# Planning Board Meeting
## October 23, 2023
## 7:00 p.m.

## AGENDA

A. Call to Order

1. Pledge of Allegiance
2. Invocation
3. Approval of August 28, 2023, Planning Board Meeting Minutes

B. Regular Agenda

1. Town of Rolesville Appearance Commission – Input on establishment of a commission and possible duties.

C. Communications

1. Planning Department Updates
    a. Previous Planning Board Recommendations
    b. Averette, Young, and Rolesville Road Corridor Study
    c. Communication of Planning Board Recommendations to Town Board
    d. Other
2. Town Attorney's Report
3. Other Business
4. Adjournment

# Planning Board Meeting
## August 28, 2023 - 7:00 PM
## 502 Southtown Circle, Rolesville, NC 27571

**MINUTES**

**PRESENT:** Mike Moss, Chair; Donnie Lawrence, Board Member; Davion Cross, Vice-Chair; Tisha Lowe, Board Member; Steve Hill, Board Member; Derek Versteegen, Board Member; Michelle Medley, Commissioner/ Planning Board Liaison; Erin Catlett, Deputy Town Attorney; Meredith Gruber, Planning Director; Mike Elabarger, Senior Planner; Michele Raby, Planning Board Clerk/Planner I

**ABSENT:** Jim Schwartz, Board Member

**A. CALL TO ORDER**

Chair Moss called the meeting to order at 7:00 p.m.

**A.1. PLEDGE OF ALLEGIANCE**

The Board collectively recited the Pledge of Allegiance.

**A.2. INVOCATION**

Chair Moss delivered the invocation.

**A.3. APPROVAL of July 24, 2023, Planning Board meeting minutes.**

**Moved by Board Member Lawrence and Seconded by Board Member Lowe. The motion to approve the minutes of July 24, 2023, with a noted correction of a clerical error to amend the date from June 24, 2023, to July 24, 2023, was carried by unanimous (7-0) vote.**

**B. REGULAR AGENDA**

**B.1. MA 22-08 Harris Creek Farms Rezoning for approximately ninety-three (93) acres consisting of nineteen (19) tracts of land on the West side of Jonesville Road near Universal Drive.**

Mr. Elabarger described the proposed Map Amendment application from Wake County's R-30 Zoning District to the Town's Land Development Ordinance (LDO) zoning district of Residential Medium (RM) and Residential High (RH) as Conditional Zoning (CZ) Districts.

Mr. Samuel Morris Attorney with Long Leaf Law Partners, Steve George with CSC Group, Jeremy Keeny, and Panth Naik with Morris & Ritchie Associates, Inc. (Architecture Group) represented the applicant and presented the project along with the existing and proposed conditions. The board collectively asked about why a virtual meeting rather than an in-person meeting was held, walkability, greenway connectivity, 30+ acres be dedicated to the Town, public parking, park access, paving Universal Drive, street widths, why a conservation subdivision was not utilized, vinyl siding and lack of dwelling design types and voiced their concern about the lack of a second means of ingress/egress. Mr. George stated the conditions they would concede to would be to consult with the landowner to inquire if a sidewalk on Jonesville Road could be extended on their property to enhance connectivity.

There was one (1) public speaker who spoke in opposition of the project; Mr. Guy Jones 4706 Cousins Lane Wake Forest, NC 27587 noting the negative effect it would have on his property taxes if this development were allowed.

**Moved by Board Member Versteegen and Seconded by Board Member Lowe. The motion to recommend DENIAL of MA 22-08 Harris Creek Farms Rezoning Map Amendment carried with a unanimous vote (6 ayes-0 nayes-1 absent being Board Member Schwartz was absent).**

**C. COMMUNICATIONS**

**C.1. Planning Director's Report**

**a. Update on Previous Planning Board Recommendations**

**On August 15, 2023, the Town Board approved the Pearce Farm Annexation and Rezoning Map Amendment request with added conditions. At the next Town Board meeting on September 5, the board will hear the Arden Senior Living Rezoning Map Amendment and the Hills at Harris Creek Annexation and Rezoning Map Amendment requests.**

**b. July Development Report**

**In July there were eighteen (19) total dwelling unit permits issued. Permits are down compared to this time last year.**

**c. September 2023 marks the 50th Anniversary since the Planning Board was established. A celebration will occur before the next meeting. Light refreshments will be provided.**

**d. Upcoming LDO Text Amendments**

**i. Main Street/Commercial Corridor- more information to come.**

**ii. Appendix B, Section 1.2 Stormwater Management will be established by the State and adopted as the State requires.**

**C.2. Town Attorney's Report**

**Deputy Town Attorney Catlett noted nothing at this time.**

**C.3. Other Business**

**None currently.**

**C.4. Adjournment**

**Board Member Lawrence made a motion to adjourn and Seconded by Vice-Chair Cross. The motion was carried by unanimous vote. The meeting was adjourned at 8:28 p.m.**

_____ _____

**Mike Moss, Planning Board Chairman** **Michele Raby, Planning Board Clerk/Planner**

# Memo

**To**: Planning Board
**From**: Meredith Gruber, Planning Director
**Date**: October 23, 2023
**Re**: Town of Rolesville Appearance Commission

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**Background**
At their September 19 work session, the Town Board of Commissioners discussed the potential creation of an Appearance Commission and what their duties might be. The mayor and commissioners wished to get the Planning Board's input on this topic before moving forward.

**Summary**
This memo includes draft ordinance language for an Appearance Commission for review by the Town Board of Commissioners. Along with the draft text amendment language, staff has identified some related issues the Board may wish to add to their discussion of a Town of Rolesville Appearance Commission.

**Draft Ordinance**
Draft language for a Land Development Ordinance (LDO) text amendment for an Appearance Commission is provided below for review and discussion. The language is modeled after the Town of Wendell's Appearance Commission and formatted to match the Planning Board and Board of Adjustment sections in the LDO. The Town of Wendell was chosen as a reasonable model for the Town of Rolesville because of the comparability of our communities as well as the similar citizen advisory boards that both towns have.

The potential language for an Appearance Commission LDO text amendment is as follows:

**LDO Section 2.1.*TBD*. Appearance Commission**

A. **Purpose and Intent**. The Appearance Commission's mission is to initiate, promote, and assist in the implementation of programs of general community beautification within the Town's planning jurisdiction. The Appearance Commission exercises its authority consistent with N.C. Gen. Stat. § 160D-304.

B. **Powers and Duties**. The Appearance Commission shall have the following powers and duties:

1. To coordinate the activities of individuals, agencies, organizations, and groups, public and private, whose plans, activities and programs bear upon the appearance of the town.
2. To direct the attention of the Board of Commissioners to needed enforcement of any ordinance that may in any way affect the appearance of the town.
3. To review plans referred to the Commission by the Board of Commissioners, Planning Board, Board of Adjustment, or Town Manager and make recommendations regarding their aesthetic suitability. All plans shall be reviewed by the Commission in a prompt and expeditious manner, and all recommendations of the Commission about any public project shall be made in writing.
4. To appoint subcommittees (consisting of Commission members) or advisory groups (consisting of Commission members, non-commission members, or any combination thereof) to advise and assist the Commission in carrying out its duties.
5. To take any other action authorized by this section of the LDO or any ordinance or resolution of the Board of Commissioners.

C. **Membership**.
   1. There shall be an Appearance Commission, which shall consist of seven members appointed by the Board of Commissioners. All members of the Commission shall reside, own property, or operate a business within the town's planning jurisdiction.
   2. Appearance Commission members shall be appointed by the Board for three-year staggered terms, but members may continue to serve until their successors have been appointed. Initially, four members shall be appointed for three-year terms and three members shall be appointed for two-year terms.
   3. Terms of office shall be consistent with the calendar year of January 1 through December 31.
   4. Members may be appointed for successive terms without limitation.
   5. Where possible, appointments shall be made to always maintain on the commission a majority of members who have had special training or experience in a design field, such as architecture, landscape design, horticulture, city planning, or a related field.
   6. Members may be removed by the Board of Commissioners for failure to attend three consecutive meetings without advance notice to the chair of the Commission and without excuse or failure to attend thirty (30) percent or more of the meetings within a 12-month period.

D. **By-laws and Rules of Procedure**. The Appearance Commission shall maintain by-laws which shall be updated once a year. By-laws shall be consistent with N.C. Gen. Stat. § 160D-960.

E. **Conflicts of Interest**. The Appearance Commission shall abide by N.C. Gen. Stat. § 160D-109.

F. **Oath**. Members of the Appearance Commission, before entering their duties, shall qualify by taking an oath as required by N.C. Gen. Stat. § 160D-309.

G. **Voting Rights**. Members appointed from the extraterritorial jurisdiction shall have equal rights, privileges, and duties with the other members of the Appearance Commission, regardless of whether the matters at issue arise within the town or within the extraterritorial area.

**Related Issues**

***Volunteer Availability***

Staff is concerned about the likelihood of finding seven members for an Appearance Commission. With the two other advisory boards managed by the Planning Department, one seat stayed open on the Planning Board for several months, and the Board of Adjustment has two vacant seats that need to be filled. An alternative to creating a new commission is to add to the duties of the Planning Board.

***Development Review***

Adding an Appearance Commission that may review some site development plans or other permits would add to the development review process timeline. Development review timelines vary based on the number of applications required for a particular project. Some nonresidential development projects include rezoning, annexation, construction infrastructure drawings, site development plans, and building permits. Time from conception to construction can take several years. Is the Town Board comfortable adding another step in the development review process?

***Staffing***

Additional personnel in Planning or Administration may be needed to staff an Appearance Commission. As a comparison, Planning staff spend 35 – 50 hours per month preparing for one Planning Board meeting.

**Next Steps**

Staff recommends The Town Board of Commissioners provide direction on the creation of an Appearance Commission.

**Attachments**

- NC General Statutes Chapter 160D-304 Appearance Commission
- NC General Statutes Chapter 160D-960 Powers and Duties of Commission

**§ 160D-304. Appearance commission.**

(a) Composition. – Each local government may create a special commission, to be known as the appearance commission. The commission shall consist of not less than seven nor more than 15 members, to be appointed by the governing board for terms not to exceed four years, as the governing board may by ordinance provide. All members shall be residents of the local government's area of planning and development regulation jurisdiction at the time of appointment. Where possible, appointments shall be made in such a manner as to maintain on the commission at all times a majority of members who have had special training or experience in a design field, such as architecture, landscape design, horticulture, city planning, or a related field. Members of the commission may be reimbursed for actual expenses incidental to the performance of their duties within the limits of any funds available to the commission but shall serve without pay unless otherwise provided in the ordinance establishing the commission. Membership of the commission is an office that may be held concurrently with any other elective or appointive office pursuant to Section 9 of Article VI of the North Carolina Constitution.

(b) Joint Commissions. – Local governments may establish a joint appearance commission. If a joint commission is established, it shall have the same composition as specified by this section, and the local governments involved shall determine the residence requirements for members of the joint commission.

(c) Duties. – The community appearance commission shall have the duties specified in G.S. 160D-960. (2019-111, s. 2.4; 2020-3, s. 4.33(a); 2020-25, s. 51(a), (b), (d).)

Part 5. Community Appearance Commissions.

**§ 160D-960. Powers and duties of commission.**

A community appearance commission shall make careful study of the visual problems and needs of the local government within its planning and development regulation jurisdiction and shall make any plans and carry out any programs that will, in accordance with the provisions of this Part, enhance and improve the visual quality and aesthetic characteristics of the local government. To this end, the governing board may confer upon the appearance commission the following powers and duties:

(1) To initiate, promote, and assist in the implementation of programs of general community beautification in the local government.

(2) To coordinate the activities of individuals, agencies, and organizations, public and private, whose plans, activities, and programs bear upon the appearance of the local government.

(3) To provide leadership and guidance in matters of area or community design and appearance to individuals, to public and private organizations, and to agencies.

(4) To make studies of the visual characteristics and problems of the local government, including surveys and inventories of an appropriate nature, and to recommend standards and policies of design for the entire area, any portion or neighborhood thereof, or any project to be undertaken.

(5) To prepare both general and specific plans for the improved appearance of the local government. These plans may include the entire area or any part thereof and may include private as well as public property. The plans shall set forth desirable standards and goals for the aesthetic enhancement of the local government or any part thereof within its area of planning and development regulation jurisdiction, including public ways and areas, open spaces, and public and private buildings and projects.

(6) To participate, in any way deemed appropriate by the governing board of the local government and specified in the ordinance establishing the commission, in the implementation of its plans. To this end, the governing board may include in the ordinance the following powers:

a. To request from the proper officials of any public agency or body, including agencies of the State and its political subdivisions, its plans for public buildings, facilities, or projects to be located within the local government's planning and development regulation jurisdiction.

b. To review these plans and to make recommendations regarding their aesthetic suitability to the appropriate agency or to the planning or governing board. All plans shall be reviewed by the commission in a prompt and expeditious manner, and all recommendations of the commission with regard to any public project shall be made in writing. Copies of the recommendations shall be transmitted promptly to the planning or governing board and to the appropriate agency.

c. To formulate and recommend to the appropriate planning or governing board the adoption or amendment of ordinances, including zoning regulations, subdivision regulations, and other local development regulations, that will, in the opinion of the commission, serve to enhance the appearance of the city or county and surrounding areas.

d. To direct the attention of local government officials to needed enforcement of any ordinance that may in any way affect the appearance of the city or county.
e. To seek voluntary adherence to the standards and policies of its plans.
f. To enter, in the performance of its official duties and at reasonable times, upon private lands and make examinations or surveys.
g. To promote public interest in and an understanding of its recommendations, studies, and plans, and, to that end, prepare, publish, and distribute to the public such studies and reports that will, in the opinion of the commission, advance the cause of improved appearance.
h. To conduct public meetings and hearings, giving reasonable notice to the public thereof. (2019-111, s. 2.4; 2020-3, s. 4.33(a); 2020-25, s. 51(a), (b), (d).)

Rolesville
Genuine Community • Capital Connection
Est. 1837

# Averette Road, Young Street, Rolesville Road Corridor Study

October 2023

EXULT ENGINEERING

**Prepared by:**
Exult Engineering, PC,
304 West Millbrook Road, Suite F
Raleigh, NC 27609

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*Figures and tables listed on the following pages*

## FIGURES



## TABLES



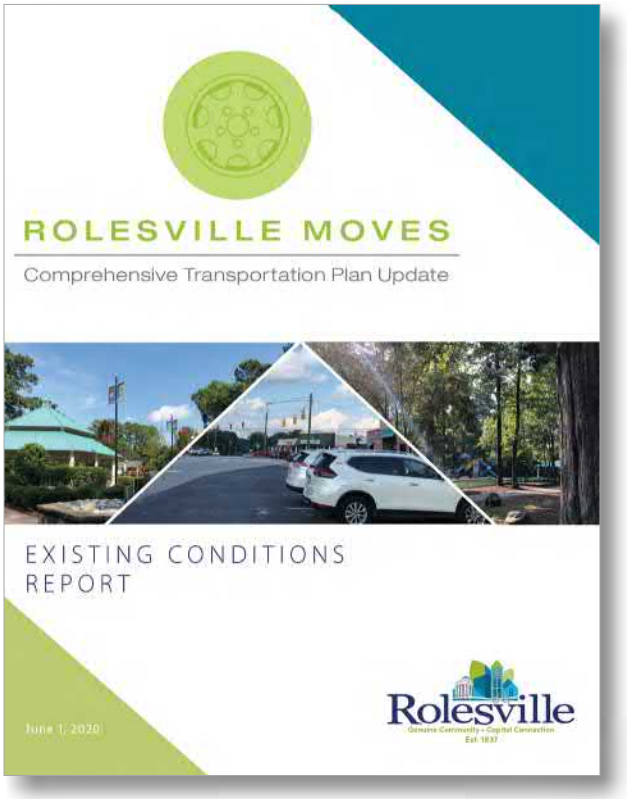
# EXECUTIVE SUMMARY

## PLANNING FOR THE FUTURE

Rolesville has seen exponential growth in recent years. The Town prioritizes accommodating responsible growth by identifying sufficient infrastructure to promote a strong community for its residents. The Averette Road, Young Street, Rolesville Road Corridor is a critical piece of transportation infrastructure for the Town – supporting various developments, providing an important connection from the Town to adjacent municipalities and commuter roadways, and providing sense of place through the heart of Rolesville. The corridor study was recommended within Rolesville Moves - Community Transportation Plan (CTP) Update (2021) to better understand the existing and future operations along the corridor and at the key intersections within the study limits.

The intent of this Corridor Study is to further investigate the anticipated operation along the corridor and at major intersections in 2033 and to provide improvement recommendations necessary to achieve an acceptable level-of-service. The Corridor Study is bounded to the north by Wait Avenue/NC 98 and to the south by Mitchell Mill Road and includes the following intersections as shown on the vicinity map:

1. Averette Road at NC 98/Wait Avenue (signalized)
2. Averette Road at Jones Dairy Road (unsignalized)
3. Young Street at South Main Street (signalized)
4. Young Street at US 401/Louisburg Road (signalized)
5. Young Street at Rolesville High School Driveway (unsignalized)
6. Rolesville Road at Mitchell Mill Road (unsignalized)



# Averette Rd, Young St, Rolesville Rd Corridor Study

## Study Area Map

**EXTENTS**

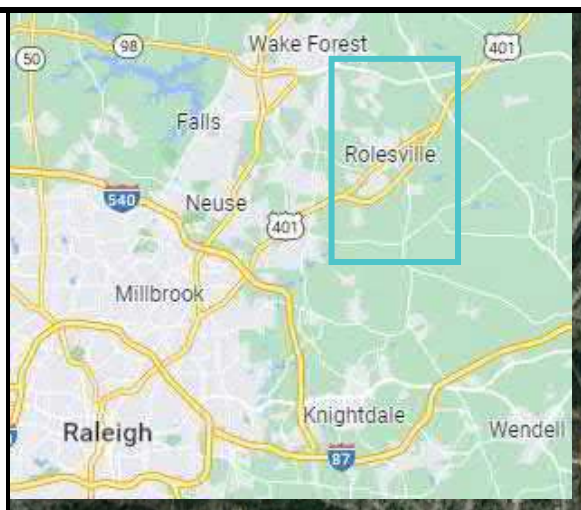
Along Averette Rd, Young St, and Rolesville Rd between Wait Ave and Mitchell Mill Rd

*Rolesville, NCDOT Division 5*

**LEGEND**

(#) Intersection #

EXULT ENGINEERING




1 NC 98/Wait Avenue

Jones Dairy Road

Averette Road

2

Young Street

US 401/Main Street

3

US 401/Louisburg Road

4

5 Rolesville High School Entrance

Rolesville Road

Mitchell Mill Road

6

# FUTURE CONDITIONS

The Corridor Study includes analysis of two future year (2033) volume scenarios.

## SCENARIO 1

Scenario 1 consists of existing traffic volumes, traffic that will be added to the corridor due to the development of previously submitted or approved site plans (12 approved developments), and trips generated for land that is currently vacant but is likely to be developed within the next 10 years. The future development of the existing vacant land was grouped into subareas based on location and assumed access to the corridor.

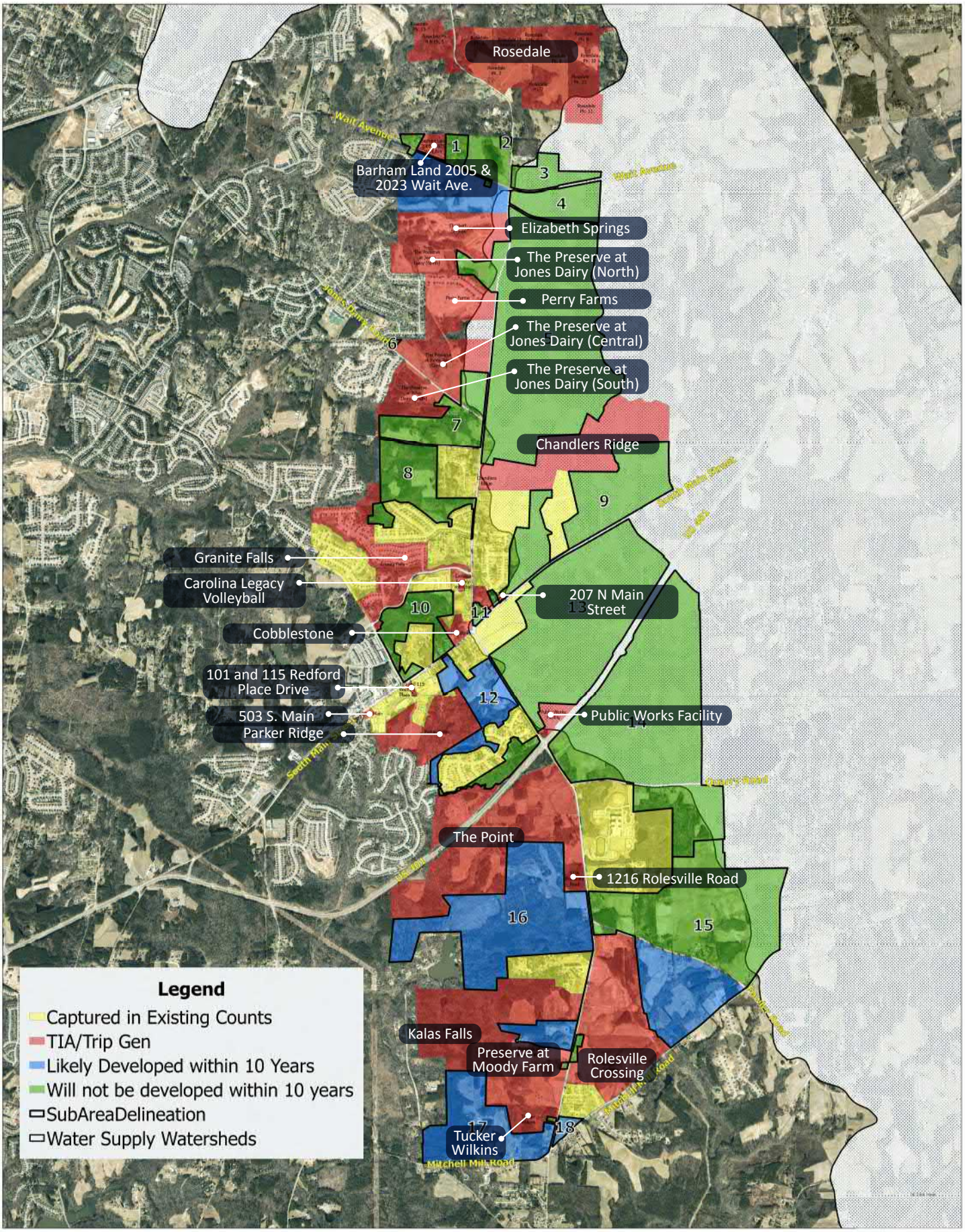
The land uses assumed for the development of vacant land under Scenario 1 were based off guidance from Town staff. Scenario 1 volumes were studied in one future year roadway network alternative (**Alternative 1**). Alternative 1 considered the existing cross sections and known committed roadway improvements. Both developer and current North Carolina Department of Transportation (NCDOT) projects were included in the committed improvements.

## SCENARIO 2

The future year traffic volumes for Scenario 2 were estimated in a similar manner. Scenario 2 consists of existing traffic volumes traffic from the previously submitted or approved site plans (12 approved developments), and also considers re-zoning of vacant land to higher densities than what was assumed in Scenario 1. The land use assumptions for Scenario 2 were also based on guidance from Town staff. Scenario 2 volumes were studied in two future year roadway network alternatives (**Alternative 2** and **Alternative 3**). Similar to Alternative 1, Alternative 2 also considered the existing cross sections and known committed roadway improvements. Alternative 3 assumed the recommended ultimate cross sections identified in the Rolesville Moves Community Transportation Plan (CTP) and the Town of Rolesville Bicycle Plan were in place.

The approved developments and subareas are shown on the following figure.

The volume development for this Corridor Study does not take into account overall origin-destination background traffic volume adjustments that a Travel Demand Model would produce. Instead, the volume development presented in this study represents a conservative estimate and accounts for traffic associated with development specifically along the corridor. In addition, the study area was constrained to intersections along the corridor. Therefore, the benefit of reassigning traffic to alternative routes was not quantified because the available capacity for these alternative routes was unknown.




# Averette, Young, Rolesville Road Corridor Study

## Approved Developments and Subareas

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Rolesville

# OPERATION AND RECOMMENDATIONS

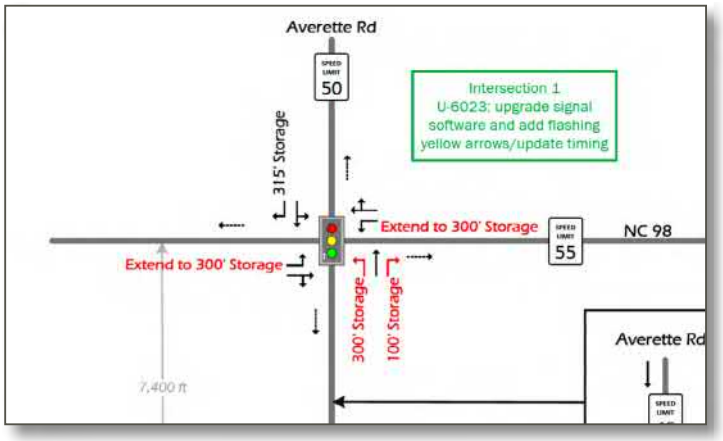
Based on the analysis, intersection and corridor improvements were identified for each of the three future year alternative scenarios to achieve an acceptable level-of-service (LOS D). The recommended improvements vary for each alternative. Because Alternative 1 and Alternative 2 assume existing cross sections, but Alternative 2 volumes include higher density assumptions for the vacant land, the improvements identified for Alternative 2 essentially build on those recommended for Alternative 1. With the ultimate sections assumed for Alternative 3, these improvements are unique to this alternative.

Town staff requested Conceptual Horizontal Layout and Right-of-Way Exhibits for the recommendations identified in Alternative 3 at each study intersection. Opinion of Probable Construction Costs (OPCC) were also prepared for the Alternative 3 improvements. In essence, Alternative 3 is a representation of the ultimate cross section as presented in the Rolesville Moves CTP and Bicycle Plans with recommended lane improvements to meet LOS of D thresholds along the corridor. The exhibits are based on aerial imagery, field observations, and available Geographical Information System (GIS) databases. When developing the concept layouts, symmetric widening was assumed unless there was a known constraint, such as a cemetery, that would warrant asymmetric widening. The right of way shown provides a 1-foot offset from the outer most pedestrian elements. Additionally, the limits of the OPCC match the limit of roadway improvements shown on the exhibit. Refer to the Constructability and Impacts of Recommendations for a complete list of exhibit and opinion of probable construction cost assumptions.

The following intersection pages summarize the improvements needed for each alternative as well as the Alternative 3 Conceptual Horizontal Layout and Right-of-Way Exhibits for each intersection.

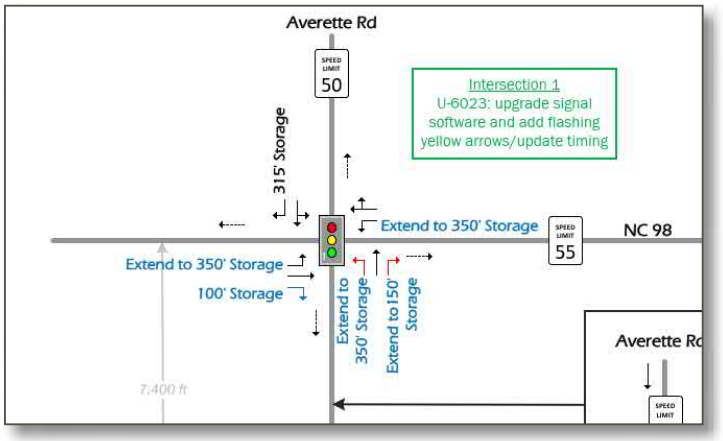
# AVERETTE ROAD AT NC 98/WAIT AVENUE RECOMMENDED IMPROVEMENTS

## Alternative 1



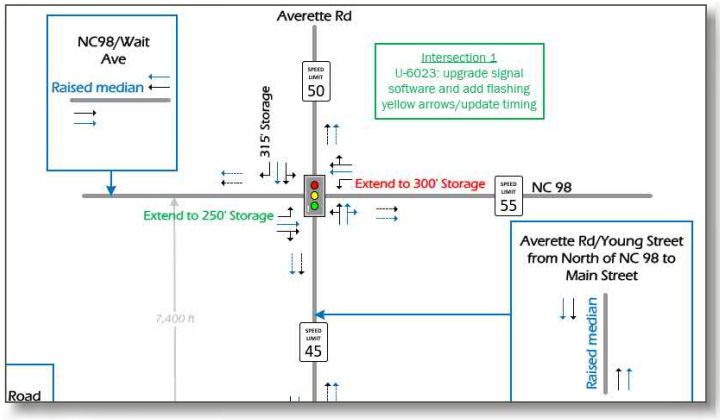

*Green is committed, Red is recommended*

## Alternative 2




*Green is committed, Red is recommended with Alternative 1,*
*Blue is additional recommended with Alternative 2*

## Alternative 3




*Green is committed, Blue is ultimate cross section,*
*Red is recommended*

# AYR CORRIDOR STUDY
# CONCEPTUAL DESIGN EXHIBIT

## AVERETTE ROAD AT WAIT AVENUE

ROLESVILLE, NORTH CAROLINA
SEPTEMBER 18, 2023

DESIGN CONSIDERATIONS:
– SYMMETRIC WIDENING
– LEFT TURN LANE NOT NEEDED FOR TRAFFIC DEMANDS. RECOMMEND LEFT TURN LANE BE CONSIDERED FOR FUNCTIONALITY AND SAFETY.

WAIT AVE (NC 98)
FOUR LANE DIVIDED HIGHWAY (12' LANES) WITH RAISED MEDIAN, CURB AND GUTTER, AND 5' SIDEWALK ON NORTH & SOUTH SIDE OF THE CORRIDOR

SOUTHBOUND AVERETTE ROAD
ONE RIGHT TURN LANE (315' STORAGE)

AVERETTE ROAD (SR 1945)

WAIT AVENUE (NC 98)

WESTBOUND WAIT AVENUE
ONE LEFT TURN LANE (300' STORAGE)

EASTBOUND WAIT AVENUE
ONE LEFT TURN LANE (250' STORAGE)

NCDOT TIP U-6023
TO UPGRADE SIGNAL SOFTWARE AND FYA'S

AVERETTE ROAD (SR 1945)

AVERETTE RD (SR 1945)
FOUR LANE DIVIDED HIGHWAY WITH RAISED MEDIAN, 5' BIKE LANES WITH BUFFER, CURB AND GUTTER AND 10' SIDEPATH ON WEST AND 5' SIDEWALK ON EAST SIDE OF THE CORRIDOR

WAIT AVENUE (NC 98)

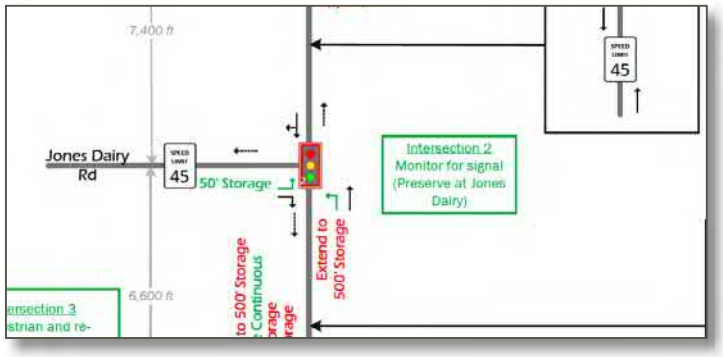
LEGEND
- EXISTING ROADWAY TO BE RESURFACED
- PROPOSED PAVEMENT WIDENING
- PROPOSED CONCRETE ISLAND
- PROPOSED GRASS MEDIAN
- PROPOSED RIGHT OF WAY
- EXISTING SIGNAL – UPGRADE
- PROPOSED SIGNAL – NEW

50' 0' 50' 100'
25'

**Averette Rd(SR 1945) and Wait Ave(NC 98) Intersection Improvements: $4,900,000**

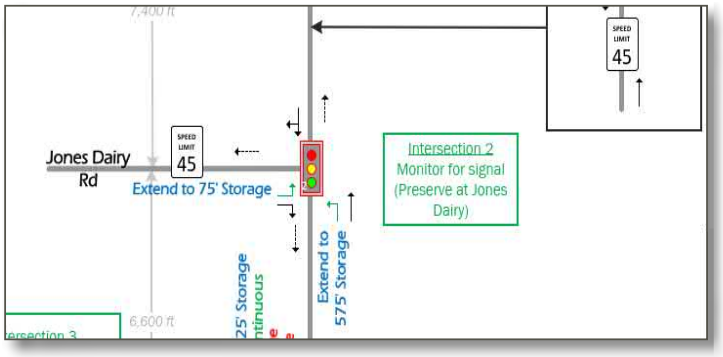
# AVERETTE ROAD AT JONES DAIRY ROAD RECOMMENDED IMPROVEMENTS

## Alternative 1



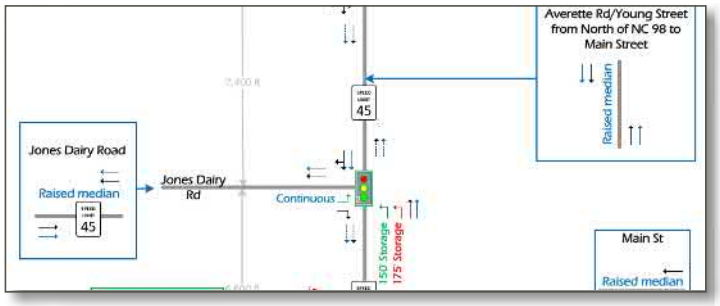

*Green is committed, Red is recommended*

## Alternative 2




*Green is committed, Red is recommended with Alternative 1,*
*Blue is additional recommended with Alternative 2*

## Alternative 3




*Green is committed, Blue is ultimate cross section,*
*Red is recommended*

# AYR CORRIDOR STUDY
# CONCEPTUAL DESIGN EXHIBIT

AVERETTE ROAD
AT JONES DAIRY ROAD

ROLESVILLE, NORTH CAROLINA
SEPTEMBER 18, 2023

DESIGN CONSIDERATIONS:
– ASYMMETRIC WIDENING ON AVERETTE ROAD DUE TO CEMETERY

JONES DAIRY ROAD (SR 2053)
FOUR LANE DIVIDED HIGHWAY WITH RAISED MEDIAN, CURB AND GUTTER, AND 5' SIDEWALK ON NORTH & SOUTH SIDE OF THE CORRIDOR

JONES DAIRY ROAD (SR 2053)

CHALK ROAD (SR 2054)

AVERETTE ROAD (SR 1945)

EASTBOUND JONES DAIRY ROAD
ONE LEFT TURN LANE (CONTINUOUS STORAGE)
ONE RIGHT TURN LANE (CONTINUOUS STORAGE)

NORTHBOUND AVERETTE ROAD
ONE LEFT TURN LANE (150' STORAGE)
ONE LEFT TURN LANE (175' STORAGE)

AVERETTE RD (SR 1945)
FOUR LANE DIVIDED HIGHWAY WITH RAISED MEDIAN, 5' BIKE LANES WITH BUFFER, CURB AND GUTTER AND 10' SIDEPATH ON WEST AND 5' SIDEWALK ON EAST SIDE OF THE CORRIDOR

AVERETTE ROAD (SR 1945)

ROLESVILLE CEMETARY

LEGEND

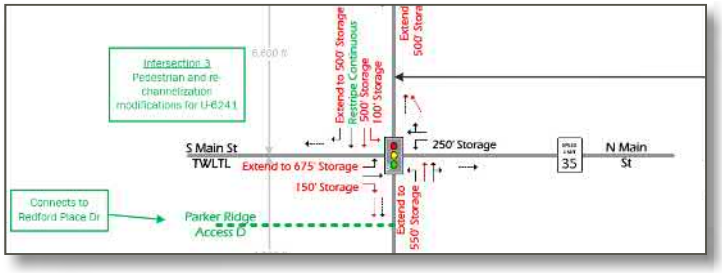
- EXISTING ROADWAY TO BE RESURFACED
- PROPOSED PAVEMENT WIDENING
- PROPOSED CONCRETE ISLAND
- PROPOSED GRASS MEDIAN
- PROPOSED RIGHT OF WAY
- EXISTING SIGNAL – UPGRADE
- PROPOSED SIGNAL – NEW

50' 0' 50' 100'
25'

**Averette Rd(SR 1945) and Jones Dairy Rd(SR 2053) Intersection Improvements: $4,600,000**

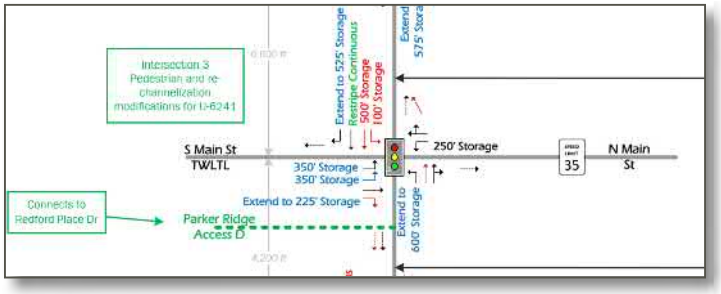
# YOUNG STREET AT MAIN STREET RECOMMENDED IMPROVEMENTS

## Alternative 1




*Green is committed, Red is recommended*

## Alternative 2

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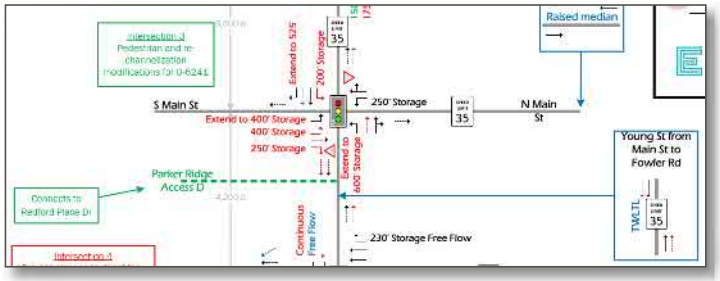
## Alternative 3




*Green is committed, Blue is ultimate cross section,*
*Red is recommended*

# AYR CORRIDOR STUDY
# CONCEPTUAL DESIGN EXHIBIT

## YOUNG STREET AT MAIN STREET

ROLESVILLE, NORTH CAROLINA
SEPTEMBER 18, 2023

DESIGN CONSIDERATIONS:
– ASYMMETRIC WIDENING ON E. YOUNG STREET DUE TO CHURCH ON THE EAST SIDE AND FUTURE PLANS FOR REDEVELOPMENT ON THE WEST.
– ASYMMETRIC WIDENING ON S. MAIN STREET DUE TO COBBLESTONE VILLAGE MIXED-USE DEVELOPMENT.
– HELD PARKING LANE ON W. YOUNG STREET BASED ON COBBLESTONE VILLAGE MIXED-USE DEVELOPMENT DESIGN.
– THIS PROPOSED EXHIBIT FOCUSES ON TRAFFIC NEEDS AND WOULD SUPERSEDE THE PEDESTRIAN IMPROVEMENTS PROPOSED WITH U-6241 PROJECT.

