

TOWN OF WENDELL ARTERIAL AND COLLECTOR STREET PLAN

Wendell, Wake County, NC | Adopted November 2016





EXECUTIVE SUMMARY

Located a few miles from Raleigh and the Research Triangle Park, the Town of Wendell is experiencing a large amount of growth. Without proper planning, a greater number of people driving an increasing number of miles on a transportation system can restrict this growth. Compounding this are land use patterns that have evolved over time to include more suburban development, cul-de-sacs, and isolation of land uses. The resultant travel demand places shorter-distance trips on arterials which are intended for longer-distance trips.

In an effort to plan for this growth, the Town of Wendell has commissioned the redevelopment of an Arterial and Collector Street Plan. This plan will provide citizens, the development community, and Town staff with an easy-to-understand and rational document that guides arterial and collector street design. Town staff will rely on this document to make future decisions on the location of streets in a variety of land use types and densities. Specifically, the purpose of this plan is to develop and assign road classifications to existing and future facilities within Wendell. This will be used in conjunction with additional data to develop a priority list of projects which will aid Wendell in preserving, developing, and enhancing vital transportation network performance.

This plan provides not only maps of the fully-developed roadway network of Wendell, but this written document reviews nearby plans and studies which may influence this plan, it develops a classification system used to develop the complete roadway network in Wendell. Two distinct classifications were developed (thoroughfare and collectors) complete with major and minor designations and lane configurations. In total, there are seven options with advised design elements, speed limits, right of way and approximate construction costs per linear foot. It should be noted that these costs do not represent associated design or right of way costs.

The specific roadway network established by the transportation plan is conceptual in nature. The final location and design capacity of roads will be determined as development occurs. The transportation plan is designed to aid the Town in its review and consideration of development plans by establishing infrastructure improvement requirements and road cross-sections, but final requirements will be determined at the time a development is proposed, taking into consideration the impact of the development



Table ES-1: Thoroughfare & Collector Definitions

Class	ADT Range	Cross-Section	Bike Lanes	Sidewalks	Speed Limit (mph)	ROW (feet)	Approximate Construction Cost per Linear Foot*
Major Thoroughfare	12k+	6 lane divided	Yes	Yes	45	134	\$3,400
Major Thoroughfare	12k+	4 lane divided	Yes	Yes	45	110	\$2,600
Minor Thoroughfare	9k-12k	4 lane divided	Yes	Yes	35	110	\$2,600
Minor Thoroughfare	6k-9k	3 lane undivided	Yes	Yes	35	79	\$2,150
Major Collector	5k-6k	3 lane undivided	Yes	Yes	30	79	\$2,150
Major Collector	4k-5k	2 lane divided	Yes	Yes	30	86	\$2,100
Minor Collector	2k-4k	2 lane undivided	Case-by-Case	Yes	30	67	\$1,800

*Approximate costs are for facilities on new location per linear foot of roadway centerline and do not include design or ROW

These classifications were then assigned to existing and proposed roadway segments to create the core of the Plan. Multiple maps have been developed to illustrate the facilities with respect to the context of the Town. This includes features such as aerial imagery, floodplain mapping, and property lines.

Given the large amount of growth anticipated on Wendell Falls Parkway, this document contains a section dedicated to the study of this corridor from the interchange with US 64 Bypass to Wendell Boulevard downtown. The study splits the corridor into three sections to ensure that the design elements match the surrounding area. It is recommended that the undeveloped area between Martin Pond Road and Jake May Drive have a fully-realized form closely matching a major thoroughfare with a four-lane divided cross-section. From Jake May Drive to Wendell Boulevard, the form of Wendell Falls Parkway would closely match that of a minor collector with a two-lane undivided cross-section.





This list includes projects identified as part of the literature review, the public involvement process and the development of the ultimate network. These projects were prioritized and planning-level cost estimates were developed.

Table ES-2: Priority List of Projects

Priority	Name	Length (ft.)	Planning-Level Estimated Construction Cost (\$)*
1	Rolesville Road / Eagle Rock at Wendell Boulevard intersection	2,400	\$1,800,000
2	Eagle Rock Road at Martin Pond Road Intersection and Railroad Crossing	600	\$1,500,000
3	Wendell Boulevard at NC 231 (Selma Road) Intersection†	-	\$400,000
4	Wendell Boulevard at Wendell Falls Parkway	-	\$150,000
5	Old Battle Bridge Road Bridge	-	\$750,000
6	Multi-Use Path / Trail	14,500	\$2,500,000
7	Marshburn Road realignment (through REID 0004321)	110	\$250,000
8	Wendell Boulevard Widening	7,500	\$11,400,000
9	Jake May Drive	12,500	\$25,700,000
10	Hanor Lane / Todd Lane	3,950	\$11,500,000
11	Lions Club Road North / South	12,500	\$41,200,000
12	North Wendell Thoroughfare	12,300	\$30,900,000
13	Wendell Falls Parkway Widening	8,900	\$10,000,000
14	NC 97 Widening	24,500	\$35,860,000
15	Wendell Valley Boulevard Construction	13,800	\$37,800,000

*estimated costs are shown in 2015 dollars and do not include the cost of design or right of way acquisition unless explicitly specified in the above table

†project does not include a realignment of Old Zebulon Road as to not disturb the historic district



Traffic impact assessments (TIA) are used by agencies throughout the US to project the effects a development project will have on the transportation system. Credible and accurate studies are important for community development and livability. With regard to the arterial and collector street plan, the focus is placed upon the threshold for which a TIA is required. Most agencies focus on the peak hour trips generated versus daily as the demand for transportation facilities is highest then. The general consensus of nearby municipalities is any development generating between 100 and 150 trips during the peak hour is required to develop a TIA. Moving forward, it is recommended that the Town institute the threshold of 150 peak hour trips generated in either the AM or PM peak hour of the adjacent street traffic.

In addition to discussing traffic impact assessments, this document also discusses the funding and phasing of the future roadway network. Typical practice is to construct new arterial and collector streets through routine development. In this scenario, these facilities would be the funding responsibility of the developer. For developments that do require a traffic impact assessment, some of the improvements required of the developer will occur via the traffic study. These developments must also complete any thoroughfare or collector street improvements of existing roadways dictated by this plan along the frontage of these roadways. For developments that do not require a TIA, there still may be some roadway requirements that are necessary due to traffic volumes. Additionally, these developments will also be required to complete any thoroughfare or collector street improvements dictated by this plan along the frontage of these roadways.

In some cases, specific site conditions may warrant that a fee in lieu of construction be requested by the applicant and approved by the Town. Payments in lieu of physical improvements should be reserved for those situations where upcoming planned improvements would make it beneficial to delay implementation, or where the installation of infrastructure improvements over a limited span would be disruptive to traffic patterns (beyond the time of construction).

It should be noted that developments that meet the requirements of a family subdivision, as defined by the UDO, shall be exempt from thoroughfare and collector street infrastructure improvement requirements.

While development is the primary funding source for these improvements, additional funding sources may be sought by the Town. Partnering with additional agencies such as Wake County, the Capital Area Metropolitan Planning Organization (CAMPO) and NCDOT may provide additional funding sources. Other mechanisms such as bonding of transportation improvements or grant opportunities can be sought.



Acknowledgements

Town of Wendell Board of Commissioners (past and present)

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Virginia Gray, Mayor

John Boyette, Commissioner

Ben Carroll, Commissioner

David Myrick, Commissioner

James Parham, Mayor Pro Tem

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INTRODUCTION

Located a few miles from Raleigh and the Research Triangle Park, the Town of Wendell is experiencing a large amount of growth. Without proper planning, a greater number of people driving an increasing number of miles on a transportation system can restrict this growth. Compounding this are land use patterns that have evolved over time to include more suburban development, cul-de-sacs, and isolation of land uses. The resultant travel demand places shorter-distance trips on arterials which are intended for longer-distance trips.

In an effort to plan for this growth, the Town of Wendell has commissioned the redevelopment of an Arterial and Collector Street Plan. This plan will provide citizens, the development community, and Town staff with an easy-to-understand and rational document that guides arterial and collector street design. Town staff will rely on this document to make future decisions on the location of streets in a variety of land use types and densities. Specifically, the purpose of this plan is to develop and assign road classifications to existing and future facilities within Wendell. This will be used in conjunction with additional data to develop a priority list of projects which will aid Wendell in preserving, developing, and enhancing vital transportation network performance.

Study Area

The Town of Wendell is located along the eastern portion of Wake County, with the Wake/Johnston County line serving as the Town's eastern jurisdictional boundary. Major transportation facilities allow residents to reach downtown Raleigh in 20 minutes, downtown Durham in approximately 45 minutes and downtown Chapel Hill in 55 minutes.

Due to this proximity, the Town is beginning to experience population growth. The Town's 2014 estimated population according to the US Census Bureau is 6,182.

This plan encompasses three distinct areas in and around the Town. Specifically, the Town's corporate limits, its extraterritorial jurisdiction and urban service area.

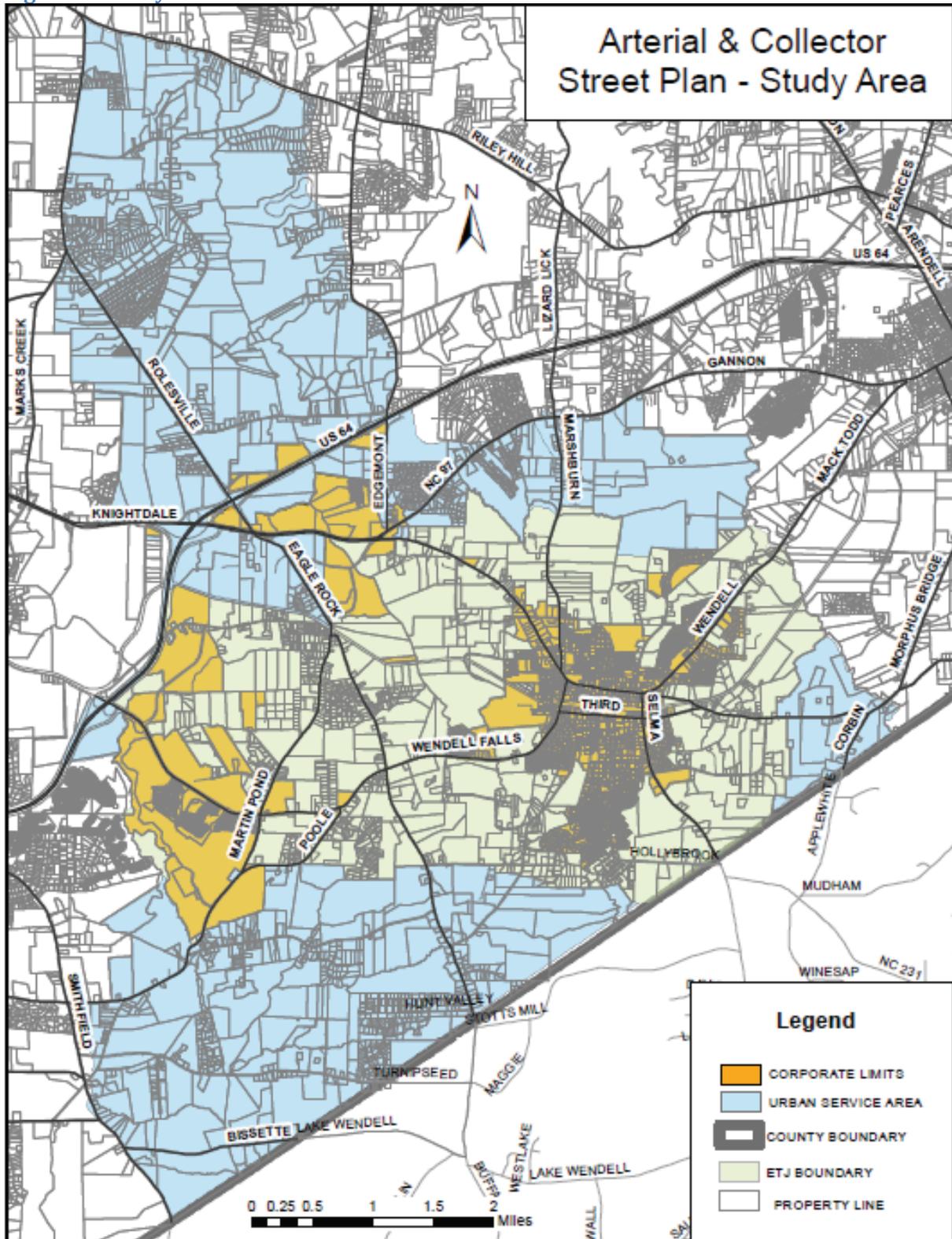
The term corporate limits is a legal name and for the purposes of discussion herein, can be used interchangeably with the terms "town limits" and "town boundary."

Extraterritorial jurisdiction (ETJ) consists of the unincorporated land near the corporate limits that is not within Wendell or any other municipality. This area is an extension of some of the Town's regulations where development of such land can affect quality of life within the Town's corporate limits. For the purposes of this plan and roadway infrastructure, the influence the Town has over transportation infrastructure within the ETJ is equivalent to influence the Town has over areas within the corporate limits.

Urban service area (USA) are lands beyond the ETJ which have been designated by Wake County as an area which will eventually come under the planning jurisdiction / corporate limits of the Town. While the Town has no current jurisdiction over this area, it has been included in this plan in the event that the ETJ or corporate limits expands to those areas. Figure 1 shows the study area.



Figure 1: Study Area





Existing Travel Conditions

In order to plan for the future, a discussion must first be held on Wendell's existing travel conditions and its place within Wake County.

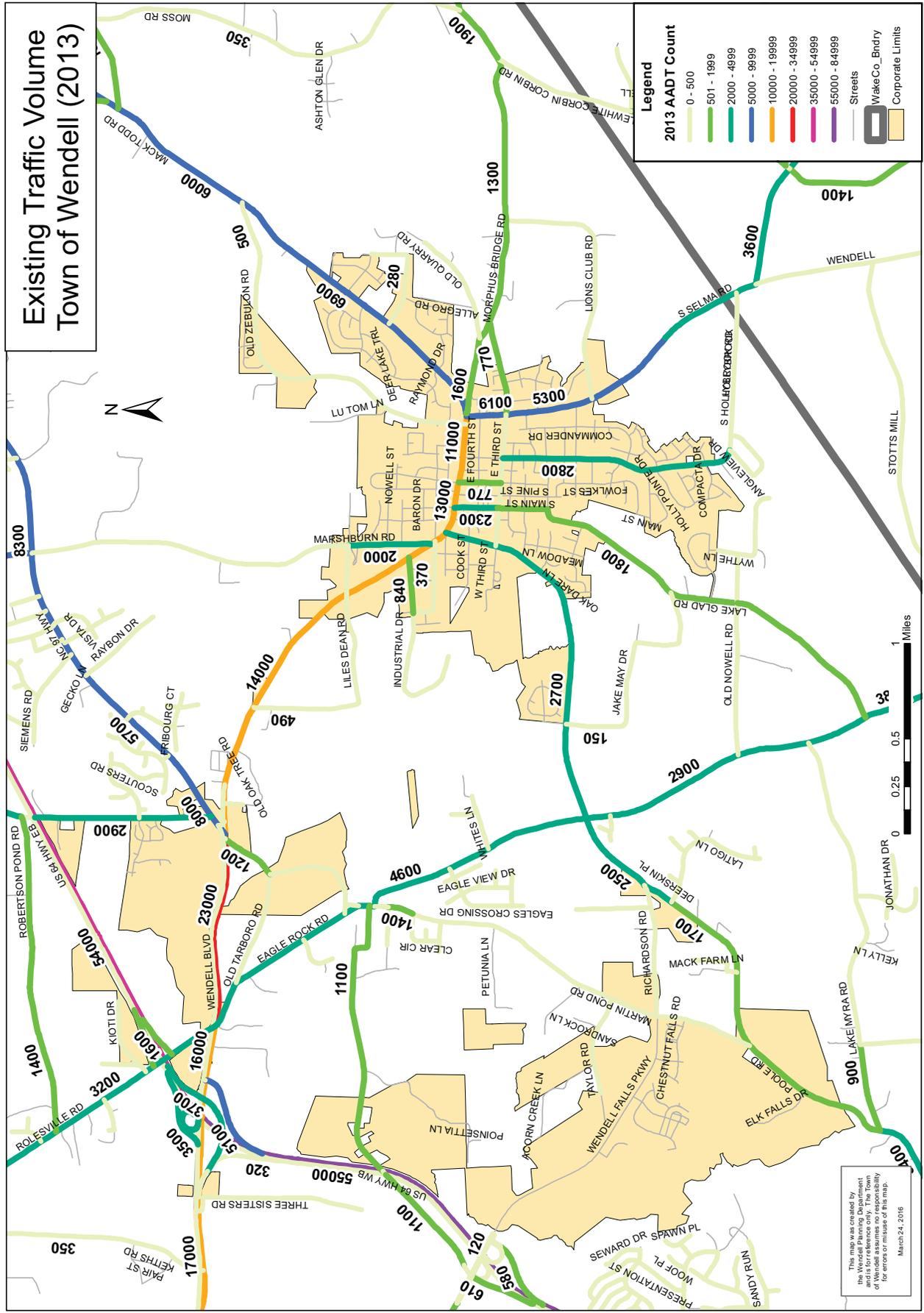
As one of the towns within Wake County with a true "small town feel," Wendell's population in 2013 was approximately 6,000 residents. This results in Wendell ranking 10th in population density of the 13 municipalities located within Wake County at 1,183 persons per square mile.

One of Wendell's draws is this small-town feel with quick access to employment centers in Raleigh and the Research Triangle Park via US 64 / US 264 Bypass. As such, 16% of Wendell's population are considered "in-town commuters", meaning that their homes and places of work both reside within Wendell. Conversely, 84 percent of Wendell residents commute to work outside of Wendell.

An additional consideration when discussing transportation facilities is meeting the needs of an ageing population. Wendell's median age is currently 40.2 years old; the 11th highest out of the 13 municipalities in Wake County. There are needs beyond adequate roadway capacity to consider when providing transportation for an ageing population.

The population and travel statistics presented previously can be found on the Wake County website (www.wakegov.com/planning/demographic/documents/trends2014.pdf).

Existing Traffic Volume Town of Wendell (2013)



This map was created by the Wendell Planning Department and is for reference only. The Town of Wendell assumes no responsibility for errors or omissions of this map.

March 24, 2016



The data used to produce the map on the previous page was taken from NCDOT's GIS webpage:

<http://ncdot.maps.arcgis.com/home/item.html?id=5fe3f6949bdc472e8d557ff57f920330>

The largest volume of traffic is on Wendell Boulevard between Rolesville Road and NC 97 in northwest Wendell. East of NC 97, Wendell Boulevard retains a high-volume until it reaches the US 64 Business / NC 231 (N. Selma Road) / Old Wilson Road intersection; where the volume is split between continuing on US 64 Business toward Zebulon or NC 231 towards Johnston County.

Wendell Boulevard, as shown in the figure, is demonstrative of the overarching travel demand in Wendell. Moving from east to west (i.e. left to right), traffic volumes grow as travelers are wishing to access US 64 / US 264 Bypass.

Future Travel Conditions

Population growth in Wake County has been well-documented. While the density of certain activity centers has been increasing, many forecasts suggest that much of the future growth in Wake County will extend outwards from the urbanized areas.

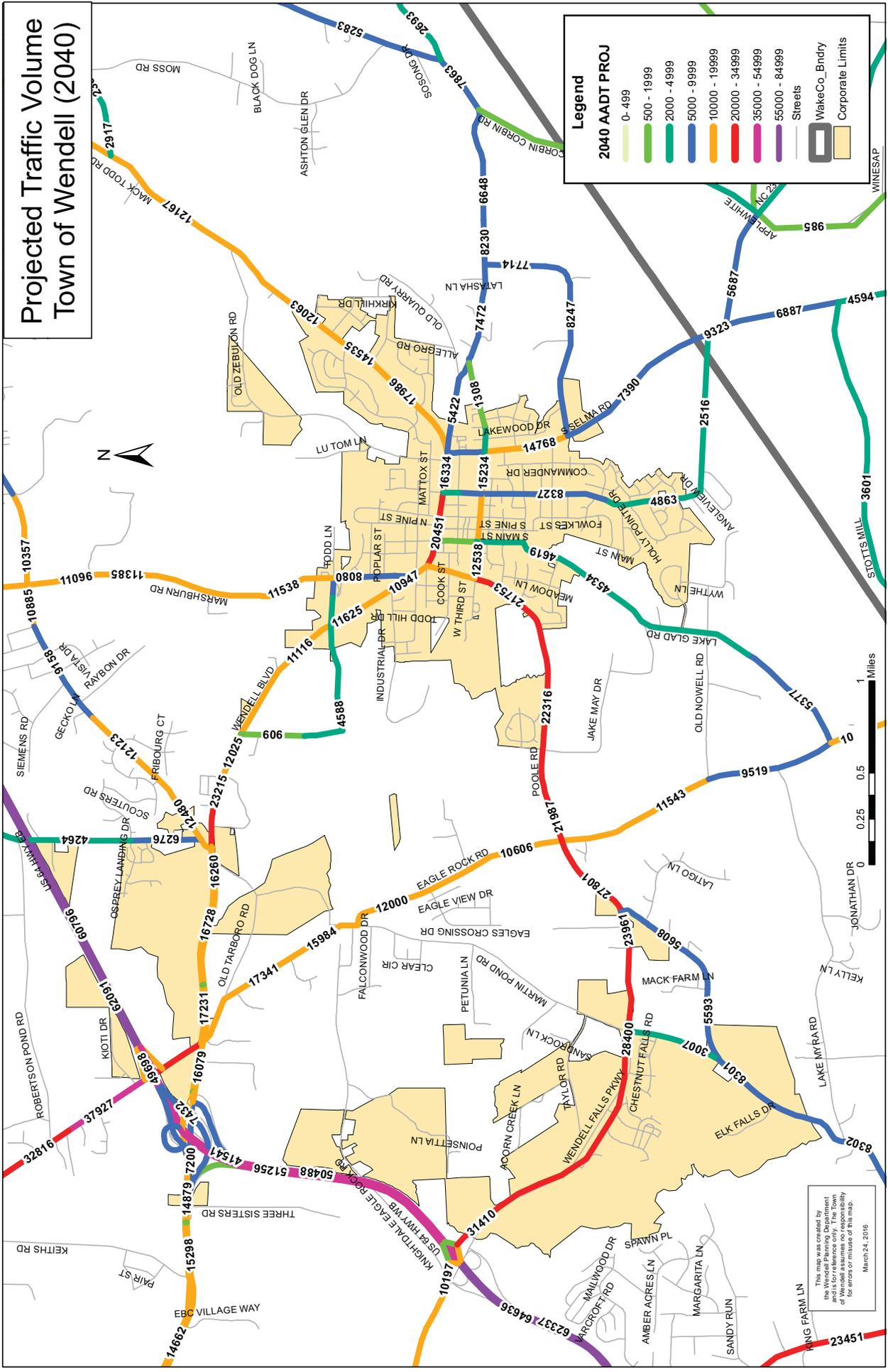
The Capital Area Metropolitan Planning Organization (CAMPO) provided projections of average daily traffic (ADT) on major roadways in Wendell in 2040.

Figure 3 shows the 2040 traffic volume projections.

Comparing the existing traffic with the 2040 traffic projections can help one see where the growth in and around Wendell is anticipated. Traffic growth around the Wendell Falls development is particularly evident, with Wendell Falls Parkway seeing traffic increases of approximately one thousand percent between 2013 and 2040. That is an average increase of over 35 percent annually.

Even facilities in developed areas of Wendell are anticipated to grow heavily. One example of this is Wendell Boulevard. On the section near the intersection with Selma Road, traffic volumes are anticipated to grow by almost 50 percent between 2013 and 2040. As this section of road is constrained by the development around it, additional facilities are needed to alleviate this increase in traffic.

Projected Traffic Volume Town of Wendell (2040)



This report was created by the Wendell Planning Department and is for reference only. The Town of Wendell assumes no responsibility for errors or omissions of this map.

March 24, 2016



Complete Streets

NCDOT adopted a complete streets policy in 2009. Complete streets is a term used to describe facilities which are designed to be safe and comfortable for all users. The term “all users” is emphasized as this includes pedestrians, bicyclists, transit riders, motorists and individuals of all ages and capabilities.

The result are facilities that complement the surrounding environment by not simply providing lanes of travel for motorized traffic, but also providing sidewalks, appropriate bicycle facilities, properly-sized street widths and context based traffic speeds.

To this end, the cross-sections presented in this plan seek to provide the aforementioned safety and comfort for all users. What manifests are the use of six feet wide sidewalks, five feet wide bike lanes, and curb and gutter along with 7 feet wide planting areas with street-trees to separate sidewalks from in-street traffic.

The cross-sections can be viewed in the section titled *Creation of Roadway Classifications*.



INTERNAL LITERATURE REVIEW

To better understand where we are going, the project team needs to have thorough knowledge of the work that has been done in the past. To this end, the project team has reviewed Town documents that relate to the Arterial and Collector Street Plan. This includes the following documents:

- Unified Development Ordinance
- Town Comprehensive Plan
- Existing Collector Street Plan

This memorandum is the synopsis of this literature review. It discusses the above documents and their relevance to the Arterial and Collector Street Plan.

