

City of Wilmington
Development Services

Adopted
November 2004



OLEANDER Drive 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 (OBC-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.

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.

Adopted at a regular meeting
on November 3, 2004.

ATTEST:

Philippe Spion-Sidbury
City Clerk



APPROVED AS TO FORM:

Spence H. Broadhurst
Attorney

CERTIFIED TO BE A TRUE COPY
Philippe Spion-Sidbury
CITY CLERK

Oleander Drive Corridor Plan

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Oleander Drive 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: Oleander Drive east of 42nd Street



Image 2: Oleander Drive east of Dogwood Lane

Purposes of the Plan

This Plan provides strategies to make Oleander Drive 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.

Oleander Drive History

The Oleander Drive study area from Dawson Street to Wrightsville Avenue is 6.1 miles long and is state-maintained. It was originally constructed in the 1920s at a width of 18 feet and named the "Wilmington-Wrightsville Speedway." Today, the roadway is as much as 86 feet wide in some places and serves an average of 45,000 vehicles a day. Oleander Drive is an important east-west route for local commuters to and from work, as well as to and from other major corridors and commercial areas. It also serves as a connection to Brunswick and Pender Counties and to Wrightsville Beach. In addition, Oleander Drive is a major retail and service destination for both residents and visitors. Businesses along this corridor serve adjacent residential neighborhoods with commercial uses, such as grocery stores, restaurants, shopping, personal services and a variety of other regional and community businesses. The corridor also attracts residents from throughout the region to Westfield Shoppingtown - Independence Mall.

Corridor Planning Philosophies

The Oleander Drive 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.

Balancing Practical and Idealistic Strategies

The Oleander 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 Oleander Drive.

Typical regulatory approaches to corridor improvement including elimination of pole signs, architectural standards for buildings and down-zoning 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 several aging commercial areas along Oleander Drive that are expected to redevelop over the next decade and several sites along the corridor have recently redeveloped. 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 Oleander Drive 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 Oleander Drive 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 Oleander Drive 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 Oleander Drive. 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 3: Corridor Plan Meeting August 2004

Existing Conditions Analysis

Land Use and Zoning

Oleander Drive is essentially built out. The few undeveloped sites along the road are mostly scattered in the area east of College Road. There are several distinct land use patterns along the road including: a community commercial node at Dawson Street; a stable and attractive low density residential area from Columbus Circle to Independence Boulevard; a regional commercial node at Independence Boulevard; aging strip commercial between Floral Parkway/Fordham Road and College Road; a community commercial node at College Road; a transitioning residential area from Pine Grove Drive to 51st Street; and aging strip commercial with scattered new development from 51st Street to Wrihstville Avenue. Regional nodes are clusters of commercial development that attract customers from the multi-county region (the Mall, big-box retail) while community nodes are clusters that attract customers from the City or a portion of the City (grocery store, drug store).



Image 4: Existing residential uses west of Independence Boulevard



Image 5: Commercial uses at Floral Parkway/ Fordham Road

The majority of Oleander Drive is zoned Regional Business (RB), Community Business (CB) or residential. There are limited areas of Office and Institutional (O&I) and Commercial Services (CS) zoning. The zoning pattern is appropriate in many areas including CB-zoned nodes at Dawson Street and Greenville Loop Road and RB-zoned nodes at Independence Boulevard and College Road. However, the commercial areas between the nodes are zoned to allow the existing inefficient strip patterns and diverse and sometimes incompatible uses that could hinder potential improvements through redevelopment.

There has been no recent notable transition of uses along Oleander Drive. The only transition expected is the single-family residential area between Pine Grove Drive and 51st Street. This area could transition to higher-density residential or commercial uses. Almost all of the rezonings that have occurred in the last few years are considered “clean ups” from errors made when rezoning over 5,000 properties as part of the annexation effective in 2000.

There are several redevelopment possibilities along the corridor. Several sites between 42nd Street and College Road and from 51st

OLEANDER DRIVE CORRIDOR PLAN

Existing Conditions Analysis

Street to Greenville Loop Road are identified as priority redevelopment areas in the *Future Land Use Plan*. While many of the existing uses in these areas are stable, some are below what the current market could support, detracting from the overall quality of the road. A few properties in these areas have already redeveloped, most notably the southeast and northwest corners of the College Road intersection and a few sites east of 51st Street. In general, the area between Pine Grove Road and Greenville Loop Road is less economically viable for redevelopment than the area west of College Road. Traffic patterns and incompatible heavy commercial and light industrial uses discourage higher quality redevelopment in this area. Despite the incompatibilities, the current zoning permits most of the existing development.



Image 6: Redevelopment opportunity at Willow Woods Drive



Image 7: Manufactured housing businesses

Transportation

The majority of Oleander Drive is a five-lane major arterial (2 travel lanes in each direction and a two-way center turn lane). The area from Independence Boulevard to Pine Grove Drive has a raised concrete median with six through travel lanes. The majority of the road functions at an acceptable level of service (LOS) of D based on federal standards for volume to capacity ratios (LOS is defined in the Appendix).

The Oleander Drive study area has a total of 439 driveways, with an average of 72 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. Oleander Drive has the highest number of driveways per mile of these four corridors. There are a few areas where alleys provide alternative access to residential and commercial uses west of College Road. Existing alleys are located within the residential area between Willow Woods Drive and Independence Boulevard, and in commercial areas on the north and south sides of Oleander Drive between Floral Parkway and 39th Street. Access is not well managed along most of Oleander Drive because of the large number of driveways, limited interconnection between sites and long sections with a two-way center turn lane. Access management is particularly bad east of College Road.

Additionally, improvements to the College Road 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 College Road intersection than any other intersection in Wilmington.

There are sidewalks along the majority of the road west of College Road; however, the area east of College Road has few sidewalks. The

large width, high speeds, and the heavy traffic flows are major challenges for pedestrians attempting to cross Oleander Drive.

From Dawson Street to College Road there are 29 bus stops. There are no bus stops east of College Road. The Cape Fear Public Transportation Authority has general plans to expand public transit service to the area east of College Road in the near future. See the Short Range Public Transportation Master Plan for more details about public transit in Wilmington.



Image 8: Example of unconnected sidewalks east of 39th Street

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. TPI parameters include volume to capacity ratios, signal progression, number of driveways, sidewalks, bus stops, medians/center turn lanes and crashes. 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. 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.



Image 9: Bradley Creek Bridge

The section of Oleander west of College rated very well in the TPI because of the presence of medians, the large area of low-density residential land use, sidewalks, public transit and the controlled access of the large shopping centers – Independence Mall and Hanover Center. However, the section of Oleander east of College Road scored lower than any of the comparison roads except parts of Market Street. The low score is the result of no median, numerous substandard driveways, high accident rates, no public transportation and almost no sidewalks.

Aesthetics

Oleander Drive is inconsistent in terms of aesthetics. The residential sections have extensive landscaping including mature trees. For a corridor with the maturity of Oleander Drive, there are very few large trees in commercial areas. The most unattractive sections in terms of lack of landscaping, large pole signs and generic architecture are the aging commercial areas between Floral Parkway/Fordham Road and College Road and between 51st Street and Greenville Loop Road. Overhead utility lines are a primary source of visual clutter along most of the road, 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.

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 improvements in quality, regulatory changes or substantial public investment, aesthetics will not noticeably improve.



Image 10: Example of large pole signs on Oleander Drive

Corridor Enhancement Strategies

Oleander Drive 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.

Oleander Drive 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 Oleander Drive 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. Support the rezoning of the Commercial Services and Light Manufacturing areas on the south side of the Dawson and Wooster Streets node to Community Business or Office and Institutional.
2. Prohibit rezoning of residential properties between Columbus Circle and Independence Boulevard. Do not allow encroachment of higher-intensity commercial uses into this area.
3. Discourage heavy commercial and light industrial uses such as warehousing, automobile service, used car sales not

associated with new car sales and manufactured housing sales and storage along the entire Oleander Drive corridor.