S. MAIN STREET (US 401 BUS)

FUTURE COBBLESTONE VILLAGE MIXED USED DEVELOPMENT

EASTBOUND S. MAIN STREET
TWO LEFT TURN LANES (400′ STORAGE)
ONE RIGHT TURN LANE (250′ STORAGE)

SOUTHBOUND W. YOUNG STREET
ONE LEFT TURN LANE (200′ STORAGE)
ONE RIGHT TURN LANE (525′ STORAGE)
ONE PARKING LANE (5 PARKING SPACES)

U-6241: PEDESTRIAN IMPROVEMENTS PROJECT

SUZANNA'S ANTIQUES

ROLESVILLE FIRE DEPARTMENT

W. YOUNG STREET (SR 1945)

ROLESVILLE CHAMBER OF COMMERCE

COUNTRY MARKET - CREATIVE EXCHANGE

W. YOUNG STREET (SR 1945)
FOUR LANE DIVIDED HIGHWAY WITH RAISED MEDIAN, 5′ BIKE LANES WITH BUFFER, CURB AND GUTTER AND 10′ SIDEPATH ON WEST AND 5′ SIDEWALK ON EAST SIDE OF THE CORRIDOR

E. YOUNG STREET (SR 1003)
FIVE LANE UNDIVIDED HIGHWAY, 5′ BIKE LANES, CURB AND GUTTER AND 10′ SIDEPATH ON EAST AND 5′ SIDEWALK ON WEST SIDE OF THE CORRIDOR

PERRY STREET

ROLESVILLE EMERGENCY MEDICAL SERVICES

NORTHBOUND E. YOUNG STREET
ONE LEFT TURN LANE (600′ STORAGE)

E. YOUNG STREET (SR 1003)

ROLESVILLE BAPTIST CHURCH

WESTBOUND N. MAIN STREET
ONE EXISTING LEFT TURN LANE (250′ STORAGE)

PULLEY STREET

N. MAIN STREET (US 401 BUS)

LEGEND

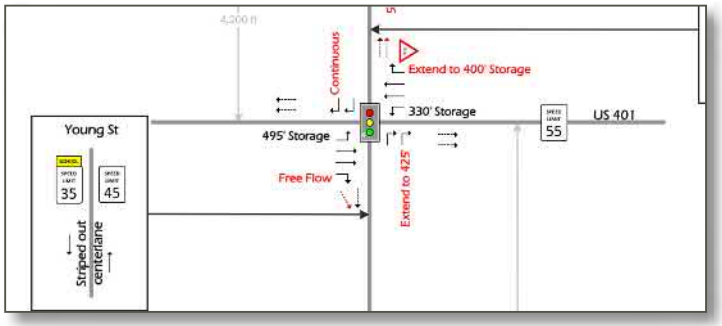
- EXISTING ROADWAY TO BE RESURFACED
- PROPOSED PAVEMENT WIDENING
- PROPOSED CONCRETE ISLAND
- PROPOSED GRASS MEDIAN
- FUTURE DEVELOPMENT
- PROPOSED RIGHT OF WAY
- EXISTING SIGNAL – UPGRADE
- PROPOSED SIGNAL – NEW

100′ 0′ 100′ 200′
50′

**W. Young St(SR 1945) and N. Main St (US 401 BUS) Intersection Improvements: $5,400,000**

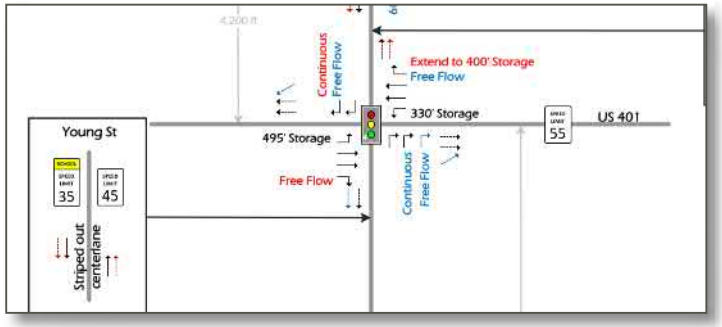
# YOUNG STREET AT US 401 RECOMMENDED IMPROVEMENTS

## Alternative 1



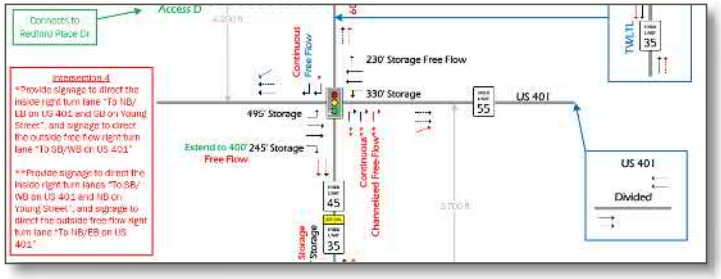

*Green is committed, Red is recommended*

## Alternative 2




*Green is committed, Red is recommended with Alternative 1,*
*Blue is additional recommended with Alternative 2*

## Alternative 3




*Green is committed, Blue is ultimate cross section,*
*Red is recommended*

# AYR CORRIDOR STUDY
# CONCEPTUAL DESIGN EXHIBIT

## YOUNG STREET AT US 401

ROLESVILLE, NORTH CAROLINA
SEPTEMBER 18, 2023

LOUISBURG ROAD (US 401)

E. YOUNG STREET (SR 1003)
FIVE LANE UNDIVIDED HIGHWAY, 5' BIKE LANES, CURB AND GUTTER AND 10' SIDEPATH ON WEST AND 5' SIDEWALK ON EAST SIDE OF THE CORRIDOR

CEDAR LAKES NEIGHBORHOOD

E. YOUNG STREET (SR 1003)

EASTBOUND LOUISBURG ROAD (US 401)
ONE RIGHT TURN LANE
(400' STORAGE FREE FLOW)

SOUTHBOUND E. YOUNG STREET
ONE RIGHT TURN LANE
(CONTINUOUS STORAGE)
ONE RIGHT TURN LANE
(CHANNELIZED FREE-FLOW)

DESIGN CONSIDERATIONS:
- RETAIN US 401 PEDESTRIAN UPGRADES

E. YOUNG STREET (SR 1003)
FIVE LANE UNDIVIDED HIGHWAY, 5' BIKE LANES, CURB AND GUTTER AND 10' SIDEPATH ON EAST AND 5' SIDEWALK ON WEST SIDE OF THE CORRIDOR

E. YOUNG STREET (SR 1003)

NORTHBOUND E. YOUNG STREET
TWO RIGHT TURN LANES
(CONTINUOUS STORAGE)
ONE RIGHT TURN LANE
(CHANNELIZED FREE-FLOW)

LOUISBURG ROAD (US 401)

CENTURY FARM ROAD

LEGEND

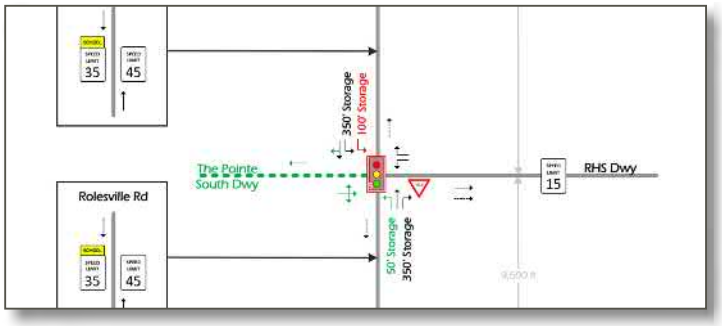
- EXISTING ROADWAY TO BE RESURFACED
- PROPOSED PAVEMENT WIDENING
- PROPOSED CONCRETE ISLAND
- PROPOSED GRASS MEDIAN
- PROPOSED RIGHT OF WAY
- EXISTING SIGNAL – UPGRADE
- PROPOSED SIGNAL – NEW

75' 0' 75' 150'
37.5'

**W. Young St(SR 1945) and N. Main St (US 401 BUS) Intersection Improvements: $3,600,000**

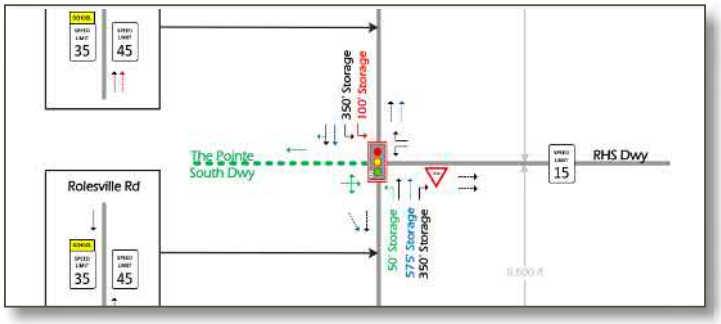
# YOUNG STREET AT ROLESVILLE HIGH SCHOOL DRIVEWAY RECOMMENDED IMPROVEMENTS

## Alternative 1



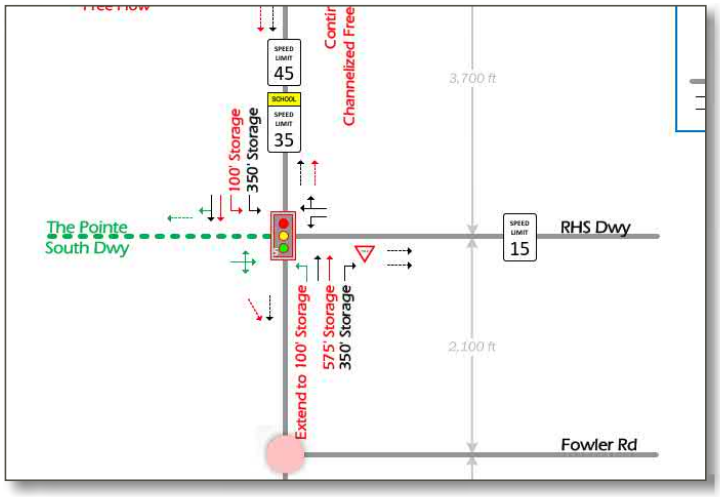

*Green is committed, Red is recommended*

## Alternative 2




*Green is committed, Red is recommended with Alternative 1,*
*Blue is additional recommended with Alternative 2*

## Alternative 3




*Green is committed, Blue is ultimate cross section,*
*Red is recommended*

# AYR CORRIDOR STUDY
# CONCEPTUAL DESIGN EXHIBIT

## ROLESVILLE ROAD/YOUNG STREET AT ROLESVILLE HIGH SCHOOL

ROLESVILLE, NORTH CAROLINA
SEPTEMBER 18, 2023

DESIGN CONSIDERATIONS:
- SYMMETRIC WIDENING
- RETAIN THE EXISTING BMP ON THE EAST
- ADDITIONAL ROW SHOWN SOUTH OF THE SIGNALIZED INTERSECTION FOR FUTURE THROUGH LANE EXTENSION. WOULD NEED TO BE COORDINATED WHEN THAT PROPERTY DEVELOPS.

THE POINT
FUTURE DEVELOPEMENT

ROLESVILLE ROAD (SR 1003)
FIVE LANE UNDIVIDED HIGHWAY
(TIE TO EXISTING CONDITIONS), 5' BIKE LANES, CURB AND GUTTER AND 10' SIDEPATH ON EAST AND 5' SIDEWALK ON WEST SIDE OF THE CORRIDOR

SOUTHBOUND E. YOUNG STREET
ONE LEFT TURN LANE (100' STORAGE)
ONE LEFT TURN LANE (350' STORAGE)

EXISTING
48" CULVERT
TO BE EXTENDED

E. YOUNG STREET (SR 1003)
FIVE LANE UNDIVIDED HIGHWAY, 5' BIKE LANES, CURB AND GUTTER AND 10' SIDEPATH ON EAST AND 5' SIDEWALK ON WEST SIDE OF THE CORRIDOR

ROLESVILLE ROAD
(SR 1003)

SUNSET MANOR
DRIVE

NORTHBOUND ROLESVILLE ROAD
ONE LEFT TURN LANE (100' STORAGE)
ONE RIGHT TURN LANE (350' STORAGE)
ADDITIONAL THRU LANE (575' STORAGE)

E. YOUNG STREET
(SR 1003)

EXISTING
BMP

ROLESVILLE HIGH
SCHOOL

LEGEND

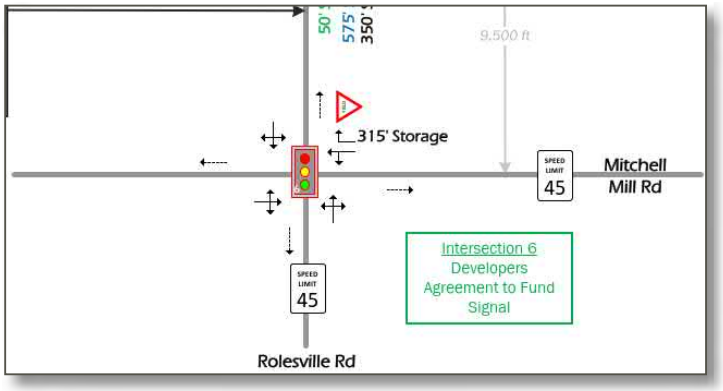
- EXISTING ROADWAY TO BE RESURFACED
- PROPOSED PAVEMENT WIDENING
- PROPOSED CONCRETE ISLAND
- PROPOSED GRASS MEDIAN
- FUTURE DEVELOPMENT
- PROPOSED RIGHT OF WAY
- EXISTING SIGNAL – UPGRADE
- PROPOSED SIGNAL – NEW

100' 0' 100' 200'
50'

**E. Young St(SR 1003) and Rolesville High School Driveway Intersection Improvements: $6,200,000**

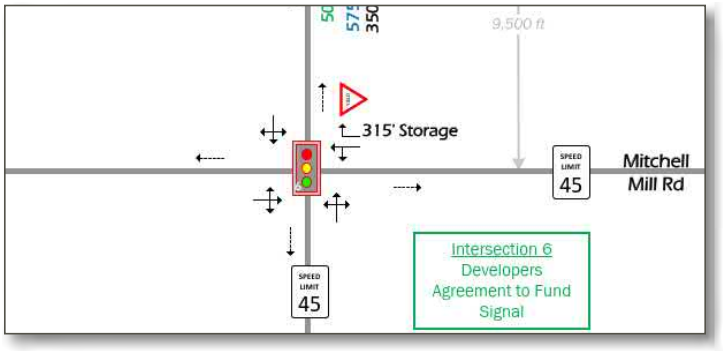
# ROLESVILLE ROAD AT MITCHELL MILL ROAD RECOMMENDED IMPROVEMENTS

## Alternative 1



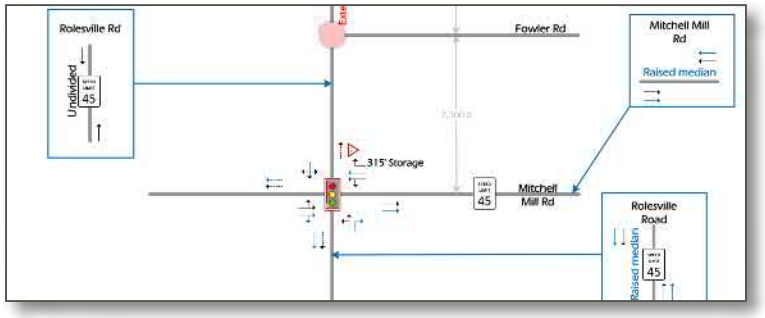

*Green is committed, Red is recommended*

## Alternative 2




*Green is committed, Red is recommended with Alternative 1,*
*Blue is additional recommended with Alternative 2*

## Alternative 3




*Green is committed, Blue is ultimate cross section,*
*Red is recommended*

# AYR CORRIDOR STUDY
# CONCEPTUAL DESIGN EXHIBIT

ROLESVILLE ROAD
AT MITCHELL MILL ROAD

ROLESVILLE, NORTH CAROLINA
SEPTEMBER 18, 2023

MITCHELL MILL ROAD (SR 2224)
FOUR LANE DIVIDED HIGHWAY WITH RAISED MEDIAN, 5' BIKE LANES WITH BUFFER, CURB AND GUTTER 5' SIDEWALK ON BOTH SIDES OF THE CORRIDOR

MITCHELL MILL ROAD (SR 2224)

SOUTHBOUND ROLESVILLE ROAD
TWO LANES UNDIVIDED, CURB AND GUTTER 5' SIDEWALK ON BOTH SIDES OF THE CORRIDOR

ROLESVILLE ROAD (SR 1003)

DESIGN CONSIDERATIONS:
- ASYMMETRIC WIDENING ON WEST LEG OF MITCHELL MILL ROAD DUE TO PRIVATE CEMETERY
- CONFIGURATION SHOWN ADDRESSES TRAFFIC DEMANDS AND THE SIGNAL HELPS WITH THE SKEWED INTERSECTION. TWO SEPARATE T– SIGNALED INTERSECTIONS APPROXIMATELY 600' APART COULD STILL BE CONSIDERED.
- LEFT TURN LANE NOT NEEDED FOR TRAFFIC DEMANDS. RECOMMEND LEFT TURN LANE BE CONSIDERED FOR FUNCTIONALITY AND SAFETY.

WESTBOUND MITCHELL MILL ROAD
ONE THRU LEFT LANE (CONTINUOUS STORAGE)
ONE THRU RIGHT LANE (CONTINUOUS STORAGE)

PRIVATE CEMETARY

WESTBOUND MITCHELL MILL ROAD
ONE RIGHT TURN LANE (315' STORAGE)

ROLESVILLE ROAD (SR 1003) NORTHBOUND
FOUR LANE DIVIDED HIGHWAY WITH RAISED MEDIAN, 5' BIKE LANES WITH BUFFER, CURB AND GUTTER 5' SIDEWALK ON BOTH SIDES OF THE CORRIDOR

MITCHELL MILL ROAD (SR 2224)

MITCHELL MILL ROAD (SR 2224)
FOUR LANE DIVIDED HIGHWAY WITH RAISED MEDIAN, 5' BIKE LANES WITH BUFFER, CURB AND GUTTER 5' SIDEWALK ON BOTH SIDES OF THE CORRIDOR

ROLESVILLE ROAD (SR 1003)

NORTHBOUND ROLESVILLE ROAD
ONE THRU LEFT LANE (CONTINUOUS STORAGE)
ONE RIGHT TURN LANE (CONTINUOUS STORAGE)

LEGEND
- EXISTING ROADWAY TO BE RESURFACED
- PROPOSED PAVEMENT WIDENING
- PROPOSED CONCRETE ISLAND
- PROPOSED GRASS MEDIAN
- PROPOSED RIGHT OF WAY
- EXISTING SIGNAL – UPGRADE
- PROPOSED SIGNAL – NEW

50' 0' 50' 100'
25'

**Rolesville Rd(SR 1003) and Mitchell Mill Road (SR 2224) Intersection Improvements: $4,900,000**

## CORRIDOR WIDENING

Corridor widening improvements were identified to achieve acceptable LOS along the arterial section or at the intersection. The following table summarizes the recommended cross section for each alternative.

| Segment | Existing | Alt 1 | Alt 2 | Alt 3 (Includes CTP/ Bicycle Plan | CTP & Bicycle Plan |
|---|---|---|---|---|---|
| **Averette Road: NC 98/Wait to Jones Dairy Road** | 2-lane | - | - | As recommended in CTP/Bicycle Plan | 4-lane divided (Raised Median – Narrow), with C&G, Bike lanes, Sidewalk and Sidepath |
| **Averette Road/ Young Street: Jones Dairy Road to Main Street** | 2-lane (TWLTL between Granite Falls Blvd and Main Street) | - | - | As recommended in CTP/Bicycle Plan | 4-lane divided (Raised Median – Narrow), with C&G, Bike lanes, Sidewalk and Sidepath |
| **Young Street: Main Street to US 401 Bypass** | 2-lane | 4-lane | 4-lane | 4-lane | 2-lane with TWLTL, C&G, Bike lanes, Sidewalk and Sidepath |
| **Young Street: US 401 Bypass to Rolesville High School Driveway** | 2-lane | - | 4-lane | 4-lane | 2-lane with TWLTL, C&G, Bike lanes, Sidewalk and Sidepath |
| **Rolesville Rd: Rolesville High School Driveway to Fowler Road** | 2-lane | - | - | As recommended in CTP/Bicycle Plan | 2-lane with TWLTL, C&G, Bike lanes, Sidewalk and Sidepath |
| **Rolesville Road: Fowler Road to Mitchell Mill Rd** | 2-lane | - | - | As recommended in CTP/Bicycle Plan | 2-lane undivided, C&G, Bike lanes and Sidewalk |

As shown in the table above, additional widening (4 lanes) is needed beyond the ultimate section recommended for the corridor segment from Main Street to US 401 Bypass for Alternative 1 and from Main Street to Rolesville High School Driveway for Alternatives 2 & 3.

All recommended improvements summarized in the Corridor Study were due to capacity deficiencies that impact delay and level-of-service. There were no additional improvements needed as a result of the Traffic Safety Analysis.

# CRITICAL INTERSECTIONS AND CONNECTORS

## MAIN STREET AND US 401

Traffic from the corridor converges and diverges at the corridor intersections with Main Street and US 401 as these roadways serve as major commuter roadways and provide a direct route to access the area-wide transportation network. As shown in the previous intersection summary pages, significant improvements are needed to accommodate the demand on the **north, south,** and **west** legs of these intersections.

Alternate east-west routes would serve to alleviate the demand brought on by the confluence of the heavy traffic volumes at these two intersections. Future proposed roadways were recommended as part of the Rolesville Moves CTP as shown in the *Proposed Network Map* below. The CTP further recommends when each of these network improvements should be constructed. The timeline for the future roadways is categorized by Near Term (0-10 years), Mid-Term (10-20 years), and Long-Term (+20 years). With the Corridor Study analysis year of 2033, most of the future planned roadways in the CTP have a prioritization year beyond our study year. There is currently no funding in place to construct the new roadways except through private development.

The following recommended roadways shown on the *Proposed Network Map* (circled in **red**) will help improve overall connectivity and provide relief for the heavy-volume movements at the intersections of Young Street at Main Street and Young Street at US 401:

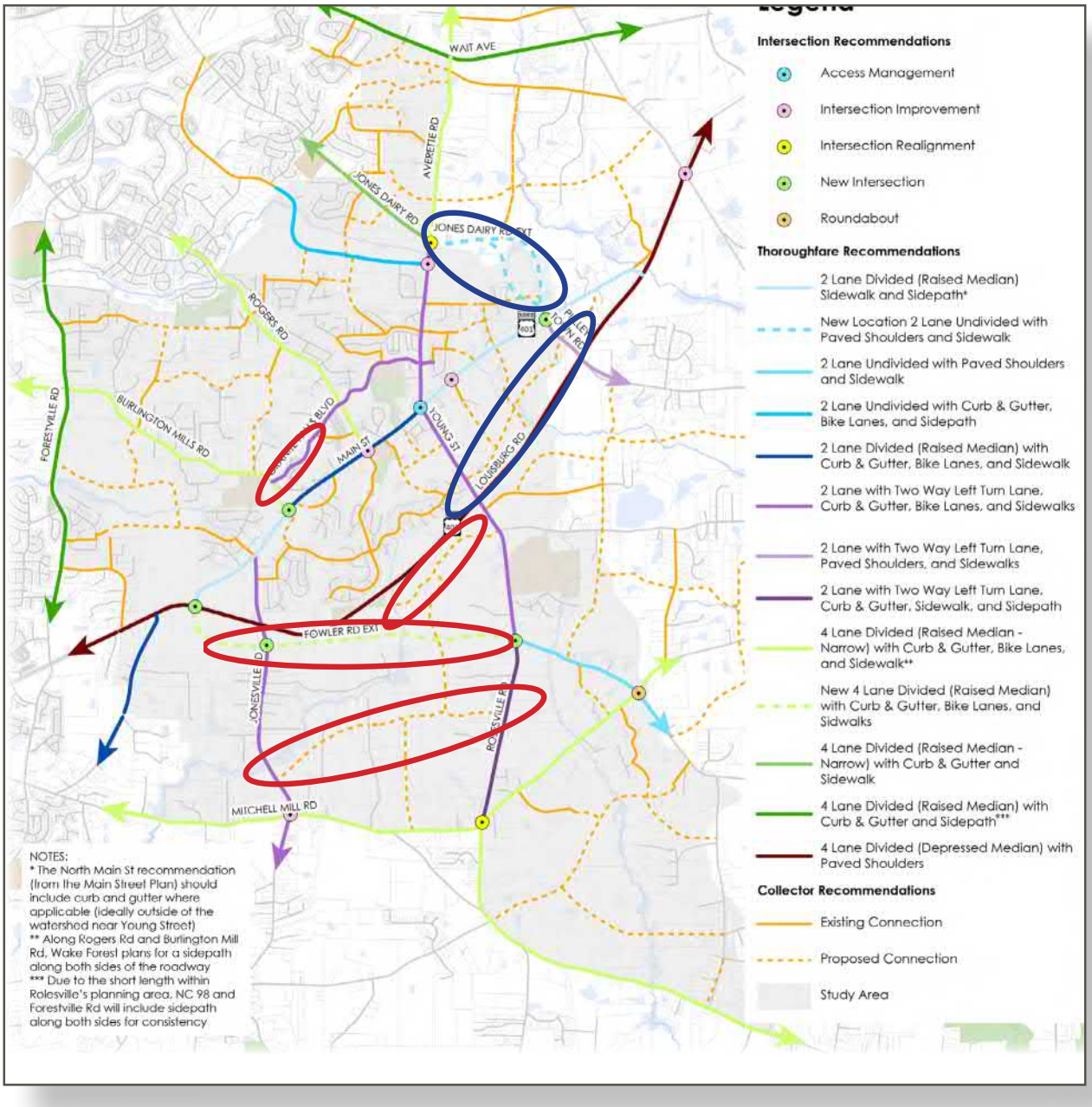
- Granite Falls Boulevard Extension from Grand Rock Way to Burlington Mills Extension (Near-Term Prioritization)
- Proposed East-West Collector west of the corridor connecting Quarry Road to Fowler Road Extension
- Proposed East-West Collector west of the corridor connecting Rolesville Road to Jonesville Road
- Fowler Road Extension (Long-Term Prioritization)

Other proposed connections (circled in **blue** on the *Proposed Network Map*) that will help overall traffic conditions at these intersections and provide alternative routes to the east, but do not necessarily lessen the heavy-volume directional demand include:

- Jones Dairy Road Extension (Mid-Term Prioritization)
- Proposed East-West Collector east of the corridor connecting Young Street to Main Street

A proposed access on Young Street will connect to Redford Place and South Main Street via Scarboro Property and Parker Ridge within the next 10 years. This connection will serve as an alternative route for vehicles traveling northbound on Young Street to travel westbound on South Main Street. Conversely, vehicles traveling eastbound on South Main Street may take advantage of the new roadway connection to travel southbound on Young Street. The Redford Place intersection with South Main Street was not included in this study area and therefore, it is unknown how much capacity will be available at that intersection in future years.

Virginia Water Drive provides an east-west connection through Cedar Lakes, Villages of Rolesville, and the Carlton Pointe Subdivision to access Jonesville Road. However, this roadway is not suited for higher traffic volumes due to the lower posted speed limit, numerous residential driveways, and non-direct route. To promote desirability of the future east-west planned roadways, factors such as speed limit, alignment, connectivity to major roadways, and limited access should be considered.




*Map Reference: Rolesville Moves CTP*

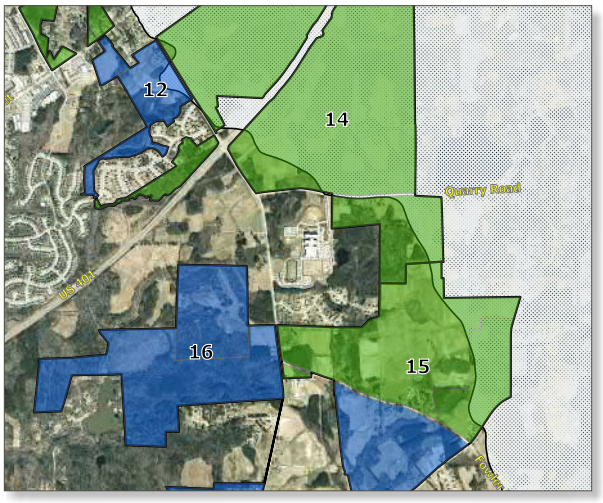
## ROLESVILLE HIGH SCHOOL DRIVEWAY

In addition, significant improvements were recommended for the intersection of Young Street and Rolesville High School Driveway. The NCDOT Municipal School Transportation Assistance (MSTA) study currently being performed at Rolesville High School will also address school peak hour deficiencies related to operation at the school driveway, internal circulation, and stacking concerns. Recommendations from the study may impact access and corridor recommendations. However, for purposes of this corridor analysis, it was assumed the access would remain as it is today. Based on public announcement information that was not available when the corridor analysis was performed, the school access to Quarry Road will be used for student drop-off during the AM peak hour. Even so, the improvements recommended in this study are needed to improve operations during the PM peak hour. The MSTA study should be referenced in conjunction with this corridor study to determine final improvement recommendations.

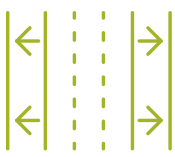
# NEXT STEPS

The purpose of the Averette Road/Young Street/Rolesville Road Corridor Study is to analyze and evaluate the future operation along the corridor and at the major intersections. Based on future operations, improvements were recommended to achieve an acceptable level-of-service. The following further steps can be taken to implement these recommendations and to re-evaluate the allowable land uses assumed for future development along the corridor:

- **Redevelopment Plans -** Plan for future redevelopment to account for and contribute to the overall widening needs along the Corridor. Based on the widening needed along the corridor to achieve an acceptable LOS, frontage widening and right-of-way requirements may be placed on developers.
- **Subareas Contribution to Surrounding Improvements –** Use the identified improvements along the corridor for policy direction. Policy direction may be in the form of seeking funding or collecting contributions from adjacent developments expected to directly impact the need for the improvements. The subareas that contribute higher traffic volumes and consequently influence the need for improvements at the study intersections include subareas 2, 12, 15, 16, and 17 with 12, 15, and 16 being the most impactful.




- **Land Use Decisions** – The results can aid in decisions to allow rezoning of certain parcels. The Planning Board and Board of Commissioners can use the results of the study when considering rezoning proposals. The study can also be modified to consider specific rezoning requests to determine the impact on the corridor or be modified periodically to incorporate approved rezoning requests. Based on the recommended improvements needed to accommodate the assumed development along the corridor, the Town can revisit the Future Land Use Map to restrict densities in the area.
- **Main Street at Young Street Area Plan –** Based on the results of this corridor study, a further evaluation of the Main Street and Young Street intersection is recommended. Opportunities to provide connector roads that provide continuity in traveling from Young Street to/from Main Street should be identified as the connector roads will improve operation at the signalized intersection. In order to achieve the sense of place desired for the intersection as detailed in the Main Street Vision Plan and to reduce impacts to surrounding parcels and existing buildings, a plan identifying alternative connections that will provide added vehicular capacity should be developed. Analyzing proposed connector roadways and new intersections along Main Street and Young Street impacted by the connector roadways is necessary to understand the benefit and impact of the new roadways.



REDEVELOPMENTS PLANS

SUBAREAS CONTRIBUTION TO SURROUNDING IMPROVEMENTS

LAND USE DECISIONS

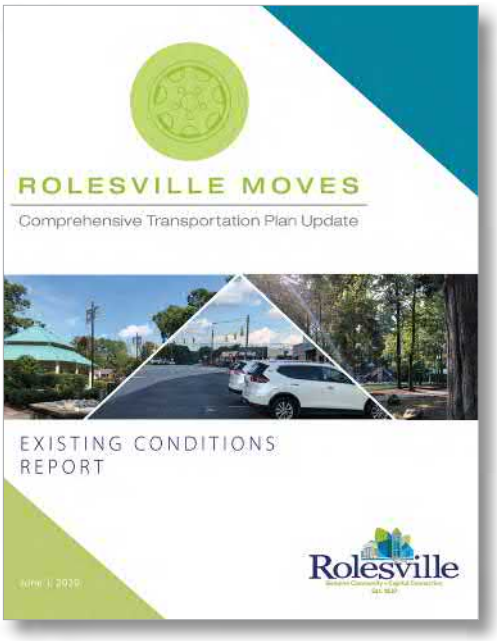
MAIN STREET AT YOUNG STREET AREA PLAN

# INTRODUCTION

## PLANNING FOR THE FUTURE

Rolesville has seen exponential growth in recent years. The Town prioritizes accommodating responsible growth by identifying sufficient infrastructure to promote a strong community for residents. The Averette Road, Young Street, Rolesville Road Corridor is a critical piece of transportation infrastructure for the Town – supporting various developments, providing an important connection from the Town to adjacent municipalities and commuter roadways, and providing sense of place through the heart of Rolesville.

The corridor study was recommended within *Rolesville Moves - Community Transportation Plan (CTP) Update (2021)* to better understand the existing and future operations along the corridor and at the key intersections within the study limits. The CTP noted the Town's desire to promote a bikeable/walkable Town Center as well as general improvements to enhance north-south travel. The intent of this corridor study is to further investigate the operation along the corridor and at major intersections and provide improvement recommendations to achieve an acceptable level-of-service.




Multiple existing and future residential communities have direct access onto the Averette Road, Young Street, and Rolesville Road Corridor. The majority of Rolesville residents travel on a section of the corridor each day. Other high demand facilities, such as the Rolesville High School campus, retail and office uses, churches, and town facilities are also located along this corridor.

The corridor study is bounded to the north by Wait Avenue/NC 98 and to the south by Mitchell Mill Road as shown on **Figure 1**. With the Town of Wake Forest limits to the north and the City of Raleigh limits to the south, the corridor serves as a key north-south connector roadway for residents of not only Rolesville, but surrounding jurisdictions. The 6-mile corridor, as a major collector and distributor of traffic to surrounding areas, provides access to various commuter roadways, such as Wait Avenue/NC 98 and US 401. The corridor also runs through the heart of Rolesville. The connection with Main Street/US 401 Business provides a sense of that "small town feel" Town residents desire. Surrounded by an area of high demand, this intersection feels like home with surrounding local businesses, the fire station, pedestrian opportunities, and new developments to serve the community.

## TOWN STAFF AND BOARD INVOLVEMENT

The important first step of this study was to seek guidance from key stakeholders. Exult Engineering staff participated in a Work Session with the Board of Commissioners, Planning Board, and Town staff to discuss safety and operational concerns, study methodology, and objectives of the study. This time was an opportunity to hear the Town's guidance on study parameters, upcoming projects, and goals for the study.

Following the work session, Exult Engineering held a project scoping meeting with Town staff to discuss the study methodology in further detail. This meeting was important to determine study parameters and assumptions such

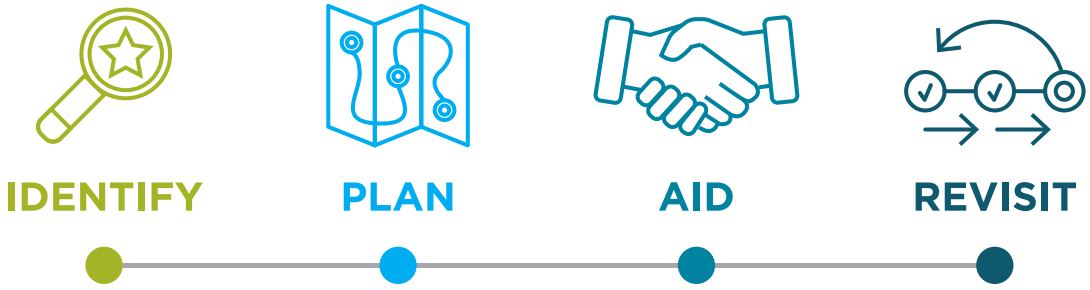
as future land use assumptions, development of vacant land within the next ten (10) years, as well as lane geometry improvements planned along the corridor. The objectives and operational thresholds used to identify recommendations based on the arterial and intersection analysis were defined. Town staff is a valuable resource and input early on was helpful in laying a firm foundation for the study.


*Photo from Facebook*

## DECISION MAKING

This corridor study combines existing data with future adopted plans as well as staff input regarding probable future land uses to serve as a decision-making tool. The results can be used to:

- Identify needed improvements along the corridor and use for policy direction. Whether that be seeking funding or collecting contributions from adjacent developments expected to directly impact the need for the improvement.
- Plan for future redevelopment to account for and contribute to the overall widening needs along the Corridor.
- Aid in decisions to allow rezoning of certain parcels. The Planning Board and Board of Commissioners can use the results of the study when considering rezoning proposals. The study can also be modified to consider specific rezoning requests to determine the impact on the corridor or be modified periodically to incorporate approved rezoning requests.
- Based on the recommended improvements needed to accommodate the assumed development along the corridor, the Town can revisit the Future Land Use Map to restrict densities in the area.



