





MARKET STREET CORRIDOR STUDY

Sustainable Growth, Enhanced Mobility

July 2010

Market Street Corridor Study

Final Report





Acknowledgements

The *Market Street Corridor Study* provides a blueprint for implementing a new vision for Market Street — the City of Wilmington's gateway corridor and spine of commercial activity. This vision has come into focus thorough years of planning and engineering by local, regional, and state authorities and has culminated in a collaborative planning process that involved local residents, numerous stakeholders, a steering committee, the Wilmington Metropolitan Planning Organization (WMPO), City of Wilmington, New Hanover County, and the North Carolina Department of Transportation (NCDOT). Their efforts are appreciated.

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Chapter 1 – Introduction & History

The ***Market Street Corridor Study*** represents the culmination of years of planning and engineering by the City of Wilmington, New Hanover County, and the North Carolina Department of Transportation. This plan combines the results and recommendations of numerous land use and transportation studies into a consistent set of roadway and development recommendations to address congestion and safety along Market Street as well as land use policy measures to encourage sustainable development.

This study has two distinct components: transportation and land use. While land use and transportation planning traditionally have been stand-alone processes, they do not exist in a vacuum. Transportation systems and land use patterns tend to influence each other in a cyclical pattern. Elements of transportation — including roads and pedestrian, bicycle, and transit facilities — can impact how land is developed in terms of density and even use. Further, the distribution of land uses inevitably impacts decisions regarding where people travel and how transportation facilities are prioritized. If low-density development is spread out, residents must rely almost entirely on automobiles to get from one location or use to another. Conversely, denser centers that combine complementary land uses near each other enable greater choices in transportation.



Because of this relationship between land use planning and transportation systems, the ***Market Street Corridor Study*** must strive to strike a delicate balance. Plans, policies, and programs not only must preserve mobility through effective transportation, but also must reinforce a "sense of place" through land use that truly reflects the community.

The following components were developed as part of this study to find the balance between land use and transportation:

- Preferred Access Management Plan
- Bicycle and Pedestrian Connectivity Plan
- Market Analysis for the surrounding community
- Corridor Overlay and Mixed-Use Ordinances
- Collector Street Plan
- Roadway Concept Plans
- Framework Plan
- General Development Plan



HISTORICAL CONTEXT

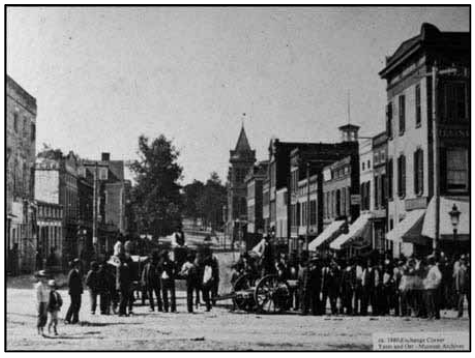
The City of Wilmington—incorporated in 1739—owes its name to Lord Spencer Compton, the Earl of Wilmington and former prime minister of Great Britain. Originally situated on seven hills flanking the eastern banks of the Cape Fear River, the city has since expanded well beyond the riverfront and currently boasts a population of approximately 101,000 (NC Office of State Budget and Management, July 2007). Graced by tree-lined boulevards and large estate homes, the downtown area still maintains its historic charm, making Wilmington one of the most attractive small cities in the southern United States.



Map of Wilmington, 1863

Wilmington is served by many regional roadways, including Interstates 40 and 140, and US Highways 17, 74, 76, 117, and 421. Market Street is designated as US 17 Business within the City of Wilmington from N. and S. 3rd Street to the Wilmington Bypass. Today, Market Street serves as one of the major arterials for the city and New Hanover County. Given its location, size, and lack of parallel corridors, Market Street carries much of the traffic between downtown and suburban communities such as Ogden and Porters Neck—even extending to areas in Pender County.

Even before incorporation in 1739, Market Street was one of the most recognizable and traveled corridors in the city. The road was part of the King's Highway, a major pre-revolutionary route from the northern colonies to points south, such as Wilmington and Charleston. Prior to the 1930s, Market Street traffic crossed the Cape Fear River via the Market Street Ferry. Around 1935, the construction of bridges across the river rendered the ferry operation obsolete. The roadway served as a major commercial thoroughfare, connecting Wilmington to other colonial cities, ports, and business centers. This rich history of trade and commerce continues today, as Market Street traffic continues to overload the roadway, adding to the frustrations of residents and business owners.



Market and Front Streets, circa 1881

After incorporation, the City of Wilmington began growing eastward, with large residential estates developing along the Market Street corridor. The community quickly gained the reputation as one of the grandest residential areas in the state, receiving street lights as early as 1855.



Towards the end of the 19th century, Market Street was envisioned as a large boulevard with a tree-lined median leading to the Wilmington waterfront. Combined with the grand homes lining the corridor, the area quickly developed the historic character and charm that are still prevalent in the Wilmington community today.

The once largely residential area has given way to increased commercial and office development, especially east of Colonial Drive, which serves as an unofficial boundary between the historic downtown and the new urban-suburban transitional area. This movement was fueled by the advent of the motorized vehicle, pushing the trip length further east and creating demands for additional development and residences further from the downtown core. Market Street was first paved in 1927, further fueling the eastward growth. Large rural farmlands were quickly developed for commercial interests. This development pattern has been most apparent over the past three decades as the population of Wilmington has swelled from 55,000 in 1990 to over 100,000 today.

Market Street remains as one of the most recognized corridors in the City of Wilmington. However, unlike years past when the corridor was known for its large commercial prowess and grand estates, the roadway is most synonymous now with traffic, congestion, delay, unsafe travel conditions, and poor land use patterns. Given the rate at which the area developed, most planning decisions and traffic engineering strategies could not keep pace with the unregulated growth. Coupled with insufficient investment in roadway infrastructure, lack of alternative transportation choices, and sprawl development patterns, the Market Street corridor has become one of the most highly congested, unsafe travel routes in the Wilmington community.

Between July 1, 2005 and June 30, 2008, approximately 1,851 crashes occurred between Colonial Drive and the Pender County line, including 6 fatal crashes and 693 injury crashes. A quote submitted by a workshop attendee during the public outreach process indicates the level of patron frustration with the Market Street corridor, "By far it is the most unappealing transportation corridor in Wilmington—ugly, poorly designed, and over capacity."



Market and Front Streets, circa 1905



Bellamy Mansion and other historic homes along Market Street, circa 1900



Market and Front Street, 1910-1920

> *By far it (Market Street) is the most unappealing transportation corridor in Wilmington – ugly, poorly designed, and over capacity.*
>
> - October 2008 Workshop Attendee

New developments continue to surface along the corridor, and the associated vehicular demands only worsen the congestion and safety conditions. Because of the combination of suburban-type development and traffic growth, it is important to develop a strategy for the corridor based on both land use and transportation, and how the relationship between the two affects the overall efficiency of the system.



Commercial development along Market Street

The 2004 Coastal Area Management Act (CAMA) Registered Voter Survey indicated that 59% of respondents felt that the issue of "too much strip commercial development along major roads," which listed Market Street specifically, was "very important," with an additional 20% responding that the issue was "somewhat important". In 2004, the City of Wilmington adopted the ***Market Street Corridor Plan***, which outlined transportation and land use strategies to help manage growth and its impacts to the corridor. Numerous other studies by the City of Wilmington and the North Carolina Department of Transportation (NCDOT) have attempted to address the traffic conditions on Market Street, either through widening, turn-lane additions, or signal timing/upgrades. A discussion of these previous planning efforts is included in **Chapter 2** of this report.



Market Street – 4-lane section west of Colonial Drive

To the west of the study area, Market Street is currently four lanes undivided (36 feet wide) from N. and S. 17th Street to Colonial Drive. From Colonial Drive to the Wilmington Bypass the corridor varies between 40 and 78 foot width (including through lanes, turn lanes and existing concrete median), with four travel lanes and one two-way center left turn lane for most of the corridor. A monolithic concrete median was recently constructed between New Centre Drive and Eastwood Road as part of the ongoing NCDOT TIP project U-4902, which plans to implement median along Market Street between Colonial Drive and the Wilmington Bypass.



Market Street – 5-lane section near Martin Luther King Jr. Parkway

In 1997[1], Market Street served between 24,000 and 45,000 vehicles per day. Today[2], those totals have grown to between 31,000 and 56,000 vehicles per day. The largest area of growth has been in the Marsh Oaks and Porters Neck areas, which have seen large residential and commercial developments within the past decade.

[1] *Based on NCDOT Average Daily Traffic Counts*

[2] *Based on Wilmington MPO Traffic Counts*



Today's Market Street serves as both a gateway corridor into downtown and a major commercial connection for local citizens and regional travelers. The road is still a major thoroughfare between Brunswick, New Hanover, and Pender Counties, as well as a popular tourist route leading to the primary beach routes, N. and S. College Road and Eastwood Road. The recently completed Martin Luther King Jr. Parkway has lessened the traffic burden between downtown and Eastwood Road by removing some through traffic off of Market Street, but the strong commercial draw will continue to generate enough traffic to strain the roadway. East of Eastwood Road, the Wilmington Bypass provides an alternative route between Porters Neck and Interstate 40. The route provides some relief but, most through trips from downtown Wilmington to Pender County use Market Street as the major route.

Recent efforts have been made to beautify Market Street, particularly in the section closest to the downtown core. Utility lines were buried along a portion of the corridor leading into downtown, and quality street lamps have been installed on portions of the street's west end. Kenan Memorial Fountain, originally constructed in 1921, was recently restored by the Historic Wilmington Foundation, Inc. These efforts to beautify the downtown sections of Market Street, combined with the historic homes that remain in the area, help preserve the historic character and appeal of the city's downtown core.

East of Colonial Drive, the corridor has pockets of development that remain attractive to the community, but the majority of the corridor is in need of a facelift outside the right-of-way; the roadway itself is in need of improvements to reduce congestion and increase safety. This study attempts to do both through analysis of existing traffic and safety conditions, assessment of the local market and existing land uses, public outreach to determine their vision for the corridor's future, and development of recommendations that ties it all together. The next section outlines the framework for this report, and its accompanying documents. The remainder of this report details the transportation conditions and proposed corridor improvements.



Restored Kenan Fountain



Dilapidated business along Market Street



Example of new development along Market Street



STUDY FRAMEWORK

This report is organized into seven distinct chapters, each documenting a specific aspect or phase of the study. These chapters include:

- **Introduction and Historical Context** – a review of Market Street's history and its effect on today's planning process
- **Planning Process** – the framework for this study, including public involvement and how previous planning efforts were intertwined in the foundation of this study
- **Existing Conditions** – a review of existing traffic and safety conditions along the corridor
- **General Development** – a set of policy and corridor specific recommendations intended to address the elements of the corridor beyond the roadway, including future land use strategies and justification for development controls along the corridor
- **Focus Area Site Studies** - a summary of five site specific studies along the corridor, including Independence Boulevard, Kerr Avenue, Eastwood Road, Military Cutoff Road, and Marsh Oaks.
- **Recommendations** – a set of proposed improvements, ranging from regional connections to spot intersection improvements that relieve congestion and improve safety along the corridor
- **Envisioning Success** – a blueprint for implementation, outlining phasing and funding strategies to construct the proposed improvements

References

- Lower Cape Fear Historical Society:

  http://www.latimerhouse.org/

- A History of Wilmington in Pictures: The Dr. Robert M. Fales Collection:

  http://wwwtmpapps.nhcgov.com/lib/history/fales/index.htm

- Perry-Castaneda Library Map Collection – U.S. Historical City Maps (University of Texas – Austin)

  http://www.lib.utexas.edu/maps/historic_us_cities.html



Chapter 2 – Planning Process

Planning at its best is a cooperative process led by local staff and citizens invested in their community and involves key stakeholders and the general public. The planning process should be rooted in a public involvement platform that gathers, processes, and applies a diversity of opinions from residents, the business community, and civic groups. Public outreach occurred through a variety of small- and large-group meetings and an assortment of media. Two principles of public outreach were adhered to:

1. Citizens have an intimate understanding of the community and planning decisions that have a direct impact on their daily lives.
2. Groups can share in the collective vision for the project even as they hold differing opinions on how this vision should be reached.

With respect to these two principles, the planning process for this study was designed to create an open dialogue about the needs of current and future residents and visitors.

Public Involvement

True success for a project like the ***Market Street Corridor Study*** occurs when a strong foundation of stakeholder input and public involvement is established. From the beginning of this project, the City of Wilmington, New Hanover County, and Wilmington MPO set out to ensure that concerned citizens had the opportunity to provide input into the formation of the proposed improvements. This was accomplished using interactive public input forums, public surveys, stakeholder interviews, and the formation of a dedicated project steering committee. The following sections describe the public outreach and support efforts of the city, county, MPO, and project team.

Project Steering Committee

The project steering committee was formed at the beginning of the project to provide technical oversight for the formulation of recommendations and strategies. The steering committee consisted of representatives from the City of Wilmington, Wilmington MPO, New Hanover County, and NCDOT. The steering committee met frequently during the project to provide localized guidance, brainstorm concepts, review draft recommendations, and formulate growth strategies.



Project Steering Committee meeting



STAKEHOLDER INTERVIEWS

Early in the public outreach process, the City of Wilmington and New Hanover County identified several key stakeholders, including representatives from the North Carolina Department of Transportation, developers, business community, utility representatives, transit providers, and citizen advocates. Interviews with these stakeholders were used to gain insight into the social, political, economic, and transportation issues facing the Market Street corridor and surrounding area. Feedback received during these interviews was used to refine the work plan for the project and validate background information collected to date. Information garnered through stakeholder interviews supplemented the information provided by the Steering Committee and the results of the public workshops.



Local stakeholder discusses potential improvements along Market Street

PUBLIC WORK SESSIONS

During the initial planning stages of the study, the project team held two week-long project work sessions, intended to open the planning and design process to the community. The work sessions focused on the development of multiple strategies and alternatives along the corridor, allowing the project team to explore multiple alternatives while closely working with the steering committee, stakeholders, and the public. The events were held in October 2008. A summary of each event follows.



Images from October 6 – 9 Work Sessions and Public Outreach

PUBLIC WORK SESSION #1 – OCTOBER 6 – 9, 2008

The first public work session focused on the portion of Market Street between Colonial Drive and Military Cutoff Road. Daily work sessions were held at the Hanna Block USO Building in downtown Wilmington, and two evening workshops were held in the New Hanover County Government Center.

The first day of the event focused on gathering public input regarding the existing conditions of the corridor and the projected future growth and development in the focus area. The majority of the data was received at the opening public workshop. Sixteen people attended the event, representing residents, employees, business owners, and elected officials with interests along the corridor. The ideas and concerns



generated on the opening day were used to formulate potential improvements and strategies on days two and three of the work session. The design sessions were open to the public, and several concerned citizens dropped in to provide on the spot suggestions for improving conditions along the corridor.

The event ended with a follow-up workshop intended to provide the public an opportunity to view and comment on the strategies and designs formulated during the work session. Twelve people attended the closing workshop, which was structured in a "pin-up" format, with maps and design elements posted for direct comment by the attendees. The information gathered at this workshop was used to further refine the concepts into the final design plans and strategies.

Public Work Session #2 – October 27 – 30, 2008

The second public work session focused on the portion of Market Street between Military Cutoff Road and the Pender County line. Daily work sessions were again held at the Hanna Block USO Building in downtown Wilmington, and two evening workshops were held at Ogden Elementary School.



Images from October 27 – 30 Work Sessions and Public Outreach

The format for the second public work session closely followed the format for the first event. The first days were spent gathering information, and the second two were spent developing strategies and recommendations intended to alleviate problems and general issues. Two public workshops were held in conjunction with the event; one on the first day of the event and a closing workshop on the final night.

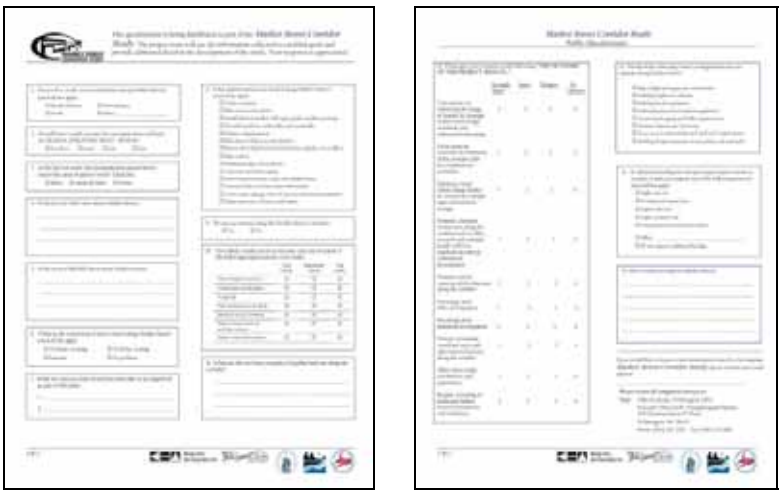
Approximately 33 people attended the first workshop, which was centered on identification of issues for the eastern portion of the corridor. The refined materials from the first public work session also were on display. This provided the attendees an opportunity to understand the types of improvements proposed for the first section, which helped to visualize improvements to the remaining portion. Just as in the previous work session, the issues and concerns identified in the opening workshop were used as the foundation for the development of proposed recommendations and strategies.



The closing workshop presented these recommendations and strategies in "pin-up" format, allowing attendees to move about the room viewing and marking up maps and providing comments. Approximately 27 people attended the closing workshop, most of which had attended the opening night. The information gathered at this workshop was used to further refine the concepts into the final design plans and strategies.

Public Survey #1

As a part of the public work sessions series, a public survey was conducted to gather information about existing perceptions of the corridor, as well as potential recommendations that would be palatable to the community. The 15-question survey posed a variety of questions related to the corridor, including overall perception, transit usage, adjacent land uses, and financing strategies. In total, 57 surveys were submitted as part of the workshop process.



Surveys distributed at October 2008 Public Outreach sessions

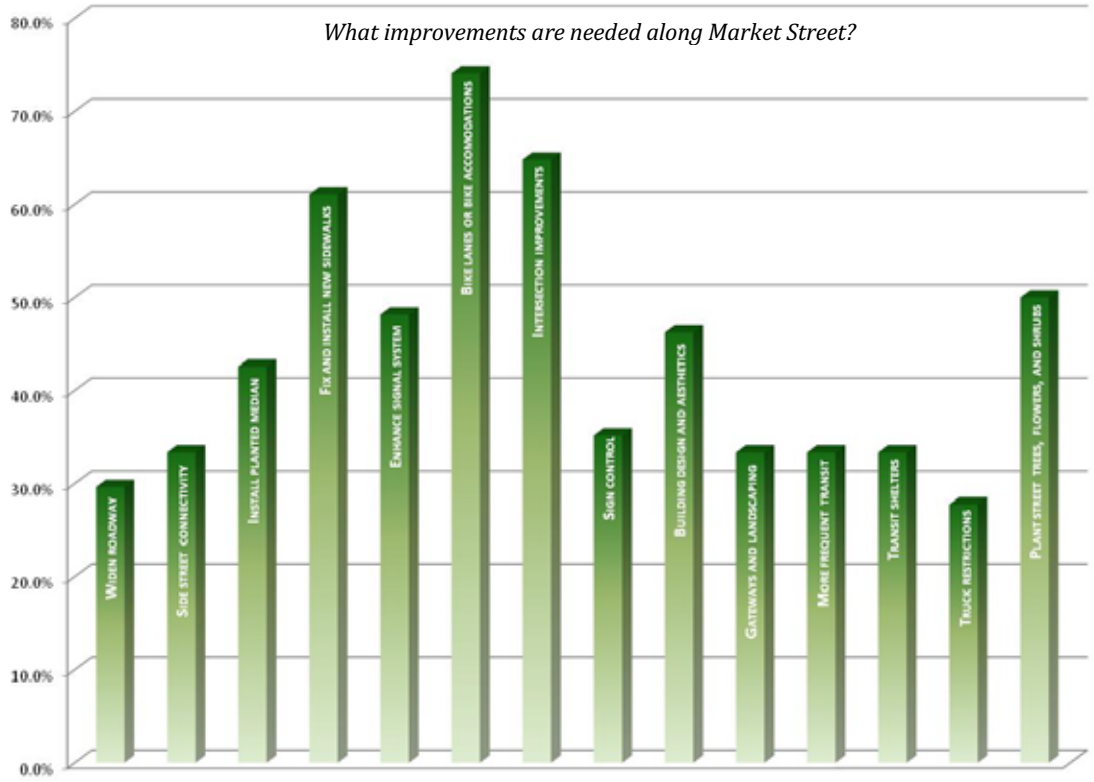
Nearly half of the surveys were submitted by residents along the corridor, with the remainder completed by business owners, employees, and concerned citizens. The results of the survey indicate that the Market Street corridor is poorly viewed in terms of both transportation and land use. Most respondents view the situation as worsening in the last few years. When asked to list what they **LIKE** most about Market Street, most respondents listed features that are located in the section leading into downtown (oak trees, streetscape, fountains, or historic elements). When asked to list what they **DISLIKE** the most about Market Street, respondents listed congestion, safety, "ugly" landscape and land use features, or the presence of too many driveways and curb cuts.



Overall, how would you rate the transportation and land use decisions along Market Street?



What improvements are needed along Market Street?



When asked to weigh in on potential improvements to the Market Street corridor, a majority of respondents chose improvements that enhanced multimodal transportation and improvements to travel without widening the roadway. The most popular improvements were the provision of bicycle amenities, improvements to intersections (turn lanes, signals, or crosswalks), construction of sidewalks, and enhancement of aesthetics through landscaping and building design.

The survey also addressed specific land use concerns and improvements along Market Street. When asked to provide the best two examples of quality land use along the corridor, most respondents were unsure of a good example (at least along the Market Street corridor). Those who did indicated that the developments at the Port City Java Complex and Porters Neck were good examples, while most indicated that the development found near downtown was the most ideal.

*Examples of **Quality Land Use** along the Market Street corridor*
(As indicated by survey respondents)

Port City Java Complex



Porters Neck Shopping Area



New McDonalds (near N. Kerr Avenue and Princess Place Drive)



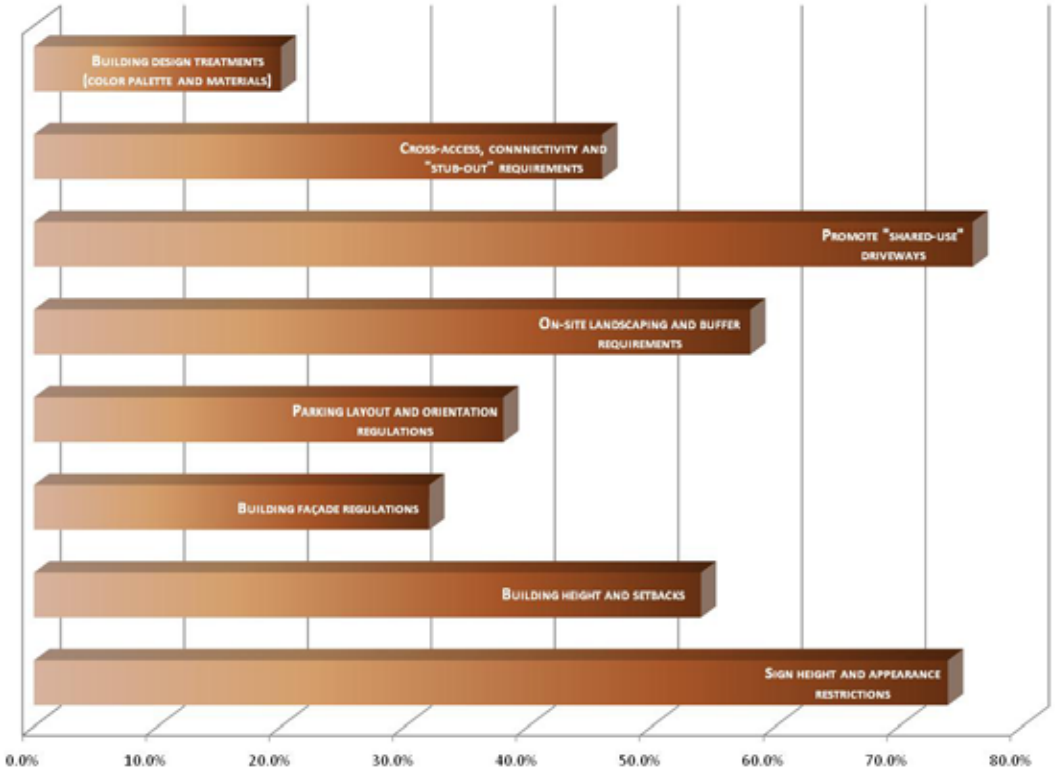
Downtown Section





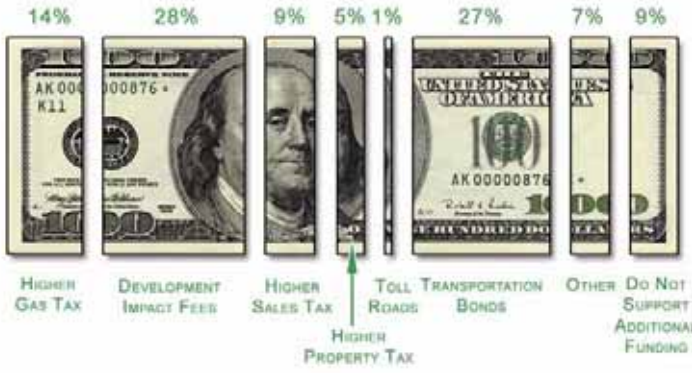
The survey also asked citizens to indicate what types of land use regulations they would like to see enacted along the Market Street corridor. The most prevalent answers were the promotion of shared use driveways and restrictions on sign height and appearance. Most of the responses focused on landscaping and access requirements, as well as allowing for the proper building height and setback from the roadway. The least popular responses involved influencing building design, including materials, color, and façade regulations.

Which of the following land use regulations do you support along Market Street?



The final question of the survey asked respondents to indicate how they would pay for proposed improvements to Market Street. The most popular answers were development impact fees and transportation bonds, followed by higher gas taxes. These potential funding sources are discussed in greater detail in **Chapter 6 – Envisioning Success**. Most respondents indicated that higher sales and property taxes, as well as toll roads, would not be a favorable source of funding for the improvements.

If additional funding for transportation improvements is needed, would you support any of the following sources?





PUBLIC INFORMATION MEETINGS

Near the end of the study, the project team held two public information meetings, intended to provide the community with the opportunity to see the completed design plans and provide comments on particular improvements. Approximately 82 people attended the two events. The events were held on February 18th and 19th, 2009.

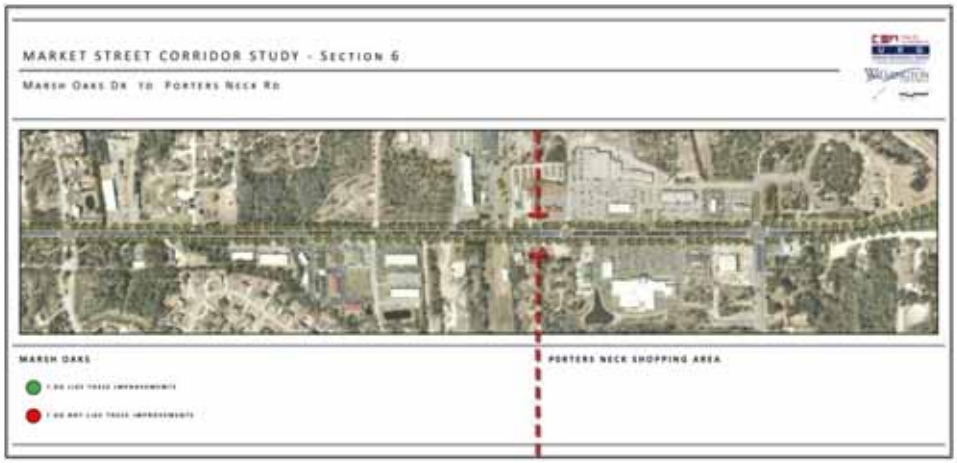
The proposed recommendations were separated into stations to create a transition from improvement to improvement. The following stations were used at the workshop:

- Regional Connectivity – Collector streets and their connections to Market Street and other regional roads
- Access Management Plan – Proposed median locations, including median breaks (signalized and U-turn); included proposed grade separation locations
- Roadway Design Concepts – Graphical representations of the roadway improvements, including medians, intersection improvements, sidewalks, crosswalks, leftover/U-turn locations, and proposed connections to new development locations



Images from February 18th and 19th Public Information Meetings

Example Roadway Design Concept Map





- Conceptual Site Circulation Plans – A more in-depth look at three proposed development locations (Independence Boulevard extension, N. and S. Kerr Avenue, and Military Cutoff extension) and how the roadway improvements and site access plans work together
- Bicycle and Pedestrian Network – Bicycle and pedestrian improvements intended to connect neighborhoods and destinations with Market Street by providing alternate routes for bicyclists to navigate the area without using the heavily traversed roadway
- Land Use Focus Areas – Catalyst sites along the corridor indicating new development patterns that could spur growth and further development



Example Land Use Focus Area Map

The proposed recommendations were presented for the public to view, as well as to provide direct feedback. Attendees were given a set of green and red dots to vote on various improvements throughout the corridor. The map to the right provides a sample of the votes tabulated at one of the workshops for the N. and S. Kerr Avenue intersection.



Display map with green and red voting dots from February Public Information Meetings

Public Survey #2

In addition to the direct voting allowed at the mapping stations, attendees also were asked to quantify their support of the particular improvements through a second public survey. The seven-question survey focused on specific improvements, both transportation and land use, along the Market Street corridor. In total, 60 surveys were submitted as part of the workshop process.



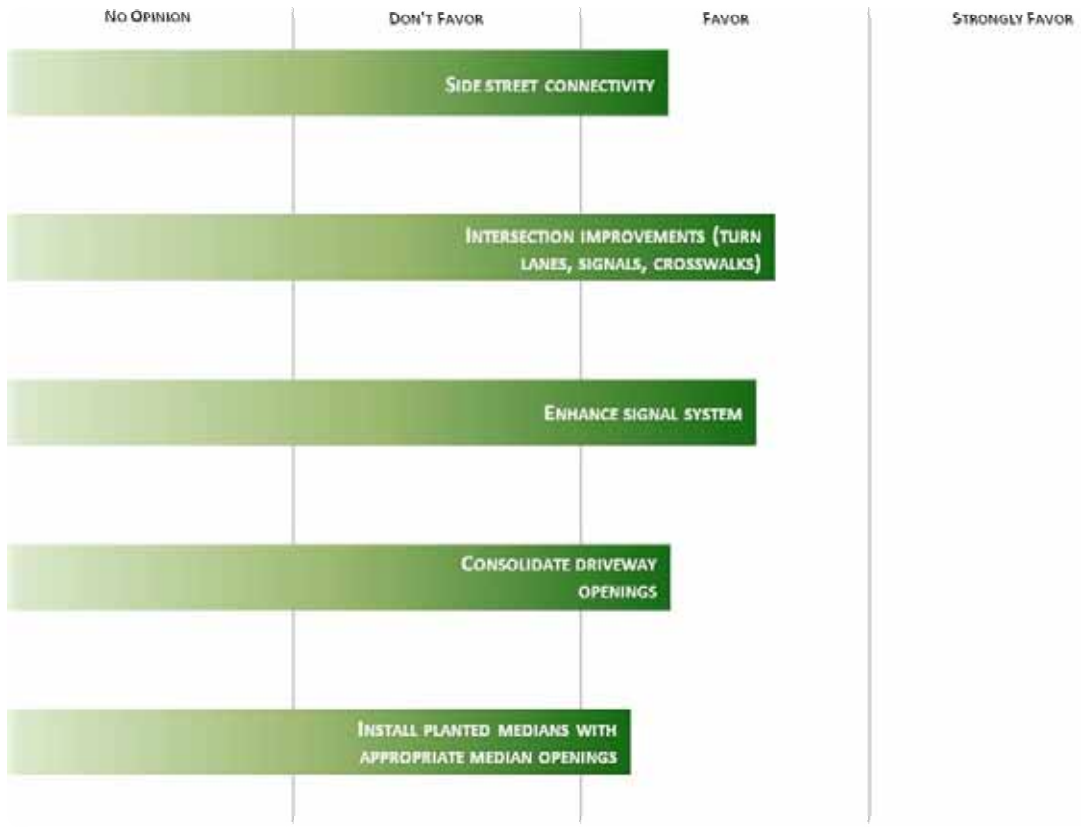


Surveys distributed at February 2009 Public Information Meetings



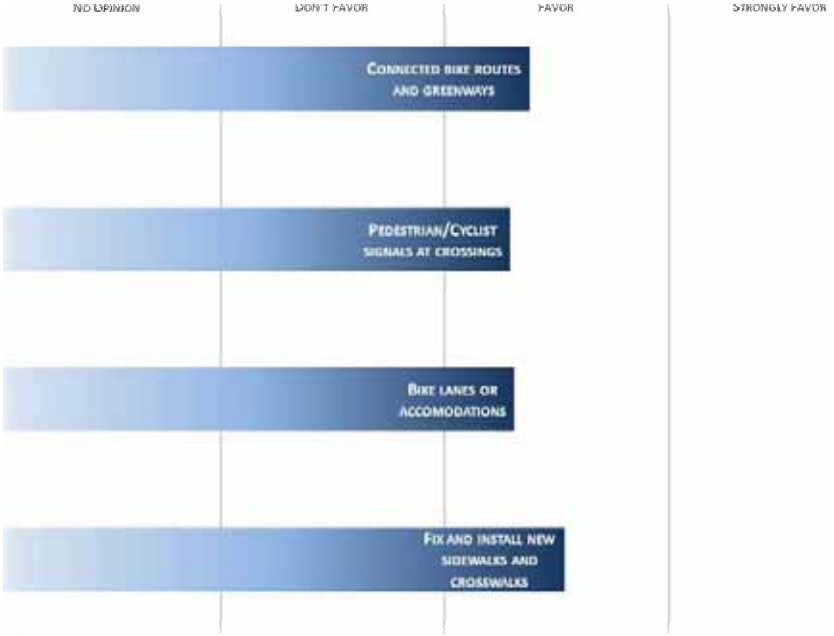
Like the previous survey, nearly half of all respondents were residents along the corridor, with the remaining portion made up of employees, business owners, and concerned citizens. The questions on the survey asked the attendees to answer whether they "favored" or "disliked" certain types of improvements along the corridor. The following charts provide a summary of those responses.

How do you feel about access management improvements along Market Street?

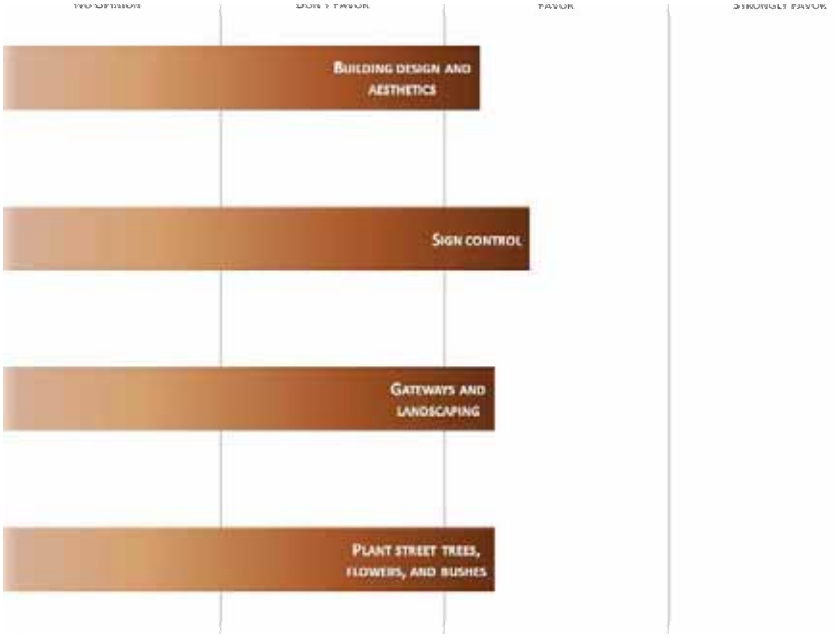




How do you feel about bicycle and pedestrian improvements along Market Street?



How do you feel about streetscape and land use improvements along Market Street?





The previous questions asked for opinions on generalized improvements throughout the corridor. The survey also asked attendees to rank certain intersection improvements throughout the corridor. The following project rankings are based on the survey responses and the opinion of the Wilmington community.

Project Ranking	Location	Description*
1	Military Cutoff Road	Grade separation and interchange
2	N. and S. Kerr Avenue	Quadrant road and restriction of left turns from N. and S. Kerr Ave.
3	Middle Sound Loop Road	Realign Lendire Rd. to form four-leg intersection
4	New Centre Drive/Walton Drive	Move leftover from Lennon Dr. to Walton Dr. to relieve New Centre
5	Porters Neck Road	Signalize Cypress Point Rd. and improve Porters Neck intersection
6	Bayshore Drive	Dual lefts from Bayshore Dr. to Market St.; pedestrian improvements
7	Independence Boulevard Extension	Grade separation and partial quadrant design
8	Marsh Oaks Road	Signalize intersection; pedestrian improvements
9	Eastwood Road/Old Eastwood Road	Leftover north at Old Eastwood Rd.; pedestrian improvements

**A more detailed description of each of these improvements is provided in Ch. 5 of this report*

The project rankings in the table above were based on a survey question that asked respondents to rate each of the specified projects from one to five, with one representing high importance and five representing least importance. While the rankings show an order of importance based on these results, it should be noted that no project scored lower than an average score. Conversely, no project scored higher than an average score of 1.7. The results of the survey show that each of the projects represent equal importance along the corridor, and results varied slightly based on the opinion of the survey respondent.



PREVIOUS PLANNING EFFORTS

Planning and design efforts for Market Street have been ongoing for numerous years. Problems were not created overnight, and solutions have taken just as long to develop. The City of Wilmington, New Hanover County, Wilmington MPO, and NCDOT have all taken part in projects and studies that have led to the decisions made in this process. This plan has used these previous planning efforts to develop a concise set of recommendations to mitigate congestion and safety problems along Market Street. The following transportation related studies were used to build the foundation for the ***Market Street Corridor Study***. A review of documents relevant to the land use component of this study is presented in **Chapter 4**.



WILMINGTON MPO 2030 LONG RANGE TRANSPORTATION PLAN

The 2030 Long Range Transportation Plan (LRTP) is a strategy to resolve existing and future transportation issues throughout the Wilmington area. The current version of the plan, completed in 2005, includes transportation improvements related to congestion, bicycle/pedestrian mobility, transit infrastructure, and freight mobility. One of the specific goals and objectives of the 2030 LRTP stated:

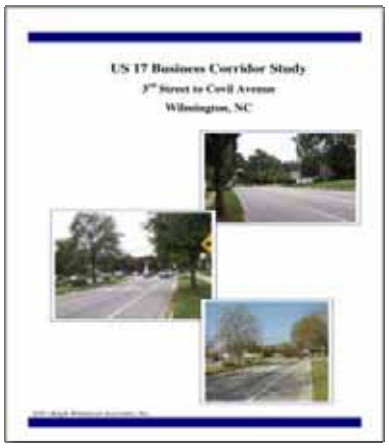
> *Access management strategies shall be employed where appropriate on major regional arterials and above to improve safety and facilitate through-traffic flow.*

There are no specific recommendations regarding Market Street; however, the following recommendations are specific to the surrounding network and are intended to provide congestion relief along Market Street:

- Military Cutoff extension – from Market Street to I-140
- Independence Boulevard extension – from existing terminus to Martin Luther King Jr. Parkway
- N. and S. Kerr Avenue widening – from two to four lanes (Randall Parkway to Martin Luther King Jr. Parkway)
- Gordon Road widening – from three lanes to four lanes (College Road to Market Street)



US 17 Business Corridor Plan (Wilmington MPO)



This study, completed in 2006, evaluated the section of Market Street from Covil Avenue to N. and S. 3rd Street in downtown Wilmington. The goal was to develop alternative cross sections that reduce congestion, promote aesthetics, introduce access management, and preserve the integrity of the corridor. The study developed three alternatives for the corridor, each intending to keep improvements within the existing right-of-way and providing a more balanced level of access and mobility. The preferred alternative reduces the number of travel lanes from four to two; introduces a planted median, bike lanes, and on-street parking the entire length of the study corridor; and restricts full access only to the major intersections. These concepts were carried through the roadway concept planning for this study.

Market Street Corridor Plan (City of Wilmington)

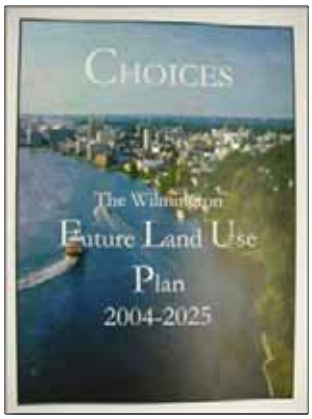


This plan is one of the first efforts to quantify the current problems along Market Street and provide holistic solutions to create a more attractive and drivable corridor. The plan, completed in 2004, combines transportation and land use planning and extensive community involvement to create a set of strategies for improving the corridor. These strategies include:

- Zoning changes along the corridor to create a more sustainable development pattern
- Creation of priority redevelopment areas around Mercer Avenue, N. and S. Kerr Avenue, and the area east of N. and S. College Road
- Creation and funding of an access management incentive program to retrofit existing developments
- Installation of a landscaped median between Colonial Drive and city limits
- Construction of sidewalks near and between major commercial centers
- Construction of bus pullouts at N. and S. Kerr Avenue and Lullwater Drive
- Regulatory changes to enhance development standards and enhance aesthetics
- Requirement of cross-connectivity between new developments



CHOICES: THE CITY OF WILMINGTON FUTURE LAND USE PLAN 2004-2025



The 2004 future land use plan was developed to ensure that the city experiences healthy growth and provides a vision for the community to work towards in the coming years. The horizon for the plan was 2025, and the study elements include environmental resources, historic resources, neighborhoods, public spaces, recreation, and transportation. The plan identified several categories of development trends within the planning area, including infill, redevelopment, and transition areas. Following is a brief summation of recommendations and strategies for each development type, as they relate to the Market Street corridor.

Infill Development

As of 2004, ten percent of the city's land was undeveloped. There are several large tracts of land that are nearly adjacent to the Market Street corridor that have the potential for new development, including the following locations:

Randall Parkway



Between Covil Avenue and South Kerr Avenue – the preferred development patterns in this area include Commerce Center (mixture of office and retail usage) and multi-family residential with a mixture of office space. This site has direct access to both Market Street and Randall Parkway.

The specific strategies outlined for this site include:

- Rezoning for office use along Randall Parkway and office/multi-family residential along South Kerr Avenue
- Interconnectivity between developments
- Construction of frontage roads or alley access along Randall Parkway and South Kerr Avenue
- Limit of three to five story height on new development
- Preservation of wetlands
- Encourage assemblage of land parcels

Martin Luther King Jr. Parkway



East of Creekwood subdivision and along New Centre Drive (north of Market Street) – the preferred development pattern in this area is moderate-density multi-family residential (12 or less units per acre). This site has access to Market Street via New Centre Drive.

The specific strategies outlined for this site include:

- Provide shared access and interconnectivity between surrounding developments
- Utilize riparian buffers and wetlands as open space amenities
- Utilize porous pavement to decrease impervious surface and reduce stormwater run-off
- Encourage assemblage of land parcels



There are also a handful of small vacant areas adjacent to Market Street with the potential for infill development. Smaller tract infill areas are defined as those with 40 acres or less of undeveloped land. Most remaining sites within the city are surrounded by established single-family neighborhoods, and are classified as "Small-Tract Established Residential" in the 2004 future land use plan. The plan recommends the following strategies for these sites:

- Do not support rezoning to more intense use unless clear evidence is provided that the rezoning will be more beneficial to the community character and stability
- Infill projects should not disrupt or substantially change the existing roadway system in and around stable single family neighborhoods

There are a few areas throughout the city that are surrounded by a more varied land use pattern, which are classified as "Varied Use Areas" in the plan. The plan recommends the following strategies for these sites:

- Encourage commercial uses that generate higher traffic volumes to locate at arterial nodes and multi-family or office uses between nodes to prevent strip commercial development
- Discourage commercial land uses in areas without direct access onto arterial roadways
- Provide shared access and interconnectivity between infill development and surrounding development
- Develop and utilize zoning districts that allow smaller neighborhood-scale businesses and that incorporate site building design regulations to ensure that infill development will retain aesthetic as well as functional compatibility with surrounding development

Redevelopment

As an evolving community, it is important for Wilmington to redevelop aging, underutilized properties. The 2004 future land use plan identified two types of redevelopment priorities. Tier 1 sites were defined as those commercial sites that had the greatest need for quality redevelopment. Market Street has five such locations, including near Covil Avenue, surrounding North and South Kerr Avenue, east of Eastwood Road, near Judges Road, and west of Station Road. Tier 2 areas are provided as a second level of redevelopment opportunity. These locations are not as high a priority because the current state of development is acceptable or viable. The Market Street corridor between Colonial Drive and Gordon Road was identified as a Tier 2 area. The plan provided specific redevelopment strategies, indicated in the box to the right.

Redevelopment Strategies

- Develop a process to expedite staff review of redevelopment projects in Tier 1 areas
- Develop database of available redevelopment properties
- Develop flexible landscape buffer regulations
- Provide density bonuses through increased height allowances
- Utilize shared parking to reduce parking requirements
- Create and fund redevelopment incentive program for Tier 1 areas
- Prioritize capital projects in redevelopment areas
- Prioritize Community Development Block Grant (CDBG) and city funding for most threatened redevelopment areas
- Require road connectivity
- Allow no net increase in driveway access and require removal of all driveways that do not meet current standards



Transitioning Residential Areas

The final development type is the transition of existing uses because of changing demographic trends and economic factors, outdated subdivision patterns, or the provision of improved infrastructure (water, sewer, or roadway). Within the 2004 future land use plan, transitions are characterized as either single-family residential to a higher density multi-family residential; or single-family residential to a commercial use. Along Market Street, the single-family residential area between Borden Avenue and Colonial Drive is classified as transitioning from single-family residential to office, neighborhood retail, or a higher density residential use. Specific strategies for this area include reuse of existing houses (maintaining architectural character and existing setbacks), locating parking in the rear of the business, and discouraging fast food or other high volume businesses. Some general strategies for a successful transition are provided in the box to the right.

Transition Strategies

- Maintain an ongoing effort to map rezoning to track trends and anticipate future areas for transition
- Develop database of available redevelopment properties
- Encourage less intensive commercial uses, small offices, and compatible uses adjacent to existing neighborhoods
- Adopt additional zoning districts to provide more options for appropriate intensity of development

General Transportation Recommendations

The following general objectives were included in the plan related to transportation:

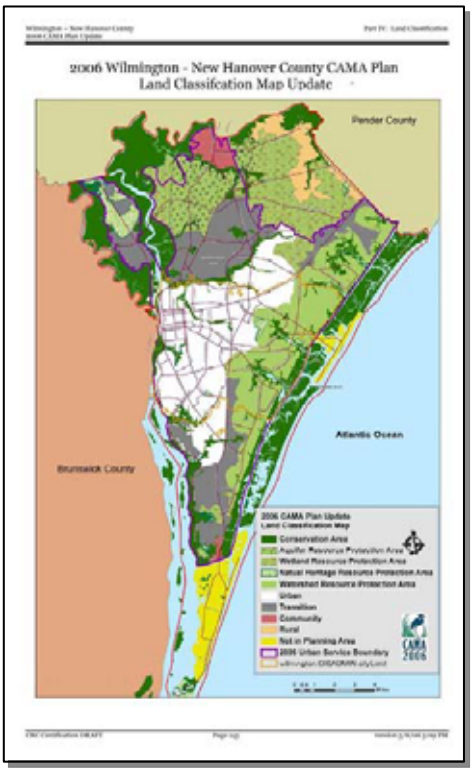
- Manage the existing transportation system effectively, reducing the need for new roadway construction. Strategies include providing interconnected street networks, maintaining and evaluating the signal system, evaluating and mitigating crash history, and collaborating with the Wilmington MPO and NCDOT.
- Employ access management strategies to reduce congestion and improve traffic safety. Strategies include limiting conflict points, removing turning vehicles from through traffic lanes, and providing incentive strategies and development regulations to promote access management.
- Promote and increase the use of alternate transportation modes. Strategies include providing new sidewalks, including pedestrian and bicycle amenities in all new capital projects when feasible, providing a network of bicycle facilities, encouraging the reintroduction of passenger rail service, providing sidewalk and bus shelters near all major activity centers, constructing a new transit transfer facility, and considering the establishment of a transit overlay zone near the new transfer center.



WILMINGTON-NEW HANOVER COUNTY 2006 CAMA PLAN UPDATE



The North Carolina Coastal Area Management Act (CAMA) requires the establishment of a cooperative program of coastal land management between local government and the state for preparing, adopting, and enforcing local land use plans. The plan provides guidance for decisions on new development proposals and redevelopment plans, development and zoning regulations, and new policies and programs. The 2006 CAMA Plan Update designates the portion of Market Street between Colonial Drive and Gordon Road as urban, while the portion between Gordon Road and the county line is designated as transition. Other specific policies and recommendations that could impact the future of Market Street include:



- Implementation of an integrated greenway network, including acquisition of land and easements along high priority corridors
- Promote compact development and infill that minimizes vehicle trips and vehicle miles traveled
- Encourage development patterns and neighborhood street designs that are conducive to pedestrian and bicycle use
- Encourage development located and designed to be convenient for access to public transit
- Promote street designs that support and enhance access between neighborhoods
- Designate undeveloped or underdeveloped areas (including areas identified in 2004 FLUP) as mixed use
- Provide incentives for redevelopment to high intensity mixed-use in areas that have been abandoned or that re underutilized
- Develop a schematic collector street plan as a guide in the development approval process
- Prepare and adopt driveway standards that promote better traffic flow in the county.
- Develop and enact land use policies that minimize driveway access to major thoroughfares
- Establish and implement access management plans, programs, and strategies
- Coordinate with NCDOT to enhance streetscape
- Enforce regulations to create less obtrusive commercial signage and billboards
- Promote undergrounding or relocation of utility lines and poles for aesthetic purposes
- Develop design standards, ordinances, and regulations to improve parking lot and landscaping in development/redevelopment projects



THE SOUTH SIDE SMALL-AREA PLAN

The purpose the South Side Small-Area Plan is to identify long-term goals aimed at improving the quality of life which, in turn, will develop the social capital of the area, prevent decline within the neighborhood, protect property values and foster a sense of place within the community. Strategies identified in the plan require that the relationships between the physical, socio-economic and political environments be addressed simultaneously to achieve key outcomes that incorporate the values and spirit of the community.

WALK WILMINGTON – A COMPREHENSIVE PEDESTRIAN PLAN



The Walk Wilmington Pedestrian Plan provides a series of policies, guidelines, recommendations, and design standards to help develop an integrated, safe, and efficient pedestrian network throughout the community. The plan also provides suggestions for expanding the overall pedestrian program, focusing on education, awareness, safety, and enforcement. Specific improvements recommended along Market Street include:

- Construction of sidewalks between New Centre Drive and Walton Road (short term), Gingerwood Drive and Gordon Road (medium term), between Gordon Road and Military Cutoff Road (long term)
- New hybrid pedestrian signal at South 29th Street
- Addition of pedestrian signals, crosswalks, median refuge, curb ramps, and push buttons to existing traffic signals at the following locations:
  - Short term: Covil Avenue, Barclay Hills Drive, Princess Place Drive, North and South Kerr Avenue, New Centre Drive, Green Meadows Drive, and Gordon Road
  - Medium term at Railroad Crossing, Lullwater Drive, and North and South College Road
  - Long term at Eastwood Road/Martin Luther King Jr. Parkway, Cardinal Drive, and Blair School Drive

WAVE SHORT RANGE TRANSIT PLAN (WILMINGTON MPO)

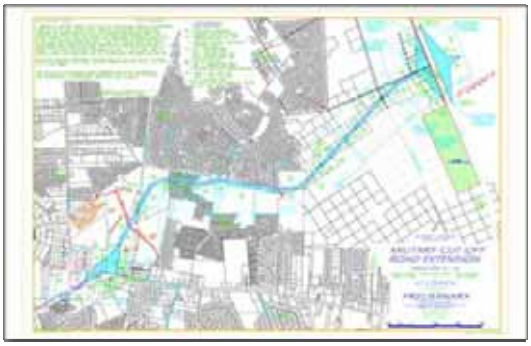


This report provides recommendations for the Cape Fear Public Transportation Authority. The report was completed in 2004, shortly after the merger of the Wilmington Transit Authority and the New Hanover County Transportation Services. The study was conducted to



increase transit presence in the area, provide greater service to community residents, and ensure adequate funding for the improvements. The recommendations of this plan include numerous routes that use Market Street, as well as the relocation of a primary transit center to a location near the Market Street and N. and S. Kerr Avenue intersection.

Military Cutoff Road Extension Feasibility Report (NCDOT)



This study, completed in 2004, examines the extension of Military Cutoff Road from its current terminus at Market Street to the Wilmington Bypass. The study evaluated several alternative alignments and provided recommendations based on traffic operations, project cost, and estimated impacts. Alternatives included at-grade and interchange configurations with Market Street. The preferred alternative includes a modified single point urban interchange with Market Street.

Independence Boulevard Extension Feasibility Report (NCDOT)



This study, completed in 2002, examines the extension of Independence Boulevard from Randall Parkway to Martin Luther King Jr. Parkway. The study evaluated several alternate alignments and provided recommendations based on traffic operations, project cost, and estimated impacts. Alternatives included at-grade with Market Street and grade separations with Princess Place Drive and Martin Luther King Jr. Parkway. The preferred alternative does not modify the Market Street laneage except to add an additional left turning lane in the westbound direction.

Middle Sound Loop Traffic Operations and Access Study

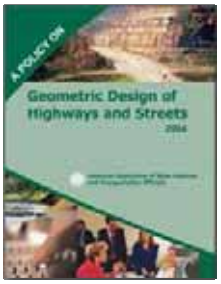
This study, completed in February 2008, examines the traffic and congestion issues related to proposed development along Middle Sound Loop Road adjacent to Market Street. The study evaluated three alternative access scenarios for development driveways along Market Street and provided recommendations based on traffic operations, project cost, and estimated impacts. The preferred alternative includes a realigning Lendire Road to align with Middle Sound Loop Road, construction of a new access road and signalized driveway 450 feet east of Wendover Court, laneage improvements to the intersection at Torchwood Boulevard and Bayshore Drive.



GOVERNING DOCUMENTS

Several national, regional, and local design guidelines, ordinances and regulatory standards were used in the development of the ***Market Street Corridor Study***. The following manuals, ordinances, and guides were instrumental in developing the overall plan.

AASHTO POLICY ON GEOMETRIC DESIGN OF STREETS AND HIGHWAYS



The "Green Book" is published by the American Association of State Highway and Transportation Officials, and provides guidance for the functional design of roads and highways. For this project, the manual was used for intersection layout and roadway conceptual design standards, as well as verification of spacing standards and general roadway geometric standards.

NCDOT ROADWAYDESIGN MANUAL



The North Carolina Department of Transportation publishes and maintains a design manual similar to the AASHTO Green Book. The NCDOT manual provides guidelines for roadway design criteria, intersection design, drainage, capacity, and much more. For this project, the manual was used for intersection layout and roadway conceptual design standards, as well as verification of spacing standards and general roadway geometric standards.

NCDOT ROADWAY STANDARD DRAWINGS



The North Carolina Department of Transportation publishes and maintains a set of roadway standard drawings that are intended to be guidelines for roadway design components , including earthwork, pavement, signing, pavement markings, lighting, and more. For this project, the manual was used for roadway conceptual design, signing, and pavement marking standards.

NCDOT POLICY ON STREET AND DRIVEWAY ACCESS TO NORTH CAROLINA HIGHWAYS



The Driveway Access Manual sets requirements for design, location, and construction of driveways along North Carolina Highways. The document balances the needs of both roadway users and property/business owners, by providing standards for access to and from the roadway system. For this



project, the manual was used to develop spacing and access standards for the Market Street corridor.

CITY OF WILMINGTON AND NEW HANOVER COUNTY ORDINANCES

NEW HANOVER COUNTY ZONING ORDINANCE

The county's Zoning Ordinance is the codification and enforcement mechanism to allow for development in alignment with their Comprehensive Plan. The Ordinance is "designed to lessen congestion throughout the county; to secure safety from fire, panic and other dangers; to promote health and the general welfare, to provide adequate light and air; to prevent the overcrowding of land; to avoid undue concentration of population; to facilitate the adequate provision of transportation, water, sewerage, schools, parks and other public requirements."

CITY OF WILMINGTON LAND DEVELOPMENT ORDINANCE

As in the county, the city's Land Development Ordinance is the city's primary tool to implement the strategies, concepts and policies of plans such as the Wilmington-New Hanover County CAMA Land Use Plan Update, the Comprehensive Plan, the Future Land Use Plan, corridor plans, special area plan and other planning documents as adopted by the city Council. The Ordinance is designed with a "reasonable consideration of the character of the city's various neighborhoods and their peculiar suitability for particular uses of land and have been made with a view to preserving the existing environment and maintaining or enhancing the quality of life while assuring the greatest possible use and enjoyment of land on individual properties, balanced against the necessary protection and enjoyment of land uses on adjacent properties, with the objective of promoting and protecting the public welfare through the regulation of land use and land development activities."

CITY OF WILMINGTON TECHNICAL STANDARDS MANUAL

The Technical Standards Manual details the minimum standards for materials, design and construction specifications for infrastructure within the jurisdiction of the City of Wilmington. This document is a compendium of various technical resources throughout the city, county and state that addresses water, sanitary sewer, stormwater management, landscaping, traffic engineering, the public transportation system and sanitation construction for all new improvements and enhancements to existing systems.



CONCLUSION

The ***Market Street Corridor Study*** planning process was intended to be transparent and open to the general public. From the stakeholder process to the public outreach meetings, the citizens of the city of Wilmington and New Hanover County were given the opportunity to provide input on the outcome of the study from the initial planning phase to the final recommendations. This open process has allowed the project team to develop a plan that is based on the wishes of the community and should have strong community support through the implementation process.

