Final Report -
September 2019

CITY PLANNING

AF

Avent Ferry
Corridor Study

CH. 1 - EXECUTIVE SUMMARY

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Raleigh

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EXECUTIVE SUMMARY

The following pages describe the major recommendations of the study that reinforce the primary goal of this study:

"To plan for and implement a safe, vibrant corridor for pedestrians, cyclists, transit-uses and motorists that helps enhance livability and economic viability."

Overall Goals for the Avent Ferry Corridor Study

- Enhance economic vitality and livability
- Promote ease-of-access and movement with complete streets design
- Leverage public infrastructure to better secure long-term corridor stability
- Identify market opportunities for redevelopment
- Retain and expand commercial services as a high priority
- Celebrate and highlight the area's economic and ethnic diversity
- Develop a mix of residential types to attract and retain residents
- Create walkable, mixed-use development at key nodes
- Strengthen overall connectivity within and to surrounding areas
- Improve the safety and aesthetic appeal of the corridor
- Provide feasible implementation items

Introduction

Avent Ferry Road's long transportation history began as a major Raleigh and Wake County connection to the Cape Fear River dating back to the 1800's. The street's character has changed and its length significantly shortened since the Avent family operated a ferry at the river at present-day NC42 bridge. Avent Ferry has since become a primary residential corridor serving NC State University's Main and Centennial Campuses and providing the key link between Western Boulevard and Tryon Road. The existing character of the Avent Ferry Corridor is noted as non-descript and characterized by aging strip malls and university-related residential structures common to cities throughout the country. Visually, there is little distinguishing this highly-traversed corridor from many other arteries in the city. Many pedestrians and cyclists heavily use Avent Ferry despite few crosswalks, inconsistent sidewalk/multiuse path patterns, and numerous curb-cuts/driveways that create possibly dangerous conflict points. The street was designed to support

lifestyles and transportation systems long eclipsed by a fresh demand for mixed-use and vibrant, walkable communities.

Recognizing the importance of this corridor and its redevelopment potential into the future, the City of Raleigh's Urban Design Center launched a planning study in late 2016. A kick-off meeting was held in March 2017, to review initial findings from the design team's analysis of existing conditions and to discuss broad goals for the study. Several public venues and dates were made available to the community for participation through the course of the planning process. Public workshops were held on October 4 and 5, 2017, with a follow-up workshop on March 3, 2018, which provided the public generous opportunity to "weigh in" and to express specific and general opinions, concerns, and ideas for developing plans and typical cross-sections. In addition to the workshops, the Urban Design Center hosted several "pop-up" meetings at locations near the corridor to increase opportunities for residents and local businesses to provide input. For residents and stakeholders unable to attend either of the in-person visioning sessions, an online survey was made available in April 2018.

The following report outlines the public process, analysis, design concepts, and recommendations that were produced through collaborative analysis and reviewed by the design team that included the consultant group, Urban Design Center, city departments, residents, community stakeholders, and local institutions. Through the course of the study, over 800 citizens were engaged in the planning process. The resulting recommendations reflect the insight gained from technical analyses and public input. Key considerations in making these recommendations include: existing conditions; transportation networks; connections for cyclists, pedestrians, and Greenway users; market projections; other infrastructure improvements planned for the area; and the potential to partner with private developers.

