE NC 27571-0203
MILLER, BERNARD	3516 WOOD DUCK LN	WAKE FOREST NC 27587-6873
TOUTLOFF, KENNETH S TOUTLOFF, BILLIE ANNE	3512 WOOD DUCK LN	WAKE FOREST NC 27587-6873
CHRIST HOLINESS CHURCH	5016 HARTSFIELD DR	WAKE FOREST NC 27587-9638
FERRELL, BENJAMIN C/O JESSE FERRELL	248 CALIFORNIA AVE	PROVIDENCE RI 02905-2815
ALSTON, HENRY ALSTON, MARIE F	3741 JONESVILLE RD	WAKE FOREST NC 27587-8179
MT CALVARY HOLINESS CHURCH OF WAKE CO INC	3921 JONESVILLE RD	WAKE FOREST NC 27587-8183
GOODNIGHT, CECIL L GOODNIGHT, JUDY J	1201 ROLESVILLE RD	WAKE FOREST NC 27587-6957
CHRIST HOLINESS CHURCH # 1 C/O WILLIAM WHITFIELD	5016 HARTSFIELD DR	WAKE FOREST NC 27587-9638
FOWLER, JAMES ROBERT III BRIGHT, JILL F	7400 FOWLER RD	ZEBULON NC 27597-8318
HOLDEN, MARCIE L	3524 WOOD DUCK LN	WAKE FOREST NC 27587-6873
KULAWIAK, MEGAN	3533 WOOD DUCK LN	WAKE FOREST NC 27587-6874
GREENE, JOE L	6415 HAWTHORNE ST	HYATTSVILLE MD 20785-1711
WILLIAMS, JAMES K	5044 HARTSFIELD DR	WAKE FOREST NC 27587-9638
PERRY, HEATHER MARIE	3500 WOOD DUCK LN	WAKE FOREST NC 27587-6873
ELIAS, ABAHOR ELIAS, SUSAN	5918 BIG NANCE DR	RALEIGH NC 27616-5795
GHOLSON, CHRISTOPHER GHOLSON, KELLY GAITHER	3440 PEEBLES RD	RALEIGH NC 27616-8802
BEACHUM, JONATHAN ADAM	3803 JONESVILLE RD	WAKE FOREST NC 27587-8181
GRO PEG PROPERTIES LLC	481 AIRPORT RD	LOUISBURG NC 27549-6806
UNDERHILL, GROVER ARCHIE JR	5229 MITCHELL MILL RD	WAKE FOREST NC 27587-7249
RS RENTAL II LLC	31 HUDSON YARDS	NEW YORK NY 10001-2170
UNIVERSAL CHURCH OF PRAYER &	4912 UNIVERSAL DR	WAKE FOREST NC 27587-6356

Elizabeth C. Trahos
T: 919.329.3884
beth.trahos@nelsonmullins.com

4140 Parklake Ave, Suite 200
Raleigh, NC 27612
T: 919.329.3800 F: 919.329.3799
nelsonmullins.com

June 6, 2022

Dear Sir or Madam:

You are invited to attend a virtual neighborhood information meeting on Monday, June 20th at 6:00 p.m. The purpose of this meeting is to discuss the proposed zoning of the approximately 55± acres of property located west of Jonesville Road and the approximately 86± acres of property located east of Jonesville Road in Rolesville, North Carolina. Attached please find a map of the subject properties.

The subject property is currently zoned R-30 by Wake County. We propose to bring the properties into the Town of Rolesville and zone them NC-CZ and RM-CZ to allow for the construction of mixed-use residential neighborhood. The Town of Rolesville Planning Board and the Board of Commissioners will discuss the proposed zoning at a future date for public hearing.

You can access the meeting from your computer, tablet or smartphone at: <https://www.zoom.us/join> The Meeting ID is 872 7589 3223 and the passcode is 150583.

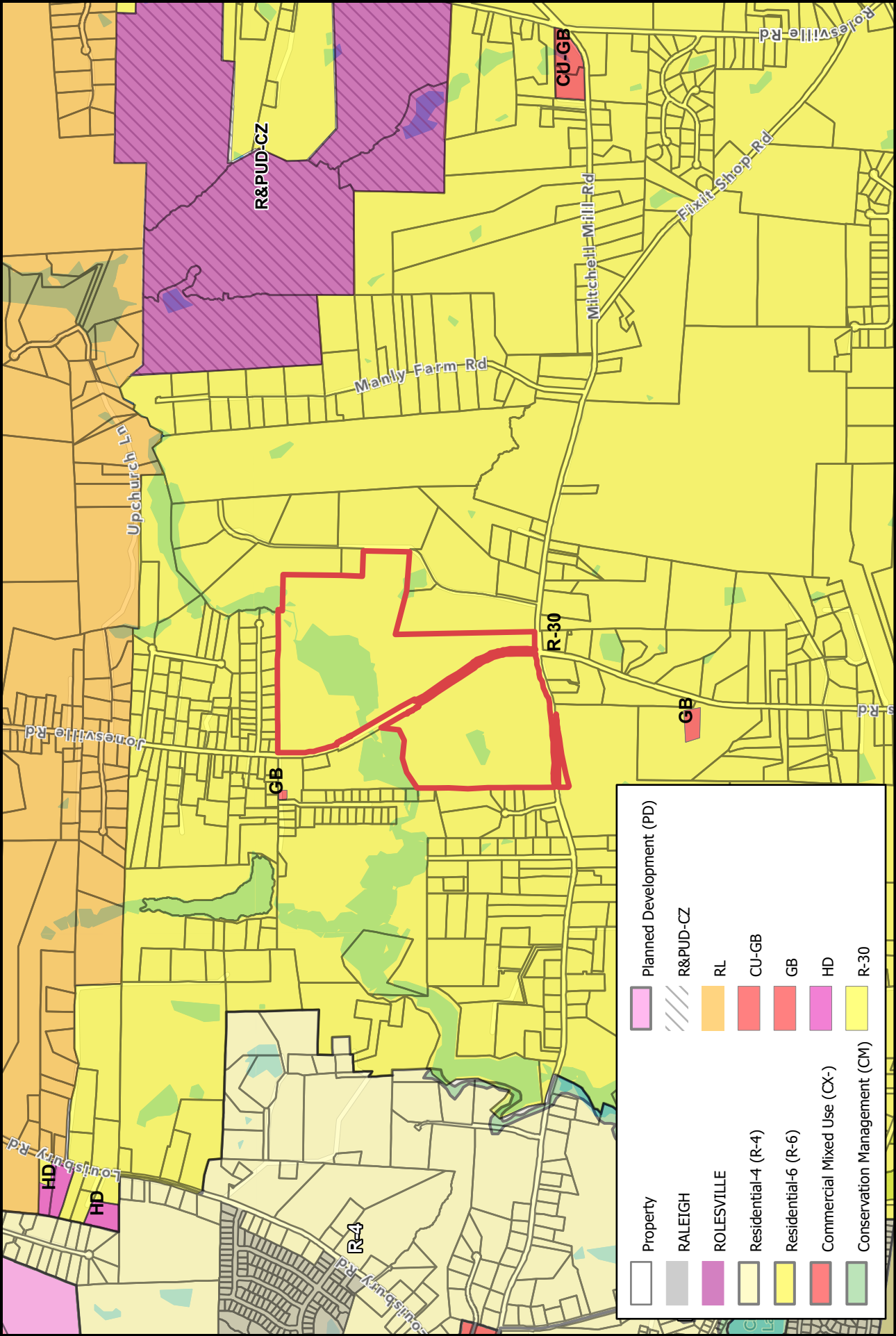
Alternatively, you can also dial in using your telephone to United States: 1-646-558-8656 and entering Meeting ID: 87275893223# and entering the Passcode 150583# when prompted to do so.

Please join us to discuss the proposal in more detail. In the interim, please do not hesitate to contact me with questions at 919.329.3884 or at beth.trahos@nelsonmullins.com.

Very truly yours,



Elizabeth C. Trahos



Property

RALEIGH

ROLESVILLE

Residential-4 (R-4)

Residential-6 (R-6)

Commercial Mixed Use (CX-)

Conservation Management (CM)

Planned Development (PD)

R&PUD-CZ

RL

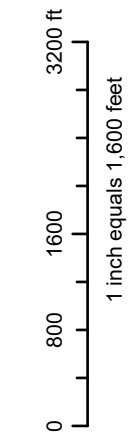
CU-GB

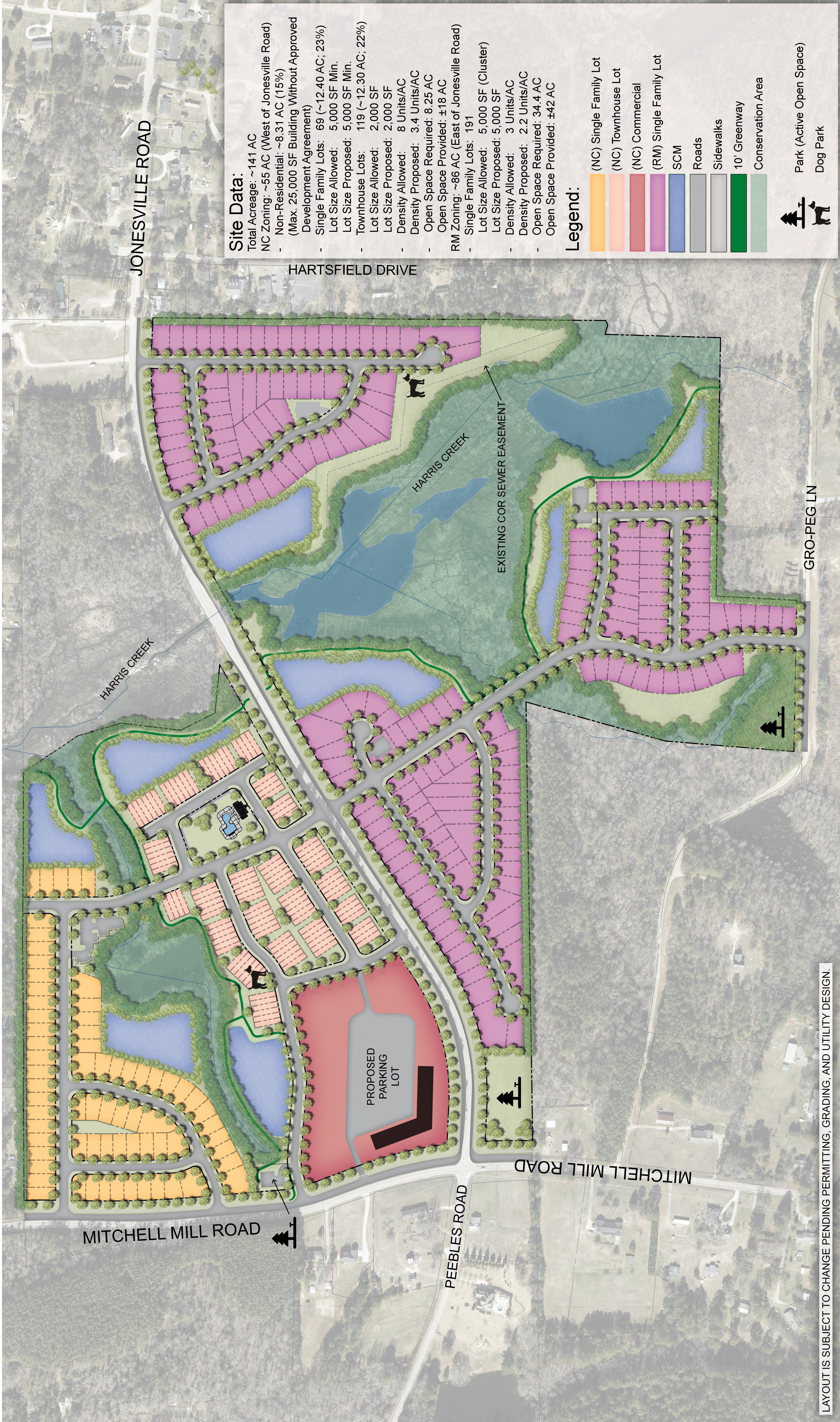
GB

HD

R-30

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





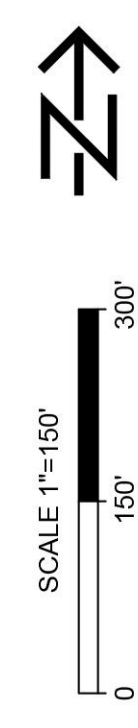
Site Data:
Total Acreage: ~141 AC
NC Zoning: ~55 AC (West of Jonesville Road)
- Non-Residential: ~8.31 AC (15%)
 (Max. 25,000 SF Building Without Approved Development Agreement)
- Single Family Lots: 69 (~12.40 AC; 23%)
 Lot Size Allowed: 5,000 SF Min.
 Lot Size Proposed: 5,000 SF Min.
- Townhouse Lots: 119 (~12.30 AC; 22%)
 Lot Size Allowed: 2,000 SF
 Lot Size Proposed: 2,000 SF
- Density Allowed: 8 Units/AC
 Density Proposed: 3.4 Units/AC
- Open Space Required: 8.25 AC
 Open Space Provided: ±18 AC
RM Zoning: ~86 AC (East of Jonesville Road)
- Single Family Lots: 191
 Lot Size Allowed: 5,000 SF (Cluster)
 Lot Size Proposed: 5,000 SF
- Density Allowed: 3 Units/AC
 Density Proposed: 2.2 Units/AC
- Open Space Required: 34.4 AC
 Open Space Provided: ±42 AC

Legend:

- (NC) Single Family Lot
- (NC) Townhouse Lot
- (NC) Commercial
- (RM) Single Family Lot
- SCM
- Roads
- Sidewalks
- 10' Greenway
- Conservation Area



LAYOUT IS SUBJECT TO CHANGE PENDING PERMITTING, GRADING, AND UTILITY DESIGN.



Neighborhood Meeting

A neighborhood meeting was held virtually on June 20, 2022 beginning at 6:00 p.m. Attached as **Exhibit A** is a copy of the neighborhood meeting notice, including the attachments. A copy of the mailing list for the meeting notice is attached as **Exhibit B**. The following members of the applicant team and attendees were present, as identified in the virtual meeting sign in process:

Applicant Team:

Beth Trahos, Nelson Mullins
Bill Harrell, Hopper Communities
Patrick Barbeau, Timmons
Steve and Giny Wheeler, Landowners

Attendees:

None

Ms. Trahos opened the meeting at 6. There was no one from the public in attendance. Ms. Trahos kept the meeting line open until 7:15. No one else joined the meeting. As a result, no presentation was made.

The meeting was adjourned at 7:15 p.m.

EXHIBIT A



Elizabeth C. Trahos
T: 919.329.3884
beth.trahos@nelsonmullins.com

NELSON MULLINS RILEY & SCARBOROUGH LLP
ATTORNEYS AND COUNSELORS AT LAW

4140 Parklake Ave, Suite 200
Raleigh, NC 27612
T: 919.329.3800 F: 919.329.3799
nelsonmullins.com

June 6, 2022

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The subject property is currently zoned R-30 by Wake County. We propose to bring the properties into the Town of Rolesville and zone them NC-CZ and RM-CZ to allow for the construction of mixed-use residential neighborhood. The Town of Rolesville Planning Board and the Board of Commissioners will discuss the proposed zoning at a future date for public hearing.

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Alternatively, you can also dial in using your telephone to United States: 1-646-558-8656 and entering Meeting ID: 87275893223# and entering the Passcode 150583# when prompted to do so.

Please join us to discuss the proposal in more detail. In the interim, please do not hesitate to contact me with questions at 919.329.3884 or at beth.trahos@nelsonmullins.com.

Very truly yours,

A handwritten signature in blue ink, appearing to read 'Beth', with a long, sweeping horizontal line extending to the right.

Elizabeth C. Trahos

EXHIBIT B

OWNER

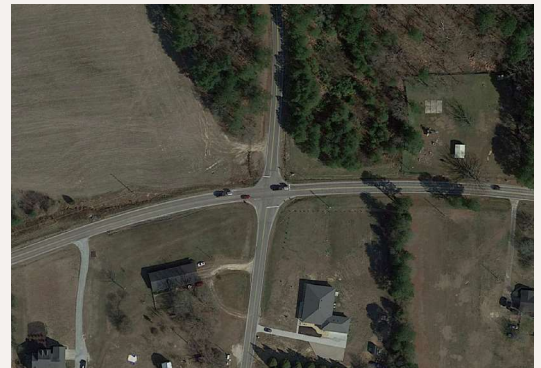
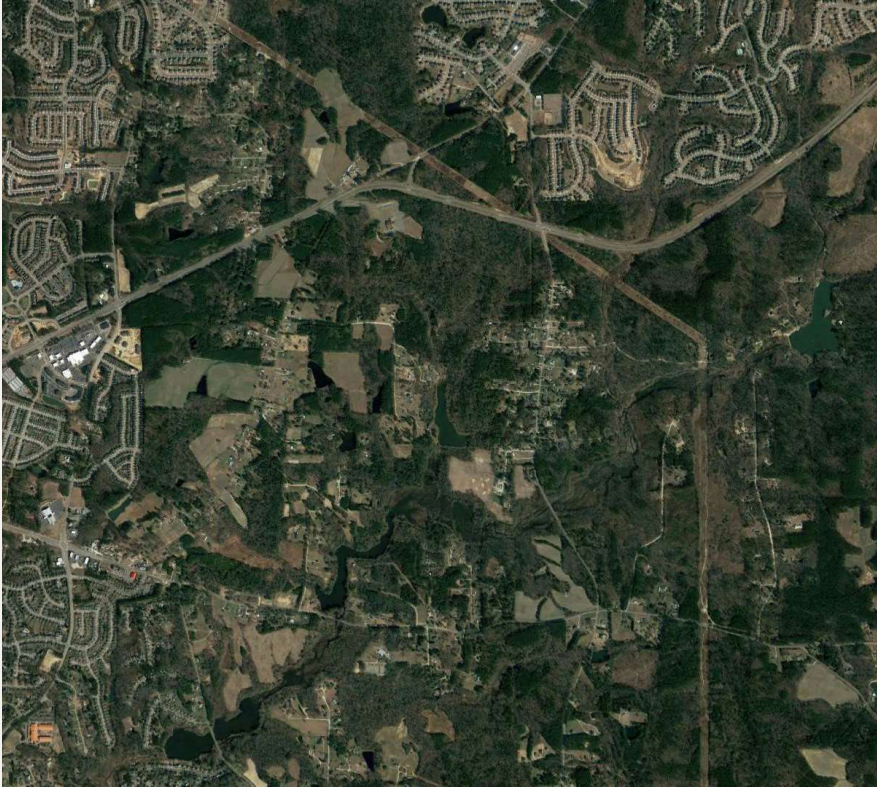
JONES, CHARLES ALFONSO JONES, ALLIE V
WALKER, ALESHIA FERRELL WALKER, AARON
JONES, ALICIA BROWN JONES, CARL T
HONEYCUTT, CURTIS L HONEYCUTT, CHARITY M
HONEYCUTT, TODD KENDALL
CARLE, SCOTT CARLE, THERESA
CHRIST HOLINESS CHURCH NUMBER 1 C/O WILIAM WHITFIELD
HARTSFIELD, ROZELIA J HEIRS C/O HATTIE SMITH
BASS, KAREN E
CHEN, PING
BRADSHER, PHETIS JONES
MILLER, BERNARD
TOUTLOFF, KENNETH S TOUTLOFF, BILLIE ANNE
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HOLDEN, MARCIE L
KULAWIAK, MEGAN
GREENE, JOE L
WILLIAMS, JAMES K
PERRY, HEATHER MARIE
ELIAS, ABAHOR ELIAS, SUSAN
GHOLSON, CHRISTOPHER GHOLSON, KELLY GAITHER
BEACHUM, JONATHAN ADAM
GRO PEG PROPERTIES LLC
UNDERHILL, GROVER ARCHIE JR
RS RENTAL II LLC
UNIVERSAL CHURCH OF PRAYER &

ADDR1

3800 JONESVILLE RD
5012 HARTSFIELD DR
5028 HARTSFIELD DR
5100 MITCHELL MILL RD
5104 MITCHELL MILL RD
PO BOX 371
5016 HARTSFIELD DR
2450 MINERAL SPRINGS RD
1601 BASS RD
10030 GREEN LEVEL CHURCH RD STE 802
PO BOX 203
3516 WOOD DUCK LN
3512 WOOD DUCK LN
5016 HARTSFIELD DR
248 CALIFORNIA AVE
3741 JONESVILLE RD
3921 JONESVILLE RD
1201 ROLESVILLE RD
5016 HARTSFIELD DR
7400 FOWLER RD
3524 WOOD DUCK LN
3533 WOOD DUCK LN
6415 HAWTHORNE ST
5044 HARTSFIELD DR
3500 WOOD DUCK LN
5918 BIG NANCE DR
3440 PEEBLES RD
3803 JONESVILLE RD
481 AIRPORT RD
5229 MITCHELL MILL RD
31 HUDSON YARDS
4912 UNIVERSAL DR

ADDR2

WAKE FOREST NC 27587-8180
WAKE FOREST NC 27587-9638
WAKE FOREST NC 27587-9638
WAKE FOREST NC 27587-7247
WAKE FOREST NC 27587-7247
WAKE FOREST NC 27588-0371
WAKE FOREST NC 27587-9638
BOYDTON VA 23917-4404
WENDELL NC 27591-6403
CARY NC 27519-8195
ROLESVILLE NC 27571-0203
WAKE FOREST NC 27587-6873
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PROVIDENCE RI 02905-2815
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HYATTSVILLE MD 20785-1711
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RALEIGH NC 27616-5795
RALEIGH NC 27616-8802
WAKE FOREST NC 27587-8181
LOUISBURG NC 27549-6806
WAKE FOREST NC 27587-7249
NEW YORK NY 10001-2170
WAKE FOREST NC 27587-6356



5109 Mitchell Mill Road
Traffic Impact Analysis
Rolesville, North Carolina

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

TRAFFIC IMPACT ANALYSIS
5109 MITCHELL MILL ROAD
ROLESVILLE, NORTH CAROLINA

EXECUTIVE SUMMARY

1. Development Overview

A Traffic Impact Analysis (TIA) was conducted for the proposed 5109 Mitchell Mill Road 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 is expected to be completed in 2028 and is to be separated into two (2) tracts on both sides of Jonesville Road, north of Mitchell Mill Road in Rolesville, North Carolina. The eastern tract is expected to consist of 195 single-family homes and the western tract of development is expected to consist of 69 single-family homes, 129 townhomes, and 50,000 square feet (sq. ft.) of general retail space. Site access is proposed via four (4) full-movement driveway connections along Jonesville Road, three (3) right-in/right-out (RIRO) driveway connections along Mitchell Mill Road, and one (1) full-movement driveway connection along Mitchell Mill Road. One of the site driveway connections along Jonesville Road will be aligned to provide access to both the eastern and western tracts of the proposed development.

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

- 2021 Existing Traffic Conditions
- 2028 No-Build Traffic Conditions
- 2028 Build Traffic Conditions

2. Existing Traffic Conditions

The study area for the TIA was determined through coordination with the Town of Rolesville (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

Existing peak hour traffic volumes were determined based on traffic counts conducted at the study intersections listed above, 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:

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 264 single-family homes, 129 townhomes, and 50,000 sq. ft. of general retail space. Average weekday daily, AM peak hour, and PM peak hour trips for the proposed development were estimated using methodology contained within the *ITE Trip Generation Manual*, 10th Edition. Table E-1, on the following page, 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)	264 DU	2,540	48	144	192	163	95	258
Multi-Family Home (Low-Rise) (220)	129 DU	934	14	47	61	47	27	74
Shopping Center (820)	50 KSF	3,752	110	67	177	156	169	325
Total Trips		7,226	172	258	430	366	291	657
<i>Internal Capture (1% AM, 15% PM)*</i>			-2	-2	-4	-35	-35	-70
Total External Trips			170	256	426	331	256	587
<i>Pass-By Trips: Shopping Center (34% PM)</i>			-	-	-	-47	-47	-94
Total Primary Trips			170	256	426	284	209	493

**Utilizing methodology contained in the NCHRP Report 684.

4. Future Traffic Conditions

Through coordination with the Town and NCDOT, it was determined that an annual growth rate of 2% would be used to generate 2028 projected weekday AM and PM peak hour traffic volumes.

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

- Cobblestone Crossing Mixed-Use
- Young Street PUD
- Wheeler Tract
- Louisbury Road Assemblage
- Kalas / Watkins Family Property

5. Capacity Analysis Summary

The analysis considered weekday AM and PM peak hour traffic for 2021 existing, 2028 no-build, and 2028 build 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 the study intersections. The improvements are summarized below and are illustrated in Figure E-1.

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.

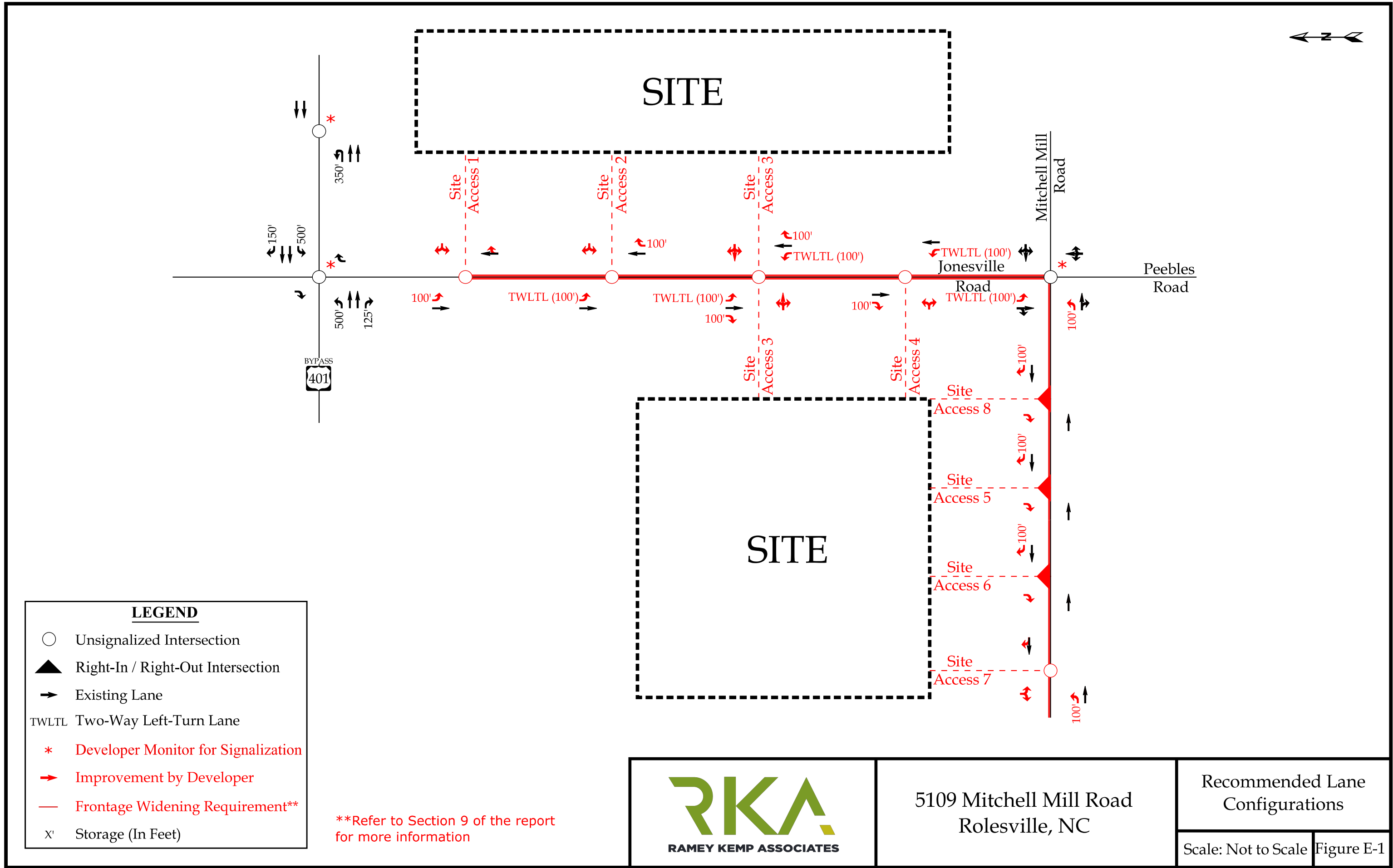


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- Appendix D: Capacity Calculations – US 401 Bypass & Jonesville Road
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TRAFFIC IMPACT ANALYSIS
5109 MITCHELL MILL ROAD
ROLESVILLE, NORTH CAROLINA

1. INTRODUCTION

The contents of this report present the findings of the Traffic Impact Analysis (TIA) conducted for the proposed 5109 Mitchell Mill Road development in Rolesville, North Carolina. The proposed development, anticipated to be completed in 2028, is separated into two (2) tracts on both sides of Jonesville Road, north of Mitchell Mill Road. 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 eastern tract is expected to consist of 195 single-family homes and the western tract of development is expected to consist of 69 single-family homes, 129 townhomes, and 50,000 square feet (sq. ft.) of general retail.

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

- 2021 Existing Traffic Conditions
- 2028 No-Build Traffic Conditions
- 2028 Build Traffic Conditions

1.1. Site Location and Study Area

The development is proposed to be located along both sides of Jonesville Road, north of Mitchell Mill Road in Rolesville, North Carolina. Refer to Figure 1 for the site location map.

The study area for the TIA was determined through coordination with the North Carolina Department of Transportation (NCDOT) and the Town of Rolesville (Town) 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

Refer to Appendix A for the approved scoping documentation.

1.2. Proposed Land Use and Site Access

The site is to be located along both sides of Jonesville Road, north of Mitchell Mill Road. The proposed development, anticipated to be completed in 2028, is assumed to consist of the following uses:

- 264 single-family homes
- 129 townhomes
- 50,000 sq. ft. of general retail

Site access is proposed via four (4) full-movement driveway connections along Jonesville Road, three (3) right-in/right-out (RIRO) driveway connections along Mitchell Mill Road, and one (1) full-movement driveway connection along Mitchell Mill Road. One of the site driveway connections along Jonesville Road will be aligned to provide access to both the eastern and western tracts of the proposed development. 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.

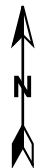
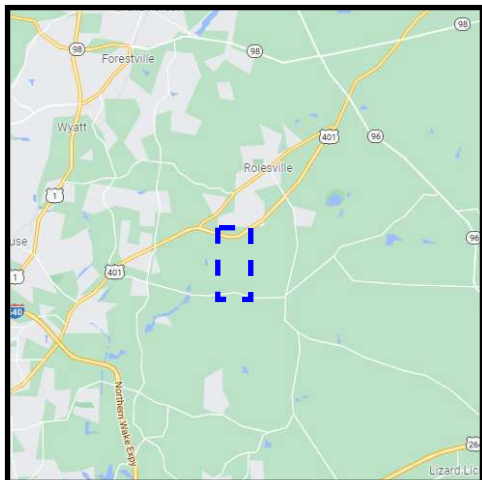
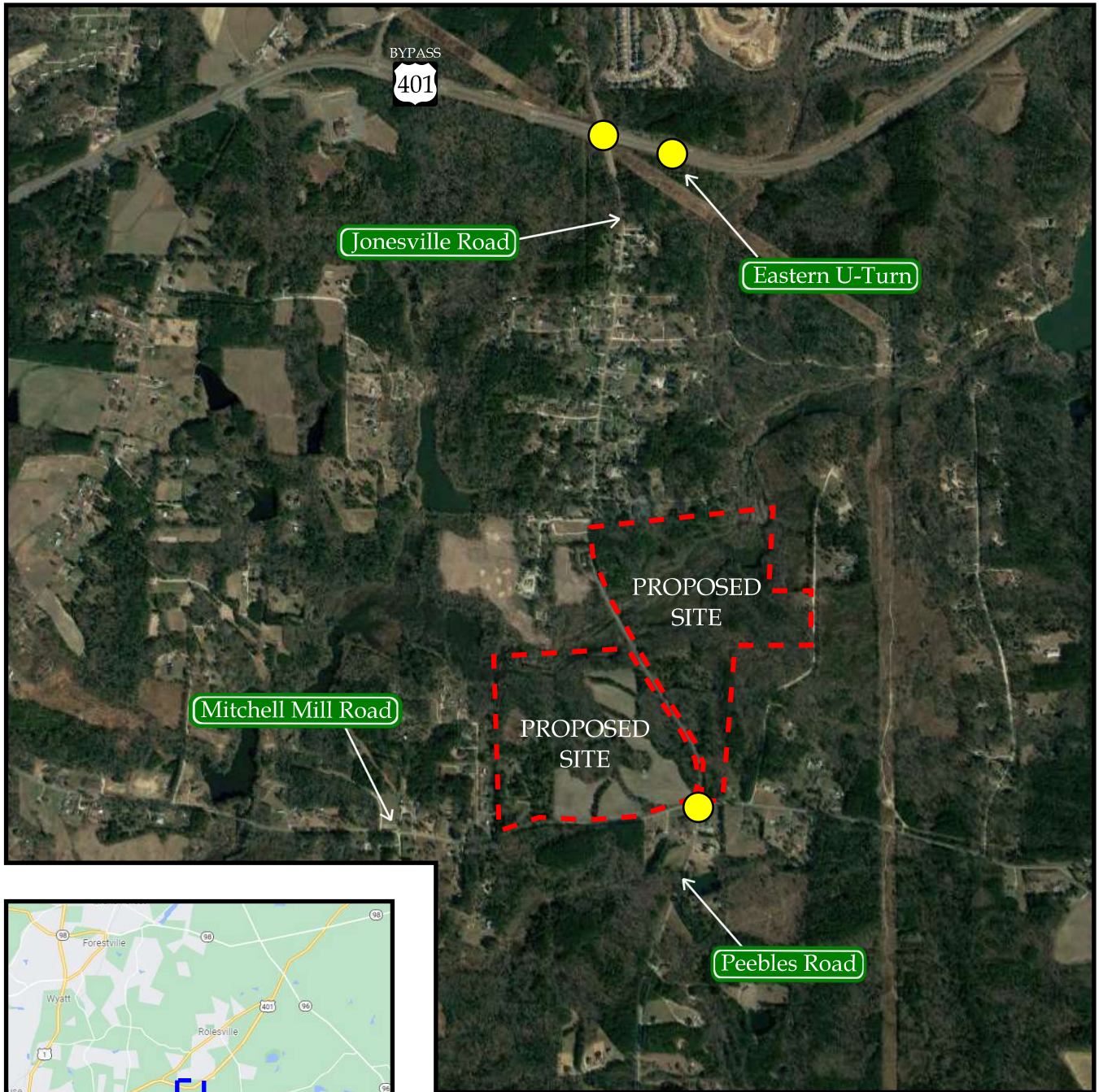
1.4. Existing Roadways

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

Table 1: Existing Roadway Inventory

Road Name	Route Number	Typical Cross-Section	Speed Limit	Maintained By	2019 AADT (vpd)
US 401 Bypass		4-lane divided	55 mph	NCDOT	17,500
Jonesville Road	SR 2226	2-lane undivided	35 mph / 45 mph	NCDOT	2,170*
Mitchell Mill Road	SR 2224	2-lane undivided	45 mph	NCDOT	4,000
Peebles Road	SR 2929	2-lane undivided	45 mph	NCDOT	1,670*

*ADT based on 2021 existing traffic volumes and assuming the weekday PM peak hour volume is 10% of the average daily traffic.



LEGEND

-  Proposed Site Location
-  Study Intersection
-  Study Area

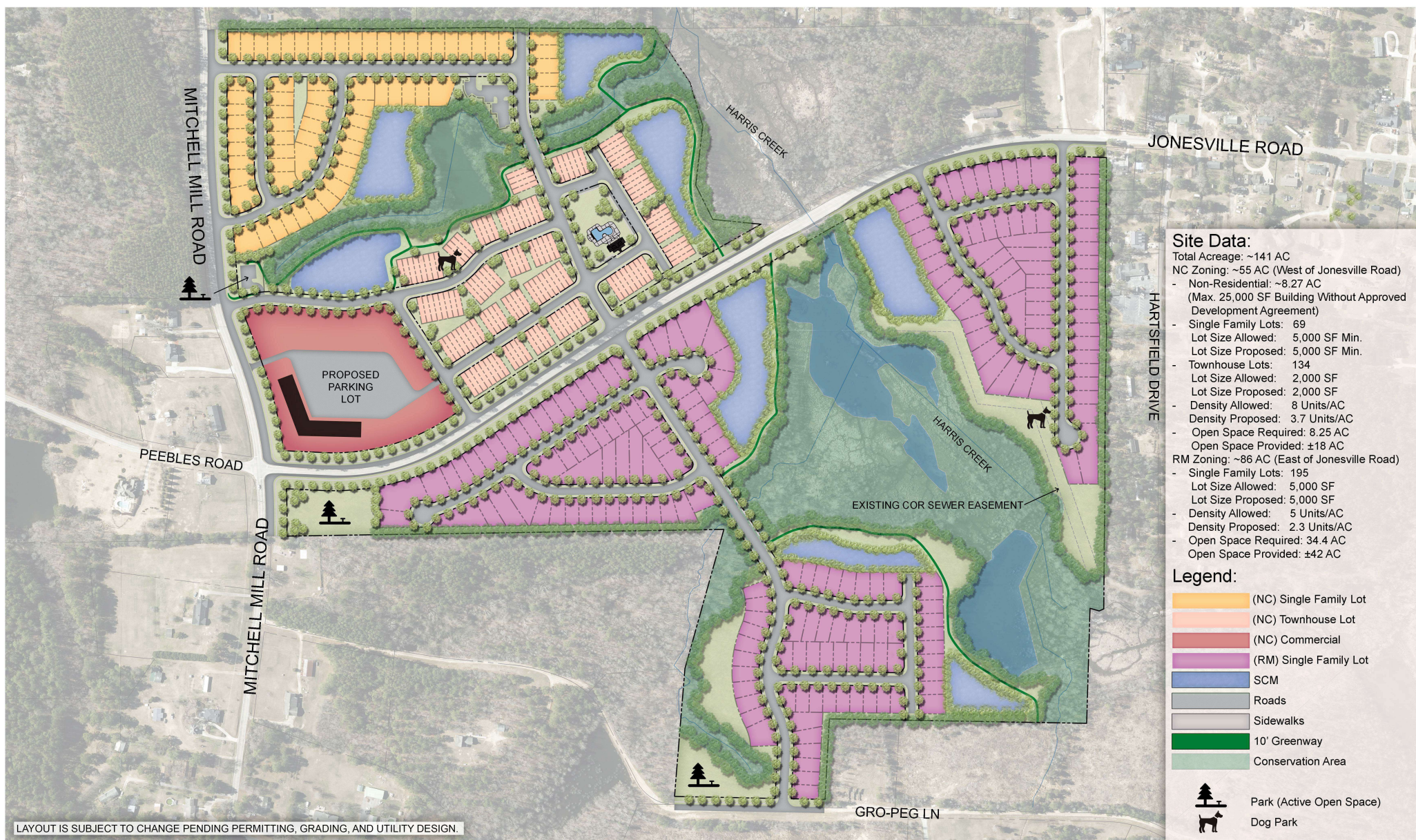


5109 Mitchell Mill Road
Rolesville, NC

Site Location Map

Scale: Not to Scale

Figure 1

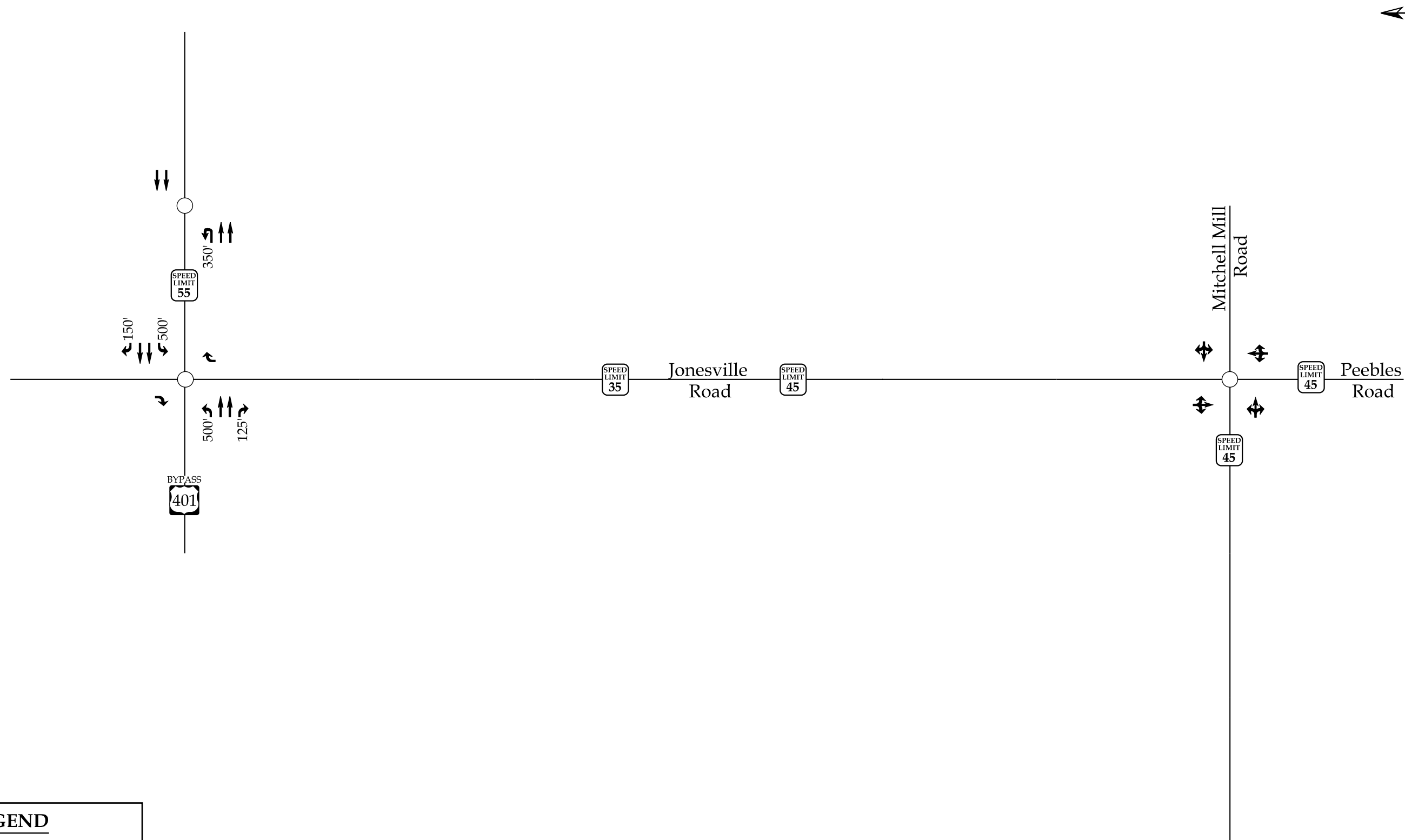


5109 MITCHELL MILL ROAD - ROLESVILLE, NC
 Conceptual Master Plan - February 23, 2022

SCALE 1"=150'



Figure 2



LEGEND

○

Unsignalized Intersection

➔

Existing Lane

x'

Storage (In Feet)

SPEED LIMIT

XX

Posted Speed Limit

<div><div>RKA</div><div>RAMEY KEMP ASSOCIATES</div></div>	5109 Mitchell Mill Road Rolesville, NC	2021 Existing Lane Configurations	
		Scale: Not to Scale	Figure 3

2. 2021 EXISTING PEAK HOUR CONDITIONS

2.1. 2021 Existing Peak Hour Traffic Volumes

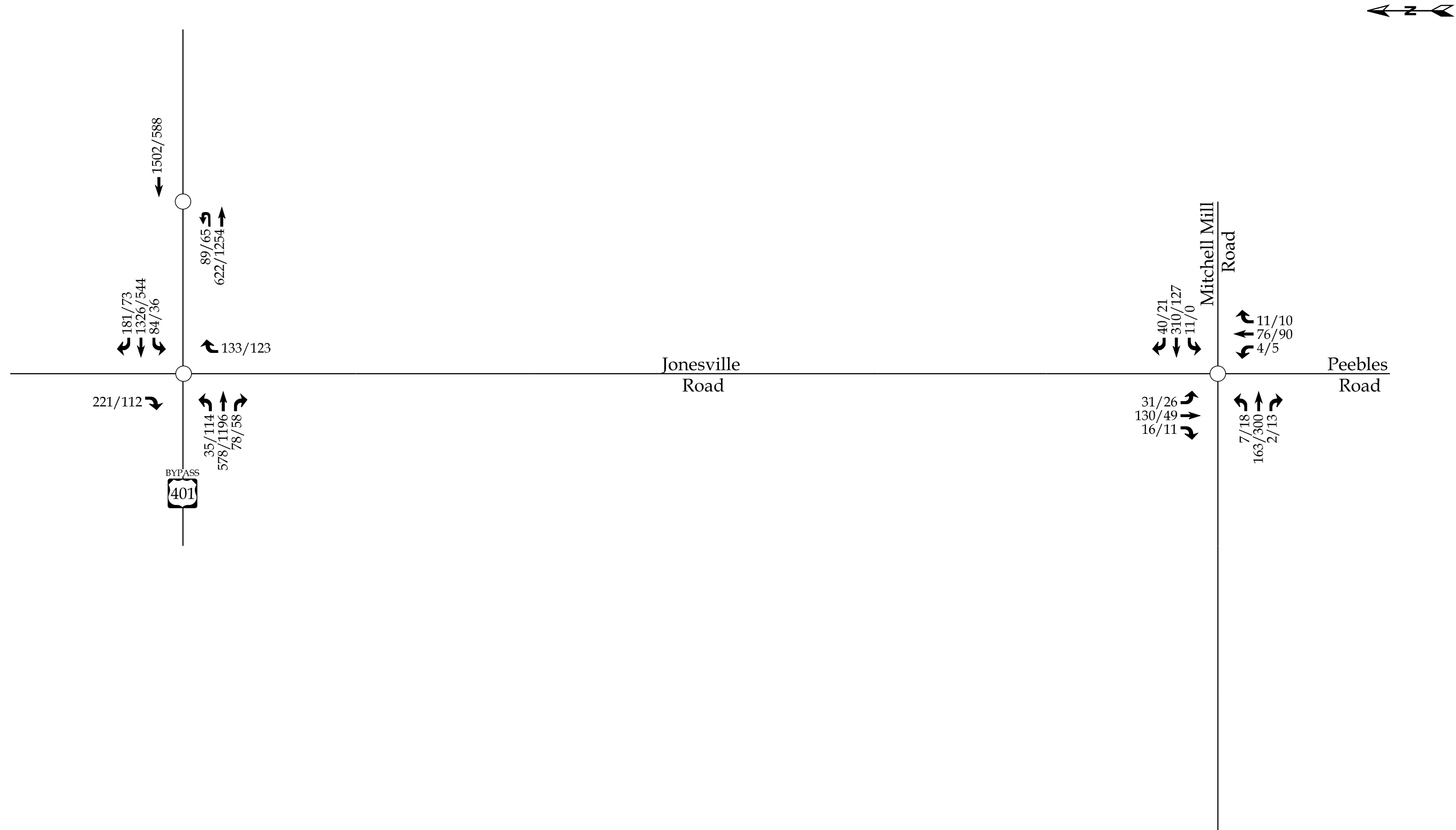
Existing peak hour traffic volumes were determined based on traffic counts conducted at the study intersections listed below, in November of 2021 during typical weekday AM (7:00 AM – 9:00 AM) and PM (4:00 PM – 6:00 PM) peak periods, while schools were in session for in-person learning:

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

Weekday AM and PM traffic volumes were balanced between study intersections, where appropriate. Refer to Figure 4 for 2021 existing weekday AM and PM peak hour traffic volumes. A copy of the count data is located in Appendix B of this report.

2.2. Analysis of 2021 Existing Peak Hour Traffic Conditions

The 2021 existing weekday AM and PM peak hour traffic volumes were analyzed to determine the current levels of service at the study intersections under existing roadway conditions. The results of the analysis are presented in Section 7 of this report.



LEGEND

○

Unsignalized Intersection

x / y →

Weekday AM / PM Peak Hour Traffic

<div><div>RKA</div><div>RAMEY KEMP ASSOCIATES</div></div>	5109 Mitchell Mill Road Rolesville, NC	2021 Existing Peak Hour Traffic	
		Scale: Not to Scale	Figure 4

3. 2028 NO-BUILD PEAK HOUR CONDITIONS

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

3.1. Ambient Traffic Growth

Through coordination with the Town and NCDOT, it was determined that an annual growth rate of 2% would be used to generate 2028 projected weekday AM and PM peak hour traffic volumes. Refer to Figure 5 for 2028 projected peak hour traffic.

3.2. Adjacent Development Traffic

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

- Cobblestone Crossing Mixed-Use
- Young Street PUD
- Wheeler Tract
- Louisbury Road Assemblage
- Kalas / Watkins Family Property

Table 2, on the following page, provides a summary of the adjacent developments.

Table 2: Adjacent Development Information

Development Name	Location	Build-Out Year	Land Use / Intensity	TIA Performed
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

It should be noted that the adjacent developments were approved, during scoping, by the Town and NCDOT. Adjacent development trips are shown in Figure 6. Adjacent development information can be found in Appendix C.

3.3. Future Roadway Improvements

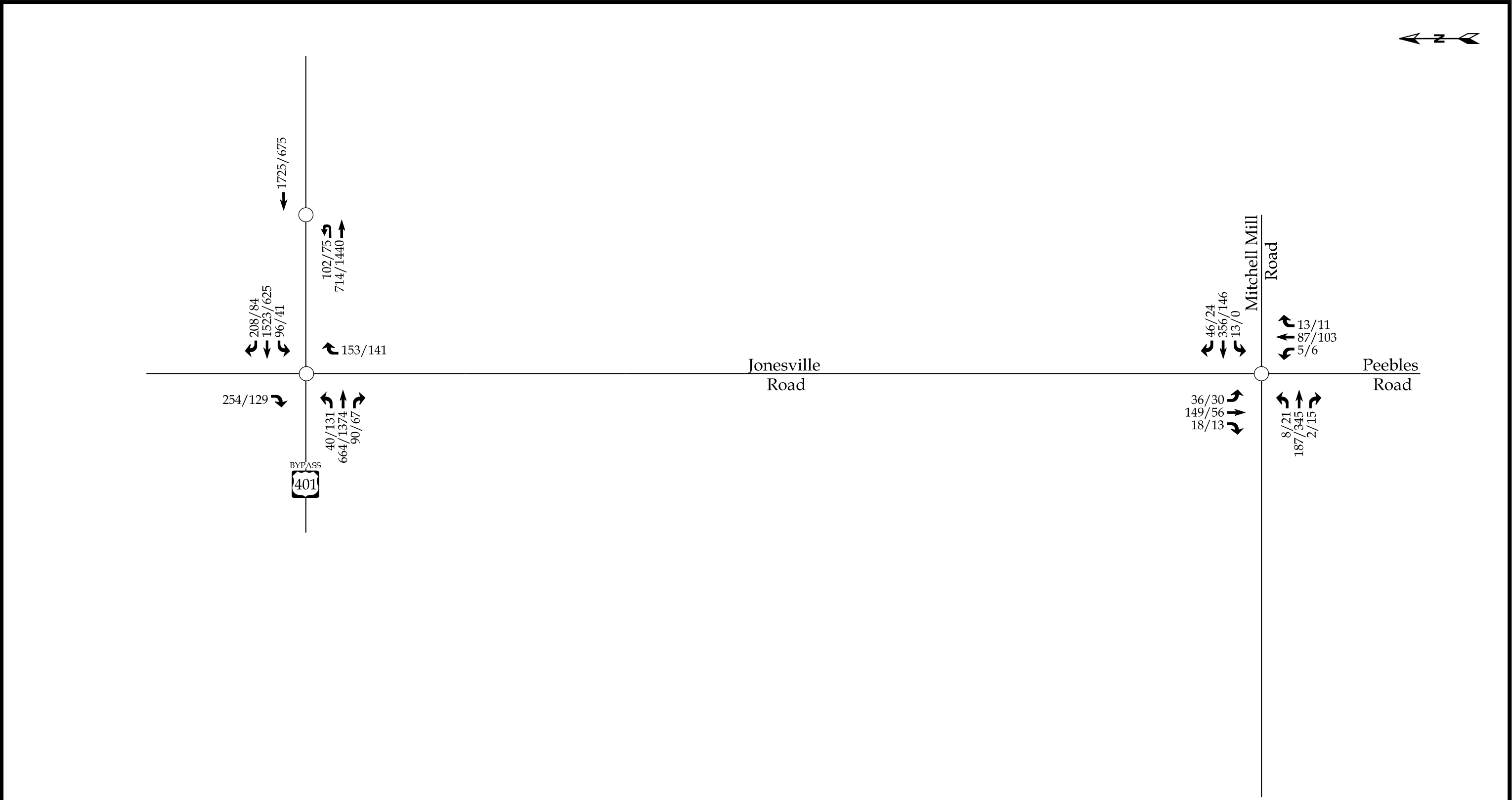
Based on coordination with the NCDOT and the Town, it was determined there were no future roadway improvements to consider under future conditions with this study. It should be noted that per the Rolesville Community Transportation Plan (dated May 2021), the ultimate cross-section of Jonesville Road 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. 2028 No-Build Peak Hour Traffic Volumes

The 2028 no-build traffic volumes were determined by projecting the 2021 existing peak hour traffic to the year 2028, and adding the adjacent development trips. Refer to Figure 7 for an illustration of the 2028 no-build peak hour traffic volumes at the study intersections.

3.5. Analysis of 2028 No-Build Peak Hour Traffic Conditions

The 2028 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

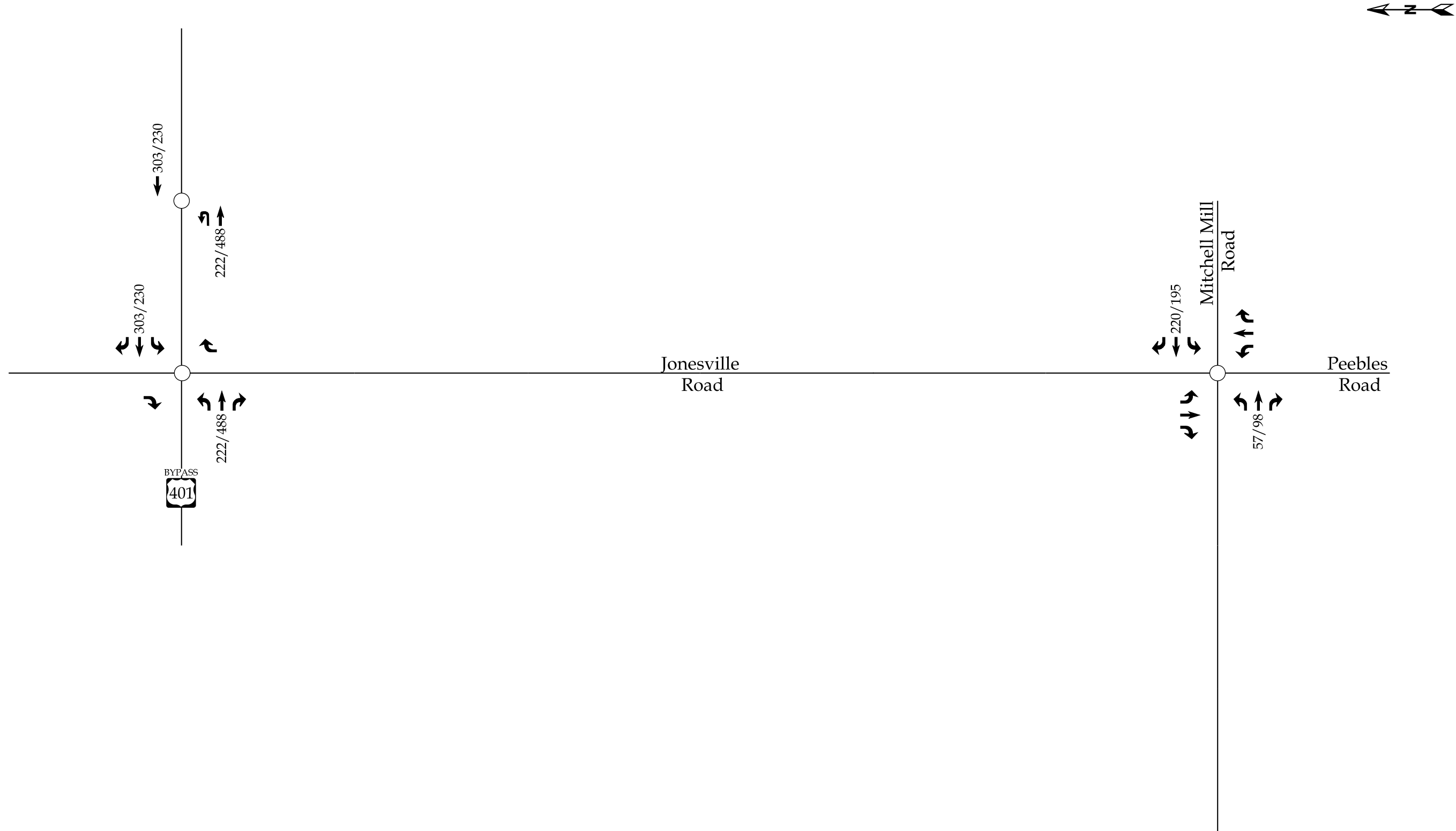
○

Unsignalized Intersection

x / y →

Weekday AM / PM Peak Hour Traffic

<div><div>RKA</div><div>RAMEY KEMP ASSOCIATES</div></div>	5109 Mitchell Mill Road Rolesville, NC	2028 Projected Peak Hour Traffic	
		Scale: Not to Scale	Figure 5



LEGEND

- Unsignalized Intersection
- x / y → Weekday AM / PM Peak Hour Adjacent Development Trips

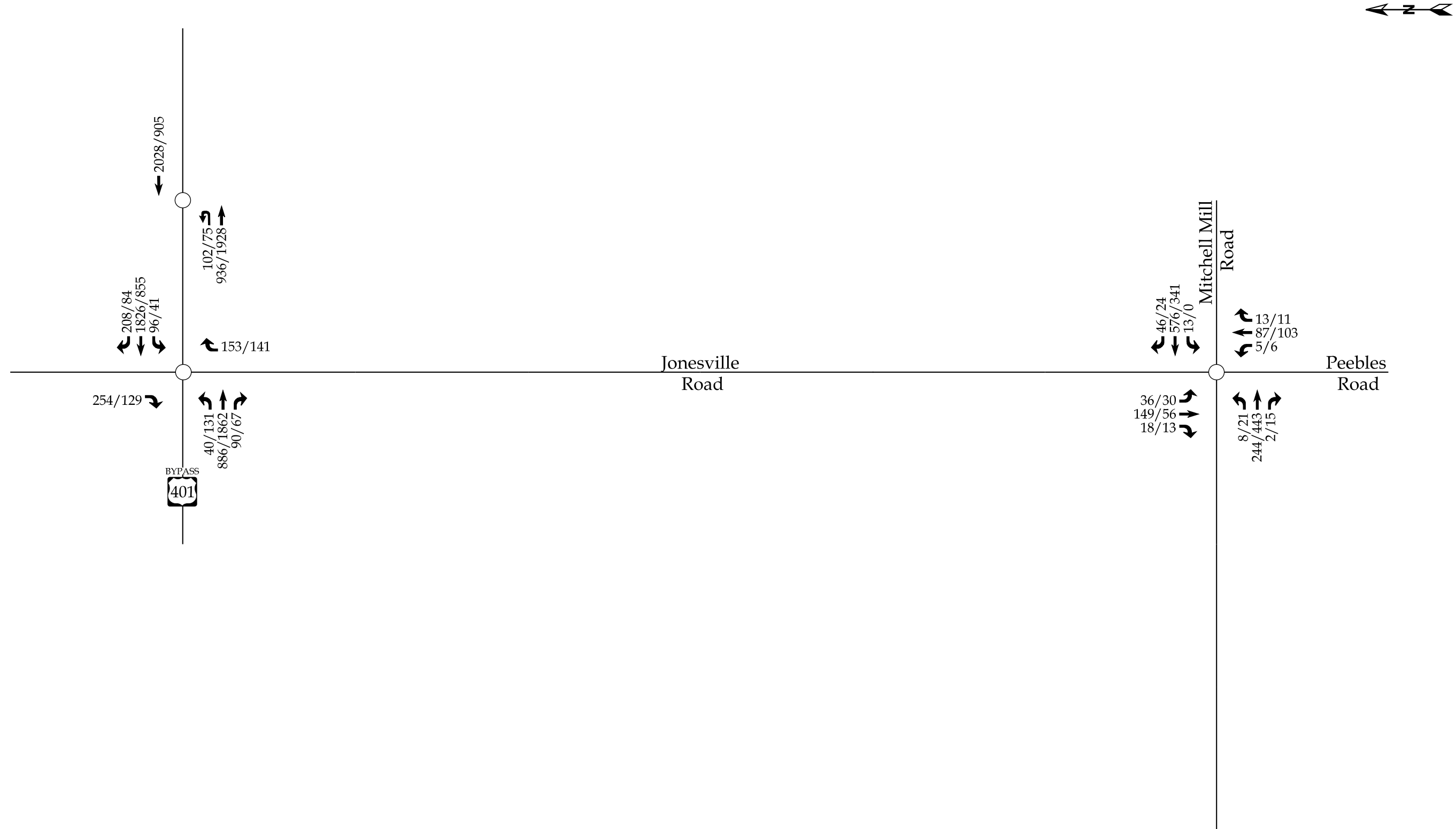


5109 Mitchell Mill Road
Rolesville, NC

Peak Hour Adjacent
Development Trips

Scale: Not to Scale

Figure 6



LEGEND

○

Unsignalized Intersection

x / y →

Weekday AM / PM Peak Hour Traffic

<div><div>RKA</div><div>RAMEY KEMP ASSOCIATES</div></div>	5109 Mitchell Mill Road Rolesville, NC	2028 No-Build Peak Hour Traffic	
		Scale: Not to Scale	Figure 7

4. SITE TRIP GENERATION AND DISTRIBUTION

4.1. Trip Generation

The proposed development is assumed to consist of 264 single-family homes, 129 townhomes, and 50,000 sq. ft. of general retail space. Average weekday daily, AM peak hour, and PM peak hour trips for the proposed development were estimated using methodology contained within the *ITE Trip Generation Manual*, 10th Edition. Table 3 provides a summary of the trip generation potential for the site.