4. Prohibit any new rezonings to Regional Business (RB) in any areas outside of the existing RB-zoned regional nodes.
5. Encourage redevelopment with less intense uses such as offices and multi-family residential in areas between nodes. High traffic-generating retail and services should be directed to nodal areas.
6. Allow the transition of existing single-family residential properties between Pine Grove Drive and 51st Street to multi-family uses and/or limited commercial uses such as offices and small retail shops only when a transition zoning district is developed to maintain and protect the context (scale and design of buildings) of the area. Adaptive reuse of the existing houses is strongly preferred over redevelopment.
7. Establish a community node in the area between Willow Woods Drive and Hinton Avenue as redevelopment opportunities allow. This nodal area will be a key to traffic flow east of College Road and should concentrate development at a community-scale intensity that warrants a traffic signal and supports transit service. The uses in this node should be fully interconnected and should complement each other (i.e. offices supported by restaurants, hair salons, dry cleaners, etc.) to allow multiple tasks to be completed without needing an automobile.
8. The community node at Greenville Loop Road should be developed using neighborhood-scale architecture that is compatible with the established single-family neighborhoods to the south. Driveways with direct access to Oleander Drive

should be minimized. Internal connectivity and access to adjacent properties are required. Only ground signs should be permitted and the large mature trees should be retained to maintain the attractiveness of the area.

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 Oleander Drive include the Dawson/Wooster intersection, and the areas generally located around the intersections with 42nd Street, 51st Street and Hinton Avenue. The node at Hinton 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. Work with NCDOT to construct a separate multi-use bicycle/pedestrian crossing at the Bradley Creek Bridge. Seek grants with NCDOT when possible.

Estimated cost: This project is the installation of a separate crossing over Bradley Creek for use by pedestrians and cyclist. Based on the construction cost of the Riverwalk, the crossing is estimated to cost approximately \$1,800,000.

4. Work with the businesses between Floral Parkway and 39th Street to improve the alley access. Improvements could include better signage and driveways.
5. Install a landscaped median in the section east of Pine Grove Drive to Greenville Loop Road. If major issues with right of way or maintenance costs make the landscaped median too costly, a raised concrete median should be constructed.

Estimated cost: This project is estimated to cost \$6,000,000. The total length of the project is 3.03 miles. The project could be done in phases, however it is recommended that each phase be a minimum of 1,000 feet. It should be noted that breaking the project into small segments would increase the total cost. The installation of a landscaped median will require additional maintenance. Public Services staff assigned maintenance responsibilities for medians are currently working at full capacity. Options to be considered for maintenance should include contracting the maintenance, investigating the potential for a public/private partnership, or the hiring of additional staff.

6. Secondary to the sidewalk priority areas in the *Future Land Use Plan*, sidewalk priority areas on Oleander Drive should focus on

major commercial centers (nodes) and at bus stops. When bus service is extended east of College Road, sidewalks should be prioritized to provide access from Oleander Drive to the Cape Fear Hospital and planned nodes near Hinton Avenue and Greenville Loop Road.

Estimated cost: The estimated cost to construct sidewalks between Wooster Street and Pine Grove Road is \$1,200,000. Right-of-way or easements for the sidewalks are approximately \$100,000 of this amount. The project also includes the installation of street trees where they don't exist. The cost of the trees and right-of-way required for their installation is approximately \$350,000 of the total cost. Completing only the priority areas will significantly reduce this cost. Public Services staff assigned maintenance responsibilities for street trees and plazas are currently working at full capacity. Options to be considered for maintenance should include contracting the maintenance, investigating the potential for a public/private partnership, or the hiring of additional staff.

7. Provide a median between Dawson Street and Hawthorne Road if Oleander Drive becomes Business Route 17 (rerouted from Market Street).

Estimated cost: The estimated cost to construct a raised concrete median is \$2,300,000. The total length of the project is 1.05 miles. The project could be done in phases, however it is recommended that each phase be a minimum of 1,000 feet. It should be noted that breaking the project into small segments would increase the total cost.

8. 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.

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Oleander Drive Corridor Issues Map

Appendix A: Existing Conditions

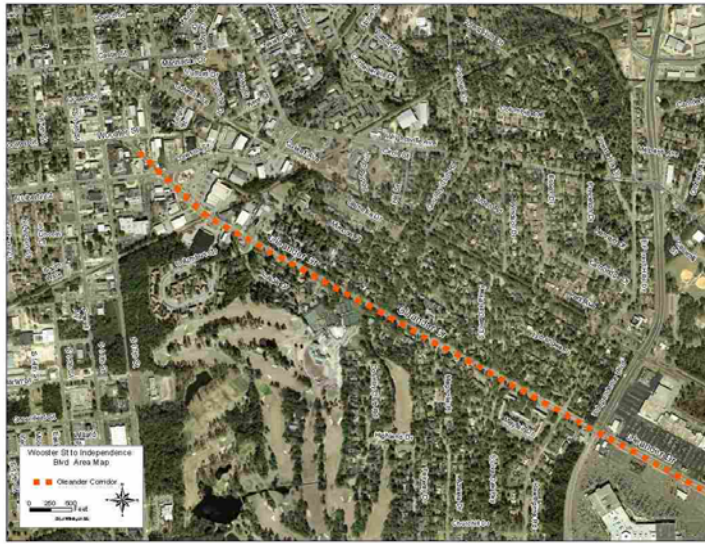


Figure AA.1: Map of Area A (2004)

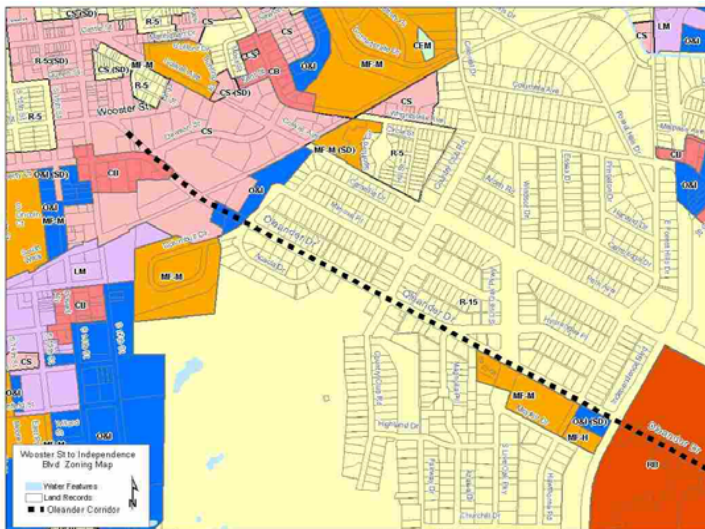


Figure AA.2: Zoning Map of Area A (2004)

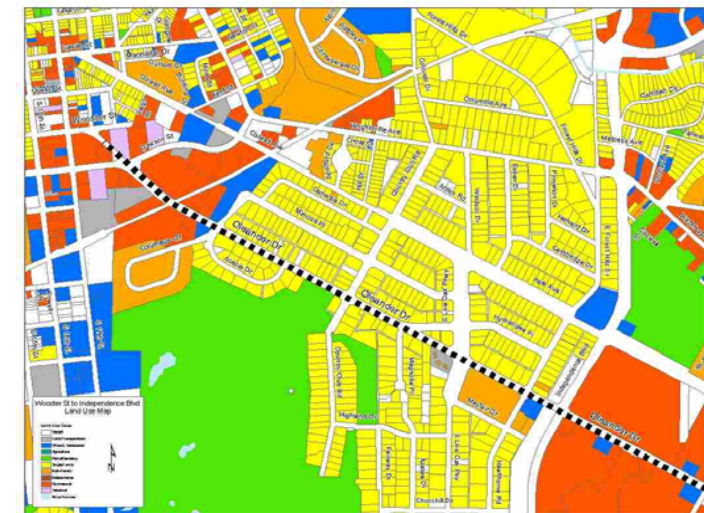


Figure AA.3: Existing Land Use Map of Area A (2004)

Area A

Wooster Street to Independence Boulevard

A. Area A - Wooster Street to Independence Boulevard

1. Section A1 - Wooster Street to Columbus Circle

a. Land Use and Zoning

- Various commercial and industrial uses including: fast food restaurant, office furniture store, gas station, shopping center with grocery and clothing stores
- Zoning: Commercial Services (CS), Community Business (CB), and Office and Institutional (O&I)
- Stand-alone one-story buildings and strip shopping centers
- No vacant parcels

b. Transportation

- Center two-way turning lane throughout
- Sidewalks along most of north side of roadway
- One WAVE bus stop on north side of roadway
- At-grade railroad crossing
- Train crossings occur approximately twice a day and once at night
- Individual curb cuts for each parcel on south side of roadway – no interconnectivity
- Shopping center has two driveways

c. Aesthetics

- Mixture of architectural styles
- Lack of mature cover trees
- Most commercial buildings have minimal landscaping
- Numerous large signs and billboards
- Power/telephone poles on north side of street



Image AA.1: View east from Dawson Street / Oleander Drive intersection. Lack of landscaping, street trees, and sidewalks.