District Character Assessment

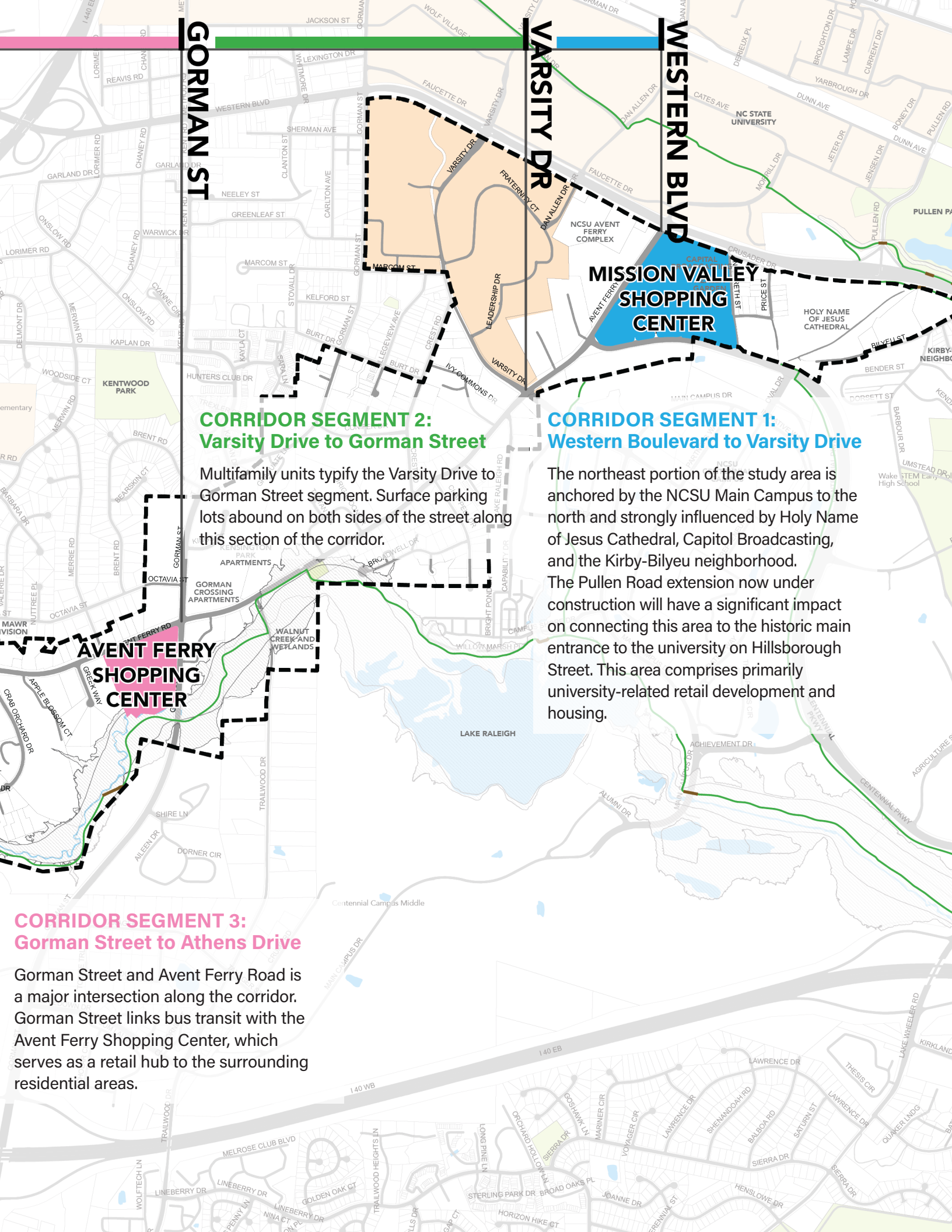
The Avent Ferry Road corridor is one of the busiest in the city and serves students, neighborhoods, shopping centers, the new cathedral, as well as daily southeast Wake County commuters. The Avent Ferry corridor study area runs from the main campus of North Carolina State University (NCSU) to NCSU Centennial Campus, to Lake Johnson. The project area boundary starts at the intersection with Western Boulevard and leads south through the intersection with Gorman Street to the intersection with Tryon Road. The physical character of Avent Ferry Road varies considerably over its three-mile length. From a concentrated urban environment at NCSU and Mission Valley Shopping Center to the sparsely developed Lake Johnson and Tryon Road areas, the corridor is a broad mix of development patterns which accommodates housing, workplaces, and transportation routes for a growing and diverse population. The City's GoRaleigh, the regional GoTriangle, and NCSU's Wolfline provide regular bus service along the corridor.