# Averette Rd, Young St, Rolesville Rd Corridor Study

## Study Area Map

**EXTENTS**

Along Averette Rd, Young St, and Rolesville Rd between Wait Ave and Mitchell Mill Rd

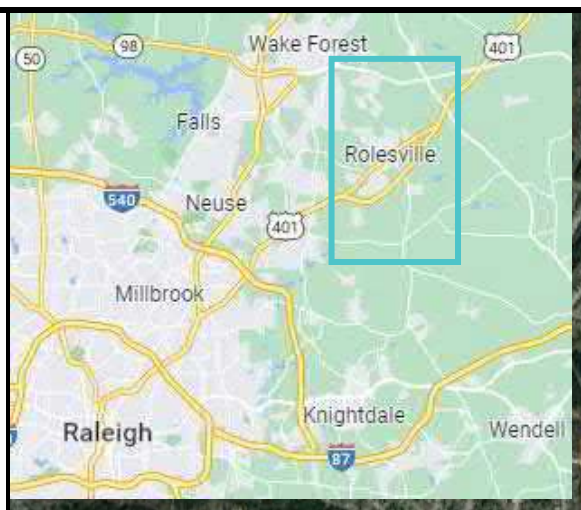
*Rolesville, NCDOT Division 5*

**LEGEND**

(#) Intersection #

Figure 1

EXULT ENGINEERING




1 NC 98/Wait Avenue

Jones Dairy Road

Averette Road

2

Young Street

US 401/Main Street

3

US 401/Louisburg Road

4

5 Rolesville High School Entrance

Rolesville Road

Mitchell Mill Road

6

# TOWN OF ROLESVILLE PLANS

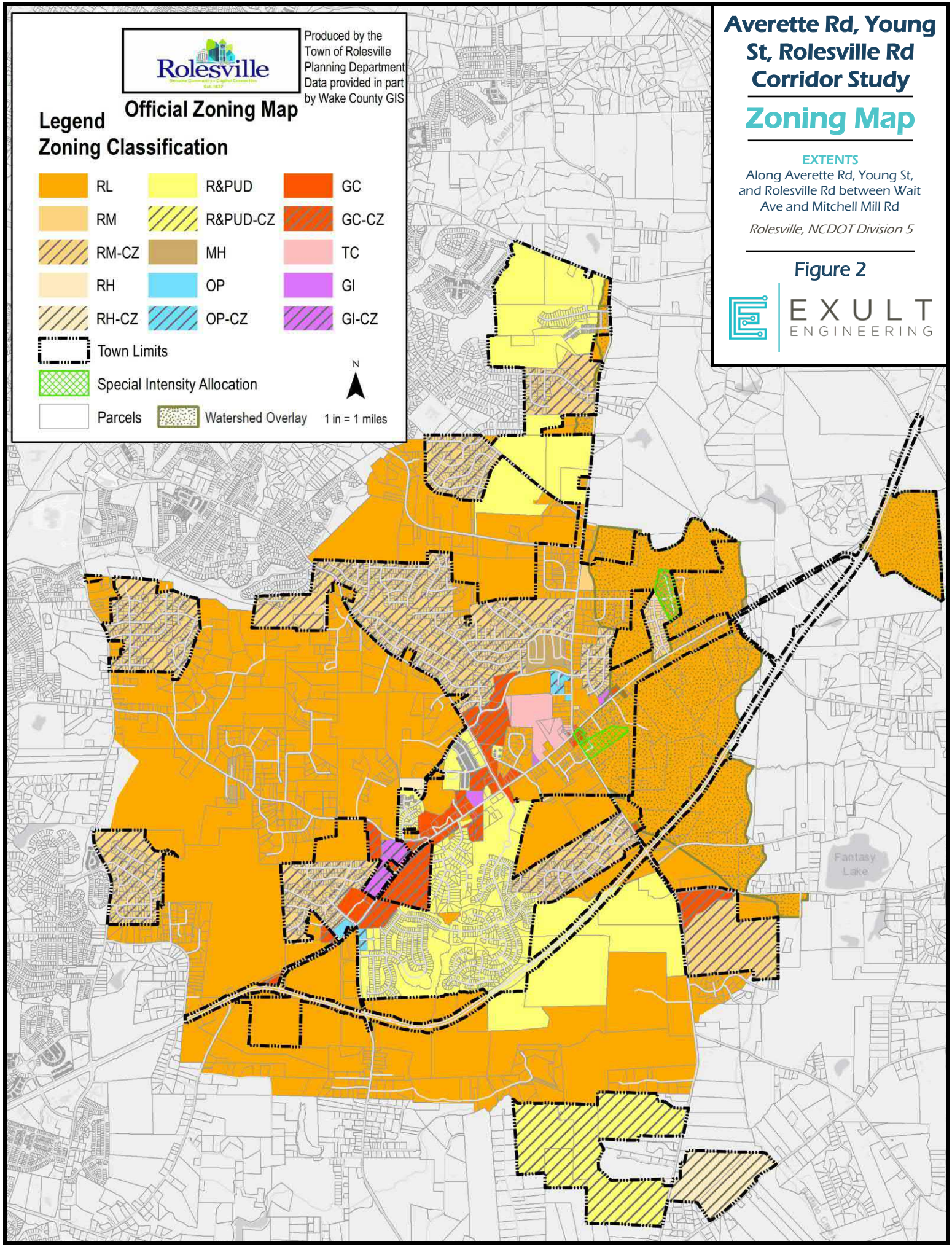
## EXISTING ZONING AND LAND USES

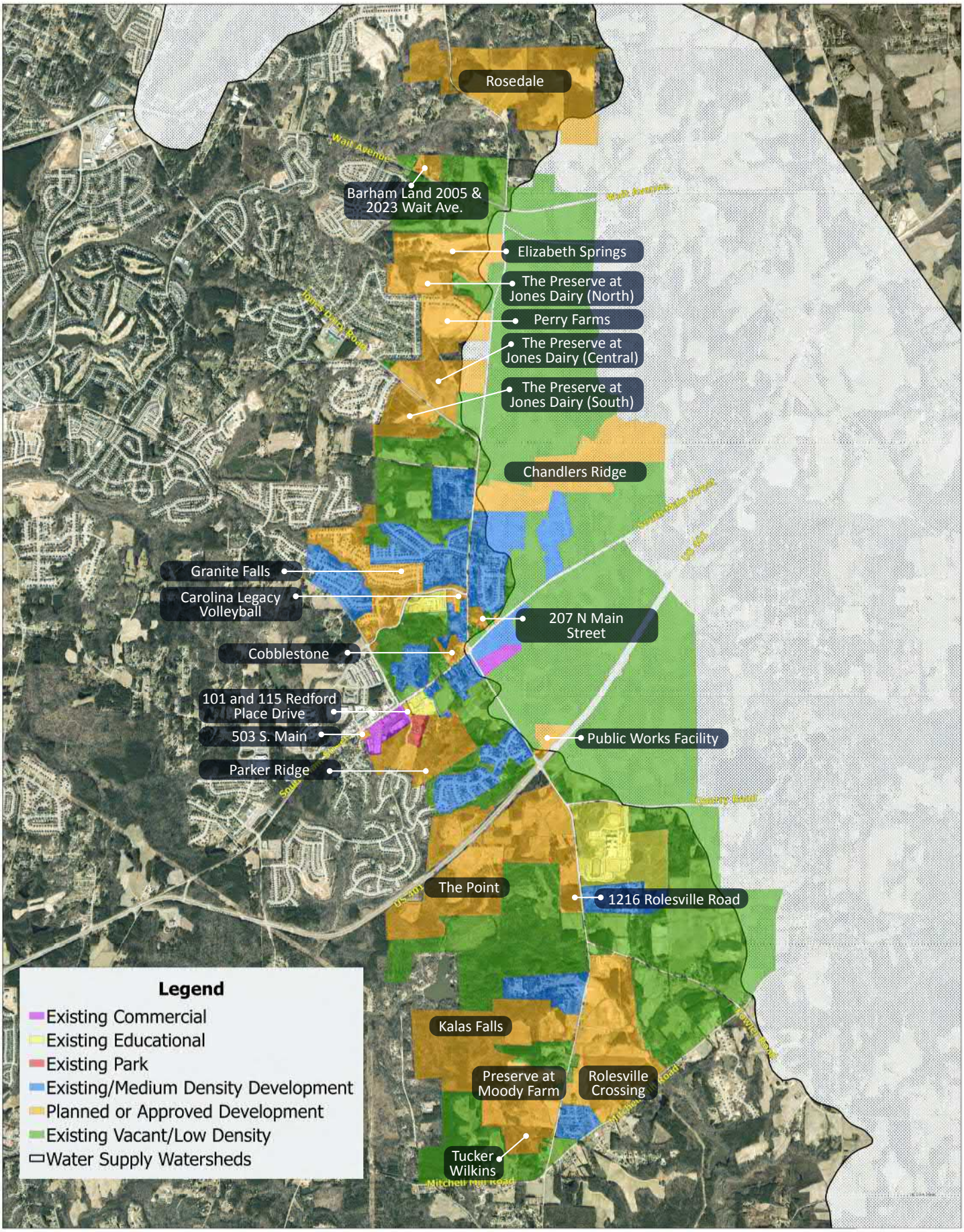
The Town of Rolesville's *Official Zoning Map*, shown in **Figure 2**, was referenced as the base condition for understanding existing land uses and designations along the corridor. As shown, the existing uses along the corridor include residential developments, commercial uses, town facilities, and vacant land expected to be developed. The legend references the Town's zoning designations that can be found in the *Rolesville Land Development Ordinance* and shown in the following table.

The *Official Zoning Map*, in conjunction with both the Town's *Development Projects Online Mapping Application* and Wake County's *Water Supply Watershed GIS Layer*, was used to create the *Existing Land Use Map* shown in **Figure 3**. This map helped to identify areas for future growth opportunities along the corridor.

## FUTURE LAND USE MAP

The Town's intents and objectives for future uses in these growth areas were identified by referencing the T*own's Future Land Use Map,* which is shown on **Figure 4.** The Future Land Use Map was published in the *Rolesville Comprehensive Plan 2017*. To capture more up-to-date information regarding development trends and the Town's vision along the corridor, Town staff was consulted to confirm future land use assumptions used in future year volume development. These land use assumptions are detailed on Figure 4.


Rolesville
Produced by the Town of Rolesville Planning Department
Data provided in part by Wake County GIS
Official Zoning Map
Legend
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
Town Limits
Special Intensity Allocation
Parcels
Watershed Overlay
N
1 in = 1 miles
Averette Rd, Young St, Rolesville Rd Corridor Study
Zoning Map
EXTENTS
Along Averette Rd, Young St, and Rolesville Rd between Wait Ave and Mitchell Mill Rd
Rolesville, NCDOT Division 5
Figure 2
EXULT ENGINEERING
Fantasy Lake




Averette, Young, Rolesville Road Corridor Study

Figure 3: Existing Land Use Map

EXULT ENGINEERING

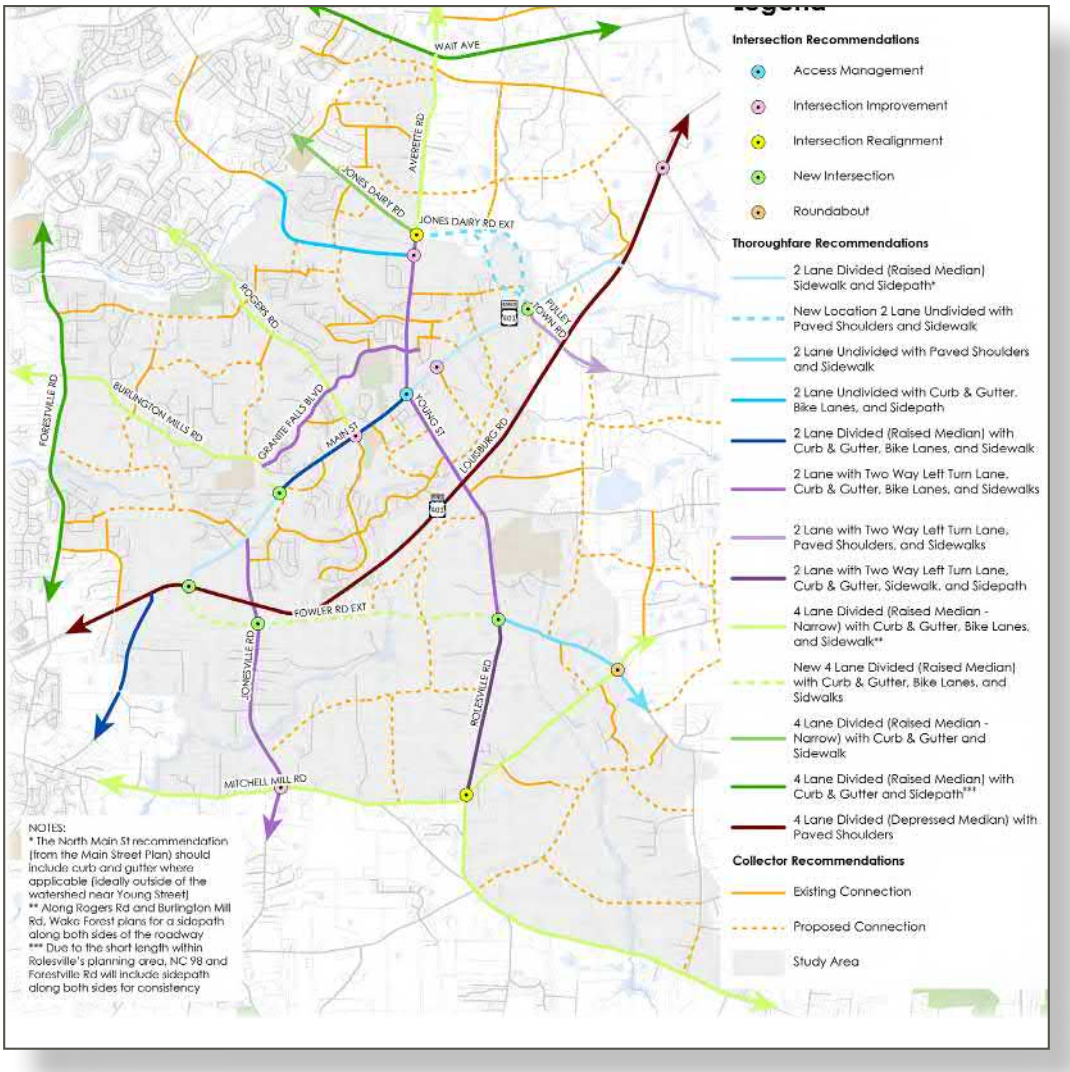
Rolesville

# ROLESVILLE MOVES

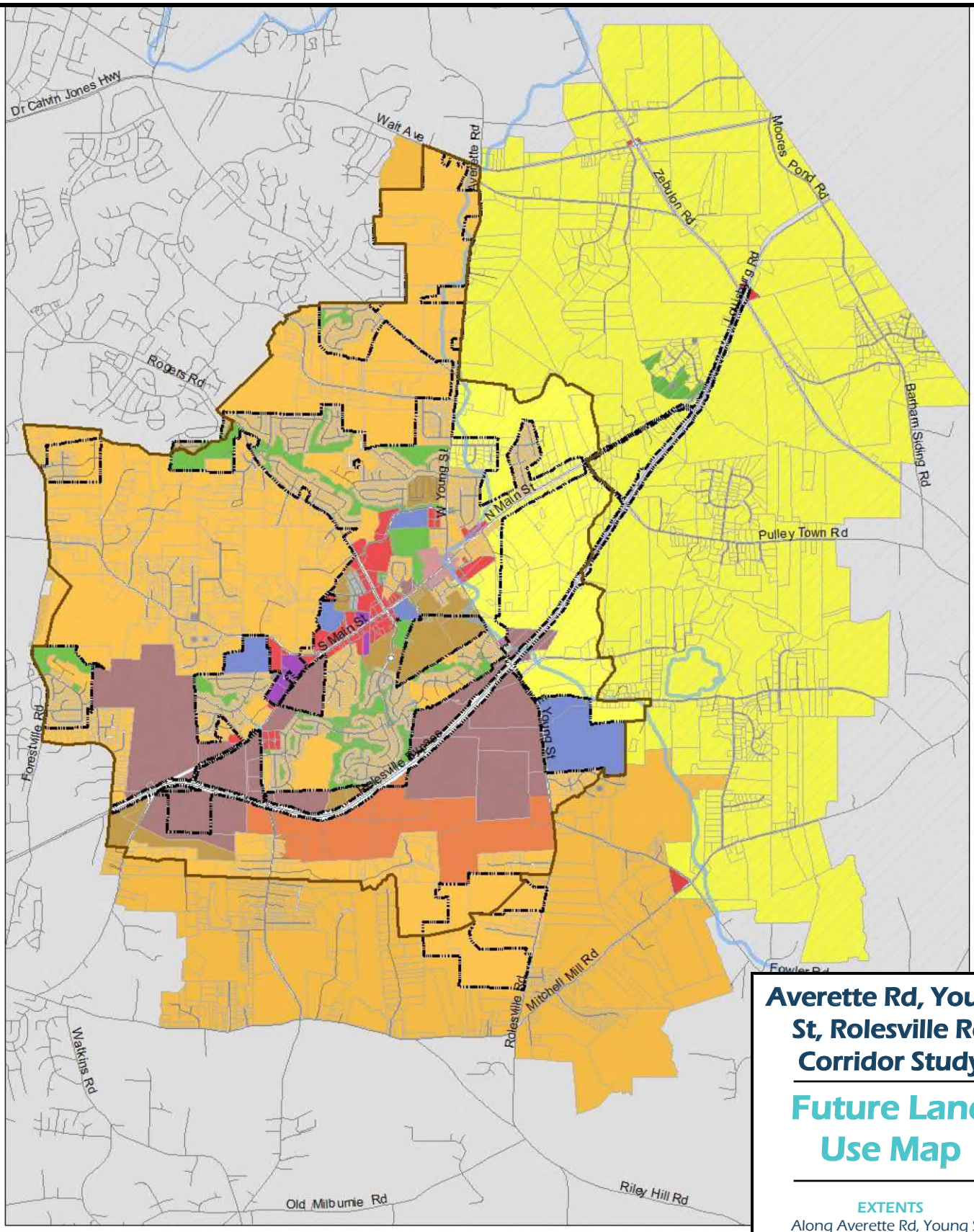
Along with the above zoning and land use maps, the current *Rolesville Moves Community Transportation Plan Update* document contains valuable information related to future plans for the Averette Road, Young Street, and Rolesville Road Corridor. The proposed thoroughfare recommended typical sections were provided in the CTP. The graphic from the CTP is shown below. The recommended cross sections along the corridor were considered for future year capacity analysis for the intersections and corridor. The recommended timing for the thoroughfare improvements were also considered when determining whether to incorporate these details into the corridor study. Although varying timing recommendations were made in the CTP, the recommended typical sections were assumed to be in place for Alternative 3.

The Community Transportation Plan (CTP) also designates future new roadways in the vicinity of the corridor. The timing of these new roadways will depend on adjacent development plans and/or available funding. Based on information in the CTP, the future new roadways are not expected to impact the analysis presented in this study; however, when these roadways are constructed, new opportunities to access and disperse traffic from the corridor will be realized.

Thoroughfare Recommendations from CTP




*Map Reference: Rolesville Moves CTP*




**Rolesville:** Future Land Use Map

- ETJ Boundary
- Town Boundary
- Water Supply Watershed
- 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

# Averette Rd, Young St, Rolesville Rd Corridor Study

## Future Land Use Map

**EXTENTS**

Along Averette Rd, Young St, and Rolesville Rd between Wait Ave and Mitchell Mill Rd

*Rolesville, NCDOT Division 5*

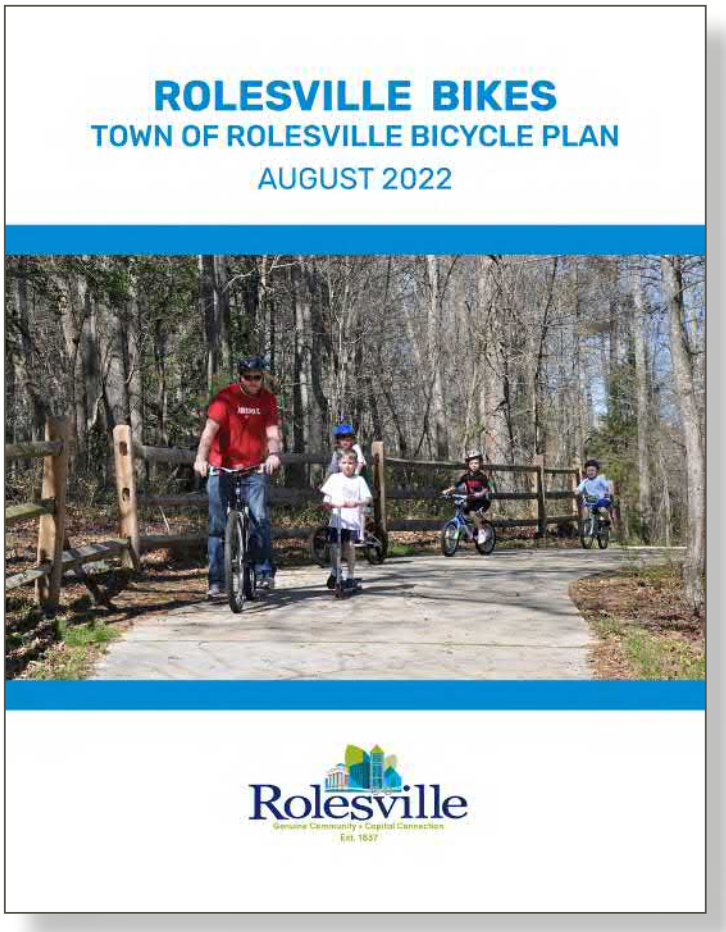
Figure 4

EXULT ENGINEERING

## TOWN OF ROLESVILLE BICYCLE PLAN (2022)

The current *Town of Rolesville Bicycle Plan* summarizes the priorities to implement and improve the bicycle and pedestrian network throughout the Town. This study builds off the recommendations in the CTP and *Town of Rolesville Greenway Plan* and provides enhancements to the cross sections for the on-road and sidepath facilities. For some segments along the corridor, the recommended cross sections detailed in the Bicycle Plan vary from those recommended in the CTP.

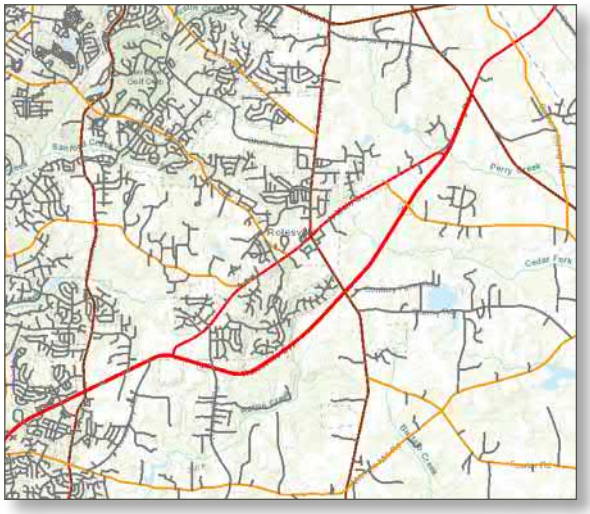
According to Town staff, the Bicycle Plan recommendations are the most current and should be considered for the future year analysis if different from those in the CTP. Additionally, during the analysis for this report, it was determined that the wider cross sections reflected in the Bicycle Plan were necessary to accommodate the projected 10 year traffic volumes and achieve the Town desired level of service.



# EXISTING CONDITIONS

## ROADWAY NETWORK

The Averette Road, Young Street, Rolesville Road Corridor is currently a two-lane roadway with a posted speed limit of 50 miles per hour north of NC 98/Wait Avenue, 45 miles per hour between NC 98/Wait Avenue and Jones Dairy Road, 35 miles per hour between Jones Dairy Road and US 401, and 45 miles per hour south of US 401. During Rolesville High School operational hours, the speed limit is 35 miles per hour in the school zone. Averette Road/Young Street/Rolesville Road is classified as a Minor Arterial on the *NCDOT Functional Class Map*. According to the *NCDOT Interactive Traffic Volume Map*, the corridor has a 2019 average annual daily traffic (AADT) volume ranging from 3,600-8,600 vehicles per day.



*NCDOT Functional Class Map*

Based on input from Town staff and the Board of Commissioners, the key intersections analyzed along the corridor include:

1. Averette Road at NC 98/Wait Avenue (signalized)
2. Averette Road at Jones Dairy Road (unsignalized)
3. Young Street at South Main Street (signalized)
4. Young Street at US 401/Louisburg Road (signalized)
5. Young Street at Rolesville High School Driveway (unsignalized)
6. Rolesville Road at Mitchell Mill Road (unsignalized)

Each corridor section between the key study intersections was also analyzed. A site visit was performed on Monday, April 10th to observe existing field conditions, such as lane geometry, posted speed limits, and traffic operations. **Figure 5** shows the Existing Lane Geometry and Cross Sections at the above existing study intersections.

The arterials in the study corridor are summarized below:

- **NC 98/Wait Avenue** is currently a 2-lane undivided roadway with a posted speed limit of 55 miles per hour (mph). NC 98/Wait Avenue is classified as a Minor Arterial on the NCDOT Functional Class Map. According to the NCDOT Interactive Traffic Volume Map, NC 98/Wait Avenue has a 2019 average annual daily traffic (AADT) volume of 12,500 vehicles per day east of Averette Road and a 2019 AADT of 17,500 vehicles per day west of Averette Road.

*NC 98/Wait Avenue at Averette Road*

- **Jones Dairy Road** is currently a 2-lane undivided roadway with a posted speed limit of 45 miles per hour (mph). Jones Dairy Road is classified as a Major Collector on the NCDOT Functional Class Map. According to the NCDOT Interactive Traffic Volume Map, Jones Dairy Road has a 2019 average annual daily traffic (AADT) volume of 4,700 vehicles per day.

*Jones Dairy Road at Averette Road*

- **Main Street** is currently a 2-lane undivided roadway east of Young Street and a 2-lane roadway with two-way left-turn lane west of Young Street. Main Street has a posted speed limit of 35 miles per hour (mph). Main Street is classified as an Other Principal Arterial on the NCDOT Functional Class Map. According to the NCDOT Interactive Traffic Volume Map, Main Street has a 2019 average annual daily traffic (AADT) volume of 3,800 vehicles per day east of Young Street and a 2019 AADT of 11,500 vehicles per day west of Young Street.

*S. Main Street at Young Street*

- **US 401 Bypass** is currently a 4-lane divided roadway with a posted speed limit of 55 miles per hour (mph). US 401 Bypass is classified as an Other Principal Arterial on the NCDOT Functional Class Map. According to the NCDOT Interactive Traffic Volume Map, US 401 Bypass has a 2019 average annual daily traffic (AADT) volume of 17,500 vehicles per day west of Young Street and 14,500 vehicles per day east of Young Street.

*US 401 Bypass at Young Street*

- **Rolesville High School Driveway** currently consists of two ingress lanes and two egress lanes. The driveway has a posted speed limit of 15 miles per hour (mph). At the time this study was performed, NCDOT's Municipal School Transportation Assistance (MSTA) division was working on a study to address internal stacking and circulation issues at the high school. The recommendations of the school study may impact the access for the high school. However, for purposes of this corridor analysis, it was assumed the access would remain as it is today.

*Rolesville High School Driveway Egress at Young Street*

- **Mitchell Mill Road** is currently a 2-lane undivided roadway and has a posted speed limit of 45 miles per hour (mph). Mitchell Mill Road is classified as a Major Collector on the NCDOT Functional Class Map. According to the NCDOT Interactive Traffic Volume Map, Mitchell Mill Road has a 2019 average annual daily traffic (AADT) volume of 1,900 vehicles per day east of Rolesville Road and a 2019 AADT of 4,000 vehicles per day west of Rolesville Road.

*Mitchell Mill Road at Rolesville Road*

# Averette Rd, Young St, & Rolesville Rd Corridor Study

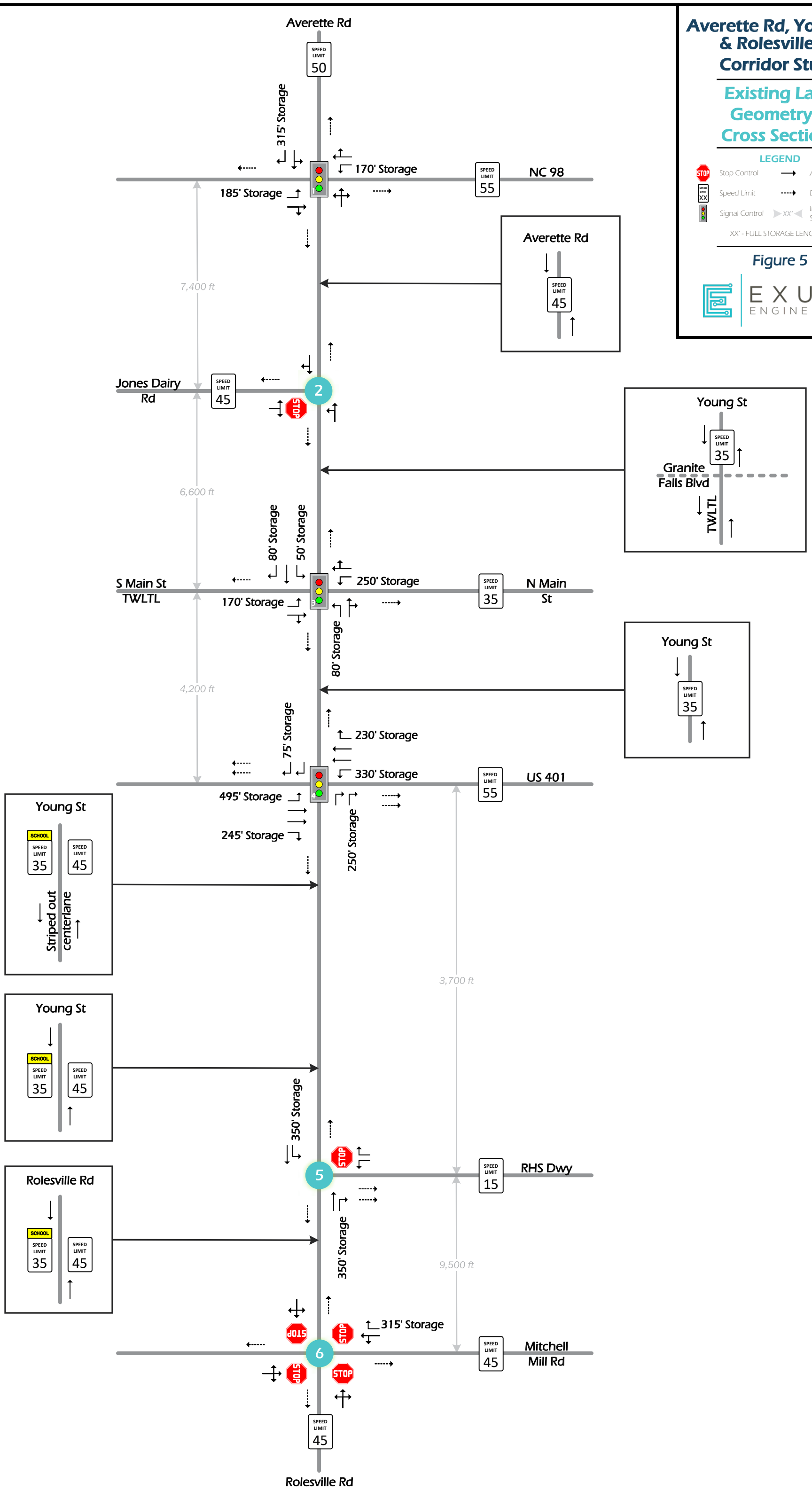
## Existing Lane Geometry & Cross Sections

LEGEND

Stop Control | Approach Lane
Speed Limit | Departure Lane
Signal Control | XX' Intersection Spacing
XX' - FULL STORAGE LENGTH

Figure 5

EXULT ENGINEERING



# TRAFFIC VOLUMES

Peak-hour turning movement traffic counts were performed at the existing study intersections during the AM (7:00 – 9:00) and PM (4:00 – 6:00) peak periods on Wednesday, May 10, 2023 while school was still in session at the following intersections:

- Averette Road at NC 98/Wait Avenue (signalized)
- Averette Road at Jones Dairy Road (unsignalized)
- Young Street at South Main Street (signalized)
- Rolesville Road at Mitchell Mill Road (unsignalized)

To accurately account for school traffic peak periods, the May 10th turning movement traffic counts were performed for extended peak periods (6:45 – 9:00 AM and 1:45 – 6:00 PM) at the following intersections:

- Young Street at US 401/Louisburg Road (signalized)
- Young Street at Rolesville High School Driveway (unsignalized)

Traffic count data is included in the Appendix of this report. Existing traffic volumes were not adjusted to balance approach and departure volumes given the number of access points and land uses located between study intersections as well as the varying peak hours. **Figure 6** shows the Existing 2023 AM and PM Peak Hour Traffic Volumes for the study intersections.

## PEDESTRIANS AND BICYCLES

Pedestrian and bike considerations are highlighted in the *Rolesville Moves Community Transportation Plan* with recommendations detailed further in the *Town of Rolesville Bicycle Plan* and the *Town of Rolesville Greenway Plan*. The following list summarizes the amount of pedestrian and bicycle volumes observed during the May 10, 2023 data collection:

- Averette Road at NC 98/Wait Avenue: One (1) bike crossing during AM peak hour
- Averette Road at Jones Dairy Road: One (1) bike crossing during PM peak hour
- Young Street at South Main Street: One (1) pedestrian crossing during PM peak hour
- Rolesville Road at Mitchell Mill Road: One (1) pedestrian crossing during PM peak hour

While the existing pedestrian and bicycle volume observed is relatively low, the Town places high priority on future infrastructure to support the potential demand for multi-modal transportation options.

# Averette Rd, Young St, & Rolesville Rd Corridor Study

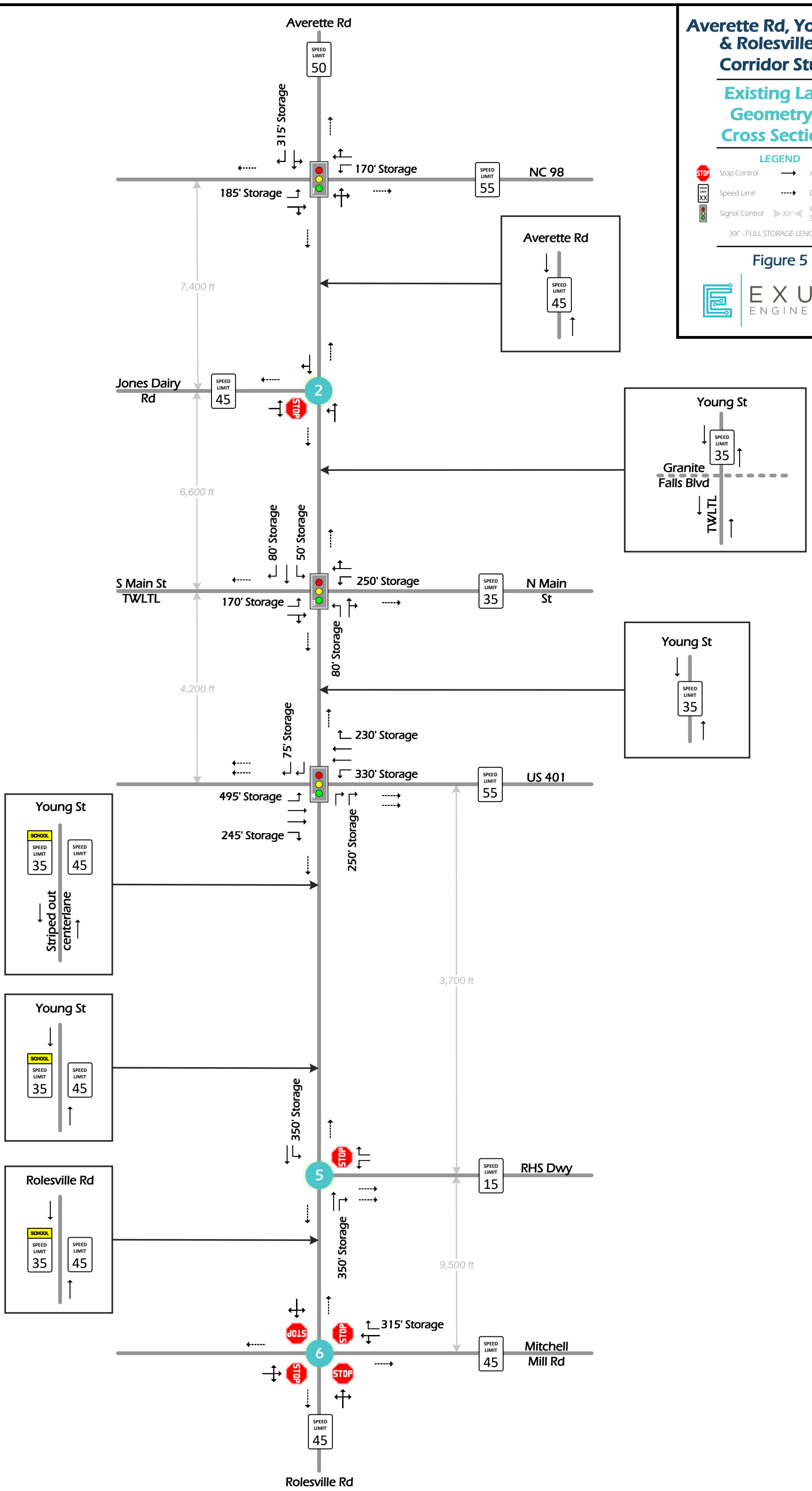
## Existing Lane Geometry & Cross Sections

LEGEND

Stop Control | Approach Lane
Speed Limit | Departure Lane
Signal Control | XX' Intersection Spacing
XX' - FULL STORAGE LENGTH

Figure 5

EXULT ENGINEERING



# SCENARIOS (VOLUME DEVELOPMENT)

The Corridor Study includes analysis of two future year volume scenarios. Scenario 1 consists of existing traffic volumes, traffic that will be added to the corridor due to the development of previously submitted or approved site plans, and trips generated for land that is currently vacant but is likely to be developed within the next 10 years. The land uses assumed for the development of vacant land under Scenario 1 is based off guidance from Town staff. The future year traffic volumes for Scenario 2 were estimated in a similar manner. Scenario 2 consists of existing traffic volumes, traffic from the previously submitted or approved site plans, and also considers re-zoning of vacant land to higher densities than what was assumed in Scenario 1. The land use assumptions for Scenario 2 were also based on guidance from Town staff. The following elements were considered for the future year volume development.