The planning process also was intended to be inclusive of previous planning efforts, building on strategies and recommendations developed along the corridor. The hope was to gather these individual ideas and form a holistic approach to improving congestion, safety, and land use planning decisions along the corridor. The following chapters introduce the assessment of the existing conditions and planning strategies along the corridor, evaluate the relationship between land use and transportation along Market Street, and then provide this study's recommendations and implementation strategies for improving the Market Street corridor.



Chapter 3 – Existing Conditions

Before proposing improvements to a roadway, it is important to understand how the facility functions today. A thorough review of existing conditions can provide a foundation of current successes and deficiencies, while also providing a catalogue of potential resources that could be impacted with improvement to the roadway. This chapter provides an overview of the existing Market Street corridor, including the surrounding environment, traffic and safety, committed improvements, and proposed development along the corridor. The analysis is based on field reviews, GIS data, NCDOT data, transportation modeling, and stakeholder interviews.

Environmental Constraints

As coastal communities, Wilmington and New Hanover County are faced with a higher degree of environmental constraint than similar inland communities. The presence of wetlands is much greater in the Wilmington and New Hanover County community, and the proximity to the ocean creates a greater environment for hydrological bodies and native species. As such, it is important to understand the surrounding environment and potential impacts that transportation improvements may create. **Figure 3.1** provides an illustrative summary of the environmental features in the surrounding area.

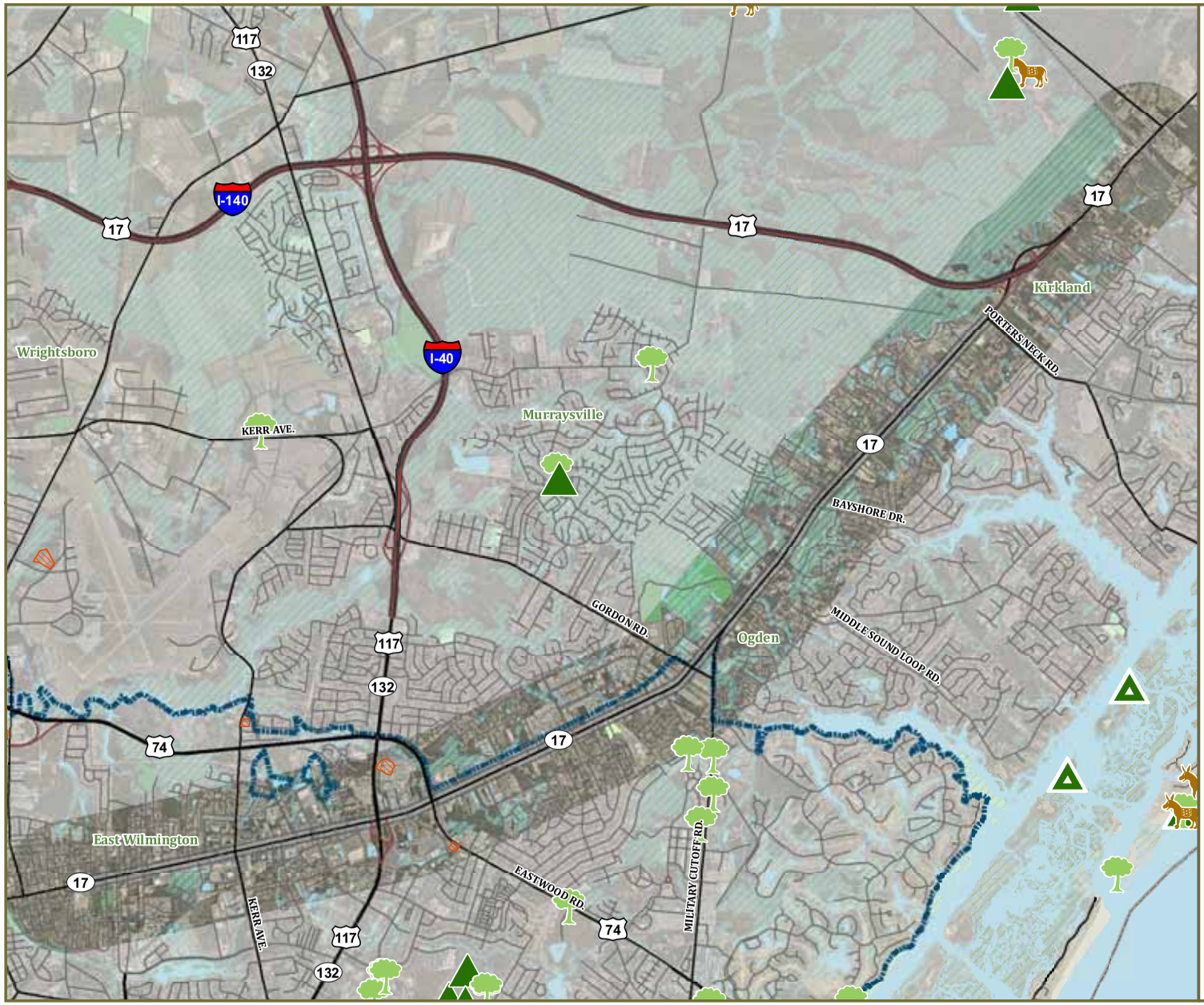




Environmental features interacting with the roadway

Visual observation of the environmental mapping shows that wetlands currently surround the corridor, especially in the eastern portion near Porters Neck Road and Pender County. Market Street currently crosses two wetlands between Middle Sound Loop Road and Bayshore Drive, as well as north of Porters Neck Road near the Wilmington Bypass interchange. These two locations contain a total of 187 acres of wetland, but the overall crossing area is much smaller. Within 1,000 feet of the corridor there are a handful of small bodies of water, mostly classified as ponds or smaller. There are approximately 7.06 acres of water within these bodies of water.

There are two hazardous waste disposal sites located near the corridor, including Shepard Chemical Works, Inc. (specializing in wood preservatives) off of Eastwood Road; and Corning Glass Works (specializing in fiber optics cable) off of North College Road and Market Street. The Corning site has direct driveway access onto Market Street, and may be impacted by potential improvements.



MARKET STREET CORRIDOR STUDY

Figure 3.1
Environmental Features

Legend

- Hazardous Waste Disposal Site*
- Natural Conservation Lands**
- City Parks
- Body of Water
- Wetlands
- City Limits
- County Boundary

Natural Heritage Element Occurences***

- Non-Vascular Plant
- Vascular Plant
- Vertabrate Animal
- Invertabrate Animal
- Specific Animal Habitat
- Natural Community

Roads

- Interstate
- Interchange
- US or State Highway
- Local Road
- Private Road

** NC-DEHNR - Solid Waste Management (Superfund Division)*
*** NCGIA*
**** NC-DEHR - Parks and Recreation (National Heritage Program)*

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CITY OF WILMINGTON NORTH CAROLINA

Kimley-Horn and Associates, Inc.



Ogden Park is a large county park located between Market Street and Gordon Road. The site has direct access to Market Street via Ogden Park Drive, and has various athletic fields and a park area. Blair Noble Park, near Blair School Road, is considered to be a natural conservation land. This area is directly adjacent to corridor, and currently houses athletic fields and a park area. Environmentally protected species are present within one mile of the corridor, including vertebrate animals and vascular plants. These locations are not considered close enough to the corridor to be affected by potential improvements.

How was it used?

The results of the environmental constraints analysis were used during the recommendations phase of this project to identify potential impacts to constraints and develop the collector street network

Regional Connectivity

The City of Wilmington and New Hanover County are served by numerous high-capacity roadways, such as Interstate 40, Interstate 140, and US Highways 17, 74, 76, 117, and 421. Interstate 40 runs north-south through the planning area, providing access into Wilmington from the western and central portions of North Carolina. Interstate 140 runs east-west and serves as a bypass around the City of Wilmington, connecting US 421 with I-40; the Wilmington Bypass then carries traffic to US 17 near the Pender County line. US Highways 74 and 76 run east-west from southwest North Carolina to Wrightsville Beach. US Highway 421 runs parallel to Interstate 40, and connects Wilmington to smaller communities in the center of the state. US Highway 17 follows the Wilmington Bypass north of the City of Wilmington.

The Market Street corridor serves as US 17 Business, one of the major east-west thoroughfares in New Hanover County. Before the completion of Martin Luther King Jr. Parkway, Market Street carried nearly all of the traffic generated between downtown and points east, such as Ogden, Kirkland, and coastal Pender County. The completion of the new parkway has relieved some of the stress on Market Street, but the street still carries much of the through east-west traffic in the City of Wilmington. The completion of the Wilmington Bypass also is expected to relieve some of the through traffic, but given the heavy commercial interests along the corridor, large traffic volumes are expected to remain consistent.



Regional roads connecting Wilmington



Existing Roadway Characteristics

The existing Market Street corridor is primarily a five-lane section from Colonial Drive to Porters Neck Road, with the exception of a recently constructed concrete monolithic median between New Centre Drive and Eastwood Road. The roadway is classified as an urban principal arterial, which is typically a high capacity, high mobility corridor. The urban principal arterial usually serves major metropolitan centers and has the ability to serve longer trip lengths.



Looking east from Colonial Drive

The overall width of the roadway (including through lanes, turn lanes, and existing concrete medians) varies between 40 feet and 78 feet. The widest portions of the roadway occur between N. and S. Kerr Avenue and N. and S. College Road. In these sections, right-of-way varies from 98 to 103 feet.



Looking east near College Road

These sections are wider than the others due to the presence of a "semi-continuous" right turn lane. The lane is present throughout parts of this section, alternating sides of the roadway. From Cinema Drive to N. and S. Kerr Avenue, the lane occurs in the eastbound direction of travel. From Princess Place Drive to Jacksonville Street, the lane occurs in the westbound direction of travel. In the longest section, from New Centre Drive to N. and S. College Road, the lane occurs continuously in the eastbound direction.



Looking west near Eastwood Road

East of Eastwood Road, the cross section of the roadway is more consistent with four through lanes and a two-way left turn lane. The pavement width varies from 56 to 65 feet, depending upon channelization and through lane width. Right-of-way varies from 96 to 100 feet. There are pocket right turn lanes, primarily at major intersections and large developments, but none are significant enough to consider as additional laneage.

There are 15 signalized intersections between Colonial Drive and Porters Neck Road. These locations include:

- Covil Avenue
- Barclay Hills Drive
- N. and S. Kerr Avenue
- Lullwater Drive
- New Centre Drive
- S. College Road Ramp
- N. College Road Ramp
- Martin Luther King Jr. Parkway/Eastwood Road
- Cardinal Drive
- Blair School Road
- Gordon Road
- Military Cutoff Road
- Middle Sound Loop Road
- Bayshore Drive/Torchwood Boulevard
- Porters Neck Road



Looking east near Porters Neck



Sidewalks are only present on portions of the corridor, primarily west of North and South College Road. Full sidewalks are present on both sides of the roadway between Colonial Drive and New Centre Drive. Between New Centre Drive and North and South College Road, sections of sidewalk are available in smaller non-uniform segments. There are small segments between North and South College Road and Eastwood Road as well. East of Eastwood Road there are no sidewalks present along the corridor. Currently no dedicated crosswalks exist along Market Street. Additionally, there are no pedestrian signal heads at signalized intersections. No bicycle facilities are present along the corridor.



Sidewalks near N. and S. College Road

Table 3.1 provides a breakdown of roadway characteristics at major intersections along the corridor.

Table 3.1 – Market Street Roadway Characteristics

Location	Laneage	Pavement Width	Available Right-of-way	Pedestrian Amenities	Speed Limit
Colonial Drive	4 lanes undivided	40 feet	70 feet	Sidewalks	35 mph
Covil Avenue	5 lanes (TWLTL)	60 feet	90 feet	Sidewalks	40 mph
N. and S. Kerr Avenue	6 lanes (TWLTL, continuous right turn lane)	78 feet	98 feet	Sidewalks	40 mph
New Centre Drive	6 lanes (TWLTL, semi-continuous right turn lane)	74 feet	100 feet	Sidewalks	40 mph
N. and S. College Road	6 lanes (TWLTL, semi-continuous right turn lane)	70 feet	103 feet	Sidewalks	40 mph
Eastwood Road	5 lanes (TWLTL)	65 feet	98 feet	None	40 mph
Cardinal Drive	5 lanes (TWLTL)	60 feet	96 feet	None	45 mph
Green Meadows Drive	5 lanes (TWLTL)	60 feet	100 feet	None	45 mph
Gordon Road	5 lanes (TWLTL)	65 feet	100 feet	None	45 mph
Middle Sound Loop Road	5 lanes (TWLTL)	56 feet	96 feet	None	45 mph
Bayshore Drive	5 lanes (TWLTL)	56 feet	100 feet	None	45 mph
Marsh Oaks Drive	5 lanes (TWLTL)	60 feet	100 feet	None	45 mph
Porters Neck Road	5 lanes (TWLTL)	60 feet	98 feet	None	45 mph

**TWLTL = Two Way Left Turn Lane*



The speed limit of the roadway varies from 35 miles per hour to 45 miles per hour. The urban sections, near Colonial Drive and transitioning into downtown are posted slower, at 35 miles per hour. As the corridor moves from urban to suburban, the speed transitions as well, rising from 35 miles per hour to 40 miles per hour near the YMCA, and from 40 miles per hour to 45 miles per hour at N. and S. College Road.



Existing congestion on Market Street

EXISTING TRAFFIC VOLUMES

A review of existing traffic volumes and historic average daily traffic volumes indicates that over the last ten years Market Street has experienced varied growth. **Figure 3.2** illustrates the 2007 Average Daily Traffic volumes along the Market Street corridor. The segment capacities and levels of service shown in this figure are developed based on typical NCDOT thoroughfare capacities **Table 3.2** provides a breakdown of the tabulated daily traffic volumes at various points along the corridor.

Table 3.2 – Average Daily Traffic Volumes Along Market Street (2005-2009)*

Location	2005	2006	2007	2008	2009	Growth Rate (2005–2009)**
Wayne Drive	40,685	36,431	34,843	32,093	31,681	-2.7%
Near Railroad Crossing	45,870	41,874	40,566	37,745	36,065	-2.6%
West of Kerr Avenue	56,652	60,893	48,250	48,503	42,889	-3.0%
East of Kerr Avenue	48,522	60,377	44,679	43,017	40,293	-2.0%
Gingerwood Drive	43,200	41,760	38,855	37,962	32,769	-3.0%
East of N. College Road	47,255	48,898	44,859	44,382	37,349	-2.5%
MLK Parkway/ Cardinal Drive	46,545	42,036	44,696	48,558	40,715	-1.4%
Judges Road	52,231	46,798	38,844	45,327	46,947	-1.2%
Gordon Road	41,423	39,185	41,829	37,909	35,252	-1.7%
Near Middle Sound Loop Road	63,471	50,482	52,613	50,501	56,854	-1.2%
Wendover Lane	48,586	44,441	46,163	44,244	42,282	-1.5%
Sweetwater Drive	43,249	39,146	41,255	39,491	39,782	-0.9%
North of Porters Neck Road		26,913	33,700	32,946	38,948	5.5%

**Average Daily Traffic Volumes obtained from Wilmington MPO (http://www.wmpo.org/)*

***The growth rates represented were calculated based on the 2009 and 2007 volumes. The actual growth at these locations may vary based on the analysis years.*

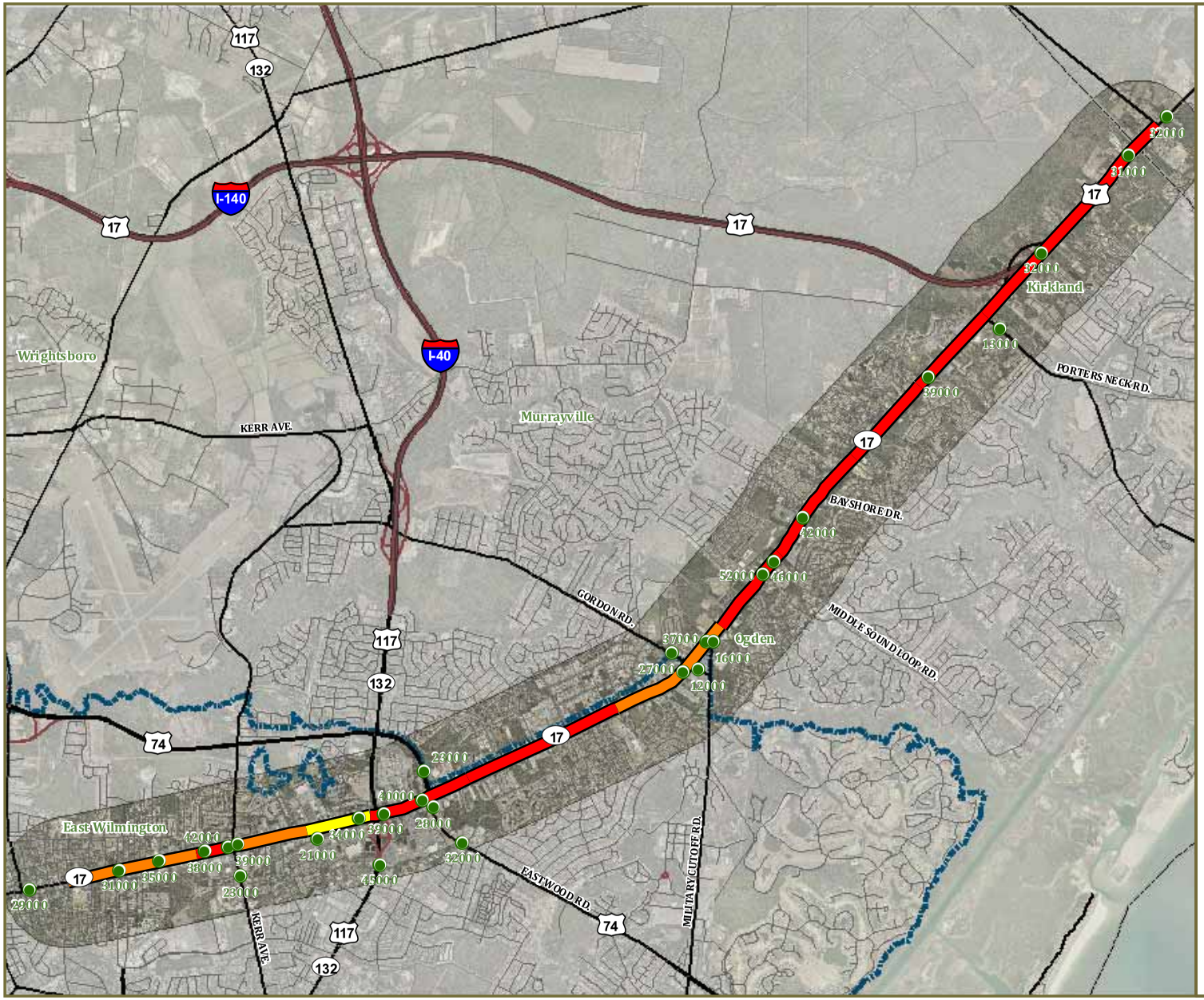


Figure 3.2
AADT's and Estimated Corridor LOS

Legend

- 2007 AADT
- City Limits
- County Boundary

Estimated Segmental LOS

- LOS C
- LOS D
- LOS E
- LOS F

Roads

- Interstate
- Interchange
- US or State Highway
- Local Road
- Private Road

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Overall, most of the corridor has experienced a reduction in traffic volumes between 2005 and 2009. This can largely be attributed to the completion of the Martin Luther King Jr. Parkway and Wilmington Bypass, which provides additional routing for through trips. The only location that experienced traffic growth over the analysis period was north of Porters Neck Road. This is not surprising, given that this part of the corridor was largely undeveloped ten years ago, and is now experiencing heavier growth due to the construction of large residential developments. Upon further review we can see the following trends in the traffic volume data.

- Near Wayne Drive – The volumes steadily decreased between 2005 and 2009. It can be assumed that this location is not experiencing any further growth and the traffic volumes should remain relatively consistent. The extension of Independence Boulevard may influence future patterns at this location, but through movements on Market Street should not increase drastically.
- Near the railroad crossing – The volumes steadily decreased between 2005 and 2009. It can be assumed that this location is not experiencing any further growth and the traffic volumes should remain relatively consistent. With the completion of the N. and S. Kerr Avenue improvements and the Independence Boulevard extension, these volumes may reduce further, as drivers look for alternate routes.
- Near N. and S. Kerr Avenue – The volumes at this intersection rose drastically between 2005 and 2006, but then declined sharply over the remaining years. The completion of the N. and S. Kerr Avenue improvements, coupled with potential redevelopment of the area may lead to increased traffic volumes in the future.
- Gingerwood Drive – – The volumes steadily decreased between 2005 and 2009. Given the density of development surrounding this intersection, significant future increases in traffic volumes are not likely.
- Between N. and S. College Road and Eastwood Road – The volumes in this segment rose slightly between 2005 and 2006, but then declined sharply over the remaining years. Given the nature of the corridor surrounding the intersections (fully built-out), and the alternative routes into downtown and to the northern portions of the Market Street corridor, it is not expected that these volumes will rise drastically.

How was it used?

Existing traffic volumes were used to establish baseline levels of service along the corridor, develop roadway recommendations, and formulate an action plan for implementation



Traffic just east of Colonial Drive



Cul-de-sac at Princess Place Drive



Traffic near College Road interchange



- Between Martin Luther King Jr. Parkway and Cardinal Drive – The volumes in this segment remained relatively flat during the analysis period, with fluctuations of a few thousand cars between the years. The area is already moderately developed and is not expected to see large increases in traffic volumes in the coming years.

- Near Judges Road – The volumes at this location varied greatly during the analysis period. Between 2005 and 2007 (due to the widening of Military Cutoff Road), volumes dropped steadily and then rose sharply over the final two years. This can be attributed to the increased development of Market Street in the vicinity.

- Near Gordon Road – The volumes at this location remained pretty consistent over the analysis period. Traffic volumes may grow at this intersection, especially after the completion of the Military Cutoff Road extension and continued development in the area.

- Near Middle Sound Loop Road – The volumes at this location varied during the analysis period. This can be attributed to the continued growth along Market Street in this time period, including increased residential development along the corridor as well as in the northern portions of the county.

- Near Wendover Lane and Sweetwater Drive – The volumes at these locations remained relatively consistent during the analysis period. Future growth in the area may increase traffic volumes, especially in the absence of alternative connections (i.e. collector streets).

- North of Porters Neck Road – The volumes at this location increased dramatically over the analysis period. This can be attributed to the continued population growth in this portion of the county, as well as to the completion of the Wilmington Bypass that connects this portion of the county directly to Interstate 40.

Traffic volumes alone should not be used to determine congestion levels because this measurement does not take into account the varying roadway capacities based on a road's classification. A better measurement for this comparison is volume-to-capacity ratio (V/C). V/C ratios are calculated by dividing the traffic volume of a roadway segment by the theoretical capacity of the roadway.



Traffic near Eastwood Road



Military Cutoff Road intersection



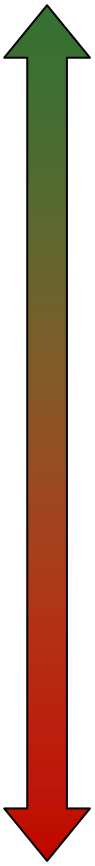
Traffic near Porters Neck Road

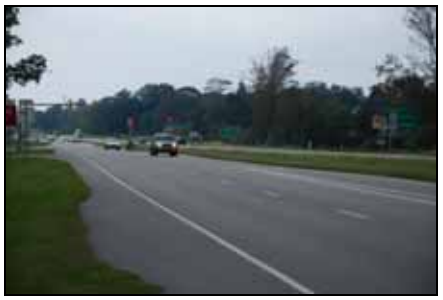


Transitioning to super-street north of Porters Neck



V/C ratios can be correlated to roadway Levels of Service (LOS), which place roadway segments into six letter grade levels of the quality of service to a typical traveler on the facility. An "A" describes the highest level (least congestion) and level "F" describes the lowest level (most congestion). Levels of service can be grouped into the following categories.









- **LOS A or B –** Well below capacity (V/C = less than 0.5) – Roadways operating with a V/C ratio less than 0.60 operate at optimal efficiency with no congestion during peak travel periods. This level of service usually occurs on rural or local streets.
- **LOS C** – Approaching capacity (V/C = 0.50 to 0.65) – As the V/C nears 0.8, the roadway becomes more congested. A roadway approaching capacity may operate effectively during non-peak hours, but may be congested during morning and evening peak travel periods.
- **LOS D** – *At Capacity* (V/C = 0.65 to 0.8) – Roadways operating at capacity are somewhat congested during non-peak periods, with congestion building during peak periods. A change in capacity due to incidents impacts the travel flow on corridors operating within this V/C range. LOS D is the MPO target service level.
- **LOS E** – *Slightly Over Capacity* (V/C = 0.80 to 1.0) – Roadways operating with V/C ratios between 1.0 and 1.2 experience heavy congestion during peak periods and moderate congestion during non-peak periods. Changes in capacity can have major impacts on corridors and may create gridlock conditions.
- **LOS F** – *Well Over Capacity* (V/C = greater than 1.0) – Roadways in this category represent the most congested corridors in the study area. These roadways are congested during non-peak hours and most likely operate in stop-and-go gridlock conditions during the morning and evening peak travel periods.

Using the 2009 Traffic Volumes recorded by the Wilmington MPO, we can estimate an overall Level of Service for the various sections along the corridor. **Table 3.3** provides a summary of the existing V/C ratios and the Levels of Service.



Table 3.3 – 2009 Estimated Levels of Service

Location	ADT	Capacity	V/C	Level of Service
Wayne Dr.	31,681	36,500	0.87	**E**
Near Railroad Crossing	36,065	36,500	0.99	**E**
West of Kerr Avenue	42,889	36,500	1.18	**F**
East of Kerr Avenue	40,293	45,000	0.90	**E**
Gingerwood Drive	32,769	45,000	0.73	**D**
N./ S. College Rd and Eastwood Rd	37,349	36,500	1.02	**F**
MLK Parkway and Cardinal Drive	40,715	37,500	1.09	**F**
Judges Road	46,947	37,500	1.25	**F**
Gordon Road	35,252	36,500	0.97	**E**
Middle Sound Loop Road	56,854	36,500	1.56	**F**
Wendover Lane	42,282	36,500	1.16	**F**
Sweetwater Drive	39,782	36,500	1.09	**F**
North of Porters Neck Road	38,948	36,500	1.07	**F**

Based on 2009 segment ADT's, the entire portion of Market Street between Colonial Drive and Porters Neck Road operates at Level of Service D or higher. The eastern portions operate at LOS E or higher, indicating that growth in that area has created congestion that needs to be addressed before additional growth magnifies the problem.

TRAFFIC SAFETY



A thorough examination of crash history and traffic patterns usually can predict key locations where an improvement in traffic safety will benefit motorists and the community as a whole. Traffic safety is one of the driving forces behind public frustration along the Market Street corridor. This section examines a three-year crash history along the Market Street corridor, including an identification of priority crash locations that were used to develop safety related improvements (outlined in **Chapter 4**).



In a three-year span (July 2005 through June 2008) there were 1,752 crashes along Market Street between Colonial Drive and Porters Neck Road. These crashes included six fatal crashes and 660 injury crashes[1]. The overall crash rate for this portion of the corridor is 483.39 crashes per 100 million vehicle miles traveled. The statewide average crash rate for a comparable

[1]Based on crash data provided by NCDOT (July 2005 through June 2008)



route is 375.75 crashes per 100 million vehicle miles traveled. Based on this statistic, Market Street has a thirty percent higher occurrence of crashes than comparable corridors. **Table 3.4** provides a breakdown of the most prevalent crash types along the corridor.

Table 3.4 – Highest Crash Types

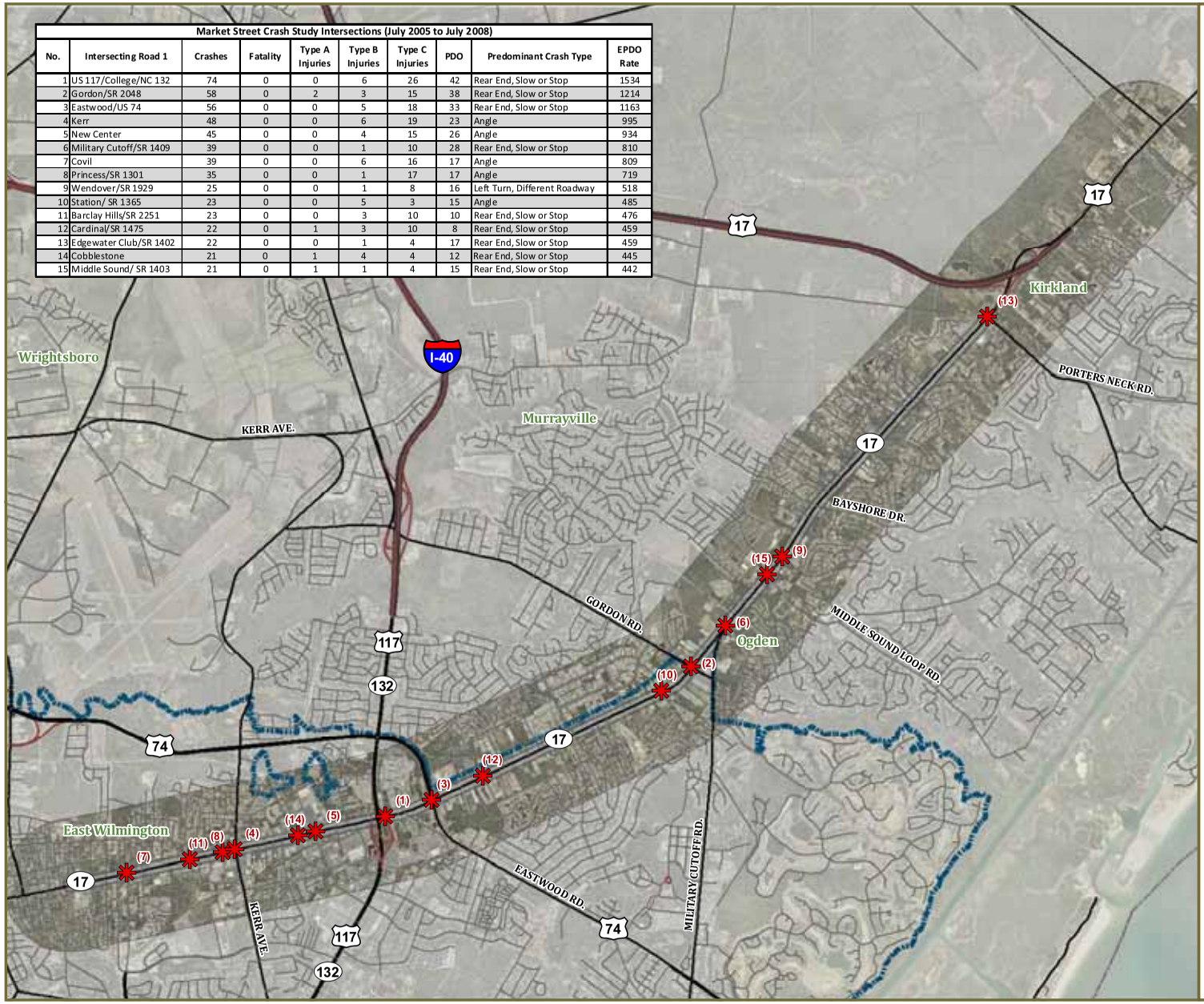
Type	Crashes
Rear end	766
Angle	331
Left turn	302
Sideswipe	135
Right turn	52

The most frequent crash type along Market Street is the rear end collision, which occurred 766 times over the analysis period. These crashes account for 43.7 percent of the total crashes along the corridor. Rear end crashes are typically attributed to driver inattention and stop & go driving conditions. The volumes of traffic on Market Street, combined with the traffic signals, vehicles in the two way left turn lane, and numerous driveway openings, creates an atmosphere that is highly conducive to rear end collisions along the corridor.

The second most frequent type of collision is the angle collision, with 331 crashes occurring during the analysis period. These crashes account for 18.9 percent of the total crashes along the corridor. The third most frequent collision type, left turn crashes (302 crashes, 17.2 percent of total), is very similar in nature to the angle collision. In both crash types, two or more vehicles (usually from opposite directions) collide when one vehicle moves across the path of the other vehicles. The fourth most common crash type was the sideswipe collision, which is often amplified with the presence of a continuous two way left turn lane along the corridor.

This is common along roadways with two-way left turn lanes, as there are no restrictions to vehicular turning movements, which can create unforeseen movements that catch opposing drivers by surprise. When you consider these two crash types account for over 600 total collisions, it is clear something needs to be done to reduce the number of turning movements and conflict points along the corridor. A further discussion of crash reductions based on the proposed recommendations is presented in **Chapter 4**.

The following sections provide a breakdown of traffic safety at key intersections along the corridor. This includes crash frequency and severity statistics, top crash type, and the intersections equivalent property damage only (EPDO) rate—a measure of the total crash costs at a location, weighting fatal and injury crashes higher than property damage only crashes. **Figure 3.3** shows the locations of these intersections along the Market Street corridor.



Market Street Crash Study Intersections (July 2005 to July 2008)

No.	Intersecting Road 1	Crashes	Fatality	Type A Injuries	Type B Injuries	Type C Injuries	PDO	Predominant Crash Type	EPDO Rate
1	US 117/College/NC 132	74	0	0	6	26	42	Rear End, Slow or Stop	1534
2	Gordon/SR 2048	58	0	2	3	15	38	Rear End, Slow or Stop	1214
3	Eastwood/US 74	56	0	0	5	18	33	Rear End, Slow or Stop	1163
4	Kerr	48	0	0	6	19	23	Angle	995
5	New Center	45	0	0	4	15	26	Angle	934
6	Military Cutoff/SR 1409	39	0	0	1	10	28	Rear End, Slow or Stop	810
7	Covil	39	0	0	6	16	17	Angle	809
8	Princess/SR 1301	35	0	0	1	17	17	Angle	719
9	Wendover/SR 1929	25	0	0	1	8	16	Left Turn, Different Roadway	518
10	Station/ SR 1365	23	0	0	5	3	15	Angle	485
11	Barclay Hills/SR 2251	23	0	0	3	10	10	Rear End, Slow or Stop	476
12	Cardinal/SR 1475	22	0	1	3	10	8	Rear End, Slow or Stop	459
13	Edgewater Club/SR 1402	22	0	0	1	4	17	Rear End, Slow or Stop	459
14	Cobblestone	21	0	1	4	4	12	Rear End, Slow or Stop	445
15	Middle Sound/ SR 1403	21	0	1	1	4	15	Rear End, Slow or Stop	442

MARKET STREET CORRIDOR STUDY

Figure 3.3
Crash Analysis

Legend

- Hazardous Intersections (Rank)
- City Limits
- County Boundary

Roads

- Interstate
- Interchange
- US or State Highway
- Local Road
- Private Road

** NCDOT Crash Data (July 2005-June2008)*

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Covil Avenue

There were 39 total crashes at the intersection of Covil Avenue/Montgomery Avenue and Market Street. Of these 39 crashes, 22 ended with some type of injury. There were no fatal collisions. The most common crash type was an angle or left-turning collision of vehicles traveling on opposing roadways. The EPDO rate at this location was 809 crashes, which ranks as the seventh highest location along the corridor.



Covil Avenue at Market Street

Barclay Hills Drive

There were 23 total crashes at the intersection of Barclay Hills Drive and Market Street. Of these 23 crashes, 13 ended with some type of injury. There were no fatal collisions. The most common crash type was a rear end collision, primarily of vehicles traveling eastbound. The EPDO rate at this location was 476 crashes, which ranks as the eleventh highest location along the corridor.



Barclay Hills Drive at Market Street

Princess Place Drive

There were 35 total crashes at the intersection of Princess Place Drive and Market Street. Of these 35 crashes, 18 ended with some type of injury. There were no fatal collisions. The most common crash type was an angle or left-turning collision of vehicles traveling on opposing roadways. The intersection is no longer full movement, which may reduce some of the angled and turning movement crashes. The EPDO rate at this location was 719 crashes, which ranks as the eighth highest location along the corridor.



Princess Place Drive at Market Street

N. and S. Kerr Avenue

There were 48 total crashes at the intersection of N. and S. Kerr Avenue and Market Street. Of these 48 crashes, 24 ended with some type of injury. There were no fatal collisions. The most common crash type was an angle or left-turning collision of vehicles traveling on opposing roadways. The EPDO rate at this location was 995 crashes, which ranks as the fourth highest location along the corridor.



N. and S. Kerr Avenue at Market Street



New Centre Drive

There were 45 total crashes at the intersection of New Centre Drive and Market Street. Of these 45 crashes, 19 ended with some type of injury. There were no fatal collisions. The most common crash type was an angle or left-turning collision of vehicles traveling on opposing roadways. The EPDO rate at this location was 934 crashes, which ranks as the fifth highest location along the corridor.



New Centre Drive at Market Street

N. and S. College Road Interchange

There were 74 total crashes at the N. and S. College Road interchange at Market Street. Of these 74 crashes, 32 ended with some type of injury. There were no fatal collisions. The most common crash type was a rear end collision, primarily of vehicles traveling eastbound. The EPDO rate at this location was 1534 crashes, which ranks as the highest location along the corridor.



N. and S. College Road Interchange with Market Street

Martin Luther King Jr. Parkway / Eastwood Road

There were 56 total crashes at the intersection of Martin Luther King Jr. Parkway/Eastwood Road and Market Street. Of these 56 crashes, 23 ended with some type of injury. There were no fatal collisions. The most common crash type was a rear end collision, primarily of vehicles traveling westbound. The EPDO rate at this location was 1163 crashes, which ranks as the third highest location along the corridor.



Martin Luther King Jr. Parkway at Market Street

Cardinal Drive

There were 22 total crashes at the intersection of Cardinal Drive and Market Street. Of these 22 crashes, 14 ended with some type of injury. There were no fatal collisions. The most common crash type was a rear end collision, primarily of vehicles traveling westbound. The EPDO rate at this location was 459 crashes, which ranks as the twelfth highest location along the corridor.



Cardinal Drive at Market Street



Station Road

There were 23 total crashes at the intersection of Station Road and Market Street. Of these 23 crashes, 8 ended with some type of injury. There were no fatal collisions. The most common crash type was an angle or left-turning collision of vehicles traveling on opposing roadways. The EPDO rate at this location was 485 crashes, which ranks as the tenth highest location along the corridor.



Station Road at Market Street

Gordon Road

There were 58 total crashes at the intersection of Gordon Road and Market Street. Of these 58 crashes, 20 ended with some type of injury. There were no fatal collisions. The most common crash type was a rear end collision, primarily of vehicles traveling southbound. The EPDO rate at this location was 1214 crashes, which ranks as the second highest location along the corridor.



Gordon Road at Market Street

Military Cutoff Road

There were 39 total crashes at the intersection of Military Cutoff Road and Market Street. Of these 39 crashes, 11 ended with some type of injury. There were no fatal collisions. The most common crash type was a rear end collision, primarily of vehicles traveling northbound. The EPDO rate at this location was 810 crashes, which ranks as the sixth highest location along the corridor.



Military Cutoff Road at Market Street

Middle Sound Loop Road

There were 21 total crashes at the intersection of Middle Sound Loop Road and Market Street. Of these 21 crashes, 6 ended with some type of injury. There were no fatal collisions. The most common crash type was a rear end collision. The EPDO rate at this location was 442 crashes, which ranks as the fifteenth highest location along the corridor.



Middle Sound Loop Road at Market Street



Wendover Lane

There were 25 total crashes at the intersection of Wendover Lane and Market Street. Of these 25 crashes, 9 ended with some type of injury. There were no fatal collisions. The most common crash type was an angle or left-turning collision of vehicles traveling on opposing roadways. The EPDO rate at this location was 518 crashes, which ranks as the ninth highest location along the corridor.



Wendover Lane at Market Street

Porters Neck Road

There were 22 total crashes at the intersection of Porters Neck Road and Market Street. Of these 22 crashes, 5 ended with some type of injury. There were no fatal collisions. The most common crash type was a rear end collision. The EPDO rate at this location was 459 crashes, which ranks as the twelfth highest location along the corridor.



Porters Neck Road at Market Street

Bicycle and Pedestrian Crashes

Given the increased emphasis on alternative modes of travel, it is important to evaluate and understand the safety of cyclists and pedestrians. Market Street currently does not have any dedicated pedestrian signal heads or crosswalks at signalized intersections. This creates a dangerous environment for walking or cycling along the corridor.

During the three-year analysis period, there were 11 crashes involving a cyclist between Colonial Drive and Porters Neck Road. All but one of these crashes involved some form of injury, but there were no fatalities. All 11 crashes occurred west of Military Cutoff Road, and 8 of the 11 crashes occurred during midblock crossing attempts.



Cyclist crossing midblock on Market Street

In the same analysis period, there were 14 crashes involving a pedestrian between Colonial Drive and Porters Neck Road. Eleven of the crashes involved an injury, and there were two fatalities, one just west of Cinema Drive and one just east of Lennon Drive. All 14 crashes occurred west of N. and S. College Road, and 12 of the 14 crashes occurred during midblock crossing attempts. Midblock crossings along Market Street are more appealing to pedestrians because it reduces the travel distance between intersections and removes conflicts from turning vehicles at intersections. However, unmarked midblock crossings are less safe because vehicles are not looking for pedestrians in those locations.

Based on the crash data analyzed, the following overarching trends were identified:

- **25% of vehicular crashes** occurred at midblock sections in the two-way left turn lane
- **80% of pedestrian crashes** occurred at the midblock due to inadequate crossing options



PLANNED AND COMMITTED IMPROVEMENTS

Currently, there are numerous projects aiming to improve mobility, congestion, and safety along Market Street and the surrounding transportation network. These range from signal system upgrades and pedestrian improvements intended to improve traffic flow, to major new roadways and connections intended to reroute heavy volumes from Market Street onto alternative corridors. The following sections provide a brief summary of these projects, their anticipated construction dates, and the estimated costs for implementation. **Figure 3.4** shows the locations of the committed improvements in relation to Market Street.

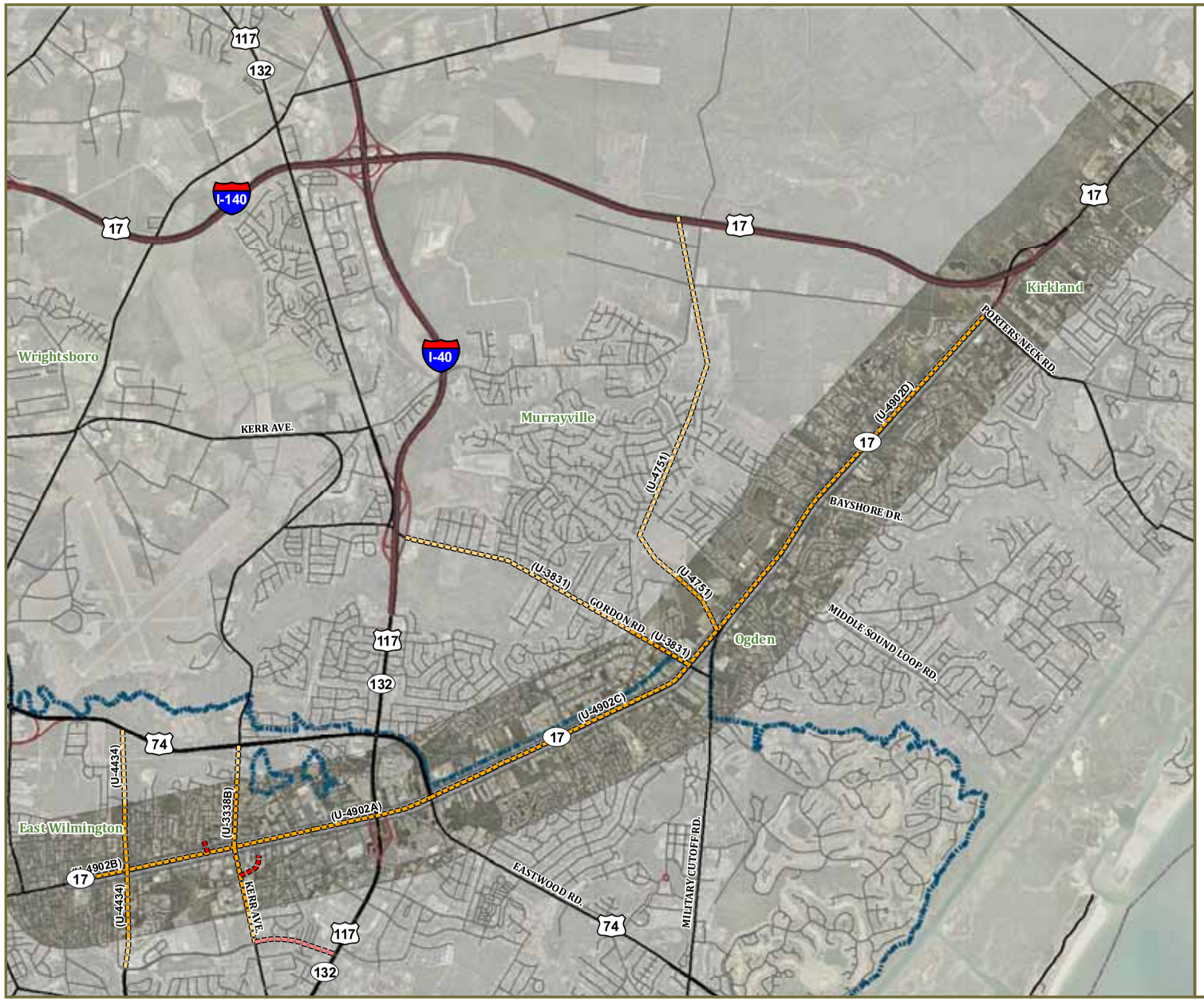
CITY OF WILMINGTON AND WMPO COMMITTED PROJECTS

The City of Wilmington, in conjunction with the WMPO, develops a list of infrastructure projects for a five-year planning horizon. These projects are generally defined as having a greater than five-year life span and an estimated cost greater than $50,000. The Capital Improvement Program (CIP) specifies the timing, location, character, and funding of capital projects. The following projects are found in the 2009–2013 City of Wilmington CIP.

- **Cinema Drive Extension** – The extension of Cinema Drive from Market Street to Princess Place Drive, providing an alternative to South Kerr Avenue and Market Street. This project is a result of the ***Market Street Corridor Study*** and will work in conjunction with access improvements at Market Street and Kerr Avenue to provide congestion relief at the intersection. The proposed project includes pedestrian and bicycle accommodations. The Cinema Drive Extension project is identified in the City of Wilmington FY 2010-11 CIP for funding in 2014-15. Estimated project funding is $600,000.
- **Kinston Avenue Extension** – The extension of Kinston Avenue from Jacksonville Avenue to South Kerr Avenue at Cinema Drive. This link could provide an alternate route to Market Street for vehicles traveling from Kerr Avenue. Ultimately, this link could become part of the quadrant design recommended for the Kerr Avenue and Market Street intersection as recommended by this study. The proposed project includes pedestrian and bicycle accommodations. *As of the Final Submittal of the **Market Street Corridor Study**, this project has been deferred from the CIP with no indication when it might be reinstated.*



Kerr Avenue Quadrant Design
(Cinema and Kinston extensions circled)



MARKET STREET CORRIDOR STUDY

Figure 3.4
Planned & Committed Improvements

Legend

WMPO Improvements
- Within Study Area
- Outside Study Area

NCDOT Improvements
- Within Study Area
- Outside Study Area
- City Limits
- County Boundary

Roads
- Interstate
- Interchange
- US or State Highway
- Local Road
- Private Road

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NCDOT Committed Projects

Similar to the CIP process at the municipal level, the North Carolina Department of Transportation publishes a Statewide Transportation Improvement Program (STIP) every other year for a six-year planning horizon. This document identifies the funding and scheduling of transportation projects and programs. The following projects are found on the 2009-2015 NCDOT STIP:

- **Market Street (U-4902)** – This project proposes to construct a median, creating a four lane divided facility, between Colonial Drive and Porters Neck Road. The project is split into phases; the first phase is already under construction. There are four phases to the improvement:

    A. Phase 1 (U-4902A) – New Centre Drive to Martin Luther King Jr. Parkway – completed

    B. Phase 2 (U-4902B) – Colonial Drive to New Centre – Construction scheduled for fiscal year 2019, NCDOT estimated project cost is $2,600,000

    C. Phase 3 (U-4902C) – Martin Luther King Jr. Parkway to Military Cutoff Road – Construction scheduled for fiscal year 2012, NCDOT estimated project cost is $2,600,000

    D. Phase 4 (U-4902D) – Military Cutoff Road to Porters Neck Road – Construction scheduled for fiscal year 2017, NCDOT estimated project cost is $4,800,000

- **Kerr Avenue Widening, Phase 1 (U-3338B)** – This project proposes to widen Kerr Avenue from its current three lane configuration to four lanes median divided, between Martin Luther King Jr. Parkway and Randall Parkway. The widened roadway will include bicycle lanes, a concrete median, and sidewalks. The pedestrian and cycling amenities are proposed to be funded by the City of Wilmington (estimated cost is $1,139,000). Right-of-way acquisition is scheduled for fiscal year 2011 and construction for this project is currently scheduled for fiscal year 2013. The estimated project cost is $74,982, 000.



Kerr Avenue preliminary design (by NCDOT)



Chapter 4 – General Development

The General Development Chapter is intended to describe the future of the Market Street Corridor. Today, Market Street is a lifeline for highway-oriented business and through-travel. The distance between complementary land uses and a lack of overall street connectivity leads to serious challenges for the community — abandoned or underutilized buildings; poor accommodations for pedestrians, bicyclists, and transit riders; increased vehicle miles traveled and subsequently, greater energy consumption and increased air pollution; strained existing infrastructure resulting in heightened infrastructure and public service costs; and decreased resource lands critical to coastal communities. Recommendations in this chapter represent the components necessary to implement the community's vision for sustainable development and sense of place within the study area.

The General Development Plan of the Market Street Corridor Study focuses on the inherent relationship between land use (demand), urban form (design), and transportation (supply) and advocates for a long-term view on development — defined by efficient land use patterns, distinctive architecture, enhanced multi-modal transportation opportunities and high quality of life — for attracting new residents, businesses, and visitors to the corridor. It will be critical, however, to make certain any land use and transportation decisions made in the short- and mid-term are compatible with the long-term community vision for the corridor. Patience will be needed for some recommendations in this chapter, as it may be 15 or 20 years before they are realized. It is only when sufficient local, regional and state support comes together with private investment and a sense of urgency that infill development and redevelopment of properties along the corridor will follow.

The discussion on general development in the Market Street Corridor follows five general headings: study area definition, building a case for urgency, vision for the corridor, community inventory and assessment, and a general framework plan.

Study Area

The focus of the Market Street Corridor Study is concentrated on the portion of Market Street between Colonial Drive and Porters Neck Road, which varies greatly in terms of cross section, use and character. Along this section of the corridor, land uses were studied for a distance of 1,000 feet on either side of the centerline. Attention was also directed for an additional 1,000





feet from the boundary of the study area, creating an area of influence that captures those land uses, development patterns, and building intensities that influence recommendations in the study area. These boundaries are illustrated in **Figure 4.1**.

BUILDING A CASE FOR URGENCY

Market Street has evolved over time from a trade route between cities, ports, and business centers, to a diverse, highly-congested, commercial corridor. As Market Street has developed, so too has the pattern of growth surrounding the corridor. As commercial growth has steadily moved outward from the traditional center of town to those areas that were traditionally residential, new residential growth has moved farther from the center of town. This intensification of development has resulted in typical suburban development patterns, with properties becoming vacant as newer development follows growth.

The city of Wilmington and New Hanover County have recognized that they cannot support this suburban-style development pattern indefinitely. Since continuous outward growth is not an option, but future development and redevelopment are still anticipated along the corridor, the city and county must determine how to ensure adequate facilities and services are available to serve new growth while maintaining the quality of life desired by residents.

Although it seems counterintuitive, conducting studies and plans during a period of economic recession allows a reprieve from fast-paced growth and allows the community an opportunity to reassess how growth should occur. The recession allows the city of Wilmington and New Hanover County the chance to effectively catch up and start being proactive. Steps can be taken to influence development patterns, transportation infrastructure, and other design qualities along the corridor before pressures are once again on these agencies. The city of Wilmington and New Hanover County must be poised to handle anticipated growth, with a strategy in place for where it should occur and what it should look like. This study is a critical step in ensuring that growth occurs in a predictable manner that protects community character and enhances the functionality and appearance of the area.

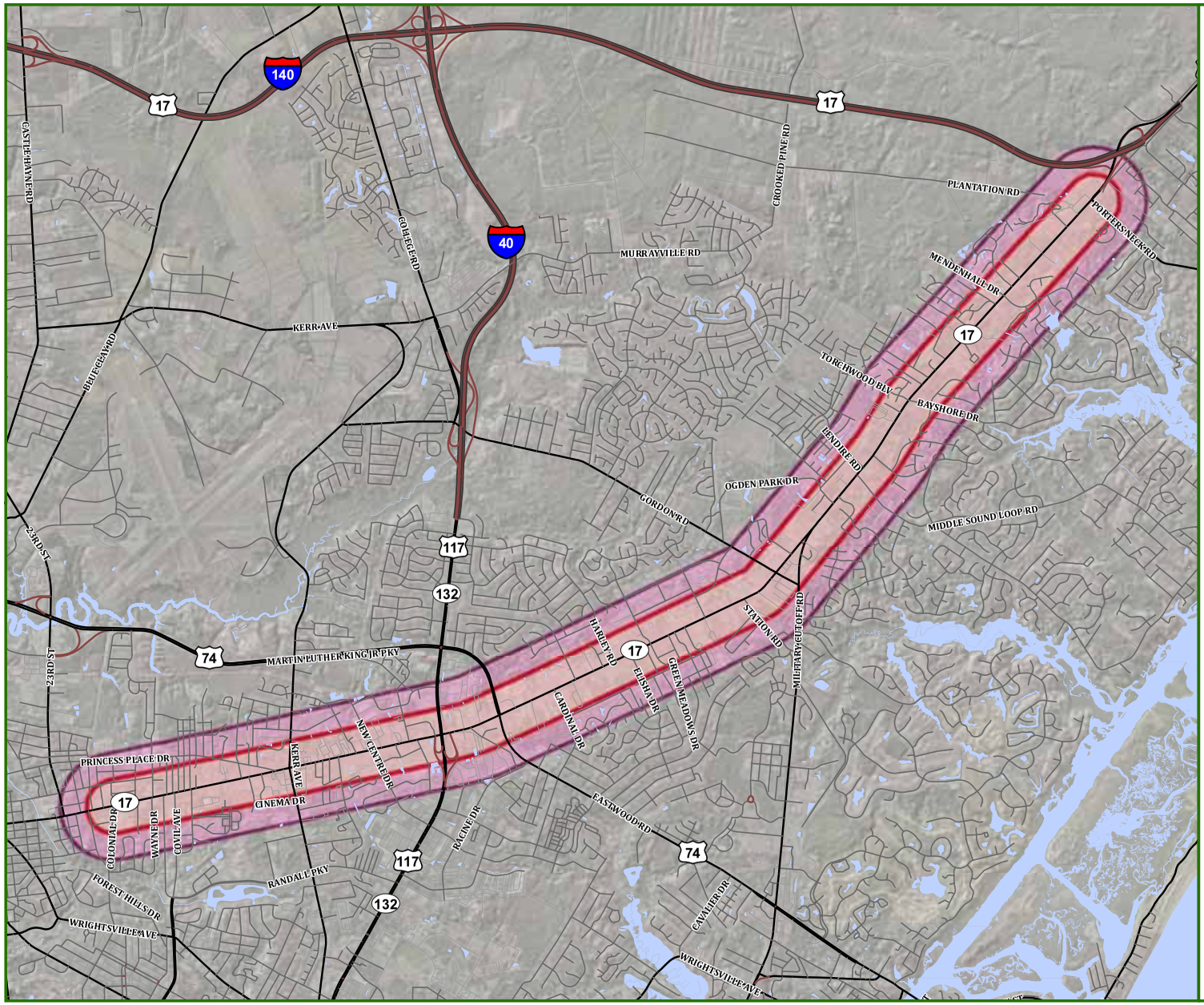


Figure 4.1
Land Use Context Areas

Legend

- Land Use Study Area
- Additional Area of Influence
- Body of Water

Roads

- Interstate
- Interchange
- US or State Highway
- Local Road
- Private Road

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A sense of urgency is warranted because of the momentum established through the city and county's investments in this and other planning studies now underway. Each study engages citizens in a public discourse that represents potential energy simply waiting for the moment to act. Community leaders can tap the potential community energy by endorsing the new vision for transformation, organizing citizens into action teams, and engaging decision-makers with influence in various communities.

VISION FOR THE CORRIDOR

Each new wave of development brings opportunities for economic prosperity and community building along the Market Street Corridor. And while some developers may be focused on short-term gains and micro views of the area, those with a commitment to long-term, sustainable growth will contribute positively to a more viable and livable community. The vision for the ***Market Street Corridor Study*** includes a long-term view on development, defined by efficient land use patterns, transportation choices, distinctive architecture, and high quality of life, intended to attract new residents, businesses, and visitors to the corridor.

The vision for the Market Street Corridor promotes more sustainable development patterns in the study area and reinforces community-based initiatives to link development and quality of life and improve community cohesiveness and economic vitality.

Recommendations in the chapter represent the community's vision for build-out in the study area, which officials for the city of Wilmington and New Hanover County would need to implement through revisions to the local plans, policies, and ordinances. Patience may be needed for some recommendations in the chapter, as it may be 15 or 20 years before they are realized.



COMMUNITY INVENTORY AND ASSESSMENT

This section represents a comprehensive inventory and assessment of conditions and community features noted along the corridor. It communicates how land is organized, used, and supported by public facilities and services. Included within the section is an examination of the natural environment, built environment, redevelopment opportunities and market analysis.

NATURAL ENVIRONMENT

The natural environment represents the interconnected network of open space, natural features, and parks that help define the environmental cohesiveness of a community. Permanent conservation of these areas serves to naturally manage stormwater, improve water quality, balance the physical and visual impacts of development, and increase opportunities for recreation in the study area. The presence of mature trees along the corridor is a feature that should be preserved throughout the development or redevelopment of the area. In particular, the live oak trees in the western portions of the corridor provide much of the area's character, while the natural, rural feel in the eastern portions of the corridor can be attributed to the presence of mature pine trees. Every effort should be made to preserve these trees throughout the improvement and continued development of the corridor.

The following elements of the natural environment were noted in the study area: wetlands and water bodies, hazardous waste sites, and parks and recreation areas.

