City of Wilmington
Development Services

Adopted
November 2004

COLLEGE Road Corridor Plan

Resolution

City Council
City of Wilmington
North Carolina

Introduced By: Sterling B. Cheatham, City Manager **Date:** 11/03/2004

Resolution Adopting the Corridor Plans for Carolina Beach Road, College Road, Market Street and Oleander Drive as Part of the Future Land Use Plan (OBG-7-1004)

LEGISLATIVE INTENT/PURPOSE:

WHEREAS the City began extensive efforts to develop a comprehensive Future Land Use Plan in early 2003; and

WHEREAS during 2003 and 2004, over 700 citizens provided their input on the future of Wilmington at one or more of the 90 Future Land Use Plan meetings held for that purpose; and

WHEREAS as part of the process, 10 meetings were held specifically for citizen input on the Corridor Plans; and

WHEREAS during the meetings, citizens clearly indicated their desire for safe, uncongested and more attractive roadways; and

WHEREAS the Corridor Plans are intended to guide the physical development of these major thoroughfares by describing how, why, when and where to build or preserve aspects of the corridors in order to meet the expectations of our citizens; and

WHEREAS amendments to the text of the Corridor Plans will follow the same process as amendments to the City Code and amendments to the map series of the Corridor Plans will follow the same process as amendments to the official City Zoning Maps; and

WHEREAS on October 6, 2004, the Wilmington Planning Commission unanimously recommended adoption of the Corridor Plans; and

WHEREAS the City Council has taken due notice of comments from the public, interested parties and the Wilmington Planning Commission.

CERTIFIED TO BE A TRUE COPY
CITY CLERK

THEREFORE, BE IT RESOLVED:

THAT the Carolina Beach Road, College Road, Market Street and Oleander Drive Corridor Plans for the City of Wilmington, North Carolina, as submitted to the Wilmington City Council on

November 3, 2004, are hereby adopted.

Spence H. Broadhurst, Mayor

Adopted at a regular meeting
on November 3, 2004.

ATTEST:
City Clerk

APPROVED AS TO FORM:
Attorney

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Oleander Drive Corridor Plan
October 2004

Acknowledgements

Wilmington City Council
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College Road Corridor Plan

Introduction

Less congestion! More attractive! These are the common themes of extensive community input regarding the City's major road corridors. However, Wilmington is mostly built out and land use and transportation patterns are well established along our thoroughfares. As a result, it will be a great challenge to make these roads less congested and more attractive because there are few easy and inexpensive solutions when it comes to quality redevelopment of established areas.

The physical city we live in today is nothing more than an accumulation of material investment choices over an extended period of time. The appearance and function of our road corridors is simply an accurate reflection of the care and wisdom, or lack thereof, of all the people who have ever lived here.

The view from our major roads is the most common way residents see their community and the means by which visitors decide if it is worth stopping to visit. Publicly-owned road rights-of-way are the places that communities can most directly control and improve. It is clear from the community input that the major road corridors of Wilmington need better care and wisdom.

Image 1: College Road and New Centre Drive

Image 2: College Road and Wrightsville Avenue

Purposes of the Plan

This Plan provides strategies to make College Road less congested and more attractive. In addition, the Plan helps implement the City's Strategic Plan by strengthening the economic and fiscal impact of commercial development along the corridor. The Plan supports and enhances the *Future Land Use Plan* by providing more specific policy guidance for future rezoning proposals and long-term capital expenditures on College Road.

College Road History

The College Road study area from Martin Luther King, Jr. Parkway to the City limits is 6 miles long and is state-maintained. The roadway serves an average of 48,000 vehicles a day. For many years College Road operated as a two-lane roadway, but over the last thirty years the roadway has been widened to increase the number of lanes. With the completion of I-40 in 1991, College Road became the primary north-south thoroughfare through New Hanover County, providing a route to major commercial and tourist destinations for City residents, surrounding county residents, and for tourists. Travelers passing through Wilmington from I-40 use College Road as a route to get to the southern part of New Hanover County, including Carolina and Kure Beaches, which are popular tourist destinations. Businesses along College Road include grocery stores, restaurants, large and small retail shops, hotels, auto sales, and a variety of other commercial establishments and services. College Road experiences heavy through-traffic including commercial truck traffic destined to the Port via Shipyard Boulevard.

Corridor Planning Philosophies

The College Road Corridor Plan was developed with the same basic philosophies as the *Future Land Use Plan* – providing a balance of practical and idealistic strategies that promote high quality redevelopment.

Image 3: College Road and Martin Luther King Jr. Parkway

Image 4: Regional commercial uses on College Road

Balancing Practical and Idealistic Strategies

The College Road Corridor Plan attempts to balance strategies for an ideal future with practical strategies that have a realistic chance to be implemented in the next 5 to 10 years. The citizens of Wilmington clearly do not like unattractive, congested roads lined with generic strip commercial development. However, change to decades of market preferences and regulatory standards that created the current situation will have to be gradual.

Proven strategies for public investment to enhance corridor aesthetics are costly. For example, the cost of burying unattractive overhead power lines is prohibitive along major roads and the cost to build and maintain frontage roads and attractive landscaped medians and plazas is high. Without creative financing tools such as tax increment financing or state and federal grants and revenues, the City will have to pay for many of these improvements. The North Carolina Department of Transportation (NCDOT) has provided substantial funding for road improvements in the area and ongoing partnerships will be necessary when funding opportunities are available. However, the City cannot expect NCDOT to fully fund all desired improvements to College Road.

Typical regulatory approaches to corridor improvement including elimination of pole signs, architectural standards for buildings and downzoning strips between commercial nodes will be extremely controversial in Wilmington. Many land owners and developers have made investment decisions based on current standards. The economic market guiding development in this area is not densely populated and wealthy enough to ensure a return on investment under different, higher quality standards. Regulatory changes will have to be implemented in a careful manner over time and will probably begin with simply attempting to screen some of the unattractive areas with more extensive landscaping.

The Plan proposes taking small steps towards the ideal future to ensure broad community support. A more progressive use of public investment and regulatory best practices should be considered when the Plan is evaluated annually coinciding with updates to the City's capital improvements program and the *Future Land Use Plan.*

Gradual introduction of these strategies will increase their chances of success in Wilmington. However, failure to eventually embrace these standard and innovative approaches will have long-term negative impacts. The community has to be willing to support change or accept the consequences of inaction including traffic congestion, greater costs to provide public services, decaying commercial areas and ultimately a decline in quality of life.

Improve the Quality of Development

During the community input process, citizens clearly expressed the desire to improve the attractiveness and quality of the City. Lack of quality development, particularly along major roads, was consistently listed as the greatest concern. There was consensus from community input that people wanted greater quality development even if costs were eventually passed on to them.

While the private market has shown some signs of supporting higher quality development, significant improvement (attractive architecture, extensive landscaping, multi-story development, innovative stormwater management, attractive ground signs, varied uses and more efficient site development patterns) is only seen in a few areas of the City. There is very little beyond generic corporate and local commercial development along most of the major roads.

There are some aging commercial areas along College Road particularly between Wilshire Boulevard and Holly Tree Road that are expected to redevelop over the next decade and several sites along the corridor have already redeveloped in the past five years. However, current

regulations are not sufficient to lead to noticeable improvement of the corridor. As a result, the typical redevelopment project is essentially the replacement of 1960s and 1970s generic development with newer generic development. For example, corner gas stations are being replaced with corner drug stores with no noticeable change in attractiveness or traffic impact.

Some older commercial areas along College Road will face challenges to redevelop because they were originally built under older, more lenient regulations. Communities are occasionally tempted to lower modern landscaping, stormwater and parking requirements to encourage redevelopment of these areas. However, as with the *Future Land Use Plan*, the College Road Corridor Plan philosophy is that existing standards should not be lowered to influence private development. It is preferable to utilize incentives for quality redevelopment in priority areas or to wait on the private market to drive redevelopment. Redevelopment without improvements to land use patterns or quality of development will defeat the purpose of the Plan to make College Road less congested and more attractive.

Community Input

Extensive community input on desired improvements to major roads was part of the *Future Land Use Plan* process including one meeting dedicated solely to preferences for the future of College Road. During 2003-2004, over 600 people participated in more than 80 community meetings. Nearly 700 additional people participated in a phone survey as part of the Coastal Area Management Act (CAMA) environmental plan update. The CAMA survey included several questions that mirrored the corridor and land use questions used during the *Future Land Use Plan* meetings. Improving the overall attractiveness of the City and reducing traffic congestion were two of the highest ranked issues in the survey.

Traffic congestion has been one of the biggest concerns of our residents for many years. Other transportation-related concerns were poor traffic circulation or connectivity between developments, lack of vision from public officials concerning the relationship between development and traffic flow, unsafe and insufficient bicycle and pedestrian facilities along the major corridors and the lack of an accessible transit system.

The primary reasons citizens like living in Wilmington are the beach, the mild climate and the historic downtown riverfront. Citizens seem more willing to tolerate less than ideal development conditions and inconveniences in the community because of the desirable natural and historic features. However, citizens still desire a more attractive community with enhanced landscaping and more aesthetically pleasing architecture.

Image 5: Corridor Plan Meeting August 2004

Existing Conditions Analysis

Land Use and Zoning

College Road is essentially built out. There are only a couple of undeveloped sites along the entire corridor. The road serves as the City's primary north-south arterial. UNCW is a major regional use on College Road. Most of the commercial uses located on College Road draw customers from the community and surrounding areas with the highest intensity uses located at the New Centre Drive intersection regional node (car dealers, Best Buy, Sams, Lowes Home Improvement).

The land use patterns along the road are widely varied including everything from industrial to single family residential. Zoning districts reflect the varied land use patterns with Regional Business (RB) and residential zoning making up almost two-thirds of the zoning along the road. Office and Institutional (primarily UNCW) and Community Business (CB) each account for 15% of the corridor's zoning. Commercial uses are found in nodal patterns at the intersections with New Centre Drive, Wilshire Boulevard, Oleander Drive, Shipyard Boulevard and 17th Street. Aging commercial strips are the dominant pattern between nodes from New Centre Drive to Holly Tree Road. The most notable exceptions to the strip commercial pattern in this area are UNCW and Hugh McRae Park.

The land use patterns along College Road from Market Street to Holly Tree Road are typical of suburban America with poorly connected commercial uses. The area south of Holly Tree Road is primarily single family residential. Although this is an uncommon land use along a major arterial, the area is stable and does not have a major impact on traffic flow due to frontage roads and limited driveways.

There has been no recent notable transition of uses along College Road and no rezonings in the past five years. Commercial development has begun to encroach into areas just off of College Road in the Racine Drive and Cedar Avenue areas. The only transition along College Road expected in the near future is the possible conversion of the area generally located at the northwest corner of the Market Street intersection from light industrial to regional commercial.

Image 6: Regional shopping center south of New Centre Drive

Image 7: Oleander Drive intersection

There are several redevelopment opportunities along College Road primarily in aging commercial areas such as Marketplace Mall, the strip commercial areas between Wilshire Boulevard and Lake Avenue and the Long Leaf Mall area at Shipyard Boulevard. Access concerns may hinder redevelopment of Marketplace Mall and the aging strip areas will probably require some combination of the properties to meet current landscaping, parking and stormwater standards.

Image 8: College Road redevelopment area


Image 9: College Road redevelopment area

Transportation

The majority of College Road is a four-lane- (two travel lanes in each direction) median divided major arterial road. The area between Market Street and Wilshire Boulevard has six lanes (three travel lanes in each direction) and a median. The majority of the road functions at an unacceptable level of service (LOS) of F. LOS is based on federal standards for volume to capacity ratios (LOS is defined in the Appendix).

Wilmington's major road corridors handle local, regional, and through-traffic, including large commercial trucks. Managing traffic progression on College Road requires a particularly delicate balance between providing smooth through-movements of the large volumes of traffic versus providing reasonable access to and from side streets and commercial developments. Generally, access is not effectively controlled between Wilshire Boulevard and Shipyard Boulevard because there is no median. The areas north of Wilshire Boulevard and south of Shipyard Boulevard are better controlled because of an existing median. Traffic volumes are heavy along College Road since it serves as the primary north-south route through New Hanover County. The roadway serves more vehicles per day than it was designed to handle in most sections. Such high levels of traffic lead to congestion, especially during peak travel periods. The congestion may be reduced some by planned improvements to Kerr Avenue and Independence Boulevard. These enhancements are expected to create more viable north-south alternatives to College Road by 2015. Additionally, improvements to the Oleander Drive intersection are currently in the planning phase though costs to improve the area are expected to be high and may not be funded. More vehicles per day enter the Oleander Drive intersection than any other intersection in Wilmington.