Table 3: Trip Generation Summary

Land Use (ITE Code)	Intensity	Daily Traffic (vpd)	Weekday AM Peak Hour Trips (vph)			Weekday PM Peak Hour Trips (vph)		
			Enter	Exit	Total	Enter	Exit	Total
Single-Family Home (210)	264 DU	2,540	48	144	192	163	95	258
Multi-Family Home (Low-Rise) (220)	129 DU	934	14	47	61	47	27	74
Shopping Center (820)	50 KSF	3,752	110	67	177	156	169	325
Total Trips		7,226	172	258	430	366	291	657
<i>Internal Capture (1% AM, 15% PM)*</i>			-2	-2	-4	-35	-35	-70
Total External Trips			170	256	426	331	256	587
<i>Pass-By Trips: Shopping Center (34% PM)</i>			-	-	-	-47	-47	-94
Total Primary Trips			170	256	426	284	209	493

*Utilizing methodology contained in the NCHRP Report 684.

It is estimated that the proposed development will generate approximately 7,226 total site trips on the roadway network during a typical 24-hour weekday period. Of the daily traffic volume, it is anticipated that 430 trips (172 entering and 258 exiting) will occur during the weekday AM peak hour and 657 trips (366 entering and 291 exiting) will occur during the weekday PM peak hour.

Internal capture of trips between the retail and residential land uses was considered in this study. Internal capture is the consideration for trips that will be made within the site between

different land uses, so the vehicle technically never leaves the internal site but can still be considered as a trip to that specific land use. However, since the site is split into two (2) tracts on either side of Jonesville Road, internal capture was only considered for the land uses in the western tract. Based on NCHRP Report 684 methodology, weekday AM and PM peak hour internal capture rates of 1% and 15%, respectively, were applied to the trips generated from the western tract only. The internal capture reductions are expected to account for approximately 4 trips (2 entering and 2 exiting) during the weekday AM peak hour and 70 trips (35 entering and 35 exiting) during the weekday PM peak hour.

Pass-by trips were also be taken into consideration in this study. Pass-by trips are made by the traffic already using the adjacent roadway, entering the site as an intermediate stop on their way to another destination. Pass-by percentages are applied to site trips after adjustments for internal capture. Pass-by trips are expected to account for approximately 94 trips (47 entering and 47 exiting) during the weekday PM peak hour. It should be noted that the pass-by trips were balanced, as it is likely that these trips would enter and exit in the same hour.

The total primary site trips are the calculated site trips after the reduction for internal capture and pass-by trips. Primary site trips are expected to generate approximately 426 trips (170 entering and 256 exiting) during the weekday AM peak hour and 493 trips (284 entering and 209 exiting) during the weekday PM peak hour.

4.2. Site Trip Distribution and Assignment

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

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

- 40% to/from the west via US 401 Bypass
- 20% to/from the east via US 401 Bypass
- 10% to/from the south via Peebles Road

- 25% to/from the west via Mitchell Mill Road
- 5% to/from the east via Mitchell Mill Road

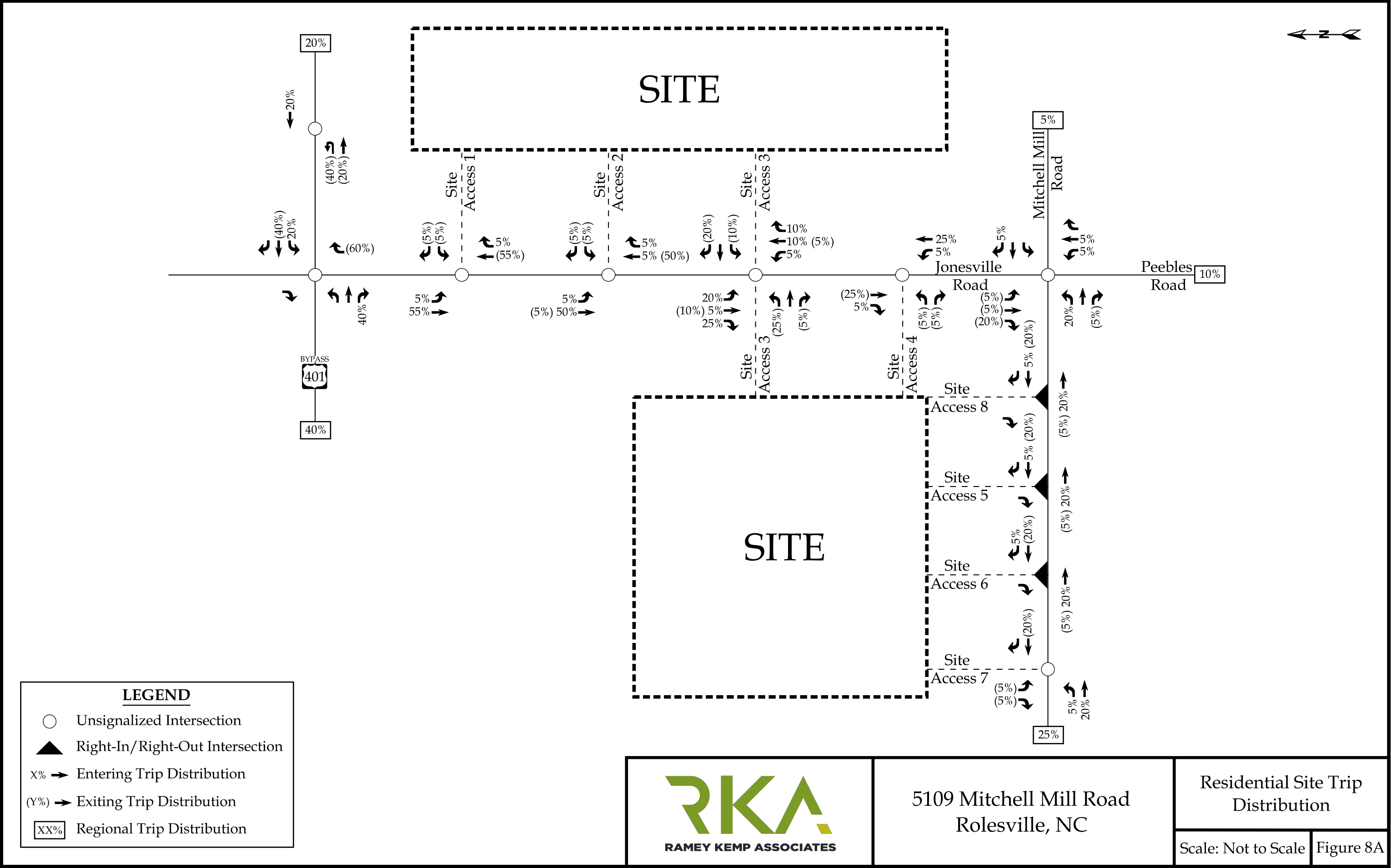
It is estimated that the commercial site trips will be regionally distributed as follows:

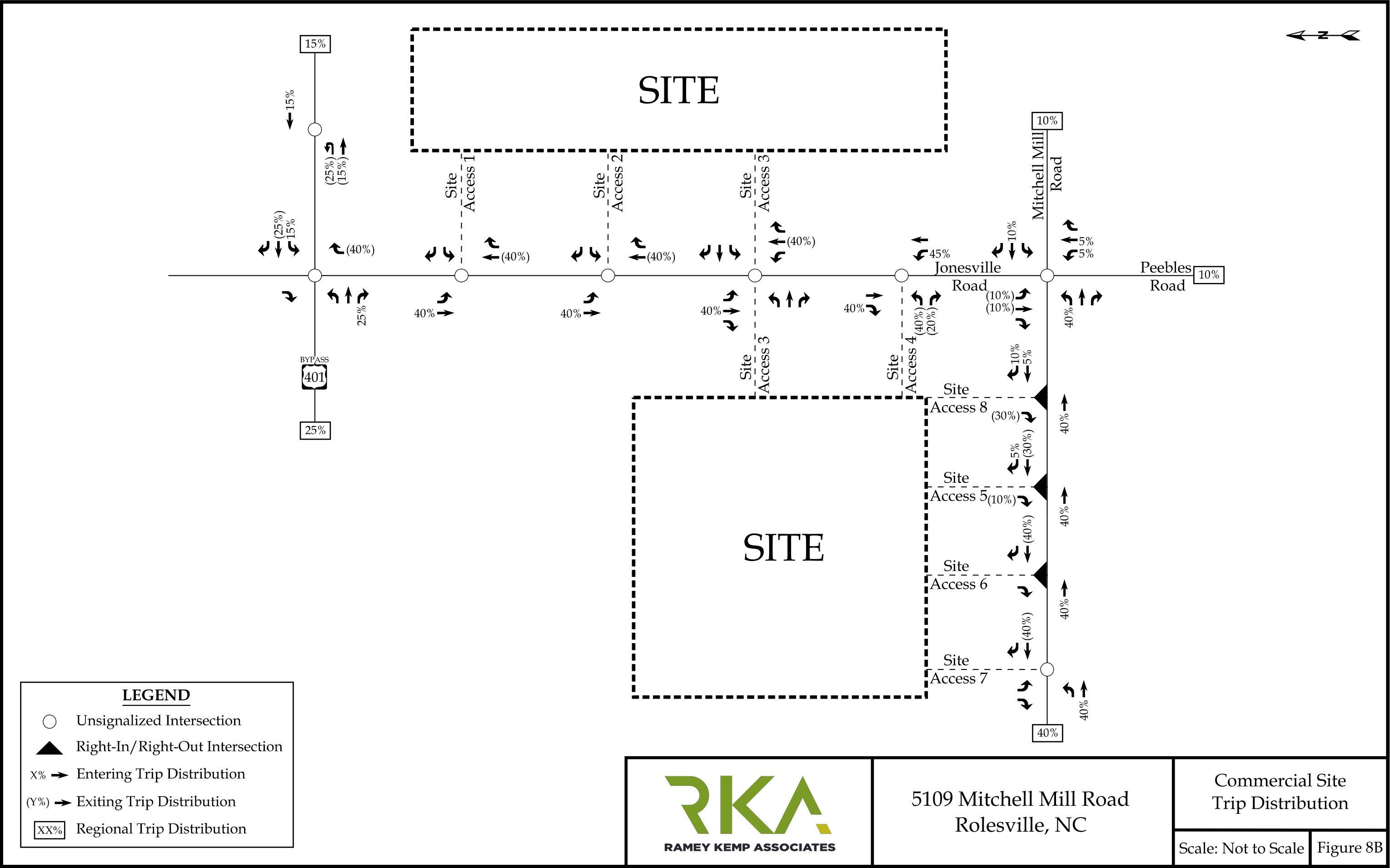
- 25% to/from the west via US 401 Bypass
- 15% to/from the east via US 401 Bypass
- 10% to/from the south via Peebles Road
- 40% to/from the west via Mitchell Mill Road
- 10% to/from the east via Mitchell Mill Road

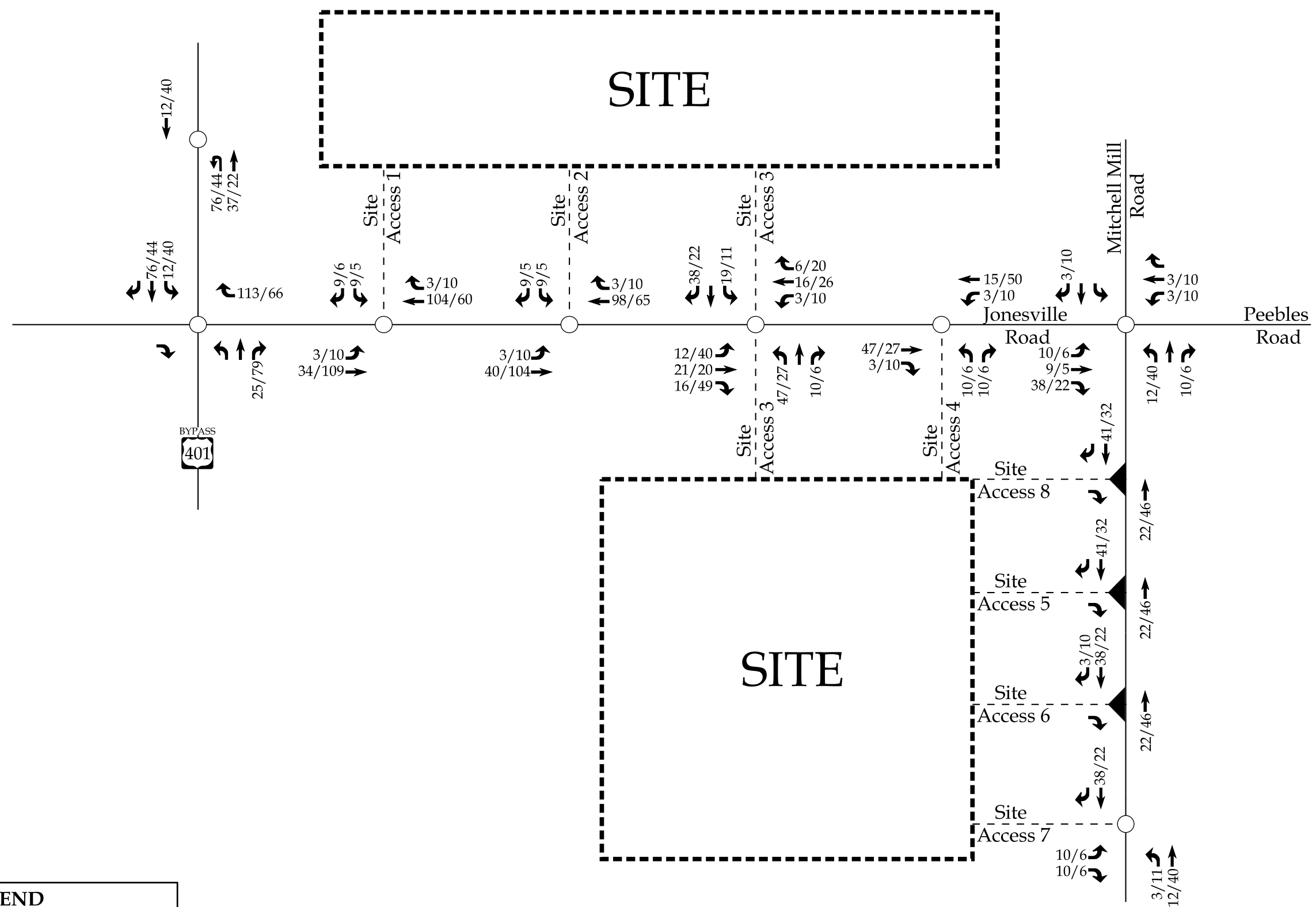
The residential site trip distribution is shown in Figure 8A and the commercial site trip distribution is shown in Figure 8B. Refer to Figures 9A and 9B for the residential site trip assignment and commercial site trip assignment, respectively.

The pass-by site trips were distributed based on existing traffic patterns with consideration given to the proposed driveway access and site layout. Refer to Figure 10 for the pass-by site trip distribution. Pass-by site trips are shown in Figure 11.

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







LEGEND

Unsignalized Intersection

Right-In/Right-Out Intersection

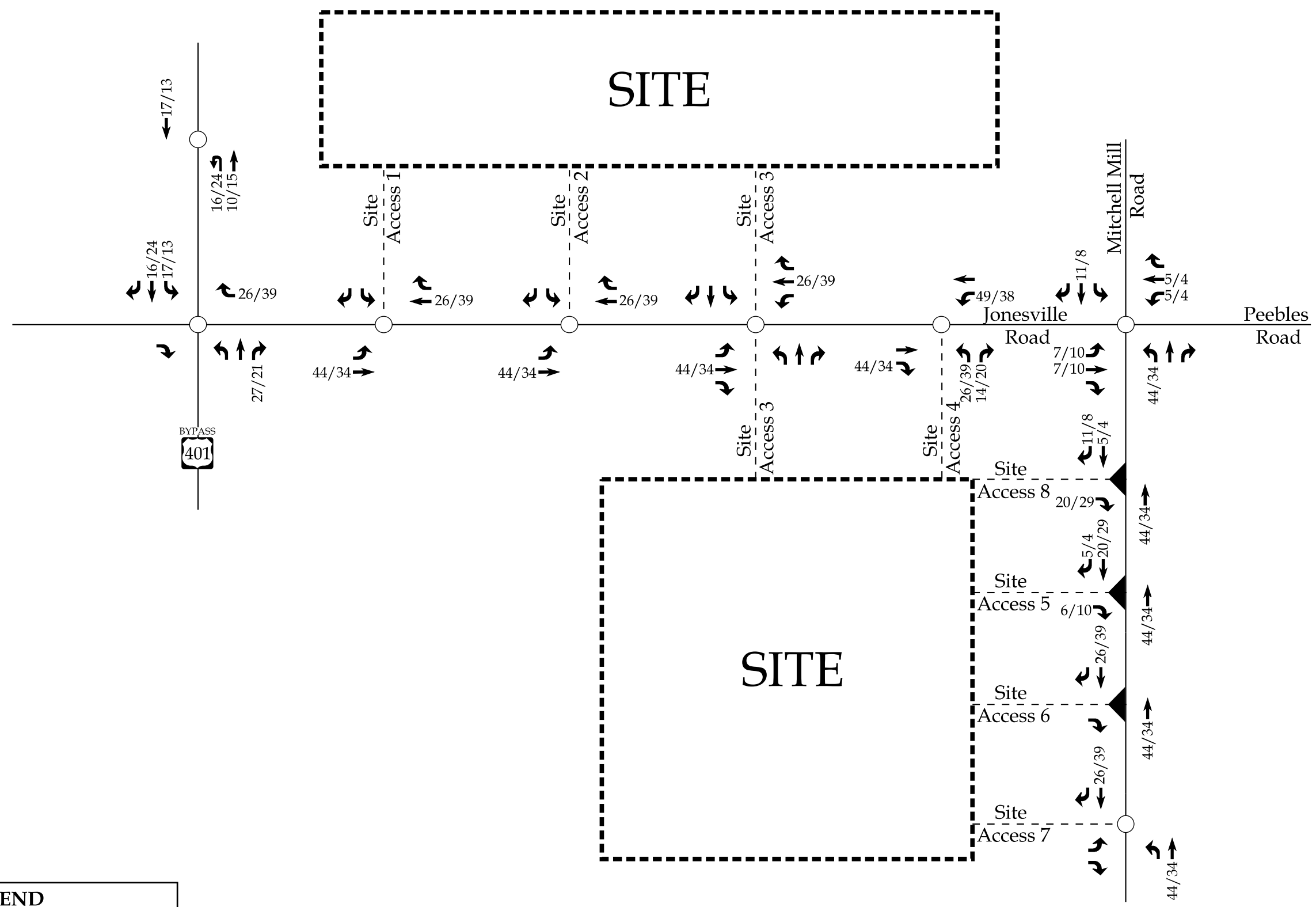
Weekday AM / PM Peak Hour Site Trips

5109 Mitchell Mill Road
Rolesville, NC

Residential Site Trip Assignment

Scale: Not to Scale

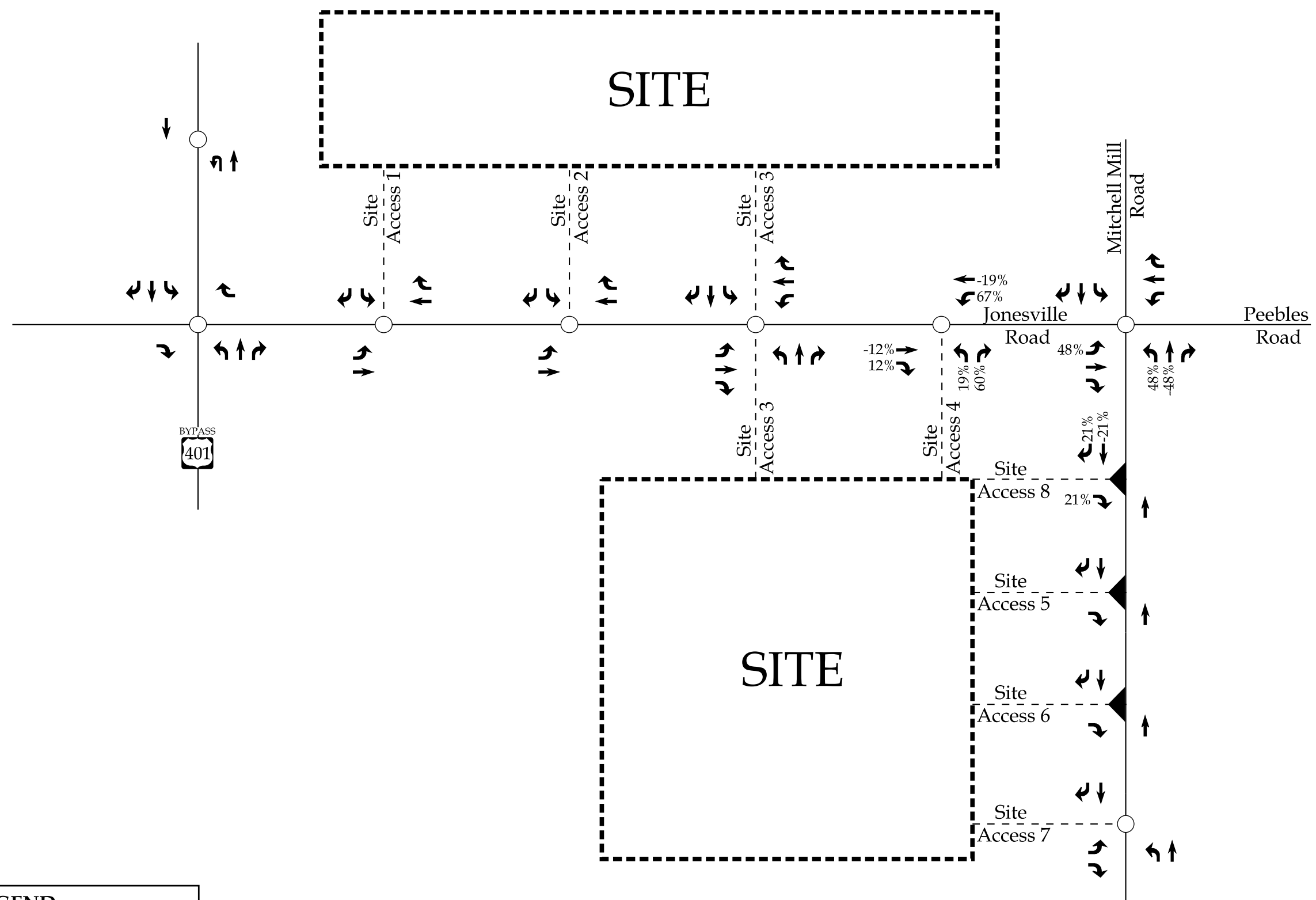
Figure 9A



5109 Mitchell Mill Road
Rolesville, NC

Commercial Site Trip
Assignment

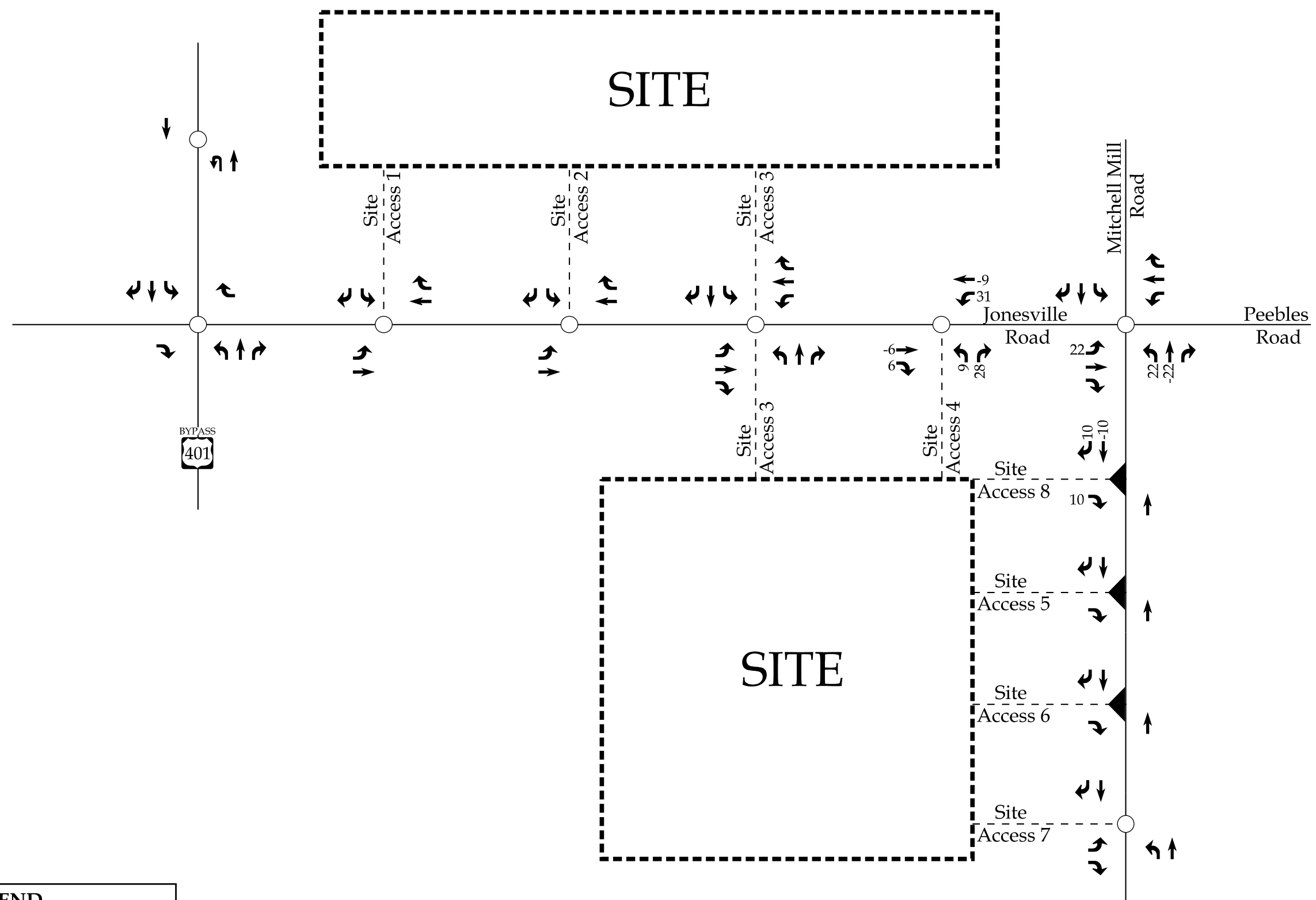
Scale: Not to Scale Figure 9B



LEGEND

- Unsignalized Intersection
- ▲ Right-In/Right-Out Intersection
- X% → Weekday PM Pass-By Trip Distribution

 RAMEY KEMP ASSOCIATES	5109 Mitchell Mill Road Rolesville, NC	Pass-By Site Trip Distribution	
		Scale: Not to Scale	Figure 10



LEGEND

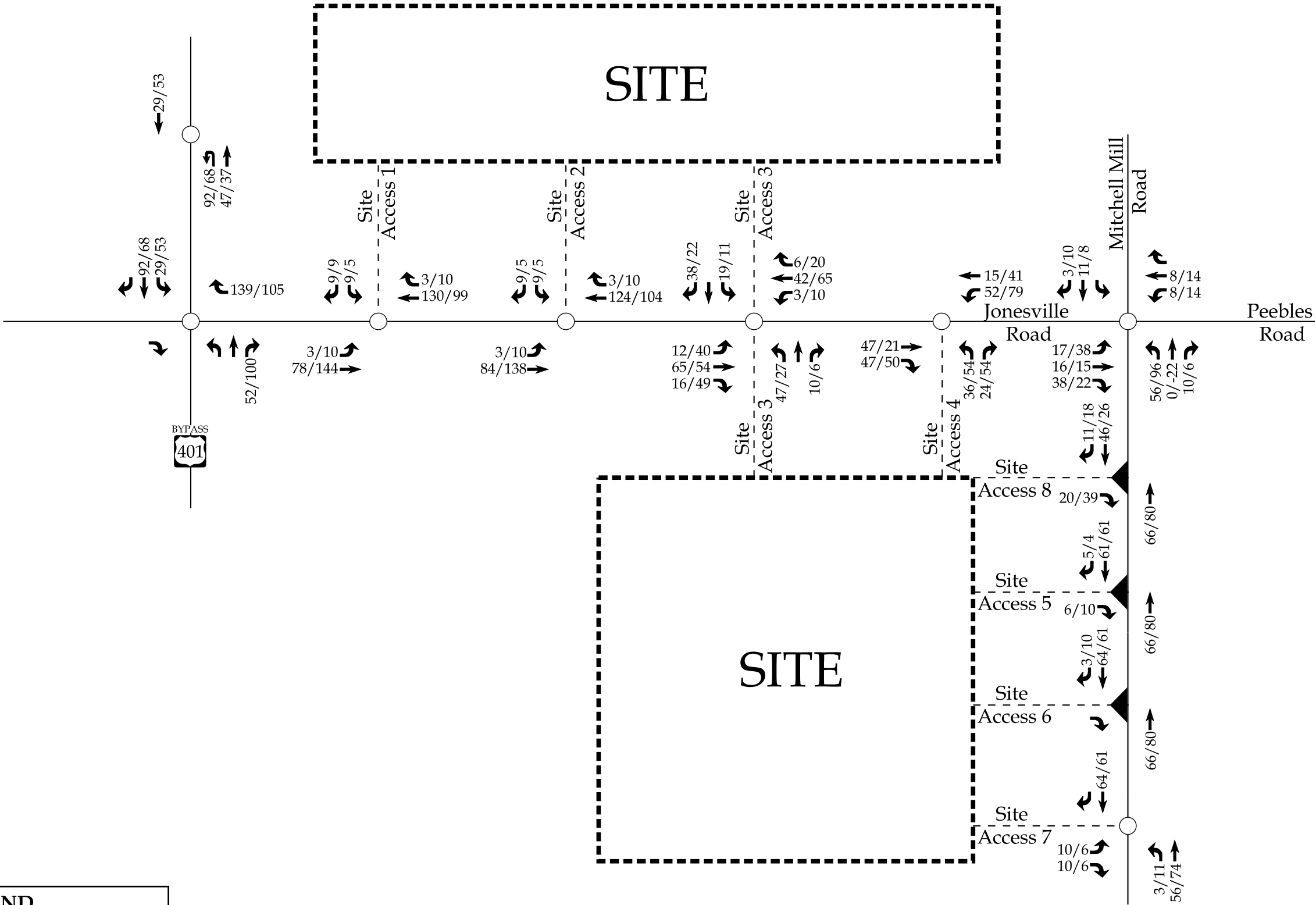
- Unsignalized Intersection
- ▲ Right-In/Right-Out Intersection
- x / y → Weekday PM Peak Hour Pass-By Trips



5109 Mitchell Mill Road
Rolesville, NC

Pass-By Site
Trip Assignment

Scale: Not to Scale Figure 11



LEGEND

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



5109 Mitchell Mill Road
Rolesville, NC

Total Site Trip
Assignment

Scale: Not to Scale Figure 12

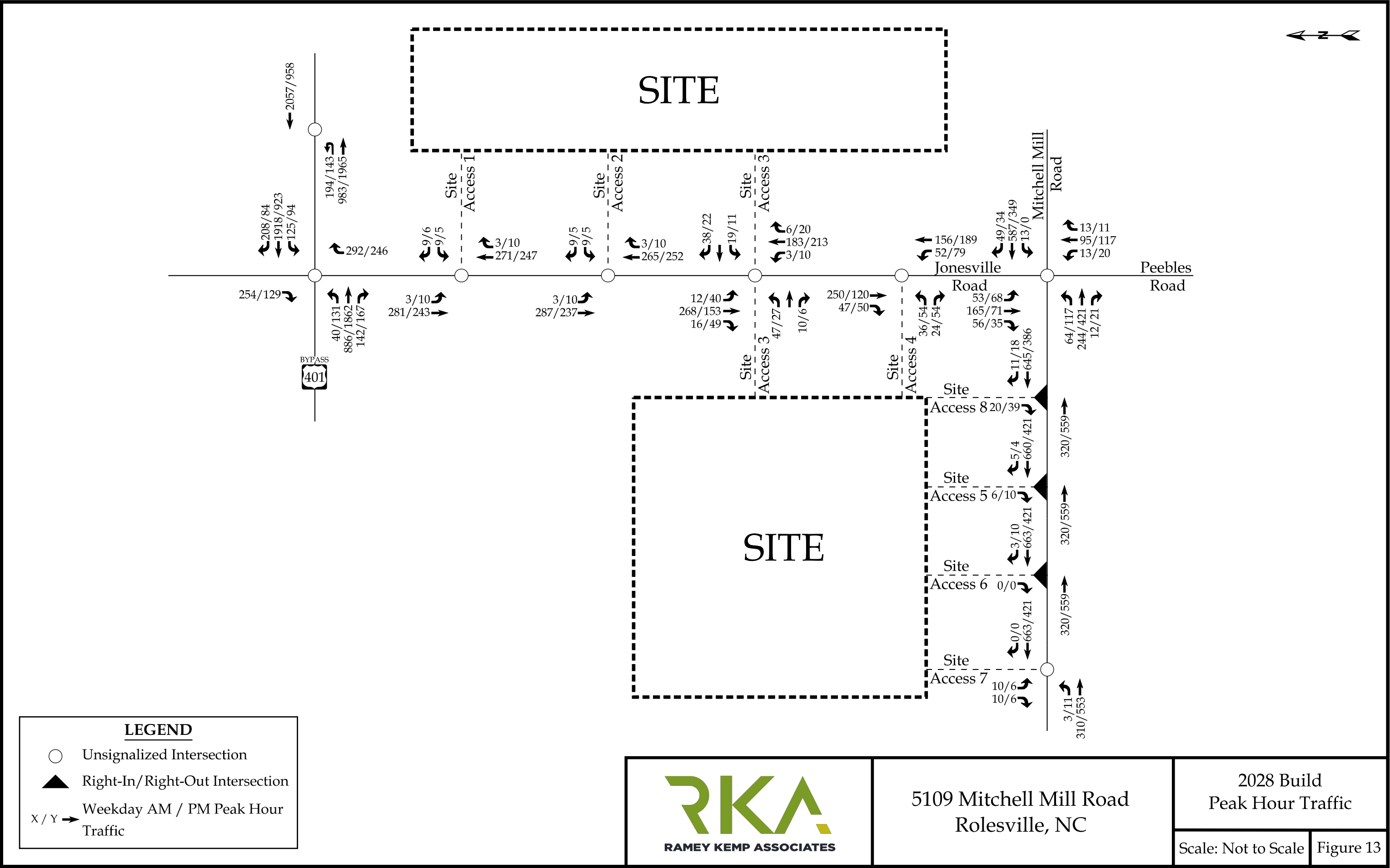
5. 2028 BUILD TRAFFIC CONDITIONS

5.1. 2028 Build Peak Hour Traffic Volumes

To estimate traffic conditions with the site fully built-out, the total site trips were added to the 2028 no-build traffic volumes to determine the 2028 build traffic volumes. Refer to Figure 13 for an illustration of the 2028 build peak hour traffic volumes with the proposed site fully developed.

5.2. Analysis of 2028 Build Peak Hour Traffic Conditions

Study intersections were analyzed with the 2028 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.



6. TRAFFIC ANALYSIS PROCEDURE

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

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

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

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

6.1. Adjustments to Analysis Guidelines

Capacity analysis at all study intersections was completed according to 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 2021 existing, 2028 no-build, and 2028 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)
2021 Existing	EB WB* NB	2 TH, 1 RT 1 LT 1 RT	-- C ¹ B ²	N/A	-- E ¹ C ²	N/A
	EB** WB SB	1 LT 2 TH, 1 RT 1 RT	F ¹ -- D ²	N/A	C ¹ -- B ²	N/A
2028 No-Build	EB WB* NB	2 TH, 1 RT 1 LT 1 RT	-- D ¹ C ²	N/A	-- F ¹ E ²	N/A
	EB** WB SB	1 LT 2 TH, 1 RT 1 RT	F ¹ -- F ²	N/A	E ¹ -- B ²	N/A
2028 Build	EB WB* NB	2 TH, 1 RT 1 LT 1 RT	-- E ¹ C ²	N/A	-- F ¹ F ²	N/A
	EB** WB SB	1 LT 2 TH, 1 RT 1 RT	F ¹ -- F ²	N/A	F ¹ -- B ²	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 2021 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) and the westbound left-turn movement during the weekday PM peak hour (LOS E).

Under 2028 no-build and 2028 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 2028 no-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 C) and the southbound approach during the weekday PM peak hour (LOS B) under 2028 no-build and 2028 build traffic conditions. It should be noted that the proposed development is expected to account for approximately 15% and 11% of the overall traffic at the southern portion of 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 2028 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 both the weekday AM and PM peak hours under 2028 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 95th percentile queue length calculations, the northbound right-turn movement demand is expected to exceed capacity during the weekday PM peak hour under 2028 no-build and 2028 build traffic conditions. Refer to Appendix P for a copy of the MUTCD warrants and the ITRE 95th 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 2021 existing, 2028 no-build, and 2028 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)
2021 Existing	EB* WB	1 UT 2 TH	C ¹ --	N/A	B ¹ --	N/A
2028 No-Build	EB* WB	1 UT 2 TH	E ¹ --	N/A	B ¹ --	N/A
2028 Build	EB* WB	1 UT 2 TH	F ¹ --	N/A	C ¹ --	N/A

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

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

Capacity analysis of 2021 existing and 2028 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 2028 no-build conditions (LOS E).

Under 2028 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 5% and 11% of the overall traffic at this intersection during the weekday AM and PM peak hours, respectively. These levels-of-service are not uncommon for stop-controlled u-turn movements with heavy mainline traffic volumes.

Due to the poor levels-of-service expected at this intersection, a traffic signal was considered under 2028 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 both the weekday AM and PM peak hours under 2028 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 95th percentile queue length calculations, the eastbound u-turn movement demand is expected to exceed capacity during the weekday AM peak hour under 2028 no-build and 2028 build traffic conditions. Refer to Appendix P for a copy of the MUTCD warrants and the ITRE 95th 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 intersection of Mitchell Mill Road and Jonesville Road / Peebles Road was analyzed under 2021 existing, 2028 no-build, and 2028 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)
2021 Existing	EB WB NB SB	1 LT-TH-RT 1 LT-TH-RT 1 LT-TH-RT 1 LT-TH-RT	B ¹ B ¹ A ¹ B ¹	B (12)	B ¹ A ¹ A ¹ A ¹	B (11)
2028 No-Build	EB WB NB SB	1 LT-TH-RT 1 LT-TH-RT 1 LT-TH-RT 1 LT-TH-RT	C ¹ F ¹ B ¹ C ¹	F (55)	D ¹ C ¹ B ¹ B ¹	C (20)
2028 Build	EB WB NB SB	1 LT-TH-RT 1 LT-TH-RT 1 LT-TH-RT 1 LT-TH-RT	C ¹ F ¹ C ¹ C ¹	F (86)	F ¹ D ¹ C ¹ C ¹	F (52)
2028 Build - Improved	EB WB NB SB	1 LT, 1 TH-RT 1 LT-TH-RT 1 LT-TH-RT 1 LT, 1 TH-RT	C ¹ F ¹ C ¹ C ¹	F (107)	E ¹ E ¹ C ¹ B ¹	D (35)

Improvements by the developer are shown in bold.

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

Capacity analysis of 2021 existing and 2028 no-build traffic conditions indicates that the intersection is expected to operate at an overall LOS C or better during the weekday AM and PM peak hours, with the exception of the weekday AM peak hour under 2028 no-build traffic conditions (LOS F). Under 2028 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 12% and 16% of the overall traffic at this intersection during the weekday AM and PM peak hours, respectively.

Turn lanes were considered at this intersection in order to mitigate the proportional impact that the proposed site traffic is expected to have at this intersection and to improve overall operations. Exclusive left-turn lanes are recommended by the developer on the eastbound and southbound approaches. With these improvements, the intersection is expected to operate at an overall LOS F during the weekday AM peak hour and at an overall LOS D during the weekday PM peak hour.

It should be noted that the westbound approach and overall intersection delays are expected to increase during the weekday AM peak hour as a result of the recommended improvements to the southbound and eastbound approaches. Mitigation was considered for the westbound approach due to the anticipated impact traffic on this approach is expected to have on the overall intersection operations under future traffic conditions. However, due to the vast majority of traffic on the westbound approach continuing through this intersection on Mitchell Mill Road, no feasible improvements other than signalization would be expected to decrease delays for the westbound approach.

Due to the poor levels-of-service expected at this intersection, a traffic signal was considered under 2028 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 2028 no-build and 2028 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 P 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 Site Access 1

The proposed unsignalized intersection of Jonesville Road and Site Access 1 was analyzed under 2028 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 Site Access 1

ANALYSIS SCENARIO	APPROACH	LANE CONFIGURATIONS	WEEKDAY AM PEAK HOUR LEVEL OF SERVICE		WEEKDAY PM PEAK HOUR LEVEL OF SERVICE	
			Approach	Overall (seconds)	Approach	Overall (seconds)
2028 Build	WB	1 LT-RT	B ²	N/A	B ²	N/A
	NB	1 TH-RT	--		--	
	SB	1 LT, 1 TH	A ¹		A ¹	

Improvements to lane configurations by the developer are shown in bold.

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

Capacity analysis of 2028 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 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* and a left-turn lane is recommended on the southbound approach (Jonesville Road). Based on the estimated low volume of right-turn movements into the proposed development at this intersection, an exclusive right-turn lane is not recommended. Refer to Appendix O for a copy of the turn lane warrants.

7.5. Jonesville Road and Site Access 2

The proposed unsignalized intersection of Jonesville Road and Site Access 2 was analyzed under 2028 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 Access 2

ANALYSIS SCENARIO	APPROACH	LANE CONFIGURATIONS	WEEKDAY AM PEAK HOUR LEVEL OF SERVICE		WEEKDAY PM PEAK HOUR LEVEL OF SERVICE	
			Approach	Overall (seconds)	Approach	Overall (seconds)
2028 Build	WB	1 LT-RT	B ²	N/A	B ²	N/A
	NB	1 TH, 1 RT	--		--	
	SB	1 LT, 1 TH	A ¹		A ¹	

Improvements to lane configurations by the developer are shown in bold.

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

Capacity analysis of 2028 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 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* and a left-turn lane is recommended on the southbound approach (Jonesville Road). Based on coordination with NCDOT a right-turn lane is also recommended on the northbound approach (Jonesville Road). Refer to Appendix O for a copy of the turn lane warrants.

7.6. Jonesville Road and Site Access 3

The proposed unsignalized intersection of Jonesville Road and Site Access 3 was analyzed under 2028 build traffic conditions with the lane configurations and traffic control shown in Table 10. Refer to Table 10 for a summary of the analysis results. Refer to Appendix I for the synchro capacity analysis reports.

Table 10: Analysis Summary of Jonesville Road and Site Access 3

ANALYSIS SCENARIO	APPROACH	LANE CONFIGURATIONS	WEEKDAY AM PEAK HOUR LEVEL OF SERVICE		WEEKDAY PM PEAK HOUR LEVEL OF SERVICE	
			Approach	Overall (seconds)	Approach	Overall (seconds)
2028 Build	EB	1 LT-TH-RT	B ²	N/A	B ²	N/A
	WB	1 LT-TH-RT	B ²		B ²	
	NB	1 LT, 1 TH, 1 RT	A ¹		A ¹	
	SB	1 LT, 1 TH, 1 RT	A ¹		A ¹	

Improvements to lane configurations by the developer are shown in bold.

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

Capacity analysis of 2028 build traffic conditions indicates that the major-street left-turn movements are expected to operate at LOS A during the weekday AM and PM peak hours. The minor-street approaches are expected to operate at LOS B 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* and both are recommended on the southbound and northbound approaches (Jonesville Road). Refer to Appendix O for a copy of the turn lane warrants.

7.7. Jonesville Road and Site Access 4

The proposed unsignalized intersection of Jonesville Road and Site Access 4 was analyzed under 2028 build traffic conditions with the lane configurations and traffic control shown in Table 11. Refer to Table 11 for a summary of the analysis results. Refer to Appendix J for the synchro capacity analysis reports.

Table 11: Analysis Summary of Jonesville Road and Site Access 4

ANALYSIS SCENARIO	APPROACH	LANE CONFIGURATIONS	WEEKDAY AM PEAK HOUR LEVEL OF SERVICE		WEEKDAY PM PEAK HOUR LEVEL OF SERVICE	
			Approach	Overall (seconds)	Approach	Overall (seconds)
2028 Build	EB	1 LT-RT	B ²	N/A	B ²	N/A
	NB	1 LT, 1 TH	A ¹		A ¹	
	SB	1 TH, 1 RT	--		--	

Improvements to lane configurations by the developer are shown in bold.

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

Capacity analysis of 2028 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 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* and are recommended on the southbound and northbound approaches (Jonesville Road), respectively. Refer to Appendix O for a copy of the turn lane warrants.

7.8. Mitchell Mill Road and Site Access 5

The proposed unsignalized intersection of Mitchell Mill Road and Site Access 5 was analyzed under 2028 build traffic conditions with the lane configurations and traffic control shown in Table 12. Refer to Table 12 for a summary of the analysis results. Refer to Appendix K for the synchro capacity analysis reports.

Table 12: Analysis Summary of Mitchell Mill Road and Site Access 5

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)
2028 Build	EB	1 TH	--	N/A	--	N/A
	WB	1 TH, 1 RT	--		--	
	SB	1 RT	B ¹		B ¹	

Improvements to lane configurations by the developer are shown in bold.

1. Level of service for minor-street approach.

Capacity analysis of 2028 build traffic conditions indicates that the minor-street approach is expected to operate at LOS B during the weekday AM and PM peak hours.

A right-turn lane was considered based on the NCDOT *Policy on Street and Driveway Access to North Carolina Highways* and is recommended on the westbound approach (Mitchell Mill Road). Refer to Appendix O for a copy of the turn lane warrants.

7.9. Mitchell Mill Road and Site Access 6

The proposed unsignalized intersection of Mitchell Mill Road and Site Access 6 was analyzed under 2028 build traffic conditions with the lane configurations and traffic control shown in Table 13. Refer to Table 13 for a summary of the analysis results. Refer to Appendix L for the synchro capacity analysis reports.

Table 13: Analysis Summary of Mitchell Mill Road and Site Access 6

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)
2028 Build	EB	1 TH	--	N/A	--	N/A
	WB	1 TH-RT	--		--	
	SB	1 RT	B ¹		B ¹	

Improvements to lane configurations by the developer are shown in bold.

1. Level of service for minor-street approach.

Capacity analysis of 2028 build traffic conditions indicates that the minor-street approach is expected to operate at LOS B during the weekday AM and PM peak hours.

A right-turn lane was considered based on the NCDOT *Policy on Street and Driveway Access to North Carolina Highways*. Based on coordination with NCDOT, an exclusive right-turn lane is recommended on the westbound approach (Mitchell Mill Road). Refer to Appendix O for a copy of the turn lane warrants.

7.10. Mitchell Mill Road and Site Access 7

The proposed unsignalized intersection of Mitchell Mill Road and Site Access 7 was analyzed under 2028 build traffic conditions with the lane configurations and traffic control shown in Table 14. Refer to Table 14 for a summary of the analysis results. Refer to Appendix M for the synchro capacity analysis reports.

Table 14: Analysis Summary of Mitchell Mill Road and Site Access 7

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)
2028 Build	EB WB SB	1 LT, 1 TH 1 TH-RT 1 LT-RT	A ¹ -- C ²	N/A	A ¹ -- C ²	N/A

Improvements to lane configurations by the developer are shown in bold.

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

Capacity analysis of 2028 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 C 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* and an exclusive left-turn lane is recommended on eastbound approach (Mitchell Mill Road). Based on the estimated low volume of right-turn movements into the proposed development at this intersection, an exclusive right-turn lane is not recommended. Refer to Appendix O for a copy of the turn lane warrants.

7.11. Mitchell Mill Road and Site Access 8

The proposed unsignalized intersection of Mitchell Mill Road and Site Access 8 was analyzed under 2028 build traffic conditions with the lane configurations and traffic control shown in Table 15. Refer to Table 15 for a summary of the analysis results. Refer to Appendix N for the synchro capacity analysis reports.

Table 15: Analysis Summary of Jonesville Road and Site Access 8

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)
2028 Build	EB	1 TH	--	N/A	--	N/A
	WB	1 TH, 1 RT	--		--	
	SB	1 RT	B ¹		B ¹	

Improvements to lane configurations by the developer are shown in bold.

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

Capacity analysis of 2028 build traffic conditions indicates that the minor-street approach is expected to operate at LOS B during the weekday AM and PM peak hours.

A right-turn lane was considered based on the NCDOT *Policy on Street and Driveway Access to North Carolina Highways*. Based on coordination with NCDOT, an exclusive right-turn lane is recommended on the westbound approach (Mitchell Mill Road). Refer to Appendix O for a copy of the turn lane warrants.

8. CONCLUSIONS

This Traffic Impact Analysis was conducted to determine the potential traffic impacts of the proposed 5109 Mitchell Mill Road development located along both sides of Jonesville Road, north of Mitchell Mill Road in Rolesville, North Carolina. The proposed development is separated into two (2) tracts on both sides of Jonesville Road. The eastern tract is expected to consist of 195 single-family homes and the western tract of development is expected to consist of 69 single-family homes, 129 townhomes, and 50,000 square feet (sq. ft) of general retail. Site access is proposed via four (4) full-movement driveway connections along Jonesville Road, three (3) RIRO driveway connections along Mitchell Mill Road, and one (1) full-movement driveway connection along Mitchell Mill Road. One of the site driveway connections along Jonesville Road will be aligned to provide access to both the eastern and western tracts of the proposed development.

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

- 2021 Existing Traffic Conditions
- 2028 No-Build Traffic Conditions
- 2028 Build Traffic Conditions

Trip Generation

It is estimated that the proposed development will generate approximately 426 primary trips (170 entering and 256 exiting) during the weekday AM peak hour and 493 primary trips (284 entering and 209 exiting) during the weekday PM peak hour.

Rolesville Community Transportation Plan

Per the Rolesville Community Transportation Plan (CTP), 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. It is recommended that the proposed development widen Jonesville Road and one-half section of Mitchell Mill Road along the site frontage in accordance with the Town's CTP.

Adjustments to Analysis Guidelines

Capacity analysis at all study intersections was completed according to NCDOT Congestion Management Guidelines. Refer to section 6.1 of this report for a detailed description of any adjustments to these guidelines made throughout the analysis.

Intersection Capacity Analysis Summary

All the study area intersections (including the proposed site driveways) are expected to operate at acceptable levels-of-service under existing and future year conditions with the exception of the intersections listed below. A summary of the study area intersections that are expected to need improvements are as follows:

US 401 Bypass and Jonesville Road

Under 2028 no-build and 2028 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 2028 no-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 C) and the southbound approach during the weekday PM peak hour (LOS B) under 2028 no-build and 2028 build traffic conditions. It should be noted that the proposed development is expected to account for approximately 15% and 11% of the overall traffic at the southern portion of 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 2028 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 both the weekday AM and PM peak hours under 2028 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 95th percentile queue length calculations, the northbound right-turn movement demand is expected to exceed capacity during the weekday PM peak hour under 2028 no-build and 2028 build traffic conditions.

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.

US 401 Bypass and Eastern U-Turn Location

Under 2028 build traffic conditions, the major-street u-turn movement is expected to operate at LOS F during the weekday AM peak. It should be noted that the proposed development is expected to account for approximately 5% and 11% of the overall traffic at this intersection during the weekday AM and PM peak hours, respectively. These levels-of-service are not uncommon for stop-controlled u-turn movements with heavy mainline traffic volumes.

Due to the poor levels-of-service expected at this intersection, a traffic signal was considered under 2028 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 both the weekday AM and PM peak hours under 2028 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 95th percentile queue length calculations, the eastbound u-turn movement demand is expected to exceed capacity during the weekday AM peak hour under 2028 no-build and 2028 build traffic conditions.

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.

Mitchell Mill Road and Jonesville Road / Peebles Road

Under 2028 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 12% and 16% of the overall traffic at this intersection during the weekday AM and PM peak hours, respectively.

Turn lanes were considered at this intersection in order to mitigate the proportional impact that the proposed site traffic is expected to have at this intersection and to improve overall operations. Exclusive left-turn lanes are recommended by the developer on the eastbound and southbound approaches. With these improvements, the intersection is expected to operate at an overall LOS F during the weekday AM peak hour and at an overall LOS D during the weekday PM peak hour.

It should be noted that the westbound approach and overall intersection delays are expected to increase during the weekday AM peak hour as a result of the recommended improvements to the southbound and eastbound approaches. Mitigation was considered for the westbound approach due to the anticipated impact traffic on this approach is expected to have on the overall intersection operations under future traffic conditions. However, due to the vast majority of traffic on the westbound approach continuing through this intersection on Mitchell Mill Road, no feasible improvements other than signalization would be expected to decrease delays for the westbound approach.

Due to the poor levels-of-service expected at this intersection, a traffic signal was considered under 2028 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 2028 no-build and 2028 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 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.

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

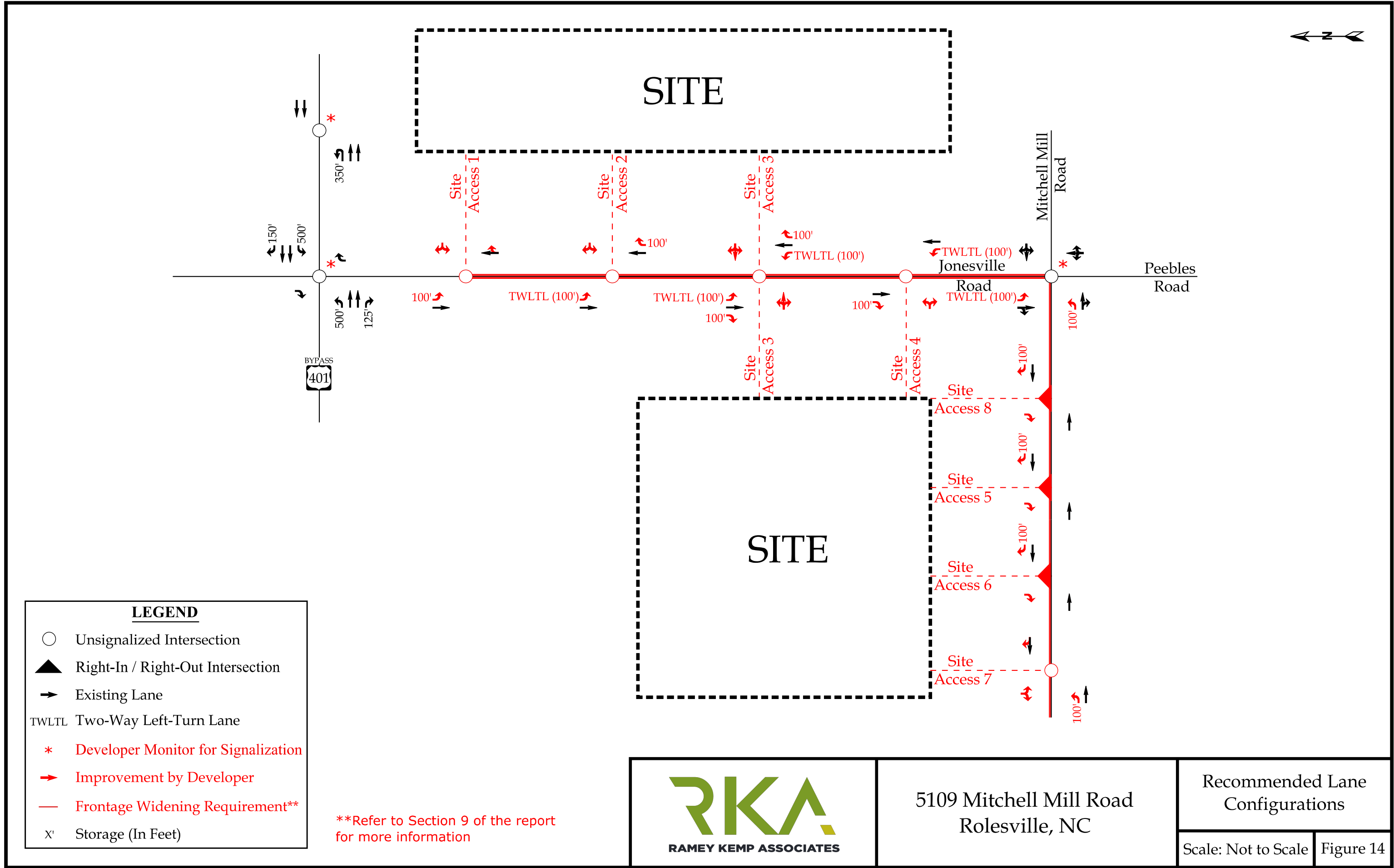
- Construct the southbound approach (Site Access 6) with one ingress lane and one egress lane striped as an exclusive right-turn lane.
- Provide stop-control for the southbound approach (Site Access 6). This proposed intersection will be restricted to right-in/right-out operations.
- Construct an exclusive 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.



TECHNICAL APPENDIX

APPENDIX A

SCOPING DOCUMENTATION

Tucker Fulle

From: Nolfo, Matthew J <mjnolfo@ncdot.gov>
Sent: Friday, June 24, 2022 2:51 PM
To: Jessica McClure; Beth Trahos; Craig Hyman; Tucker Fulle
Cc: Warren, Jeremy L; Elabarger, Michael S
Subject: RE: [External] RE: 5109 Mitchell Mill

Jessica,

The driveway for the commercial parcel would need to be studied, especially if it is desired for it to be a full access connection. The decision to do a phased TIA is up to the developer, but if it is not their intent to build all of the roadway improvements prior to the use of any section of the development, then a phased TIA would be required. Feel free to give me a call, but those are my initial thoughts.