WETLANDS & WATER BODIES

Wetlands are the predominant environmental feature in the vicinity of the Market Street corridor. Visual observation of environmental mapping (see **Figure 3.1)** shows that wetlands currently surround the corridor, especially in the eastern portion near Porters Neck Road and Pender County. Market Street currently crosses two wetlands between Middle Sound Loop Road and Bayshore Drive, as well as north of Porters Neck near the Wilmington Bypass interchange. These two locations contain a total of 187 acres of wetland, but the overall crossing area is much smaller. Within 1,000 feet of the corridor there are a handful of small bodies of water, mostly classified as ponds or smaller. There are approximately 7.06 acres of water within these bodies of water.



Preserved Wetlands



HAZARDOUS WASTE SITES

There are two hazardous waste disposal sites located near the corridor, including Shepard Chemical Works, Inc. (specializing in wood preservatives) off of Eastwood Road and Corning Glass Works (specializing in fiber optics cable) off of North College Road and Market Street. The Corning site has direct driveway access onto Market Street, and may be impacted by potential improvements.

PARKS AND RECREATION AREAS

Ogden Park is a large county park located between Market Street and Gordon Road. The site has direct access to Market Street via Ogden Park Drive, and has various athletic fields and a park area. Blair Noble Park, near Blair School Road, is considered to be a natural conservation land. This area is directly adjacent to the corridor and currently houses athletic fields and a park area. Environmentally-protected species are present within one mile of the corridor, including vertebrate animals and vascular plants. These locations are not considered close enough to the corridor to be affected by new development or redevelopment contemplated in the study area.



Ogden Dog Park

BUILT ENVIRONMENT

The built environment represents the land uses, buildings, streets, and other supporting infrastructure that help define community cohesiveness and support economic vitality. Individual site development decisions made throughout the study area reinforce the brand and identity of the Market Street corridor and contribute to its viability for transformative change.



Single Family Residence along the Market Street Corridor (Bayshore Dr)

The following elements of the built environment were summarized for this study: land use profile, existing development patterns, committed development, community design, supporting infrastructure, and development potential.

LAND USE PROFILE

The existing land use profile details important information regarding the general development patterns and characteristics in the study area. Analysis of existing land use helps form the basis for land use recommendations along the corridor.



Multifamily Residences along the Market Street Corridor (Cypress Pond Way)

The predominant land use within a half-mile of the corridor is classified as single-family residential, with 67 percent of the land in the study area dedicated to this use. This land use includes lower-, medium-, and higher-



density residential zoning in both the city and county zoning structures. The majority of land in this category is found east of North and South College Road. There are also large pockets of residential development west of North and South Kerr Avenue, as the corridor transitions towards the largely residential sections in the 1945 Corporate Limits. Multifamily land uses, including townhomes, apartments, and condominiums make up 4.5 percent of land within a half mile of the corridor. These areas are in close proximity to major roads and often serve as a buffer between commercial and single-family uses.

The second most predominant land use along the corridor is classified as business use, comprising nearly 15 percent of the available land area. Within the city limits, the business uses are stratified as either regional or community business, and are defined by size and intensity of uses. Within the county's jurisdiction, business uses are stratified by either neighborhood or highway business, and are defined again by intensity, type, and location. Office and institutional uses comprise nearly three percent of the uses along the corridor, and include public and private office facilities and education facilities. Light industrial uses comprise approximately 2.5 percent of the uses along the corridor, and include manufacturing facilities, warehouses, storage units, and similar facilities.



Commercial Development along the Market Street Corridor

Land use and character transition drastically between the western and eastern portions of the corridor, as defined by ***Walk Wilmington: A Comprehensive Pedestrian Plan***.[1] Between Colonial Drive and Kerr Avenue, the character of Market Street is classified as Traditional Suburban, with predominantly commercial frontage along the roadway and first tier residential neighborhoods clustered behind the commercial development. From Kerr Avenue to the city limits, the character is classified as Automobile-Oriented Suburban, with a larger proportion of commercial developments, including regional shopping centers and sprawling development, fronting on Market Street and little to no residential development in the area. From the city limits to Porters Neck Road, the character of Market Street is classified as Suburban Transition, with more open space and undeveloped land fronting the corridor and a greater proportion of residential development on or immediately adjacent to the corridor frontage.

[1] For complete definitions of context types, please see the ***Walk Wilmington: A Comprehensive Pedestrian Plan*** study.



Existing Development Patterns

To the west of Military Cutoff Road, the available land along the Market Street Corridor is primarily developed, with a number of small vacant parcels and environmentally sensitive areas interspersed. To the east of Military Cutoff Road, there is an increase in the number of vacant parcels as well as environmentally sensitive areas.

The corridor is primarily low-density, sprawling, suburban type development. Large expanses of parking separate buildings and limited connectivity between parcels increase dependence on Market Street. Pedestrian and other non-motorized transportation opportunities are inadequate to support the corridor.

Figure 4.2 provides a summary of the existing developed areas along the corridor. The vacant parcel symbology indicates completely undeveloped land. The developed parcels indicate some level of development, even if it is ripe for redevelopment. Environmentally sensitive areas are also displayed on this figure.

Approved Development

As of October 2008, approximately 27 projects were approved or under construction in the vicinity of study area, which could all significantly impact the character of the community if allowed to develop under existing development regulations. Current approved development initiatives within the Market Street Corridor include residential, commercial and office developments. These developments are primarily located between Gordon Road and the Wilmington Bypass. Approved developments are illustrated in **Figure 4.3**.



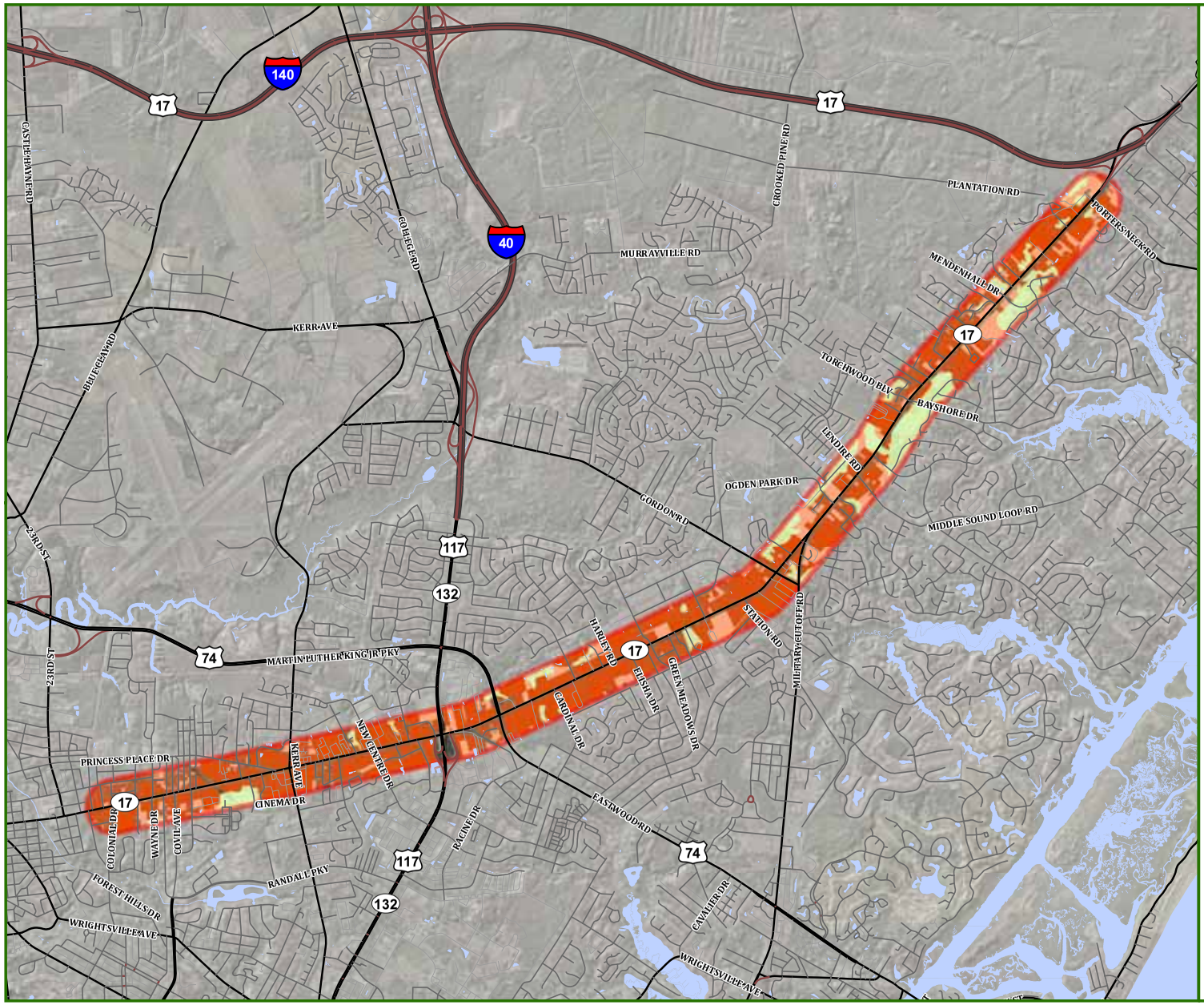
New development in the eastern portion of the Market Street Corridor

Community Design

"Community design" often is a term planners use to communicate the architectural style or vernacular of an area. Many areas of the country have a distinct style that naturally evolved given the popularity of designs and trends en vogue at the time the community underwent their predominant growth. Community design refers to how a building looks and a community is organized, including the placement of buildings and even their height and orientation.



Congestion on Market Street



MARKET STREET CORRIDOR STUDY

Figure 4.2 Existing Development Pattern

Legend

- Land Use Study Area

Existing Development

- Existing Development
- Vacant Parcel
- Environmentally Sensitve Areas
- Body of Water

Roads

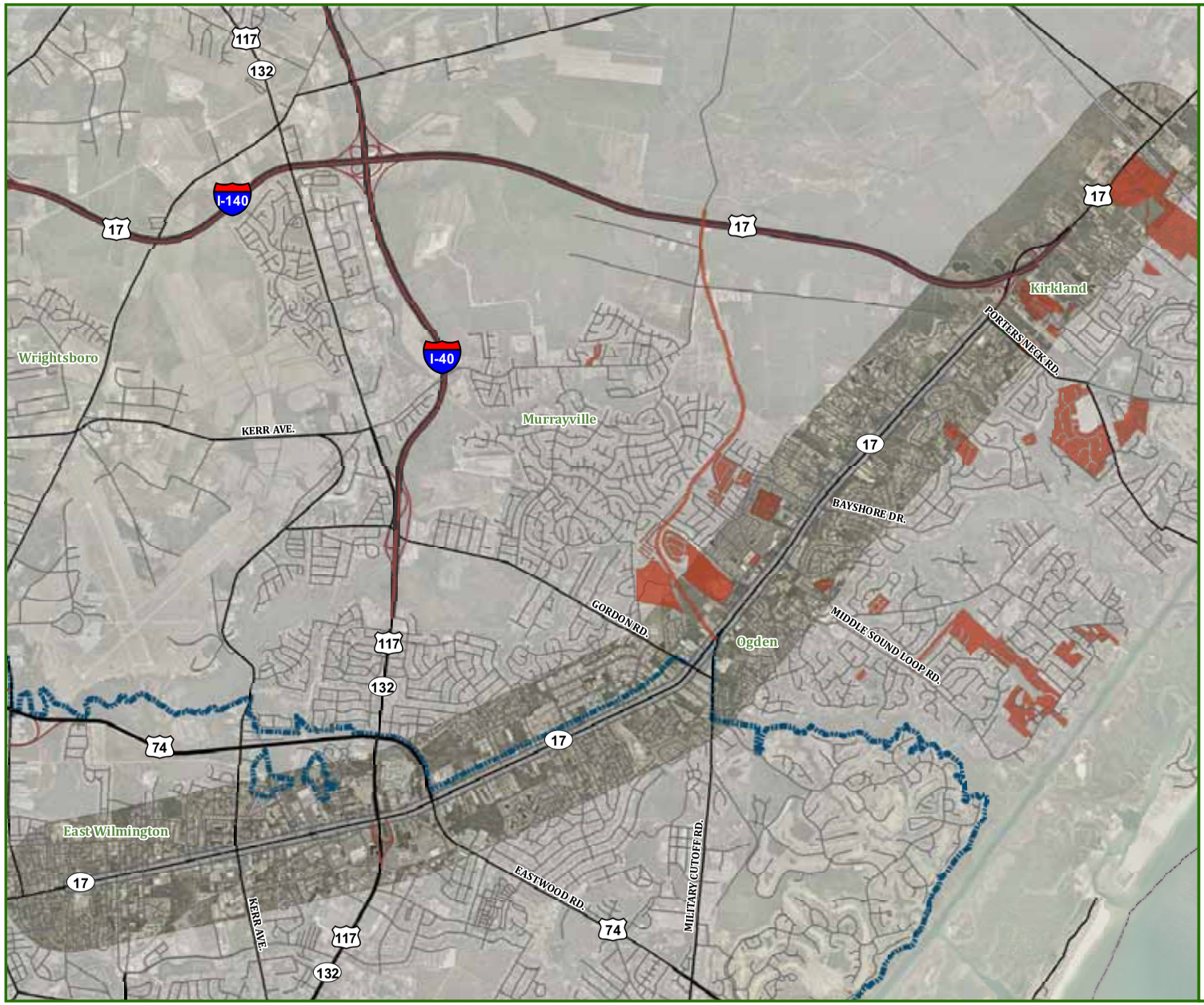
- Interstate
- Interchange
- US or State Highway
- Local Road
- Private Road

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MARKET STREET CORRIDOR STUDY

Figure 4.3
Approved Developments

Legend

- Approved Developments
- City Limits
- County Boundary

Roads

- Interstate
- Interchange
- US or State Highway
- Local Road
- Private Road

** Indicated development is as of October 2008. Identified projects were provided by City and County as part of project work session.*

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Market Street corridor is, and continues to become, a diverse, intensely developed, and highly congested commercial corridor. Most contemporary development in the corridor does little to promote a cohesive identity for the region. Many public work session attendees expressed displeasure with the strip development patterns along Market Street as well as the lack of investment in architectural details and the visual clutter of billboard signage.

These considerations are important as most citizens agree that Market Street is a gateway to historic downtown and the larger community. It represents the first and last impression of visitors, and is the place where residents spend the most time traveling between work, shopping facilities, and recreation.

Development Potential

Two different types of potential growth are possible along the Market Street Corridor: 1) growth associated with new development of currently vacant parcels and 2) growth associated with the redevelopment of developed or underutilized parcels. Areas east of Military Cutoff Road along Market Street are largely undeveloped, providing significant opportunities for new infill development. Areas west of Military Cutoff Road, moving toward the historic downtown, are already highly developed. Along this portion of the corridor, there are numerous prospects for redevelopment projects and fewer opportunities for new infill development. The city of Wilmington Future Land Use Plan identifies several strategies and key locations for development and redevelopment. For a further discussion, see **Chapter 2** of this report.

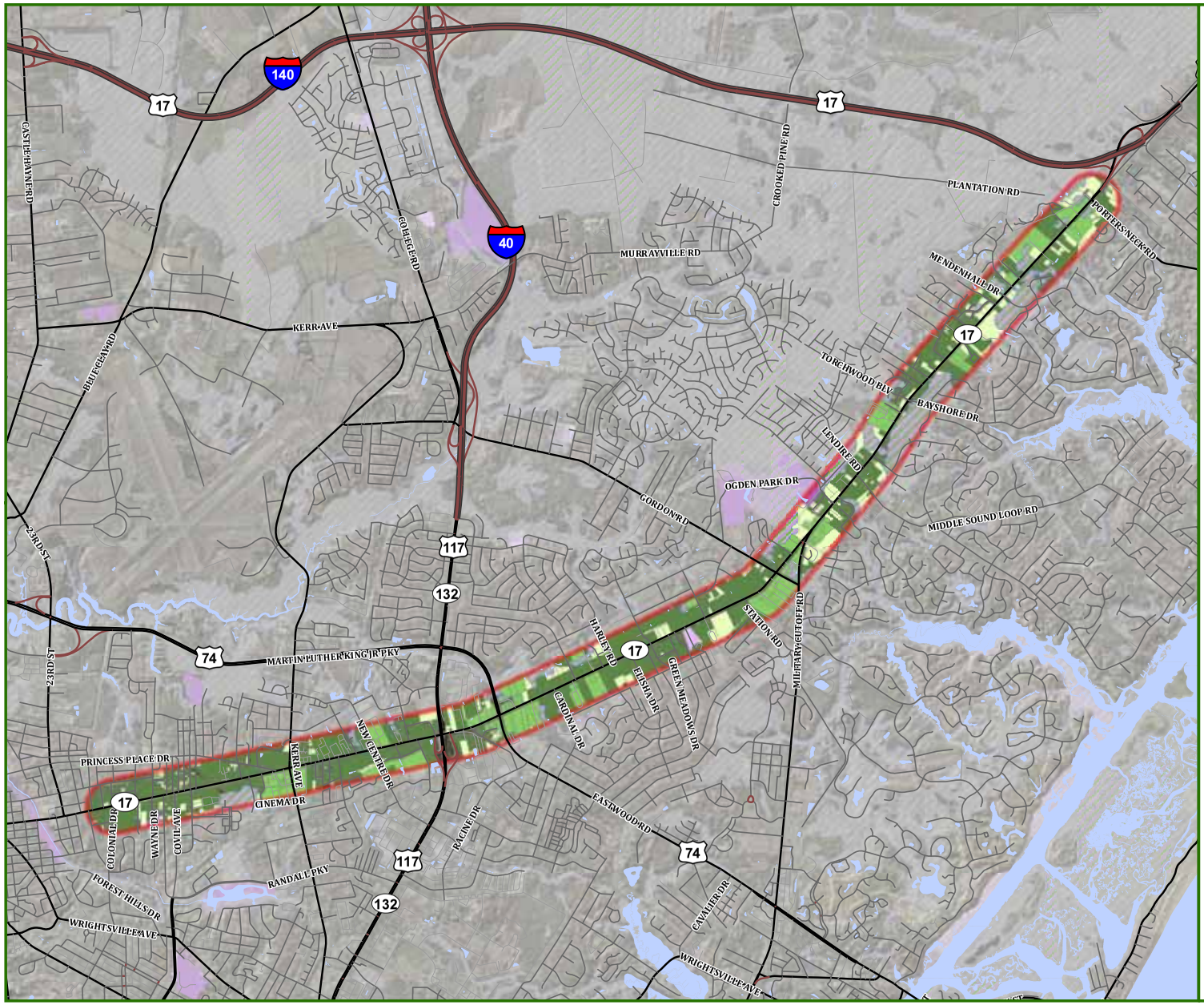


Redevelopment Opportunity on the Market Street Corridor

Figure 4.4 provides a snapshot of lands that may be available for development or redevelopment in the study area.

Market Analysis

A market analysis was completed in support of the Market Street Corridor Study. The evaluation included a base analysis of the existing market, a review of economic development opportunities along the corridor, and identification of any social or market constraints that might limit development potential. This section of the General Development Chapter provides a synopsis of the evaluation. More detailed information is available in the full market analysis summary report.



MARKET STREET CORRIDOR STUDY

Figure 4.4 Development Potential

Legend

- Land Use Study Area

Development Potential

- Infill Development
- Redevelopment Potential
- Existing Development
- Body of Water

Environmentally Sensitive Areas

- Wetlands
- City Parks
- Natural Conservation Lands

Roads

- Interstate
- Interchange
- US or State Highway
- Local Road
- Private Road

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Demographics and Trends

The analysis found that Wilmington's rapid population growth is continuing, and that current state census estimates outpace U.S. Census estimates for the year 2013. The city and county continue to face sustained growth, eben throughout the recession. As far as jobs and economic development are concerned, the city has opportunities to expand its economic base beyond tourism and retail by taking advantage of its growing information, professional, and technical services industries. Major constraints to development in the study area are the presence of small disaggregated parcels that limit efficient development and the fact that many existing properties and businesses along the corridor are vacant, for sale or functionally obsolete.

Commercial and Residential Trends and Potential

The market analysis includes an evaluation of current commercial and residential trends, and the potential for expansion in both sectors. In terms of the commercial sector, the study area already has a very strong retail base, serving as a regional shopping destination with a number of existing shopping centers and mixed-use centers.

In addition to the typical retail draw, Wilmington's reputation as a desirable destination provides a strong foundation for office and industrial growth. There is potential for approximately 60,000 square feet of growth in the study area each year. Given the tourist nature of the community, further investment in lodging and attractions could be viable along the corridor. With this in mind, the current supply of retail and office space exceeds the demand along Market Street, given the number of empty and for sale parcels and functionally obsolete buildings along the corridor. In the long term, however, the strategic location of the corridor and its relationship to major employers will create a competitive advantage, leading to long term economic development.

In terms of the residential sector, population trends suggest that the Wilmington community is still experiencing sustained growth, approximately 2 to 2.5 percent. This trend may slow, given the current economic climate, but based on these estimates, the growth creates a demand for approximately 1,500 new housing units per year. Given Wilmington's current residential trends, more than half of these homes would be rental properties. At the same time, large portions of the for-sale



residential sector are not affordable for the regional workforce. The market analysis suggests that a move to a higher density mixed-use development would lower costs on a per unit basis and create a new selection of affordable housing for the growing demand.

RECOMMENDATIONS

Based on the evaluation in the market analysis, there is sufficient demand to support a variety of commercial and residential uses along the Market Street corridor. This determination is based on several variables, including:

- The historical significance of the corridor;
- Connections to local and major regional destinations;
- Demand for retail generated by current traffic volumes and anticipated residential growth;
- Strong ties for office and industrial growth in the study area; and
- Strong demand for mixed-use, high-density residential growth in the study area.

Information from the market analysis was used to influence the development types, patterns and intensities recommended in the General Framework Plan (see page 4-22 to 4-28).

GENERAL FRAMEWORK PLAN

The General Framework Plan provides overall guidance for realizing the community's vision toward more walkable, mixed-use development patterns in the corridor, which in turn preserves and strengthens existing neighborhoods and protects the natural surroundings valued by its citizens. Specific elements in the general framework plan include: guiding principles, growth areas, development considerations, recommended general development, place types, and preferred development principles.

GUIDING PRINCIPLES

The consultant team worked with elected officials, the Project Steering Committee, key stakeholders, and members of the public in attendance at the public work sessions and informational meetings to create a set of guiding principles for influencing the General Development Chapter. These principles generally support, encourage, and implement the community's vision toward more sustainable development.



Guiding principles for the General Development section include:

- Designate mixed-use development areas in the corridor that encourage active living and the ability to live, shop, work, or play in one location.
- Provide housing solutions that ensure future needs and preferences for various housing types are addressed in the community.
- Advocate for a multimodal transportation system that serves pedestrians, bicyclists, transit riders and vehicles and the connections between the various modes.
- Promote a streetscape strategy for Market Street that reinforces high-quality design and sense of place.
- Integrate building architecture and site design with market forces and the surrounding environment to create lasting value in the corridor.
- Emphasize improvements on Market Street that balance the needs of regional mobility with community livability.
- Consider the community's concerns for environmental stewardship in the study area; especially related to tree preservation, new tree planting, wetlands preservation, and stormwater management.
- Implement the principles and technologies of smart growth, low-impact development, and green building for new development and redevelopment in the corridor.
- Update the city and county's existing plans or other supporting policies and ordinances administered in the study area with recommendations from the Market Street Corridor Study.

Growth Areas

Serious and irreversible consequences face the study area if low-density, single-use development is allowed to sprawl throughout the eleven mile study area. Many cities and counties in similar situations are designating growth areas to better phase or manage their future development and public investments. Growth areas in the corridor were used to influence the timing, location, amount, density, and intensity of development for the study area; however, they do not strictly prohibit development in any portion of the study area.



The Market Street Corridor Study designates three growth areas for the study area, as follows:

Activity Nodes

Activity nodes accommodate convenience business/retail uses and services within or near neighborhoods for day-to-day living needs of the immediate community. Convenience business uses include small grocery stores, laundromats, and business and office uses with relatively low traffic generation characteristics such as florists and law offices. Activity nodes are also intended to foster opportunities for the integration and promotion of multimodal transportation systems. The vertical and horizontal integration of uses is encouraged, and existing neighborhood compatibility and interconnection is essential. Supporting low-intensity institutional uses is acceptable.

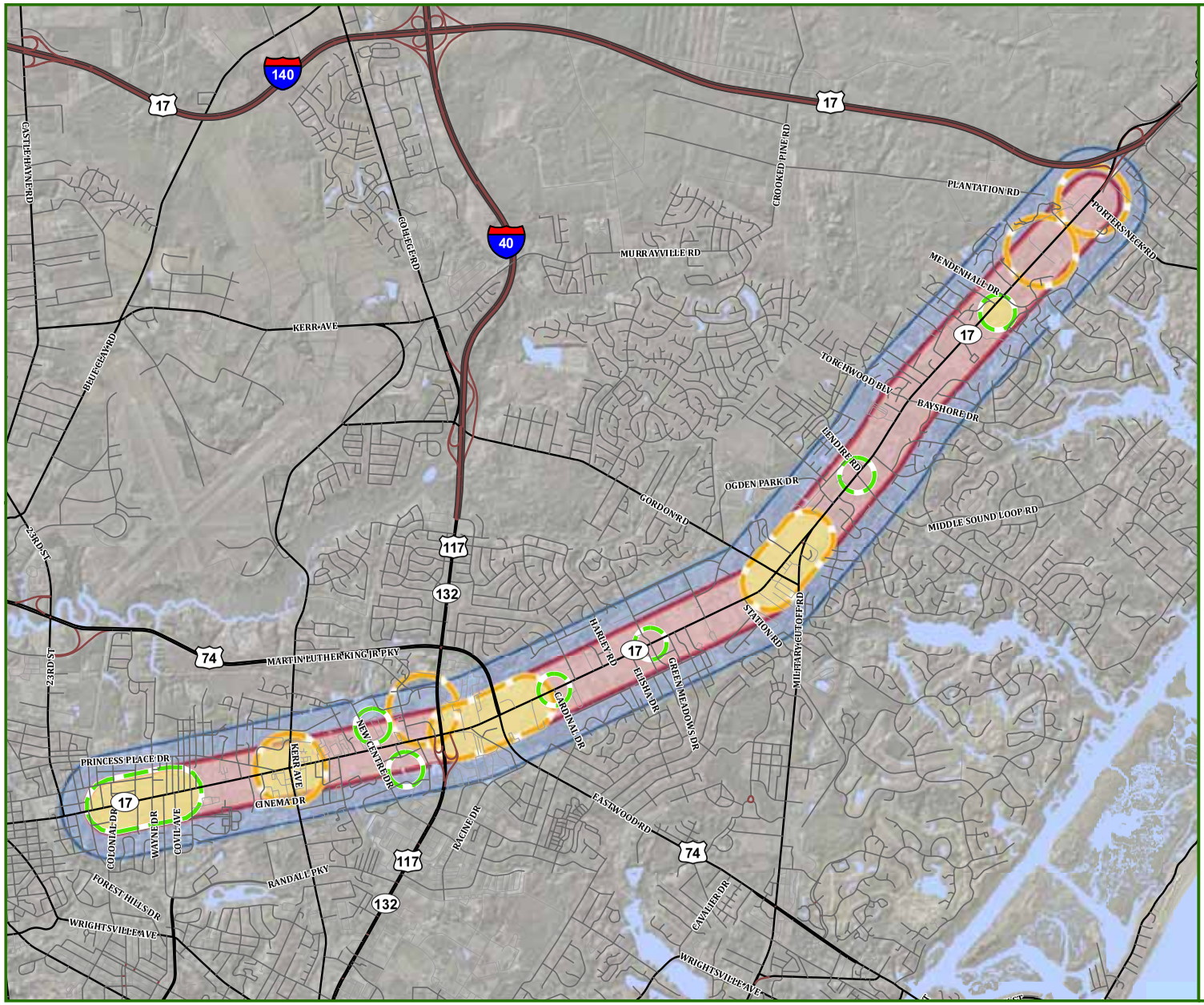
Activity Centers

Activity centers promote a planned and integrated combination of uses within larger areas and are planned to provide services at community or regional levels. Activity centers should be designed to encourage compact, mixed-use development comprised of recreation/open space and office as well as one or more of the following uses: business, townhouses, senior living units, civic, institutional, and/or hotel. Activity centers are also intended to foster opportunities for the integration and promotion of multimodal transportation systems. Development must emphasize the efficient reuse of existing infrastructure, preservation of natural systems, integration of pedestrian and bicycle facilities, and an urban form characterized by close-knit neighborhoods and sense of community. The vertical and horizontal integration of uses is encouraged, and existing neighborhood compatibility and interconnection is essential.

Supporting Development Areas

Supporting development areas represent those parcels within the study area that are not classified as activity nodes or activity centers. These areas should be considered for future infill development or redevelopment opportunities but, due to constraints such as parcel size and accessibility, are more likely expected to be developed as single user sites. These sites should incorporate the general themes of the ***Market Street Corridor Study***, including the principles of high-quality building architecture and site design beginning on page 4-22 of this chapter.

The Growth Areas Map is illustrated as **Figure 4.5**.



MARKET STREET CORRIDOR STUDY

Figure 4.5 Growth Areas Map

Legend

- Suggested Activity Center
- Suggested Activity Node
- Land Use Study Area
- Additional Area of Influence
- Body of Water

Roads

- Interstate
- Interchange
- US or State Highway
- Local Road
- Private Road

** Specific Activity Center/Node Focus Area's are denoted with yellow hatching. These sites were selected for more detailed study. Details of these studies are provided in Chapter 5.*

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Development Considerations Map

The Development Considerations Map supplements the General Development Map. It identifies prime locations for future mixed-use activity nodes or activity centers, and other single-use developments within the study area. Officials for the city of Wilmington and New Hanover County should refer to both the General Development Map and the Development Consideration Map when contemplating development applications in the study area.

The Development Considerations Map prepared for the study area is presented in **Figure 4.6**.

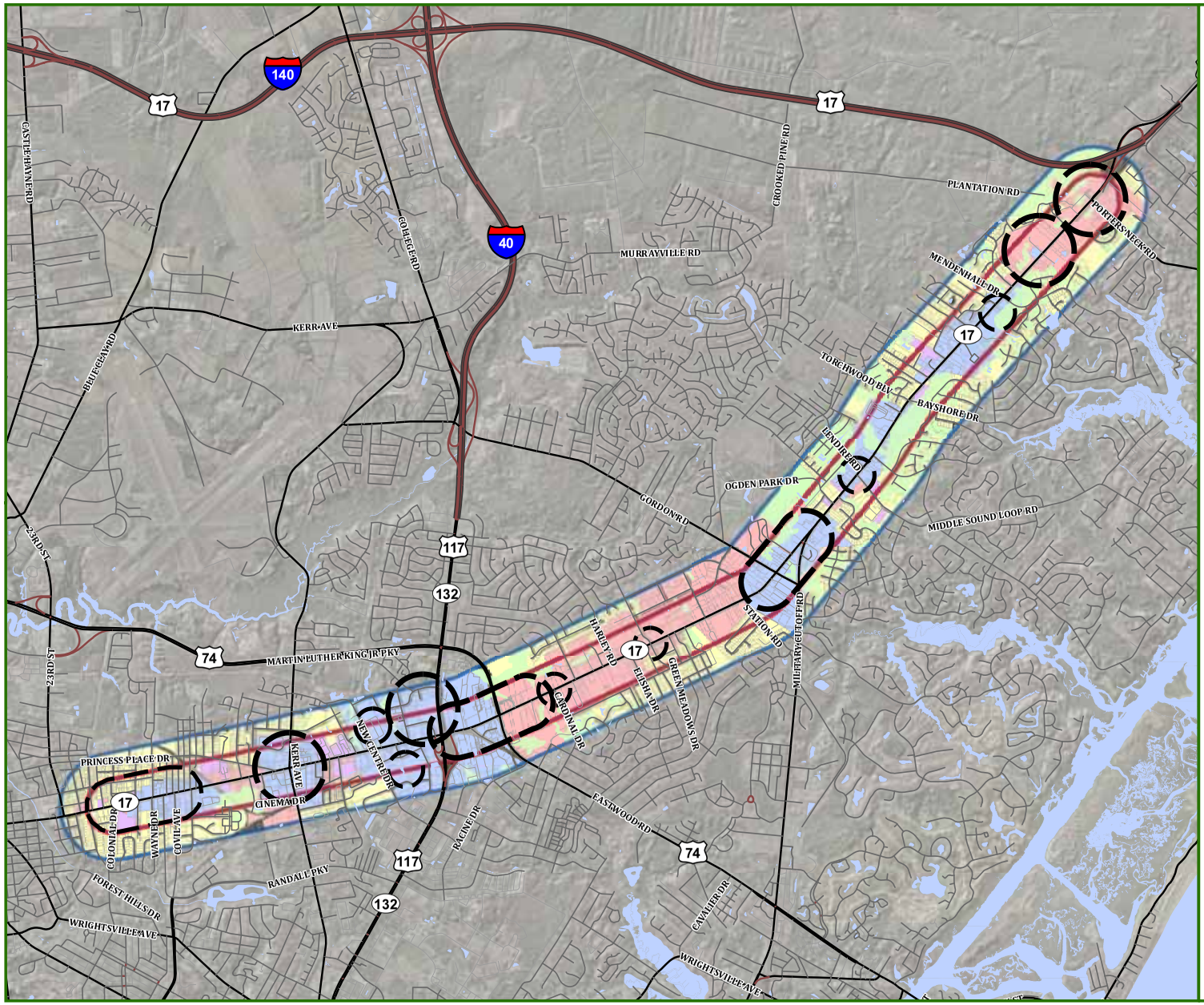
Recommended General Development Map

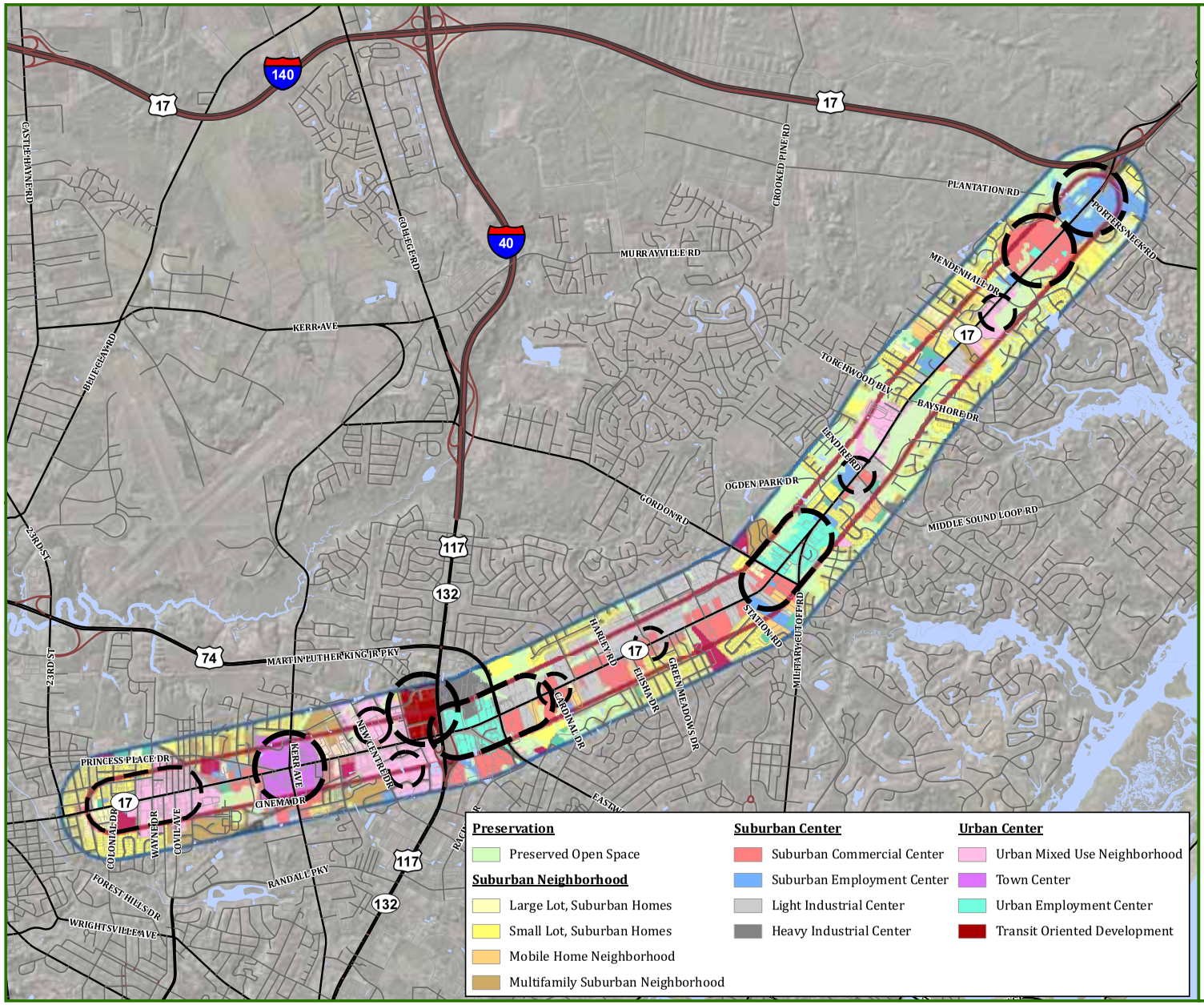
The Recommended General Development Map represents preferred development types, patterns, and intensities favored in the study area. Input used to develop the map was sought throughout the planning process, including stakeholder interviews, public meetings and workshops and interaction with the Project Steering Committee. Information depicted on the general development map should be a guide for amendments to local planning documents or other policies and ordinances. Patience may be needed for some recommendations made in the General Development Map as it may be 15 or 20 years before they are realized.

The Recommended General Development Map prepared for the study area is represented in **Figure 4.7**.

Place Types

Place types represent the look or feel of a place that differentiate it from other areas. They have their own unique settings, visual patterns, and qualities. Many cities and counties around the country are switching from conventional land use designations to place types when developing growth plans. This is driven by a renewed interest in the interrelationship between land use and urban design for creating unique places. Generalized development characteristics used to describe different place types include generalized land use patterns (e.g., mixed or stand-alone), residential density, non-residential intensity, prevailing building height, open space elements, block size, or street pattern. Equal emphasis on land use and urban design in the place type description guides decisions about growth and development, land preservation, resource protection, and the provision of community facilities and services during the planning process.


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MURRAYVILLE RD
KERR AVE
GORDON RD
OGDEN PARK DR
PLANTATION RD
MENDENHALL DR
TORCHWOOD BLV
BAYSHORE DR
MIDDLE SOUND LOOP RD
PORTERS NECK RD
CROOKED PINE RD
COLLEGE RD
CASTLEHAYNE RD
BRIGGS AVE
23RD ST
HARPER AVE
HARVEY RD
ELISHA DR
GREENMEADOWS DR
CARDINAL DR
STATION RD
MILITARY CUTOFF RD
PRINCESS PLACE DR
CINEMA DR
NEW CENTRE DR
COLONIAL DR
WAYNE DR
COVIL AVE
RACINE DR
EASTWOOD RD
RANDALL PKY
FOREST HILLS DR
WRIGHTSVILLE AVE
CAVALIER DR
MARKET STREET CORRIDOR STUDY
Figure 4.6
Development
Considerations Map
Legend
Land Use Study Area
Additional Area of Influence
Body of Water
Growth Strategy
Preservation
Suburban Neighborhood
Suburban Center
Urban Center
Special District
Roads
Interstate
Interchange
US or State Highway
Local Road
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MARKET STREET CORRIDOR STUDY

Figure 4.7 Recommended General Development Map

Legend

- Land Use Study Area
- Additional Area of Influence
- Body of Water

Roads

- Interstate
- Interchange
- US or State Highway
- Local Road
- Private Road

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Place types are not meant to be synonymous with zoning districts, nor should they be thought to replace rules or requirements set forth in current city of Wilmington or New Hanover County ordinances. Amendments to policy documents or ordinances may be necessary to implement the character and intent recommendations presented for the various place types used in the study area.

The following place types are represented on the General Development Map for the Market Street Corridor Study: preserved open space, large-lot suburban home, small-lot suburban neighborhood, mobile home park, multifamily suburban neighborhood, suburban commercial center, suburban employment center, light industrial center, heavy industrial center, mixed-use neighborhood, town center, urban employment center, and transit oriented development.

Detailed descriptions for all thirteen place types are provided on the following pages.



Preserved Open Space & Open Space

Open space includes active and passive land dedicated for permanent conservation. In the study area, open space includes active parks, water bodies, environmentally sensitive areas, and common areas preserved in suburban neighborhoods. It is scattered throughout the study area, but is primarily centered around parks and protected lands, including Ogden Park and the Inland Greens golf community. There is also a substantial amount of environmentally sensitive land (e.g. wetlands) throughout the planning area.





Form & Pattern Characteristics:

General Development Pattern	Isolated Uses	Street Pattern	N/A
Residential Density	N/A	Typical Street Spacing	N/A
Non-Residential Intensity	N/A	Street Connectivity	Low
Prevailing Building Height	N/A	Typical Street Cross Section	Rural Condition
Open Space Elements	Protected Natural Areas/ Greenways/Stream Corridors		

Large-Lot Suburban Homes

Large-lot suburban homes are scattered throughout the study area. Clusters of large-lot homes represent the oldest neighborhoods in the area, while standalone home sites represent 'holdouts' amidst new suburban neighborhoods or new suburban centers. Homes on large lots are generally oriented toward the street surrounded by large yards and mature trees (sometimes greater than one acre in size). Large-lot suburban homes noted in the study area include single-family detached homes and mobile homes. Large-lot residential neighborhoods occur in small pockets throughout the study area.





Form & Pattern Characteristics:

General Development Pattern	Isolated Uses	Street Pattern	N/A
Residential Density	1 d.u./5acres to 1d.u./acre	Typical Street Spacing	N/A
Non-Residential Intensity	N/A	Street Connectivity	Low
Prevailing Building Height	1-2 stories	Typical Street Cross Section	Rural Condition
Open Space Elements	Protected Natural Areas/ Greenways/Stream Corridors		



Small-Lot Suburban Homes





Small-lot suburban neighborhoods are generally formed as subdivisions with a relatively uniform housing type and density throughout. They are found in close proximity to suburban centers and provide the density necessary to support commercial and employment uses in the study area. Buildings are oriented interior to the site and are typically buffered from surrounding development by transitional uses or landscaped areas. Small-lot suburban neighborhoods may contain one or more of the following housing types: single-family detached, duplex, or townhouses. They are prevalent throughout the study area. East of Military Cutoff Road, they are the primary land use along the corridor

Form & Pattern Characteristics:

General Development Pattern	Isolated Uses
Residential Density	1.0 to 7.0 d.u./acre
Non-Residential Intensity	N/A
Prevailing Building Height	1-3 stoires
Open Space Elements	Neighborhood Parks/ Greenways/Stream Corridors

Street Pattern	Curvilinear
Typical Street Spacing	1,500 to 3,000 ft
Street Connectivity	Medium
Typical Street Cross Section	Suburban

Mobile Home Neighborhood





Mobile home neighborhoods are characterized by single-wide and double-wide mobile homes on separated lots clustered in an area owned and managed by a single entity. Mobile home neighborhoods typically include a small amenity center for the residents. They occur in small pockets throughout the study area. These communities appear to be isolated and intermixed with small-lot suburban homes.

Form & Pattern Characteristics:

General Development Pattern	Isolated Uses
Residential Density	8.0 d.u./acre
Non-Residential Intensity	N/A
Prevailing Building Height	1 story
Open Space Elements	Greenways/Parks

Street Pattern	Modified Grid
Typical Street Spacing	300 to 600 ft
Street Connectivity	Medium
Typical Street Cross Section	Rural



MULTIFAMILY SUBURBAN NEIGHBORHOOD

Mulitfamily suburban neighborhoods are generally formed as complexes or communities, with a relatively uniform housing type and density throughout. They are found in close proximity to suburban centers, and provide the density necessary to support commercial and employment uses in the study area. Buildings are oriented toward the interior of the site and are typically buffered from surrounding development by transitional uses or landscaped areas. Large parking lots and low street connectivity are common in these types of neighborhoods. Multifamily suburban neighborhoods support the highest residential densities in the suburban landscape, including condominiums and apartments and may include rental or fee-simple units.





Form & Pattern Characteristics:

General Development Pattern	Isolated Uses
Residential Density	8.0-10 d.u./acre
Non-Residential Intensity	N/A
Prevailing Building Height	2-4 stories
Open Space Elements	Neighborhood Parks/ Greenways/Stream Corridors

Street Pattern	Modified Grid
Typical Street Spacing	1,500 – 3,000 ft.
Street Connectivity	Medium
Typical Street Cross Section	Suburban Condition

SUBURBAN COMMERCIAL CENTER

Suburban commercial centers serve the daily needs of surrounding residential neighborhoods. They are typically near high-volume roads or major intersections and are designed to be accessible primarily by automobile. Buildings are generally set back from the road behind large surface parking lots with little or no street connectivity between adjacent businesses. Common types of suburban centers in the study area include multi-tenant strip centers (i.e., strip development) and big box stores. Suburban commercial centers are prevalent throughout the corridor study area, primarily between North and South College Road and Military Cutoff Road.





Form & Pattern Characteristics:

General Development Pattern	Isolated Uses
Residential Density	N/A
Non-Residential Intensity	0.20 – 0.50 FAR
Prevailing Building Height	1-6 stories
Open Space Elements	Protected Natural Areas/ Greenways/Stream Corridors

Street Pattern	N/A
Typical Street Spacing	1,200 – 1,500 ft.
Street Connectivity	N/A
Typical Street Cross Section	Suburban Condition



Suburban Employment Center

Business centers provide basic jobs and keep people in the study area during normal work hours. They typically locate near high-volume roads or major intersections and may include stand-alone businesses, office parks, medical office parks, government centers, corporate centers, or technology centers. One or more buildings in a suburban employment center are generally surrounded by surface parking lots. Clusters of uses that support or serve one another should be encouraged to locate in the same employment center. Suburban employment centers are most prevalent in the eastern portions of the corridor study area.





Form & Pattern Characteristics:

General Development Pattern	Isolated Uses
Residential Density	N/A
Non-Residential Intensity	0.20 – 0.50 FAR
Prevailing Building Height	1-4 stories
Open Space Elements	Stream Corridors

Street Pattern	N/A
Typical Street Spacing	1,200 – 1,800 ft.
Street Connectivity	Medium
Typical Street Cross Section	Suburban Condition

Light Industrial Center

Light industrial centers provide basic jobs and keep people in the study area during normal work hours. Each center generally supports manufacturing and production uses, including warehouse, light manufacturing, medical research, and assembly operations. These areas are found in close proximity to major transportation corridors (i.e., highway or rail) and are generally buffered from surrounding development by transitional uses or landscaped areas that shield the view of structures, loading docks, or outdoor storage from adjacent properties. Clusters of uses that support or serve one another are encouraged to locate in the same light industrial center.





Form & Pattern Characteristics:

General Development Pattern	Isolated Uses
Residential Density	N/A
Non-Residential Intensity	0.10 – 0.20 FAR
Prevailing Building Height	1-2 stories
Open Space Elements	Stream Corridors

Street Pattern	Modified Grid
Typical Street Spacing	1,200 – 2,400 ft.
Street Connectivity	Medium
Typical Street Cross Section	Suburban Condition



Heavy Industrial Center

Heavy industrial centers support large-scale manufacturing and production uses, including assembly and processing, regional warehouse and distribution, bulk storage, and utilities. These areas are found in close proximity to major transportation corridors (e.g., highways or railroads) and are generally buffered from surrounding development by transitional uses or landscape areas that increase as intensity increases. Heavy industrial centers may require larger sites because activities are not confined entirely to buildings. Conveyer belts, holding tanks, smoke stacks, or outdoor storage may all be present in a heavy industrial center. Clusters of uses that support or serve heavy industrial centers should be encouraged to locate in close proximity.





Form & Pattern Characteristics:

General Development Pattern	Isolated Uses
Residential Density	N/A
Non-Residential Intensity	0.05 – 0.15 FAR
Prevailing Building Height	1-5 stories
Open Space Elements	Pocket Parks/Buffer Areas/Stream Corridors

Street Pattern	N/A
Typical Street Spacing	N/A
Street Connectivity	N/A
Typical Street Cross Section	Rural

Urban Mixed-Use Neighborhood

Urban mixed-use neighborhoods offer residents the ability to live, shop, work, and play in one community. They include a mix of housing types and residential densities integrated with goods and services residents need on a daily basis. The design and scale of the development encourages active living, with a comprehensive and interconnected network of walkable streets. Urban mixed-use communities support multiple modes of transportation. Mixed-use neighborhoods do not exist along the corridor today, but are proposed as a new development pattern near New Centre Drive and Covil Avenue.





Form & Pattern Characteristics:

General Development Pattern	Mixed Uses
Residential Density	3.0 – 6.0 d.u./acre (SF) 8.0 – 15.0 d.u./acre (MF)
Non-Residential Intensity	0.35 – 2.0 FAR
Prevailing Building Height	2-4 stories
Open Space Elements	Community Parks/Public Spaces/Stream Corridors

Street Pattern	Modified Grid
Typical Street Spacing	600 – 1,500 ft.
Street Connectivity	High
Typical Street Cross Section	Urban Condition



Town Center

Town centers serve local economic, entertainment, and community activities. Uses and buildings are located on small blocks with streets designed to encourage pedestrian activity. Buildings in the core of the town center stand two or more stories with residential units above storefronts. A town center is typically surrounded by one or more mixed-use neighborhoods that encourage active living, with a comprehensive and interconnected network of walkable streets. Town center developments do not exist in the corridor today, but are proposed for the future near the intersection of Kerr Avenue and Market Street.





Form & Pattern Characteristics:

General Development Pattern	Mixed Uses
Residential Density	3.0 – 6.0 d.u./acre (SF) 8.0 – 15.0 d.u./acre (MF)
Non-Residential Intensity	0.35 – 2.0 FAR
Prevailing Building Height	4-15 stories
Open Space Elements	Community Parks/Public Spaces/Stream Corridors

Street Pattern	Grid
Typical Street Spacing	300 – 1,200 ft.
Street Connectivity	High
Typical Street Cross Section	Urban Condition

Transit Oriented Development

Transit-oriented development (TOD) represents the concentration of mixed-use, dense development around a transit center. Uses and buildings are located on small blocks with streets designed to encourage bicycle and pedestrian activity. High-density development is located primarily within ¼ mile of the transit station, with progressively lower densities spreading out into neighborhoods surrounding the center. National literature recommends a minimum residential density of seven dwelling units per acre and a minimum non-residential intensity of 25 employees per acre to support TOD served by regional bus. TODs do not exist in the study area today, but are proposed for areas around Hunters Trail and College Road.





Form & Pattern Characteristics:

General Development Pattern	Mixed Uses
Residential Density	6.0 – 8.0 d.u./acre (SF) 8.0 – 25.0 d.u./acre (MF)
Non-Residential Intensity	0.35 – 3.0 FAR
Prevailing Building Height	4-15 stories
Open Space Elements	Community Parks/Public Spaces/Stream Corridors

Street Pattern	Grid
Typical Street Spacing	300 – 1,200 ft.
Street Connectivity	High
Typical Street Cross Section	Urban Condition



URBAN EMPLOYMENT CENTER





Urban employment centers encourage a concentration of business, commercial, and light industrial uses in a campus-like setting. Buildings support a mix of uses (both vertically and horizontally) throughout the same development, integrated into the campus using plazas, squares and wide sidewalks to create formal and informal gathering spaces. Higher intensity employment is encouraged in the core of the urban employment center. Parking decks or surface parking lots oriented to the perimeter of the development reinforce a "park once" pedestrian campus. Urban employment centers support multiple modes of transportation. Urban employment centers are proposed in the vicinity of Eastwood Road/Martin Luther King Jr. Parkway and the Military Cutoff Road extension.

Form & Pattern Characteristics:

General Development Pattern	Mixed Use
Residential Density	N/A
Non-Residential Intensity	0.20 – 1.0 FAR
Prevailing Building Height	1-10 stories
Open Space Elements	Pocket Parks/Stream Corridors

Street Pattern	Modified Grid
Typical Street Spacing	1,200 – 1,800 ft.
Street Connectivity	Medium
Typical Street Cross Section	Urban Condition



PREFERRED DEVELOPMENT PRINCIPLES

Quality development principles have the potential to influence the attraction of private investment, the quality of future development, and the value of properties in the area. Stakes are high for communities that do not formulate community development principles (and implement subsequent design guidelines). Failure to do so can lead to:

- loss of community identity, tradition, and culture;
- irreversible environmental degradation; and
- drop in the desirability of the area for attracting businesses, homeowners, and visitors to the region.

General recommendations for community development principles were formulated in partnership with the Project Steering Committee, city and county planning staff, and participants in the public planning process. They are based on the belief that development is both necessary and desirable to maintain and improve the community's quality of life.

The following development principles support implementation of the General Development Map prepared for the study area. New infill development or redevelopment should incorporate these principles to better link growth and quality of life and improve community cohesiveness and economic vitality. Officials for the city of Wilmington and New Hanover County need to implement one more of these development principles through revisions to the local plans, ordinances, and policies.

General development principles important to the community include: promotion of mixed-use development, building walkable communities, building architecture, franchise architecture, architectural unity, site design, signage, and billboards.

PROMOTE MIXED-USE DEVELOPMENT

One type of development gaining popularity throughout the state is mixed-use development. Integrating a mix of uses in a central location creates places where people live, work, and play as a cohesive community. Mixed-use developments further the vitality and sustainability of an area, the efficiency of utilities and transportation serving the area, and the sense of community experienced by residents, business owners, and visitors to the area. Mixed-use developments often become activity centers or nodes in the



Mixed-use Development



suburban landscape. It is important to establish meaningful connections between these centers and nodes to promote a vibrant, sustainable transportation system.

Build Walkable Neighborhoods

Walkable neighborhoods locate places to live, work, learn, and play in an environment that promotes pedestrian activity. A comprehensive network of streets, mix of complementary land uses, and compact urban form serve a wide range of users — pedestrians, bicyclists, transit riders, and automobiles — and support "active living by design" initiatives.



Walkable Neighborhoods

Building Architecture

Building architecture is a critical component for quality development. Architectural design standards are intended to promote compatibility within a development and its surrounding environment, allow creativity and diversity of design, protect property values and neighborhood quality, and provide a safe and attractive environment for residents and visitors alike to destinations in the community. Key elements of building architecture were identified as important to the community during the public work sessions: building material, building and façade character, roof articulation and equipment screening, and building scale and orientation.

Franchise Architecture

For a half century, national and regional chain stores have used franchise architecture to reinforce their image and brand. It is likely that you easily recall what certain chain stores look like. This replication of building style by chains is such a part of our culture, you can probably tell what store you are approaching, even if you are not familiar with the locale you are in and even if you are unable to read the store's sign. This replication is part of the "place-product- packaging" strategy of business. It is a visual cue to customers that reassures them they will find the same products and services within every store, no matter where that store may be. This level of branding is often so effective that finding another use for a former franchise building is often difficult if not impossible because it is so strongly tied to the branded image of the original occupant. It is this type of homogenous franchise architecture in the built environment that can weaken a community's character.





Franchise Architecture on Market Street



Though they may report otherwise, corporations and franchise businesses will modify image architecture standards in response to specific conditions, concerns, or preferences raised by the community. The key is negotiating power, which is defined for the community as a strong market leadership and an effective design standards ordinance that regulates franchise architecture. Many communities across the country acknowledge the absence of a design standards ordinance as the primary reason corporations might refuse to alter a franchise building prototype. Community leaders should be persistent in requesting distinctive and site-specific building architecture for new development and redevelopment in the Market Street corridor.

Architectural Unity

Quality, cohesive building design in site development helps enhance community character and improve quality of life. Promoting architectural unity on a site ensures quality projects, lends credibility and professionalism, and creates a unique brand identity in the area. Requiring architectural unity in large site developments allows developers and staff to consider the interplay between buildings, ultimately preventing inconsistencies and the uncoordinated feel that arises from ad hoc development. It is recommended that all new development and redevelopment in the study area consisting of more than one building on a single parcel be required to construct architecturally unified buildings and should include compatible quality and type of building materials.



Architectural Unity

Site Design

Overall site design is a critical component for quality development. Site design guidelines are intended to promote compatibility within a development and its surrounding environment, allow creativity and diversity of design, protect property values and neighborhood quality, and provide a safe and attractive environment for residents and visitors alike to destinations in the community.

The following elements of site design were identified as important to the Market Street Corridor: open space, landscaping, parking lot design, cross access between parcels, and pedestrian and bicyclist opportunities.



Open Space Plaza

Open Space

Open space provides an alternative to publicly designed and managed parks, and has a tendency to boost property values and can serve as a social or



recreational focal point for neighborhoods. Open space, in the form of pocket parks, mini-parks, and trails/greenways, should be easily accessible by all citizens from surrounding neighborhoods, be centrally located, free from physical barriers, and offer a range of facilities. In addition, they should be accessible for use by the broader public.

It is recommended open space (e.g., parks, plazas, or other gathering areas) be required in new development or redevelopment in the study area. As parks and recreation budgets decrease and land costs increase, this will help the city and the county provide acceptable levels of service for parkland and respond to increasing demand. Most importantly, requirements adopted as a result of this process should be enforced during the development approval process and site construction.

Landscaping

Landscaping improves the quality of the environment, helps maintain an aesthetically appealing community character, reduces topsoil erosion and stormwater runoff, and minimizes some of the negative impacts of traffic and parking lots.

Landscaping requirements, including buffer yards and street yards, are found in both the city and the county's landscaping ordinances. It is recommended that additional landscaping requirements be imposed along Market Street. These requirements should include additional parking lot landscaping, the protection of existing vegetation, and required building foundation plantings.

Parking Lot Design

Off-street parking plays an important role in the efficiency of the overall transportation system. To be efficient and maintain attractiveness of destinations, the transportation system must include adequate parking facilities. Properly designed parking lots can also provide screening, reduce stormwater runoff, and provide shade.



Traditional Parking Lot Design

Parking standards are found in the city and county's ordinances. For activity centers and activity nodes within the Market Street corridor, these standards should be enhanced to require shared parking, provide guidance for structured parking facilities and promote surface parking oriented toward the interior of the site.