2. Section A2 - Columbus Circle to Independence Boulevard**a. Land Use and Zoning**

- Single-family uses dominate
- Zoning mostly single-family residential (R-15)
- Multi-family residential (MF-M) zoning on eastern end, two- and three-story apartment buildings
- Office and Institutional (O&I) zoning on eastern end
- Two vacant residential lots

b. Transportation

- Two short left turn lanes: Mimosa Place and Country Club Road
- Alley or side street access available to many residences
- Several single-family driveways connect to Oleander Drive
- On-street parking in some areas
- Existing sidewalks on both sides of roadway

c. Aesthetics

- Lined with mature live oaks, pines, and other trees
- Residential lots lushly landscaped
- Two parking lots at eastern end of corridor well landscaped and screened from roadway
- Infrequent and/or small signage
- Power/telephone poles present but masked by trees



Image AA.2: View east from Columbus Circle. Sidewalks are set back from the roadway; mature trees generally screen utility poles.

Area B

Independence Boulevard to South College Road



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

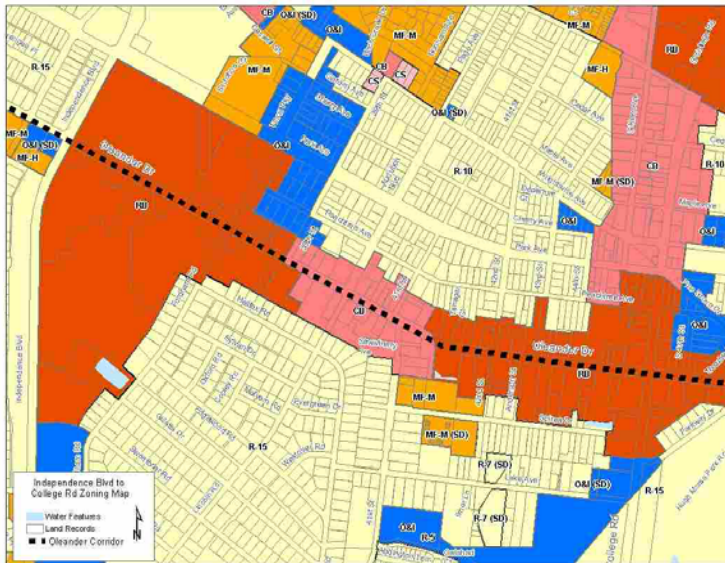


Figure AB.2: Zoning Map of Area B (2004)

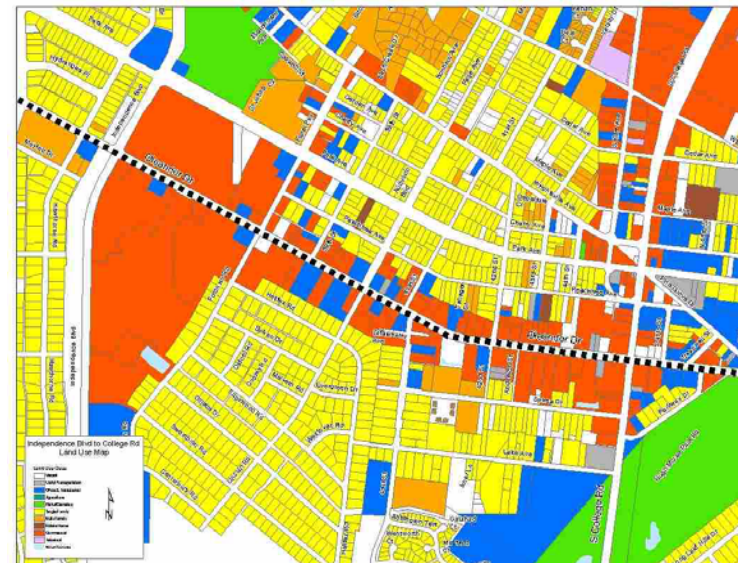


Figure AB.3: Existing Land Use Map of Area B (2004)

B. Area B - Independence Boulevard to South College Road**1. Section B1 - Independence Boulevard to Fordham Road****a. Land Use and Zoning**

- Commercial uses throughout
- Zoned for Regional Business (RB)
- Large strip shopping center on north side of roadway includes: variety store, grocery store, bookstore, department store, clothing store, cafeteria
- Out-parcels on north side of roadway include: three banks, fast food, clothing store
- Regional mall on south side of roadway
- Out-parcels on south side include: gas station, clothing store, pizza restaurant, bank
- One vacant out-parcel in front of mall

b. Transportation

- Raised concrete center median throughout
- Several shared driveway and parking lots allowing interconnectivity between businesses
- Cross-access between most out-parcel developments and shopping center and mall properties

c. Aesthetics

- Mixture of architectural styles
- Minimal landscaping
- Large, unscreened parking lots
- Lack of mature trees
- Numerous pole signs
- Utility poles on both sides of road unmasked



Image AB.1: View west toward Independence Boulevard. Sidewalks are directly adjacent to roadway. Street trees are generally absent.



Image AB.2: View of cross-access between out-parcels of shopping center. Lack of landscaping and trees.

2. Section B2 - Fordham Road to 42nd Street

a. Land Use and Zoning

- Commercial uses
- Zoning includes Regional Business (RB) and Community Business (CB)
- One- and two-story stand-alone structures fronted by parking lots dominate
 - 10,000 to 15,000 square feet per floor
- Strip shopping centers also present
 - 500 to 3,000 square feet per unit
 - Some oriented perpendicular to roadway
- Commercial uses include: grocery store, tire repairs, tobacco sales, restaurants, fast food
- Two vacant parcels

b. Transportation

- Raised concrete center median throughout
- 41st Street not aligned where it crosses corridor
- Some cross-access, but with frequent breaks
- Back alley access in some areas
- Peak-period traffic backs up onto Oleander from Post Office
- Sidewalks present but very close to roadway
- Gaps in sidewalks

c. Aesthetics

- Mixture of architectural styles
- Minimal landscaping
- Lack of mature trees
- One billboard and numerous pole signs
- Power/telephone poles unscreened



Image AB.3: View west toward 39th Street. Sidewalks are directly adjacent to the roadway. Landscaping is moderate, with some trees. Power lines dominate the view.



Image AB.4: View west toward 41st Street. Landscaping is nearly non-existent. Large signs, power poles, and parking lots dominate the view.

3. Section B3 - 42nd Street to South College Road**a. Land Use and Zoning**

- Commercial uses
- Zoning includes Community Business (CB) and Regional Business (RB)
- One- and two-story stand-alone structures fronted by parking lots predominant
- Commercial uses include: auto repair, gas stations, restaurants, clothing store, toy store, fast food, pawn shop, auto sales
- Three undeveloped parcels

b. Transportation

- Raised concrete center median throughout
- Congested due to Oleander Drive/South College Road intersection
 - 80,000 vehicles (approximate daily average)
 - Highest volume at-grade intersection in Wilmington
 - Peak period movement through intersection requires several signal cycles
 - Exacerbated by close proximity of other College Road intersections
- Little cross-access between businesses

c. Aesthetics

- Mixture of architectural styles
- Minimal to non-existent landscaping
- Lack of mature trees
- One billboard and numerous, densely-packed pole signs
- Power/telephone poles on both sides of road, unscreened



Image AB.5: View of auto dealership. Landscaping is minimal. Parking areas are dominant.