Thanks,

Matthew Nolfo

Assistant District Engineer
Northern Wake County
Wake County District Office (Division 5 District 1)
North Carolina Department of Transportation

mjnolfo@ncdot.gov

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Physical Address

4009 District Drive
Raleigh, NC 27607

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1575 Mail Service Center
Raleigh, NC 27699-1575



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From: Jessica McClure <JMCClure@rameykemp.com>
Sent: Thursday, June 23, 2022 5:04 PM
To: Beth Trahos <beth.trahos@nelsonmullins.com>; Nolfo, Matthew J <mjnolfo@ncdot.gov>; Craig Hyman <chyman@rameykemp.com>; Tucker Fulle <tfulle@rameykemp.com>
Cc: Warren, Jeremy L <jlwarren@ncdot.gov>; Elabarger, Michael S <michael.elabarger@rolesville.nc.gov>
Subject: [External] RE: 5109 Mitchell Mill

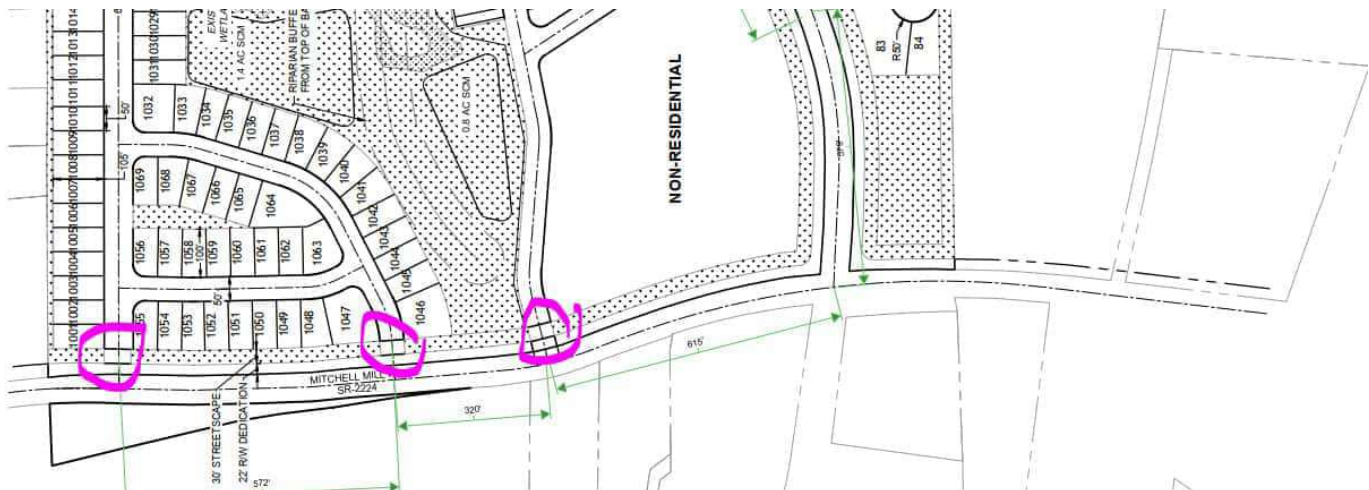
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Hi Beth – thanks for circling up on this one.

The TIA was scoped with the access/site plan shown below (purple indicates driveways on Mitchell Mill Road). Not to speak for NCDOT, but if the developer is pursuing a fourth driveway for the non-residential use, I would assume a TIA Update would be needed to show the impacts of the additional driveway.

If we are updating the study for the additional driveway, I think it would be wise to decide if a phasing study is also appropriate and knock it all out at once, unless the developer is OK with providing all of the improvements required prior to final plats and/or CO per Matthew's email.

We'll give DOT a call tomorrow morning and get a path forward on this one.



Jessica McClure, PE
State Traffic Engineering Lead
D 919 987 1283 | T 919 872 5115 | C 919 637 5553



From: Beth Trahos <beth.trahos@nelsonmullins.com>

Sent: Thursday, June 23, 2022 4:39 PM

To: Nolfo, Matthew J <mjnolfo@ncdot.gov>; Jessica McClure <JMCClure@rameykemp.com>; Rynal Stephenson <rstephenson@rameykemp.com>

Cc: Warren, Jeremy L <jlwarren@ncdot.gov>; Elabarger, Michael S <michael.elabarger@rolesville.nc.gov>

Subject: RE: 5109 Mitchell Mill

Just wanted to touch base on this. How should we address it?

Thanks!

Beth



ELIZABETH C. TRAHOS **PARTNER**
beth.trahos@nelsonmullins.com
GLENLAKE ONE | SUITE 200
4140 PARKLAKE AVENUE | RALEIGH, NC 27612
T 919.329.3884 F 919.329.3799
NELSONMULLINS.COM **VCARD** **VIEW BIO**

From: Nolfo, Matthew J <mjnoflo@ncdot.gov>
Sent: Friday, June 10, 2022 11:17 AM
To: Beth Trahos <beth.trahos@nelsonmullins.com>; jmcclure@rameykemp.com
Cc: Warren, Jeremy L <jlwarren@ncdot.gov>; Elabarger, Michael S <michael.elabarger@rolesville.nc.gov>
Subject: RE: 5109 Mitchell Mill

◀**External Email**▶ - From: mjnoflo@ncdot.gov

Jessica,

Michael's autoreply said he left Ramey Kemp on 5/5 and to direct emails towards you and Rynal. I am not sure what background you may have on 5109 Mitchell Mill, but I wanted to loop you into the conversation below.

Thanks,

Matthew Nolfo
Assistant District Engineer
Northern Wake County
Wake County District Office (Division 5 District 1)
North Carolina Department of Transportation

mjnoflo@ncdot.gov
(919)733-7759

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4009 District Drive
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Raleigh, NC 27699-1575



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From: Nolfo, Matthew J
Sent: Friday, June 10, 2022 11:12 AM
To: beth.trahos@nelsonmullins.com; MKarpinski@rameykemp.com
Cc: Warren, Jeremy L <jlwarren@ncdot.gov>; Elabarger, Michael S <michael.elabarger@rolesville.nc.gov>
Subject: 5109 Mitchell Mill

Beth and Michael,

I am writing to follow up on some of the comments brought up in the Town of Rolesville meeting yesterday.

Currently, the TIA that has been submitted to NCDOT is unphased. There was a lot of discussion in the meeting yesterday about the possibility of 2 (or more) phases for this development. What this means is that prior to any residential units getting final plat approval, or any commercial building getting a CO, the expectation of the NCDOT is that all the non-frontage improvements on the TIA are constructed, as well as any frontage improvements for the site that is being approved for use.

Additionally, upon further review of the TIA, it only has 3 driveways along Mitchell Mill Road that are studied. When the distances of these driveways are compared with the TIA, it is evident that the missing driveway is the one into the proposed parking lot for the commercial unit (approximately 350 feet from the intersection of Mitchell Mill and Peebles. Currently, that TIA does not appear to study that connection, and I imagine the future tenant (grocery store?) would want that connection to exist. I have copied Michael Karpinski with Ramey Kemp who sealed the TIA, as he may be able to shed a bit of light on this as it was scoped and studied before I came into the picture at the District Office.

I think it is very important that we get this straightened out sooner rather than later to avoid unexpected problems in the future.

Thanks,

Matthew Nolfo
Assistant District Engineer
Northern Wake County
Wake County District Office (Division 5 District 1)
North Carolina Department of Transportation

mjnolfo@ncdot.gov
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Tucker Fulle

From: Walker, Braden M <bmwalker1@ncdot.gov>
Sent: Wednesday, January 5, 2022 3:19 PM
To: Michael Karpinski; Brennan, Sean P; Neidringhaus, Amy N
Cc: Winkler, Niklaus C; Wheeler, Millard S; Ishak, Doumit Y; Bunting, Clarence B; McFarland, Mical; Gruber, Meredith a; Carter, James E; Jessica McClure; Tucker Fulle
Subject: RE: [External] 5109 Mitchell Mill Road - TIA Scoping

Michael,

Congestion Management is ok with the MOU provided for the 5109 Mitchell Mill Road TIA.

Thank you,

Braden M. Walker, PE.
Congestion Management Project Design Engineer
Traffic Management Unit
North Carolina Department of Transportation

919 814 5078 office
bmwalker1@ncdot.gov

750 N. Greenfield Parkway
Garner, NC 27529



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From: Michael Karpinski <MKarpinski@rameykemp.com>
Sent: Monday, January 3, 2022 11:06 AM
To: Brennan, Sean P <spbrennan@ncdot.gov>; Walker, Braden M <bmwalker1@ncdot.gov>; Neidringhaus, Amy N <anneidringhaus@ncdot.gov>
Cc: Winkler, Niklaus C <ncwinkler@ncdot.gov>; Wheeler, Millard S <mswheeler1@ncdot.gov>; Ishak, Doumit Y <dishak@ncdot.gov>; Bunting, Clarence B <cbunting@ncdot.gov>; McFarland, Mical <mical.mcfarland@rolesville.nc.gov>; Gruber, Meredith a <meredith.gruber@rolesville.nc.gov>; Carter, James E <james.carter@rolesville.nc.gov>; Jessica McClure <JMCClure@rameykemp.com>; Tucker Fulle <tfulle@rameykemp.com>
Subject: RE: [External] 5109 Mitchell Mill Road - TIA Scoping

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All,

Happy New Year! I am following up on my email below in regards to the attached MOU for the 5109 Mitchell Mill Road TIA in Rolesville. Let me know if you have any questions or need any additional information from us.

Regards,
Michael

Michael Karpinski, PE
Traffic Engineering Project Manager

D 919 987 1300 | T 919 872 5115



From: Michael Karpinski
Sent: Monday, December 13, 2021 1:26 PM
To: Brennan, Sean P <spbrennan@ncdot.gov>; Walker, Braden M <bmwalker1@ncdot.gov>; Neidringhaus, Amy N <anneidringhaus@ncdot.gov>
Cc: Winkler, Niklaus C <ncwinkler@ncdot.gov>; Wheeler, Millard S <mswheeler1@ncdot.gov>; Ishak, Doumit Y <dishak@ncdot.gov>; Bunting, Clarence B <cbunting@ncdot.gov>; McFarland, Mical <mical.mcfarland@rolesville.nc.gov>; Gruber, Meredith a <meredith.gruber@rolesville.nc.gov>; Carter, James E <james.carter@rolesville.nc.gov>; Jessica McClure <JMCClure@rameykemp.com>; Tucker Fulle <tfulle@rameykemp.com>
Subject: RE: [External] 5109 Mitchell Mill Road - TIA Scoping

Good afternoon,

Please find the attached MOU for the 5109 Mitchell Mill Road TIA in Rolesville, North Carolina. Let me know your thoughts/comments on the attached or if you need anything else from me for your review, thanks!

Regards,
Michael

Michael Karpinski, PE
Traffic Engineering Project Manager

D 919 987 1300 | T 919 872 5115



From: Brennan, Sean P <spbrennan@ncdot.gov>
Sent: Monday, October 18, 2021 3:01 PM
To: Walker, Braden M <bmwalker1@ncdot.gov>; Michael Karpinski <MKarpinski@rameykemp.com>; Neidringhaus, Amy N <anneidringhaus@ncdot.gov>
Cc: Winkler, Niklaus C <ncwinkler@ncdot.gov>; Wheeler, Millard S <mswheeler1@ncdot.gov>; Ishak, Doumit Y <dishak@ncdot.gov>; Bunting, Clarence B <cbunting@ncdot.gov>; McFarland, Mical <mical.mcfarland@rolesville.nc.gov>; Gruber, Meredith a <meredith.gruber@rolesville.nc.gov>; Carter, James E

<james.carter@rolesville.nc.gov>; Jessica McClure <JMCClure@rameykemp.com>

Subject: Re: [External] 5109 Mitchell Mill Road - TIA Scoping

Michael,

I don't have any additional comments.

Regards,

Sean Brennan, PE

Senior Assistant District Engineer

Division 5/District 1

Department of Transportation

919-733-3213 office

919-715-5778 fax

spbrennan@ncdot.gov

4009 District Drive (Physical Address)

Raleigh, NC 27607

1575 Mail Service Center (Mailing Address)

Raleigh, NC 27699-1575



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From: Walker, Braden M <bmwalker1@ncdot.gov>

Sent: Monday, October 18, 2021 1:13 PM

To: Michael Karpinski <MKarpinski@rameykemp.com>; Brennan, Sean P <spbrennan@ncdot.gov>; Neidringhaus, Amy N <anneidringhaus@ncdot.gov>

Cc: Winkler, Niklaus C <ncwinkler@ncdot.gov>; Wheeler, Millard S <mswheeler1@ncdot.gov>; Ishak, Doumit Y

<dishak@ncdot.gov>; Bunting, Clarence B <cbunting@ncdot.gov>; McFarland, Mical

<mical.mcfarland@rolesville.nc.gov>; Gruber, Meredith a <meredith.gruber@rolesville.nc.gov>; Carter, James E

<james.carter@rolesville.nc.gov>; Jessica McClure <JMCClure@rameykemp.com>

Subject: RE: [External] 5109 Mitchell Mill Road - TIA Scoping

Michael,

Congestion Management has no additional comments.

I have attached the Town of Rolesville traffic analysis which should have traffic counts from 2016. The report also projected volumes for 2020 and 2025.

Thank you,

Braden M. Walker, PE.

Congestion Management Project Design Engineer

Traffic Management Unit

North Carolina Department of Transportation

919 814 5078 office
bmwalker1@ncdot.gov

750 N. Greenfield Parkway
Garner, NC 27529



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From: Michael Karpinski <MKarpinski@rameykemp.com>
Sent: Monday, October 11, 2021 12:17 PM
To: Brennan, Sean P <spbrennan@ncdot.gov>; Neidringhaus, Amy N <anneidringhaus@ncdot.gov>
Cc: Winkler, Niklaus C <ncwinkler@ncdot.gov>; Wheeler, Millard S <mswheeler1@ncdot.gov>; Ishak, Doumit Y <dishak@ncdot.gov>; Bunting, Clarence B <cbunting@ncdot.gov>; McFarland, Mical <mical.mcfarland@rolesville.nc.gov>; Gruber, Meredith a <meredith.gruber@rolesville.nc.gov>; Carter, James E <james.carter@rolesville.nc.gov>; Jessica McClure <JMCClure@rameykemp.com>; Walker, Braden M <bmwalker1@ncdot.gov>
Subject: RE: [External] 5109 Mitchell Mill Road - TIA Scoping

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Thanks, Sean! Do you have any other comments regarding the proposed TIA scope outlined below?

Michael Karpinski, PE
Traffic Engineering Project Manager

D 919 987 1300 | T 919 872 5115



From: Brennan, Sean P <spbrennan@ncdot.gov>
Sent: Friday, October 8, 2021 10:27 AM
To: Michael Karpinski <MKarpinski@rameykemp.com>; Neidringhaus, Amy N <anneidringhaus@ncdot.gov>
Cc: Winkler, Niklaus C <ncwinkler@ncdot.gov>; Wheeler, Millard S <mswheeler1@ncdot.gov>; Ishak, Doumit Y <dishak@ncdot.gov>; Bunting, Clarence B <cbunting@ncdot.gov>; McFarland, Mical <mical.mcfarland@rolesville.nc.gov>; Gruber, Meredith a <meredith.gruber@rolesville.nc.gov>; Carter, James E <james.carter@rolesville.nc.gov>; Jessica McClure <JMCClure@rameykemp.com>; Walker, Braden M <bmwalker1@ncdot.gov>
Subject: Re: [External] 5109 Mitchell Mill Road - TIA Scoping

Michael,

I'm okay with the driveways on Jonesville operating as full access assuming that they have adequate sight distance. Given the required cross section on Mitchell Mill Road, we will only support the western most access being studied as a full movement, the other two driveway will need to be restricted to right-in/right-out.

Regards,

Sean Brennan, PE

Senior Assistant District Engineer
Division 5/District 1
Department of Transportation

919-733-3213 office
919-715-5778 fax
spbrennan@ncdot.gov

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Raleigh, NC 27699-1575



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From: Michael Karpinski <MKarpinski@rameykemp.com>

Sent: Wednesday, October 6, 2021 12:06 PM

To: Brennan, Sean P <spbrennan@ncdot.gov>; Neidringhaus, Amy N <anneidringhaus@ncdot.gov>

Cc: Winkler, Niklaus C <ncwinkler@ncdot.gov>; Wheeler, Millard S <mswheeler1@ncdot.gov>; Ishak, Doumit Y <dishak@ncdot.gov>; Bunting, Clarence B <cbunting@ncdot.gov>; McFarland, Mical <mical.mcfarland@rolesville.nc.gov>; Gruber, Meredith a <meredith.gruber@rolesville.nc.gov>; Carter, James E <james.carter@rolesville.nc.gov>; Jessica McClure <JMCClure@rameykemp.com>; Walker, Braden M <bmwalker1@ncdot.gov>

Subject: RE: [External] 5109 Mitchell Mill Road - TIA Scoping

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Hey Sean,

See below for answers to your questions:

- The developer would prefer full movement access for all of their proposed driveway connections.
- The Town's Community Transportation Plan shows the future cross section of Jonesville Road as a 2-lane roadway with a TWLTL and Mitchell Mill Road as a 4-lane median divided roadway. Based on my coordination with Town staff, with all the surrounding residential development coming in, road sizing and signalization on Mitchell Mill Road is something we will need to continue to evaluate and work closely with NCDOT. Kalas Falls (450+ homes) and Rolesville Crossing (formerly Hopper Communities, 300 homes) are being proposed near the

intersection Mitchell Mill Road and Rolesville Road. At a minimum, the Town is considering requiring ROW dedication and ultimate cross-section widening along this proposed development's frontage on Mitchell Mill Road and Jonesville Road.

Braden – any luck finding traffic count data at the US 401 Bypass / Jonesville Road intersection from the Bypass project?

Let me know if you have any questions. Thanks!

Michael Karpinski, PE
Traffic Engineering Project Manager

D 919 987 1300 | T 919 872 5115



From: Brennan, Sean P <spbrennan@ncdot.gov>

Sent: Friday, September 24, 2021 10:45 AM

To: Michael Karpinski <MKarpinski@rameykemp.com>; Neidringhaus, Amy N <anneidringhaus@ncdot.gov>

Cc: Winkler, Niklaus C <ncwinkler@ncdot.gov>; Wheeler, Millard S <mwheeler@ncdot.gov>; Ishak, Doumit Y

<dishak@ncdot.gov>; Bunting, Clarence B <cbunting@ncdot.gov>; McFarland, Mical

<mical.mcfarland@rolesville.nc.gov>; Gruber, Meredith a <meredith.gruber@rolesville.nc.gov>; Carter, James E

<james.carter@rolesville.nc.gov>; Jessica McClure <JMCclure@rameykemp.com>; Walker, Braden M

<bmwalker1@ncdot.gov>

Subject: Re: [External] 5109 Mitchell Mill Road - TIA Scoping

Michael,

I have the following questions:

- What type of access is being proposed at each access location.
- What are the ultimate cross sections for Mitchell Mill Rd and Jonesville Rd, and what will the town require in terms of ultimate section widening?

Braden,

Do we have any traffic count data available at the US 401 Bypass / Jonesville Road intersection from the Bypass project?

Regards,

Sean Brennan, PE

Senior Assistant District Engineer

Division 5/District 1

Department of Transportation

919-733-3213 office

919-715-5778 fax

spbrennan@ncdot.gov

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1575 Mail Service Center (Mailing Address)
Raleigh, NC 27699-1575



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From: Michael Karpinski <MKarpinski@rameykemp.com>
Sent: Tuesday, September 21, 2021 3:23 PM
To: Brennan, Sean P <spbrennan@ncdot.gov>; Neidringhaus, Amy N <anneidringhaus@ncdot.gov>
Cc: Winkler, Niklaus C <ncwinkler@ncdot.gov>; Wheeler, Millard S <mwheeler@ncdot.gov>; Ishak, Doumit Y <dishak@ncdot.gov>; Bunting, Clarence B <cbunting@ncdot.gov>; McFarland, Mical <mical.mcfarland@rolesville.nc.gov>; Gruber, Meredith a <meredith.gruber@rolesville.nc.gov>; Carter, James E <james.carter@rolesville.nc.gov>; Jessica McClure <JMCclure@rameykemp.com>
Subject: [External] 5109 Mitchell Mill Road - TIA Scoping

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Good afternoon, Sean / Amy –

We are working with the Town of Rolesville on a TIA for the proposed development located at 5109 Mitchell Mill Road in Rolesville, NC. The proposed development is separated into two (2) tracts on both sides of Jonesville Road, north of Mitchell Mill Road. I have attached a preliminary site plan for reference. Let me know if you would like to have a meeting to discuss the scope of the TIA, if you need this information in the NCDOT TIA scoping checklist, and/or if you have any questions/comments on the scope. We will submit a formal MOU once the TIA is underway for confirmation of all scoping assumptions/methodology.

Existing Traffic Conditions:

Study Intersections

- i. Mitchell Mill Road and Jonesville Road / Peebles Road (unsignalized)
- ii. US 401 Bypass and Jonesville Road (unsignalized)
- iii. US 401 Bypass and Eastern U-Turn Location (unsignalized)
- iv. Mitchell Mill Road and Site Driveways (3 in total – all on west side)
- v. Jonesville Road and Site Driveways (2 on west side, 3 on east side – only 1 will be aligned on both sides)

Traffic Counts

- Does NCDOT have any traffic count data available at the US 401 Bypass / Jonesville Road intersection from the Bypass project? I was not able to find count data from NCDOT's website at the existing study intersections noted above.
- Attached are turning movement counts at the intersection of US 401 Business (Louisburg Road) and Jonesville Road / Hampton Lakes Drive from March of 2019 (please note, NOT a study intersection for this TIA); if no other count data is available, we could collect new turning movement counts at this intersection to determine an

appropriate adjustment factor to account for COVID-19 to apply to new traffic counts at the existing study intersections.

Trip Generation:

- West Side:
 - 8.27 acres of non-residential use; assumed 57,890 sq. ft. of general retail (ITE LUC 820)
 - Exact land uses & intensity unknown at this time; therefore, we are assuming 7,000 square feet of general retail space per acre
 - $8.27 \text{ acres} * 7,000 \text{ sq. ft. / acre} = 57,890 \text{ sq. ft. of general retail (ITE LUC 820)}$
 - 69 Single Family Homes (ITE LUC 210)
 - 129 Townhomes (ITE LUC 220)
- East Side:
 - 195 Single Family Homes (ITE LUC 210)
- **Total Unadjusted Trip Generation: 7,500 ADT; 434 AM (174 Entering, 260 Exiting); 695 PM (384 Entering, 311 Exiting)**
 - Calculated utilized 264 Single Family Homes, 129 Townhomes, and 57,890 sq ft. of general retail.

Future Traffic Conditions:

- Build-out year: 2028
- Growth Rate: 2% (*consistent with previous studies in the area*)
- Adjacent Developments: (*Please advise if there are any we are missing*)
 - Cobblestone Crossing Mixed-Use
 - Kalas Falls
 - East Young Street PUD (The Point)
 - Rolesville Crossing (Formerly Hopper Communities)
 - Louisbury Road Assemblage
- Future Roadway Improvements: (*Please advise if there are any – nothing on STIP map*)

Let me know if you have any questions, thanks!

Michael

Michael Karpinski, PE
Traffic Engineering Project Manager

D 919 987 1300 | T 919 872 5115



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RAMEY KEMP ASSOCIATES

TOGETHER WE ARE LIMITLESS



T 919 872 5115

5808 Faringdon Pl,
Raleigh, NC 27609

December 13, 2021

Meredith Gruber, PLA, AICP
Town of Rolesville - Planning Director
PO Box 250
502 Southtown Circle
Rolesville, NC 27571
meredith.gruber@rolesville.nc.gov
[Sent via Email]

Reference: 5109 Mitchell Mill Road
Rolesville, North Carolina

Subject: Memorandum of Understanding for TIA Report

Dear Ms. Gruber:

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 5109 Mitchell Mill Road development in Rolesville, North Carolina. The proposed development is separated into two (2) tracts on both sides of Jonesville Road, north of Mitchell Mill Road. The eastern tract is expected to consist of 195 single-family homes and the western tract of development is expected to consist of 69 single-family homes, 129 townhomes, and 8.27 acres of commercial development. This MOU reflects the assumptions outlined during initial coordination between Ramey Kemp Associates (RKA), the Town of Rolesville (Town), and the North Carolina Department of Transportation (NCDOT). Refer to the attached site location map. Site access to the proposed development is expected to be provided via four (4) full-movement driveway connections along Jonesville Road, two (2) right-in/right-out (RIRO) driveway connections along Mitchell Mill Road, and one (1) full-movement driveway connection along Mitchell Mill Road. One of the site driveway connections along Jonesville Road will be aligned to provide access to both the eastern and western tracts of the proposed development.

The proposed development, anticipated to be completed in 2028, is expected to consist of 264 single-family homes, 129 townhomes, and 8.27 acres of commercial development. It should be noted that the commercial development land use(s) and intensity are not known at this time. Therefore, 7,000 square feet (sq. ft.) of general retail space per acre of land [approximately 57,890 sq. ft.] was assumed for the commercial development in this study. The proposed development is assumed to consist of the following land uses:

- 264 single-family homes
- 129 townhomes
- 57,890 sq. ft. of general retail



Study Area

Based on a coordination with NCDOT and Town staff, 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 Site Driveways (4)
- Mitchell Mill Road and Site Driveways (3)

Existing Traffic Volumes

Existing peak hour traffic volumes will be determined based on traffic counts conducted at the study intersections below, in November 2021 during a typical weekday AM (7:00 AM – 9:00 AM) and PM (4:00 PM – 6:00 PM) peak periods, while schools are 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

Background Traffic Volumes

Based on coordination with NCDOT and the Town, background traffic volumes will be determined by projecting 2021 existing traffic volumes to the year 2028 using a 2% annual growth rate. Additionally, it was determined that the following adjacent developments are to be included in this study:

- Cobblestone Crossing Mixed-Use
- Young Street PUD
- Wheeler Tract
- Louisbury Road Assemblage
- Kalas / Watkins Family Property

Future Roadway Improvements

Based on coordination with the Town and NCDOT, it was determined that 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*, 10th 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)	264 DU	2,540	48	144	192	163	95	258
Multi-Family Home (Low-Rise) (220)	129 DU	934	14	47	61	47	27	74
Shopping Center (820)	57.89* KSF	4,146	112	69	181	174	189	363
Total Trips		7,620	174	260	434	384	311	695
<i>Internal Capture (1% AM, 16% PM)**</i>			-2	-2	-4	-40	-41	-81
Total External Trips			172	258	430	344	270	614
<i>Pass-By Trips: Shopping Center (34% PM)</i>			-	-	-	-52	-52	-104
Total Primary Trips			172	258	430	292	218	510

*Since the commercial development is unknown at this time, 7,000 SF of general retail space per acre of land [8.27 acres in total] was assumed for this land use.

**Utilizing methodology contained in the NCHRP Report 684.

It is estimated that the proposed development will generate approximately 7,620 site trips on the roadway network during a typical 24-hour weekday period. Of the daily traffic volume, it is anticipated that 434 trips (174 entering and 260 exiting) will occur during the weekday AM peak hour and 695 trips (384 entering and 311 exiting) will occur during the weekday PM peak hour.

Internal capture of trips between the retail and residential land uses was considered in this study. Internal capture is the consideration for trips that will be made within the site between different land uses, so the vehicle technically never leaves the internal site but can still be considered as a trip to that specific land use. However, since the site is split into two (2) tracts on either side of Jonesville Road, internal capture was only considered for the land uses in the western tract. Based on NCHRP Report 684 methodology, weekday AM and PM peak hour internal capture rates of 1% and 16%, respectively, were applied to the trips generated from the western tract only. The internal capture reductions are expected to account for approximately 4 trips (2 entering and 2 exiting) during the weekday AM peak hour and 81 trips (40 entering and 41 exiting) during the weekday PM peak hour. Refer to the attached NCHRP internal capture reports for reference.

Pass-by trips will also be taken into consideration in this study. Pass-by trips are made by the traffic already using the adjacent roadway, entering the site as an intermediate stop on their way to another destination. Pass-by percentages are applied to site trips after adjustments for internal capture. Pass-by trips are expected to account for approximately 104 trips (52 entering and 52 exiting) during the weekday PM peak hour. It should be noted that the pass-by trips were balanced, as it is likely that these trips would enter and exit in the same hour.

The total primary trips are the calculated site trips after the reduction for internal capture and pass-by trips. Primary site traffic is expected to generate approximately 430 trips (172 entering and 258 exiting) during the weekday AM peak hour, and 510 trips (292 entering and 218 exiting) 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

- 40% to/from the west via US 401 Bypass
- 20 % to/from the east via US 401 Bypass
- 10% to/from the south via Peebles Road
- 25% to/from the west via Mitchell Mill Road
- 5% to/from the east via Mitchell Mill Road

Commercial

- 25% 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
- 40% to/from the west via Mitchell Mill Road
- 10% to/from the east via Mitchell Mill Road

Refer to the attached site trip distribution figures.

Analysis Scenarios

All capacity analyses will be performed utilizing Synchro (Version 10.3). All study intersections will be analyzed during the weekday AM and PM peak hours under the following proposed traffic scenarios:

- 2021 Existing Traffic Conditions
- 2028 No-Build Traffic Conditions
- 2028 Build Traffic Conditions

Report

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

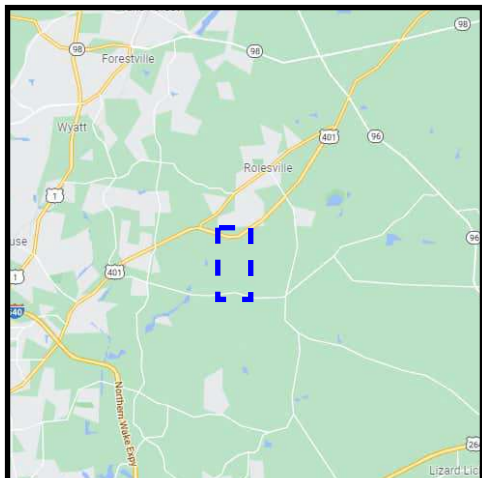
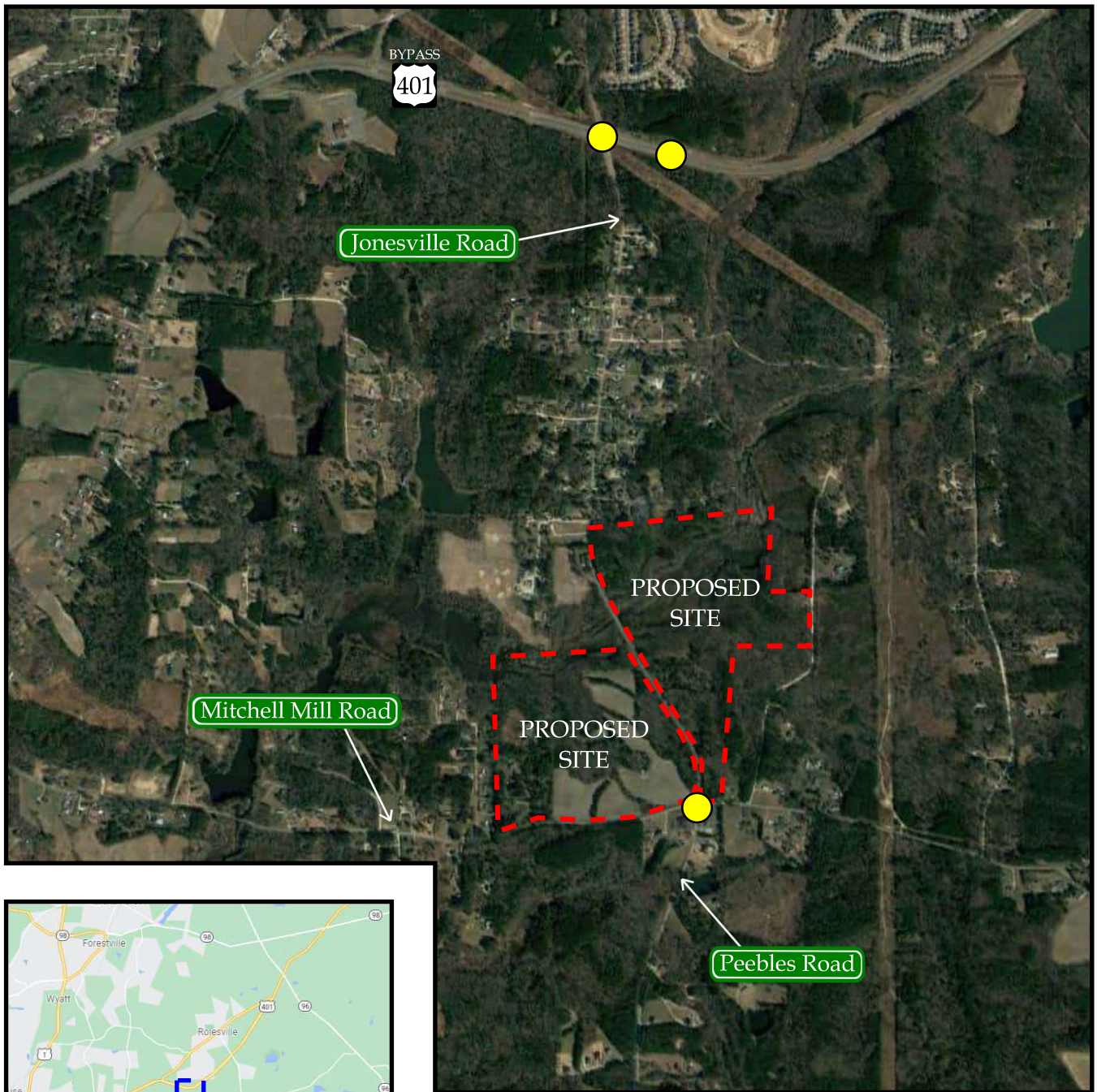
If you find this memorandum of understanding acceptable, please let me know so that we may include it in the TIA report. If you have any questions or concerns, please do not hesitate to contact me.

Sincerely,
Ramey Kemp Associates,

A handwritten signature in blue ink, reading "Michael Karpinski", enclosed within a thin black rectangular border.

Michael Karpinski, P.E.
Traffic Engineering Project Manager

Attachments: Site Location Map
 Site Plan
 2021 Existing Traffic Volumes Figure
 NCHRP 684 Internal Capture Reports
 Proposed Site Trip Distribution Figures



LEGEND

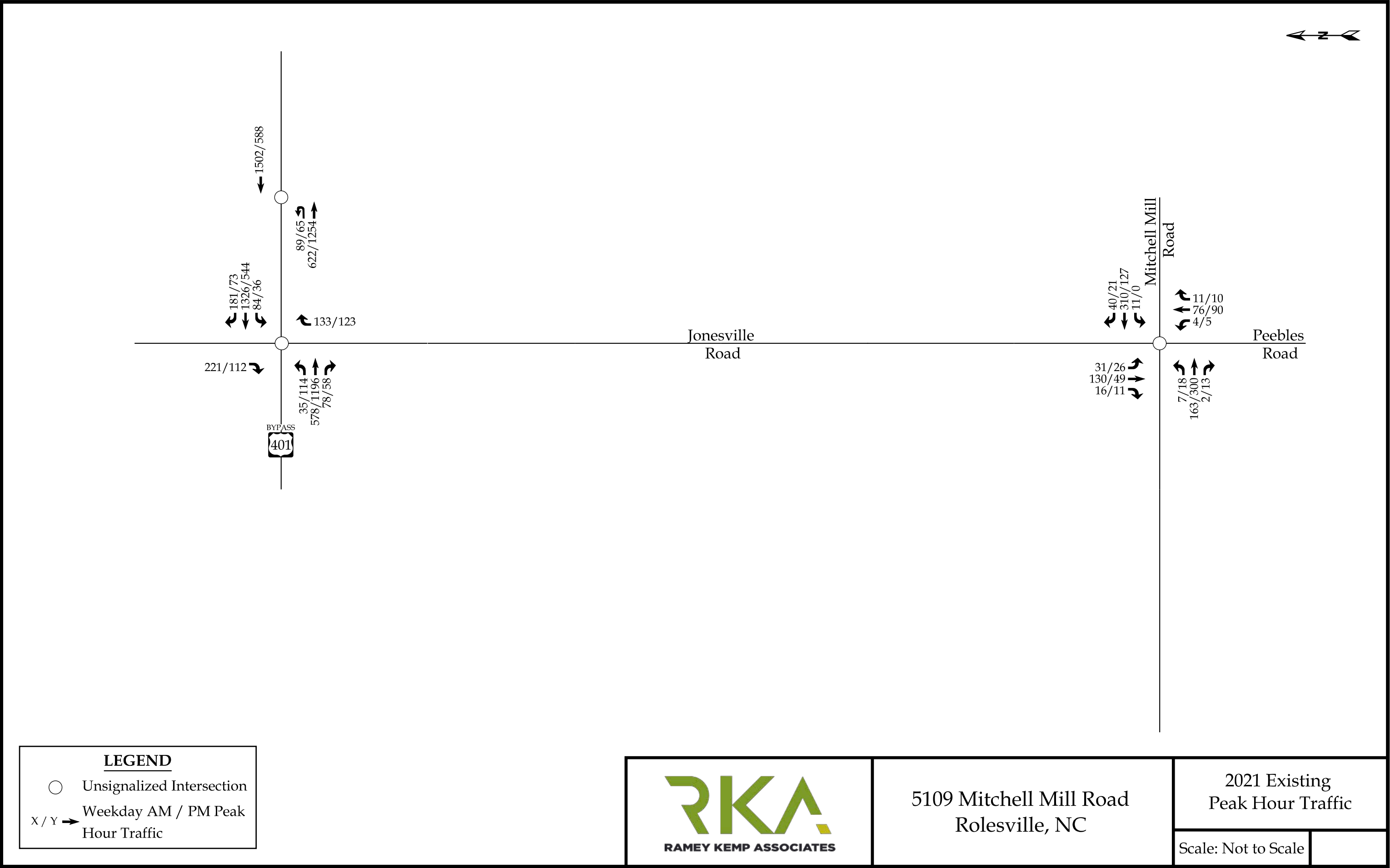
- Proposed Site Location
- Study Intersection
- Study Area



5109 Mitchell Mill Road
Rolesville, NC

Site Location Map

Scale: Not to Scale



NCHRP 684 Internal Trip Capture Estimation Tool					
Project Name:	5109 Mitchell Mill Road			Organization:	RKA
Project Location:	Rolesville, NC			Performed By:	TF
Scenario Description:	Full-Build			Date:	12/9/2021
Analysis Year:	2028			Checked By:	
Analysis Period:	AM Street Peak Hour			Date:	

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)						
Land Use	Development Data (For Information Only)			Estimated Vehicle-Trips ³		
	ITE LUCs ¹	Quantity	Units	Total	Entering	Exiting
Office						
Retail	820	58	KSF		112	69
Restaurant						
Cinema/Entertainment						
Residential	210,220	69, 129	DU		26	84
Hotel						
All Other Land Uses ²						
				0	138	153

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

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

Table 4-A: Internal Person-Trip Origin-Destination Matrix*						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		0	0	1	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	1	0	0		0
Hotel	0	0	0	0	0	

Table 5-A: Computations Summary			
	Total	Entering	Exiting
All Person-Trips	320	152	168
Internal Capture Percentage	1%	1%	1%
External Vehicle-Trips ⁵	287	136	151
External Transit-Trips ⁶	0	0	0
External Non-Motorized Trips ⁶	0	0	0

Table 6-A: Internal Trip Capture Percentages by Land Use		
Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	1%	1%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	3%	1%
Hotel	N/A	N/A

¹ Land Use Codes (LUCs) from <i>Trip Generation Manual</i> , published by the Institute of Transportation Engineers.
² Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator.
³ Enter trips assuming no transit or non-motorized trips (as assumed in ITE <i>Trip Generation Manual</i>).
⁴ Enter vehicle occupancy assumed in Table 1-A vehicle trips. If vehicle occupancy changes for proposed mixed-use project, manual adjustments must be made to Tables 5-A, 9-A (O and D). Enter transit, non-motorized percentages that will result with proposed mixed-use project complete.
⁵ Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A.
⁶ Person-Trips
*Indicates computation that has been rounded to the nearest whole number.
Estimation Tool Developed by the Texas A&M Transportation Institute - Version 2013.1

Project Name:	5109 Mitchell Mill Road
Analysis Period:	AM Street Peak Hour

Table 7-A: Conversion of Vehicle-Trip Ends to Person-Trip Ends						
Land Use	Table 7-A (D): Entering Trips			Table 7-A (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.10	0	0	1.10	0	0
Retail	1.10	112	123	1.10	69	76
Restaurant	1.10	0	0	1.10	0	0
Cinema/Entertainment	1.10	0	0	1.10	0	0
Residential	1.10	26	29	1.10	84	92
Hotel	1.10	0	0	1.10	0	0

Table 8-A (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	22		10	0	11	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	2	1	18	0		0
Hotel	0	0	0	0	0	

Table 8-A (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		39	0	0	0	0
Retail	0		0	0	1	0
Restaurant	0	10		0	1	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	21	0	0		0
Hotel	0	5	0	0	0	

Table 9-A (D): Internal and External Trips Summary (Entering Trips)						
Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles ¹	Transit ²	Non-Motorized ²
Office	0	0	0	0	0	0
Retail	1	122	123	111	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	1	28	29	25	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses ³	0	0	0	0	0	0

Table 9-A (O): Internal and External Trips Summary (Exiting Trips)						
Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles ¹	Transit ²	Non-Motorized ²
Office	0	0	0	0	0	0
Retail	1	75	76	68	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	1	91	92	83	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses ³	0	0	0	0	0	0

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

²Person-Trips

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

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

NCHRP 684 Internal Trip Capture Estimation Tool					
Project Name:	5109 Mitchell Mill Road			Organization:	RKA
Project Location:	Rolesville, NC			Performed By:	TF
Scenario Description:	Full-Build			Date:	12/9/2021
Analysis Year:	2028			Checked By:	
Analysis Period:	PM Street Peak Hour			Date:	

Table 1-P: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)						
Land Use	Development Data (For Information Only)			Estimated Vehicle-Trips ³		
	ITE LUCs ¹	Quantity	Units	Total	Entering	Exiting
Office						
Retail	820	58	KSF		174	189
Restaurant						
Cinema/Entertainment						
Residential	210,220	69, 129	DU		89	52
Hotel						
All Other Land Uses ²						
				0	263	241

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

Table 3-P: Average Land Use Interchange Distances (Feet Walking Distance)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail					1900	
Restaurant						
Cinema/Entertainment						
Residential		1900				
Hotel						

Table 4-P: Internal Person-Trip Origin-Destination Matrix*						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		0	0	36	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	7	0	0		0
Hotel	0	0	0	0	0	

Table 5-P: Computations Summary			
	Total	Entering	Exiting
All Person-Trips	554	289	265
Internal Capture Percentage	16%	15%	16%
External Vehicle-Trips ⁵	424	223	201
External Transit-Trips ⁶	0	0	0
External Non-Motorized Trips ⁶	0	0	0

Table 6-P: Internal Trip Capture Percentages by Land Use		
Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	4%	17%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	37%	12%
Hotel	N/A	N/A

¹ Land Use Codes (LUCs) from <i>Trip Generation Manual</i> , published by the Institute of Transportation Engineers.
² Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator.
³ Enter trips assuming no transit or non-motorized trips (as assumed in ITE <i>Trip Generation Manual</i>).
⁴ Enter vehicle occupancy assumed in Table 1-P vehicle trips. If vehicle occupancy changes for proposed mixed-use project, manual adjustments must be made
⁵ Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P.
⁶ Person-Trips
*Indicates computation that has been rounded to the nearest whole number.
Estimation Tool Developed by the Texas A&M Transportation Institute - Version 2013.1

Project Name:	5109 Mitchell Mill Road
Analysis Period:	PM Street Peak Hour

Table 7-P: Conversion of Vehicle-Trip Ends to Person-Trip Ends						
Land Use	Table 7-P (D): Entering Trips			Table 7-P (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.10	0	0	1.10	0	0
Retail	1.10	174	191	1.10	189	208
Restaurant	1.10	0	0	1.10	0	0
Cinema/Entertainment	1.10	0	0	1.10	0	0
Residential	1.10	89	98	1.10	52	57
Hotel	1.10	0	0	1.10	0	0

Table 8-P (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	4		60	8	36	10
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	2	9	12	0		2
Hotel	0	0	0	0	0	

Table 8-P (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		15	0	0	4	0
Retail	0		0	0	45	0
Restaurant	0	96		0	16	0
Cinema/Entertainment	0	8	0		4	0
Residential	0	7	0	0		0
Hotel	0	4	0	0	0	

Table 9-P (D): Internal and External Trips Summary (Entering Trips)						
Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles ¹	Transit ²	Non-Motorized ²
Office	0	0	0	0	0	0
Retail	7	184	191	167	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	36	62	98	56	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses ³	0	0	0	0	0	0

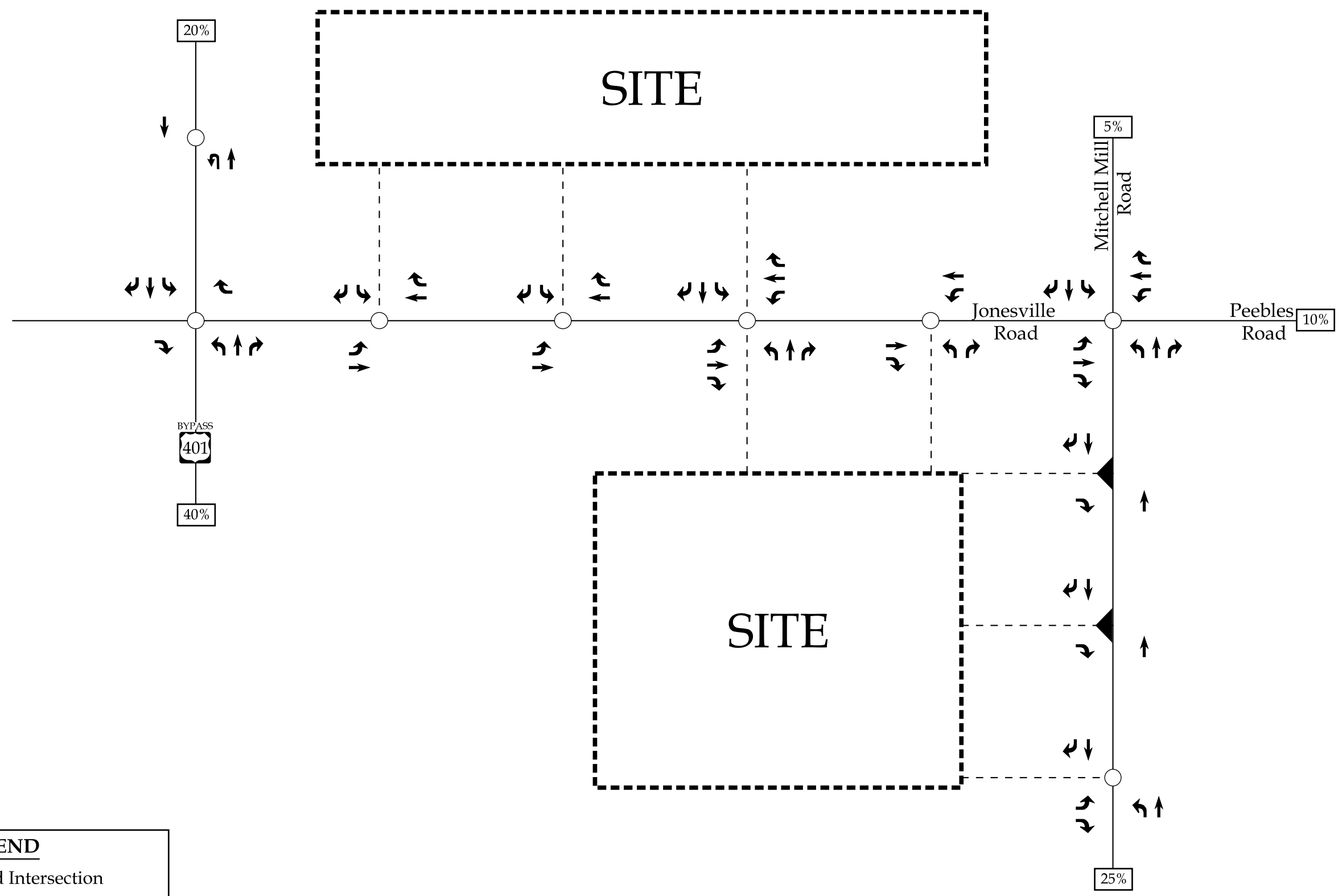
Table 9-P (O): Internal and External Trips Summary (Exiting Trips)						
Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles ¹	Transit ²	Non-Motorized ²
Office	0	0	0	0	0	0
Retail	36	172	208	156	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	7	50	57	45	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses ³	0	0	0	0	0	0

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

²Person-Trips

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

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



LEGEND

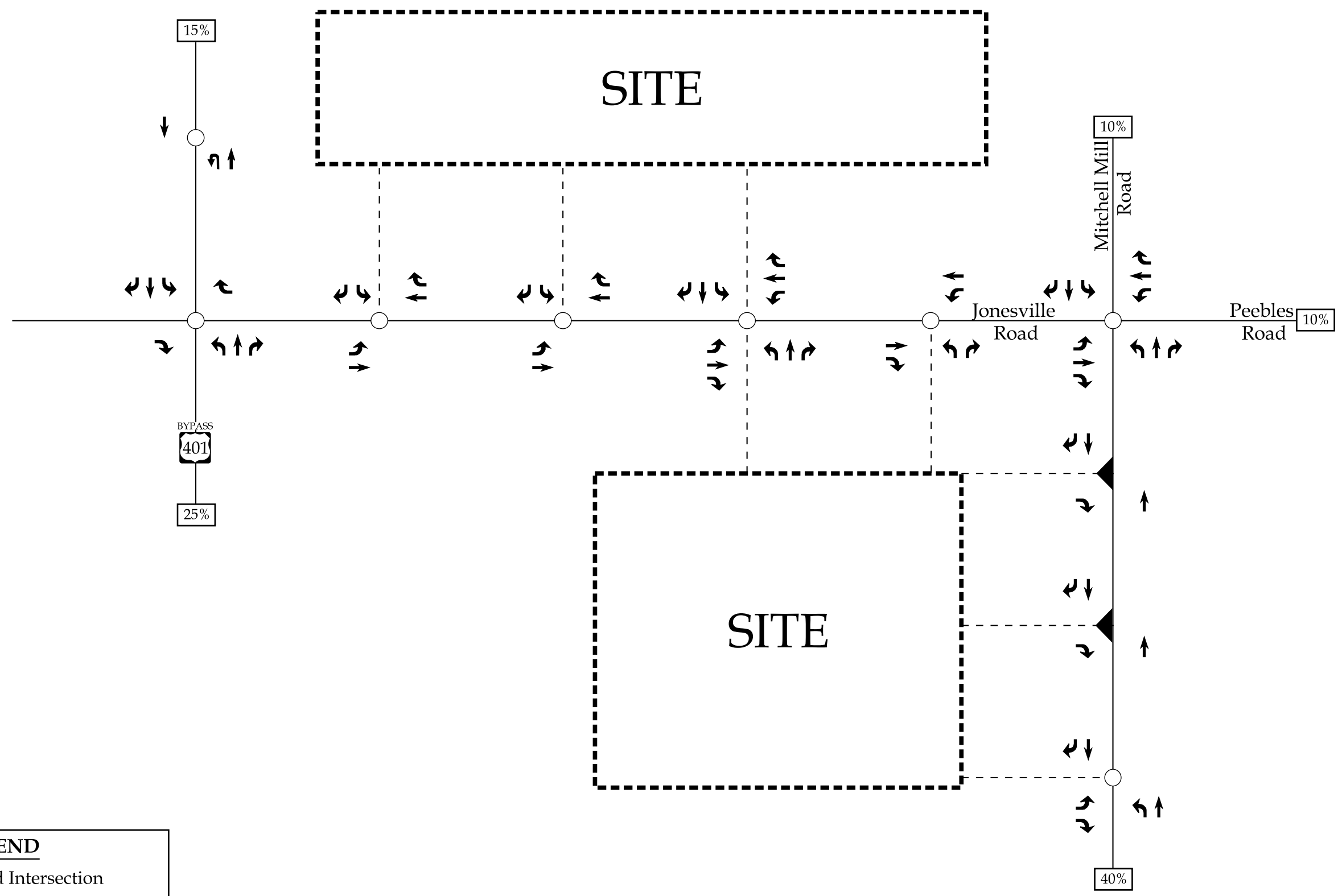
- Unsignalized Intersection
- ▲ Right-In/Right-Out Intersection
- x% → Entering Trip Distribution
- (Y%) → Exiting Trip Distribution
- XX% Regional Trip Distribution



5109 Mitchell Mill Road
Rolesville, NC

Proposed Residential
Site Trip Distribution

Scale: Not to Scale



LEGEND

- Unsignalized Intersection
- ▲ Right-In/Right-Out Intersection
- x% ➡ Entering Trip Distribution
- (Y%) ➡ Exiting Trip Distribution
- XX% Regional Trip Distribution



5109 Mitchell Mill Road
Rolesville, NC

Proposed
Commercial Site
Trip Distribution

Scale: Not to Scale

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

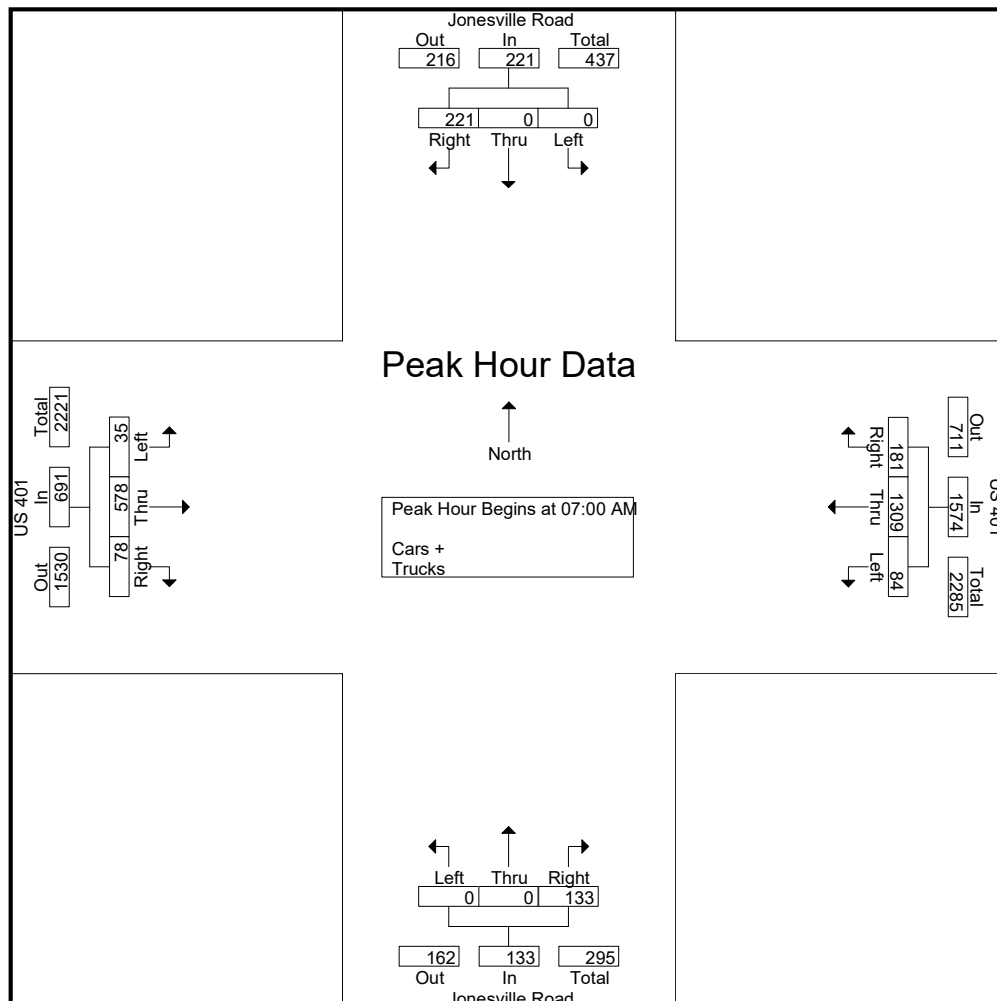
	Jonesville Road Southbound				US 401 Westbound				Jonesville Road Northbound				US 401 Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
07:00 AM	63	0	0	63	24	380	21	425	23	0	0	23	18	182	3	203	714
07:15 AM	42	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

	Jonesville Road Southbound				US 401 Westbound				Jonesville Road Northbound				US 401 Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. 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

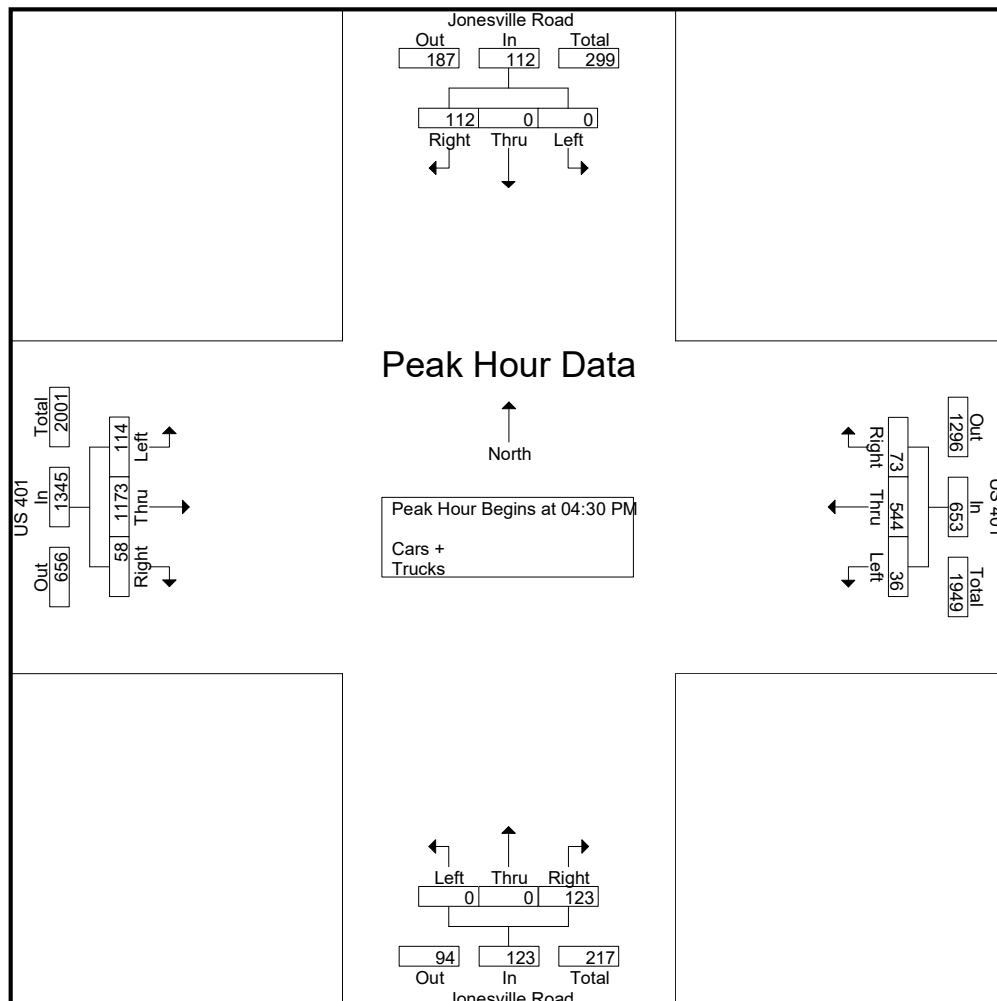
	Jonesville Road Southbound				US 401 Westbound				Jonesville Road Northbound				US 401 Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
04:00 PM	47	0	0	47	13	124	6	143	21	0	0	21	37	217	22	276	487
04:15 PM	34	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