Opportunities for Cross Access Between Parcels

Cross access represents the presence of a service drive or secondary roadway between two properties. It is used to reduce the number of vehicles using the regional transportation system to access adjacent or nearby destinations. Cross access is generally secured through the development review process. Provisions for cross-access easements should be included in city and county ordinances for the Market Street corridor.

Pedestrian and Bicyclist Opportunities

Establishing access for pedestrians and bicyclists to significant destinations and natural areas in the community facilitates community ownership, increases public health, and supports local identity and quality of life. During the planning process, members of the steering committee, stakeholders, and citizens supported improving bicycle and pedestrian conditions along existing streets to allow easier access to open-space resources in the community.



Pedestrian and Bicyclist Opportunities

Today, establishing access to natural areas may not be practical, yet it is prudent to anticipate the option of adding public access in the future. This plan proposes several options to link together and create access to scenic views, community parks, and natural areas in the study area. Additional requirements for internal, non-vehicular circulation as well as the provision of bicycle facilities should be imposed on new development (including shopping centers, public areas, and other destinations) or redevelopment in the Market Street corridor.

Summary of Recommendations

Recommendations in the General Development Chapter for implementing the community's vision for sustainable development include:

1. **Update local plans with recommendations from the Market Street Corridor Study.**

   The city of Wilmington and New Hanover County should consider incorporating the Recommended General Development Map into future land use maps and including other recommendations from the general development section of this chapter as goals, objectives, and policies in the General Development chapter of the update to the local plans.



2. **Protect valuable open space areas indicated on the Recommended General Development Map.**

   The city of Wilmington and New Hanover County should consider reviewing existing rules and requirements related to the provision and protection of open space. Specific emphasis should be placed on protecting scenic view sheds, reserving greenway corridors, requiring neighborhoods parks, public plazas, etc. in new developments, and moving development out of floodplains. Areas designated for preserved open space in the Recommended General Development Map should be the highest priority for preserving green infrastructure in the study area.

3. **Promote a mix of housing types in appropriate locations of the study area that respond to shifting housing markets emerging in the region.**

   The city of Wilmington and New Hanover County should work together to provide solutions that ensure the study area meets future housing needs and preferences for various housing types in the community. The focus should be on shifting housing markets in response to changing demographics and socioeconomic characteristics, lifestyle choices, market conditions, and the opportunities that will result from providing a more stratified housing market in the study area.

4. **Revise local land development regulations to include corridor overlay standards to promote quality development within the Market Street corridor.**

   Consideration should be given to reviewing and revising local land development regulations to allow for corridor overlay regulations to promote quality development within the Market Street corridor. These regulations should pay special attention to site and building design, signage, parking and access management.



5. **Revise local land development regulations to encourage mixed-use development within activity centers and nodes without the need for a planned development district designation.**

   The city of Wilmington and New Hanover County should consider incorporating overlay design standards that encourage compact, mixed-use development comprised of three or more of the following uses: residential, office, commercial, institutional/quasi-public/public or entertainment and lodging. The design and scale of mixed-use developments should support active living, human scale, and the principles of smart growth described in the General Development chapter and detailed on the place type summary sheets.

6. **Promote the principles of smart growth in new neighborhoods and centers.**

   Consider reviewing and revising local land development regulations to encourage the principles of smart growth, which recognize connections between development and quality of life for improving community cohesiveness and vitality.

7. **Move from strip development patterns toward activity centers or nodes.**

   Transforming development from linear strips along major thoroughfares to activity centers or nodes promotes more human-scale development and improves transportation efficiency. Activity centers and nodes are more pedestrian friendly and allow visitors to access multiple businesses in one trip. Additionally, shared parking, improved connectivity within and adjacent to the site, and fewer curb cuts helps the function of the overall transportation system.



8. **Officials for the city of Wilmington and New Hanover County should continually monitor new development and public investments in the area to ensure fulfillment of the community's vision for high quality of life, improved community cohesiveness, and increased economic vitality in the study area.**

   Stakeholders should continually monitor and evaluate implementation of recommendations presented in the Market Street Corridor Study. The city of Wilmington and New Hanover County should summarize progress in the study area in a formal two-year implementation status report (the "report card") for presentation to the Wilmington City Council and the New Hanover County Board of Commissioners.

Chapter 5 – Focus Area Site Studies

Focus area studies represent possible build-out scenarios for undeveloped or underdeveloped parcels in the study area. Five locations were selected to represent build-out scenarios for activity centers or activity nodes recommended in the General Development Map (**Chapter 4**). Together, these locations represent the most influential properties for implementing recommendations in the ***Market Street Corridor Study***. It should be noted that the boundaries of the following study areas are not necessarily fixed and can be expanded to fit the needs of the community.

Focus Area Site Locations

All activity centers or activity nodes selected for focus area studies directly abut the Market Street corridor. Activity centers were identified near Kerr Avenue, College Road and Military Cutoff Road extension. Activity nodes were identified near Independence Boulevard and Marsh Oaks Drive. These focus areas were defined by the Project Steering Committee, city, and county staff during the project work session's and include properties that were considered ripe for redevelopment along the corridor.

Several of the focus areas include land currently owned by NCDOT. It is the recommendation of this study that NCDOT should sell or convey unused property within these areas.

Planning Process

Site design studies were completed for all of the focus areas. They represent possible build-out scenarios for undeveloped or underdeveloped parcels that promote mixed-use development, a variety of housing types and residential densities, and multi-modal transportation options. Each site design study included a market-realistic development program, illustrative master plan concept, and three-dimensional renderings. Drawings were done over aerial photography with roadways, water features, property lines, and building footprints displayed. Many of the focus area site design studies were formulated in partnership with local landowners during the public work sessions.

The type of land uses or development patterns assumed in the site design studies were for illustrative purposes only, and could vary significantly based on future landowner interests, development approvals, or location of available infrastructure. Property owners with similar vision, or with sites

sharing similar characteristics, should consider the best development practices highlighted in focus area studies when developing their own land.



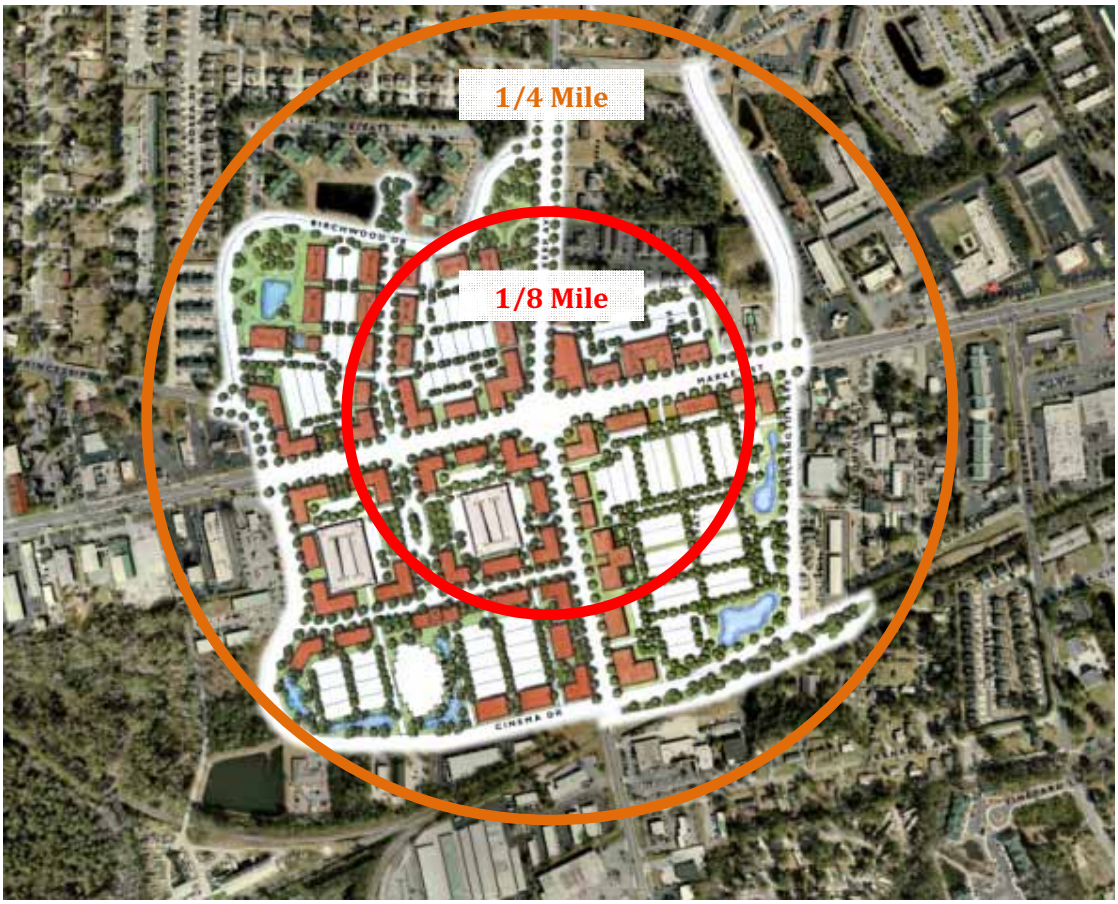
The last live oak tree

Site Design Studies

Summaries of the site design studies completed for each focus area are provided in the following sections.

Kerr Avenue (activity center)

The Kerr Avenue intersection, one of the most congested along the corridor, is surrounded by aging, outdated strip centers, fast-food restaurants, gas stations, and other auto-oriented development. The area is most recognized as the location for the last live oak tree that stands within the streetscape. As shown in the picture to the right, this tree stands in stark contrast to the visual clutter of signage and overhead utilities.



Conceptual redevelopment plan

In order to relieve traffic congestion at the busy intersection of Kerr Avenue and Market Street, a series of street network improvements is proposed. On the west side of the focus area site area, the realignment of Princess Place Drive with Cinema Drive facilitates a full and/or continuous movement onto and across Market Street. The blocks between this new alignment and Kerr Avenue are broken down further, by reducing the block sizes, providing more route options. To the southeast, the completion of Wilmington Avenue, to connect with an extended Kinston Avenue (which is to align with Cinema Drive), helps with transportation options. The Kinston Avenue extension also runs parallel to the proposed rails-to-trails greenway. Finally, to ensure a full loop option around the congested intersection at Kerr Avenue, Wilmington Avenue should be continued to the north to connect with McClelland Drive.



Ripe and firm analysis

- *Ripe for redevelopment*
- *Mixture of ripe and firm*
- *Firm land use*

The area surrounding the intersection is ripe for redevelopment, especially on the south side. The conceptual master plan to the right illustrates how the older shopping centers could be redeveloped as a vertically mixed-use activity center for retail, office, medical office, and residential uses.

As an activity center, this area should focus on the walkability for at least 1/8 of a mile from the intersection. A walkable urban environment of approximately 1/4 mile in total length is the optimal distance to ensure a successful retail atmosphere.

To accommodate the anticipated parking needs, the plan suggests mid-block locations for parking decks along with on-street parking along the side streets.

In addition to the mixed-use opportunities, this area should accommodate some civic uses as well. Branch libraries, government facilities, social services offices, etc., should be considered as part of the overall mix.

This project has the potential for success given a high interest in redevelopment by some of the key property owners in the focus area and a partial consolidation of parcels making a more coordinated approach practical.

The master plan concept supports the following potential development program:

- Residential Flats: 210 units
- General Office: 73,800 sq. ft.
- Medical Office: 124,800 sq. ft.
- Mixed-use Buildings: 649,600 sq. ft.



Perspective illustration looking southwest along Market Street at Kerr Avenue

College Road/Corning Area (activity center)

As Market Street approaches the dual intersections of College Road and Eastwood Road/Martin Luther King Jr. Parkway, the context is much more suburban. Lane widths are wider along with the corresponding speeds and accident history. Besides the more recent retail development activity in the area, the Corning manufacturing plant is the most significant physical presence in the focus area.

The master plan concept for the area recommends a reduction in the number of driveways on Market Street as well as the construction of service roads flanking Market Street on each side to provide access to large redevelopment opportunities.



Ripe and firm analysis

- *Ripe for redevelopment*
- *Mixture of ripe and firm*
- *Firm land use*



Conceptual Redevelopment Plan

The conceptual redevelopment plan (on the previous page) for this area suggests the potential of various parcels between College Road and Eastwood Road/Martin Luther King Jr. Parkway as employment-based uses. These uses could be complimentary to the existing Corning plant as either clean manufacturing operations or Class A office space. Given the easy access to the greater community from this area via Market Street and Martin Luther King Jr. Parkway, the focus area is ideally suited for economic development opportunities that don't necessarily compete with the downtown. Such uses might include low- and mid-rise suburban office buildings and "flex-space" that combines front office operations with back office manufacturing and/or distribution.

Parking decks will need to be incorporated for proposed three-story buildings, especially on the north side of Market Street.

The master plan concept supports approximately 1,378,700 sq. ft. of office and manufacturing uses.



Illustration of a typical suburban class A office building fronting on a lake that provides both water quality and water quantity features.

Military Cutoff Road Extension (Activity center)

The premise of the redevelopment of areas surrounding Military Cutoff Road begin with its planned extension across Market Street with its eventual extension to Interstate 140. With the infrastructure investment and improvements in place, the surrounding properties could prosper with redevelopment by replacing smaller, one story, auto-oriented businesses with mixed-use, office, flex space, and residential units.

As new development moves farther and deeper from the Military Cutoff Road extension at Market Street, the intensity of development should transition from commercial to residential as it meets the neighborhoods to the southeast.



Ripe and firm analysis

- *Ripe for redevelopment*
- *Mixture of ripe and firm*
- *Firm land use*

The design intent for this area is to create a compact neighborhood center that differentiates itself from the rest of the sprawling corridor with a walkable street network and neighborhood services such as specialty retail, professional offices and day care buildings. As a compliment to nearby activity centers and activity nodes, space should be reserved for civic/community space such as a branch library, community center, or similar gathering area.

To the southwest of the planned Military Cutoff Road extension, the master plan concept recommends the redevelopment of the existing shopping center while still accommodating a grocery store or similar neighborhood-serving general goods store.

The master plan concept supports the following potential development program:

- Residential Flats: 36 units
- Townhouses: 28 units
- Single-family Homes: 10 units
- General Office: 148,400 sq. ft.
- Flex Space: 84,000 sq. ft.
- Mixed-use Buildings: 152,400 sq. ft.



Conceptual Redevelopment Plan

Independence Boulevard (Activity Node)

The Independence Boulevard Activity Node is generally bounded by the YMCA to the west and Darlington Avenue to the east and extends as far as 600 feet into the neighborhoods adjacent to Market Street. The future crossing of the Independence Boulevard extension and Market Street conceived as an overpass that links Martin Luther King Jr. Parkway to River Road. This overpass will descend into the neighborhoods after extending approximately 500 feet from Market Street. This will have an impact on the existing neighborhoods and may prompt significant redevelopment in the area.



Ripe and firm analysis

- *Ripe for redevelopment*
- *Mixture of ripe and firm*
- *Firm land use*

From a land use perspective, there is a substantial opportunity to inject mixed-use office and retail commercial buildings along Market Street with connected parking areas in the rear, thus reducing the number of driveway cuts and points of conflict along Market Street. A reduction in the number of driveway cuts will also provide for a better defined and safer pedestrian realm with sidewalks.



Conceptual Redevelopment Plan

To the west of the future Independence Boulevard crossing, the master plan concept recommends buildings in the area be low-scale (i.e. low height) and residential in character to better relate to the surrounding neighborhoods. Three- and four-story buildings would be appropriate along Market Street with the height generally tapering into the neighborhoods that surround it. The master plan concept also suggests the use of pitched roofs, deep porches or similar residential details to relate to the transition to the Mansion District to the west. Future plans in this focus area should consider the preservation or adaptive reuse of historic properties in the area.

To the east of the future crossing, it is recommended that new buildings transition to more discernibly commercial buildings that are vertically mixed-use (some combination of residential, retail, and office uses). To encourage profitable and sustainable redevelopment, the building height could accommodate up to six stories, assuming that adequate levels of parking are accommodated.

Because of the fairly radical block reconfiguration that will be required for the purchase of right-of-way for the bridge and on/off ramps, the plan shows a more traditional pattern for the pending redevelopment. The conceptual plan envisions a variety of for-sale and for-rent housing offerings all placed on a network of pedestrian-oriented streets that include both sidewalks and street trees.

Because it is assumed that additional right-of-way will be necessary along the current alignment of Montgomery Avenue, the plan suggests the installation of a linear park with generous landscaping to soften the bridge abutments and projected noise.

The master plan concept supports the following potential development program:

- Residential Flats 36 units
- Townhouses: 123 units
- Single-family Homes 49 units
- General Office: 195,600 sq. ft.
- Mixed-use Buildings: 71,000 sq. ft.



Photo-simulation illustrating new mixed-use buildings and a well detailed bridge structure (with public art) that serves as a gateway to historic downtown.

Marsh Oaks (Activity Node)

The Marsh Oaks area is primarily residential with some limited commercial and professional office uses along Market Street. The area lacks curbs and sidewalks and still maintains a significant canopy of trees along both sides of the street.



Ripe and firm analysis

- *Ripe for redevelopment*
- *Mixture of ripe and firm*
- *Firm land use*

The master plan concept continues this trend with a variety of infill possibilities featuring quadraplexes, townhouses, and single-family homes along with a limited amount of neighborhood-oriented retail or offices.

With the exception of the small neighborhood commercial areas, the intent is to set back the buildings along Market Street approximately fifty feet from the right-of-way to preserve the vegetation which currently lines the

corridor. Access to these buildings would be provided through either a common small-scale frontage driveway or via a backage road.

The character of the area can be maintained with preservation of the tree canopy. In addition, the deep setback (fifty feet) can make residential development such as townhouses and quadraplexes fronting on the corridor more viable in much the same way as Oleander Court. Any commercial development should take the form of a residential-scaled structure including such details as pitched roofs and deep front porches.



Conceptual Redevelopment Plan

The master plan concept supports the following potential development program:

- Townhouses: 44 units
- Single-family Homes: 30 units
- Quadraplexes: 8 units
- Non-residential Uses* 86,400 sq. ft.

** = Non-residential uses contemplated in the master plan concept could include neighborhood-scale retail or office uses.*



Illustration looking north at the conceptual development near the intersection of Mendenhall Drive and Marsh Oaks Drive along Market Street.



Chapter 6 – Recommendations

The transportation recommendations for the ***Market Street Corridor Study*** include a wide variety of solutions intended to provide congestion relief, crash reductions, aesthetic improvements, and benefit the surrounding community. The recommendations described in this chapter range from regional improvements to spot location improvements. The proposed improvements are presented from a top down perspective, starting at the regional level and progressing to intersection level recommendations. This chapter includes the following recommendation types:

- **Regional Level** – collector street connectivity, intended to reduce vehicular demand on Market Street by providing alternate routes
- **Community Based** – cross section recommendations for the Market Street corridor that account for the surrounding environment's context
- **Policy Based**– standard access management policies and considerations intended to reduce congestion and increase motorists' safety
- **Corridor Level** – preferred access strategy for the corridor, outlining proposed signalized locations and median openings
- **Intersection Level** – specific section and intersection improvements intended to combat spot congestion and safety problems
- **Multimodal Considerations** – improvements intended to provide alternative travel modes and a safer, more efficient transportation system within and adjacent to the Market Street corridor.

CONNECTIVITY

Healthy neighborhoods and regions require an interconnected network of streets of varying sizes, providing transportation alternatives to its residents and visitors. The Market Street corridor is surrounded by a wide variety of uses, including neighborhoods, regional shopping centers, and major employment centers. In many locations, it is difficult to move between destinations without accessing Market Street, adding to the congestion and delays already experienced on the corridor due to through trips.

Typical Collector Street



The role of a collector street in a balanced transportation system is to collect traffic from neighborhoods and distribute it to the network of arterials. As such, these streets provide relatively less mobility but higher overall accessibility compared to higher level streets. The lower design speeds and multimodal amenities make these streets attractive for bicyclists and



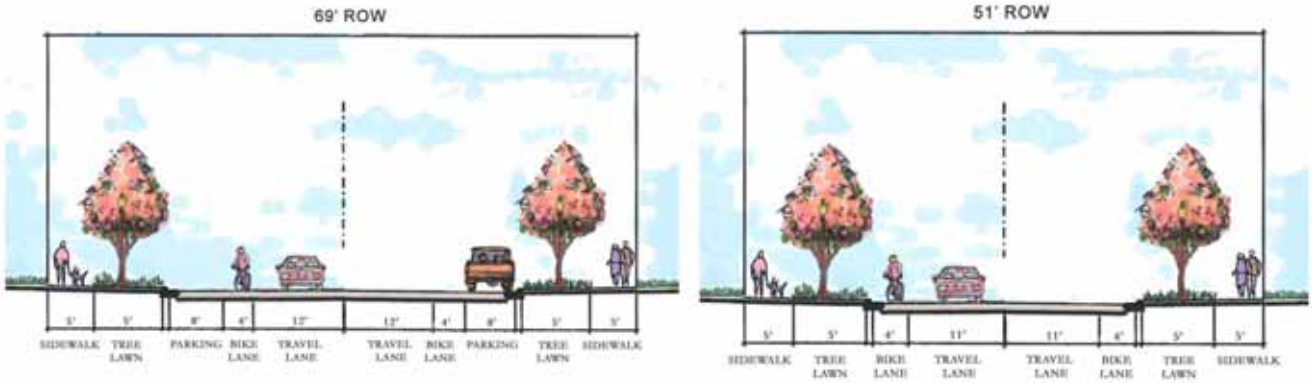
pedestrians. The proper design and spacing of collector streets is critical to ensuring the balanced transportation network envisioned by the residents and local officials in the Wilmington area.

A network of well-connected streets will allow motorists options for accessing Market Street and moving between the regional arterials in the project area. **Figure 6.1** on the next page shows the current and proposed collector street connections surrounding Market Street. The solid orange lines indicate the existing collector street network. As the map indicates, there is already an extensive network of collector streets providing connections and alternate entry points between major subdivisions and destinations.

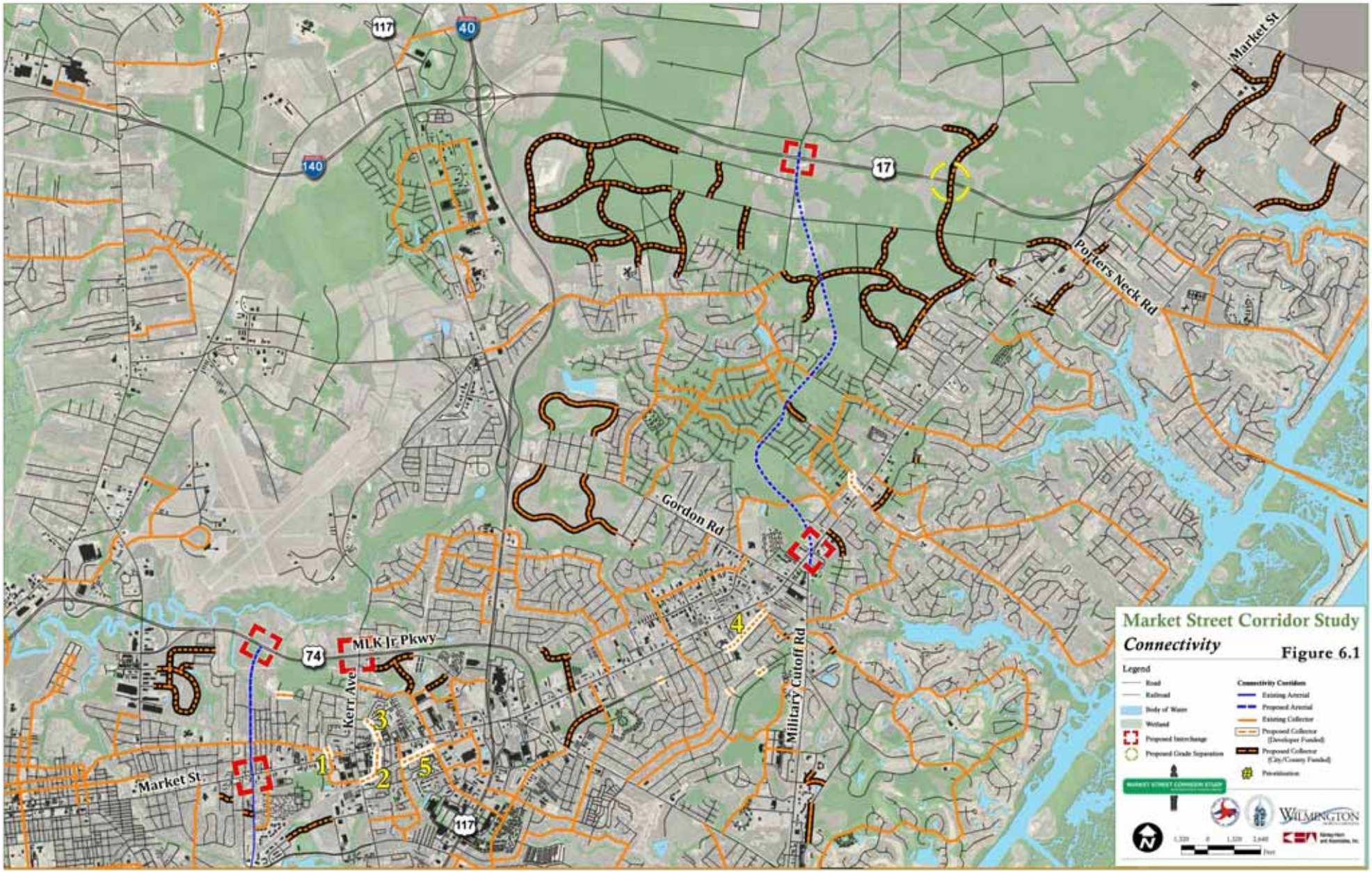
The dashed lines (representing proposed collector street alignments) build on this network and provide recommendations for the area's future as it continues to develop, primarily in the areas surrounding the new Military Cutoff Extension and Wilmington Bypass. As development continues in these areas, it is important to provide viable connections and alternatives. The proposed alignments shown in **Figure 6.1** are not precise and more detailed planning will be required prior to construction. The purpose of the mapped collector streets is to show critical connection points throughout the study area.

Implementation Strategy:

Use the future collector street map to review development plans and help locate future collector streets



Typical collector street cross sections (with and without parking)
(not to scale)


Market Street Corridor Study
Connectivity
Figure 6.1
Legend
Road
Railroad
Body of Water
Wetland
Proposed Interchange
Proposed Grade Separation
Connectivity Corridors
Existing Arterial
Proposed Arterial
Existing Collector
Proposed Collector (Developer Funded)
Proposed Collector (City/County Funded)
Prioritization
Market St
Porters Neck Rd
Gordon Rd
Military Cutoff Rd
Kerr Ave
MLK Jr Pkwy
Market St
117
40
140
17
74
1
2
3
4
5



CITY/COUNTY COLLECTOR STREET PRIORITIZATION

The proposed collector streets in **Figure 6.1** are stratified based on whether the city or county is responsible for construction, or whether the local development community would be responsible as the parcels are developed. The following five locations represent the top priority for the city and county based on their relation to other recommendations.

1. Cinema Drive Extension – this recommendation would help form the northwest quadrant in the N. and S. Kerr Avenue quadrant design, helping to reduce congestions and increase safety at the N. and S. Kerr Avenue and Market Street. ***Projected Cost $1,200,000****

2. Kinston Avenue Extension – this recommendation would help form the southeast quadrant in the N. and S. Kerr Avenue quadrant design, helping to reduce congestions and increase safety at the N. and S. Kerr Avenue and Market Street. ***Projected Cost $1,400,000****

3. McClelland Drive Connector – this recommendation would help form the northeast quadrants in the N. and S. Kerr Avenue quadrant design, helping to reduce congestions and increase safety at the N. and S. Kerr Avenue and Market Street. ***Projected Cost $700,000*****

4. St. Nicholas Road Extension – this connection between Blair School Road and Station Drive would allow for alternative routing of both school and residential traffic, easing congestion and safety issues at the Blair School Road and Market Street intersection, ultimately allowing the removal of the signalized intersection and construction of a single direction left-over. ***Projected Cost $1,100,000*****

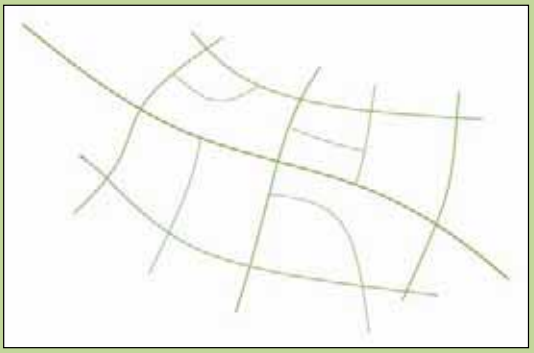
5. Lullwater-New Centre Connector – this recommendation would provide an alternative route between Lullwater Drive and New Centre Drive, allowing for a reduction in congestion for motorists traveling between the various shopping centers along this section of Market Street. ***Projected Cost $900,000*****

Cinema Drive and Kinston Avenue Extension costs based on 2009-2013 City of Wilmington CIP (see **Chapter 3).*
***Project cost estimates do not include right-of-way acquisition, design, or permitting*

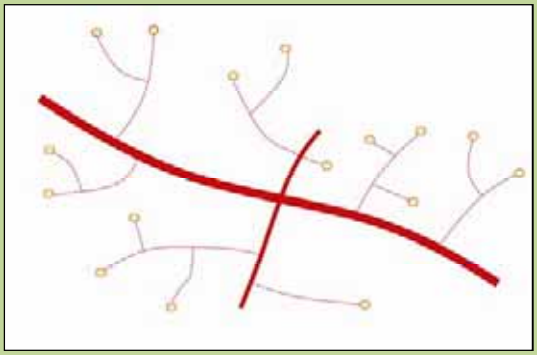
Benefits of Connectivity

- Reduced travel on major thoroughfares
- Reduced travel times without travel speed increase
- Increased route choice for all modes
- Improved access opportunities for emergency response vehicles

Well-connected system of streets



Limited connectivity resulting in heavy reliance on arterial system





POLICY CONSIDERATIONS

The design of a collector street network must respect present and future conditions, the public's vision for the future, and how the network can best balance the natural environment, connectivity, access, mobility, and safety.

NATURAL ENVIRONMENT

With abundant wetlands in the area, local planners face challenges related to the natural environment. The local geography's network of creeks, wetlands, and floodplains impacts land use and transportation decisions. These features affect how the community develops, where streets can be constructed and maintained, and where connections between streets can be made. Collector streets, as part of the development process, must respect the natural environment.

STREET SPACING AND ACCESS

Local officials also must consider street spacing guidelines to promote the efficient development of an expanding transportation system. Ultimately, these street spacing guidelines could be used as "rules of thumb" during the development review process. Different spacing standards are necessary for different development types and intensities. Understanding this principle, **Table 6.1** provides a theoretical model largely influenced by land use intensity ranges that shows the desired collector street spacing for different intensities.

Table 6.1 – Collector Street Spacing Standards

Land Use/Type of Collector Street	**Intensity** (dwelling units per acre)	**Access Function**	**Approximate Street Spacing**
Very Low Intensity Residential	Less than 2	High	3,000 to 6,000 ft
Low Intensity Residential	2 to 4	High	1,500 to 3,000 ft
Medium and High Intensity Residential	More than 4	High	750 to 1,500 ft
Activity Center	Mixed-use	Medium	750 to 1,500 ft

In addition to these recommendations, individual driveway access to collector streets should be limited to local streets when possible.

Collector Street Spacing

Very Low Intensity Land Use



Street Spacing: 3,000' to 6,000'

Low Intensity Land Use



Street Spacing: 1,500' to 3,000'

High Intensity Land Use



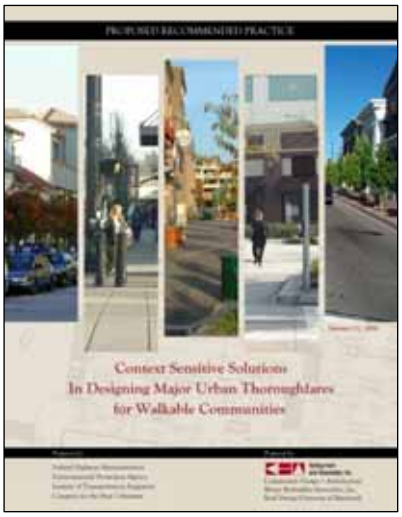
Street Spacing: 750' to 1,500'



Design Elements

As most communities' largest collection of public space, streets need to reflect the values of the community and reinforce a unique "sense of place" to be enjoyed by citizens — whether in urban, suburban, or rural contexts. This is especially true for a collector street system that serves as the backbone for local mobility, property access, and non-vehicular transportation modes.

Recently, municipalities across the country have started implementing "complete streets" as one way to transform their transportation corridors from vehicle-dominated roadways into community-oriented streets that safely and efficiently accommodate all modes of travel — not just motor vehicles. The complete street movement does not advocate for one-size-fits-all approach — a complete street in an urban area may look quite different from a complete street in a more rural area. However, both facilities are designed to balance mobility, safety, and aesthetics for everyone using the travel corridor. Furthermore, design considerations supportive of complete streets include elements in both the traditional travel corridor (i.e., the public realm) as well as adjacent land uses (i.e., the private realm) for reinforcing the desired sense of place.



Context Sensitive Solutions manual provided guidelines for developing cross sections and multimodal improvements

General Policy Recommendations

The following general policy recommendations are offered for consideration in an effort to increase the number of collector streets to better facilitate travel between local streets and arterials:

- Implement the future collector street network through the development review process
- Amend the collector street network to include new streets as they are identified during the development review process
- "Complete street" elements should be included in collector street design standards, including street trees, sidewalks, and bicycle amenities
- Work with the development and real estate community to increase public awareness of future collector street connections through enhanced signage – i.e., "Future Street Extension"
- Require new development to provide temporary turnaround accommodations for collector street stub-outs to allow access by maintenance and emergency vehicles if length exceeds 150'; right-of-way needed for these turnarounds would revert back to property owners once the connection is made



- Continue requiring new developments to reserve right-of-way for, and in some cases construct, future collector streets
- Continue considering adopting policies and dedicating funding to help construct traffic calming measures on existing collector streets that become connected to new collector streets
- Continue requiring all new developments to provide connections or stub-out streets in each of the four cardinal directions (where applicable)

The Action Plan in Chapter 7 provides more detail about the implementation of specific policy measures along the corridor.

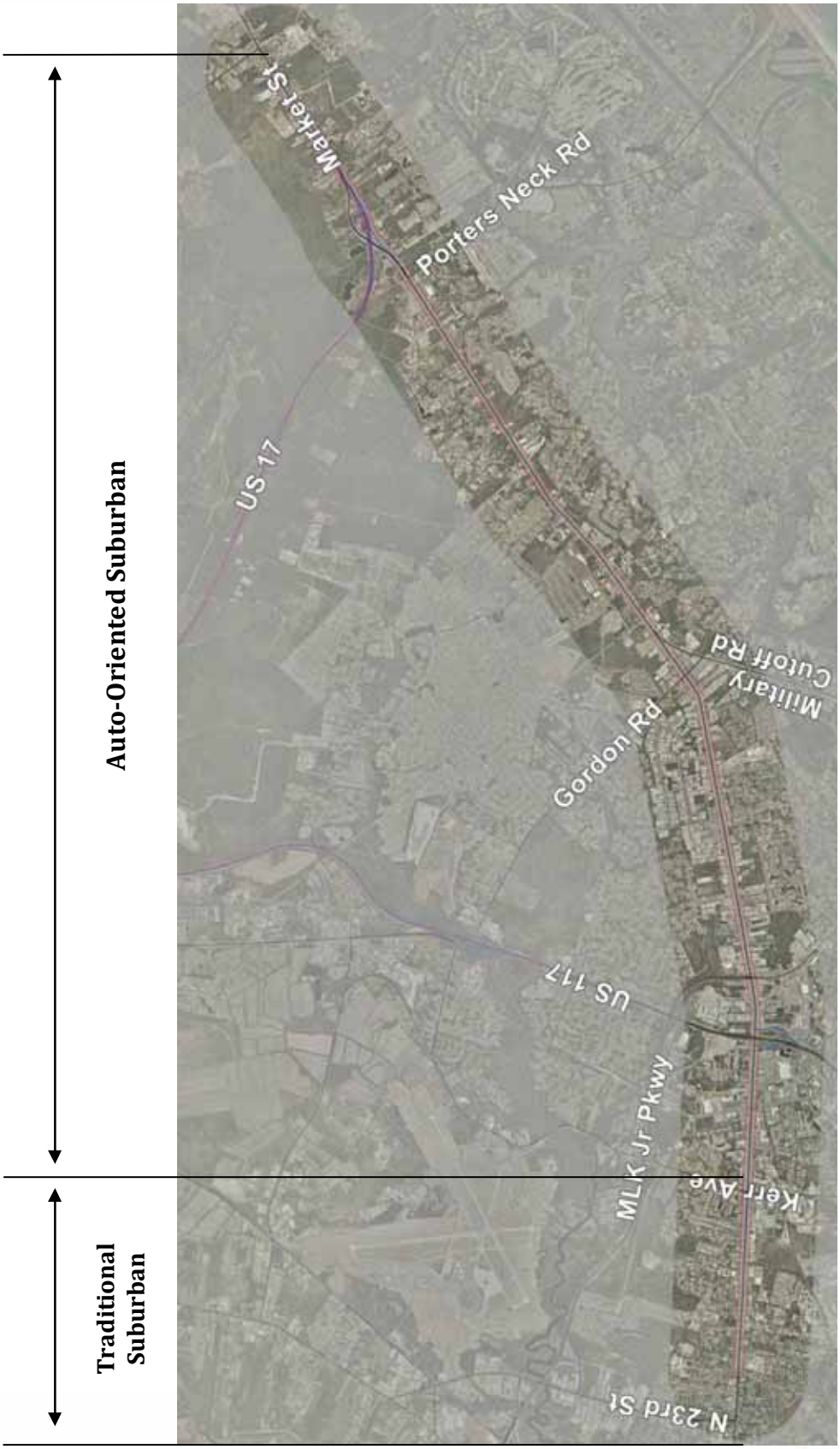
Context Zones

The Market Street corridor has a multitude of characteristics between Colonial Drive and Porters Neck Road. In the western portions of the corridor, the corridor exhibits a more urban feel; moving east, the corridor transitions to suburban. Finally, as you move into Pender County, it becomes rural in nature. The Market Street Corridor is a living example of the rural to urban transect, often cited by planners and engineers to describe human environments and their relationship with land use and transportation. The following character areas are present along the Market Street Corridor:

- **Traditional Suburban Zone – Colonial Drive to Kerr Avenue –** this area is typified by a large cluster of residential first-tier neighborhoods with commercial development fronting Market Street. The travelway currently is defined by narrow travel lanes, frequent transit stops, poor connections to adjacent neighborhoods, and an undefined pedestrian zone.
- **Automobile-Oriented Suburban Zone – Kerr Avenue to City Limits -** this area contains a much larger proportion of commercial development adjacent to the corridor. In the western portion of this context zone, the commercial developments consist of larger regional shopping centers directly adjacent to the Market Street Corridor. The type and size of the development begins to transition as the corridor moves farther east. There are more sprawling developments, such as automotive dealerships, and some opportunities still exist for greenfield development. The travelway is defined by wider lanes, higher speeds, less frequent transit service and virtually no pedestrian amenities.

The exhibit on the following page demonstrates how the changes in context zone are seen along the Market Street Corridor.



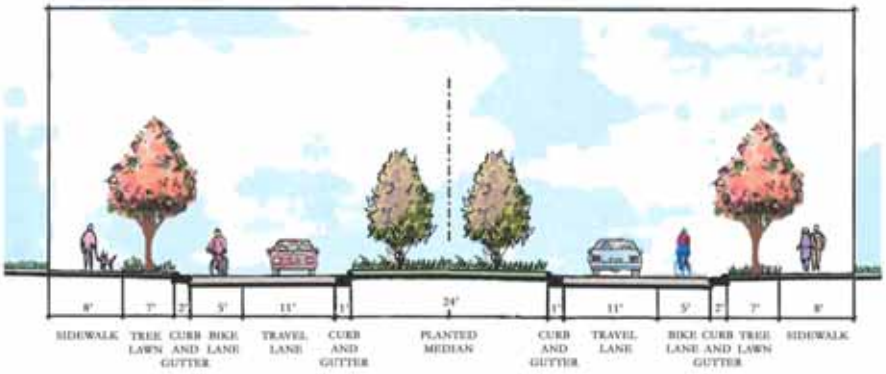

Auto-Oriented Suburban
Traditional Suburban
Market St
Porters Neck Rd
US 17
Military Cutoff Rd
Gordon Rd
US 117
MLK Jr Pkwy
Kerr Ave
N 23rd St



Based on the characteristics of the context zones identified throughout the corridor, the following proposed cross sections were developed for the Market Street Corridor.

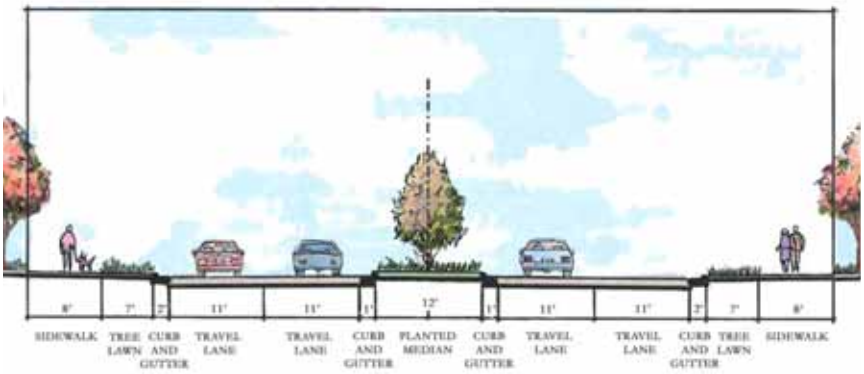
Colonial Drive to Wayne Drive

Based on the recommendations of the ***US 17 Business Corridor Plan***, the proposed cross section in this area includes the "road diet" concept identified in that study. The travelway is two lanes divided by a plantable median, with provisions for bicycle and pedestrian amenities.



Wayne Drive to Barclay Hills Drive

Given the traditional suburban context and number of residential uses found in this area, the proposed cross section includes smaller lane widths with a 12 foot landscaped median. The reduced lane widths remove need to widen, reducing potential impacts. The cross section includes sidewalks outside of the travelway.



Barclay Hills Drive to Porters Neck Road

The landscaped median is continued from Barclay Hills Drive to Porters Neck Road. The median should be at least 12 feet wide, with the option for small-scale street trees or shrubbery (see the Landscape Recommendations on p. 6-21 of this chapter). The overarching goal of this study is to remain within the exising curb-to-curb right-of-way, so lane width and median width may vary throughout the corridor. Lanes should be at least 11 feet wide, preferably 12 feet wide where there is available room.The cross section has eight-foot sidewalks on either side between Barclay Hills Drive and Bayshore Drive. Between Bayshore Drive and Porters Neck Road, sidewalks are included on both sides in addition to connections to various multi-use paths and trails.

Implementation Strategy:

Adopt the cross sections in your local design guidelines to guide future development along Market Street



ACCESS MANAGEMENT

As Market Street continues to attract commercial and residential development, protecting the through capacity becomes essential for the efficiency of the transportation system and continued economic growth. Access management balances the needs of motorists using a roadway with the needs of adjacent property owners dependent upon access to the roadway. In an environment with limited funds for transportation projects and competing agendas, ***access management*** is not just good policy but crucial to the health of the entire transportation network.

The Federal Highway Administration (FHWA) defines access management as "the process that provides access to land development while simultaneously preserving the flow of traffic on the surrounding system in terms of safety, capacity, and speed." According to the Access Management Manual, access management results from a cooperative effort between state and local agencies and private land owners to systematically control the "location, spacing, design, and operation of driveways, median openings, interchanges, and street connections to a roadway."[1] Access management requires cooperation between government agencies and private land owners.

> Access management results from a cooperative effort between state and local agencies and private land owners to systematically control the "location, spacing, design, and operation of driveways, median openings, interchanges, and street connections to a roadway.

The following sections provide access management policy measures and guidelines that should be integrated into the design review process for pending and future development along the Market Street corridor. Many of these policies are included in the model corridor ordinance documents included in the appendix of this report.

Implementation Strategy:

The policies and guidelines found in the Access Management toolkit should be integrated into the design review process for pending and future development



Poor access management contributes to congestion and safety issues along the corridor.

[1] Access Management Manual, Transportation Research Board, National Academy of Sciences, Washington DC, 2003



Symptoms and Benefits of Access Management

Poor access management directly affects the livability and economic vitality of commercial corridors, ultimately discouraging potential customers from entering the area. A corridor with poor access management lengthens commute times, creates unsafe conditions, lowers fuel efficiency, and increases vehicle emissions. Signs of a corridor with poor access management include:

- Increased crashes between motorists, pedestrians, and cyclists
- Worsening efficiency of the roadway
- Congestion outpacing growth in traffic
- Spillover cut-through traffic on adjacent residential streets
- Limited sustainability of commercial development

Without access management, the function and character of major roadway corridors can deteriorate rapidly and adjacent properties can suffer from declining property values and high turnover. Access management has wide-ranging benefits to a variety of users as shown in **Table 6.2.**

Table 6.2 - Benefits of Corridor Access Management

User	Benefit
Motorists	▪ Fewer delays and reduced travel times ▪ Safer traveling conditions
Bicyclists	▪ Safer traveling conditions ▪ More predictable motorist movements ▪ More options in a connected street network
Pedestrians	▪ Fewer access points and more median refuges increases safety ▪ More pleasant walking environment
Transit Users	▪ Fewer delays and reduced travel times ▪ Safer, more convenient trips to and from transit stops in a connected street and sidewalk network
Freight	▪ Fewer delays and reduced travel times lower cost of delivering goods and services
Business Owners	▪ More efficient roadway system serves local and regional customers ▪ More pleasant roadway corridor attracts customers ▪ Improved corridor aesthetics ▪ Stable property values
Government Agencies	▪ Lower costs to achieve transportation goals and objectives ▪ Protection of long-term investment in transportation infrastructure
Communities	▪ More attractive, efficient roadways without the need for constant road widening

Access Management Strategy Toolkit

Access management is not a one-size-fits-all solution to corridor congestion. Successful strategies differ throughout a region and even along the same road. The *Access Management Strategy Toolkit* (which is consistent with the *NCDOT Policy on Street and Driveway Access to North Carolina Highways*) provides a general overview of the various strategies available to mitigate congestion and its effects. A comprehensive access management program includes evaluation methods and supports the efficient



and safe use of the corridors for all transportation modes. The purpose of the toolkit is to provide local engineering and planning officials with access management strategies as well as an overview of their application; use; and, in some cases, unit costs.

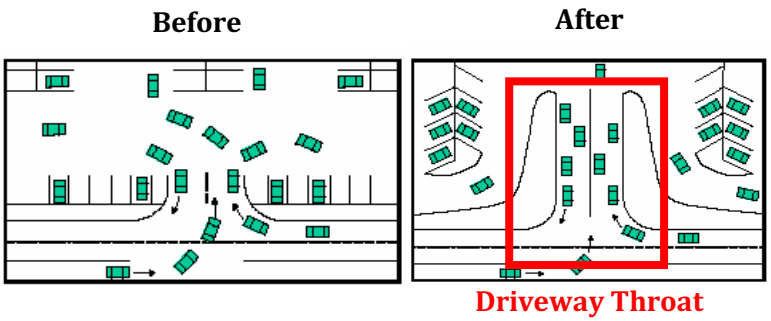
Site Access Treatments

Improvements that reduce the total number of vehicle conflicts should be a key consideration during the approval of redeveloped sites along corridors identified for access management programs. Site Access Treatments include the following:

- Improved On-Site Traffic Circulation
- Number of Driveways
- Driveway Placement/Relocation
- Cross Access

Improved On-Site Traffic Circulation

One way to reduce traffic congestion is to promote on-site traffic circulation. Pushing back the throat of an entrance, as shown in the figures to the right, helps avoid spillback onto the arterial. This action improves both the safety and efficiency of the roadway. A minimum separation of 100 feet should be provided to prevent internal site operations from affecting an adjacent public street, ultimately causing spillback problems. Approximate construction cost varies and usually is the responsibility of private development.

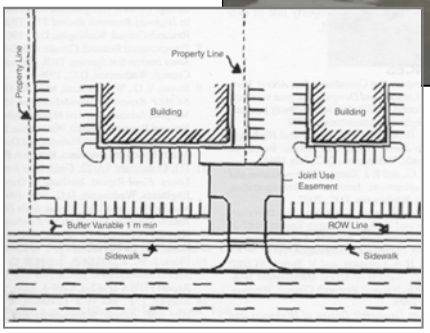


Number of Driveways

Only the minimum number of connections necessary to provide reasonable access should be permitted. For those situations where outparcels are under separate ownership, easements for shared access should be used to reduce the number of necessary connections. Reducing the number of access points also decreases the number of conflict points, making the arterial safer and more efficient. Approximate construction cost varies and usually is the responsibility of private development.



Driveways on Market Street





Driveway Placement/Relocation

Driveways located close to intersections create and contribute to operational and safety issues. These issues include intersection and driveway blockages, increased points of conflict, frequent/unexpected stops in the through travel lanes, and driver confusion as to where vehicles are turning. Driveways close to intersections should be relocated or closed, as appropriate. As a best planning practice, no driveway should be allowed within 100 feet of the nearest intersection.



Cross Access

Cross access is a service drive or secondary roadway that provides vehicular access between two or more continuous properties. Such access prevents the driver from having to enter the public street system to travel between adjacent uses. Cross access can be a function of good internal traffic circulation at large developments with substantial frontage along a major roadway. Similarly, backdoor access occurs when a parcel has access to a parallel street behind buildings and away from the main line. When combined with a median treatment, cross access and backdoor access ensure that all parcels have access to a median opening or traffic signal for left-turn movements.

Median Treatments

Segments of a corridor with sufficient cross access, backdoor access, and on-site circulation may be candidates for median treatments. A median-divided roadway improves traffic flow, reduces congestion, and increases traffic safety — all important goals of access management. While medians restrict some left-turn movements, overall traffic delays are reduced by removing conflicting vehicles from the mainline. Landscaping and gateway features incorporated into median treatments improve the aesthetics of the corridor, in turn encouraging investment in the area. Median treatments include the following:

- Non-traversable median
- Median u-turn treatment
- Directional cross-over (left-over crossing)
- Left-turn storage bays
- Offset left-turn treatment



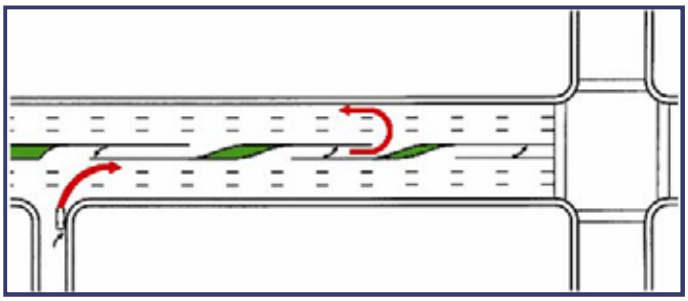
Non-Traversable Median



These features are raised or depressed barriers that physically separate opposing traffic flows. Inclusion in a new cross-section or retrofit of an existing cross-section should be considered for multi-lane roadways with high pedestrian volumes or collision rates as well as in locations where aesthetics are a priority. A non-traversable median requires sufficient cross and backdoor access. As these treatments are considered, sufficient spacing and locations for U- and left-turn bays must be identified.

The advantage of non-traversable medians includes increased safety and capacity by separating opposing vehicle flows, providing space for pedestrians to find refuge, and restricting turning movements to locations with appropriate turn lanes. Disadvantages include increased emergency vehicle response time (indirect routes to some destinations), inconvenience, increased travel distance for some movements, and potential opposition from the general public and affected property owners. To overcome some of these disadvantages, sufficient spacing and location of U- and left-turn bays must be identified. Approximate construction cost varies.

Median U-Turn Treatment



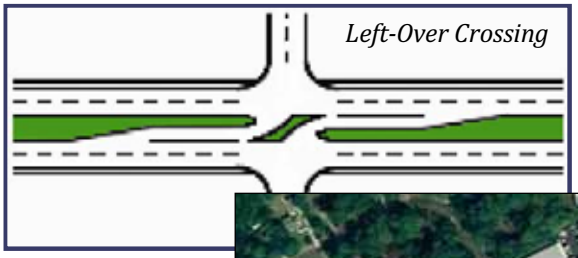
Median U-Turn Movement

These treatments involve prohibiting or preventing minor street or driveway left-turns between signalized intersections. Instead, these turns are made by first making a right-turn and then making a U-turn at a nearby median opening or intersection. These treatments can increase safety and efficiency of roadway corridors with high volumes of through traffic, but should not be used where there is not sufficient space available for the provision of U-turn movements. The location of U-turn bays must consider weaving distance, but also not contribute to excessive travel distance.

Advantages of median U-turn treatments include reduced delay for major intersection movements, potential for better two-way traffic progression (major and minor streets), fewer stops for through traffic, and fewer points of conflict for pedestrians and vehicles at intersections. Disadvantages include increased delay for some turning movements, increased travel distance, increased travel time for minor street left-turns, and increased driver confusion.



Directional Crossover (Left-Over Crossing)



When a median exists on a corridor, special attention must be given to locations where left-turns are necessary. A left-over is a type of directional crossover that prohibits drivers on the cross road (side street) from proceeding straight through the intersection with the main road, but allows vehicles on the mainline to turn left onto the cross road. Such designs are appropriate in areas with high traffic volumes on the major road and lower volumes of through traffic on the cross road, particularly where traffic needs to make left-turns from the main line onto the minor street. A properly implemented left-over crossing reduces delay for through-traffic and diverts some left-turn maneuvers from intersections. By reducing the number of conflict points for vehicles along the corridor, these treatments improve safety.

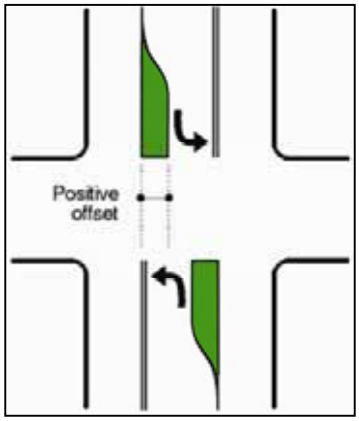


Left-Turn Storage Bays



Where necessary, exclusive left-turn lanes/bays should be constructed to provide adequate storage space exclusive of through traffic for turning vehicles. The provision of these bays reduces vehicle delay related to waiting for vehicles to turn and also may decrease the frequency of collisions attributable to lane blockages. In some cases, turn lanes/bays can be constructed within an existing median. Where additional right-of-way is required, construction may be more costly.

Offset Left-Turn Treatment



Exclusive left-turn lanes at intersections generally are configured to the right of one another, which causes opposing left-turning vehicles to block one another's forward visibility. An offset left-turn treatment shifts the left-turn lanes to the left, adjacent to the innermost lane of oncoming through traffic. In cases where permissive left-turn phasing is used, this treatment can improve efficiency by reducing crossing and exposure time and distance for left-turning vehicles. In addition, the positive offset improves sight distance and may improve gap recognition. In locations with sufficient median width, this treatment can be easily retrofitted. Where insufficient right-of-way width exists, the construction of this treatment can be difficult and costly. As a result, approximate construction costs vary.

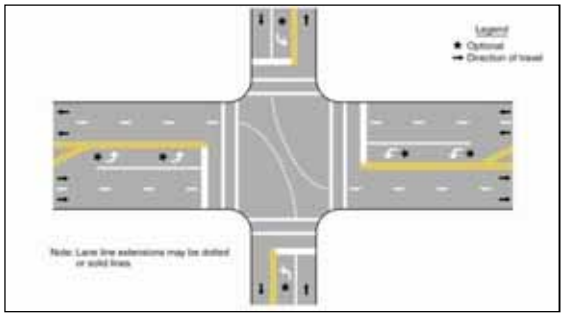


Intersection and Minor Street Treatments

The operation of signalized intersections can be improved by reducing driver confusion, establishing proper curb radii, and ensuring adequate laneage of minor street approaches. Intersection and Minor Street Treatments include the following:

- Mini-skips (dotted line markings)
- Intersection and driveway curb radii
- Minor street approach improvements

Mini-Skips (Dotted Line Markings)



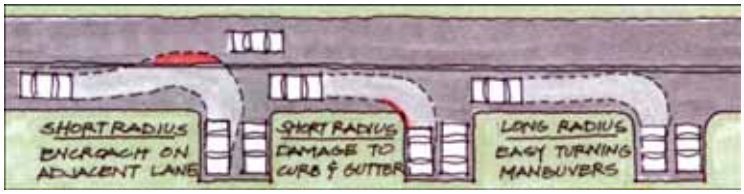
These pavement markings can reduce driver confusion and increase safety by guiding drivers through complex intersections. Intersections that benefit from these lane markings include offset, skewed, or multi-legged intersections. Mini skips are also useful at intersections with multiple turn lanes. The dotted line markings extend the line markings of approaching roadways through the intersection. The markings should be designed to avoid confusing drivers in adjacent or opposing lanes.

Intersection and Driveway Curb Radii



Damage due to insufficient curb radius

Locations with inadequate curb radii may cause turning vehicles to use opposing travel lanes to complete their turning movement. Inadequate curb radii may cause vehicles to "mount the curb" as they turn a corner and cause damage to the curb and gutter, sidewalk, and any fixed objects located on the corner. This maneuver also can endanger pedestrians standing on the corner, putting them in harm's way if a vehicle mounts the curb. Curb radii should be adequately sized for area context and likely vehicular usage.



Minor Street Approach Improvements

At signalized intersections, minor street vehicular volumes and associated delays may require that a disproportionate amount of green time be allocated to the minor street, contributing to higher-than-desired main street delay. With laneage improvements to the minor street approaches, such as an additional left-turn lane or right-turn lane, signal timing often can be re-allocated and optimized.



PREFERRED ACCESS PLAN

Based on the principles outlined in the *Access Management Strategy Toolkit*, a preferred access plan was developed for the Market Street corridor between Colonial Drive and Porters Neck Road. The preferred access plan provides the framework for improvements to access and mobility along the corridor, providing locations for signalized intersections, left-over treatments, non-traversable medians, and potential grade separations. **Figures 6.2** and **6.3** show the preferred access plan for the western and eastern portion of the corridor, respectively.

