



# The Pender County Collector Street Plan

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## User Guide

November 2016



This document serves as a reference guide to using the Pender County Collector Street Plan, adopted March 21, 2016. Specific references to the Pender County Unified Development Ordinance are included to better advise citizens and applicants towards utilizing the adopted plans of the County. Consultation with Pender County Staff is advised when developing any project.

# Introduction and Purpose

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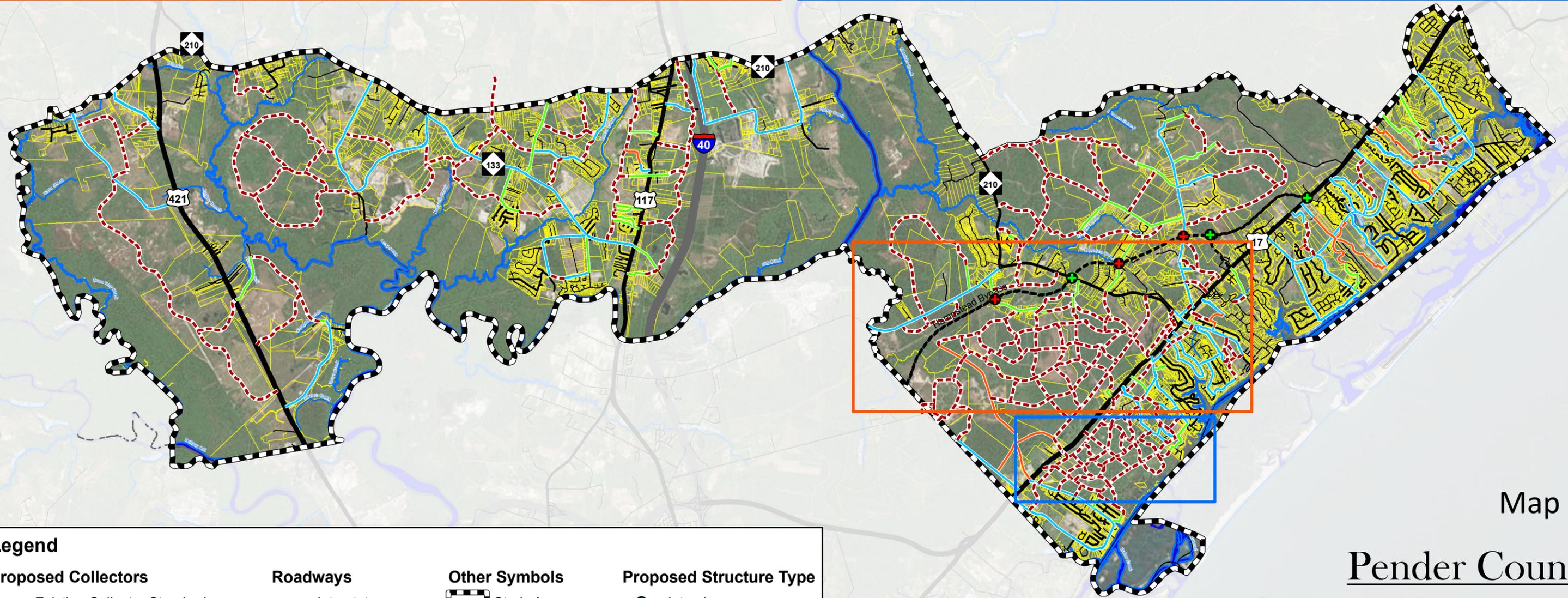
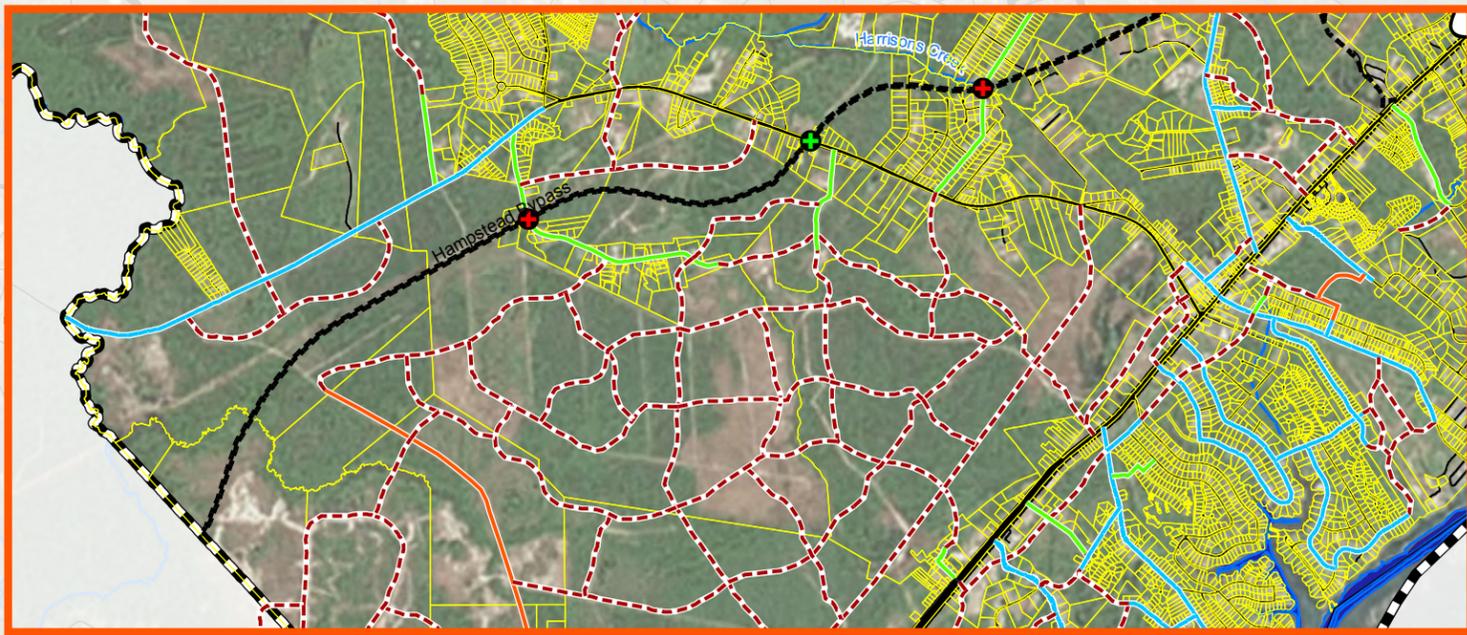
The primary goal of the Pender County Collector Street Plan is to guide investment in new collector streets with the ultimate intention of improving connectivity, focusing land development in suitable areas, encouraging all modes of transportation, maintaining levels-of-service on existing roadways, promoting safety, ensuring that significant natural areas are conserved, and providing a safe and high-quality transportation system for existing and future residents, businesses, and visitors.