	Jonesville Road Southbound				US 401 Westbound				Jonesville Road Northbound				US 401 Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. 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

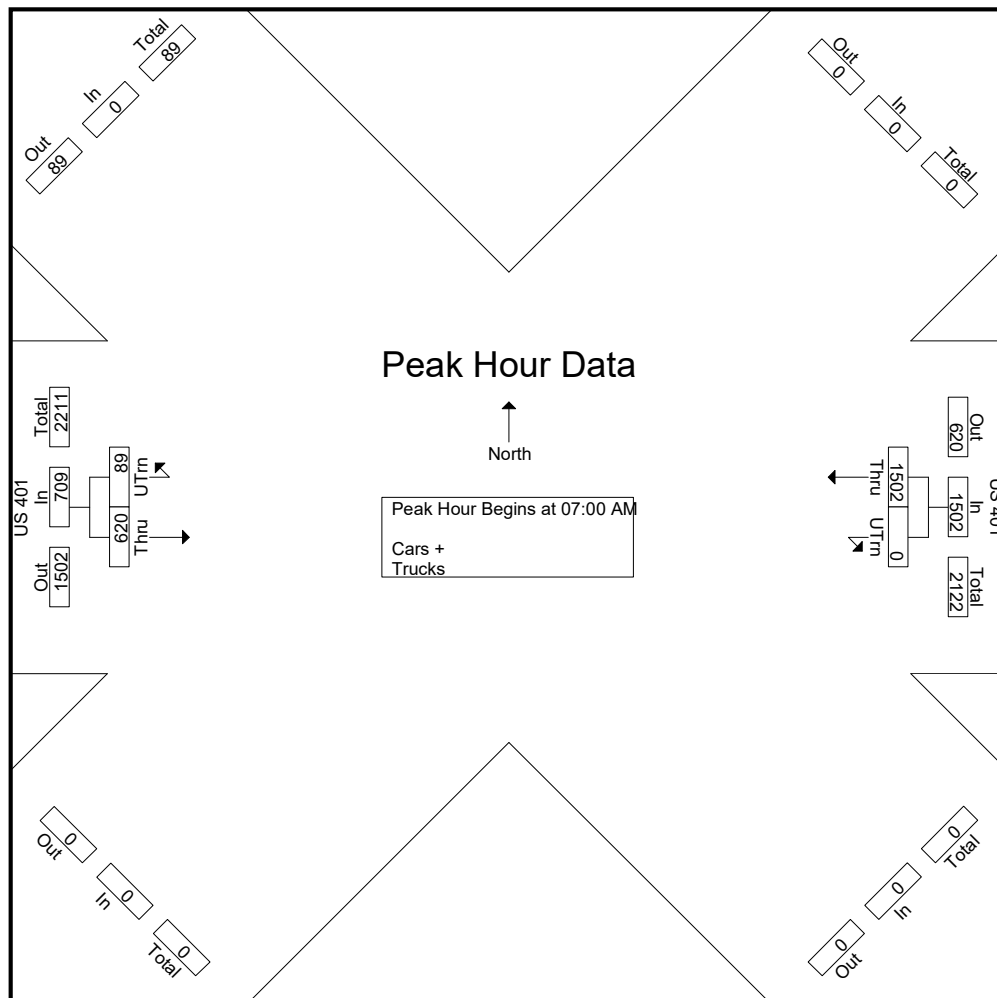
Start Time	US 401 Westbound			US 401 Eastbound			Int. Total
	Thru	UTrn	App. Total	Thru	UTrn	App. Total	
07:00 AM	421	0	421	198	12	210	631
07:15 AM	410	0	410	136	24	160	570
07:30 AM	392	0	392	149	36	185	577
07:45 AM	279	0	279	137	17	154	433
Total	1502	0	1502	620	89	709	2211
08:00 AM	253	0	253	130	20	150	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

	US 401 Westbound			US 401 Eastbound			
Start Time	Thru	UTrn	App. Total	Thru	UTrn	App. Total	Int. 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

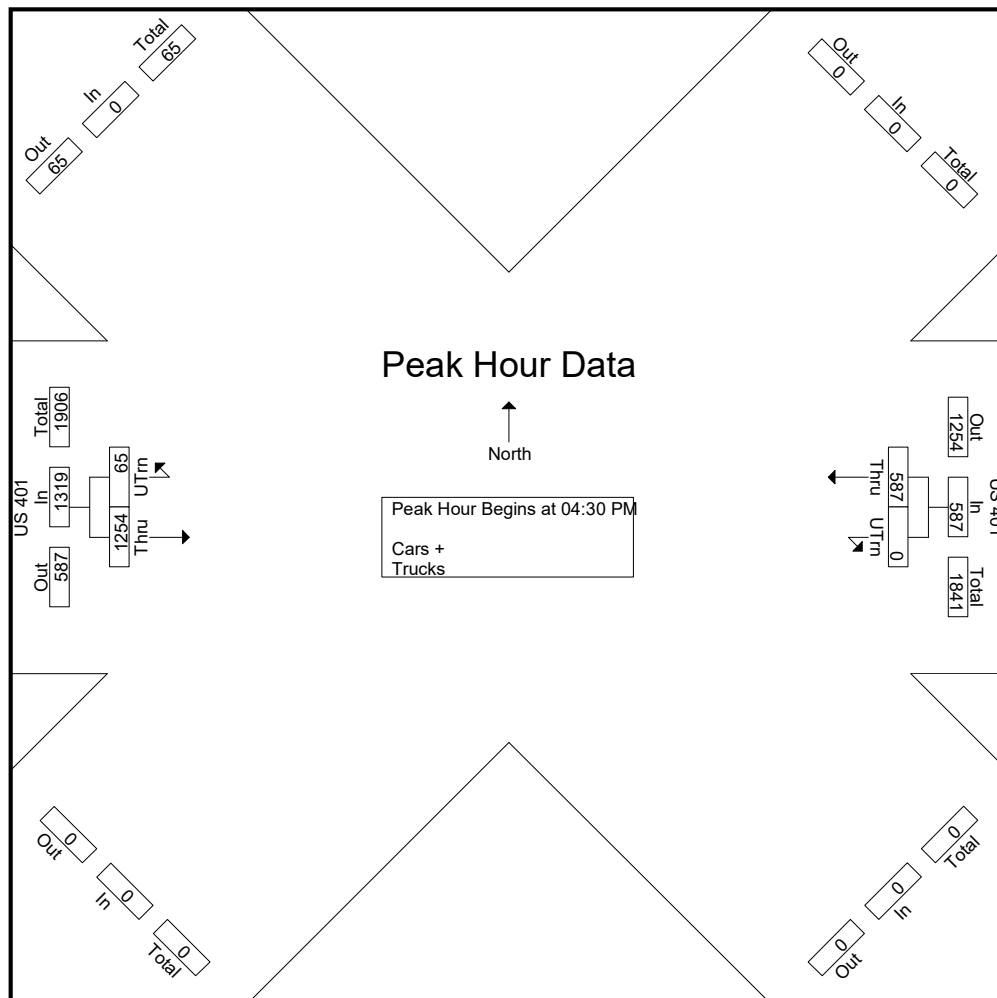
Start Time	US 401 Westbound			US 401 Eastbound			Int. Total
	Thru	UTrn	App. Total	Thru	UTrn	App. Total	
04:00 PM	130	0	130	240	12	252	382
04:15 PM	128	0	128	237	15	252	380
04:30 PM	129	0	129	311	19	330	459
04:45 PM	149	0	149	317	19	336	485
Total	536	0	536	1105	65	1170	1706
05:00 PM	149	0	149	342	8	350	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

	US 401 Westbound			US 401 Eastbound			
Start Time	Thru	UTrn	App. Total	Thru	UTrn	App. Total	Int. 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

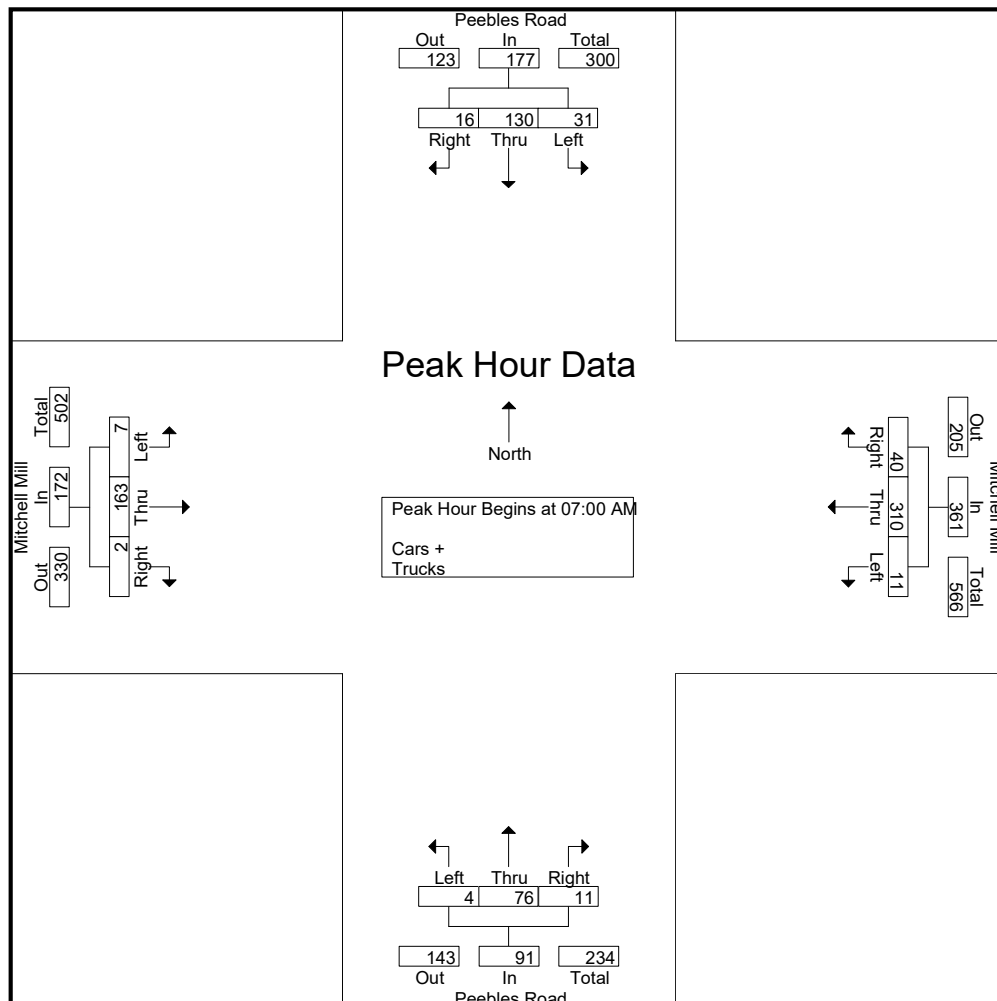
	Peebles Road Southbound				Mitchell Mill Westbound				Peebles Road Northbound				Mitchell Mill Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
07:00 AM	4	17	13	34	8	73	5	86	6	11	3	20	0	74	1	75	215
07:15 AM	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

	Peebles Road Southbound				Mitchell Mill Westbound				Peebles Road Northbound				Mitchell Mill Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. 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

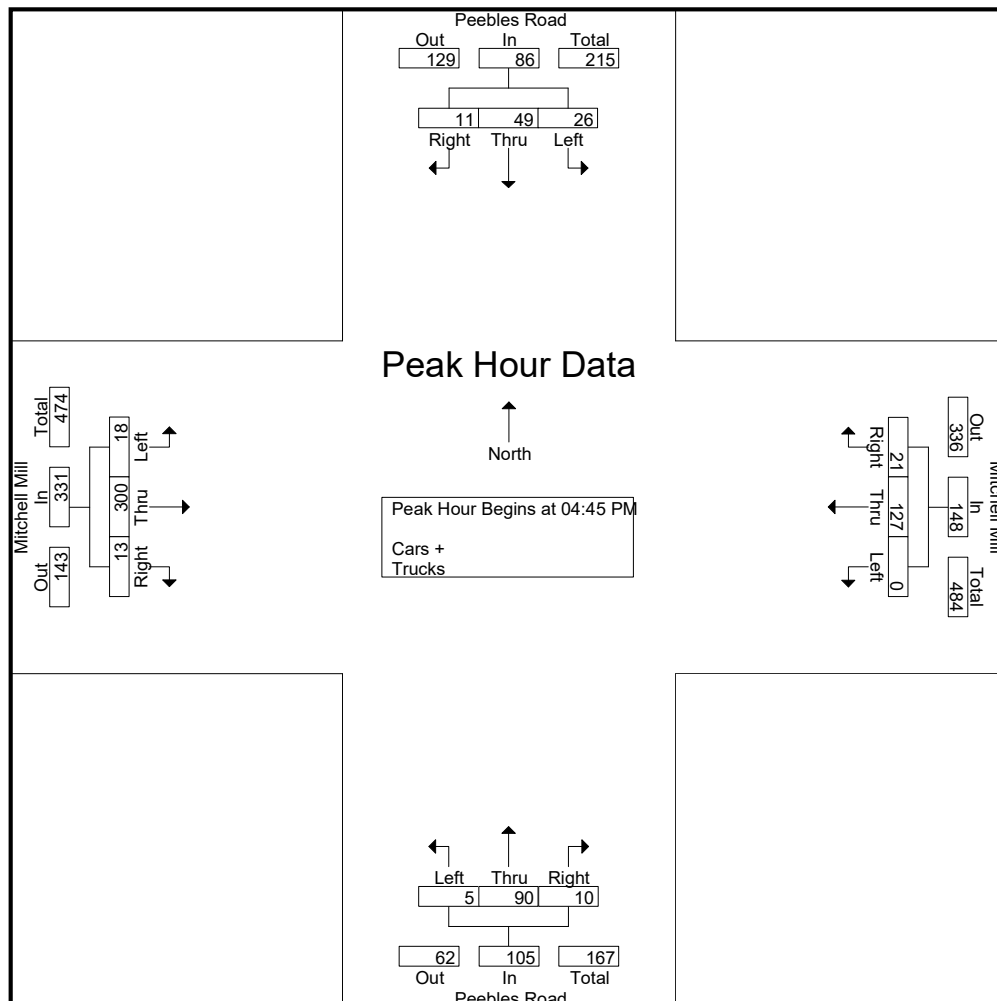
	Peebles Road Southbound				Mitchell Mill Westbound				Peebles Road Northbound				Mitchell Mill Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
04:00 PM	7	11	13	31	6	25	1	32	1	14	1	16	2	44	6	52	131
04:15 PM	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

	Peebles Road Southbound				Mitchell Mill Westbound				Peebles Road Northbound				Mitchell Mill Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. 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



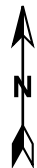
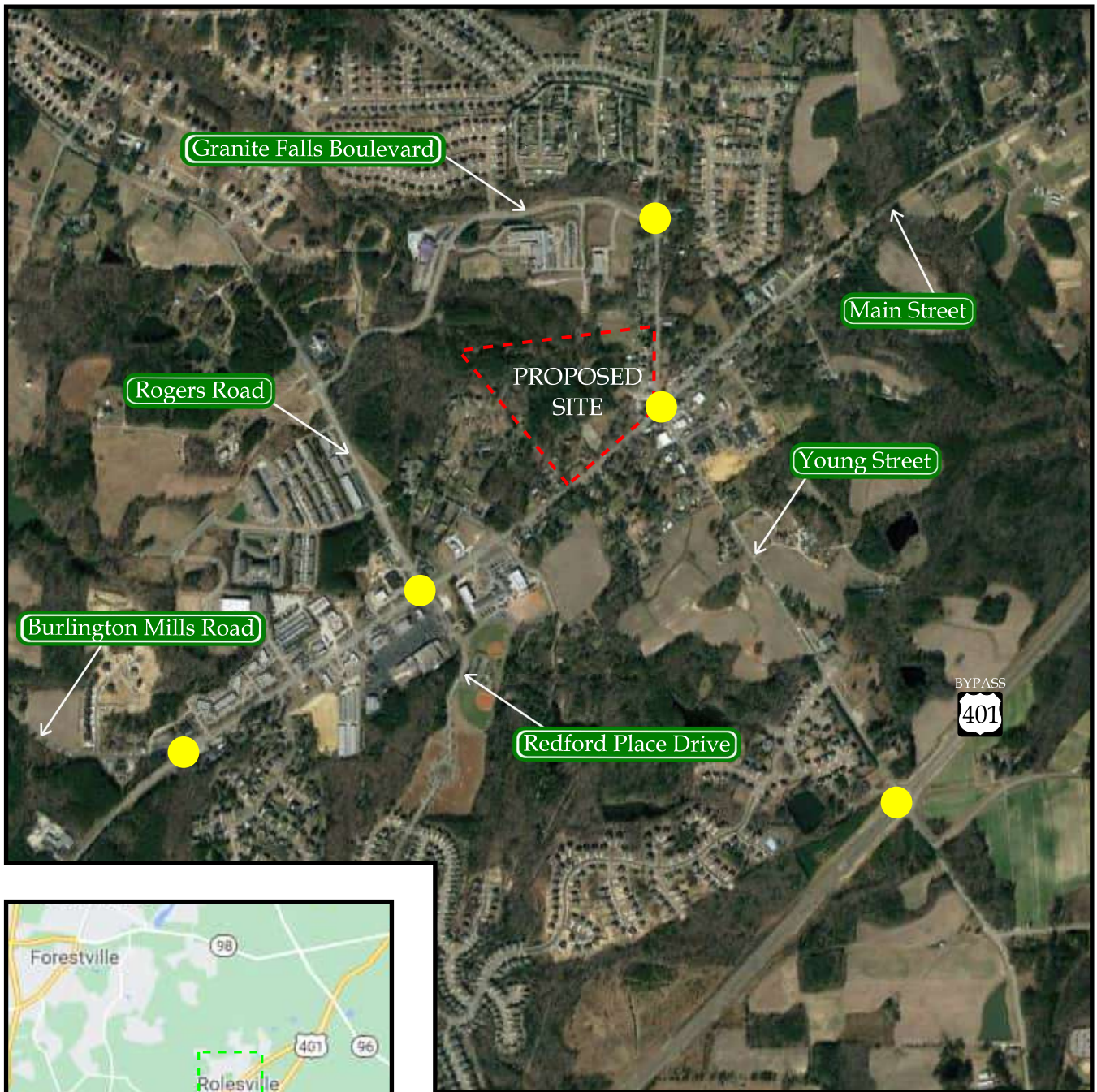
3-15-2021

MARCH 2021

RKA Project No. 20498

Prepared By: TF

Reviewed By: MK



LEGEND

- Proposed Site Location
- Study Intersection
- Study Area

Moving forward.



RAMEY KEMP ASSOCIATES

Cobblestone Crossing
Mixed-Use
Rolesville, NC

Site Location Map

Scale: Not to Scale

Figure 1

LEGEND



Unsignalized Intersection

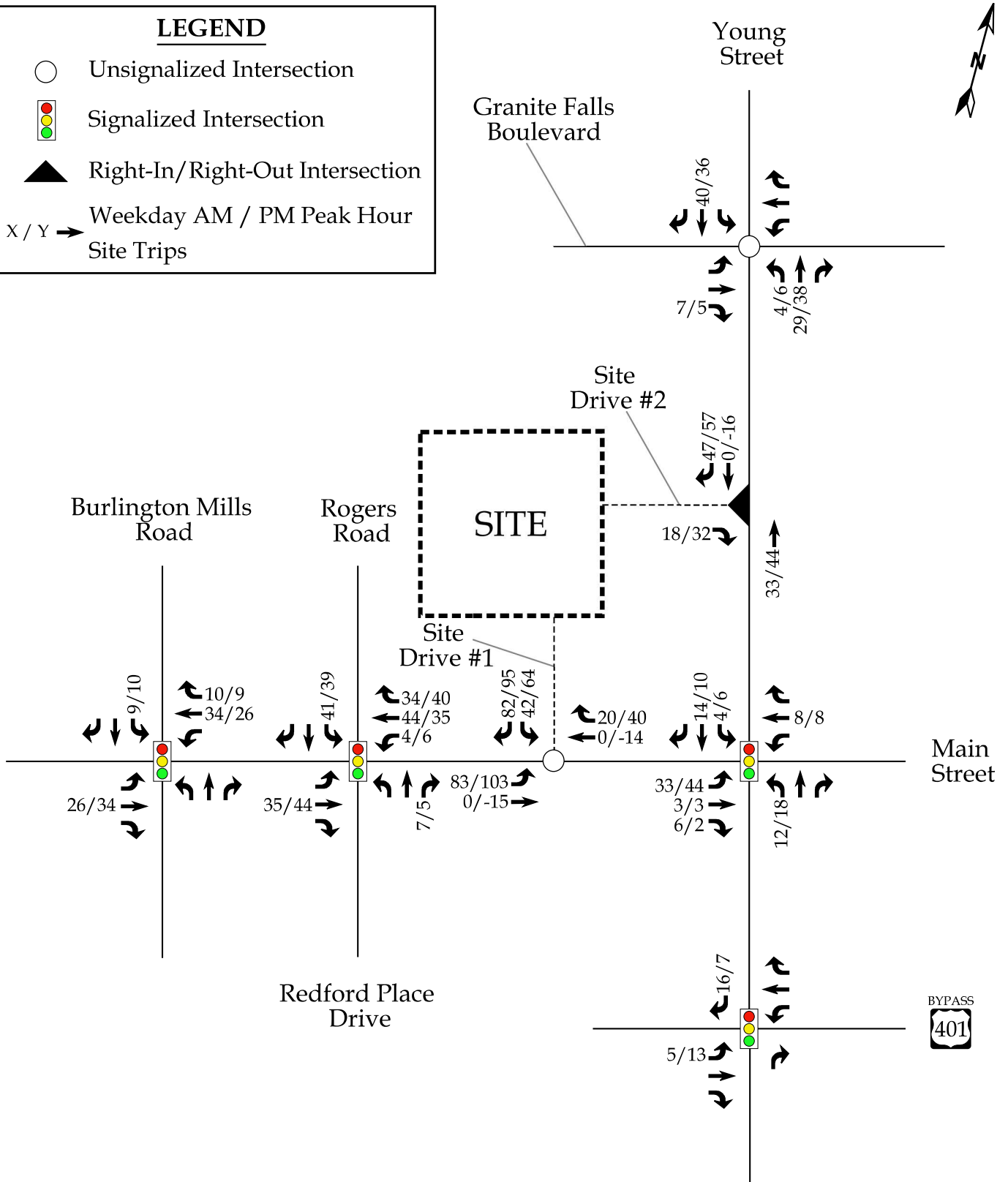


Signalized Intersection



Right-In/Right-Out Intersection

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



Moving forward.



RAMEY KEMP ASSOCIATES

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

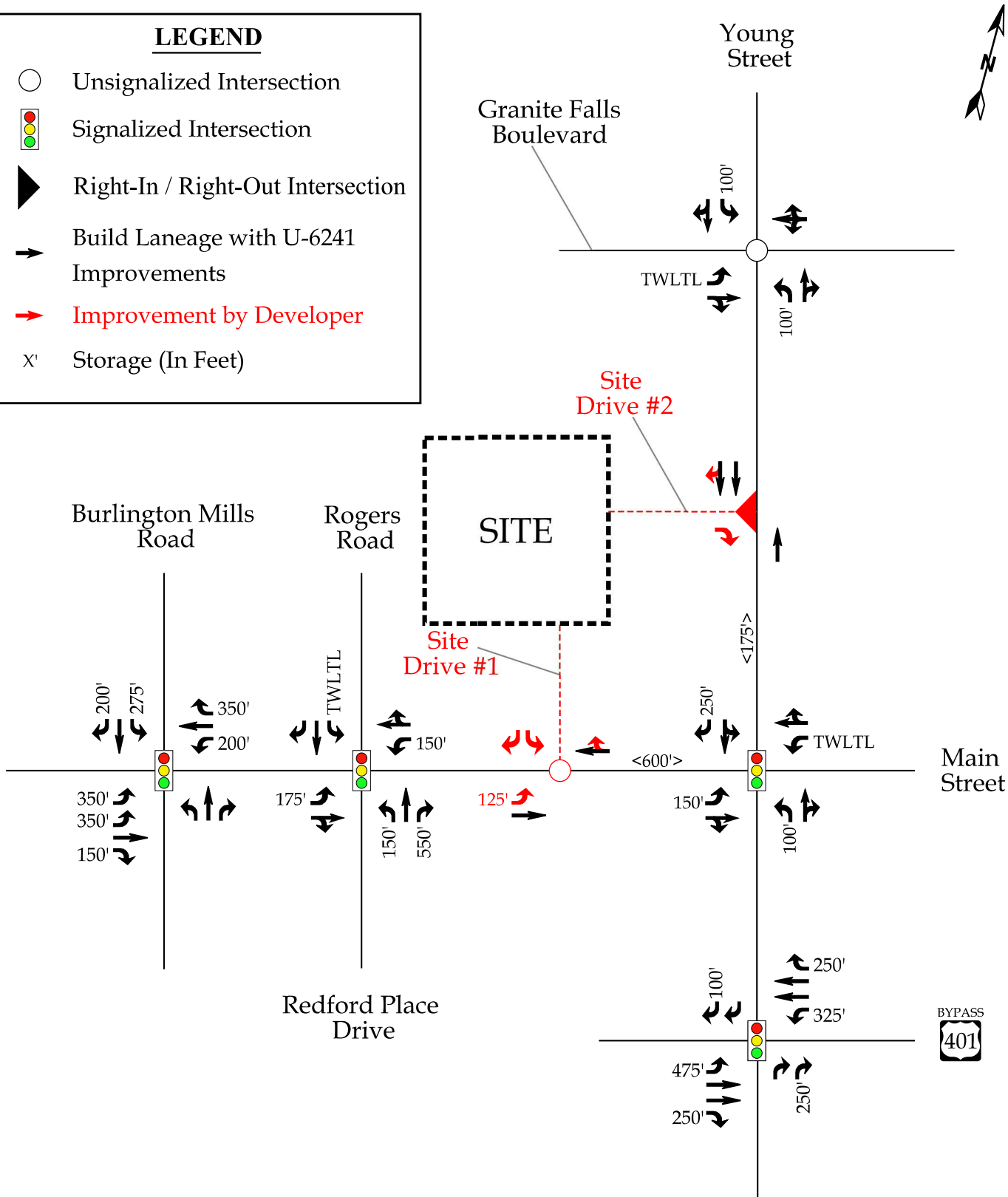
- Construct the southbound approach with one ingress and two egress lanes.
- Provide stop control for the southbound approach.
- Install an eastbound left-turn lane with at least 125 feet of storage and appropriate deceleration and taper.

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)



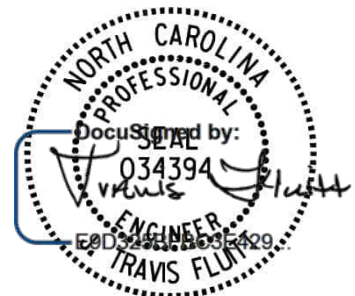
<div> <div>Moving forward.</div> <div>RKA</div> <div>RAMEY KEMP ASSOCIATES</div> </div>	<div> <div>Cobblestone Crossing</div> <div>Mixed-Use</div> <div>Rolesville, NC</div> </div>	<div>Recommended Lane Configurations</div>	
		<div>Scale: Not to Scale</div>	<div>Figure 14</div>

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

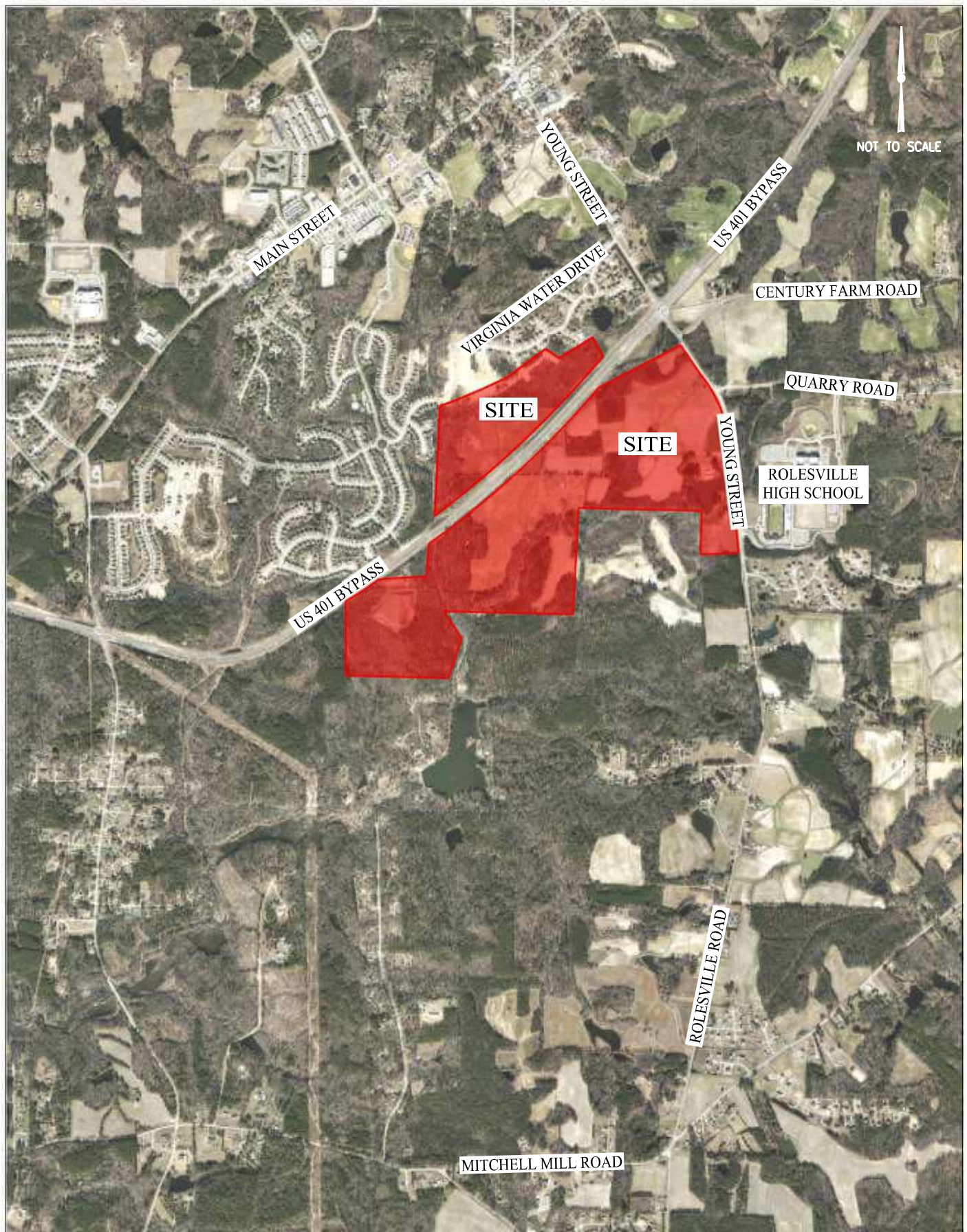
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Ashton Woods
Raleigh, North Carolina

Prepared by:
Kimley-Horn and Associates, Inc.
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June 2019
015956012



6/13/2019



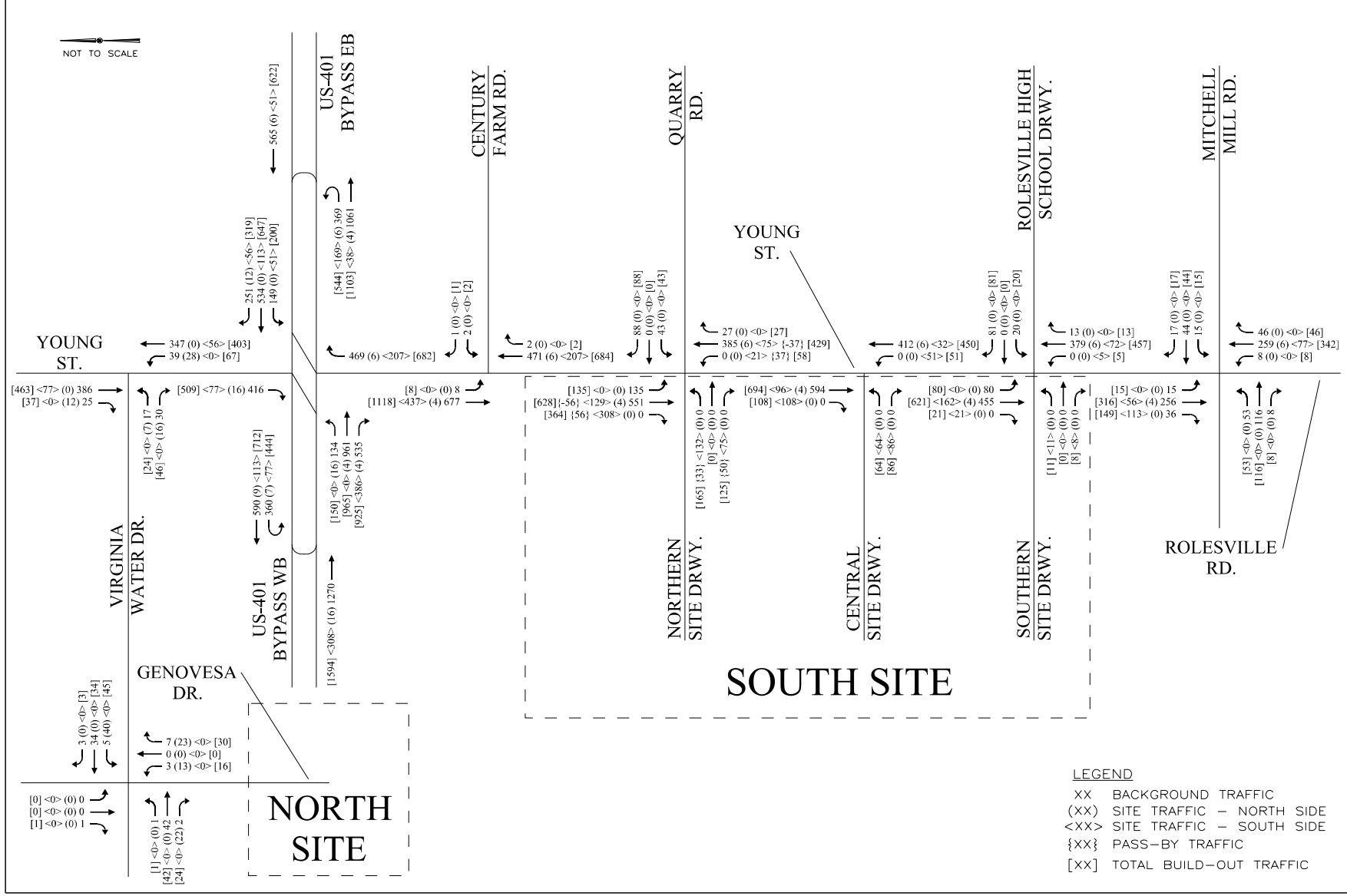
Kimley»Horn

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.



Kimley»Horn

YOUNG STREET PUD
ROLESVILLE, NC
TRAFFIC IMPACT ANALYSIS

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

FIGURE
16

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.

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**.

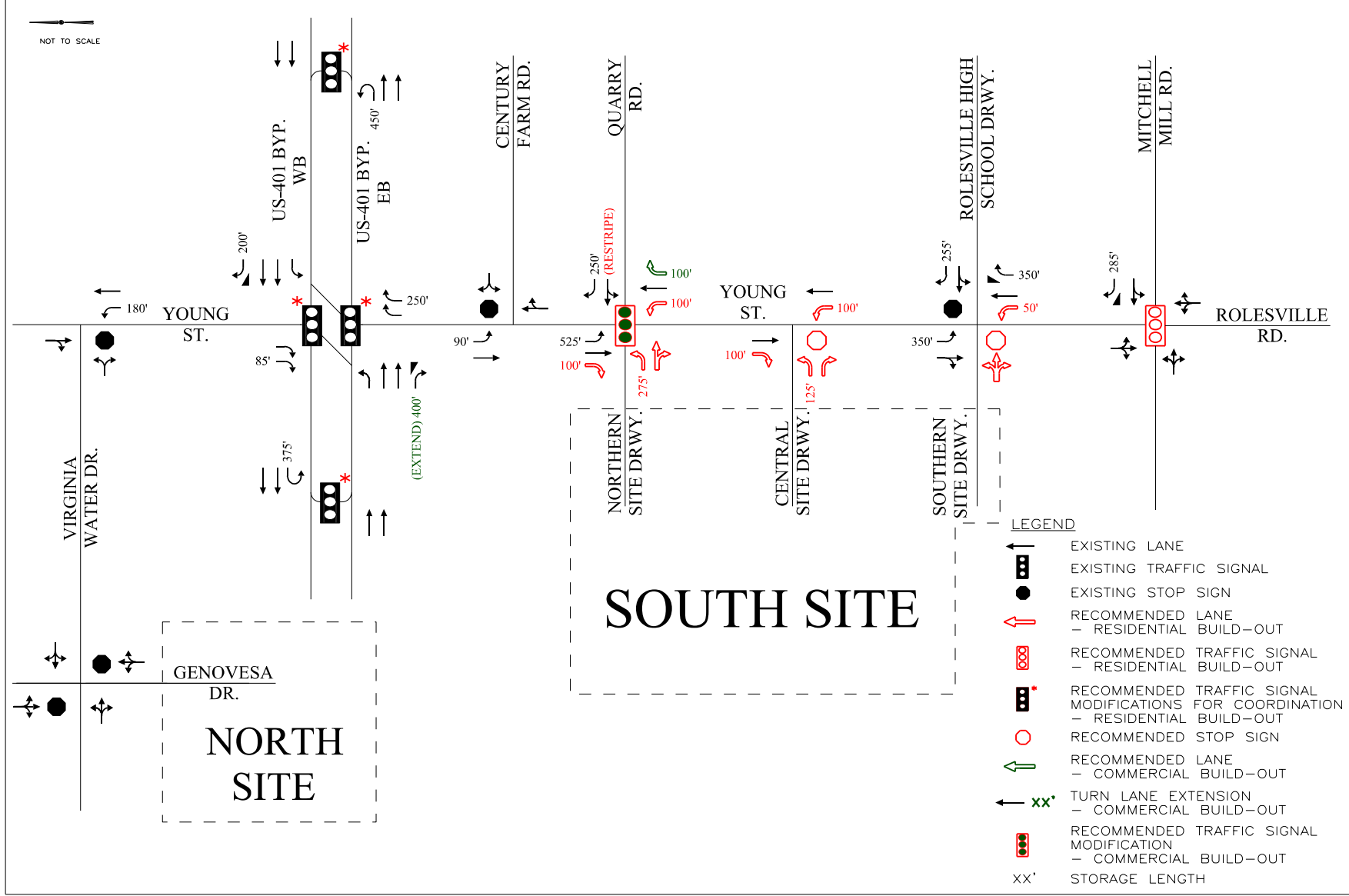


FIGURE 17

RECOMMENDED ROADWAY LANEAGE

YOUNG STREET PUD
ROLESVILLE, NC
TRAFFIC IMPACT ANALYSIS

Kimley»Horn

TRAFFIC IMPACT ANALYSIS

FOR

WHEELER TRACT

LOCATED

IN

ROLESVILLE, NC

Prepared For:
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Prepared By:
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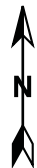
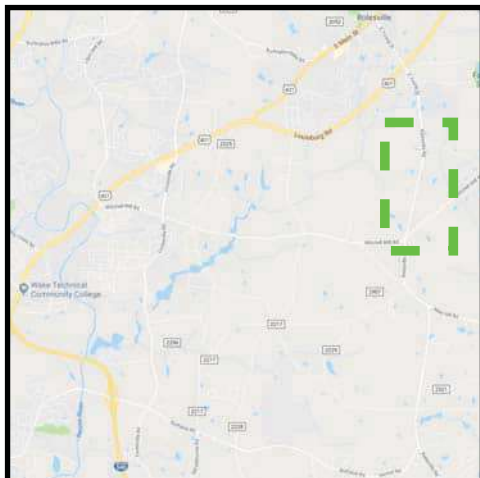
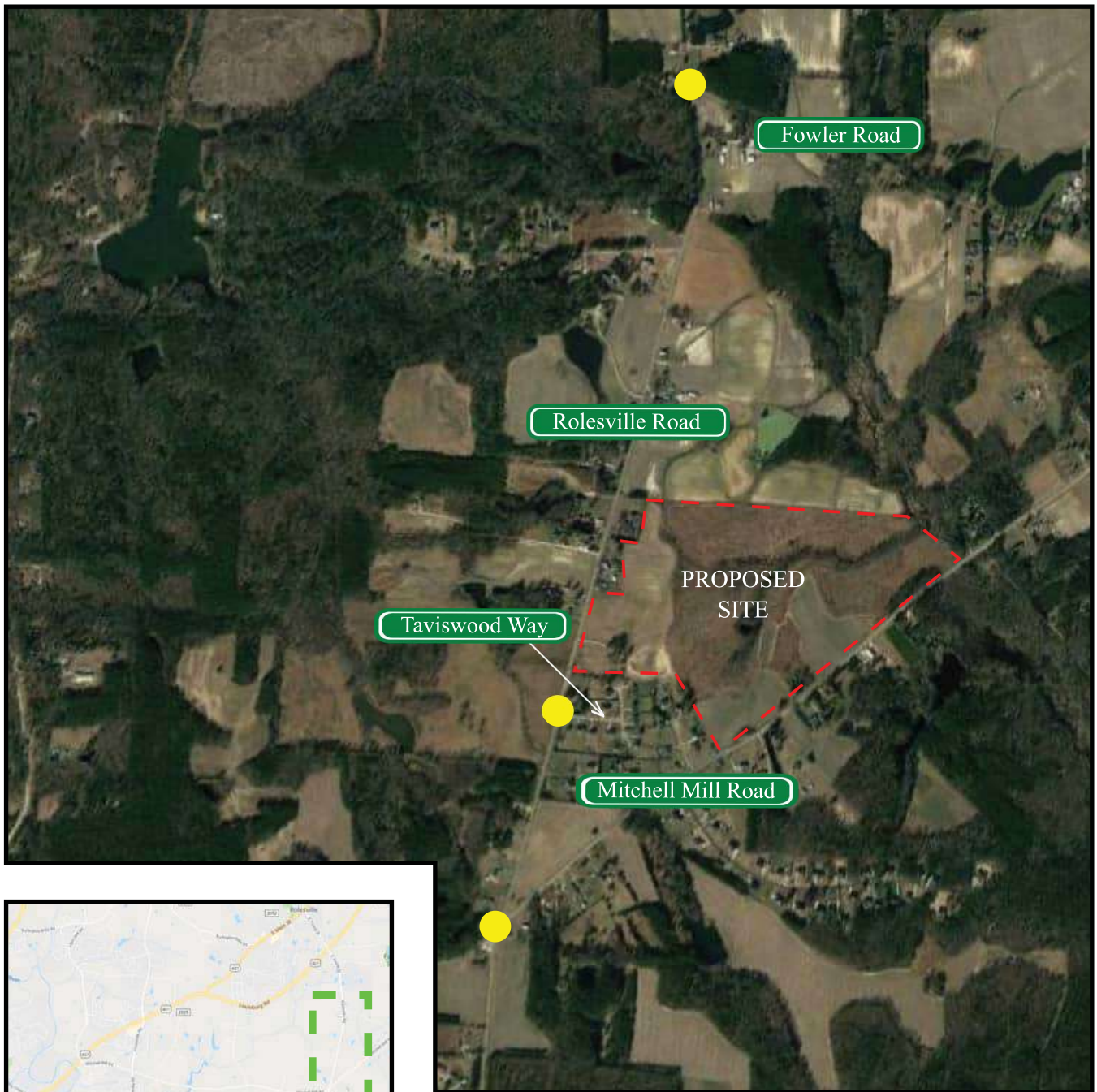
June 2019



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

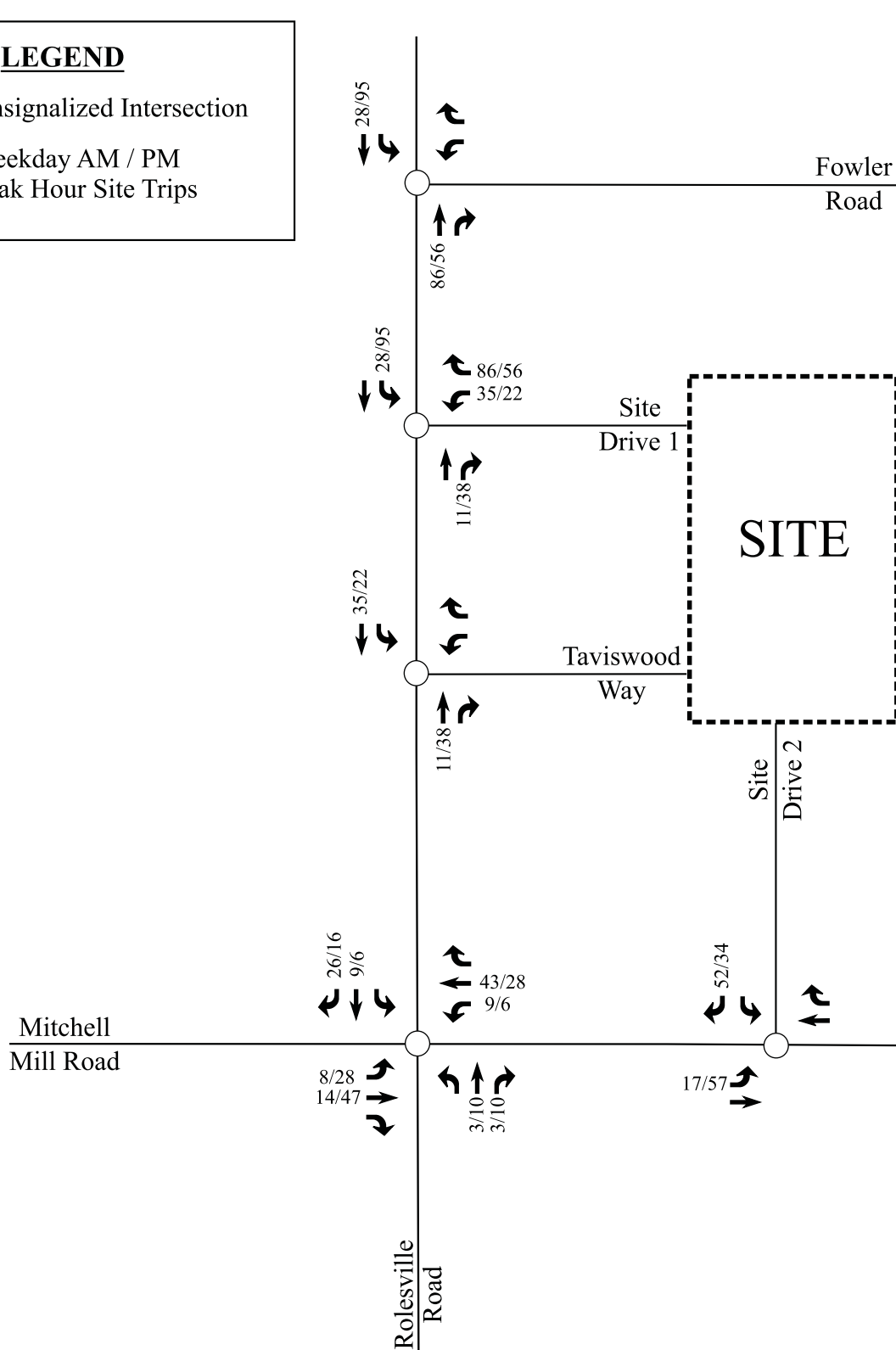
Figure 1


○

Unsignalized Intersection

X/Y →

Weekday AM / PM
Peak Hour Site Trips



 <div> <div>RAMEY KEMP</div> <div>&</div> <div>ASSOCIATES</div> <div>TRANSPORTATION ENGINEERS</div> </div>	<div>Wheeler Tract</div> <div>Rolesville, NC</div>	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

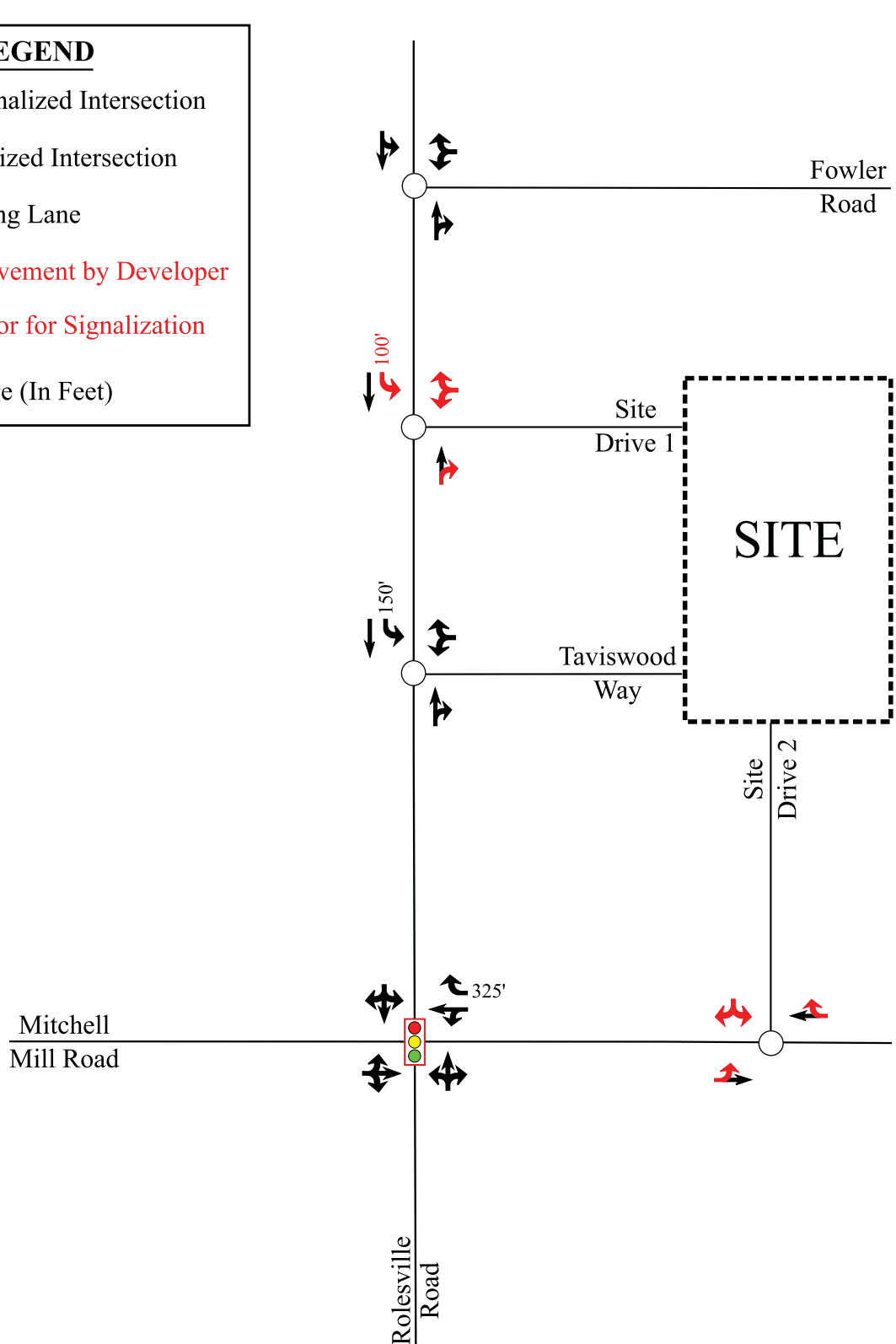
- Provide site access via a full movement intersection with one ingress lane and one egress lane.
- Provide stop control for westbound Site Drive 1 approach.
- Provide a designated southbound left-turn lane with at least 100 feet of storage and appropriate deceleration and taper.

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

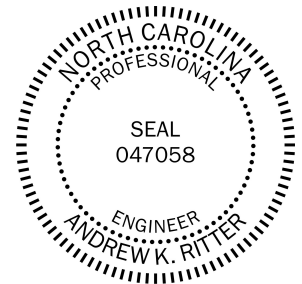
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May 2020

RKA Project No. 19418

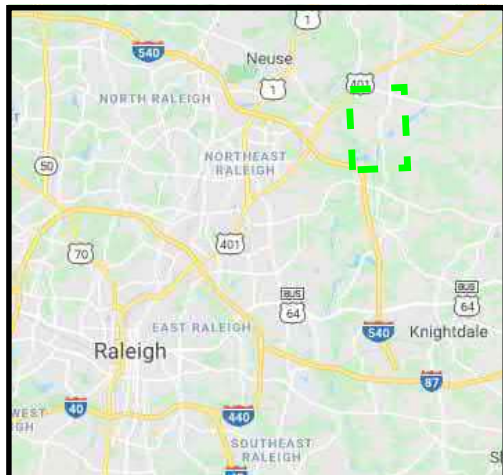
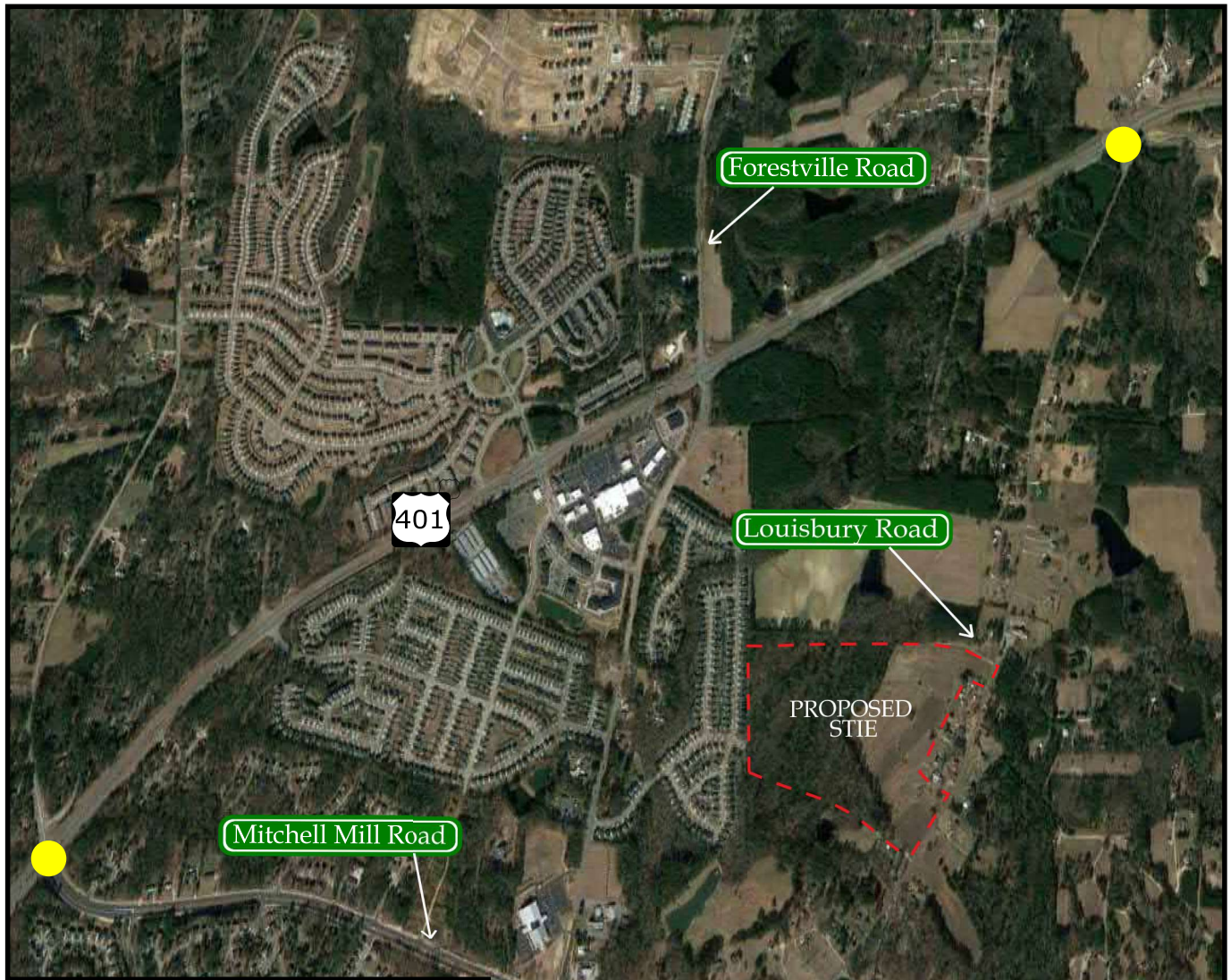
Andrew Kyle Ritter



5/8/2020

Prepared By: DT

Reviewed By: DR



LEGEND

- Proposed Site Location
- Study Intersection
- Study Area



Moving forward.



RAMEY KEMP ASSOCIATES

Louisbury Road Assemblage
Raleigh, NC

Site Location Map

Scale: Not to Scale

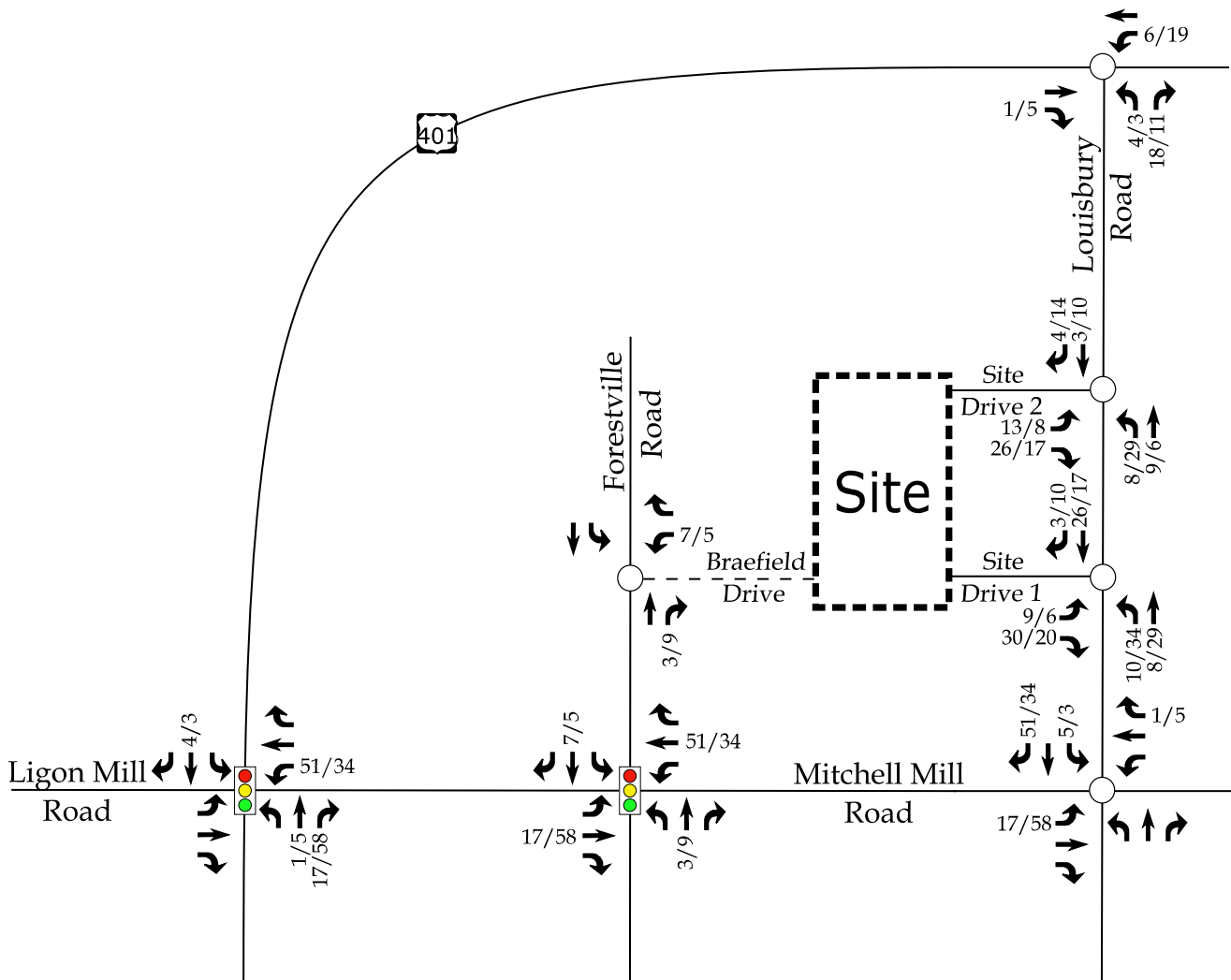
Figure 1

LEGEND

○ Unsignalized Intersection

🚦 Signalized Intersection

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



Moving forward.