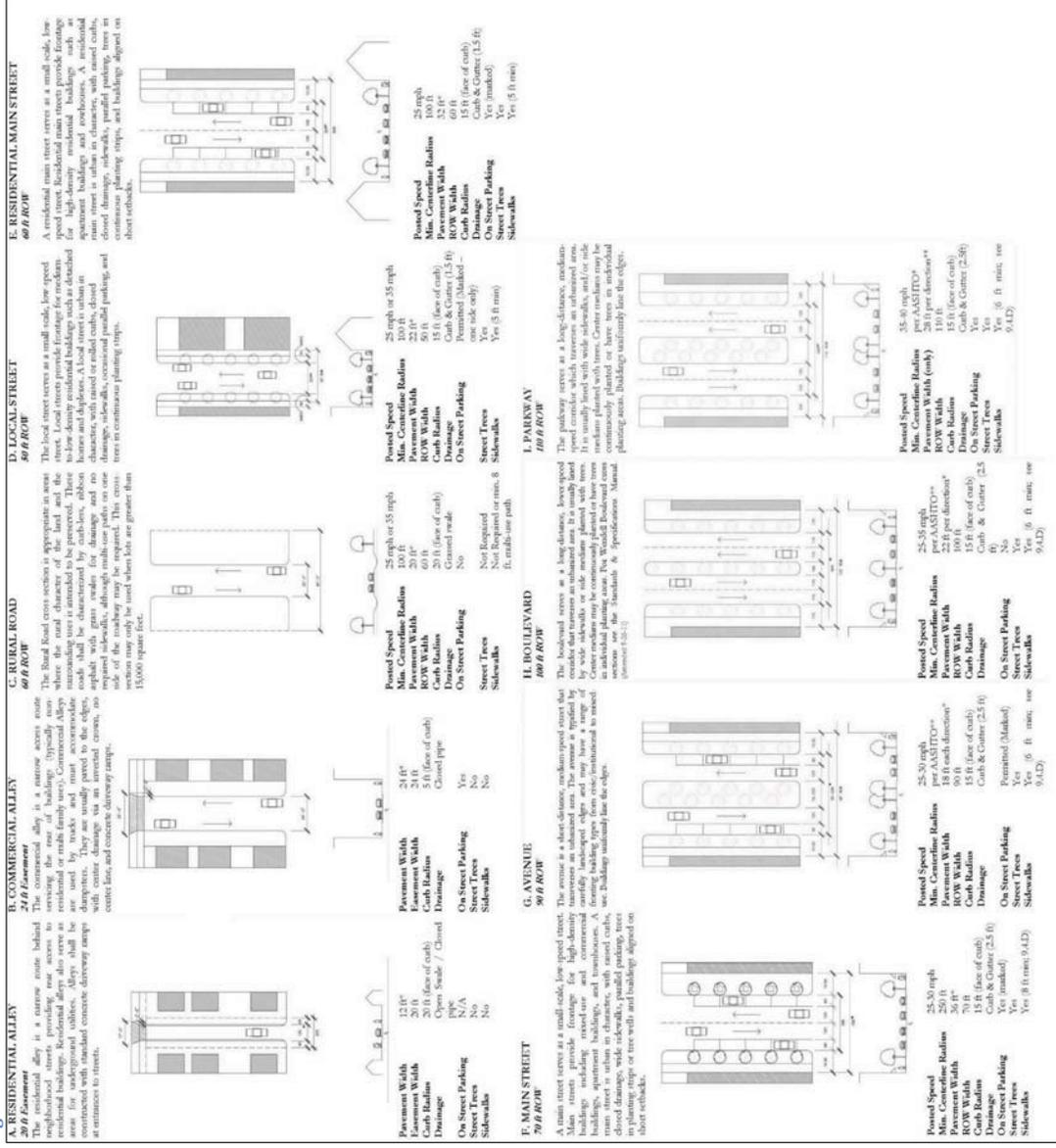
United Development Ordinance

The current Town United Development Ordinance (UDO), adopted on July 26, 2010, was produced by The Lawrence Group, in conjunction with the Town of Wendell staff, committees and boards. Its purpose being to facilitate a coordinated, balanced, sustainable, and harmonious development of the land within the corporate limits and the town's extraterritorial jurisdiction (ETJ). The UDO touches on many subjects such as building types, environmental protection, tree protection, lighting, and so on.

With regard to transportation, Chapter 9 titled Circulation and Connectivity most-relates to the existing and upcoming Arterial and Collector Street Plan



Figure 4: Wendell UDO Cross-Sections



The existing Collector Street Plan incorporated into the UDO at the original time of its adoption contains solely recommendations. Chapter 9 of the UDO serves to convert those recommendations into actionable policy and regulation.

It contains general provisions for the design of streets, sidewalks, bikeways, intersections, and so on. The chapter does provide nine permitted cross-sections; which are reprinted in Figure 4.

The chapter continues to discuss the purpose and intent of the existing Collector Street Plan:

The CSP [Collector Street Plan] is intended to promote orderly, incremental implementation of a network of collector streets. Implementation will occur primarily through the local development process. The proposed collector street alignments assume that development exists (or will exist at some future date) at a scale to warrant the construction of a collector street. Although some improvements to existing collector streets will be made through local, state, or MPO-driven transportation projects, proposed new collector streets will be constructed primarily as the result of private development activity.

A street connectivity index is also introduced. This is to determine the adequacy of street connectivity in new developments. Essentially, it is the ratio of street links and connections to the number of nodes in a specific development. This is restated in equation form below:

$$\text{Connectivity Index} = \frac{(\text{links} + \text{connections})}{\text{nodes}}$$

The UDO continues to establish connectivity index minimums for various zoning designations. It follows that the UDO establishes minimum and average block lengths for the various land uses as well. Cul-de-Sacs are extremely discouraged and are only permitted under certain instances.

Conversely, intersections with major thoroughfares are provided minimum spacing requirements. This is to manage the number of intersections that will or could be controlled by a traffic signal. The UDO continues to discuss access management on the Town's major streets by limiting the number of driveways and their distances from intersections.





As all of these requirements are based upon zoning, the zoning abbreviations are listed below. The requirements have been combined into a singular table (Table 1) based upon their land use.

While indicated on the cross-sections presented in Figure 4, on-street parking, street trees and sidewalk are also specified by zoning district in the UDO.

- Open Space Conservation District OSC
- Residential Agricultural District RA
- Rural Residential District RR
- Residential District R2, R3, R4, R7
- Neighborhood Center District NC
- Corridor Mixed Use District CMX
- Community Center District CC
- Downtown Mixed Use District DMX
- Manufactured Housing District MH
- Commercial Highway District CH
- Manufacturing and Industrial District M&I
- Traditional Neighborhood Development District TND

Table 1: Connectivity Requirements by Land Use

Zoning District	Connectivity Index	Block Length		Cul-de-Sac Maximum Length (ft.)
		Maximum (ft.)	Average (ft.)	
OSC	N/A	N/A	N/A	800
RA	1.3	N/A	N/A	600
RR	1.4	1,200	800	600
R2	1.4	1,200	800	600
R3	1.4	1,200	800	300
R4	1.4	800	600	300
R7	1.5	800	600	300
NC	1.5	800	600	300
CMX	1.5	800	600	Not Allowed
CC	1.5	800	600	Not Allowed
DMX	1.5	800	600	Not Allowed
MH	1.4	800	600	300
CH	N/A	800	600	Not Allowed
M&I	1.3	N/A	N/A	500
TND	1.5	800	600	Not Allowed





The remaining specificities related to the Arterial and Collector Street Plan are the driveway number and spacing along thoroughfares and the driveway distance from intersections. These are shown in Table 2 and Table 3; respectively.

Table 2: Thoroughfare Driveway Number and Spacing

Parcel Frontage (ft.)	Number of Allowable Driveways
Less than 500 feet	1
501 to 1,200 feet	2
Greater than 1,200 feet	3

Table 3: Driveway Distance from Intersections

Facility Type	Minimum Distance (ft.)
Major Thoroughfare	300
Collector Street / Minor Thoroughfare	150
Local Street	50

[Town Comprehensive Plan](#)

The current Town Comprehensive Plan (Comp Plan), adopted on April 23, 2007, was produced by a consultant team led by The Lawrence Group. It sought to develop a vision for the Town's 35 square mile planning area. The consultant team, with oversight from a fifteen-member advisory committee and robust public involvement plan, developed a framework that establishes land use and development guides for a twenty-year period.

With regard to transportation, the Comp Plan includes an analysis of the transportation system and makes recommendations for building on this system. The Comp Plan states that the Town has a vision of *efficient, multi-modal, and pedestrian-oriented access and mobility*.

[Public Involvement](#)

As previously mentioned, the development of the Comp Plan included a robust public involvement aspect. Much of which was in the form of a charrette. Specific transportation items that resulted from the public involvement are as follows:

- Make Wendell Boulevard safer and more attractive
- Provide adequate sidewalk facilities throughout Wendell, keeping non-motorized transportation both practical and safe
- Encourage developers to connect roadways to quicken safety and emergency medical services (EMS) response times



Non-Motorized Transportation Recommendations

The Comp Plan makes several recommendations to improve non-motorized transportation in the Town. These recommendations have been distilled and are presented below:

- Develop a Comprehensive Pedestrian Plan
- Adopt new development standards for sidewalks
- Develop greenway connections with neighboring municipalities and greenways through the development process
- Develop a Comprehensive Bicycle Facilities Plan
- Construct bicycle accommodations on several existing roadways
- The following roads are recommended for designated bike routes:
 - o Industrial Drive
 - o Latigo Lane
 - o Main Street

Transit is discussed, but the Comp Plan acknowledges a lack of funding for regional rail commuter services. In lieu of a plan for transit in the area, the Comp Plan recommends continuing a relationship with Triangle Transit, requiring development in areas suitable for transit to utilize higher densities, determining future bus services with regional partners, and developing local service as demand warrants.

Roadway Network Recommendations

Rather than make individual recommendations on facilities within the Town, the Comp Plan presents a series of strategies to better the overall roadway network. Those are as follows:

- Maintenance of a network of different sized streets. Specifically, a well-connected network of arterial, collector, and local streets that are spaced and sized appropriately
- Changing the subdivision ordinance to require instead of encourage street interconnectivity
- Adoption of a complete streets policy
- Addition of gateway elements at strategic locations

Wendell Boulevard

The Comp Plan takes a special look at Wendell Boulevard. This is rightfully so, as Wendell Boulevard is a strategic piece of the Town's roadway network. It is a primary east-west corridor and serves as a gateway on both the east and west sides of the Town. The characteristics of the facility vary greatly depending on the area of Town. As a result, the right-of-way within the corridor varies between 60 and 125 feet. Similarly, the speed limit ranges between 35 and 55 miles per hour. Capacity becomes an issue when the average daily traffic (ADT) remains relatively constant through these varying characteristics. Recognizing that the widening of Wendell Boulevard would not achieve the long-term goals outlined in the Comp Plan, the consultant team recommended against the widening of Wendell Boulevard for additional travel lanes.



To address the traffic concerns without widening of Wendell Boulevard, the consultant team first recommends two new east-west thoroughfares:

- An east-west facility that links Liles Dean Road and Old Zebulon Road in the north; and
- an east-west facility that connects US 64 / US 264 and NC 231 (Selma Road)

The Comp Plan proceeds to deconstruct Wendell Boulevard into five sections and provide recommended cross-sections for each. These cross-sections are summarized in Table 4 below.

Table 4: Wendell Boulevard Recommended Cross-Section Elements

Section	West Extents	East Extents	Lanes	Divided	Sidewalk	Bike Lanes	Speed Limit (mph)
I	US 64 / US 264	NC 97	4	Yes	No	No	45
II	NC 97	Academy Street	2	Yes	No	Yes	35
III	Academy Street	Selma Road	2	No	Yes	No	25
IV	Selma Road	Raymond Drive	2	Yes	Yes	No	35
V	Raymond Drive	Old Zebulon Road	2	No	No	Yes	35

The Comp Plan also discusses the intersection of Wendell Boulevard at Selma Road and Old Wilson Road. This four-legged intersection has challenging geometry that leads to inefficient traffic signal operation. Three strategies were provided; two of which were concepts for new geometry at the intersection.

The first strategy presented is to redevelop the triangular parcels of land on the eastern side of the intersection and provide a new north-south connector between Old Wilson Road and Wendell Boulevard. This would remove the Old Wilson Road approach from the intersection. Therefore, the intersection could be converted to a traditional T-type signalized intersection. The second concept for intersection geometry presented in the Comp Plan is a roundabout. The Comp Plan does not present any specifics in regard to these configurations or analysis to determine feasibility of these concepts.

[Previous Collector Street Plan](#)

The existing Wendell Collector Street Plan was developed by Kimley-Horn and Associates on behalf of the Town of Wendell and was adopted in November of 2006. It makes recommendations on both cross-sections as well as network modifications and design characteristics. The recommended network is shown in Figure 5. The plan also presented six cross-sections which are shown in Figure 6 through Figure 12.

The recommended network in the 2006 Town of Wendell Collector Street Plan served as the starting point for the Arterial and Collector Street Plan update. Modifications to the network shown in Figure 5





illustrated in the Arterial and Collector Street Plan are based upon subsequent development patterns, growth and traffic projections, and updated priorities and needs identified by the Town.