To achieve these goals, the Steering Committee, Pender County, and WMPO planners agreed on the following guiding principles and objectives for the Pender County Collector Street Plan.

- Develop a realistic and feasible network of collector streets that support the local street and arterial system
- Work with the development community to ensure proper connectivity and collector street design
- Be sensitive to environmental issues and “build in” context sensitive design approaches where applicable
- Integrate multimodal design features into the street design that support walkability and bikability

This document is intended to guide users on how to apply the Pender County Collector Street Plan to specific development projects. Consultation with the Planning and Community Development Department is recommended early in your project. The general path of determining the effect of the plan on a specific project should follow the steps in progression:

1. Determine if a collector street is shown in a specific location and is part of the subject property by using the Pender County GIS or through the attached map labeled MAP 1 (MAP 1: Overall Collector Street Plan Map)
2. If a collector street is shown on the subject parcel, proceed to MAP 2 (MAP 2: Hierarchy Map) to determine the level of access that will be permissible. The collector streets are broken into a functional classification hierarchy. All collector streets are broken down between Local, Minor, and Major. Specific requirements associated with the classifications of collector streets may be found in Section 7.2.5. of the Pender County Unified Development Ordinance.
3. Once it’s been determined the level of access of the collector street you will need to determine what cross-section is applicable to the street. In order to determine this, a color coded map labeled MAP 3 (MAP 3: Cross-Section Map) should be referenced and applied. Please note that cross-sections in each Group contain options to choose from are shown following the map.