Much of the corridor is characterized by aging building stock and auto-oriented retail areas with large surface parking lots. An impressive tree canopy on both sides of the southern portion of the corridor contributes largely to the variation in character. Pedestrians and cyclists are heavy users of the corridor. Many users see the corridor as unsafe for walking or biking. Sidewalks are in deteriorating condition and discontinuous along some spans of the corridor. Bicycle infrastructure is also lacking.

Due to the distinguishable change in character, the Avent Ferry Corridor Study area is divided into four segments.

CORRIDOR SEGMENT 4: Athens Drive to Tryon Road

From Athens Drive south, Avent Ferry Road has lower traffic volumes and a narrower roadway width. There is considerable natural vegetation and a quieter feel. Lake Johnson Park anchors this end of the corridor. Avent Ferry Road continues south over I-40 through residential areas to connect to Tryon Road.



CORRIDOR SEGMENT 2: Varsity Drive to Gorman Street

Multifamily units typify the Varsity Drive to Gorman Street segment. Surface parking lots abound on both sides of the street along this section of the corridor.

CORRIDOR SEGMENT 1: Western Boulevard to Varsity Drive

The northeast portion of the study area is anchored by the NCSU Main Campus to the north and strongly influenced by Holy Name of Jesus Cathedral, Capitol Broadcasting, and the Kirby-Bilyeu neighborhood. The Pullen Road extension now under construction will have a significant impact on connecting this area to the historic main entrance to the university on Hillsborough Street. This area comprises primarily university-related retail development and housing.

CORRIDOR SEGMENT 3: Gorman Street to Athens Drive

Gorman Street and Avent Ferry Road is a major intersection along the corridor. Gorman Street links bus transit with the Avent Ferry Shopping Center, which serves as a retail hub to the surrounding residential areas.

Design Concepts and Recommendations

Analysis of existing conditions and wide community input shows a heavily used and rapidly changing corridor. While a primary goal of the Avent Ferry Road Corridor Study is "to plan for and implement a safe, vibrant corridor for pedestrians, cyclists, transit-users, and motorists that helps enhance livability and economic viability," there is also the opportunity to leverage public infrastructure to better secure long-term corridor stability. Transitioning Avent Ferry Road into a complete streets corridor connecting greenways, parks, and recreation areas would attract and support additional private investment. Primary opportunities to improve the corridor were categorized in three key concepts: Develop a Distinct District, Adopt "Complete Streets" Principles, and Foster Redevelopment and Economic Viability.

1. Develop a Distinct District

The City of Raleigh received several accolades in 2016, among them; "2nd Easiest City to Find a Job," "#2 in America's Hottest Spot for Tech Jobs," and "Best Cities for Recent Grads." Many of these achievements are reflections of the creative talent and workforce coming out of the universities in the area. The Avent Ferry Corridor is befitted with many unique assets, one being its position as a major corridor linking the NCSU to many retail and office spaces, local recreational activities, a diverse housing stock, and intellectual capital in the corridor. Its proximity to the future Dorthea Dix Park, a major BRT stop, and Downtown Raleigh makes it an ideal candidate for a distinct district that could accommodate much of the future growth projected for the market area.

With Avent Ferry Road as its central boulevard, the corridor area could provide an increased variety of housing options, expanded employment, and updated dining, shopping, and entertainment that could complement the existing market demand. While the draw of NCSU for education and employment is evident, the new economy's emerging technologies and changing demographics could provide added workplace options.

Distinct District Strategies:

- Leverage infrastructure improvements to attract new private investments and new residents.
- Adapt complete streets principles to safely and efficiently accommodate people in cars, on transit, on bicycles, and on foot.
- Foster development within a unified district that activates area growth and inclusive vitality with respect to varying character of each corridor segment.
- Develop vibrant nodes of high density mixed-use centers at Mission Valley and Avent Ferry Shopping Centers, and protect stable residential neighborhoods along the Corridor.
- Provide a well-connected greenway system.
- Capitalize on existing assets and provide quality housing opportunities for residents of all economic levels.
- Cater diverse retail opportunities to locally and nationally operated businesses alike.
- Provide a steady economic base to support commercial activities with increased residential and office densities.
- Scale new construction appropriate to its context.
- Implement interconnected water, vegetation, and fauna of natural systems through a continual ribbon of greenery through vegetated medians, street trees, and green infrastructure.