Figure 5: Previous Collector Street Plan

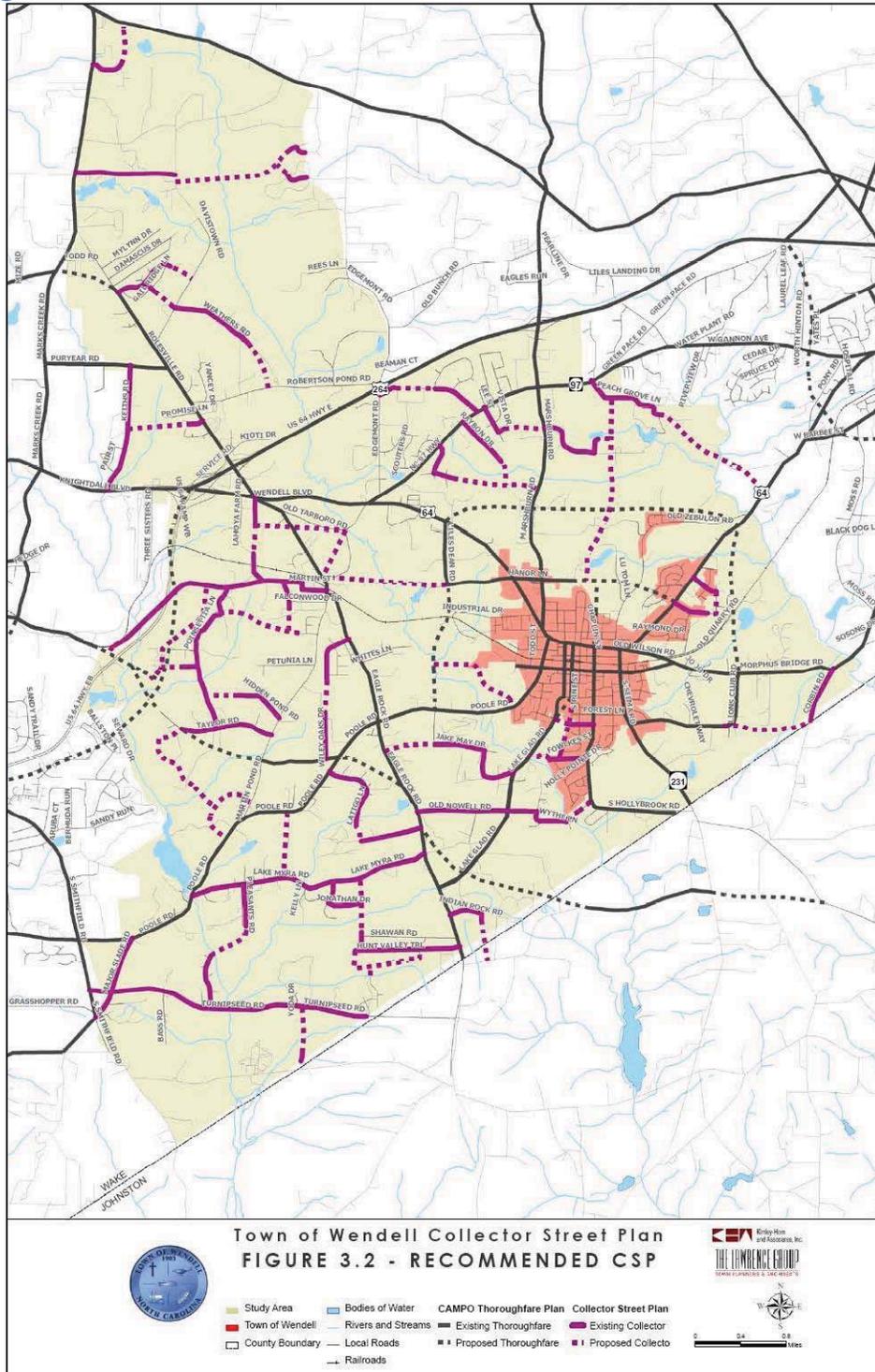




Figure 6: Previous CS Plan - Rural Context Residential Collector, Type A

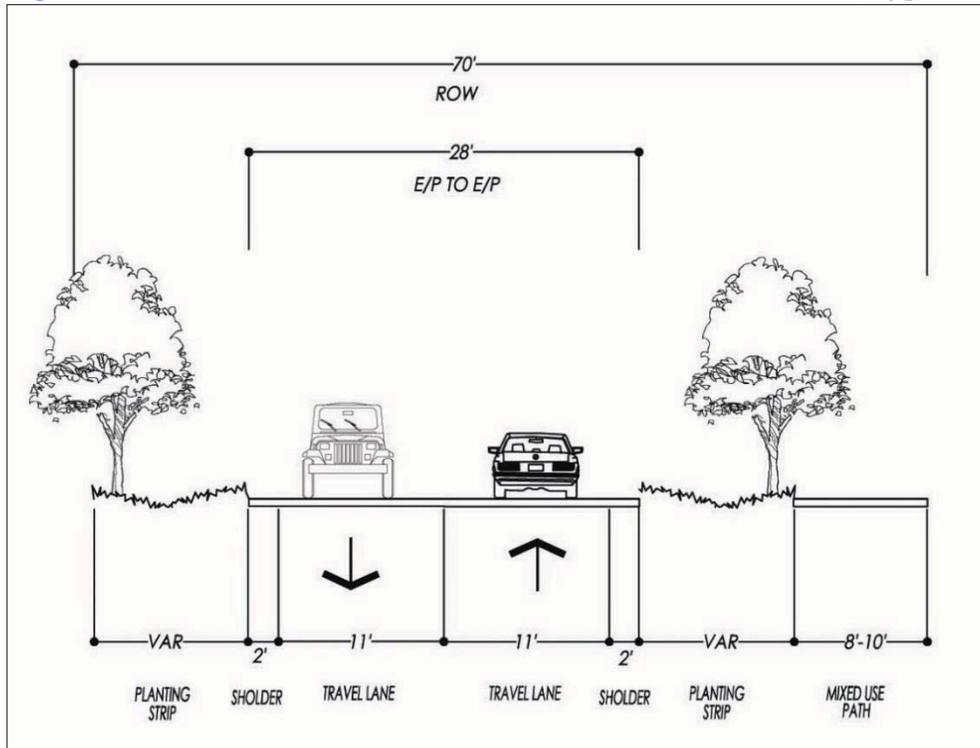


Figure 7: Previous CS Plan - Urban Context Residential Collector, Type A

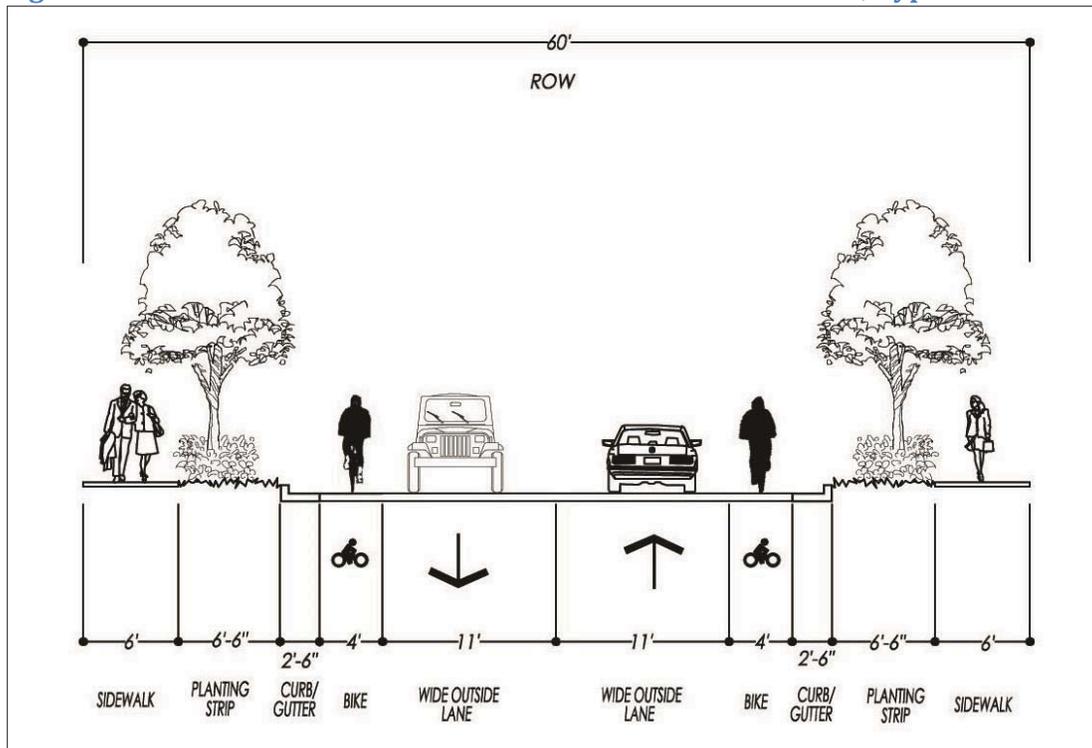




Figure 8: Previous CS Plan - Rural Context Residential Collector, Type B

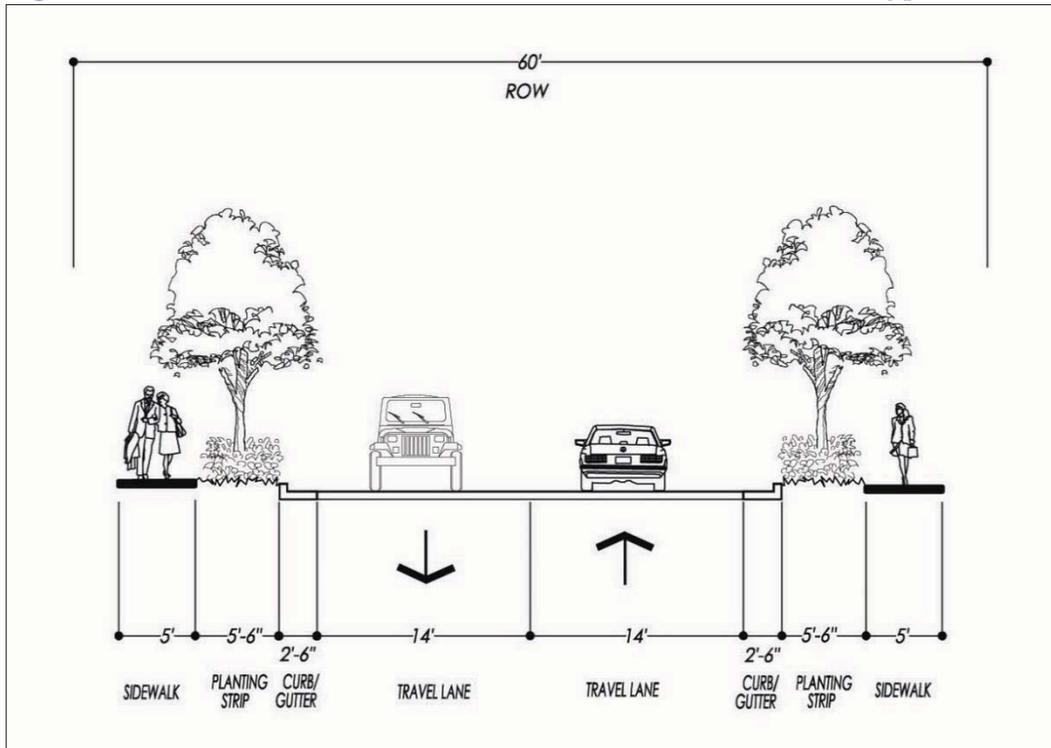


Figure 9: Previous CS Plan - Urban Context Residential Collector, Type B

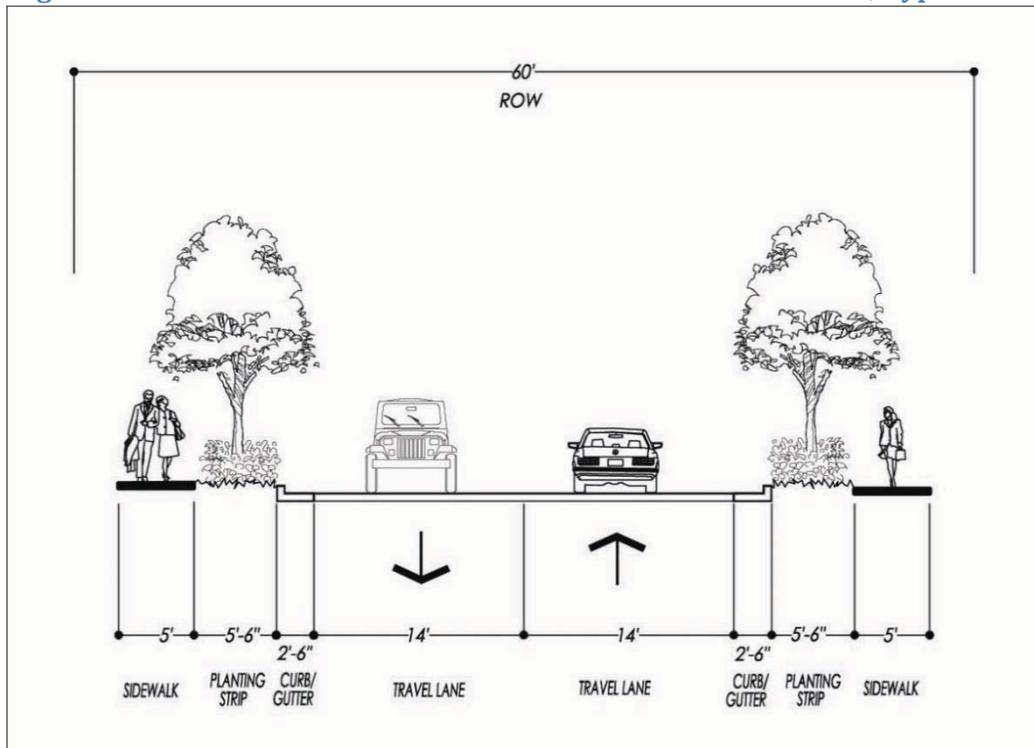




Figure 10: Previous CS Plan - Urban Context Commercial Collector, Type A

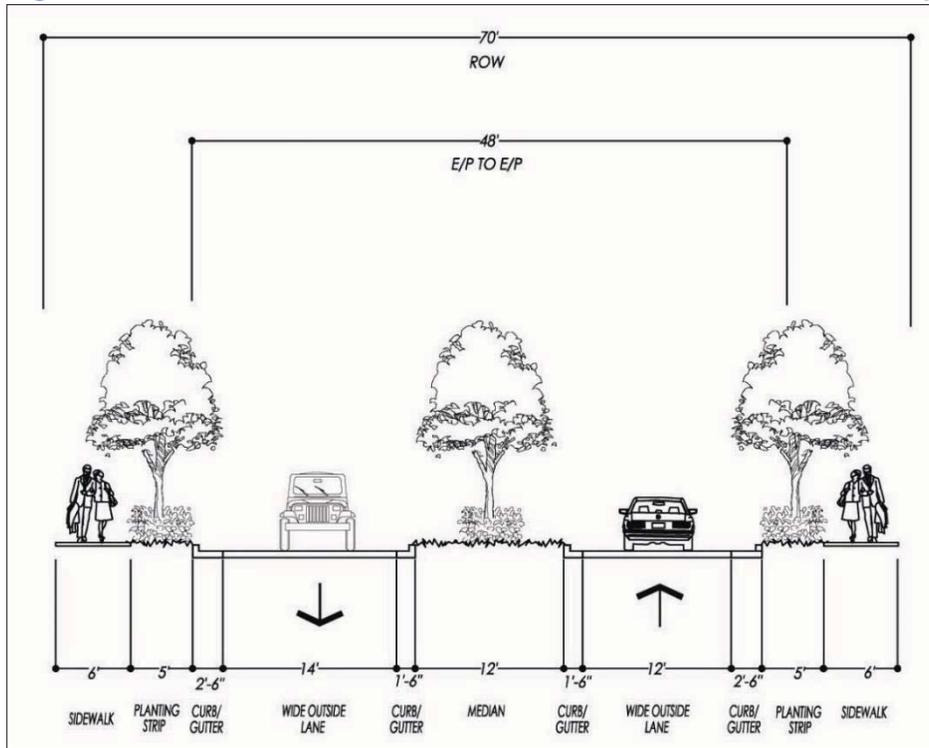


Figure 11: Previous CS Plan - Urban Context Commercial Collector, Type B

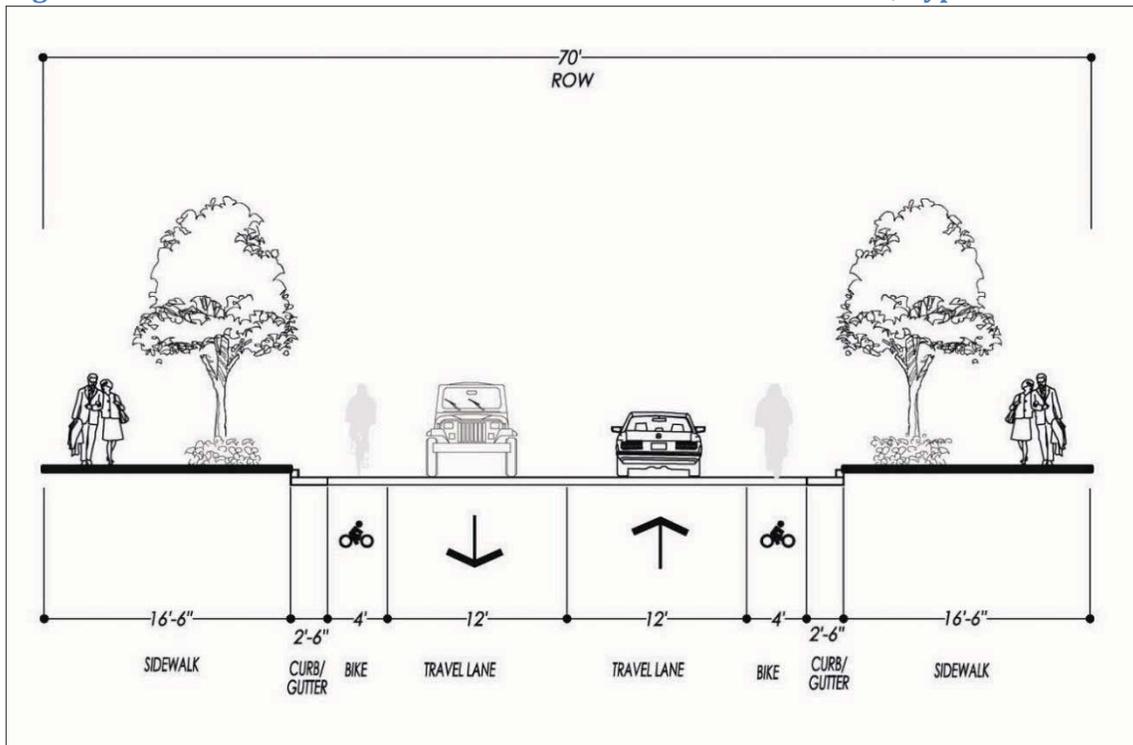
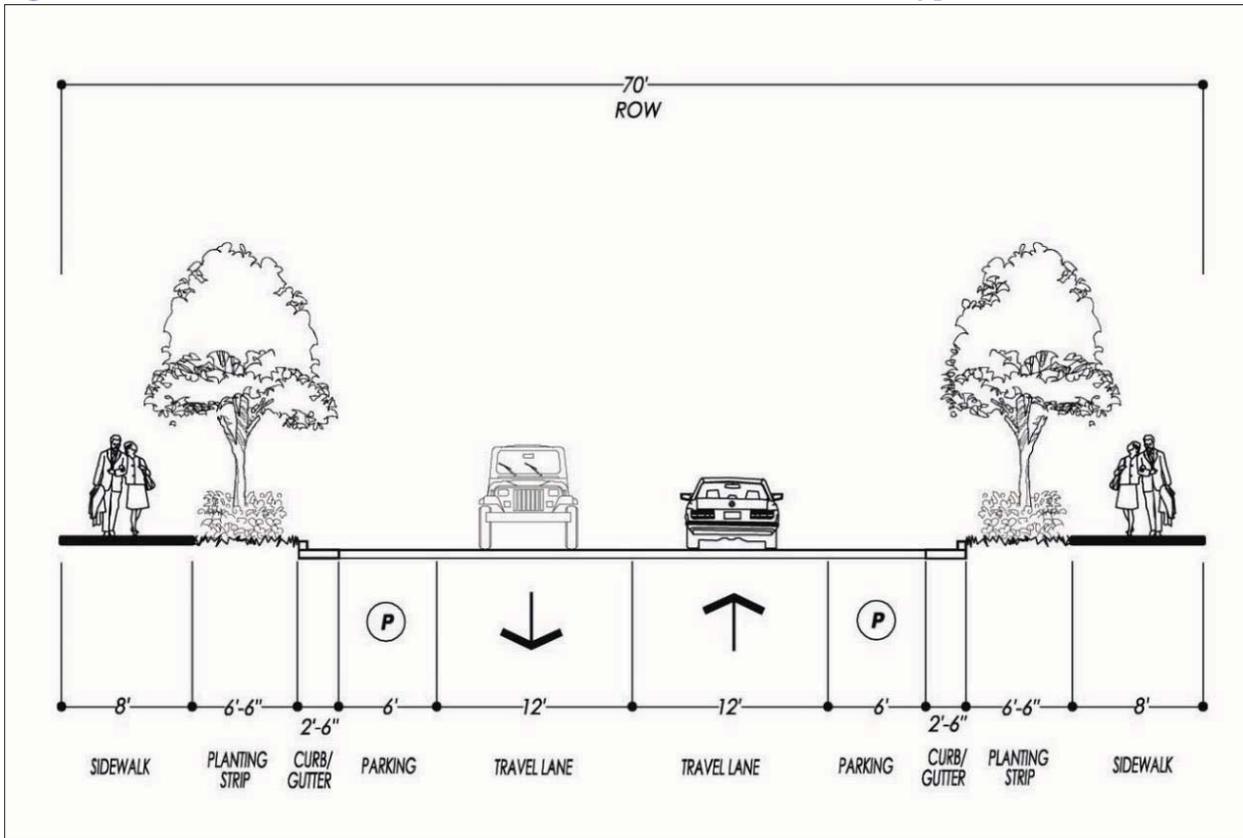




Figure 12: Previous CS Plan - Urban Context Commercial Collector, Type C



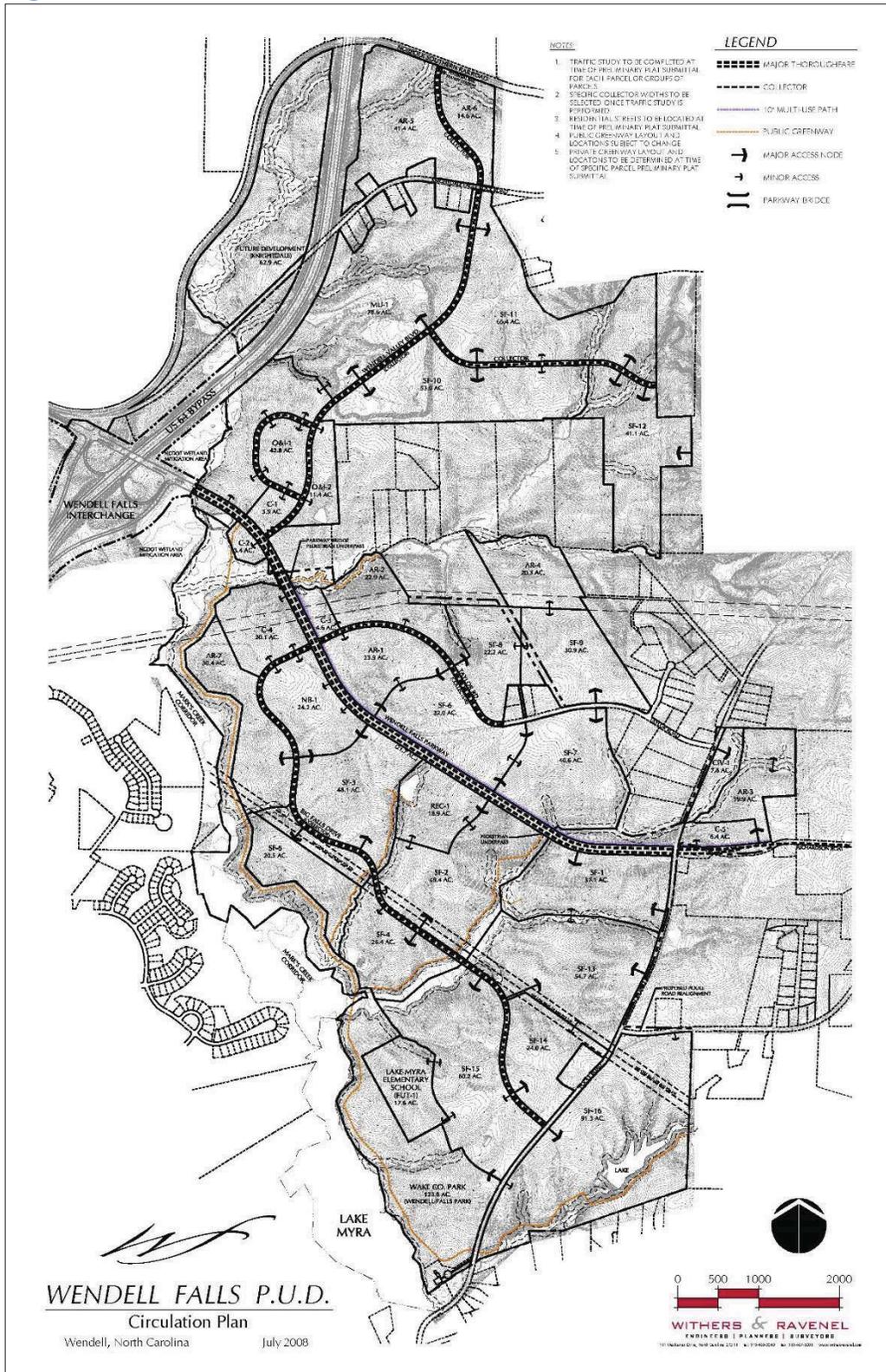
Wendell Falls P.U.D. Circulation Plan

One of the primary factors influencing growth and traffic patterns at the outset of this transportation plan update is the development of Wendell Falls. Wendell Falls is a master-planned, mixed-use development of over 1,000 acres located at the western extent of Wendell’s jurisdiction. Due to its significance, AMT reviewed and assessed how the road networks contained within the Wendell Falls Planned Unit Development’s Circulation Plan would fit within Wendell’s larger transportation system.

The plan shows the approximate alignments of the collector streets within the development. Items of include the Big Falls Drive connection to Poole Road, the Poole Road realignment, the Taylor Road alignment, the Wendell Valley Boulevard connection with Knightdale Eagle Rock Road, and the remaining collector street’s connection to the east with what appears to be Petunia Lane. This plan is shown in Figure 13.



Figure 13: Wendell Falls PUD Circulation Plan





EXTERNAL LITERATURE REVIEW

To better understand the context of the Town, the project team needs to have thorough knowledge of the plans laid-out by the surrounding communities and regulatory agencies. To this end, the project team has reviewed the following documents:

- Capital Area Metropolitan Planning Organization Northeast Area Study
- Capital Area Metropolitan Planning Organization 2040 Projected Traffic Volumes
- Town of Clayton General Design Guidelines
- Johnston County Transportation Plan
- Knightdale Transportation Plan
- Wake County Collector Street Plan
- Zebulon Comprehensive Plan
- Zebulon Multimodal Transportation Plan

Capital Area Metropolitan Planning Organization Northeast Area Study

Source: <http://www.neareastudy.com/#!reports/cwcp>

The Northeast Area Study covered northeastern Wake and southwestern Franklin counties. This includes Raleigh, Wake Forest, Knightdale, Franklinton, Youngsville, Rolesville, Wendell, Zebulon, and Bunn. The goal of the study was to identify a sustainable transportation strategy for the growing region.

Key Projects

The study proposes cost-effective roadway improvements. Three projects were identified in and around Wendell:

1. Wendell Boulevard was proposed to be widened from a two-lane to a four-lane section. The extents of the project are from NC 97 to Liles Dean Road. This has been established as a mid-term priority with an estimated cost of \$11.4 million.
2. NC 97 was proposed to be widened from a two-lane to a four-lane section with an on-road bicycle facility. The extents of the project are from US 64 to Wedgewood Avenue. This has been established as a long-term priority with an estimated cost of \$35.86 million
3. Old Battle Bridge Road was identified to be extended from the existing terminus to Knightdale Eagle Rock Road. The cross-section was identified to consist of two-lanes with sidewalks. This 1.7 mile extension has been established as a long-term priority with an estimated cost of \$8.68 million.



Town of Clayton General Design Guidelines

Source: <http://www.townofclaytonnc.org/uploads/files/Planning/General%20Design%20Guidelines%202-20-2006.pdf>

The Town of Clayton adopted their General Design Guidelines in February of 2006. Of interest are their guidelines regarding streets as well as bike lanes.

Streets and Pathways

Clayton's guidelines focus on establishing general principles. For instance, their guidelines note, "developments linked to the street system should make their contribution to a harmonious streetscape, with adequate sidewalk space and landscaping." With regard the circulation, the guidelines make the following statement:

"Extend existing street patterns for efficient circulation, while avoiding offset intersections."

Areas where specific needs are stated are the need for major landscaping and visual improvements at the gateway entrances to Clayton. Specifically along NC 42 and US 70. Additionally, the guidelines state:

"Developments located along potential urban pathways, bikeways, or trails as shown in the Community Plan or Clayton Recreation and Park Master Plan should provide suitable linkages to Clayton's neighborhoods."

Bikeways

The guidelines do mention some specifics as it relates to bikeways. Those relevant to the Wendell Arterial and Collector Street Plan are as follows:

- Keep bikeway opportunities open along creek sides. Provide bikeways or easements for future development as appropriate
- Design bikeways to connect to transit station bike storage, shopping centers bike racks, schools, colleges, and parks
- Bike lanes should be avoided on streets with complicated intersections interchanges and where parking obscures visibility
- Sidewalks should never be designed as a multi-use path for bicyclists
- Bicycle lanes should not be striped adjacent to on-street parking due to the hazard of car doors opening into the bike lane

Johnston County Transportation Plan

Source: <http://www.townofclaytonnc.org/uploads/files/Planning/Johnston%20County%20Comprehensive%20Transportation%20Plan.pdf>

While Wendell is not located within Johnston County, it is located a few miles from the Wake/Johnston county border. Having knowledge and coordination with neighboring agencies is necessary for an



effective plan. Provided in a series of maps, the plan was completed in July of 2011. The following are of note to the Wendell Arterial and Collector Street Plan:

- NC 231 is labeled an Existing Major Thoroughfare
- Buffalo Road, which becomes Eagle Rock Road in Wake County, is labeled as a Boulevard that “needs improvement.” It is currently a two-lane undivided cross-section near the county line.
- Buffalo Road, which becomes Eagle Rock Road in Wake County, is labeled as an on-road bicycle facility that “needs improvement.”



Knightsdale Transportation Master Plan

Source: <http://www.knightdalenc.gov/modules/showdocument.aspx?documentid=683>

The goals of the Knightdale Transportation Master Plan are to address mobility needs throughout the Town’s planning jurisdiction and urban service area through the development of a network of interconnected streets. Additionally, the plan encourages the development of a network of sidewalks, bicycle lanes, and mass transit options. Of the six major sections of the plan, the most relevant to the Wendell Arterial and Collector Street Plan are:

- Street Classification System
- Transportation Maps
- Street Design Guidelines

Street Classification System

The plan defines four categories of street classification. Those are listed in Table 5.

Table 5: Knightdale Street Classification Categories

Category	Synonym	Definition
Freeway	-	A multi-lane median divided facility with full control of access. US 64 and the Eastern Wake Expressway are examples.
Arterial	Boulevard / Thoroughfare	A street used to promote moderate mobility with limited access, moderate volume, and moderate speed. Travel speeds are projected at 30-45 mph with a four lane median-divided cross section equipped with turn bays.
Collector	Avenue	These facilitates focus on access. Their intended purpose is to distribute traffic to and from the arterials to the local system.
Local	-	These are minor streets intended to carry local traffic from collectors to individual lots within residential neighborhoods. Their features emphasize safety and mobility for pedestrians.

Transportation Maps

The plan goes onto present a series of maps which highlight existing and proposed routes along with their classifications and whether improvements are needed. The plan is largely limited to Knightdale’s corporate limits. The following are relevant to the Wendell Arterial and Collector Street Plan:

- Knightdale Boulevard (i.e. Wendell Boulevard)
 - o Listed as an existing arterial which needing improvement in their Arterial and Collector Street Plan
 - o Planned as a 6-lane Boulevard (i.e. arterial) with variable right of way width



- Robertson Street (i.e. Wendell Falls Parkway)
 - o Listed as an existing arterial which needing improvement in their Arterial and Collector Street Plan
 - o Planned as a Boulevard (i.e. arterial) with 100 foot right of way near the interchange with US 64 / US 264 Bypass
 - o Highlighted for wide sidewalks and as a cross-town bicycle route on the Bicycle and Pedestrian Plan near the interchange with US 64 / US 264 Bypass

- Puryear Road
 - o The existing location is listed as a collector street needing improvement
 - o Additionally, the Arterial and Collector Street Plan shows an east-west connection from the intersection of Horton Road in the northwestern area around Wendell
 - o This existing and proposed section of Puryear Road is listed as a Main Street in the Knightdale functional classification plan with 64 feet of right of way.

These three facilities are listed on the functional classification table adapted from the report in Table 6.

Table 6: Knightdale Street Classification Specifics

Route	Classification	Sidewalk	Curb/ Gutter	On-Street Parking	Bike Markings
Knightdale Boulevard	6-Lane Divided	Yes	Yes	None	None
Robertson Street	Boulevard	Yes	Yes	None	Yes
Puryear Road	Main	Yes	None	None	None

These maps are shown on the following pages in Figure 14, Figure 15 and Figure 16.