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

Area C

South College Road to Willow Woods Drive

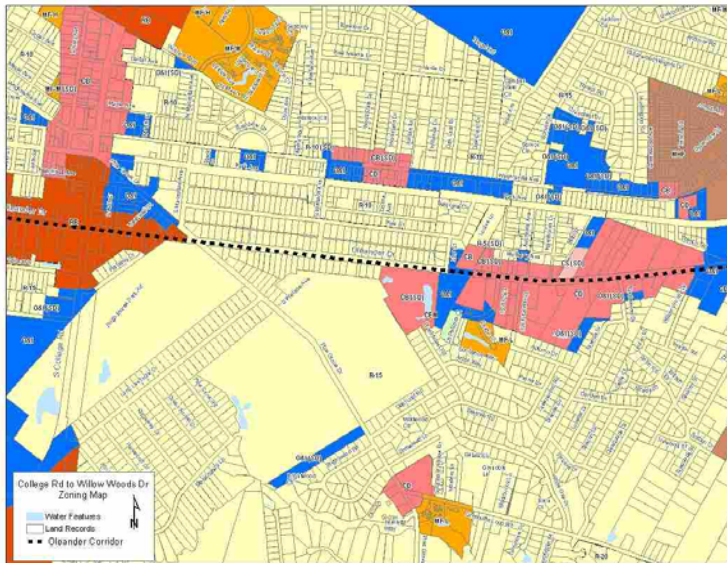


Figure AC.2: Zoning Map of Area C (2004)

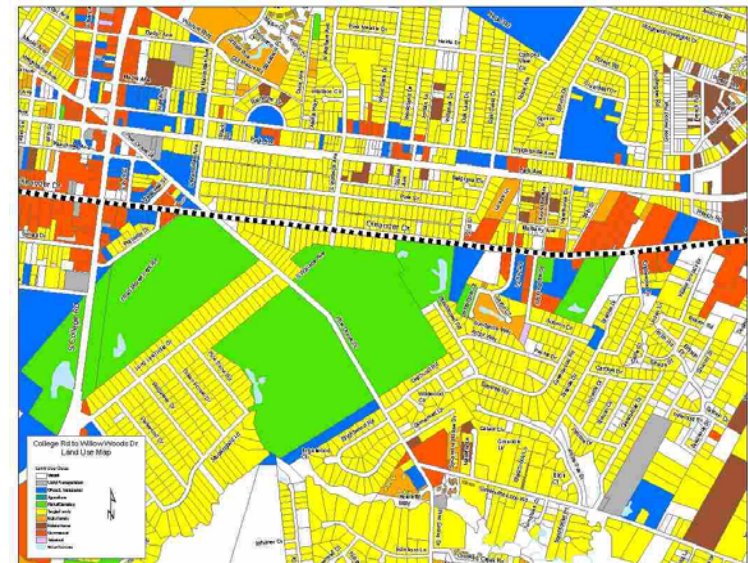


Figure AC.3: Existing Land Use Map of Area C (2004)

C. Area C - South College Road to Willow Woods Drive

1. Section C1 - South College Road to Pine Grove Drive

a. Land Use and Zoning

- Commercial uses
- Zoned entirely for Regional Business (RB)
- Commercial uses include: auto repair, drug and variety store, copy/print shop, chiropractic clinic, medical center, insurance sales
- One-story stand-alone structures fronted by parking lots predominant
- Small strip shopping center on south side of road
- Three adjacent undeveloped lots on northeast corner of Oleander Drive and South College Road

b. Transportation

- Congested due to Oleander Drive/South College Road intersection
 - 80,000 vehicles (approximate daily average)
 - Highest volume at-grade intersection in Wilmington
 - Peak period movement through intersection requires several signal cycles
 - Exacerbated by close proximity of other College Road intersections
- Raised-curb median only for westbound left turn lane at Oleander Drive/College Road intersection
- Center two-way turning lane otherwise throughout
- Frequent back up of peak period left turn traffic
- Cross-access only between plazas on the south side of the road, immediately east of College Road intersection
- Hugh McRae park abuts road at Pine Grove intersection
- No existing transit service



Image AC.1: View west from Hugh McRae Park. Sidewalk is set back from roadway, but obstructed by vehicles. Raised-curb median present.



Image AC.2: View of backed-up traffic east of the South College Road intersection. Building in background is vacant. Landscaping is minimal and power poles and lines are prominent.

c. Aesthetics

- Mixture of architectural styles
- Varied landscaping levels
 - Newer buildings have more than older buildings
- Mature pine trees at Hugh McRae park
- Lack of trees along rest of section
- Numerous pole signs
- Two billboards
- Power/telephone poles on both sides of road, unscreened except at Hugh McRae park



Image AC.3: Hugh McRae Park at the Pine Grove intersection

2. Section C2 - Pine Grove Drive to 51st Street**a. Land Use and Zoning**

- Primarily residential uses
- Moderately sized and priced
- Single-Family (R-15) zoning
- Driving range between South Wallace Street and 51st Street is the only exception
- Five vacant lots

b. Transportation

- Center two-way turning lane throughout
- Driveways connect to Oleander Drive
- Alley access available for some residences on north side of road
- No sidewalks present
- No existing transit service

c. Aesthetics

- Mature live oaks and pines line road
- Signage small and infrequent
- Power/telephone poles generally screened or set back on residential lots or in alleys



Image AC.4: View east toward Pine Grove Drive from S. College Road. Sidewalks are directly adjacent to the roadway. Landscaping is above average. Hugh McRae Park is on the right.

3. Section C3 - 51st Street to Willow Woods Drive

a. Land Use and Zoning

- Commercial uses
- Zoned mainly for Community Business (CB)
- Some Office and Institutional (O&I) zoning
- Stand-alone and strip shopping centers fronted by parking lots
- Varied building sizes: 1,500 square foot converted homes to 10,000 square foot furniture and carpet stores
- Commercial uses include: skating rink, entertainment park, gas stations, movie theatre, medical center
- Large vacant buildings
- Three vacant undeveloped parcels

b. Transportation

- Center two-way turning lane throughout
- One to two driveways per business connect directly to Oleander Dr.
- No cross-access between businesses
- Few sidewalks
- No existing transit service

c. Aesthetics

- Mixture of architectural styles
- Low building density with large open parking areas
- Varied landscaping
 - Older buildings have little to none
 - Newer buildings have minimal to adequate
- Power/telephone poles on both sides of the street, unscreened
- Pole signs present



Image AC.5: A stand-alone building on the north side of Oleander. Building is surrounded by unlandscaped parking.



Image AC.6: Mobile home park with frontage road.