2. Adopt "Complete Streets" Principles

Vehicular circulation has been the historic focus of the corridor. A large percentage of the population in the area perceive the corridor as unsafe for walking or biking. New best practices are now needed to accommodate transit riders, cyclists, and pedestrians. Updated transportation services demand quality transit and walkable and bicycle-friendly neighborhoods.

The corridor should include a strong identifiable transportation network and clear well-connected pathways. Broader transportation networks would provide critical access to the area's amenities including Dix Park, Lake Johnson, and Pullen Park. The corridor offers opportunities for a long list of potential transportation improvements including implementation of the "Complete Streets" principles to facilitate the movement of people using multiple transportation modes. Complete Streets is a proven strategy to expand multimodal options and NCDOT has established policies for implementing this program.

Bus Rapid Transit (BRT) is planned for the Western Boulevard corridor. BRT will provide regular bus alternatives connecting the Avent Ferry Road corridor to downtown Raleigh, the university, and west Raleigh. Higher density development near the resulting BRT transit stops should enhance ridership and connectivity. Gaps in cycling and pedestrian systems should be eliminated to enhance overall connectivity for users. In addition to improving connectivity gaps, safe crosswalks should be a priority. Poorly designed parking lots should be replaced and connections to the greenway system which link commercial/ recreational centers enhanced.

Complete Streets Strategies:

- Transform Avent Ferry Corridor into a Complete Street designed and operated to enable safe access for all users, including pedestrians, bicyclists, motorists, and transit riders of all ages and abilities.
- Improve key intersections along Avent Ferry to address bike/pedestrian safety, access, and crossings.
- Provide safe and secure pedestrian and bicycle crossing across Western Boulevard (NCDOT underpass) to connect to both sides of the Avent Ferry corridor.
- Enhance bicycle and pedestrian safety with grade-separated bicycle lanes, separated sidewalks, and isolated bicycle and vehicular lanes at busy intersections.
- Improve and augment pedestrian connections between neighborhoods, University, Lake Johnson, and shopping centers.
- Provide for higher density development near future BRT transit stops.
- Improve bus stop amenities to encourage transit use.
- Enhance connections to the greenway system.

Street Section Recommendations

Application of the overarching Design Concepts themes results in a proposed approach to improve the transportation experience, safety, aesthetics, connectivity, economic sustainability, and natural resources. A range of proposed design solutions are recommended throughout the corridor. The use of a unified palette of design details, as well as repetition and consistency of public art should contribute to memorable corridor identity. Lane sizes should be generally reduced as bicycle infrastructure and increased vegetative area is introduced to the street sections. Transit usage should be encouraged through improved bus stop amenities and the increased convenience in higher density development.

There are a few noteworthy features that apply to all four segment lane configurations. The proposed dedicated bicycle lanes would be buffered from vehicular traffic, allowing a continuous path along Avent Ferry Road between Western Boulevard and Tryon Road. Some elements of the roadway design, such as lane widths and the median width, are narrower than City of Raleigh roadway design standards; however, the proposed streetscape details are recommended for adoption as a streetscape plan. Improvements outside of private redevelopment should be budgeted as Capital Improvement Project (CIP) items for implementation. Please see the implementation table in the final chapter for more detailed information.