## CURRENT PLANNED DEVELOPMENTS

As previously described, the Town of Rolesville's Official Zoning Map was referenced as the base condition for understanding existing land uses and designations along the corridor. The existing uses along the corridor include residential developments, commercial uses, town facilities, and vacant land expected to be developed. The Official Zoning Map, in conjunction with both the Town's Development Projects Online Mapping Application and Wake County's Water Supply Watershed GIS layer was used to create the Existing Land Use Map shown in **Figure 3**.

The areas shown in orange are the planned or approved developments along the corridor and include:

- **Barham Land 2005 & 2033 Wait Ave:** 52 residential townhomes located along the north side of NC 98/Wait Avenue west of Averette Road. Access for the site is proposed along NC 98/Wait Avenue.
- **The Preserve at Jones Dairy (North, Central, & South):** 250 residential townhomes and 600 single family homes located on the north and south side of Jones Dairy Road west of Averette Road. Access for the site is proposed along Jones Dairy Road and Averette Road. At the time of traffic count data collection, 75 Certificates of Occupancy had been issued for Jones Dairy Preserve. Therefore, 92% of the total site traffic was not accounted for in the existing traffic counts and consequently added to the corridor to estimate future year volumes.
- **Chandlers Ridge:** 96 single family homes located on the east side of Averette Road south of the Chalk Road intersection. Access for the site is along Averette Road. At the time of traffic count data collection, 71 Certificates of Occupancy had been issued for Chandlers Ridge. Therefore, 21% of the total site traffic was not accounted for in the existing traffic counts and consequently added to the corridor to estimate future year volumes.
- **Cobblestone:** 176 multifamily apartment units, 46,194 square feet of retail, 3,816 flex space, and 15,900 square feet of municipal office space located on the northwest quadrant of Young Street and South Main Street. Access for the site is proposed along Young Street and South Main Street.
- Scarboro 201 S. Main St. – 240 senior adult housing units located along the south side of South Main Street west of Young Street. Access for the site is proposed along South Main Street.
- **The Point:** 250 multifamily apartment units, 650 single family homes, and 108,200 square feet of retail space located along the west side of Young Street north and south of US 401 Bypass. Access is proposed along Young Street and Genovesa Drive.
- **Kalas Falls:** 439 single family homes and 96 multifamily apartment units located along the west side of Rolesville Road north of Mitchell Mill Road. Access for the site is proposed along Rolesville Road.
- **Preserve at Moody Farm:** 82 single family homes located along the west side of Rolesville Road north of Mitchell Mill Road. Access for the site is proposed along Rolesville Road.
- **Tucker Wilkins:** 27 single family homes and 64 residential townhomes located along the west side of Rolesville Road north of Mitchell Mill Road. Access for the site is proposed along Rolesville Road.

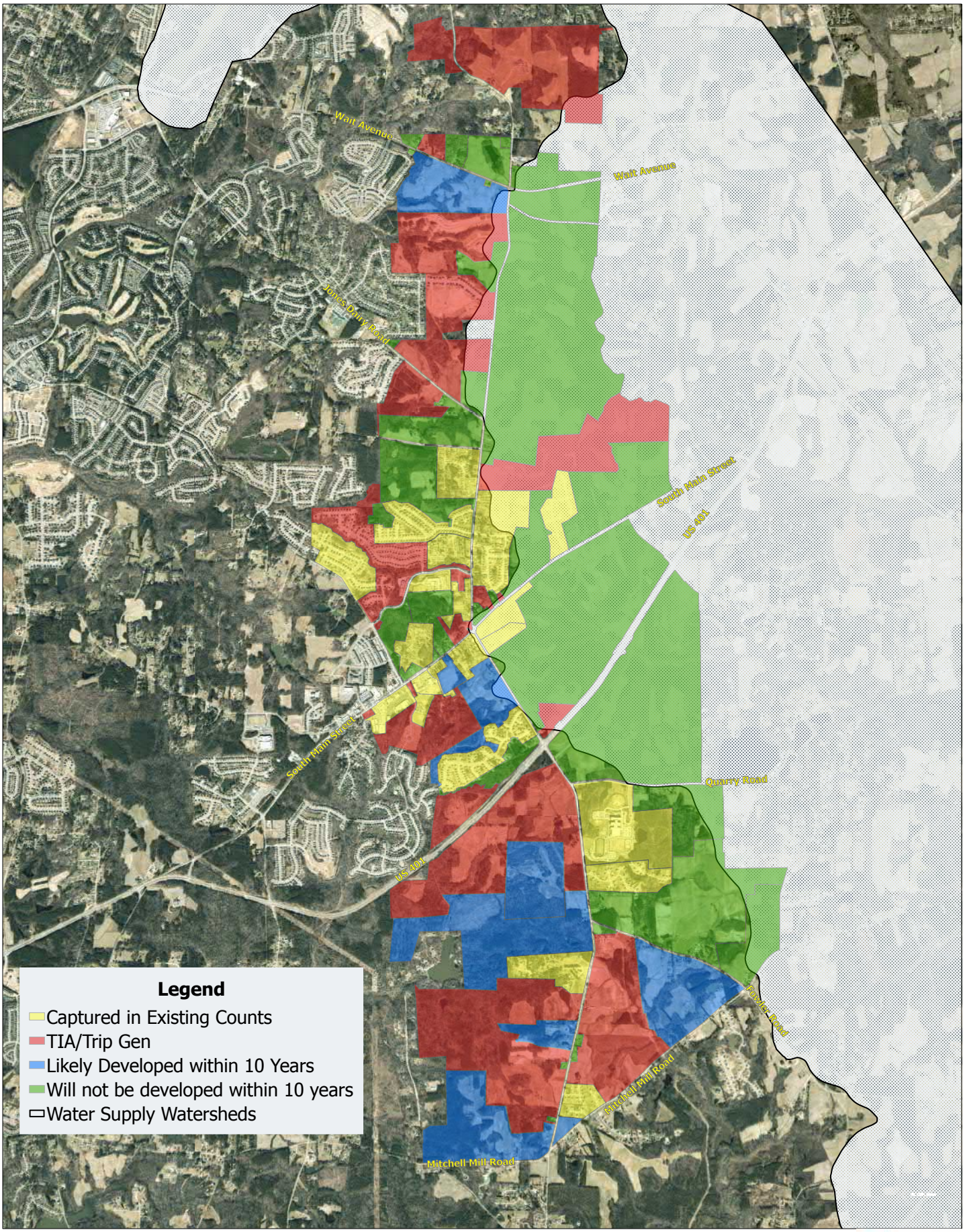
- **Rolesville Crossing:** 233 single family homes and 125 residential townhomes located along the east side of Rolesville Road north of Mitchell Mill Road. Access for the site is proposed along Rolesville Road and Mitchell Mill Road.
- **Rosedale:** 677 single family homes and 288 multifamily apartment units located along the east and west side of Averette Road north of NC 98/Wait Avenue. Access for the site is proposed along Averette Road and NC 96. At the time of data collection, a minimal amount of CO's were issued. However, to remain conservative, a reduction in Rosedale site traffic was not applied.
- **Parker Ridge:** 162 single family homes and 114 residential townhomes located along Redford Place Drive south of South Main Street. Access for the site is proposed along Redford Place Drive and School Street.

All approved developments were assumed to be completely built out within 10 years. The Town of Rolesville and NCDOT supplied information related to the approved developments. If a TIA was not prepared for an approved or planned development, trips were generated and assigned to the roadway network based on existing traffic patterns, access to commuter roadways, and surrounding land uses. Detailed information and sketches of the site trips for each approved development are included in the Appendix. It is important to note that even though the peak hour for the intersection of Young Street and Rolesville High School occurs prior to typical PM peak hour for the approved development traffic, to remain conservative, the approved development trips were generated for the typical adjacent street traffic PM peak hour.

This map helped to identify areas for future growth commitments and opportunities along the corridor. The Planned or Approved Developments are highlighted in orange while the vacant land with development potential is shown in green.

## VACANT LAND TO BE DEVELOPED

Upon review of the vacant land along the corridor, the areas likely to be developed within 10 years were identified with guidance from Town staff. Town staff has extensive knowledge on develop-ability of these parcels as well as development proposal trends. **Figure 7** details the vacant land that is likely to be developed within the next 10 years shown in blue.




Averette, Young, Rolesville Road Corridor Study

Figure 7: Volume Development - Vacant Land to be Developed

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Rolesville

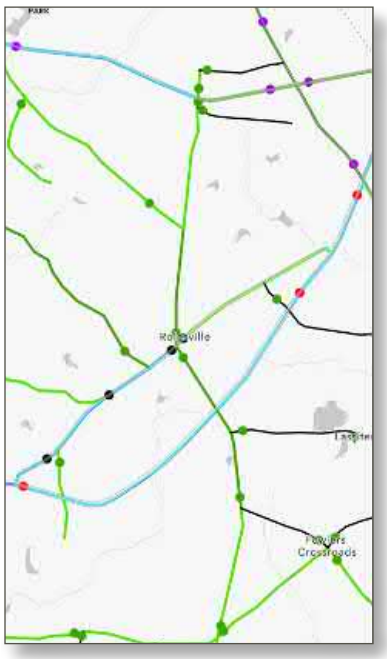
## FUTURE REZONING

For Scenario 1, Medium Density residential land uses were assumed for the vacant land expected to be developed within 10 years. Medium Density zoning is consistent with what has been designated for these areas on the Future Lane Use Map. To calculate the number of dwelling units for each parcel, the total area was reduced by 40% to account for the undevelopable area of the parcel. A density of 2.7 units per acre was then applied to the remaining developable acreage to determine the maximum number of single family dwelling units to assume. Additionally, the plans for the future Town Facilities located along the west side of Young Street south of South Main Street were accounted for in Scenario 1. The land use assumptions for Scenario 1 are shown on **Figure 8**. Trips for these land use assumptions were generated and then assigned based on surrounding land uses and access to major commuter roads. Trip generation and assignment details are in the Appendix of this report. The projected future year traffic volumes at study intersections are show in **Figure 9** (2033 AM Scenario 1 Peak Hour Traffic Volumes) and **Figure 10** (2033 PM Scenario 1 Peak Hour Traffic Volumes).

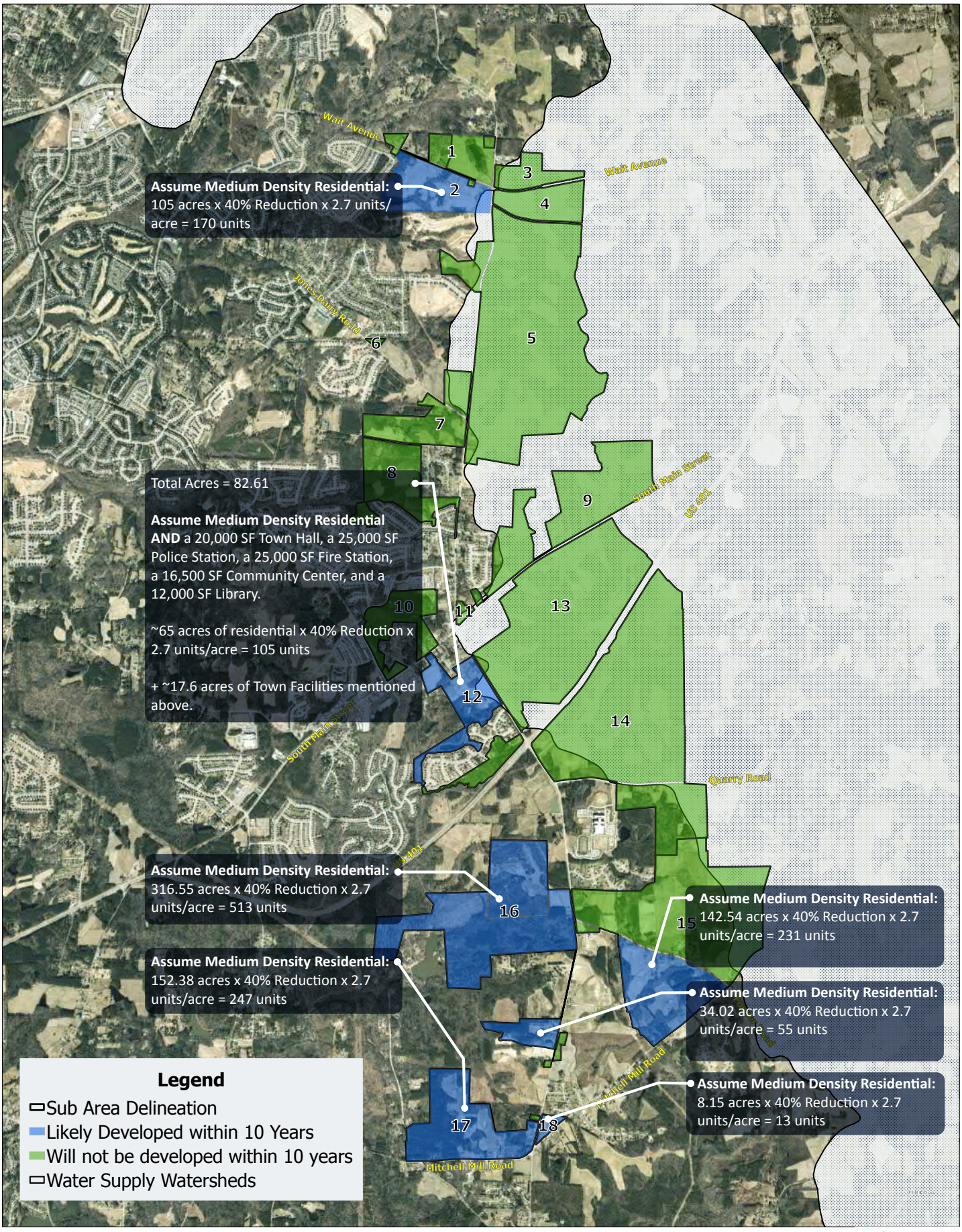
For Scenario 2, Town staff supplied assumptions related to the rezoning potential of the vacant land likely to be developed within 10 years. These assumptions are shown on **Figure 11**. The rezoning scenario includes a combination of medium density residential, office, retail, and Town Facilities land uses to be developed on the currently vacant land. Trips for these land use assumptions were generated and then assigned based on surrounding land uses and access to major commuter roads. Trip generation and assignment details are in the Appendix of this report. The projected future year traffic volumes at study intersections are show in **Figure 12** (2033 AM Scenario 2 Peak Hour Traffic Volumes) and **Figure 13** (2033 PM Scenario 2 Peak Hour Traffic Volumes).

## GROWTH RATE COMPARISON

Based on published traffic count data available on the NCDOT Annual Average Daily Traffic (AADT) Mapping Application, historic growth trends suggest a 4% annual growth rate along the corridor. However, due to the nature of the study and the detailed manner in which trips will be generated for land uses along the corridor as described above, the volumes developed for the future year scenarios resulted in higher overall traffic volumes at each of the study intersections when compared to volume projections based on an annual growth rate. Therefore, the volumes developed for Scenario 1 and Scenario 2 were considered conservative.



*NCDOT AADT Mapping Application*




Averette, Young, Rolesville Road Corridor Study

Figure 8: Land Use Assumptions - Scenario 1

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# Averette Rd, Young St, Rolesville Rd Corridor Study

## 2033 AM Scenario 1 Traffic Volumes

**EXTENTS**

Along Averette Rd, Young St, and Rolesville Rd between Wait Ave and Mitchell Mill Rd

*Rolesville, NCDOT Division 5*

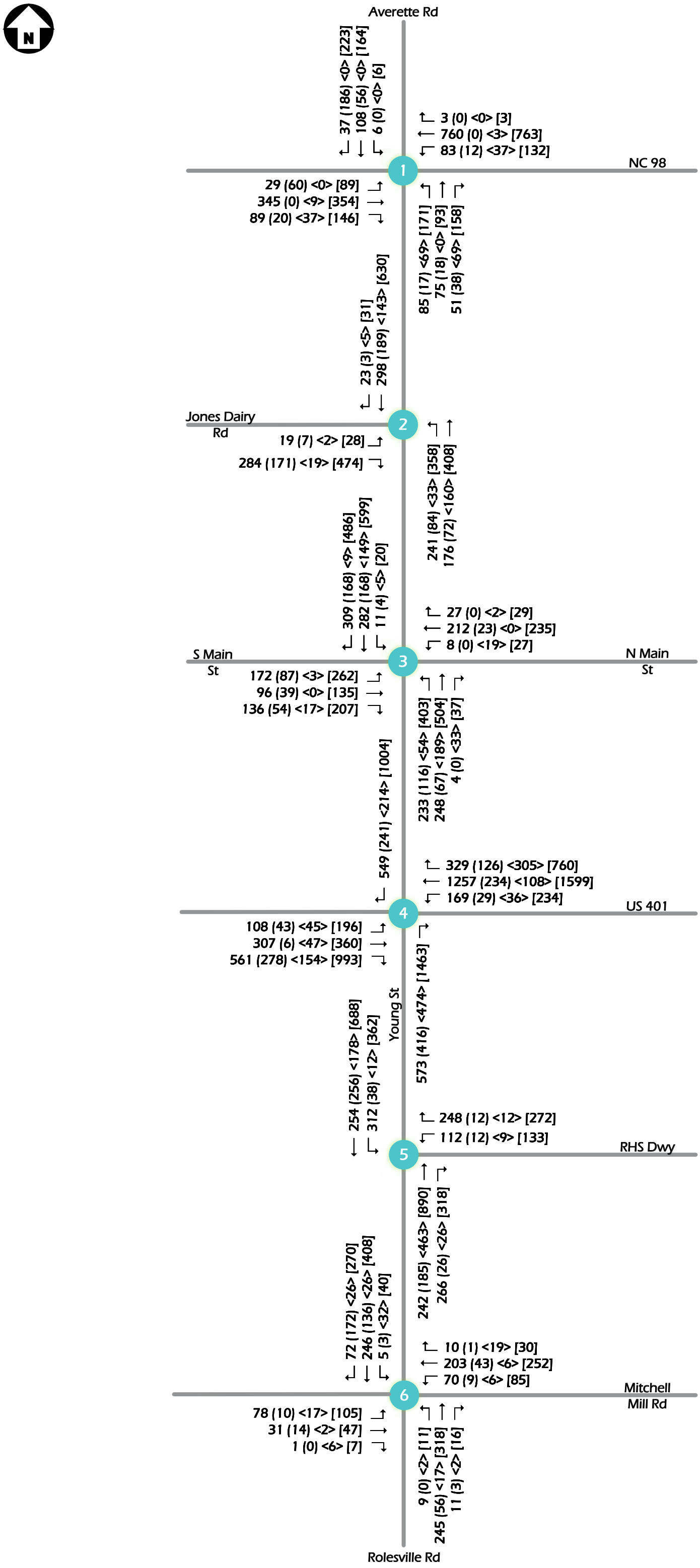
**LEGEND**

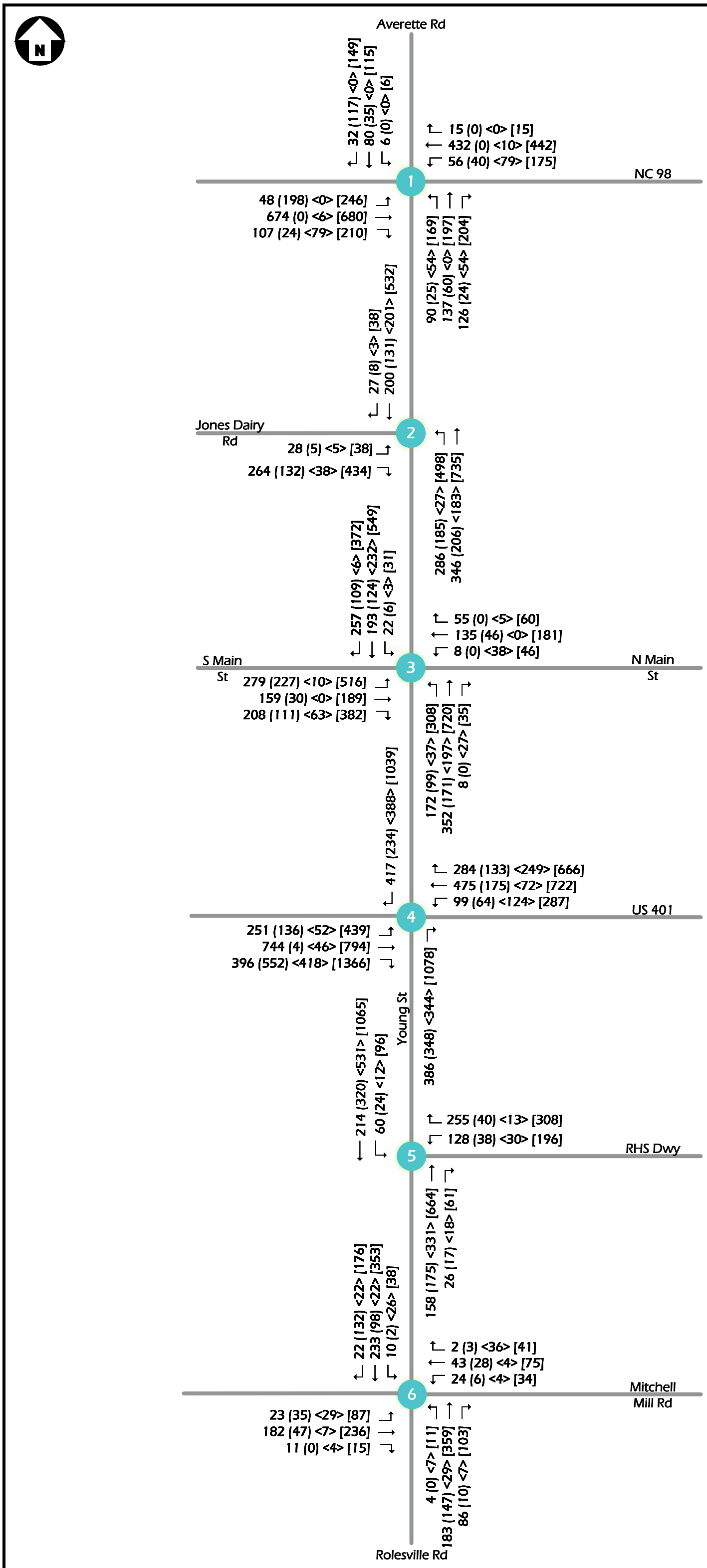
XX – Existing AM Traffic
(XX) – Approved Development Traffic
<XX> – Scenario 1 Sub Area AM Traffic
[XX] – Total Scenario 1 AM Traffic

XX + (XX) + <XX> = [XX]

Figure 9

EXULT ENGINEERING






# Averette Rd, Young St, Rolesville Rd Corridor Study

## 2033 PM Scenario 1 Traffic Volumes

**EXTENTS**

Along Averette Rd, Young St, and Rolesville Rd between Wait Ave and Mitchell Mill Rd

*Rolesville, NCDOT Division 5*

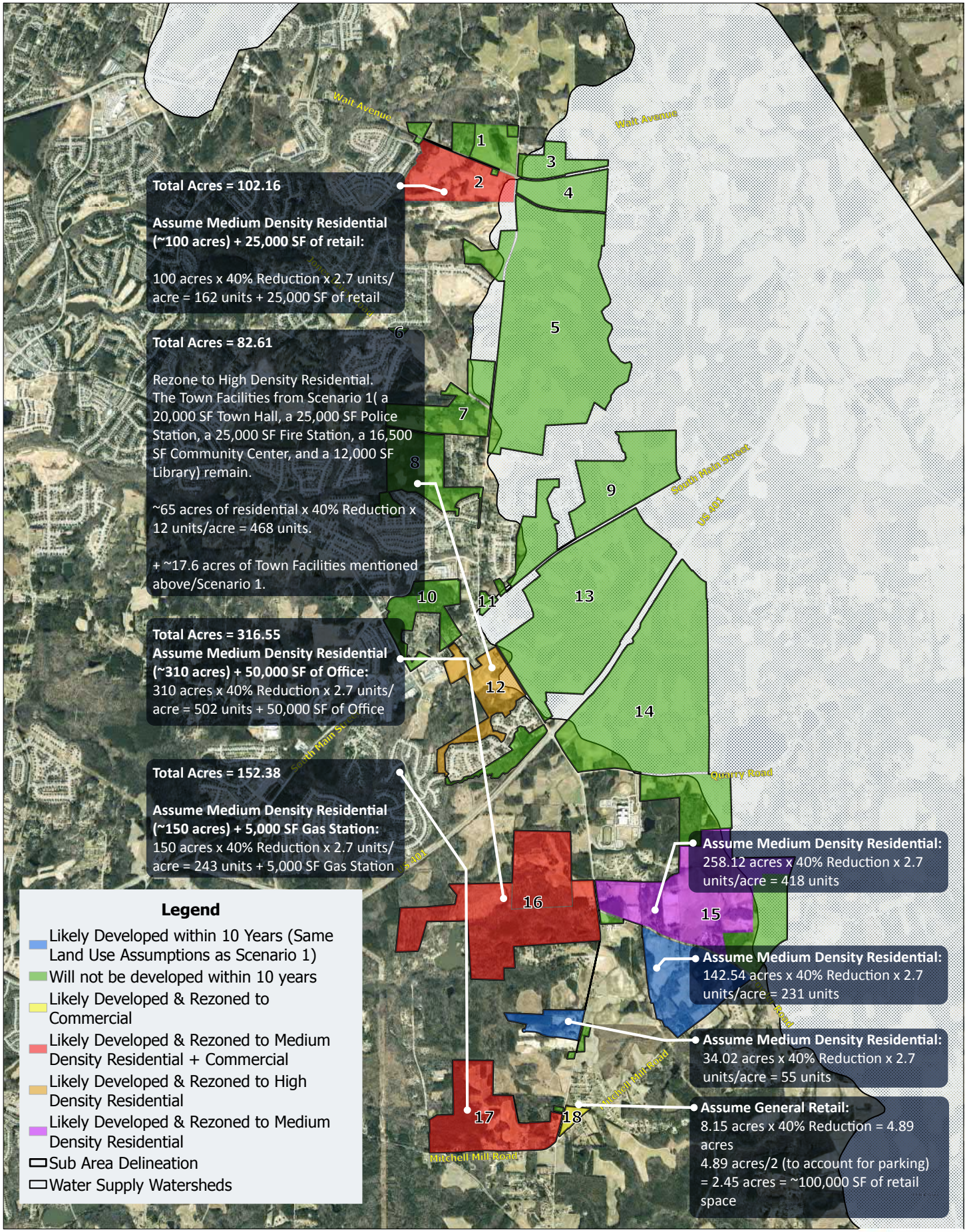
**LEGEND**

XX – Existing PM Traffic
(XX) – Approved Development Traffic
<XX> – Scenario 1 Sub Area PM Traffic
[XX] – Total Scenario 1 PM Traffic

XX + (XX) + <XX> = [XX]

Figure 10

EXULT ENGINEERING

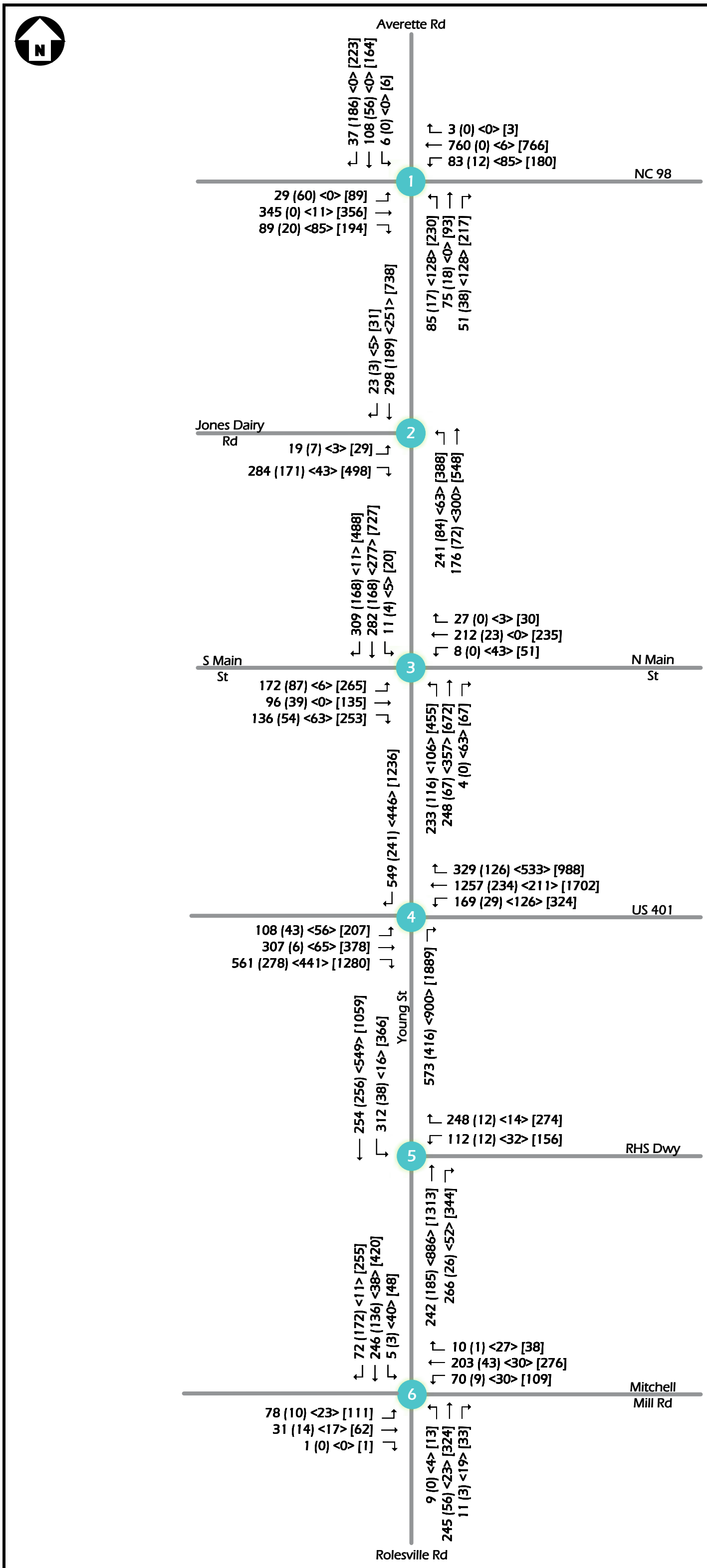



# Averette, Young, Rolesville Road Corridor Study

## Figure 11: Land Use Assumptions - Scenario 2

EXULT ENGINEERING

Rolesville




# Averette Rd, Young St, Rolesville Rd Corridor Study

## 2033 AM Scenario 2 Traffic Volumes

**EXTENTS**

Along Averette Rd, Young St, and Rolesville Rd between Wait Ave and Mitchell Mill Rd

*Rolesville, NCDOT Division 5*

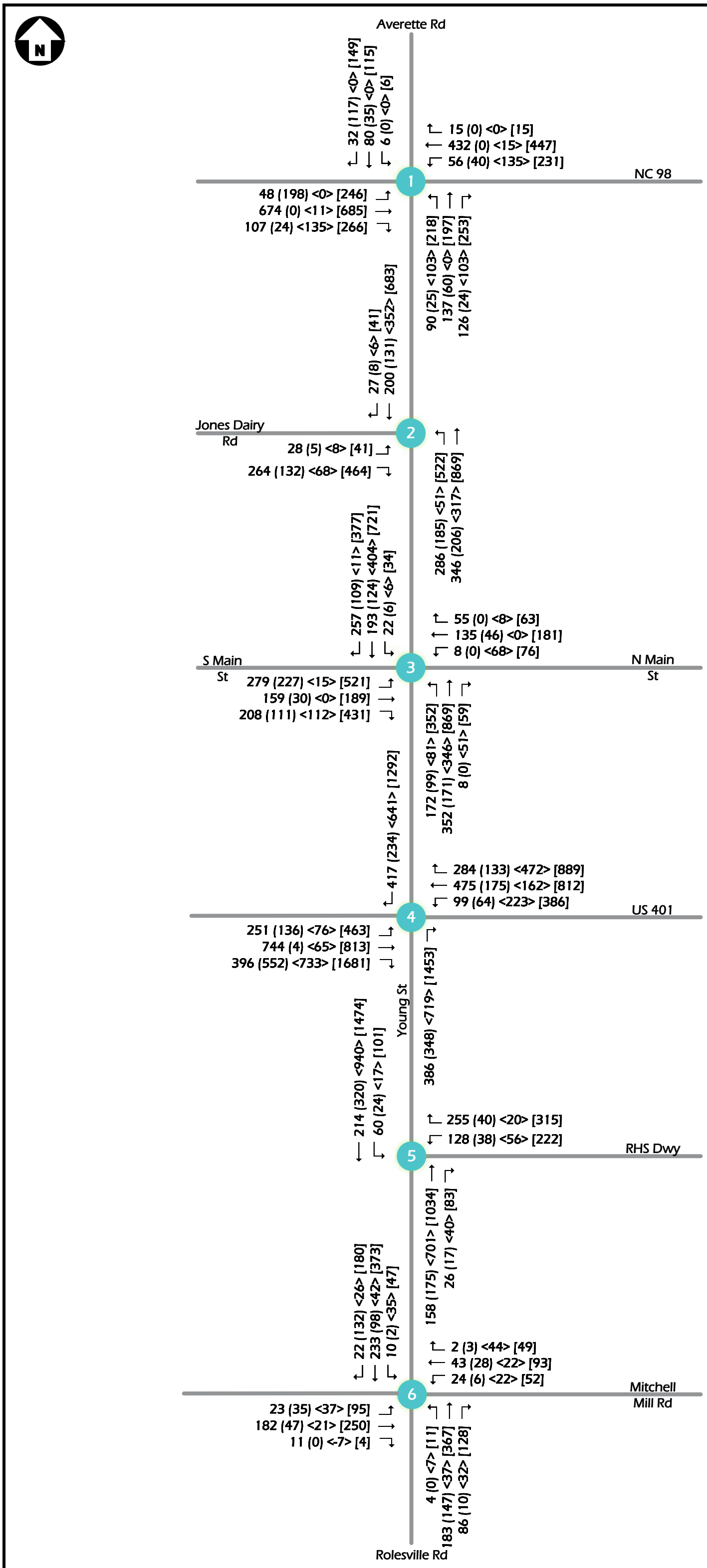
**LEGEND**

XX – Existing AM Traffic
(XX) – Approved Development Traffic
<XX> – Scenario 2 Sub Area AM Traffic
[XX] – Total Scenario 2 AM Traffic

XX + (XX) + <XX> = [XX]

Figure 12

EXULT ENGINEERING




# Averette Rd, Young St, Rolesville Rd Corridor Study

## 2033 PM Scenario 2 Traffic Volumes

**EXTENTS**

Along Averette Rd, Young St, and Rolesville Rd between Wait Ave and Mitchell Mill Rd

*Rolesville, NCDOT Division 5*

**LEGEND**

XX – Existing PM Traffic
(XX) – Approved Development Traffic
<XX> – Scenario 2 Sub Area PM Traffic
[XX] – Total Scenario 2 PM Traffic

XX + (XX) + <XX> = [XX]

Figure 13

EXULT ENGINEERING

## ROLESVILLE HIGH SCHOOL STUDY

A meeting was held on Wednesday, May 3, 2023 with Town staff, NCDOT, MSTA, VHB, and Wake County Public School Systems (WCPSS) to review the progress of a school study being performed to address internal circulation and stacking issues. The MSTA study currently being performed at Rolesville High School will also address school peak hour deficiencies. Recommendations from the study may impact access and corridor recommendations. However, for purposes of this corridor analysis, it was assumed the access would remain as it is today.

Representatives from WCPSS indicated the current student population exceeds the maximum enrollment for the high school. Therefore, additional growth in student population was not considered. Representatives from WCPSS also indicated there are plans for a potential future elementary school adjacent to the high school campus. However, the plans are not definitive, and the future elementary school is not likely to be developed within 10 years. Therefore, the elementary school was not assumed to be built for the future analysis year of the corridor study.

# FUTURE YEAR TRANSPORTATION ANALYSIS

## PLANNED PROJECTS AND COMMITTED IMPROVEMENTS

In addition to the existing transportation infrastructure, there are several improvements that are committed to by private developers and NCDOT along the corridor. These improvements are all expected to be constructed within 10 years and were therefore included in the future year analysis of the corridor. The improvements are detailed below and shown in **Figure 14**.

The following committed roadway improvements are to be completed by others to improve the Averette Road, Young Street, Rolesville Road Corridor:

**Averette Road at NC 98/Wait Avenue**

- Rosedale Development: Construct an exclusive southbound right-turn lane on Averette Road to provide 315 feet of full width storage and appropriate taper. This improvement has already been constructed.
- Rosedale Development: Extend the existing eastbound left-turn lane on NC 98/Wait Avenue to provide 250 feet of full width storage and appropriate taper.
- NCDOT TIP U-6023: Upgrade signal software and add flashing yellow arrows/update signal timing.

**Averette Road at Jones Dairy Road**

- The Preserve at Jones Dairy: Construct an exclusive eastbound left-turn lane on Jones Dairy Road to provide 50 feet of full width storage and appropriate taper.
- The Preserve at Jones Dairy: Construct an exclusive northbound left-turn lane on Averette Road to provide 150 feet of full width storage and appropriate taper.
- The Preserve at Jones Dairy: Monitor intersection for warranting installation of traffic signal.

**Young Street at South Main Street/North Main Street**

- NCDOT TIP U-6241: Provide an exclusive southbound right-turn lane on Young Street to provide 200 feet of full width storage and appropriate taper and a shared through/left-turn lane with continuous storage.

**Young Street at US 401 Bypass**

- The Point: Extend the existing eastbound right-turn lane on US 401 Bypass to provide 400 feet of full width storage and appropriate taper.