College Road has a total of 220 driveways with an average of 37 driveways per mile. The average of the four corridors studied in 2004 (Carolina Beach Road, College Road, Market Street, Oleander Drive) is 60 driveways per mile. Traffic levels along College Road increase in areas where commercial density along the corridor increases. The majority of the driveways along College Road between Oriole Drive and Holly Tree Drive are considered high traffic generating commercial driveways. Many of the commercial businesses are not internally connected, creating the necessity for numerous individual driveways, the use of which slows traffic flow and increases the risk of collision.

Image 10: College Road grass median

College Road has a median along the majority of the roadway that reduces the number of vehicle conflicts by restricting left-turn movements. The area between Wilshire and Shipyard Boulevards has a center-turn lane and no median. The majority of College Road has right-turn lanes that improve traffic flow on through-lanes.

The lack of sidewalks and safe crosswalks along the corridor are a concern. Although there are sidewalks around some of the major shopping centers, a connected pedestrian network does not exist along most of College Road. The large width of the road, high speeds and the very heavy traffic flows are major challenges for pedestrians attempting to cross College Road.

From Oriole Drive to Holly Tree Road there are 20 bus stops. There are no bus stops south of Holly Tree Road. There are no existing bus pullouts on College Road. The Cape Fear Public Transportation Authority has general plans to expand public transit service to the Carolina Beach area in the near future. See the Short Range Public Transportation Master Plan for more details about public transit in Wilmington.

Image 11: College Road concrete median

Image 12: Unconnected sidewalk north of Wilshire Boulevard

Image 13: Existing crosswalk at the Randall Parkway intersection

In order to more effectively study the transportation systems impacting the City's major road corridors, a composite index of transportation factors was developed. This index, the Transportation Performance Index (TPI), goes beyond the typical evaluation of how fast traffic can be moved through a corridor or a simple volume and capacity analysis. The TPI quantifies the various parameters that determine the quality of service citizens experience as they travel the primary road corridors, and allows for the comparison of relative needs between corridors and sections of corridors for prioritizing future improvements. TPI parameters include volume to capacity ratios, signal progression, number of driveways, medians/center turn lanes, bus stops, sidewalks, and crashes. The TPI was created to identify and prioritize corridor sections for improvements as funding becomes available. In order to arrive at potential solutions to improve the operation of these primary road corridors, the contributing factors were analyzed by identifying corridor components and ranking them by the criteria established in the TPI. The details of the TPI are included in the Plan's appendices.

The area of College Road between MLK Parkway and Oriole Drive scored very well in the TPI due mainly to a low crash rate, a low frequency of driveways, and the presence of a median. The segment of College Road between Wilshire Boulevard and Holly Tree Road rated poorly principally due to a high crash rate, high frequency of driveways, and limited median presence.

Aesthetics

Sections of College Road are among the City's more attractive corridor areas due to extensive natural landscaping at UNCW and Hugh McRae Park, single-family development on the south end, and some of the commercial development on the north end. College Road provides one of the primary roadway entrances to Wilmington where millions of vehicle trips occur every year. However, this entry from the north lacks an attractive gateway that welcomes motorists to Wilmington.

Overall, landscaping along the majority of College Road is adequate with street trees and parking lot landscaping, though the portion of College Road between Wilshire Boulevard and Lake Avenue is in need of landscape improvements along the roadway and within parking lots. Natural tree stands sporadically line portions of the roadway. Although landscaping along College Road contributes to improved aesthetics where present, frequent large freestanding pole signs on commercial properties, utility poles, and several billboards detract from the road's appearance.

Image 14: Preserved trees on the UNCW campus

The corridor plan takes a practical approach to make incremental improvements in aesthetics as opportunities arise through redevelopment, new development, NCDOT projects, and City capital projects. Overhead utility lines are a primary source of visual clutter, but because of high costs it is not practical to consider placing them underground for the entire corridor. Current cost estimates for burying power lines range from $500,000 to $3,000,000 per mile compared to $120,000 per mile for installing overhead lines. Other meaningful

improvements in appearance will require financial investment by the City as well as the private sector. Existing regulations do not effectively address building design and sign clutter and there is no easy and low-cost solution to substantially improve the appearance of the corridor. Thus, without market-driven enhancements and regulatory changes, or substantial public investment, aesthetics will not noticeably improve. Significant aesthetic improvement along the corridor is not likely in areas other than the Wilshire Boulevard to Holly Tree Road section where it is hoped that market-driven redevelopment will occur.

Image 15: Hugh McRae Park south of Lake Avenue

Corridor Enhancement Strategies

College Road enhancement strategies include guidance for future rezonings and capital investment. The strategies also include suggestions for regulatory change. The strategies are intended to make the road less congested and more attractive and to encourage redevelopment that strengthens the local economy.

College Road is essentially fully developed, so it will take higher quality site-by-site redevelopment and public investment in sidewalks, medians, turn lanes, alleys and landscaping to see meaningful improvements to congestion and attractiveness. Significantly improving College Road will likely take many years and will require cooperation with private landowners, the North Carolina Department of Transportation (NCDOT), and the Metropolitan Planning Organization (MPO). The Plan recognizes that it has taken time to grow into what we are today and that changes will take time to implement and will not occur overnight.

Strategies for Zoning Changes

1. Rezoning of the area generally located at the northwest corner of the Market Street intersection to Regional Business zoning should only be supported if the project includes an internal collector roadway that connects to the shopping and residential areas adjacent to Ringo Drive and Hunters Trail. New development should be required to enhance the quality of the area with full internal interconnection of uses, fewer and more attractive signs, attractive architecture and an integrated mix of uses. Development in this area should enhance the City entrance and not degrade traffic flow in the area.

2. Limit Regional Business zoning to the nodes at Market Street, New Centre Drive, Wilshire Boulevard, Oleander Drive and Shipyard Boulevard. Land between the nodes should remain zoned for lower intensity uses such as Community Business and Office and Institutional. Multi-family and Mixed Use zoning are also appropriate at or between nodes.

3. Protect the existing residential neighborhoods and the existing single-family houses that are located directly on College Road south of Holly Tree Road by prohibiting rezonings of residential properties and requiring any adjacent commercial uses to be neighborhood- or community-scale.

Strategies for Capital Improvements

Where possible, specific cost estimates are included with the strategy. General costs for other items are included in the Appendix.

1. Create and fund a redevelopment incentive program that focuses on the *Future Land Use Plan* priority redevelopment areas but is also applicable to other areas. This program will provide specific standards for desired redevelopment (mix and type of uses, signage, architecture, landscaping, site design) and establish cost-sharing levels for infrastructure improvements such as deceleration lanes, traffic signals, turn lanes, medians, alleys, frontage roads, sidewalks/multi-use paths and other access management improvements that would be required for development approval. Priority redevelopment areas for College Road include the Marketplace Mall near the Market Street overpass, the commercial areas between Wilshire Boulevard and Lake Avenue, and Long Leaf Mall at the Shipyard Boulevard intersection. The commercial areas between Wilshire Boulevard and Peachtree Avenue should be the top priority.

2. Create and fund an access management incentive program to retrofit existing development. The program will provide specific standards for cost sharing of improvements including but not limited to deceleration lanes, medians, median opening controls, driveway closures, alleys, frontage roads, signal coordination and interconnections between businesses. Precedence should be given to *Future Land Use Plan* priority redevelopment areas and areas of greatest need as identified in the Transportation Performance Index.

3. Create an attractive gateway entrance into Wilmington that includes the installation of a gateway sign feature near Martin Luther King, Jr. Parkway that welcomes motorists to Wilmington. The welcoming sign should be integrated into and supported by foundation plantings, lighting, and decorative walls. The sign should reflect the unique features of Wilmington. Attempt to extend the entrance further south with green space along College Road similar to Corning on the east side.

   Estimated cost: The estimated cost of the gateway, including land, design, and construction is $100,000. There will be long-term cost associated with the gateway. Public Services' staff which maintains the medians and other city landscaped areas are currently working at maximum capacity levels. Additional staff, contracting for maintenance, or some type of public/private partnership will be required. In addition, additional funds for planting may be needed.

4. Support the construction of an additional northbound left-turn lane on College Road at the New Centre Drive intersection. This project is currently funded by NCDOT through the North Carolina Moving Ahead program. The expected completion date is June 2006.

   Estimated cost: This project is estimated to cost $300,000 to $400,000 for the design and construction. There appears to be sufficient right-of-way to construct the additional lane.

5. Secondary to the sidewalk priority areas in the *Future Land Use Plan*, sidewalk priority areas on College Road should be focused around shopping areas and UNCW, through new development, redevelopment, and City capital projects.

   Estimated cost: The estimated cost of completing the sidewalks on both sides of College Road from Imperial Drive (across from the entrance to Market Place Mall) to Holly Tree Road is estimated at $1,600,000. Completing only the priority areas will significantly reduce this cost.

6. Crosswalk priority intersections along College Road are Randall Parkway, New Centre Drive, and Lake Avenue. Enhancements to pedestrian crossings will be based on site specific engineering analysis and will potentially include:

   - Raised medians
   - Illuminated crosswalks and median refuges
   - Special markings such as striped, or "zebra," longitudinal lines or diagonal cross-hatching to increase visibility and emphasize a crossing
   - Textured crossings, using non-slip bricks or colored pavers, to increase a driver's awareness through increased noise and vibration
   - Visible signage
   - Flashing beacons

Estimated cost: NCDOT allows crosswalks along major thoroughfares only where pedestrian signals have been installed.

There are very strict warrants on the installation of pedestrian signal. Where the pedestrian signals and crosswalks exist, the additional marking with thermoplastic materials can be installed for approximately $2,000 per intersection. If pedestrian signals are not present, but the warrants are met, then the pedestrian signals and markings can be installed for approximately $5,000.

7. Support the NCDOT study and funding of improvements to the Oleander Drive intersection.

8. Construct a bus pullout on the northbound lane south of Parkway Drive.

   Estimated cost: There appears to be sufficient right-of-way along College Road south of Parkway Drive to install a northbound turn lane. Assuming there is sufficient right-of-way in this area, the estimated cost of installing a bus pullout is $70,000.

9. Where right of way permits and NCDOT will allow, plant landscaping to help screen utility poles without interfering with their operation and maintenance.

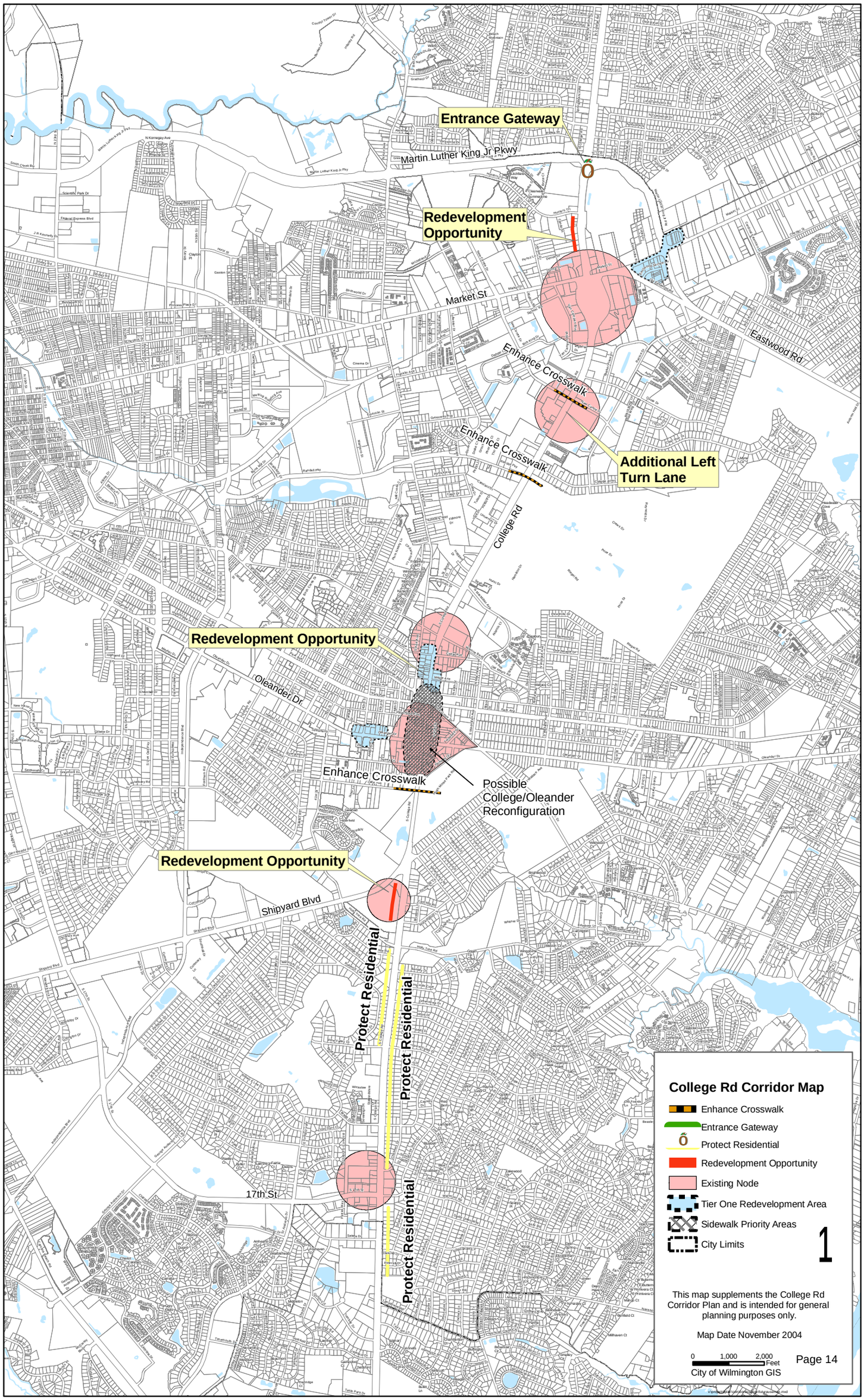
Strategies for Regulatory Changes

1. Regulatory changes to require enhanced development standards will be controversial in the development community. These changes should be studied and introduced gradually. Initially, increased street buffer landscaping should be considered to help screen unattractive areas of the road.