Proposed Collectors	Roadways	Other Symbols	Proposed Structure Type
Existing Collector Standards	Interstate	Study Area	Interchange
Existing Roads - Need Improvement	NC and US Routes	Study Area Parcels	Overpass
Planned Connections	Local Roads	Lakes and Ponds	
Preferred Scenario	Hampstead Bypass	Streams	

Map 1  
Pender County  
Collector Street Plan:  
Proposed Alignments

# Recommended Collector Streets

*How did the collector streets come to be located where they are recommended on the adopted plan?*

The collector streets were recommended in the specific locations based on street spacing standards. The recommended collector streets, as identified in the Pender County Collector Street Plan are based on the zoning district of the underlying land. As land use intensity increases, there are more recommended collector streets. Each land use type is assigned an approximate street spacing based on the density and intensity of land use development. The principle of the Pender County Collector Street Plan is to make a connection; these documents do not seek to predetermine a specific route.

Spacing Standards were developed as part of a modeling exercise (conducted in 2011) to determine the ideal spacing needed for streets to maintain a Level-of-Service “D” on all roadways within a given study area. A Level-of-Service “D” constitutes acceptable conditions under which speed and freedom to maneuver are severely restricted, though traffic flow is still stable. A Level-of-Service “D” serves as a baseline in this instance. The details of the spacing standards are presented in below. The parentheses indicate the zoning definition that corresponds to the land use intensity. The Access Function column refers to the amount of access that the collector street will provide.

Zoning District	Intensity	Approximate Street Spacing
Environmental Conservation	Little to no development	N/A
Rural Agricultural	Less than 2 dwelling units per acre	3,000 to 6,000 feet apart
General Business, General Industrial, Industrial Transition, Manufactured Housing Community, Residential Performance	2-4 dwelling units per acre	1,500 to 3,000 feet apart
Residential Mixed, Office & Institutional, Planned Development	More than 4 dwelling units per acre/activity nodes	750 to 1,500 feet apart

Table 1: Collector Street Plan Spacing Standards

*What if the collector street cannot be located in the specific location identified in the Pender County Collector Street Plan?*

The Unified Development Ordinance Section 7.5 Street Design, provides the flexibility of moving a collector street within the approximate street spacing guidelines provided within Table 1 above. If a roadway is not feasible in the given location as identified in the Pender County Collector Street Plan, then the requirement would be to move the proposed roadway to a suitable location within the spacing standards identified for the specific zoning district.