**Young Street at Rolesville High School Driveway**

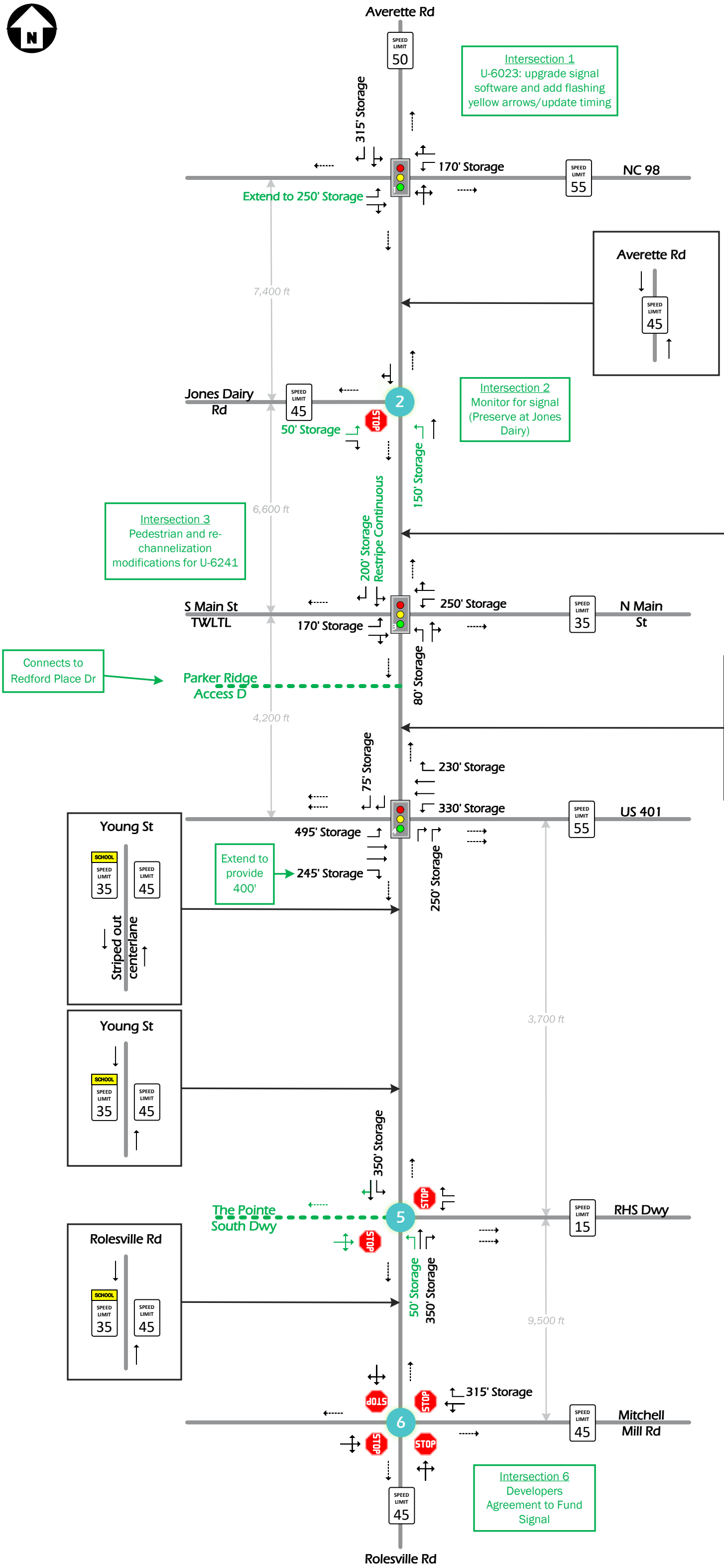
- The Point: Construct The Point South Site Driveway as the west leg of the intersection and provide one ingress and one egress lane. The eastbound approach will be stop controlled.
- The Point: Construct an exclusive northbound left-turn lane on Young Street to provide 50 feet of full width storage and appropriate taper.

**Rolesville Road at Mitchell Mill Road**

- Developers' Agreement from Various Proposed Developments: Fund traffic signal when warranted.

# Averette Rd, Young St, & Rolesville Rd Corridor Study

## Committed Improvements by Others




**LEGEND**

- Stop Control
- Approach Lane
- Speed Limit
- Departure Lane
- Signal Control
- XX' Intersection Spacing
- Committed Improvements by others

XX' - FULL STORAGE LENGTH

**Figure 14**

EXULT ENGINEERING

# FRONTAGE WIDENING COMMITMENTS BY OTHERS

Frontage Widening requirements are an opportunity for developers to contribute to the surrounding transportation infrastructure on a systemic level. When the Town places frontage widening requirements on private development, the ultimate future roadway cross section planned for the adjacent roadway is gradually built. **Figure 15** highlights both the approved developments and those expected to be developed within the next 10 years along the Averette Road/Young Street/Rolesville Road that, with constructed frontage widening improvements, contribute to the overall vision of the corridor.

As shown on **Figure 15**, there are no contiguous segments of widening that will increase the overall capacity of the corridor. Therefore, the widening was not accounted for in the capacity analysis models for the corridor segments.

The Town indicated there are plans to assist in the widening along Rolesville Road to provide a continuous ultimate section between the Kalas Falls site frontages. Between Kalas Falls and the adjacent approved developments, Rolesville Road will be built according to the planned ultimate section of a 2-lane undivided roadway with curb and gutter, bike lanes, and sidewalk in this vicinity. This widening will help to provide pedestrian and bicycle infrastructure; however, there will not be an increase in vehicular capacity due to this frontage widening.

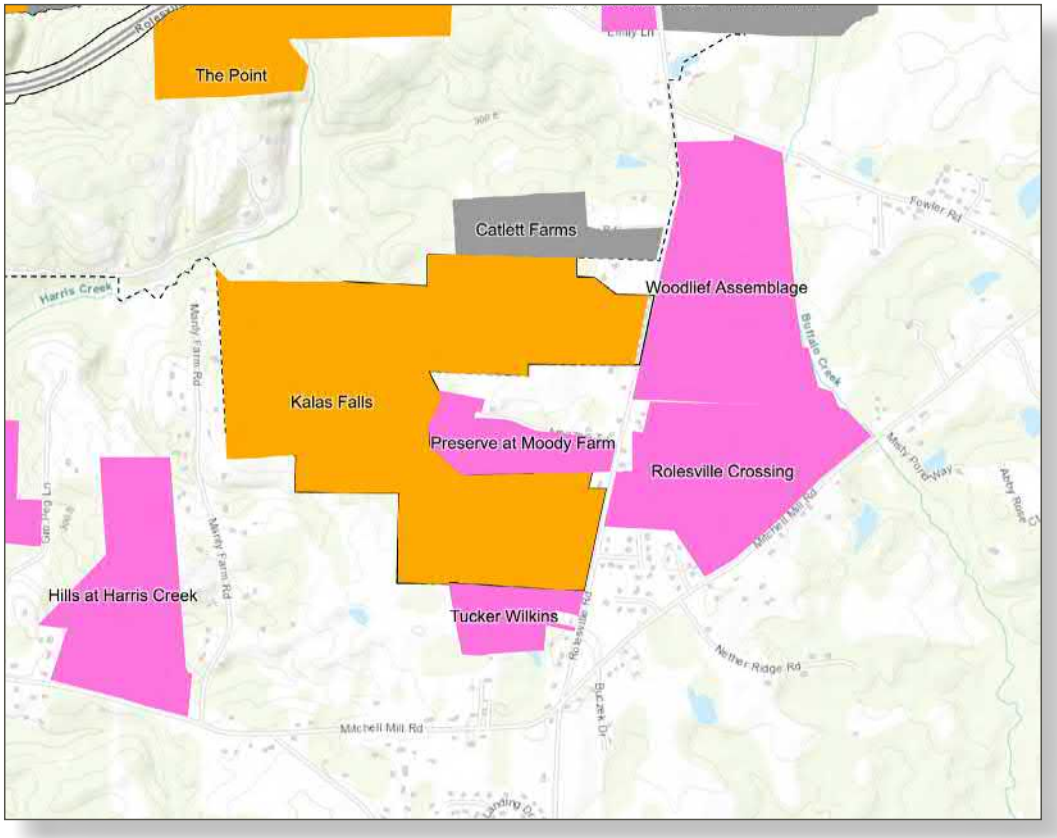
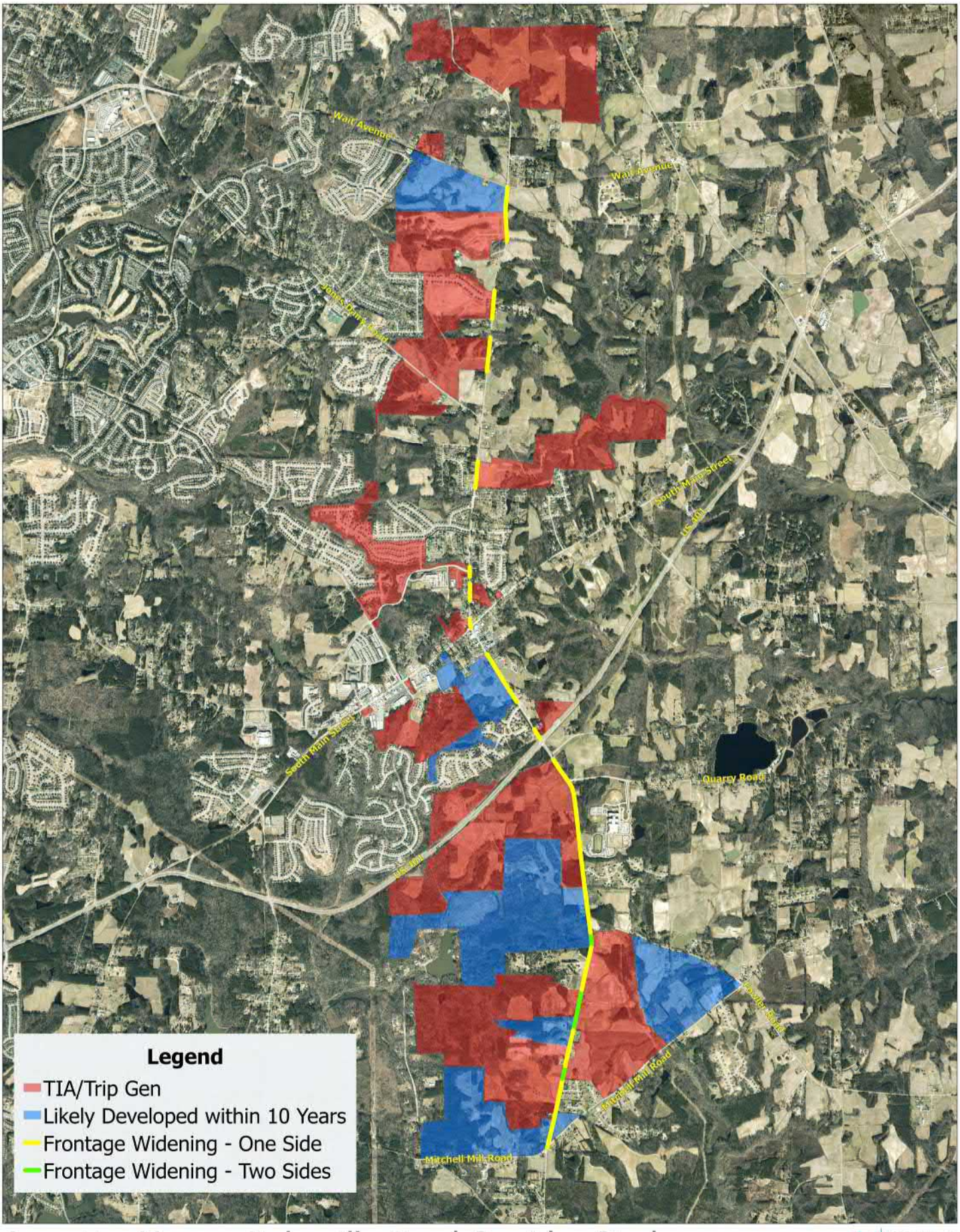



*Image from Town's Interactive Development Map*




Averette, Young, Rolesville Road Corridor Study

Figure 15: Frontage Widening

EXULT ENGINEERING

Rolesville

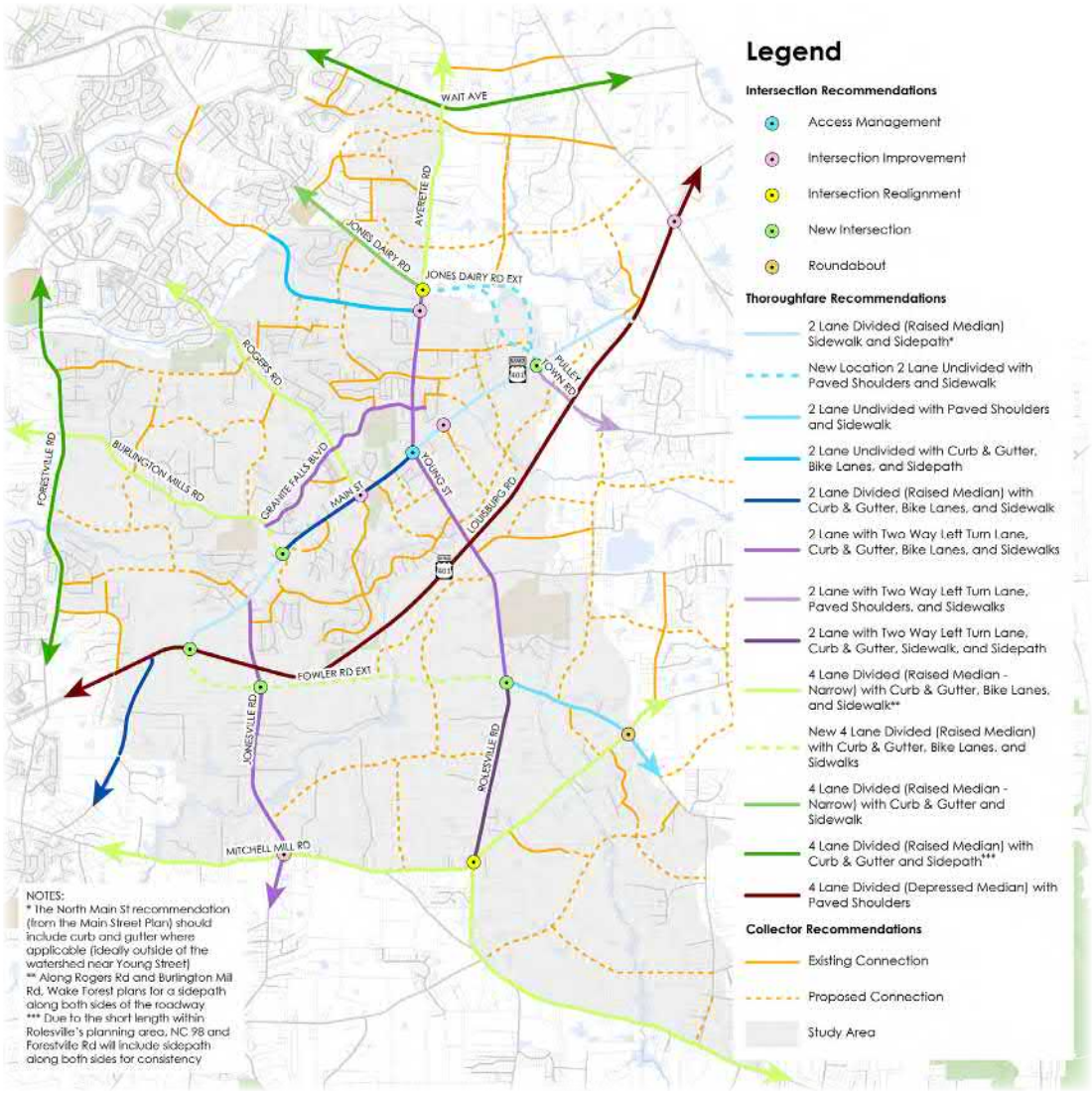
# FUTURE ROADWAYS AND PRIORITIZATION

The *Rolesville Moves Community Transportation Plan (CTP)* includes recommendations for the Proposed Network as shown in the following graphic.

## Town of Rolesville

### Proposed Network

The proposed network combines thoroughfare, collector street, and intersection recommendations to provide a glimpse at the future of mobility in and around the Town of Rolesville. With a variety of multimodal facilities, the proposed network is friendly for all users. The multimodal provisions provide options for active modes of transportation throughout and around the Town of Rolesville. The future of transportation will leverage surrounding land uses and build off of new development or shifting land uses.

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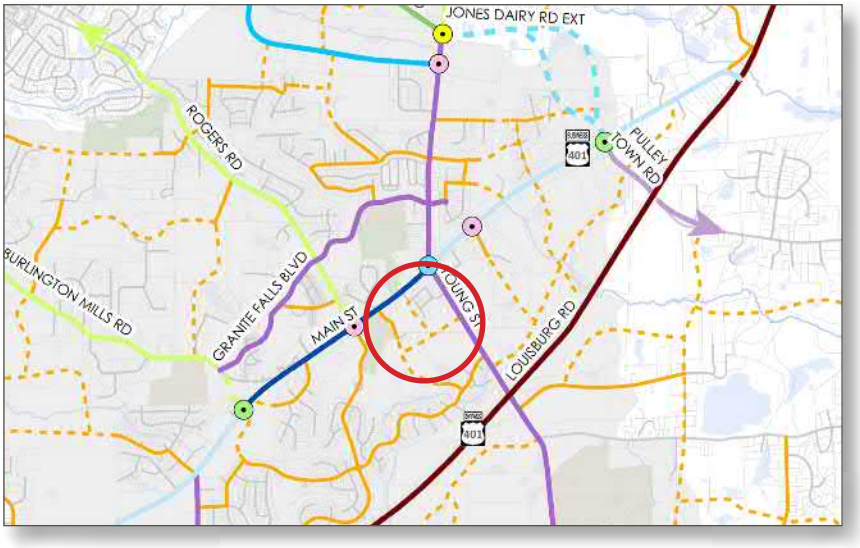
*Rolesville Moves CTP*

The Proposed Network consists of ultimate cross sections for existing roadways as well as new roadways planned for the future. The yellow dashed lines represent these proposed future roadways. The CTP further recommends when each of these network improvements should be constructed. The timeline for the future roadways is categorized by Near Term (0-10 years), Mid-Term (10-20 years), and Long-Term (+20 years). With the Corridor Study analysis year of 2033, most of the future planned roadways in the CTP have a prioritization year beyond our study year. There is currently no funding in place to construct the new roadways except through private development.

In the graphic below, the dashed yellow line, identified within the red circle, represents the new roadway that will be constructed as part of the development process for the Scarboro 201 S. Main Street and Parker Ridge. This new connection is expected to be constructed within the next 10 years. The proposed access on Young Street will connect to Redford Place and South Main Street via Scarboro Property and Parker Ridge. This connection will serve as an alternative route for vehicles traveling northbound on Young Street to travel westbound on South Main Street. Conversely, vehicles traveling eastbound on South Main Street may take advantage of the new roadway connection to travel southbound on Young Street.




*Snippet from CTP Proposed Network Map*

As part of *Rolesville Moves CTP*, the ultimate cross-section recommendations for the existing roadways were identified on the Proposed Network Map. As shown on the Proposed Network Map, the recommended cross sections varied along the Averette Road/Young Street/Rolesville Road Corridor. The *Town of Rolesville Bicycle Plan* also identified recommendations for cross sections along the study corridor. Table 1 provides a concise summary of the recommended CTP and Bicycle Plan typical sections that are along the study corridor. During this study, a few discrepancies between the two recommendations were identified. These varying segments are highlighted in Table 1.

According to Town staff, the Bicycle Plan recommendations should be considered for the future year analysis if different from those in the CTP. These cross sections, along with those recommended for the side streets, were incorporated into one of the future year alternative models as described below.

Table 1: Cross Section Recommendations

| Segment | | CTP Recommendation | Bicycle Plan Recommendation |
|---|---|---|---|
| **Averette Road** | NC 98/Wait Avenue to North of Jones Dairy Road | 4-lane divided (Raised Median – Narrow) with C&G, Bike lanes and Sidewalk | 4-lane divided (Raised Median – Narrow), with C&G, Buffered bike lanes, Sidewalk and Sidepath |
| **Averette Road/ Young Street** | Jones Dairy Road to Main Street | 2-lane with TWLTL, C&G, Bike lanes and Sidewalks | 4-lane divided (Raised Median – Narrow), with C&G, Buffered bike lanes, Sidewalk and Sidepath |
| **Young Street** | Main Street to US 401 Bypass | 2-lane with TWLTL, C&G, Bike lanes and Sidewalks | 2-lane with TWLTL, C&G, Bike lanes, Sidewalk and Sidepath |
| **Young Street** | US 401 Bypass to Rolesville High School Driveway | 2-lane with TWLTL, C&G, Bike lanes and Sidewalks | 2-lane with TWLTL, C&G, Bike lanes, Sidewalk and Sidepath |
| **Rolesville Road** | Rolesville High School Driveway to Fowler Road | 2-lane with TWLTL, C&G, Sidewalk, and Sidepath | 2-lane with TWLTL, C&G, Bike lanes, Sidewalk and Sidepath |
| **Rolesville Road** | Fowler Road to Mitchell Mill Road | 2-lane with TWLTL, C&G, Sidewalk, and Sidepath | 2-lane undivided, C&G, Buffered bike lanes and Sidewalk |
| **Rolesville Road** | South of Mitchell Mill Road | 4-lane divided (Raised Median – Narrow) with C&G, Bike lanes and Sidewalk | - |
| **NC 98/Wait Avenue** | At Averette Road | 4-lane divided (Raised Median) with C&G and Sidepath | - |
| **Jones Dairy Road** | At Averette Road | 4-lane divided (Raised Median- Narrow) with C&G and Sidewalk | - |
| **South Main Street** | West of Young Street | 2-lane divided (Raised Median) with C&G, Bike Lanes, and Sidewalk | 2-lane undivided, C&G, Bike lanes and Sidewalk |
| **North Main Street** | East of Young Street | 2-lane divided (Raised Median), Sidewalk and Sidepath | - |
| **US 401 Bypass** | At Young Street | 4-lane divided (Depressed Median) with Paved Shoulders | - |
| **Mitchell Mill Road** | At Rolesville Road | 4-lane divided (Raised Median – Narrow) with C&G, Bike Lanes, and Sidewalk | - |

# CAPACITY ANALYSIS & ROADWAY RECOMMENDATIONS

The Town's interest is to evaluate the Averette Road/Young Street/Rolesville Road Corridor under existing conditions and future conditions for planning purposes. The corridor study includes the analysis of the roadway segments and key intersections under the following traffic scenarios:

1. **Existing (2023) AM and PM Peak Hour**
2. **Future Year (2033) Alternative 1** (utilizing existing cross sections plus committed roadway improvements with **Scenario 1 Volumes**) AM and PM Peak Hour
3. **Future Year (2033) Alternative 1 with Recommended Improvements** (utilizing existing cross sections plus committed roadway improvements with **Scenario 1 Volumes**) AM and PM Peak Hour with Recommended Improvements
4. **Future Year (2033) Alternative 2** (utilizing existing cross sections plus committed roadway improvements with **Scenario 2 Volumes**/increased potential for re-zoning) AM and PM Peak Hour
5. **Future Year (2033) Alternative 2 with Recommended Improvements** (utilizing existing cross sections plus committed roadway improvements with **Scenario 2 Volumes**/increased potential for re-zoning) AM and PM Peak Hour with Recommended Improvements
6. **Future Year (2033) Alternative 3** (with previously identified *Rolesville Moves* cross sections plus committed roadway improvements with **Scenario 2 Volumes**/increased potential for re-zoning) AM and PM Peak Hour
7. **Future Year (2033) Alternative 3 with Recommended Improvements** (with previously identified *Rolesville Moves* cross sections plus committed roadway improvements with **Scenario 2 Volumes**/increased potential for re-zoning) AM and PM Peak Hour with Recommended Improvements

## Level-Of-Service

Level-of-service (LOS) is a qualitative measurement of traffic operations that is a measure of delay time. The Transportation Research Board's Highway Capacity Manual (HCM) defines six levels of service for intersections with LOS "A" representing the best operating condition and LOS "F" representing the worst. Table 2 summarizes the criteria for signalized intersections and stop-controlled intersections.

Table 2: Highway Capacity Manual (LOS and Delay for Intersections)

| Signalized Intersection | | Stop-Controlled Intersection | |
|---|---|---|---|
| **Level-of-Service (LOS)** | **Average Control Delay (Seconds per Vehicles)** | **Level-of-Service (LOS)** | **Average Control Delay (Seconds per Vehicles)** |
| **A** | ≤ 10.0 | **A** | ≤ 10.0 |
| **B** | > 10.0 and ≤ 20.0 | **B** | > 10.0 and ≤ 15.0 |
| **C** | > 20.0 and ≤ 35.0 | **C** | > 15.0 and ≤ 25.0 |
| **D** | > 35.0 and ≤ 55.0 | **D** | > 25.0 and ≤ 35.0 |
| **E** | > 55.0 and ≤ 80.0 | **E** | > 35.0 and ≤ 50.0 |
| **F** | > 80.0 | **F** | > 50.0 |

Version 11.1 of Synchro Professional software was used to determine the LOS, delay, and expected queue length at the signalized and unsignalized intersections. SimTraffic was also used to determine the maximum queue length experienced at the study intersections. This software is based on the analysis procedures defined in the HCM. For unsignalized intersections, Synchro reports were created using the HCM 6th Edition option for unsignalized intersections. Queue lengths for the turn lanes are shown in the summary tables found in the Appendix. Detailed Synchro and SimTraffic reports are included in the Appendix of this report.

LOS for a two-way stop-controlled (TWSC) intersection is determined by the control delay and is defined for the minor approaches. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. With respect to field measurements, this summation of control delay is defined as the total time elapsed from the time a vehicle stops at the end of the queue to the time the vehicle departs from the stop line. Capacity analysis results between LOS A and LOS C for the minor street stop-controlled approaches are assumed to represent short delays. Results between LOS D and LOS E for the minor street stop-controlled approaches are assumed to represent moderate delays, and LOS F for the minor street stop-controlled approaches is assumed to represent long delays. It is typical for minor street stop-controlled approaches and driveways intersecting major streets to experience long delays during peak hours, particularly for left-turn movements. However, the majority of the traffic moving through the intersection experiences little or no delay on the major street approaches.

For roadway segments, HCM defines the LOS for arterials using the criteria summarized in **Table 3**. Level of service for arterials is dependent on an arterial class of Type I, Type II, or Type III. Type I arterials have free flow speeds of 45-55 mph. Type II arterials have free flow speeds of 35-45 mph. Type III arterials have free flow speeds of 30-35 mph. The LOS for an arterial is based on delays, speeds, and maneuverability. As the segment volume increases, the likeliness of stopping at an intersection increases, and the delay increases.

Table 3: Highway Capacity Manual (LOS for Arterials)

| Level-of-Service (LOS) | Arterial Class (Average Travel Speed (mph) | | |
|---|---|---|---|
| | I | II | III |
| A | >42 | >35 | >30 |
| B | >34-42 | >28-35 | >24-30 |
| C | >27-34 | >22-28 | >18-24 |
| D | >21-27 | >17-22 | >14-18 |
| E | >16-21 | >13-17 | >10-14 |
| F | ≤16 | ≤13 | ≤10 |

## CAPACITY ANALYSIS INPUTS

The following inputs were used for all intersections:

- Peak Hour Factor (PHF) was based on existing count data by intersection for existing scenarios, where available. For future year scenarios, a PHF of 0.90 was used to remain conservative.
- Heavy vehicle (HV%) percentages were based on existing count data by approach for existing scenarios, where available. Heavy vehicle percentages were set to 2% for future year scenarios given the increase in passenger vehicle traffic expected in the study area.
- For allowable movements where zero (0), one (1), two (2), or three (3) volumes are projected, a value of four (4) was used in the Synchro capacity analysis model.
- Right-turns on red were permitted if allowable under existing conditions and if no foreseeable conditions would be present int the future to necessitate restricting right-turns on red, such as sight distance limitations.
- Lost time set to 5 seconds, yellow time set to 5 seconds, and red time set to 2 seconds in future scenarios.
- Enter Blocked Intersection was set to 1 vehicle for all stop-controlled approaches, unless specified otherwise.
- Phasing coded for exclusive left-turn movements was set to existing phasing conditions. The cross-product guidelines in NCDOT's *ITS and Signal Design Manual* were referenced for future phasing conditions.

For future year scenarios, the following input values were used in accordance with NCDOT Congestion Management Capacity Analysis Guidelines and NCDOT's *ITS and Signal Design Manual* for signalized intersections:

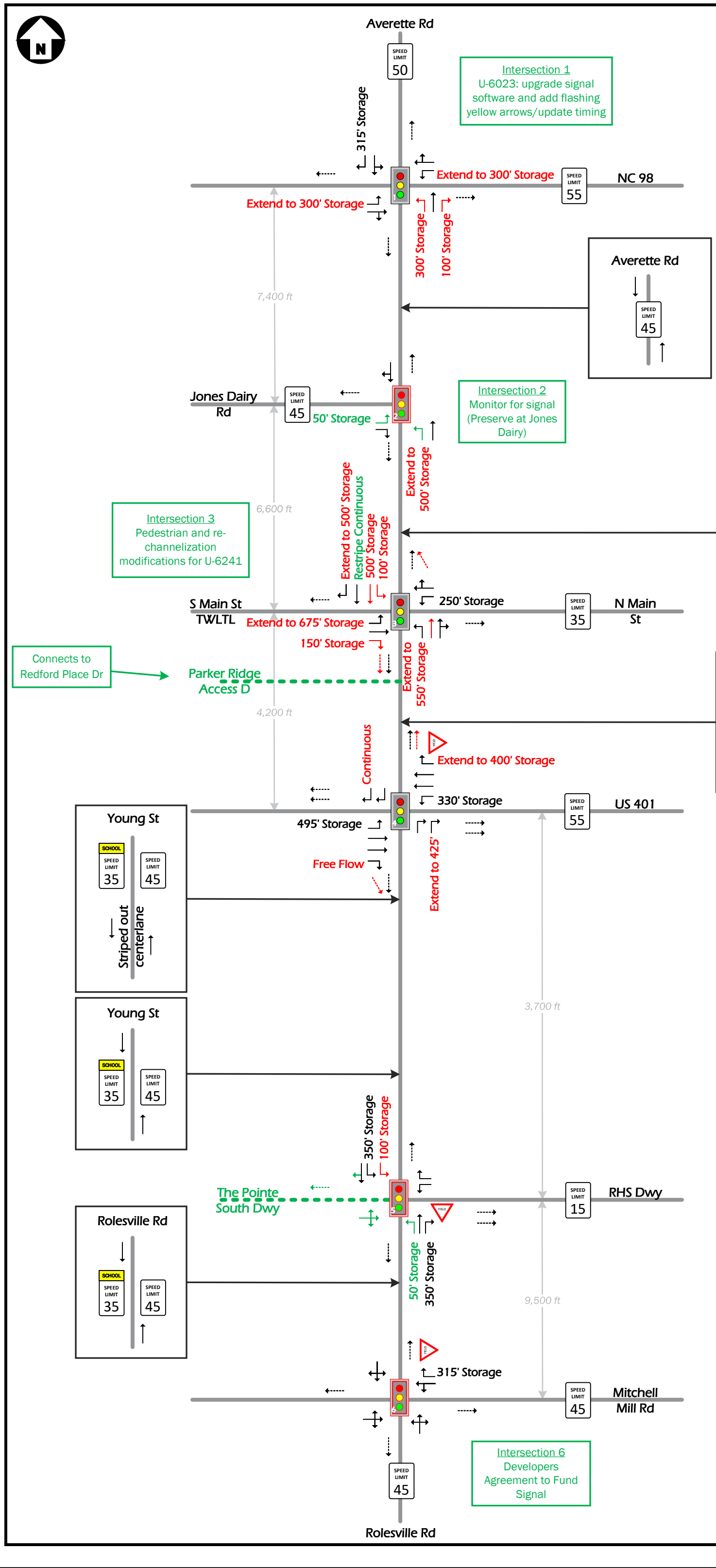
- Cycle length and splits were optimized for future scenarios. NCDOT Congestion Management minimum cycle length recommendations were applied.
- Left-turn treatment for exclusive left-turn lane movements was determined based on NCDOT's *ITS and Signal Design Manual* cross product thresholds:
  - If cross product <50,000, permitted phasing was applied.
  - If cross product >50,000 but < 100,000, permitted+protected phasing was applied.
  - If cross product >100,000, protected phasing was applied.
- In accordance with signal timing and design practices, variations in phasing were allowed at the intersection depending on if cross product thresholds were met. It is our understanding that NCDOT allows for permitted+protected phasing during certain time periods of the day while protected only phasing is observed during other time periods of the day to match fluctuations in traffic volumes.
- Default values for vehicle extension and minimum gap were used.

For unsignalized intersections, queue length for HCM from Synchro is given in terms of number of vehicles. To convert to queue length in feet, an estimated 25'/vehicle was applied.

The following subsections summarize the results for the capacity analysis under the existing and future analysis alternatives. The recommended lane geometries identified in each intersection subsection are shown on the Recommended Lane Geometry figures for each alternative (**Figure 16, Figure 17,** and **Figure 18**).

# Averette Rd, Young St, & Rolesville Rd Corridor Study

## Alternative 1 Recommended Lane Geometry (Scenario 1 Volumes)




**LEGEND**

- Stop Control
- Speed Limit XX
- Signal Control
- XX' Intersection Spacing
- Approach Lane
- Departure Lane
- Committed Improvements by others
- Alternative 1 Recommended Improvements
- Alternative 1 Recommended Signal Control

XX' - FULL STORAGE LENGTH

**Figure 16**

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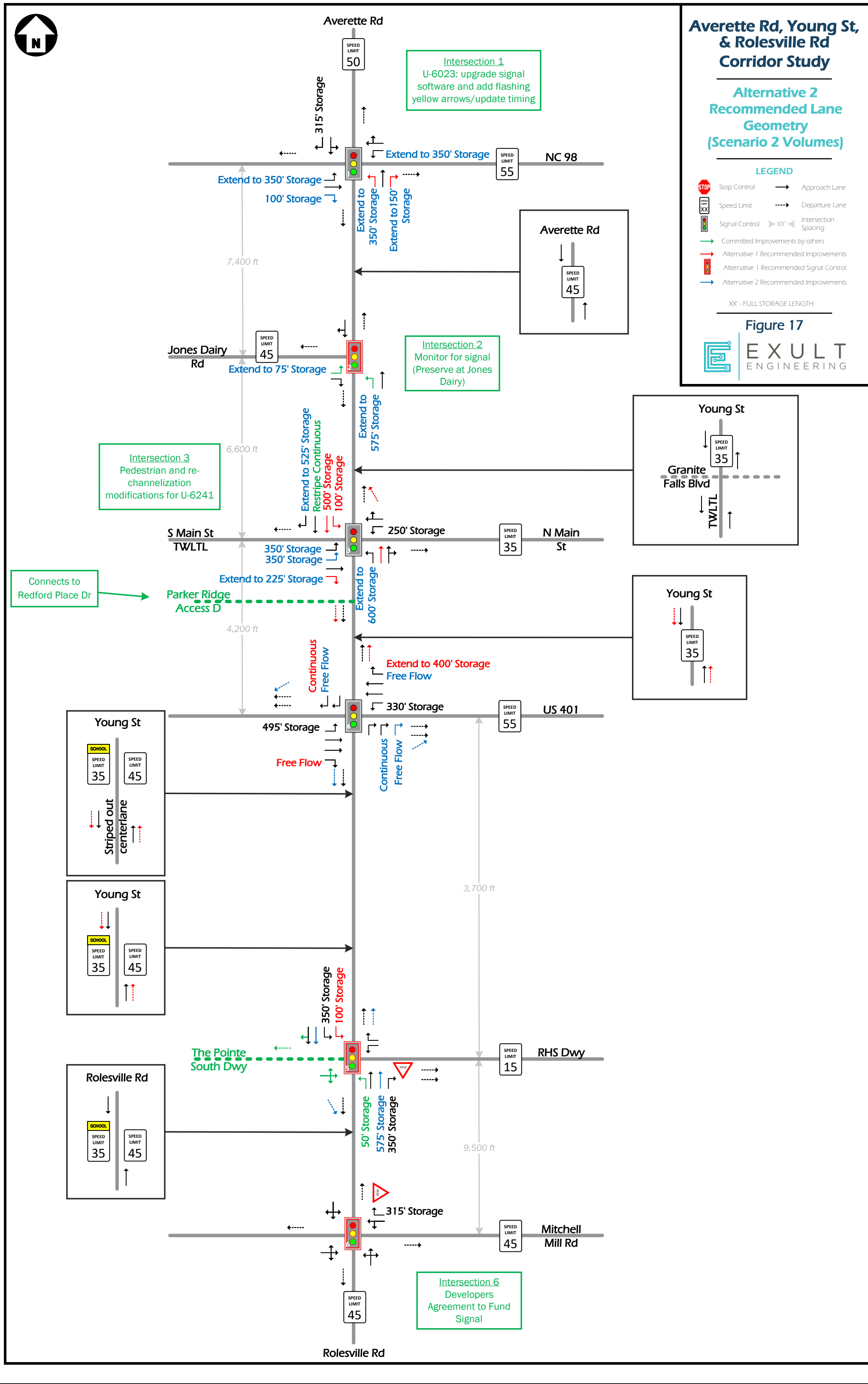
# Averette Rd, Young St, & Rolesville Rd Corridor Study

## Alternative 2 Recommended Lane Geometry (Scenario 2 Volumes)




### LEGEND

- Stop Control
- Speed Limit
- Signal Control
- Approach Lane
- Departure Lane
- XX' Intersection Spacing
- Committed Improvements by others
- Alternative 1 Recommended Improvements
- Alternative 1 Recommended Signal Control
- Alternative 2 Recommended Improvements

XX' - FULL STORAGE LENGTH

**Figure 17**

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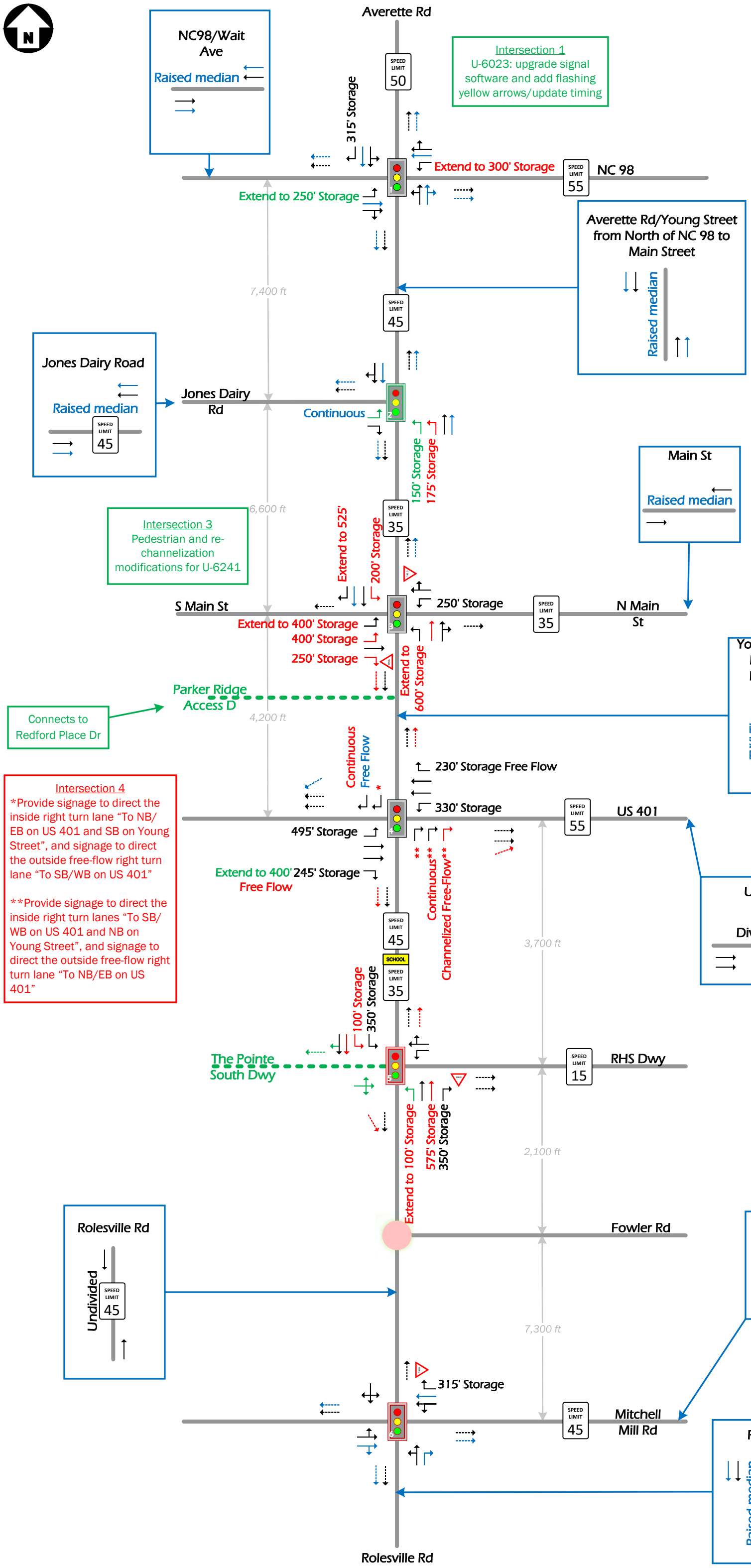
# Averette Rd, Young St, & Rolesville Rd Corridor Study

## Alternative 3
## Existing Lane Geometry + Committed Improvements & "Rolesville Moves"/ Bicycle Plan Cross Sections with Recommended Roadway Improvements (Scenario 2 Volumes)




### LEGEND

- Stop Control
- Approach Lane
- Speed Limit XX
- Departure Lane
- Existing Signal Control
- XX' Intersection Spacing
- Recommended Signal Control (by others)
- Recommended Signal Control
- Committed Improvements by others
- "Rolesville Moves" Recommended Widening
- Additional Roadway Recommendations (Alternative 3 Recommended Improvements)

XX' - FULL STORAGE LENGTH

Not a study intersection

Figure 18

EXULT ENGINEERING

## AVERETTE ROAD AT NC 98/WAIT AVENUE

Averette Road at NC 98/Wait Avenue is currently a four-legged signalized intersection that is isolated. Existing signal plans obtained from NCDOT were used in the 2023 existing analysis scenarios. The signal plans are included in the Appendix of this report.