Corridor Segment 1: Western Boulevard to Varsity Drive

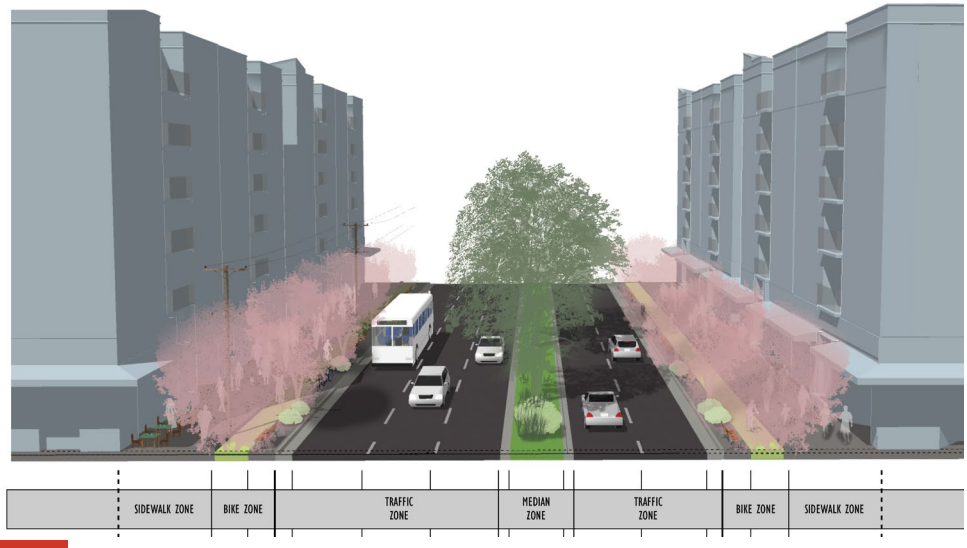
Redevelopment of the Mission Valley Shopping Center should serve as a catalyst for corridor investment. Development should capitalize on the proposed BRT and bicycle/pedestrian traffic between NCSU Centennial and Main Campuses.

The recommended design for this segment is two 10′ northbound vehicle travel lanes, one northbound 11′ queue jump/turn lane, two 10′ southbound vehicle travel lanes, an 11′ center planting strip/median, 5′ raised and buffered bicycle lanes on both sides of the street and 14′ sidewalks on both sides of the street. Future development along Mission Valley fronting Avent Ferry Rd. will be required to dedicate 7-9 feet (variable) of additional right-of-way to meet the 14′ proposed sidewalk width.

Corridor Segment 2: Varsity Drive to Gorman Street

The goal for this segment is to redevelop the area with well-connected street-front buildings. Building heights should be moderate with a residential character.

The recommended design for this segment is two 10-11′ vehicle travel lanes in each direction, an 11′ center planting strip/median, 6′ raised and buffered bicycle lanes on both sides of the street and 6′ sidewalks on both sides of the street.



Segment 1 - Option A

Segment 1 - Option B

Corridor Segment 3: Gorman Street to Athens Drive

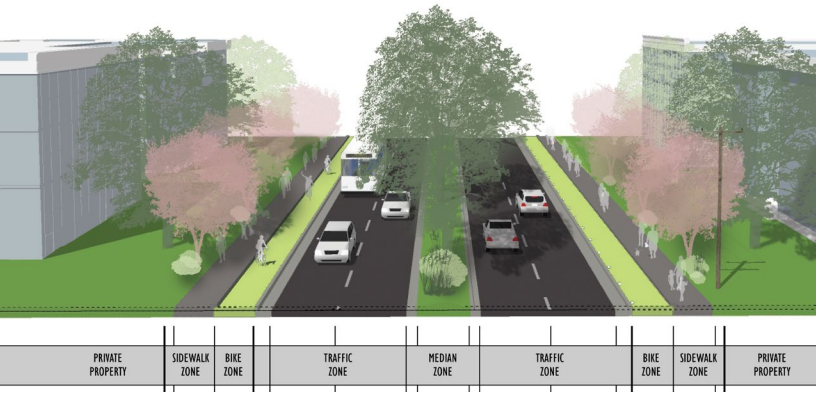
The Gorman Street intersection should provide additional retail services to the nearby neighborhood. Enhance this pattern by updating the center into a mixed-use center that adds residential and office space.

The recommended design for this segment is one 11′ vehicle travel lane in both direction, an 11′ center planting strip/median, 6′ raised and buffered bicycle lanes on both sides of the street and 6′ sidewalks on both sides of the street.