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.

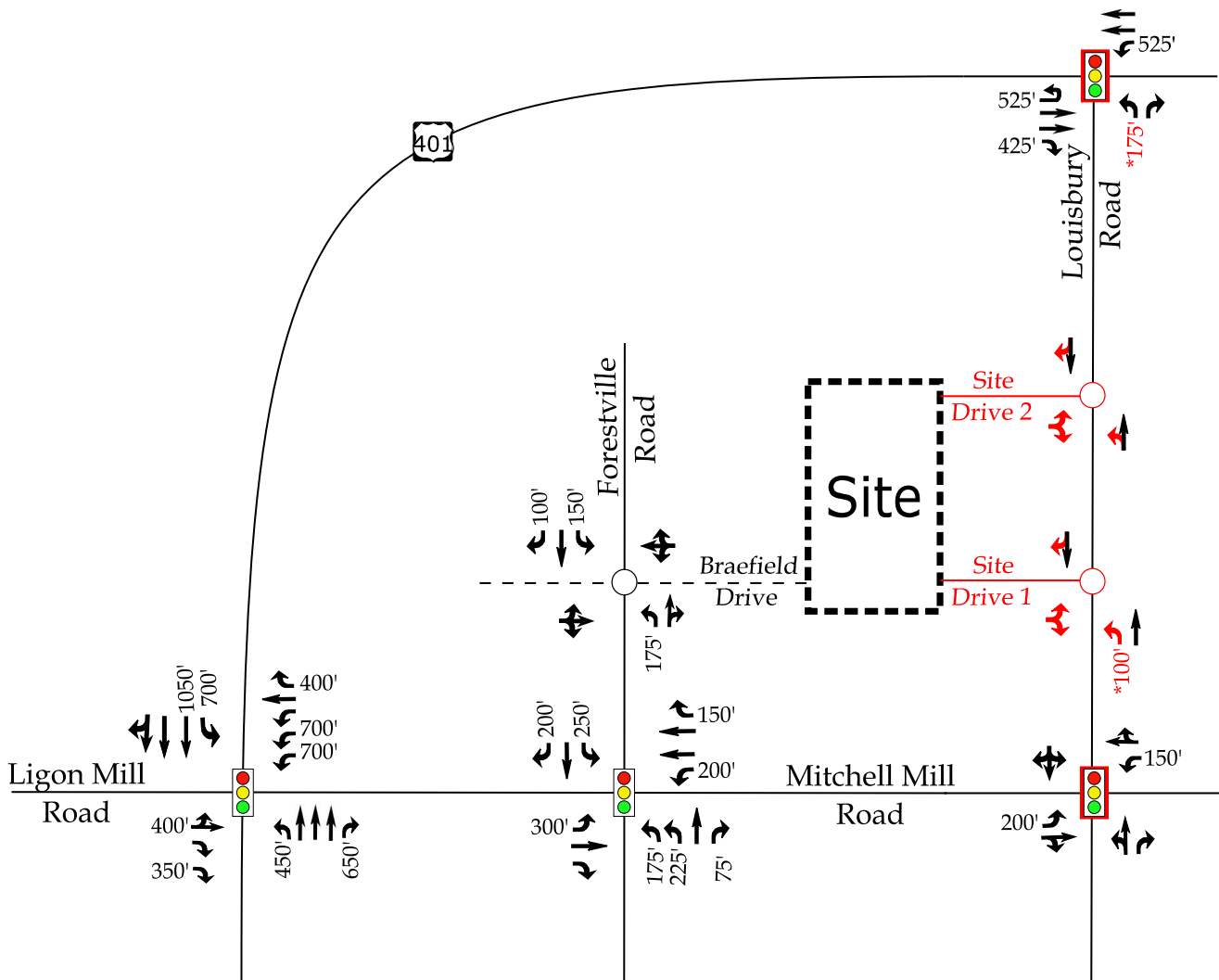
Louisbury Road and Site Drive 2

- 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
- ◫ Monitor for Signalization at Full Build-Out
- Existing Lane
- 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)

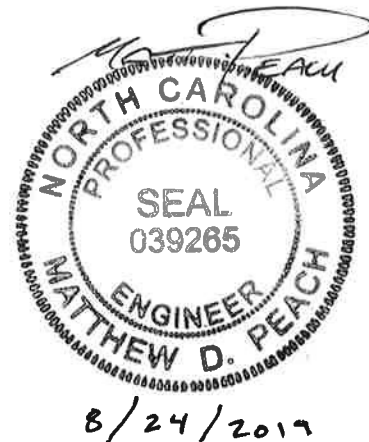
Maggie Rogers

Reviewed by [Signature]
(signature)

Matt Peach, PE, PTOE

Approved by Christa Greene
(signature)

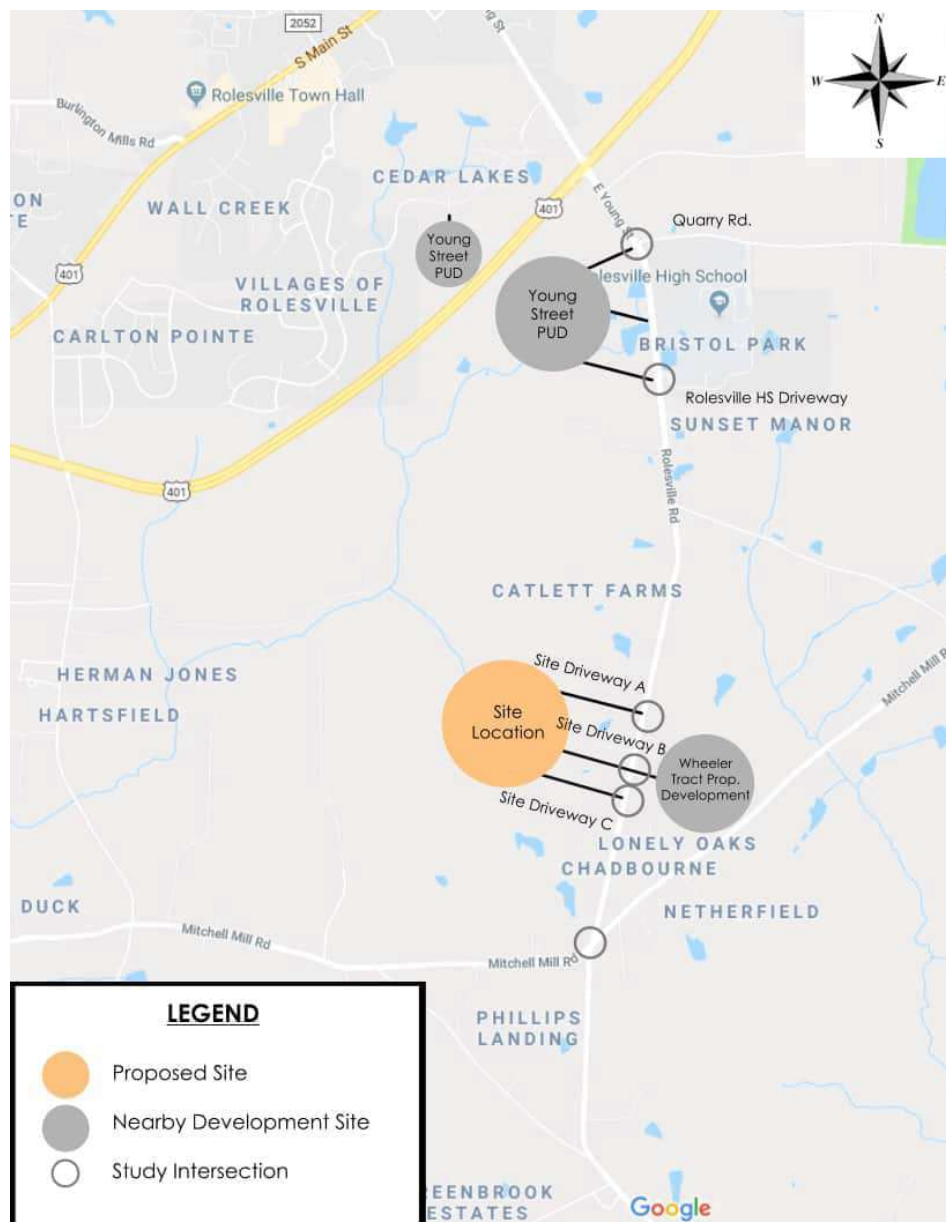
Christa Greene, PE



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

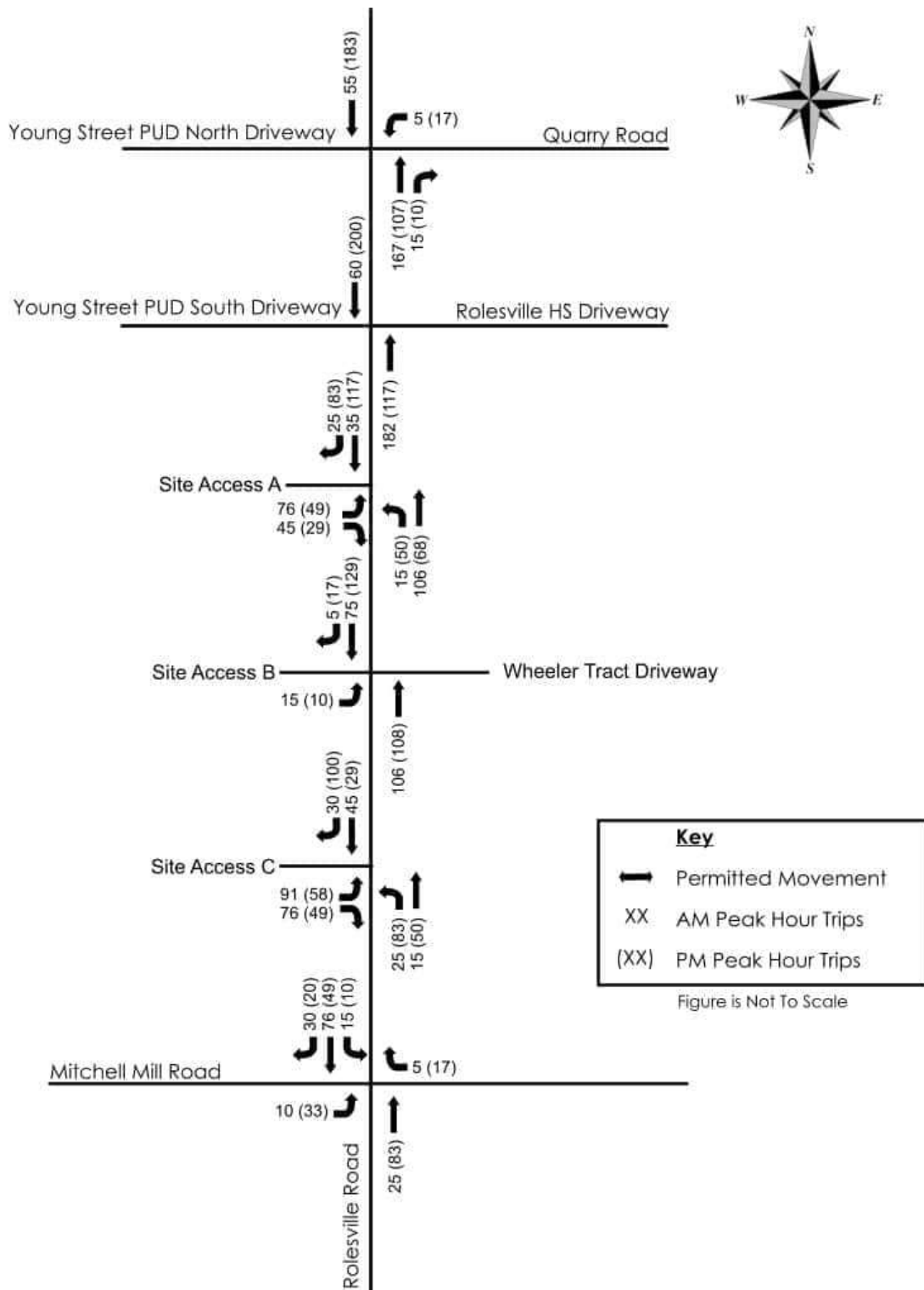


KALAS / WATKINS FAMILY PROPERTY TRAFFIC IMPACT ANALYSIS

Trip Generation and Distribution

August 24, 2019

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



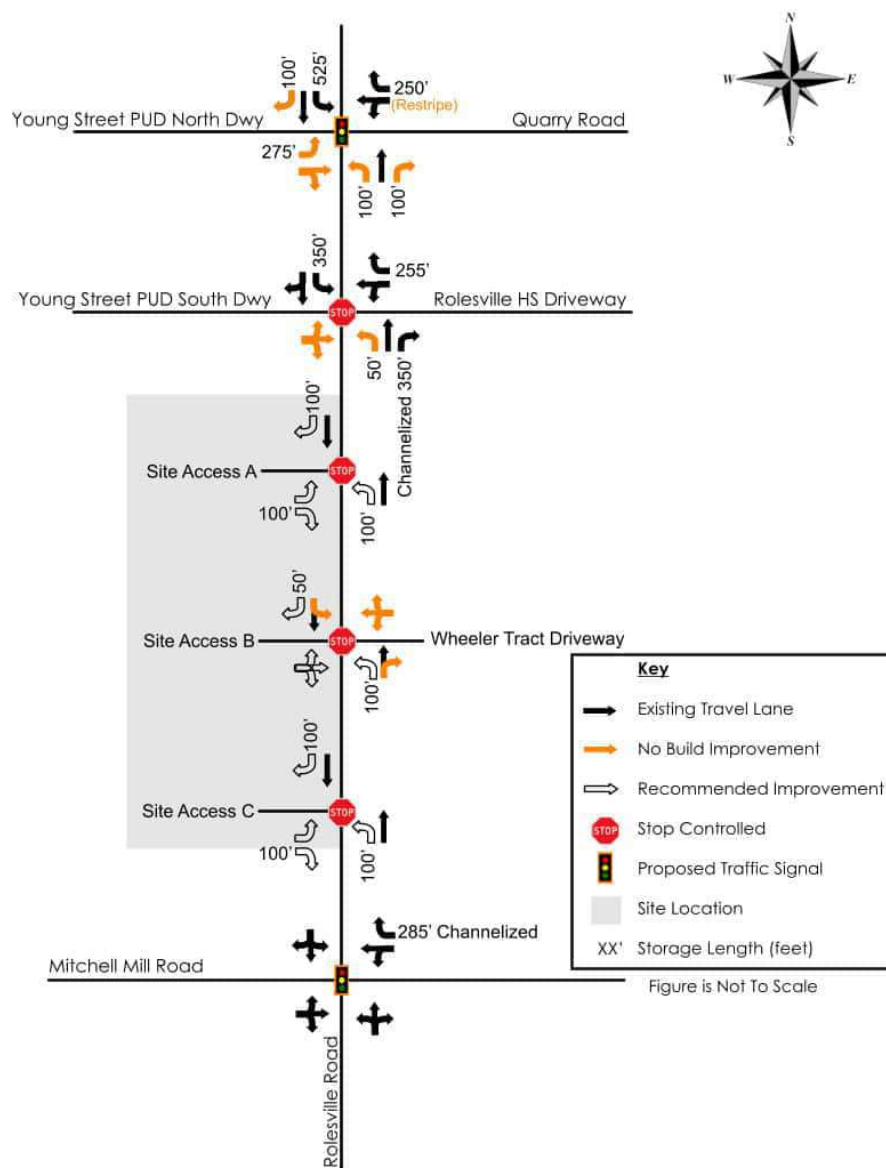
KALAS / WATKINS FAMILY PROPERTY TRAFFIC IMPACT ANALYSIS

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



APPENDIX D

CAPACITY ANALYSIS CALCULATIONS

US 401 BYPASS

&

JONESVILLE ROAD

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

2021 Existing
Timing Plan: AM Peak Hour

Intersection												
Int Delay, s/veh	3.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↗						↗		↑	
Traffic Vol, veh/h	0	578	78	0	0	0	0	0	133	0	84	0
Future Vol, veh/h	0	578	78	0	0	0	0	0	133	0	84	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	-	-	16983	-	-	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	642	87	0	0	0	0	0	148	0	93	0
Major/Minor	Major1						Minor1		Minor2			
Conflicting Flow All	-	0	0				-	-	321	-	642	-
Stage 1	-	-	-				-	-	-	-	0	-
Stage 2	-	-	-				-	-	-	-	642	-
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	675	0	391	0
Stage 1	0	-	-				0	0	-	0	-	0
Stage 2	0	-	-				0	0	-	0	467	0
Platoon blocked, %		-	-									
Mov Cap-1 Maneuver	-	-	-				-	-	675	-	391	-
Mov Cap-2 Maneuver	-	-	-				-	-	-	-	391	-
Stage 1	-	-	-				-	-	-	-	-	-
Stage 2	-	-	-				-	-	-	-	467	-
Approach	EB						NB		SB			
HCM Control Delay, s	0						11.8		17.1			
HCM LOS							B		C			
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	SBLn1								
Capacity (veh/h)	675	-	-	391								
HCM Lane V/C Ratio	0.219	-	-	0.239								
HCM Control Delay (s)	11.8	-	-	17.1								
HCM Lane LOS	B	-	-	C								
HCM 95th %tile Q(veh)	0.8	-	-	0.9								

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

2028 No-Build
Timing Plan: AM 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	886	90	0	0	0	0	0	153	0	96	0
Future Vol, veh/h	0	886	90	0	0	0	0	0	153	0	96	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	-	-	16983	-	-	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	984	100	0	0	0	0	0	170	0	107	0
Major/Minor	Major1						Minor1			Minor2		
Conflicting Flow All	-	0	0				-	-	492	-	984	-
Stage 1	-	-	-				-	-	-	-	0	-
Stage 2	-	-	-				-	-	-	-	984	-
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	522	0	247	0
Stage 1	0	-	-				0	0	-	0	-	0
Stage 2	0	-	-				0	0	-	0	325	0
Platoon blocked, %		-	-									
Mov Cap-1 Maneuver	-	-	-				-	-	522	-	247	-
Mov Cap-2 Maneuver	-	-	-				-	-	-	-	247	-
Stage 1	-	-	-				-	-	-	-	-	-
Stage 2	-	-	-				-	-	-	-	325	-
Approach	EB						NB			SB		
HCM Control Delay, s	0						15.2			30.2		
HCM LOS							C			D		
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	SBLn1								
Capacity (veh/h)	522	-	-	247								
HCM Lane V/C Ratio	0.326	-	-	0.432								
HCM Control Delay (s)	15.2	-	-	30.2								
HCM Lane LOS	C	-	-	D								
HCM 95th %tile Q(veh)	1.4	-	-	2								

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

2028 Build
Timing Plan: AM Peak Hour

Intersection												
Int Delay, s/veh	7.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑						↑		↑	
Traffic Vol, veh/h	0	886	142	0	0	0	0	0	292	0	125	0
Future Vol, veh/h	0	886	142	0	0	0	0	0	292	0	125	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	-	-	16983	-	-	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	984	158	0	0	0	0	0	324	0	139	0
Major/Minor	Major1						Minor1		Minor2			
Conflicting Flow All	-	0	0				-	-	492	-	984	-
Stage 1	-	-	-				-	-	-	-	0	-
Stage 2	-	-	-				-	-	-	-	984	-
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	522	0	247	0
Stage 1	0	-	-				0	0	-	0	-	0
Stage 2	0	-	-				0	0	-	0	325	0
Platoon blocked, %		-	-									
Mov Cap-1 Maneuver	-	-	-				-	-	522	-	247	-
Mov Cap-2 Maneuver	-	-	-				-	-	-	-	247	-
Stage 1	-	-	-				-	-	-	-	-	-
Stage 2	-	-	-				-	-	-	-	325	-
Approach	EB						NB		SB			
HCM Control Delay, s	0						22.6		36.8			
HCM LOS							C		E			
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	SBLn1								
Capacity (veh/h)	522	-	-	247								
HCM Lane V/C Ratio	0.622	-	-	0.562								
HCM Control Delay (s)	22.6	-	-	36.8								
HCM Lane LOS	C	-	-	E								
HCM 95th %tile Q(veh)	4.2	-	-	3.1								

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

2021 Existing
Timing Plan: PM Peak Hour

Intersection												
Int Delay, s/veh	2.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑						↑		↑	
Traffic Vol, veh/h	0	1196	58	0	0	0	0	0	123	0	36	0
Future Vol, veh/h	0	1196	58	0	0	0	0	0	123	0	36	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	-	-	16983	-	-	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	1329	64	0	0	0	0	0	137	0	40	0

Major/Minor	Major1			Minor1			Minor2		
Conflicting Flow All	-	0	0	-	-	665	-	1329	-
Stage 1	-	-	-	-	-	-	-	0	-
Stage 2	-	-	-	-	-	-	-	1329	-
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	403	0	154	0
Stage 1	0	-	-	0	0	-	0	-	0
Stage 2	0	-	-	0	0	-	0	222	0
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	-	-	403	-	154	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	154	-
Stage 1	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	222	-

Approach	EB	NB	SB
HCM Control Delay, s	0	18.4	36.4
HCM LOS		C	E

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	SBLn1
Capacity (veh/h)	403	-	-	154
HCM Lane V/C Ratio	0.339	-	-	0.26
HCM Control Delay (s)	18.4	-	-	36.4
HCM Lane LOS	C	-	-	E
HCM 95th %tile Q(veh)	1.5	-	-	1

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

2028 No-Build
Timing Plan: PM Peak Hour

Intersection												
Int Delay, s/veh	7.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↗						↗		↑	
Traffic Vol, veh/h	0	1862	67	0	0	0	0	0	141	0	41	0
Future Vol, veh/h	0	1862	67	0	0	0	0	0	141	0	41	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	-	-	16983	-	-	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	2069	74	0	0	0	0	0	157	0	46	0
Major/Minor	Major1						Minor1			Minor2		
Conflicting Flow All	-	0	0				-	-	1035	-	2069	-
Stage 1	-	-	-				-	-	-	-	0	-
Stage 2	-	-	-				-	-	-	-	2069	-
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	229	0	54	0
Stage 1	0	-	-				0	0	-	0	-	0
Stage 2	0	-	-				0	0	-	0	95	0
Platoon blocked, %		-	-									
Mov Cap-1 Maneuver	-	-	-				-	-	229	-	54	-
Mov Cap-2 Maneuver	-	-	-				-	-	-	-	54	-
Stage 1	-	-	-				-	-	-	-	-	-
Stage 2	-	-	-				-	-	-	-	95	-
Approach	EB						NB			SB		
HCM Control Delay, s	0						49.1			199.4		
HCM LOS							E			F		
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	SBLn1								
Capacity (veh/h)	229	-	-	54								
HCM Lane V/C Ratio	0.684	-	-	0.844								
HCM Control Delay (s)	49.1	-	-	199.4								
HCM Lane LOS	E	-	-	F								
HCM 95th %tile Q(veh)	4.4	-	-	3.6								

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

2028 Build
Timing Plan: PM Peak Hour

Intersection												
Int Delay, s/veh	41.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑						↑		↑	
Traffic Vol, veh/h	0	1862	167	0	0	0	0	0	246	0	94	0
Future Vol, veh/h	0	1862	167	0	0	0	0	0	246	0	94	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	-	-	16983	-	-	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	2069	186	0	0	0	0	0	273	0	104	0

Major/Minor	Major1			Minor1			Minor2		
Conflicting Flow All	-	0	0	-	-	1035	-	2069	-
Stage 1	-	-	-	-	-	-	-	0	-
Stage 2	-	-	-	-	-	-	-	2069	-
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	~ 229	0	~ 54	0
Stage 1	0	-	-	0	0	-	0	-	0
Stage 2	0	-	-	0	0	-	0	~ 95	0
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	-	-	~ 229	-	~ 54	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	~ 54	-
Stage 1	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	~ 95	-

Approach	EB	NB	SB
HCM Control Delay, s	0	166	\$ 601.5
HCM LOS		F	F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	SBLn1
Capacity (veh/h)	229	-	-	54
HCM Lane V/C Ratio	1.194	-	-	1.934
HCM Control Delay (s)	166	-	-	\$ 601.5
HCM Lane LOS	F	-	-	F
HCM 95th %tile Q(veh)	13.3	-	-	10.2

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

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

2021 Existing
Timing Plan: AM Peak Hour

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	1326	181	0	35	0	0	0	221
Future Vol, veh/h	0	0	0	0	1326	181	0	35	0	0	0	221
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, #	-	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	0	0	0	1473	201	0	39	0	0	0	246

Major/Minor	Major2		Minor1		Minor2	
Conflicting Flow All	-	-	0	-	1674	-
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	1674	-
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	95	0
Stage 1	0	-	-	0	-	0
Stage 2	0	-	-	0	151	0
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	-	95	-
Mov Cap-2 Maneuver	-	-	-	-	95	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	151	-

Approach	WB	NB	SB
HCM Control Delay, s	0	67	33.7
HCM LOS		F	D

Minor Lane/Major Mvmt	NBLn1	WBT	WBR	SBLn1
Capacity (veh/h)	95	-	-	361
HCM Lane V/C Ratio	0.409	-	-	0.68
HCM Control Delay (s)	67	-	-	33.7
HCM Lane LOS	F	-	-	D
HCM 95th %tile Q(veh)	1.7	-	-	4.8

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

2028 No-Build
Timing Plan: AM Peak Hour

Intersection												
Int Delay, s/veh	23.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑	↑		↑				↑
Traffic Vol, veh/h	0	0	0	0	1826	208	0	40	0	0	0	254
Future Vol, veh/h	0	0	0	0	1826	208	0	40	0	0	0	254
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, #	-	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	0	0	0	2029	231	0	44	0	0	0	282

Major/Minor	Major2	Minor1	Minor2
Conflicting Flow All	-	0	2260
Stage 1	-	-	0
Stage 2	-	-	2260
Critical Hdwy	-	-	6.54
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	5.54
Follow-up Hdwy	-	-	4.02
Pot Cap-1 Maneuver	0	~ 40	0
Stage 1	0	0	0
Stage 2	0	76	0
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	~ 40	-
Mov Cap-2 Maneuver	-	~ 40	-
Stage 1	-	-	-
Stage 2	-	76	-

Approach	WB	NB	SB
HCM Control Delay, s	0	\$ 333.6	165.1
HCM LOS		F	F

Minor Lane/Major Mvmt	NBLn1	WBT	WBR	SBLn1
Capacity (veh/h)	40	-	-	236
HCM Lane V/C Ratio	1.111	-	-	1.196
HCM Control Delay (s)	\$ 333.6	-	-	165.1
HCM Lane LOS	F	-	-	F
HCM 95th %tile Q(veh)	4.4	-	-	13.6

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

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

2028 Build
Timing Plan: AM Peak Hour

Intersection												
Int Delay, s/veh	28.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑	↑		↑				↑
Traffic Vol, veh/h	0	0	0	0	1918	208	0	40	0	0	0	254
Future Vol, veh/h	0	0	0	0	1918	208	0	40	0	0	0	254
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, #	-	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	0	0	0	2131	231	0	44	0	0	0	282

Major/Minor	Major2	Minor1	Minor2
Conflicting Flow All	-	-	0
Stage 1	-	-	0
Stage 2	-	-	2362
Critical Hdwy	-	-	6.54
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	5.54
Follow-up Hdwy	-	-	4.02
Pot Cap-1 Maneuver	0	-	~ 35
Stage 1	0	-	0
Stage 2	0	-	67
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	~ 35
Mov Cap-2 Maneuver	-	-	~ 35
Stage 1	-	-	-
Stage 2	-	-	67

Approach	WB	NB	SB
HCM Control Delay, s	0	\$ 418.5	206.2
HCM LOS		F	F

Minor Lane/Major Mvmt	NBLn1	WBT	WBR	SBLn1
Capacity (veh/h)	35	-	-	218
HCM Lane V/C Ratio	1.27	-	-	1.295
HCM Control Delay (s)	\$ 418.5	-	-	206.2
HCM Lane LOS	F	-	-	F
HCM 95th %tile Q(veh)	4.7	-	-	15.1

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

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

2021 Existing
Timing Plan: PM Peak Hour

Intersection												
Int Delay, s/veh	4.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑↑	↑		↑				↑
Traffic Vol, veh/h	0	0	0	0	544	73	0	114	0	0	0	112
Future Vol, veh/h	0	0	0	0	544	73	0	114	0	0	0	112
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, #	-	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	0	0	0	604	81	0	127	0	0	0	124

Major/Minor	Major2		Minor1		Minor2	
Conflicting Flow All	-	-	0	-	685	-
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	685	-
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	369	0
Stage 1	0	-	-	0	-	0
Stage 2	0	-	-	0	447	0
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	-	369	-
Mov Cap-2 Maneuver	-	-	-	-	369	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	447	-

Approach	WB	NB	SB
HCM Control Delay, s	0	19.8	11.3
HCM LOS		C	B

Minor Lane/Major Mvmt	NBLn1	WBT	WBR	SBLn1
Capacity (veh/h)	369	-	-	694
HCM Lane V/C Ratio	0.343	-	-	0.179
HCM Control Delay (s)	19.8	-	-	11.3
HCM Lane LOS	C	-	-	B
HCM 95th %tile Q(veh)	1.5	-	-	0.7

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

2028 No-Build
Timing Plan: PM Peak Hour

Intersection												
Int Delay, s/veh	6.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑	↑		↑				↑
Traffic Vol, veh/h	0	0	0	0	855	84	0	131	0	0	0	129
Future Vol, veh/h	0	0	0	0	855	84	0	131	0	0	0	129
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, #	-	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	0	0	0	950	93	0	146	0	0	0	143

Major/Minor	Major2		Minor1		Minor2	
Conflicting Flow All	-	-	0	-	1043	-
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	1043	-
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	228	0
Stage 1	0	-	-	0	-	0
Stage 2	0	-	-	0	305	0
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	-	228	-
Mov Cap-2 Maneuver	-	-	-	-	228	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	305	-

Approach	WB	NB	SB
HCM Control Delay, s	0	45	14.2
HCM LOS		E	B

Minor Lane/Major Mvmt	NBLn1	WBT	WBR	SBLn1
Capacity (veh/h)	228	-	-	536
HCM Lane V/C Ratio	0.638	-	-	0.267
HCM Control Delay (s)	45	-	-	14.2
HCM Lane LOS	E	-	-	B
HCM 95th %tile Q(veh)	3.9	-	-	1.1

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

2028 Build
Timing Plan: PM Peak Hour

Intersection												
Int Delay, s/veh	7.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑↑	↑		↑				↑
Traffic Vol, veh/h	0	0	0	0	923	84	0	131	0	0	0	129
Future Vol, veh/h	0	0	0	0	923	84	0	131	0	0	0	129
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, #	-	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	0	0	0	1026	93	0	146	0	0	0	143

Major/Minor	Major2		Minor1		Minor2	
Conflicting Flow All	-	-	0	-	1119	-
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	1119	-
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	205	0
Stage 1	0	-	-	0	-	0
Stage 2	0	-	-	0	280	0
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	-	205	-
Mov Cap-2 Maneuver	-	-	-	-	205	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	280	-

Approach	WB	NB	SB
HCM Control Delay, s	0	56.7	14.9
HCM LOS		F	B

Minor Lane/Major Mvmt	NBLn1	WBT	WBR	SBLn1
Capacity (veh/h)	205	-	-	506
HCM Lane V/C Ratio	0.71	-	-	0.283
HCM Control Delay (s)	56.7	-	-	14.9
HCM Lane LOS	F	-	-	B
HCM 95th %tile Q(veh)	4.6	-	-	1.2

APPENDIX E

CAPACITY ANALYSIS CALCULATIONS

US 401 BYPASS

&

EASTERN U-TURN LOCATION



HCM 6th TWSC
2: Eastern U-Turn & US 401 Bypass WB

2021 Existing
Timing Plan: AM Peak Hour

Intersection						
Int Delay, s/veh	1.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations				↑↑	↑	
Traffic Vol, veh/h	0	0	0	1502	89	0
Future Vol, veh/h	0	0	0	1502	89	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	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	1669	99	0
Major/Minor			Major2		Minor1	
Conflicting Flow All			-	-	835	-
Stage 1			-	-	0	-
Stage 2			-	-	835	-
Critical Hdwy			-	-	6.84	-
Critical Hdwy Stg 1			-	-	-	-
Critical Hdwy Stg 2			-	-	5.84	-
Follow-up Hdwy			-	-	3.52	-
Pot Cap-1 Maneuver			0	-	306	0
Stage 1			0	-	-	0
Stage 2			0	-	386	0
Platoon blocked, %				-		
Mov Cap-1 Maneuver			-	-	306	-
Mov Cap-2 Maneuver			-	-	306	-
Stage 1			-	-	-	-
Stage 2			-	-	386	-
Approach			WB		NB	
HCM Control Delay, s			0		22.3	
HCM LOS					C	
Minor Lane/Major Mvmt	NBLn1	WBT				
Capacity (veh/h)	306	-				
HCM Lane V/C Ratio	0.323	-				
HCM Control Delay (s)	22.3	-				
HCM Lane LOS	C	-				
HCM 95th %tile Q(veh)	1.4	-				



HCM 6th TWSC
2: Eastern U-Turn & US 401 Bypass WB

2028 No-Build
Timing Plan: AM Peak Hour

Intersection						
Int Delay, s/veh	2.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	2028	102	0
Future Vol, veh/h	0	0	0	2028	102	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	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	2253	113	0
Major/Minor	Major2			Minor1		
Conflicting Flow All	-			-	1127	-
Stage 1	-			-	0	-
Stage 2	-			-	1127	-
Critical Hdwy	-			-	6.84	-
Critical Hdwy Stg 1	-			-	-	-
Critical Hdwy Stg 2	-			-	5.84	-
Follow-up Hdwy	-			-	3.52	-
Pot Cap-1 Maneuver	0			-	198	0
Stage 1	0			-	-	0
Stage 2	0			-	271	0
Platoon blocked, %				-		
Mov Cap-1 Maneuver	-			-	198	-
Mov Cap-2 Maneuver	-			-	198	-
Stage 1	-			-	-	-
Stage 2	-			-	271	-
Approach	WB			NB		
HCM Control Delay, s	0			45		
HCM LOS				E		
Minor Lane/Major Mvmt	NBLn1	WBT				
Capacity (veh/h)	198	-				
HCM Lane V/C Ratio	0.572	-				
HCM Control Delay (s)	45	-				
HCM Lane LOS	E	-				
HCM 95th %tile Q(veh)	3.1	-				



HCM 6th TWSC
2: Eastern U-Turn & US 401 Bypass WB

2028 Build
Timing Plan: AM Peak Hour

Intersection						
Int Delay, s/veh	12.8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	2057	194	0
Future Vol, veh/h	0	0	0	2057	194	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	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	2286	216	0
Major/Minor	Major2		Minor1			
Conflicting Flow All			-	-	1143	-
Stage 1			-	-	0	-
Stage 2			-	-	1143	-
Critical Hdwy			-	-	6.84	-
Critical Hdwy Stg 1			-	-	-	-
Critical Hdwy Stg 2			-	-	5.84	-
Follow-up Hdwy			-	-	3.52	-
Pot Cap-1 Maneuver			0	-	~ 194	0
Stage 1			0	-	-	0
Stage 2			0	-	266	0
Platoon blocked, %			-			
Mov Cap-1 Maneuver			-	-	~ 194	-
Mov Cap-2 Maneuver			-	-	~ 194	-
Stage 1			-	-	-	-
Stage 2			-	-	266	-
Approach	WB		NB			
HCM Control Delay, s	0		148.1			
HCM LOS			F			
Minor Lane/Major Mvmt	NBLn1	WBT				
Capacity (veh/h)	194	-				
HCM Lane V/C Ratio	1.111	-				
HCM Control Delay (s)	148.1	-				
HCM Lane LOS	F	-				
HCM 95th %tile Q(veh)	10.4	-				
Notes						
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined		*: All major volume in platoon




HCM 6th TWSC
2: Eastern U-Turn & US 401 Bypass WB

2021 Existing
Timing Plan: PM Peak Hour

Intersection						
Int Delay, s/veh	1.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	588	65	0
Future Vol, veh/h	0	0	0	588	65	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	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	653	72	0
Major/Minor			Major2		Minor1	
Conflicting Flow All			-	-	327	-
Stage 1			-	-	0	-
Stage 2			-	-	327	-
Critical Hdwy			-	-	6.84	-
Critical Hdwy Stg 1			-	-	-	-
Critical Hdwy Stg 2			-	-	5.84	-
Follow-up Hdwy			-	-	3.52	-
Pot Cap-1 Maneuver			0	-	642	0
Stage 1			0	-	-	0
Stage 2			0	-	703	0
Platoon blocked, %				-		
Mov Cap-1 Maneuver			-	-	642	-
Mov Cap-2 Maneuver			-	-	642	-
Stage 1			-	-	-	-
Stage 2			-	-	703	-
Approach			WB		NB	
HCM Control Delay, s			0		11.3	
HCM LOS					B	
Minor Lane/Major Mvmt	NBLn1	WBT				
Capacity (veh/h)	642	-				
HCM Lane V/C Ratio	0.112	-				
HCM Control Delay (s)	11.3	-				
HCM Lane LOS	B	-				
HCM 95th %tile Q(veh)	0.4	-				

HCM 6th TWSC
2: Eastern U-Turn & US 401 Bypass WB

2028 No-Build
Timing Plan: PM Peak Hour

Intersection							
Int Delay, s/veh	1						
Movement	EBT	EBR	WBL	WBT	NBL	NBR	
Lane Configurations				 			
Traffic Vol, veh/h	0	0	0	905	75	0	
Future Vol, veh/h	0	0	0	905	75	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	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	1006	83	0	
Major/Minor	Major2		Minor1				
Conflicting Flow All			-	-	503	-	
Stage 1			-	-	0	-	
Stage 2			-	-	503	-	
Critical Hdwy			-	-	6.84	-	
Critical Hdwy Stg 1			-	-	-	-	
Critical Hdwy Stg 2			-	-	5.84	-	
Follow-up Hdwy			-	-	3.52	-	
Pot Cap-1 Maneuver			0	-	498	0	
Stage 1			0	-	-	0	
Stage 2			0	-	573	0	
Platoon blocked, %			-				
Mov Cap-1 Maneuver			-	-	498	-	
Mov Cap-2 Maneuver			-	-	498	-	
Stage 1			-	-	-	-	
Stage 2			-	-	573	-	
Approach	WB		NB				
HCM Control Delay, s			0	13.7			
HCM LOS			B				
Minor Lane/Major Mvmt	NBLn1	WBT					
Capacity (veh/h)	498	-					
HCM Lane V/C Ratio	0.167	-					
HCM Control Delay (s)	13.7	-					
HCM Lane LOS	B	-					
HCM 95th %tile Q(veh)	0.6	-					

HCM 6th TWSC
2: Eastern U-Turn & US 401 Bypass WB

2028 Build
Timing Plan: PM Peak Hour

Intersection						
Int Delay, s/veh	2.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations				↑↑	↑	
Traffic Vol, veh/h	0	0	0	958	143	0
Future Vol, veh/h	0	0	0	958	143	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	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	1064	159	0
Major/Minor			Major2		Minor1	
Conflicting Flow All			-	-	532	-
Stage 1			-	-	0	-
Stage 2			-	-	532	-
Critical Hdwy			-	-	6.84	-
Critical Hdwy Stg 1			-	-	-	-
Critical Hdwy Stg 2			-	-	5.84	-
Follow-up Hdwy			-	-	3.52	-
Pot Cap-1 Maneuver			0	-	477	0
Stage 1			0	-	-	0
Stage 2			0	-	553	0
Platoon blocked, %				-		
Mov Cap-1 Maneuver			-	-	477	-
Mov Cap-2 Maneuver			-	-	477	-
Stage 1			-	-	-	-
Stage 2			-	-	553	-
Approach			WB		NB	
HCM Control Delay, s			0		16.3	
HCM LOS					C	
Minor Lane/Major Mvmt	NBLn1	WBT				
Capacity (veh/h)	477	-				
HCM Lane V/C Ratio	0.333	-				
HCM Control Delay (s)	16.3	-				
HCM Lane LOS	C	-				
HCM 95th %tile Q(veh)	1.4	-				

APPENDIX F

CAPACITY ANALYSIS CALCULATIONS

MITCHELL MILL ROAD





&

JONESVILLE ROAD / PEEBLES ROAD

HCM 6th AWSC
3: Peebles Road/Jonesville Road & Mitchell Mill Road

2021 Existing
Timing Plan: AM Peak Hour

Intersection	
Intersection Delay, s/veh	12.4
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	7	163	4	11	310	40	4	76	11	31	130	16
Future Vol, veh/h	7	163	4	11	310	40	4	76	11	31	130	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	181	4	12	344	44	4	84	12	34	144	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	10.6	14.4	10	11.2
HCM LOS	B	B	A	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	4%	4%	3%	18%
Vol Thru, %	84%	94%	86%	73%
Vol Right, %	12%	2%	11%	9%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	91	174	361	177
LT Vol	4	7	11	31
Through Vol	76	163	310	130
RT Vol	11	4	40	16
Lane Flow Rate	101	193	401	197
Geometry Grp	1	1	1	1
Degree of Util (X)	0.163	0.289	0.562	0.309
Departure Headway (Hd)	5.798	5.389	5.044	5.651
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	618	665	714	635
Service Time	3.846	3.43	3.078	3.693
HCM Lane V/C Ratio	0.163	0.29	0.562	0.31
HCM Control Delay	10	10.6	14.4	11.2
HCM Lane LOS	A	B	B	B
HCM 95th-tile Q	0.6	1.2	3.5	1.3

HCM 6th AWSC
3: Peebles Road/Jonesville Road & Mitchell Mill Road

2028 No-Build
Timing Plan: AM Peak Hour

Intersection	
Intersection Delay, s/veh	55.2
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	8	244	4	13	576	46	5	87	13	36	149	18
Future Vol, veh/h	8	244	4	13	576	46	5	87	13	36	149	18
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	9	271	4	14	640	51	6	97	14	40	166	20
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	15.6	91	12.7	15.3
HCM LOS	C	F	B	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	5%	3%	2%	18%
Vol Thru, %	83%	95%	91%	73%
Vol Right, %	12%	2%	7%	9%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	105	256	635	203
LT Vol	5	8	13	36
Through Vol	87	244	576	149
RT Vol	13	4	46	18
Lane Flow Rate	117	284	706	226
Geometry Grp	1	1	1	1
Degree of Util (X)	0.23	0.492	1.106	0.426
Departure Headway (Hd)	7.498	6.491	5.644	7.145
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	482	558	642	507
Service Time	5.498	4.491	3.709	5.145
HCM Lane V/C Ratio	0.243	0.509	1.1	0.446
HCM Control Delay	12.7	15.6	91	15.3
HCM Lane LOS	B	C	F	C
HCM 95th-tile Q	0.9	2.7	20.9	2.1

HCM 6th AWSC
3: Peebles Road/Jonesville Road & Mitchell Mill Road

2028 Build
Timing Plan: AM Peak Hour

Intersection	
Intersection Delay, s/veh	86.2
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	64	244	12	13	587	49	13	95	13	53	165	56
Future Vol, veh/h	64	244	12	13	587	49	13	95	13	53	165	56
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	71	271	13	14	652	54	14	106	14	59	183	62
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	24.1	157.3	15.1	21.9
HCM LOS	C	F	C	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	11%	20%	2%	19%
Vol Thru, %	79%	76%	90%	60%
Vol Right, %	11%	4%	8%	20%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	121	320	649	274
LT Vol	13	64	13	53
Through Vol	95	244	587	165
RT Vol	13	12	49	56
Lane Flow Rate	134	356	721	304
Geometry Grp	1	1	1	1
Degree of Util (X)	0.291	0.671	1.273	0.601
Departure Headway (Hd)	8.613	7.35	6.354	7.796
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	419	494	570	466
Service Time	6.613	5.35	4.453	5.796
HCM Lane V/C Ratio	0.32	0.721	1.265	0.652
HCM Control Delay	15.1	24.1	157.3	21.9
HCM Lane LOS	C	C	F	C
HCM 95th-tile Q	1.2	4.9	28.4	3.9

HCM 6th AWSC
3: Peebles Road/Jonesville Road & Mitchell Mill Road

2028 Build - Improved
Timing Plan: AM Peak Hour

Intersection	
Intersection Delay, s/veh	107.1
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	64	244	12	13	587	49	13	95	13	53	165	56
Future Vol, veh/h	64	244	12	13	587	49	13	95	13	53	165	56
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	71	271	13	14	652	54	14	106	14	59	183	62
Number of Lanes	1	1	0	0	1	0	0	1	0	1	1	0





Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	1	2
HCM Control Delay	18.7	205.1	16.5	18.3
HCM LOS	C	F	C	C

Lane	NBLn1	EBLn1	EBLn2	WBLn1	SBLn1	SBLn2
Vol Left, %	11%	100%	0%	2%	100%	0%
Vol Thru, %	79%	0%	95%	90%	0%	75%
Vol Right, %	11%	0%	5%	8%	0%	25%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	121	64	256	649	53	221
LT Vol	13	64	0	13	53	0
Through Vol	95	0	244	587	0	165
RT Vol	13	0	12	49	0	56
Lane Flow Rate	134	71	284	721	59	246
Geometry Grp	6	7	7	6	7	7
Degree of Util (X)	0.309	0.152	0.566	1.384	0.134	0.512
Departure Headway (Hd)	9.36	8.371	7.82	6.91	9.083	8.38
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	387	431	464	526	398	432
Service Time	7.36	6.071	5.52	5	6.783	6.08
HCM Lane V/C Ratio	0.346	0.165	0.612	1.371	0.148	0.569
HCM Control Delay	16.5	12.6	20.2	205.1	13.2	19.5
HCM Lane LOS	C	B	C	F	B	C
HCM 95th-tile Q	1.3	0.5	3.4	32.8	0.5	2.8

HCM 6th AWSC
3: Peebles Road/Jonesville Road & Mitchell Mill Road

2021 Existing
Timing Plan: PM Peak Hour

Intersection	
Intersection Delay, s/veh	10.7
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	18	300	13	4	127	21	5	90	10	26	49	11
Future Vol, veh/h	18	300	13	4	127	21	5	90	10	26	49	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	333	14	4	141	23	6	100	11	29	54	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	9.4	9.5	9.3
HCM LOS	B	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	5%	5%	3%	30%
Vol Thru, %	86%	91%	84%	57%
Vol Right, %	10%	4%	14%	13%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	105	331	152	86
LT Vol	5	18	4	26
Through Vol	90	300	127	49
RT Vol	10	13	21	11
Lane Flow Rate	117	368	169	96
Geometry Grp	1	1	1	1
Degree of Util (X)	0.171	0.478	0.228	0.142
Departure Headway (Hd)	5.281	4.681	4.85	5.345
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	672	765	733	663
Service Time	3.372	2.744	2.927	3.439
HCM Lane V/C Ratio	0.174	0.481	0.231	0.145
HCM Control Delay	9.5	12	9.4	9.3
HCM Lane LOS	A	B	A	A
HCM 95th-tile Q	0.6	2.6	0.9	0.5

HCM 6th AWSC
3: Peebles Road/Jonesville Road & Mitchell Mill Road

2028 No-Build
Timing Plan: PM Peak Hour

Intersection	
Intersection Delay, s/veh	20.4
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	21	443	15	4	341	24	6	103	11	30	56	13
Future Vol, veh/h	21	443	15	4	341	24	6	103	11	30	56	13
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	23	492	17	4	379	27	7	114	12	33	62	14
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	26.3	17.7	12	11.6
HCM LOS	D	C	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	5%	4%	1%	30%
Vol Thru, %	86%	92%	92%	57%
Vol Right, %	9%	3%	7%	13%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	120	479	369	99
LT Vol	6	21	4	30
Through Vol	103	443	341	56
RT Vol	11	15	24	13
Lane Flow Rate	133	532	410	110
Geometry Grp	1	1	1	1
Degree of Util (X)	0.249	0.796	0.63	0.209
Departure Headway (Hd)	6.736	5.385	5.53	6.841
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	536	665	648	527
Service Time	4.742	3.468	3.62	4.847
HCM Lane V/C Ratio	0.248	0.8	0.633	0.209
HCM Control Delay	12	26.3	17.7	11.6
HCM Lane LOS	B	D	C	B
HCM 95th-tile Q	1	7.9	4.4	0.8

HCM 6th AWSC
3: Peebles Road/Jonesville Road & Mitchell Mill Road

2028 Build
Timing Plan: PM Peak Hour

Intersection	
Intersection Delay, s/veh	51.5
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	117	421	21	4	349	34	20	117	11	68	71	35
Future Vol, veh/h	117	421	21	4	349	34	20	117	11	68	71	35
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	130	468	23	4	388	38	22	130	12	76	79	39
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	88.4	28	15.1	15.9
HCM LOS	F	D	C	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	14%	21%	1%	39%
Vol Thru, %	79%	75%	90%	41%
Vol Right, %	7%	4%	9%	20%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	148	559	387	174
LT Vol	20	117	4	68
Through Vol	117	421	349	71
RT Vol	11	21	34	35
Lane Flow Rate	164	621	430	193
Geometry Grp	1	1	1	1
Degree of Util (X)	0.347	1.089	0.763	0.401
Departure Headway (Hd)	7.95	6.311	6.66	7.793
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	456	578	546	464
Service Time	5.95	4.311	4.66	5.793
HCM Lane V/C Ratio	0.36	1.074	0.788	0.416
HCM Control Delay	15.1	88.4	28	15.9
HCM Lane LOS	C	F	D	C
HCM 95th-tile Q	1.5	18.8	6.8	1.9

HCM 6th AWSC
3: Peebles Road/Jonesville Road & Mitchell Mill Road

2028 Build - Improved
Timing Plan: PM Peak Hour

Intersection	
Intersection Delay, s/veh	34.5
Intersection LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	117	421	21	4	349	34	20	117	11	68	71	35
Future Vol, veh/h	117	421	21	4	349	34	20	117	11	68	71	35
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	130	468	23	4	388	38	22	130	12	76	79	39
Number of Lanes	1	1	0	0	1	0	0	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	1	2
HCM Control Delay	42.8	38.8	16.6	13.6
HCM LOS	E	E	C	B

Lane	NBLn1	EBLn1	EBLn2	WBLn1	SBLn1	SBLn2
Vol Left, %	14%	100%	0%	1%	100%	0%
Vol Thru, %	79%	0%	95%	90%	0%	67%
Vol Right, %	7%	0%	5%	9%	0%	33%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	148	117	442	387	68	106
LT Vol	20	117	0	4	68	0
Through Vol	117	0	421	349	0	71
RT Vol	11	0	21	34	0	35
Lane Flow Rate	164	130	491	430	76	118
Geometry Grp	6	7	7	6	7	7
Degree of Util (X)	0.383	0.267	0.934	0.85	0.184	0.262
Departure Headway (Hd)	8.393	7.394	6.848	7.118	8.777	8.021
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	428	485	530	507	408	446
Service Time	6.478	5.156	4.61	5.181	6.554	5.797
HCM Lane V/C Ratio	0.383	0.268	0.926	0.848	0.186	0.265
HCM Control Delay	16.6	12.8	50.7	38.8	13.5	13.6
HCM Lane LOS	C	B	F	E	B	B
HCM 95th-tile Q	1.8	1.1	11.5	8.8	0.7	1

APPENDIX G

CAPACITY ANALYSIS CALCULATIONS





JONESVILLE ROAD

&

SITE ACCESS 1





HCM 6th TWSC
8: Jonesville Road & Site Access 1

2028 Build
Timing Plan: AM Peak Hour

Intersection						
Int Delay, s/veh	0.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	9	9	271	4	4	281
Future Vol, veh/h	9	9	271	4	4	281
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	10	10	301	4	4	312
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	623	303	0	0	305	0
Stage 1	303	-	-	-	-	-
Stage 2	320	-	-	-	-	-
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	450	737	-	-	1256	-
Stage 1	749	-	-	-	-	-
Stage 2	736	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	449	737	-	-	1256	-
Mov Cap-2 Maneuver	543	-	-	-	-	-
Stage 1	749	-	-	-	-	-
Stage 2	734	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	11	0	0.1			
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	625	1256	-	
HCM Lane V/C Ratio	-	-	0.032	0.004	-	
HCM Control Delay (s)	-	-	11	7.9	-	
HCM Lane LOS	-	-	B	A	-	
HCM 95th %tile Q(veh)	-	-	0.1	0	-	

HCM 6th TWSC
8: Jonesville Road & Site Access 1

2028 Build
Timing Plan: PM Peak Hour

Intersection						
Int Delay, s/veh	0.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	6	247	10	10	243
Future Vol, veh/h	5	6	247	10	10	243
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	6	7	274	11	11	270
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	572	280	0	0	285	0
Stage 1	280	-	-	-	-	-
Stage 2	292	-	-	-	-	-
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	482	759	-	-	1277	-
Stage 1	767	-	-	-	-	-
Stage 2	758	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	478	759	-	-	1277	-
Mov Cap-2 Maneuver	564	-	-	-	-	-
Stage 1	767	-	-	-	-	-
Stage 2	751	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	10.6	0	0.3			
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	656	1277	-	
HCM Lane V/C Ratio	-	-	0.019	0.009	-	
HCM Control Delay (s)	-	-	10.6	7.8	-	
HCM Lane LOS	-	-	B	A	-	
HCM 95th %tile Q(veh)	-	-	0.1	0	-	

APPENDIX H

CAPACITY ANALYSIS CALCULATIONS






JONESVILLE ROAD

&

SITE ACCESS 2






HCM 6th TWSC
9: Jonesville Road & Site Access 2

2028 Build
Timing Plan: AM Peak Hour

Intersection						
Int Delay, s/veh	0.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	9	9	265	4	4	287
Future Vol, veh/h	9	9	265	4	4	287
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	100	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	10	10	294	4	4	319
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	621	294	0	0	298	0
Stage 1	294	-	-	-	-	-
Stage 2	327	-	-	-	-	-
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	451	745	-	-	1263	-
Stage 1	756	-	-	-	-	-
Stage 2	731	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	450	745	-	-	1263	-
Mov Cap-2 Maneuver	450	-	-	-	-	-
Stage 1	756	-	-	-	-	-
Stage 2	729	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	11.7	0	0.1			
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	561	1263	-	
HCM Lane V/C Ratio	-	-	0.036	0.004	-	
HCM Control Delay (s)	-	-	11.7	7.9	-	
HCM Lane LOS	-	-	B	A	-	
HCM 95th %tile Q(veh)	-	-	0.1	0	-	

HCM 6th TWSC
9: Jonesville Road & Site Access 2

2028 Build
Timing Plan: PM Peak Hour

Intersection						
Int Delay, s/veh	0.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	5	252	10	10	237
Future Vol, veh/h	5	5	252	10	10	237
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	100	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	6	6	280	11	11	263
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	565	280	0	0	291	0
Stage 1	280	-	-	-	-	-
Stage 2	285	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	486	759	-	-	1271	-
Stage 1	767	-	-	-	-	-
Stage 2	763	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	482	759	-	-	1271	-
Mov Cap-2 Maneuver	482	-	-	-	-	-
Stage 1	767	-	-	-	-	-
Stage 2	756	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	11.2	0		0.3		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1		SBL	SBT	
Capacity (veh/h)	-	- 590		1271	-	
HCM Lane V/C Ratio	-	- 0.019		0.009	-	
HCM Control Delay (s)	-	- 11.2		7.9	-	
HCM Lane LOS	-	- B		A	-	
HCM 95th %tile Q(veh)	-	- 0.1		0	-	

APPENDIX I

CAPACITY ANALYSIS CALCULATIONS

JONESVILLE ROAD

&

SITE ACCESS 3

HCM 6th TWSC
10: Jonesville Road & Site Access 3

2028 Build
Timing Plan: AM Peak Hour

Intersection												
Int Delay, s/veh	2.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↔	↑	↔	↔	↑	↔
Traffic Vol, veh/h	47	4	10	19	4	38	4	183	6	12	268	16
Future Vol, veh/h	47	4	10	19	4	38	4	183	6	12	268	16
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	100	100	-	100
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	52	4	11	21	4	42	4	203	7	13	298	18

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	562	542	298	552	553	203	316	0	0	210	0	0
Stage 1	324	324	-	211	211	-	-	-	-	-	-	-
Stage 2	238	218	-	341	342	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	438	447	741	444	441	838	1244	-	-	1361	-	-
Stage 1	688	650	-	791	728	-	-	-	-	-	-	-
Stage 2	765	723	-	674	638	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	409	441	741	430	435	838	1244	-	-	1361	-	-
Mov Cap-2 Maneuver	409	441	-	430	435	-	-	-	-	-	-	-
Stage 1	686	644	-	789	726	-	-	-	-	-	-	-
Stage 2	720	721	-	653	632	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	14.6		11.5		0.2		0.3	
HCM LOS	B		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1244	-	-	444	618	1361	-
HCM Lane V/C Ratio	0.004	-	-	0.153	0.11	0.01	-
HCM Control Delay (s)	7.9	-	-	14.6	11.5	7.7	-
HCM Lane LOS	A	-	-	B	B	A	-
HCM 95th %tile Q(veh)	0	-	-	0.5	0.4	0	-

HCM 6th TWSC
10: Jonesville Road & Site Access 3

2028 Build
Timing Plan: PM Peak Hour

Intersection												
Int Delay, s/veh	2.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↔	↑	↑	↔	↑	↔
Traffic Vol, veh/h	27	4	6	11	4	22	10	213	20	40	153	49
Future Vol, veh/h	27	4	6	11	4	22	10	213	20	40	153	49
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	100	100	-	100
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	30	4	7	12	4	24	11	237	22	44	170	54

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	542	539	170	550	571	237	224	0	0	259	0	0
Stage 1	258	258	-	259	259	-	-	-	-	-	-	-
Stage 2	284	281	-	291	312	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	451	449	874	446	431	802	1345	-	-	1306	-	-
Stage 1	747	694	-	746	694	-	-	-	-	-	-	-
Stage 2	723	678	-	717	658	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	420	430	874	425	413	802	1345	-	-	1306	-	-
Mov Cap-2 Maneuver	420	430	-	425	413	-	-	-	-	-	-	-
Stage 1	741	670	-	740	688	-	-	-	-	-	-	-
Stage 2	691	673	-	683	636	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	13.6		11.6		0.3		1.3	
HCM LOS	B		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1345	-	-	460	587	1306	-
HCM Lane V/C Ratio	0.008	-	-	0.089	0.07	0.034	-
HCM Control Delay (s)	7.7	-	-	13.6	11.6	7.9	-
HCM Lane LOS	A	-	-	B	B	A	-
HCM 95th %tile Q(veh)	0	-	-	0.3	0.2	0.1	-

APPENDIX J

CAPACITY ANALYSIS CALCULATIONS






JONESVILLE ROAD

&

SITE ACCESS 4






HCM 6th TWSC
11: Jonesville Road & Site Access 4

2028 Build
Timing Plan: AM Peak Hour

Intersection						
Int Delay, s/veh	2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	36	24	52	156	250	47
Future Vol, veh/h	36	24	52	156	250	47
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	100	-	-	100
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	40	27	58	173	278	52
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	567	278	330	0	-	0
Stage 1	278	-	-	-	-	-
Stage 2	289	-	-	-	-	-
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	485	761	1229	-	-	-
Stage 1	769	-	-	-	-	-
Stage 2	760	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	462	761	1229	-	-	-
Mov Cap-2 Maneuver	551	-	-	-	-	-
Stage 1	733	-	-	-	-	-
Stage 2	760	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	11.5	2		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1229	-	619	-	-	
HCM Lane V/C Ratio	0.047	-	0.108	-	-	
HCM Control Delay (s)	8.1	-	11.5	-	-	
HCM Lane LOS	A	-	B	-	-	
HCM 95th %tile Q(veh)	0.1	-	0.4	-	-	