*Westbound Approach of NC 98/Wait Avenue at Averette Road*

*Southbound Approach of Averette Road at NC 98/Wait Avenue*

*Eastbound Approach of NC 98/Wait Avenue at Averette Road*

*Northbound Approach of Averette Road at NC 98/Wait Avenue*

The capacity analysis results for the signalized intersection under 2023 existing and future 2033 scenarios are summarized in **Table 4** below.

The following improvements were assumed to be in place at the intersection for all future year scenarios:

- Rosedale Development: Construct an exclusive southbound right-turn lane on Averette Road to provide 315 feet of full width storage and appropriate taper. This improvement has already been constructed.
- Rosedale Development: Extend the existing eastbound left-turn lane on NC 98/Wait Avenue to provide 250 feet of full width storage and appropriate taper.
- NCDOT TIP U-6023: Upgrade signal software and add flashing yellow arrows/update signal timing.

As shown in **Table 4** below, the intersection of Averette Road at NC 98/Wait Avenue currently operates at LOS B during the AM peak hour and LOS C during the PM peak hour. Under the 2033 Alternative 1 scenario, the following recommendations are needed to achieve an acceptable LOS D or better:

- Construct an exclusive northbound left-turn lane on Averette Road with 300 feet of storage and appropriate taper.
- Construct an exclusive northbound right-turn lane on Averette Road with 100 feet of storage and appropriate taper.
- Extend the existing exclusive eastbound left-turn lane on NC 98/Wait Avenue to accommodate 300 feet of storage and appropriate taper.
- Extend the existing exclusive westbound left-turn lane on NC 98/Wait Avenue to accommodate 300 feet of storage and appropriate taper.

Under the 2033 Alternative 2 scenario, the following recommendations in addition to those listed above for Alternative 1 are needed to achieve an acceptable LOS D or better:

- Construct an exclusive eastbound right turn lane on Wait Avenue with 100 feet of storage and appropriate taper.*
- Extend the eastbound left turn lane on Wait Avenue to provide 350 feet of storage and appropriate taper.
- Extend the westbound left turn lane on Wait Avenue to provide 350 feet of storage and appropriate taper.
- Extend the exclusive northbound left-turn lane on Averette Road to accommodate 350 feet of storage and appropriate taper.
- Extend the exclusive northbound right-turn lane on Averette Road with 150 feet of storage and appropriate taper.

**It is important to note that with the expected development of the southwest quadrant of this intersection, half the ultimate section will be constructed along the site frontage on the west leg. In addition, the westbound approach will have additional pavement that may be utilized for the construction of the recommended eastbound right-turn lane.*

For Alternative 3 in which the *Rolesville Moves* and *Town of Rolesville Bicycle Plan* recommended cross sections were included, the following improvements were assumed to be in place:

- Additional through lanes in eastbound and westbound directions along NC 98/Wait Avenue to account for 4-lane median divided section.
- Additional through lanes in northbound and southbound directions along Averette Road to account for 4-lane median divided section.

Under the 2033 Alternative 3 scenario, the following recommendations are needed to achieve an acceptable LOS D or better in addition to the ultimate cross sections listed above:

- Extend the existing westbound left turn lane on Wait Avenue to provide 300 feet of full width storage and appropriate taper.

Table 4: Level-of-Service: Averette Road and NC 98 (Wait Avenue) (Signalized)

| Condition | AM Peak<br>LOS and Delay (sec/veh) | PM Peak<br>LOS and Delay (sec/veh) |
|---|---|---|
| **2023 Existing** | B (18.5) | C (24.9) |
| **2033 Alternative 1** | D (50.9) | F (112.0) |
| **2033 Alternative 1 with Improvements** | C (27.5) | D (44.9) |
| **2033 Alternative 2** | E (74.0) | F (162.2) |
| **2033 Alternative 2 with Improvements** | C (29.6) | D (39.9) |
| **2033 Alternative 3** | B (10.4) | C (33.6) |
| **2033 Alternative 3 with Improvements** | B (13.3) | C (33.6) |

With the median planned along Averette Road under the Alternative 3 scenario, exclusive left-turn lanes in the northbound and southbound direction could easily be constructed. While not needed to maintain an acceptable LOS, these turn lanes would increase capacity and enhance safety conditions at the intersection.

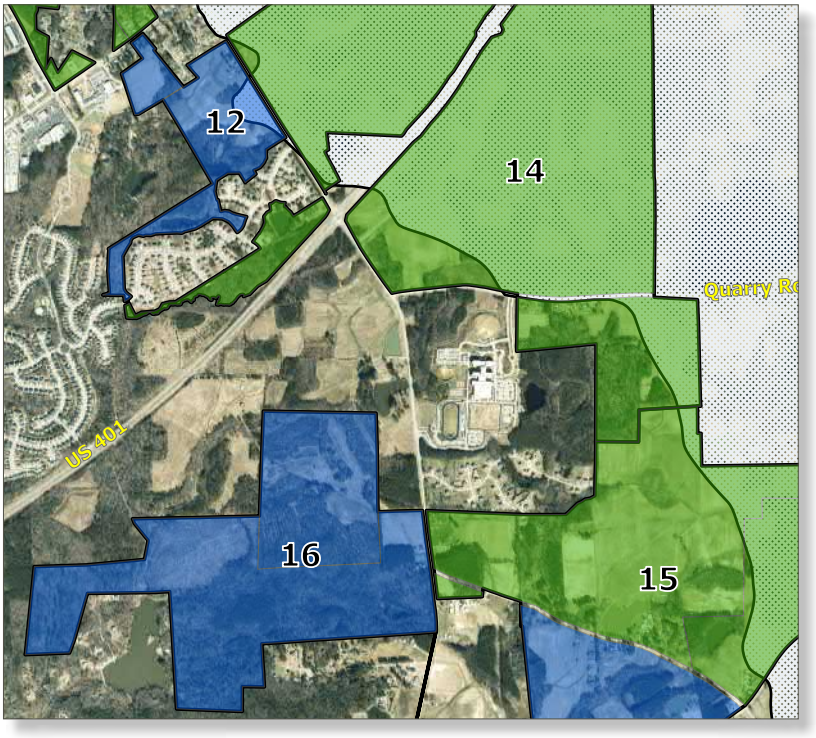
The volume development subareas that most contributed to the need for improvements at this intersection include:

- Sub Area 12:
  - Alternative 1: Medium Density Residential, Town Hall, Police Station, Community Center, Library
  - Alternative 2 & 3: Medium Density Residential, Town Hall, Police Station, Community Center, Library

- Sub Area 15:
  - Alternative 1: Low and Medium Destiny Residential
  - Alternative 2 & 3:Medium Destiny Residential

- Sub Area 16:
  - Alternative 1: Medium Density Residential
  - Alternative 2 & 3: Medium Density Residential, Office

Future developer contributions may be considered to assist in construction of the recommended improvements.




*Subareas Contributing to Averette at 98*

## AVERETTE ROAD AT JONES DAIRY ROAD

Averette Road at Jones Dairy Road is currently a three-legged unsignalized intersection. The eastbound minor street approach (Jones Dairy Road) is stop-controlled while the northbound and southbound major street approaches (Averette Road) are free-flow.

*Eastbound Approach of Jones Dairy Road at Averette Road*

*Southbound Approach of Averette Road at Jones Dairy Road*

*Northbound Approach of Averette Road at Jones Dairy Road*

The capacity analysis results for the signalized intersection under 2023 existing and future 2033 scenarios are summarized in **Table 5** below.

The following improvements were assumed to be in place at the intersection for all future year scenarios:

- The Preserve at Jones Dairy: Construct an exclusive eastbound left-turn lane on Jones Dairy Road to provide 50 feet of full width storage and appropriate taper.
- The Preserve at Jones Dairy: Construct an exclusive northbound left-turn lane on Averette Road to provide 150 feet of full width storage and appropriate taper.
- The Preserve at Jones Dairy: Monitor intersection for warranting installation of traffic signal.

As shown in **Table 5** below, the intersection of Averette Road at Jones Dairy Road currently operates with short delays for the eastbound minor street approach (Jones Dairy Road). Under the 2033 Alternative 1 scenario, the following recommendations are needed to achieve an acceptable LOS D or better:

- Install a traffic signal. Monitoring the intersection for signal warrants was a recommended improvement identified for the Preserve at Jones Dairy development. Based on the future year analysis, the signal is expected to be warranted.
- Extend the committed northbound left-turn lane on Averette Road to provide 500 feet of full width storage and appropriate taper. If development is proposed for the northwest quadrant of this intersection, dual northbound left-turn lanes may be considered instead of a single left-turn lane. The frontage widening requirements for the proposed development would allow for dual receiving lanes.

Under the 2033 Alternative 2 scenario, the following recommendations in addition to those listed above for Alternative 1 are needed to achieve an acceptable LOS D or better:

- Extend the existing eastbound left-turn lane on Jones Dairy Road to provide 75 feet of full width storage and appropriate taper.
- Extend the northbound left-turn lane on Averette Road to provide 575 feet of full width storage and appropriate taper. If development is proposed for the northwest quadrant of this intersection, dual northbound left-turn lanes may be considered instead of a single left-turn lane. The frontage widening requirements for the proposed development would allow for dual receiving lanes.

For Alternative 3 in which the *Rolesville Moves* and *Town of Rolesville Bicycle Plan* recommended cross sections were included, the following additional improvements were assumed to be in place:

- Additional through lane in eastbound direction along Jones Dairy Road to account for 4-lane median divided section. The additional lane will drop as the eastbound left-turn lane.
- Additional through lanes in northbound and southbound directions along Averette Road to account for 4-lane median divided section.

**It is important to note the Rolesville Moves Community Transportation Plan includes a new roadway planned for the future that will serve as the fourth (east) leg to this intersection. However, there currently is no funding in place or proposed development to construct this roadway and therefore, it was not included in the future year scenarios.*

Under the 2033 Alternative 3 scenario, the following recommendations are needed to achieve an acceptable LOS D or better in addition to the ultimate cross sections listed above:

- Install a traffic signal. Monitoring the intersection for signal warrants was a recommended improvement identified for the Preserve at Jones Dairy development. Based on the future year analysis, the signal will be warranted.
- Construct a second exclusive northbound left turn lane on Averette Road with 175 feet of full width storage and appropriate taper.

Table 5: Level-of-Service: Jones Dairy Road and Averette Road (Unsignalized and Signalized)

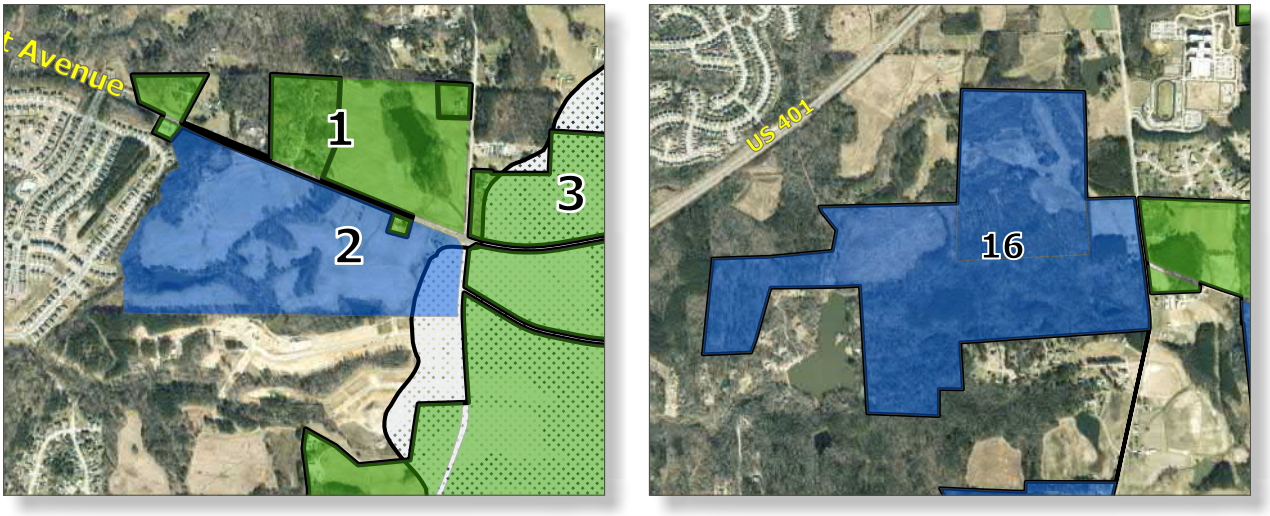
| Condition | AM Peak<br>LOS and Delay (sec/veh) | PM Peak<br>LOS and Delay (sec/veh) |
|---|---|---|
| **2023 Existing** | EB - C (21.2) | EB - C (20.3) |
| **2033 Alternative 1** | EB - F (154.9) | EB - F (188) |
| **2033 Alternative 1 with Improvements** | C (24.0) | C (22.0) |
| **2033 Alternative 2** | EB - F (286.4) | EB - F (580) |
| **2033 Alternative 2 with Improvements** | C (28.4) | C (32.1) |
| **2033 Alternative 3** | EB - F (75.6) | EB - F (279.6) |
| **2033 Alternative 3 with Improvements** | B (14.2) | B (14.3) |

The volume development subareas that most contributed to the need for improvements at this intersection include:

- Sub Area 2:
  - Alternative 1: Medium Density Residential
  - Alternative 2 & 3: Medium Density Residential, Retail

- Sub Area 16:
  - Alternative 1: Medium Density Residential
  - Alternative 2 & 3: Medium Density Residential, Office

Future developer contributions may be considered to assist in construction of the recommended improvements.




*Subareas Contributing to Averette at Jones Dairy*

## YOUNG STREET AT SOUTH MAIN STREET/NORTH MAIN STREET

Young Street at South Main Street/North Main Street is currently a four-legged signalized intersection that is part of the US 401 Closed Loop System. Existing signal plans obtained from NCDOT were used in the 2023 existing analysis scenarios. The signal plans are included in the Appendix of this report.

*Westbound Approach of N Main Street at Young Street*

*Southbound Approach of Young Street at S Main Street/N Main Street*

*Eastbound Approach of S Main Street at Young Street*

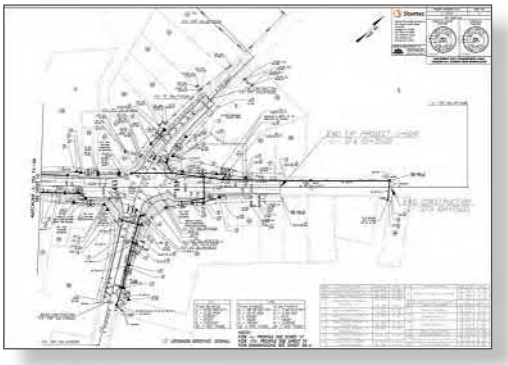
*Northbound Approach of Young Street at S Main Street/N Main Street*

The capacity analysis results for the signalized intersection under 2023 existing and future 2033 scenarios are summarized in **Table 6** below.

The following improvements were assumed to be in place at the intersection for all future year scenarios:

- NCDOT TIP U-6241: Provide an exclusive southbound right-turn lane on Young Street to provide 200 feet of full width storage and appropriate taper and a shared through/left-turn lane with continuous storage.

**It is important to note that on-street parking will also be added to the north and west legs of the intersection as part of the Cobblestone Development. The potential disruptions caused by on-street parking maneuvers were accounted for in all future capacity analysis models.*



*NCDOT TIP U-6241*

As shown in **Table 6** below, the intersection of Young Street at North Main Street/South Main Street currently operates at LOS B during the AM peak hour and LOS C during the PM peak hour. Under the 2033 Alternative 1 scenario, the following recommendations are needed to achieve an acceptable LOS D:

- Construct an exclusive eastbound right-turn lane on South Main Street with 150 feet of full width storage and appropriate taper.
- Construct an exclusive southbound left-turn lane on Young Street with 100 feet of full width storage and appropriate taper.
- Construct a second northbound through lane on Young Street to terminate 500 feet north of the intersection.
- Construct a second southbound through lane on Young Street that starts 500 feet north of the intersection.
- Extend the existing exclusive eastbound left-turn lane on South Main Street to accommodate 675 feet of full width storage and appropriate taper. Due to the length needed to accommodate the anticipated queue for the eastbound left-turn lane and because there are dual receiving lanes recommended on the north leg of the intersection, consideration may be given to constructing dual eastbound left-turn lanes instead of a single left-turn lane, if feasible.
- Extend the existing northbound left-turn lane on Young Street to accommodate 550 feet of full width storage and appropriate taper.
- Extend the existing southbound right-turn lane on Young Street to accommodate 500 feet of full width storage and appropriate taper.

Under the 2033 Alternative 2 scenario, the following recommendations are needed in addition to those listed above for Alternative 1 to achieve an acceptable LOS D:

- Construct a second exclusive eastbound left-turn lane on South Main Street with 350 feet of full width storage each and appropriate taper.
- Extend the existing eastbound left turn lane on Main Street to accommodate 350 feet of full width storage and appropriate taper.
- Extend the existing northbound left-turn lane on Young Street to provide 600 feet of full width storage and appropriate taper.
- Extend the eastbound right-turn lane on Young Street to provide 225 feet of full width storage and appropriate taper.
- Extend the southbound right-turn lane on Young Street to provide 525 feet of full width storage and appropriate taper.

For Alternative 3 in which the *Rolesville Moves* and *Town of Rolesville Bicycle Plan* recommended cross sections were included, the following additional improvements were assumed to be in place:

- Additional through lanes for the northbound departure and southbound approach along Young Street to account for 4-lane median divided section. The additional southbound lane will drop as the southbound right-turn lane.
- The addition of a two-way left-turn lane on the south leg of the intersection.

Under the 2033 Alternative 3 scenario, the following recommendations are needed to achieve an acceptable LOS D in addition to the ultimate cross sections listed above:

- Construct a second exclusive eastbound left turn lane on Main Street to provide 400 feet of full width storage and appropriate taper.
- Extend the existing eastbound left turn lane on Main Street to accommodate 400 feet of full width storage and appropriate taper.
- Construct an exclusive eastbound right turn lane on Main Street to provide 250 feet of full width storage and appropriate taper.
- Extend the existing northbound left turn lane on Young Street to accommodate 600 feet of full width storage and appropriate taper.
- Construct an exclusive southbound left turn lane on Young Street to provide 200 feet of full width storage and appropriate taper.
- Extend the exclusive southbound right turn lane on Young Street to accommodate 525 feet of full width storage and appropriate taper.
- Construct an additional northbound continuous through lane on Young Street (beginning south of RHS)
- Construct an additional continuous southbound receiving lane on Young Street (terminating south of RHS)

The *Town of Rolesville Main Street Vision Plan* (2018) highlights the Town's priorities to allow for on-street parking, promote urban design, and provide pedestrian and bicycle facilities at the intersection. The traditional intersection configuration was determined to be the preferred design to achieve a vehicular LOS D, over a roundabout alternative, during the planning process. Due to the location of existing commercial buildings surrounding the intersection, the constructability of the improvements recommended within this study may need to be further evaluated. However, if redevelopment along the corridor occurs at this intersection, there will be opportunity to provide the right-of-way for these necessary improvements.

## ALTERNATIVE ROUTES/CTP CONNECTIONS

Aside from providing additional capacity through roadway improvements at the intersection, alternative routes or "loop roads" may bring relief to the delay experienced at the intersection. These alternative routes will need to be easily accessible and promote continuous traffic flow (limited stops/delays, wider streets, etc.). As shown on the *Proposed Network Map* within the CTP, a proposed access on Young Street will connect to Redford Place and South Main Street via Scarboro Property and Parker Ridge. This connection may prove beneficial for those vehicles traveling northbound on Young Street to turn left onto South Main Street and for those vehicles traveling eastbound on South Main Street to turn right onto Young Street. For example, given the projected volumes for Alternative 2, if approximately 100 northbound left-turning vehicles from Young Street onto South Main Street instead utilize the proposed connection, the required storage length for the northbound left-turn lane is reduced by approximately 200 feet. It is important to note that the Redford Place intersection with South Main Street was not included in this study area and therefore it is unknown how much capacity will be available at that intersection in future years.

The following recommended new roadways shown on the *Proposed Network Map* will help improve overall east-west connectivity and provide relief for the heavy-volume movements at the intersection of Young Street at Main Street (as well as the intersection of Young Street at US 401 Bypass):

- Granite Falls Boulevard Extension from Grand Rock Way to Burlington Mills Extension (Near-Term Prioritization)
- Proposed East-West Collector west of the corridor connecting Quarry Road to Fowler Road Extension
- Proposed East-West Collector west of the corridor connecting Rolesville Road to Jonesville Road
- Fowler Road Extension (Long-Term Prioritization)

Other proposed connections that will help overall traffic conditions at these intersections and provide alternative routes to the east, but do not necessarily lessen the heavy-volume directional demand include:

- Jones Dairy Road Extension (Mid-Term Prioritization)
- Proposed East-West Collector east of the corridor connecting Young Street to Main Street

Virginia Water Drive provides an east-west connection from the corridor through Cedar Lakes, Villages of Rolesville, and the Carlton Pointe Subdivision to access Jonesville Road. However, this roadway is not suited for higher traffic volumes due to the lower posted speed limit, numerous residential driveways, and non-direct nature of the route. To promote desirability of the future east-west planned roadways, factors such as speed limit, alignment, connectivity to major roadways, and limited access should be considered.

Table 6: Level-of-Service: US 401 (Main Street) and Young Street (Signalized)

| Condition | AM Peak<br>LOS and Delay (sec/veh) | PM Peak<br>LOS and Delay (sec/veh) |
|---|---|---|
| **2023 Existing** | C (25.5) | C (24.5) |
| **2033 Alternative 1** | E (74.5) | F (133.4) |
| **2033 Alternative 1 with Improvements** | D (44.9) | D (54.3) |
| **2033 Alternative 2** | F (98.7) | F (298.5) |
| **2033 Alternative 2 with Improvements** | D (46.6) | D (43.3) |
| **2033 Alternative 3** | F (102.5) | F (298.5) |
| **2033 Alternative 3 with Improvements** | D (48.1) | D (43.3) |

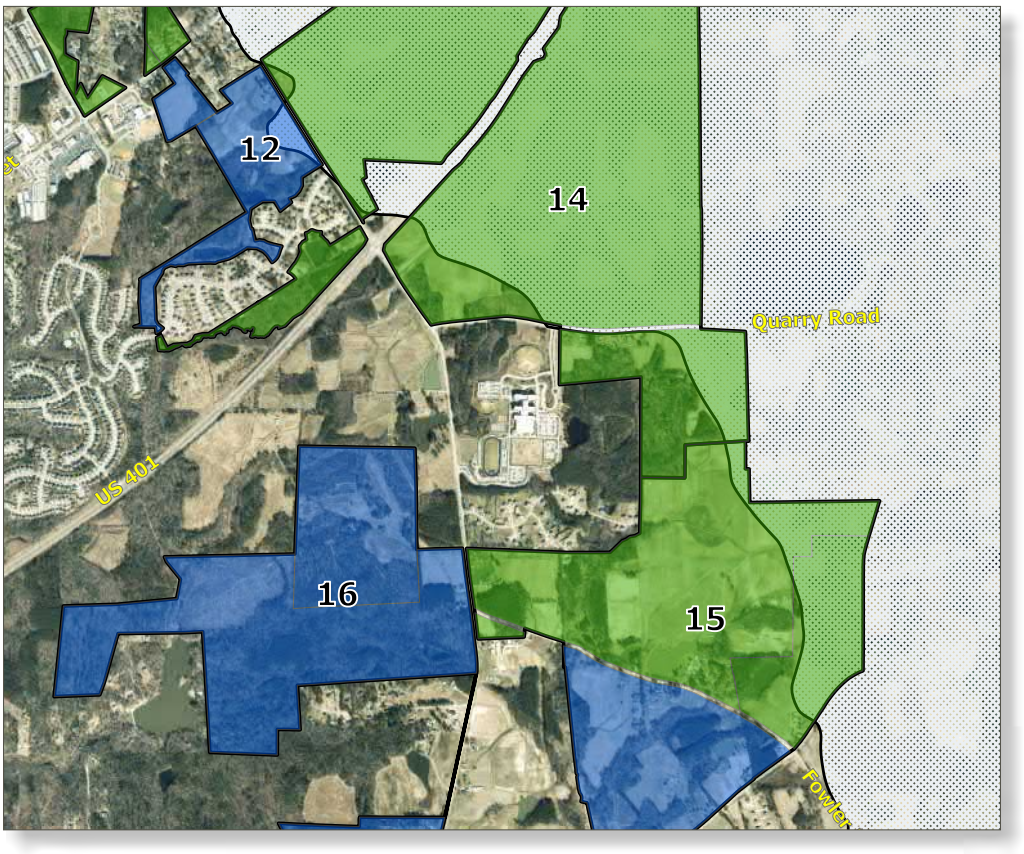
The volume development subareas that most contributed to the need for improvements at this intersection include:

- Sub Area 12:
  - Alternative 1: Medium Density Residential, Town Hall, Police Station, Community Center, Library
  - Alternative 2 & 3: Medium Density Residential, Town Hall, Police Station, Community Center, Library

- Sub Area 15:
  - Alternative 1: Low and Medium Destiny Residential
  - Alternative 2 & 3:Medium Destiny Residential

- Sub Area 16:
  - Alternative 1: Medium Density Residential
  - Alternative 2 & 3: Medium Density Residential, Office

Future developer contributions may be considered to assist in construction of the recommended improvements.




*Subareas Contributing to Young and Main*

## YOUNG STREET AT US 401 BYPASS

Young Street at US 401 Bypass is currently serves as the central signalized intersection of the Reduced Conflict Intersection (RCI) or "superstreet." Existing signal plans obtained from NCDOT were used in the 2023 existing analysis scenarios. The signal plans are included in the Appendix of this report. For analysis purposes, this intersection was modeled as two separate signalized intersections to best represent field operations. For purposes of this study, Young Street was designated as the northbound/southbound route while US 401 Bypass was designated as the eastbound/westbound route.

*Westbound Approach of US 401 Bypass at Young Street*

*Southbound Approach of Young Street at US 401 Bypass*

*Eastbound Approach of US 401 Bypass at Young Street.*

*Northbound Approach of Young Street at US 401 Bypass*

The capacity analysis results for the signalized intersection under 2023 existing and future 2033 scenarios are summarized in Table 7 below.

The following improvements were assumed to be in place at the intersection for all future year scenarios:

- The Point: Extend the existing eastbound right-turn lane on US 401 Bypass to provide 400 feet of full width storage and appropriate taper.

As shown in Table 7 below, the intersection of Young Street (North Leg) at US 401 Bypass currently operates at LOS C during the AM peak hour and LOS A during the PM peak hour. Under the 2033 Alternative 1 scenario, the following recommendations are needed to achieve an acceptable LOS D or better:

- Extend the existing exclusive westbound right-turn lane on US 401 to accommodate 400 feet of full width storage and appropriate taper.
- Extend the existing southbound right-turn lane on Young Street to provide continuous storage.

Under the 2033 Alternative 2 scenario, the following recommendations in addition to those listed above for Alternative 1 are needed to achieve an acceptable LOS D or better:

- Extend the outside existing southbound right turn lane on Young Street to provide continuous storage. Construct this lane as a median divided, channelized free-flow lane to US 401.
- Provide signage to direct the inside right turn lanes "To NB/EB on US 401 and SB on Young Street", and signage to direct the outside free-flow right turn lane "To SB on US 401."
- Construct a second northbound receiving lane on Young Street to allow for a westbound right channelized free-flow movement.

In addition, for Alternative 3 in which the *Rolesville Moves* and *Town of Rolesville Bicycle Plan* recommended cross sections were included, the following additional improvements were assumed to be in place:

- Pavement to provide for a 3-lane section on the north and south legs of the intersection (Young Street).

Under the 2033 Alternative 3 scenario, the following recommendations are needed to achieve an acceptable LOS D at the intersection of Young Street (North Leg) at US 401 Bypass in addition to the ultimate cross section listed above:

- Extend the outside existing southbound right turn lane on Young Street to provide continuous storage. Construct this lane as a median divided, channelized free-flow lane to US 401.
- Provide signage to direct the inside right turn lanes "To NB/EB on US 401 and SB on Young Street", and signage to direct the outside free-flow right turn lane "To SB/WB on US 401."
- Construct a second northbound receiving lane on Young Street to allow for a westbound right channelized free-flow movement.

Table 7: Level-of-Service: WB US 401 Bypass at North Leg of Young Street (Signalized)

| Condition | AM Peak<br>LOS and Delay (sec/veh) | PM Peak<br>LOS and Delay (sec/veh) |
|---|---|---|
| **2023 Existing** | B (19.3) | A (6.7) |
| **2033 Alternative 1** | D (41.4) | C (28.6) |
| **2033 Alternative 1 with Improvements** | D (38.2) | C (24.0) |
| **2033 Alternative 2** | E (74.8) | E (63.9) |
| **2033 Alternative 2 with Improvements** | D (49.5) | B (14.9) |
| **2033 Alternative 3** | E (74.6) | E (63.9) |
| **2033 Alternative 3 with Improvements** | D (49.5) | B (14.9) |

As shown in Table 8 on the following page, the intersection of Young Street (South Leg) at US 401 Bypass currently operates at LOS A during the AM and PM peak hours. Under the 2033 Alternative 1 scenario, the following recommendations are needed to achieve an acceptable LOS D or better:

- Reconfigure the existing eastbound right-turn lane on US 401 Bypass to allow for a free-flow movement on to Young Street.
- Construct a second southbound through receiving lane on Young Street to terminate at Quarry Road.
- Extend the existing northbound right-turn lane on Young Street to provide 425 feet of full width storage and appropriate taper.

Under the 2033 Alternative 2 scenario, the following recommendations in addition to those listed above for Alternative 1 are needed to achieve an acceptable LOS D:

- Extend the outside existing northbound right turn lane on Young Street to provide continuous storage.
- Provide a third, median divided, channelized free flow northbound right turn lane on Young Street. Construct an additional eastbound receiving lane on US 401 to terminate at the U-turn east of Young Street.
- Provide signage to direct the inside right turn lanes "To SB/WB on US 401 and NB on Young Street", and signage to direct the outside free-flow right turn lane "To NB on US 401."
- Construct a second southbound receiving lane on Young Street to allow for an eastbound right channelized free-flow movement.

Table 8: Level-of-Service: EB US 401 Bypass at South Leg of Young Street (Signalized)

| Condition | AM Peak<br>LOS and Delay (sec/veh) | PM Peak<br>LOS and Delay (sec/veh) |
|---|---|---|
| **2023 Existing** | A (6.9) | A (6.2) |
| **2033 Alternative 1** | D (54.3) | F (125.9) |
| **2033 Alternative 1 with Improvements** | B (12.6) | B (19.9) |
| **2033 Alternative 2** | F (179.4) | F (258.8) |
| **2033 Alternative 2 with Improvements** | B (14.2) | D (54.9) |
| **2033 Alternative 3** | F (179.4) | F (252.7) |
| **2033 Alternative 3 with Improvements** | B (14.2) | D (54.9) |

Under the 2033 Alternative 3 scenario, the following recommendations are needed to achieve an acceptable LOS D at the intersection of Young Street (South Leg) at US 401 Bypass in addition to the ultimate cross section listed above:

- Extend the outside existing northbound right turn lane on Young Street to provide continuous storage.
- Provide a third, median divided, channelized free flow northbound right turn lane on Young Street. Construct an additional eastbound receiving lane on US 401 to terminate at the U-turn east of Young Street.
- Provide signage to direct the inside right turn lanes "To SB/WB on US 401 and NB on Young Street", and signage to direct the outside free-flow right turn lane "To NB/EB on US 401."
- Construct a second southbound receiving lane on Young Street to allow for an eastbound right channelized free-flow movement.

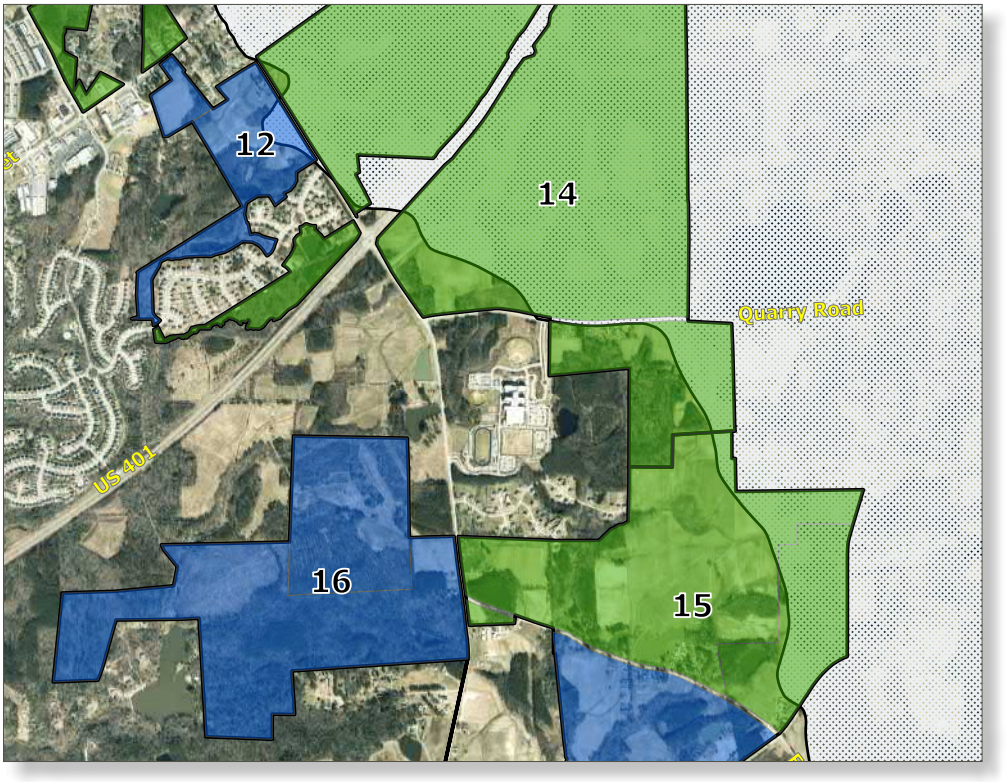
The volume development subareas that most contributed to the need for improvements at this intersection include:

- Sub Area 12:
  - Alternative 1: Medium Density Residential, Town Hall, Police Station, Community Center, Library
  - Alternative 2 & 3: Medium Density Residential, Town Hall, Police Station, Community Center, Library

- Sub Area 15:
  - Alternative 1: Low and Medium Destiny Residential
  - Alternative 2 & 3:Medium Destiny Residential

- Sub Area 16:
  - Alternative 1: Medium Density Residential
  - Alternative 2 & 3: Medium Density Residential, Office

Future developer contributions may be considered to assist in construction of the recommended improvements.