2. After additional community input specifically geared to code changes, consider regulatory changes including prohibition of pole signs and development of codified architectural guidelines. These changes may apply to base zoning districts or may only be applied to properties fronting on a major thoroughfare as part of an overlay district. A Community Appearance Commission could be considered to assist with development review along the major road corridor areas.

3. Increase connectivity between commercial properties by reducing the number of allowed driveways and requiring properties to internally connect as redevelopment occurs, especially in and near the nodal areas, to improve traffic flow. Provide additional connections from the rear of the property if possible.

4. As a result of College Road widening and improved development standards, older properties between Wilshire Boulevard and Lake Avenue, considered to be a priority redevelopment area in the *Future Land Use Plan*, will be difficult to redevelop in compliance with current regulations for building setbacks, parking, landscaping, and stormwater. Due to these constraints, major redevelopment in this area may not be likely in the immediate future. It is preferable to wait and allow market-driven redevelopment to achieve quality development rather than relax existing standards.


Entrance Gateway
Martin Luther King Jr Pkwy
Redevelopment Opportunity
Market St
Eastwood Rd
Enhance Crosswalk
Enhance Crosswalk
Additional Left Turn Lane
College Rd
Redevelopment Opportunity
Oleander Dr
Enhance Crosswalk
Possible College/Oleander Reconfiguration
Redevelopment Opportunity
Shipyard Blvd
Protect Residential
Protect Residential
Protect Residential
17th St
College Rd Corridor Map
Enhance Crosswalk
Entrance Gateway
Protect Residential
Redevelopment Opportunity
Existing Node
Tier One Redevelopment Area
Sidewalk Priority Areas
City Limits
1
This map supplements the College Rd Corridor Plan and is intended for general planning purposes only.
Map Date November 2004
0 1,000 2,000 Feet
City of Wilmington GIS

Appendix A: Existing Conditions

Figure AA.1: Aerial Map of Area A (2004)

Area A

Martin Luther King Jr. Parkway (City Limits) to Oriole Drive

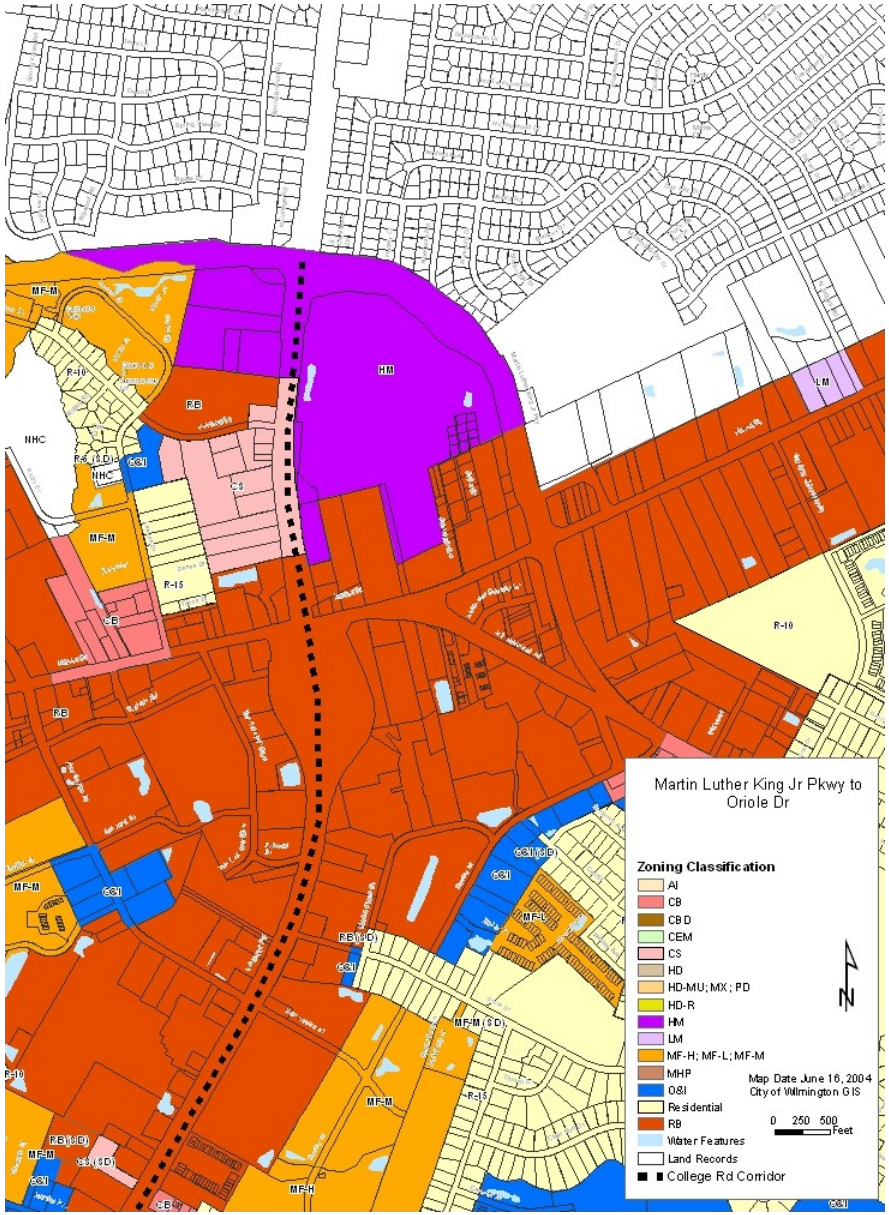


Figure AA.2: Zoning Map of Area A (2004)

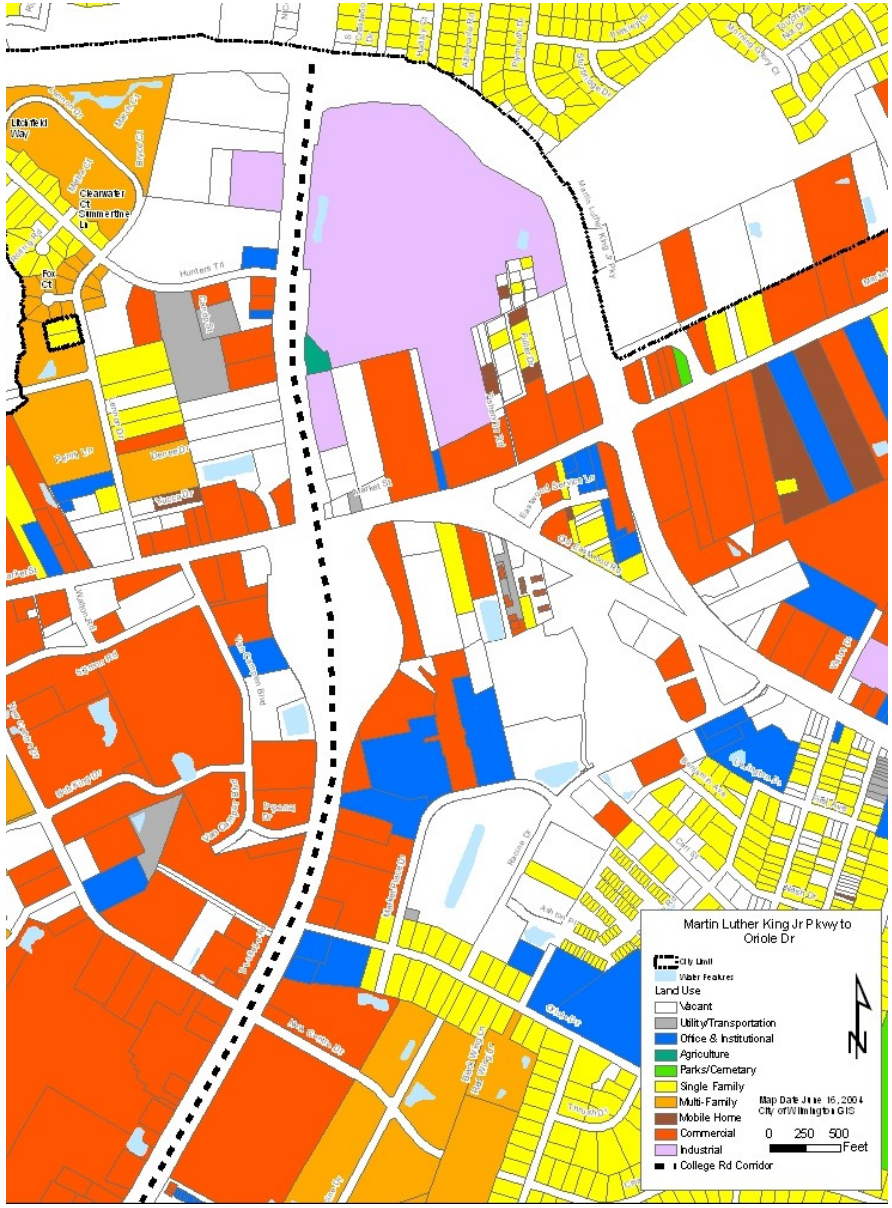


Figure AA.3: Existing Land Use Map of Area A (2004)

A. Area A - Martin Luther King, Jr. Parkway to Oriole Drive

a. Land Use and Zoning

- Commercial and industrial uses predominant, including: shopping centers, auto dealerships, banks, night club, hotel, Corning industrial plant
- Zoning includes Regional Business (RB), Commercial Services (CS), and Heavy Manufacturing (HM)
- Residential areas adjacent to corridor include Single-Family (R-10, R-15, and R-20) and Multi-Family (MF-M)
- 10 undeveloped lots
- Stand-alone buildings surrounded by parking areas are predominant

b. Transportation

- Four travel lanes
- Grassy median
- Unconnected sidewalks
- Some deceleration lanes at intersections
- Three of seven cross-streets unaligned
- Overpass across Market Street

c. Aesthetics

- No gateway signage
- Lack of mature trees
- Older buildings lack landscaping, newer buildings have generally adequate landscaping
- Numerous large signs
- Three billboards
- Power/telephone poles on west side of street, generally unscreened

Image AA.1: Marketplace Mall

Image AA.2: Martin Luther King Jr. Parkway and College Road intersection

Figure AB.1: Aerial Map of Area B (2004)