Area D

Willow Woods Drive to Wrightsville Avenue

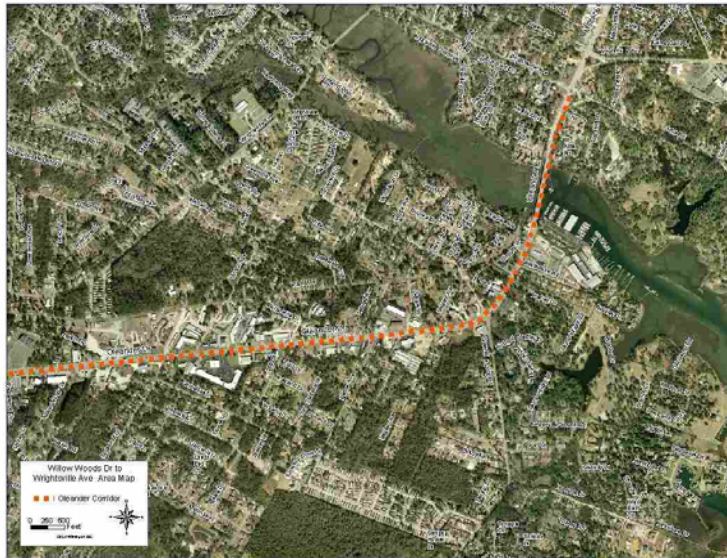


Figure AD.1: Map of Area D (2004)

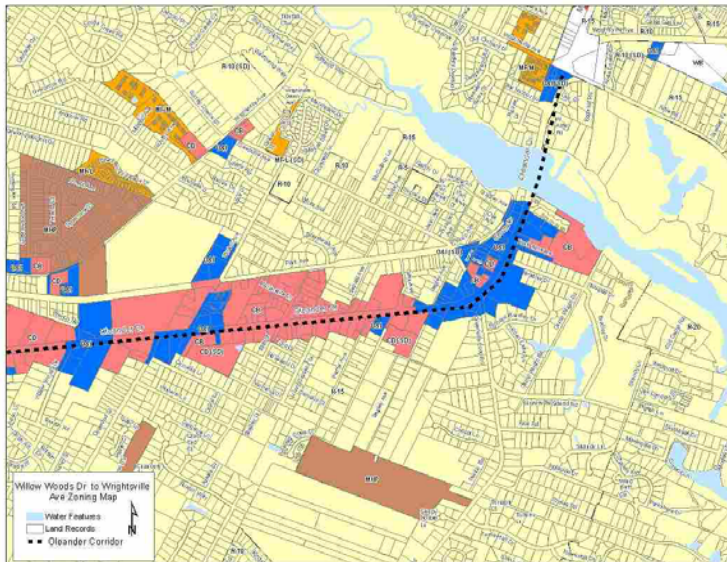


Figure AD.2: Zoning Map of Area D (2004)

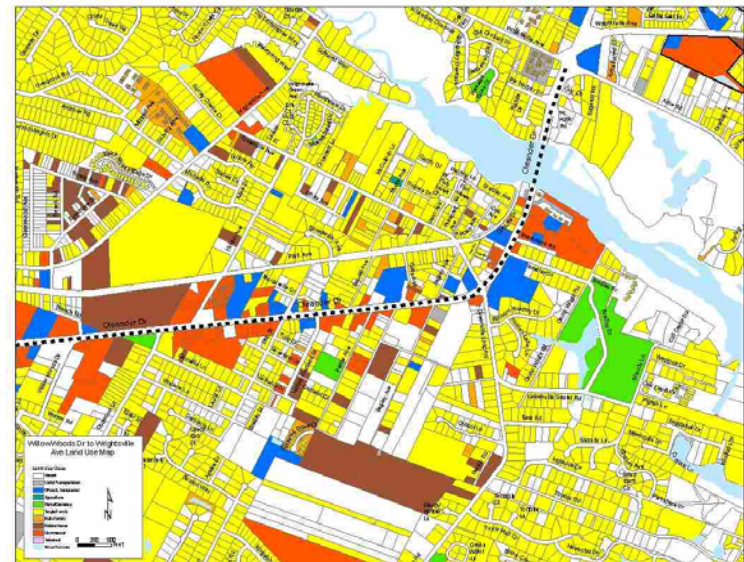


Figure AD.3: Existing Land Use Map of Area D (2004)

D. Area D - Willow Woods Drive to Wrightsville Avenue**1. Section D1 - Willow Woods Drive to Dogwood Lane****a. Land Use and Zoning**

- Commercial uses
- Zoned for Office and Institutional (O&I) and Community Business (CB)
- Only one parcel is being used for offices
- Predominance of mobile home sales establishments
- Mobile home salvage yard
- Predominance of older commercial buildings
- No vacant lots

b. Transportation

- Center two-way turning lane throughout
- Several unaligned cross streets
- Sidewalks not present
- No existing transit service

c. Aesthetics

- Varied landscaping
 - Older buildings have little to none
 - Newer buildings have minimal to adequate
- Large open parking areas
- Lack of tree coverage
- Numerous pole signs
- Power/telephone poles, unscreened



Image AD.1: Mobile home salvage yard.

2. Section D2 - Dogwood Lane to Greenville Loop Road

a. Land Use and Zoning

- Zoned primarily for Community Business (CB), with some Office and Institutional (O&I)
- Single family houses converted to commercial uses
- Stand-alone and strip shopping centers fronted by parking lots
- Varied building sizes: 1,500 square-foot converted homes to 10,000 square-foot stores
- Predominance of 1960's buildings
- Commercial uses include: auto sales and repair, BBQ restaurant, refrigeration sales
- Eight vacant lots and vacant mobile homes

b. Transportation

- Center two-way turning lane throughout
- Commercial properties have multiple driveways onto Oleander Drive
- No cross-access between businesses
- No sidewalks or existing transit service
- Several unaligned cross streets

c. Aesthetics

- Mixture of architectural styles
- Buildings built within the last five years are generally architecturally pleasant
- Varied landscaping: older buildings have little to no landscaping while newer buildings have adequate landscaping
- Large open parking areas
- Some mature trees
- Pole signs present
- Power/telephone poles on both sides of the road, occasionally screened



Image AD.2: A dilapidated portion of roadway with a lack of sidewalks, landscaping and trees.



Image AD.3: Lack of cross-access between business parking lots.

3. Section D3 - Greenville Loop Road to Wrightsville Avenue**a. Land Use and Zoning**

- Varied uses
- Zoned primarily for Office and Institutional (O&I) uses, with some Community Business (CB), and Single-Family Residential (R-15)
- Commercial uses include: restaurants, boat sales, marine, offices, County Agricultural Extension Office and Nursery
- Eight vacant parcels

b. Transportation

- Center two-way turning lane throughout
- Each property has one to two driveways
- No cross-access between properties
- No public access to Bradley Creek
- Lack of sidewalks
- No existing transit service

c. Aesthetics

- Well landscaped
- Mature live oaks and pines line and overhang portions of the road
- Several pole signs
- One billboard
- Power/telephone poles on both sides of the road, generally screened by trees



Image AD.4. Eastward view of Oleander from Greenville Loop Road.

Appendix B: Inventories

1. Land Use Inventory

Area	Residential (Res)	Office & Institutional (O&I)	Community Business (CB)	Regional Business (RB)	Commercial Services (CS)	Total
A. Wooster St. to Independence Blvd.	67%	7%	3%	0%	23%	100%
B. Independence Blvd. to S. College Rd.	0%	0%	24%	76%	0%	100%
C. S. College Rd. to Willow Woods Dr.	38%	4%	42%	15%	1%	100%
D. Willow Woods Dr. to Wrightsville Ave.	19%	14%	44%	0%	0%	100%
Percent of Road Length	30%	14%	31%	20%	5%	100%