Implementation Strategy:

The local governing bodies should adopt the preferred access plans as official guiding documents for use in the development review process

Spacing standards for signalized intersections and median openings were developed based on the *AASHTO Policy on Geometric Design of Streets and Highways* and the *NCDOT Policy on Street and Driveway Access*. **Table 6.3** below provides the spacing standards used for the development of the preferred access plan. The spacing standards differ between urban and rural context zones, given the characteristics of travel and the roadway.

This plan recommends that the city of Wilmington, New Hanover County, and WMPO adopt these maps as official guiding documents for use in the development review process. The spacing standards below, as well as the access management policies in the previous sections, should be incorporated into local development ordinances to guide future projects adjacent to Market Street.

There are four types of intersection treatments recommended for the Market Street corridor, including Full Movement Signalized intersection, Median Crossover intersection, Emergency Preemption Signalized intersection, and Grade Separated intersection treatments.

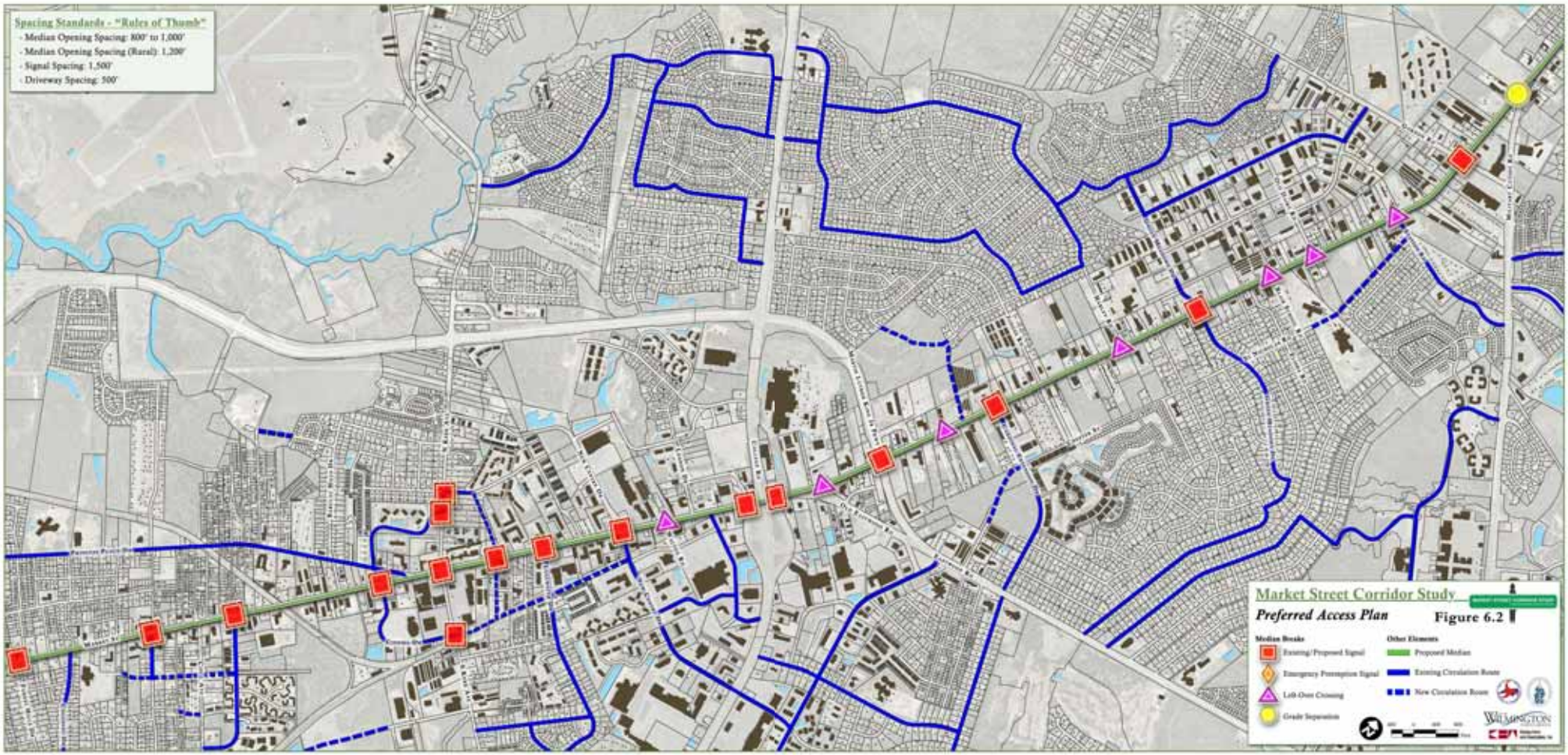
Table 6.3 - Minimum Median Opening, Driveway, and Signal Spacing

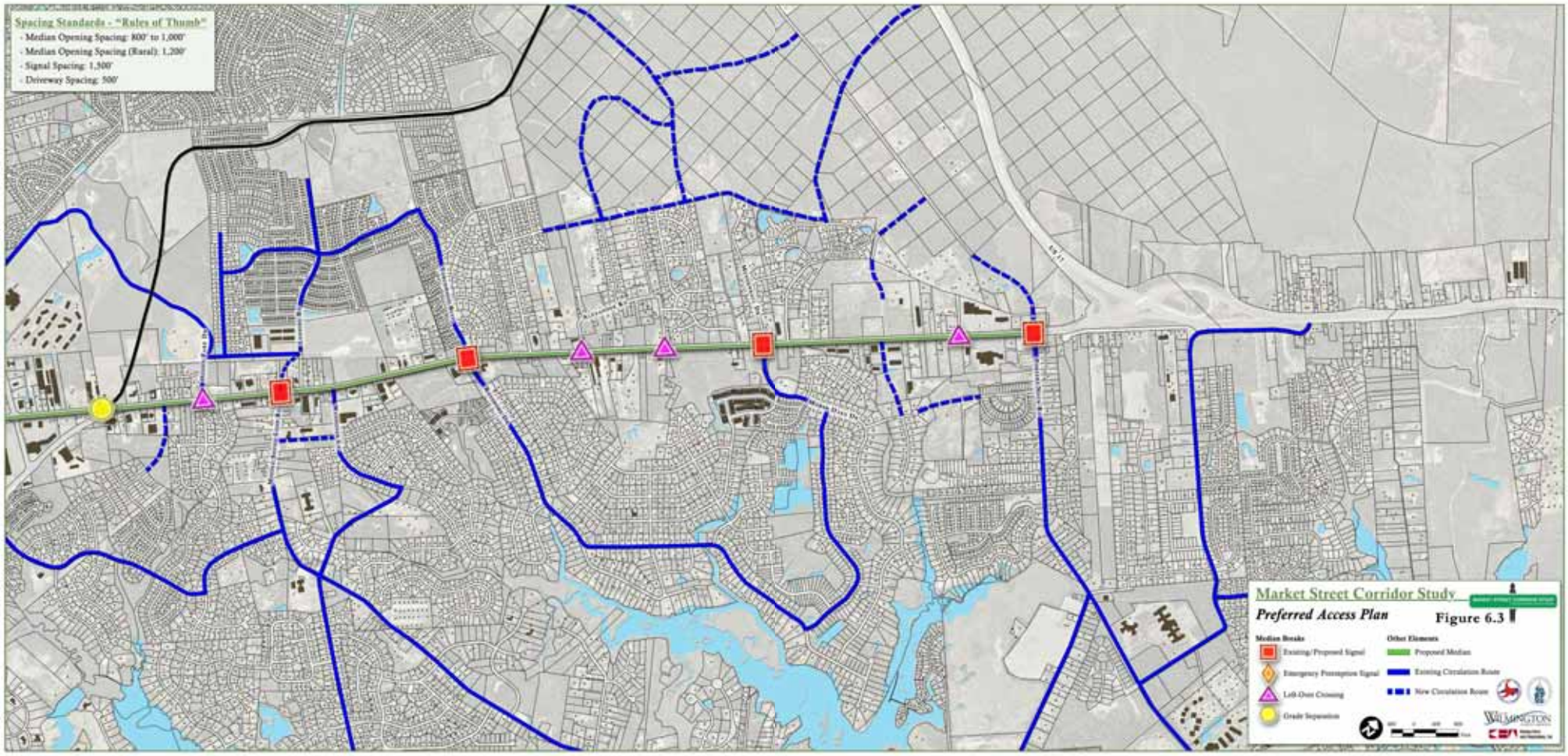
Context	Signal/Full Median Opening Spacing	Directional Median Opening Spacing	Adjacent Driveway Spacing	Opposite Street Driveway Spacing
Urban	1,500 feet	700 – 1,000 feet	300 feet	300 feet
Suburban-Rural	1,500 feet	1,200 feet	500 feet	500 feet

Notes:

1. No median opening shall be placed where it would interfere with the storage length requirements of an existing intersection.

2. A directional median opening represents a median that prohibits specific turning movements (e.g. directional cross over, channelized restrictions, etc.), usually through the use of channelization.

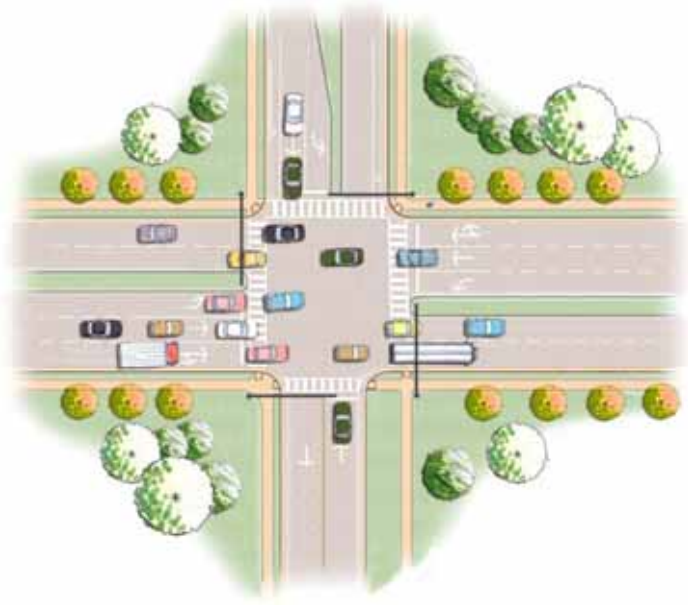

Spacing Standards - "Rules of Thumb"
- Median Opening Spacing: 800' to 1,000'
- Median Opening Spacing (Rural): 1,200'
- Signal Spacing: 1,500'
- Driveway Spacing: 500'
Market Street Corridor Study
Preferred Access Plan
Figure 6.2
Median Breaks
Existing/Proposed Signal
Emergency Preemption Signal
Left-Over Crossing
Grade Separation
Other Elements
Proposed Median
Existing Circulation Route
New Circulation Route


Spacing Standards - "Rules of Thumb"
- Median Opening Spacing: 800' to 1,000'
- Median Opening Spacing (Rural): 1,200'
- Signal Spacing: 1,500'
- Driveway Spacing: 500'
Market Street Corridor Study
Preferred Access Plan
Figure 6.3
Median Breaks
Existing/Proposed Signal
Emergency Preemption Signal
Left-Over Crossing
Grade Separation
Other Elements
Proposed Median
Existing Circulation Route
New Circulation Route



Full Movement Signalized Intersection

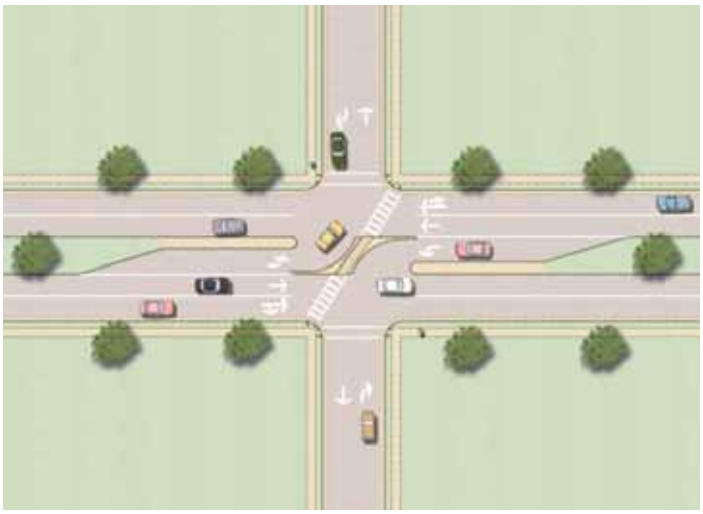
Full movement signalized intersections are proposed at those locations with the heaviest traffic volumes. In total there are 18 proposed full movement intersections along Market Street between Colonial Drive and Porters Neck Road. One new signal is proposed at Wilmington Avenue. One signal is proposed to be relocated from Barclay Hills Drive to Cinema Drive. The signal at Princess Place Drive should be replaced with a dedicated emergency preemption signal.



Full movement intersections should incorporate multimodal transportation features, such as crosswalks, pedestrian push-button signal activation, pedestrian countdown lighting, sidewalks, and pedestrian refuge in the non-traversable median. The picture to the right indicates a typical full movement intersection configuration along Market Street.

Median Crossover Intersection

Median crossover intersections are proposed at those locations where the minor leg movement is not heavy enough to warrant full median openings. At these locations, vehicles turning left from the minor movement will make a right-turn onto Market Street and perform a U-turn movement at the next upstream intersection. There are 10 locations along the corridor that are proposed for some type of median crossover concept between Colonial Drive and Porters Neck Road.



There are a variety of median crossover intersection treatments recommended along Market Street, but the most prevalent is the "left-over" treatment allowing vehicles from Market Street to either turn left onto the minor leg or perform a U-turn movement to reach a downstream destination. The other type of median crossover treatment used along the corridor is a "left-in/left-out" concept, which allows motorists from the main line and minor leg to make left-turns, but prohibits through movements from the minor leg. There are a few locations that allow U-turn movements only, and are included in the preferred access



plan to provide the highest possible level of access (based on the prescribed spacing standards) to existing development along the corridor.

Emergency Preemption Signal

Emergency preemption signals are proposed at one location along the corridor that directly serves emergency service vehicles – near the Ogden Fire and Rescue complex, located directly adjacent to Market Street. This signal will only stop traffic along Market Street in the event of an emergency, providing priority passage to the emergency service vehicles from the adjacent stations. The full recommendation includes an emergency preemption signal and mountable median.

Landscaping Recommendations

The main focus of this study is to provide congestion relief and safety improvements along the Market Street corridor. An ancillary goal is to provide aesthetic improvements, transforming the corridor from a perceived eyesore to a gateway into and through the community. The addition of landscaped medians and street trees within and outside of the right-of-way will provide a facelift along the corridor, and make the area more attractive for development and enjoyable for motorists and pedestrians. There are two types of tree cover proposed for the Market Street corridor: canopy and ornamental. The type of tree used along the corridor will depend on the distance from passing vehicles. During final design and implementation of streetscape improvements, all improvements should comply with NCDOT's *Guidelines for Planting Within Highway Right-of-Way*, which provides guidance on dimensions, spacing, planting details, and approved planting lists. The local power company should be included in potential rerouting discussions. Additionally, incentives should be provided to developers for planting at least one tree on their respective properties.

The following sections describe the proposed trees.

Canopy Trees

Canopy trees can only be used at locations with adequate distance from passing vehicles. Given the typical travel speeds along Market Street, canopy trees would need to be at least fifteen feet from the travelway. These types of trees are proposed behind the sidewalks on either side of Market Street. The pictures to the right provide a few examples of the types of canopy trees that could be used along the Market Street corridor.

Potential canopy trees for the Market Street corridor



Live Oak



Panache Shumard Oak



Willow Oak



Zelkova



Tulip Poplar



American Yellowwod



Ornamental Trees

Ornamental trees can only be used at locations with shorter distances from passing vehicles. Given the typical travel speeds along Market Street, ornamental trees can be planted six feet from the travelway, and should be used in the planting strip or in the landscaped median. The pictures to the right provide a few examples of the types of ornamental trees that could be used along the Market Street corridor.

Shrubs

In landscape areas not offering enough space to the edge of the travel lane, or areas where additional landscape layering and interest is desired, shrubs can be used. There are a variety of native species combined with drought tolerant species that would do well as median plantings or roadside planting beds. A few examples of possible shrubs are shown below.

Potential ornamental trees for the Market Street corridor



Miami Crape Myrtle



Naches Crape Myrtle



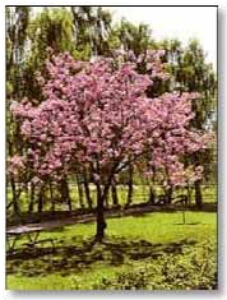
Fringe Tree



Flowering Dogwood



Chastetree



Higan Cherry



Chinese Pistachio



Flowering Crabapple

Potential shrubbery for the Market Street corridor



Dwarf Yaupon Holly



Sea Green Chinese Juniper



Knockout Rose



Azalea Formosa



Indian Hawthorn



Barberry



ROADWAY IMPROVEMENT RECOMMENDATIONS

The following sections describe specific details of the proposed improvements along Market Street. These descriptions include sections of roadway with similar improvements and specific intersection related improvements. As the descriptions move east along the corridor, there are less section improvements, as there are longer sections of uninterrupted median proposed. Those sections follow the assumptions below. Full roadway concept plans can be found in the ***Executive Summary*** report, which is found under separate cover.

Implementation Strategy:

The landscape plan found in this study should be incorporated into the Market Street Overlay District, helping make decisions during the development review process

ASSUMPTIONS

- All roadway improvements along Market Street are intended to stay within the existing curb-to-curb right-of-way.
- Traffic volumes used to develop these recommendations were provided by NCDOT as part of a forecast developed for TIP project U-4902.
- Build-out analysis was conducted for horizon year 2035, based on the forecasts provided by NCDOT.

GENERAL RECOMMENDATIONS AND ASSUMPTIONS

- Non-traversable plantable median should be planted between Barclay Hills Drive and Porters Neck Road, with median openings dictated by the Preferred Access Plan, and turning pocket storage capacity dictated by the *Conceptual Design Plans* found in this study's associated ***Executive Summary***.
- Traffic signals should be coordinated to optimize traffic flow along the corridor (based on location and distance between signals).
- Pedestrian level improvements should be included at all full median opening signalized intersections. These improvements include crosswalks (including high visibility crosswalks on all approached with posted speed limits higher than 45 miles per hour), pedestrian refuge in median splitters, and pedestrian signal timing with countdown heads.
- Pedestrian level improvements should be provided at mid-block areas where indicated on the *Conceptual Design Plans* found in this study's associated ***Executive Summary***.



COLONIAL DRIVE TO WAYNE DRIVE

The section of Market Street between Colonial Drive and Wayne Drive remains consistent with the recommendations of the ***US 17 Business Corridor Plan (2006)***. The recommendation of this plan is the construction of a "road diet", reducing the total number of lanes from four or five to two, with turning pockets at major intersections, a planted median, and on-road bicycle lanes. This concept is planned for the entire length of Market Street between Wayne Drive and N. and S. 3rd Street in downtown Wilmington.

For this section of the corridor, there are four proposed median openings. The first is a two-way stop controlled intersection at Colonial Drive and Barnard Drive. The second is a one direction left-over treatment into the YMCA complex. Vehicles exiting the YMCA and wishing to go towards downtown will be required to either perform a U-turn at N. 29th Street or use the second entrance/exit onto N. 29th Street. The third median opening is at N. 29th Street, which is proposed for two-way stop control. The fourth and final median opening in this section is planned for Wayne Drive, which is discussed in greater detail in the next section.



Independence Boulevard Extension

Between Wayne Drive and Darlington Avenue, the proposed Independence Boulevard extension creates a new major intersection with Market Street that will require treatment beyond a simple full movement intersection. The proposed improvement is a grade separated interchange, with connections between Market Street and Independence Boulevard using collector-distributor roads on the existing Wayne Drive and Darlington Avenue alignments. The entry points onto Independence Boulevard are proposed to operate with right-in/right-out operations, with the provision of adequate acceleration and deceleration lanes onto the freeway facility. **Figure 6.4** on the following page provides a rendering of this concept.

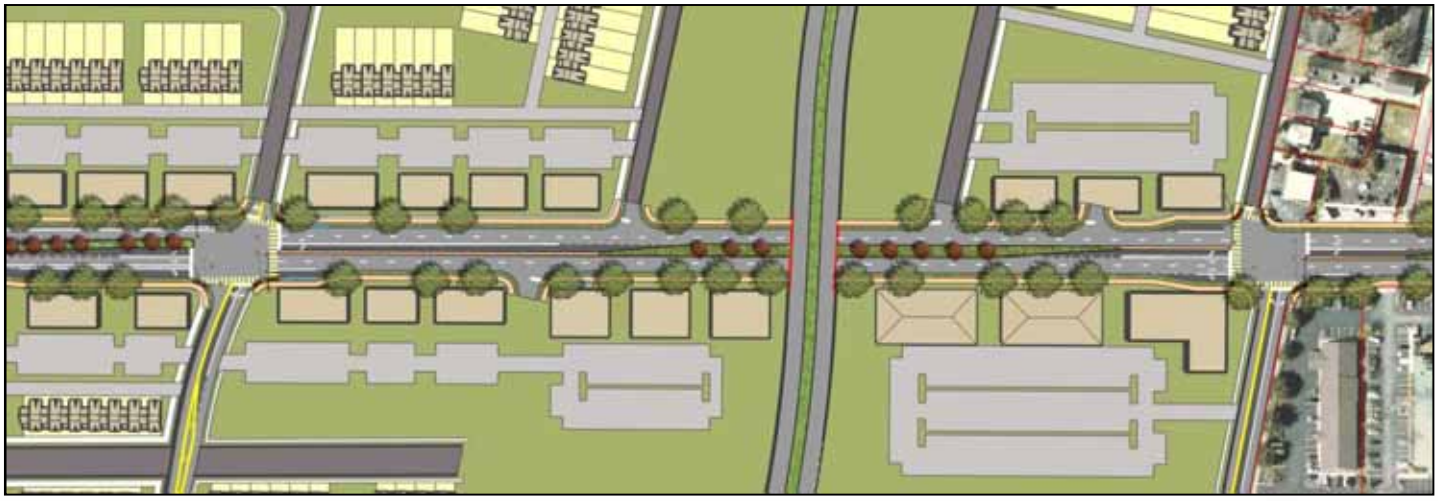


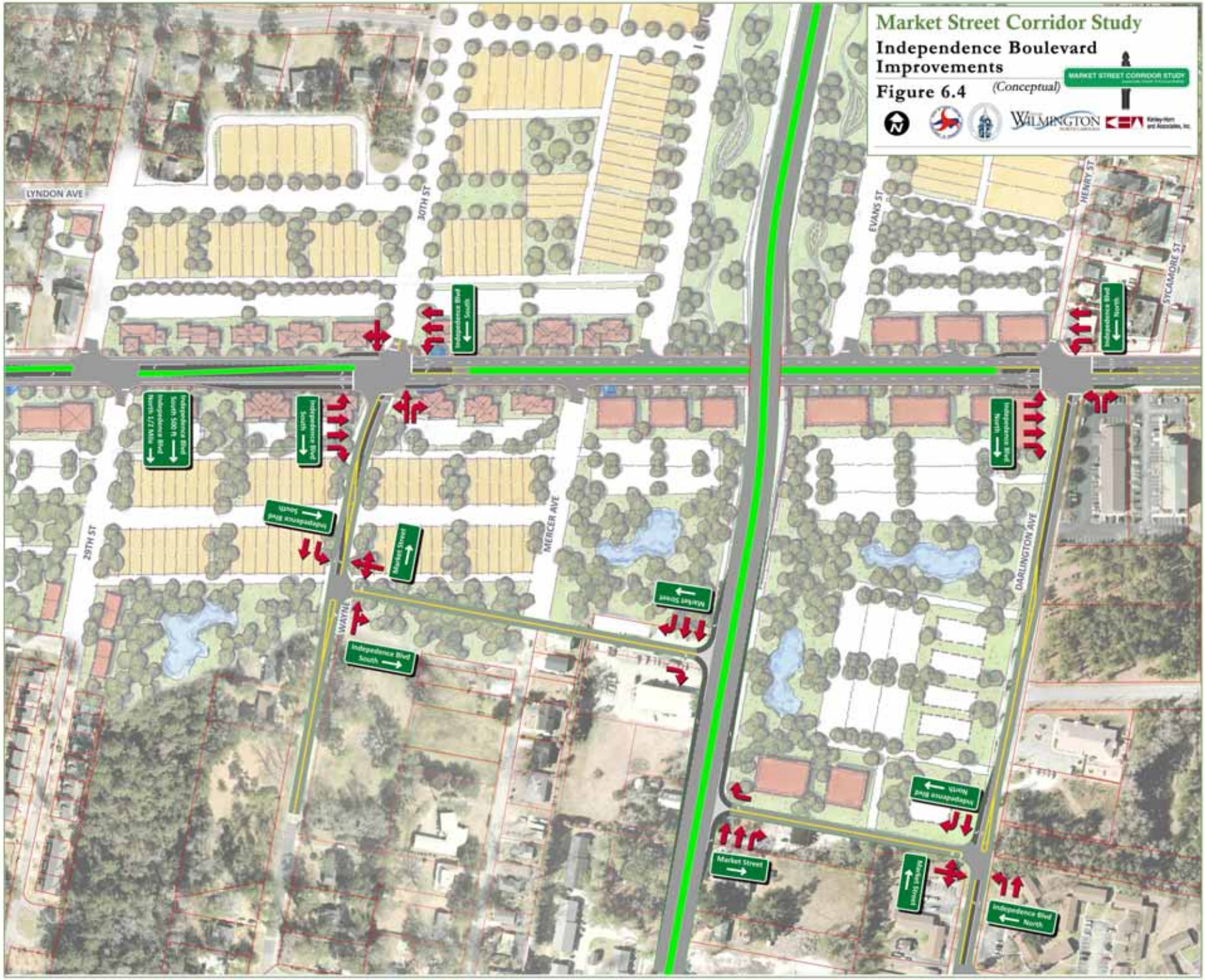


Conceptual renderings of the Independence Boulevard grade separation over Market Street.

Both the intersection of Wayne Drive/Market Street and Darlington Avenue/Market Street are proposed for full movement signalization. Given the expected traffic using the Independence Boulevard extension, dedicated left-turn lanes will be necessary on the major approaches along Market Street and the southern legs of the minor street movements.

Given the heavy occurrence of angle and left-turning collisions in this section of the corridor, the conceptual design includes a landscaped median between Wayne Drive and Barclay Hills Drive, creating a consistent cross section the entire length of the project, and providing more predictability for drivers.




Market Street Corridor Study
Independence Boulevard Improvements
Figure 6.4
(Conceptual)
MARKET STREET CORRIDOR STUDY
WILMINGTON
LYNDON AVE
30TH ST
EVANS ST
HENRY ST
SYCAMORE ST
29TH ST
MERCER AVE
WAYNE
DARLINGTON AVE
Independence Blvd South
Independence Blvd South 500 ft
Independence Blvd North 1/2 Mile
Market Street
NIMAS Street
Independence Blvd North



Darlington Avenue to Barclay Hills Drive

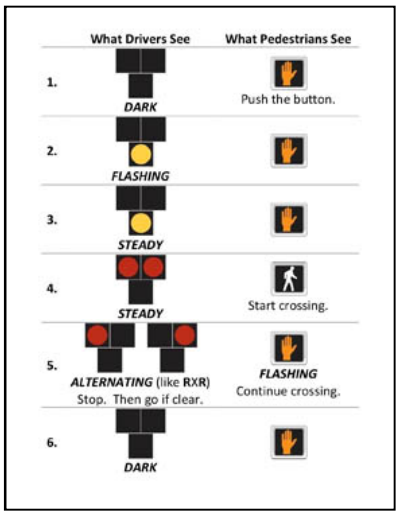
Between Darlington Avenue and Barclay Hills Drive, the raised landscaped median is continued from the previous section. This section still exhibits high occurrences of left-turn and angle collisions. The existing signal at the Barclay Hills Drive intersection is proposed to removed, with a mountable median providing access for emergency service vehicles from the city of Wilmington Fire Station #3, while prohibiting through and turning movements from passenger vehicles.



Princess Place Drive

The existing intersection of Princess Place Drive and Market Street has been recently converted from a full movement intersection to a partial movement intersection with right-turns from westbound Market Street as the only allowed movement. This configuration is proposed to be maintained in the short term, until the quadrant design at Kerr Avenue and Market Street is implemented. At the time of implementation, this intersection should be closed completely.

Ultimately, this location will become a pedestrian mid-block crossing, allowing access between the mixed-use destinations on either side of Market Street (see Market/Kerr development concepts on the following pages). For pedestrian safety improvements, it is recommended that a High-intensity Activated Crosswalk (HAWK) be installed at this location. The HAWK uses simple traffic and pedestrian signal heads, but is only activated when a pedestrian presses the button. At other times, the signal head is blank, allowing continuous flow of traffic. When activated, vehicles must stop and allow pedestrians safe passage.



Example HAWK signal configurations



KERR AVENUE

The N. and S. Kerr Avenue and Market Street intersection is one of the most heavily traversed intersections along the corridor today. The intersection was also the fourth highest along the corridor in terms of crash frequency and severity. Most of the congestion and safety issues are caused by the heavy volumes of left-turning vehicles between N. and S. Kerr Avenue and Market Street.

The proposed recommendation for the intersection is to reduce the conflict points caused by these left-turns by implementing a quadrant intersection concept. **Figure 6.5** on the following page shows a graphical representation of this concept. The quadrant roads will allow for the removal of left-turning traffic from N. and S. Kerr Avenue and Market Street, relocating those movements to quadrant roads in the southwest and northeast quadrants of the intersection.

On the western side of the intersection, the quadrant design will use the existing alignments along Cinema Drive and Birchwood Drive, requiring only a new connection between Princess Place Drive and Market Street. On the eastern side, the design will require new alignments between McClelland Drive and Market Street and S. Kerr Avenue and Wilmington Avenue. These facilities are envisioned as two lane collector roads that provide access between the two major facilities and potential new development within the quadrants.

Access management standards should be applied to the quadrant roadways, minimizing the total number of driveways allowed from existing or future developments. Based on the conceptual development plans shown with the quadrant designs in **Figure 6.5**, it is envisioned that no more than two full access driveways should be necessary along the quadrant roads. Along Market Street, access should be minimized to right-in/right-out, and should be restricted to no more than one driveway per quadrant.



Existing Kerr Avenue intersection approach



Conceptual rendering of the Kerr Avenue and Market Street intersection redevelopment



Street level conceptual rendering of the Kerr Avenue and Market Street intersection redevelopment



At the time of this study, NCDOT is developing recommendations related to the widening of Kerr Avenue (as discussed in Chapter 3). At the beginning of the Market Street Corridor Study, the widening plans at the Kerr Avenue and Market Street intersection included more than 20 dedicated traffic lanes, including multiple left turn lanes on several approaches. In response to citizen concern raised as part of this study, NCDOT agreed to reevaluate the design at this intersection for potential context sensitive solutions. The result of this re-evaluation was a confirmation of the quadrant design, and a major change in the design plans.

The current recommendation at this intersection is for a two-quadrant design. NCDOT has evaluated existing and future traffic patterns and determined that quadrants in the northeast and southwest quadrants will efficiently move traffic through the intersection with minimal impacts to adjacent land uses. Based on a review of the plans and design year traffic, this study fully supports the development of the two-quadrant design. We do recommend that the City of Wilmington keep the four-quadrant design available in the event that future traffic levels necessitate the full build-out of the recommendation.

The NCDOT two-quadrant design alternatives are shown to the right.






Market Street Corridor Study
Kerr Avenue Improvements
Figure 6.5
(Conceptual)
Market Street East
Market Street West
PRIVATE



Specific questions were raised during the conceptual design process regarding the overall laneage needed at the quadrant intersections to accommodate projected traffic from the potential new development. The following tables provide a comparison of level-of-service and delay for specific movements at Market Street and Cinema Drive.

Market Street at Cinema Dr. Eastbound Right Laneage Comparison							
Laneage	**Lane**	**AM Volumes**	**PM Volumes**	**AM LOS (Delay)**	**PM LOS (Delay)**	**AM Queue Length**	**PM Queue Length**
Through-Right	Through	1224	1391	C (24.2)	C (21.3)	750'	650'
	Right	93	58	C (24.2)	C (21.3)	750'	650'
Exclusive Right	Through	1224	1391	B (19.8)	C (21.4)	425'	625'
	Right	93	58	A (2.2)	A (1.1)	25'	25'

Market Street at Cinema Dr. Southbound Right Laneage Comparison							
Laneage	**Lane**	**AM Volumes**	**PM Volumes**	**AM LOS (Delay)**	**PM LOS (Delay)**	**AM Queue Length**	**PM Queue Length**
Through-Right	Through	15	34	E (79.4)	F (100.3)	150'	225'
	Right	59	69	E (79.4)	F (100.3)	150'	225'
Exclusive Right	Through	15	34	E (63.1)	E (75.1)	50'	75'
	Right	59	69	D (40.3)	D (35.0)	125'	100'

Based on this analysis, the addition of exclusive right-turn lanes in the northbound and southbound directions will decrease the delay of right-turning vehicles, most of which is due to the ability to allow an overlap phase with exclusive right-turn lanes. However, through traffic delay is only marginally decreased for eastbound traffic as a result of the extra turn lanes. Additionally, the overall intersection level of service is only marginally decreased as a result of the addition of these turn lanes. Since the right-turning volumes are at most 93 and 69 for eastbound and southbound right-turns, it does not seem cost effective to build the exclusive right-turn lanes considering the amount of additional right-of-way needed to build the lanes.

However, the conceptual design plans included in this report provide for the inclusion of these turn lanes. The final decision on addition of right-turn lanes is dependent on traffic forecasts from the Kerr Avenue project currently being conducted by NCDOT.

New Centre Drive/Walton Road/Lennon Drive

The New Centre Drive and Market Street intersection experiences some of the highest congestion and traffic delay along the corridor, due to the large shopping center located in the southeast quadrant of the intersection. The existing roadway is separated by a monolithic concrete median, and left-over access is provided for vehicles turning from Market Street to Lennon Drive.



Existing left-over at Lennon Drive

Currently, vehicles traveling westbound on Market Street attempting to turn left into the shopping center have one option for accessing the shopping center — making a left-turn at the New Centre/Market intersection. This movement experiences heavy volumes (200+ vehicles in the peak hour), while also experiencing delay from vehicles making U-turn movements at the intersection to reach destinations upstream of the shopping center. One proposed solution – the addition of a left-out from Van Campen to reduce congestion at New Centre – does not work because of spacing requirements needed for acceleration distances.



Existing congestion at New Centre Drive

The proposed recommendation is to remove the eastbound left-over access at Lennon Drive and construct a westbound left-over access point at Walton Drive, creating a second access point to the shopping center. By comparison, approximately 170 vehicles make left-turns at Lennon Drive in the peak hour and 200+ make left-turns at New Centre Drive. New connections between Gingerwood Drive and Lennon Drive allow for a secondary access point to the businesses and residences along Lennon Drive via signalized intersection at Gingerwood Drive.





As part of the study, separate Synchro analyses were performed to determine whether a left-over should be placed at Lennon Drive or Walton Road for delay savings at upstream and downstream intersections in the area. The analyses utilized 2009 traffic counts with additional traffic added in for U-turns once the proposed medians were reconfigured.

It is assumed that half of the southbound left-turns at the New Centre Drive/Bob King Drive and New Centre Drive/Sigmon Road intersections would utilize the left-over at Walton Road if given the choice rather than taking a left at New Centre Drive and another left at either Bob King Drive or Sigmon Road. The connection of Gingerwood Drive with Lennon Drive creates the opportunity for left-turning vehicles on Market Street to use Gingerwood Drive to access Lennon. The table below provides the results of a comparison of the two left-over locations.

Area Delay Savings Comparison (Walton Road Left-Over vs. Lennon Drive Left-Over)

Intersection	AM LOS (Delay)			Midday LOS (Delay)			PM LOS (Delay)			Total Delay Savings
	Lennon L-O	Walton L-O	Delay Difference	Lennon L-O	Walton L-O	Delay Difference	Lennon L-O	Walton L-O	Delay Difference	
New Centre Dr.	C (29.5)	C (26.1)	3.4	E (58.8)	D (52.1)	6.7	E (64.9)	D (51.0)	13.9	24
Walton Rd.	A (8.8)	A (9.7)	-0.9	B (10.2)	B (10.5)	-0.3	B (11.1)	B (10.9)	0.2	-1
Lennon Dr.	B (12.3)	B (10.9)	1.4	B (12.3)	B (10.3)	2	B (12.6)	B (10.3)	2.3	5.7
Gingerwood Dr.	C (33.8)	D (35.0)	-1.2	C (35.0)	D (39.1)	-4.1	C (33.2)	D (37.9)	-4.7	-10
Total Delay	84.4	81.7	2.7	116.3	112	4.3	121.8	110.1	11.7	18.7

The Walton Road left-over analysis resulted in some increase in delay at the Gingerwood Drive intersection, but these increases were no more than 4.7 seconds, which should not adversely affect intersection level-of-service. However, decreases in average delay at the New Centre Drive intersection lowered the LOS to D from E in both the Midday and PM peak periods. The PM delay at this intersection is expected to be reduced by nearly 14 seconds with the proposed improvements.

Moving the left-turning vehicles to this intersection has minimal impacts to delay at the Gingerwood Drive/ S. College Road SB Ramp/Market Street intersection, providing very positive benefits at the New Centre Drive/Market Street intersection by redistributing the left-turning and U-turning vehicles at the intersection.



N. AND S. COLLEGE ROAD

The only proposed geometric change proposed at this location is the inclusion of dual left-turns at the S. College Road ramp intersection with Market Street. Based on the traffic forecasts provided by NCDOT, the left-turning volumes are only 194 vehicles in the AM peak and 21 vehicles in the PM peak. Providing an additional left-turn lane would require a moderate to significant right-of-way and infrastructure investment, while the overall intersection level-of-service would remain LOS C and the overall intersection delay would only be reduced less than a second. In addition, the additional laneage will make it more difficult for pedestrian crossings at this intersection, increasing walk distance and conflicts. With this in mind, the final decision to include a dual left-turn lane should be weighed between right-of-way/infrastructure costs vs. level-of-service savings.

Additionally, this location is currently divided by a concrete monolithic median. The median is proposed to be converted to a plantable median, consistent with the remainder of the corridor. Other minor improvements include constructing a concrete "porkchop" island, delineating the right-turn lane from Market Street onto S. College Rd. southbound and installing pedestrian amenities, such as crosswalks
and pedestrian countdown signal heads.





EASTWOOD ROAD/OLD EASTWOOD ROAD

The Eastwood Road/Martin Luther King Jr. Parkway/ Market Street intersection is proposed to remain the same as its existing configuration. The areas in the northwest and southwest quadrants of the intersection were identified as potential catalyst redevelopment sites, and conceptual development plans show the need for a mixed-used office campus surrounding the existing Corning property, thus providing an employment center that is missing along Market Street.



Existing left-over at old Eastwood Road

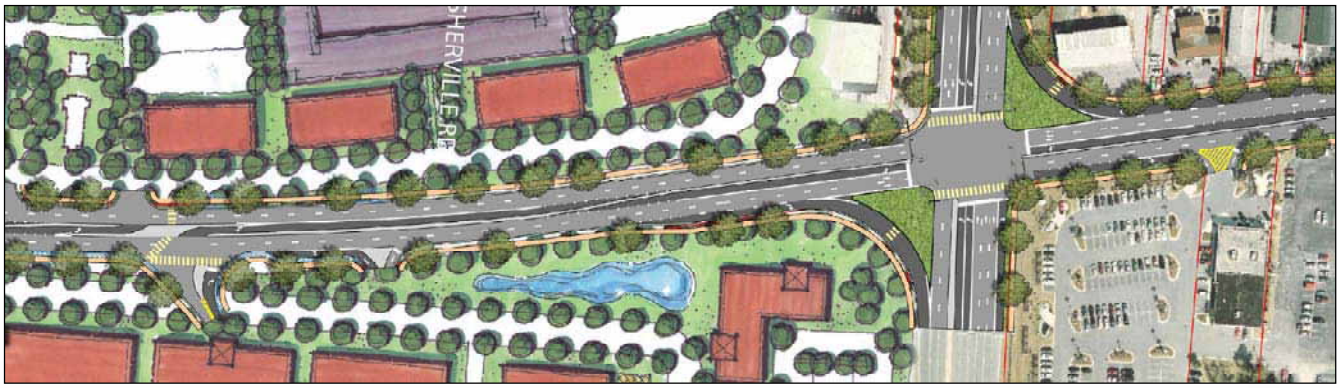
The Old Eastwood Road intersection, which currently operates as a collector-distributor between Market Street, Eastwood Road, and the businesses in that quadrant, is served by a single direction left-over from westbound Market Street. Under the conceptual redevelopment plans, the left-over is proposed to be completed, providing mainline access from Market Street to the northern portion of the office campus. The left-over is proposed to include pedestrian crossing and refuge amenities.



Conceptual rendering of proposed mixed-use office park north of Market Street

The existing Old Eastwood Road alignment is proposed to be replaced by interior circulation routes on the southern portion of the campus. The plans will allow for a more complete utilization of the available land in the quadrant, improving viability along the corridor. The access points for the proposed development should be evaluated in more detail as development plans become more concrete.

It should be noted that the most recent LRTP completed by the Wilmington MPO calls for a potential interchange at this location. Final decisions to incorporate grade separated fly-overs should be weighed against the business viability and area context at the time of improvement.





EASTWOOD ROAD TO CARDINAL DRIVE

Between Eastwood Road and Cardinal Drive, the surrounding environment becomes less dense, with greater distances between major intersections and larger parcels and development footprints. With this in mind, the spacing between median breaks becomes larger, and the need to introduce locations for U-turning movements becomes more evident.

The first such location is approximately 1,250 feet east of Eastwood Road and 1,000 feet west of Cardinal Drive. The land use types located between Eastwood Road and Cardinal Drive require delivery truck access, and the provision of this U-turn location is intended to provide adequate distance and pavement area to perform the operation while maintaining adequate access to the adjacent businesses. The U-turn bulbout on the north side of Market Street is proposed to contain stamped asphalt pavement markings to add to the aesthetic improvements along the corridor.



Proposed improvements at Cardinal Drive and Market Street

At Cardinal Drive, the proposed recommendations for the intersection include the addition of pedestrian amenities (such as crosswalks and pedestrian countdown signals) and adequate left-turn storage capacity for projected demands. U-turn movements are prohibited at this intersection, based on peak hour turning movement counts and associated capacity analyses. These restrictions are necessary during peak hour movements, but it may be appropriate to lift these restrictions during non-peak hour movements. This will ensure proper U-turn spacing availability, as well as provide a higher level of access and mobility for businesses and residences along Cardinal Drive.



Proposed improvements at Harley Drive and Market Street



HARLEY DRIVE

Harley Drive is the next partial median break east of Cardinal Drive. This location is proposed to be a partial left-over, serving Harley Drive on the north side, and providing opportunities for U-turn movements from westbound Market Street. A bus pullout shelter on the southern side of the road is proposed to provide adequate vehicular clearance for the U-turn movements, as well as storage for transit vehicles during normal pickup and drop-off.



Median left-over treatment with provision for heavy vehicle U-turn operations

GREEN MEADOWS DRIVE/BLAIR SCHOOL ROAD

The existing traffic signal at Blair School Road experiences heavy school peak volumes generated from the side street. Outside of school arrival and dismissal times, the intersection does not experience heavy traffic volumes.

Green Meadows Drive does not experience heavy volumes in either peak, but does experience some delay due to heavy through movement volumes on Market Street minimizing acceptable gaps for side street traffic.



Existing traffic signal at Blair School Road

The proposed recommendation at this location is to relocate the traffic signal from Blair School Road to Green Meadows Drive, moving the school ingress/egress movements to Green Meadows Drive through the adjacent neighborhoods, using St. Nicholas Road or Loubelle Street. The optimal solution would be to implement variable signal timing at Green Meadows Drive/Market Street, allowing the heavy school entrances and exits to have priority during school peak hours.

A single-direction left-over is proposed for the Blair School Road intersection, allowing school peak traffic from westbound Market Street two options for entry into the school property during peak usage.





Old Dairy Road

Just upstream of Blair School Road, another single-direction left-over is proposed to service the businesses located on Old Dairy Road. While these locations do not meet traditional median opening spacing, the configuration should operate acceptably because the movements are in opposing directions.



Station Road

Moving east from Old Dairy Road, the next median opening is proposed for Station Road. Given the existing volumes at the intersection and the heavier demand for left-turning movements onto Market Street, a modified left-over is proposed for this location. The "Unsignalized Turbo Lane" design operates like a stop controlled intersection, but provides an acceleration lane for vehicles turning left from the minor leg onto the mainline. This addition allows for a more seamless merge movement, reducing delay and vehicular friction. The primary benefits of this intersection configuration are the ability to allow free flow through movement while still accommodating the heavy left turn movement, which can merge with through traffic at speed.





The combination of left-in and left-out treatments is proposed due to lack of additional access options for Station Road. The volume of westbound left-turns onto Station Road includes an estimated 58 and 88 vehicles in the AM and PM peak hours, respectively. These volumes are relatively small but in the case that the left-over is removed, the vehicles will have to travel 2500' to Blair School Road to make a U-turn, and then return the same distance to make the right-turn into Station Road.

As an alternative, it is possible for vehicles to take a left at Gordon Road and then a right onto Military Cutoff Road as an alternative route to the U-turn. The additional vehicles would not be a problem from a queuing standpoint, but the poor level of service at this intersection creates an unappealing alternative. Other options include building a dual direction left-over at Old Dairy Road, which would reduce the additional travel distance to 1675', or leaving the left-in/left-out intersection as proposed.

Under the proposed left-in/left-out conditions, northbound left-turns operate at a level-of-service (LOS) C with 23.5 and 23.0 seconds of delay in the AM and PM peak hours, respectively. The westbound left-in movement operates with 16.2 and 23.4 seconds of delay in the AM and PM peak hours respectively. This combination of minimal delays suggests that acceptable gaps will be available for both left-turning movements. It is also important to note the number of conflicting movements which northbound left-turning vehicles will yield to under left-in/left-out conditions has been reduced to two (eastbound through and westbound left). Under existing conditions, vehicles utilizing this turn yield to three other movements under existing conditions.

If it is determined that the left-in movement should be removed from the proposed recommendations, then the proposed collector street connection between Blair School Road/St. Nicholas Road will need to be realized more quickly.

GORDON ROAD/MILITARY CUTOFF ROAD EXTENSION

The Gordon Road intersection is another heavily traveled intersection, carrying large volumes of traffic between Market Street, large residential developments, and Interstate 40. The proposed improvements at this intersection are very minimal, with the addition of pedestrian level amenities and a dedicated right-turn lane on northbound Gordon Road. Further improvements may be necessary as the plans for the Military Cutoff Road extension are finalized.



Existing Military Cutoff Road and Market Street intersection

The intersection of Military Cutoff Road and Market Street is currently a T-intersection, at the northern terminus of Military Cutoff Road. Future plans call for Military Cutoff Road to be extended to the north, connecting with the Wilmington Bypass. This improvement is expected to generate higher volumes of traffic both as through movements on Military Cutoff Road and turning movements to and from Market Street.

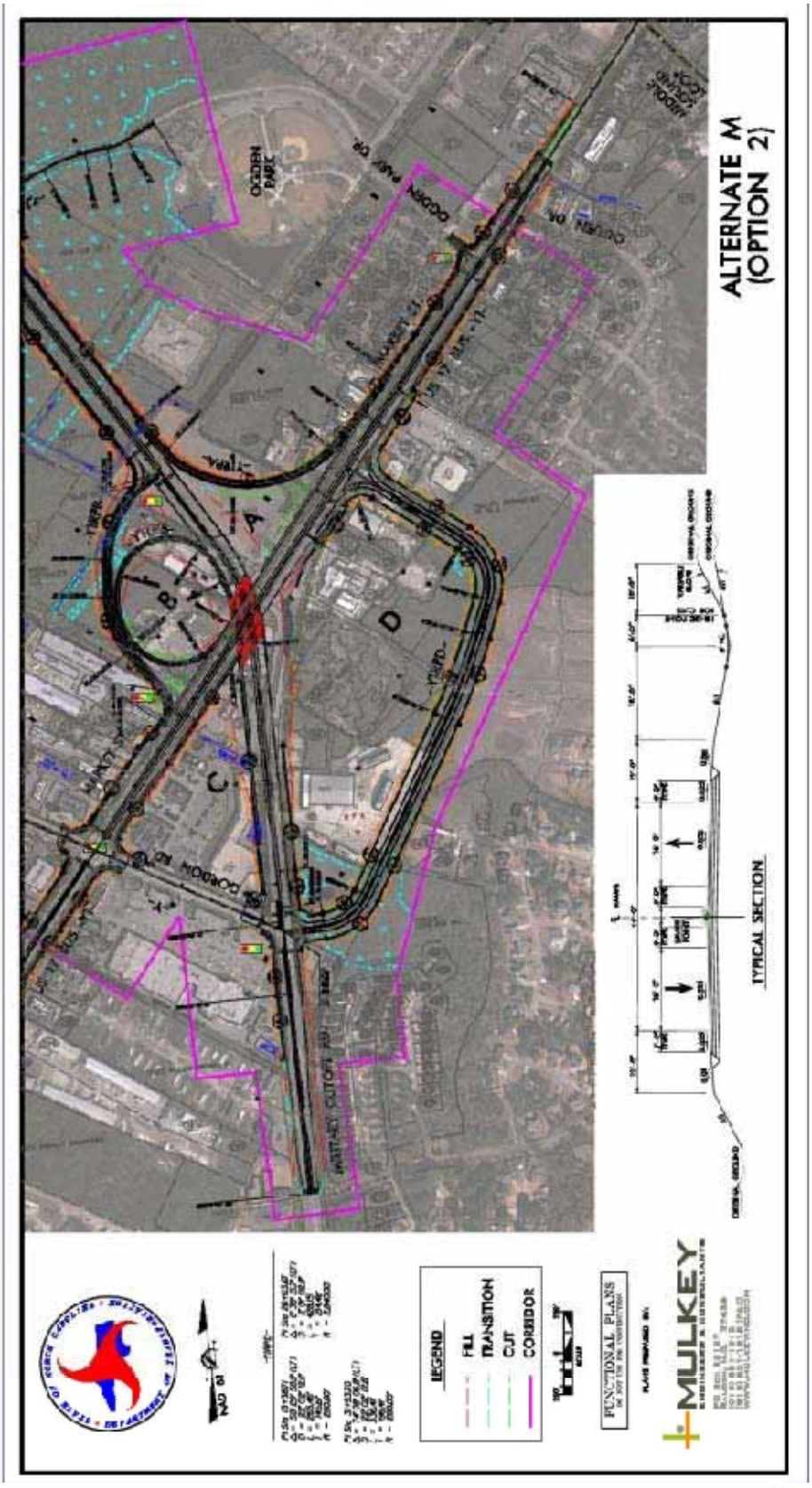
This plan does not present actual recommendations for the Military Cutoff Road extension intersection with Market Street, only a general opinion that the actual connection between the two facilities should most likely be grade separated, allowing for greater mobility for the projected heavy through movements along each mainline. The final recommendations of the Military Cutoff Road extension study should reflect the potential for new development in the area of the interchange, minimizing the overall footprint, which in turn allows for greater economic vitality in the area.



Conceptual development plans for Military Cutoff Road and Market Street

Because of this potential, the Military Cutoff area was selected as a catalyst redevelopment site during the analysis phase of this study. The proposed development plans call for a mixture of commercial and office space, with the potential for residential development. It is important as the city and NCDOT continue to explore the possible connection between these two important facilities that they are mindful of the surrounding land use potential and preservation of valuable land adjacent to each corridor. The recommended improvement is a creative, context sensitive interchange that takes into account the viability and use of the surrounding parcels.

A conceptual design alternative under consideration by NCDOT is shown on the following page.


ALTERNATE M
(OPTION 2)
OGDEN PARK
OGDEN DR.
HARBOR LOCUST LOOP
DORDON RD.
MARTIN CUTOFF RD.
A
B
C
D
TYPICAL SECTION
LEGEND
FILL
TRANSITION
CUT
CORRIDOR
FUNCTIONAL PLANS
MULKEY



OGDEN PARK DRIVE

Moving east of Military Cutoff Road, the corridor begins yet another transition zone, moving from suburban to rural. The transition requires fewer full median openings, which requires the presence of more partial median openings, allowing for U-turn movements. The first such location is Ogden Park Drive, which provides a mid-point for U-turning vehicles between Military Cutoff Road and Middle Sound Loop Road, as well as access to the residences on Ogden Park Drive.

A larger bulbout is provided on the southern side of Market Street, allowing U-turn clearance for heavier vehicles moving from westbound Market Street to eastbound Market Street. The provision of this type of U-turn allows for delivery truck access to the businesses on the southern side of the corridor between Ogden Park Drive and Middle Sound Loop Road. The U-turn bulbout is proposed to contain stamped asphalt pavement markings to add to the aesthetic improvements along the corridor.



Median left-over treatment with provision for heavy vehicle U-turn operations

MIDDLE SOUND LOOP ROAD/LENDIRE ROAD

Currently the intersections of Middle Sound Loop Road and Lendire Road are separated by approximately 300 feet. Middle Sound Loop Road is signalized, while Lendire Road is stop controlled. Left-turning movements to and from Lendire Road can be difficult during the peak hour. Middle Sound Loop Road experiences delays during normal peak hours and school peak hours, given its proximity to Ogden Elementary School.

The proposed recommendation at these intersections is to realign Lendire Road to complete a four leg intersection with Middle Sound Loop Road. This would provide greater mobility to the residents along both roadways, and reduce congestion along market Street by removing the off-set intersection configuration.





In addition to the realigned roadway, the actual intersection with Market Street should be upgraded geometrically to include an additional dedicated left-turn lane in each minor leg approach and a dedicated right-turn lane from Middle Sound Loop Road to Market Street.

A traffic impact analysis was recently completed for proposed development in the vicinity of this intersection. The intersection laneage developed for the TIA was less than the intersection recognized in the Market Street report. We proposed a dedicated right-turn lane from Middle Sound Loop Road onto Market Street and a dedicated right-turn lane from Market Street onto Middle Sound Loop Road. The traffic forecasts provided by NCDOT indicated that there are 494 right-turns from Market Street onto Middle Sound Loop Road and 199 right-turns from Middle Sound Loop Road onto Market Street in the AM peak. These same forecasts projected 680 right-turns from Market Street onto Middle Sound Loop Road and 162 right-turns from Middle Sound Loop Road onto Market Street in the PM peak. These volumes necessitate the dedicated right-turn lanes on these approaches.



Example emergency service vehicle signal preemption

Ogden Fire and Rescue

There is currently an emergency preemption signal adjacent to the Ogden Fire and Rescue complex, providing priority access to emergency service vehicles entering Market Street. The construction of a mountable median is proposed at this location, allowing for the passage of the emergency service vehicles, while prohibiting turning and U-turning movements from passenger vehicles.

Torchwood Boulevard/Bayshore Drive

The proposed recommendations at Bayshore Drive and Torchwood Boulevard alter the existing configuration minimally. The only proposed improvement is an additional left-turn lane from Bayshore Drive onto Market Street. The additional turning capacity will allow for an improved intersection level of service and reduced congestion from the residential development.



Based on the traffic forecasts provided by NCDOT, the Torchwood Boulevard approach does not require a dual left-turn lane onto Market Street. The forecasted volumes include 96 and 131 left-turning vehicles in the AM and PM peaks, respectively. Providing dual left-turning lanes



would reduce the overall delay at this location by 0.2 and 0.4 seconds in the Am and PM peaks respectively. Compared to right-of-way and infrastructure costs, this reduction does not necessitate the addition of another left-turn lane.

Alexander Road

Alexander Road connects with Market Street in two locations, forming a loop that contains numerous residences and businesses. Neither connection is signalized, creating congestion and delay for motorists attempting to turn on or off of the roadway. The proposed recommendation for this location is the construction of a pair of partial left-over treatments, allowing for more efficient ingress and egress to Alexander Road.

The westernmost partial left-over will operate as a "left-in", allowing motorists from eastbound Market Street to turn left onto Alexander Road. The easternmost partial left-over will operate as the "left-out" movement, allowing vehicles exiting Alexander Road to turn left onto eastbound Market Street. The "left-out" design operates like a stop controlled intersection, but provides an acceleration lane for vehicles turning left from the minor leg onto the mainline. This addition allows for a more seamless merge movement, reducing delay and vehicular friction.

The movements from westbound Market Street can be handled with right-turning movements.



Marsh Oaks Road/Mendenhall Drive

The existing intersection of Market Street and Marsh Oaks Road/Mendenhall Drive is two-way stop-controlled, with Market Street traffic moving continuously. Congestion is high on the minor leg approaches during peak hour, with heavy volumes on Market Street dominating the flow of traffic.



The proposed improvement at this location is to signalize the intersection, allowing for protected movements from the minor leg approaches, which should reduce delay and congestion out of the large residential developments on either side of Market Street. The signalized intersection should also have pedestrian amenities, such as crosswalks and pedestrian signal heads.



Based on the traffic forecasts provided by NCDOT, the laneage recommended at this intersection is more than suitable to handle the projected traffic. An additional right-turn lane from Marsh Oaks Boulevard to Market Street might prove beneficial to that particular movement, but would not reduce the overall delay of the intersection significantly.

Cypress Pond Way

The Cypress Pond Way intersection provides access to Market Street from the Cypress Pond Apartments and the shopping area on the northern side of Market Street. The current intersection is unsignalized, which creates delay and congestion for residents and shoppers. The only signalized alternative is at Porters Neck Road, requiring residents to navigate the busy shopping center, which creates additional driver frustration.



The proposed improvement is to provide a direct left-over access from eastbound Market Street onto Cypress Pond Way. While the inclusion of a traffic signal would most likely reduce congestion and delay at this specific location, the spacing between Cypress Pond Way and Porters Neck Road precludes the inclusion of a signal at this location.

After the completion of this recommendation, traffic volumes and congestion should be monitored to ensure that access to the apartment complex is being adequately provided.