Area B

Oriole Drive to Wilshire Boulevard

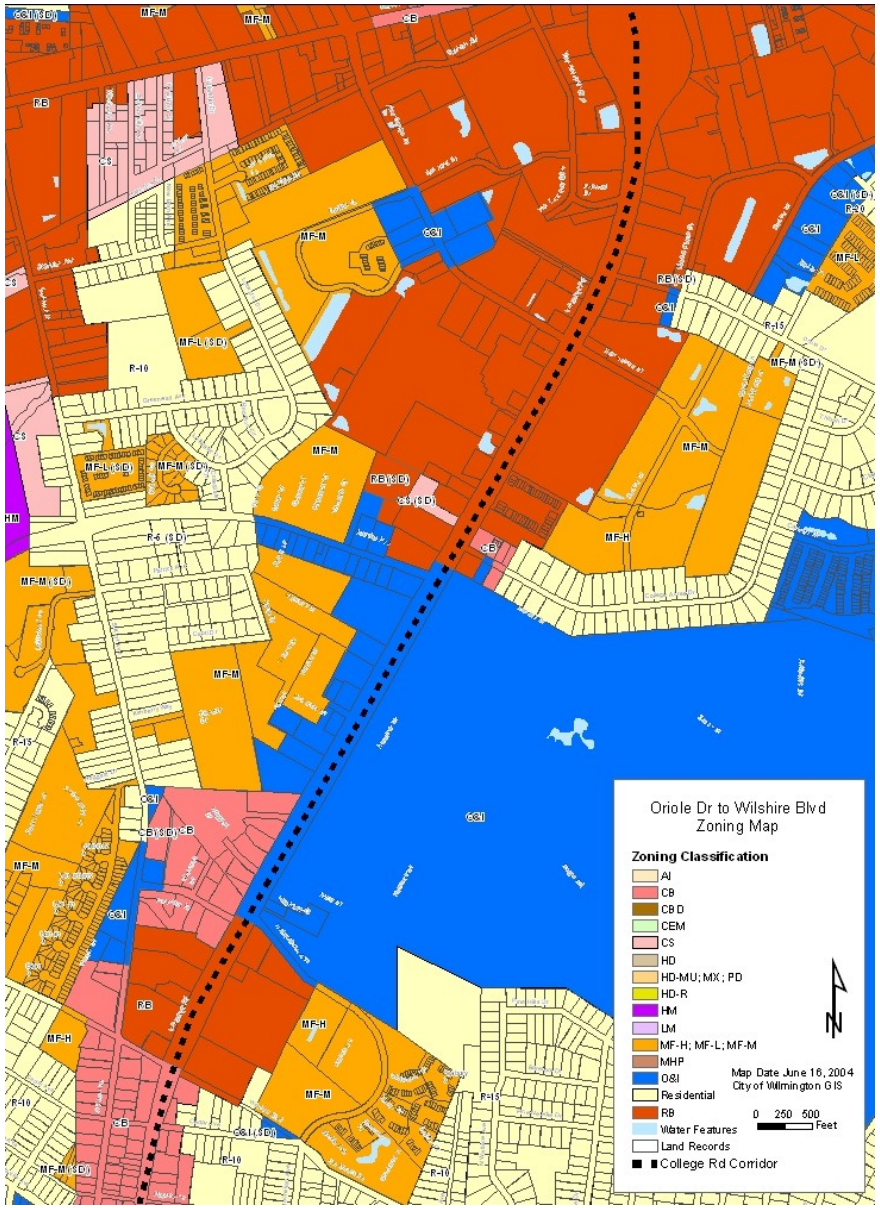


Figure AB.2: Zoning Map of Area B (2004)

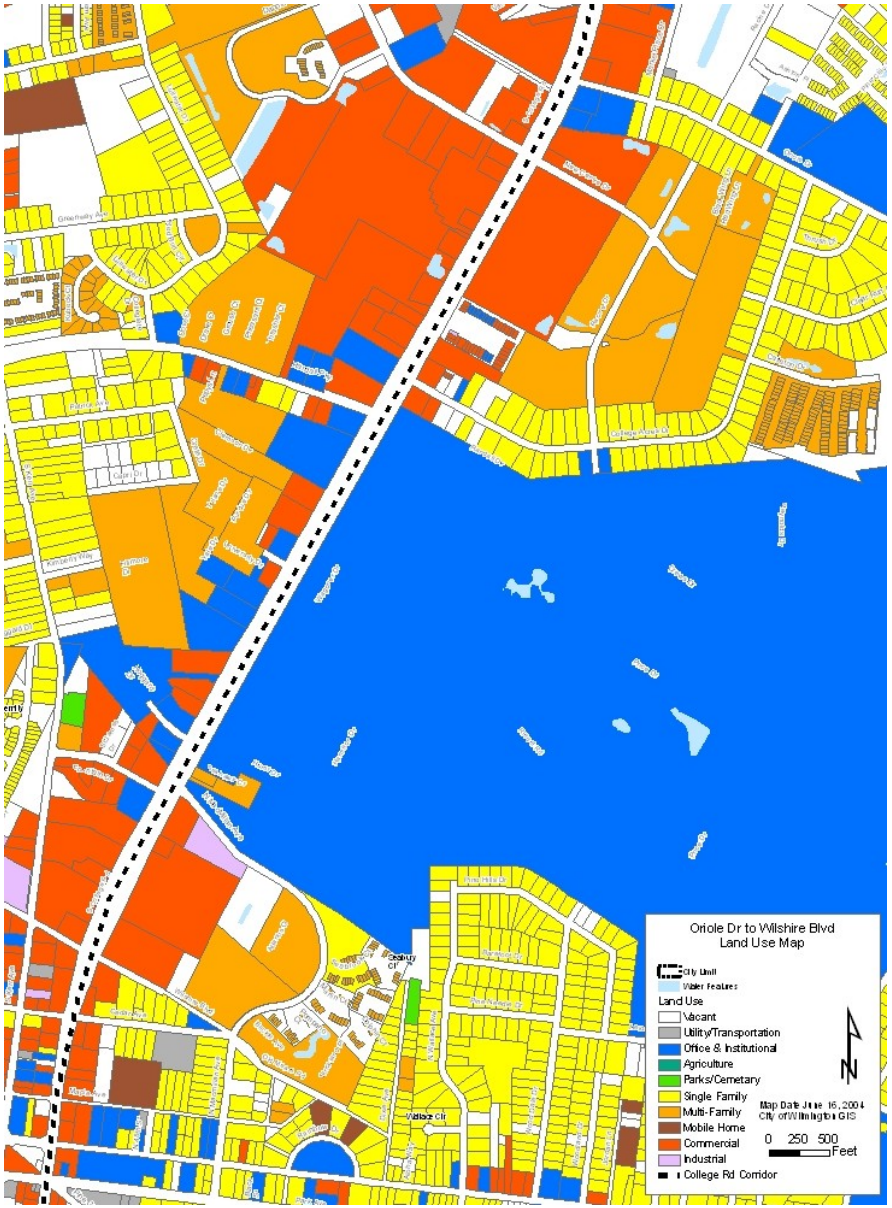


Figure AB.3: Existing Land Use Map of Area B (2004)

B. Area B - Oriole Drive to Wilshire Boulevard

a. Land Use and Zoning

- Commercial and Institutional uses, including: UNCW, shopping centers, furniture stores, drug stores, home improvement stores, fast food, restaurants, churches, vocational schools, grocery stores
- Zoning includes Office and Institutional (O&I), Community Business (CB), Regional Business (RB), Commercial Services (CS)
- Residential areas adjacent to corridor include Single-Family (R-10, R-15, and R-20) and Multi-Family (MF-M and MF-H)
- Strip development predominant
- No vacant private parcels, some undeveloped land owned by the University
- Buildings generally far apart, surrounded by parking

b. Transportation

- Six travel lanes
- Grassy median
- Raised-curb median present in some areas between New Centre Drive and Randall Parkway
- No bicycle facilities; sidewalks in some areas
- Major shopping centers south of New Centre Drive have consolidated access driveways
- Little cross-access between small parcels
- Some unaligned cross-streets

c. Aesthetics

- Lack of mature trees, numerous unscreened parking lots
- Older buildings lack landscaping, newer buildings are generally adequately landscaped
- One billboard and numerous large signs
- Power/ telephone poles present on both sides of the road

Image AB.1: Strip style commercial development

Image AB.2: University Center shopping complex

Figure AC.1: Aerial Map of Area C (2004)

Area C

Wilshire Boulevard to Holly Tree Road

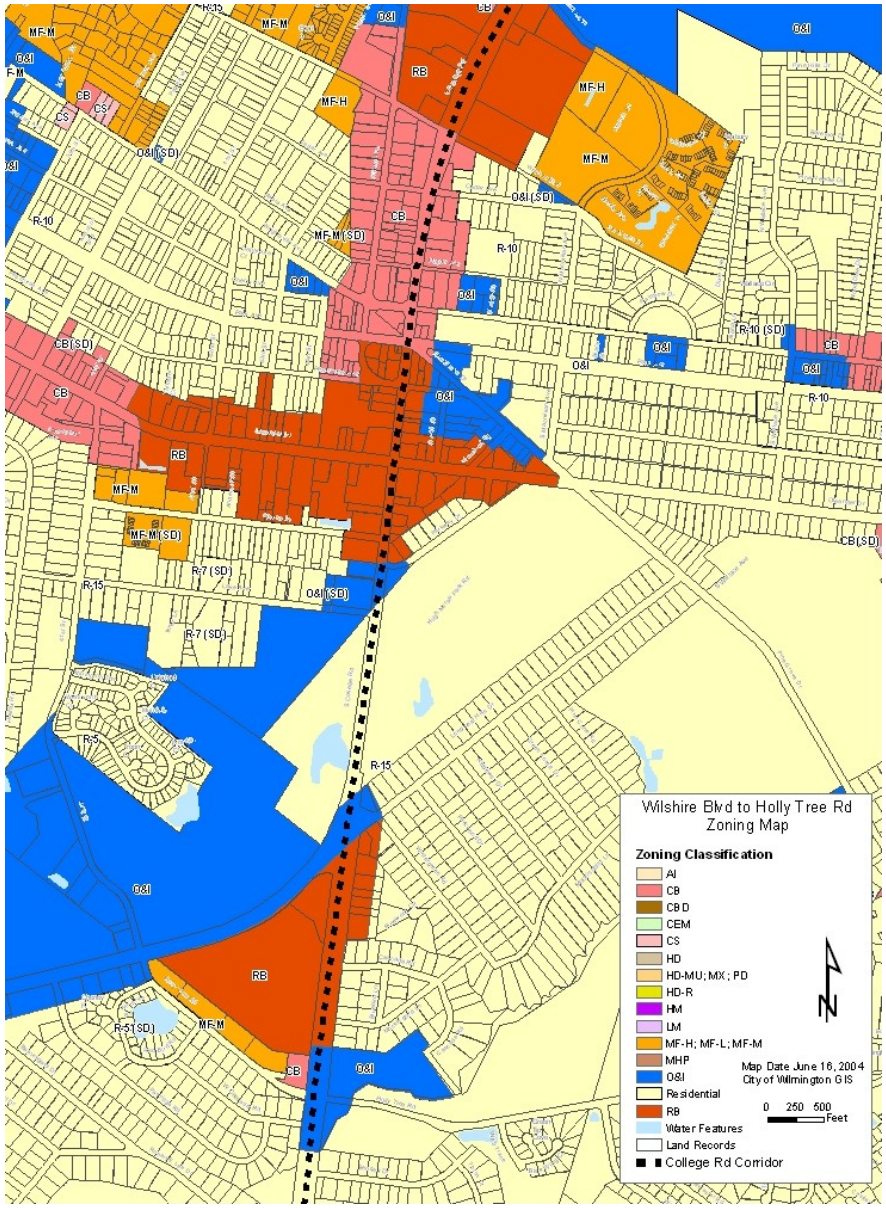


Figure AC2: Zoning Map of Area C (2004)