Figure 14: Knightdale Arterial & Collector Street Plan

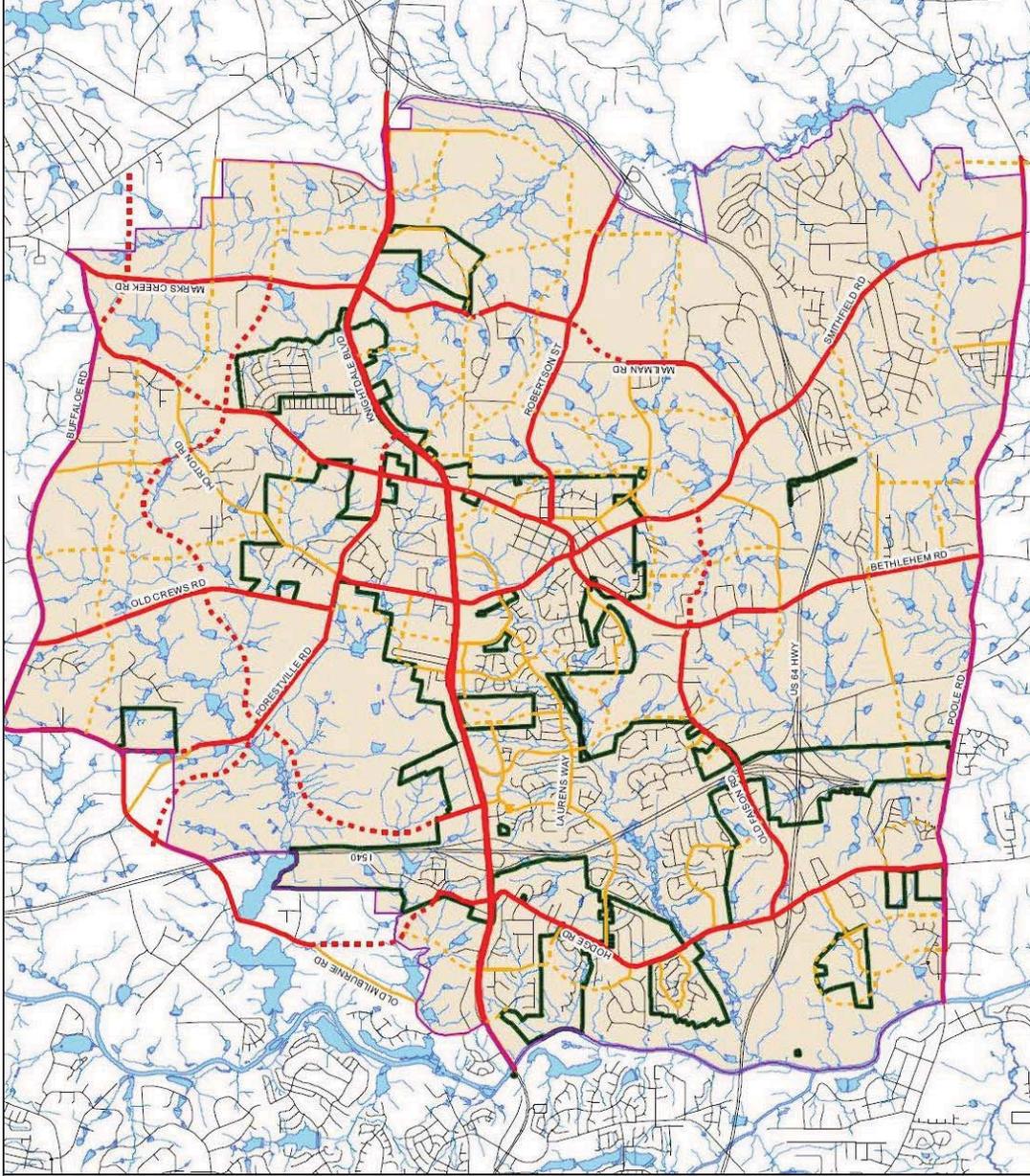
ARTERIAL & COLLECTOR STREET PLAN



Town of Knightdale
Planning Department
2010

Legend

- Urban Service Area Boundary
- Proposed Arterial Connections
- Proposed Collector Connections
- Existing Arterial Streets (Needs Improvements)
- Existing Collector Streets (Needs Improvements)
- Streets
- Knightdale Corporate Limits (2009)
- Surface Waters
- Surface Streams



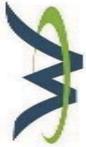


Figure 15: Knightdale Functional Class Plan

FUNCTIONAL CLASS PLAN



Town of Knightdale
Planning Department
2010

Legend

- Six Lane Boulevard - Variable Width
- Boulevard - 100 Foot ROW
- Urban Avenue - 90 Foot ROW
- Avenue - 74 Foot ROW
- Main Street - 64 Foot ROW
- Local Street - 54 Foot ROW
- Knightdale Corporate Limits (2009)
- Urban Service Area Boundary
- Streets
- Surface Waters
- Surface Streams

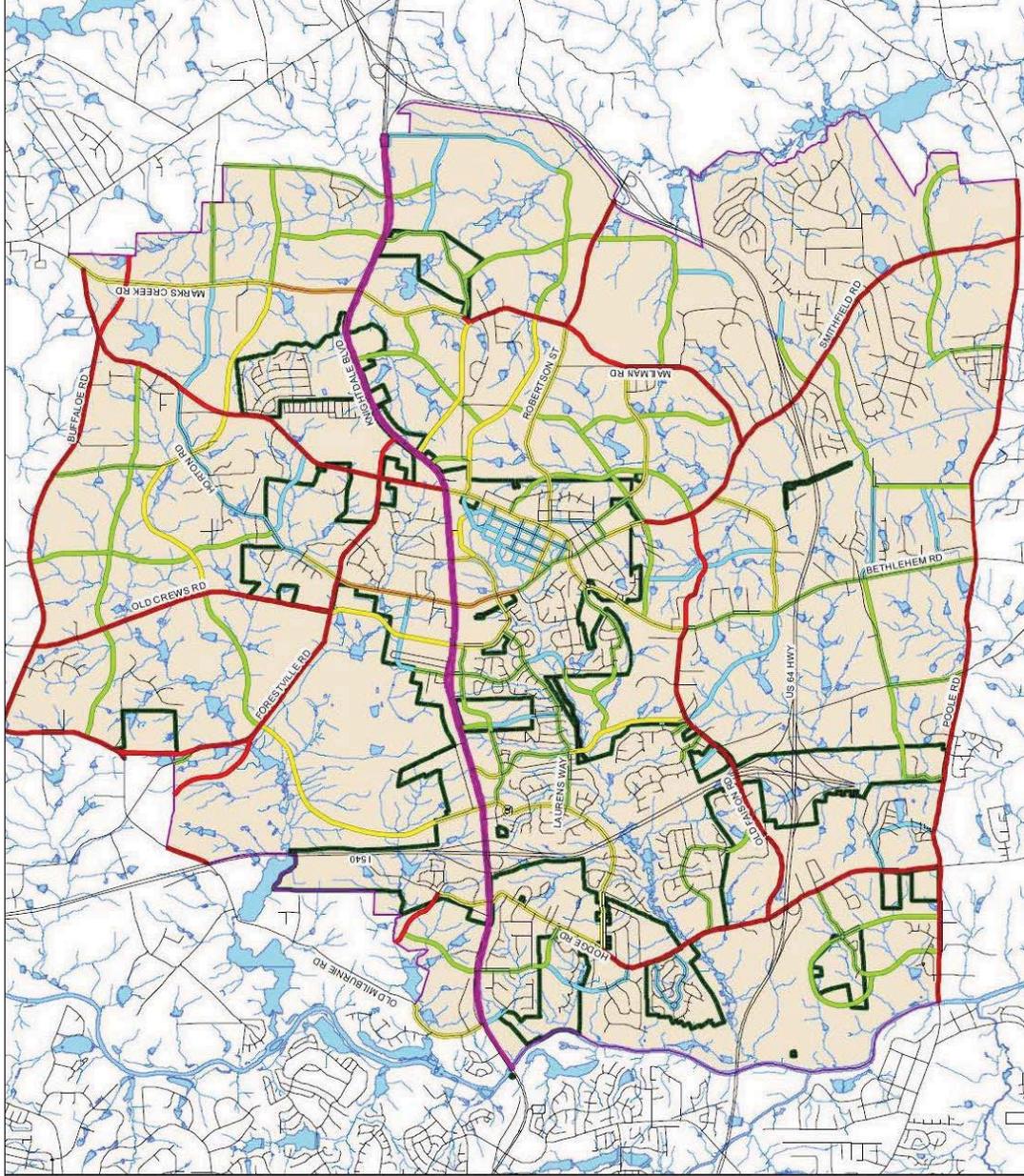




Figure 16: Knightdale Bicycle & Pedestrian Plan

BICYCLE & PEDESTRIAN PLAN



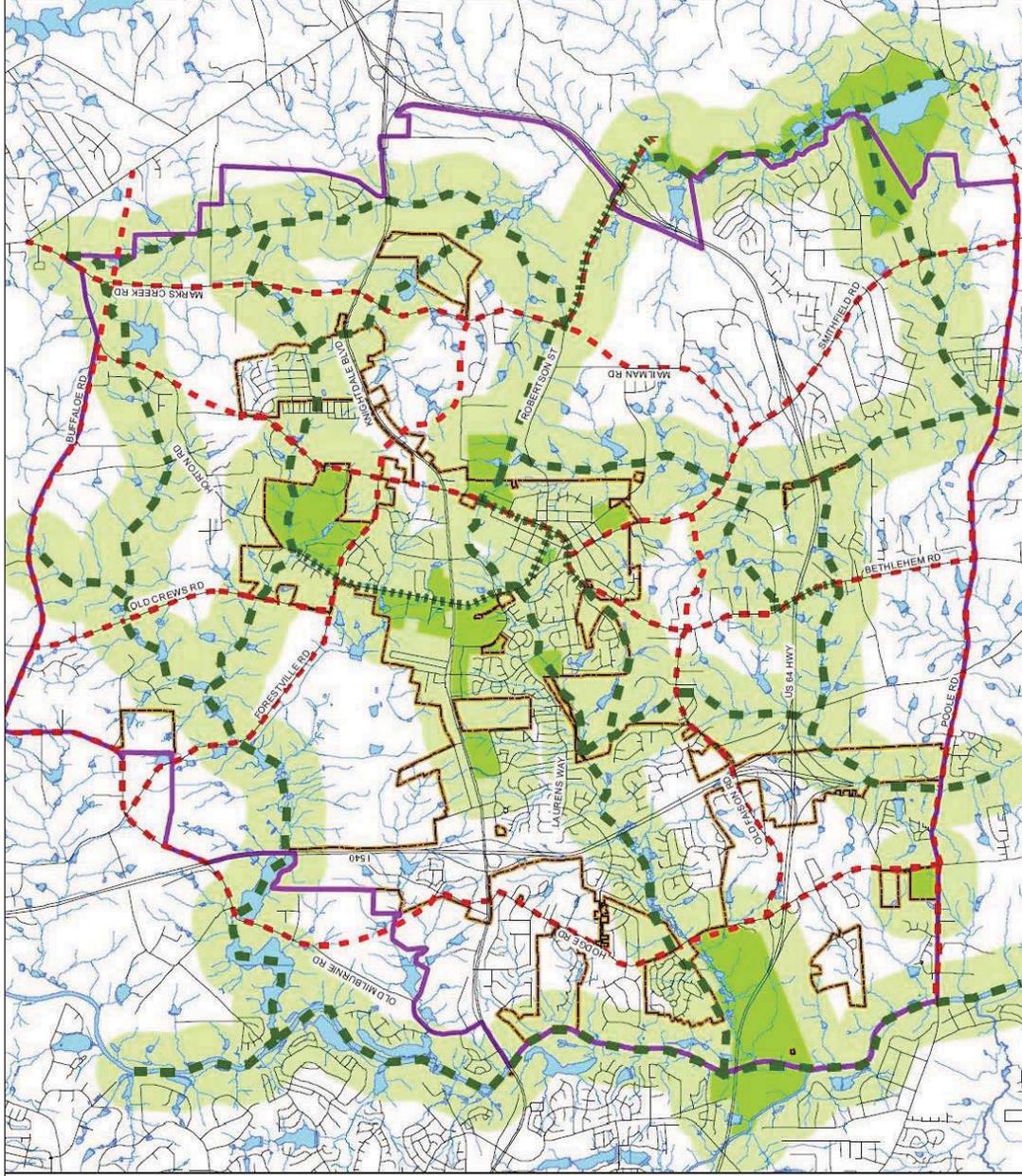
Town of Knightdale
Planning Department
2010

- Legend**
- Streets
 - 10' Multi-Use Paths
 - Wide Sidewalks
 - Cross-Town Bicycle Routes
 - Urban Service Area Boundary
 - Knightdale Corporate Limits (2009)
 - Surface Waters
 - Surface Streams
 - Pedestrian Destination Areas
 - High Pedestrian Connectivity Area



1 inch = 3,400 feet

0 1,700 3,400 6,800 10,200 Feet





Street Design Guidelines

The Street Design Guidelines are intended to encourage interconnected streets which connect the vital urban and rural aspects of the Town. Additionally, the guidelines promote sidewalks and bike lanes. The points of interest to the Wendell Arterial and Collector Street Plan are:

- Streets in the Urban Village District and within Countryside Village and Neighborhood centers should provide on-street parking where practical
- Streets should interconnect both within a development and with adjoining developments
- Cul-de-sacs are permitted only where topographic and/or environmental conditions offer no practical alternatives for connections
- Street stubs should be provided within a development adjacent to open land to provide future connections
- Closed or gated streets should be discouraged as they do not reflect the public nature and purpose of a street
- Blocks should not be less than 200 feet nor more than 1,320 feet (i.e. ¼ mile), unless special site, topographic or environmental factors are present; or the block is part of an urban center
- A modified grid street system should be designed throughout higher density areas of the town; thereby increasing the number of access routes for emergency vehicles

Wake County Collector Street Plan

Source: <http://www.wakegov.com/planning/transport/documents/wakecountycollectorstreetreport.pdf>

The most recent Wake County Collector Street Plan was completed in April of 2004. The plan provides recommendations on new collector links, however it does not overlap greatly with the study area of the Wendell Arterial and Collector Street Plan. Of note is the planned extension of Robertson Pond Road to Puryear Road. This planned collector is shown from the Robertson Pond Road terminus at Rolesville Road bending to the northwest and connection to Puryear Road at the intersection of Puryear Road and Keiths Road. However, the plan defines four different cross-sections for collector streets. Specifically, Low-Intensity, Medium-Intensity, High-Intensity, and Activity Center collectors. The following figures present the specifics of the various collector street types and the illustrations presented in the Wake County Collector Street Plan.



Figure 17: Wake County CS Plan - Low Intensity Collector Street

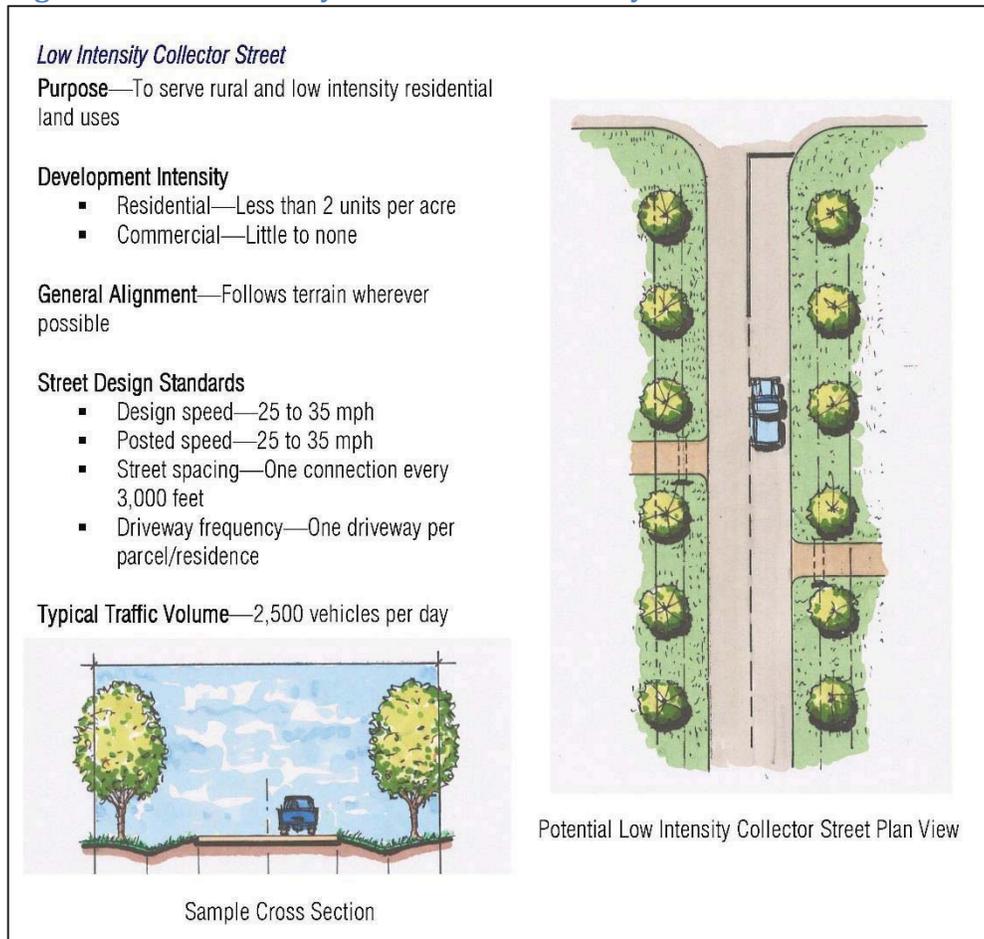


Figure 18: Wake County CS Plan - Medium Intensity Collector Street

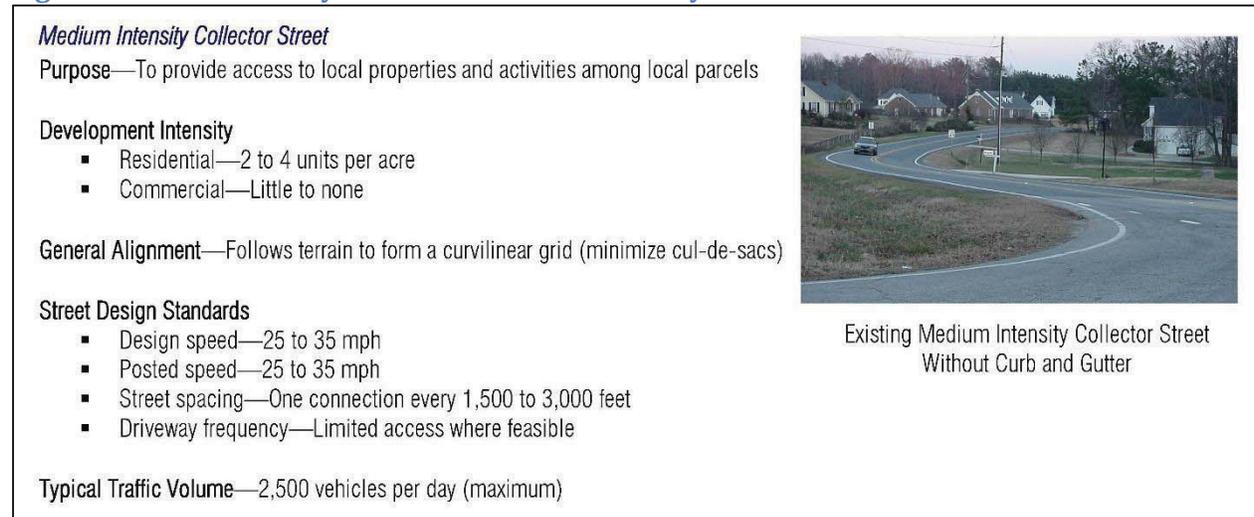




Figure 19: Wake County CS Plan – High Intensity Collector Street

High Intensity Residential Collector Street

Purpose—To provide access to local properties and activities among local parcels

Development Intensity

- Residential—More than 4 units per acre
- Commercial—Some

General Alignment—Interconnected grid with few (if any) cul-de-sacs

Street Design Standards

- Design speed—25 to 35 mph
- Posted speed—25 to 35 mph
- Sidewalks—Both sides
- Street spacing—One connection every 750 to 1,500 feet

Typical Traffic Volume—2,500 to 5,000 vehicles per day



Existing High Intensity Collector Street

Potential High Intensity Collector Street Plan View

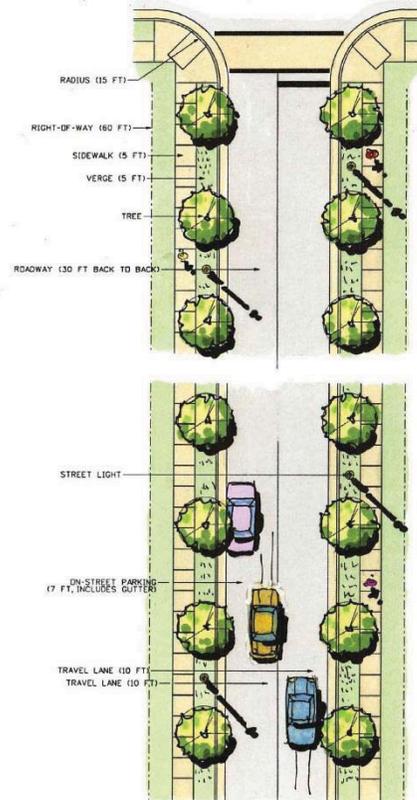
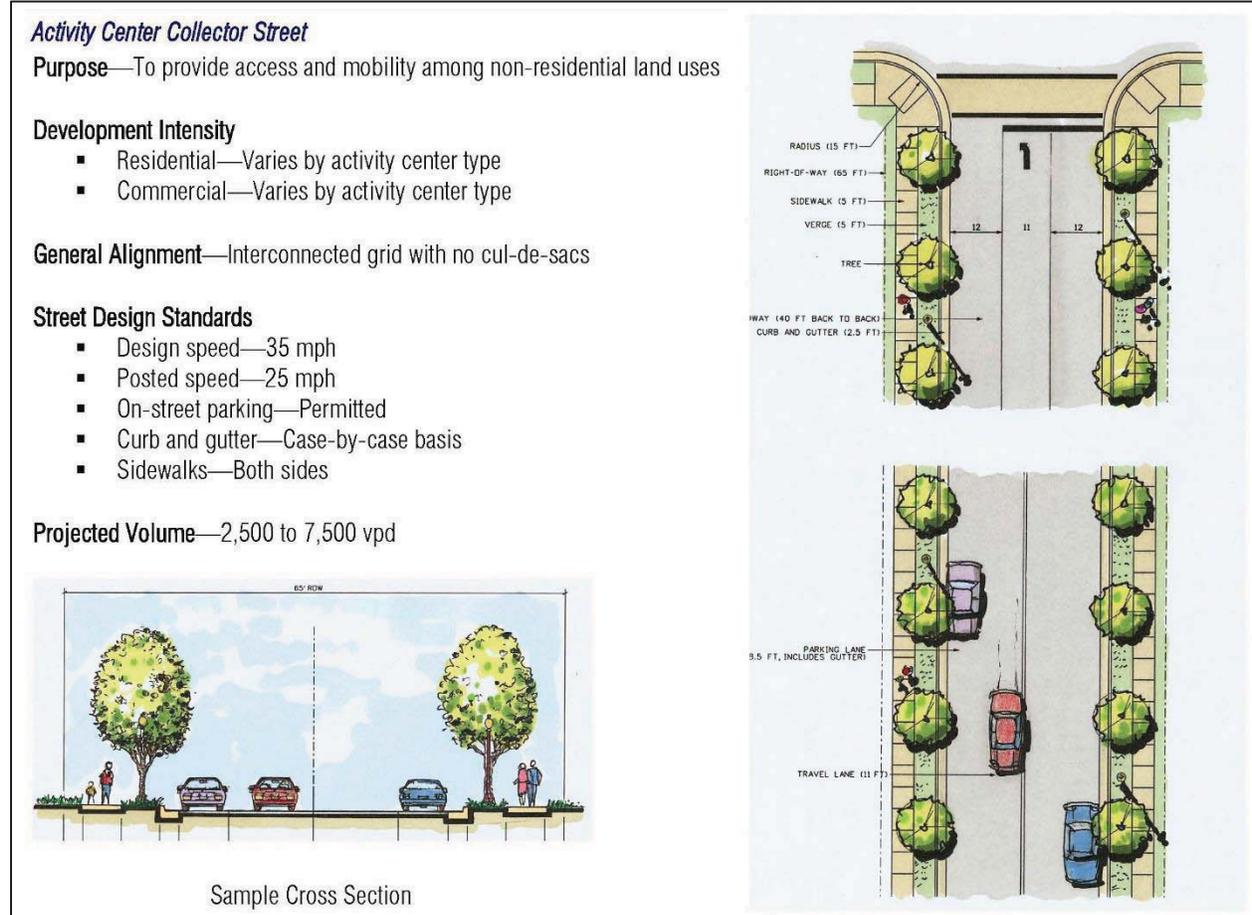




Figure 20: Wake County CS Plan – Activity Center Collector Street



Zebulon Comprehensive Plan

Source: <http://www.townofzebulon.org/uploads/Comprehensive%20Plan.pdf>

Completed in June of 2008, the Zebulon Comprehensive Plan delves into the population trends, government structure, economic development, and several other topics. Transportation is covered in chapter five and focuses on establishing goals and objectives rather than recommendations on cross-sections and alignments. The Plan does establish the need for a *Gateway Plan*, which would improve and enhance facilities such as NC 96, US 64, NC 97, and others. This is of note for the Wendell Arterial and Collector Street Plan as US 64 Business links the city centers of Wendell and Zebulon. Similarly, the Comprehensive Plan calls for the development of a Streetscape Design Plan. Both of these documents have yet to be produced.

Conversely, Zebulon’s Multimodal Transportation Plan was produced in May 2014.



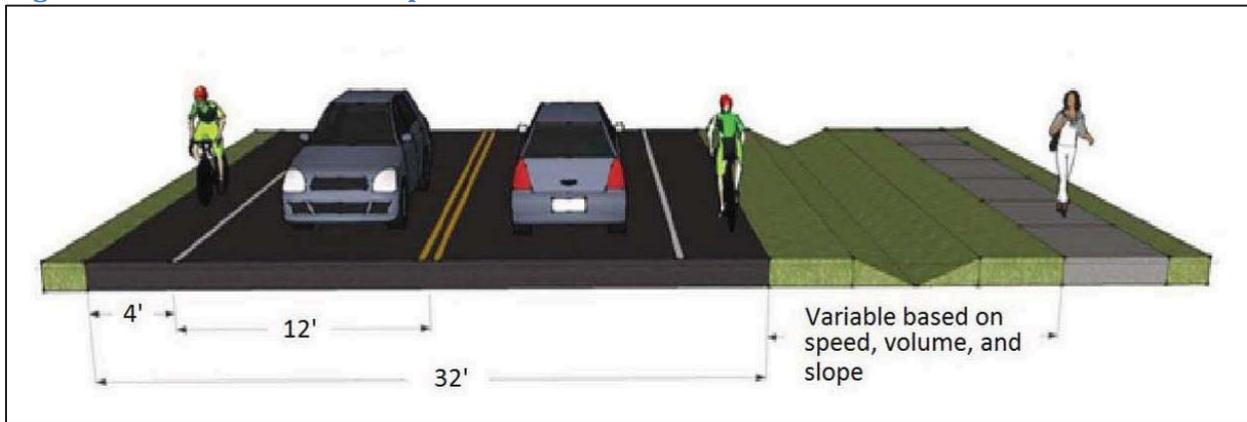
Zebulon Multimodal Transportation Plan

Source: http://townofzebulon.org/uploads/Zebulon%20Complete_wCover_042314.pdf

This Transportation Plan updates the previous version. It lists several projects for widening or modernization of facilities. Only one project is of relevance to the Wendell Arterial and Collector Street Plan.

Mack Todd Road (US 64 Business), known as Wendell Boulevard within Wendell, is listed to remain a two-lane cross-section. However, it notes that paved shoulders will be added for bicycles along with a sidewalk on one side of the roadway will be added north of Barbee Street. The cross-section presented in Figure 21 is an example.