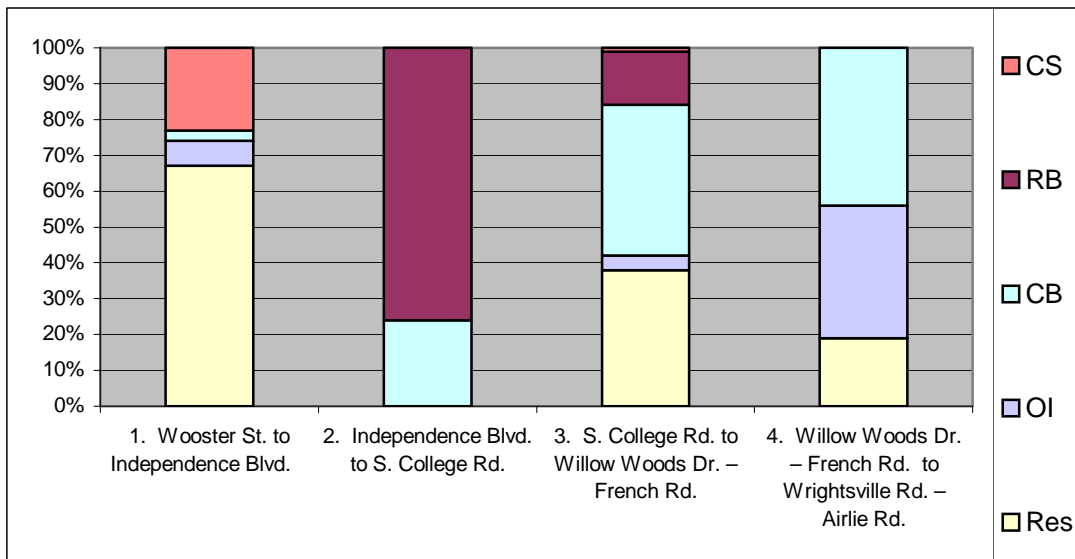


Figure B.1: Zoning Percentages Graph

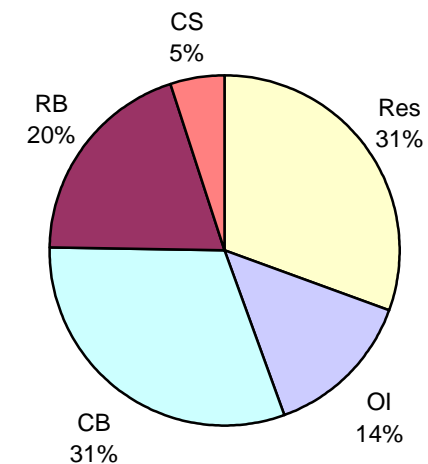


Figure B.2: Zoning Percentages Chart

Area	Summary
A. Wooster St. to Independence Blvd.	<ul style="list-style-type: none"> • Moderately dense pre-1960's architecture • Nodal area with commercial and residential uses in close proximity • Multi-family and single-family • Commercial buildings stand-alone with moderate parking areas • Some shared use buildings
B. Independence Blvd. to S. College Rd.	<ul style="list-style-type: none"> • Modern, post-1960's strip commercial development • Long distances between buildings, large parking lots • Strip shopping areas, mall • Nodal area • Fractured grid street pattern • Inconsistent zoning has yielded varied appearance
C. S. College Rd. to Willow Woods Dr.	<ul style="list-style-type: none"> • Modern, post-1960's strip and stand-alone commercial development • Nodal area • Wide mixture of uses • Long distances between buildings, large parking areas • Some residential
D. Willow Woods Dr. to Wrightsville Ave.	<ul style="list-style-type: none"> • Low density strip and stand-alone development • Older, uncoordinated buildings • Encroachment issues between commercial and residential areas • Some high-end residential

Table B.3: Vacancies

Area	Vacant Parcels	Vacant Parcel Zoning	Vacant Buildings	Vacant Building Zoning
A. Wooster St. to Independence Blvd.	2 lots	Residential	0	N/A
B. Independence Blvd. to S. College Rd.	6 parcels	Commercial	0	N/A
C. S. College Rd. to Willow Woods Dr.	6 parcels, 5 lots	Commercial and residential	3	Commercial
D. Willow Woods Dr. to Wrightsville Ave.	8 parcels, 8 lots, several mobile homes	Commercial and residential	0	N/A

2. Traffic Management Inventory

Table B.4: Driveway Curb-Cuts and Medians

Area	Driveways	Distance Between Driveways	Driveways/ Mile	Medians
A. Wooster St. to Independence Blvd.	60	110 feet	48	Concrete raised median divider starts at approach to Independence Blvd
B. Independence Blvd. to S. College Rd.	95	71 feet	74	Raised concrete median divider with turn lanes at intersections
C. S. College Rd. to Willow Woods Dr.	144	64 feet	82	Raised concrete median divider between S. College Rd. and Pine Grove Dr.
D. Willow Woods Dr. to Wrightsville Ave.	140	91 feet	58	None

Area	Bus Stops	Signals	Sidewalk Inventory		Sidewalk Coverage	Notes
A. Wooster St. to Independence Blvd.	14	4	L Side 4835 ft R Side 4150 ft	Total: 8994 ft.	68%	Mostly residential development “grid street” with alleys
B. Independence Blvd. to S. College Rd.	15	6	L Side 1876 ft. R Side 3552 ft.	Total: 5428 ft.	39%	Strip development - commercial
C. S. College Rd. to Willow Woods Dr. – French Rd.	0	3	L Side 772 ft. R side 2075 ft	Total: 2848 ft.	15%	Commerical to Pine Grove Dr. then primarily residential to end of road section
D. Willow Woods Dr. – French Rd to Wrightsville Rd. – Airlie Rd.	0	2	0	Total: 0	0	Low density commercial development
Total	29	15		17260 ft. 3.3 Miles	27%	

3. Aesthetic Inventory

Area	Billboards	Detached Signs	Distance Between Signs	Signs / Mile
A. Wooster St. to Independence Blvd.	3	9	733 feet	7.2
B. Independence Blvd. to S. College Rd.	2	49	139 feet	38
C. S. College Rd. to Willow Woods Dr.	2	27	342 feet	15.4
D. Willow Woods Dr. to Wrightsville Ave.	1	59	159 feet	33.1

Area	Summary
A. Wooster St. to Independence Blvd.	<ul style="list-style-type: none"> • Generally pre-1960's • Some attached buildings close to street • Strip development with large parking lots • Stand-alone buildings with large parking lots • Buildings relatively close together • Low-end commercial appearance • Mid- to high-end residential
B. Independence Blvd. to S. College Rd.	<ul style="list-style-type: none"> • Post-1960's strip and stand-alone commercial development • Buildings spaced farther apart, very large parking areas
C. S. College Rd. to Willow Woods Dr.	<ul style="list-style-type: none"> • Pre-1960's strip and stand-alone commercial development • Some buildings with derelict appearance • Buildings spaced farther apart, very large parking areas
D. Willow Woods Dr. to Wrightsville Ave.	<ul style="list-style-type: none"> • Pre- and post-1960's strip and stand-alone commercial development • Buildings spaced farther apart • High-end Residential

Area	Street Trees	Utility Poles and Lines
A. Wooster St. to Independence Blvd.	Present on residential lots	Both sides of road, wooden
B. Independence Blvd. to S. College Rd.	Minimal	Both sides of road, wooden
C. S. College Rd. to Willow Woods Dr.	Minimal	Both sides of road, wooden
D. Willow Woods Dr. to Wrightsville Ave.	Some on residential and commercial parcels	Both sides of road, wooden

Appendix C: Traffic Operations

1. History

Oleander Drive was constructed in the 1920s as the "Wilmington-Wrightsville Speedway." It was originally constructed only 18 feet wide, but was subsequently widened in the 1950s to 44 feet west of College Road and 24 feet east of College Road. West of College Road, Oleander Drive was widened further in 1969 and again in 1975. East of College Road, Oleander Drive was widened again in 1988. The Bradley Creek Bridge was reconstructed in 1990 and the roadway section north of the bridge to Eastwood Road was reconstructed in 1996.

2. Traffic Operations

Traffic operations on Oleander Drive are acceptable through the entire length of this principal arterial street, with the exception of the intersection with College Road. 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 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.

Section	% Growth 1991-2001	Through Travel Lanes	Posted Speed Limit (mph)
Dawson Street to Independence Boulevard	35	4	40
Independence Boulevard to Pine Grove Drive	25	6	40
Pine Grove Drive to Greenville Loop Rd.	15	4	45
Greenville Loop Rd. to Wrightsville Ave./Airlie Rd.	15	4	45

Road Portion	Width
Dawson St. to RR	64-72'
RR to Hawthorne Dr./East Forest Hills Dr.	44-60'
Hawthorne Dr./East Forest Hills Dr to Pine Grove Dr.	86'
Pine Grove Dr. to Wrightsville Ave.	58-68'

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.