PORTERS NECK RD

The existing intersection of Porters Neck Road serves the shopping centers on the north and south sides of Market Street, as well as large residential developments to the south. The current intersection is signalized, with permitted left-turn movements and dedicated left-turn lanes in each direction. Future development in the northeast quadrant of the intersection is expected to increase traffic volumes by a substantial amount, requiring additional capacity at the intersection.



The proposed improvement at this location is the addition of turning lanes in each approach, creating dual lefts and dedicated right-turn lanes on all four legs. The improved intersection should also have pedestrian amenities, such as crosswalks and pedestrian signal heads.

MULTIMODAL CONSIDERATIONS

Most of the previously discussed recommendations have been tailored to address vehicular congestion and safety through roadway improvements and access management strategies. Additional gains in congestion and safety can be realized through the implementation of multimodal improvements along corridor, such as vehicular reductions through improvements to transit, bicycle, and pedestrian travel.



Existing WAVE Transit facilities and buses

TRANSIT IMPROVEMENT RECOMMENDATIONS

The Cape Fear Public Transportation Authority (doing business as Wave Transit) has been working towards improving both its service and frequency for many years now, including the 2004 *Wave Short Range Transit Plan*, which began to develop the vision for area transit after the merger of Wilmington Transit Authority and New Hanover County Transportation Services.

Currently there are ten dedicated transit routes throughout the Wilmington community, with five of those routes stopping along or near Market Street. In total, there are 17 stops along or near Market Street, providing a high

level of alternate travel options, especially within the city limits. The routes along Market Street have some of the highest ridership within the service area. There are plans for a new transfer station at Cando Street.

In addition to the proposed new transfer facility, this plan recommends upgrading transit stops through better shelter with benches and protection from inclement weather (including shielding from the rain and shade for the hottest portions of the summer months). The shelters should also have accurate route and schedule information to help travelers understand their options for travel.



Improved bus shelter with dedicated bus pullout area (pedbikeimages.org)

This plan also calls for dedicated bus pullout areas at each major intersection along Market Street. These treatments serve multiple purposes, including:

- Reduction of congestion due to stopped transit vehicles
- Increased rider safety by removing the movement from the roadway
- Additional laneage for U-turning vehicles at intersections (when buses are not present)



Proposed bus pullouts at New Centre Drive

Transit improvements along the corridor, including shelters and encroachments, should be coordinated with NCDOT design requirements.

Bicycle and Pedestrian

The Wilmington Urban Area MPO, city of Wilmington, and New Hanover County have been working diligently to improve bicycle and pedestrian amenities throughout the area, including the *Walk Wilmington: A Comprehensive Pedestrian Plan* and continued planning of bicycle routes, greenways, and trails. However, current bicycle and pedestrian amenities are sorely lacking along Market Street, as voiced by public workshop and stakeholder participants.

Just east of N. and S. College Road there are virtually no sidewalks, and there are no dedicated pedestrian crossings anywhere along the corridor. People crossing midblock in the midst of peak hour traffic are an everyday occurrence on Market Street. Pedestrian collisions are very common along the corridor, with 14 occurring between 2005 and 2008.



Cyclists and pedestrians along Market Street



This situation is unacceptable for a large community corridor such as Market Street; this plan proposes numerous improvements to create a much more walkable and bike-friendly corridor for the Wilmington community. **Figure 6.6** and **6.7** show the proposed improvements along the corridor. The improvements shown on these maps should be implemented in the timeframes shown in **Chapter 7** of this report. The figure shows proposed bicycle paths, multi-use paths, collector street bike amenities, and neighborhood connections. Existing and proposed collectors are shown as in the connectivity map – these facilities will have bike facilities and sidewalks. Other neighborhood connectors include low volume local streets suitable for bicycling without a dedicated facility.

Implementation Strategy:

- *Integrate pedestrian and bicyclist amenities along Market Street during construction of the proposed median treatments*
- *Provide an alternate network of pedestrian and cyclist amenities through neighborhoods and collector streets*

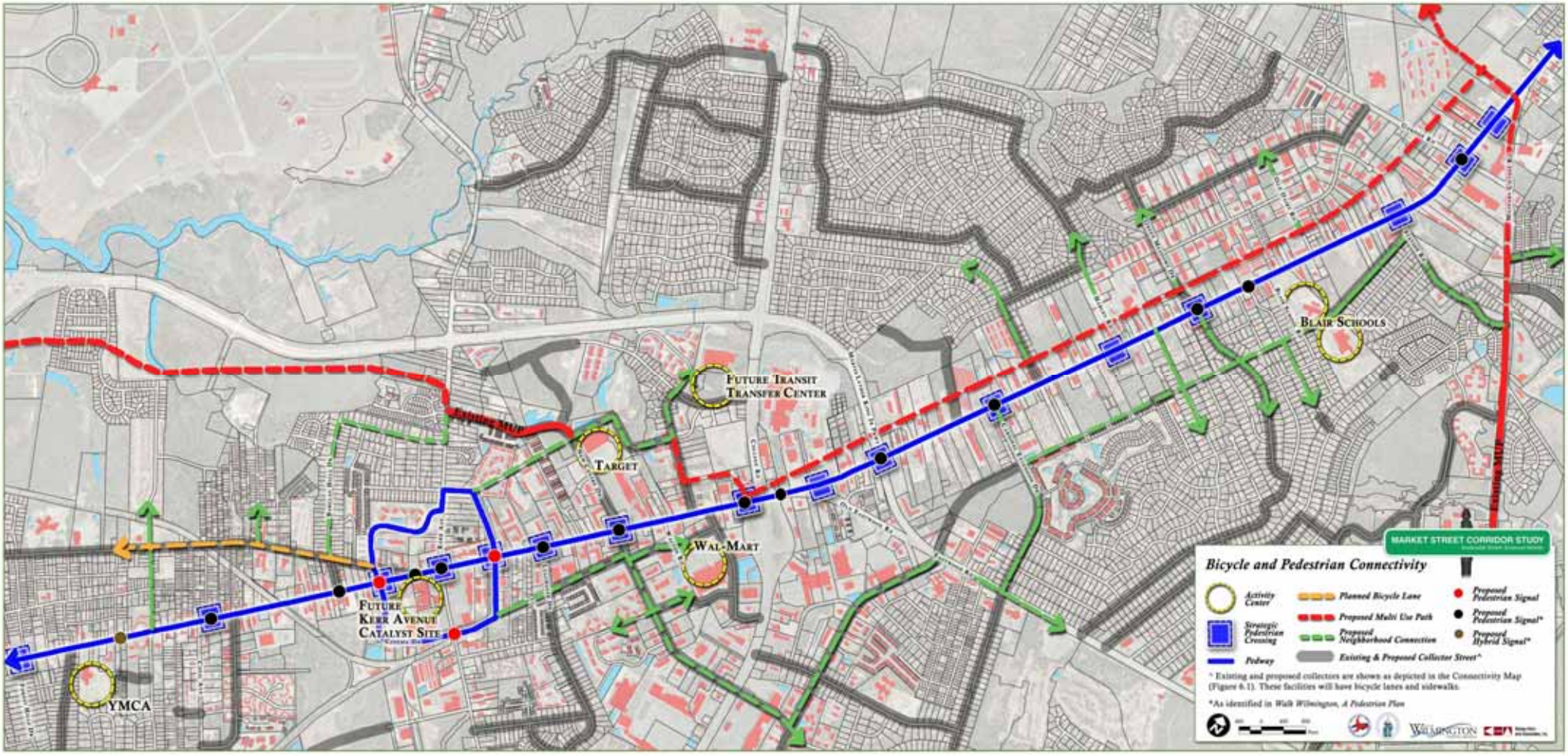
The overarching improvement is the provision of sidewalks the entire length of the corridor, between Colonial Drive and Porters Neck Road. This improvement also requires pedestrian crosswalk amenities at all signalized intersections, and even some midblock locations where spacing and volumes warrant. These improvements will fully connect the pedestrian network and allow for a more walkable corridor, creating a more connected development community where people can frequent multiple destinations without having to access Market Street multiple times.

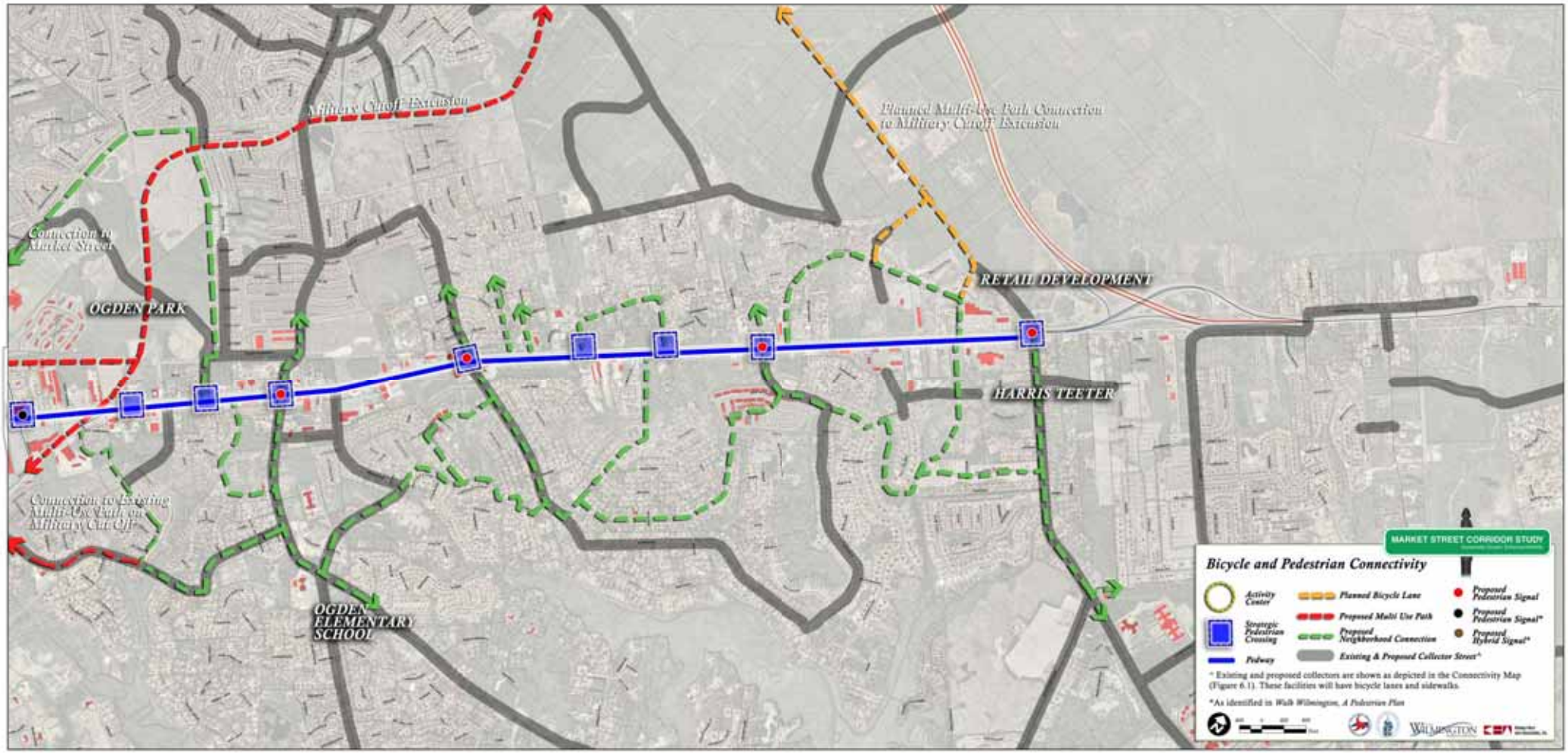
For bicycle level amenities, the proposed improvement is the construction of a mulit-use path that connects from New Centre Drive to Military Cutoff Road. Given the volume and speed of traffic along Market Street, it is not feasible to suggest that bicycle amenities be built in the travelway. An abandoned rail corridor provides the optimal location for the multi-use path. Moving east, there is adequate right-of-way on the northern side of Market Street to provide a eight-foot sidewalk between Military Cutoff Road and Porters Neck Road.



Conceptual rendering of 8' sidewalk along Market Street

These improvements should be coordinated with ongoing city, county, and MPO studies to ensure that proper connections are provided to proposed greenways, bike paths, and neighborhood routes. By providing these essential connections, vehicular demands on Market Street can be reduced, reducing congestion and increasing pedestrian, cyclist, and motorist safety.


Future Transit Transfer Center
Target
Wal-Mart
Blair Schools
Future Kerr Avenue Catalyst Site
YMCA
Existing MUP
Existing MUP
MARKET STREET CORRIDOR STUDY
Bicycle and Pedestrian Connectivity
Activity Center
Strategic Pedestrian Crossing
Pedway
Planned Bicycle Lane
Proposed Multi Use Path
Proposed Neighborhood Connection
Existing & Proposed Collector Street^
Proposed Pedestrian Signal
Proposed Pedestrian Signal*
Proposed Hybrid Signal*
^ Existing and proposed collectors are shown as depicted in the Connectivity Map (Figure 6.1). These facilities will have bicycle lanes and sidewalks.
*As identified in Walk Wilmington, A Pedestrian Plan


Military Cutoff Extension
Planned Multi-Use Path Connection to Military Cutoff Extension
Connection to Market Street
OGDEN PARK
RETAIL DEVELOPMENT
HARRIS TEETER
Connection to Existing Multi-Use Path on Military Cut Off
OGDEN ELEMENTARY SCHOOL
MARKET STREET CORRIDOR STUDY
Bicycle and Pedestrian Connectivity
Activity Center
Strategic Pedestrian Crossing
Pedway
Planned Bicycle Lane
Proposed Multi Use Path
Proposed Neighborhood Connection
Existing & Proposed Collector Street*
Proposed Pedestrian Signal
Proposed Pedestrian Signal*
Proposed Hybrid Signal*
* Existing and proposed collectors are shown as depicted in the Connectivity Map (Figure 6.1). These facilities will have bicycle lanes and sidewalks.
*As identified in Walk Wilmington, A Pedestrian Plan



Benefits of Improvements

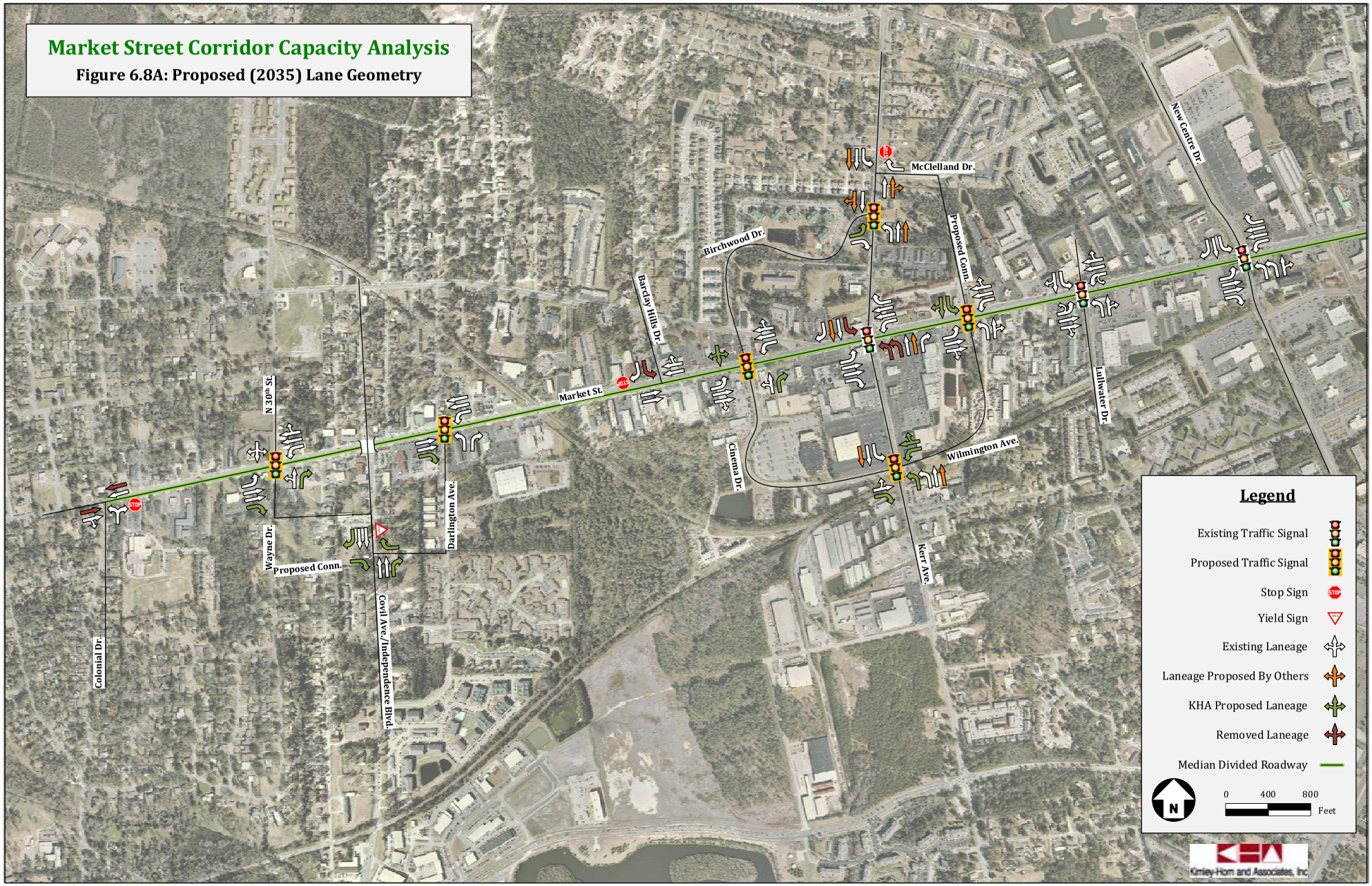
The previous sections in this chapter have dealt with general and specific improvements along the Market Street corridor, outlining access management strategies, intersection improvements, key connections, roadway aesthetics, and multimodal considerations. Each of these improvements is intended to improve congestion, safety, or aesthetics along the corridor. But how do we measure improvements?

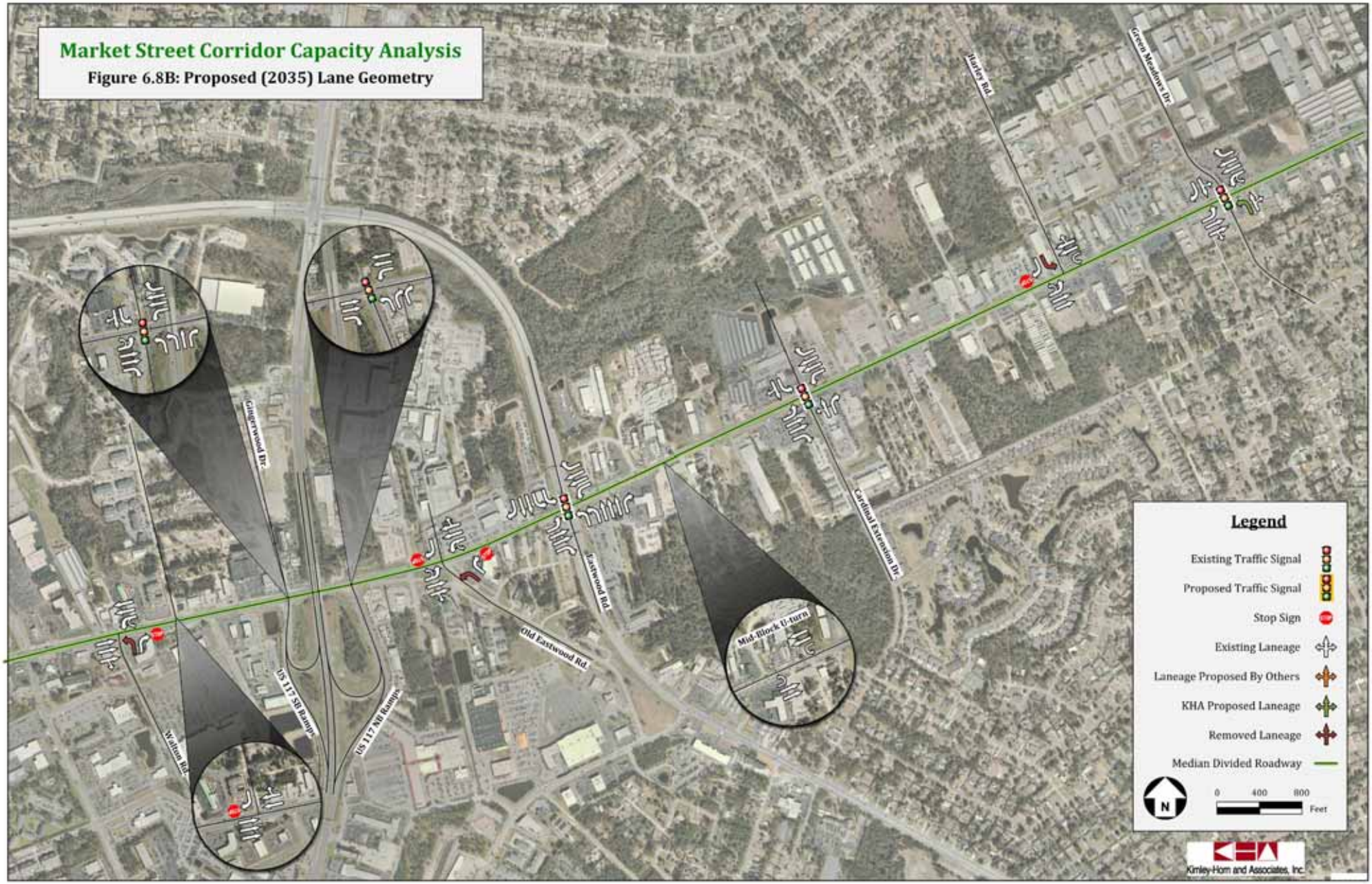
In terms of congestion and safety, we can review historical data and make projections as to whether our improvements will provide noticeable benefit to the motorists and the community. The following sections provide the results of this analysis for the proposed improvements.

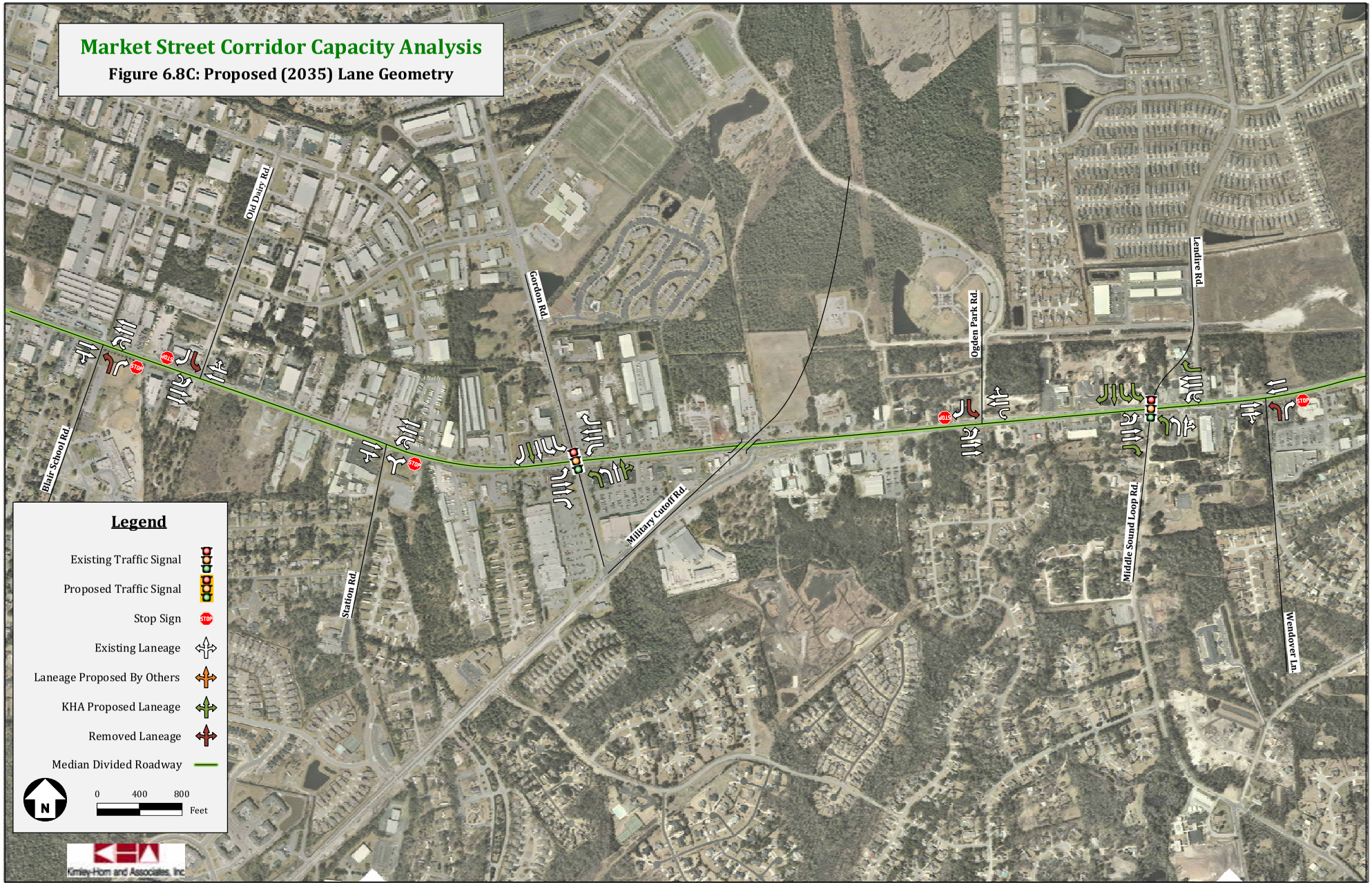
Corridor aesthetics is a little less tangible, and will require the consensus of the Wilmington community and the Market Street motorist.

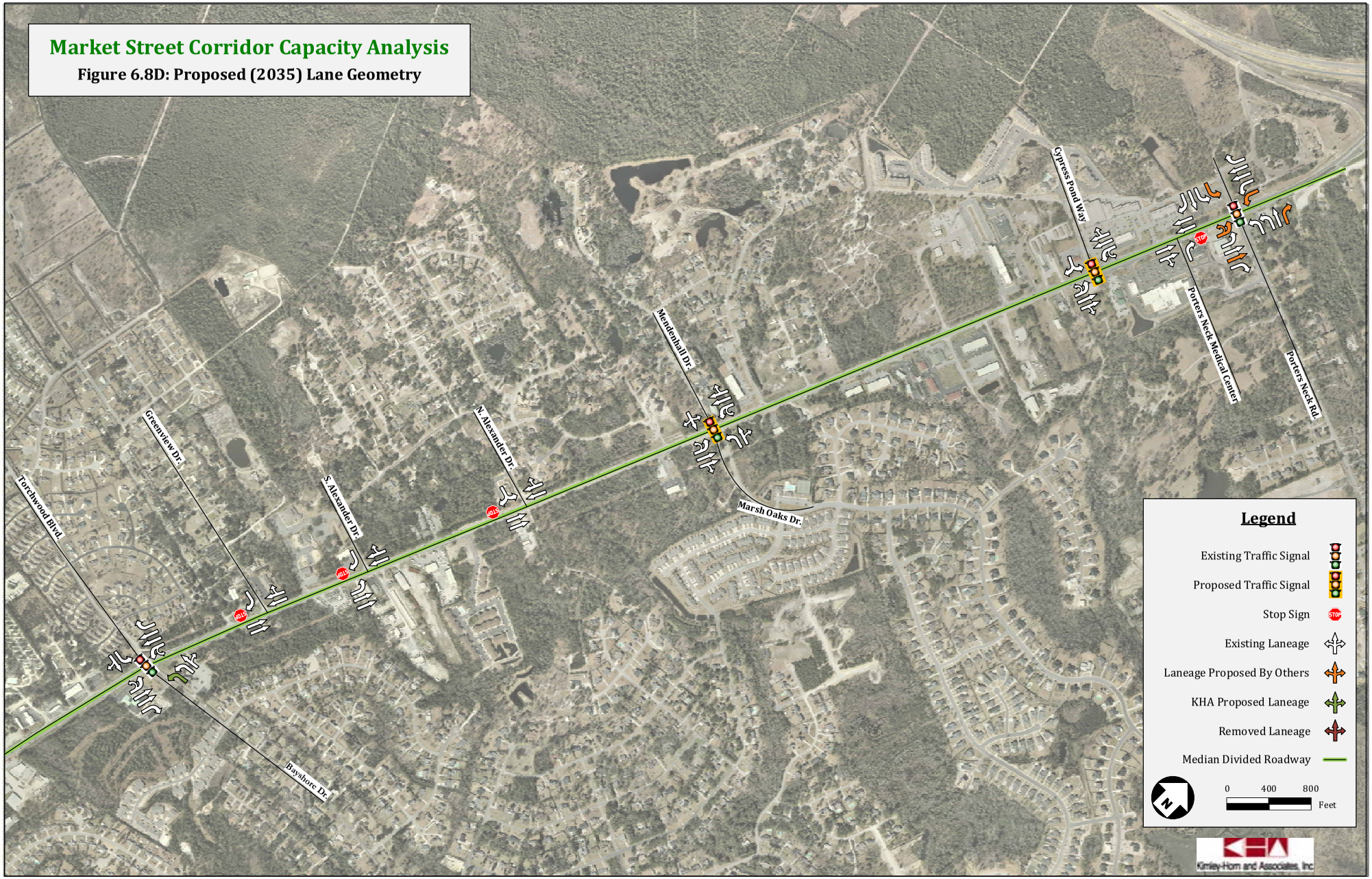
Level of Service

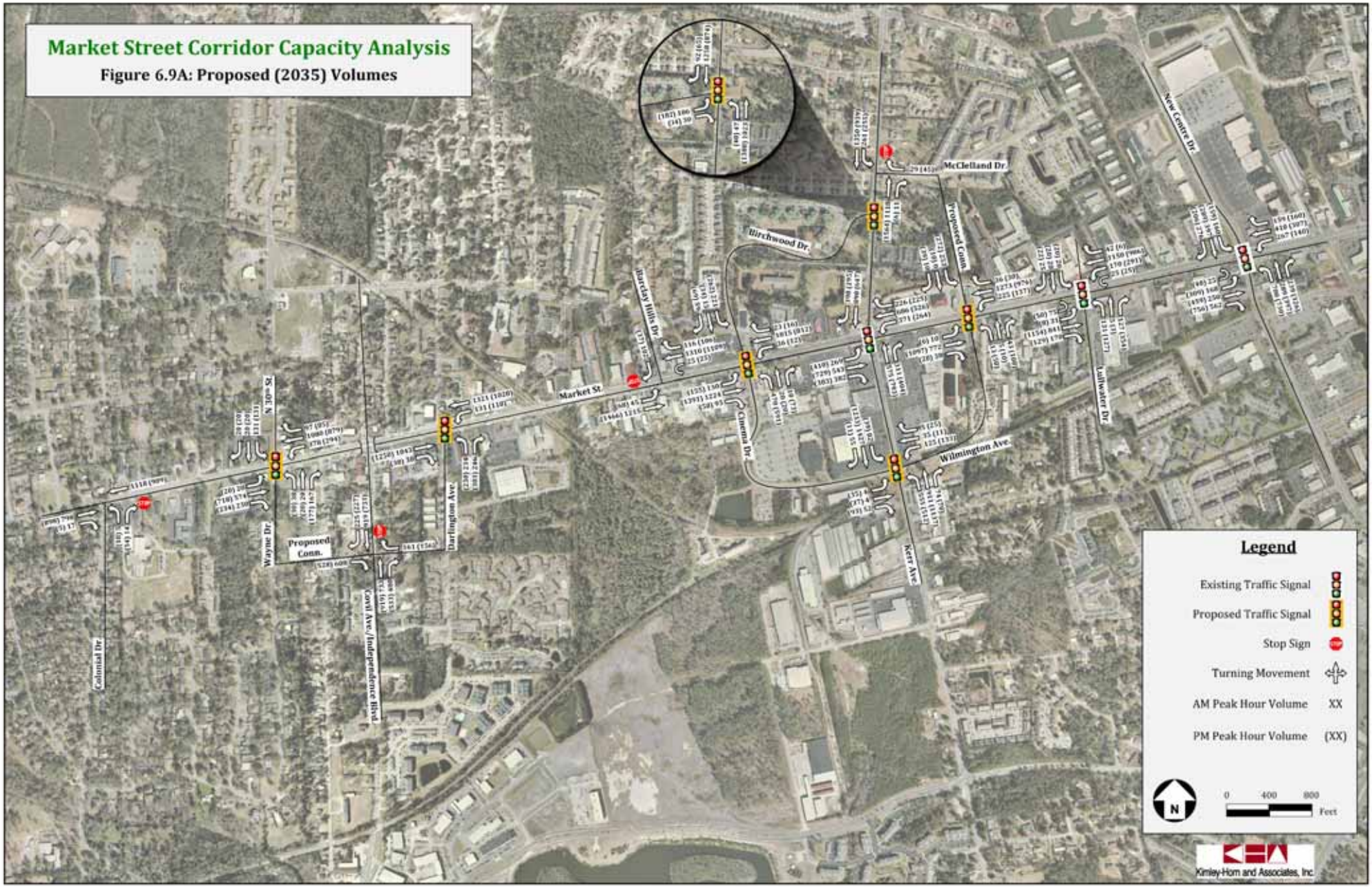
The measure of success for congestion related improvements is a reduced delay and increased level of service (LOS). This study analyzed the proposed improvements using Synchro version 7, capacity analysis software. The analysis was performed based on traffic volumes provided by NCDOT, which were developed for a previous phase of this study. The volumes are 2035 projections of traffic based on expected growth along the corridor. **Figures 6.8(a-d)** and **6.9(a-d)** provide the peak hour volumes, by intersection, used to analyze the Market Street improvements. **Table 6.4** provides a direct side-by-side comparison of the projected levels of service for the proposed improvements in this study and the levels of service for the proposed improvements from the previous phase of this study (performed by another consultant). It should be noted that the level-of-service and delay reported in **Table 6.4** do not take into account a reduction traffic that could be realized as the additional collector street connections (presented in **Figure 6.1**) are realized. It isn't possible to quantify how volumes along the roadway would change as these are realized, so the results presented in the table only represent the projected operations based on the specific intersection and segment recommendations for Market Street, as outlined in this chapter.


Market Street Corridor Capacity Analysis
Figure 6.8A: Proposed (2035) Lane Geometry
Market St.
McClelland Dr.
Birchwood Dr.
Barclay Hills Dr.
Proposed Conn.
New Centre Dr.
Inlwater Dr.
Wilmington Ave.
Cinema Dr.
Kerr Ave.
N 30th St.
Darlington Ave.
Wayne Dr.
Proposed Conn.
Covil Ave./Independence Blvd.
Colonial Dr.
Legend
Existing Traffic Signal
Proposed Traffic Signal
Stop Sign
Yield Sign
Existing Laneage
Laneage Proposed By Others
KHA Proposed Laneage
Removed Laneage
Median Divided Roadway
N
0
400
800
Feet
Kimley-Horn and Associates, Inc.


Market Street Corridor Capacity Analysis
Figure 6.8B: Proposed (2035) Lane Geometry
Harley Rd.
Green Meadows Dr.
Gingerwood Dr.
Eastwood Rd.
Old Eastwood Rd.
Cardinal Extension Dr.
US 117 SB Ramps
US 117 NB Ramps
Walters Rd.
Mid-Block U-turn
Legend
Existing Traffic Signal
Proposed Traffic Signal
Stop Sign
Existing Laneage
Laneage Proposed By Others
KHA Proposed Laneage
Removed Laneage
Median Divided Roadway
N
0
400
800
Feet
Kimley-Horn and Associates, Inc.


Market Street Corridor Capacity Analysis
Figure 6.8C: Proposed (2035) Lane Geometry
Old Dairy Rd.
Gordon Rd.
Ogden Park Rd.
Lendire Rd.
Blair School Rd.
Station Rd.
Military Cutoff Rd.
Middle Sound Loop Rd.
Wendover Ln.
STOP
Legend
Existing Traffic Signal
Proposed Traffic Signal
Stop Sign
Existing Laneage
Laneage Proposed By Others
KHA Proposed Laneage
Removed Laneage
Median Divided Roadway
N
0
400
800
Feet
Kimley-Horn and Associates, Inc


Market Street Corridor Capacity Analysis
Figure 6.8D: Proposed (2035) Lane Geometry
Torchwood Blvd.
Greenview Dr.
S. Alexander Dr.
N. Alexander Dr.
Mendenhall Dr.
Marsh Oaks Dr.
Cypress Pond Way
Porters Neck Medical Center
Porters Neck Rd.
Bayshore Dr.
Legend
Existing Traffic Signal
Proposed Traffic Signal
Stop Sign
Existing Laneage
Laneage Proposed By Others
KHA Proposed Laneage
Removed Laneage
Median Divided Roadway
0
400
800
Feet
Kimley-Horn and Associates, Inc.


Market Street Corridor Capacity Analysis
Figure 6.9A: Proposed (2035) Volumes
Market St
McClelland Dr
Birchwood Dr.
Barclay Hills Dr
Proposed Conn
Cinema Dr
New Centre Dr
Tallwater Dr
Wilmington Ave
Kery Ave
N 30th St
Wayne Dr
Proposed Conn.
Darlington Ave
Covil Ave./Independence Blvd
Colonial Dr
Legend
Existing Traffic Signal
Proposed Traffic Signal
Stop Sign
Turning Movement
AM Peak Hour Volume XX
PM Peak Hour Volume (XX)
N
0 400 800
Feet
Kimley-Horn and Associates, Inc.


Market Street Corridor Capacity Analysis
Figure 6.9B: Proposed (2035) Volumes
Market St.
Martin Luther King, Jr. Pkwy
Eastwood Rd.
Old Eastwood Rd.
Cardinal Extension Dr.
Harley Rd.
Green Meadows Dr.
Lennon Dr.
Walton Rd.
US 117 SB Ramps
US 117 NB Ramps
Mid-Block U-turn
Legend
Existing Traffic Signal
Proposed Traffic Signal
Stop Sign
Turning Movement
AM Peak Hour Volume XX
PM Peak Hour Volume (XX)
N
0 400 800
Feet
Kimley-Horn and Associates, Inc.


Market Street Corridor Capacity Analysis
Figure 6.9C: Projected (2035) Volumes
Old Dairy Rd.
Gordon Rd.
Ogden Park Rd.
Lendire Rd.
Market St.
Blair School Rd.
Station Rd.
Military Cutoff Rd.
Middle Sound Loop Rd.
Wendover Ln.
(1852) 1179
(50) 121
(223) 259
1897 (1141)
246 (132)
50 (60)
50 (50)
(61) 25
(50) 50
(2014) 1399
10 (10)
1931 (1515)
(1919) 1531
(55) 34
1931 (1515)
33 (38)
25 (50)
(30) 40
(45) 22
(395) 301
(1472) 1152
(97) 100
(500) 565
(270) 365
(301) 595
550 (565)
1472 (1152)
74 (51)
(38) 51
147 (125)
370 (863)
25 (25)
100 (10)
2155 (1811)
25 (25)
(33) 25
(25) 25
(2155) 1811
100 (81)
20 (20)
340 (247)
(25) 25
(100) 0
(1475) 1317
(680) 494
(494) 680
(20) 20
(162) 199
247 (340)
1475 (1317)
162 (199)
75 (75)
1637 (1516)
(1637) 1516
(10) 10
100 (100)
Legend
Existing Traffic Signal
Proposed Traffic Signal
Stop Sign
Turning Movement
AM Peak Hour Volume XX
PM Peak Hour Volume (XX)
0 400 800
Feet
Kimley-Horn and Associates, Inc.

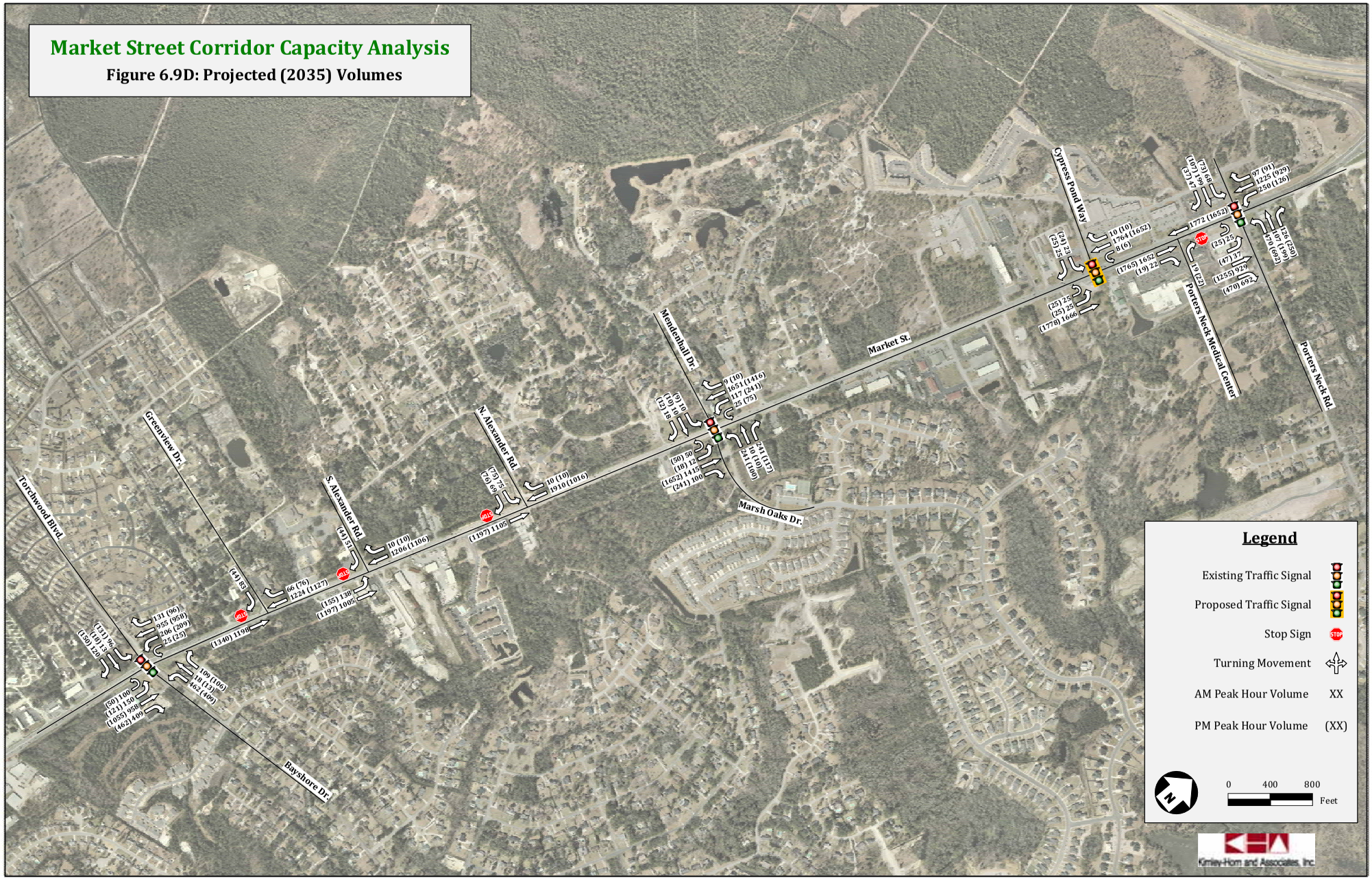

Market Street Corridor Capacity Analysis
Figure 6.9D: Projected (2035) Volumes
Market St.
Mendenhall Dr.
N. Alexander Rd.
S. Alexander Rd.
Greenview Dr.
Torchwood Blvd.
Bayshore Dr.
Marsh Oaks Dr.
Cypress Pond Way
Porters Neck Medical Center
Porters Neck Rd.
Legend
Existing Traffic Signal
Proposed Traffic Signal
Stop Sign
Turning Movement
AM Peak Hour Volume XX
PM Peak Hour Volume (XX)
0 400 800
Feet
Kimley-Horn and Associates, Inc.



Table 6.4 - Level-of-Service Summary (2035)

Intersection	Projected LOS (Delay) AM	Projected LOS (Delay) PM	Previous Study LOS (Delay) AM	Previous Study LOS (Delay) PM
Market Street & Colonial Drive	C (19.5)*	C (24.9)*	C (19.6)*	C (23.8)*
Market Street & Wayne Drive	C (30.5)	C (27.9)	*NA*	*NA*
Market Street & Covil Avenue	*NA*	*NA*	***F (106.7)***	***F (127.8)***
Wayne Drive & Independence Boulevard	B (11.9)*	B (13.4)*	*NA*	*NA*
Market Street & Darlington Avenue	B (16.9)	C (21.9)	*NA*	*NA*
Market Street & Barclay Hills Drive	B (10.4)*	A (10.0)*	C (24.8)	C (23.5)
Market Street & Cinema Drive	C (27.8)	D (37.9)	*NA*	*NA*
McClelland Drive & N. Kerr Avenue	C (17.1)*	***E (38.7)****	*NA*	*NA*
Birchwood Drive & N. Kerr Avenue	B (13.9)	B (13.3)	*NA*	*NA*
Market Street & N. and S. Kerr Avenue	D (38.0)	D (35.1)	***E (56.9)***	D (53.6)
Cinema Drive & S. Kerr Avenue	C (27.6)	C (30.9)	*NA*	*NA*
Market Street & McClelland Connector	D (36.0)	C (26.3)	*NA*	*NA*
Market Street & Lullwater Drive	C (26.3)	C (26.5)	C (29.7)	D (42.6)
Market Street & New Center Drive	***E (57.7)***	***E (67.3)***	***E (68.6)***	***E (75.4)***
Market Street & Walton Drive	B (12.4)*	B (12.1)*		
Market Street & Lennon Drive	B (10.5)*	A (9.3)*	C (18.6)*	B (11.7)*
Market Street & S. College/Gingerwood Dr	C (33.0)	D (38.0)	C (28.8)	D (35.5)
Market Street & N. College Road	C (30.3)	C (29.7)	C (29.2)	D(36.6)
Market Street & Old Eastwood Road	C (18.1)*	C (15.3)*	B (10.6)*	B (10.5)*
Market Street & Martin Luther King Jr. Pkwy.	D (54.9)	***E (64.6)***	D (50.9)	***E (64.1)***
Market Street & midblock U-turn	C (19.6)**	D (28.9)**	*NA*	*NA*
Market Street & Cardinal Extension Drive	C (29.5)	C (34.9)	***E (76.6)***	***F (128.3)***
Market Street & Harley Road	***F (69.7)****	D (31.1)*	***F (69.7)****	D (31.1)*
Market Street & Green Meadows Drive	***E (63.3)***	C (31.2)	***F (162.0)***	***F (112.4)***
Market Street & Blair School Road	***F (59.0)****	***F (142.6)****	C (27.5)	B (18.6)
Market Street & Old Dairy Road	D (27.6)	C (19.4)*	D (30.8)*	C (19.4)*
Market Street & Station Road	C (18.1)***	C (19.6)***	C (18.3)*	D (27.7)*
Market Street & Gordon Road	***E (68.3)***	***E (67.8)***	***F (88.9)***	***E (77.6)***
Market Street & Ogden Park Road	D (29.2)*	C (22.2)*	D (29.2)*	C (22.2)*
Market Street & Middle Sound Loop Road	***E (59.9)***	***E (55.3)***	D (38.1)	D (41.1)

* unsignalized analysis

**modeled in HCS as left-turns instead of U-turns

***modeled in HCS as no EB traffic since accel lane will be provided



Table 6.4 – Level of Service Summary (continued)

Intersection	Current Study LOS (Delay) AM	Current Study LOS (Delay) PM	Previous Study LOS (Delay) AM	Previous Study LOS (Delay) PM
Market Street & Wendover Lane	B (11.4)*	B (12.2)*	B (14.7)*	C (16.6)*
Market Street & Torchwood Blvd/Bayshore Dr	D (52.8)	D (50.6)	***F (110.8)***	***E (64.2)***
Market Street & Greenview Drive	C (17.8)*	C (15.2)*	C (17.3)*	B (14.7)*
Market Street & Alexander Road South	C (15.6)*	B (14.4)*	C (15.6)*	B (14.4)*
Market Street & Alexander Road North	B (10.7)***	A (8.1)***	C (16.4)*	C (15.2)*
Market Street & Mendenhall Dr/Marsh Oaks Dr	C (34.2)	C (31.8)	***E (56.4)***	D (37.4)
Market Street & Cypress Pond Way	A (8.3)	A (6.0)	C (21.4)*	C (19.8)*
Market Street & Porters Neck Medical Center	B (11.3)*	B (13.2)*	C (19.4)*	C (21.2)*
Market Street & Porters Neck Road	D (41.4)	D (42.9)	D (42.0)	D (52.7)

* unsignalized analysis

**modeled in HCS as left-turns instead of U-turns

***modeled in HCS as no EB traffic since accel lane will be provided

There are two locations where levels of service are projected to worsen based on the current study's improvements. First is Blair School Road, where the previous study proposed to maintain the existing signal, while this study proposed to consolidate movements to Green Meadows Drive. The poor levels of service in the current study are based on congested conditions at the proposed left-over, which might be mitigated by more vehicles utilizing Green Meadows Drive to enter and exit school properties. Maintaining the existing signal at Blair School Road causes excessive queuing between the two intersections. Consequently, delay and level of service are both reduced at Green Meadows Drive under this plan's proposed improvements. Realizing the collector street connection between Blair School Road and Station Road could further improve the projected level-of-service.

The total expected delay reductions between the two studies is equivalent to 4 minutes in the AM peak and 5½ minutes in the PM peak

The other location is Middle Sound Loop Road, where the previous study proposed to maintain the current T-intersection conditions, which are only 300 feet from the upstream connection with Lendire Road. The previous study does not analyze the effects of Lendire Road on Middle Sound Loop Road, which causes unnecessary delay and queuing along the minor legs. With that in mind, as the Middle Sound Loop area continues to develop, it may be necessary to consider additional laneage at that intersection, primarily from the northbound approach on Middle Sound Loop Road.



SAFETY

The measure of success for safety related improvements is the potential to reduce crashes along a corridor. In general, research indicates improved safety for median-divided roadways as compared to five-lane roadways. According to the National Cooperative Highway Research Program (NCHRP)[2], crash rate reductions range from 0.5 to 1 crash per million vehicle miles based on the number of access points. For roadway segments with more than 60 access points per mile, medians can reduce the crash rate by one crash per hundred million vehicle miles traveled. For fewer than 20 access points per mile, the reduction is 0.5 crashes per million vehicle miles.

Over the past three years there were 1,752 crashes between Colonial Drive and Porters Neck Road. Only 510 occurred at major intersections, leaving 1,242 crashes in the mid-block. Many of these crashes can be attributed to the continuous two-way center left-turn lane and the numerous conflict points it creates. Based on a review of crash types, directions, and crash descriptions, approximately 326 crashes could have been avoided during the analysis period had there been a median in place. That is a reduction of 26.2 percent of total crashes.

More than a quarter of all crashes could be prevented by the construction of a median.

SUMMARY

Overall the improvements proposed along Market Street are expected to significantly impact congestion, safety, and corridor aesthetics from Colonial Drive to the Pender County Line. The recommendations are expected to create the following benefits along the corridor:

- **Delay reduction** – implementation of the proposed median and intersection improvements could reduce delay along the by nearly four minutes in the AM peak and five and a half minutes in the PM peak
- **Safety improvements** - implementation of a median could reduce overall crashes by 26 percent, while improved pedestrian crossings could reduce pedestrian crashes by 80 percent

[2] National Cooperative Highway Research Program Report 3-52



Chapter 7 – Envisioning Success

Action Plan

Successful implementation of the ***Market Street Corridor Study*** will depend to a great extent on the ability of local, private, and governmental entities to collaborate with one another. The action plan provides a summary of the implementation strategy, including a list of specific projects (some of which are already committed), a phasing plan, planning level cost estimates, available funding sources, and agencies responsible for implementing the vision. The intent of this section is two-fold; first, it must provide decision-makers with an implementation blueprint that will enable them to track progress and schedule future year improvements. Second, clearly defined action items will enable the City of Wilmington and New Hanover County to identify public and private investment opportunities that are healthy, sustainable, and achievable through well-guided transportation and land use policies that encourage quality design and environmental stewardship.

Implementation will be a collaborative effort between multiple parties

All indications point to a paradigm shift in the way the Wilmington region does business. Similar to other communities and areas within the state, the Market Street corridor has reached a tipping point, where high levels of traffic congestion, unsafe travel conditions, and non-sustainable development patterns can no longer be tolerated. Local incentives for the development community are not necessarily protocol. Property and business owners have been reluctant to reinvest in the property itself. Today, there is a true demarcation between commercial sprawl into the rural areas and what was once Market Street's thriving commercial core.



Congestion concerns along Market Street

The quality of private investment in both design and community amenities will have a profound impact on the attractiveness of the area. Successful and sustainable development will come only through a cooperative effort between public and private ventures. To assist in this effort, the city and county are actively involved with adopting a form-base code as a part of this study.

Already, we have seen the public investment in this regional corridor through NCDOT committed projects such as N. and S. Kerr Avenue widening improvements (TIP #U-3338B) and the funding of the Market Street plantable median improvements (TIP # U-4902). However, the completion of this study represents an important step toward implementing a long-term vision of quality development, safety, and aesthetic improvements within



the study corridor. The structure of the recommendations does not require that all improvements are completed at one time. This should allow flexibility to work in partnership with the development community as well as NCDOT to implement the vision of the plan in several phases as development occurs and funding sources become available.



New development along Market Street

Local, state, and private partnerships offer strategic advantages to implementing improvements on a timely basis, especially considering the level of impending development within the Market Street corridor area. The purpose of the action plan is to recognize these challenges and suggest strategies and resources to address each challenge.

With this in mind, the following action plan identifies next step items for each category described and summarized in **Chapter 6 – Recommendations** of this report as well as the accompanying model corridor ordinance documents produced in support of the ***Market Street Corridor Study***. Specific categories include recommendations for General Procedures and Guidelines, Land Use and Policy, Committed Transportation, Interim & Long-term Transportation, and Funding Strategies. Within the context of the land use considerations, specific action items were discussed in **Chapter 4 – General Development** of this report. Ultimately, these recommendations can be administered concurrently or as priorities and regional initiatives present the opportunity to do so.