HCM 6th TWSC
11: Jonesville Road & Site Access 4

2028 Build
Timing Plan: PM Peak Hour

Intersection						
Int Delay, s/veh	3.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	54	54	79	189	120	50
Future Vol, veh/h	54	54	79	189	120	50
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	100	-	-	100
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	60	60	88	210	133	56
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	519	133	189	0	-	0
Stage 1	133	-	-	-	-	-
Stage 2	386	-	-	-	-	-
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	517	916	1385	-	-	-
Stage 1	893	-	-	-	-	-
Stage 2	687	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	484	916	1385	-	-	-
Mov Cap-2 Maneuver	559	-	-	-	-	-
Stage 1	836	-	-	-	-	-
Stage 2	687	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	11.3	2.3		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1385	-	694	-	-	
HCM Lane V/C Ratio	0.063	-	0.173	-	-	
HCM Control Delay (s)	7.8	-	11.3	-	-	
HCM Lane LOS	A	-	B	-	-	
HCM 95th %tile Q(veh)	0.2	-	0.6	-	-	

APPENDIX K

MITCHELL MILL ROAD & SITE ACCESS 5

HCM 6th TWSC
12: Mitchell Mill Road & Site Access 5

2028 Build
Timing Plan: AM Peak Hour

Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑	↖		↖
Traffic Vol, veh/h	0	320	660	5	0	6
Future Vol, veh/h	0	320	660	5	0	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	100	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	356	733	6	0	7
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	-	0	-	0	-	733
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.318
Pot Cap-1 Maneuver	0	-	-	-	0	421
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	421
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	WB		SB		
HCM Control Delay, s	0	0		13.7		
HCM LOS	B					
Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1		
Capacity (veh/h)	-	-	-	421		
HCM Lane V/C Ratio	-	-	-	0.016		
HCM Control Delay (s)	-	-	-	13.7		
HCM Lane LOS	-	-	-	B		
HCM 95th %tile Q(veh)	-	-	-	0		

HCM 6th TWSC
12: Mitchell Mill Road & Site Access 5

2028 Build
Timing Plan: PM Peak Hour

Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑	↑		↑
Traffic Vol, veh/h	0	559	421	4	0	10
Future Vol, veh/h	0	559	421	4	0	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	100	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	621	468	4	0	11
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	-	0	-	0	-	468
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.318
Pot Cap-1 Maneuver	0	-	-	-	0	595
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	595
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	WB		SB		
HCM Control Delay, s	0	0		11.2		
HCM LOS	B					
Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1		
Capacity (veh/h)	-	-	-	595		
HCM Lane V/C Ratio	-	-	-	0.019		
HCM Control Delay (s)	-	-	-	11.2		
HCM Lane LOS	-	-	-	B		
HCM 95th %tile Q(veh)	-	-	-	0.1		

APPENDIX L

MITCHELL MILL ROAD & SITE ACCESS 6

HCM 6th TWSC
13: Mitchell Mill Road & Site Access 6

2028 Build
Timing Plan: AM Peak Hour

Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑	↗		↗
Traffic Vol, veh/h	0	320	663	4	0	4
Future Vol, veh/h	0	320	663	4	0	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	100	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	356	737	4	0	4
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	-	0	-	0	-	737
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.318
Pot Cap-1 Maneuver	0	-	-	-	0	418
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	418
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	WB		SB		
HCM Control Delay, s	0	0		13.7		
HCM LOS	B					
Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1		
Capacity (veh/h)	-	-	-	418		
HCM Lane V/C Ratio	-	-	-	0.011		
HCM Control Delay (s)	-	-	-	13.7		
HCM Lane LOS	-	-	-	B		
HCM 95th %tile Q(veh)	-	-	-	0		

HCM 6th TWSC
13: Mitchell Mill Road & Site Access 6

2028 Build
Timing Plan: PM Peak Hour

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑	↑		↑
Traffic Vol, veh/h	0	559	421	10	0	4
Future Vol, veh/h	0	559	421	10	0	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	100	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	621	468	11	0	4
Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	-	0	-	0	-	468
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.318
Pot Cap-1 Maneuver	0	-	-	-	0	595
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	595
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	WB		SB		
HCM Control Delay, s	0	0		11.1		
HCM LOS	B					
Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1		
Capacity (veh/h)	-	-	-	595		
HCM Lane V/C Ratio	-	-	-	0.007		
HCM Control Delay (s)	-	-	-	11.1		
HCM Lane LOS	-	-	-	B		
HCM 95th %tile Q(veh)	-	-	-	0		

APPENDIX M






MITCHELL MILL ROAD

&

SITE ACCESS 7






HCM 6th TWSC
14: Mitchell Mill Road & Site Access 7

2028 Build
Timing Plan: PM Peak Hour

Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	11	553	421	4	6	6
Future Vol, veh/h	11	553	421	4	6	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	12	614	468	4	7	7
Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	472	0	-	0	1108	470
Stage 1	-	-	-	-	470	-
Stage 2	-	-	-	-	638	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1090	-	-	-	232	594
Stage 1	-	-	-	-	629	-
Stage 2	-	-	-	-	526	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1090	-	-	-	229	594
Mov Cap-2 Maneuver	-	-	-	-	229	-
Stage 1	-	-	-	-	622	-
Stage 2	-	-	-	-	526	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.2	0		16.3		
HCM LOS				C		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1090	-	-	-	331	
HCM Lane V/C Ratio	0.011	-	-	-	0.04	
HCM Control Delay (s)	8.3	-	-	-	16.3	
HCM Lane LOS	A	-	-	-	C	
HCM 95th %tile Q(veh)	0	-	-	-	0.1	

HCM 6th TWSC
14: Mitchell Mill Road & Site Access 7

2028 Build
Timing Plan: AM Peak Hour

Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	4	310	663	4	10	10
Future Vol, veh/h	4	310	663	4	10	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	344	737	4	11	11
Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	741	0	-	0	1091	739
Stage 1	-	-	-	-	739	-
Stage 2	-	-	-	-	352	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	866	-	-	-	238	417
Stage 1	-	-	-	-	472	-
Stage 2	-	-	-	-	712	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	866	-	-	-	237	417
Mov Cap-2 Maneuver	-	-	-	-	237	-
Stage 1	-	-	-	-	470	-
Stage 2	-	-	-	-	712	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.1	0		17.9		
HCM LOS				C		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	866	-	-	-	302	
HCM Lane V/C Ratio	0.005	-	-	-	0.074	
HCM Control Delay (s)	9.2	-	-	-	17.9	
HCM Lane LOS	A	-	-	-	C	
HCM 95th %tile Q(veh)	0	-	-	-	0.2	

APPENDIX N

MITCHELL MILL ROAD & SITE ACCESS 8

HCM 6th TWSC
15: Mitchell Mill Road & Site Access 8

2028 Build
Timing Plan: AM Peak Hour

Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑	↗		↗
Traffic Vol, veh/h	0	320	645	11	0	20
Future Vol, veh/h	0	320	645	11	0	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	100	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	356	717	12	0	22
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	-	0	-	0	-	717
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.318
Pot Cap-1 Maneuver	0	-	-	-	0	430
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	430
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	WB		SB		
HCM Control Delay, s	0	0		13.8		
HCM LOS	B					
Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1		
Capacity (veh/h)	-	-	-	430		
HCM Lane V/C Ratio	-	-	-	0.052		
HCM Control Delay (s)	-	-	-	13.8		
HCM Lane LOS	-	-	-	B		
HCM 95th %tile Q(veh)	-	-	-	0.2		

HCM 6th TWSC
15: Mitchell Mill Road & Site Access 8

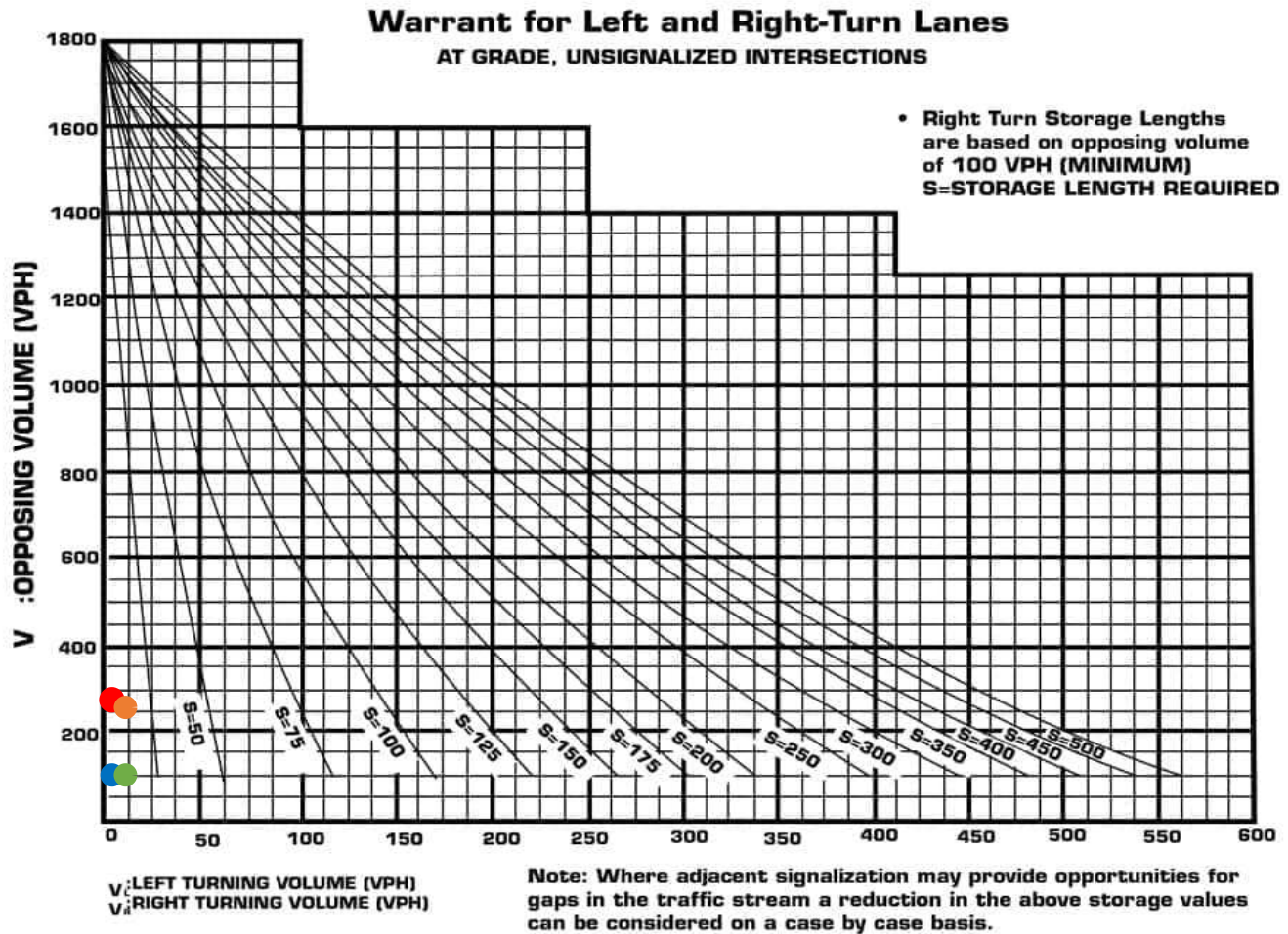
2028 Build
Timing Plan: PM Peak Hour

Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑	↗		↗
Traffic Vol, veh/h	0	559	386	18	0	39
Future Vol, veh/h	0	559	386	18	0	39
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	100	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	621	429	20	0	43
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	-	0	-	0	-	429
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.318
Pot Cap-1 Maneuver	0	-	-	-	0	626
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	626
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	WB		SB		
HCM Control Delay, s	0	0		11.2		
HCM LOS	B					
Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1		
Capacity (veh/h)	-	-	-	626		
HCM Lane V/C Ratio	-	-	-	0.069		
HCM Control Delay (s)	-	-	-	11.2		
HCM Lane LOS	-	-	-	B		
HCM 95th %tile Q(veh)	-	-	-	0.2		

APPENDIX O

TURN LANE WARRANTS

TURN LANE STORAGE WARRANTS

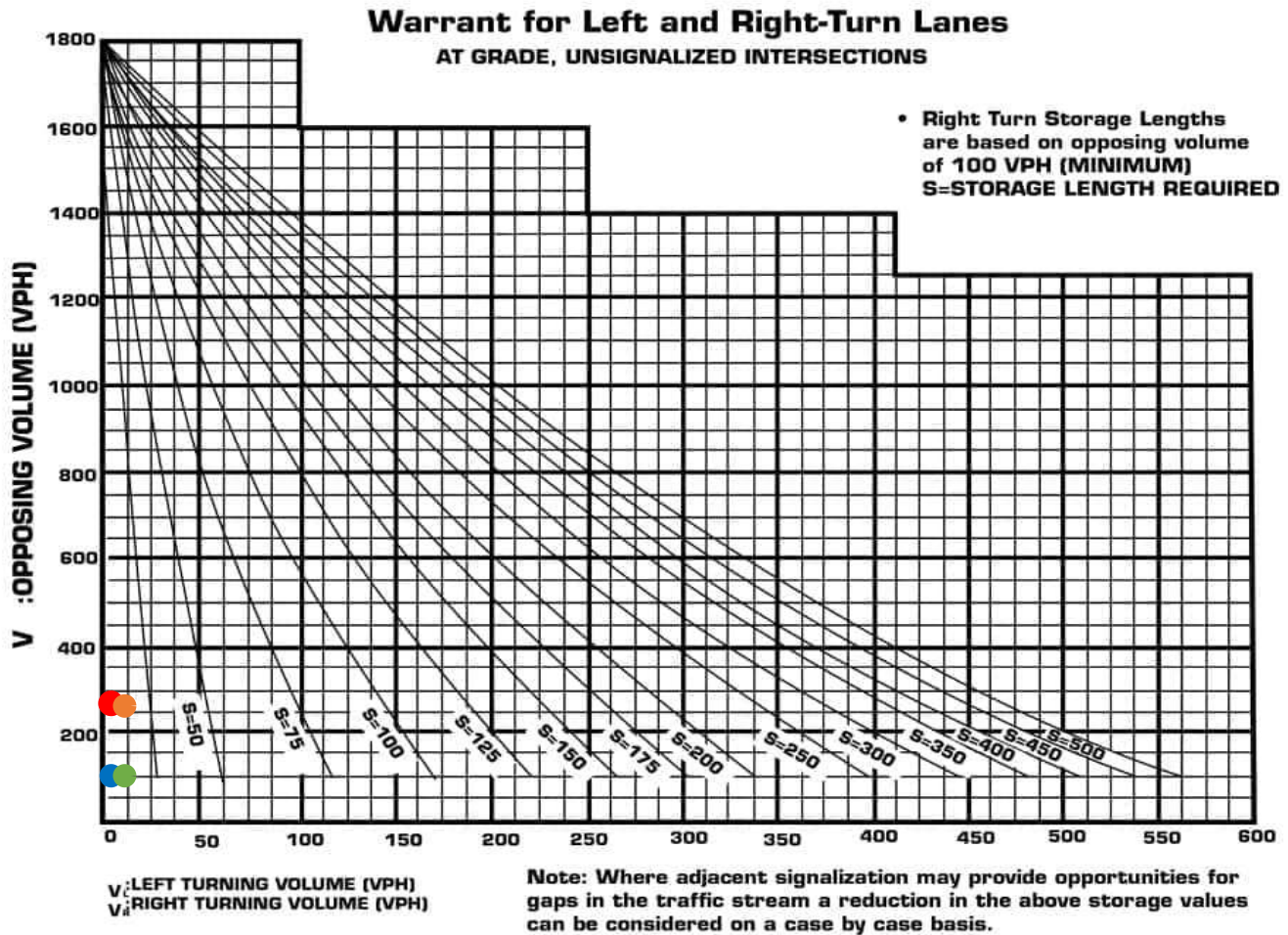


Policy On Street And Driveway Access to North Carolina Highways

INTERSECTION: Jonesville Road & Site Access 1

SCENARIO	Movement	Turn Lane	Turning Volume (V _r /V _l)	Approach / Opposing Volume (V _A /V _O)	Symbol
AM Build	SBL	Left	3	274	●
AM Build	NBR	Right	3	100	●
PM Build	SBL	Left	10	257	●
PM Build	NBR	Right	10	100	●

TURN LANE STORAGE WARRANTS

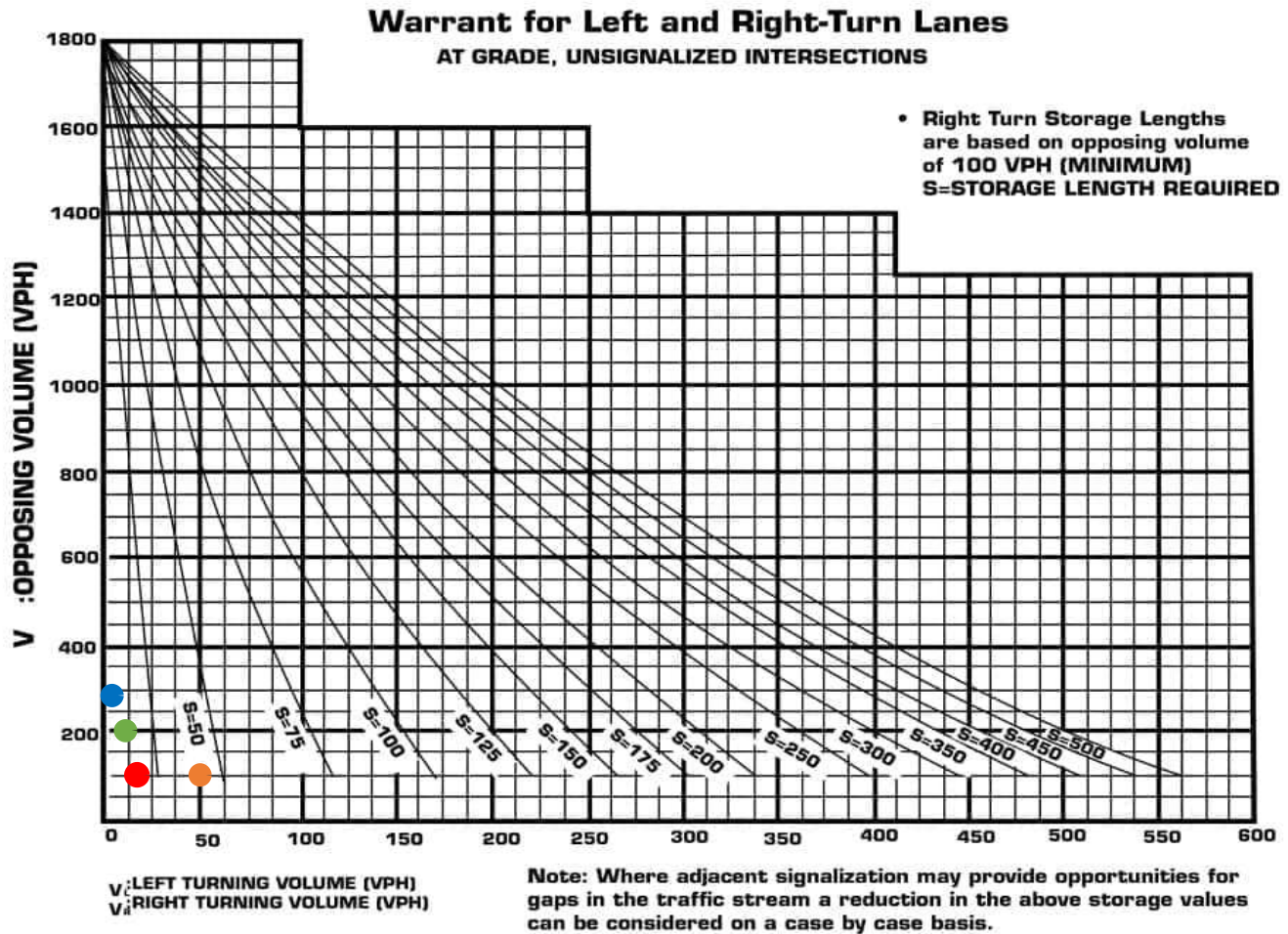


Policy On Street And Driveway Access to North Carolina Highways

INTERSECTION: Jonesville Road & Site Access 2

SCENARIO	Movement	Turn Lane	Turning Volume (V_r/V_l)	Approach / Opposing Volume (V_A/V_O)	Symbol
AM Build	SBL	Left	3	268	●
AM Build	NBR	Right	3	100	●
PM Build	SBL	Left	10	262	●
PM Build	NBR	Right	10	100	●

TURN LANE STORAGE WARRANTS

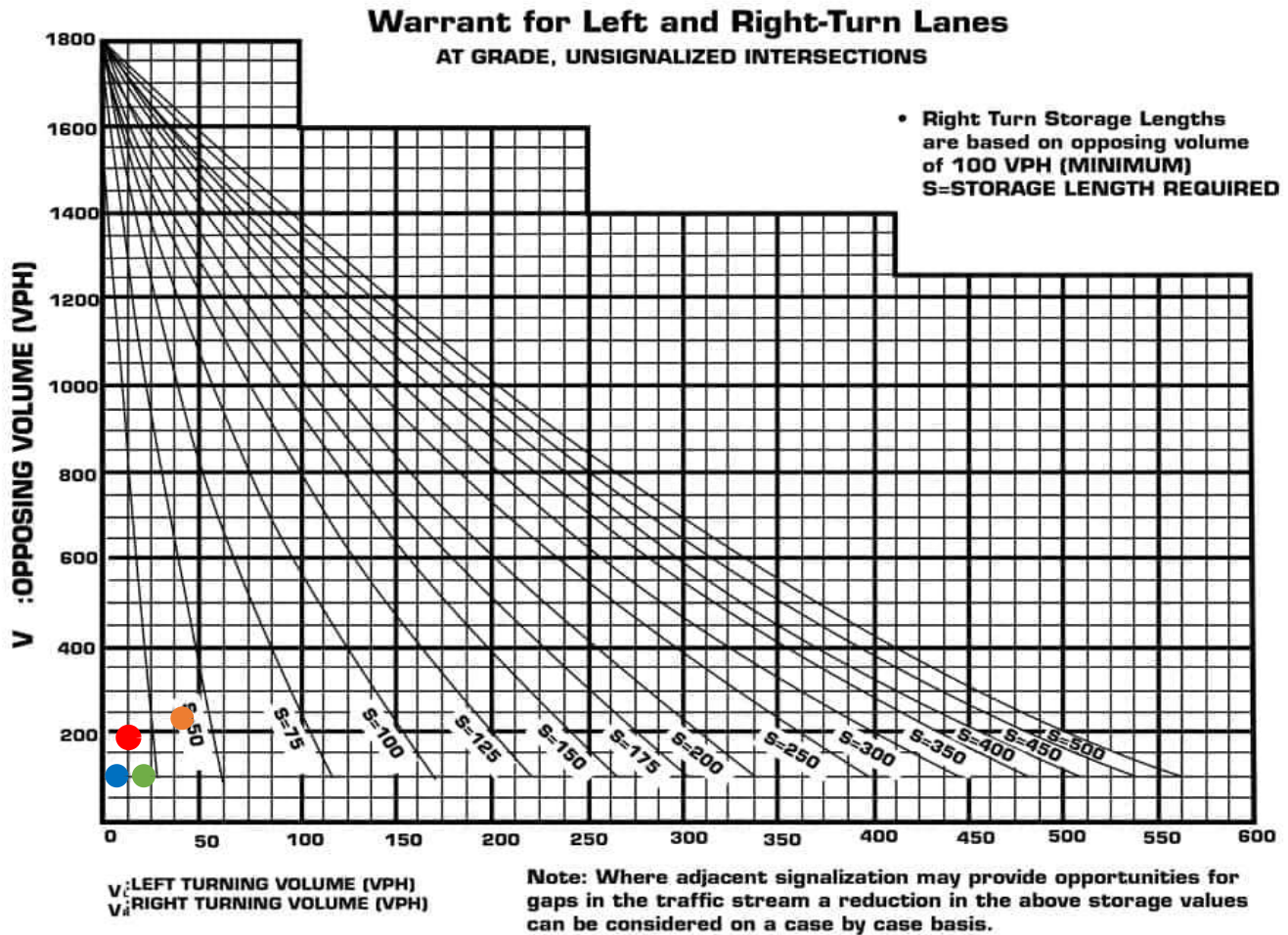


Policy On Street And Driveway Access to North Carolina Highways

INTERSECTION: Jonesville Road & Site Access 3 [EB Approach]

SCENARIO	Movement	Turn Lane	Turning Volume (V_R/V_L)	Approach / Opposing Volume (V_A/V_O)	Symbol
AM Build	SBR	Right	16	100	●
AM Build	NBL	Left	3	284	●
PM Build	SBR	Right	49	100	●
PM Build	NBL	Left	10	202	●

TURN LANE STORAGE WARRANTS

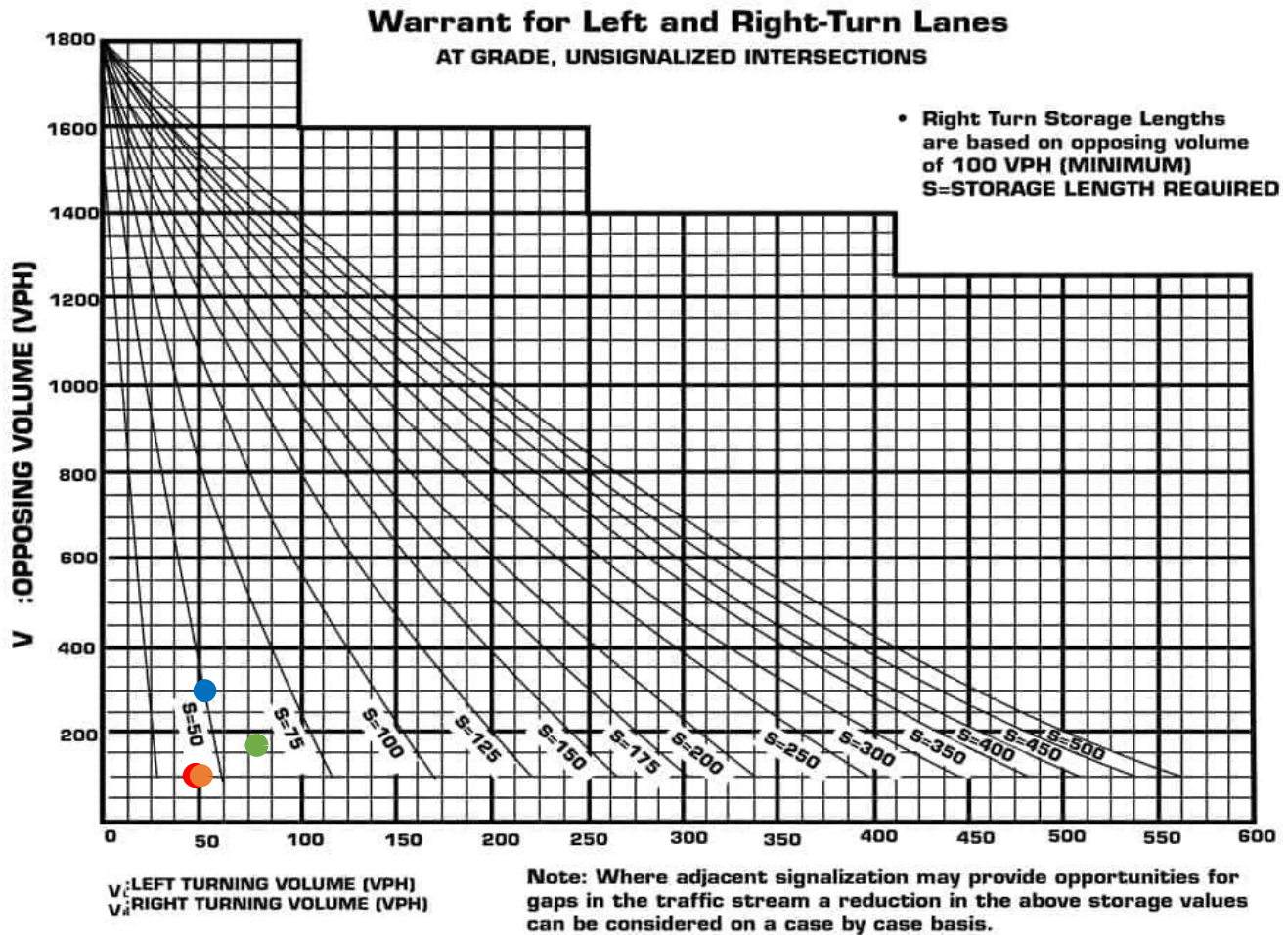


Policy On Street And Driveway Access to North Carolina Highways

INTERSECTION: Jonesville Road & Site Access 3 [WB Approach]

SCENARIO	Movement	Turn Lane	Turning Volume (V_R/V_L)	Approach / Opposing Volume (V_A/V_O)	Symbol
AM Build	SBL	Left	12	189	●
AM Build	NBR	Right	6	100	●
PM Build	SBL	Left	40	233	●
PM Build	NBR	Right	20	100	●

TURN LANE STORAGE WARRANTS

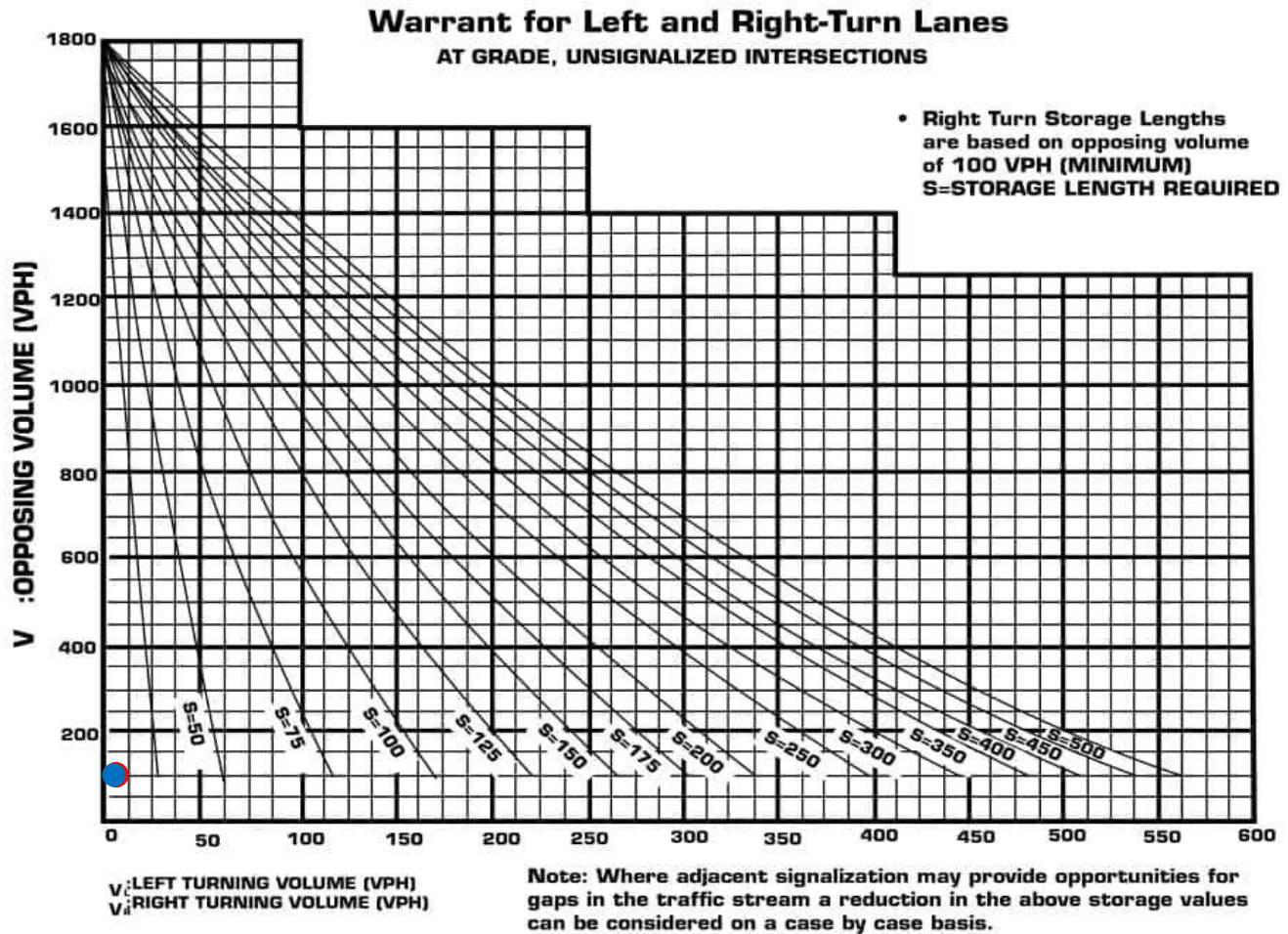


Policy On Street And Driveway Access to North Carolina Highways

INTERSECTION: Jonesville Road & Site Access 4

SCENARIO	Movement	Turn Lane	Turning Volume (V_R/V_L)	Approach / Opposing Volume (V_A/V_O)	Symbol
AM Build	SBR	Right	47	100	●
AM Build	NBL	Left	52	297	●
PM Build	SBR	Right	50	100	●
PM Build	NBL	Left	79	170	●

TURN LANE STORAGE WARRANTS

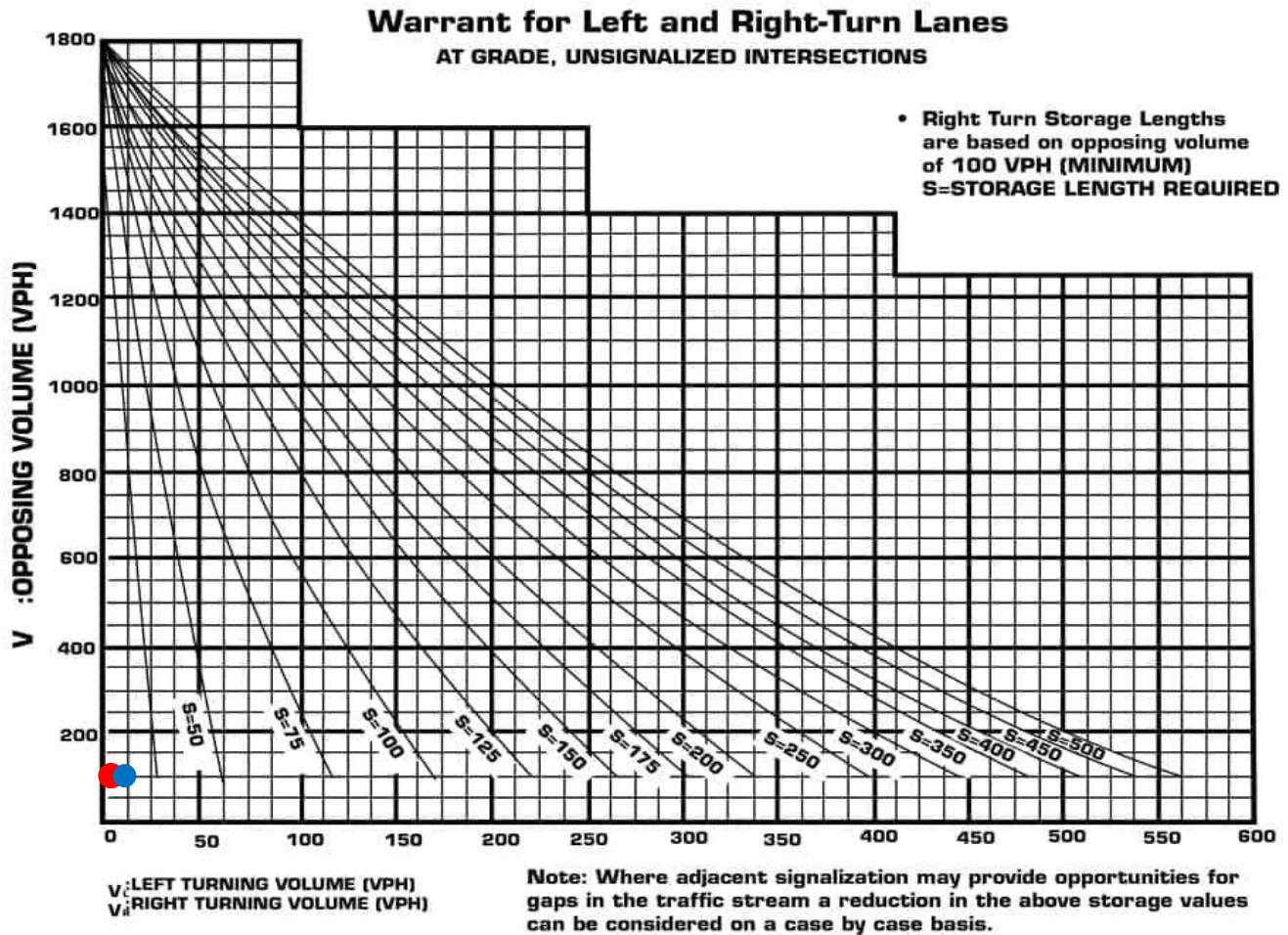


Policy On Street And Driveway Access to North Carolina Highways

INTERSECTION: Mitchell Mill Road & Site Access 5

SCENARIO	Movement	Turn Lane	Turning Volume (V_r/V_t)	Approach / Opposing Volume (V_A/V_O)	Symbol
AM Build	WBR	Right	5	100	●
PM Build	WBR	Right	4	100	●
					●
					●

TURN LANE STORAGE WARRANTS

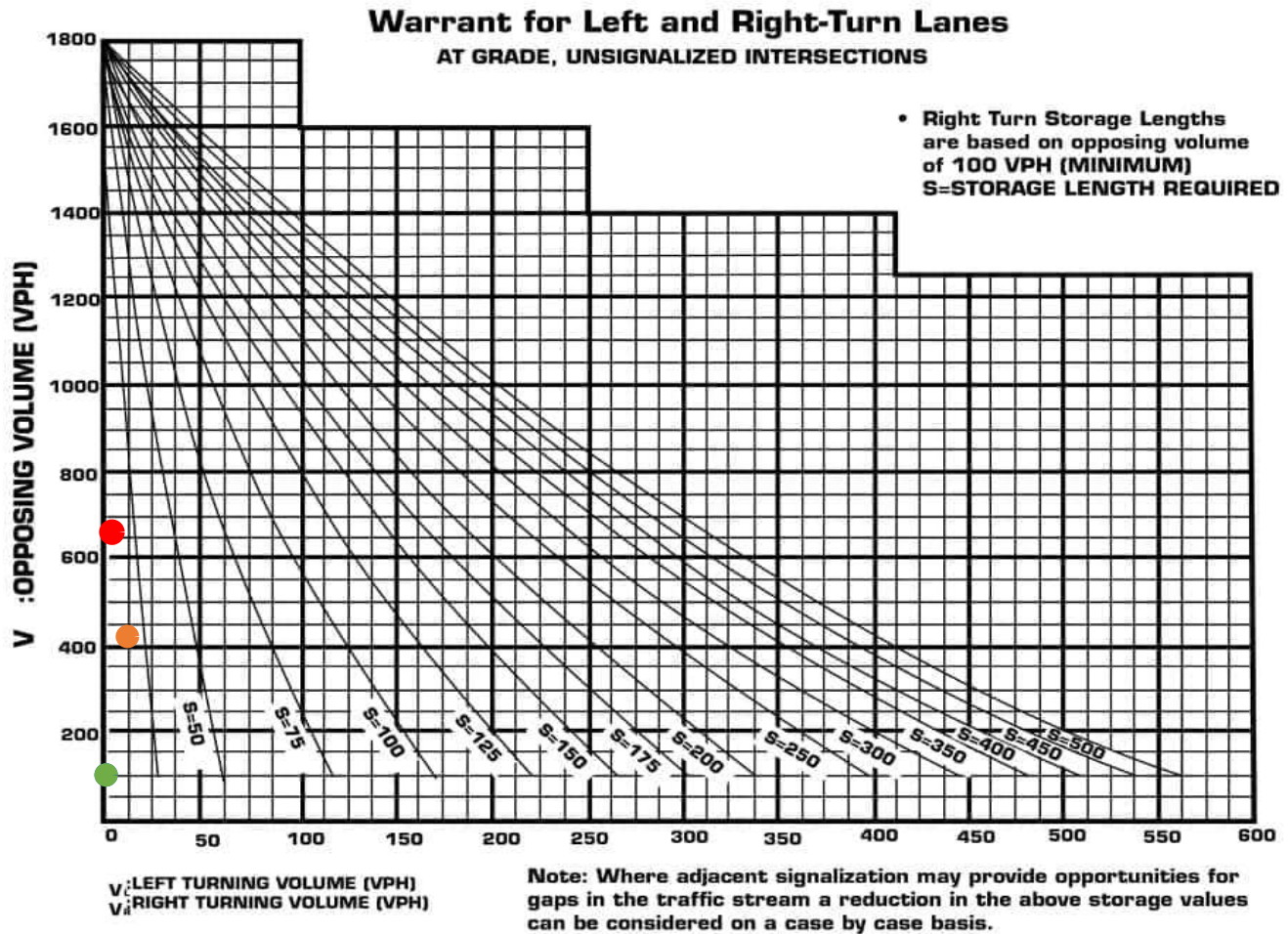


Policy On Street And Driveway Access to North Carolina Highways

INTERSECTION: Mitchell Mill Road & Site Access 6

SCENARIO	Movement	Turn Lane	Turning Volume (V _r /V _l)	Approach / Opposing Volume (V _A /V _O)	Symbol
AM Build	WBR	Right	3	100	●
PM Build	WBR	Right	10	100	●
					●
					●

TURN LANE STORAGE WARRANTS

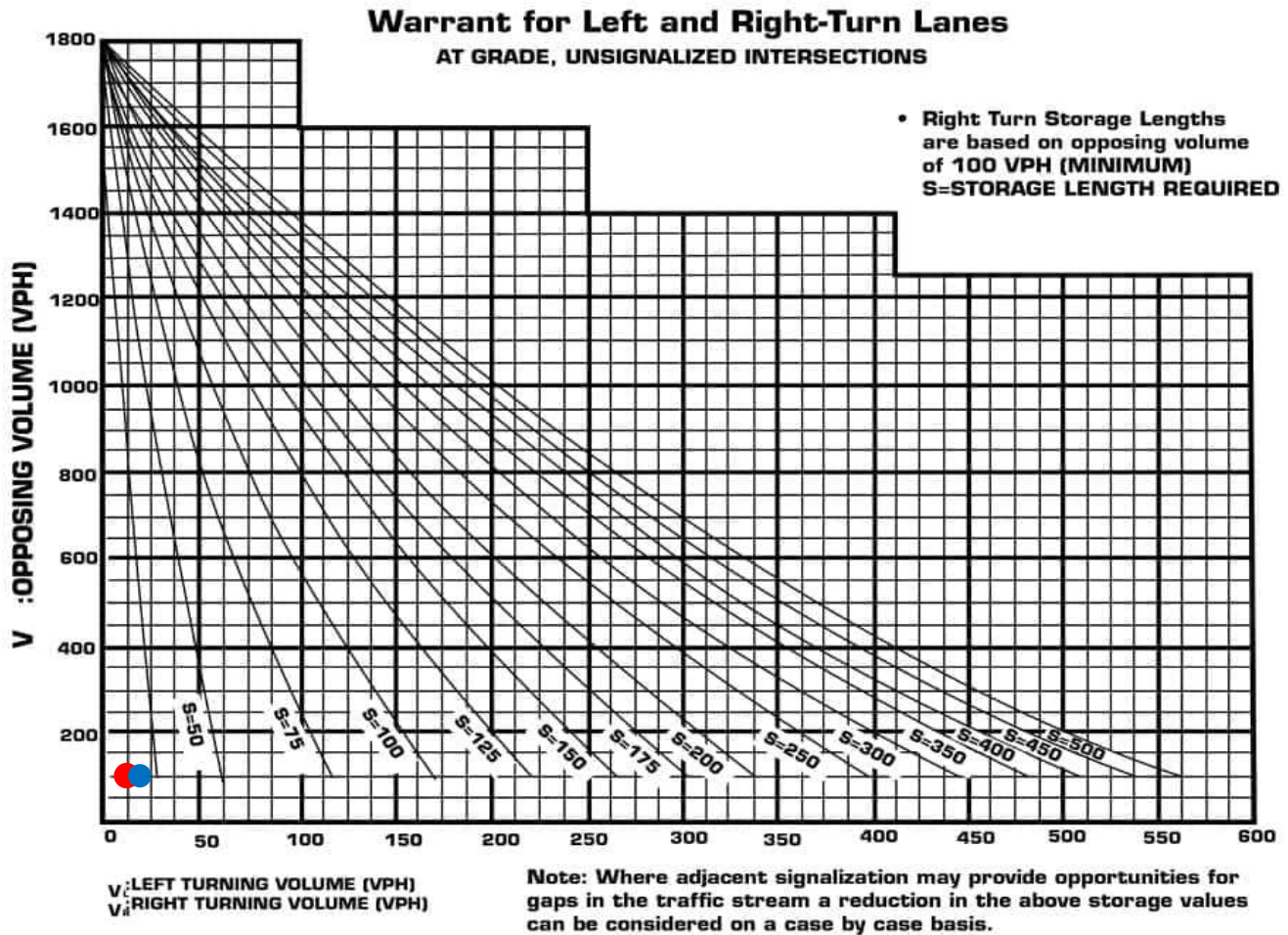


Policy On Street And Driveway Access to North Carolina Highways

INTERSECTION: Mitchell Mill Road & Site Access 7

SCENARIO	Movement	Turn Lane	Turning Volume (V_r/V_l)	Approach / Opposing Volume (V_A/V_O)	Symbol
AM Build	EBL	Left	3	663	●
AM Build	WBR	Right	0	100	●
PM Build	EBL	Left	11	421	●
PM Build	WBR	Right	0	100	●

TURN LANE STORAGE WARRANTS



Policy On Street And Driveway Access to North Carolina Highways

INTERSECTION: Mitchell Mill Road & Site Access 8

SCENARIO	Movement	Turn Lane	Turning Volume (V_R/V_L)	Approach / Opposing Volume (V_A/V_O)	Symbol
AM Build	WBR	Right	11	100	●
PM Build	WBR	Right	18	100	●
					●
					●

APPENDIX P

MUTCD / ITRE SIGNAL WARRANT ANALYSIS

Traffic Signal Warrant Analysis

Warrants 1 - 3 (Volume Warrants)

Project Name	5109 Mitchell Mill Road
Project/File #	20498 - 04
Scenario	2028 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	3057 vehicles	Total Approach Volume	757 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.

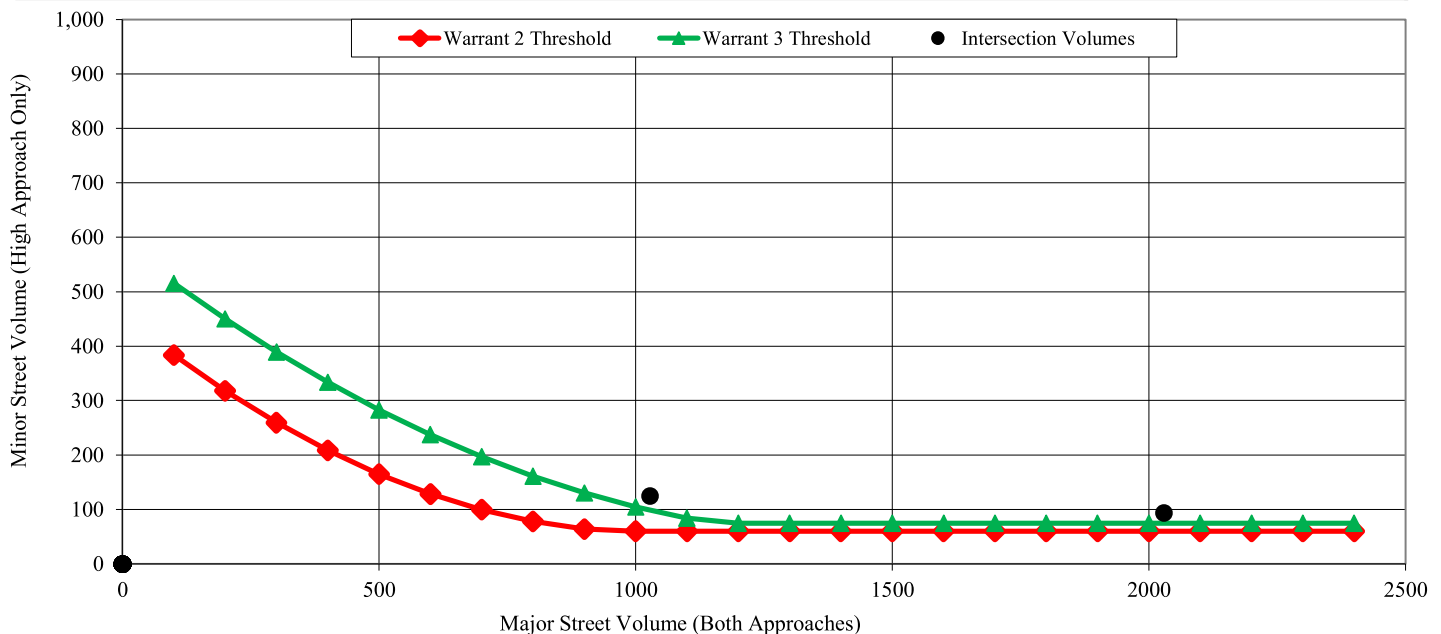
Warrant 1, Eight Hour Vehicular Volume			
	Condition A	Condition B	Condition A+B*
Condition Satisfied?	Not Satisfied	Not Satisfied	Not Satisfied
Required values reached for	1 hour	2 hours	2 (Cond. A) & 2 (Cond. B)
Criteria - Major Street (veh/hr)	420	630	336 (Cond. A) & 504 (Cond. B)
Criteria - Minor Street (veh/hr)	105	53	84 (Cond. A) & 42 (Cond. B)

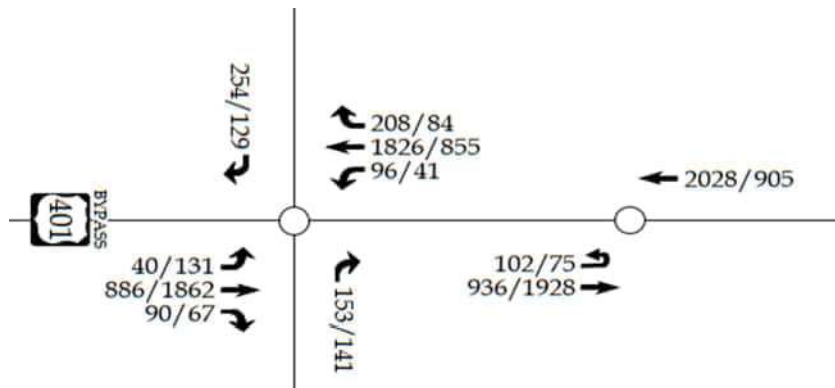
* Should be applied only after an adequate trial of other alternatives that could cause less delay and inconvenience to traffic has failed to solve the traffic problems.

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	2369 total, 246 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)

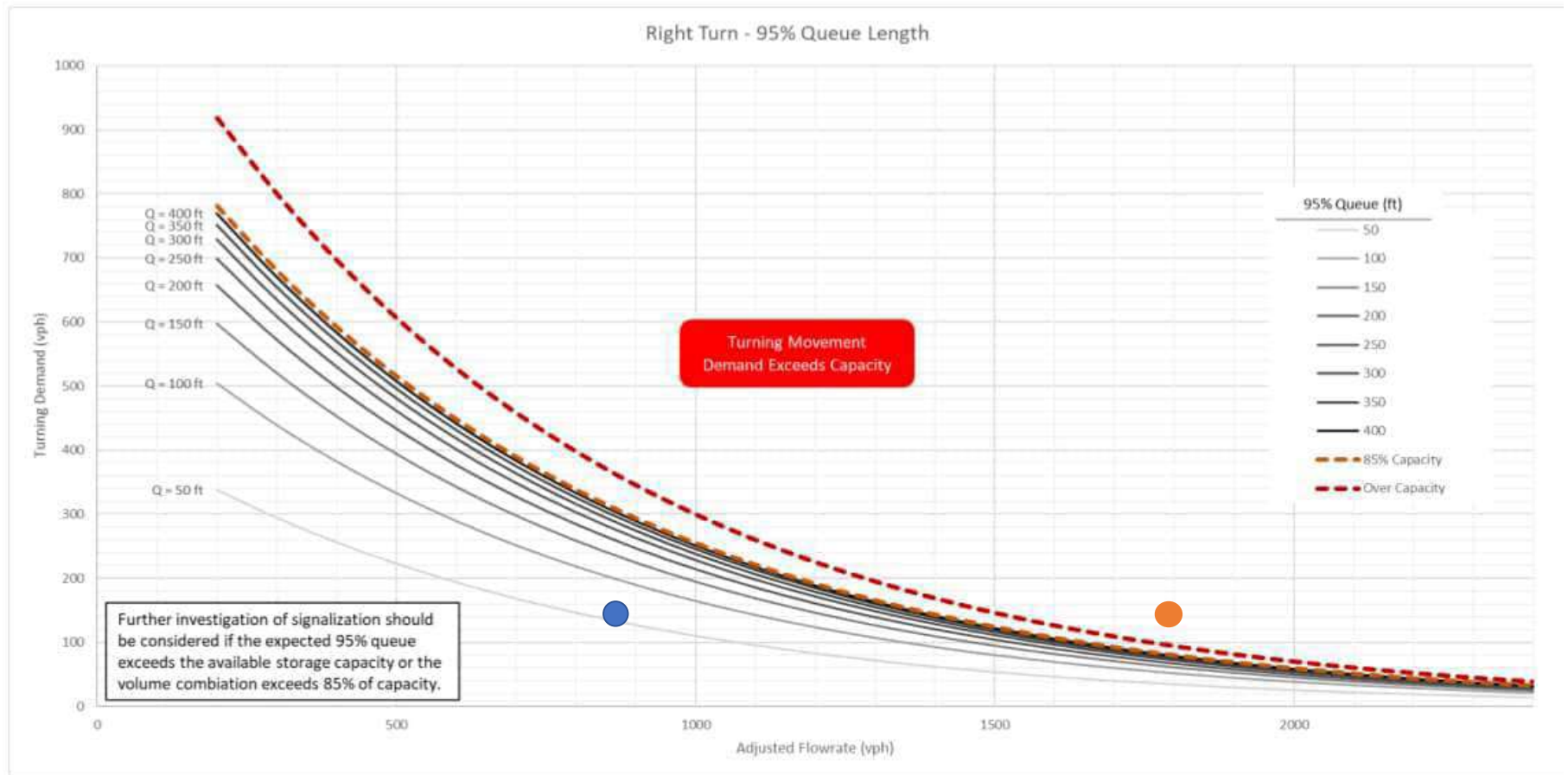


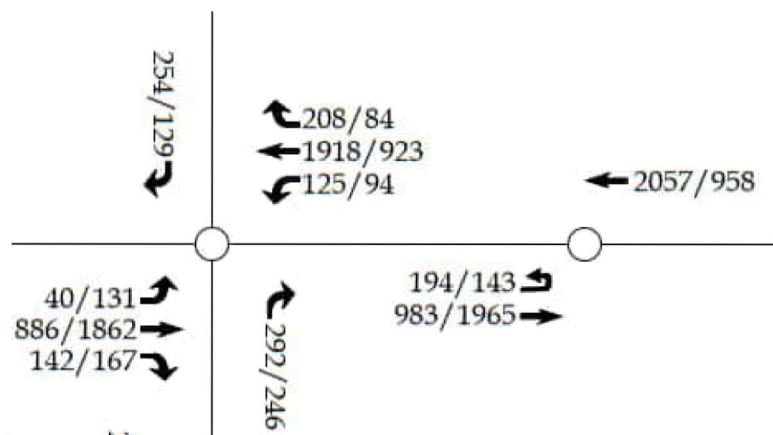


CVAF =	1
Conflicting =	886
ACV =	886
Turn Vol =	153

CVAF =	1
Conflicting =	1862
ACV =	1,862
Turn Vol =	141

US 401 & Jonesville Road
2028 No-Build Traffic Conditions



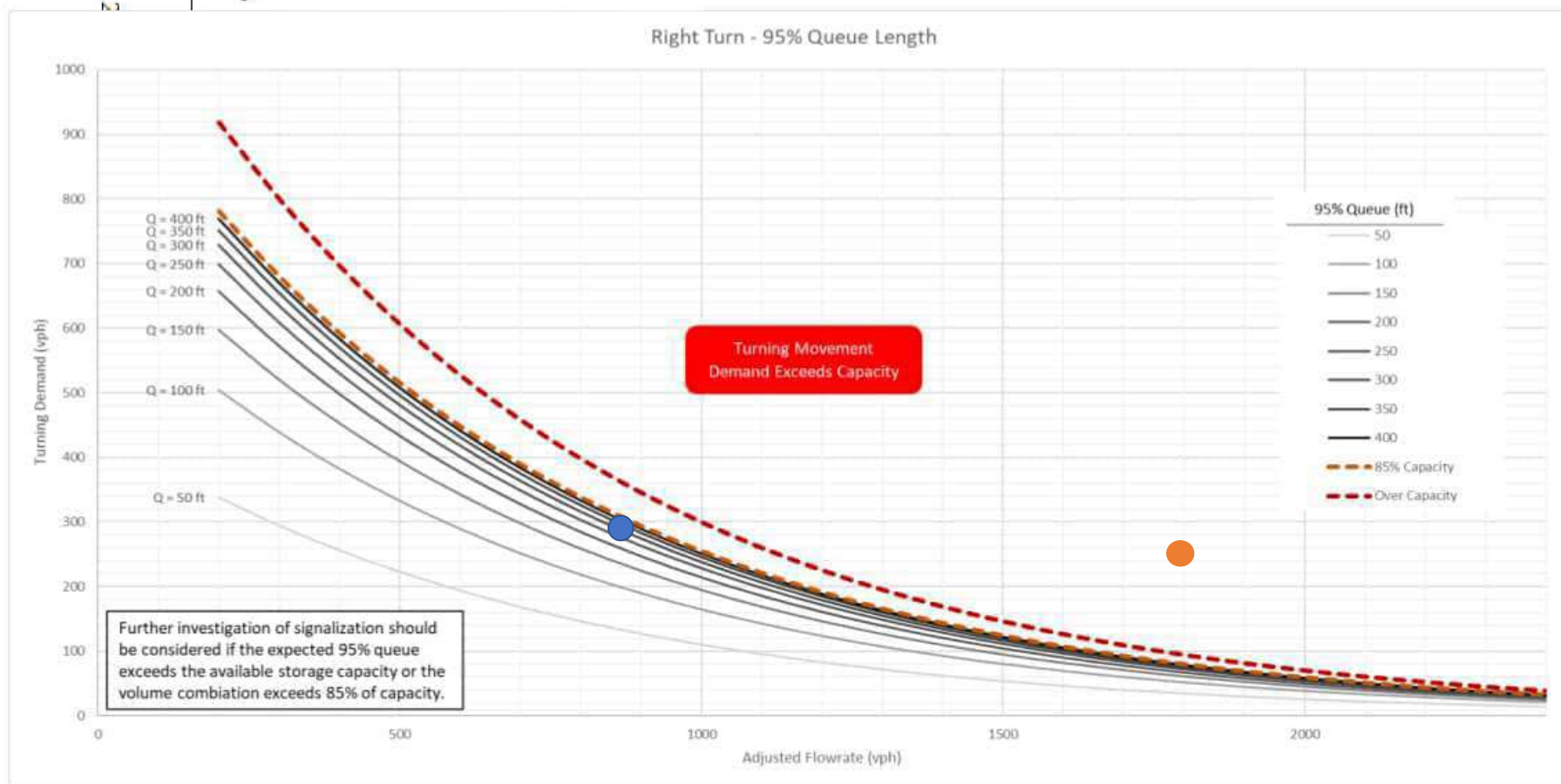


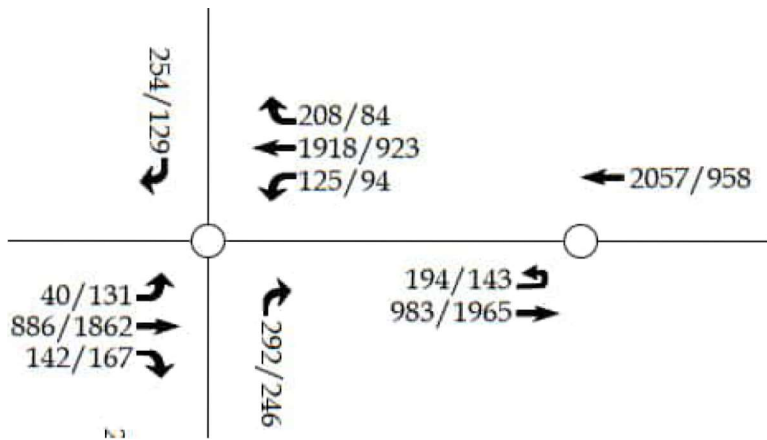
CVAF =	1
Conflicting =	886
ACV =	886
Turn Vol =	292

CVAF =	1
Conflicting =	1862
ACV =	1,862
Turn Vol =	246

US 401 & Jonesville Road

2028 Build Traffic Conditions

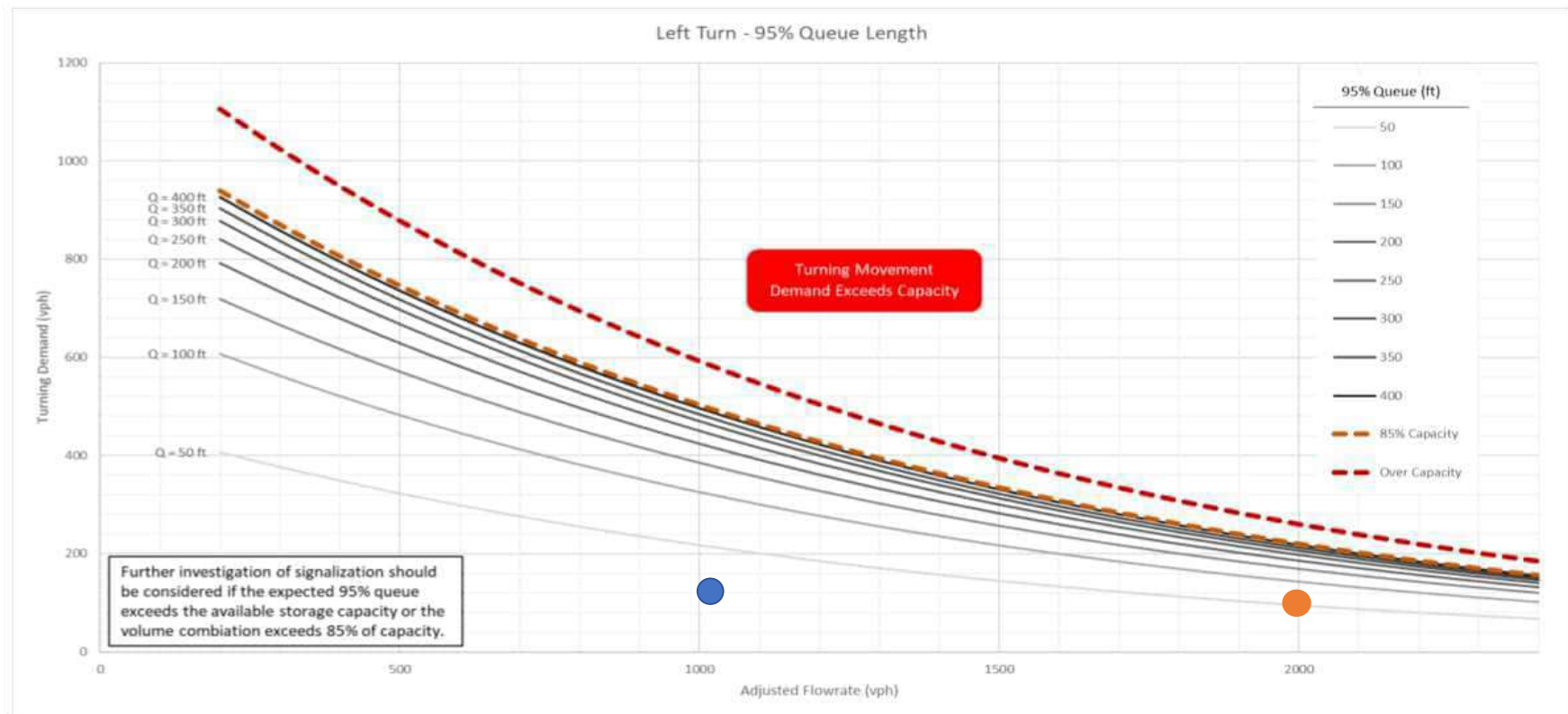




CVAF =	1
Conflicting =	1028
ACV =	1028
Turn Vol =	125

CVAF =	1
Conflicting =	2029
ACV =	2029
Turn Vol =	94

US 401 & Jonesville Road
2028 Build Traffic Conditions



Traffic Signal Warrant Analysis

Warrants 1 - 3 (Volume Warrants)

Project Name	5109 Mitchell Mill Road
Project/File #	20498 - 04
Scenario	2028 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	3015 vehicles	Total Approach Volume	337 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.