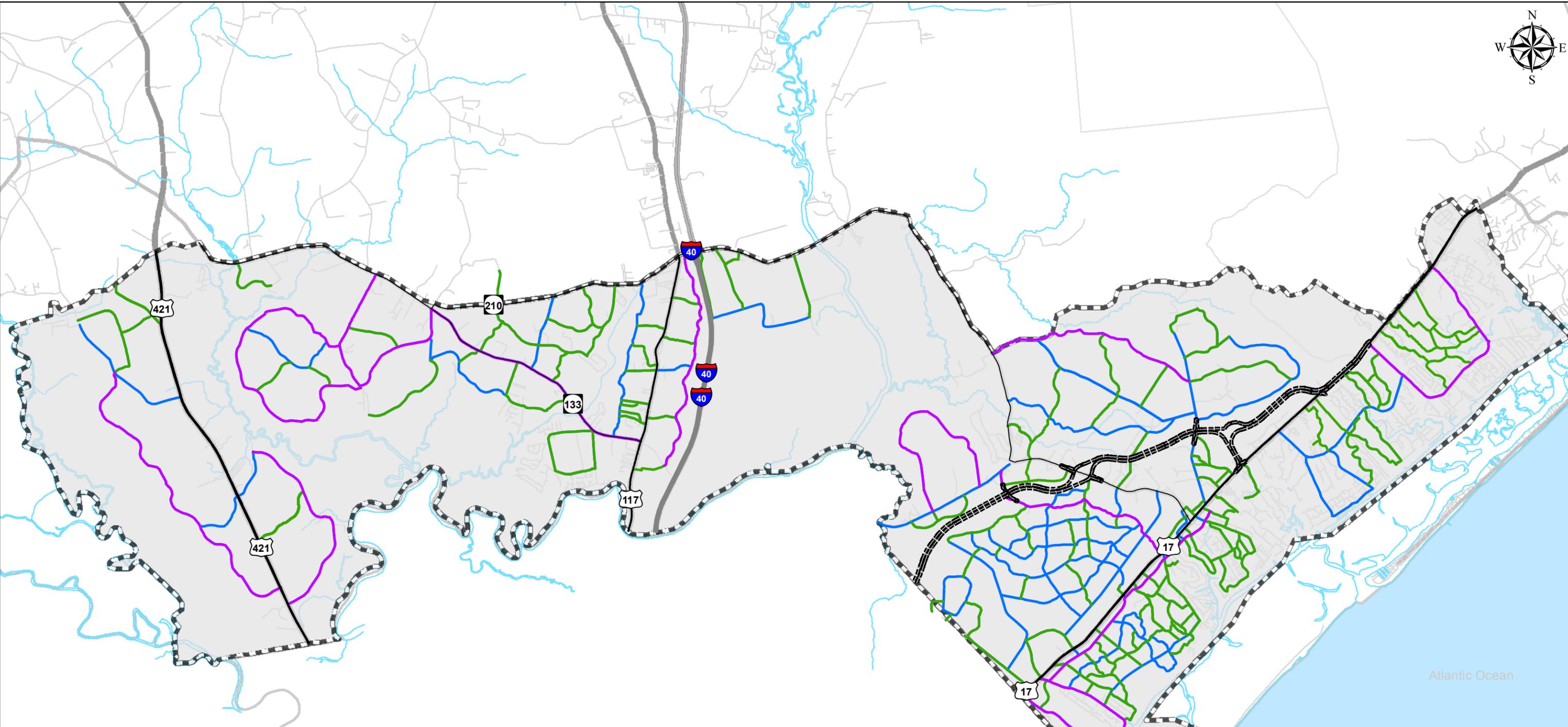
For example, if a parcel is zoned GB, General Business, and a collector street is identified within the project bounds but cannot be designed in the location on the plan, the developer is encouraged to

design the project to have the same collector street 1,500 to 3,000 feet from the identified roadway recommended in the Pender County Collector Street Plan. The intention of the Pender County Collector Street Plan is to recommend connectivity not alignment. The specific location of future collectors and the timeframe in which they will be constructed will be determined by future development.

*Is there any way that the specific project may not require a collector street identified in the adopted plan?*

The regulatory language in the Unified Development Ordinance Section 7.5 allows for flexibility and added review to examine parcel specific conditions which may warrant an exception from the collector street plan map. Specifically, the Ordinance states in Section 7.5.1; Any deviation from the required spacing standards, width, grade, or character of the streets may be granted based on the approval of the Administrator. Maximization of the number of lots or parcels in a land division is not a reason to allow a waiver or modification. Criteria for approval may include;

1. 401 or 404 Wetlands as depicted by USACE wetland verification or as presented in written or map form by a wetlands consultant or professional wetlands scientist that identifies wetlands present within the project area and alternative locations of collector streets cannot be achieved. Evidence shall be presented that the written or map form verification has been submitted to USACE for wetland concurrence at the time of permitting;
  - a. Wetlands impacted in excess of 0.5 acres on site that are directly caused by the required collector road shall warrant administrative review for an exception when no other alignment can be made on site without equal or greater wetland impacts.
  - b. Off-site wetland impacts in excess of 1 acre based on a desktop review/assessment (by wetland consultant or professional wetlands scientist) that are directly caused by the County's required collector road corridor shall warrant administrative review for an exception when no other alignment can be made on site without equal or greater wetland impacts.
2. Identified Areas of Environmental Concern (AEC) that lie within the identified path of the collector street;
3. An adjacent property connection cannot be made due to existing conditions that would create a street slope greater than a 4:1 ratio.
4. Existing railroad crossings, structures, conservation easements or buildings that are not part of the development plan located on the subject property or adjacent property that create a barrier in the identified path of the Collector Street and no other arrangement can be made. Evidence shall be presented from the appropriate agency showing that the crossing(s) cannot be made;
5. Significant Trees, as defined (Section 8.1.3.A.2), are located on the subject property and alternative location for collector street construction cannot be made. A significant tree survey shall be submitted demonstrating the general location, species and size.
6. The identified Collector Street will lineally connect into an existing roadway network that is, an existing private street, was not constructed to NCDOT standards, or would create conditions inconsistent with the collector street classification. Alternative roadway design shall be submitted to make connections with the existing or planned roadway network to the Administrator for review and approval.