Figure 21: Zebulon MM Transportation Plan – Mack Todd Road Potential Cross-Section





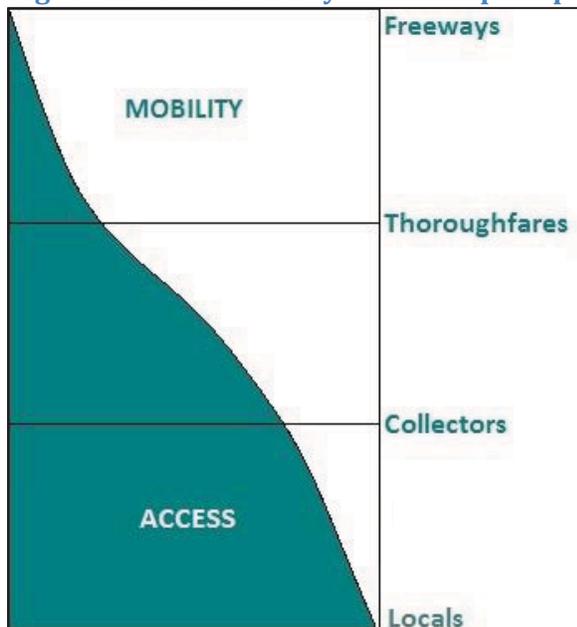
CREATION OF ROADWAY CLASSIFICATIONS

Before specific classifications are assigned to existing and proposed roadway segments, the project team needs to define each classification as well as their characteristics. To this end, this section presents those definitions and their characteristics.

Functional System

Roadways are grouped into classes based on their intended service. These groupings are referred to as Functional Classification and the summation of those classifications is referred to as the Functional System. Intended service refers to the trip type. For instance, a long distance desires high speeds. Therefore, to provide those desired speeds, access must be limited on the facility to allow those desired speeds. This is referred to as a high degree of mobility. Conversely, a short-distance trip desires access to destinations and therefore can tolerate lower speeds to provide that high-degree of access safely. This is represented in Figure 22.

Figure 22: Functional System & Trip Purpose



Class Definitions

As this Plan is for arterials and collectors, we will focus on defining those two types of facilities.

Thoroughfares

These facilities serve major activity centers. They provide a high degree of mobility and have some control of access. Some resources and plans may refer to these as Arterials. With regard to this plan, both major and minor thoroughfares will be used.

Major thoroughfares are intended to provide service to large activity centers or to provide connectivity to area freeways. Land uses served are traditionally more industrial or retail areas. Minor thoroughfares

are intended to do the same, but connect smaller activity centers, allow greater access, and as such permit lower traveling speeds. Large residential areas are envisioned to be connected by minor thoroughfares. Additionally, an ideal setting would allow the minor thoroughfares to interconnect with and augment the higher-order major thoroughfares.

Collectors

Collectors gather traffic from the local facilities and transfer them to the network of thoroughfares; hence the name. These facilities can still provide service other than passing traffic to or from the thoroughfare network. They can also provide service to shorter trips between local facilities or local streets. The differences between major and minor collectors are slight, but worthy of discussion.



Major collectors are typically longer in length, have fewer access points, and provide higher traveling speeds than minor collectors. Both serve the same purpose, simply to different degrees. Much like the above thoroughfares, it is envisioned that major collectors would serve industrial or retail centers where minor collectors would serve residential areas. These descriptions are better defined in Table 7 below.

Table 7: Thoroughfare & Collector Definitions

Class	ADT Range	Cross-Section	Bike Lanes	Sidewalks	Speed Limit (mph)	ROW (feet)	Approximate Construction Cost per Linear Foot*
Major Thoroughfare	12k+	6 lane divided	Yes	Yes	45	134	\$3,400
Major Thoroughfare	12k+	4 lane divided	Yes	Yes	45	110	\$2,600
Minor Thoroughfare	9k-12k	4 lane divided	Yes	Yes	35	110	\$2,600
Minor Thoroughfare	6k-9k	3 lane undivided	Yes	Yes	35	79	\$2,150
Major Collector	5k-6k	3 lane undivided	Yes	Yes	30	79	\$2,150
Major Collector	4k-5k	2 lane divided	Yes	Yes	30	86	\$2,100
Minor Collector	2k-4k	2 lane undivided	Case-by-Case	Yes	30	67	\$1,800

*Approximate costs are for facilities on new location per linear foot of roadway centerline and do not include design or ROW

[Driveway Access](#)

As discussed previously, the overall function of each classification has preferred access limitations. It is desirable to provide all new driveway access on collector and local streets. In some cases, it may be warranted to provide small residential developments access from a thoroughfare roadway. For any major subdivision of land into more than five lots with frontage along a thoroughfare, the adjacent property owners are encouraged to construct rear alleys or a shared driveway able to serve the





properties. Joint access provides several benefits such as improved internal circulation and parking, as well as reduces conflict points along the roadway.

NCDOT in their Policy on Street and Driveway Access to North Carolina Highways provides the following:

“On most State maintained routes, the minimum distance between the centerlines of full-movement driveways into developments that generate high traffic volumes should be at least 600 feet. However, on routes with safety, congestion, or operational problems, 1,000 feet or more may be required between the centerline of any left turn access points and any adjacent street and driveways. The minimum distance between drives does not apply to service drives not used by the general public.”

Source: <https://connect.ncdot.gov/projects/Roadway/RoadwayDesignAdministrativeDocuments/Policy%20on%20Street%20and%20Driveway%20Access.pdf>

The definitions listed in Table 7 are illustrated via the cross-sections in the following section. It should be noted that the costs presented in the previous table are for facilities on new location. Expansions or modifications of existing facilities should be treated on a case-by-case basis. The costs presented are based upon averages developed by NCDOT and modified for the particular section’s characteristics. They do not include costs for design or right of way acquisition.



ROADWAY CROSS-SECTIONS

The previous discussion has led to the development of illustrated cross-sections for each functional class defined in Table 7. These are shown in Figure 23 through Figure 29. These illustrations are accompanied by their respective information originally presented in Table 7.

Figure 23: Major Thoroughfare, 6 Lane Divided Cross-Section

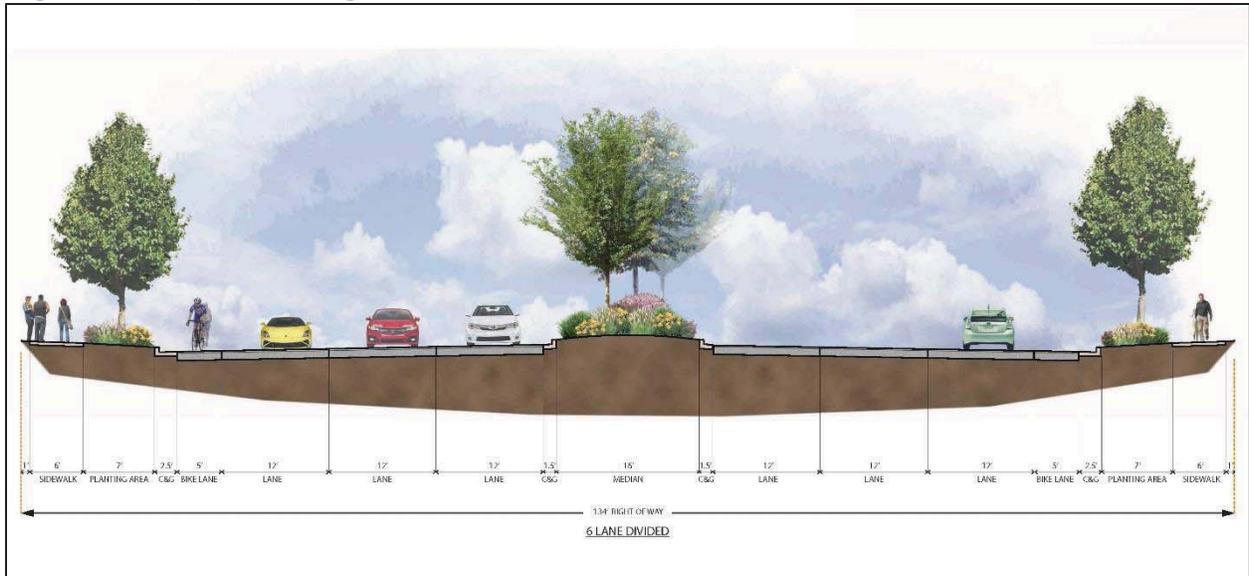


Table 8: Major Thoroughfare, 6 Lane Divided Cross-Section

Class	ADT Range	Cross-Section	Bike Lanes	Sidewalks	Speed Limit (mph)	ROW (feet)	Approximate Construction Cost per Linear Foot*
Major Thoroughfare	12k+	6 lane divided	Yes	Yes	45	134	\$3,400

*approximate costs are for facilities on new location per linear foot of roadway centerline and do not include design or ROW



Figure 24: Major Thoroughfare, 4 Lane Divided Cross-Section

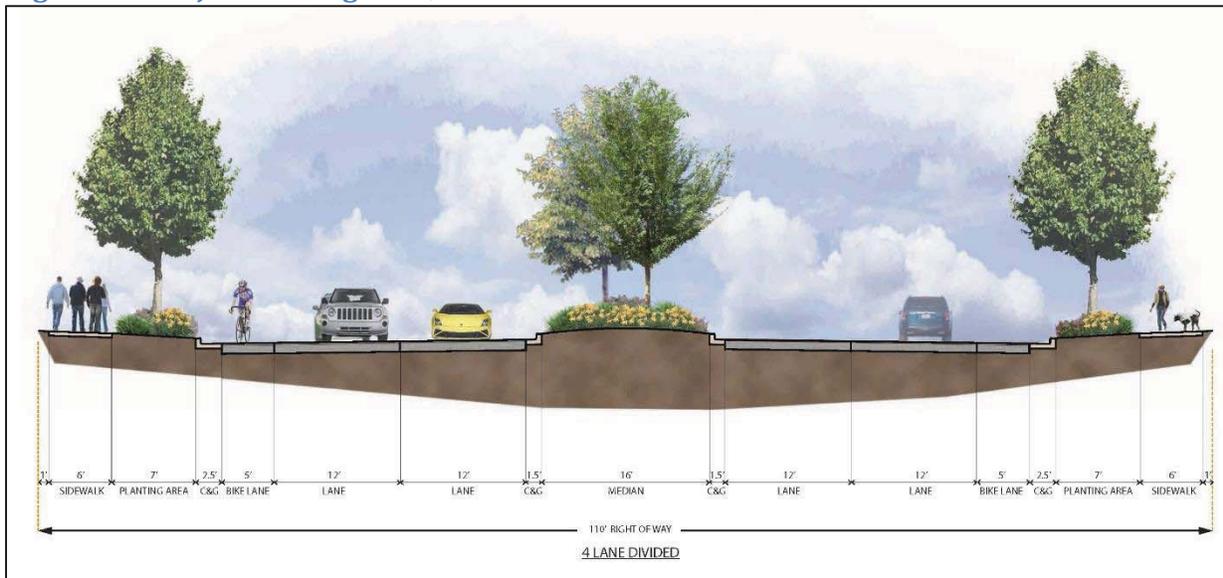


Table 9: Major Thoroughfare, 4 Lane Divided Cross-Section

Class	ADT Range	Cross-Section	Bike Lanes	Sidewalks	Speed Limit (mph)	ROW (feet)	Approximate Construction Cost per Linear Foot*
Major Thoroughfare	12k+	4 lane divided	Yes	Yes	45	110	\$2,600

*approximate costs are for facilities on new location per linear foot of roadway centerline and do not include design or ROW



Figure 25: Minor Thoroughfare, 4 Lane Divided Cross-Section

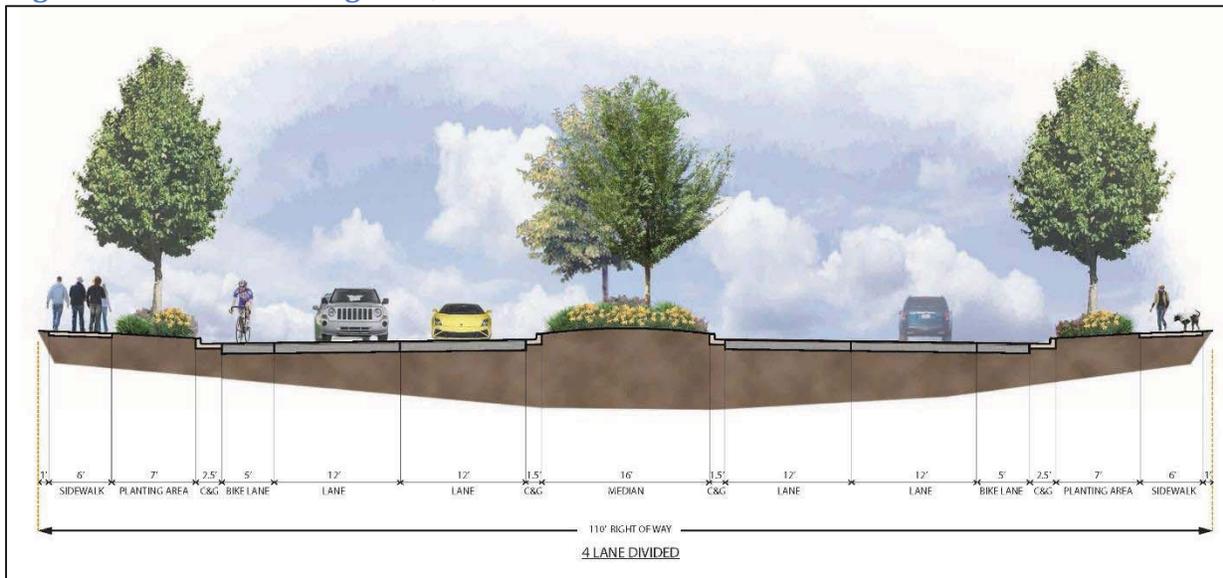


Table 10: Minor Thoroughfare, 4 Lane Divided Cross-Section

Class	ADT Range	Cross-Section	Bike Lanes	Sidewalks	Speed Limit (mph)	ROW (feet)	Approximate Construction Cost per Linear Foot*
Minor Thoroughfare	9k-12k	4 lane divided	Yes	Yes	35	110	\$2,600

*approximate costs are for facilities on new location per linear foot of roadway centerline and do not include design or ROW



Figure 26: Minor Thoroughfare, 3 Lane Undivided Cross-Section

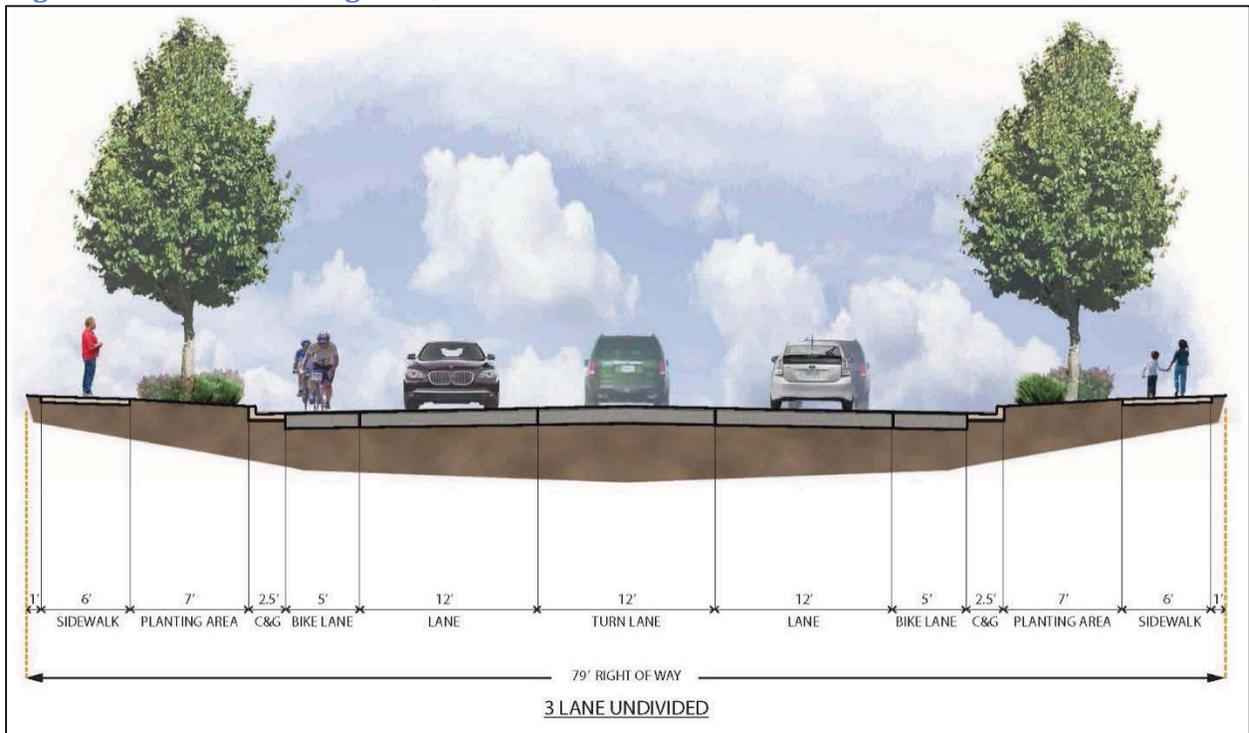


Table 11: Minor Thoroughfare, 3 Lane Undivided Cross-Section

Class	ADT Range	Cross-Section	Bike Lanes	Sidewalks	Speed Limit (mph)	ROW (feet)	Approximate Construction Cost per Linear Foot*
Minor Thoroughfare	6k-9k	3 lane undivided	Yes	Yes	35	79	\$2,150

*approximate costs are for facilities on new location per linear foot of roadway centerline and do not include design or ROW



Figure 27: Major Collector, 3 Lane Undivided Cross-Section

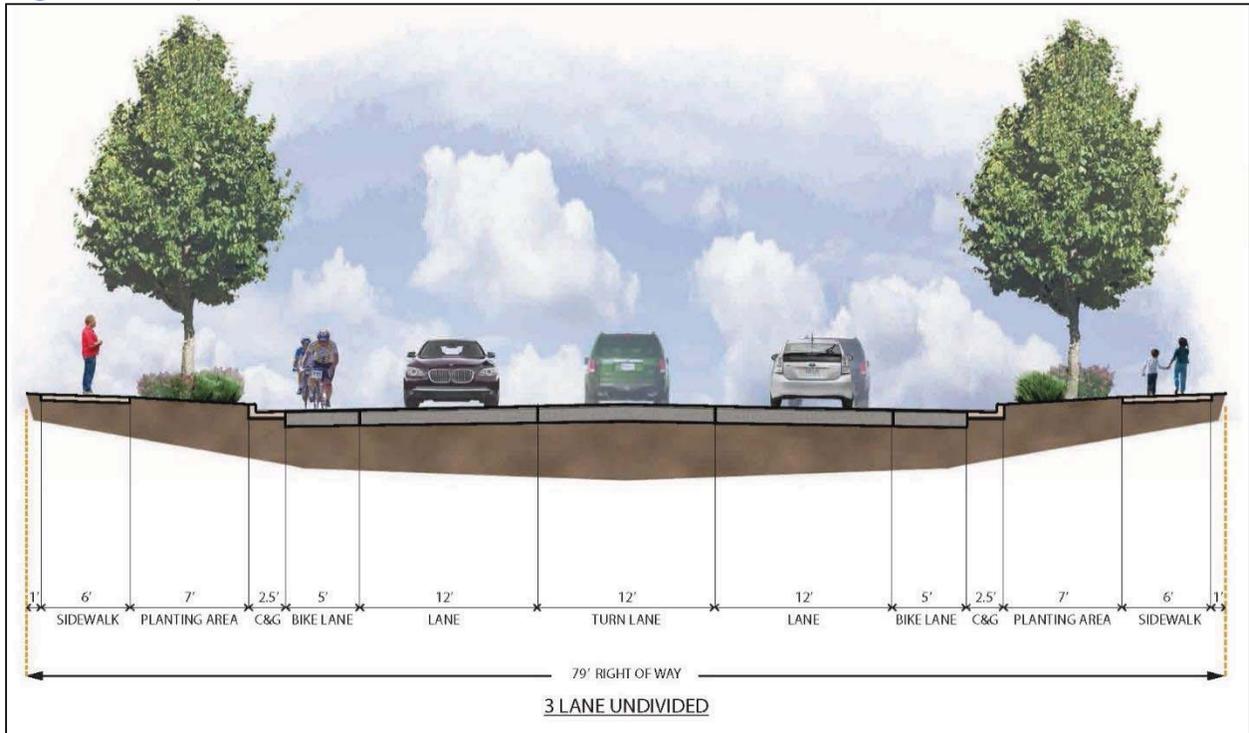


Table 12: Major Collector, 3 Lane Undivided Cross-Section

Class	ADT Range	Cross-Section	Bike Lanes	Sidewalks	Speed Limit (mph)	ROW (feet)	Approximate Construction Cost per Linear Foot*
Major Collector	5k-6k	3 lane undivided	Yes	Yes	30	79	\$2,150

*approximate costs are for facilities on new location per linear foot of roadway centerline and do not include design or ROW



Figure 28: Major Collector, 2 Lane Divided Cross-Section

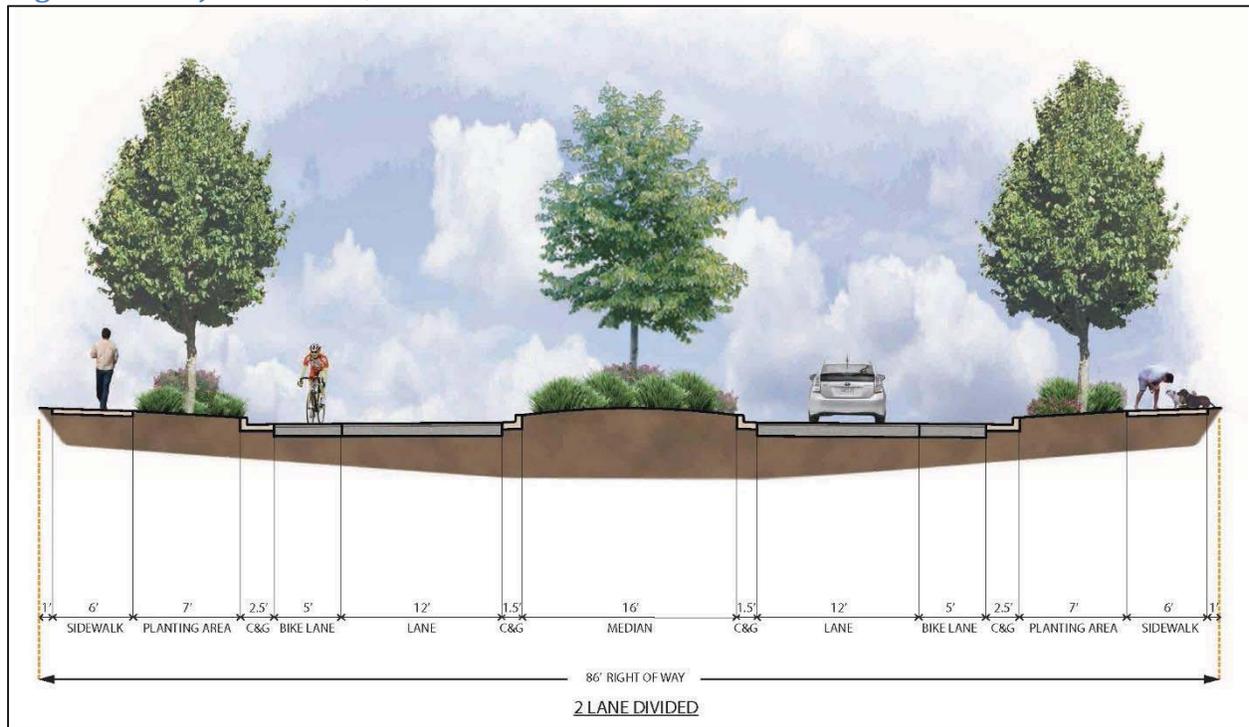


Table 13: Major Collector, 2 Lane Divided Cross-Section

Class	ADT Range	Cross-Section	Bike Lanes	Sidewalks	Speed Limit (mph)	ROW (feet)	Approximate Construction Cost per Linear Foot*
Major Collector	4k-5k	2 lane divided	Yes	Yes	30	86	\$2,100

*approximate costs are for facilities on new location per linear foot of roadway centerline and do not include design or ROW