General Action Items	Timeframe	Responsible Party
Adopt the ***Market Street Corridor Study***	2010	WMPO/Board of Commissioners/City Council
Apply the recommendations of this plan during the development review process. Use this plan as a tool to review proposed development projects and plans as they locate and are implemented within the corridor.	Ongoing	City/County/NCDOT
Integrate the findings and recommendation of this plan into the Wilmington Long Range Transportation Plan and Future Land Use Plan; and New Hanover County CAMA Plan.	Ongoing	WMPO/County/City/ NCDOT
Adopt the ***Market Street Model Ordinances*** as a tool to help guide future development and redevelopment activities through established standards thereby promoting consistent development patterns along the corridor.	2010	City Council/County Board of Commissioners
Work collaboratively with the Steering Committee, City of Wilmington, New Hanover County, and the NCDOT to secure funding and implement the vision and recommendations of the ***Market Street Corridor Study***.	Ongoing	WMPO/County/City/ NCDOT
Use the future collector street network as a tool to review proposed development projects and plans as future collector streets are located.	Ongoing	WMPO/County/City/ NCDOT
Work with the development and real estate community to increase public awareness of future collector street connections through enhanced signage – i.e., "Future Street Extension"	Ongoing	WMPO/County/City/ NCDOT
Require new developments to reserve right-of-way for, and in some cases construct, future collector streets.	Ongoing	WMPO/County/City/ NCDOT
Consider dedicating funding to help construct traffic calming measures on existing collector streets.	Ongoing	City Council/ NCDOT
Adopt collector street spacing standards (**Table 6.1**) and median opening, driveway, and signal spacing standards (**Table 6.3**) as a part of the city and county development code, technical standards	2010	City/ County/NCDOT



Land Use & Policy — Action Items	Timeframe	Responsible Party
Develop an ordinance to implement the recommendations from the ***Market Street Model Ordinances***, including provisions for Complete Street design initiatives and Access Management Toolkit (Chapter 6)	2010	City/County
Work with city/county staff to initiate the redevelopment/development activities within the Catalyst Areas of Independence Boulevard, Kerr Avenue, College Road/Corning, Military Cutoff Extension, and Marsh Oaks.	2010	City Council/County Board of Commissioners
Update local plans with recommendations from the ***Market Street Corridor Study***	2010	City/County
Protect valuable open space areas indicated on the Recommended General development Plan Map	2010	City/County
Promote a mix of housing types in appropriate locations of the study area that respond to shifting housing markets emerging in the region	Ongoing	City/County
Formalize the policy agreement between the city/county and NCDOT to require maintenance of Market Street plantable median to be the responsibility of the city and county.	2010	City/ County/NCDOT
Revise local land development regulations to include corridor overlay standards to promote quality development within the Market Street corridor	2010	City/County
Revise local land development regulations to encourage mixed-use development within activity centers and nodes without the need for a planned development district designation	2010-2011	City/County
Promote the principles of smart growth in new neighborhoods and centers	Ongoing	City/County
Move from strip development patterns toward activity centers or nodes	Ongoing	City/County
Officials for the City of Wilmington and New Hanover County should continually monitor new development and public investments in the area to ensure fulfillment of the community's vision for high quality of life, improved community cohesiveness, and increased economic vitality in the study area	Ongoing	City Council/County Board of Commissioners
Designate funds in the city/county's annual budget to meet local match requirements for grants received, expedite projects or fund small-scale bike/pedestrian or access initiatives.	2011	City Council/County Board of Commissioners



Transportation Committed Projects — Action Items	Timeframe	Responsible Party
U-4902A – Market Street – Install median from New Centre Drive to Martin Luther King, Jr. Parkway – completed ($991,000).	2010-11	NCDOT
U-3831A – Gordon Road – widen Gordon Road between Interstate 40 and Wood Sorrell Road. The widened roadway will include two travel lanes and a two-way left-turn lane - $14,648,000.	2012	NCDOT
U-4902D – Market Street – Install plantable median from Military Cutoff Road to Porters neck Road - $4,800,000.	2017	
U-4902C – Market Street – Install plantable median from Martin Luther King, Jr. to Military Cutoff Road - $2,600,000.	2012	NCDOT
U-4902B – Market Street – Install plantable median from Colonial Drive to New Centre Drive. This project is currently unfunded. Work with NCDOT and WMPO to secure full funding - $2,600,000.	2019	City/NCDOT
U-3338B - Kerr Avenue Widening and Streetscape Improvements. Widening between Randall Parkway and Martin Luther King, Jr. Parkway, including pedestrian/bicycle amenities and landscaped median – $73,468,000.	2013	NCDOT
U-4751 - Military Cutoff Road Extension – extend Military Cutoff Road from Market Street northeast to the Wilmington Bypass. It will be a controlled access four lane divided facility with an adjacent multi-use path. Potential for grade separated interchange at Market Street - $51,602,000	2017	NCDOT
U4434 – Independence Boulevard Extension – from Randall Parkway to US 74 (Martin Luther King Jr Parkway) - $57,458,000	Unfunded	NCDOT



Transportation Interim Projects — Action Items	Timeframe	Responsible Party
Work with NCDOT (site plan development process) to construct access management improvements including intersection redesign, driveway consolidation, cross-access between adjacent development, etc.	2010	City/County Planning / Engineering Staff /NCDOT
Sidewalks (along both sides of Market Street) should be constructed and required by new development to incrementally construct their portion of sidewalk as development occurs.	Ongoing	County Planning Staff / NCDOT / Business Owners
Conduct a signal warrant study at Judges Road (with removal at Cardinal Drive). Moving signal to location would allow for better signal coordination and could provide greater level of congestion relief based on potential number of trips generated by residential area north of Market Street. Probable construction cost is $150,000 for mast-arm signal installation plus $10,000 for pedestrian level amenities.	2010	County Planning Staff /WMPO
Findings and recommendations from the recently adopted City of Wilmington Signage Plan should be implemented at the proposed intersections along Market Street. A wayfinding/signage program should be conducted and implemented for the remainder of the Market Street corridor to guide tourists and limit driver confusion.	2011	City Staff / County Planning Staff/NCDOT
Construct the Kerr Avenue/ Market Street Quadrant Intersection Improvements. This project currently is being studied as part of the Kerr Avenue Categorical Exclusion NEPA document. Full funding will be required for implementation. Probable construction cost is $1,700,000.	2012	City/WMPO/ NCDOT
Construct a 10-foot greenway from College Road to Military Cutoff Road using the abandoned rail corridor. This 1.5-mile new bike and pedestrian facility should connect the Corning Area and Ogden Community Park. Probable construction cost is $900,000.	2014	City Council/ WMPO



Transportation Long-Term Projects — Action Items	Timeframe	Responsible Party
Market Street Improvements – Install intersection laneage, signalization, sidewalks, landscaping, and resurfacing in accordance with Plan from New Centre Drive to Martin Luther King, Jr. Parkway (1.0 miles). Probable construction cost is $2,400,000.	2016	City Council/ WMPO/ NCDOT
Market Street Improvements – Install intersection laneage, signalization, sidewalk/multi-use path, landscaping and resurfacing in accordance with Plan from Bayshore Drive to Porters Neck (2.0 miles). Probable construction cost is $3,700,000.	2017	WMPO/County/ NCDOT
Market Street Improvements – Install intersection laneage, signalization, sidewalks, landscaping and resurfacing in accordance with Plan from Military Cutoff Road to Bayshore Drive (1.1 mile). Probable construction cost is $2,850,000.	2019	WMPO/County/ NCDOT
Market Street Improvements – Install intersection laneage, signalization, sidewalks, landscaping, and resurfacing in accordance with Plan from Martin Luther King, Jr. Parkway to Military Cutoff Road (2.7 miles). Probable construction cost is $5,100,000.	2020	City Council/ WMPO/ NCDOT
Market Street Improvements – Install intersection laneage, signalization, sidewalks, landscaping, and resurfacing in accordance with Plan from Colonial Drive to New Centre Drive (2.0 miles). Probable construction cost is $4,500,000.	2022	City Council/ WMPO/ NCDOT
Construct the Independence Blvd/ Market Street Quadrant Interchange Improvements. This project is currently being studied as part of the Independence Boulevard Extension (TIP #U-4434) NEPA document. Full funding will be required for implementation. Probable construction cost is $13,400,000.	2024	City Council/ WMPO/ NCDOT



Funding - Action Items	Timeframe	Responsible Party
Work with NCDOT and Board of Transportation to secure funding for the Kerr Avenue/Market Street Quadrant Intersection Improvements. Specific right-of-way donation could be negotiated with interested property owners as expressed during the course of this study.	2010	City Council/ Planning staff/ WMPO
Lobby NCDOT, Board of Transportation and the State legislature to include partial funding of improvements in the Phase II Stimulus Package and next Transportation Improvement Program (TIP) to design and implement the Market Street corridor improvements.	2010	City Council/ Board of Commissioners/ WMPO
Consider providing a tax incentive to existing property owners and developers located along the Market Street corridor for enhancing their property values through aesthetic design treatments.	2010	City Council/ Board of Commissioners
Aggressively pursue city and county matching funds for the Energy Efficiency and Conservation Block Grant (EECBG) Program sponsored by the Department of Energy. This funding program can be used for bike and pedestrian infrastructure improvements, operational and system (signals) improvements and planning activities.	2010	City/ County/ WMPO
Solicit NCDOT Division Spot Safety, Hazard Elimination, Governor's Highway Safety Program (GHSP), Economic Development, and Contingency Funds to implement corridor and safety improvements at key intersections along the Market Street corridor.	2011	City/Board of Commissioners/ WMPO/NCDOT
Consider a Local Option Sales Tax. The NC Legislature in 2007 gave counties the authority to ask voters for permission to levy a 0.4 percent land transfer tax or an additional quarter-cent sales tax. A county-wide sales tax could be used to pay for major investment projects along the corridor. However, a sales tax would require the identification of specific projects and special legislative authority.	Ongoing	City/County Board of Commissioners
Pursue NCDOT STP-Enhancement grant funding to install 10-foot multi-use path from College Road to Bayshore Road. These funds are administered through a grant program with a 20% local match requirement. Website: www.ncdot.org/financial/fiscal/Enhancement	2012	Board of Commissioners/ County Planning Staff/NCDOT



The City Council and County Board of Commissioners, in partnership with the Wilmington MPO, should explore the feasibility of implementing one or more of the preferred funding strategies identified by the community planning participants. Initial considerations for implementing the various funding strategies should include:

- The feasibility of implementing the specific funding strategy in New Hanover County, including required state authority, regulatory limitations, or political feasibility.
- The extent of the political jurisdiction that would be subject to the provisions of the new funding strategy (e.g., study area or county-wide).
- The amount of revenue that can be generated from the funding strategy.
- The level of local funding match that may be required.
- A list of eligible projects or planning initiatives that could be implemented with the funding source.

CONCLUSION

There are a variety of funding strategies to implement the recommended improvements for the ***Market Street Corridor Study***. These funding strategies include state and local monies, which are often limited or committed well into the future. Grant funding from the state or federal government typically requires a local match, but these monies may be used to cover many of the capital and operating expenses identified in the recommendations for the corridor. Some of the improvements will be made in partnership with the private sector.

An incremental funding approach would be possible, but is not as attractive because the full benefit of the collective improvements would not be realized for quite some time. Alternative funding sources for expediting construction include special assessments and/or a locally-adopted sales tax or tax incentives.

One thing is certain, with our nation's recession and state funding shortfall, the most critical steps toward implementation will be carried by leaders identified within the community. In collaboration with state and local officials, their collective efforts will lead to a safe, multimodal corridor that supports sustainable development opportunities through the heart of Wilmington's commercial gateway.



Appendix Files

Introductory Text for Model Ordinances in the Market Street Corridor Study Report

The model ordinances (City: Sec. 18-213.4. Market Street Corridor Regulations and County: Sec. 59.10 Market Street Corridor Regulations) developed for the Market Street Corridor Study provide a legal framework for the City of Wilmington and New Hanover County to administer and enforce consistent standards for site design, building design, signage, and access management throughout the entire eleven mile corridor. These ordinances are intended to better link growth and quality-of-life and improve community cohesiveness and economic vitality.

The model ordinances were formulated in partnership with the Project Steering Committee, City and County Planning Staff, and participants in the public planning process. Thorough reviews of the City of Wilmington's *Land Development Code* and *Technical Standards and Specifications Manual*, New Hanover County's *Zoning Ordinance* and other various plans also assisted in the development of the two model ordinances. The ordinances included in this document have been reviewed by staff for the City of Wilmington, New Hanover County and the WMPO.

The model ordinances are designed to complement and enhance existing local zoning and subdivision regulations. These ordinances are not intended to change any of the rules and requirements associated with the underlying zoning districts. The model ordinances also pay special attention to those areas identified as 'activity nodes' and 'activity centers' in the Market Street Corridor Study, and include special mixed use standards in these areas that encourage compact, mixed-use development comprised of three or more of the following uses: residential, office, commercial, institutional/quasi-public/public or entertainment and lodging. Both ordinances also encourage design and scale of mixed-use developments that support active living, human scale, and the principles of smart growth. Provisions in the model ordinances are consistent with the standards and formatting of the City of Wilmington's *Land Development Code* and *Technical Standards and Specifications Manual* as well as New Hanover County's *Zoning Ordinance*.

Prior to the adoption of these model ordinances, provisions and regulations should be reviewed by both the City and County attorneys. It is also recommended that public outreach forums be conducted prior to initiating the formal adoption process to inform concerned citizens about the proposed regulations and seek their input.

Other City Ordinance Revisions to Support the Market Street Corridor Regulations:

Article 5. Zoning District Regulations. Division III. Overlay Districts, Sec. 18-213. CO, Corridor Overlay Districts.

(a) Purpose. The Corridor Overlay Districts are established to provide a series of overlapping regulations for particular roadway corridor areas in addition to those provided by the other zoning districts established by this article. The purpose for establishing these Corridor Overlay Districts is first, to recognize the importance that different roadway corridor areas play in defining the city's character as city entryways and/or significant cultural or historic thoroughfares; second, to protect and preserve both the aesthetics of these important roadways and their traffic handling capabilities through the application of site-specific land use planning principles and procedures; and third, to satisfy the policies and objectives of the South 17th Street Land Use Plan or the Market Street Corridor Study, thereby contributing to the general welfare of the City of Wilmington.

Article 12. Sign Regulations. Division IV. Regulation of Outdoor Advertising Signs, Sec. 18-608. Allowance; removal/relocation/reconstruction of nonconforming outdoor advertising signs

(e) Location. A qualified sign may be relocated or reconstructed and continued as a nonconforming use on any lot zoned CB, Community Business District; RB, Regional Business District: CS, Commercial Services District; LI, Light Industrial District; IND, Industrial District; or AI, Airport-Industrial District; and located only in the following areas:

(2) College Road from Market Street south to terminus of city's zoning jurisdiction;
(3) Oleander Drive from Dawson Street south to the southern bank of Bradley Creek;
(4) Carolina Beach Road;
(5) Shipyard Boulevard from S. 17th Street west to its terminus.

Sec. 18-213.4. Market Street Corridor Regulations.

(a) Applicability. In addition to the general and specific regulations imposed by this chapter on the use of property in the Market Street Corridor Study Area (the boundaries are shown as Figure 4-1: Land Use Context Areas, in the Market Street Corridor Study) approved by the Wilmington City Council on _____ (hereinafter "Corridor Study"), the following regulations shall apply:

The standards or requirements set forth in this section shall not apply to property being developed for single-family, detached housing, except that all single-family, detached housing shall conform to the access management requirements provided in 18-213.4(b)(4).

(b) For any development or redevelopment within the Market Street Corridor Study Area, the following development standards shall apply:

(1) Site design standards.

a. Dumpsters, recycling containers, and/or trash compactor enclosures.

i. These enclosures shall not be located adjacent to residential areas, public rights-of-way, private roads, public sidewalks, paths, or trails, nor should they be located in required buffer areas.
ii. If the enclosure is situated on the site so it appears as an extension of the building, the material used for the enclosure shall be consistent with that of the associated building.
iii. If the enclosure is situated on the site so it appears independent of the building, the material shall be brick, stone, pre-cast concrete, or tinted/textured concrete masonry units (CMU), and shall be visually consistent with that of the associated building.
iv. The gates for any enclosure shall be decorative metal or treated wood, both opaque and secured, and a color that is compatible with the enclosure material.
v. Any enclosure shall be a minimum of six (6) feet tall or at least one foot taller than the dumpster, recycling container and/or trash compactor, whichever is greater, on all sides from public rights-of-way, private roads, parking lots, sidewalks, paths and trails.

b. Utility equipment orientation.

i. All electric, cable television, internet and telephone utilities, fire alarm conduits, streetlight wiring and other wiring conduits and similar utilities shall be placed underground (except where placement is prohibited or deemed impractical by the City Manager or the appropriate utility companies) for all new developments and/or redevelopments within the Market Street Corridor Study Area.
ii. Stand-alone utility equipment shall be screened from view from public rights-of-way, parking lots, private roads, public sidewalks, and adjoining property.

iii. Utility equipment attached to the building, including but not limited to backflow preventors, utility meters, and grease traps, shall not abut public rights-of-way, parking lots, or private roads, unless screened from the line of sight by a wing wall. Utility equipment affixed to a building shall be painted to match the adjacent surface, unless specifically prohibited by building code or the governing authority.

c. Site lighting.

i. All exterior lighting shall have underground electric service.
ii. All fixtures shall be full-cutoff light fixtures and shall not shine on adjacent properties.
iii. No exterior light fixture shall exceed the height of the highest roof point on the principal or fifteen (15) feet, whichever is less.
iv. Wooden light poles are prohibited.
v. Light poles and fixtures required for the development shall be compatible with the architecture of the buildings on the lot or parcel.
vi. Gas station canopy lights shall be recessed within the canopy.
vii. Flashing, blinking, or intermittent lights and visible neon tubing are prohibited

d. Landscaping.

i. Landscaping Plans. Landscape plans shall be prepared for all buildings and common areas on a lot or parcel. All landscape plans shall be prepared by a registered landscape architect or a licensed landscape designer, and shall bear the landscape architect's/designer's seal, signature, and State of North Carolina registration number and shall include the information required under Section 18-462 of this chapter.
ii. Parking Lot Landscaping. The requirements for parking lot landscaping shall apply to new parking areas or enlargement of existing parking areas that increase the total number of parking spaces by ten (10) percent or more. The enlargement of any existing parking area by ten (10) percent or more shall require that both the existing and new parking areas conform to these requirements. Structured parking facilities are exempt from the interior parking landscaping requirements. In addition to the requirements of Division 5 of Article 8 of this chapter, the following requirements shall apply to all parking lot landscaping, including parking enlargements:

(a) Parking areas shall be separated from other private property by a ten-(10) foot wide perimeter planting area. The perimeter planting area shall contain a double staggered row of evergreen shrubs that are at least eighteen (18) inches in height at the time of planting, which shall be maintained at a height of thirty-six (36) inches at maturity, and trees equal in number to one (1) tree per fifty (50) feet of abutting property line. Canopy trees shall be planted on thirty-five (35) foot centers and understory size trees shall be planted on twenty-five (25) foot centers.

(b) Pedestrian access between adjacent parcels shall be permitted within the perimeter planting area.
(c) Parking facilities located in the Market Street Corridor shall comply with the requirements of Section 18-481.i and Section 18-481.j of this chapter regardless of the underlying zoning designation of the parcels.

iii. Foundation Plantings. Landscaping is required along all facades of a building in the form of foundation plantings. This requirement may be met through the provision of a planting strip with a minimum width of four (4) feet or through the provision of clustered free-standing planters. Plant materials shall be of appropriate size and scale to adequately screen forty percent (40%) of the foundation perimeter visible from any public right-of-way or private road at plant maturity.
iv. Existing Vegetation. Existing and undisturbed trees of a caliper greater than four (4) inches may be used to satisfy a portion of the landscaping requirements so long as they meet or exceed spacing requirements. Existing trees that are preserved may be credited as follows:

(a) 4" - 6" caliper tree = 1 credit
(b) 7" - 12" caliper tree = 2 credits
(c) 13" - 18" caliper tree = 3 credits
(d) 19" - 24" caliper tree = 4 credits
(e) > 25" caliper tree = 6 credits

e. Non-vehicular circulation. Pedestrian circulation shall be provided for and coordinated with that generated from or using adjacent properties as follows:

i. Adjacent land uses shall provide pedestrian access through sidewalks, paths or trails to allow circulation between sites.
ii. Sidewalks, paths or trails shall be constructed to optimize pedestrian movements between buildings and connect with existing pedestrian sidewalks, paths or trails adjacent to the lot or parcel where they are planned or currently exist.
iii. Safe and convenient crossings shall be provided across all private roads internal to the site and at all driveways leading to the site from a public street.
iv. Pedestrian walkways across parking areas shall be located as follows:

(a) Walkways running parallel to the parking rows shall be provided for every four (4) rows. Rows without walkways shall be landscaped or contain barriers or other means to encourage pedestrians to use the walkways; and
(b) Walkways running perpendicular to the parking rows shall be no further than twenty (20) parking spaces. Landscaping, barriers or other means shall be provided between the parking rows to encourage pedestrians to use the walkways.

f. Outdoor storage.

i. Outdoor storage or display of sales merchandise, excluding automobiles, motorcycles, and live plants shall not be visible from public rights-of-way, except that single-tenant buildings greater than 100,000 square feet in gross floor area may display sales merchandise within fifteen (15) feet of the front of their building, and multi-tenant buildings or single-tenant buildings less than 100,000 square feet in gross floor area may display sales merchandise within fifteen (15) feet of the main entrance to the business. Outdoor storage display areas shall be designated on the site plan submitted for the development.

(2) Building architecture standards.

a. Building materials and colors.

i. Prohibited exterior building materials. Vinyl or aluminum siding, unparged concrete block, masonite, and corrugated metal are not permitted.
ii. Building color.

(a) Color schemes used for buildings shall aesthetically integrate building elements together, relate separate (free-standing) buildings on the same lot or parcel to each other, and be used to enhance the architectural form of the building.
(b) All building projections, including, but not limited to, chimneys, flues, vents, and gutters, shall match or complement in color the permanent color of the surface from which they project.
(c) Intense, bright, black, or florescent colors shall only be used as accents; such colors shall not be used as the predominant color on any wall or roof of any building.

b. Building character.

i. Building scale. The horizontal length of a building façade shall be offset by a change in wall plane such as projections or recesses as follows:

(a) The distance between required offsets shall be no further apart than two-thirds (2/3) of the height of the façade. A building façade that is less than or equal to the height of the building shall not require an offset.
(b) The depth or projection of the offset shall be at least one-tenth (1/10) of the length of the longest adjacent façade wall; provided, however, the minimum offset depth shall be at least one (1) foot. For example, a building with a twenty (20) foot façade wall shall have at least two-(2) foot offset adjacent to the façade walls.
(c) The change in wall plane (i.e., offset) shall extend at least twenty percent (20%) of the length of the façade wall.

ii. Minimum wall articulation. Any building greater than fifty (50) feet in length, measured horizontally, that faces a public right-of-way or private street or pedestrian walkway shall include at least three (3) of the following features:

(a) change in texture or masonry pattern
(b) change in brick color
(c) windows
(d) dormers
(e) trellises with vegetation
(f) covered porch
(g) balconies
(h) parapet walls designed to meet the minimum requirements set forth of Sec. 18-174 of this chapter.

iii. Four-sided architecture. All sides of the building shall include articulation, materials, and design characteristics consistent with those on the primary front façade in terms of quality and detail, unless the public's view of a rear or side building elevation from a public right-of-way or private street or pedestrian walkway is blocked by intervening buildings or landscaping measuring at least fifteen (15) feet in height at maturity.

c. Roof form and articulation.

i. Flat Roof Buildings.

(a) The roof of any building with a flat roof shall include parapets to conceal the roof and roof-top equipment from public view. The average height of such parapets shall not exceed fifteen (15) percent of the height of the supporting wall, and such parapets shall not at any point exceed one-third (1/3) of the height of the supporting wall or six (6) feet, whichever is greater.
(b) Parapets used to conceal the roof and roof-top equipment for any building shall not extend a constant height for more than forty (40) feet in length.

ii. Pitched Roof Buildings. The roof of any building with a pitched roof shall include at least two (2) of the following to maintain proportional building architecture:

(a) three (3) or more roof pitch planes
(b) overhanging eaves, extending no less than one (1) foot past the supporting wall
(c) pitched roofs that do not exceed the average height of the supporting walls, with an average slope greater than or equal to one (1) foot of vertical rise for every three (3) feet of horizontal run and less than or equal to one (1) foot of vertical rise for every one (1) foot of horizontal run.

iii. Additional Requirements.

(a) Consistent roof treatments, whether flat or pitched, shall be provided on all sides of the building.
(b) The back side of all cornices, parapets, and roofline that are visible from an adjacent public right-of- way shall be finished with materials consistent with the associated building.

iv. Rooftop Equipment Screening. All rooftop mechanical equipment and vents greater than eight (8) inches in diameter shall be:

(a) Screened from the line of sight of public rights-of-way, private roads, parking lots, public sidewalks, greenways, and internal pedestrian ways except for instances where site topography precludes reasonable compliance with the minimum screening requirement;
(b) Screened by either a parapet wall along the building edge or a freestanding screen wall on the roof of a material, color, and design architecturally compatible with the building, that is at least as high as the equipment and vents for which the screening is designed to hide.

d. Architectural Unity. All buildings within the same lot or parcel shall be architecturally unified. Architectural unity means that buildings shall be related and compatible in style, color, scheme, quality, and type of exterior building materials.

(3) Signage standards.

a. Prohibited signs.

Off-premise signs/billboards. Off-premise Signs, including billboards, are prohibited in the Market Street Corridor Study Area.

b. General regulations and design standards.

i. Monument signage.

(a) One monument sign shall be permitted per lot or parcel when it has frontage on Market Street or arterial street, but only in the event that no ground sign is also provided for the same lot or parcel.
(b) The maximum permitted square footage for a monument sign is set forth in the underlying zoning district.
(c) No monument sign shall exceed ten (10) feet in height.
(d) Monument signs shall conform to front, side, and rear yard setback requirements for such signs set forth in the underlying zoning district.
(e) A landscaped area located around the entire base of a monument sign shall be required. The landscaped area shall contain living landscape materials consisting of shrubs, spread no greater than

three (3) feet on center, and perennial ground cover densely planted.

(4) Access management. Improvements to Market Street should enhance the mobility function of the highway, while recognizing that landowners have certain rights of access to the highway consistent with their needs.

The North Carolina Department of Transportation (NCDOT) is responsible for regulating the location, design, construction, and maintenance of street and driveway connections to Market Street pursuant to G.S. 136-18(29). The Policy on Street and Driveway Access to North Carolina Highways published by the North Carolina Department of Transportation (NCDOT) establishes minimum criteria for granting access connections to Market Street; however, a provision in the policy manual defers evaluation of a Street and Driveway Access Permit to criteria established by the local government when they are deemed more restrictive than NCDOT requirements. The provisions of this Section meet or exceed minimum requirements established in the Policy on Street and Driveway Access to North Carolina Highways, and should be used by the NCDOT for evaluating access connection permits along Market Street. Approval of a development application by the City of Wilmington does not confer any obligation on the North Carolina Department of Transportation to allow the same number, location, or design of any of the access or traffic control measures illustrated on the approved development plan without first securing a Street and Driveway Access Permit from the NCDOT for the exact same improvements. Further, approval of a driveway access permit by the NCDOT does not confer any obligation by the City of Wilmington to allow the same number, location, or design of any of the access or traffic control measures illustrated on the approved permit without first securing a development approval from the City of Wilmington for the exact same improvements.

a. Administration. The City Manager or his designee, shall administer and enforce the provisions of this section in cooperation with the North Carolina Department of Transportation.

i. Need for a street, driveway access, or median opening permit. Approval of a Street and Driveway Access Permit from the North Carolina Department of Transportation is required prior to any one of the following events along the Market Street Corridor:

(a) The approval of any development permit for any property abutting Market Street.
(b) The construction of any new public or private access to Market Street or to a public street that intersects directly with Market Street.
(c) The reconstruction or relocation of any existing public or private access to Market Street or to a public street that intersects directly with Market Street.
(d) A change in land use, or substantial enlargement or improvement to an existing land use, subject to the requirements set forth in the Technical Standards and Specifications Manual.

ii. Application requirements.

(a) Street or driveway access permit. An application for a site-specific Street and Driveway Access Permit shall be submitted to the North Carolina Department of Transportation in accordance with minimum rules and procedures set forth in the Policy on Street and Driveway Access to North Carolina Highways.
(b) Median opening permit. A request for a new median opening or median relocation shall be submitted to the North Carolina Department of Transportation in accordance with the minimum rules and procedures set forth in the Median Crossover Guidelines for North Carolina Streets and Highways. Upon completion of a traffic study, the NCDOT and the City of Wilmington may consider the relocation of an existing median opening. It is the sole responsibility of the property owner to provide the justification necessary for a new or relocated median opening in conformance with the Market Street Corridor Study.
(c) Agency coordination. Site driveway access permits and median opening permits shall be endorsed by the City Manager or his designee prior to consideration by the North Carolina Department of Transportation.

b. Standards for Access Connections

i. All access shall be provided via the nearest abutting street with the lowest functional classification as zoning permits.
ii. Minimum median opening, driveway, and traffic signal spacing standards. All access connections to Market Street shall meet or exceed the minimum

Posted Speed Limit	Signal / Full Median Opening Spacing	Directional Median Opening Spacing	Adjacent Driveway Spacing	Opposite Street Driveway Spacing
≥ 45 MPH	2,500 feet	2,000 feet	800 feet	800 feet
26-44 MPH	1,500 feet	1,200 feet	500 feet	500 feet
≤ 25 MPH	1,000 feet	1,000 feet	300 feet	300 feet

connection spacing requirements specified in the table below.

Minimum Median Opening, Driveway, and Signal Spacing

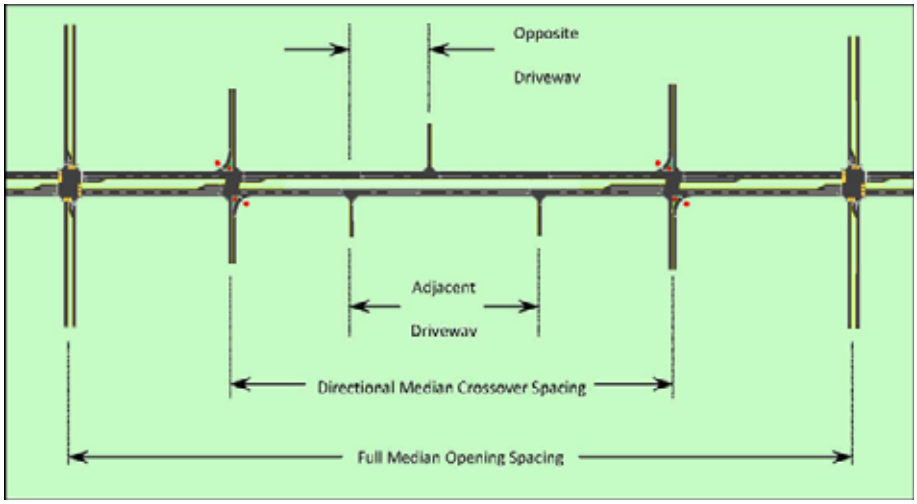
Notes:

A = No median opening shall be placed where it would interfere with the storage length requirements of an existing intersection.

B = Directional median openings represent a median that prohibits specific turning movements (e.g. directional cross over, channelized restrictions, etc.), usually through the use of channelization.

iii. Measurement criteria. Spacing between driveways or medians shall be measured along the right-of-way line between the tangent projection of the inside edges of adjacent driveways, opposite street driveways or median openings, as applicable (see below).

Measuring Median Opening, Driveway, and Signal Spacing



iv. Variance from minimum median opening, driveway, and traffic signal spacing standards.

(a) The City Manager or his designee, in coordination with the North Carolina Department of Transportation, may reduce the connection spacing requirements set forth herein for situations where they prove impractical, but in no case shall the permitted spacing be less than eighty-five percent (85%) of the applicable standard, except as provided in the Technical Standards and Specifications Manual..

(b) For sites with insufficient road frontage to meet minimum spacing requirements, consideration shall first be given to providing access via connection to the lowest-order adjoining street, utilization of a joint or shared driveway with an adjacent property that meets the recommended spacing requirement, or development of a service road to serve multiple properties.

(c) The City Manager or his designee, in coordination with the North Carolina Department of Transportation, may grant access approval for a permanent use not meeting the spacing requirements of this Section on an interim basis if an access plan is submitted that demonstrates how spacing requirements will ultimately be met and appropriate assurances in the form of a recordable and enforceable

easement or access agreement will be provided insuring future provision of a conforming access.

(d) Deviation from these spacing standards may be permitted at the discretion of the City Manager or his designee, in cooperation with the North Carolina Department of Transportation, where the effect would be to enhance the safety and operation of the highway. Examples might include a pair of one-way driveways in lieu of a two-way driveway, or alignment of median openings with existing access connections. Approval of a deviation from the minimum spacing standards in this Section may require the applicant to submit a study prepared by a duly qualified and licensed engineer in the State of North Carolina that evaluates whether the proposed change would exceed highway safety or operational benefits of the prescribed standard.

c. Immediate compliance.

(a) Existing road and driveway connections for any single parcel along Market Street shall be modified to conform with the minimum connection spacing requirements set forth in this Section when safety, capacity, or operational improvements are made within the public right-of-way.

(b) The North Carolina Department of Transportation may prohibit, restrict, or modify the placement of any connection, at any time, to a single property in the interest of public safety and mobility.

d. Corner clearance. Corner clearance for connections to Market Street shall meet or exceed the minimum connection spacing requirements set forth in the Technical Standards and Specifications Manual.

e. New access connections. New access connections shall not be permitted within the functional area of an interchange, intersection, or existing median opening defined by the minimum connection spacing requirements set forth in the Technical Standards and Specifications Manual, unless:

i. No other reasonable access to the property is available, and the City Manager or his designee, in coordination with the North Carolina Department of Transportation, determine that the connection does not create a safety or operational problem after review of a site specific traffic impact study prepared by a duly qualified and licensed engineer in the State of North Carolina.

ii. Where no other alternatives exist, the City Manager or his designee, in coordination with the North Carolina Department of Transportation, may allow construction of an access connection along the property line farthest from an intersection. In such cases, a directional driveway connection (i.e., right-in/ right-out or right-out only) may be required. No median breaks will be allowed within the functional area of the intersection.

iii. Near a signalized intersection, the location for a full movement driveway connection may be required to exceed the minimum spacing requirements set forth in the Technical Standards and Specifications Manual to avoid

interference with the operations of the traffic signal and resulting traffic queues. The radius of a full movement driveway connection shall not encroach on the minimum corner clearance.

iv. The minimum lot size for any new corner lot created through the subdivision process shall be of adequate size to provide for the minimum corner clearance spacing required herein.

f. Joint and cross access.

i. Non-residential and mixed-use projects.

(a) Adjacent land uses shall provide a cross-access drive and pedestrian access to allow circulation between sites.

(b) A system of joint-use driveways and cross access easements shall be established wherever deemed feasible by the City Manager or his designee. The building site shall incorporate the following:

(i) A continuous service drive or cross-access corridor extending the entire length for property frontage required to provide driveway separation consistent with the minimum spacing requirements set forth in the Technical Standards and Specifications Manual.

(ii) A design speed of ten miles per hour (10 mph) and sufficient width to accommodate two-way travel aisles designed to accommodate automobiles, service vehicles, and loading vehicles.

(iii) Stub-out connections and other design features that make it visually obvious that the abutting properties may be tied-in to provide cross access via a service drive.

(iv) A unified access and circulation plan that includes coordinated or shared-use parking areas, wherever feasible. Shared-use parking areas shall count toward reducing the number of required off-street parking spaces for the two adjacent land uses if the peak parking demand periods do not occur at the same time.

(c) Pursuant to this section, a property owner for a non-residential or mixed-use project shall:

(i) Record an easement with the deed for the property that allows cross access to and from other properties served by a joint-use driveway, cross-access, or service drive.

(ii) Record an agreement with the deed for the property that remaining access rights along Market Street will be dedicated to the North Carolina Department of Transportation and pre-existing driveways along the property's frontage will be closed and eliminated after construction of the joint use driveway.

(iii) Record a joint maintenance agreement with the deed for the property defining maintenance responsibilities of the adjacent property owners.

ii. Residential projects.

(a) Residential subdivisions with lots fronting along Market Street shall be designed with joint access points to the highway. Normally a maximum of two access points shall be allowed regardless of the number of lots served.
(b) The property owner shall enter into a written agreement with City of Wilmington, recorded with the deed for the property, that pre-existing connections along the frontage will be closed and eliminated after construction of joint use driveways.
(c) The City Manager or his designee may modify or waive the requirements of this Section where the characteristics or layout of abutting properties would make implementation of joint use driveways or development of a shared access circulation system impractical, provided that all of the following requirements are met:

(i) Joint access driveways and cross access easements are provided wherever feasible in accordance with this Section.
(ii) The site plan incorporates a unified access and circulation system in accordance with this Section.

g. Median openings. No new median openings shall be allowed along Market Street unless it is in conformance with the Market Street Corridor Study and the latest edition of Median Crossover Guidelines for North Carolina Streets and Highways published by the North Carolina Department of Transportation. In all circumstances, new median openings shall not encroach on the functional area of an existing median opening or intersection. Approval of any new median opening along Market Street lies solely with the North Carolina Department of Transportation Traffic Engineering and Safety Systems Branch.

i. Minimum evaluation criteria. Minimum criteria for evaluating a request for a new median opening may include, but not be limited to, the following:

(a) Median openings shall not be located where intersection sight distance (both vertical and horizontal) cannot meet current design criteria required by the North Carolina Department of Transportation.
(b) Median openings shall not be placed in areas where the grade of the crossover will exceed five percent (5%). Special consideration should be given to the vertical profile of any proposed new median opening that has the potential for future signalization.
(c) A median opening shall not be provided where the median width is less than sixteen (16) feet.
(d) Median openings that require a traffic signal, or where one may expect a potential traffic signal in the future, should be avoided.

(e) It is the responsibility of the property owner to provide the justification for a new median opening along Market Street. If this information is not provided, the median opening request shall not be reviewed by the North Carolina Department of Transportation.

h. Design Guidelines for access connections. The following factors shall be considered by the City Manager or his designee and the North Carolina Department of Transportation when assessing the suitability of a proposed access connection location associated with a permit application.

i. Offset Access Connections: Access connections on opposing sides of the highway shall be aligned with one another or offset an adequate distance to minimize overlapping left turns and other maneuvers that may result in safety hazards or operational problems.
ii. Adequate Sight Distance: An access connection shall be located so as to provide adequate intersection sight distance.
iii. Auxiliary Lanes: The NCDOT District Engineer may require auxiliary lanes (i.e., left or right turn lanes, bypass lane, or acceleration lanes) where deemed necessary due to traffic volumes or where a safety or operational problem is expected without such lane. Consideration for right turn auxiliary lanes should be balanced with the community's desire to create a pedestrian-friendly environment for the Market Street Corridor. Left and right turn lanes shall be constructed in accordance with the North Carolina Standards and Specifications for Roads and Structures.
iv. Substandard Frontage: If lot frontage is inadequate to provide the required minimum spacing, consideration shall first be given to providing access via connection to a side street, utilization of a joint or shared driveway with an adjacent property that meets the recommended spacing requirement, or development of a service road to serve multiple properties.
v. Future Development: To maintain minimum spacing requirements between non-residential access locations when future development occurs, a proposed access connection may be approved subject to the condition that it serves adjacent property via a joint or shared access located on the common property line or a cross access easement.
vi. Easements for Joint Access: When required to provide a joint or shared access, the property owners must record an easement allowing cross access to and from the properties served by the shared driveway or cross access. The easement must include a joint maintenance agreement defining the responsibilities of the property owners.
vii. Restricting Left Turns: Left turning movements to or from a proposed access connection may be restricted at the time of construction or at a future date based upon existing or anticipated roadway operating conditions.
viii. Angle of Approach: Access points shall be aligned to be straight and perpendicular to the centerline of Market Street to the maximum extent feasible.
ix. Driveway Width:

	Minimum	Maximum

One-way Traffic	13 feet	20 feet
Two-way Traffic	23 feet	30 feet, 2-lane 36 feet, 3-lane

x. Driveway Throat Length: For any development plan with an internal roadway network, a minimum storage of one hundred (100) feet measured from the near edge of the right-of-way line will be required before any crossing or left-turning conflicts area allowed. The minimum driveway stem distance may be modified on a project-by-project basis based on recommendations from an analysis of traffic operations on the internal roadway network.

xi. Auxiliary Features: Signs, entrance medians, and fences shall be placed or constructed outside of the public right-of-way for Market Street.

xii. Non-Residential and Mixed-Use Access Design: Non-residential and mixed-use access must be designed so that backing, loading, unloading, and other maneuvers are accommodated on-site and not using the Market Street right-of-way, and the access shall provide adequate stacking distance to prevent entering or exiting vehicles from obstructing the flow of traffic on Market Street. A driveway median may be required to preserve the length of storage, or to prevent cross access to an out-parcel within the storage area of a driveway. All driveway grades and drainage improvements shall conform to the rules and requirements set forth in the NCDOT's Policy on Street and Driveway Access to North Carolina Highways.

xiii. Non-Residential and Mixed-Use Access Geometrics: The geometrics of a non-residential or mixed-use access shall provide adequate width, grade, and radii to accommodate all vehicles that will access the site.

xiv. Corner Radius: The minimum corner radius of a street or driveway along Market Street shall be in conformance with the rules, requirements, and technical standards set forth in the Technical Standards and Specifications Manual.

i. Connectivity. The internal street system for a proposed development shall be designed to coordinate with existing, proposed, and planned streets outside of the development as provided in this Section.

i. Wherever a proposed development abuts unplatted land or a future development phase of the same development, clearly demarcated (i.e., "future street connection") street stubs shall be provided as deemed necessary by the City Manager or his designee to provide access to abutting properties or to logically extend the street system into the surrounding area. All street stubs shall be provided with temporary turnaround or cul-de-sacs unless specifically exempted by the City Manager or his designee, and the restoration and extension of the street shall be the responsibility of any future developer of the abutting land.

ii. Collector streets shall intersect with collector or arterial streets on- and off-site at safe and convenient locations.

iii. Local streets shall connect with surrounding streets to permit the convenient movement of traffic between land uses or facilitate emergency access and evacuation, but such connections shall not be permitted where

the effect would be to encourage the use of such streets by substantial through traffic.

iv. Pedestrian connections should be provided between adjacent properties in addition to roadway connections. These pedestrian connections should provide for safe pedestrian travel along roadways and across parking areas to site buildings.

j. Requirements for out-parcels and phased development plans

i. Aggregation. In the interest of promoting unified access and circulation systems, development sites under the same ownership or consolidated for the purposes of development and comprised of more than one building site shall not be considered separate properties in relation to the access standards set forth in this Section. The number of connections permitted shall be the minimum number necessary to provide reasonable access to these properties, not the maximum available for that frontage along Market Street. All necessary easements, agreements, and stipulations required in this Section shall be met. This shall also apply to phased development plans. The owner and all lessees within the affected area are responsible for compliance with the requirements of this Section and both shall be cited for any violation.

ii. Out-parcels. All out-parcel access shall be served internally to the development site using the shared circulation system of the principle development. Access to out-parcels shall be designed to avoid excessive movement across parking aisles and queuing across surrounding parking and driving aisles.

k. Minimum on-site vehicle storage area. Adequate storage must be provided within the internal circulation system for properties that include either a drop-off loop or drive-through facility so that vehicles do not queue onto Market Street. Specific storage areas will be determined by the City Manager or his designee, in coordination with the North Carolina Department of Transportation, on a case-by-case basis during the development review process. The City Manager or his designee may require a trip generation and queuing study to determine on-site storage needs and to evaluate a site's impact on the adjacent public roadway network. The following minimum storage lengths are required for specific development types along Market Street. Dimensions are measured from the ultimate right-of-way line stipulated by the State Transportation Improvement Program, or other project plans.

i. For single-lane drive-in banks, storage to accommodate a minimum queue of six (6) vehicles will be provided. Banks having several drive-in service windows will have storage to accommodate a minimum of four (4) vehicles per service lane.

ii. For single-lane drive-through full-service car washes, storage to accommodate a minimum of twelve (12) vehicles will be provided. Automatic or self-service car washes having a multi-bay design will have minimum vehicle storage to accommodate three (3) vehicles per bay.

iii. For fast-food restaurants with drive-in window service, storage within the site to accommodate a minimum of eight (8) vehicles per service lane from the menu board/ordering station will be provided.
iv. For service stations where the pump islands are parallel to the pavement edge, a minimum setback of thirty-five (35) feet between the pump islands and the public right-of-way will be provided. For service stations where the pump islands are not parallel to the pavement edge, minimum vehicle storage of fifty (50) feet in length between the pump islands and the public right-of-way will be provided.
v. For land uses that require an entry transaction or have service attendants, gates or other entry control devices, the vehicle storage will be of adequate length so that entering vehicles do not queue back on the right-of-way for the adjacent highway. No portion of a parking area, attendant booth, gates, signing, or parking activity shall encroach on the public right-of-way.
vi. For schools, adequate storage for parental drop-off and pick-up areas should be provided entirely on the school campus site.

l. Variances. The granting of a variance, pursuant to the Technical Standards and Specifications Manual, shall be in harmony with the purpose and intent of this Section and shall not be considered until every feasible option for meeting minimum access management standards is explored.

i. Applicants for a variance from the standards herein must provide proof of unique or special site conditions that make strict application of the provisions impractical. This shall include proof that:

(a) Indirect or restricted access cannot be obtained; and
(b) No engineering or construction solutions can be applied to mitigate the conditions; and
(c) No alternative access is available from a side street.

ii. Under no circumstances shall a variance be granted, unless not granting the variance would deny all reasonable access, endanger public health, welfare or safety, or cause an exceptional and undue hardship on the applicant. No variance shall be granted where such hardship is self-created.

m. Nonconforming access.

i. Following adoption of this Section, access points along Market Street that do not conform to the standards set forth herein shall be designated as nonconforming access features and shall be brought into compliance with applicable standards only under the following scenarios:

(a) When a new access connection permit is requested as part of any permit application.
(b) A change in land use, or substantial enlargement or improvement to an existing land use as defined in Article 15, Section 18-812, is made subject to the requirements set forth in the Technical Standards and Specifications Manual.

(c) As road improvements are made within the public right-of-way for Market Street adjacent to the property.
(d) A nonconforming access is inactive for a continuous period of more than 180 days, unless otherwise exempted by City of Wilmington or the North Carolina Department of Transportation.

ii. Normal maintenance and/or repair of an existing access connection shall not be considered a physical change in access that triggers compliance with this Section.
iii. Notwithstanding the foregoing, the North Carolina Department of Transportation may prohibit, restrict, or modify the placement of any connection, at any time, to a single property in the interest of public safety and mobility.

(c) Market Street Mixed Use Overlay (MSMO). The Market Street Mixed Use Overlay (MSMO) is established for locations identified in the Market Street Corridor Study. In addition to the other study area regulations and standards set forth herein, an owner/applicant shall develop a lot or parcel in an MSMO in accordance with the following regulations:

1) Review procedures.

a. Preapplication. Prior to an applicant submitting an application and a detailed preliminary plan for review and approval, the applicant shall arrange a preapplication conference with the City's planning staff and Technical Review Committee (TRC) to review the applicant's concept plan.

b. Application plan and approval: The applicant for an MSMO project shall submit an application and a detailed, unified preliminary master plan for the planned development to the City's planning staff, SRB and TRC for review and approval in accordance with the provisions of Article 7 and Section 18-60 of this chapter. In addition to these requirements, the applicant shall include in the preliminary plan submission the following:

i. Access.
ii. Architectural features of structures.
iii. Bikeways.
iv. Circulation.
v. Design guidelines for the development.
vi. Environmental analysis.
vii. Historic features.
viii. Landscaping, including tree species, size and extent of tree cover.
ix. Location, use, types, massing, scale and dimensions of structures.
x. Open space.
xi. Recreational areas and parks.
xii. Stormwater plans and calculations.
xiii. Traffic impact study.

Following TRC and SRB review and approval, the applicant shall prepare and submit the final plat for approval in accordance with Article 3, Division III of this chapter. The final plat shall contain the following notation: "This plat has been approved as part of a mixed use development in accordance with section 18-213. of this chapter."

c. Minor changes to approved MSMO plan. Minor changes to the approved final plat and master plan for an MSMO site are changes proposed by the applicant that do not change the basic design and development concepts of the MSMO approved master plan . Minor changes to approved preliminary plans are allowed on final plats if the changes are in substantial compliance with the preliminary plan. Denial classifies such changes as major changes in plans and a new preliminary plan must be submitted or the major change reworked so as to be classified as a minor change. Minor changes to final plats and master plans require the review and approval of TRC and the City Manager.

d. Major changes to approved MSMO plan. Major changes to the approved final plat and master plan for an MSMO district are changes that require resubmission of the plat and plan for review and approval as set forth in Section 18-213 of this chapter.

(2) Prohibited uses. Notwithstanding the provisions of section 18-173 of this chapter, any uses permitted in the underlying zoning district is also allowed in the MSMO provided it meets all other provisions of this chapter, except for the following:

a. Arcades
b. Automotive Services
c. Adult establishments
d. Bowling alleys and pool halls
e. Contractor's equipment or supply dealers and service
f. Contractor's storage lots
g. Crematoria and funeral homes
h. Flea markets
i. Fuel and ice dealers
j. Garbage collection, private
k. Ground floor residential, fronting along Market Street
l. Mini warehouses
m. Motor freight companies
n. Motor vehicle dealers, including automobiles, boat dealers, manufactured homes, motorcycles, recreational vehicles and utility trailers
o. Movers, van lines and storage
p. Retail uses in excess of 100,000 square feet
q. Tire dealers
r. Welding, repair

(3) Activity centers and nodes. The intensity, amount, and size of development allowed within an MSMO are based on the two (2) types of activity area designations used in the Market Street Corridor Study. The two (2) types of activity areas are intended to function at a neighborhood, community or regional scale, in accordance with guidelines found in the Market Street Corridor Study.

a. Activity node. Activity nodes accommodate convenience business/retail uses and services within or near neighborhoods for day-to-day living needs of the immediate community. Convenience business uses include small grocery stores, laundromats, and business and office uses with relatively low traffic generation characteristics such as florists and law offices. Activity nodes are also intended to foster opportunities for the integration and promotion of multimodal transportation systems. The vertical and horizontal integration of uses is encouraged, and existing neighborhood compatibility and interconnection is essential. Supporting low intensity institutional uses are allowed.
b. Activity center. Activity centers promote a planned and integrated combination of uses within larger areas and are planned to provide services at community or regional levels. Activity centers should be designed to encourage compact, mixed use development comprised of recreation/open space and office as well as one or more of the following uses: business, town homes, senior living units, civic, institutional, and/or hotel. Activity centers are also intended to foster opportunities for the integration and promotion of multimodal transportation systems. Development must emphasize the efficient reuse of existing infrastructure, preservation of natural systems, integration of pedestrian and bicycle facilities, and an urban form characterized by close-knit neighborhoods and sense of community. The vertical and horizontal integration of uses is encouraged, and existing neighborhood compatibility and interconnection is essential.

(4) Dimensional requirements.

		Activity Node (AN)	Activity Center (AC)
a.	Minimum project size.	5 acres	10 acres
b.	Maximum residential density.	14 units per lot	20 units per lot
c.	Maximum commercial density.	None	None
d.	Maximum office density.	None	None
e.	Maximum impervious surface.	80%	90%

f. Front setbacks. New construction shall be constructed to align with the predominant existing setback of the block face, or if no predominant setback exists, then construction shall align with the street right-of-way.
g. Side and rear yard setbacks. None, except where adjacent to residential zoning, in which case the setback shall be ten (10) feet.
h. Minimum building separation. There shall be no minimum interior setbacks and separation requirements. All internal non-residential buildings are encouraged to be located within ten (10) feet of street rights-of-way to enhance the pedestrian orientation of the development. Buildings set back large distances from roads and pedestrian trails are strongly discouraged. All structures shall meet state building code requirements and all other requirements to protect the health, safety and welfare of occupants.

(5) Mix of Uses. A proposed mixed use development shall include an appropriate intensity, type, and mix of land uses, as outlined by the requirements below. This shall be assessed in relation to the scale of the activity node or activity center and the mix and relationship of existing and planned uses in the same activity node or activity center, including residential, commercial, office, and institutional uses;

a. The mixed use development shall contain at least three (3) of the following uses:

   i. Residential.
   ii. Office.
   iii. Commercial.
   iv. Institutional, quasi-public, public.
   v. Entertainment and lodging.

b. For mixed-use developments containing three (3) use categories, each use shall occupy a minimum of twenty (20) percent of the floor area or gross acreage of the project. The developer may choose the use mix measurement but each project shall only use one (1) of the use mix measurements (floor area or gross acreage). For projects with four (4) or more use categories, the twenty (20) percent minimum is waived for all categories except residential, however, no use may occupy more than sixty (60) percent and no two (2) uses combined shall occupy more than eighty (80) percent of the floor area or gross acreage. For phased projects, during construction of any phase prior to project completion or six (6) years from the initial foundation inspection, whichever is first, no single use shall exceed sixty (60) percent and no two (2) uses shall exceed ninety (90) percent. Residential uses may occupy as much as seventy-five (75) percent floor area or gross acreage, if that which is over sixty (60) percent is located in a mixed-use building and located over first floor commercial use.

(6) Site design standards. The following standards shall apply to all Activity Centers and all Activity Nodes in an MSMO.

a. Common space. At least ten (10) percent of the acreage of the site shall be devoted to common space(s).

   i. Common space includes areas where the public is directly or indirectly invited to gather, browse, sit, interact or congregate. Common spaces do not have to be publicly owned. Common areas may include walking paths, bicycle paths, courtyards, plazas and other similar areas.
   ii. Unimproved natural areas shall not be counted as common space.
   iii. Parking area landscaping and buffer areas shall not be counted toward meeting this requirement.
   iv. Common spaces shall be arranged as community spaces with open areas, landscaping, seating facilities and lighting fixtures which provide for safety and visual effects. Common spaces are intended to be places for social interaction and may include impervious surfaces.
   v. The walking areas of common spaces shall be surfaced with concrete, brick, tile or another material approved by the technical review committee. The type of surfacing material shall be identified on the site plan.
   vi. Construction of bus shelters along project perimeters, shall be mandatory wherever the project includes or is adjacent to an existing or previously identified transit line extension proposed in adopted documents by the Cape Fear Public Transportation Authority, or another public transit provider.

vii. Construction of greenways shall be mandatory whenever the project includes or is adjacent to trails identified on a previously adopted greenway plan.

b. Site amenities.

i. Common space amenities shall include at least three (3) of the following:

(a) Sidewalks with substantial ornamental treatments (e.g. brick pavers; change in materials, color or texture; use of pervious materials when consistent with Americans with Disabilities Act).
(b) Sidewalk planters. Planters may be constructed to provide seating around the perimeter.
(c) Public art (e.g., sculpture, fountain, clock, mural, etc.).
(d) Street trees of a caliper fifty (50) percent wider than required by this chapter (may include preservation of healthy mature trees adjacent to sidewalks).

ii. Amenities should be visible and accessible to the general public from an improved street. Access to pocket parks, plazas and sidewalks shall be provided via a right-of-way or a public access easement.
iii. The size or capacity of pedestrian amenities should be proportional to their expected use, including use by employees, customers, residents, and other visitors.
iv. Amenities should be consistent with the character and scale of surrounding developments. For example, similarity in awning height, bench style, planter materials, street trees and pavers is recommended to foster continuity in the design of pedestrian areas. Materials should be suitable for outdoor use, easily maintained and have a reasonably long life cycle (e.g., ten (10) years before replacement).
v. When provided at or near a bus stop, amenities should conform to standards of the Cape Fear Public Transportation Authority system.

c. Fringe areas. To insure compatibility with adjoining land uses a fringe use area one hundred (100) feet in width, shall be established along the exterior property lines of the MSMO where the exterior property lines of the MSMO are adjacent to single-family residential uses or platted single family residential lots.

i. If the exterior property line of an MSMO is not adjacent to residential uses or platted residential lots, then no fringe use area will be required.
ii. If a fringe use area is required, only residential uses or open space shall be permitted within that fringe area.
iii. The maximum building height within the fringe use area shall be three (3) stories.
iv. The required building setback in the fringe use area shall be calculated as follows: (building height) × (2.75). In no case shall the minimum setback be less than twenty-five (25) feet.
v. There shall be no accessory structures or parking located within the part of the setback adjacent to residential districts.

vi. In all instances, lighting shall be directed away from the adjacent residential use.

(7) Building architecture. The following standards shall apply to all Activity Centers and all Activity Nodes in an MSMO.

a. Building orientation. All buildings shall be oriented toward Market Street and other primary streets. For buildings on corner properties, both street elevations are considered to be front facades and shall be architecturally enhanced as a front facade.

b. Building height. Building height in an MSMO shall not exceed ten (10) stories, not including levels utilized for structured parking. Additional height up to a maximum of fifteen (15) stories may be permitted based on compliance with either of the following performance options:

i. Dedication of private land area for public use greater than the required minimum of ten (10) percent. For every five (5) percent of additional permanently designated public space, building height may be increased by one (1) story.

ii. Reduction of building mass greater than the required minimum of twenty-five (25) percent. For every additional five (5) percent of building mass reduction above the "building base," building height may be increased by one (1) story.

c. Building façade character.

i. Minimum wall articulation. Any building greater than fifty (50) feet in length, measured horizontally, that is visible from a public right-of-way, private street and/or pedestrian walkway shall include at least three (3) of the following features:

(i) change in texture or masonry pattern
(j) change in color
(k) windows
(l) dormers
(m) trellises with vegetation
(n) covered porch
(o) balconies
(p) parapet walls designed to meet the minimum requirements set forth in 18-213.4(b)(2) of this chapter.

ii. Street-level facades. Window glazing shall be the predominant material in the street-level facade. Such glazing shall be transparent under all lighting conditions; however, spandrel or colored glass may be used above the height of the door head. Glazing shall extend from a base of contrasting material to at least the height of the door head. For new buildings on corner lots adjacent to single-family residential zoning, glazing area may be reduced. Glazing shall extend from the corner of the front facade for a depth equal to

at least fifty (50) percent of the length of building along the side street building facade. Exterior burglar bars, fixed riot shutters, or similar visible security devices shall not be installed in any new or existing commercial storefront. Residential uses are not permitted on the ground level fronting any facade.

iii. Building entries and pedestrian scale design. Facades fronting rights-of-way shall be detailed to create a pedestrian scale.

(a) All public building entries shall be clearly defined, highly visible, and feature no less than three (3) of the following:

(i) Canopies or porticos.
(ii) Overhangs.
(iii) Recesses or projections.
(iv) Arcades.
(v) Arches.
(vi) Outdoor patios.
(vii) Windows.
(viii) Awnings.
(ix) Architectural features that are integrated into the building structure or design or
(x) Planters or wing walls that incorporate landscaped areas or places for sitting.

(b) Entrances shall be recessed from the property line allowing a pedestrian space between the sidewalk and the front door.

(c) For buildings located on street corners, a corner entrance is permissible.

iv. Canopies and awnings. When used, canopies and/or awnings shall be placed along the first floor façade only, at the top of windows or doorway openings and shall meet the following requirements:

(a) Canopies and/or awnings shall relate to the shape of the top of the window or opening.
(b) Canopies and/or awnings shall be made of canvas, treated canvas, glass, metal or similar material. Horizontal cantilever awnings must be metal or glass
(c) Vinyl (or plastic) awnings are prohibited.
(d) No awning shall extend more than the width of the sidewalk or ten feet, whichever is less.
(e) Awnings must be self-supporting from the wall. No supports shall rest on or interfere with the use of pedestrian walkways or streets.
(f) Canopies and/or awnings shall not be internally lit.

v. Four-sided architecture. All sides of the building shall include articulation, materials, and design characteristics consistent with those on the primary front façade in terms of quality and detail, unless the public's view of a rear

or side building elevation from a public right-of-way or private street or pedestrian walkway is blocked by intervening buildings or landscaping measuring at least fifteen (15) feet in height at maturity.

d. Franchise architecture. Buildings shall not be construction or renovated using franchise architecture to develop and maintain a unified architectural theme in the MKTSMU Overlay.

e. Architectural unity. All buildings within the same lot or parcel shall be architecturally unified. Architectural unity means that buildings shall be related and compatible in style, color, scheme, quality, and type of exterior building materials.