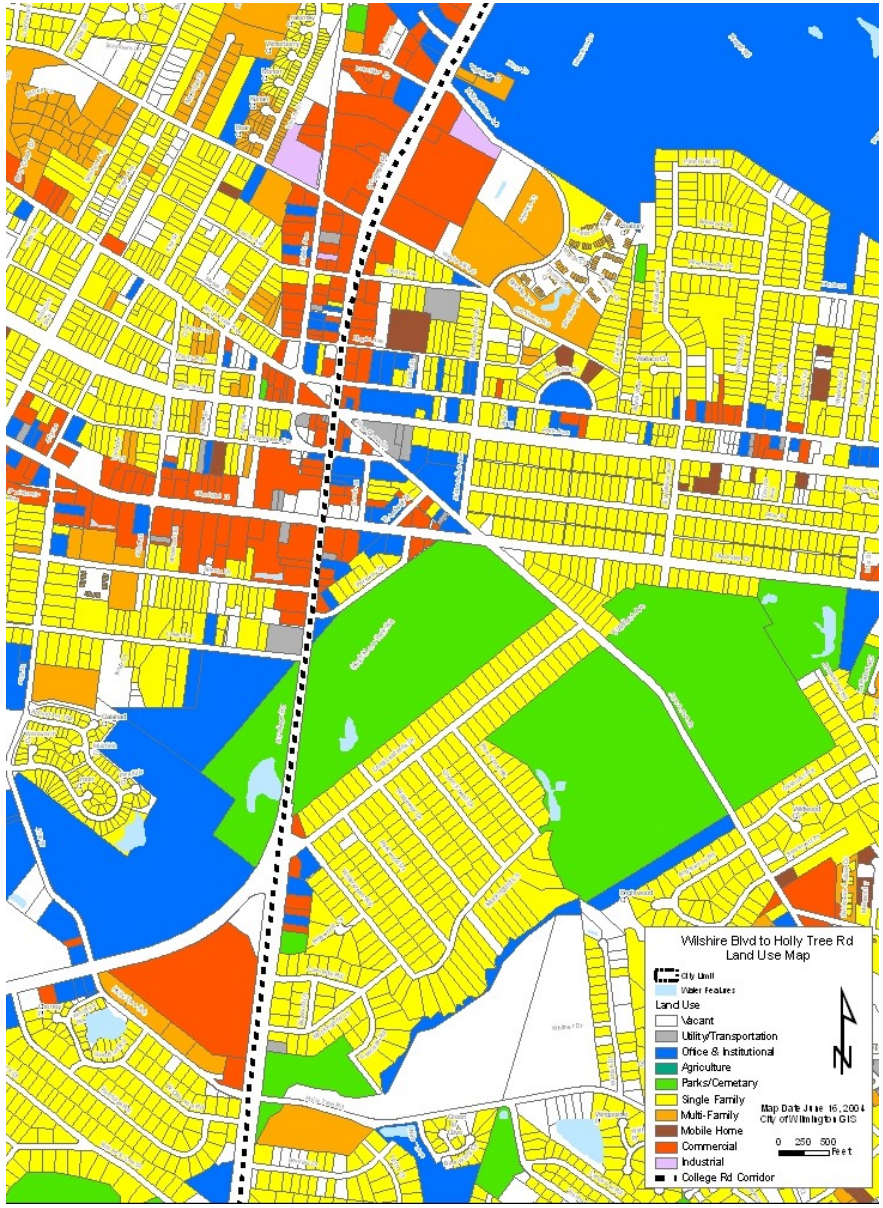


Figure AC.3: Existing Land Use Map of Area C (2004)

C. Area C - Wilshire Boulevard to Holly Tree Road

a. Land Use and Zoning

- Commercial uses include: numerous small strip shopping centers; fast food; restaurants; drug stores; gas stations; offices; churches
- Zoning includes Regional Business (RB), Community Business (CB), and Office and Institutional (O&I)
- Single-Family (R-5, R-10, and R-15) and Multi-Family (MF-M) Residential areas adjacent to corridor
- Property at major intersections zoned regional, high intensity commercial
- Property between major intersections zoned low intensity commercial
- Three single-family houses: one vacant, two converted to commercial
- Three vacant lots
- Predominance of stand-alone buildings surrounded by parking areas
- Area between Wilshire Blvd. and Lake Avenue is a priority redevelopment area

b. Transportation

- Four travel lanes, two deceleration lanes
- Grassy and raised-curb medians south of Shipyard Blvd.
- Some sidewalks, buffer strips narrow where sidewalks exist
- Every property has at least one driveway
- Limited cross-access between businesses
- Some unaligned cross-streets

c. Aesthetics

- Lack of mature trees; large open parking areas
- Landscaping varies: older buildings generally not landscaped, newer ones have adequate landscaping
- Five billboards and numerous large signs
- Power/telephone poles line both sides of the street

Image AC.1: View North on College Road towards Peachtree Avenue

Image AC.2 : View South along College Road from Wrightsville Avenue

Figure AD.1: Aerial Map of Area D (2004)

Area D

Holly Tree Road to Lansdowne Road (City Limits)

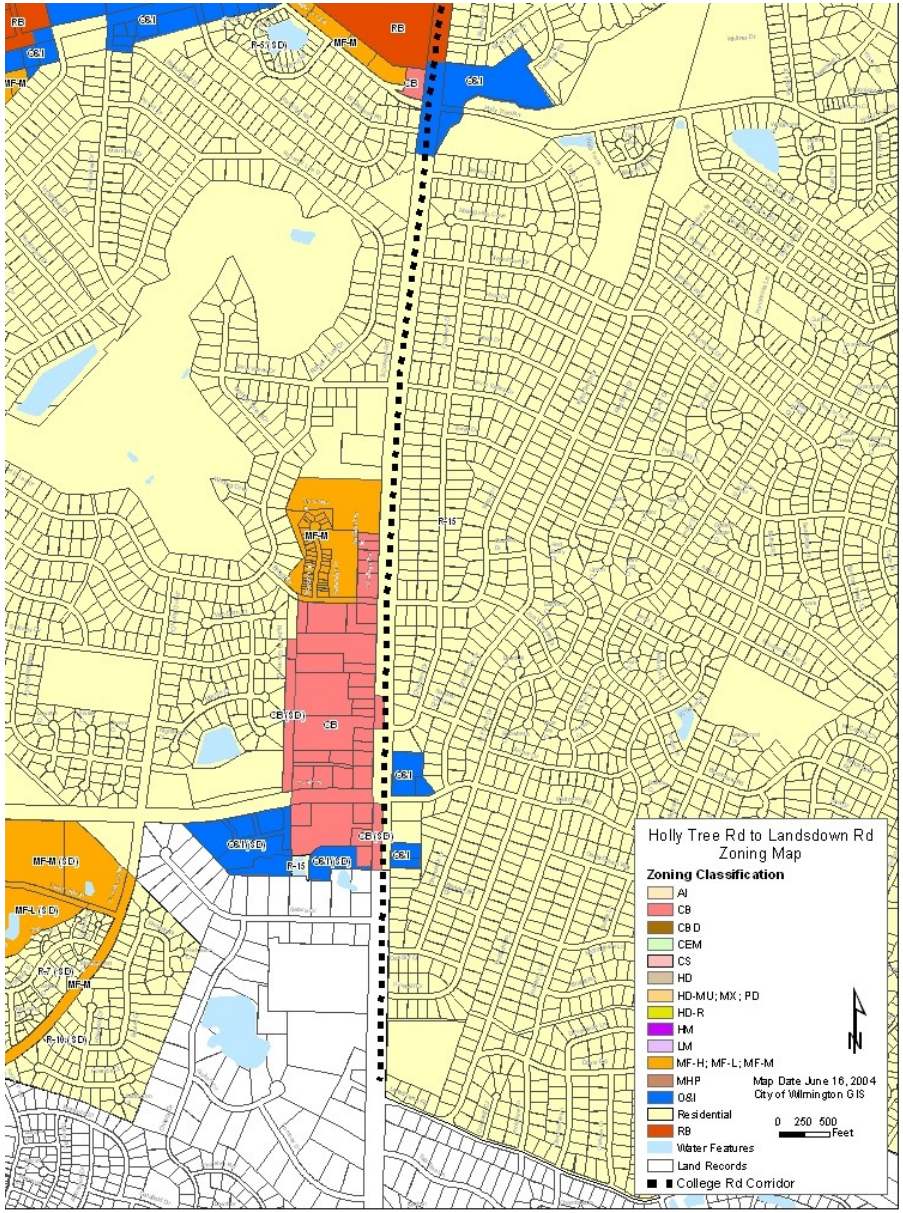


Figure AD2: Zoning Map of Area D (2004)

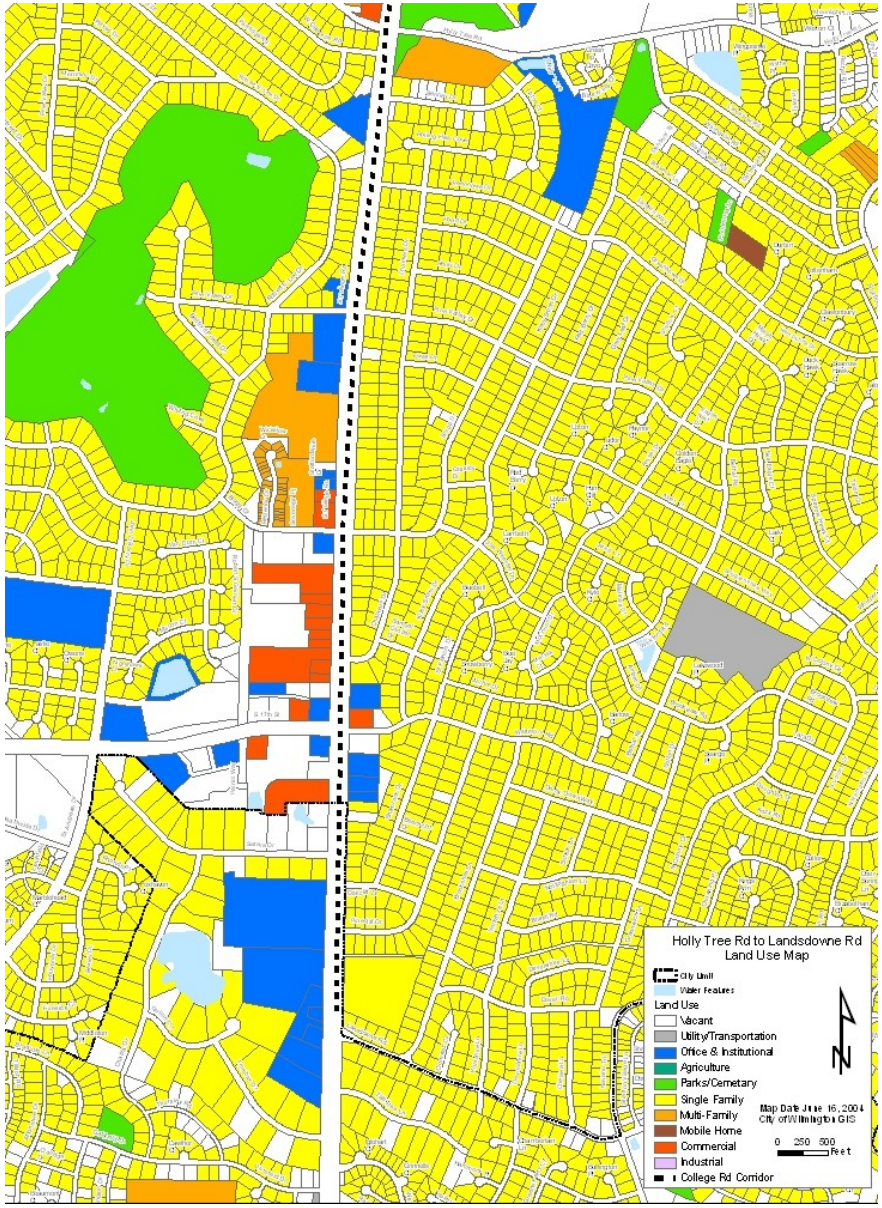


Figure AD.3: Existing Land Use Map of Area D (2004)

D. Area D - Holly Tree Road to Lansdowne Road

a. Land Use and Zoning

- Primarily single family residential with some commercial
- Zoned for Single-Family Residential (R-15), Multi-Family Residential (MF-M), Office and Institutional (O&I), and Community Business (CB)
- Commercial uses include: shopping center with grocery store, drug stores, churches, fire station
- Four small undeveloped lots
- Low building density
- Stand-alone commercial buildings surrounded by parking areas

b. Transportation

- Four travel lanes
- Deceleration lanes at intersections
- Grassy/raised-curb median
- Limited sidewalks
- Curb-cuts present for all properties, commercial and residential
- Some unaligned cross-streets

c. Aesthetics

- Generally adequate landscaping
- Lack of mature trees
- Several large commercial signs
- No billboards
- Power/telephone poles, unscreened

Image AD.1: Residences along College Road south of Holly Tree Road

Image AD.2: College Road and Holly Tree Road intersection

Appendix B: Inventories

1. Land Use Inventory

Table B.1: Land Use Percentages						
Area	**Residential (Res)**	**Office and Institutional (O&I)**	**Community Business (CB)**	**Regional Business (RB)**	**Commercial Services (CS)**	**Heavy Manufacturing (HM)**
A. Martin Luther King Jr. Parkway (City Limits) to Oriole Drive	0%	0%	0%	56%	11%	33%
B. Oriole Drive to Wilshire Boulevard	0%	37%	11%	52%	0%	0%
C. Wilshire Boulevard to Holly Tree Road	25%	12%	25%	38%	0%	0%
D. Holly Tree Road to Lansdowne Road (City Limits)	74%	8%	18%	0%	0%	0%
Percentage of Road Length	28%	15%	15%	34%	2%	6%