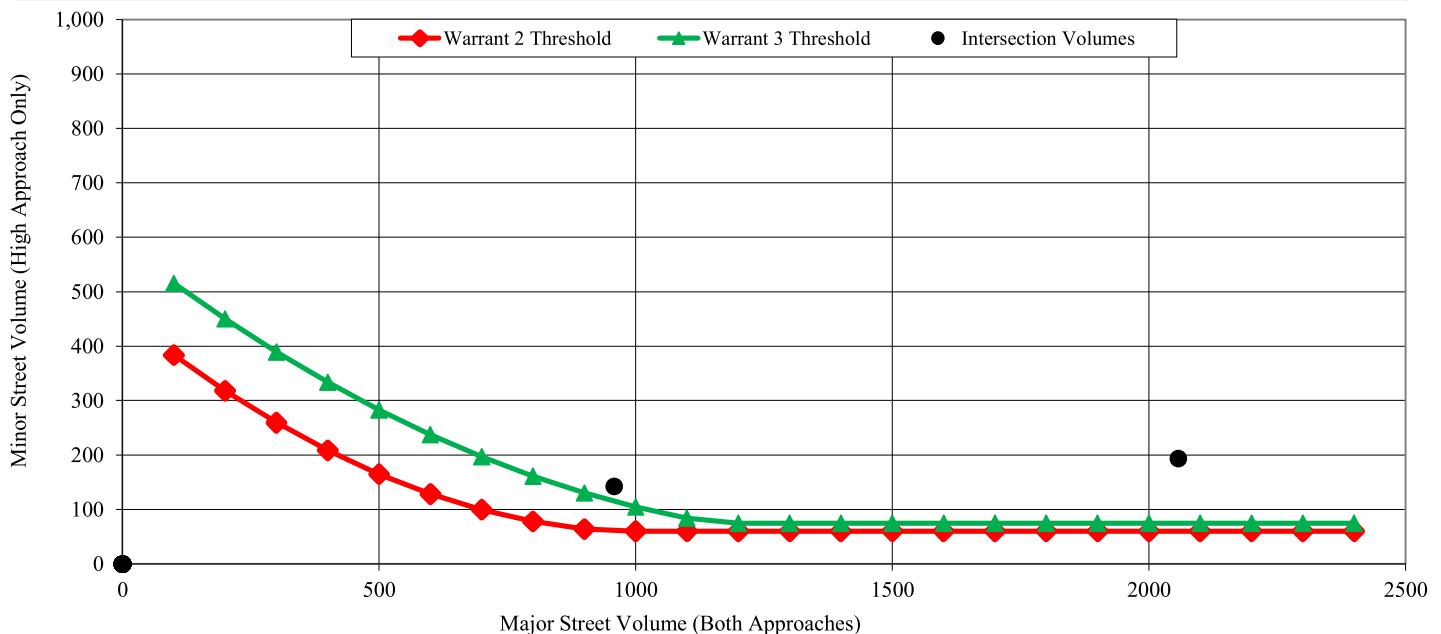
Warrant 1, Eight Hour Vehicular Volume			
	Condition A	Condition B	Condition A+B*
Condition Satisfied?	Not Satisfied	Not Satisfied	Not Satisfied
Required values reached for	2 hours	2 hours	2 (Cond. A) & 2 (Cond. B)
Criteria - Major Street (veh/hr)	420	630	336 (Cond. A) & 504 (Cond. B)
Criteria - Minor Street (veh/hr)	105	53	84 (Cond. A) & 42 (Cond. B)

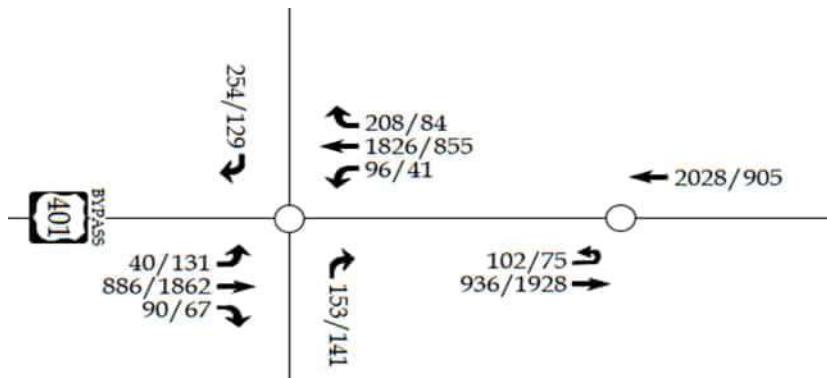
* Should be applied only after an adequate trial of other alternatives that could cause less delay and inconvenience to traffic has failed to solve the traffic problems.

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	2251 total, 194 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)

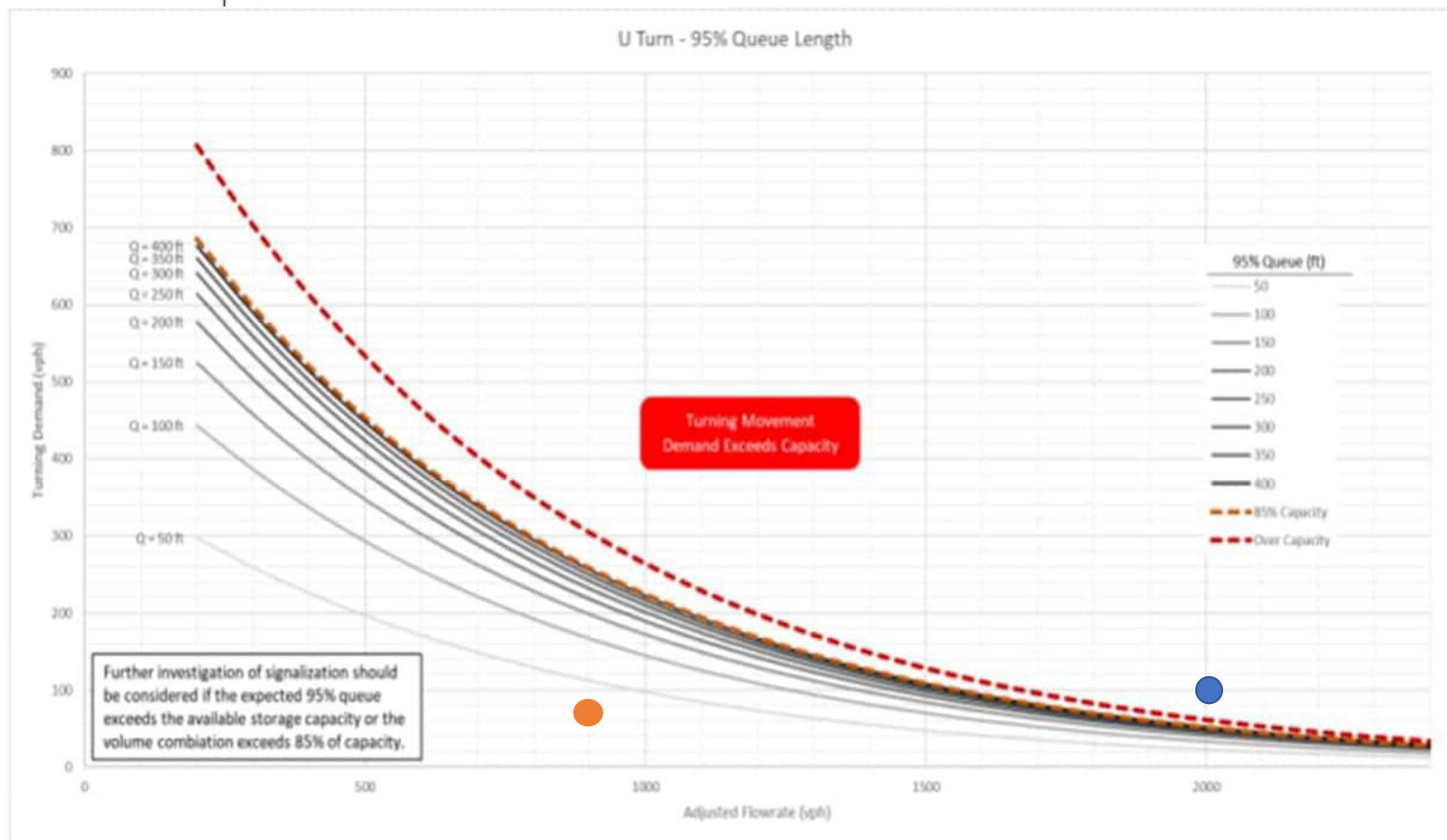


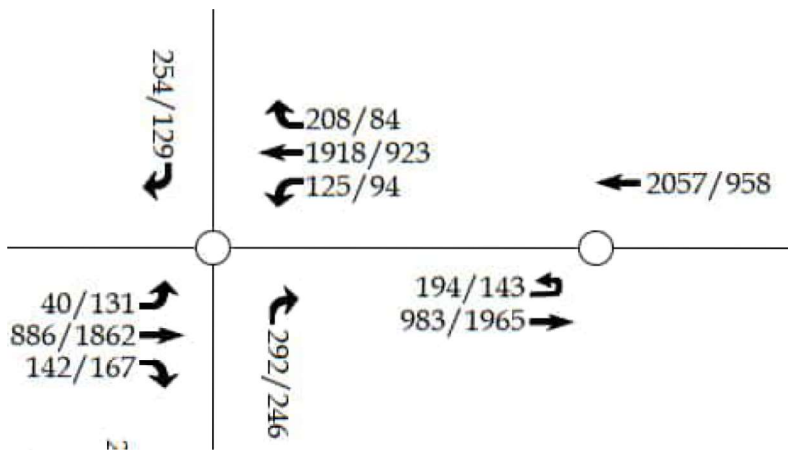


CVAF =	1
Conflicting =	2028
ACV =	2028
Turn Vol =	102

CVAF =	1
Conflicting =	905
ACV =	905
Turn Vol =	75

US 401 & Eastern U-Turn
2028 No-Build Traffic Conditions

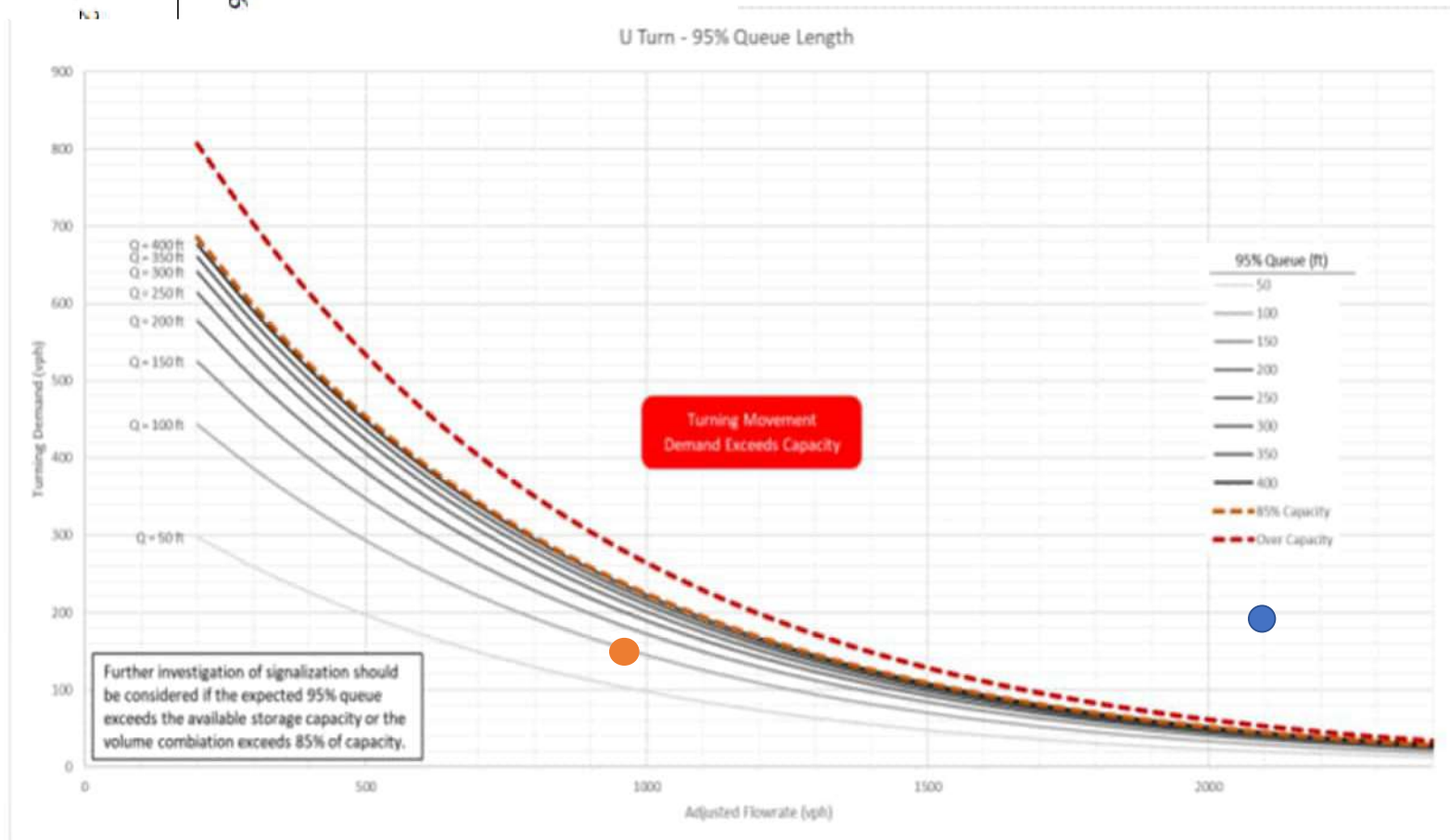




CVAF =	1
Conflicting =	2057
ACV =	2057
Turn Vol =	194

US 401 & Eastern U-Turn
2028 Build Traffic Conditions

CVAF =	1
Conflicting =	958
ACV =	959
Turn Vol =	143



Traffic Signal Warrant Analysis

Warrants 1 - 3 (Volume Warrants)

Project Name	5109 Mitchell Mill Road
Project/File #	20498 - 04
Scenario	2028 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	1733 vehicles	Total Approach Volume	527 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.

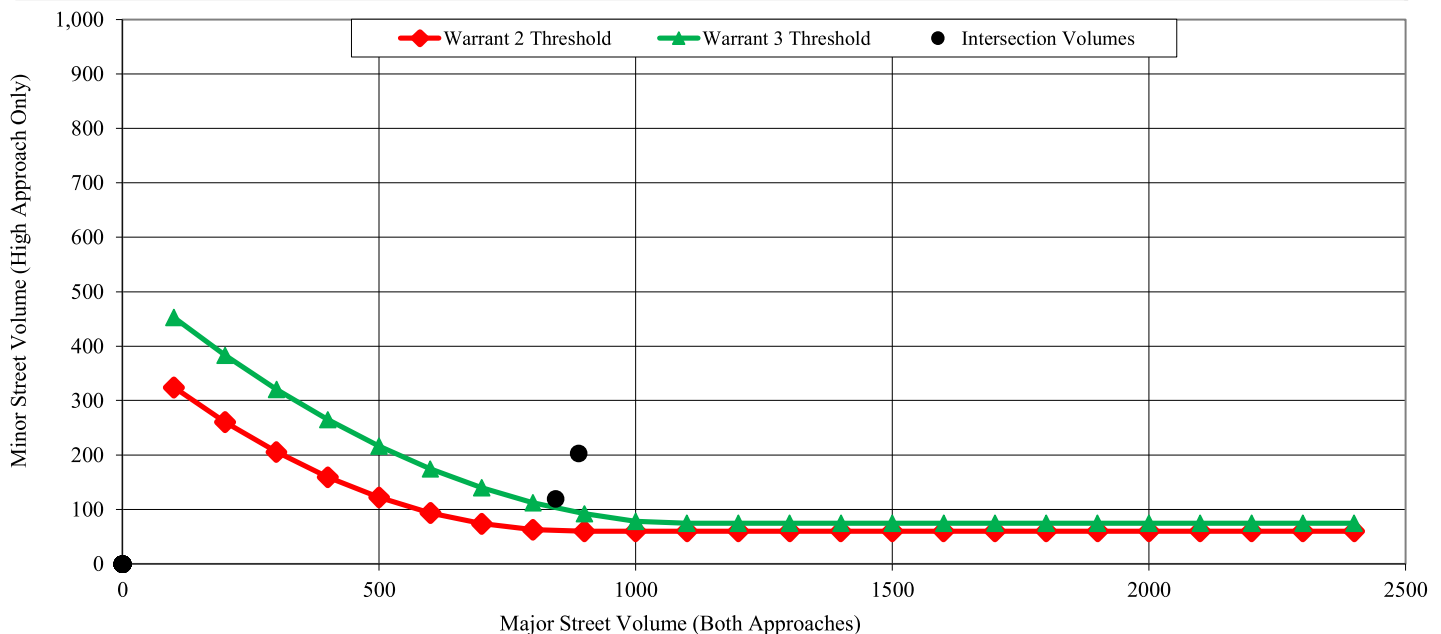
Warrant 1, Eight Hour Vehicular Volume			
	Condition A	Condition B	Condition A+B*
Condition Satisfied?	Not Satisfied	Not Satisfied	Not Satisfied
Required values reached for	2 hours	2 hours	2 (Cond. A) & 2 (Cond. B)
Criteria - Major Street (veh/hr)	350	525	280 (Cond. A) & 420 (Cond. B)
Criteria - Minor 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	1197 total, 203 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	5109 Mitchell Mill Road
Project/File #	20498 - 04
Scenario	2028 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	1911 vehicles	Total Approach Volume	717 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.

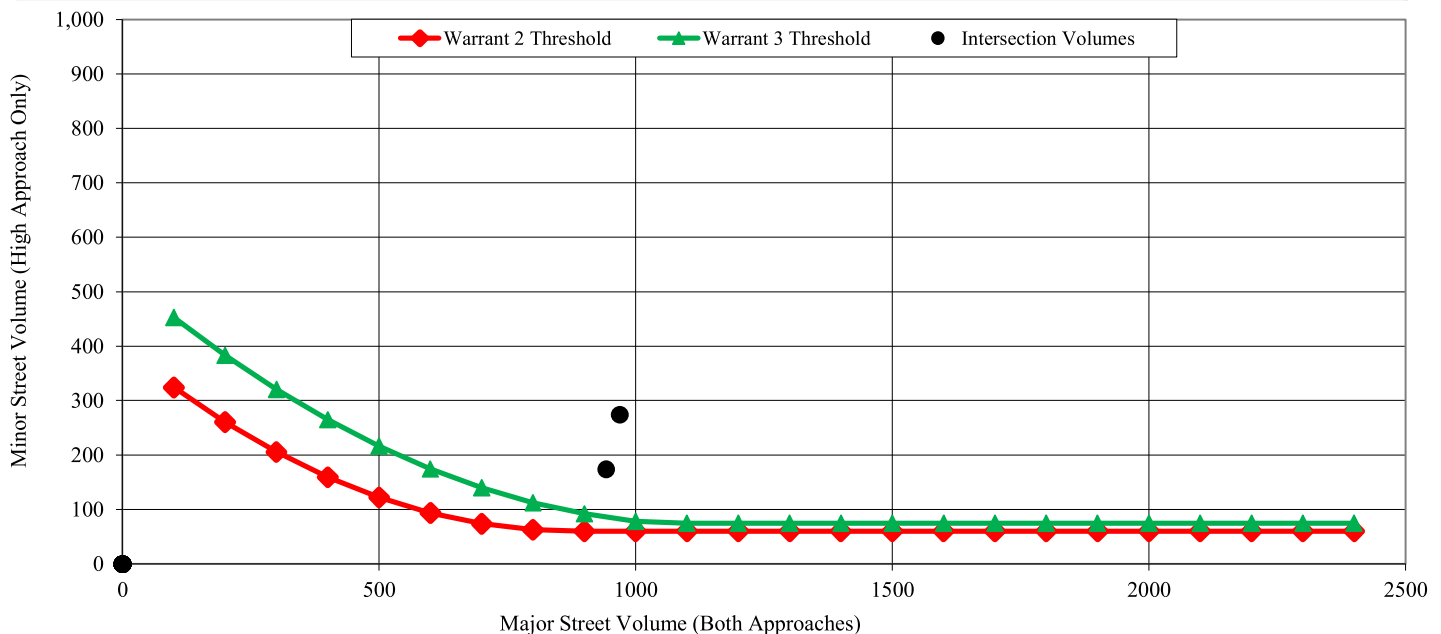
Warrant 1, Eight Hour Vehicular Volume			
	Condition A	Condition B	Condition A+B*
Condition Satisfied?	Not Satisfied	Not Satisfied	Not Satisfied
Required values reached for	2 hours	2 hours	2 (Cond. A) & 2 (Cond. B)
Criteria - Major Street (veh/hr)	350	525	280 (Cond. A) & 420 (Cond. B)
Criteria - Minor 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	1264 total, 174 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	

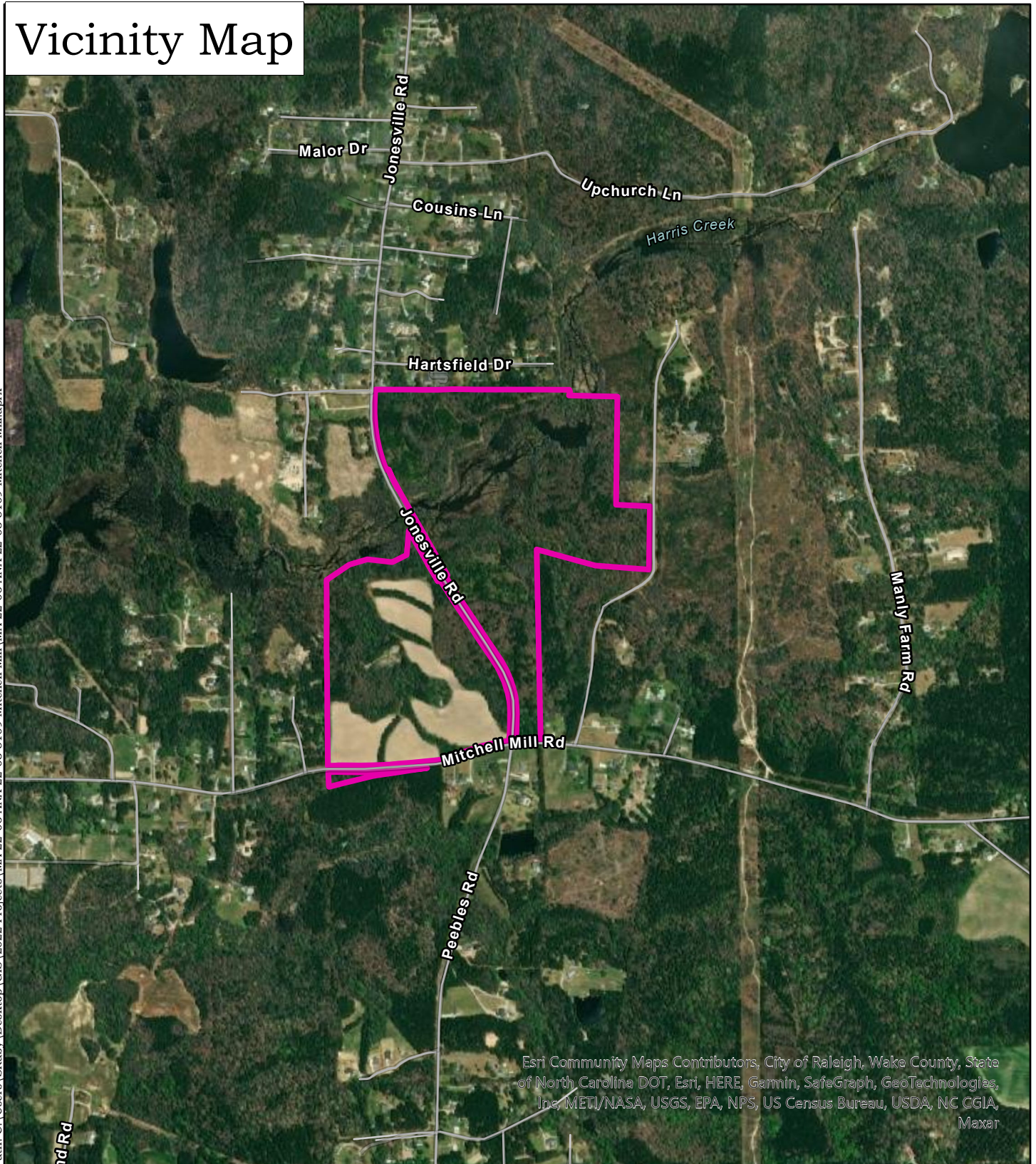
Figure 4C-2 (Warrant 2 - 70% Factor) & Figure 4C-4 (Warrant 3 - 70% Factor)



Vicinity Map

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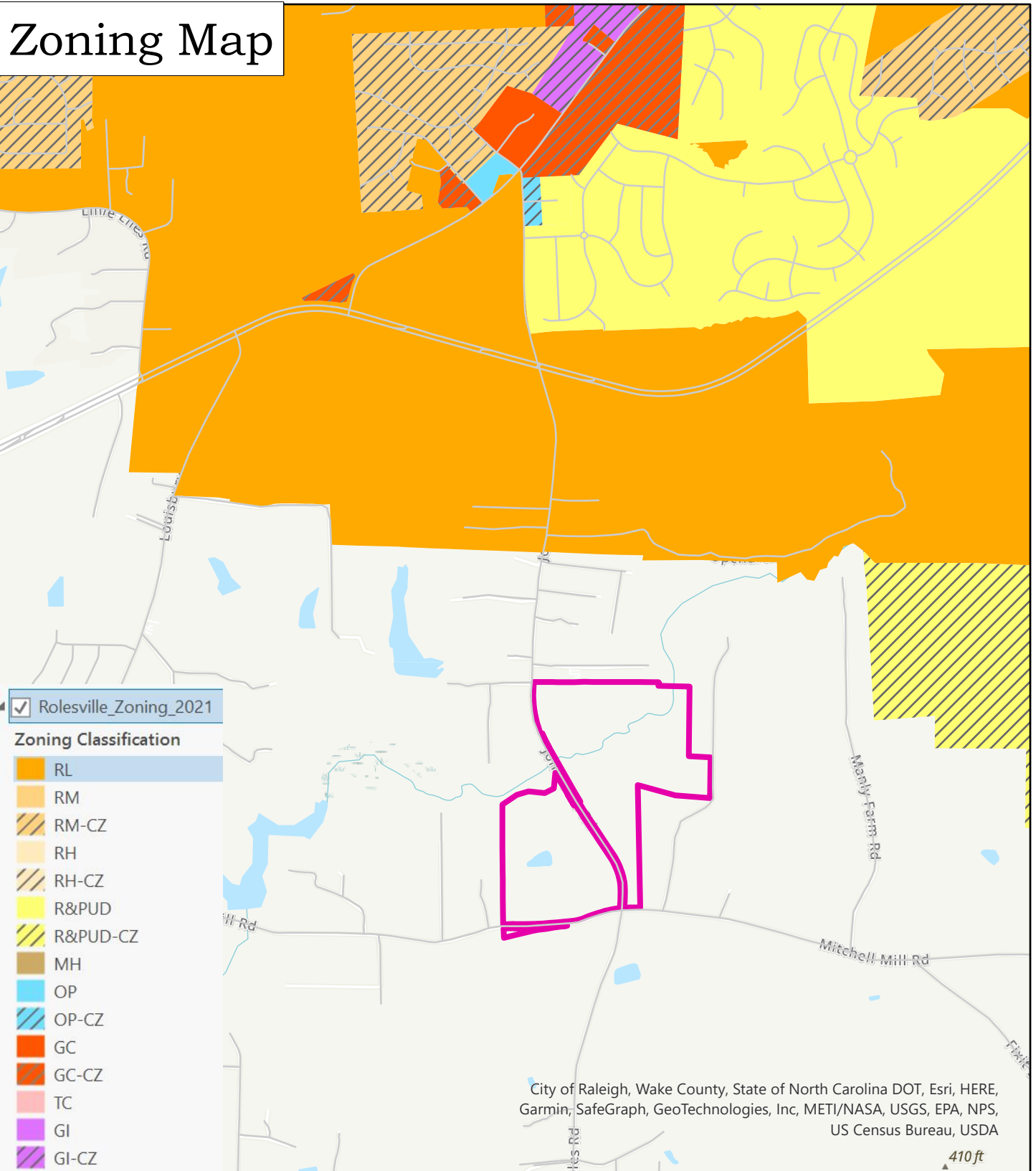


0 0.15 0.3 0.6 Miles
0 Miles

Zoning Map

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0 0.28 0.55 0 1.1 Miles

Future Land Use Map

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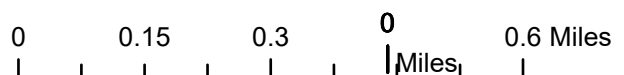
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ROLU_CLASS

- 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

Esri Community Maps Contributors, City of Raleigh, Wake County, State of North Carolina DOT, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA





Memo

To: Rolesville Planning Board
From: Meredith Gruber, Planning Director
Date: September 23, 2022
Re: TA 22-01 Land Development Ordinance (LDO) Amendments Round 3

Schedule

Following is the schedule of meetings for the LDO Technical Amendments Round 3:

- *Town Board Work Session – Feedback and Discussion, June 21, 2022*
- *Planning Board Meeting – Report from Town Board Work Session, June 27, 2022*
- *Planning Board Meeting – Discuss Proposed Landscape Ordinance Amendments, August 22, 2022*
- *Town Board Work Session – Feedback and Discussion, September 20, 2022*
- **Planning Board Meeting** – Presentation and Recommendation, September 26, 2022
- Town Board Meeting – Presentation, Public Hearing, and Decision, October 4, 2022

Background

Development regulations are designed to foster the creation of vibrant neighborhoods and a strong business community, while preserving the community's character. Amendments are necessary to continue the effective administration of the LDO. Such amendments are brought forward for public hearing and Town Board consideration for a variety of reasons; some amendments will result in updates to development regulations while others address technical details or procedures. The Town Board of Commissioners can expect to consider technical amendments to the LDO approximately twice a year; the first and second rounds of LDO amendments were approved in December 2021.

Proposed LDO Amendments Summary Table

The following table includes a summary of the proposed third round of LDO technical amendments.

	LDO Section	Amendment Discussion Topic	Recommendation
1	5.1. Principal Uses	Single family attached dwellings (townhomes) are allowed in the RH District and Activity Center Districts.	Allow single family attached dwellings (townhomes) in the RM district in addition to the RH district.
2	6.2.1.3. Open Space – Active and Passive Features	Gardens are listed as a passive feature for open space.	To support the Mayor's Monarch Challenge, add Pollinator Gardens as a passive feature for open space.
3	6.2.2.1. Perimeter Buffers	Perimeter Buffer Type 1 is a 10' buffer with landscaping and a 6' tall fence. This type of buffer is required between two parcels with the same zoning district except RH and BT.	Remove requirement for buffers between parcels of the same zoning district, especially non-residential uses.
4	6.2.2.2. Street Buffers	30' streetscape buffer only required for thoroughfares as per LDO	Add a 10' streetscape buffer for collectors.
5	6.2.4.2. Landscape Plan and Review	The LDO is silent on who should prepare a landscape plan.	Add requirement that landscape plans be prepared by a landscape architect, landscape designer, or horticulturalist.
6	6.2.4.4. Parking Landscaping	Terminal islands are required at the end of each parking bay. Interior islands and divider medians appear to be optional as defined in the LDO.	To supplement terminal, interior island standards, and divider medians, require every parking space to be within 60' of a tree trunk (requirement was in UDO).
7	6.2.4.5.B.3. Vegetation Preservation – Preservation Standards	Removal of qualifying evergreen or deciduous tree shall be replaced on-site with at least four or more trees of similar species and size.	Clarify requirement. Replace 25% of the caliper inches of qualifying removed trees.
8	6.2.4.7.B. Landscape/ Planting Guidelines – Plant Palette	LDO states all plants shall be of native and locally adaptive species.	Require at least four different plant species with no one being greater than 35% of the palette.
9	6.6.G. Lighting – General Design Standards	Street Light Poles	Add a general design standard that prohibits wood poles in residential subdivisions.
10	6.8.5. Single Family Design Guidelines	Foundation types	Define acceptable foundation types such as stem walls and crawlspaces. Require minimum height of 18 inches.

Amendment 2: 6.2.1.3. Open Space – Active and Passive Features

Active Features	Passive Features
Lawn Games and Concrete Gaming Tables	Walking Trails
Hard Courts (Pickleball, Tennis, Etc.)	Boardwalks
Playgrounds	<u>Pollinator Gardens or Other</u> Gardens
Swimming Pools and Splash Pads	Greens
Athletic Fields (Soccer, Baseball, Etc.)	Picnic Areas
Clubhouse, Pavilions, Amenity Centers	Lakes and Ponds
Exercise Facilities	Lawns and Natural Areas
Plazas	Greenways

Amendment 3: 6.2.2.1. Perimeter Buffers

Zoning District of Adjacent Property	RL	RM	RH	MH	GC	CH	OP	BT	GI
RL	<u>1L</u>	2	3	3	3	3	3	3	4
RM	2	<u>1L</u>	3	3	3	3	3	3	4
RH	3	3	2 <u>1L</u>	3 <u>2</u>	2	2	2	3 <u>2</u>	4
MH	3	3	3 <u>2</u>	<u>1L</u>	3 <u>2</u>	3 <u>2</u>	3 <u>2</u>	3 <u>2</u>	4
GC	3	3	2	3 <u>2</u>	1 <u>N/A</u>	<u>1L</u>	<u>1L</u>	3 <u>1L</u>	4
CH	3	3	2	3 <u>2</u>	<u>1L</u>	1 <u>N/A</u>	<u>1L</u>	3 <u>1L</u>	4
OP	3	3	2	3 <u>2</u>	<u>1L</u>	<u>1L</u>	1 <u>N/A</u>	3	4
BT	3	3	3 <u>2</u>	3 <u>2</u>	3 <u>1L</u>	3 <u>1L</u>	3	3 <u>N/A</u>	3
GI	4	4	4	4	4	4	4	3	1 <u>N/A</u>

The “L” in the above table denotes “Landscape”. This is a proposed buffer type that would include plant materials only.

Amendment 4: 6.2.2.2. Street Buffers

- B. Applicability.** Streetscape buffers are required on all thoroughfares, collectors, and local streets as shown on the adopted land use plan and/or thoroughfare map. Streetscapes are to remain undisturbed except where no existing vegetation is present. All uses which require site plan approval or preliminary plat approval shall preserve, install, and maintain a planted streetscape along each thoroughfare it abuts which protects the existing vegetation and abuts the perimeter of the property. All streetscape plantings, including the installation of all plant materials, shall conform in accordance with the specifications of this section.

D. Standards.

1. The width of the streetscape buffer shall be at least thirty (30) feet for thoroughfares, fifteen (15) feet for collectors, and ten (10) feet for local streets as measured from the right-of-way line.
2. If the streetscape is disturbed or non-vegetated, the property owner or developer shall install and maintain the following vegetation every forty (40) linear feet of frontage. Along collector streets, this vegetation may be installed up to every fifty (50) linear feet of frontage. Along local streets, this vegetation may be installed up to every sixty (60) linear feet:
 - a. One (1) street tree of two (2) and one-half (1/2) inches in caliper; or,
 - b. Two (2) understory ornamental type trees one-and-one-half (1.5) inches in caliper (this option is used only with overhead utility lines).
 - c. Small trees shall be located under overhead power lines. Such small trees shall be at least one-and-one-half (1.5) inches in caliper at the time of installation and two such trees shall be installed or maintained for every forty (40) linear feet of streetscape, rather than one (1) larger tree per forty (40) feet required above.

Amendment 5: 6.2.4.2. Landscape Plan and Review

- A. **Landscape Plan.** All development applicable under this section shall submit and receive approval of a landscape plan from the Planning Department, as required to be included in a site plan. Landscape Plans shall be prepared by a licensed landscape architect, landscape designer, or horticulturalist. Detail shall be provided on the plan showing the required landscaping ~~within a one hundred (100) linear foot section of any buffer and any supplemental landscaping.~~ Species of trees and shrubs shall be chosen from the approved plant list, as defined in Section 6.2.4.7: Landscape/Planting Guidelines. Preservation of existing vegetation is encouraged and may be used to meet requirements of this section. A landscape plan shall include the following:

Amendment 6: 6.2.4.4. Parking Landscaping

- C. Parking Lot Landscaping. Together, the requirements in items D. through G. below shall result in all parking spaces being within sixty (60) feet of the trunk of a canopy tree.

Amendment 7: 6.2.4.5.B.3. Vegetation Preservation – Preservation Standards

3. In any case where removal of a qualifying evergreen or deciduous tree from subsection (2) is required for site development, it shall be replaced on-site ~~with at least four (4) or more trees of similar species and size~~ trees totaling twenty-five (25) percent of the caliper inches removed.
4. Trees ~~sixtyfour (6040)~~ sixtyfour (6040) inches diameter at breast height and in good health based upon a professional arborist, must be preserved to the greatest extent possible and not be removed. If removal is required for site development, diameter at

breast [height](#) shall be replaced one (1) for one (1) using [a minimum of](#) three (3) inch caliper trees on site. Exiting buffers and canopy may be used for up to twenty-five (25) percent of replacement.

Amendment 8: 6.2.4.7.B. Landscape/Planting Guidelines – Plant Palette

- B. **Plant Palette.** All plants shall be of native and locally adaptive species (zone 7 according to the USDA Plant Hardiness Zone Map). Town staff may be able to deny or recommend the use of different species if there is little plant diversity or plant species which are known to have common diseases or branching and/or root structures which do not fit within the specified plant location. [Plant lists must include at least four \(4\) different tree species with no one species being greater than thirty-five \(35\) percent of the palette.](#)

Amendment 9: 6.6.G. Lighting – General Design Standards

5. [Wood light poles are prohibited in residential subdivisions.](#)

Amendment 10: 6.8.5. Single Family Design Guidelines - Foundations

- J. **Foundations.** [Crawlspace foundations are preferred. When using a stem wall foundation, the minimum height is eighteen \(18\) inches.](#)

Amendment 11: 8.C. Traffic Impact Applicability

- C. **Applicability.** A TIA is required prior to approval of any zoning map amendment (rezoning), special use permit, site plan and/or preliminary plat that exceeds the following thresholds in one (1) or more development applications submitted for a parcel or parcels under common ownership:
1. The proposed development, or phases of development, or contiguous tracts under the same ownership, would accommodate or could be expected to generate ~~one-hundred~~[fifty](#) (~~100~~[50](#)) or more added vehicle trips to or from the site during the peak traffic hour (based on the proposed development or the adjacent roads and intersections); or
 2. The proposed development, or phases of development, or contiguous tracts under the same ownership, would accommodate or could be expected to generate ~~one-thousand~~[five hundred](#) (~~1,000~~[500](#)) or more added vehicle trips to or from the site during a twenty-four (24) hour period (based on the proposed development or the adjacent roads and intersections).
 4. [If the peak hour and/or daily trip threshold is not met for a proposed development, a trip generation letter, access location and design review analysis are required.](#)

Amendment 12: 9.2.5.B. Subdivision Access Standards – Connectivity

- B. **Connectivity.** Streets shall be interconnected and connect with adjacent streets external to the subdivision to provide multiple routes for pedestrian and vehicle trips.

Implementation of any access points or associated improvements recommended by a traffic impact analysis (TIA) are required. In addition, connections must be made to existing and planned street stubs.

Amendment 13: 11.2. Interpretation

- H. General Interpretation. The Land Development Administrator has the authority to interpret this ordinance and make associated determinations.

Amendment 14: Appendix A – LDO Handbook

TABLE 1.15 – DEVELOPMENT PROCESSES SUMMARY TABLE						
REVIEW PROCESS	SECTION	LDA	TRC	BOA	PB	BOC
LEGISLATIVE PROCESSES						
Annexation	2.1	R				D
Development Agreement	2.2	R			RR	D
Rezoning (Zoning Map Amendment)	2.3	R	R		RR	D
Text Amendment	2.4	R			RR	D
EVIDENTIARY PROCESSES						
Appeals	3.1	R		D		
Special Use Permit	3.2	R	R	D		D
Variance	3.3	R		D		
Vested Rights Certificate/Determination	3.4	R				D
Major Subdivision Preliminary Plat	3.5	R	R			D
ADMINISTRATIVE PROCESSES						
Certificate of Occupancy/Compliance	4.1	D				
Major Subdivision Preliminary Plat	4.1	D				
Construction Infrastructure Drawings	4.2	D	RR			
Minor Subdivision Final Plat	4.3	D				
Major Subdivision Final Plat	4.4	D				
Site Development Plan	4.5	D				
Sketch Plan	4.6	D				
Zoning Permit	4.7	D				

KEY: R = REVIEW, RR = REVIEW AND RECOMMEND, D = FINAL DECISION

LDA = LAND DEVELOPMENT ADMINISTRATOR

BOA = BOARD OF ADJUSTMENT

PB = PLANNING BOARD

BOC = BOARD OF COMMISSIONERS

Text amendments associated with the changes in the above table are included in the attachment *TA 22-01 Appendix A – LDO Handbook*.

Staff Recommendation

Staff recommends approval of TA 22-01 Land Development Ordinance Technical Amendments Round 3.

Proposed Motion

Motion to recommend (approval or denial) of TA 22-01 Land Development Ordinance Technical Amendments Round 3

Attachments

TA 22-01 Appendix A – LDO Handbook (track changes mode)

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APPENDIX A - LAND DEVELOPMENT ORDINANCE HANDBOOK

1. GENERAL PROVISIONS

1.1. PURPOSE AND INTENT

- A. The purpose of Appendix A - Land Development Ordinance Handbook (referred to throughout as “LDO Handbook”, “The Handbook”, or “Handbook”) to identify procedures for filing and processing applications for development approval within the Town of Rolesville, in accordance with the required standards of the Land Development Ordinance (LDO) of the Town of Rolesville. This handbook is a tool for staff of the Town of Rolesville and is designed to allow users to determine the steps involved to obtain development approval.

1.2. GENERAL PROCEDURES

- A. No development of land, building, or structure is permitted unless all applicable approvals are issued in accordance with this handbook and the standards of the LDO. Development approvals from the town are required for all development, unless otherwise exempted, to ensure compliance with the LDO, Comprehensive Plan, other town plans and adopted codes, plans, standards, and applicable laws. This handbook describes procedural elements for development approval processes.

1.3. APPROVALS REQUIRED

- A. Except as specifically exempted by North Carolina General Statutes or other applicable laws, the use of property may not be substantially changed nor may any clearing, grading, or excavation be commenced and buildings or other structures may not be constructed, erected, moved or substantially altered except in accordance with and pursuant to the standards of the Town of Rolesville’s Land Development Ordinance and the process requirements of this handbook.
- B. All development shall comply with such approved plans and specifications, as well as the provisions of the LDO except where otherwise modified (i.e. through a variance, design alternative or similar approval by the town). Approvals, as identified in Section 1.4 below, authorize specified activities; however, the intended use may not be

established, no building may be occupied, and in the case of subdivisions no lots may be sold until all of the requirements of this LDO and any other (additional) requirements imposed pursuant to approval have been met.

1.4. CATEGORIES OF DEVELOPMENT APPROVALS – LEGISLATIVE, EVIDENTIARY, ADMINISTRATIVE

- A. **Legislative Development Approvals.** Legislative approvals require approval by the Town of Rolesville Board of Commissioners (“BOC”). A public ~~hearing-meeting~~ is required, ~~but and~~ the procedural requirements of an evidentiary hearing do not apply.
- B. **Evidentiary Development Approval.** Evidentiary (quasi-judicial) approvals involve the application of a discretionary standard of the LDO to an application. These approvals require ~~an evidentiary-public~~ hearing, and procedural due process requirements apply. Evidentiary approvals shall comply with the provisions of N.C. Gen. Stat. § 160D-406.
- C. **Administrative Approval.** A public hearing is not required for administrative approvals; however, administrative approvals ~~may~~ require input from the Technical Review Committee (“TRC”).

1.5. AUTHORIZING USE

- A. Subject to TRC comments, the LDO Administrator may authorize the use or the occupancy of buildings prior to development completion only if:
 - 1. The applicant provides security satisfactory to the Planning Director that is sufficient to ensure that all approval requirements will be fulfilled by a specified date not to exceed twelve (12) months as determined by the Planning Director; and
 - 2. The security shall be sufficient to ensure compliance and be approved by the Town Attorney prior to the Planning Director authorizing the intended use or occupancy.
- B. The authorization identified in this section is limited to the following:
 - 1. The authorized use or occupancy is consistent with an approved phasing plan;
 - 2. Through a temporary certificate of occupancy (permitted when, because of weather conditions or other factors beyond the control of the applicant, exclusive of financial hardship, it would be unreasonable to require the

applicant to comply with all of the requirements of this LDO prior to commencing the intended use of the property or occupying any buildings);

3. When the Town Council imposes additional requirements pursuant to special use permits or the applicant proposes to install amenities beyond those required by this LDO; or
4. When the developer is selling only undeveloped lots after final plat approval and acceptance of surety or improvements.

1.6. APPLICATION REQUIREMENTS

- A. Requests for any development process defined in this handbook shall be made on applications provided by the Planning Department. The term application is understood to include all materials identified in the submittal requirements including application, instructions, plans, studies, and analysis, filing fees, and any additional information required in the review and processing of a specific project.
- B. Applications shall only be accepted from a landowner, a lessee or person holding an option or contract to purchase or lease land, or an authorized agent of the landowner. Easement holders may also apply for approval for such development as authorized by the easement. Development approvals made pursuant to this handbook and the LDO attach to and run with the land.

1.7. PROCESSING OF APPLICATIONS

- A. Once an application is deemed complete consistent with Section 1.12 by the Planning Department, the Land Development Administrator (LDA) and/or their designee shall review the application and forward the application to all required review bodies.

1.8. CONTINUANCE

- A. The applicant and LDA may mutually agree for a continuance or extension of any time limit provided for in this handbook.
- B. If the LDA receives a written request less than seven (7) days prior to a public hearing in which the application is scheduled to be heard, the applicant is not entitled to an automatic continuance. The hearing body shall consider the request and may grant approval of a continuance upon demonstration of good cause (by the applicant).
- C. If an applicant receives a continuance, the applicant shall reimburse the town for all advertising costs associated with the public hearing.

1.9. WITHDRAWALS

- A. An applicant may withdraw an application at any time. A written notice shall be provided to the LDA for a withdrawal.
- B. If the LDA receives notice of the applicant's written withdrawal statement following public notice, the applicant shall be precluded from re-filing the same or substantially same application for the subject property for a period of six (6) months. Fees and costs will not be refunded or credit applied to any subsequent applications.

1.10. DENIALS

- A. If an application requiring a public hearing is denied, an application proposing substantially the same development on all or part of the same land shall not be submitted within six (6) months after the date of denial unless the decision-making body waives this time limit in accordance with subsection 2 below. Only one request for a waiver of this time limit may be submitted during the period.
- B. The owner of land that is the subject of an application that was denied as set out in subsection 1 above, or the owner's authorized agent, may submit a written request for waiver of the time limit established in subsection 1 above, along with a fee to defray the cost of processing the request, to the LDA, who shall transmit the request to the decision-making body. The decision-making body may grant a waiver of the time limit based on one or more of the following:
 - 1. There is a substantial change in circumstances relevant to the issues or facts considered during review of the application that might reasonably affect the application of the relevant review standards to the development proposed in the application;
 - 2. New or additional information is available that was not available at the time of review that might reasonably affect the application of the relevant review standards to the development proposed in the application; or
 - 3. The new application proposed to be submitted is not substantially the same as the prior application.

1.11. PRE-APPLICATION MEETINGS

- A. The purpose of a pre-application meeting is to provide an opportunity for the applicant to meet with town staff to learn about the submittal requirements, procedures, and standards applicable to a particular development application.
- B. The pre-application meeting also provides an opportunity for staff to become familiar with the proposed project and offer preliminary comments about the scope of the proposed development, as it relates to the standards of the LDO.
- C. Comments and information provided during the pre-application meeting is deemed to be advisory in nature and not binding upon the staff.
- D. The pre-application meeting is not required but is encouraged.

1.12. COMPLETENESS REVIEWS

- A. Applications shall include all required items before being deemed as complete by the LDA.
- B. A complete application shall contain, at minimum all information and materials as required for submittal of the particular type of application; Provide the number of copies required for application submittal; Is signed by the person with the authority to file the application; Is legible and printed to scale (as may be required by staff); Includes information in sufficient detail to evaluate whether or not the application complies with the applicable review standards of the LDO; and the appropriate fee is submitted for the particular type of application.
- C. Additional information may be required by any other regional, state, or federal entity.
- D. Completeness review of an application is intended to determine whether preliminary information required for submission is sufficient to allow further technical review and is not a decision as to whether the application complies with the provisions and standards of the LDO.
- E. The LDA may process an application without all required information at the risk of the applicant that the decision-making body may require the information prior to acting on the application. A written statement by the applicant shall be provided to the LDA acknowledging this risk.
- F. Although the town has primary responsibility for regulation of land development within the town's jurisdiction, there exist a number of aspects of development that

may be subject to regulation by regional, state, or federal entities. Approval by the town does not waive any other entity's requirements.

- G. If any application is deemed incomplete, the LDA shall specify to the applicant what information is still required. The applicant may resubmit the application with the required information or may appeal the LDA's decision to the Board of Adjustment.

1.13. FORMAL REVIEWS

- A. After staff deems an application complete, the application shall be considered as officially submitted. Staff shall begin formal review of the application.
- B. The application shall be distributed to all appropriate review bodies within the town, consistent with the requirements of the specific process.
- C. Each appropriate review body shall review and comment on the application. If any deficiencies exist, planning staff shall contact the applicant and inform them of said deficiencies. The applicant shall be provided opportunity to discuss any deficiencies and resubmit any required information in the form of a resubmittal.
- D. Upon receiving all required information, the appropriate review body shall deem the application complete through formal review. The application shall be forwarded to the appropriate review body for consideration. If the application is administrative, it shall be approved by the appropriate staff.

1.14. CONDITIONS OF APPROVAL

- A. Conditions of approval shall comply with the following:
 - 1. Conditions of approval are limited to a conditional rezoning and evidentiary processes;
 - 2. Conditions of approval shall be limited to conditions necessary to ensure compliance with the LDO, or to prevent or mitigate adverse effects from the proposed development on neighboring land; and
 - 3. Any condition of approval shall be set forth in any official notice of decision or permit approval.

1.15. DEVELOPMENT PROCESSES SUMMARY TABLE

- A. Table 1.15 provides a summary of the development processes included in this handbook.

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TABLE 1.15 – DEVELOPMENT PROCESSES SUMMARY TABLE							
REVIEW PROCESS	SECTION	LDA	TRC	BOA	PB	BOC	
LEGISLATIVE PROCESSES							
Annexation	2.1	R				D	
Development Agreement	2.2	R			RR	D	
Rezoning (Zoning Map Amendment)	2.3	R	R		RR	D	
Text Amendment	2.4	R			RR	D	
EVIDENTIARY PROCESSES							
Appeals	3.1	R		D			
Special Use Permit	3.2	R	R	D		D	
Variance	3.3	R		D			
Vested Rights Certificate/Determination	3.4	R				DD	
Major Subdivision Preliminary Plat	3.5	R	R			D	
OTHER ADMINISTRATIVE PROCESSES							
Certificate of Occupancy/Compliance	4.1	D					
Major Subdivision Preliminary Plat	4.1	D					
Construction Infrastructure Drawings	4.2	D	RR				
Minor Subdivision Final Plat	4.3	D					

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Major Subdivision Final Plat	4.4	D					
TABLE 1.15 – DEVELOPMENT PROCESSES SUMMARY TABLE (CONT)							
REVIEW PROCESS	SECTION						
		LDA	TRC	BOA	PB	BOC	
Site Development Plan (without design alternatives, variances, conditional zoning, or development agreement)	4.5	D	RR				
Sketch Plan	4.6	D					
Zoning Permit	4.7	D					
KEY: R = REVIEW, RR = REVIEW AND RECOMMEND, D = FINAL DECISION, A = APPEAL LDA = LAND DEVELOPMENT ADMINISTRATOR TRC = TECHNICAL REVIEW COMMITTEE BOA = BOARD OF ADJUSTMENT PB = PLANNING BOARD BOC = BOARD OF COMMISSIONERS							

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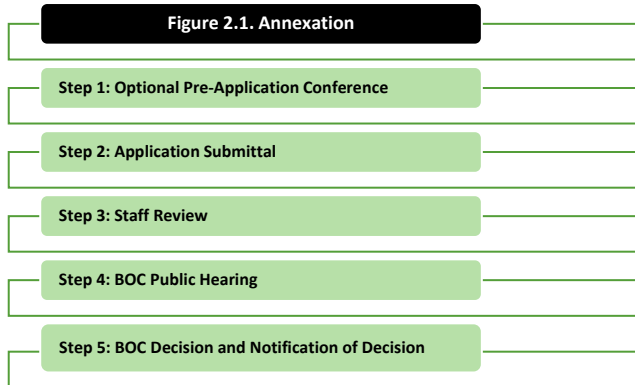
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2. LEGISLATIVE PROCESSES

Legislative Processes
Annexation
Development Agreement
Rezoning (Zoning Map Amendment)
Text Amendments

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2.1. ANNEXATION



A. **Purpose.** The purpose of an annexation request is to annex or incorporate lands into the Town of Rolesville in accordance with N.C. Gen. Stat. § 160D-202. The annexation process in this handbook pertains only to annexation by petition, or voluntary annexations.

B. **Application.**

1. The owner of property, or one having financial or close interest in the property with the written consent of the owner, may institute an annexation request.
2. Annexations shall be reviewed and approved in a public hearing by the BOC and meet all applicable common application procedures.
3. If the annexation request submitted to the Planning Department does not conform to all applicable regulations, the applicant shall resubmit the plans to the Planning Department for redistribution and review.

C. **Review Process.**

1. The application shall be reviewed for consistency with the regulations of the LDO and any other relevant town ordinances and adopted plans.
2. A staff report (if applicable) and application shall be provided to the BOC in their public hearing review.
3. The BOC shall direct the clerk to schedule a hearing.