(8) Site circulation and parking facility design. The following standards shall apply to Activity Centers and Activity Nodes in an MSMO.

a. Parking facilities. All off-street parking shall adhere to the following requirements:

i. Structured parking. Structured parking facilities contained within new buildings shall adhere to the building design standards of Section 18-196(h) of this chapter, and the following regulations:

(a) Whenever possible, vehicular entrances shall be provided from the lowest-order adjoining street.
(b) On street-fronting facades, vehicles shall be concealed from view with decorative screening, such as louvers, and/or vegetation.

ii. Surface parking. All surface parking lots shall adhere to the following requirements:

(a) Surface parking shall be located in the side or rear yards and shall be set back a minimum of ten (10) feet from the front plane of all street-facing facades. One-way drives shall be incorporated where possible.
(b) Surface parking shall not be located in front of any building. Surface parking shall be located to the interior of the block and/or behind buildings fronting rights-of-way, where possible, so as to not interrupt the continuity of the block face.
(c) Surface parking lots shall be screened from public streets by permanent walls, shrubbery or hedges at least three (3) feet but not more than five (5) feet in height.
(d) Surface parking shall be accessed via public or private alleyways where possible.
(e) All surface lots shall meet the shading requirements of Section 18-481 of this Chapter.

b. Shared parking facilities. The shared use of off-street parking is specifically encouraged in an MSMO .

i. Shared parking lots must be located on the same block as the land uses they serve. Signs shall be placed to inform motorists of the allowable use of shared lots.
ii. In shared lots, the same parking space may fully satisfy the off-street parking requirement for two different land uses provided their peak parking demands clearly occur at different times. When the peak demands do not clearly occur at different times, each two parking spaces can replace three parking spaces that would otherwise be required by the combined uses.
iii. The approval for the shared use of off-street parking can be granted only when all users of the shared lot have chosen to be governed by a shared parking agreement.
iv. Those wishing to use shared parking as a means of satisfying off-street parking requirements must submit a shared parking analysis to the TRC that clearly demonstrates the feasibility of shared parking. The study must address, at a minimum, the size and type of the development, the composition of tenants, the anticipated rate of parking turnover and the anticipated peak parking and traffic loads for all uses that will be sharing off-street parking spaces. A shared parking plan will be enforced through written agreement among all owners of record. An attested copy of the agreement between the owners of record must be approved by the city attorney and submitted to the city for recordation on forms made available in the office of the city. Recordation of the agreement must take place before issuance of a building permit for any use to be served by the off-site parking area. A shared parking agreement may be revoked only if required off-street parking spaces can be otherwise provided, in accordance with Section 18-532 of this chapter.

c. Loading facilities. Service areas and loading docks should be separated from pedestrian, bicycle and vehicular circulation whenever practical.

i. Service areas and loading docks shall be oriented away from streets and walkways.
ii. To the maximum extent possible, all service areas and loading docks shall be located between the building and the rear lot line of the property, and/or shall be screened from the view of the street and adjacent properties.
iii. All loading areas shall meet the applicable landscaping, screening, and buffering requirements set forth in this chapter.
iv. The details of such location and screening shall be reviewed and approved as part of the approval process.

d. Internal site circulation and street network. The proposed public or private street system shall be designed to provide vehicular interconnections to facilitate internal and external traffic movements in the area.

i. All development shall be designed to allow for cross-access to adjacent properties to encourage shared parking and shared access points on public or private streets.
ii. Where development is adjacent to vacant land likely to be developed in the future, all streets, sidewalks, bicycle paths, and access ways in the

development's proposed street system shall continue through to the boundary lines of the area

iii. In general, permanent cul-de-sacs are discouraged in the design of street systems, and should only be used when topography, the presence of natural features, and/or vehicular safety factors make a vehicular connection impractical. Where cul-de-sacs are unavoidable, site plans shall incorporate provisions for future vehicular connections to adjacent, undeveloped properties, and to existing adjacent development where existing connections are poor.

e. Transit facilities. Construction of covered bus shelters as well as turnouts along project perimeters, shall be mandatory wherever the project includes or is adjacent to an existing or previously identified transit line extension proposed in adopted documents by the Cape Fear Public Transportation Authority, or another public transit provider.

f. Bicycle facilities. Each new mixed-use development or major mixed-use redevelopment requiring twenty-five (25) or more automobile parking spaces shall make provisions for parking a minimum of five (5) bicycles. Each additional one hundred (100) automobile parking spaces above the twenty-five (25) minimum shall require provisions for parking an additional five (5) bicycles up to a bicycle parking system that can accommodate a maximum of twenty (20) bicycles. The bicycle parking provisions shall allow for bicyclists to secure their vehicle against theft. Bicycle parking facilities shall be provided within twenty (20) feet of the primary entrance to the facility. In the event of multiple entrances, bicycle-parking facilities shall be dispersed for easy access to the multiple entrances.

(9) Signage. The following standards shall apply to all Activity Centers and all Activity Nodes in an MSMO.

a. In any mixed use development in the Market Street Corridor Study Area, no permit shall be issued for an individual sign requiring a permit unless and until a common signage package is submitted to and approved by the City.
b. The common sign package shall comply with the requirements of this section and contain a visual representation to specify standards for consistency among all signs on the property affected by the common sign package in regard to sign size, location(s), color scheme, lettering or graphic style, lighting, location, and sign proportions.
c. Off-premise way-finding signs included in the common sign package shall be constructed as a ground sign and limited to ten (10) square feet per side of sign area, a maximum of four (4) feet in height, and be placed at least five (5) feet behind the public right-of-way.
d. After approval of the common sign package, the City Manager or his designee may approve minor modifications to the common sign package, provided that the modified sign package complies with the requirements of this section and does not violate the following:

i. increase the area of a sign by more than five (5) percent
ii. alter the relationship of a sign to neighboring property

iii. change the locations of signs in such a manner as to increase non-conformity with setback requirements, interfere with pedestrian or vehicular traffic, interrupt architectural details, or otherwise significantly deviate from the approved common sign package.

Sec. 59.10 Market Street Corridor Regulations.

New Hanover County, North Carolina has determined it is in the public's interest to enact corridor standards for the Market Street Corridor, which will provide a scenic gateway into New Hanover County and project positively the image of the County. The purpose of this Section is to implement the General Development Map and supporting recommendations presented in the Market Street Corridor Study, approved by the New Hanover County Commission on _____.

59.9-1: Applicability. The requirements of this Section are supplemental to the underlying zoning district classifications established in the Zoning Ordinance of New Hanover County, North Carolina for the use of property in the Market Street Corridor Study Area (the boundaries are shown as Figure 4-1: Land Use Context Areas, in the Market Street Corridor Study). The provisions of this Section shall be overlaid upon and shall be imposed in addition to said underlying zoning regulations or other ordinances enacted by the New Hanover County, North Carolina. Where standards or requirements conflict, the provisions of this section shall apply.

The standards or requirements set forth in this section shall not apply to property being developed for single-family, detached residential housing, except that all single-family, detached residential housing shall conform to the access management requirements provided in 18-213.4(b)(4).

59.9-2: Development Approval.
Approval for development within the Market Street Corridor Study Area shall submit the plan requirements outlined in Section 53.5-2(7)(M)(3) and generally follow the procedures as detailed in Section 53.5-3.

59.9-3: For any development or redevelopment within the Market Street Corridor, the following development standards shall apply:

(1) Site design standards.

(A) Dumpsters, recycling containers, and/or trash compactor enclosures.

i. One or more of the above enclosures may be required to serve a business. These enclosures shall not be located adjacent to residential areas, public rights-of-way, private roads, public sidewalks, or greenways, nor should they be located in required buffer areas.

ii. If the enclosure is situated on the site so it appears as an extension of the building, the material used for the enclosure shall be consistent with that of the associated building.

iii. If the enclosure is situated on the site so it appears independent of the building, the material shall be brick, stone, pre-cast concrete, or tinted/textured concrete masonry units (CMU), and shall be visually consistent with that of the associated building.

iv. The gates for any enclosure shall be decorative metal or treated wood, both opaque and secured, and a color that is compatible with the enclosure material.

v. Any enclosure identified above shall be a minimum of six (6) feet tall and on all sides from public rights-of-way, private roads, parking lots, sidewalks, and greenways.

(B) Utility equipment orientation.

i. All electric, cable television, internet and telephone utilities, fire alarm conduits, streetlight wiring and other wiring conduits and similar utilities shall be placed underground (except where placement is prohibited or deemed impractical) by the County or the appropriate utility companies for all new developments and/or redevelopments within the Market Street Corridor.

ii. Stand-alone utility equipment shall be screened from view from public rights-of-way, parking lots, private roads, public sidewalks, and adjoining property.

iii. Utility equipment attached to the building, including but not limited to backflow preventors, utility meters, and grease traps, shall not abut public rights-of-way, parking lots, or private roads, unless screened from the line of sight by a wing wall. Utility equipment affixed to a building shall be painted to match the adjacent surface, unless specifically prohibited by building code or the governing authority.

(C) Site lighting.

i. All exterior lighting shall have underground electric service.

ii. All fixtures shall be full-cutoff light fixtures and be of such intensity, location, and design that no more than one (1) foot candle of light is cast upon adjacent property or public rights-of-way.

iii. No exterior light fixture shall exceed fifteen (15) feet in height.

iv. Wooden light poles are prohibited on private property.

v. Light poles and fixtures required for the development shall be compatible with the architecture of the buildings on the lot or parcel.

vi. Gas station canopy lights shall be recessed within the canopy.

vii. Flashing, blinking, or intermittent lights and visible neon tubing are prohibited

(D) Landscaping.

i. Landscaping Plans. Landscape plans shall be prepared for all buildings and commons areas on a lot or parcel. All landscape plans shall be prepared by a registered landscape architect or a licensed landscape designer, and shall bear the landscape architect's/designer's seal, signature, and State of North

Carolina registration number and shall include the information required under 67B-8 of this ordinance.

ii. Parking Lot Landscaping. The requirements for parking lot landscaping shall apply to new parking areas or enlargement of existing parking areas that increase the total number of parking spaces by ten (10) percent or more. The enlargement of any existing parking area by ten (10) percent or more shall require that both the existing and new parking areas conform to these requirements. Structured parking facilities are exempt from the interior parking requirements. In addition to the requirements of this ordinance, the following requirements shall apply to all parking lot landscaping, including parking enlargements:

a. Parking areas shall be separated from other private property by a ten-foot (10') wide perimeter planting area. The perimeter planting area shall contain a double staggered row of evergreen shrubs which are at least eighteen (18) inches in height at the time of planting and which shall be maintained at a height of thirty-six (36) inches at maturity, and trees equal in number to one (1) tree per fifty (50) feet of abutting property line. Large trees shall be planted on thirty-five (35) foot centers and small and medium size trees shall be planted on twenty-five (25) foot centers. Plant materials shall be selected from the "Tree and Plant Materials for Landscaping."

b. Parking facilities located in the Market Street Corridor shall comply with the requirements of 67B-5(B-D).

iii. Foundation Plantings. Landscaping is required along all facades of a building in the form of foundation plantings. This requirement may be met through the provision of a planting strip with a minimum width of four (4) feet or through the provision of clustered free-standing planters. Plant materials shall be listed in the "Tree and Plant Materials for Landscaping" and shall be of appropriate size and scale to adequately screen forty percent (40%) of the foundation perimeter visible from any public right-of-way or private road at plant maturity.

iv. Existing Vegetation.

a. Existing and undisturbed trees of a caliper greater than four inches (4") may be used to satisfy a portion of the landscaping requirements so long as they meet or exceed spacing requirements.

b. Credit towards landscaping requirements may be granted by the reviewing agency for healthy trees of at least two (2) inch caliper preserved or transplanted by spade anywhere on a site that are not otherwise required to be preserved by this article. Credit may be

allowed for each tree preserved at a rate in accordance with the table below. Tree credit may be used to satisfy street yard or parking lot requirements provided an overall landscaped effect is maintained and the parking facility shading requirements are achieved. Tree credits may be used to offset mitigation requirements. Credit may not be granted for single-family residential development except for retained trees in the common areas. Credit shall not be granted for trees preserved in a required buffer yard.

c. Existing trees that are preserved may be credited as follows:

(i) 4" - 6" caliper tree = 1 credit
(ii) 7" - 12" caliper tree = 2 credits
(iii) 13" - 18" caliper tree = 3 credits
(iv) 19" - 24" caliper tree = 4 credits
(v) > 25" caliper tree = 6 credits

v. Significant Tree Preservation.

a. Tree preservation is determined once a tree survey has been completed demonstrating the amount of existing tree canopy on a site and specific locations of all significant trees. A minimum of 100% of all significant trees located within the front setback shall be preserved.

b. The removal of any other significant tree (as defined by this Ordinance) on the site must be mitigated in accordance with the requirements of 67B-9(4)(G).

vi. In addition to the requirements of this section, all expansions to principal structures or uses shall meet the requirements of 67B-12.

(E) Non-vehicular circulation. Pedestrian circulation shall be provided for and coordinated with that generated from or using adjacent properties as follows:

i. Sidewalks or greenways shall be constructed to optimize pedestrian movements between buildings and connect with existing pedestrian sidewalks or greenways adjacent to the lot or parcel where they currently exist.

ii. Safe and convenient crossings shall be provided across all private roads internal to the site and at all driveways leading to the site from a public street.

(F) Outdoor storage.

i. Outdoor storage or display of sales merchandise, excluding automobiles, motorcycles, and live plants shall not be visible from public rights-of-way, except that single-tenant buildings greater than 100,000 square feet in gross floor area may display sales merchandise within fifteen (15) feet of the front of their building, and multi-tenant buildings or single-tenant buildings less than 100,000 square feet in gross floor area may display sales merchandise within fifteen (15) feet of the main entrance to the business. Outdoor storage display areas shall be designated on the site plan submitted for the development.

ii. Seasonal outdoor sales, when conducted in conjunction with a legally established commercial use on a lot or parcel, are permitted subject to the following conditions:

a. All outdoor sales on a lot or parcel shall be associated with a legally established business on the same lot or parcel.

b. A permit must be applied for and received from the Building Official that allows for outdoor sales on the lot or parcel. The permit shall extend for thirty (30) consecutive days after the issue date, and be eligible for renewal for an additional thirty (30) consecutive days. Any business shall be limited to one such permit per year.

c. A permit for seasonal outdoor sales shall include the following information: a description of the products for sale, an illustration depicting the boundaries of the outdoor sales area, and a temporary circulation / parking plan.

(2) Building architecture standards.

(A) Building materials.

i. Prohibited exterior building materials. Vinyl or aluminum siding, fieldstone, unparged concrete block, masonite, and corrugated metal are not permitted.

(B) Building character.

i. Building scale. The horizontal length of a building façade shall be offset by a change in wall plane such as projections or recesses as follows:

a. The distance between required offsets shall be no further apart than two-thirds (2/3) of the height of the

façade. A building façade that is less than or equal to the height of the building shall not require an offset.

b. The depth or projection of the offset shall be at least one-tenth (1/10) of the length of the longest adjacent façade wall; provided, however, the minimum offset depth shall be at least one (1) foot. For example, a building with a twenty (20) foot façade wall shall have at least two (2) foot offset adjacent to the façade walls.

c. The change in wall plane (i.e., offset) shall extend at least twenty percent (20%) of the length of the façade wall.

ii. Minimum wall articulation. Any building greater than fifty (50) feet in length, measured horizontally, that faces a public right-of-way or private street or pedestrian walkway shall include at least three (3) of the following features:

a. change in texture or masonry pattern
b. change in color
c. windows
d. dormers
e. trellises with vegetation
f. covered porch
g. balconies
h. parapet walls

iii. Four-sided architecture. All sides of the building shall include articulation, materials, and design characteristics consistent with those on the primary front façade in terms of quality and detail, unless the public's view of a rear or side building elevation from a public right-of-way or private street or pedestrian walkway is blocked by intervening buildings or landscaping within thirty (30) feet of the structure.

(C) Roof form and articulation.

i. Flat Roof Buildings.

a. The roof of any building with a flat roof shall include parapets to conceal the roof and roof-top equipment from public view. The average height of such parapets shall not exceed fifteen percent (15%) of the height of the supporting wall, and such parapets shall not at any point exceed one-third (1/3) of the height of the supporting wall.

b. Parapets used to conceal the roof and roof-top equipment for any building shall not extend a constant height for more than forty (40) feet in length.

ii. Slope Roof Buildings. The roof of any building with a slope roof shall include at least two (2) of the following to maintain proportional building architecture:

a. three (3) or more roof slope planes
b. overhanging eaves, extending no less than one (1) foot past the supporting wall
c. sloping roofs that do not exceed the average height of the supporting walls, with an average slope greater than or equal to one (1) foot of vertical rise for every three (3) feet of horizontal run and less than or equal to one (1) foot of vertical rise for every one (1) foot of horizontal run.

iii. Additional Requirements.

a. Consistent roof treatments, whether flat or sloping, shall be provided on all sides of the building.
b. The back side of all cornices, parapets, and roofline that are visible from an adjacent public right-of- way shall be finished with materials consistent with the associated building.

(D) Rooftop Equipment screening. All rooftop mechanical equipment and vents greater than eight (8) inches in diameter shall be:

i. Screened from the line of sight of public rights-of-way, private roads, parking lots, public sidewalks, greenways, and internal pedestrian ways except for instances where site topography precludes reasonable compliance with the minimum screening requirement;
ii. Screened by either a parapet wall along the building edge or a freestanding screen wall on the roof of a material, color, and design architecturally compatible with the building, that is at least as high as the equipment and vents for which the screening is designed to hide.

(E) Architectural Unity. All buildings within the same lot or parcel shall be architecturally unified. Architectural unity means that buildings shall be related and compatible in style, color, scheme, quality, and type of exterior building materials.

(3) Signage standards.

(A) Prohibited signs.

i. Off-premise signs/billboards. Off-premise signs, including billboards, are prohibited in the Market Street Corridor.

ii. Electronic copy. Signs that direct attention through the use of flashing, intermittent, strobe, or pulsating effects including electronic changeable copy, animated letters, symbols, characters, changing scenes or effects are prohibited. Time and temperature portions of such signs, up to six (6) square feet in area, are exempt from this restriction.

(B) General regulations and design standards.

i. Ground signage. A ground sign is a free-standing structure, less than six (6) feet in height, that is permanently affixed to the ground for the entire width of the sign face or cabinet.

a. Ground signs shall be permitted on lots with street frontages less than sixty (60) linear feet.

b. One ground sign shall be permitted per lot or parcel. The maximum permitted square footage for a ground sign is set forth in the underlying zoning district.

c. Ground signs shall conform to side and rear yard setback requirements for such signs set forth in the underlying zoning district.

d. A landscaped area located around the entire base of a ground sign shall be required. The total area of the sign face shall be computed and multiplied by a minimum of 12%. The resultant total square footage shall be planted as landscaped areas of sufficient variety, height and size, with plantings listed in the "Tree and Plant Materials for Landscaping."

ii. Monument signage. A monument sign is a free-standing structure, greater than six (6) feet in height, that is permanently affixed to the ground by solid supports so that the sign face, in its entirety, is situated above and between the outermost edges of the supporting base or support structures, and so that the permanent sign base for the structure has an aggregate width of no less than forty percent (40%) of the width of the sign cabinet or face.

a. Monument signs shall be permitted on lots with street frontages greater than sixty (60) linear feet.

b. One monument sign shall be permitted per lot or parcel when it has frontage on an interstate or arterial street, but only in the event that no ground sign is also provided for the same lot or parcel.

c. The maximum permitted square footage for a monument sign is set forth in the underlying zoning district.

d. No monument sign shall exceed fifteen (15) feet in height.

e. Monument signs shall conform to front, side, and rear yard setback requirements for such signs set forth in the underlying zoning district.

f. A landscaped area located around the entire base of a monument sign shall be required. The total area of the sign face shall be computed and multiplied by a minimum of 12%. The resultant total square footage shall be planted as landscaped areas of sufficient variety, height and size, with plantings listed in the "Tree and Plant Materials for Landscaping."

(4) Access management. Improvements to Market Street should enhance the mobility function of the highway, while recognizing that landowners have certain rights of access to the highway consistent with their needs. Unfortunately, access connections to the highway are often a major contributor of traffic congestion and poor operations. Indiscriminate roadside and unregulated access connections contribute to decreased highway capacity, driver and pedestrian confusion, and increased safety hazards. Regulation of access to land abutting Market Street set forth in this section permits reasonably convenient and suitable access to development in the corridor, while preserving the mobility in terms of safety, capacity, and speed.

(A) Ultimately, the North Carolina Department of Transportation (NCDOT) is responsible for regulating the location, design, construction, and maintenance of street and driveway connections to Market Street pursuant to G.S. 136-18(29). The Policy on Street and Driveway Access to North Carolina Highways published by the North Carolina Department of Transportation (NCDOT) establishes minimum criteria for granting access connections to Market Street; however, a provision in the policy manual defers evaluation of a Street and Driveway Access Permit to criteria established by the local government when they are deemed more restrictive than NCDOT requirements. The provisions of this Section meet or exceed minimum requirements established in the Policy on Street and Driveway Access to North Carolina Highways, and should be used by the NCDOT for evaluating access connection permits along Market Street. Approval of a development application by New Hanover County does not confer any obligation on the North Carolina Department of Transportation to allow the same number, location, or design of any of the access or traffic control measures illustrated on the approved development plan without first securing a Street and Driveway Access Permit from the NCDOT for the exact same improvements. Further, approval of a driveway access permit by the NCDOT does not confer any obligation by New Hanover County to allow the same number, location, or design of any of the access or traffic control measures illustrated on the

approved permit without first securing a development approval from New Hanover County for the exact same improvements.

(B) Administration. The Planning and Inspections Director or his designee, shall administer and enforce the provisions of this Section in cooperation with the North Carolina Department of Transportation.

i. Need for a street, driveway access, or median opening permit. Approval of a Street and Driveway Access Permit from the North Carolina Department of Transportation is required prior to any one of the following events along the Market Street Corridor:

a. The approval of any development permit for any property abutting Market Street.
b. The construction of any new public or private access to Market Street or to a public street that intersects directly with Market Street.
c. The reconstruction or relocation of any existing public or private access to Market Street or to a public street that intersects directly with Market Street.
d. A change in land use, or substantial enlargement or improvement to an existing land use

ii. Application requirements.

a. Street or driveway access permit. An application for a site specific Street and Driveway Access Permit shall be submitted to the North Carolina Department of Transportation in accordance with minimum rules and procedures set forth in the Policy on Street and Driveway Access to North Carolina Highways.
b. Median opening permit. A request for a new median opening or median relocation shall be submitted to the North Carolina Department of Transportation in accordance with the minimum rules and procedures set forth in the Median Crossover Guidelines for North Carolina Streets and Highways. Upon completion of a traffic study, the NCDOT and New Hanover County may consider the relocation of an existing median opening. It is the sole responsibility of the property owner to provide the justification necessary for a new median opening in conformance with the Market Street Corridor Study.
c. Agency coordination. Site driveway access permits and median opening permits shall be endorsed by the Planning and Inspections Director or his designee and the Wilmington Metropolitan Planning Organization

(WMPO) prior to consideration by the North Carolina Department of Transportation.

(C) Standards for Access Connections

i. All access shall be provided via the nearest abutting street with the lowest functional classification as zoning permits.

ii. Minimum median opening, driveway, and traffic signal spacing standards. All access connections to Market Street shall meet or exceed the minimum connection spacing requirements specified in the table below.

Minimum Median Opening, Driveway, and Signal Spacing

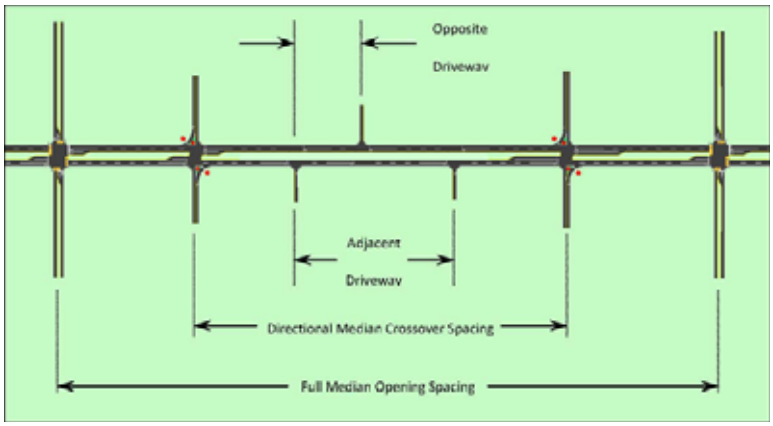
Posted Speed Limit	Signal / Full Median Opening Spacing	Directional Median Opening Spacing	Adjacent Driveway Spacing	Opposite Street Driveway Spacing
> 45 MPH	2,500 feet	2,000 feet	800 feet	800 feet
26-45 MPH	1,500 feet	800 - 1,200 feet	500 feet	500 feet
≤ 25 MPH	1,000 feet	1,000 feet	300 feet	300 feet

Notes:

A = No median opening shall be placed where it would interfere with the storage length requirements of an existing intersection.
B = A directional median opening represents a median that prohibits specific turning movements (e.g. directional cross over, channelized restrictions, etc.), usually through the use of channelization.

iii. Measurement criteria. Spacing between driveways or medians shall be measured along the right-of-way line between the tangent projection of the inside edges of adjacent driveways, opposite street driveways or median openings, as applicable (see below).

Measuring Median Opening, Driveway and Signal Spacing



iv. Variance from minimum median opening, driveway, and traffic signal spacing standards.

a. The Planning and Inspections Director or his designee, in coordination with the North Carolina Department of Transportation, may reduce the connection spacing requirements set forth herein for situations where they prove impractical, but in no case shall the permitted spacing be less than eighty-five percent (85%) of the applicable standard

b. For sites with insufficient road frontage to meet minimum spacing requirements, consideration shall first be given to providing access via connection to the lowest-order adjoining street, utilization of a joint or shared driveway with an adjacent property that meets the recommended spacing requirement, or development of a service road to serve multiple properties.

c. The Planning and Inspections Director or his designee, in coordination with the North Carolina Department of Transportation, may grant access approval for a permanent use not meeting the spacing requirements of this Section on an interim basis if an access plan is submitted that demonstrates how spacing requirements will ultimately be met and appropriate assurances in the form of a recordable and enforceable easement or access agreement will be provided insuring future provision of a conforming access.

d. Deviation from these spacing standards may be permitted at the discretion of the Planning and Inspections Director or his designee, in cooperation with the North Carolina Department of Transportation, where the effect would be to enhance the safety and operation of the highway. Examples might include a pair of one-way driveways in lieu of a two-way driveway, or

alignment of median openings with existing access connections. Approval of a deviation from the minimum spacing standards in this Section may require the applicant to submit a study prepared by a duly qualified and licensed engineer in the State of North Carolina that evaluates whether the proposed change would exceed highway safety or operational benefits of the prescribed standard.

(D) Immediate compliance.

i. Existing road and driveway connections for any single parcel along Market Street shall be modified to conform with the minimum connection spacing requirements set forth in this Section when safety, capacity, or operational improvements are made within the public right-of-way.

ii. The North Carolina Department of Transportation may prohibit, restrict, or modify the placement of any connection, at any time, to a single property in the interest of public safety and mobility.

(E) Corner clearance. Corner clearance for connections to Market Street shall meet or exceed the minimum connection spacing requirements set forth in this Ordinance.

(F) New access connections. New access connections shall not be permitted within the functional area of an interchange, intersection, or existing median opening defined by the minimum connection spacing requirements set forth in Ordinance, unless:

i. No other reasonable access to the property is available, and the Planning and Inspections Director or his designee and the WMPO, in coordination with the North Carolina Department of Transportation, determine that the connection does not create a safety or operational problem after review of a site specific traffic impact study prepared by a duly qualified and licensed engineer in the State of North Carolina.

ii. Where no other alternatives exist, the Planning and Inspections Director or his designee, in coordination with the North Carolina Department of Transportation, may allow construction of an access connection along the property line farthest from an intersection. In such cases, a directional driveway connection (i.e., right-in/ right-out or right-out only) may be required. No median breaks will be allowed within the functional area of the intersection.

iii. Near a signalized intersection, the location for a full movement driveway connection may be required to exceed the minimum spacing requirements set forth in this Ordinance to avoid

interference with the operations of the traffic signal and resulting traffic queues. The radius of a full movement driveway connection shall not encroach on the minimum corner clearance.

iv. The minimum lot size for any new corner lot created through the subdivision process shall be of adequate size to provide for the minimum corner clearance spacing required herein.

(G) Joint and cross access.

i. Non-residential and mixed-use projects.

a. Adjacent land uses shall provide a cross access drive and pedestrian access to allow circulation between sites.

b. A system of joint use driveways and cross access easements shall be established wherever deemed feasible by the Planning and Inspections Director or his designee. The building site shall incorporate the following:

(i) A continuous service drive or cross access corridor extending the entire length for property frontage required to provide driveway separation consistent with the minimum spacing requirements set forth in Ordinance.

(ii) A design speed of ten miles per hour (10 mph) and sufficient width to accommodate two-way travel aisles designed to accommodate automobiles, service vehicles, and loading vehicles.

(iii) Stub-out connections and other design features that make it visually obvious that the abutting properties may be tied-in to provide cross access via a service drive.

(iv) A unified access and circulation plan that includes coordinated or shared-use parking areas, wherever feasible. Shared-use parking areas shall count toward reducing the number of required off-street parking spaces for the two adjacent land uses if the peak parking demand periods do not occur at the same time.

c. Pursuant to this Section, a property owner for a non-residential or mixed-use project shall:

(i) Record an easement with the deed for the property that allows cross access to and from other properties served by a joint use driveway, cross access, or service drive.

(ii) Record an agreement with the deed for the property that remaining access rights along Market Street will be dedicated to the North Carolina Department of Transportation and pre-existing driveways along the property's frontage will be closed and eliminated after construction of the joint use driveway.

(iii) Record a joint maintenance agreement with the deed for the property defining maintenance responsibilities of the adjacent property owners.

ii. Residential projects.

a. Residential subdivisions with lots fronting along Market Street shall be designed with joint driveways to the highway. Normally a maximum of two joint driveways shall be allowed regardless of the number of lots served.

b. The property owner shall enter into a written agreement with New Hanover County, recorded with the deed for the property, that pre-existing connections along the frontage will be closed and eliminated after construction of joint use driveways.

c. The Planning and Inspections Director or his designee may modify or waive the requirements of this Section where the characteristics or layout of abutting properties would make implementation of joint use driveways or development of a shared access circulation system impractical, provided that all of the following requirements are met:

(i) Joint access driveways and cross access easements are provided wherever feasible in accordance with this Section.

(ii) The site plan incorporates a unified access and circulation system in accordance with this Section.

(H) Median openings. No new median openings shall be allowed along Market Street unless it is in conformance with the Market Street Corridor Study and the latest edition of Median Crossover Guidelines for North Carolina Streets and Highways published by the North Carolina Department of Transportation. In all circumstances, new

median openings shall not encroach on the functional area of an existing median opening or intersection. Approval of any new median opening along Market Street lies solely with the North Carolina Department of Transportation Traffic Engineering and Safety Systems Branch.

i. Minimum evaluation criteria. Minimum criteria for evaluating a request for a new median opening may include, but not be limited to, the following:

a. Median openings shall not be located where intersection sight distance (both vertical and horizontal) cannot meet current design criteria required by the North Carolina Department of Transportation.
b. Median openings shall not be placed in areas where the grade of the crossover will exceed five percent (5%). Special consideration should be given to the vertical profile of any proposed new median opening that has the potential for future signalization.
c. A median opening shall not be provided where the median width is less than sixteen (16) feet.
d. Median openings that require a traffic signal, or where one may expect a potential traffic signal in the future, should be avoided.
e. It is the responsibility of the property owner to provide the justification for a new median opening along Market Street. If this information is not provided, the median opening request shall not be reviewed by the North Carolina Department of Transportation.

(l) Design Guidelines for access connections. The following factors shall be considered by the Planning and Inspections Director or his designee and the North Carolina Department of Transportation when assessing the suitability of a proposed access connection location associated with a permit application.

i. Offset Access Connections: Access connections on opposing sides of the highway shall be aligned with one another or offset an adequate distance to minimize overlapping left turns and other maneuvers that may result in safety hazards or operational problems.
ii. Adequate Sight Distance: An access connection shall be located so as to provide adequate intersection sight distance.
iii. Auxiliary Lanes: The NCDOT District Engineer may require auxiliary lanes (i.e., left or right turn lanes, bypass lane, or acceleration lanes) where deemed necessary due to traffic volumes or where a safety or operational problem is expected without such lane. Consideration for right turn auxiliary lanes should be balanced with the community's desire to create a

pedestrian-friendly environment for the Market Street Corridor. Left and right turn lanes shall be constructed in accordance with the North Carolina Standards and Specifications for Roads and Structures.

iv. Substandard Frontage: If lot frontage is inadequate to provide the required minimum spacing, consideration shall first be given to providing access via connection to a side street, utilization of a joint or shared driveway with an adjacent property that meets the recommended spacing requirement, or development of a service road to serve multiple properties.

v. Future Development: To maintain minimum spacing requirements between non-residential access locations when future development occurs, a proposed access connection may be approved subject to the condition that it serves adjacent property via a joint or shared access located on the common property line or a cross access easement.

vi. Easements for Joint Access: When required to provide a joint or shared access, the property owners must record an easement allowing cross access to and from the properties served by the shared driveway or cross access. The easement must include a joint maintenance agreement defining the responsibilities of the property owners.

vii. Restricting Left Turns: Left turning movements to or from a proposed access connection may be restricted at the time of construction or at a future date based upon existing or anticipated roadway operating conditions.

viii. Angle of Approach: Access points shall be aligned to be straight and perpendicular to the centerline of Market Street to the maximum extent feasible.

ix. Driveway Width:

	Minimum	Maximum
One-way Traffic	13 feet	20 feet
Two-way Traffic	23 feet	30 feet, 2-lane
		36 feet, 3-lane

x. Driveway Throat Length: For any development plan with an internal roadway network, a minimum storage of one hundred (100) feet measured from the near edge of the right-of-way line will be required before any crossing or left-turning conflicts area allowed. The minimum driveway stem distance may be modified on a project-by-project basis based on recommendations from an analysis of traffic operations on the internal roadway network.

xi. Auxiliary Features: Signs, entrance medians, and fences shall be placed or constructed outside of the public right-of-way for Market Street.

xii. Non-Residential and Mixed-Use Access Design: Non-residential and mixed-use access must be designed so that backing, loading, unloading, and other maneuvers are accommodated on-site and

not using the Market Street right-of-way, and the access shall provide adequate stacking distance to prevent entering or exiting vehicles from obstructing the flow of traffic on Market Street. A driveway median may be required to preserve the length of storage, or to prevent cross access to an out-parcel within the storage area of a driveway. All driveway grades and drainage improvements shall conform to the rules and requirements set forth in the NCDOT's Policy on Street and Driveway Access to North Carolina Highways.

xiii. Non-Residential and Mixed-Use Access Geometrics: The geometrics of a non-residential or mixed-use access shall provide adequate width, grade, and radii to accommodate all vehicles that will access the site.

xiv. Corner Radius: The minimum corner radius of a street or driveway along Market Street shall be within fifteen (15) feet minimum and thirty-five (35) feet maximum.

(J) Connectivity. The internal street system for a proposed development shall be designed to coordinate with existing, proposed, and planned streets outside of the development as provided in this Section.

i. Wherever a proposed development abuts unplatted land or a future development phase of the same development, clearly demarcated (i.e., "Future Street Connection") street stubs shall be provided as deemed necessary by the Planning and Inspections Director or his designee to provide access to abutting properties or to logically extend the street system into the surrounding area. All street stubs shall be provided with temporary turnaround or cul-de-sacs unless specifically exempted by the Planning and Inspections Director or his designee, and the restoration and extension of the street shall be the responsibility of any future developer of the abutting land.

ii. Collector streets shall intersect with collector or arterial streets on- and off-site at safe and convenient locations.

iii. Local streets shall connect with surrounding streets to permit the convenient movement of traffic between land uses or facilitate emergency access and evacuation, but such connections shall not be permitted where the effect would be to encourage the use of such streets by substantial through traffic.

iv. Pedestrian connections should be provided between adjacent properties in addition to roadway connections. These pedestrian connections should provide for safe pedestrian travel along roadways and across parking areas to site buildings.

(K) Requirements for out-parcels and phased development plans

i. Aggregation. In the interest of promoting unified access and circulation systems, development sites under the same ownership or consolidated for the purposes of development and comprised of more than one building site shall not be considered separate properties in relation to the access standards set forth in this Section. The number of connections permitted shall be the minimum number necessary to provide reasonable access to these properties, not the maximum available for that frontage along Market Street. All necessary easements, agreements, and stipulations required in this Section shall be met. This shall also apply to phased development plans. The owner and all lessees within the affected area are responsible for compliance with the requirements of this Section and both shall be cited for any violation.

ii. Out-parcels. All out-parcel access shall be served internally to the development site using the shared circulation system of the principle development. Access to out-parcels shall be designed to avoid excessive movement across parking aisles and queuing across surrounding parking and driving aisles.

(L) Minimum on-site vehicle storage area. Adequate storage must be provided within the internal circulation system for properties that include either a drop-off loop or drive-through facility so that vehicles do not queue onto Market Street. Specific storage areas will be determined by the Planning and Inspections Director or his designee, in coordination with the North Carolina Department of Transportation, on a case-by-case basis during the development review process. The Planning and Inspections Director or his designee may require a trip generation and queuing study to determine on-site storage needs and to evaluate a site's impact on the adjacent public roadway network. The following minimum storage lengths are required for specific development types along Market Street. Dimensions are measured from the ultimate right-of-way line stipulated by the State Transportation Improvement Program, or other project plans.

i. For single-lane drive-in banks, storage to accommodate a minimum queue of six (6) vehicles will be provided. Banks having several drive-in service windows will have storage to accommodate a minimum of four (4) vehicles per service lane.

ii. For single-lane drive-through full-service car washes, storage to accommodate a minimum of twelve (12) vehicles will be provided. Automatic or self-service car washes having a multi-bay design will have minimum vehicle storage to accommodate three (3) vehicles per bay.

iii. For fast-food restaurants with drive-in window service, storage within the site to accommodate a minimum of eight (8) vehicles per service lane from the menu board/ordering station will be provided.

iv. For service stations where the pump islands are parallel to the pavement edge, a minimum setback of thirty-five (35) feet between the pump islands and the public right-of-way will be provided. For service stations where the pump islands are not parallel to the pavement edge, minimum vehicle storage of fifty (50) feet in length between the pump islands and the public right-of-way will be provided.

v. For land uses that require an entry transaction or have service attendants, gates or other entry control devices, the vehicle storage will be of adequate length so that entering vehicles do not queue back on the right-of-way for the adjacent highway. No portion of a parking area, attendant booth, gates, signing, or parking activity shall encroach on the public right-of-way.

vi. For schools, adequate storage for parental drop-off and pick-up areas should be provided entirely on the school campus site.

(M) Variances. The granting of a variance, pursuant to Section121 of this Ordinance, shall be in harmony with the purpose and intent of this Section and shall not be considered until every feasible option for meeting minimum access management standards is explored.

i. Applicants for a variance from the standards herein must provide proof of unique or special site conditions that make strict application of the provisions impractical. This shall include proof that:

a. Indirect or restricted access cannot be obtained; and
b. No engineering or construction solutions can be applied to mitigate the conditions; and
c. No alternative access is available from a side street.

ii. Under no circumstances shall a variance be granted, unless not granting the variance would deny all reasonable access, endanger public health, welfare or safety, or cause an exceptional and undue hardship on the applicant. No variance shall be granted where such hardship is self-created.

(N) Nonconforming access.

i. Following adoption of this Section, access points along Market Street that do not conform to the standards set forth herein shall be designated as nonconforming access features and shall be brought into compliance with applicable standards only under the following scenarios:

a. When a new access connection permit is requested as part of any permit application.

b. A change in land use, or substantial enlargement or improvement to an existing land use is made subject
c. As road improvements are made within the public right-of-way for Market Street adjacent to the property.
d. A nonconforming access is inactive for a continuous period of more than 180 days, unless otherwise exempted by New Hanover County or the North Carolina Department of Transportation.

ii. Normal maintenance and/or repair of an existing access connection shall not be considered a physical change in access that triggers compliance with this Section.
iii. Notwithstanding the foregoing, the North Carolina Department of Transportation may prohibit, restrict, or modify the placement of any connection, at any time, to a single property in the interest of public safety and mobility.

59.9-4: Market Street Mixed Use District (MSMD). The Market Street Mixed Use District (MSMD) is established within the study area at locations identified in the Market Street Corridor Plan. In addition to the other study area regulations and standards, set forth herein, an owner/applicant shall develop a lot or parcel in a MSMD in accordance with the following regulations:

(1) Review procedures.

(A) Preapplication. Prior to an applicant submitting an application and a detailed preliminary plan for review and approval, the applicant shall arrange a preapplication conference with the County's planning staff and Technical Review Committee (TRC) to review the applicant's sketch plan.
(B) Application plan and approval: The applicant for a MSMD project shall submit an application and a detailed, unified preliminary master plan for the planned development to the County's planning staff and TRC for review and approval in accordance with the provisions of this Ordinance. In addition to these requirements, the applicant shall include in the preliminary plan submission the following:

i. Access.
ii. Address of property owner.
iii. Address of engineer/surveyor.
iv. Architectural features of structures, including proposed building elevations and materials.
v. Bikeways.
vi. Boundary survey as well as metes and bounds description for the project tract
vii. Circulation.
viii. Design guidelines for the development.
ix. Environmental analysis.

x. Historic features, i.e., Civil War battleground signs.
xi. Landscaping, including tree species, size and extent of tree cover.
xii. Lighting Plan
xiii. Location, use, types, massing, scale and dimensions of structures.
xiv. North arrow
xv. Open space.
xvi. Recreational areas and parks.
xvii. Stormwater plans and calculations.
xviii. Scale
xix. Traffic impact study.

Following the County's planning staff and TRC review and approval, the applicant shall prepare and submit the final plat for amendment in accordance with this Ordinance.

(C) Minor changes to approved MSMD plan. Minor changes to the approved final plat and master plan for a MSMD site are changes proposed by the applicant that do not change the basic design and development concepts of the MSMD approved master plan. Minor changes to approved preliminary plans are allowed on final plats if the changes are in substantial compliance with the preliminary plan. Denial classifies such changes as major changes in plans and a new preliminary plan must be submitted or the major change reworked so as to be classified as a minor change. Minor changes to final plats and master plans require the review and approval of TRC and the County's planning director.

(D) Major changes to approved MSMD plan. Major changes to the approved final plat and master plan for a MSMD are changes that require resubmission of the plat and plan for review and approval as set forth in this Ordinance.

(2) Prohibited uses. The following uses are prohibited in a MSMD:

(A) Adult establishments
(B) Contractor's equipment or supply dealers and service
(C) Contractor's storage lots
(D) Crematoria
(E) Fuel and ice dealers
(F) Garbage collection, private
(G) Ground floor residential, fronting along Market Street
(H) Motor freight companies
(I) Motor vehicle dealers, including automobiles, boat dealers, manufactured homes, motorcycles, recreational vehicles and utility trailers
(J) Movers, van lines and storage
(K) Retail uses in excess of 100,000 square feet
(L) Tire dealers

(M) Welding, repair

(3) Activity centers and nodes. The intensity, amount, and size of development allowed within a MSMD are based on the two (2) types of activity area designations used in the Market Street Corridor Study. The two (2) types of activity areas are intended to function at a neighborhood, community or regional scale, in accordance with guidelines found in the Market Street Corridor Study.

(A) Activity node. Activity nodes accommodate convenience business/retail uses and services within or near neighborhoods for day-to-day living needs of the immediate community. Convenience business uses include small grocery stores, laundromats, and business and office uses with relatively low traffic generation characteristics such as florists and law offices. Activity nodes are also intended to foster opportunities for the integration and promotion of multimodal transportation systems. The vertical and horizontal integration of uses is encouraged, and existing neighborhood compatibility and interconnection is essential. Supporting low intensity institutional uses are allowed.

(B) Activity center. Activity centers promote a planned and integrated combination of uses within larger areas and are planned to provide services at community or regional levels. Activity centers should be designed to encourage compact, mixed use development comprised of recreation/open space and office as well as one or more of the following uses: business, town homes, senior living units, civic, institutional, and/or hotel. Activity centers are also intended to foster opportunities for the integration and promotion of multimodal transportation systems. Development must emphasize the efficient reuse of existing infrastructure, preservation of natural systems, integration of pedestrian and bicycle facilities, and an urban form characterized by close-knit neighborhoods and sense of community. The vertical and horizontal integration of uses is encouraged, and existing neighborhood compatibility and interconnection is essential.

(4) Dimensional requirements.

	Activity Node (AN)	Activity Center (AC)
Minimum project size.	5 acres	10 acres
Maximum residential density.	14 units per lot	20 units per lot
Maximum commercial density.	None	None
Maximum office density.	None	None
Maximum impervious surface.	80%	90%

(A) Front setbacks. New construction shall be constructed to align with the predominant existing setback of the block face, or if no predominant setback exists, then construction shall align with the street right-of-way.

(B) Side and rear yard setbacks. None, except where adjacent to residential zoning, in which case the setback shall be ten (10) feet.

(C) Minimum building separation. All internal non-residential buildings are encouraged to be located within ten (10) feet of street rights-of-way to

enhance the pedestrian orientation of the development. Buildings set back large distances from roads and pedestrian trails are strongly discouraged. All structures shall meet state building code requirements and all other requirements to protect the health, safety and welfare of occupants.

(5) Mixture of Uses. A proposed mixed use development shall include an appropriate intensity, type, and mix of land uses, as outlined by the requirements below. This shall be assessed in relation to the scale of the activity node or activity center and the mix and relationship of existing and planned uses in the same activity node or activity center, including residential, commercial, office, and institutional uses;

(A) The mixed use development shall contain at least three (3) of the following uses:

i. Residential.
ii. Office.
iii. Commercial.
iv. Institutional, quasi-public, public.
v. Entertainment and lodging.

(B) For mixed-use developments containing three (3) use categories, each use shall occupy a minimum of twenty (20) percent of the floor area or gross acreage of the project. The developer may choose the use mix measurement but each project shall only use one (1) of the use mix measurements (floor area or gross acreage). For projects with four (4) or more use categories, the twenty (20) percent minimum is waived for all categories except residential, however, no use may occupy more than sixty (60) percent and no two (2) uses combined shall occupy more than eighty (80) percent of the floor area or gross acreage. For phased projects, during construction of any phase prior to project completion or six (6) years from the initial foundation inspection, whichever is first, no single use shall exceed sixty (60) percent and no two (2) uses shall exceed ninety (90) percent. Residential uses may occupy as much as seventy-five (75) percent floor area or gross acreage, if that which is over sixty (60) percent is located in a mixed-use building and located over first floor commercial use.

(6) Site design standards. The following standards shall apply to all Activity Centers and all Activity Nodes in a MSMD.

(A) Common space. At least ten (10) percent of the acreage of the site shall be devoted to common space(s).

i. Common space includes areas where the public is directly or indirectly invited to gather, browse, sit, interact or congregate. Common spaces do not have to be publicly owned. Common

areas may include walking paths, bicycle paths, courtyards, plazas and other similar areas.

ii. Unimproved natural areas shall not be counted as common space.

iii. Parking area landscaping and buffer areas shall not be counted toward meeting this requirement.

iv. Common spaces shall be arranged as community spaces with open areas, landscaping, seating facilities and lighting fixtures which provide for safety and visual effects. Common spaces are intended to be places for social interaction and may include impervious surfaces.

v. The walking areas of common spaces shall be surfaced with concrete, brick, tile or another material approved by the technical review committee. The type of surfacing material shall be identified on the site plan.

vi. Construction of bus shelters along project perimeters, shall be mandatory wherever the project includes or is adjacent to an existing or previously identified transit line extension proposed in adopted documents by the Cape Fear Public Transportation Authority, or another public transit provider.

vii. Construction of greenways shall be mandatory whenever the project includes or is adjacent to trails identified on a previously adopted greenway plan.

(B) Site amenities.

i. Common space amenities shall include at least three (3) of the following:

a. Sidewalks with substantial ornamental treatments (e.g. brick pavers; change in materials, color or texture; use of pervious materials when consistent with Americans with Disabilities Act).

b. Sidewalk planters. Planters may be constructed to provide seating around the perimeter.

c. Public art (e.g., sculpture, fountain, clock, mural, etc.).

d. Street trees of a caliper fifty (50) percent wider than required by this chapter (may include preservation of healthy mature trees adjacent to sidewalks).

ii. Amenities should be visible and accessible to the general public from an improved street. Access to pocket parks, plazas and sidewalks shall be provided via a right-of-way or a public access easement.

iii. The size or capacity of pedestrian amenities should be proportional to their expected use, including use by employees, customers, residents, and other visitors.

iv. Amenities should be consistent with the character and scale of surrounding developments. For example, similarity in awning height, bench style, planter materials, street trees and pavers is

recommended to foster continuity in the design of pedestrian areas. Materials should be suitable for outdoor use, easily maintained and have a reasonably long life cycle (e.g., ten (10) years before replacement).

v. When provided at or near a bus stop, amenities should conform to standards of the Cape Fear Public Transportation Authority system.

(C) Fringe areas. To insure compatibility with adjoining land uses a fringe use area one hundred (100) feet in width, shall be established along the exterior property lines of a MSMD where the exterior property lines of a MSMD are adjacent to single-family residential uses or platted single family residential lots.

i. If the exterior property line of a MSMD is not adjacent to residential uses or platted residential lots, then no fringe use area will be required.

ii. If a fringe use area is required, only residential uses or open space shall be permitted within that fringe area.

iii. The maximum building height within the fringe use area shall be three (3) stories.

iv. The required building setback in the fringe use area shall be calculated as follows: (building height) × (2.75). In no case shall the minimum setback be less than twenty-five (25) feet.

v. There shall be no accessory structures or parking located within the part of the setback adjacent to residential districts.

vi. In all instances, lighting shall be directed away from the adjacent residential use.

(7) Building architecture. The following standards shall apply to all Activity Centers and all Activity Nodes in a MSMD.

(A) Building orientation. All buildings shall be oriented toward Market Street and other primary streets. For buildings on corner properties, both street elevations are considered to be front facades and shall be architecturally enhanced as a front facade.

(B) Building height. Building height in a MSMD shall not exceed ten (10) stories, not including levels utilized for structured parking. Additional height up to a maximum of fifteen (15) stories may be permitted based on compliance with either of the following performance options:

i. Dedication of private land area for public use greater than the required minimum of ten (10) percent. For every five (5) percent of additional permanently designated public space, building height may be increased by one (1) story.

ii. Reduction of building mass greater than the required minimum of twenty-five (25) percent. For every additional five (5) percent of building mass reduction above the "building base," building height may be increased by one (1) story.

iii. Achievement of the elements necessary for any level of LEED, Energy Star, Green Globes, North Carolina High Performance Building Guidelines, BRE Environmental Assessment Method or similar approved certifying program, shall be allowed an increase in building height, to a maximum of five (5) additional stories

(C) Building façade character.

i. Minimum wall articulation. Any building greater than fifty (50) feet in length, measured horizontally, that is visible from a public right-of-way, private street and/or pedestrian walkway shall include at least three (3) of the following features:

a. change in texture or masonry pattern
b. change in color
c. windows
d. dormers
e. trellises with vegetation
f. covered porch
g. balconies
h. parapet walls

ii. Street-level facades. Window glazing shall be the predominant material in the street-level facade. Such glazing shall be transparent under all lighting conditions; however, spandrel or colored glass may be used above the height of the door head. Glazing shall extend from a base of contrasting material to at least the height of the door head. For new buildings on corner lots adjacent to single-family residential zoning, glazing area may be reduced. Glazing shall extend from the corner of the front facade for a depth equal to at least fifty (50) percent of the length of building along the side street building facade. Exterior burglar bars, fixed riot shutters, or similar visible security devices shall not be installed in any new or existing commercial storefront. Residential uses are not permitted on the ground level fronting any facade.

iii. Building entries and pedestrian scale design. Facades fronting rights-of-way shall be detailed to create a pedestrian scale.

a. All public building entries shall be clearly defined, highly visible, and feature no less than three (3) of the following:

(i) Canopies or porticos.
(ii) Overhangs.
(iii) Recesses or projections.
(iv) Arcades.
(v) Arches.

(vi) Outdoor patios.
(vii) Windows.
(viii) Awnings.
(ix) Architectural features that are integrated into the building structure or design or
(x) Planters or wing walls that incorporate landscaped areas or places for sitting.

b. Entrances shall be recessed from the property line allowing a pedestrian space between the sidewalk and the front door.
c. For buildings located on street corners, a corner entrance is permissible.

iv. Canopies and awnings. When used, canopies and/or awnings shall be placed along the first floor façade only, at the top of windows or doorway openings and shall meet the following requirements:

a. Canopies and/or awnings shall relate to the shape of the top of the window or opening.
b. Canopies and/or awnings shall be made of canvas, treated canvas, glass, metal or similar material. Horizontal cantilever awnings must be metal or glass
c. Vinyl (or plastic) awnings are prohibited.
d. No awning shall extend more than the width of the sidewalk or ten feet, whichever is less.
e. Awnings must be self-supporting from the wall. No supports shall rest on or interfere with the use of pedestrian walkways or streets.
f. No canopies and/or awnings shall be internally lit.

v. Four-sided architecture. All sides of the building shall include articulation, materials, and design characteristics consistent with those on the primary front façade in terms of quality and detail, unless the public's view of a rear or side building elevation from a public right-of-way or private street or pedestrian walkway is blocked by intervening buildings or landscaping within thirty (30) feet of the structure.

(D) Franchise architecture. Buildings shall not be construction or renovated using franchise architecture to develop and maintain a unified architectural theme in a MSMD.

(E) Architectural unity. All buildings within the same lot or parcel shall be architecturally unified. Architectural unity means that buildings shall be related and compatible in style, color, scheme, quality, and type of exterior building materials.

(8) Site circulation and parking facility design. The following standards shall apply to Activity Centers and Activity Nodes in a MSMD.

(A) Parking facilities. All off-street parking shall adhere to the following requirements:

i. Structured parking. Structured parking facilities contained within new buildings shall adhere to the building design standards of the County and the following regulations:

a. Whenever possible, vehicular entrances shall be provided from the lowest-order adjoining street.
b. On street-fronting facades, vehicles shall be concealed from view with decorative screening, such as louvers, and/or vegetation.

ii. Surface parking. All surface parking lots shall adhere to the following requirements:

a. Surface parking shall be located in the side or rear yards and shall be set back a minimum of ten (10) feet from the front plane of all street-facing facades. One-way drives shall be incorporated where possible.
b. Surface parking shall not be located in front of any building. Surface parking shall be located to the interior of the block and/or behind buildings fronting rights-of-way, where possible, so as to not interrupt the continuity of the block face.
c. Surface parking lots shall be screened from public streets by permanent walls, shrubbery or hedges at least three (3) feet but not more than five (5) feet in height.
d. Surface parking shall be accessed via public or private alleyways where possible.

(B) Shared parking facilities. The shared use of off-street parking is specifically encouraged in a MSMD.

i. Shared parking lots must be located on the same block as the land uses they serve. Signs shall be placed to inform motorists of the allowable use of shared lots.
ii. In shared lots, the same parking space may fully satisfy the off-street parking requirement for two different land uses provided their peak parking demands clearly occur at different times. When the peak demands do not clearly occur at different times, each two parking spaces can replace three parking spaces that would otherwise be required by the combined uses.

iii. The approval for the shared use of off-street parking can be granted only when all users of the shared lot have chosen to be governed by a shared parking agreement.

iv. Those wishing to use shared parking as a means of satisfying off-street parking requirements must submit a shared parking analysis to the County's TRC that clearly demonstrates the feasibility of shared parking. The study must address, at a minimum, the size and type of the development, the composition of tenants, the anticipated rate of parking turnover and the anticipated peak parking and traffic loads for all uses that will be sharing off-street parking spaces. A shared parking plan will be enforced through written agreement among all owners of record. An attested copy of the agreement between the owners of record must be approved by the county attorney and submitted to the county for recordation on forms made available in the office of the county. Recordation of the agreement must take place before issuance of a building permit for any use to be served by the off-site parking area.

(C) Loading facilities. Service areas and loading docks should be separated from pedestrian, bicycle and vehicular circulation whenever practical.

i. Service areas and loading docks shall be oriented away from streets and walkways.

ii. To the maximum extent possible, all service areas and loading docks shall be located between the building and the rear lot line of the property, and/or shall be screened from the view of the street and adjacent properties.

iii. All loading areas shall meet the applicable landscaping, screening, and buffering requirements set forth in this Ordinance.

iv. The details of such location and screening shall be reviewed and approved as part of the approval process.

(D) Internal site circulation and street network. The proposed public or private street system shall be designed to provide vehicular interconnections to facilitate internal and external traffic movements in the area.

i. All development shall be designed to allow for cross-access to adjacent properties to encourage shared parking and shared access points on public or private streets.

ii. Where development is adjacent to vacant land likely to be divided in the future, all streets, sidewalks, bicycle paths, and access ways in the development's proposed street system shall continue through to the boundary lines of the area

iii. In general, permanent cul-de-sacs are discouraged in the design of street systems, and should only be used when topography, the presence of natural features, and/or vehicular safety factors make a vehicular connection impractical. Where cul-de-sacs are

unavoidable, site plans shall incorporate provisions for future vehicular connections to adjacent, undeveloped properties, and to existing adjacent development where existing connections are poor.

(E) Transit facilities. Construction of bus shelters as well as turnouts along project perimeters, shall be mandatory wherever the project includes or is adjacent to an existing or previously identified transit line extension proposed in adopted documents by the Cape Fear Public Transportation Authority, or another public transit provider.

(F) Bicycle facilities. All non-residential uses within a mixed use development shall provide a minimum of two (2) bicycle parking spaces per business up to a maximum of twenty (20) bicycle parking spaces required in total for a common development. All residential uses, except single-family residential homes within the development, shall provide sufficient bicycle parking facilities consisting of not less than one (1) bicycle parking spaces for every ten (10) required automobile parking spaces.

(9) Signage. The following standards shall apply to all Activity Centers and all Activity Nodes in a MSMD.

(A) In any mixed use development in the Market Street corridor, no permit shall be issued for an individual sign requiring a permit unless and until a common signage package is submitted to and approved by the County.

(B) The common sign package shall comply with the requirements of this Section and contain a visual representation to specify standards for consistency among all signs on the property affected by the common sign package in regard to sign size, location(s), color scheme, lettering or graphic style, lighting, location, and sign proportions.

(C) Off-premise way-finding signs included in the common sign package shall be constructed as a ground sign and limited to ten (10) square feet per side of sign area, a maximum of four (4) feet in height, and be placed at least five (5) feet behind the public right-of-way.

(D) After approval of the common sign package, the Planning and Inspections Director or his designee may approve minor modifications to the common sign package, provided that the modified sign package complies with the requirements of this Section and does not violate the following:

i. increase the area of a sign by more than five (5) percent
ii. alter the relationship of a sign to neighboring property

iii. change the locations of signs in such a manner as to increase non-conformity with setback requirements, interfere with pedestrian or vehicular traffic, interrupt architectural details, or otherwise significantly deviate from the approved common sign package.

(E) Significant changes to the common sign package that violate the requirements of this Section shall require approval from the County's Zoning Board of Adjustment.

MARKET STREET CORRIDOR STUDY - Section 1

N 30th St to Lullwater Dr



MARKET STREET CORRIDOR STUDY - Section 2

New Centre Dr to N Cardinal Drv



MARKET STREET CORRIDOR STUDY - Section 3

Judges Rd to Gordon Rd



MARKET STREET CORRIDOR STUDY - SECTION 4

GORDON RD TO MIDDLE SOUND LOOP RD



INTERCHANGE DEPICTED ABOVE DESIGNED BY MULKEY ENGINEERING

MARKET STREET CORRIDOR STUDY - SECTION 5

BAYSHORE DR TO ALEXANDER RD



MARKET STREET CORRIDOR STUDY - SECTION 6

MARSH OAKS DR TO PORTERS NECK RD