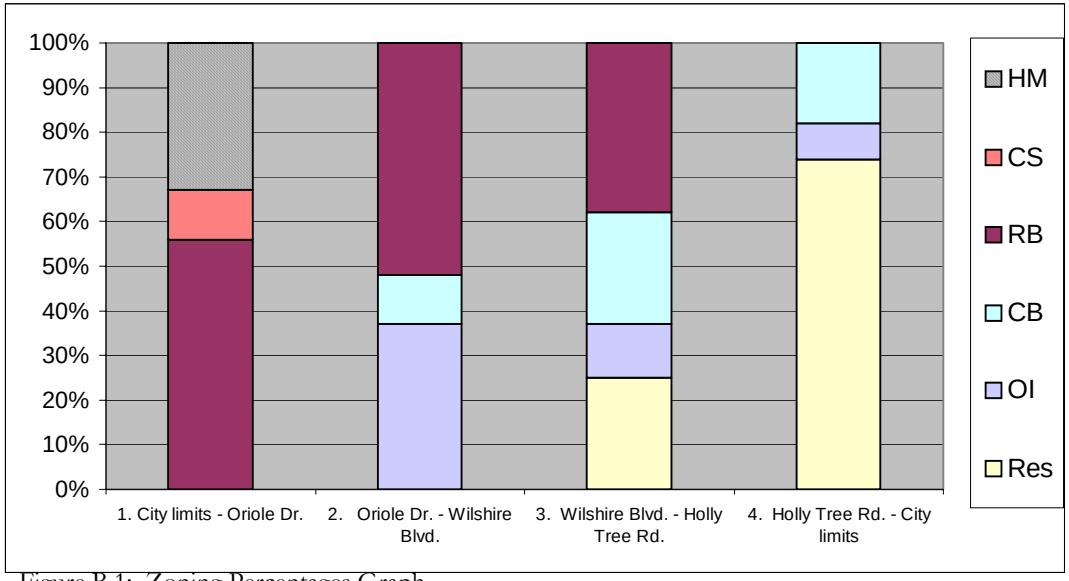


Figure B.1: Zoning Percentages Graph

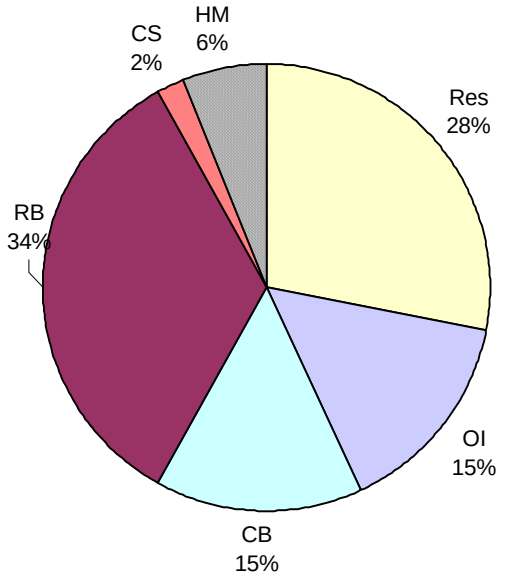


Figure B.2: Zoning Percentages Chart

Table B.2: Development Pattern Summary	
Area	**Summary**
A. Martin Luther King, Jr. Parkway (City Limits) to Oriole Drive	• Strip center development. Market Street major node.
B. Oriole Drive to Wilshire Boulevard	• Strip center development. New Centre Drive and Wilshire Blvd. major nodes.
C. Wilshire Boulevard to Holly Tree Road	• Strip-node development. Oleander Drive and Shipyard Boulevard major nodes.
D. Holly Tree Road to Lansdowne Road (City Limits)	• Strip-node development. S. 17th Street community node.

Table B.3: Vacancies	
Area	**Vacant Parcels**
A. Martin Luther King, Jr. Parkway (City Limits) to Oriole Drive	5
B. Oriole Drive to Wilshire Boulevard	1
C. Wilshire Boulevard to Holly Tree Road	3
D. Holly Tree Road to Lansdowne Road (City Limits)	6

2. Traffic Management Inventory

Table B.4: Driveway Curb-Cuts and Medians				
Area	**Driveways**	**Distance Between Driveways**	**Driveways/ Mile**	**Medians**
A. Martin Luther King, Jr. Parkway (City Limits) to Oriole Drive	17	364 feet	15	100% grass median
B. Oriole Drive to Wilshire Boulevard	64	129 feet	41	67% grass median 33% concrete divider near New Centre Drive
C. Wilshire Boulevard to Holly Tree Road	69	127 feet	42	67% unprotected asphalt lane between Cedar Ave and Shipyard Boulevard 33% grass median
D. Holly Tree Road to Lansdowne Road (City Limits)	70	111 feet	48	100% curbed grass median

Table B.5: Pedestrian and Transit Inventory						
Area	**Bus Stops**	**Signals**	**Sidewalk Inventory**		**Sidewalk Coverage**	**Notes**
A. Martin Luther King, Jr. Parkway (City Limits) to Oriole Drive	0	2	0	Total: 0	0%	Strip development – industrial and commercial
B. Oriole Drive to Wilshire Boulevard	9	4	L side 2390 ft. R side 3396 ft.	Total: 5786 ft.	18%	Strip development – commercial
C. Wilshire Boulevard to Holly Tree Road	11	5	L side 1973 ft. R side 2916 ft.	Total: 4888 ft.	14%	Strip development; limited connectivity between parcels
D. Holly Tree Road to Lansdowne Road (City Limits)	0	1	L side 0 ft. R side 1868 ft.	Total: 1868 ft.	5%	Mostly residential development with a lesser amount of commercial
Total	20	12		1,2542 feet 2.4 miles		

3. Aesthetic Inventory

Table B.6: Billboards and Signs				
Area	**Billboards**	**Detached Signs**	**Distance Between Signs**	**Signs / Mile**
A. Martin Luther King, Jr. Parkway (City Limits) to Oriole Drive	3	37	336 feet	31
B. Oriole Drive to Wilshire Boulevard	1	37	141 feet	23
C. Wilshire Boulevard to Holly Tree Road	5	82	229 feet	48
D. Holly Tree Road to Lansdowne Road (City Limits)	0	29	611 feet	19

Table B.7: Architecture Summary	
Area	**Summary**
A. Martin Luther King, Jr. Parkway (City Limits) to Oriole Drive	A manufacturing plant and modern, generally post 1960s strip commercial development. Two motels approximately 4 to 6 stories high.
B. Oriole Drive to Wilshire Boulevard	Modern generally post 1960s strip commercial development. There are large shopping centers in the vicinity of New Centre Drive and Wilshire Boulevard. UNCW has neo-colonial architecture with approximately four story buildings that are buffered from College Road by a school owned parcel with mature pine trees. A bank is three stories. Two churches are present with modern architecture.
C Wilshire Boulevard to Holly Tree Road	Modern generally post 1960s strip commercial development. Two churches are present with a neo-colonial design. In the vicinity of Cedar Avenue and Peachtree Street the buildings are closer to College Road, the street pattern is a "fractured" grid, and some buildings are older from the 1950s to 1960s.
D. Holly Tree Road to Lansdowne Road (City Limits)	Mostly post 1960s development including ranch style residential single story houses; one area with two story multi-family units; three modern looking churches; and at the S. 17 St. intersection is commercial development and a shopping center.

Table B.8: Street Trees and Utility Poles and Lines		
Area	**Street Trees**	**Utility Poles and Lines**
A. Martin Luther King, Jr. Parkway (City Limits) to Oriole Drive	Some - Commercial properties have minimal street trees. The industrial parcel on the east side of College Road has existing natural tree stands.	Wooden poles present on both sides of the road.
B. Oriole Drive to Wilshire Boulevard	Some - Generally commercial properties have few street trees. Office uses tend to have more street trees. Shopping centers generally have few to no trees. The UNCW parcel of land on the east side of College Road and some churches have street trees and natural tree stands..	Wooden poles present on both sides of the road. High voltage lines begin.
C. Wilshire Boulevard to Holly Tree Road	Some - Generally on commercial properties there are few street trees. Hugh McRae Park and residential properties towards Holly Tree Road have natural tree stands.	Wooden poles present on both sides of the road.
D. Holly Tree Road to Lansdowne Road (City Limits)	Some - Most residential properties have trees. The buffer strip between the residential access/frontage road on the east side of College Road lacks trees. Generally there are few street trees on commercial lots.	Wooden poles present on both sides of the road.

Appendix C: Traffic Operations

1. History

College Road was graded to 24' width and the drainage installed on the new location in 1957. College Road south of Market Street was paved, while north of Market Street was not.

In 1978, College Road between Shipyard Boulevard and Martin Luther King, Jr. Parkway was widened to a 4-lane divided cross-section with 24' lanes and 4' paved shoulders in each direction. The interchange was added at Market Street. Also in 1978, the section of College Road between Shipyard Boulevard and Wilshire Boulevard was widened to 64' face-to-face, curb and gutter section.

In 1990, between Wilshire Boulevard and Market Street, all the right-turn lanes in both directions were connected to provide a third through lane in each direction, and additional right-turn lanes were installed outside of the six-lane cross-section.

In 1991/1992, soon after the opening of I-40, College Road was widened to a 4-lane divided highway south of Shipyard Boulevard to Monkey Junction.

2. Traffic Operations

Traffic operations on College Road exceed acceptable congestion thresholds in at least one peak travel time at locations along much of the length of this principal arterial street. Acceptable traffic flow in an urban area is generally defined as Level of Service "D" or above. Level of Service directly corresponds to average seconds of delay experienced by each vehicle (See Table C.3).

The critical determinant of the Level of Service on an urban arterial road with signal spacing generally less than one-half mile is

Table C.1: General Information

Section	% Growth 1991-2001	Through Travel Lanes
A. Martin Luther King, Jr. Parkway (City Limits) to Oriole Drive	74%	4
B. Oriole Drive to Wilshire Boulevard	32%	6
C. Wilshire Boulevard to Holly Tree Road	54%	4
D. Holly Tree Road to Lansdowne Road (City Limits)	33%	4

Table C.2: Current Pavement Widths

Road Portion	Width
A. Martin Luther King, Jr. Parkway (City Limits) to Oriole Drive	48'
B. Oriole Drive to Wilshire Boulevard	96'
C. Wilshire Boulevard to Holly Tree Road	64'
D. Holly Tree Road to Lansdowne Road (City Limits)	48'

Table C.3: Levels of Service at Signalized Intersections

Levels of service	Seconds of Control Delay per Vehicle
A	<= 10
B	>10 and <= 20
C	>20 and <=35
D	>35 and <=55
E	>55 and <= 80
F	>80

Note: Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay.

determined primarily by signal progression. Signal progression refers to how platoons, or groups of vehicles, move continuously down an arterial with signal coordination minimizing the number of times the vehicles must stop. Therefore, the average travel speed is the critical measure for these sections of arterials to measure the overall performance of traffic flow rather than looking at the average delay at any one of the signalized intersections at any one point along the corridor. The traffic analysis of the College Road corridor between and including the signalized intersections at Martin Luther King, Jr. Parkway to the north and Holly Tree Road to the south must be considered as a cohesive unit. Sections of College Road south of Holly Tree Road have signal spacing at greater distances and coordination of signals is not an issue. Therefore, these signalized intersections can be analyzed in isolation.

However, for the entire corridor the capacity is affected by turning movements on to and from College Road and the un-signalized intersections and driveways. Deceleration lanes, two-way left-turning lanes, right-turn lanes, median controls, and minimization of access points become important factors in traffic operations as well.

Providing cross-access or rear-access between adjacent developments improves traffic operations and safety by minimizing the number of times vehicles must enter and interrupt the traffic flow on the arterial. Generally, cross-access and rear-access provisions are in and around the large shopping center developments along College Road. In other areas, they are much more limited. This means that traffic must repeatedly enter, exit, and re-enter the College Road traffic stream to reach multiple destinations.

By definition, an arterial primarily serves through traffic. Obviously, urban and suburban arterials also commonly provide primary access to commercial development. So, the mission of arterials is in conflict

with providing access to development. To the extent that a healthy balance can be achieved between these competing demands determines the "traffic health" of the corridor. It should be noted that delay experienced by vehicles at minor intersection approaches and riveways entering College Road are likely to be at a Level of Service "F" in the peak periods of traffic flow in particular. This is expected and considered normal for such a facility as College Road. The objectives of traffic operations and improvements are aimed at reducing the average delay for ALL users of the transportation facility. At any given time, minor traffic movements and flows will experience delays that seem "unacceptable" to a particular motorist; however, for purposes of traffic analysis, this is considered normal in the interest of the larger, predominant traffic flow.

The College Road arterial traffic operations were simulated using existing traffic signal timings and counts taken in 2002 at the critical intersections of Martin Luther King, Jr. Parkway, New Centre Drive, Randall Parkway, Wrightsville Avenue, Oleander Drive, Shipyard Boulevard, Holly Tree Road, and 17th Street/Waltmoor Road. Table C.4 shows the level of delay at these critical intersections analyzed individually and including the delay to motorists on the cross streets. Note that the signal phasing and timings were pulled from the coordinated traffic progression plan.