**Legend**

- |                  |                |                  |
|------------------|----------------|------------------|
| Major Collectors | NC Highways    | Hampstead Bypass |
| Local Collectors | Other          | hydrography      |
| Minor Collectors | Private Roads  |                  |
| WMPO             | Secondary Road |                  |
| Interstate       | US Highways    |                  |
| Municipal        |                |                  |

Map 2

Pender County  
Collector Street Plan:  
Hierarchy Map

# Hierarchy Classifications

*How did the collector streets get classified in the hierarchy identified on Map 2?*

The collector streets identified in the plan are categorized by hierarchical standards into; Major Collectors, Minor Collectors, and Local Collectors. The standards for developing this hierarchy were based on the items four criteria listed below;

- 1. Distance

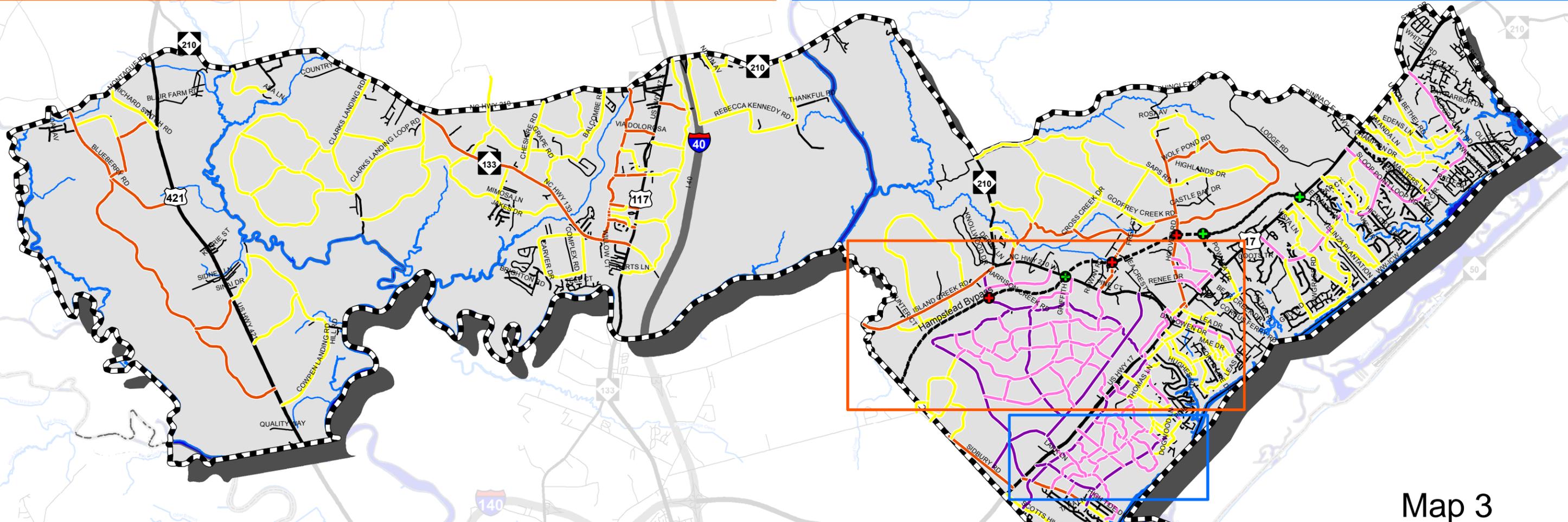
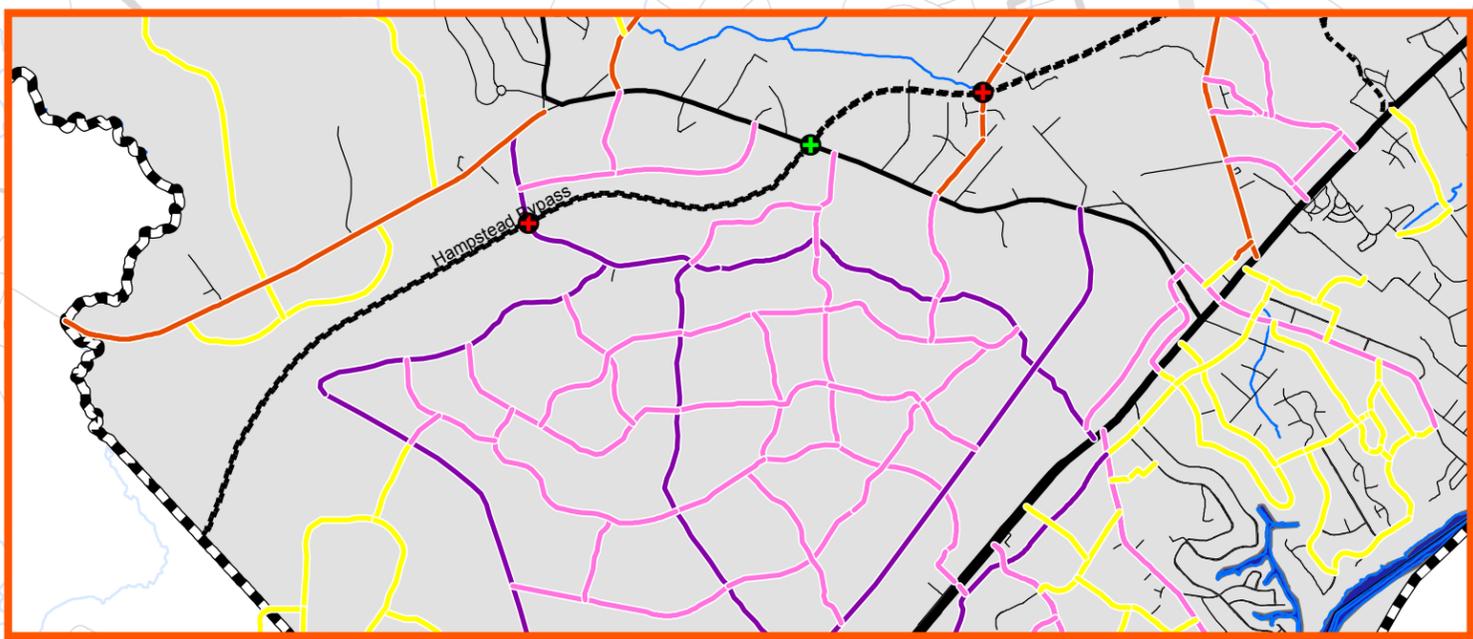
Type of Collector Street	Distance Measured of Segment (in Miles)
Major	4 or greater
Minor	2-4
Local	2 or less