Figure 29: Minor Collector, 2 Lane Undivided Cross-Section

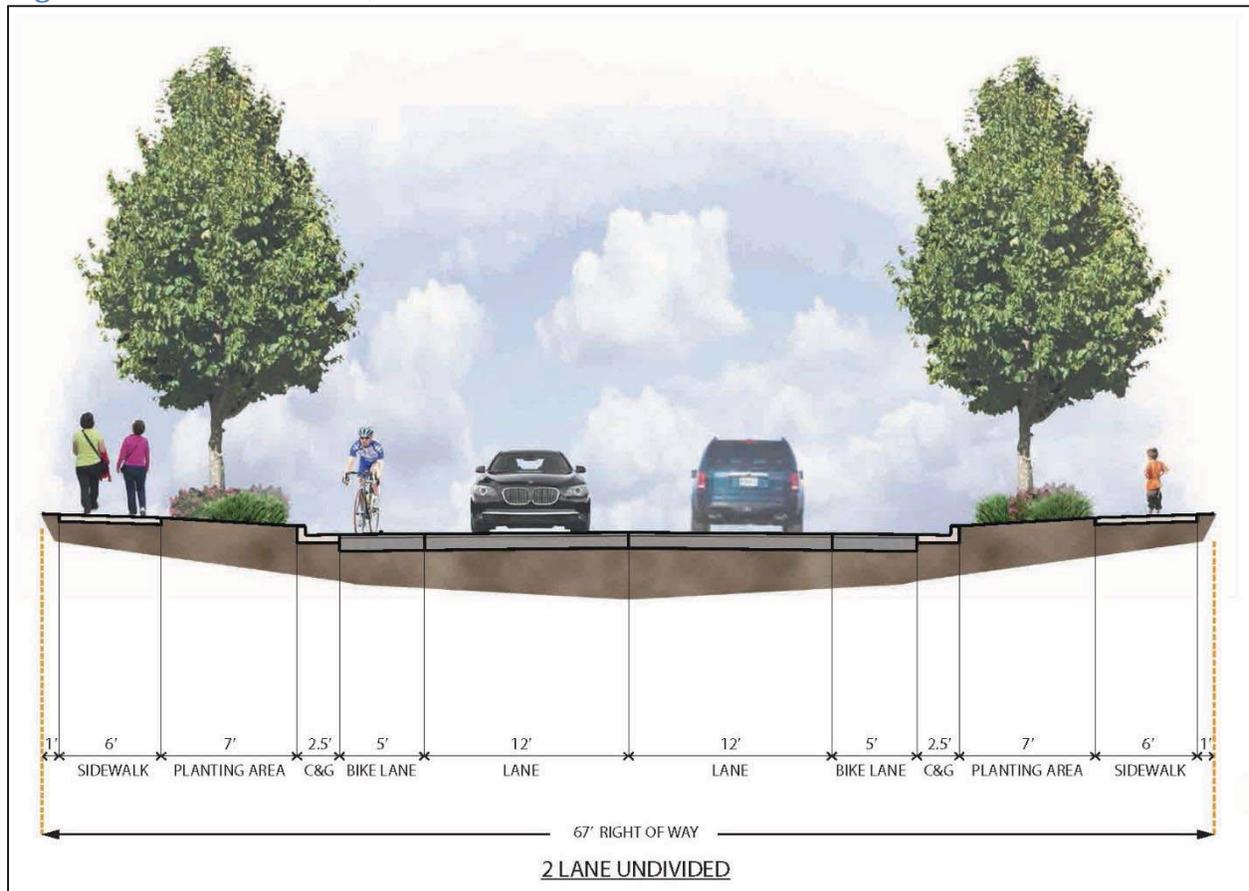


Table 14: Minor Collector, 2 Lane Divided Cross-Section

Class	ADT Range	Cross-Section	Bike Lanes	Sidewalks	Speed Limit (mph)	ROW (feet)	Approximate Construction Cost per Linear Foot*
Minor Collector	2k-4k	2 lane undivided	Case-by-Case	Yes	30	67	\$1,800

*approximate costs are for facilities on new location per linear foot of roadway centerline and do not include design or ROW

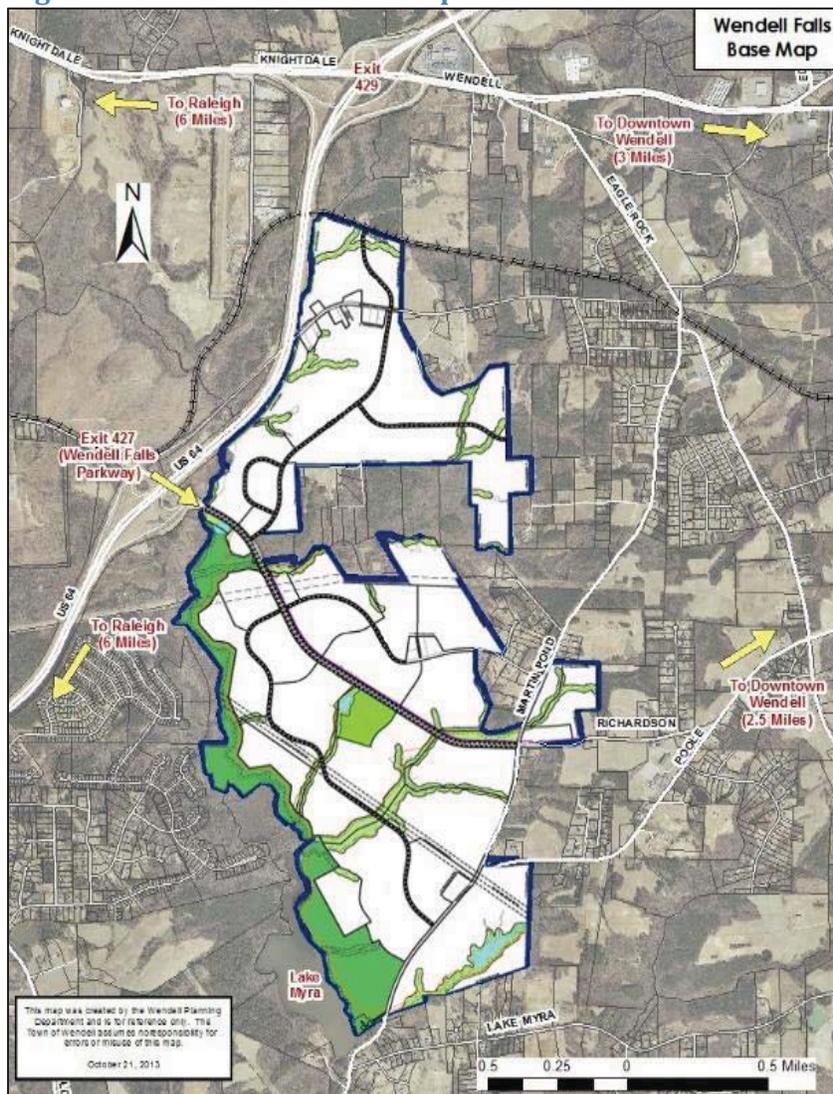


WENDELL FALLS PARKWAY CORRIDOR STUDY

The Town has commissioned the study of Wendell Falls Parkway in conjunction with the redevelopment of an Arterial and Collector Street Plan. As one of the main gateway facilities into the Town and with recent developments along the 4.6 mile facility, Wendell Falls Parkway is paramount to the transportation network within and around Wendell. It connects US 64/ US 264 Bypass to the west and the core of Wendell to the east.

This section evaluates Wendell Falls Parkway from just east of the interchange with US 64 / US 264 Bypass to US 64 Business (Wendell Boulevard) in downtown Wendell. Resulting from this evaluation are the development of specific cross-sections, access management standards, and development requirements.

Figure 30: Wendell Falls Development Overview



Source: http://files.www.townofwendell.com/departments/planning/Wendell_Falls/WendellFalls_BaseMap2.jpg

Study Area Description

Wendell Falls Parkway is designated as a minor arterial by both CAMPO and NCDOT. The facility provides the core of Wendell and the developing residential area around it access to US 64 / US 264 Bypass. Without this two-quadrant, partial cloverleaf interchange, the lone access point to the bypass in the western side for most in the western area of Wendell would be the interchange with US 64 Business.

2013 Average Annual Daily Traffic volumes (AADTs) typically range from 360 to 2,700 vehicles per day (vpd) with the highest volumes in the vicinity of the intersection with Eagle Rock Road. It should be noted that the 2013 figures from NCDOT do not have recordings on the section of Wendell Falls Parkway that connects with US 64 / US 264.

2040 projected traffic volumes



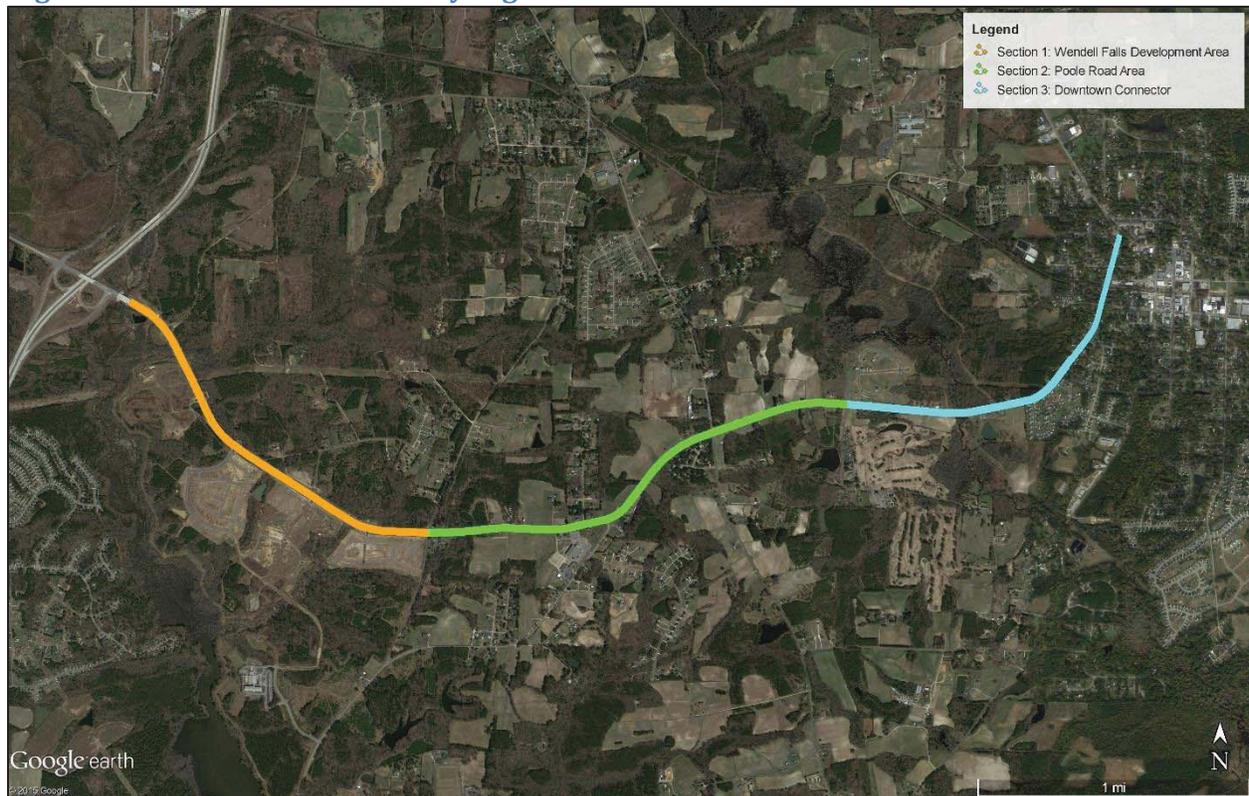
were provided by the Capital Area Metropolitan Planning Organization (CAMPO). In this figure, traffic volumes along Wendell Falls Parkway range from 22,300 to 31,400 vpd with the highest volumes occurring around the Wendell Falls development and the interchange with US 64 / US 264 Bypass.

Speed limits along the facility are generally 45 miles per hour (mph). The speed limit reduces to 35 mph just west of the intersection with Landing View Drive. This is consistent with the change in land use from generally open space to residential when traveling toward downtown Wendell.

Wendell Falls Parkway Segments

Considering the variations in roadway characteristics and surrounding land uses, it is helpful to divide the study corridor into three segments as shown in Figure 31.

Figure 31: Wendell Falls Parkway Segments



Segment 1: Wendell Falls Development Area

This western portion of the corridor begins at the interchange with US 64 / US 264 Bypass and runs approximately 1.5 miles east along the Wendell Falls Development. Ending at the intersection with Martin Pond Road, the four-lane divided cross-section has a posted speed limit of 45 miles per hour. Right of way throughout this section ranges between 130 and 140 feet. 2040 projected AADT along this section is 31,410 according to the CAMPO travel demand model. This segment is illustrated in Figure 32.



Figure 32: Wendell Falls Development Area



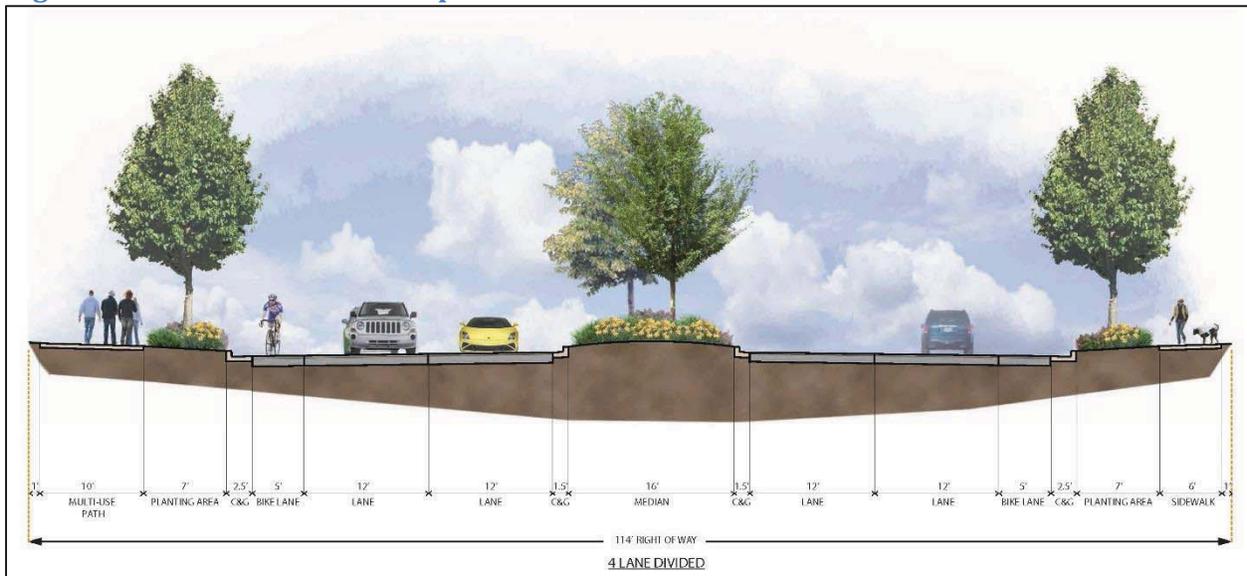
Newland Communities is in the process of constructing the Wendell Falls Development - a residential and commercial development that covers 1,160 acres. At full build-out, the development will consist of 4,000 residential units and 2 million square feet of commercial space. The base map of the development is shown in Figure 30. The interchange with US 64 / US 264 as well as the construction of Wendell Falls Parkway from the interchange to the intersection with Martin Pond Road were built in conjunction with the development.

An existing multi-use path was constructed with this section of Wendell Falls Parkway. The path is 10 feet wide and begins at the western edge of the Wendell Falls development. The eastern extent of the path is the intersection of Wendell Falls Parkway at Martin Pond Road. While the multi-use path is on the north-side of Wendell Falls Parkway, sidewalk exists on the south-side. This 10 foot-wide path will continue onto the following sections over Buffalo Creek and to the Wendell Community Park on Third Street. This is discussed further later in this plan.

As the Wendell Falls Development and the surrounding area builds-up, traffic volumes on the facility are anticipated to grow at a high rate to reach the 2040 projections developed by CAMPO. To facilitate the efficient movement of this traffic, this section of Wendell Falls Parkway has been designated a major thoroughfare. A four-lane divided cross-section will be used as the desired template for this segment and is illustrated in Figure 33.



Figure 33: Wendell Falls Development Area Cross-Section



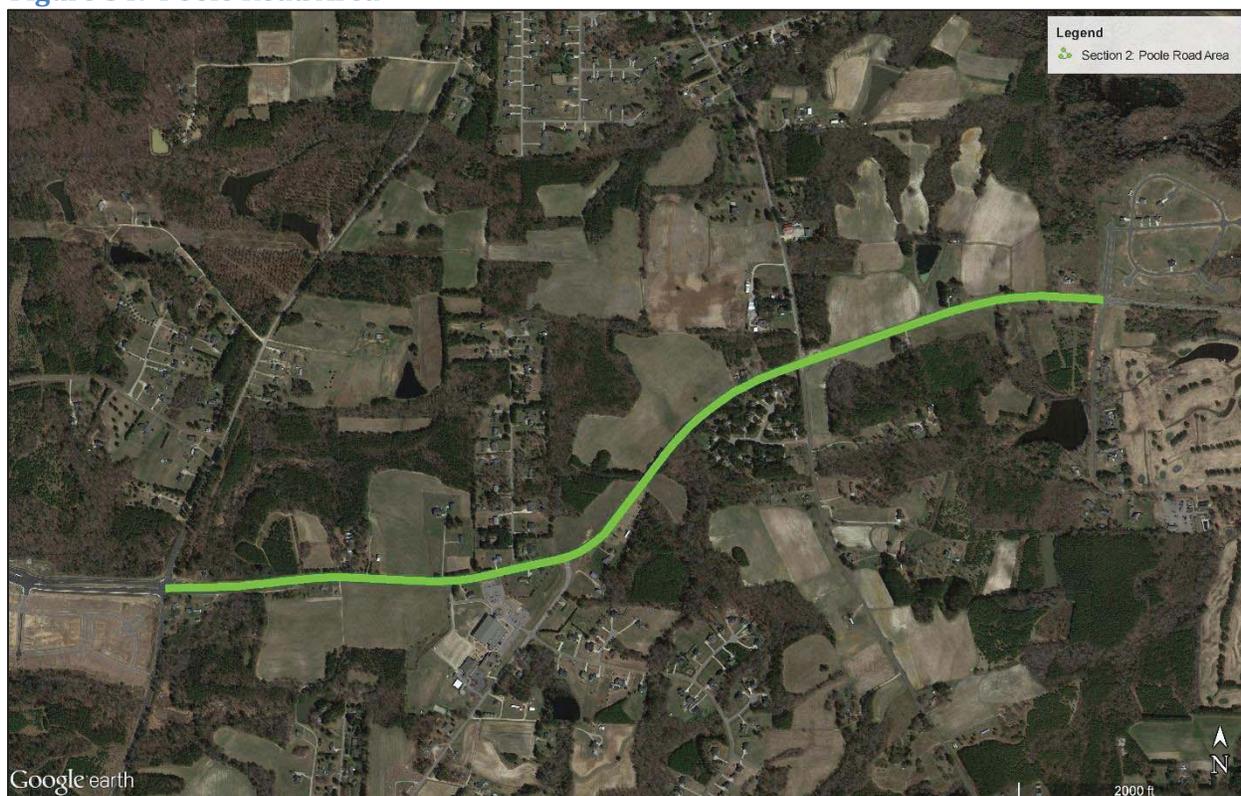
To fit the context of the area as well as the design elements of the above cross-section, guidelines for speed limits as well as access management have been developed. Preferably, this section of road will have a posted speed limit of 45 miles per hour. This speed limit combined with the amount of traffic the facility is projected to handle requires partial access control. Meaning that intersections with public roads should be spaced a minimum of 1,320 feet (0.25 miles) apart. Private driveways can intersect the facility more frequently, but should still be managed. Full movement driveways should be spaced according to the NCDOT median crossover guidelines which is 1,200 feet (0.227 miles) apart. Directional crossovers should be evaluated on a case-by-case basis and right-in/right-out driveways should be limited to every 400 feet. That spacing provides for two right-in/right-out driveways between median breaks. Shared driveways and internal connections should be a major aspect of access management along this roadway.

[Segment 2: Poole Road Area](#)

This central portion of the corridor stretches along current low-density residential areas of southwestern Wendell and transitions from the Wendell Falls Development to Downtown Wendell. Near the midpoint of the segment, Poole Road merges with Wendell Falls Parkway; thus the segment name. It runs from the intersection with Martin Pond Road to the intersection with Jake May Drive with major intersections at Martin Pond Road, Poole Road and Eagle Rock Road. This segment is approximately 1.7 miles long and has a posted speed limit of 45 miles per hour. This consists of all of what was formerly signed as Richardson Road and the eastern section of what was formerly signed as Poole Road. This segment is illustrated in Figure 34.



Figure 34: Poole Road Area



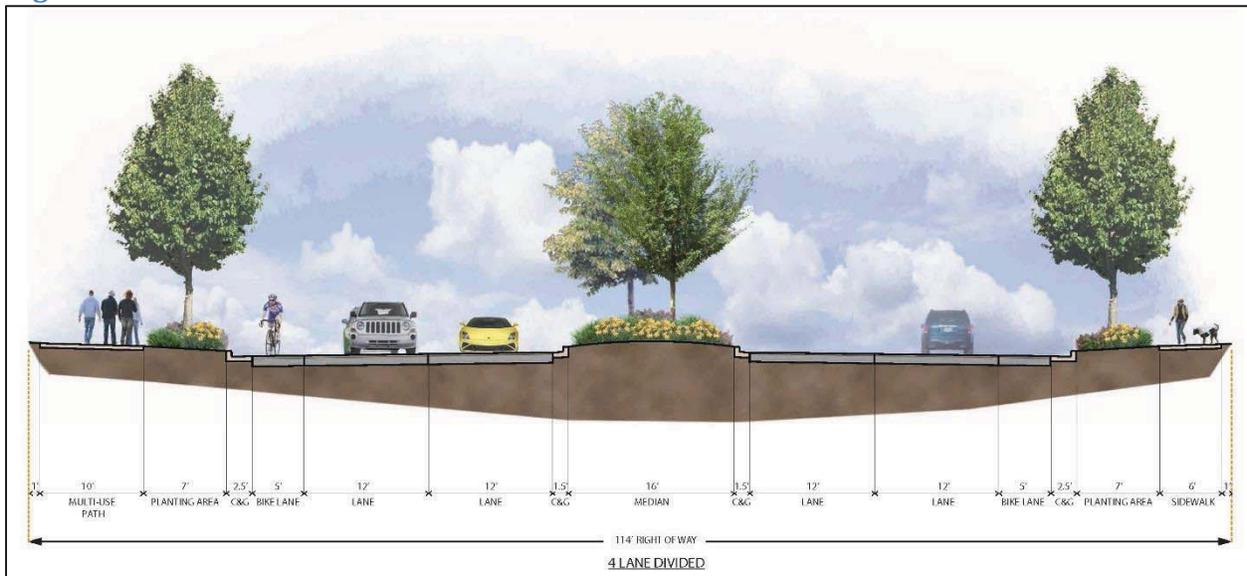
Right of way throughout this section ranges between 60 and 75 feet. 2013 AADT on the former Richardson Road section of Wendell Falls Parkway is 360 vpd and the 2013 AADT on the former Poole Road section of Wendell Falls Parkway varies between 2,500 and 2,700 vpd. In 2040 those AADTs are projected to rise up to between 23,900 and 27,800 vpd. No sidewalk or bike/pedestrian pathways are present along this section at this time. It is proposed that the multi-use path from Wendell Falls will continue along the north side of this section.

The Foxborough Crossing residential development is currently being built on the north-side of Wendell Falls Parkway near the eastern end of the segment. The development will consist of 73 single-family homes.

As the Wendell Falls Development and the surrounding area builds-up, traffic volumes on the facility are anticipated to grow at a high rate to reach the 2040 projections developed by CAMPO. To facilitate the efficient movement of this traffic, this section of Wendell Falls Parkway has been designated a major thoroughfare. A four-lane divided cross-section will be used as the desired template for this segment and is illustrated in in Figure 35.



Figure 35: Poole Road Area Cross-Section



To fit the context of the area as well as the design elements of the above cross-section, guidelines for speed limits as well as access management have been developed. Preferably, this section of road will have a posted speed limit of 45 miles per hour. This speed limit combined with the amount of traffic the facility is projected to handle requires partial access control. Meaning that intersections with public roads should be spaced a minimum of 1,320 feet (0.25 miles) apart. Private driveways can intersect the facility more frequently, but should still be managed. Full movement driveways should be spaced according to the NCDOT median crossover guidelines which is 1,200 feet (0.227 miles) apart. Directional crossovers should be evaluated on a case-by-case basis. More-frequent right-in/right-out driveways can be allowed when compared to the previous segment but should be limited to every 300 feet. That spacing provides for three right-in/right-out driveways between median breaks. Shared driveways and internal connections should be a major aspect of access management along this roadway.

[Segment 3: Downtown Connector](#)

The last and easternmost segment of Wendell Falls Parkway takes the facility into downtown Wendell. Beginning at Jake May Drive and running east and north until Wendell Boulevard, this approximately 1.4 mile long segment was formerly named Buffalo Street. The posted speed limit between Jake May Drive and Landing View Drive is 45 miles per hour and east of Landing View Drive the speed limit is 35 miles per hour. This segment is illustrated in Figure 36.



Figure 36: Downtown Connector



As the two-lane undivided cross-section runs through an established neighborhood, the existing right of way is restricted to the range of 50-65 feet. The western side of the roadway is equipped with sidewalk as well as curb and gutter whereas the east side only develops curb and gutter north of Third Street and sidewalk north of Cook Street.

A bridge exists toward the western extents of the segment over Buffalo Creek. The cross-section over the bridge consisting of two-lanes of undivided traffic with approximately 12 foot-wide lanes and a paved shoulder on each side. No sidewalks are present across the bridge.