*Subareas Contributing to Young at US 401*

The Town values pedestrian and bicycle connections throughout the roadway network. Recent improvements have been constructed at this intersection to upgrade pedestrian facilities. However, in order to achieve an acceptable level-of-service for the projected vehicular volume at the intersection, free-flow right-turn movements are necessary. Free-flow movements inhibit the ability for pedestrian and bicycles to cross the intersection safely. If free-flow movements are constructed in the future to address vehicular capacity concerns, alternative means should be considered to complete the desired pedestrian and bicycle connections. Specifically, a pedestrian bridge may be needed to provide a safe crossing for these alternative modes.

If the Town determines that the level-of-service threshold can be sacrificed in order to maintain the planned pedestrian and bicycle crossing, further evaluation of the intersection recommendations will be necessary. Based on a preliminary analysis of the intersection under future conditions without consideration of free-flow right-turn movements, the following improvements, at a minimum, would be necessary to maximize capacity at the intersection:

- Triple southbound right-turn lanes on Young Street
- Dual eastbound right-turn lanes on US 401
- Triple northbound right-turn lanes on Young Street

Even with the intersection built-out with the above lane geometry, the intersection is not projected to operate at the level-of-service threshold (LOS D) as defined by the Town.

## YOUNG STREET AT ROLESVILLE HIGH SCHOOL DRIVEWAY

Young Street at Rolesville High School Driveway is currently a three-legged unsignalized intersection. The westbound minor street approach (Rolesville High School Driveway) is stop-controlled while the northbound and southbound major street approaches (Young Street) are free-flow.

*Westbound Approach of Rolesville High School Driveway at Young Street*

*Southbound Approach of Young Street at Rolesville High School Driveway*

*Ingress Configuration of Rolesville High School Driveway at Young Street*

*Northbound Approach of Young Street at Rolesville High School Driveway*

The MSTA study currently being performed at Rolesville High School will also address school peak hour deficiencies related to operation at the school driveway, internal circulation, and stacking concerns. Recommendations from the study may impact access and corridor recommendations. However, for purposes of this corridor analysis, it was assumed the access would remain as it is today. Based on public announcement information that was not available when the corridor analysis was performed, the school access to Quarry Road will be used for student drop-off during the AM peak hour. However, the improvements recommended in this study are needed to improve operations during the PM peak hour, not just the AM peak hour. The MSTA study should be referenced in conjunction with this corridor study to determine ultimate improvement recommendations at this intersection.

The capacity analysis results for the signalized intersection under 2023 existing and future 2033 scenarios are summarized in **Table 9** below.

The following improvements were assumed to be in place at the intersection for all future year scenarios:

- The Point: Construct The Point South Site Driveway as the west leg of the intersection and provide one ingress and one egress lane. The eastbound approach will be stop controlled.
- The Point: Construct an exclusive northbound left-turn lane on Young Street to provide 50 feet of full width storage and appropriate taper.

As shown in **Table 9** below, the intersection of Young Street at Rolesville High School Driveway currently operates with long delays during the AM peak hour and short delays during the PM peak hour for the westbound minor street approach (Rolesville High School Driveway). Under the 2033 Alternative 1 scenario, the following recommendations are needed to achieve an acceptable LOS D or better:

- Install a traffic signal due to volumes satisfying peak hour signal warrant. This improvement should be re-evaluated if school traffic is re-routed to use Quarry Road as a result of the MSTA school study.
- Construct a second exclusive southbound left-turn lane on Young Street with 100 feet of full width storage and appropriate taper. Reconfigure the ingress lanes to the High School to accommodate the second lane of southbound traffic.
- Reconfigure the northbound right-turn lane on Young Street with yield control.

Under the 2033 Alternative 2 scenario, the following recommendations in addition to those listed above for Alternative 1 are needed to achieve an acceptable LOS D or better:

- Construct a second northbound through lane on Young Street to begin 575 feet south of the intersection.
- Construct a second southbound through lane on Young Street to terminate 575 feet south of the intersection.

For Alternative 3 in which the *Rolesville Moves* and *Town of Rolesville Bicycle Plan* recommended cross sections were included, the following additional improvements were assumed to be in place:

- Pavement to provide for a 3-lane section on the north and south legs of the intersection (Young Street).

Under the 2033 Alternative 3 scenario, the following recommendations are needed to achieve an acceptable LOS D in addition to the ultimate cross sections listed above:

- Install a traffic signal due to volumes satisfying peak hour signal warrant. This improvement should be re-evaluated if school traffic is re-routed to use Quarry Road as a result of the MSTA school study.
- Construct a second exclusive southbound left turn lane on Young Street with 100 feet of full width storage and appropriate taper.
- Extend the northbound left turn lane to provide 100’ of storage and appropriate taper.
- Construct an additional northbound through lane on Young Street, starting 575 feet south the intersection.
- Construct an additional southbound through lane on Young Street, terminating 575 feet south of the intersection.

Table 9: Level-of-Service: Rolesville High School Entrance and Young Street (Unsignalized and Signalized)

| Condition | AM Peak<br>LOS and Delay (sec/veh) | PM Peak<br>LOS and Delay (sec/veh) |
|---|---|---|
| **2023 Existing** | WB - F (197.7) | WB - C (16.1) |
| **2033 Alternative 1** | WB - F (4017.9)<br>EB - Not Reported | WB - F (1375.4)<br>EB - F (1892.5) |
| **2033 Alternative 1 with Improvements** | C (27.7) | C (25.2) |
| **2033 Alternative 2** | Approach Delay Not Reported | WB - F (12211.5)<br>EB - Not Reported |
| **2033 Alternative 2 with Improvements** | B (19.5) | B (19.5) |
| **2033 Alternative 3** | Approach Delay Not Reported | WB - F (12211.5)<br>EB - Not Reported |
| **2033 Alternative 3 with Improvements** | B (19.5) | B (19.5) |

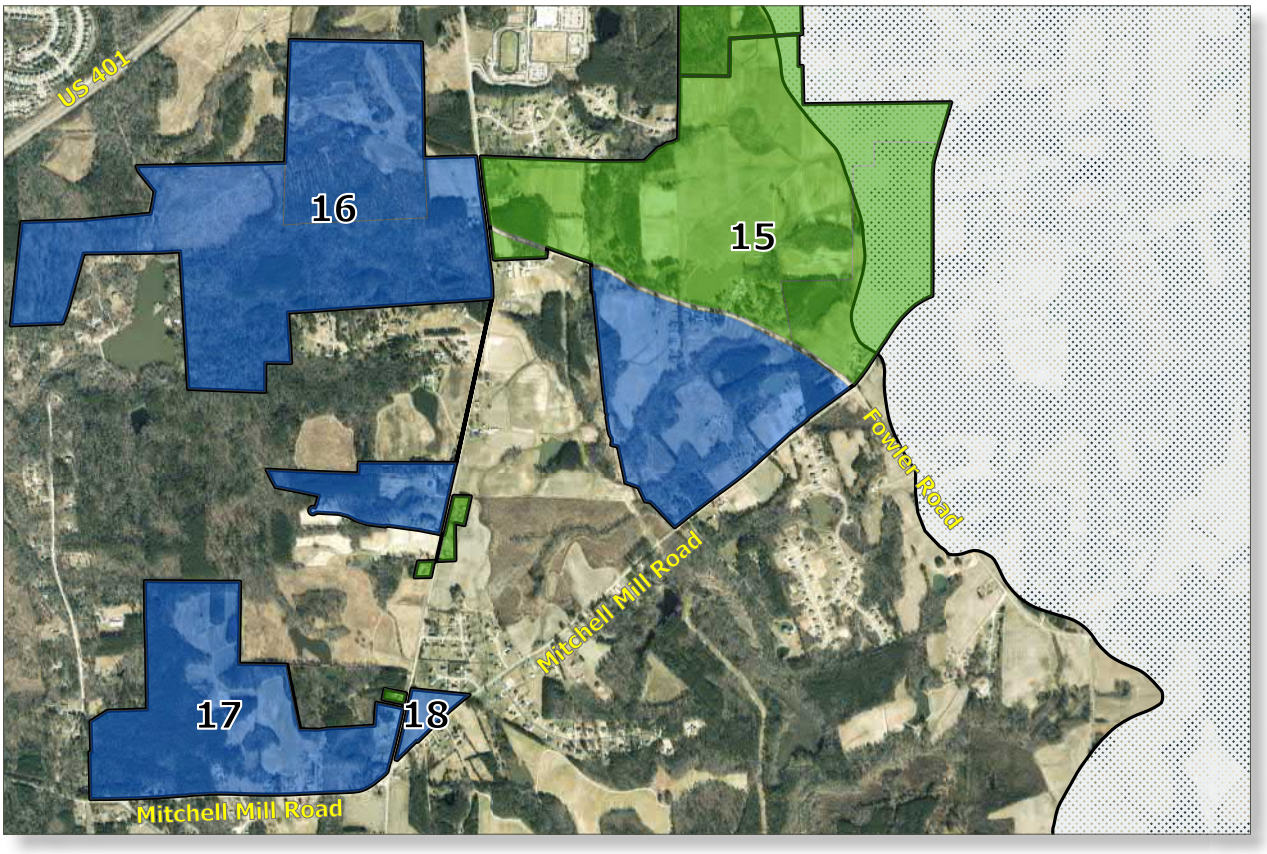
The volume development subareas that most contributed to the need for improvements at this intersection include:

- Sub Area 15:
  - Alternative 1: Low and Medium Destiny Residential
  - Alternative 2 & 3:Medium Destiny Residential

- Sub Area 16:
  - Alternative 1: Medium Density Residential
  - Alternative 2 & 3: Medium Density Residential, Office

- Sub Area 17:
  - Alternative 1: Medium Density Residential
  - Alternative 2 & 3: Medium Density Residential, Gas Station

Future developer contributions may be considered to assist in construction of the recommended improvements.




*Subareas Contributing to Young at RHS*

## ROLESVILLE ROAD AT MITCHELL MILL ROAD

Rolesville Road at Mitchell Mill Road is currently a four-legged unsignalized intersection with all approaches operating under stop-control.


*Westbound Approach of Mitchell Mill Road at Rolesville Road*

*Southbound Approach of Rolesville Road at Mitchell Mill Road*


*Eastbound Approach of Mitchell Mill Road at Rolesville Road*


*Northbound Approach of Rolesville Road at Mitchell Mill Road*

The capacity analysis results for the signalized intersection under 2023 existing and future 2033 scenarios are summarized in **Table 10** below.

The following improvements were assumed to be in place at the intersection for all future year scenarios:

- Developers' Agreement from Various Proposed Developments to fund traffic signal when warranted. This improvement was included in the "with recommendations" scenarios to show the impact of the improvement on the operation at the intersection.

As shown in **Table 10** below, the intersection of Rolesville Road at Mitchell Mill Road currently operates with short delays during the AM and PM peak hours for all approaches. Under the 2033 Alternative 1 scenario, the following recommendations are needed to achieve an acceptable LOS D or better:

- Install a traffic signal. A Developer's Agreement is in place for contributions towards signalizing this intersection. Based on the future year analysis, the signal will be warranted.

It is important to note that with the expected development of the northwest quadrant and northeast quadrants of this intersection, the north leg ultimate section will be constructed along the site frontage. In addition, the westbound approach and departure will have additional pavement that may be utilized for capacity. However, based on the capacity analysis presented herein, additional lanes are not necessary to achieve the desired level-of-service.

Under the 2033 Alternative 2 scenario, there are no improvements needed in addition to those listed above for Alternative 1 to achieve an acceptable LOS D or better.

In addition, for Alternative 3 in which the *Rolesville Moves* and *Town of Rolesville Bicycle Plan* recommended cross sections were included, the following additional improvements were assumed to be in place:

- Additional through lanes in eastbound and westbound directions along Mitchell Mill Road to account for 4-lane median divided section.
- Additional through lanes for northbound approach and southbound departure along Rolesville Road to account for 4-lane median divided section south of the intersection. The additional northbound lane will drop as an exclusive right-turn lane.

Under the 2033 Alternative 3 scenario, the following recommendations are needed to achieve an acceptable LOS D or better in addition to the ultimate cross sections listed above:

- Install a traffic signal. A Developer's Agreement is in place for contributions towards signalizing this intersection. Based on the future year analysis, the signal will be warranted.

Due to the existing skew at the intersection, sight distance may be limited. Sight distance constraints should be further investigated in determining the allowance of right-turns on red at the intersection when the signal is designed. To be conservative, an additional scenario was analyzed without the allowance of right-turns on red in case sight distance proves to be a safety concern. Even without right-turns on red, the intersection is projected to operate acceptably with the recommendations presented in the study.

Table 10: Level-of-Service: Mitchell Mill Road and Rolesville Road (Unsignalized & Signalized)

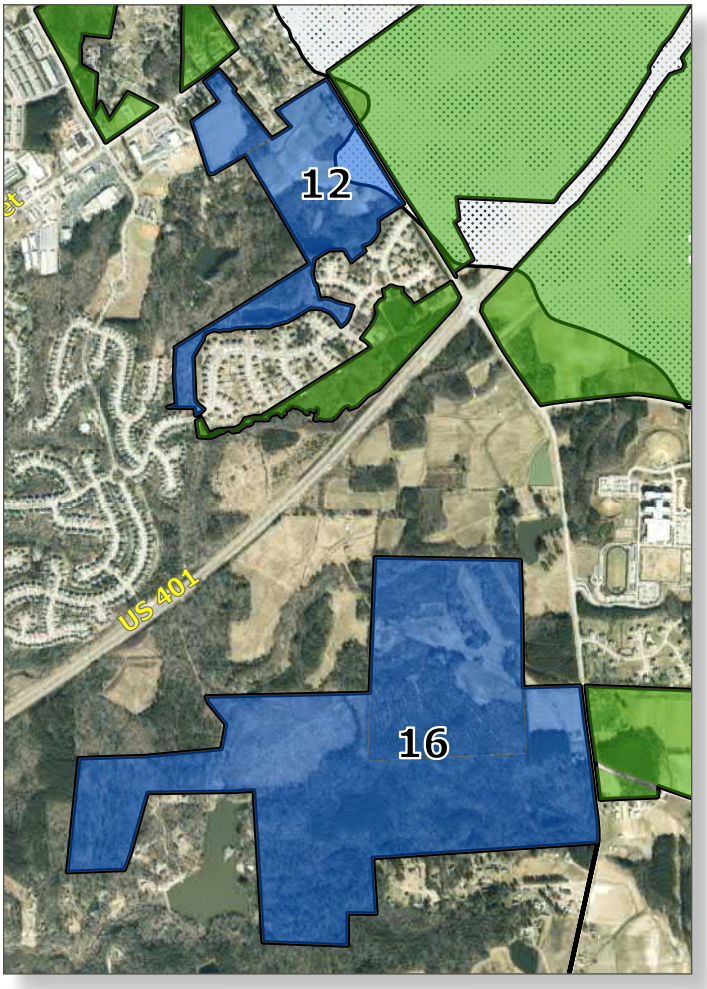
| Condition | AM Peak<br>LOS and Delay (sec/veh) | PM Peak<br>LOS and Delay (sec/veh) |
|---|---|---|
| **2023 Existing** | C (21.1) | B (12.6) |
| **2033 Alternative 1** | F (167.7) | F (110.4) |
| **2033 Alternative 1 with Improvements** | C (23.8) | B (17.5) |
| **2033 Alternative 2** | F (204.1) | F (154.3) |
| **2033 Alternative 2 with Improvements** | C (30.0) | B (19.1) |
| **2033 Alternative 3** | F (244) | F (150) |
| **2033 Alternative 3 with Improvements** | B (15.8) | B (12.4) |

The volume development subareas that most contributed to the need for improvements at this intersection include:

- Sub Area 12:
  - Alternative 1: Medium Density Residential, Town Hall, Police Station, Community Center, Library
  - Alternative 2 & 3: Medium Density Residential, Town Hall, Police Station, Community Center, Library

- Sub Area 16:
  - Alternative 1: Medium Density Residential
  - Alternative 2 & 3: Medium Density Residential, Office

Future developer contributions may be considered to assist in construction of the recommended improvements.




*Subareas Contributing to Rolesville Rd at Mitchell Mill*

# ARTERIAL CAPACITY ANALYSIS

In addition to determining the improvements needed to achieve an acceptable LOS D at the study intersections, recommendations were identified for the arterial sections along the corridor to also operate at an acceptable LOS D under the future year scenarios. Through vehicle travel speed is calculated in Synchro 11 to determine the vehicular level of service for a certain direction of travel along a corridor. The travel speed indicates how freely vehicles are traveling the corridor. Similar to intersection level of service, LOS A describes free-flow operation, and LOS F indicates low speeds and congestion. Synchro 11 was used to determine the level-of-service along each segment between the signalized study intersections. Synchro has limited abilities to report LOS between unsignalized intersections. In these cases, the nationally-recognized Florida Department of Transportation (FDOT) *Quality/Level of Service Handbook* was referenced to determine the segment LOS. This handbook utilizes the methodologies presented in the industry-standard Transportation Research Board *Highway Capacity Manual* to estimate LOS thresholds for arterials. Table 11 shows the level of service along the corridor between the signalized intersections.

Table 11: Arterial Level of Service

| Segment | Direction | Existing | | Alt 1 | | Alt 1 with Improvements | | Alt 2 | | Alt 2 with Improvements | | Alt 3 | | Alt 3 with Improvements | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | AM | PM | AM | PM | AM | PM | AM | PM | AM | PM | AM | PM | AM | PM |
| **Averette Road: NC 98/ Wait to Jones Dairy Road** | Northbound | B | B | B | C | B | B | C | D | B | B | A | B | A | B |
| | Southbound | A | A | B | B | B | C | B | B | B | C | A | A | B | B |
| **Averette Road/Young Street: Jones Dairy to Main Street** | Northbound | A | B | B | D | B | B | C | D | B | B | A | A | B | B |
| | Southbound | B | B | C | C | C | C | D | C | D | C | A | A | A | A |
| **Young Street: Main Street to US 401 Bypass** | Northbound | B | B | C | C | A | A | C | D | A | A | C | D | A | A |
| | Southbound | B | A | C | C | A | A | D | D | A | A | D | D | A | A |
| **Young Street: US 401 Bypass to Rolesville High School** | Northbound | A | A | B | C | A | B | D | D | B | B | D | D | B | B |
| | Southbound | B | A | C | C | A | B | D | D | A | B | D | D | A | B |
| **Rolesville Road: Rolesville High School to Mitchel Mill Road** | Northbound | B | A | D | B | A | A | E | C | B | A | E | C | A | A |
| | Southbound | A | A | B | B | A | A | B | B | A | A | B | B | A | A |

| Lanes | Median | B | C | D | E |
|---|---|---|---|---|---|
| 1 | Undivided | 450 | 850 | 1,200 | 1,640 |
| 2 | Divided | 1,740 | 2,450 | 3,110 | 3,440 |
| 3 | Divided | 2,610 | 3,680 | 4,660 | 5,170 |

Table 12 shows the recommended widening necessary under each alternative. The recommended widening is also included on the Recommended Lane Geometry figures for each alternative (Figure 16, Figure 17, and Figure 18).

Table 12: Recommended Widening

| Segment | Existing | Alt 1 | Alt 2 | Alt 3 (Includes CTP/ Bicycle Plan | CTP & Bicycle Plan |
|---|---|---|---|---|---|
| **Averette Road: NC 98/Wait to Jones Dairy Road** | 2-lane | - | - | As recommended in CTP/Bicycle Plan | 4-lane divided (Raised Median – Narrow), with C&G, Bike lanes, Sidewalk and Sidepath |
| **Averette Road/ Young Street: Jones Dairy Road to Main Street** | 2-lane (TWLTL between Granite Falls Blvd and Main Street) | - | - | As recommended in CTP/Bicycle Plan | 4-lane divided (Raised Median – Narrow), with C&G, Bike lanes, Sidewalk and Sidepath |
| **Young Street: Main Street to US 401 Bypass** | 2-lane | 4-lane | 4-lane | 4-lane | 2-lane with TWLTL, C&G, Bike lanes, Sidewalk and Sidepath |
| **Young Street: US 401 Bypass to Rolesville High School Driveway** | 2-lane | - | 4-lane | 4-lane | 2-lane with TWLTL, C&G, Bike lanes, Sidewalk and Sidepath |
| **Rolesville Rd: Rolesville High School Driveway to Fowler Road** | 2-lane | - | - | As recommended in CTP/Bicycle Plan | 2-lane with TWLTL, C&G, Bike lanes, Sidewalk and Sidepath |
| **Rolesville Road: Fowler Road to Mitchell Mill Rd** | 2-lane | - | - | As recommended in CTP/Bicycle Plan | 2-lane undivided, C&G, Bike lanes and Sidewalk |

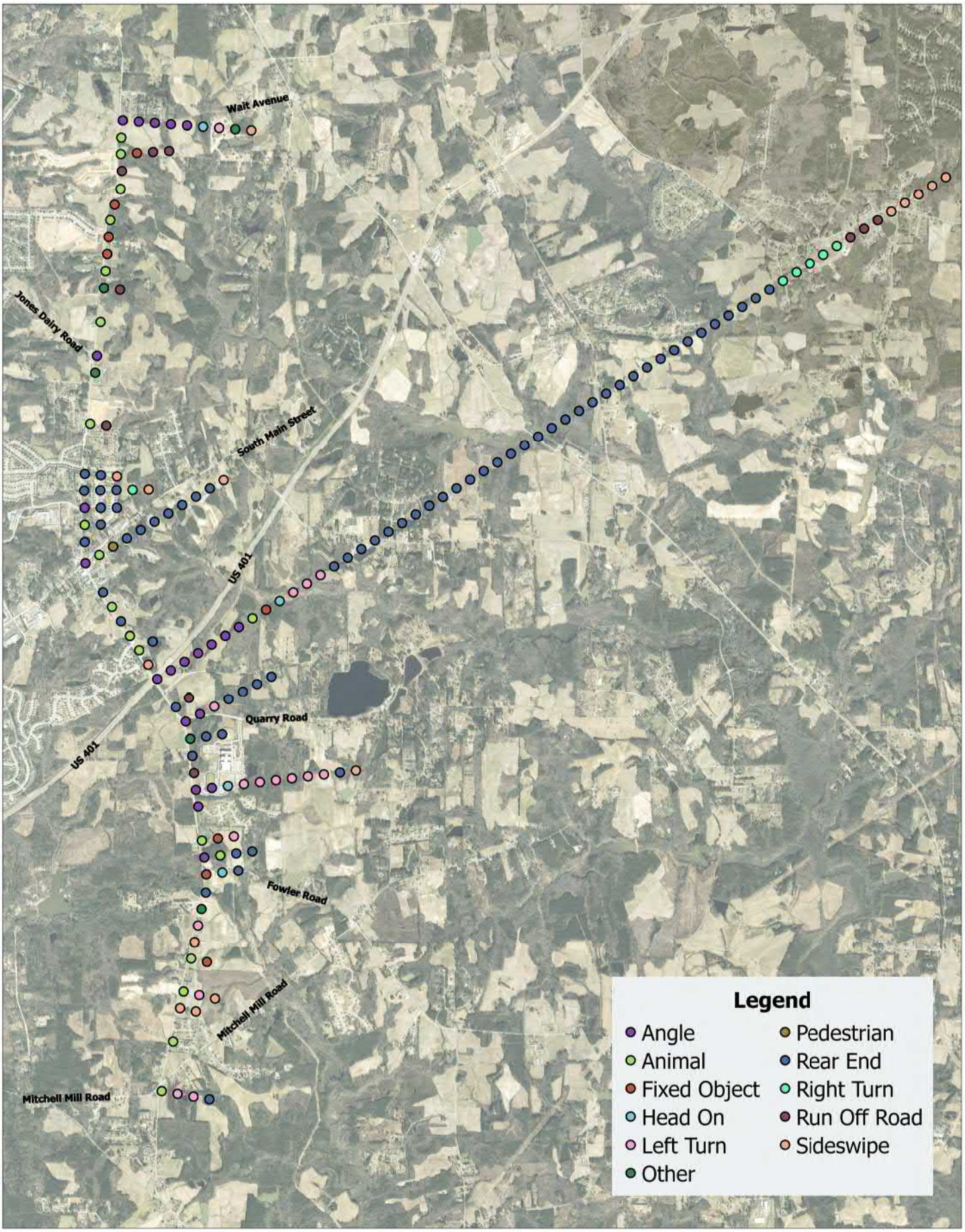
# TRAFFIC SAFETY ANALYSIS

Crash patterns and severities at the study intersections and along the 6-mile corridor were reviewed as part of this study. Corridor and individual intersection crash analyses were provided by NCDOT Traffic Safety Unit for a five-year period from March 1, 2018 to February 28, 2023. Table 13 summarizes the collisions along the Averette Road/Young Street/Rolesville Road (AYR) corridor organized by type. Table 14 provides a comparison of average crash rates for similar facilities across the state. Table 15 summarizes the collisions at all study area intersections organized by type. Additional details from the crash summaries are provided in the Appendix for reference.

Crash frequency indicates how often a crash occurs, and can sometimes identify recurring issues, trends, or patterns. Based on our analysis of the crash data, there were 171 total crashes reported along the corridor over the past five years, with rear end crashes as the predominant crash type. Figure 19 depicts these crashes along the corridor by type, indicating potential crash hot spots at the intersection with US 401 Bypass.

Table 13: Summary of Crash History Along Corridor

| Crash Type | Number of Crashes Along Corridor |
|---|---|
| **Angle** | 21 |
| **Fixed Object** | 8 |
| **Left Turn** | 16 |
| **Other** | 28 |
| **Pedestrian** | 1 |
| **Ran Off Road** | 10 |
| **Rear End** | 66 |
| **Right Turn** | 6 |
| **Sideswipe** | 15 |
| **Total Number of Crashes** | 171 |
| **Corridor Severity Index** | 3.36 |




Averette, Young, Rolesville Road Corridor Study

Figure 19: Collision Diagram

EXULT ENGINEERING

Rolesville

The crash severity index gives an indication of the crash severity at each intersection. Fatal and injury crashes are more severe than property-damage only (PDO) crashes and are weighted accordingly when calculating the crash severity index. Locations with a severity index greater than 8.4 indicate more severe injuries were sustained in crashes. Locations with a severity index less than 8.4 indicate less severe and/or infrequent injuries sustained in crashes. Intersections with a severity index greater than 8.4 should be further evaluated for possible safety countermeasures.

Based on our analysis of the crash data, there were no reported fatal crashes along the corridor over the last five years. A severity index of 3.36 was calculated for the study corridor, which indicates less severe and/or infrequent injuries sustained in crashes. Therefore, there are no specific recommendations to improve the safety along the corridor. However, it should be noted that the additional turn lanes, signalization, signal modifications, and widening as identified to increase capacity are expected to reduce crashes according to the *Crash Modification Factor Clearinghouse* and NCDOT Traffic Safety Unit:

- A new traffic signal is expected to reduce rear end crashes by 38%.
- Flashing yellow arrows are expected to reduce injury left turn crashes by 25-41%
- Raised medians are expected to reduce injury crashes by 12-39%.
- Construction of new left turn lanes is expected to reduce left turn and rear end crashes by 13-24% at signalized intersections.
- Construction of new right turn lanes is expected to reduce rear end and sideswipe crashes by 4-8% at signalized intersections.
- Construction of dual left turn lanes at an intersection is expected to reduce rear end and left turn crashes at a signalized intersection by 16%.
- Increasing the left or right turn storage at an intersection is expected to reduce crashes at in intersection by 15%.
- Widening for an additional through lane is expected to reduce crashes along the corridor by 10%.

Crash rates are calculated through the crash frequency and traffic volumes and are expressed as crashes per 100 million vehicle miles traveled (MVMT). Critical crash rates are crash rates that have been statistically adjusted, based on other roads in North Carolina with similar characteristics and cross sections to remove the elements of chance and randomness. The critical crash rate helps determine if the rate along a particular corridor is significantly higher than a predetermined average rate.

Results show that the fatal, non-fatal injury, night, and wet crash rates were all under the statewide and critical crash rates when compared to similar facilities across the state. The total crash rate, however, was just above the statewide and critical crash rates, indicating a higher-than-average crash frequency. The additional turn lanes, signalization, signal modifications, and widening as identified to increase capacity are expected to reduce crashes as outlined above.

Table 14: Crash Rate Comparison

| Type | Crashes | Crashes per 100 Million Vehicle Miles | Statewide Rate[1] | Critical Rate[2] |
|---|---|---|---|---|
| **Fatal** | 0 | 0 | 1.95 | 2.25 |
| **Non-Fatal Injury** | 36 | 59.68 | 69.44 | 71.21 |
| **Night** | 37 | 61.34 | 85.06 | 87.02 |
| **Wet** | 17 | 28.18 | 41.4 | 42.77 |
| **Total** | 171 | 283.48 | 259.55 | 262.97 |

[1]Compared to 2018-2022 Statewide Crash Rate for All Secondary Routes with 2 lanes, undivided. This is the primary cross section throughout the project limits, but the cross section does vary.

[2]Based on the statewide crash rate (95% level of confidence). The critical crash rate (a statistically derived value against which a calculated crash rate can be compared to see if the rate is above an average far enough that something besides chance must be the cause) is used to denote statistical significance.

We also reviewed the crash types and frequency by intersection to help identify any intersection hot spots. Table 15 below shows that the intersection with US 401 Bypass experienced the highest number of crashes along the corridor, with rear end crashes as the predominant crash type. Severity indexes were also calculated for each intersection. As shown in Table 15 below, the severity index at all study intersections was below 8.4. Therefore, there are no specific recommendations to improve the safety at the intersections.

Table 15: Summary of Crash History At Study Area Intersections

| Crash Type | Averette Road at NC 98/ Wait Ave | Averette Road at Jones Dairy Road | Young Street at S Main Street/N Main Street | Young Street at US 401 Bypass | Young Street at RHS Driveway | Rolesville Road at Mitchell Mill Road |
|---|---|---|---|---|---|---|
| Angle | 5 | 1 | 1 | 15 | 2 | 0 |
| Fixed Object | 0 | 0 | 0 | 1 | 0 | 0 |
| Left Turn | 1 | 0 | 0 | 6 | 5 | 2 |
| Other | 3 | 0 | 2 | 5 | 1 | 1 |
| Pedestrian | 0 | 0 | 1 | 0 | 0 | 0 |
| Ran Off Road | 0 | 0 | 1 | 4 | 0 | 0 |
| Rear End | 5 | 8 | 7 | 42 | 3 | 0 |
| Right Turn | 0 | 0 | 0 | 9 | 0 | 0 |
| Sideswipe | 1 | 1 | 0 | 8 | 1 | 0 |
| Total Number of Crashes | 15 | 10 | 12 | 90 | 12 | 3 |
| Intersection Severity Index | 4.45 | 1.74 | 2.85 | 5.34 | 3.47 | 1.00 |

# CONSTRUCTIBILITY AND IMPACTS OF RECOMMENDATIONS

Based on the intersection improvements shown on **Figure 18** for Alternative 3, Conceptual Horizontal Layout Exhibits were created to detail the improvements, identify the right-of-way needed to construct the improvements, and assist in developing likely project cost estimates for the improvements.

## CONCEPTUAL HORIZONTAL LAYOUT AND RIGHT-OF-WAY EXHIBITS

The exhibits are based on aerial imagery, field observations, and available Geographical Information Systems (GIS) databases. The improvements reflect the ultimate cross sections listed above and the recommended intersection improvements identified in Alternative 3 of this study. The following assumptions are reflected in the exhibits:

- All improvements shown are based on symmetric widening, unless other wise shown on the exhibits. During final design, detailed survey may reveal other constraints and the preferred widening approach could vary.
- The exhibits are limited to the intersection improvements only. It is assumed the intersection improvements are tying to the *Town of Rolesville Bicycle Plan* recommended typical sections. On each exhibit the limits of the estimate are identified.
- As identified in the *Town of Rolesville Bicycle Plan* all lanes are 11-feet wide, unless other wise shown on the exhibits.
- At intersections the CTP recommended "narrow median" has been defined as 16.5 feet wide. This allows for the opposing traffic to be separated by a monolithic island and the installation of an 11-foot turn lane. This is consistent with NCDOT's standard SPOT Online "Typical" Highway Cross Sections, with the modification of 11-foot lanes instead of 12-foot.
- For graphical clarification a buffered bike lane is drawn as a 7-foot wide bike lane. This represents a 5-foot bike lane and a 2-foot buffered area. *The Town of Rolesville Bicycle Plan* had identified the buffered area as 1.5-feet wide; however, the 2024 NCDOT Roadway Standard Drawings (RSD 1205.16, Sheet 4) state the minimum buffered striped width shall be 2-feet. The exhibits reflect this update.
- The estimated berm with a Sidepath is 20-feet, measured from the face of curb to the proposed right-of-way.
- The estimated berm with a sidewalk is 10-feet, measured from the face of curb to the proposed right-of-way.

The exhibits reflect the desired ultimate conditions. As such, in some instances the existing right-of-way is not sufficient to accommodate the improvements. The anticipated right-of-way needed for the improvements is shown on the conceptual horizontal layouts.

The following figures (20-25) show the exhibits for the improvements recommended for each intersection under Alternative 3.

# AYR CORRIDOR STUDY
# CONCEPTUAL DESIGN EXHIBIT

## AVERETTE ROAD AT WAIT AVENUE

ROLESVILLE, NORTH CAROLINA
SEPTEMBER 18, 2023

DESIGN CONSIDERATIONS:
– SYMMETRIC WIDENING
– LEFT TURN LANE NOT NEEDED FOR TRAFFIC DEMANDS. RECOMMEND LEFT TURN LANE BE CONSIDERED FOR FUNCTIONALITY AND SAFETY.

WAIT AVE (NC 98)
FOUR LANE DIVIDED HIGHWAY (12' LANES) WITH RAISED MEDIAN, CURB AND GUTTER, AND 5' SIDEWALK ON NORTH & SOUTH SIDE OF THE CORRIDOR

SOUTHBOUND AVERETTE ROAD
ONE RIGHT TURN LANE (315' STORAGE)

AVERETTE ROAD (SR 1945)

WAIT AVENUE (NC 98)

WESTBOUND WAIT AVENUE
ONE LEFT TURN LANE (300' STORAGE)

EASTBOUND WAIT AVENUE
ONE LEFT TURN LANE (250' STORAGE)

NCDOT TIP U-6023
TO UPGRADE SIGNAL SOFTWARE AND FYA'S

AVERETTE ROAD (SR 1945)

AVERETTE RD (SR 1945)
FOUR LANE DIVIDED HIGHWAY WITH RAISED MEDIAN, 5' BIKE LANES WITH BUFFER, CURB AND GUTTER AND 10' SIDEPATH ON WEST AND 5' SIDEWALK ON EAST SIDE OF THE CORRIDOR

WAIT AVENUE (NC 98)

LEGEND
- EXISTING ROADWAY TO BE RESURFACED
- PROPOSED PAVEMENT WIDENING
- PROPOSED CONCRETE ISLAND
- PROPOSED GRASS MEDIAN
- PROPOSED RIGHT OF WAY
- EXISTING SIGNAL – UPGRADE
- PROPOSED SIGNAL – NEW

50' 0' 50' 100'
25'

FIGURE 20

# AYR CORRIDOR STUDY
# CONCEPTUAL DESIGN EXHIBIT

AVERETTE ROAD
AT JONES DAIRY ROAD

ROLESVILLE, NORTH CAROLINA
SEPTEMBER 18, 2023

DESIGN CONSIDERATIONS:
– ASYMMETRIC WIDENING ON AVERETTE ROAD DUE TO CEMETERY

JONES DAIRY ROAD (SR 2053)
FOUR LANE DIVIDED HIGHWAY WITH RAISED MEDIAN, CURB AND GUTTER, AND 5' SIDEWALK ON NORTH & SOUTH SIDE OF THE CORRIDOR

JONES DAIRY ROAD (SR 2053)

CHALK ROAD (SR 2054)

AVERETTE ROAD (SR 1945)

EASTBOUND JONES DAIRY ROAD
ONE LEFT TURN LANE (CONTINUOUS STORAGE)
ONE RIGHT TURN LANE (CONTINUOUS STORAGE)

NORTHBOUND AVERETTE ROAD
ONE LEFT TURN LANE (150' STORAGE)
ONE LEFT TURN LANE (175' STORAGE)

AVERETTE RD (SR 1945)
FOUR LANE DIVIDED HIGHWAY WITH RAISED MEDIAN, 5' BIKE LANES WITH BUFFER, CURB AND GUTTER AND 10' SIDEPATH ON WEST AND 5' SIDEWALK ON EAST SIDE OF THE CORRIDOR

AVERETTE ROAD (SR 1945)

ROLESVILLE CEMETARY

LEGEND

- EXISTING ROADWAY TO BE RESURFACED
- PROPOSED PAVEMENT WIDENING
- PROPOSED CONCRETE ISLAND
- PROPOSED GRASS MEDIAN
- PROPOSED RIGHT OF WAY
- EXISTING SIGNAL – UPGRADE
- PROPOSED SIGNAL – NEW

50' 0' 50' 100'
25'

FIGURE 21

# AYR CORRIDOR STUDY
# CONCEPTUAL DESIGN EXHIBIT

## YOUNG STREET AT MAIN STREET

ROLESVILLE, NORTH CAROLINA
SEPTEMBER 18, 2023

DESIGN CONSIDERATIONS:
– ASYMMETRIC WIDENING ON E. YOUNG STREET DUE TO CHURCH ON THE EAST SIDE AND FUTURE PLANS FOR REDEVELOPMENT ON THE WEST.
– ASYMMETRIC WIDENING ON S. MAIN STREET DUE TO COBBLESTONE VILLAGE MIXED-USE DEVELOPMENT.
– HELD PARKING LANE ON W. YOUNG STREET BASED ON COBBLESTONE VILLAGE MIXED-USE DEVELOPMENT DESIGN.
– THIS PROPOSED EXHIBIT FOCUSES ON TRAFFIC NEEDS AND WOULD SUPERSEDE THE PEDESTRIAN IMPROVEMENTS PROPOSED WITH U-6241 PROJECT.