- 2. In measuring distance of collector streets, the roadways do not cross arterial roadways (US HWY 17, US 421 or NC 210)
- 3. Segment directly connects from a major collector street to an arterial roadway and the roadway meets at the arterial to form an intersection, then the collector roadway shall be categorized to the next level to increase mobility. The next level will be maintained until the next intersection.
- 4. Continue to plan for inclusion of the Hampstead Bypass (R-3300) interstate facility.

*What are the standards for the Major, Minor and Local collector streets?*

The specific regulations regarding access on collector streets are identified in Section 7.2.7 of the Pender County Unified Development Ordinance. Only when a property is subdivided do these regulations take apply.

- 1. Collector Streets - Major: Major Collector Streets shall preserve mobility of the transportation network and individual driveway access shall be prohibited, all individual lots shall have access to a public or private street.
- 2. Collector Streets - Minor: Minor Collector Streets shall balance mobility and access and individual driveway access shall be prohibited. Access to individual lots shall be demonstrated through other public or private streets or Alternative Design Streets as demonstrated in Section 7.5.3.F.
- 3. Collector Streets - Local: Local Collector Streets shall be designed as to provide increased access to individual lots. Local Collector Streets are intended to feed into the larger transportation network and should be designed as to limit speeds and be circuitous in nature. Individual lot access shall be permitted.