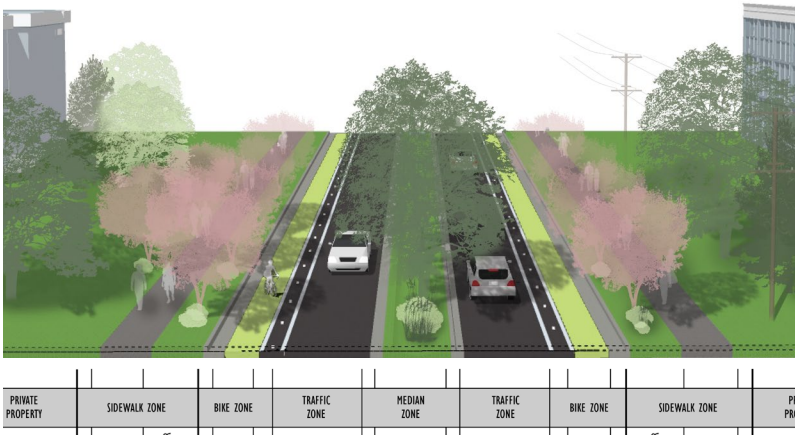
Corridor Segment 4: Athens Drive to Tryon Road

Include modest redevelopment changes in this area. The primary focus of this segment should be to close gaps in the sidewalk and greenway network.

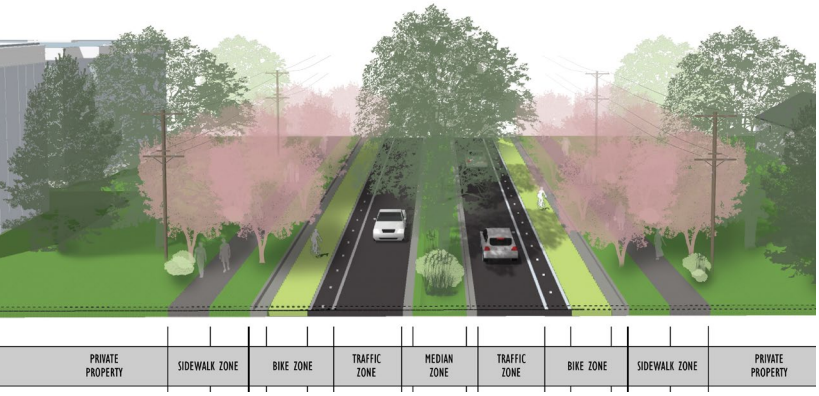
The recommended design for this segment is one 11′ vehicle travel lane in each direction, an 11′ center planting strip/median, 4′ raised and buffered bicycle lanes and 6′ sidewalks on both sides of the street.