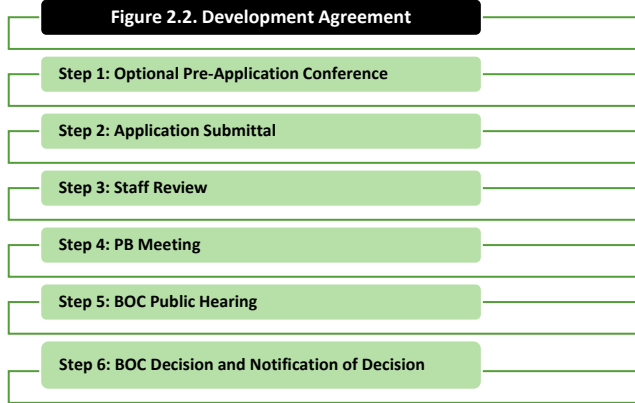
D. Board of Commissioners Public Hearing.

1. The BOC will review the proposed request under legislative discretion.
2. The BOC shall vote for approval of the annexation request or vote to deny the request.
3. If annexed, the area, owners and occupants are subject to the same debts, laws, ordinances, and regulations as other areas of the town.

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2.2. DEVELOPMENT AGREEMENT

Figure 2.2. Development Agreement



A. Purpose.

1. The purpose of a development agreement, consistent with N.C. Gen. Stat. § 160D, Article 10, is to allow a process for the establishment and review of large-scale, multi-phased development projects with an expected build out date of several years.
2. Development agreements are intended to provide the town and developers of land regulatory certainty and a schedule of development.
3. This certainty and schedule allows developers and the town to coordinate public facilities to serve the development.

B. Application.

1. A development agreement shall be submitted on a form as designated by the town and include the appropriate filing fee.
2. The application shall be reviewed in a public meeting by the PB and a public hearing by the BOC and meet all applicable common application procedures.

C. Review Process.

1. Development agreements shall occur through a public hearing process and shall be reviewed by the LDA for consistency with the regulations of the LDO and any other relevant town ordinances and adopted plans.

2. A staff report by the Planning Department shall be provided to the PB and BOC.

D. Planning Board ~~Public~~ Meeting.

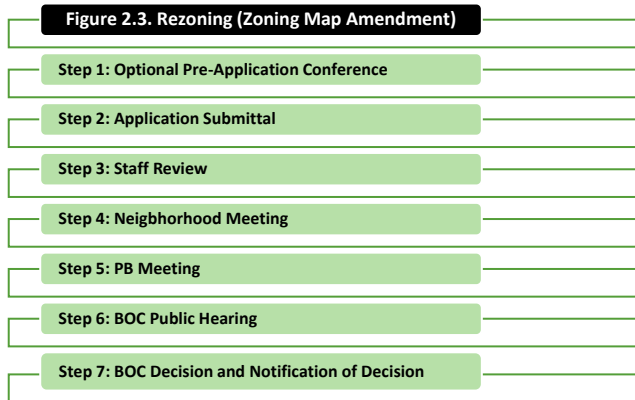
1. The PB will review the proposed request.
2. The PB shall vote to recommend approval of the request to BOC or vote to recommend denial of the request to BOC and provide a consistency statement.

E. BOC Public Hearing.

1. The BOC will review the proposed request under legislative discretion, taking into consideration all relevant comments from town staff.
2. The BOC shall vote for approval of the request or vote to deny the request.
3. The BOC may add additional requirements or modify proposed language with consent of the applicant.
4. The BOC may approve the development agreement as requested, adopt a revised amendment, or deny the amendment.
5. The BOC shall provide a brief statement describing whether the action is consistent or inconsistent with approved plans.

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2.3. REZONING (ZONING MAP AMENDMENT)



A. **Purpose.** Rezoning allows an applicant to modify the zoning of a property and amend the zoning map. This process may allow an applicant to revise the zoning map to change the zoning district classification applicable to a particular parcel, portion of a parcel, or group of parcels. There are two (2) types of rezoning authorized by this LDO: General Rezoning and Conditional Rezoning.

1. **General Rezoning.** A general rezoning reclassifies land to a base zoning district and subjects future development in the district to all the development regulations applicable to that zoning district.
2. **Conditional Rezoning.** A conditional rezoning reclassifies land to a conditional zoning district that is parallel to a base zoning district. Consistent with the definition provided in N.C. Gen. Stat. § 160D-102, this rezoning is defined as a legislative zoning map amendment with site-specific conditions incorporated into the zoning map amendment. This type of rezoning subjects future development in the district to the same development regulations applicable to the parallel base district except as modified by conditions. A conditional rezoning shall comply with the below standards:
 - a. Are proposed and/or agreed upon by the owner(s) of the land;

- b. Incorporate any proposed modifications to use, intensity, or development standards applicable in the parallel base district; and
- c. Are limited to conditions that address conformance of the allowable development and use of the rezoning site with town regulations and adopted plans, and impacts reasonably expected to be generated by the allowable development or use of the site.
- d. A site plan may be approved as part of a conditional zoning. If it is incorporated as a condition in conditional zoning, it is part of that legislative decision. If it is required and approved as part of an administrative or evidentiary decision, it is a development approval.
- e. Conditions and site-specific standards imposed in a conditional district shall be limited to those that address the conformance of the development and use of the site to town ordinances, or the impacts reasonably expected to be generated by the development or use of the site.

B. Application.

- 1. A rezoning application shall be submitted on a form as designated by the town and include the appropriate filing fee.
- 2. If the request is a conditional rezoning, the application may propose conditions in the form of text, site plans, and maps.
- 3. An application for a general rezoning may be amended to a conditional rezoning application before the public hearing.

C. Review Process.

- 1. Rezoning applications shall occur through a public hearing process and shall be reviewed by the LDA and TRC for consistency with the regulations of the LDO and any other relevant town ordinances and adopted plans.
- 2. A staff report by the Planning Department shall be provided to the PB and BOC.

D. Neighborhood Meeting.

~~E.~~ The purpose of a Neighborhood Meeting is to be transparent and allow the public to be involved in planning processes. These meetings allow citizens to hear from applicants and review proposals before they are considered by the Planning Board and Board of Commissioners. The Neighborhood Meeting also gives the

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applicant the opportunity to adjust proposals prior to a case being considered by the Planning Board and Board of Commissioners. An Applicant shall conduct a Neighborhood Meeting between the first and second review by the TRC and prior to the first meeting of the Planning Board at which the application will be considered. Requirements of the meeting are as follows:

F.1. The Neighborhood Meeting shall be held at a municipal facility or at a location near the subject property.

G.2. The owners of all property within 200 feet on all sides of the subject property (not to include street right-of-way) shall be notified of the Neighborhood Meeting by first class mail. Such notification shall be postmarked not fewer than ten (10) days prior to the date of the meeting.

H.3. The applicant shall deliver to the Planning Department a letter certifying the list of names, mailing address and Wake County Parcel Identification Numbers of all properties notified of the meeting.

I.4. A notice of the pending proposal and Neighborhood Meeting information shall be presented to the Planning Department to be posted within seven days before the meeting:

J.i. In a prominent location in Town Hall; and

K.ii. On the Town of Rolesville website.

L.5. The Neighborhood Meeting will be held on a ~~week day~~ weekday.

M.6. The applicant will run and manage the meeting making efforts to inform the public of the applicant's intentions.

N.7. The applicant shall provide to the Planning Department a list of meeting attendees and minutes at least ten (10) days prior to the first meeting of the Planning Board at which the application will be considered.

O.E. **Planning Board Public Meeting.**

1. The PB will review the proposed request.
2. The PB shall make a recommendation that addresses whether the proposed rezoning application is consistent with the Comprehensive Plan.
3. The PB shall vote to recommend approval of the request to BOC or vote to recommend denial of the request to BOC and provide a consistency statement.

P.F. **BOC Public Hearing.**

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1. The BOC will review the proposed request under legislative discretion, taking into consideration all relevant comments from town staff, TRC, and the PB.
2. The BOC shall vote on a decision which shall either approve the application, approve the application for rezoning request to a more restrictive district (with the applicant's consent), or deny the application.
3. If a conditional rezoning, the BOC may add additional conditions or modify proposed language with consent of the applicant.
4. A brief statement describing whether the action is consistent or inconsistent with approved plans.
5. Following the decision, the rezoning shall be recorded in accordance with state law.
6. If approved, the rezoning application shall reclassify the zoning of the site to the approved zoning district.

Q-G. Rezoning Review Standards. The BOC may consider as applicable the following review standards for a rezoning:

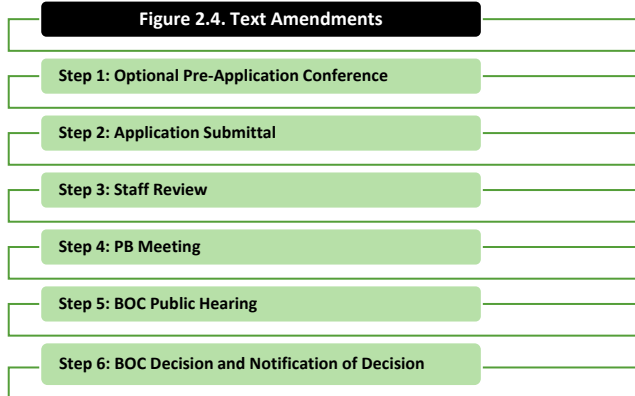
1. Is the application consistent with the Comprehensive Plan and other applicable adopted town plans;
2. Is it in conflict with any provision of the LDO or the Town Code of Ordinances;
3. Does the application correct any errors in the existing zoning present at the time it was adopted;
4. Does it allow uses that are compatible with existing and allowed uses on surrounding land;
5. Would it ensure efficient development within the town, including the capacity and safety of the street network, public facilities, and other similar considerations;
6. Would it result in a logical and orderly development pattern; and
7. Would it result in adverse impacts on water, air, noise, storm water management, wildlife, vegetation, wetlands, and the natural functioning of the environment.
8. If a conditional rezoning, the BOC may also consider if the conditional rezoning addresses the impacts reasonably expected to be generated by the development or use of the site, can reasonably be implemented and enforced for the subject property, and if it will mitigate specific issues that would likely

result if the subject property were zoned to accommodate all the uses and the minimum standards of the corresponding general zoning district.

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2.4. TEXT AMENDMENTS

Figure 2.4. Text Amendments



A. Purpose.

1. The text amendment process allows for changes to be made to the text of the LDO and include the appropriate filing fee.
2. This process may allow for the town, BOC, or any person owning land in the town or having a financial or other interest in land in the town to amend the text of the LDO.

B. Application.

1. The application shall be submitted on a form as designated by the town.
2. The application shall be reviewed by the PB and approved ~~in~~ following a public hearing by the BOC and meet all applicable common application procedures.

C. Review Process.

1. Text amendment applications shall occur through a public hearing process and shall be reviewed by the LDA for consistency with the regulations of the LDO, comprehensive plan, and any other relevant town ordinances and adopted plans.
2. A staff report by the Planning Department shall be provided to the PB and BOC.

D. Planning Board ~~Public~~ Meeting.

1. The PB shall consider the text amendment request and make a recommendation on the application to the BOC.
2. The PB shall vote to recommend approval of the request to BOC or vote to recommend denial of the request to BOC and provide a consistency statement.

E. BOC Public Hearing.

1. The BOC will review the proposed request under legislative discretion, taking into consideration all relevant comments from town staff and the PB.
2. The BOC shall vote for approval of the request or vote to deny the request.
3. The BOC may add additional requirement or modify proposed language with consent of the applicant.
4. The BOC may approve the development agreement as requested, adopt a revised amendment, or deny the amendment.
5. A brief statement describing whether the action is consistent or inconsistent with approved plans.

F. Text Amendment Review Standards.

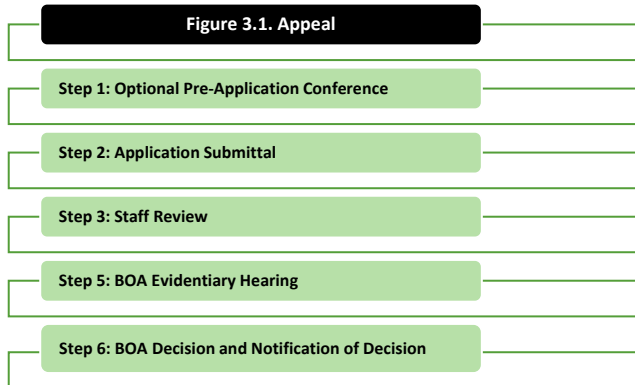
1. Whether the proposed amendment is consistent with the comprehensive plan and other applicable adopted town plans;
2. Whether the proposed amendment is in conflict with any standard of the LDO, Comprehensive Plan, and/or the town Code;
3. Whether there are changed conditions that require a text amendment;
4. Whether the proposed amendment addresses a demonstrated need within the community;
5. Whether the proposed amendment is consistent with the purpose and intent of the zoning districts of the LDO, would improve compatibility among uses, ensure efficient development within the town, and addresses a standard that is inadequate for development in the LDO; and
6. Whether the proposed amendment would negatively affect health, safety, and welfare of the town.

3. EVIDENTIARY PROCESSES

Evidentiary Processes
Appeal
Special Use Permit
Variance/Design Alternative
Vested Rights Certificate/Determination
Major Subdivision Preliminary Plat

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3.1. APPEAL



A. Purpose.

1. The purpose of the appeal process is to allow any party that is aggrieved by a decision made by the LDA, Planning Department staff, Engineering staff, or other town staff in administering the regulations of the LDO.
2. The appeal may be made within thirty (30) days after any decision is rendered by town staff. The appeal shall be made to the Board of Adjustment.
3. This process is only to appeal administrative decisions.
4. Any decisions made by a Board relative to the LDO are to be made in accordance with state law.

B. Application.

1. An appeal shall be submitted on a form designated by the Planning Department and include the appropriate filing fee.
2. Clearly cite the provision of the LDO in question, the decision, interpretation, and which town staff the decision was rendered by.
3. Include proof the applicant is a party aggrieved by the decision.
4. Identify facts and materials in support of the appeal.
5. Provide summary of the decision provided by town staff.
6. Clearly state relief that the applicant seeks.

C. Review Process.

1. An appeal shall be reviewed by the LDA to ensure the appeal contains sufficient information to render a decision (see above).
2. The LDA shall forward the application to the town staff whose decision is being appealed.
3. The LDA shall form a report which summarizes the appeal.
4. The report and application shall be forwarded to the BOA.

D. BOA Public Hearing. The BOA shall:

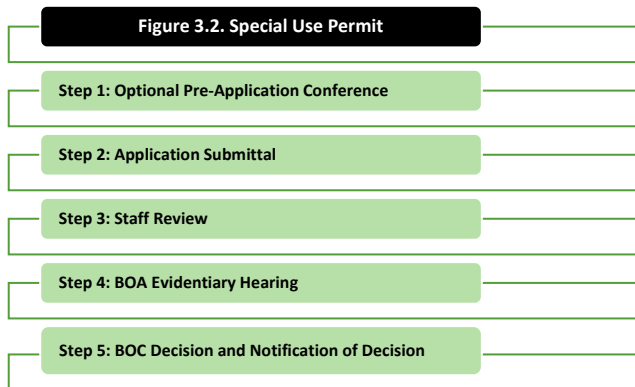
1. Review the proposed request under evidentiary discretion.
2. Render a decision which affirms the decision being appealed, modifies the decision being appealed, or reverses the decision being appealed.
3. In making its decision, the BOA shall have all the powers of the official who made the decision and shall make any order, requirement, decision, or determination that ought to be made.

E. Appeal Review Standards. The BOA shall modify or reverse the decision rendered only if it finds, based upon competent, material, and substantial evidence in the record, that

1. Has been a clear and demonstrable error by the town;
2. Abuse of discretion; and/or
3. Denial of procedural due process in the application of the facts in the record to the applicable standards of the LDO, or as otherwise provided by state law.

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3.2. SPECIAL USE PERMIT



A. Purpose.

1. A use designated as a special use in a particular zoning district is a use that may be appropriate in the district, but because of its nature, extent, and external effects, requires special consideration by the town.
2. Special consideration shall be given to location, design, and methods of operation before it can be deemed appropriate in the district and compatible with its surroundings.
3. Special Use Permits shall be approved upon the presentation of competent, material, and substantial evidence.
4. The applicant must provide written consent to any conditions placed on the approval.
5. The purpose of this section is to establish a mechanism to review special uses to ensure they are appropriate as and where proposed.

B. Application.

1. A special use request shall be submitted on a form designated by the Planning Department and include the appropriate filing fee.
2. The request shall also include a development plan illustrating the proposed development, meeting all requirements of the application form.

C. Review Process.

1. Special use permits shall occur through a public hearing process and shall be reviewed by the LDA and TRC for consistency with the regulations of the LDO and any other relevant town ordinances and adopted plans.
2. A staff report (if applicable) by the Planning Department shall be provided to the BOC.

D. ~~BOAC~~ Public Evidentiary Hearing

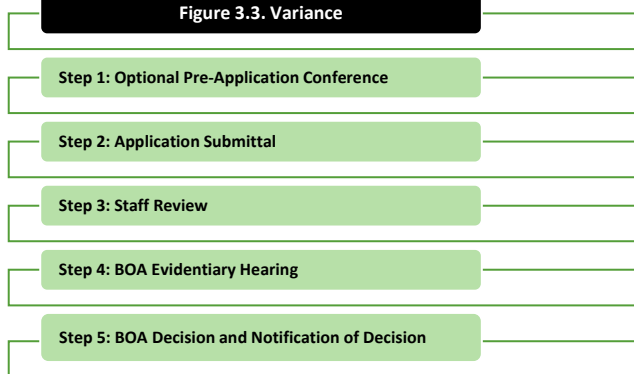
1. The ~~BOAC~~ will review the proposed request under evidentiary discretion, taking into consideration all relevant comments.
2. The ~~BOAC~~ shall vote for approval of the request or vote to deny the request.
3. The ~~BOAC~~ may add additional requirements or modify proposed language with consent of the applicant.
4. ~~The BOA will vote on a~~A brief statement describing whether the action is consistent or inconsistent with approved plans.

E. Special Use Permit Review Standards.

1. The proposed special use will be in general conformance with the comprehensive plan and other relevant town plans;
2. Demonstrated measures will be taken to provide ingress, egress, minimize traffic hazards, and minimize traffic congestion on the public roads;
3. The proposed use will not be dangerous or offensive by reason of vibration, noise, odor, dust, smoke, or gas;
4. The establishment of the proposed special use will not inhibit the orderly development of adjacent and surrounding property for uses permitted within the particular zoning district;
5. The proposed special use will not endanger the public health, safety, or general welfare; and
6. The proposed use complies with all applicable provisions of the LDO.

3.3. VARIANCE/~~DESIGN ALTERNATIVE~~

Figure 3.3. Variance



A. Purpose.

1. The purpose of a zoning variance (~~or design alternative in the TC district, where explicitly permitted in the LDO~~) is to allow certain deviations from specified standards of the LDO, when the landowner demonstrates that, owing to special conditions beyond the control of a landowner (or where permitted explicitly in the LDO) a literal application of the standards of the LDO would result in undue and unique hardship. Variances shall comply with N.C. Gen. Stat. § Section 160D-705(d).
2. The special conditions may include but are not limited to topographical considerations, shape of lot, and similar conditions that are beyond the control of a landowner. Where the LDO permits an applicant to request a design alternative, the applicant shall demonstrate compliance with the particular review standards for the design alternative in the LDO.

B. Application.

1. A variance ~~or design alternative~~ request shall be submitted on a form designated by the Planning Department and include the appropriate filing fee.

2. The variance ~~or design alternative~~ request shall include a detailed narrative explaining the unique circumstances in which a variance or design alternative is requested.
3. The request shall also include any and all standards of the LDO in which a variance ~~or design alternative~~ is sought.

C. Review Process.

1. Requests shall be reviewed by the LDA and occur through an evidentiary public hearing process ~~and shall be reviewed by the LDA .~~
2. A staff report (if applicable) by the Planning Department shall be provided to the BOA for variances or to the BOC for a design alternative.

D. BOA ~~Public Evidentiary~~ Hearing.

1. The BOA will review the proposed request under evidentiary discretion, taking into consideration all relevant comments and in compliance with N.C. Gen. Stat. § Section 160D-705(d).
2. The BOA shall vote for approval of the request or vote to deny the request.
3. The BOA may add additional requirement or modify proposed language with consent of the applicant.
4. A brief statement describing whether the action is consistent or inconsistent with approved plans will be voted on by the BOA.
5. If approved, the variance shall run with the land.

~~E. BOC Public Hearing.~~

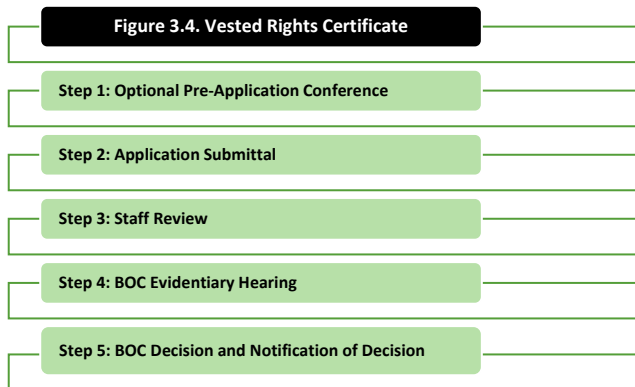
- ~~1. The BOC will review proposed design alternative requests in the TC district under evidentiary discretion, taking into consideration all relevant comments. The BOC shall review the design alternative in compliance with N.C. Gen. Stat. § Section 160D-705(d) and additional review standards required in the LDO for the particular design alternative.~~
- ~~2. The BOC shall vote for approval of the request or vote to deny the request.~~
- ~~3. The BOC may add additional requirement or modify proposed language with consent of the applicant.~~
- ~~4. A brief statement describing whether the action is consistent or inconsistent with approved plans will be voted on by the BOC.~~
- ~~5. If approved, a design alternative shall run with the land.~~

F-E Review Standards. Variances and design alternatives shall use the same review standards (see below), except that additional review standards may be required for design alternatives and are included where the design alternative is permitted in the LDO. Review standards include:

1. Unnecessary hardship would result from the strict application of the regulation. It is not necessary to demonstrate that, in the absence of the variance, no reasonable use can be made of the property. The hardship results from conditions that are peculiar to the property, such as location, size, or topography.
2. The hardship results from conditions that are peculiar to the property, such as location, size, or topography. Hardships resulting from personal circumstances, as well as hardships resulting from conditions that are common to the neighborhood or the general public, may not be the basis for granting a variance. A variance may be granted when necessary and appropriate to make a reasonable accommodation under the Federal Fair Housing Act for a person with a disability.
3. The hardship did not result from actions taken by the applicant or the property owner. The act of purchasing property with knowledge that circumstances exist that may justify the granting of a variance is not a self-created hardship.
4. The requested variance is consistent with the spirit, purpose, and intent of the regulation, such that public safety is secured and substantial justice is achieved.

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3.4. VESTED RIGHTS CERTIFICATE/DETERMINATION



A. Purpose. Nothing in the LDO nor LDO handbook is intended to repeal, supersede, annul, impair, or interfere with any vested rights under applicable laws, so long as the vested rights remain in effect. In accordance with N.C. Gen. Stat. § 160D-108.1, a landowner may establish a vested right that shall entitle the landowner to develop land in accordance with an approved site-specific development plan.

B. Application.

1. The application shall be submitted on a form as designated by the town and include the appropriate filing fee.
2. The applicant for a vested rights certificate/determination shall provide the LDA with a completed application and copies of any documents on which the applicant is relying to establish vested rights.
3. The application shall be reviewed by the LDA and approved in a public hearing by the BOC and meet all applicable common application procedures.

C. Review Process.

- a. Vested rights applications shall occur through a public hearing process and shall be reviewed by the LDA for consistency with the regulations of the LDO, comprehensive plan, and any other relevant town ordinances and adopted plans.
- b. A staff report (if applicable) by the Planning Department shall be provided to the BOC.

D. BOC ~~Public Evidentiary~~ Hearing.

- a. The BOC will review the proposed request under evidentiary proceedings, taking into consideration all relevant comments from town staff and the applicant.
- b. Upon evidence submitted and review of the application, if the BOA€ finds that there is sufficient evidence to establish vested rights, it shall issue a certificate to the applicant recognizing vested rights for the project. The certificate shall set forth all terms and conditions required for the continuance of the vested rights being recognized.
- c. The BOC shall vote for approval of the request or vote to deny the request.
- d. The BOC may add additional requirement or modify proposed language with consent of the applicant.

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3.5- MAJOR SUBDIVISION PRELIMINARY PLAT

Figure 3.5 Major Subdivision Preliminary Plat

Step 1: Optional Pre-Application Conference

Step 2: Application Submittal

Step 3: Staff Review

Step 4: BOC Evidentiary Hearing

A. Purpose.

1. The purpose of this

process is to establish procedures for the development and subdivision of land within the territorial jurisdiction of the Town of Rolesville that constitutes a major subdivision.

2. All subdivisions shall be considered major subdivisions except those defined as minor subdivisions.

3. Subdivision review, filing, and recording shall be in accordance with N.C. Gen. Stat. § 460D-803 and 804.

B. Preliminary Plat Application.

1. A request shall be submitted on a form designated by the Planning Department and include the appropriate filing fee.

2. The Technical Review Committee (TRC) will then review the preliminary plat, note any deficiencies, make technical recommendations, and decide whether the plat meets all specifications and is ready for consideration by the Board of Commissioners.

3. Should the plat in any manner not meet all the requirements of the LDO, or should any other significant contingencies exist within the proposed development, the LDA will not forward said plat to the Board of Commissioners.

4. The preliminary plat shall include all information required in N.C. Gen. Stat. § 47-30.

C. Preliminary Plat Review Process.

1. The Board of Commissioners shall review the preliminary plat on or before its next regularly scheduled meeting which follows at least seven (7) days after the LDA receives the preliminary plat and comments from the Technical Review Committee (TRC).

2. The Board of Commissioners shall hold a public hearing, and in writing, approve or deny with reasons within forty (40) days of its first consideration of the plat.

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- ~~3. If the preliminary plat is disapproved, the subdivider may make the recommended changes and submit a revised preliminary plat.~~
- ~~4. If the Board of Commissioners of the Town of Rolesville disapproves the preliminary plat, the reasons for such disapproval shall be specified in writing. One copy of the plat and the reasons shall be retained by the Board of Commissioners of the Town of Rolesville and one copy shall be returned to the subdivider.~~
- ~~5. If the Board of Commissioners of the Town of Rolesville approves the preliminary plat, such approval shall be noted on the plat. A digital copy of the plat shall be retained by the Board of Commissioners of the Town of Rolesville.~~

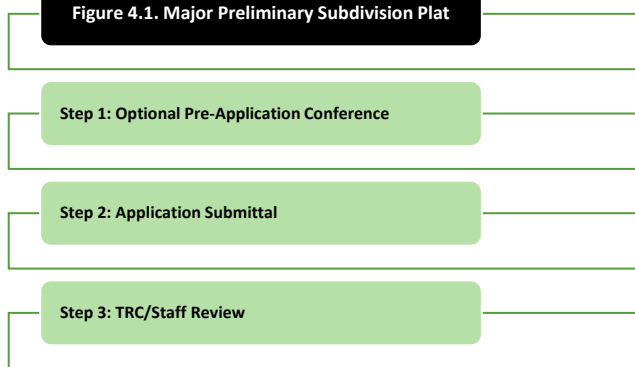
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OTHER ADMINISTRATIVE PROCESSES

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AdministrativeOther Processes
Certificate of Occupancy/Compliance
Major Preliminary Subdivision Plat
Construction Infrastructure Drawings
Minor Subdivision Final Plat
Major Subdivision Final Plat
Site Development Plan
Sketch Plan
Zoning Permit

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4.1. ~~CERTIFICATE OF OCCUPANCY/COMPLIANCE~~ MAJOR PRELIMINARY SUBDIVISION PLAT**Figure 4.1. Major Preliminary Subdivision Plat****A. Purpose.**

1. ~~The purpose of this process is to establish procedures for the development and subdivision of land within the territorial jurisdiction of the Town of Rolesville that constitutes a major subdivision.~~
2. ~~All subdivisions shall be considered major subdivisions except those defined as minor subdivisions.~~
3. ~~Subdivision review, filing, and recording shall be in accordance with N.C. Gen. Stat. § 160D-803 and 804.~~
1. ~~The purpose of a certificate of compliance is to ensure that any building or land that is erected, changed, converted, altered, or enlarged is not used or occupied, or connected to or provided with utilities, unless it complies with the requirements of the LDO.~~
2. ~~No land shall be used or occupied, and no building or structure erected or altered shall be used or changed in use until a Certificate of Occupancy/Compliance has been issued by the LDA.~~
3. ~~The LDA may issue a certificate of compliance that is valid for up to six (6) months to allow for partial occupancy of a structure or land in order to complete construction or alteration, or to allow for utilities to be connected to an unoccupied structure for rent or sale.~~

B. Application.

1. A request shall be submitted on a form designated by the Planning Department and include the appropriate filing fee.
- ~~2. The preliminary plat shall include all information required in N.C. Gen. Stat. § 47-30.~~
- ~~2. The certificate shall be applied for concurrently with the application for a zoning permit.~~

C. Review Process.

- ~~1. The TRC will review the preliminary plat, note any deficiencies, make technical recommendations, and decide whether the plat meets all specifications and is ready for approval.~~
- ~~2. Should the plat in any manner not meet all the requirements of the LDO, or should any other significant contingencies exist within the proposed development, the LDA will not approve the plat.~~
- ~~3. LDA approval shall be noted on the plat. A digital copy of the plat shall be retained by the Town of Rolesville.~~
- ~~1. The LDA will review the proposed request for compliance with the LDO.~~
- ~~2. The LDA shall approve the application as submitted, approve the application subject to conditions of approval, or deny the application as submitted.~~
- ~~3. The certificate of compliance shall remain valid unless the building or land for which the certificate was issued is in violation of the LDO.~~
- ~~4. A record of all such certificates shall be kept on file and open to the public subject to State law.~~

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4.2. CONSTRUCTION ~~INFRASTRUCTURE~~ DRAWINGS

Figure 4.2. Construction Infrastructure Drawings

Step 1: Optional Pre-Application Conference

Step 2: Application Submittal

Step 3: TRC/Staff Review

A. **Purpose.** ~~Construction drawings can be submitted after approval of a site plan.~~

Review and approval of a construction plan is required for all development.

B. **Application.**

1. A request shall be submitted on a form designated by the Planning Department and include the appropriate filing fee.

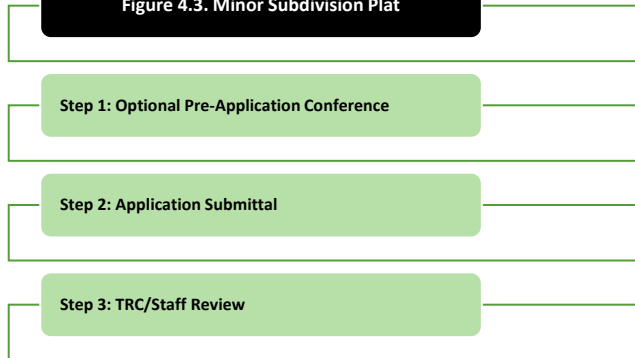
C. **Review Process.**

1. The LDA and TRC will review the proposed request for compliance with the LDO.
2. The LDA shall approve the application as submitted, approve the application subject to conditions of approval, or deny the application as submitted.
3. A record of all construction plans shall be kept on file and open to the public, subject to State law.

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4.3. MINOR SUBDIVISION FINAL PLAT

Figure 4.3. Minor Subdivision Plat



A. Purpose.

1. The purpose of this process is to establish procedures for the development and subdivision of land within the planning and development regulation jurisdiction of the Town of Rolesville that does not constitute a major subdivision.
2. Pursuant to N.C. Gen. Stat. § 160D-804, a final plat shall be prepared, approved, and recorded pursuant to the provisions of the LDO whenever any subdivision of land takes place.
3. Pursuant to N.C. Gen. Stat. § 160D-803, no final plat of a subdivision within the jurisdiction of the Town of Rolesville shall be recorded by the Register of Deeds of Wake County until it has been approved by the town as provided herein.
4. A minor subdivision is defined as one involving no new public or private streets or roads, or right-of-way dedication, no easements, no utility extension, where the entire tract to be subdivided is five (5) acres or less in size, and where four (4) or fewer lots result after the subdivision is completed.

B. Application.

1. A request shall be submitted on a form designated by the Planning Department and include the appropriate filing fee.

C. Review Process.

1. The LDA will review the proposed request for compliance with the LDO.
2. The LDA shall approve the application as submitted, approve the application subject to conditions of approval, or deny the application as submitted.
3. If the application is approved, the applicant shall submit a final plat in accordance with all standards of the LDO. The final plat shall be prepared by a Professional Land Surveyor currently licensed and registered in the State of North Carolina by the North Carolina State Board of Registration for Professional Engineers and Land Surveyors. The final plat shall conform to the provisions for plats, subdivisions, and mapping requirements set forth in N.C. Gen. Stat. § 47-30 and the Standards of Practice for Land Surveying in North Carolina.
4. One mylar copy of the plat and one digital copy shall be submitted. Material and drawing medium for the original shall be accordance with the Standards of Practice for Land Surveying in North Carolina, where applicable, and the requirements of the Wake County Register of Deeds.
5. The final plat shall be of a size suitable for recording with the Wake County Register of Deeds and shall be at a scale of not less than one (1) inch equals two-hundred (200) feet. Maps may be placed on more than one (1) sheet with appropriate match lines.
6. Submission of the final plat shall be accompanied by a filing fee in accordance with the town's fees schedule.
7. The following signed certificate shall appear on all copies of the final plat:
 - a. Certificate of Ownership and Dedication. I hereby certify that I am the owner of the property shown and describe hereon, which is located in the subdivision jurisdiction of the Town of Rolesville and that I hereby adopt this plan of subdivision with my free consent and establish minimum building setback lines as noted.

Owner

Date

- b. Certificate of Survey and Accuracy In accordance with N.C. Gen. Stat. § 47-30
- 8. The LDA shall review the final plat shall and shall approve, conditionally approve with modifications to bring the plat into compliance, or disapprove the final plat with reasons within forty-five (45) days of receiving the plat.
- 9. During their review of the final plat the LDA may appoint an engineer or surveyor to confirm the accuracy of the final plat with the permission of the Town Manager. If substantial errors are found, the costs shall be charged to the subdivider and the plat shall not be recommended for approval until such errors have been corrected.
- 10. If the LDA recommends approval of the final plat, they shall retain all copies of the plat and its written recommendations.
- 11. If the LDA recommends disapproval of the final plat, they shall instruct the subdivider concerning resubmission of a revised plat and the subdivider may make such changes as will bring the plat into compliance with the provisions of the LDO and resubmit same for reconsideration by the LDA, or appeal the decision to the Board of Commissioners of the Town of Rolesville.
- 12. Failure of the LDA to make a written recommendation within forty-five (45) days after their first review shall constitute grounds for the subdivider to apply to the Board of Commissioners of the Town of Rolesville for approval.
- 13. If the LDA approves the final plat, such approval shall be shown on each copy of the plat by the following signed certificate:

"Certificate of Approval for Recording

I hereby certify that the subdivision plat shown hereon has been found to comply with the Subdivision Regulations of the Town of Rolesville, North Carolina and that this plat has been approved by the LDA of the Town of Rolesville for recording in the Office of the Register of Deeds of Wake County.

Date

LDA, Town of Rolesville
Rolesville, North Carolina"

“I, _____, Review Officer of the Town of Rolesville, Wake County, certify that the map or plat to which this certification is affixed meets all statutory requirements for recording.

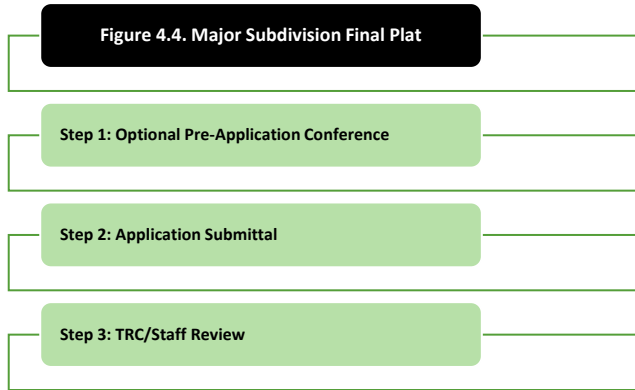
Review Officer Date”

14. If the final plat is disapproved by the LDA of the Town of Rolesville the reasons for such disapproval shall be stated in writing, specifying the provisions of the LDO with which the final plat does not comply.
15. If the final plat is disapproved, the subdivider may make such changes as will bring the final plat into compliance and resubmit same for reconsideration by the LDA or an appeal can be filed to the Board of Adjustment.
16. If the final plat is approved by the LDA of the Town of Rolesville, the original tracing and one (1) print of the plat shall be retained by the subdivider, and one (1) digital copy shall be returned to the LDA for their records. The subdivider shall file the approved final plat with the Register of Deeds of Wake County within sixty (60) days of the LDA of the Town of Rolesville approval; otherwise such approval shall be null and void.

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4.4. MAJOR SUBDIVISION FINAL PLAT

Figure 4.4. Major Subdivision Final Plat



A. Purpose.

1. The purpose of this process is to establish procedures for the development and subdivision of land within the territorial jurisdiction of the Town of Rolesville that constitutes a major subdivision. A major subdivision final plat can be submitted after approval of a major subdivision preliminary plat and construction drawings.
2. Pursuant to N.C. Gen. Stat. § 160D-804, a final plat shall be prepared, approved, and recorded pursuant to the provisions of the LDO whenever any subdivision of land takes place.
3. Pursuant to N.C. Gen. Stat. § 160D-803, no final plat of a subdivision within the jurisdiction of the Town of Rolesville shall be recorded by the Register of Deeds of Wake County until it has been approved by the town herein.

B. Application.

1. A request shall be submitted on a form designated by the Planning Department and include the appropriate filing fee.

2. Prior to approval of a final plat, the subdivider shall have installed the improvements specified in the LDO or guaranteed their installation as provided herein.
3. No final plat will be accepted for review by the LDA unless accompanied by written notice by the Town Clerk acknowledging compliance with the improvement and guarantee standards of the LDO.
4. The final plat shall constitute only that portion of the preliminary plat which the subdivider proposes to record and develop at that time; such portion shall conform to all requirements of the LDO.
5. The final plat shall include all information required in N.C. Gen. Stat. § 47-30.

C. Review Process.

1. The final plat for the first stage of the subdivision shall be submitted not more than eighteen (18) months after the date on which the preliminary plat was approved; otherwise such approval shall be null and void, unless a written extension of this limit is granted by the Board of Commissioners of the Town of Rolesville on or before the eighteen (18) month anniversary of the approval.
2. The final plat shall be prepared by a Professional Land Surveyor currently licensed and registered in the State of North Carolina by the North Carolina State Board of Registration for Professional Engineers and Land Surveyors. The final plat shall conform to the provisions for plats, subdivisions, and mapping requirements set forth in N.C. Gen. Stat. § 47-30 and the Standards of Practice for Land Surveying in North Carolina.
3. One (1) mylar copy and one (1) digital copy of the final plat shall be submitted. Material and drawing medium for the original shall be in accordance with the Standards of Practice for Land Surveying in North Carolina, where applicable, and the requirements of the Wake County Register of Deeds.
4. The final plat shall be of a size suitable for recording with the Wake County Register of Deeds and shall be at a scale of not less than one (1) inch equals two-hundred (200) feet. Maps may be placed on more than one (1) sheet with appropriate match lines.
5. Submission of the final plat shall be accompanied by a filing fee in accordance with the town's fee schedule.

6. The final plat shall meet the requirements of N.C. Gen. Stat. § 47-30.
7. The following signed certificate shall appear on all copies of the final plat:
 - a. Certificate of Ownership and Dedication. I hereby certify that I am the owner of the property shown and describe hereon, which is located in the subdivision jurisdiction of the Town of Rolesville and that I hereby adopt this plan of subdivision with my free consent and establish minimum building setback lines as noted.

Owner

Date

- b. Certificate of Survey and Accuracy In accordance with N.C. Gen. Stat. § 47-30
8. The LDA shall review the final plat shall and shall approve, conditionally approve with modifications to bring the plat into compliance, or disapprove the final plat with reasons within forty-five (45) days of receiving the plat.
9. During their review of the final plat the LDA may appoint an engineer or surveyor to confirm the accuracy of the final plat with the permission of the Town Manager. If substantial errors are found, the costs shall be charged to the subdivider and the plat shall not be recommended for approval until such errors have been corrected.
10. If the LDA recommends approval of the final plat, they shall retain all copies of the plat and its written recommendations.
11. If the LDA recommends disapproval of the final plat, they shall instruct the subdivider concerning resubmission of a revised plat and the subdivider may make such changes as will bring the plat into compliance with the provisions of the LDO and resubmit same for reconsideration by the LDA, or appeal the decision to the Board of Commissioners of the Town of Rolesville.
12. Failure of the LDA to make a written recommendation within forty-five (45) days after their first review shall constitute grounds for the subdivider to apply to the Board of Commissioners of the Town of Rolesville for approval.
13. If the LDA approves the final plat, such approval shall be shown on each copy of the plat by the following signed certificate:

"Certificate of Approval for Recording

I hereby certify that the subdivision plat shown hereon has been found to comply with the Subdivision Regulations of the Town of Rolesville, North Carolina and that this plat has been approved by the LDA of the Town of Rolesville for recording in the Office of the Register of Deeds of Wake County.

Date

LDA, Town of Rolesville
Rolesville, North Carolina"

"I, _____, Review Officer of the Town of Rolesville, Wake County, certify that the map or plat to which this certification is affixed meets all statutory requirements for recording.

Review Officer Date"

14. If the final plat is disapproved by the LDA of the Town of Rolesville the reasons for such disapproval shall be stated in writing, specifying the provisions of the LDO with which the final plat does not comply.
15. If the final plat is disapproved, the subdivider may make such changes as will bring the final plat into compliance and resubmit same for reconsideration by the LDA or an appeal can be filed to the Board of Adjustment.
16. If the final plat is approved by the LDA of the Town of Rolesville, the original tracing and one (1) print of the plat shall be retained by the subdivider, and one (1) digital copy shall be returned to the LDA for their records. The subdivider shall file the approved final plat with the Register of Deeds of Wake County within sixty (60) days of the LDA of the Town of Rolesville approval; otherwise such approval shall be null and void.

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4.5. SITE DEVELOPMENT PLAN

Figure 4.5. Site Development Plan

Step 1: Optional Pre-Application Conference

Step 2: Application Submittal

Step 3: TRC/Staff Review

- A. **Purpose.** Site Development Plan review is intended to ensure that the layout and general design of proposed development is compatible with surrounding uses and complies with all applicable standards in the LDO and all other applicable town regulations. Site plans can be submitted after approval of a preliminary plat. Review and approval of a site plan is required for all development except:
 1. Alterations of an existing structure limited to the interior of the structure that do not involve an increase in floor area, an increase in the density or intensity of use, or a change in parking requirements.
- B. **Application.**
 1. A request shall be submitted on a form designated by the Planning Department and include the appropriate filing fee.
- C. **Review Process.**
 1. The LDA will review the proposed request for compliance with the LDO.
 2. The LDA, may, in writing, exempt the applicant from meeting any plan requirement which is clearly inapplicable to the proposed use.
 3. The LDA shall approve the application as submitted, approve the application subject to conditions of approval, or deny the application as submitted.
 4. A record of all Site Development Plans shall be kept on file and open to the public, subject to State law.

4.6. SKETCH PLAN

Figure 4.6. Sketch Plan

Step 1: Optional Pre-Application Conference

Step 2: Application Submittal

Step 3: Staff Review

A. Purpose. A sketch plan review is intended to provide a conceptual illustration of development on a site. Sketch plans are not intended to be a site plan, but provide a proof of concept of development on a particular site.

B. Application.

1. A request shall be submitted on a form designated by the Planning Department.
2. Sketch plans shall provide, at minimum:
 - a. A vicinity map of the site, showing the boundaries of the site.
 - b. Total acreage/square footage of the site.
 - c. Estimated square footage of proposed development on the site.
 - d. Estimated square footage of proposed impervious surfaces on the site.
 - e. Existing and proposed uses of the land.
 - f. Existing zoning classification.
 - g. Existing and proposed building layout, street layout, right of way width, lot layout, and size of lots (where applicable).
 - h. Name, address, and contact information for owner/applicant.
 - i. Any other information required on the form designed by the Planning Department.

~~C. Review Process.~~

- ~~1. The LDA will review the proposed request for compliance with the LDO.~~
- ~~2. The LDA, may, in writing, exempt the applicant from meeting any plan requirement which is clearly inapplicable to the proposed use.~~
- ~~3. The LDA shall approve the application as submitted, approve the application subject to conditions of approval, or deny the application as submitted.~~
- ~~4. A record of all zoning permits shall be kept on file and open to the public, subject to State law.~~

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4.67. ZONING PERMIT**Figure 4.7. Zoning Permit****Step 1: Optional Pre-Application Conference****Step 2: Application Submittal****Step 3: Staff Review****A. Purpose.**

1. No building or structure or any part thereof shall be erected, extended, enlarged, or structurally altered or moved until a zoning permit has been issued by the LDA.
2. No change in use shall be approved until a zoning permit has been issued by the LDA.

B. Application.

1. A fee in accordance with the town's fee schedule shall be charged for the issuance of each zoning permit.
2. The following items shall be included with any application, if applicable:
 - a. Name of applicant, address, and PIN.
 - b. The actual shape and dimensions of the lot to be built upon or used and total acreage in the lot.
 - c. The location of the proposed structure or use on the lot.
 - d. The exact location and size of existing structures and uses, including the square footage of each building.
 - e. The existing and intended use of each structure or part of structure.

- f. The number of dwelling units the building is designed to accommodate, if applicable.
 - g. The height and number of stories of the structure.
 - h. The location and design of any off-street parking and/or loading, town easements, and impervious surfaces.
 - i. The location and dimensions of driveways. Driveway approval procedures as required by the North Carolina Department of Transportation shall be initiated.
 - j. Date of plan preparation.
 - k. Location and descriptions of landscaping, buffering, and signs.
 - l. Clearly marked distance between structures existing and proposed.
 - m. Survey with stamp and signature by registered surveyor.
 - n. Such other LDO as may be necessary for determining whether the provisions of the LDO are being met.
3. If the proposed application includes a grouping of more than one (1) principal building or use on the same lot, the following application items shall also include:
- a. A vicinity map showing the relationship of the proposed development to the surrounding area.
 - b. North arrow and declination.
 - c. Detailed layouts for all utilities, right-of-way, and roads and other improvements.
 - d. Railroads, bridges, culverts, storm drains, wooded areas, marshes, swamps, rock outcrops, ponds or lakes, streams or stream beds, and any other similar features affecting the site.
 - e. A copy of any proposed deed restrictions or similar covenants.
 - f. For projects over an acre in size, or if otherwise required by the LDA, a topographic map showing vertical contours every two (2) feet.
 - g. The names, addresses, and telephone numbers of owners, mortgagees, professional surveyors, land planners, architects, landscape architects, and professional engineers responsible for the development.

4. Mobile home parks or mobile homes on single lots shall include the following particular items for any zoning permit:
 - a. Location of drives, walks, driveways, walkways, street lighting, water and sewer systems, mobile home plots;
 - b. Location and size of service buildings and areas, recreation buildings and areas;
 - c. Location and type of screening fences or hedges and storage area;
 - d. Location and number of parking spaces;
 - e. Location and description of any other structure or improvement of the land; and
 - f. Topographic features.

C. Review Process.

1. The LDA will review the proposed request for compliance with the LDO.
2. The LDA, may, in writing, exempt the applicant from meeting any plan requirement which is clearly inapplicable to the proposed use.
3. The LDA shall approve the application as submitted, approve the application subject to conditions of approval, or deny the application as submitted.
4. Any permit issued shall become invalid unless the work authorized by it shall have been commenced within six (6) months of its date of issue, or if the work authorized by it is suspended or abandoned for a period in excess of one (1) year.
5. A record of all zoning permits shall be kept on file and open to the public, subject to State law.

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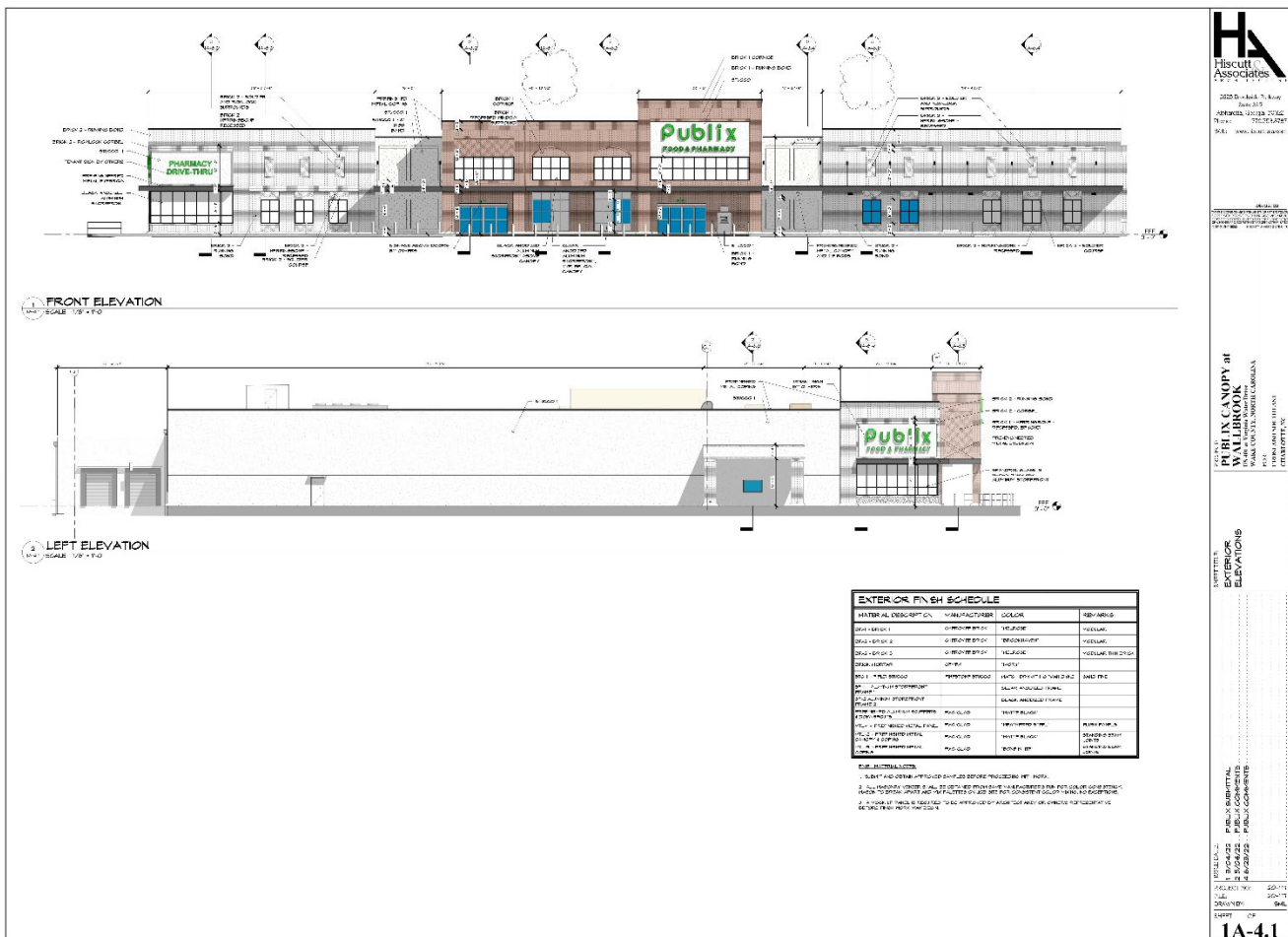
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HIGHLIGHTS



The Site Plan for Wallbrook Lot 1, which includes a Publix grocery store, was approved by the Town Board of Commissioners on August 2, 2022.

The Town of Rolesville is committed to providing accessible facilities, programs, and services for all people in compliance with the Americans with Disabilities Act. Should you need assistance or a particular accommodation please contact the ADA Coordinator.

Developments

CURRENT RESIDENTIAL PERMITS ISSUED Summary of Activity

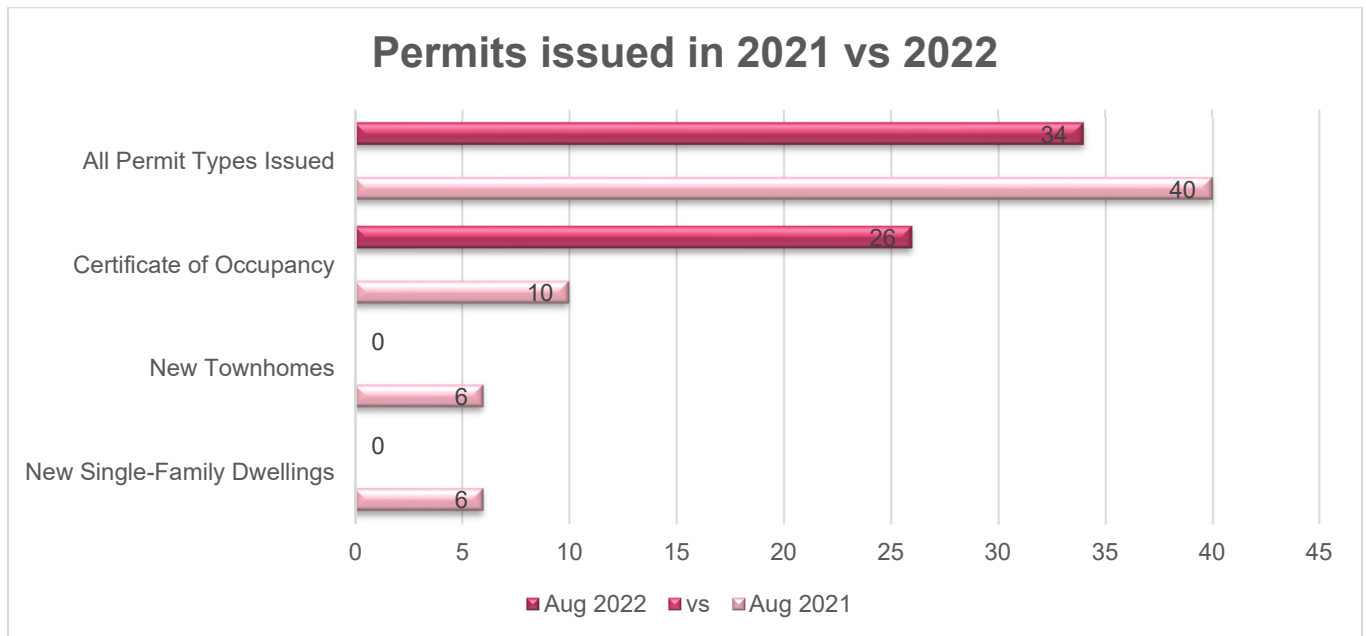
Subdivision	Total Buildable Lots	Total Permits Issued Per Development	Un-permitted Lots Remaining	Permits Issued in August	Permits Issued YTD
Carlton Pointe	301	297	4		7
Chandler's Ridge	74	57	17		29
Elizabeth Springs	89	43	46		16
Perry Farms	113	89	25		28
Preserve at Jones Dairy South	122	48	49		48
Stonewater	208	206	2		1
TOTAL	907	725	173		129

Elizabeth Springs Townhomes	98	35	63	0	28
TOTAL	98	35	63	0	28

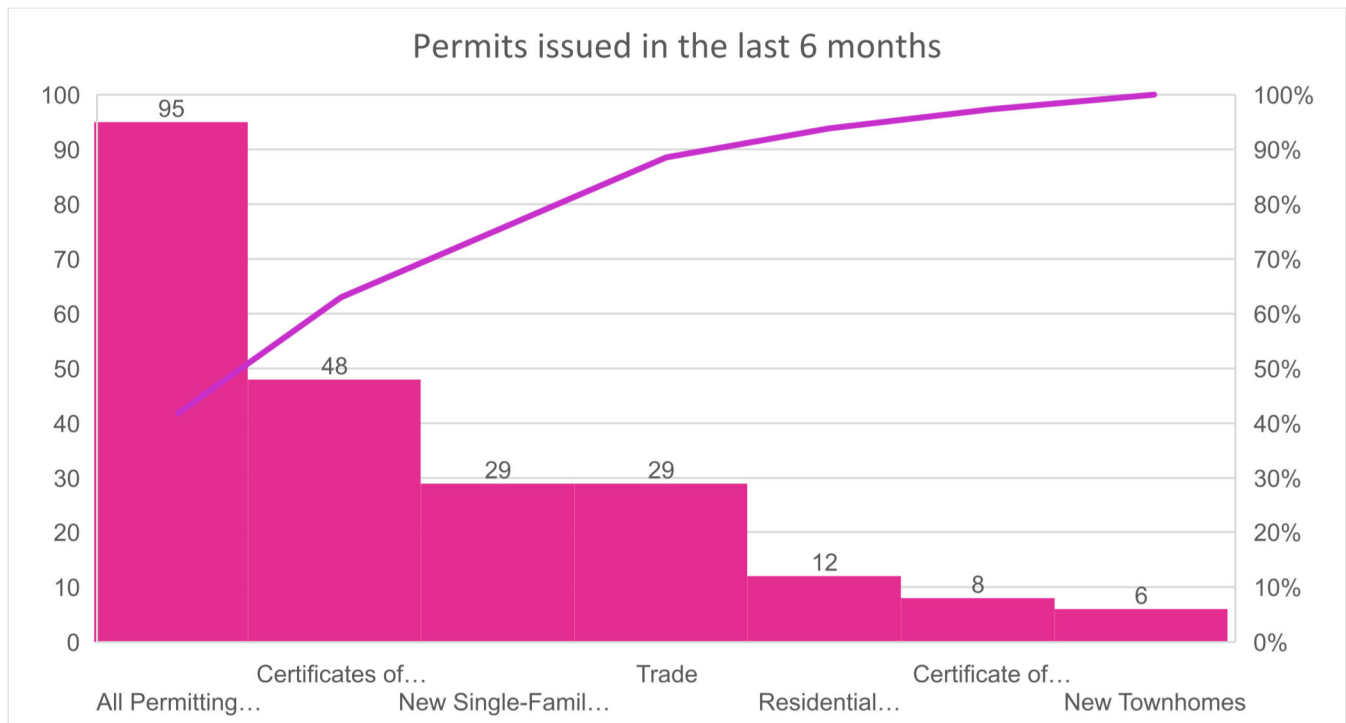
ETJ/ Non-Sub					
TOTAL				0	03

TOTAL Residential Permits Issued	1005	760			160
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Permitting Activity



The Town of Rolesville has experienced an overall **decrease** in permitting activity compared to this time last year.



Detailed information regarding these projects can be found by clicking on the link provided <https://www.rolesvillenc.gov/planning/development-projects>

Development Projects Summary

Commercial/ Mixed-Use

Triangle Medical Group

Carolina Legacy Volleyball

Cobblestone

Hampton Lake Drive Dental Office

Public Works Facility

Wallbrook

Residential

A-Master Team- 47 New Townhomes

Chandlers Ridge- 90 New Single-Family Homes

Cobblestone- 176 New Apartments

Elizabeth Springs- 89 New Single-Family Homes & 98 New Townhomes

Granite Crest Phase 3- 19 New Single-Family Homes

Kalas Falls- 484 New Single-Family Homes & 108 New Townhomes

Perry Farms Phase 2- 33 New Single-Family Homes

Preserve at Jones Dairy Road Central- 261 New Single-Family Homes & 173 New THs

Preserve at Jones Dairy Road North- 141 New Single-Family Homes & 65 New Townhomes

Preserve at Jones Dairy Road South- 221 New Single-Family Homes

Preserve at Moody Farm- 82 New Single-Family Homes

Regency at Heritage- 27 New Single-Family Homes

Rolesville Crossing – 177 New Single-Family Homes & 120 New Townhomes

The Point- 483 New Single-Family Homes & 324 New Townhomes

The Townes at Carlton Pointe- 53 New Townhomes

Wallbrook- 140 New Townhomes