Proposed Collector Groups	Roadways	Other Symbols	Proposed Structure Type
Group 1	Interstate	Study Area	Interchange
Group 2	NC and US Routes	Lakes and Ponds	Overpass
Group 3	Local Roads	Streams	
Group 4	Hampstead Bypass	County Boundaries	

Map 3  
Pender County  
Collector Street Plan:  
Cross-Section Groups

# Cross-Section Designs

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*What is the requirement for the collector street cross section? What will it look like?*

A series of cross-sections were developed as part of this plan, ranging from a rural cross-section (best suited to areas with low density development) to a neighborhood cross-section (designed to accommodate automobiles, pedestrians, and bicyclists in a more densely populated area). The specific types of cross sections recommended are shown on Map 3.

These cross-sections are presented in figures and are color-coded to the collectors identified on the map. Each color does not represent one cross-section, in fact, an array of cross-sections are presented for each category for flexibility in design, while still maintaining amenities for pedestrians and bicyclists. Each recommended cross section was designed based on the most current version of NCDOT's Complete Streets Policies. This was done to ensure that each road was built to NCDOT design standards.

The applicant has the opportunity to choose the cross section best suited for the specific proposal. For instance, if the map shows a Group 1 (denoted in yellow on the map), then the applicant can choose from the three types of Group 1 cross sections identified in Figures 21-23. In consultation with staff, the cross sections will help create community character and allows for flexibility in design.

# Group 1

<b>Baseline</b>	This facility will include: <ul style="list-style-type: none"> <li>• two travel lanes and</li> <li>• a 2' to 4' shoulder</li> </ul>
<b>Baseline with Bike Lanes</b>	This facility will include: <ul style="list-style-type: none"> <li>• two travel lanes and</li> <li>• two on-road bicycle lanes</li> </ul>
<b>Baseline with Sidewalk</b>	This facility will include: <ul style="list-style-type: none"> <li>• two travel lanes and</li> <li>• a 2' to 4' shoulder and</li> <li>• sidewalks on one or two sides</li> </ul>

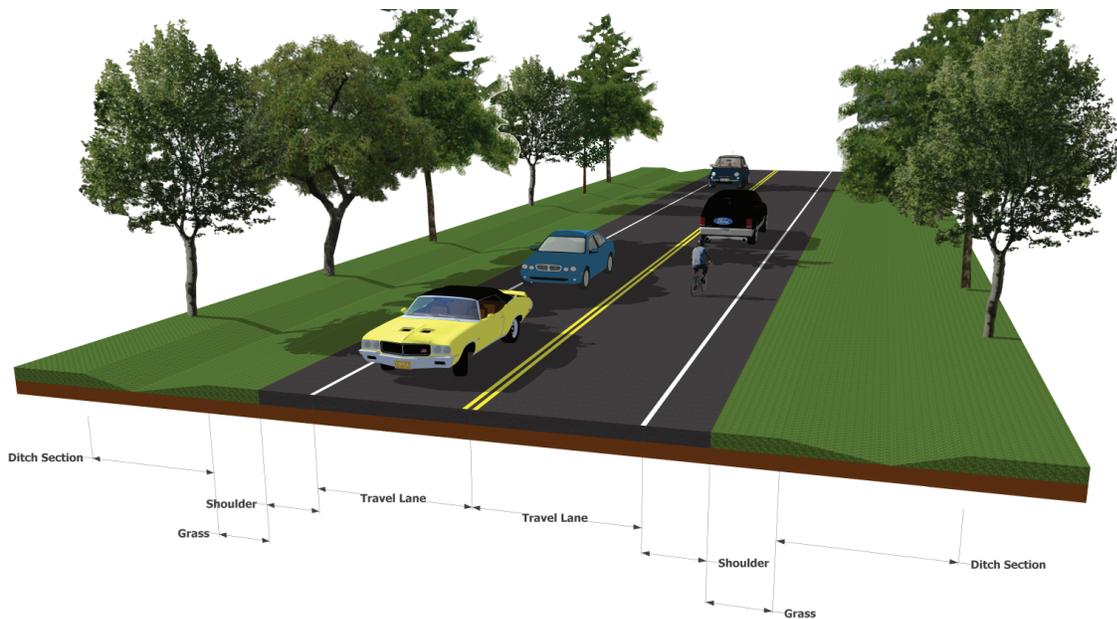


Figure 21: Baseline





Figure 22: Baseline with Bike Lanes



Figure 23: Baseline with Sidewalk (only required on one side)