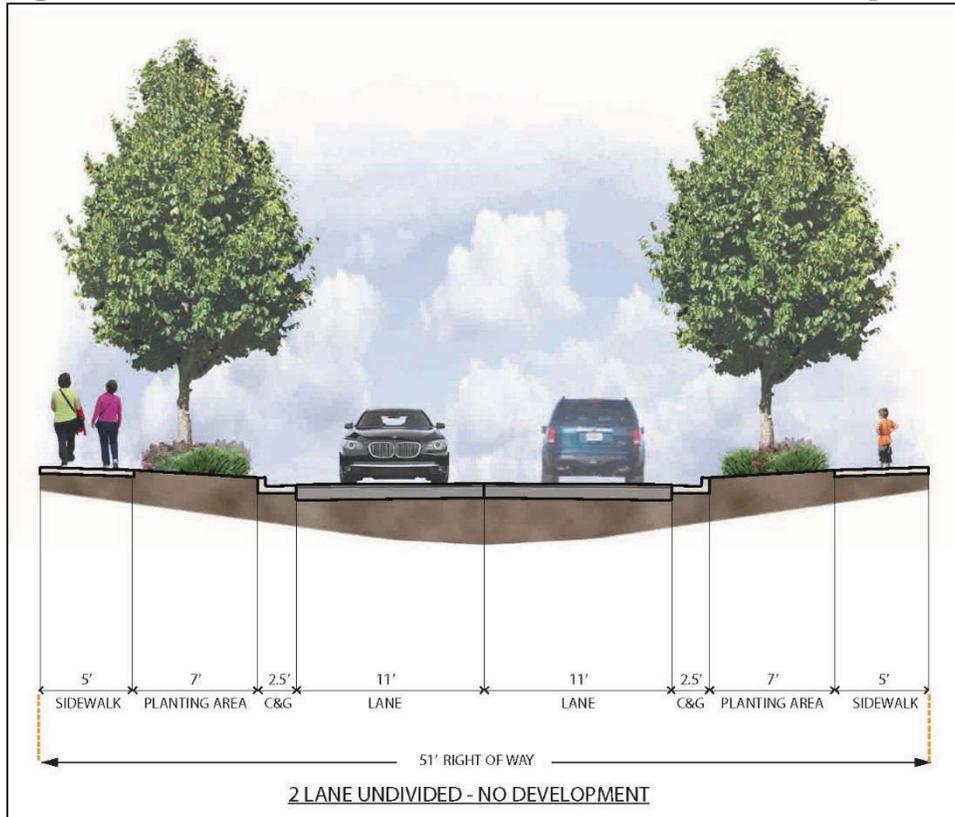
This segment includes an at-grade railroad crossing of which the track is operated on by Carolina Coastal Railway (CLNA) and owned by Norfolk Southern Railway (NS). The crossing is equipped with cantilevered flashing lights and gates for safety devices.

In-line with the residential land use of the segment, two points of interest along this segment are worth noting – namely Wendell Park and Wendell Elementary School. Wendell Park is located off of Third Street and contains a community center, ball fields, tennis courts and playgrounds. Wendell Elementary School is a magnet school for creative arts and science which abides by the traditional school calendar. The main school driveways are located along Wendell Boulevard near the intersection with Wendell Falls Parkway (formerly Buffalo Street).



Considering that the majority of this section is an established neighborhood and built-out, the ideal cross-section is presented below. This is illustrated in Figure 37, and is designed to fit within the existing right-of-way; avoiding impacts to existing homes.

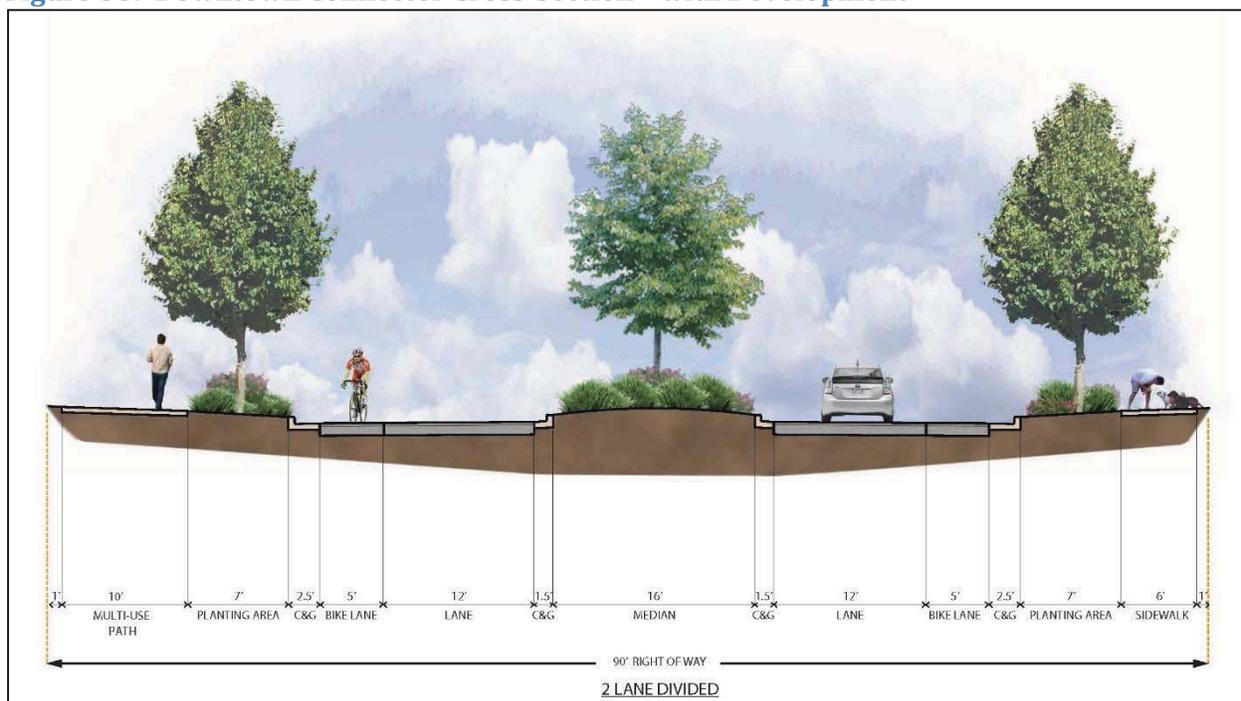
Figure 37: Downtown Connector Cross-Section – without Development



If development occurs along this section, and as the Wendell Falls Development and the surrounding area builds-up, traffic volumes on the facility are anticipated to grow at a high rate to reach the 2040 projections developed by CAMPO. To facilitate the efficient movement of this traffic, this section of Wendell Falls Parkway has been designated a major collector. A two-lane divided cross-section with the continuation of the 10 foot-wide multi-use path will be used as the desired template for this segment and is illustrated in Figure 38.



Figure 38: Downtown Connector Cross-Section – with Development



To highlight the Town as a gateway boulevard, fit the context of the area as well as the design elements of the above cross-section, guidelines for speed limits as well as access management have been developed. Preferably, this section of road regardless of development will have a posted speed limit of 35 miles per hour. With this segment reaching downtown Wendell along with several residential driveways existing along the segment, control of access will be limited to public road spacing as well as major driveway spacing. Intersections with public roads and major driveways should be spaced a minimum of 500 feet apart. No restrictions are envisioned for low-traffic driveways; although driveways located within the influence area of major intersections should be limited to right-in/right-out access via channelization.

Multi-Use Path

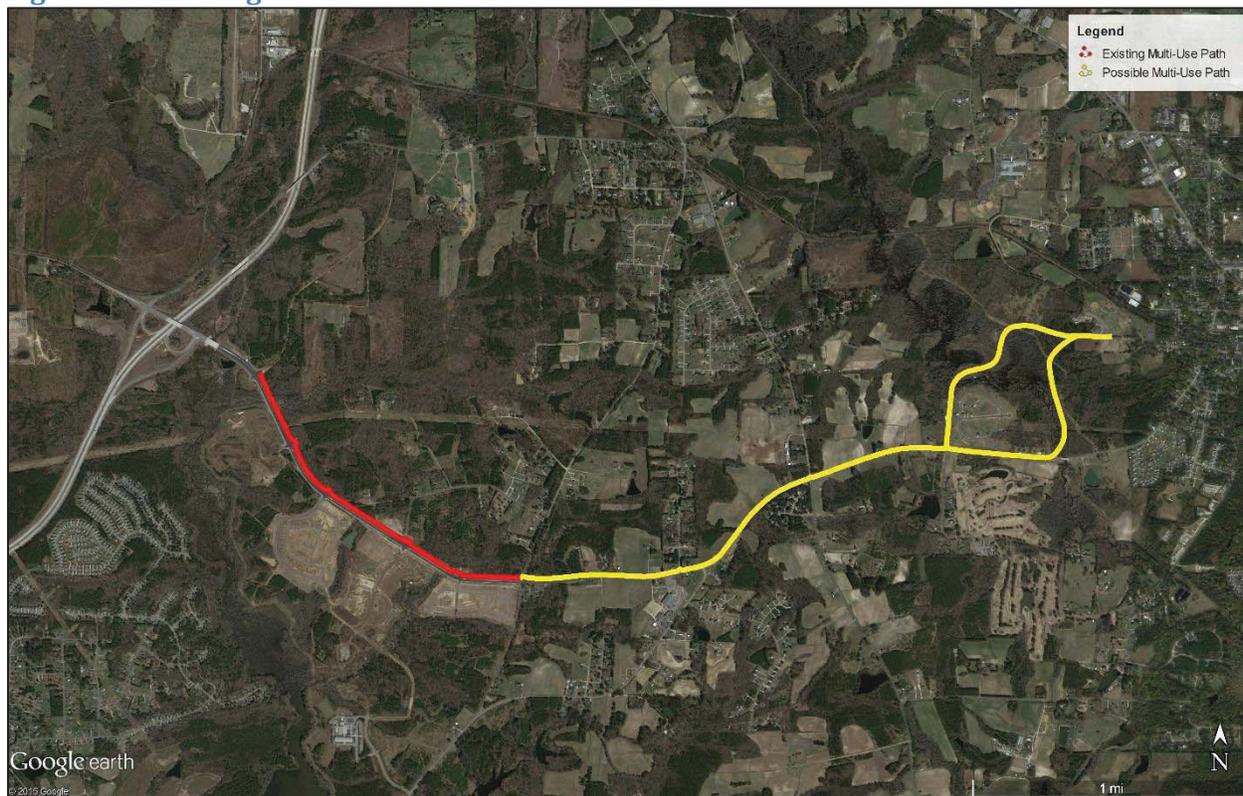
An existing multi-use path was constructed along the Wendell Falls Development section of Wendell Falls Parkway. The path is 10 feet wide and begins at the western edge of the Wendell Falls development. The eastern extent of the path is the intersection of Wendell Falls Parkway at Martin Pond Road. This is shown as the red line in Figure 39.

It is envisioned that this 10 foot-wide path will continue onto the following sections over Buffalo Creek and to the Wendell Community Park on Third Street. Figure 39 shows two potential alignments of this path as it nears the eastern end. One route shows the path following along Wendell Falls Parkway until it reaches Buffalo Creek when it crosses the creek on its own structure and turns north traveling toward Wendell Community Park. The other possible route shows the path traveling north along Jake May Drive and turning into undeveloped land before reaching Buffalo Creek. One possible challenge with



this alignment would be the possible extension of Jake May Drive northward may require a mid-block crossing.

Figure 39: Existing and Possible Multi-Use Path Location





PROJECT PRIORITIES

Through examination of the existing transportation infrastructure, the future travel demand and the goal arterial and collector street network structure, a priority list of projects can be identified. This list includes projects identified as part of the literature review, the public involvement process and the development of the ultimate network. These projects were prioritized and planning-level cost estimates were developed. The resultant list is shown in Table 15.

Table 15: Priority List of Projects

Priority	Name	Description	Length (ft.)	Planning-Level Estimated Construction Cost (\$)*
1	Rolesville Road / Eagle Rock at Wendell Boulevard intersection	Realignment of the existing intersection to space it further from the US 264 / Wendell Boulevard interchange (see U-5323 study).	2,400	\$1,800,000
2	Eagle Rock Road at Martin Pond Road Intersection and Railroad Crossing	Realignment of Eagle Rock Road intersections near Martin Pond Road for access management. This realignment would straighten Eagle Rock Road south of the Railroad to eliminate the need for traffic to turn in-order to stay on Eagle Rock Road.	600	\$1,500,000
3	Wendell Boulevard at NC 231 (Selma Road) Intersection	Convert signalized intersection to a roundabout†	-	\$400,000
4	Wendell Boulevard at Wendell Falls Parkway	Construct a westbound left-turn lane on Wendell Boulevard for traffic turning onto Wendell Falls Parkway. The estimate includes the widening associated with construction of the lane, but not the cost of right of way.	-	\$150,000
5	Old Battle Bridge Road Bridge	Replacement of the currently-closed bridge over Buffalo Creek	-	\$750,000
6	Multi-Use Path / Trail	Continuation of the multi-use trail from Martin Pond Road to the Community Center on Third Street	14,500	\$2,500,000
7	Marshburn Road Realignment	Realignment of Marshburn road at the intersection of Wendell Blvd to form a 90 degree angle (through REID 0004321)	110	\$250,000
8	Wendell Boulevard Widening	Widening from two to a Four-Lane section from NC 97 to Liles Dean Road / Hanor Lane (from CAMPO NE Area Study)	7,500	\$11,400,000
9	Jake May Drive	Extension of Jake May Drive from Liles Dean Road to Lake Myra Road Extension	12,500	\$25,700,000
10	Honor Lane / Todd Lane	Minor Thoroughfare / 3-Lane Undivided section Extending Honor / Todd Lane east to connect to Wendell Boulevard Minor Thoroughfare / 3-Lane Undivided section	3,950	\$11,500,000
11	Lions Club Road North / South	Extending Lions Club Road to Selma Road / South Wendell Thoroughfare and Wendell Boulevard Minor Thoroughfare / 4-Lane Undivided section	12,500	\$41,200,000
12	North Wendell Thoroughfare	Creating an east-west road along the northern side of Town connecting Wendell Boulevard at Liles Dean Road to Old Zebulon Road Minor Thoroughfare / 4-Lane Undivided section	12,300	\$30,900,000
13	Wendell Falls Parkway Widening	Upgrading from 2 lanes to 4-Lane Divided section along Segment 2 of Wendell Falls Parkway Major Thoroughfare / 4-Lane Divided	8,900	\$10,000,000
14	NC 97 Widening	Widening from two to a Four-Lane section from US 64 to Wedgewood Avenue (from CAMPO NE Area Study)	24,500	\$35,860,000
15	Wendell Valley Boulevard Construction	Creates new connection between Wendell Falls Parkway, across the railroad tracks to Eagle Rock Road Minor Thoroughfare / 4-Lane Divided section	13,800	\$37,800,000

*estimated costs are shown in 2015 dollars and do not include the cost of design or right of way acquisition unless explicitly specified in the above table
†project does not include a realignment of Old Zebulon Road as to not disturb the historic district



TRAFFIC IMPACT ASSESSMENTS

Traffic impact assessments (TIA) are used by agencies throughout the US to project the effects a development project will have on the transportation system. Credible and accurate studies are important for community development and livability. With regard to the arterial and collector street plan, the focus is placed upon the threshold for which a TIA is required.

To serve as a reference, the below table lists the thresholds for several nearby municipalities.

Table 16: Nearby Municipal TIA Thresholds

Municipality	Threshold	Units
Cary	≥ 100	Peak Hour Trips Generated
Durham	≥ 150	Peak Hour Trips Generated
Knightdale	≥ 150	Peak Hour Trips Generated
Raleigh*	≥ 150	Peak Hour Trips Generated
Wake Forest*	≥ 100	Peak Hour Trips Generated

*Raleigh and Wake Forest have several thresholds which depend on both trips generated and development size. The thresholds presented represents the most general case.

Many of the agencies focus on the peak hour trips generated versus daily as the demand for transportation facilities is highest then. The general consensus of the nearby municipalities is any development generating between 100 and 150 trips during the peak hour is required to develop a TIA.

Moving forward, it is recommended that the town institute the threshold of 150 peak hour trips generated in either the AM or PM peak hour of the adjacent street traffic.



FUNDING AND PHASING

Beyond communicating the structure of the future roadway network, the responsibilities for establishing this network must also be discussed.

Typical practice is to construct new arterial and collector streets through routine development. In this scenario, these facilities would be the funding responsibility of the developer. In certain situations, it may be beneficial for the Town and the developer to partner in order to improve or construct a facility not on the developer's property.

In all cases where a site either fronts an existing thoroughfare or collector or a thoroughfare or collector transverse a site, right-of-way will be dedicated according to the ACS Plan.

Developments Requiring Traffic Impact Assessment (TIA)

In the previous section, the requirements for these studies were developed. Any development that has uses that generate 150 or more peak hour trips (either during the AM or PM) will require a TIA. That TIA will include the following:

- Study Area
- Trip Generation (Land Uses within Development)
- Trip Distribution
- Year of Development Completion
- Study Year (One Year Beyond Development Completion)
- Analyses and Methodology
- Recommendations for Improvement (i.e. all existing or proposed intersections must either be existing or improved to a Level of Service D according to the latest edition of the Highway Capacity Manual)

The TIA must be submitted with the preliminary plan drawings to allow the Town to have time for adequate review. Most likely, if the development is located along a NCDOT maintained roadway, NCDOT will need to also review the TIA. After review by the Town and NCDOT, the development will have specific requirements to meet the level of service standard. Those improvements must be made prior to the issuance of any certificates of occupancy. The developer can also request to phase the improvements as development dictates. This phasing analysis will need to be a separate document from the overall TIA to ensure that improvements are completed when necessary.

Developments that require these studies must also complete any thoroughfare or collector street improvements of existing roadways dictated by this plan along the frontage of these roadways. This will be in addition to any improvements necessitated by the completion and approval of the TIA.

Development with frontage along both sides of a proposed new thoroughfare or collector road proposed for improvement or installation by the ACS plan shall not be required to construct more than 2 new travel lanes or construct a stream/railroad crossing if the daily trip generation from the site is less than 10% of the adjacent proposed roadway average daily traffic (ADT), unless said improvements are



required by a TIA to meet level of service standards. If the new roadway is needed for access, then the development would be required to build at least 2 lanes (minimum section from ACS plan).

Development with frontage along only one side of a road proposed for improvement by the ACS Plan shall not be required to construct more than 1 new travel lane or construct a stream/railroad crossing if the daily trip generation from the site is less than 10% of the adjacent proposed roadway average daily traffic (ADT), unless said improvements are required by a TIA to meet level of service standards.

Developments Not Requiring Traffic Impact Assessments

For developments that generate below 150 peak hour trips, there still may be some roadway requirements that are necessary due to traffic volumes. This may include left-turn lanes (NCDOT typically requires left-turn lanes on major roadways and roadways that have above 4,000 trips per day) and right-turn lanes (for safety purposes on high speed and high volume roadways). Additionally, these developments will also be required to complete any thoroughfare or collector street improvements dictated by this plan along the frontage of these roadways.

Development with frontage along both sides of either an existing or proposed new thoroughfare or collector road proposed for improvement or installation by the ACS plan shall not be required to construct more than 2 new travel lanes or construct a stream/railroad crossing if the daily trip generation from the site is less than 10% of the adjacent proposed roadway average daily traffic (ADT), unless said improvements are required by a TIA to meet level of service standards. If the new roadway is needed for access, then the development would be required to build at least 2 lanes (minimum section from ACS plan).

Development with frontage along only one side of an existing or proposed road for improvement by the ACS Plan shall not be required to construct more than 1 new travel lane or construct a stream/railroad crossing if the daily trip generation from the site is less than 10% of the adjacent proposed roadway average daily traffic (ADT).

Exempt/Family Subdivision

Development that is either an exempt subdivision or meets the requirements of a family subdivision, as defined in the UDO, shall be exempt from thoroughfare and collector street infrastructure improvement construction requirements.

Payment in Lieu of Physical Improvements

American Planning Association (APA) Documentation states: 'A general trend in the state courts has been to require a reasonable connection, or "rational nexus," between the fee and the needs created by development and the benefits incurred by the development. This analysis is a moderate position between a standard that requires that the fee be "specifically and uniquely attributable" to the needs created by new development, and the relaxed standard that the fee be "reasonably related" to the needs created by development.' Linear foot costs have been determined as part of this plan. The Town can apply rational nexus to each development and take each new development on a case by case basis. The methodology will use daily trips generated by the site versus the amount of proposed trips on the collector or thoroughfare to determine reasonableness as dictated in the APA documentation.



In some cases, specific site conditions may warrant that a fee in lieu of construction be requested by the applicant and approved by the Town. Payments in lieu of physical improvements should be reserved for those situations where upcoming planned improvements would make it beneficial to delay implementation, or where the installation of infrastructure improvements over a limited span would be disruptive to traffic patterns (beyond the time of construction).

Other Funding Sources

Situations may arise where the Town feels it necessary to initiate infrastructure improvements rather than relying on facilities being constructed through the development process. In this instance, partnering with additional agencies such as Wake County, the Capital Area Metropolitan Planning Organization (CAMPO) and NCDOT may be required.

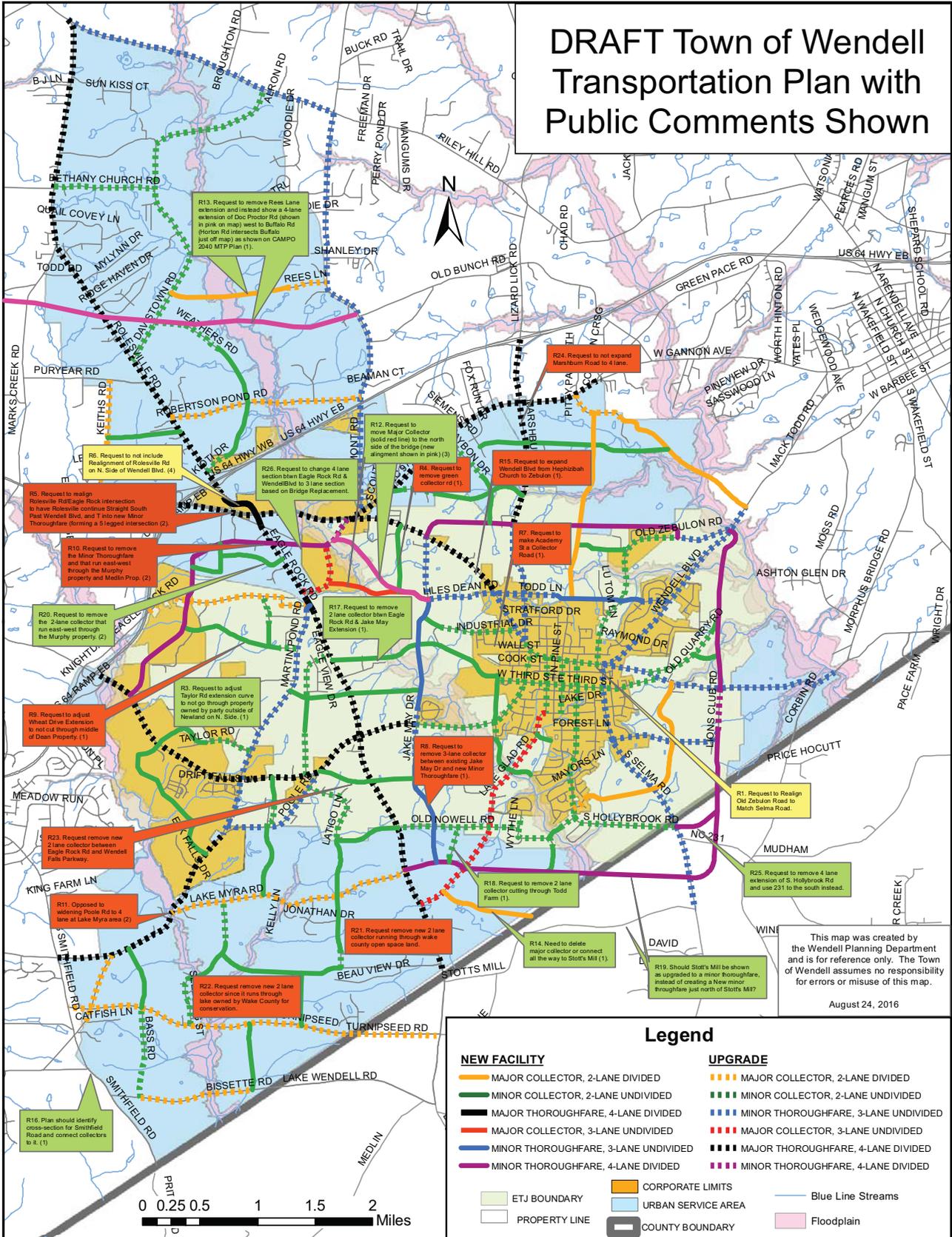
The Town will also look into using additional funding sources. This may be bonding of transportation improvements or finding grant opportunities. The Town will do what it can to try and find funding sources to create the arterial and collector street system.



MAPS

The following pages contain base maps with arterial and collector roadway classifications assigned to specific street segments. In rare cases, other plans or agreements approved by the Town of Wendell may supersede the roadway classifications and corresponding cross-sections shown in this document. These could include adopted corridor plans, Planned Unit Developments (PUDs), development agreements, or conditional districts. For example, the Wendell Falls subdivision is governed by a PUD document which includes cross-sections specific to this development. Similarly, the portion of Old Battle Bridge road south of the bridge is governed by a conditional use rezoning approval (ZM08-01). So long as these approvals remain in effect, they shall determine the applicable cross-sections in these areas.