Given the assumptions described above, the sections of College Road demarcated for purposes of this report are shown in Table C.4, C.5, and C.6, with an estimation of their average volumes and capacities. Volume-to-capacity ratio is a measure of the potential level-of-service of a given roadway section. As noted previously, other factors enter into the consideration of levels of service. Where signal spacing is close enough to benefit from signal coordination, traffic progression is the key element. Average travel speed compared to posted speed is also indicative of levels of congestion, or perhaps speeding in times of less congestion. In all cases, turn-lane provisions and their

Table C.4: Critical Intersection Performance

Intersection	A.M. (7:30-8:30) 144 sec. cycle	Mid-day (11:45-12:45) 144 sec. cycle	P.M. (16:30-17:30) 152 sec. cycle
Martin Luther King, Jr. Parkway	34.2(C)	33.1(C)	51.5(D)
New Centre Drive	76.3(E)	62.8(E)	51.2(D)
Randall Parkway	96.7(F)	58.7(E)	91.7(F)
Wrightsville Avenue	44.0(D)	28.6(C)	39.7(D)
Oleander Drive	72.6(E)	74.3(E)	109.1(F)
Shipyard Boulevard	107.2(F)	54.7(D)	201.7(F)
Holly Tree Road	131.3(F)	23.4(C)	23.2(C)
17th Street/ Waltmoor Road	113.1(F)	30.5(C)	174.3(F)

Note: All intersection movements, measured in seconds of delay per vehicle, with Level of Service in parenthesis

corresponding signal phasing and timings are also critical at all signalized intersections. For all roadway sections, access provisions and traffic movement conflicts affect the traffic flow and levels of service that can be provided.

Given the demands on this roadway, it functions fairly well. As the only continuous north-south route in New Hanover County there are few alternatives for travel across the area. The extension of Independence Boulevard may help this in providing an alternative to College Road south of Martin Luther King, Jr. Parkway.

As shown in Table C.4, the critical intersections on this roadway are Martin Luther King, Jr. Parkway, New Centre Drive, Randall Parkway, Wrightsville Avenue, Oleander Drive, Shipyard Boulevard, and 17th Street. Holly Tree Road is a not a major problem, but is challenging to coordinate with Shipyard Boulevard due to its location and particular mix of turning movements.

At Martin Luther King, Jr. Parkway, there are heavy conflicting movements, and the capacity is underutilized on Martin Luther King, Jr. Parkway. Traffic queues in the innermost lanes leaving the outer lanes. The dual left from Martin Luther King, Jr. Parkway to northbound College has a heavy conflicting movement in the WB right turn. This intersection serves as the "gateway to I-40" making it a focal point for vehicles leaving New Hanover County. As counties to the north continue to develop, the demands on this intersection will grow.

New Centre Drive at College Road has some of the same symptoms as Market Street and New Centre Drive. Drivers use New Centre Drive rather than using the interchange at Market Street and College Road. The addition of another northbound turn lane on College Road at New Centre Drive recently funded under the NCDOT Moving Ahead program will improve this situation.

Table C.5 System-wide Delay - College

A.M.	**P.M.**
39.3(D)	39.1(D)

Note: Table reflects average delay experienced by vehicles entering the artery from any approach, including side streets. Table applies to College Road between and including Kings Grant and Pinecliff.

Table C.6: Generalized Volumes and Capacities

Area	**Volume (2002)**	**Capacity**	**Volume/ Capacity Ratio**
A. Martin Luther King, Jr. Parkway (City Limits) to Oriole Drive	47,700	53,000	0.90
B. Oriole Drive to Wilshire Boulevard	55,000	53,000	1.04
C. Wilshire Boulevard to Holly Tree Road	50,000	43,000	1.16
D. Holly Tree Road to Lansdowne Road (City Limits)	40,000	35,000	1.14

Randall Parkway suffers from its function as a major arterial on the west side, and the main access to UNCW on the east side. During class change times, both the ingress and egress from UNCW have insufficient capacity. In the morning peak periods, traffic routinely backs up across College Road from inside UNCW. The long pedestrian crossing times also constrain what can be done to keep the side street green times lower.

Oleander Drive, Peachtree Avenue, and Wrightsville Avenue are the next critical points. While Peachtree is not a critical signal, its location restricts the queuing capacity at Wrightsville Avenue and at Oleander Drive. At these points, College Road is at its narrowest point and the heavy northbound flow is constricted to two lanes. Northbound turns contribute to congestion that lasts through the peak period. The proximity of buildings makes widening this roadway extremely costly. At Wrightsville Avenue, the east approach suffers from numerous driveway conflicts and limited storage capacity. The west approach suffers from the close spacing to the Kerr Avenue signal. The resulting signal timing adjustments attempting to minimize queuing on Wrightsville causes the northbound movement on College to not get as much green time as would be desirable.

At Oleander, traffic turning left to access College is so heavy that it requires the bulk of the time allotted to the side street movement. In all cycles, the side street left turns get approximately 25% of the cycle. Most of the cycle is allocated to College Road to attempt to keep College Road clear to leave room for those vehicles turning from Oleander.

The Shipyard Boulevard signal is complicated by the proximity of the Hoggard H.S. intersection that makes it difficult in the morning peak time period. Also in the morning, a few bad cycles at the College Road and Oleander Drive intersection can back up northbound

Table C.7: General Speed Information

Section	Posted Speed Limit (mph)	Average Travel Progression Speed NB/SB Peak Directions (mph)
A. Martin Luther King, Jr. Parkway (City Limits) to Oriole Drive	45	50/50
B. Oriole Drive to Wilshire Boulevard	45	45/37
C. Wilshire Boulevard to Holly Tree Road	45	35/40
D. Holly Tree Road to Lansdowne Road (City Limits)	45	45/48

traffic on College Road to or through the intersection with Shipyard Boulevard. This makes it difficult for traffic exiting Shipyard Boulevard and entering northbound College Road to proceed. Holly Tree Road is somewhat similar to New Centre Drive in that it is a minor thoroughfare carrying traffic from the developments and school to the east while serving as a cutoff to Shipyard Boulevard to the west. It is in an awkward location resulting in a less than optimum offset relationship with the Shipyard Boulevard signal. S. 17th Street is critical since it is the southern "focal point" as much as MLK is to the north. Traffic entering from the south splits in the AM between S. 17th Street and College Road. The Waltmoor Road approach is over capacity during this period. In the PM the reverse is the case. The mismatch in lane geometry across College Road between Waltmoor Road and S. 17th Street exacerbates this condition.

a. Driveway and Deceleration Lane Analysis

Table B.4 in Appendix B shows that driveways are found on average every 220 feet with an average range between 111 feet to 364 feet between driveways.

Frequent driveways (i.e. every 110-120 feet) on an arterial road such as sections of College Road are not desirable because vehicles exiting or entering the arterial slow traffic flow and create safety concerns.

As a point of comparison, Mayfaire, the new mixed-use development project located on Military Cutoff Road has 5 driveways along 6,030 feet of road frontage, with spacing between driveways ranging from 600 to 1,900 feet, with an average of 1,040 feet between driveways. This is approximately 9 times the average distance between driveways on College Road. Although it is neither expected nor likely that an older corridor such as sections of College Road would ever have driveway spacing reduced to the level of a new development such as this, it is illustrative of the difference.

b. College Road Vehicle Crash History

Traffic volumes, traffic movement conflicts, and roadway design are factors in traffic safety and accident or "crash" rates. Summary traffic crash data were compared for the years 1991 and 2001. A "strip analysis" was run on each section of College Road. This strip analysis summarizes vehicle accidents by type for this time period. A composite analysis was done on the entire College Road corridor as well.

The data shows that crash rates overall were fairly consistent in 1991 and 2001. Crash rates increased in particular from Hunters Trail to Oriole Drive. It is not clear why this has occurred. This section exhibits the greatest access control.

Table C.8: College Road Crash History

College Rd From Hunters Trail to Oriole Dr															
Year	**Volume**	**Total**	**Rate**	**Fatal**	**Injury**	**Prop Damage**	**Night Accs**	**Wet Accs**	**Alcohol**	**Angle**	**Left Turn**	**Pedestrian**	**Rear End**	**Right Turn**	**Sideswipe**
1991	24,700	9	115	0	3	6	2	1	2	2	0	0	5	0	1
1996	30,900	23	234	0	8	15	3	6	0	5	0	0	10	0	0
2001	43,000	42	307	0	21	21	11	8	0	8	7	0	21	1	2
College Rd From Oriole Dr to Wilshire Blvd															
Year	**Volume**	**Total**	**Rate**	**Fatal**	**Injury**	**Prop Damage**	**Night Accs**	**Wet Accs**	**Alcohol**	**Angle**	**Left Turn**	**Pedestrian**	**Rear End**	**Right Turn**	**Sideswipe**
1991	32,600	112	591	0	47	65	29	29	6	14	17	0	51	10	8
1996	40,900	219	920	0	92	127	46	38	5	29	26	0	107	10	21
2001	43,000	190	761	0	64	126	42	24	3	36	12	2	102	5	21
College Rd From Wilshire Blvd to Holly Tree Rd															
Year	**Volume**	**Total**	**Rate**	**Fatal**	**Injury**	**Prop Damage**	**Night Accs**	**Wet Accs**	**Alcohol**	**Angle**	**Left Turn**	**Pedestrian**	**Rear End**	**Right Turn**	**Sideswipe**
1991	25,100	144	958	0	59	85	37	42	12	28	28	1	60	8	11
1996	33,400	244	1217	0	99	145	55	43	4	43	34	1	122	8	9
2001	38,700	198	855	0	69	129	50	35	3	39	16	1	111	5	18
College Rd From Holly Tree Rd to Lansdowne Rd															
Year	**Volume**	**Total**	**Rate**	**Fatal**	**Injury**	**Prop Damage**	**Night Accs**	**Wet Accs**	**Alcohol**	**Angle**	**Left Turn**	**Pedestrian**	**Rear End**	**Right Turn**	**Sideswipe**
1991	22,100	62	398	0	22	40	8	22	2	10	7	0	38	2	1
1996	25,400	95	529	0	49	46	11	16	0	16	14	0	48	4	3
2001	29,400	68	328	0	34	34	12	13	1	20	5	2	30	4	2
Entire Corridor: College Rd From Hunters Trail to Lansdowne Rd															
Year	**Average ADT**	**Total**	**Rate**	**Fatal**	**Injury**	**Prop Damage**	**Night Accs**	**Wet Accs**	**Alcohol**	**Angle**	**Left Turn**	**Pedestrian**	**Rear End**	**Right Turn**	**Sideswipe**
1991	30,200	347	525	0	142	205	81	97	24	52	65	1	164	7	22
1996	34,000	599	803	0	260	339	123	109	11	82	93	1	296	23	35
2001	40,000	497	568	0	186	311	113	77	7	101	39	5	268	14	43

3. Public Transit

Public transit is an important aspect of managing traffic flow on the major corridors. Generally, the City is adequately served by bus service; however, there are plans outlined in the Transit Master Plan to serve the region including areas in New Hanover County, such as Wrightsville and Carolina Beach and the Monkey Junction shopping area. The Cape Fear Public Transportation Authority, known as Wave Transit, determines bus routes and the number and location of stops based on need and demand, impacts on traffic flow, and the density of uses in a particular area that would be patronized by riders.