S. MAIN STREET (US 401 BUS)

FUTURE COBBLESTONE VILLAGE MIXED USED DEVELOPMENT

EASTBOUND S. MAIN STREET
TWO LEFT TURN LANES (400' STORAGE)
ONE RIGHT TURN LANE (250' STORAGE)

SOUTHBOUND W. YOUNG STREET
ONE LEFT TURN LANE (200' STORAGE)
ONE RIGHT TURN LANE (525' STORAGE)
ONE PARKING LANE (5 PARKING SPACES)

U-6241: PEDESTRIAN IMPROVEMENTS PROJECT

SUZANNA'S ANTIQUES

ROLESVILLE FIRE DEPARTMENT

W. YOUNG STREET (SR 1945)

ROLESVILLE CHAMBER OF COMMERCE

COUNTRY MARKET - CREATIVE EXCHANGE

W. YOUNG STREET (SR 1945)
FOUR LANE DIVIDED HIGHWAY WITH RAISED MEDIAN, 5' BIKE LANES WITH BUFFER, CURB AND GUTTER AND 10' SIDEPATH ON WEST AND 5' SIDEWALK ON EAST SIDE OF THE CORRIDOR

ROLESVILLE EMERGENCY MEDICAL SERVICES

PERRY STREET

E. YOUNG STREET (SR 1003)
FIVE LANE UNDIVIDED HIGHWAY, 5' BIKE LANES, CURB AND GUTTER AND 10' SIDEPATH ON EAST AND 5' SIDEWALK ON WEST SIDE OF THE CORRIDOR

NORTHBOUND E. YOUNG STREET
ONE LEFT TURN LANE (600' STORAGE)

E. YOUNG STREET (SR 1003)

ROLESVILLE BAPTIST CHURCH

WESTBOUND N. MAIN STREET
ONE EXISTING LEFT TURN LANE (250' STORAGE)

PULLEY STREET

N. MAIN STREET (US 401 BUS)

LEGEND

- EXISTING ROADWAY TO BE RESURFACED
- PROPOSED PAVEMENT WIDENING
- PROPOSED CONCRETE ISLAND
- PROPOSED GRASS MEDIAN
- FUTURE DEVELOPMENT
- PROPOSED RIGHT OF WAY
- EXISTING SIGNAL – UPGRADE
- PROPOSED SIGNAL – NEW

100' 0' 100' 200'
50'

FIGURE 22

# AYR CORRIDOR STUDY
# CONCEPTUAL DESIGN EXHIBIT

## YOUNG STREET AT US 401

ROLESVILLE, NORTH CAROLINA
SEPTEMBER 18, 2023

LOUISBURG ROAD (US 401)

E. YOUNG STREET (SR 1003)
FIVE LANE UNDIVIDED HIGHWAY, 5' BIKE LANES, CURB AND GUTTER AND 10' SIDEPATH ON WEST AND 5' SIDEWALK ON EAST SIDE OF THE CORRIDOR

CEDAR LAKES NEIGHBORHOOD

E. YOUNG STREET (SR 1003)

EASTBOUND LOUISBURG ROAD (US 401)
ONE RIGHT TURN LANE
(400' STORAGE FREE FLOW)

SOUTHBOUND E. YOUNG STREET
ONE RIGHT TURN LANE
(CONTINUOUS STORAGE)
ONE RIGHT TURN LANE
(CHANNELIZED FREE-FLOW)

DESIGN CONSIDERATIONS:
- RETAIN US 401 PEDESTRIAN UPGRADES

E. YOUNG STREET (SR 1003)
FIVE LANE UNDIVIDED HIGHWAY, 5' BIKE LANES, CURB AND GUTTER AND 10' SIDEPATH ON EAST AND 5' SIDEWALK ON WEST SIDE OF THE CORRIDOR

E. YOUNG STREET (SR 1003)

NORTHBOUND E. YOUNG STREET
TWO RIGHT TURN LANES
(CONTINUOUS STORAGE)
ONE RIGHT TURN LANE
(CHANNELIZED FREE-FLOW)

LOUISBURG ROAD (US 401)

CENTURY FARM ROAD

LEGEND

- EXISTING ROADWAY TO BE RESURFACED
- PROPOSED PAVEMENT WIDENING
- PROPOSED CONCRETE ISLAND
- PROPOSED GRASS MEDIAN
- PROPOSED RIGHT OF WAY
- EXISTING SIGNAL – UPGRADE
- PROPOSED SIGNAL – NEW

75' 0' 75' 150'
37.5'

FIGURE 23

# AYR CORRIDOR STUDY
# CONCEPTUAL DESIGN EXHIBIT

## ROLESVILLE ROAD/YOUNG STREET AT ROLESVILLE HIGH SCHOOL

ROLESVILLE, NORTH CAROLINA
SEPTEMBER 18, 2023

DESIGN CONSIDERATIONS:
- SYMMETRIC WIDENING
- RETAIN THE EXISTING BMP ON THE EAST
- ADDITIONAL ROW SHOWN SOUTH OF THE SIGNALIZED INTERSECTION FOR FUTURE THROUGH LANE EXTENSION. WOULD NEED TO BE COORDINATED WHEN THAT PROPERTY DEVELOPS.

THE POINT
FUTURE DEVELOPEMENT

ROLESVILLE ROAD (SR 1003)
FIVE LANE UNDIVIDED HIGHWAY
(TIE TO EXISTING CONDITIONS), 5' BIKE LANES, CURB AND GUTTER AND 10' SIDEPATH ON EAST AND 5' SIDEWALK ON WEST SIDE OF THE CORRIDOR

SOUTHBOUND E. YOUNG STREET
ONE LEFT TURN LANE (100' STORAGE)
ONE LEFT TURN LANE (350' STORAGE)

EXISTING
48" CULVERT
TO BE EXTENDED

E. YOUNG STREET (SR 1003)
FIVE LANE UNDIVIDED HIGHWAY, 5' BIKE LANES, CURB AND GUTTER AND 10' SIDEPATH ON EAST AND 5' SIDEWALK ON WEST SIDE OF THE CORRIDOR

ROLESVILLE ROAD
(SR 1003)

SUNSET MANOR
DRIVE

NORTHBOUND ROLESVILLE ROAD
ONE LEFT TURN LANE (100' STORAGE)
ONE RIGHT TURN LANE (350' STORAGE)
ADDITIONAL THRU LANE (575' STORAGE)

E. YOUNG STREET
(SR 1003)

EXISTING
BMP

ROLESVILLE HIGH
SCHOOL

LEGEND
- EXISTING ROADWAY TO BE RESURFACED
- PROPOSED PAVEMENT WIDENING
- PROPOSED CONCRETE ISLAND
- PROPOSED GRASS MEDIAN
- FUTURE DEVELOPMENT
- PROPOSED RIGHT OF WAY
- EXISTING SIGNAL – UPGRADE
- PROPOSED SIGNAL – NEW

100' 0' 100' 200'
50'

FIGURE 24

# AYR CORRIDOR STUDY
# CONCEPTUAL DESIGN EXHIBIT

ROLESVILLE ROAD
AT MITCHELL MILL ROAD

ROLESVILLE, NORTH CAROLINA
SEPTEMBER 18, 2023

MITCHELL MILL ROAD (SR 2224)
FOUR LANE DIVIDED HIGHWAY WITH RAISED MEDIAN, 5' BIKE LANES WITH BUFFER, CURB AND GUTTER 5' SIDEWALK ON BOTH SIDES OF THE CORRIDOR

MITCHELL MILL ROAD (SR 2224)

SOUTHBOUND ROLESVILLE ROAD
TWO LANES UNDIVIDED, CURB AND GUTTER 5' SIDEWALK ON BOTH SIDES OF THE CORRIDOR

ROLESVILLE ROAD (SR 1003)

DESIGN CONSIDERATIONS:
- ASYMMETRIC WIDENING ON WEST LEG OF MITCHELL MILL ROAD DUE TO PRIVATE CEMETERY
- CONFIGURATION SHOWN ADDRESSES TRAFFIC DEMANDS AND THE SIGNAL HELPS WITH THE SKEWED INTERSECTION. TWO SEPARATE T– SIGNALED INTERSECTIONS APPROXIMATELY 600' APART COULD STILL BE CONSIDERED.
- LEFT TURN LANE NOT NEEDED FOR TRAFFIC DEMANDS. RECOMMEND LEFT TURN LANE BE CONSIDERED FOR FUNCTIONALITY AND SAFETY.

WESTBOUND MITCHELL MILL ROAD
ONE THRU LEFT LANE (CONTINUOUS STORAGE)
ONE THRU RIGHT LANE (CONTINUOUS STORAGE)

PRIVATE CEMETARY

WESTBOUND MITCHELL MILL ROAD
ONE RIGHT TURN LANE (315' STORAGE)

ROLESVILLE ROAD (SR 1003) NORTHBOUND
FOUR LANE DIVIDED HIGHWAY WITH RAISED MEDIAN, 5' BIKE LANES WITH BUFFER, CURB AND GUTTER 5' SIDEWALK ON BOTH SIDES OF THE CORRIDOR

MITCHELL MILL ROAD (SR 2224)

MITCHELL MILL ROAD (SR 2224)
FOUR LANE DIVIDED HIGHWAY WITH RAISED MEDIAN, 5' BIKE LANES WITH BUFFER, CURB AND GUTTER 5' SIDEWALK ON BOTH SIDES OF THE CORRIDOR

ROLESVILLE ROAD (SR 1003)

NORTHBOUND ROLESVILLE ROAD
ONE THRU LEFT LANE (CONTINUOUS STORAGE)
ONE RIGHT TURN LANE (CONTINUOUS STORAGE)

LEGEND
- EXISTING ROADWAY TO BE RESURFACED
- PROPOSED PAVEMENT WIDENING
- PROPOSED CONCRETE ISLAND
- PROPOSED GRASS MEDIAN
- PROPOSED RIGHT OF WAY
- EXISTING SIGNAL – UPGRADE
- PROPOSED SIGNAL – NEW

50' 0' 50' 100'
25'

FIGURE 25

# OPINION OF PROBABLE CONSTRUCTION COST

Based on the conceptual exhibits, a high-level, conceptual Opinion of Probable Construction Cost (OPCC) estimate was developed for each intersection. The OPCC's account for the ultimate cross sections listed above and the recommended intersection improvements identified in Alternative 3 of this study. Depending on the status of the corridor improvements, there could be additional costs if the intersection improvements need to tie back to a narrower cross section. The conceptual cost estimate utilized NCDOT bid averages, recent bid tabulations, and other conceptual OPCCs. An appropriate level of contingency was factored in due to the smaller project size (relative to the average NCDOT project size) and conceptual nature of the OPCC. Table 16 provides a summary of the intersection costs for the six identified intersections. Refer to the Appendix for a more detailed planning level cost estimate.

The following assumptions were made during the planning level cost estimate:

- This estimate is based on planning level design with broad assumptions for materials, drainage, and property impacts. The actual design and construction costs are subject to change as the project progresses.
- The OPCC is calculated off existing conditions. The cost shown accounts for the ultimate cross section and the Alternative 3 improvements.
- *These estimates do not include costs for right-of-way, utility relocations, engineering, design surveys, and construction administration.*
- All costs are based on 2023 prices.

Table 16: Opinion of Probable Construction Cost Summary

| Intersection No. | Description | Total |
|---|---|---|
| 1 | Averette Rd(SR 1945) and Wait Ave(NC 98) Intersection Improvements | $4,900,000 |
| 2 | Averette Rd(SR 1945) and Jones Dairy Rd(SR 2053) Intersection Improvements | $4,600,000 |
| 3 | W. Young St(SR 1945) and N. Main St(US 401 BUS) Intersection Improvements | $5,400,000 |
| 4 | E. Young St(SR 1003) and US 401 Intersection Improvements | $3,600,000 |
| 5 | E. Young St(SR 1003) and Rolesville High School Driveway Intersection Improvements | $6,200,000 |
| 6 | Rolesville Rd(SR 1003) and Mitchell Mill Road(SR 2224) Intersection Improvements | $4,900,000 |

Note:

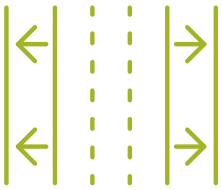
**1. Right-of-Way, Utility Relocations, Engineering, Surveys, and Construction Administration costs are not included in the estimate above.**

2. The Engineer has no control over the cost of labor, materials, or equipment, or over industry Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs, as provided here, are made on the basis of the Engineer's experience and qualifications and represent the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from opinions of probable cost.

# NEXT STEPS

The purpose of the Averette Road/Young Street/Rolesville Road Corridor Study is to analyze and evaluate the future operation along the corridor and at the major intersections. Based on future operations, improvements were recommended to achieve an acceptable level-of-service. The following further steps can be taken to implement these recommendations and to re-evaluate the allowable land uses assumed for future development along the corridor:

- **Redevelopment Plans** - Plan for future redevelopment to account for and contribute to the overall widening needs along the corridor. Based on the widening needed along the corridor to achieve an acceptable LOS, frontage widening and right-of-way requirements may be placed on developers.
- **Subareas Contribution to Surrounding Improvements** – Use the identified improvements along the corridor for policy direction. Policy direction may be in the form of seeking funding or collecting contributions from adjacent developments expected to directly impact the need for the improvement.
- **Land Use Decisions** – The results can aid in decisions to allow rezoning of certain parcels. The Planning Board and Board of Commissioners can use the results of the study when considering rezoning proposals. The study can also be modified to consider specific rezoning requests to determine the impact on the corridor or be modified periodically to incorporate approved rezoning requests. Based on the recommended improvements needed to accommodate the assumed development along the corridor, the Town can revisit the Future Land Use Map to restrict densities in the area.
- **Main Street at Young Street Area Plan** – Based on the results of this corridor study, a further evaluation of the Main Street and Young Street intersection is recommended. Opportunities to provide connector roads that provide continuity in traveling from Young Street to/from Main Street should be identified as the connector roads will improve operation at the signalized intersection. In order to achieve the sense of place desired for the intersection as detailed in the *Main Street Vision Plan* and to reduce impacts to surrounding parcels and existing buildings, a plan identifying alternative connections that will provide added vehicular capacity should be developed. Analyzing proposed connector roadways and new intersections along Main Street and Young Street impacted by the connector roadways is necessary to understand the benefit and impact of the new roadways.



REDEVELOPMENTS PLANS

SUBAREAS CONTRIBUTION TO SURROUNDING IMPROVEMENTS

LAND USE DECISIONS

MAIN STREET AT YOUNG STREET AREA PLAN


# Appendix

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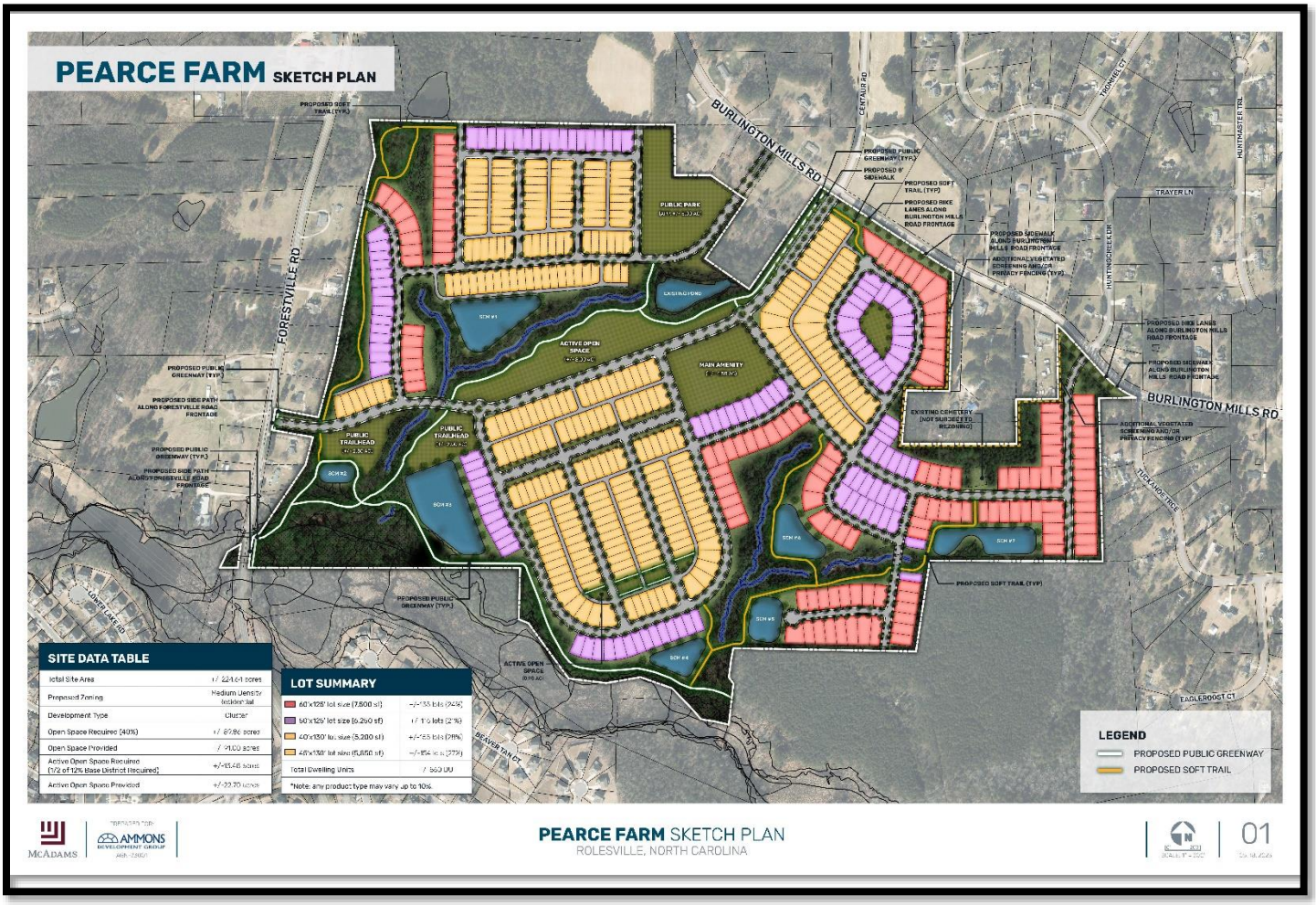
# AUGUST 2023 DEVELOPMENT REPORT



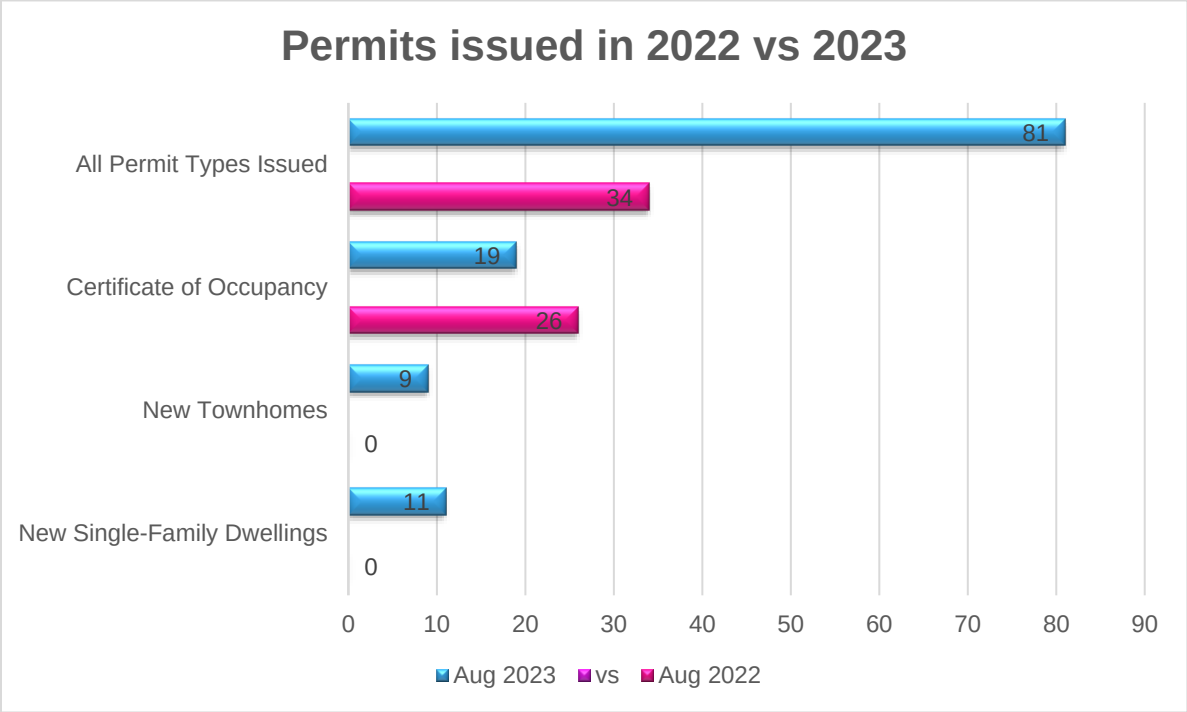

*The Pearce Farm rezoning application was approved by the Town Board of Commissioners on August 1, 2023.*

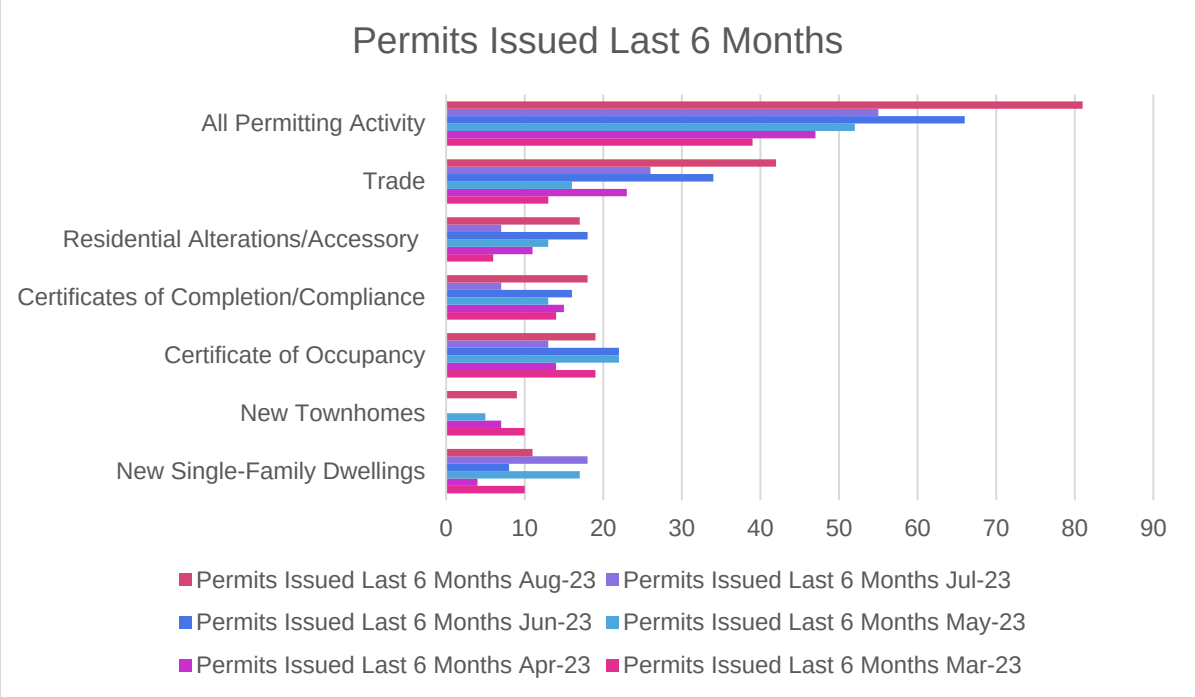
Please contact the Town of Rolesville Planning Department at 919-554-6517 or planning@rolesville.nc.gov for assistance or more information.

# RESIDENTIAL BUILDING PERMITS UPDATE

| Subdivision | Total Buildable Lots | Total Permits Issued Per Development | Un-permitted Lots Remaining | Permits Issued in Aug | Permits Issued YTD |
|---|---|---|---|---|---|
| Carlton Pointe | 301 | 301 | 0 | 0 | 1 |
| Chandler's Ridge | 95 | 95 | 0 | 0 | 0 |
| Elizabeth Springs | 97 | 72 | 25 | 0 | 5 |
| Granite Crest Phase 3C | 19 | 5 | 14 | 1 | 3 |
| Perry Farms | 113 | 109 | 4 | 0 | 3 |
| Preserve at Jones Dairy South | 215 | 92 | 123 | 6 | 32 |
| Meadows at Jones Dairy | 132 | 18 | 116 | 13 | 18 |
| Regency at Heritage PH3 | 27 | 27 | 0 | 0 | 19 |
| **TOTAL** | **999** | **719** | **282** | **20** | **81** |
| Elizabeth Springs Townhomes | 54 | 54 | 0 | 0 | 0 |
| A Master Teams Townhomes | 47 | 10 | 37 | 0 | 0 |
| Townes at Carlton Pointe | 53 | 42 | 9 | 0 | 34 |
| **TOTAL** | **154** | **106** | **46** | **0** | **34** |
| ETJ/ Non-Sub | | | | | |
| **TOTAL** | | | | **0** | **3** |
| **TOTAL Residential Permits Issued** | **1153** | **916** | **328** | **20** | **115** |

# PERMITTING ACTIVITY COMPARISON



# DEVELOPMENT PROJECTS SUMMARY

The projects listed below are in various stages of the development process – attaining Zoning entitlements, having subdivisions plats or site development plans approved, or building through the Permit and Inspections process. For more information, please visit the Development Projects webpage on the Town of Rolesville's website - www.rolesvillenc.gov - and either use the Interactive Map or go through the alphabetical lists of named projects.

## Mixed-Use (residential and non-residential)

- **Cobblestone Village** – multifamily/commercial/upper-story residential
- **503 S Main Street** – multi-tenant commercial/upper-story residential
- **1216 Rolesville Road** – townhome/commercial
- **5109 Mitchell Mill** – single-family/townhomes/commercial
- **Hills at Harris Creek** – single-family/townhomes/commercial
- **Scarboro Apartments** – multifamily/commercial

## Non-residential

- **Carolina Legacy Volleyball** – indoor / outdoor recreation
- **971 Granite Falls Blvd** – multi-tenant commercial building
- **6000 Rogers Rd** – multi-tenant commercial building
- **Wallbrook** – various commercial buildings / tenants
- **Jones Dairy Storage** – self-storage
- **4724 Burlington Mills Road** – age-restricted living/care facility
- **4502 Vineyard Pine Lane** – multi-tenant commercial building

## Residential

- **Regency at Heritage** – 27 Single-Family Homes
- **The Townes at Carlton Pointe** – 53 Townhomes
- **Perry Farms Phase 2** – 33 Single-Family Homes
- **A-Master Teams Townhomes** – 47 Townhomes
- **Chandler's Ridge** – 90 Single-Family Homes
- **Elizabeth Springs** – 100 Single-Family Homes & 105 Townhomes
- **Granite Crest Phase 3** – 19 Single-Family Homes
- **Preserve at Jones Dairy Road South** – 221 Single-Family Homes
- **Meadows at Jones Dairy** (*formerly Preserve at Jones Dairy Road North*) - 132 Single-Family Homes & 63 Townhomes
- **Preserve at Jones Dairy Road Central** – 260 Single-Family Homes / 179 Townhomes
- **The Point** – 483 Single-Family Homes & 324 Townhomes
- **Kalas Falls** - 484 Single-Family Homes & 108 Townhomes
- **Wallbrook** – 140 Townhomes
- **Parker Ridge** – 162 single-family homes / 114 Townhomes
- **Pearce Farms** – approximately 550 single-family homes
- **Harris Creek Farms** – 64 single-family homes / 81 Townhomes
- **Woodlief Assemblage** – 179 single-family homes / 57 Townhomes

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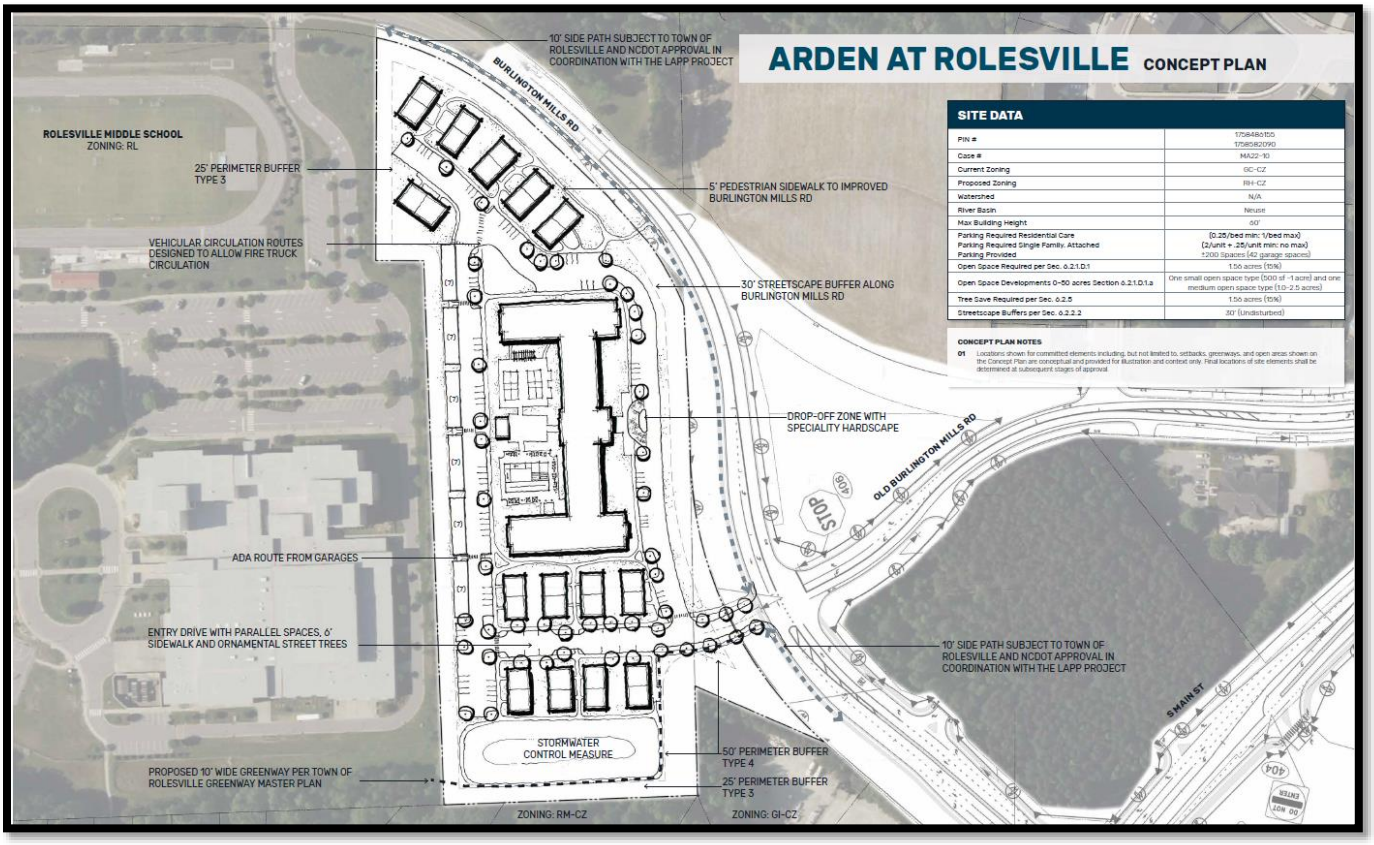
# SEPTEMBER 2023 DEVELOPMENT REPORT




*The Arden Active Adult Living (4724 Burlington Mills Road) rezoning application was approved by the Town Board of Commissioners on September 5, 2023.*

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# RESIDENTIAL BUILDING PERMITS UPDATE

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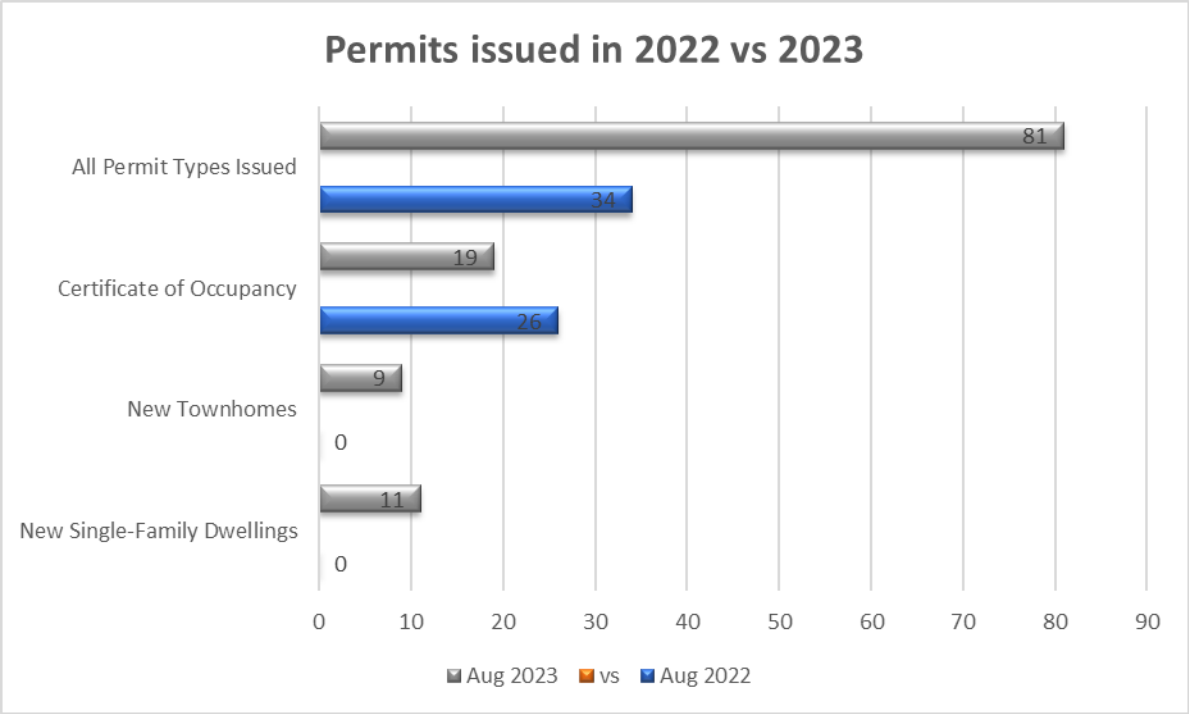
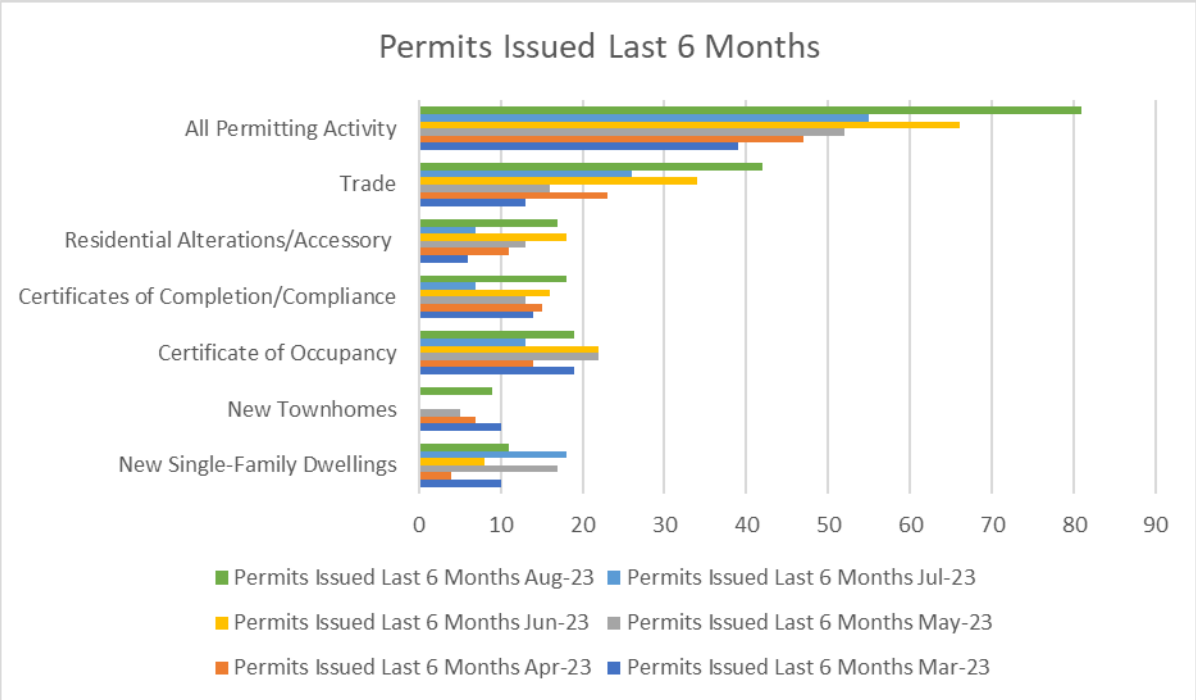
| Elizabeth Springs | 97 | 75 | 22 | 3 | 8 |
| Granite Crest Phase 3C | 19 | 5 | 14 | 0 | 3 |
| Perry Farms | 113 | 110 | 3 | 1 | 4 |
| Preserve at Jones Dairy South | 215 | 105 | 110 | 11 | 43 |
| Meadows at Jones Dairy | 132 | 23 | 109 | 5 | 23 |
| Regency at Heritage PH3 | 27 | 27 | 0 | 0 | 19 |
| **TOTAL** | **999** | **741** | **258** | **20** | **101** |
| Elizabeth Springs Townhomes | 54 | 54 | 0 | 0 | 0 |
| A Master Teams Townhomes | 47 | 16 | 31 | 6 | 6 |
| Townes at Carlton Pointe | 53 | 42 | 9 | 0 | 34 |
| **TOTAL** | **154** | **112** | **40** | **6** | **40** |
| ETJ/ Non-Sub | | | | | |
| **TOTAL** | | | | **0** | **3** |
| **TOTAL Residential Permits Issued** | **1153** | **853** | **298** | **26** | **141** |

# PERMITTING ACTIVITY COMPARISON



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