DRAFT Town of Wendell Transportation Plan with Public Comments Shown



R13. Request to remove Rees Lane extension and instead show a 4 lane extension of Doc Proctor Rd (shown in pink on map) west to Buffalo Rd (Hinton Rd intersects Buffalo just off map) as shown on CAMPO 2540 MTP Plan (1).

R5. Request to realign Rolesville Rd/Eagle Rock intersection to have Rolesville continue straight South Past Wendell Blvd. and T into new Minor Thoroughfare (forming a 5 legged intersection (2)).

R10. Request to remove the Minor Thoroughfare and that it run east-west through the Murphy property and Madin Prop. (2).

R20. Request to remove the 2 lane collector that run east-west through the Murphy property. (2).

R9. Request to adjust Wheat Drive Extension to not cut through middle of Dean Property. (1).

R3. Request to adjust Taylor Rd extension curve to not go through property owned by party outside of Newland on N. Side. (1).

R23. Request remove new 2 lane collector between Eagle Rock Rd and Wendell Falls Parkway.

R11. Opposed to widening Poole Rd to 4 lane at Lake Myra area (2).

R22. Request remove new 2 lane collector since it runs through lake owned by Wake County for conservation.

R16. Plan should identify cross-section for Smithfield Road and connect collectors to it. (1).

R12. Request to move Major Collector (solid red line) to the north side of the bridge (new alignment shown in pink) (3).

R26. Request to change 4 lane section b/wn Eagle Rock Rd & Wendell Blvd to 3 lane section based on Bridge Placement.

R4. Request to remove green collector rd (1).

R17. Request to remove 2 lane collector b/wn Eagle Rock Rd & Lake May Extension (1).

R8. Request to remove 3 lane collector between existing Lake May Dr and new Minor Thoroughfare (1).

R18. Request to remove 2 lane collector cutting through Todd Farm (1).

R14. Need to delete major collector or connect all the way to Stott's Mill (1).

R19. Should Stott's Mill be shown as upgraded to a minor thoroughfare, instead of creating a New minor thoroughfare just north of Stott's Mill?

R25. Request to remove 4 lane extension of S. Hollybrook Rd and use 231 to the south instead.

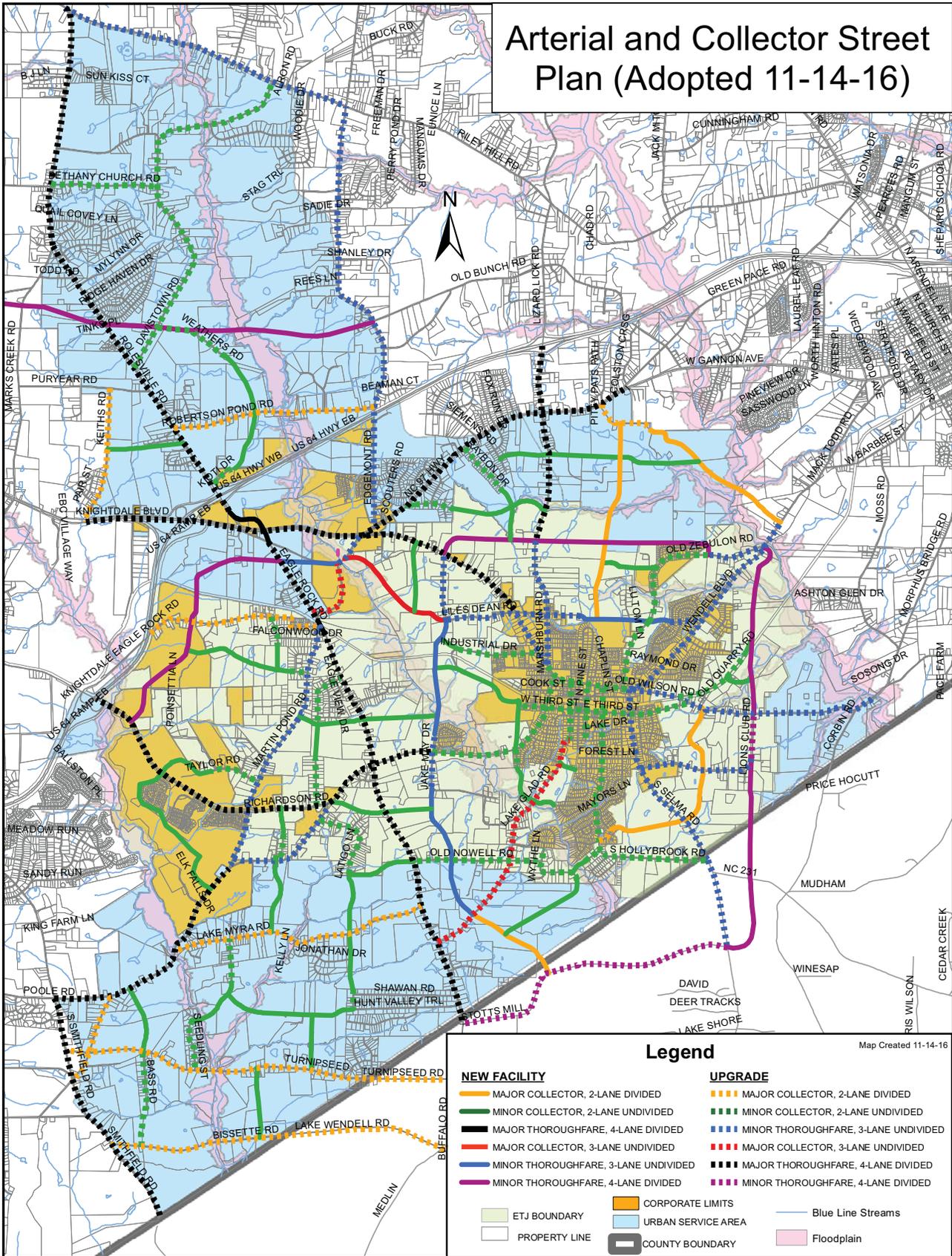
R24. Request to not expand Mainstem Road to 4 lane.

R15. Request to expand Wendell Blvd from Heshabab Church to Zebulon (1).

R7. Request to expand Academy to a Collector Road (1).

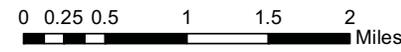
R1. Request to Realign Old Zebulon Road to Match Selma Road.

Arterial and Collector Street Plan (Adopted 11-14-16)



Legend Map Created 11-14-16

NEW FACILITY	UPGRADE
MAJOR COLLECTOR, 2-LANE DIVIDED	MAJOR COLLECTOR, 2-LANE DIVIDED
MINOR COLLECTOR, 2-LANE UNDIVIDED	MINOR COLLECTOR, 2-LANE UNDIVIDED
MAJOR THOROUGHFARE, 4-LANE DIVIDED	MINOR THOROUGHFARE, 3-LANE UNDIVIDED
MAJOR COLLECTOR, 3-LANE UNDIVIDED	MAJOR COLLECTOR, 3-LANE UNDIVIDED
MINOR THOROUGHFARE, 3-LANE UNDIVIDED	MAJOR THOROUGHFARE, 4-LANE DIVIDED
MINOR THOROUGHFARE, 4-LANE DIVIDED	MINOR THOROUGHFARE, 4-LANE DIVIDED
ETJ BOUNDARY	CORPORATE LIMITS
PROPERTY LINE	URBAN SERVICE AREA
	COUNTY BOUNDARY
	Blue Line Streams
	Floodplain





APPENDIX

Wendell Arterial and Collector Street Plan

Functional Class and Cross-Section Assignment

Section Number	Road Name	Status	Length (ft.)	From	To	Functional Classification	Cross-Section
1	Bass Road	Upgrade	4,160	Turnipseed Road	Bissette Road	Minor Collector	2-Lane Undivided
2	Bass Road Extension	New	2,916	Turnipseed Road	Poole Road	Minor Collector	2-Lane Undivided
3	Bethany Church Road	Upgrade	4,638	Rolesville Road	Davistown Road	Minor Collector	2-Lane Undivided
4	Big Falls Drive	New	7,348	Wendell Falls Parkway	Poole Road	Minor Collector	2-Lane Undivided
5	Bissette Road	Upgrade	5,202	Bass Road	Turnipseed - Bissette Connector	Major Collector	2-Lane Divided
6	Buffree Lane	Upgrade	806	Buffree Lane Extension	Hollybrook Road	Minor Collector	2-Lane Undivided
7	Buffree Lane Extension	New	797	Wythe Lane	Buffree Lane	Minor Collector	2-Lane Undivided
8	Carrington Wood Drive	Upgrade	1,299	Knightdale Road	Carrington Wood Drive Extension	Minor Collector	2-Lane Undivided
9	Carrington Wood Drive Extension	New	1,479	Carrington Wood Drive	Wheat Drive Extension	Minor Collector	2-Lane Undivided
10	Cedarmere Drive	Upgrade	1,290	Todd Lane Extension	Wendell Boulevard	Minor Thoroughfare	3-Lane Undivided
11	Chevrolet Way Extension	New	8,759	Compacta Drive	Morphus Bridge Road	Major Collector	2-Lane Divided
12	Country Farm E-W Connector	New	2,149	Peachgrove - Todd Lane Connector	Country Farm Lane	Minor Collector	2-Lane Undivided
13	Country Farm Lane	Upgrade	227	Country Farm E-W Connector	Old Zebulon Road	Minor Collector	2-Lane Undivided
14	Cypress Street	Upgrade	2,582	Wendell Boulevard	Haywood Street	Minor Collector	2-Lane Undivided
15	Darecrest Lane	Upgrade	840	Hollybrook Road	Chevrolet Way Extension	Major Collector	2-Lane Divided
16	Davistown Road	Upgrade	11,139	Riley Hill School Road	Rolesville Road	Minor Collector	2-Lane Undivided
17	Doc Proctor Road	New	12,540	Edgemont Road	Marks Creek Road	Minor Thoroughfare	4-Lane Divided
18	Eagle Rock - Jake May Connector	New	4,011	Eagle Rock Road	Jake May Drive Extension	Minor Collector	2-Lane Undivided
19	Eagle Rock Road	Upgrade	17,690	Martin Pond Road	Study Area Limits	Major Thoroughfare	4-Lane Divided
20	Eagle Rock Road	Upgrade	4,016	Rolesville Road Intersection Relocation	Eagle Rock Road Realignment	Major Thoroughfare	4-Lane Divided
21	Eagle Rock Road Realignment	New	573	Old Battle Bridge Road	Martin Pond Road	Major Thoroughfare	4-Lane Divided
22	Eagles Crossing - Wiley Oaks Connector	New	1,506	Eagles Crossing Drive	Wiley Oaks Drive	Minor Collector	2-Lane Undivided
23	Eagles Crossing Drive	Upgrade	2,587	Eagle Rock Road	Existing South Extents	Minor Collector	2-Lane Undivided
24	Eastern Wendell Thoroughfare	New	1,294	Wendell Boulevard	Lions Club Road North Extension	Minor Thoroughfare	4-Lane Divided
25	Edgemont Road	Upgrade	19,251	Riley Hill Road	NC 97	Minor Thoroughfare	3-Lane Undivided
26	Fribourg Court	Upgrade	1,631	Fribourg Court W. Extension	Fribourg Court E. Extension	Minor Collector	2-Lane Undivided
27	Fribourg Court E. Extension	New	4,258	Fribourg Court	Raybon Drive Extension	Minor Collector	2-Lane Undivided
28	Fribourg Court W. Extension	New	437	NC 97	Fribourg Court	Minor Collector	2-Lane Undivided
29	Heritage - Peachgrove Connector	New	8,758	Heritage Drive	Peachgrove Lane	Minor Collector	2-Lane Undivided
30	Hollybrook / Lake Glad	Upgrade	11,034	Cypress Street	Eagle Rock Road	Major Collector	3-Lane Undivided
31	Hollybrook Road	Upgrade	11,997	Wendell Boulevard	Selma Road	Minor Collector	2-Lane Undivided
32	Hollybrook Road Extension	New	2,107	Hollybrook Road	Lions Club Road South Extension	Minor Collector	4-Lane Divided
33	Industrial Drive	Upgrade	3,498	Industrial Drive Extension	Wendell Boulevard	Minor Collector	2-Lane Undivided
34	Industrial Drive Extension	New	937	Jake May Extension	Industrial Drive	Minor Collector	2-Lane Undivided
35	Jake May Extension	New	12,523	Liles Dean Road	South Wendell Thoroughfare	Minor Thoroughfare	3-Lane Undivided
36	Jordan Cabin Road	Upgrade	1,482	Poole Road	Jordan Cabin Road Extension	Minor Collector	2-Lane Undivided
37	Jordan Cabin Road Extension	New	1,055	Jordan Cabin Road	Wendell Falls Parkway	Minor Collector	2-Lane Undivided
38	Keiths - Rolesville Connector	New	3,357	Keiths Road	Rolesville Road	Minor Collector	2-Lane Undivided
39	Keiths Road	Upgrade	6,020	Puryear Road	Knightdale Boulevard	Major Collector	2-Lane Divided
40	Kiotti Road	Upgrade	949	Rolesville Road	Kiotti Road Extension	Minor Collector	2-Lane Undivided
41	Kiotti Road	Upgrade	1,266	Rolesville Road	Kiotti Road Extension	Minor Collector	2-Lane Undivided
42	Kiotti Road Extension	New	2,614	Kiotti Road	Robertson Pond Road	Minor Collector	2-Lane Undivided
43	Knightdale Road	Upgrade	7,955	Study Area Limits	Eagle Rock Road	Major Collector	2-Lane Undivided
44	Lake Glad - County Line Connector	New	3,806	Lake Glad Road	County Line	Major Collector	2-Lane Divided
45	Lake Myra Road	Upgrade	11,274	Poole Road	Eagle Rock Road	Major Collector	2-Lane Divided

**Wendell Arterial and Collector Street Plan
Functional Class and Cross-Section Assignment**

Section Number	Road Name	Status	Length (ft.)	From	To	Functional Classification	Cross-Section
46	Landing Place - Harris Connector	New	743	Landing Place Drive	Harris Street	Minor Collector	2-Lane Undivided
47	Landing View - Boxley Connector	New	2,887	Landing View Drive	Boxley Drive	Minor Collector	2-Lane Undivided
48	Landing View Drive North Extension	New	2,657	Landing View Drive	Third Street	Minor Collector	2-Lane Undivided
49	Latigo Lane	Upgrade	3,751	Poole Road	Latigo Lane Extension	Minor Collector	2-Lane Undivided
50	Latigo Lane Extension	New	5,095	Latigo Lane	Twin Cedar Lane	Minor Collector	2-Lane Undivided
51	Liles Dean / Hanor E-W Upgrade	Upgrade	5,875	Liles Dean Road N-S Sections	Todd Lane Terminus	Minor Thoroughfare	3-Lane Undivided
52	Liles Dean Road	Upgrade	2,960	Wendell Boulevard	Liles Dean Road E-W Section	Minor Thoroughfare	3-Lane Undivided
53	Lions Club Road	Upgrade	1,944	Lions Club Road South Extension	Lions Club Road North Extension	Minor Thoroughfare	4-Lane Divided
54	Lions Club Road	Upgrade	5,160	Selma Road	Lions Club Road South Extension	Minor Thoroughfare	3-Lane Undivided
55	Lions Club Road North Extension	New	6,341	Eastern Wendell Thoroughfare	Morphus Bridge Road	Minor Thoroughfare	4-Lane Divided
56	Lions Club Road South Extension	New	5,820	Lions Club Road	South Wendell Thoroughfare	Minor Thoroughfare	4-Lane Divided
57	Lizard Lick Road / Marshburn Road	Upgrade	8,626	Study Area Limits	North Wendell Thoroughfare	Major Thoroughfare	4-Lane Divided
58	Main Street	Upgrade	2,471	Wendell Boulevard	Haywood Street	Minor Collector	2-Lane Undivided
59	Major Slade Road	Upgrade	3,457	Catfish Lane	Poole Road	Major Collector	2-Lane Divided
60	Marshburn Road	Upgrade	5,587	North Wendell Thoroughfare	Wendell Boulevard	Minor Thoroughfare	3-Lane Undivided
61	Martin Pond - Jake May Connector	New	5,827	Martin Pond Road	Jake May Drive Extension	Minor Collector	2-Lane Undivided
62	Martin Pond Road	Upgrade	11,307	Martin Pond Road Realignment	Poole Road	Minor Thoroughfare	3-Lane Undivided
63	Martin Pond Road Realignment	New	232	Eagle Rock Road	Martin Pond Road	Minor Thoroughfare	3-Lane Undivided
64	NC 97	Upgrade	13,677	Wendell Boulevard	Study Area Limits	Major Thoroughfare	4-Lane Divided
65	North Wendell Thoroughfare	New	12,278	Wendell Boulevard	Old Zebulon Road	Minor Thoroughfare	4-Lane Divided
66	Old Battle Bridge - Liles Dean Connector	New	5,201	Old Battle Bridge Road	Liles Dean Road	Major Collector	3-Lane Undivided
67	Old Battle Bridge Road	Upgrade	3,074	Eagle Rock Road	Wendell Valley Boulevard	Major Collector	3-Lane Undivided
68	Old Battle Bridge Road	Upgrade	1,581	Wendell Boulevard	Wendell Valley Boulevard	Minor Thoroughfare	4-Lane Divided
69	Old Medlin Farm Road	New	2,422	Turnipseed Road	Pleasants - Hunt Valley Trail Connector	Minor Collector	2-Lane Undivided
70	Old Nowell Road	Upgrade	5,572	Eagle Rock Road	Wythe Lane	Minor Collector	2-Lane Undivided
71	Old Nowell Road Extension	New	2,978	Latigo Lane	Old Nowell Road	Minor Collector	2-Lane Undivided
72	Old Quarry - Lions Club Connector	New	1,169	Old Quarry Road	Lions Club Road North Extension	Minor Collector	2-Lane Undivided
73	Old Quarry Extension	New	735	Old Quarry Road	Lions Club Road North Extension	Minor Collector	2-Lane Undivided
74	Old Quarry Road	Upgrade	3,597	Old Wilson Road	Old Quarry Extension	Minor Collector	2-Lane Undivided
75	Old Wilson / Morphus Bridge	Upgrade	11,072	Wendell Boulevard	Study Area Limits	Minor Thoroughfare	3-Lane Undivided
76	Old Zebulon Road	Upgrade	2,495	North Wendell Thoroughfare	Wendell Boulevard	Major Collector	3-Lane Undivided
77	Old Zebulon Road	Upgrade	8,135	Wendell Boulevard	North Wendell Thoroughfare	Minor Collector	2-Lane Undivided
78	Peachgrove - Todd Lane Connector	New	8,720	Peachgrove Lane	Todd Lane	Major Collector	2-Lane Divided
79	Peachgrove Extension	New	7,156	Peachgrove Lane	Wendell Boulevard	Major Collector	2-Lane Divided
80	Peachgrove Lane	Upgrade	2,765	NC 97	Peachgrove Extension	Major Collector	2-Lane Divided
81	Pleasants - Hunt Valley Trail Connector	New	5,770	Seedling - Pleasants Connector	Hunt Valley Trail	Minor Collector	2-Lane Undivided
82	Pleasants Road	Upgrade	1,900	Lake Myra Road	Pleasants - Hunt Valley Trail Connector	Minor Collector	2-Lane Undivided
83	Poole Road	Upgrade	5,665	Martin Pond Road	Wendell Falls Parkway	Minor Thoroughfare	3-Lane Undivided
84	Poole Road	Upgrade	10,436	Study Area Limits	Martin Pond Road	Major Thoroughfare	4-Lane Divided
85	Poole Road - Lake Myra Road Connector	New	3,249	Poole Road	Lake Myra Road	Minor Collector	2-Lane Undivided
86	Raybon Drive	Upgrade	2,496	NC 97	Raybon Drive Extension	Minor Collector	2-Lane Undivided
87	Raybon Drive Extension	New	2,299	Raybon Drive	North Wendell Thoroughfare	Minor Collector	2-Lane Undivided

**Wendell Arterial and Collector Street Plan
Functional Class and Cross-Section Assignment**

Section Number	Road Name	Status	Length (ft.)	From	To	Functional Classification	Cross-Section
88	Riley Hill Road	Upgrade	13,020	Rolesville Road	Riley Hill School Road	Minor Thoroughfare	3-Lane Undivided
89	Riley Hill School Road	Upgrade	5,935	Riley Hill Road	Davistown Road	Minor Collector	2-Lane Undivided
90	Robertson Pond Road	Upgrade	8,833	Rolesville Road	Edgemont Road	Major Collector	2-Lane Divided
91	Rolesville Road	Upgrade	24,442	Riley Hill Road	Intersection Realignment Project Extents	Major Thoroughfare	4-Lane Divided
92	Rolesville Road Intersection Relocation	New	2,408	Existing North Extents	Existing South Extents	Major Thoroughfare	4-Lane Divided
93	Seedling - Pleasants Connector	New	2,600	Pleasants Road	Seedling Street	Minor Collector	2-Lane Undivided
94	Seedling Street	Upgrade	2,246	Seedling - Pleasants Connector	Turnipseed Road	Minor Collector	2-Lane Undivided
95	Selma Road	Upgrade	12,409	Wendell Boulevard	Study Area Limits	Minor Thoroughfare	3-Lane Undivided
96	Smithfield Road	Upgrade	10,659	Poole Road	Wake County Line	Major Thoroughfare	4-Lane Divided
97	South Wendell Thoroughfare	New	14,903	Eagle Rock Road	Selma Road	Minor Thoroughfare	4-Lane Divided
98	Stott's Mill Road	Upgrade	12,759	Eagle Rock Road	S Selma Road	Minor Thoroughfare	4-Lane Divided
99	Taylor Road	Upgrade	2,208	Taylor Road Extension	Martin Pond Road	Minor Collector	2-Lane Undivided
100	Taylor Road Extension	New	2,677	Wendell Falls Parkway	Taylor Road	Minor Collector	2-Lane Undivided
101	Third Street	Upgrade	7,711	Eagle Rock - Third Street Connector	Morphus Bridge Road	Minor Collector	2-Lane Undivided
102	Todd Lane Extension	New	3,939	Todd Lane	Cedarmere Drive	Minor Thoroughfare	3-Lane Undivided
103	Turnipseed - Bisette Connector	New	3,067	Turnipseed Road	Bisette Road	Minor Collector	2-Lane Undivided
104	Turnipseed Road	Upgrade	17,193	Smithfield Road	Eagle Rock Road / Buffalo Road	Major Collector	2-Lane Divided
105	Turn Cedar Lane	Upgrade	845	Latigo Lane Extension	Pleasants - Hunt Valley Trail Connector	Minor Collector	2-Lane Undivided
106	Weathers Road	Upgrade	3,347	Davistown Road	Weathers Road Extension	Minor Collector	2-Lane Undivided
107	Weathers Road Extension	New	2,863	Weathers Road	Robertson Pond Road	Minor Collector	2-Lane Undivided
108	Wendell Blvd - Liles Dean Connector	New	3,109	Wendell Boulevard	Old Battle Bridge - Liles Dean Connector	Minor Collector	2-Lane Undivided
109	Wendell Boulevard	Upgrade	19,953	Keiths Road	Honor Lane	Major Thoroughfare	4-Lane Divided
110	Wendell Boulevard	Upgrade	2,741	Liles Dean Road / Honor Lane	Marshburn Road	Minor Thoroughfare	3-Lane Undivided
111	Wendell Boulevard	Upgrade	3,833	Marshburn Road	Selma Road	Minor Collector	2-Lane Undivided
112	Wendell Boulevard	Upgrade	9,948	Selma Road	Study Area Limits	Minor Thoroughfare	3-Lane Undivided
113	Wendell Falls - Jake May Connector	New	4,426	Wendell Falls	Jake May Extension	Minor Collector	2-Lane Undivided
114	Wendell Falls Parkway	Upgrade	7,410	Jake May Drive	Wendell Boulevard	Minor Collector	2-Lane Undivided
115	Wendell Falls Parkway	Upgrade	17,477	Study Area Limits	Jake May Drive	Major Thoroughfare	4-Lane Divided
116	Wendell Valley - Eagle Rock Connector	New	3,003	Wendell Valley Boulevard	Eagle Rock Road	Minor Collector	2-Lane Undivided
117	Wendell Valley Boulevard	New	13,785	Wendell Falls Parkway	Old Battle Bridge Road	Minor Thoroughfare	4-Lane Divided
118	Wheat Drive	Upgrade	855	Wheat Drive Extension	Martin Pond Road	Minor Collector	2-Lane Undivided
119	Wheat Drive Extension	New	4,268	Wendell Valley Boulevard	Wheat Drive	Minor Collector	2-Lane Undivided
120	Wiley Oaks Drive	Upgrade	2,040	Wiley Oaks North Terminus	Pool Road	Minor Collector	2-Lane Undivided
121	Wythe Lane	Upgrade	2,773	Blair Hills Road	Wythe Lane Extension	Minor Collector	2-Lane Undivided
122	Wythe Lane Extension	New	1,326	Wythe Lane	South Wendell Thoroughfare	Minor Collector	2-Lane Undivided