<p><b>Baseline with Sidewalk and Bike Lanes</b></p>	<p>This facility will include:</p> <ul style="list-style-type: none"> <li>• two travel lanes,</li> <li>• sidewalks on both sides, and</li> <li>• two on-road bicycle lanes.</li> </ul>
<p><b>Baseline with Sidepath</b></p>	<p>This facility will include:</p> <ul style="list-style-type: none"> <li>• two travel lanes and</li> <li>• one separated sidepath.</li> </ul>



Figure 24: Baseline with Sidewalks and Bike Lanes



Figure 25: Baseline with Sidepath



Group 3

<p><b>Residential with Sidepath (one side) or Sidewalk (both sides)</b></p>	<p>This facility will include:</p> <ul style="list-style-type: none"> <li>• two travel lanes and</li> <li>• either a sidepath on one side or</li> <li>• sidewalks on both sides.</li> </ul>
<p><b>Baseline with Sidepath</b></p>	<p>This facility will include:</p> <ul style="list-style-type: none"> <li>• two travel lanes and</li> <li>• one separated sidepath.</li> </ul>

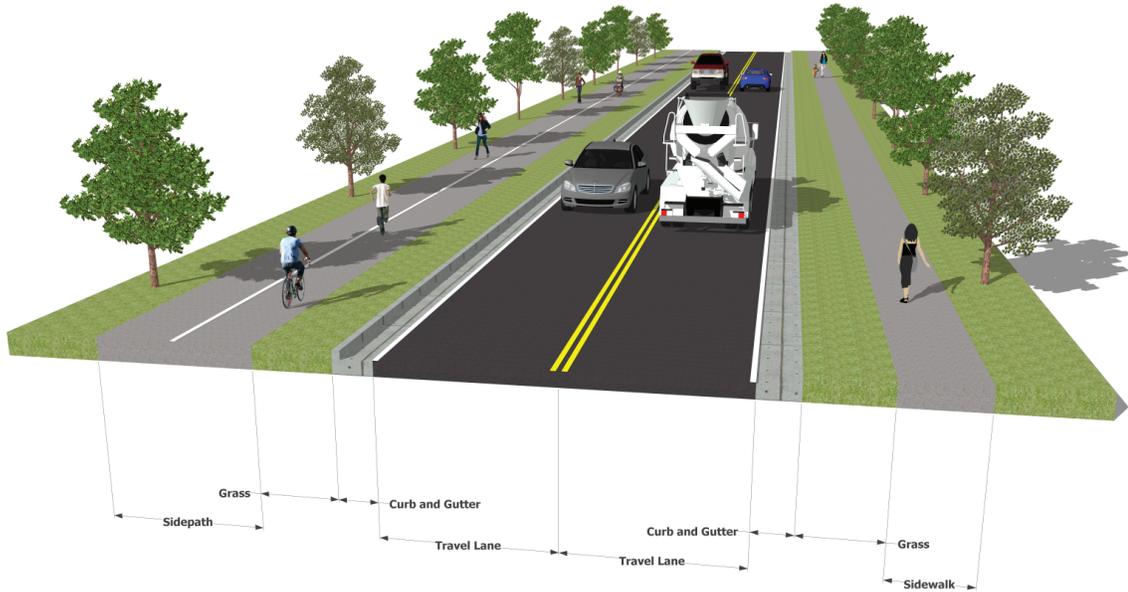


Figure 26: Residential with Sidepath (one side) or Sidewalks (both sides)



Figure 27: Baseline with Sidepath



<p><b>Residential Median-Divided with Bike Lanes and Sidewalk (both sides)</b></p>	<p>This facility will include:</p> <ul style="list-style-type: none"> <li>• a planted median;</li> <li>• two travel lanes;</li> <li>• two bike lanes, and</li> <li>• sidewalks on both sides</li> </ul>
<p><b>Neighborhood with Bike Lanes and Sidewalks (both sides)</b></p>	<p>This facility will include:</p> <ul style="list-style-type: none"> <li>• two travel lanes,</li> <li>• two bike lanes, and</li> <li>• sidewalks on both sides.</li> </ul>



Figure 28: Residential Median-Divided with Bike Lanes and Sidewalks (both sides)



Figure 29: Neighborhood with Bike Lanes and Sidewalks (both sides)