The Transit Master Plan provides the Transit Authority with an array of new service recommendations and enhancements to existing services with an increased number of transportation options. Key features in the operation of the future system are the two transit centers (primary) and three satellite transfer stations (secondary). The five facilities include the following:

Transit Centers (primary)

- Downtown Wilmington Multi-modal Transportation Center
- Market Station-joint administrative, maintenance and transfer facility

Satellite Transfer Stations (secondary)

- Oleander Station
- Monkey Junction Station
- Mayfaire Station

In general these stations are identified where multiple routes converge in the vicinity of a commercial center. Co-locating a satellite transfer station with a potential destination has proven to be a successful strategy in other areas to bolster ridership and system visibility. The exact location of each of these facilities as well as amenities will need to be determined through additional study and coordination with property owners, the Transit Authority and staff and will be implemented as funding becomes available. Amenities at these locations are likely to include:

- Shelters
- Informational boards/posts
- Benches
- Route information and maps
- Bus pull-outs

Figure C.1: Short Range Transit Plan Map

Transportation Performance Index

	Segment No.	Segment Name	Segment Length (mi.)	Segment Volume	Segment Capacity	Segment V/C Ratio	Segment V/C LOS	AM Pk Hr Signal Progression Delay/Vehicle	AM Pk Hr Signal Progression LOS	PM Pk Hr Signal Progression Delay/Vehicle	PM Pk Hr Signal Progression LOS	Traffic Signals	High Generator Commercial Driveways	Low Generator Commercial Driveways	Residential Driveways	Total Driveways	High Generator Commercial Driveways per mile	Low Generator Commercial Driveways per mile	Residential Driveways per mile	Driveways per mile	Median coverage	TWCTL	Sidewalk Coverage	Bus stops	Bus stops per mile	Crashes	Crashes per MVMT	Avg Crash Rate	TPI	LOS Pts (v/c) (20-30%)	AM Pk Hr Signal Progression Pts (0/5%)	PM Pk Hr Signal Progression Pts (0/5%)	Driveway Pts. (20%)	Median Pts (20%)	Crash Pts (20%)	Sidewalks (5%)	Bus Stops (5%)
1		**College Road**																																			
2	College #1	MLK to Oriole Dr.	1.200	47,700	53,000	0.90	E	25.8	C	27.2	C	2	10	3	0	17	8	3	0	14.17	100%	0%	0%	0	0.00	42	222.35	282.72	66	2.9	10.0	10.0	4.9	10.00	10.0	0	0
3	College #2	Oriole Dr to Wilshire Blvd	1.600	55,000	56,500	0.97	E	25.8	C	27.2	C	4	56	3	0	64	35	2	0	40.00	100%	0%	18%	9	5.63	190	654.27	282.72	21	0.8	10.0	10.0	-6.4	10.00	-1.3	1.8	7.03
4	College #3	Wilshire Blvd to Holly Tree	1.700	50,000	46,000	1.09	F	25.8	C	27.2	C	5	44	16	2	69	26	9	1	40.59	13%	87%	14%	11	6.47	198	705.88	264.33	5	-0.9	10.0	10.0	-4.5	3.04	-2.7	1.4	8.09
5	College #4	Holly Tree to Lansdowne Rd	1.500	40,000	37,500	1.07	F	N/A	N/A	N/A	N/A	1	23	5	36	70	15	3	24	46.67	100%	0%	5%	0	0.00	68	343.43	282.72	40	-0.7	0.0	0.0	3.1	10.00	7.9	0.5	0
6		**Carolina Beach Road**																																			
7	Carolina Beach #1	3rd to Southern Blvd.	0.830	30,000	36,500	0.82	E	10.3	B	16.3	B	4	8	42	18	75	10	51	22	90.36	0%	100%	89%	6	7.23	34	413.78	264.33	43	5.1	10.0	10.0	0.8	2.00	4.3	8.9	9.04
8	Carolina Beach #2	Southern Blvd to Holbrook Ave	0.953	28,000	36,500	0.77	D	10.3	B	16.3	B	1	53	34	0	90	56	36	0	94.44	0%	100%	35%	6	6.30	31	352.04	264.33	21	6.7	10.0	10.0	-12.7	2.00	6.7	3.5	7.87
9	Carolina Beach #3	Holbrook Ave to Independence Blvd	0.978	26,500	37,500	0.71	D	N/A	N/A	N/A	N/A	2	12	51	10	86	12	52	10	87.93	0%	100%	18%	0	0.00	13	152.00	264.33	50	8.4	0.0	0.0	0.1	2.00	10.0	1.8	0
10	Carolina Beach #4	Independence Blvd to City Limits	1.450	26,500	37,500	0.71	D	N/A	N/A	N/A	N/A	3	11	18	12	43	8	12	8	29.66	73%	37%	0%	0	0.00	12	94.64	282.72	71	8.4	0.0	0.0	4.6	8.05	10.0	0	0
11		**Market Street**																																			
12	Market #1	17th to Colonial Drive	0.890	31,000	33,500	0.93	E	101.2	F	34.8	C	2	2	7	24	38	2	8	27	42.70	0%	0%	76%	11	12.36	86	944.57	740.59	42	2.1	-4.2	10.0	6.0	0.00	7.2	7.6	10
13	Market #2	Colonial Drive to Barclay Hills Dr	0.938	37,000	36,500	1.01	F	18.8	B	27.2	C	0	36	23	8	68	38	25	9	72.49	0%	100%	94%	10	10.66	61	532.61	264.33	7	-0.1	10.0	10.0	-8.2	2.00	-0.1	9.4	10
14	Market #3	Barclay Hills Dr to Lullwater Dr	0.710	48,500	36,500	1.33	F	18.8	B	27.2	C	2	45	7	0	55	63	10	0	77.46	0%	100%	82%	13	18.31	111	976.81	264.33	-25	-3.3	10.0	10.0	-13.5	2.00	-6.8	8.2	7.11
15	Market #4	Lullwater Dr to Cardinal Dr	1.616	45,000	36,500	1.23	F	18.8	B	27.2	C	4	38	37	0	79	24	23	0	48.89	0%	100%	25%	4	2.48	171	712.57	264.33	-3	-2.3	10.0	10.0	-4.5	2.00	-2.8	2.5	3.09
16	Market #5	Cardinal Dr to Station Rd	1.504	41,000	36,500	1.12	F	N/A	N/A	N/A	N/A	0	25	94	3	104	17	63	2	69.15	0%	100%	2%	0	0.00	56	275.20	264.33	17	-1.2	0.0	0.0	-1.3	2.00	9.6	0.2	0
17	Market #6	Station Rd to Military Cutoff Rd	0.594	34,500	36,500	0.95	E	N/A	N/A	N/A	N/A	1	12	10	1	35	20	17	2	58.92	0%	100%	0%	0	0.00	60	887.22	264.33	1	1.6	0.0	0.0	1.5	2.00	-5.4	0	0
18		**Oleander Drive**																																			
19	Oleander #1	Dawson St to Independence Blvd	1.250	32,000	33,500	0.96	E	23.1	C	34.7	C	4	15	4	37	60	12	3	30	48.00	0%	0%	68%	14	11.20	32	242.42	740.59	49	1.3	10.0	10.0	3.9	0.00	10.0	6.8	10
20	Oleander #2	Independence Blvd to College Rd	1.290	32,500	54,500	0.60	C	23.1	C	34.7	C	6	84	1	0	95	65	1	0	73.64	100%	0%	39%	15	11.63	70	505.95	282.72	33	10.0	10.0	10.0	-13.9	10.00	2.1	3.9	10
21	Oleander #3	College Rd to Hawthorne Dr	1.750	35,000	36,500	0.96	E	N/A	N/A	N/A	N/A	3	4	28	69	144	2	16	39	82.29	17%	83%	15%	0	0.00	58	286.95	264.33	40	1.2	0.0	0.0	5.6	3.36	9.1	1.5	0
22	Oleander #4	Hawthorne Dr to Wrightsville Ave	1.780	38,000	36,500	1.04	F	N/A	N/A	N/A	N/A	2	31	72	12	140	17	40	7	78.65	0%	100%	0%	0	0.00	42	188.16	264.33	25	-0.4	0.0	0.0	1.1	2.00	10.0	0	0
	Average																			60.89					5.13												

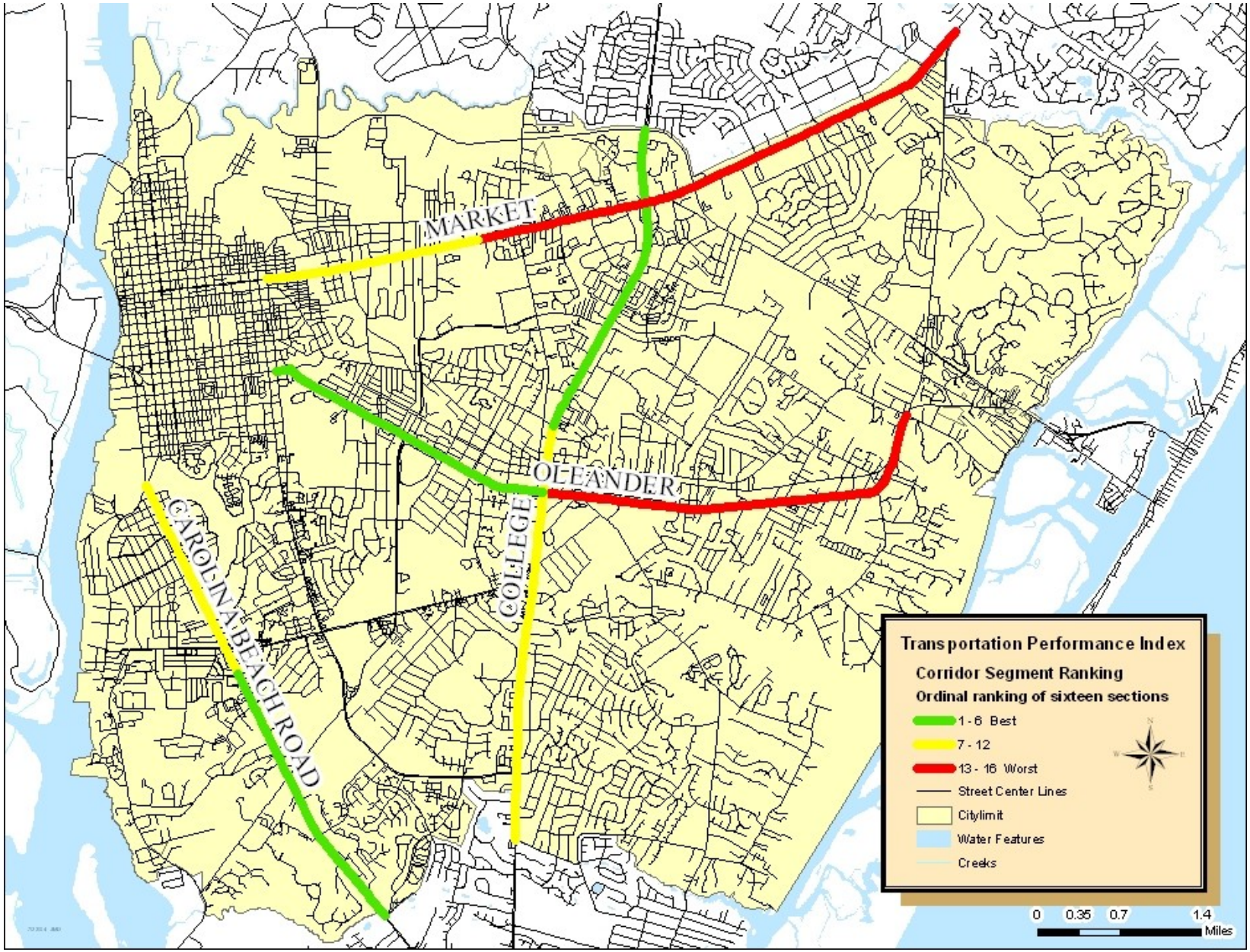


Figure C.3: Transportation Performance Index Map

Appendix D: Capital Improvement Costs

Table D.1: Estimated Capital Improvement Costs				
Items	**Low End Estimates**	**High End Estimates**	**Units**	**Comments**
Tree Plantings and Landscaping	$5	$25	Per Linear Foot	Low end is trees only, High end is trees, sod, irrigation, & shrubs. Assumes sufficient r/w.
Turn Lanes	$40,000	$100,000	Each	Assumes sufficient r/w and no major utility relocations or drainage work.
Traffic Signal	$100,000	$200,000	Each	Assumes sufficient r/w and no major utility relocations or drainage work.
Landscaped Center Medians	$300	$500	Per Linear Foot	Assumes sufficient r/w, high end includes moderate drainage and/or utility relocation cost. Cost per foot can be higher if extensive drainage work and/or utility relocation is required. Recommend that a minimum of 1000 feet be installed per project.
Alleys - New 2-way	$150	$200	Per Linear Foot	Does not include right-of-way. Assumes no major drainage cost.
Alley - Ex. 1-way modified to 2-way	$75	$200	Per Linear Foot	Does not include right-of-way. Assumes no major drainage cost.
Frontage Road (Separated from parking)	$150	$250	Per Linear Foot	Does not include right-of-way. Assumes no major drainage cost.
Frontage Road (Within Parking Lots)	$10	$150	Per Linear Foot	Does not include easements, high end assumes crossing vacant tracts where there are no improvements to mark or upgrade.

Installation of Sidewalks	$20	$50	Per Linear Foot	Does not include right-of-way. Assumes no major drainage cost.
Installation of Multi-Use Paths	$25	$75	Per Linear Foot	Does not include right-of-way. Assumes no major drainage cost.
Installation of Pedestrian Signals	$2,500	$5,000	Per Intersection	Assumes traffic signals exist at the intersection. Also, on NCDOT streets there are strict warrants that must be met for pedestrian signals to be allowed.
Additional Markings For Crosswalks	$500	$1,000	Per Intersection	Includes additional thermoplastic markings on pavement and on concrete portion of median at crosswalks.