Therefore, the traffic analysis of the Oleander Drive corridor between and including the signalized intersections at Country Club Drive to the west and Pine Grove Drive to the east must be considered as a cohesive unit. Sections of Oleander Drive west of Country Club Drive and east of Pine Grove Drive 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 Oleander Drive 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 good west of College Road. Many residences west of Independence Boulevard have alley or side street access. Most commercial properties between Independence Boulevard and College Road also have alternate access between developments. However, such access provisions are rare east of College Road.

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.

Table C.4: Critical Intersection Performance

Intersection	A.M.	P.M.
Independence Boulevard	33.7 (C)	45.5 (D)
Floral Parkway	41.3 (D)	45.6 (D)
College Road	74.6 (E)	138.6 (F)

Note: Table reflects average delay experienced by vehicles entering listed intersections from any approach. Table applies to the Oleander Drive between and including Country Club Drive and Pine Grove Drive.

Table C.5: Individual Intersections

Intersection	A.M.	P.M.
Hawthorne Dr.	8.7 (A)	13.8 (B)
Greenville Loop Rd.	28.5 (C)	39.9 (D)
Wrightsville Ave.	32.2 (C)	61.1 (E)

Note: SIGNAL2000 was allowed to optimize timings, since there was no signal constraint,

Table C.6: Route Performance

Direction	A.M.	P.M.
Westbound	12.8 (B)	19.0 (B)
Eastbound	25.5(C)	32.6 (D)
Average Both Directions	23.1(B)	34.7 (D)

Note: Table reflects average vehicle delay on Oleander Drive between and including Country Club Drive and Pine Grove Drive

It should be noted that delay experienced by vehicles at minor intersection approaches and driveways entering Oleander Drive 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 Oleander Drive. 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 Oleander Drive arterial traffic operations were simulated using existing traffic signal timings and counts taken in 2002 at the critical intersections of Independence Boulevard, Floral Parkway, and College Road. Table C.6 is a summary of performance measures output from Transit 7F traffic signal system modeling software.

Based on observations, the free flow speed along Oleander Drive fluctuates. In the section from College to Mimosa, the average speed is 40+ miles per hour in the AM, and 38 +/- in the PM peak. Noticeable friction occurs at locations with high right-turning movements where no lane is provided, causing the average speed to vary by lane.

The intersection of Oleander Drive and Dawson Street is measured as the eastern end of a unit of coordinated signals on Dawson Street and Wooster Street between and including this intersection on the east and Third Street on the west at the approaches to the Memorial Bridge. Recent analysis of this coordinated section is not currently available with recent analyses. Operational analysis of this intersection should not be performed in isolation from the Dawson and Wooster corridor. Therefore, the intersection at Dawson Street is not included with the Oleander Drive operational analysis presented

A.M.	P.M.
32.5(C)	50.2(D)
Note: Table reflects average delay experienced by vehicles entering the artery from any approach, including side streets. Table applies to the Oleander Drive between and including Country Club Drive and Pine Grove Drive.	

Area	Volume (2002)	Capacity	Volume/ Capacity Ratio
Dawson Street to Independence Boulevard	31,000-34,000	34,000-38,000	.82-1.0
Independence Boulevard to Pine Grove Drive	31,000-38,000	51,000-55,000	.56-.75
Pine Grove Drive to Greenville Loop Rd.	31,000-33,000	38,000	.82-.87
Greenville Loop Rd. to Wrightsville Ave./Airlie Rd.	44,000	38,000	1.16

Section	Posted Speed Limit (mph)	Average Travel Progression Speed NB/SB Peak Directions (mph)
Mimosa Drive to College Road	40	40/40
College Road to Pine Grove Drive	45	40/40

in this report, although its analysis will be added to this section when the Dawson and Wooster Street corridor is analyzed as part of the *Future Land Use Plan*. 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. In all cases, turn-lane provisions and their 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.

a. Driveway and Deceleration Lane Analysis

Table B.4 in Appendix B shows that driveways are found on average every 80 feet with an average range between 64 feet to 110 feet between driveways. There are three deceleration lanes found on the roadway.

Frequent driveways (i.e. every 80 feet) on an arterial road such as Oleander Drive 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 13 times the average distance between driveways on Oleander Drive. Although it is neither expected nor likely that an older corridor such as Oleander Drive would ever have driveway spacing reduced to the level of a new development such as this, it is illustrative of the difference.

b. Oleander Drive 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 (Table C.10). A “strip analysis” was run on each section of Oleander Drive. This strip analysis summarizes vehicle accidents by type for this time period. A composite analysis was done on the entire Oleander Drive corridor as well.

The data shows a reduction in the total number of crashes of nearly all types from 1991 to 2001. The exception was in the category of rear-end collisions, which generally increase as traffic increases. Rear-end collisions declined west of Independence Boulevard.

The vehicle crash rate is a measure of the relative safety of a roadway and is defined in terms of the number of crashes per hundred million vehicle miles. These numbers have declined as well from 1991 to 2001. The section west of Independence Boulevard as well as between Hawthorne Drive and Wrightsville Avenue had the lowest crash rates and the greatest reduction in crash rates. No other trends were identified particular to one or more sections.

Table C.10: Oleander Drive Crash History																
<u>Oleander Drive From Dawson Street to Independence Blvd</u>																
Year	Volume	Total	Rate	Fatal	Injury	Property Damage	Night Acc.s	Wet Acc.s	Alcohol	Angle	Left Turn	Pedestrian	Rear End	Right Turn	Sideswipe	
1991	19,400	50	609	0	18	32	7	11	1	13	4	1	20	5	4	
1996	22,400	44	479	0	15	29	6	9	1	6	5	0	22	1	4	
2001	26,0600	32	301	0	14	18	5	3	0	10	3	0	12	1	1	
<u>Oleander Drive From Independence Blvd to Pine Grove Road</u>																
Year	Volume	Total	Rate	Fatal	Injury	Property Damage	Night Acc.s	Wet Acc.s	Alcohol	Angle	Left Turn	Pedestrian	Rear End	Right Turn	Sideswipe	
1991	25,800	91	608	0	35	56	17	24	2	18	23	3	27	8	6	
1996	27,600	129	803	0	51	78	26	31	3	28	21	0	52	5	8	
2001	26,500	88	572	0	27	61	13	10	0	28	7	0	39	2	7	
<u>Oleander Drive From Pine Grove Road to Greenville Loop Road</u>																
Year	Volume	Total	Rate	Fatal	Injury	Property Damage	Night Acc.s	Wet Acc.s	Alcohol	Angle	Left Turn	Pedestrian	Rear End	Right Turn	Sideswipe	
1991	24,500	43	186	0	23	20	9	11	0	11	7	0	17	1	1	
1996	22,100	87	417	0	45	42	14	25	1	18	13	0	44	1	2	
2001	28,500	51	190	0	24	27	7	9	3	13	5	0	27	0	3	
<u>Oleander Drive From Greenfield Loop Road to Wrightsville Ave</u>																
Year	Volume	Total	Rate	Fatal	Injury	Property Damage	Night Acc.s	Wet Acc.s	Alcohol	Angle	Left Turn	Pedestrian	Rear End	Right Turn	Sideswipe	
1991	24,500	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1996	21,800	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2001	26,600	18	269	0	8	10	3	3	0	7	1	0	7	0	1	

<u>Entire Corridor: Oleander Drive From Dawson Street to Wrightsville Ave</u>															
Year	Ave. ADT	Total	Rate	Fatal	Injury	Property Damage	Night Acc.s	Wet Acc.s	Alcohol	Angle	Left Turn	Pedestrian	Rear End	Right Turn	Sideswipe
1991	23,550	256	522	0	81	145	48	66	5	62	57	0	83	17	14
1996	23,475	345	703	0	92	196	61	74	7	78	61	0	138	10	21
2001	26,900	202	368	0	53	125	31	29	0	57	20	0	90	3	12

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

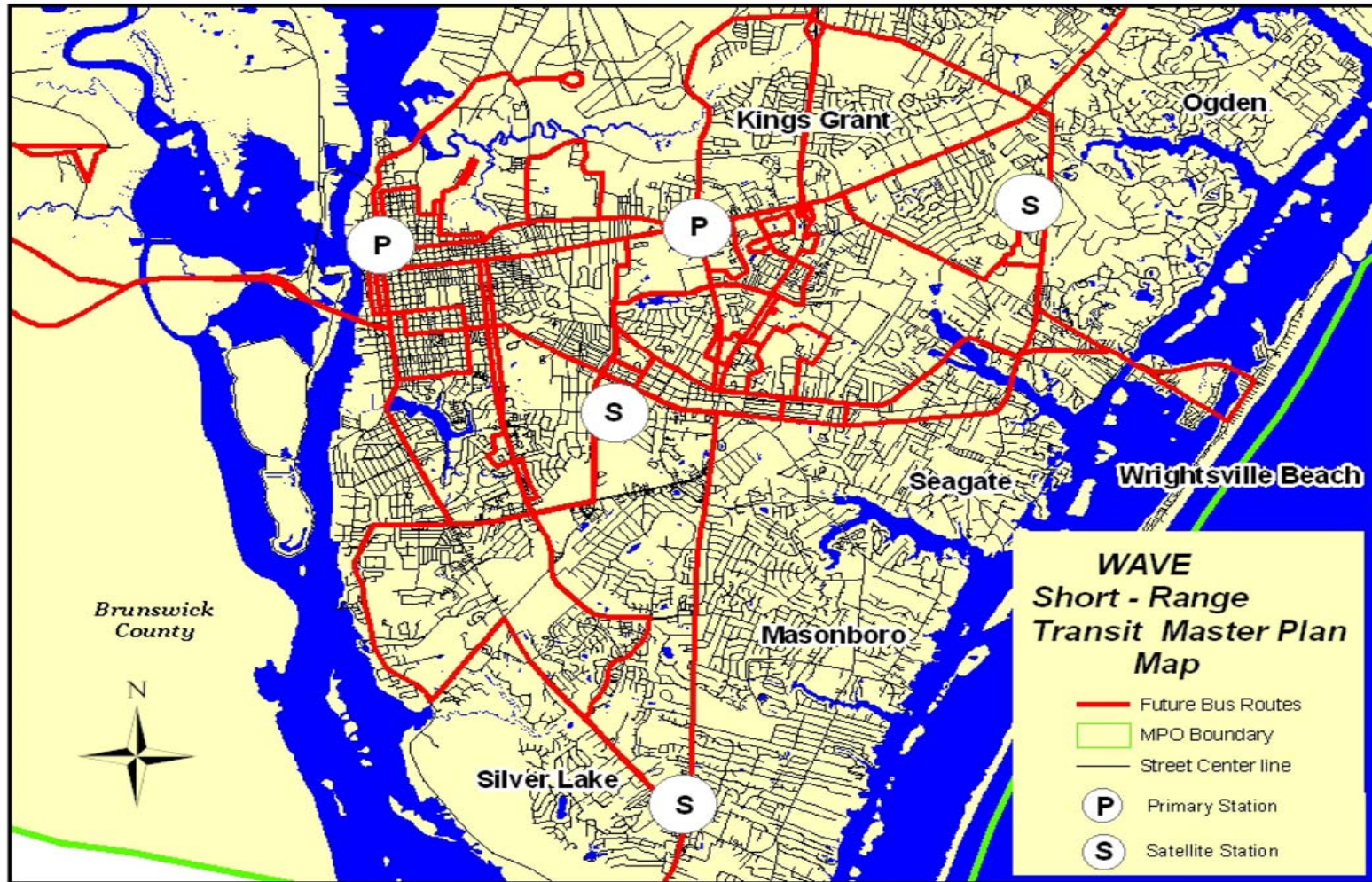


Figure C.1: Short-Range Transit Plan Map

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%)												
College Road																																																	
1																																																	
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												
Carolina Beach Road																																																	
6																																																	
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												
Market Street																																																	
11																																																	
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												
Oleander Drive																																																	
18																																																	
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									

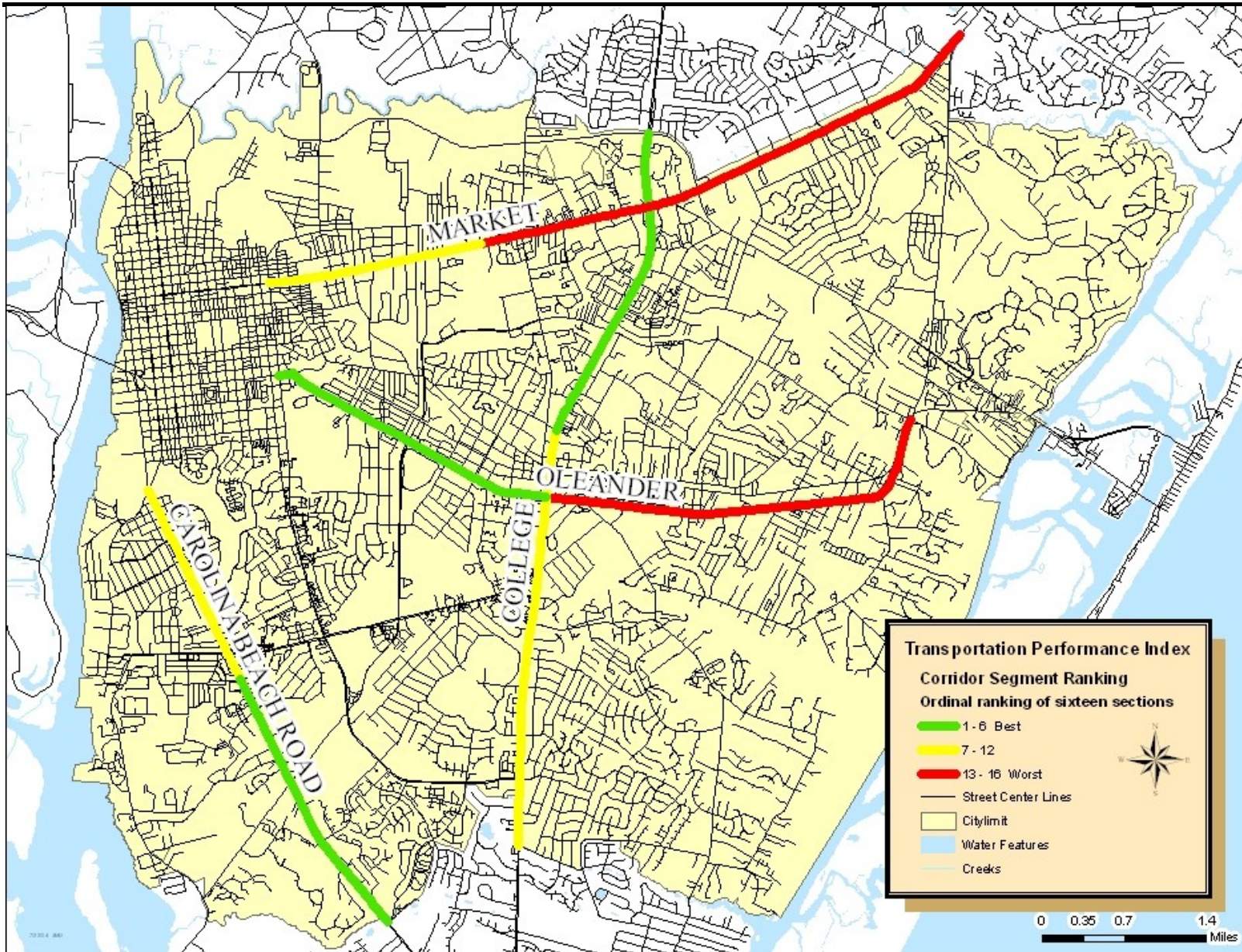


Figure C.3: Transportation Performance Index Map

Appendix D: Capital Improvement Costs

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	\$10	\$150	Per Linear Foot	Does not include easements, high end assumes crossing vacant tracts where

(Within Parking Lots)				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.