Segment 2



Segment 4



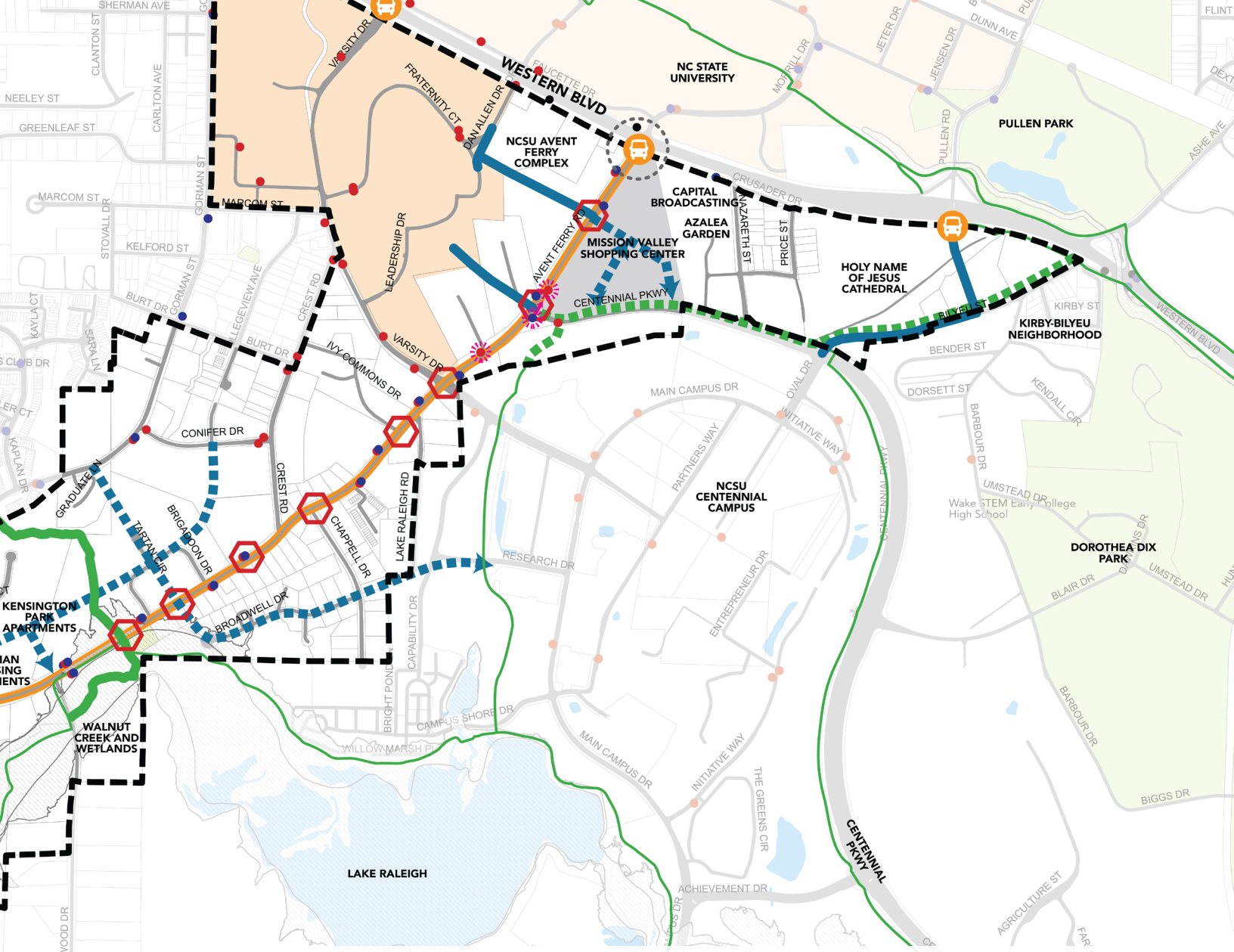
Segment 3

The proposed Connectivity Map highlights specific locations where safety may be dramatically improved. It also outlines a theoretical street grid that should be implemented as individual properties are redeveloped. Each new redevelopment plan should attempt to provide the connections described on this map.

Redevelopment of Mission Valley Shopping Center and Avent Ferry Shopping Center will eventually create nodes of activity that bookend the corridor segment between Western Blvd. and Gorman Street. Redevelopment in the rest of the corridor should occur at a lower intensity than either of the shopping centers but implement several key design principles. This will help create a network of connected streets, pedestrian, and bicycle paths. Parking between buildings and Avent Ferry Road should be eliminated, dead-end streets avoided, and driveway cuts reduced. Redevelopment should interconnect projects with internal streets and access for pedestrians and cyclists. This will allow residents to move between developments without necessarily accessing Avent Ferry Road.

Proposed Comprehensive Plan Amendments for Raleigh Street and Greenway Plans:

- The dashed, dark blue streets shown in the map above are recommended additions to the Street Plan
- The dashed, dark green lines shown in the map are recommended additions to the Capital Greenway Master Plan



The proposed streets within the focus areas are recommended as Main Street, Parallel Parking street type. For more information on this street type, please see the site plan for each focus area on .pgs 48 and 50. The recommended streets outside of the focus areas would be Neighborhood Streets, refer to Unified Development Ordinance for more details on this street type.

CONNECTIVITY LEGEND

- Potential BRT Station
- Wolfline Stops
- GoRaleigh Stops
- GoTriangle Stops
- Recommended Stop Consolidation or Removal
- Existing Streets
- PROPOSED Street in Raleigh Street Plan
- RECOMMENDED Addition to Raleigh Street Plan
- RECOMMENDED Bike Facility: Raised, buffered On-road, buffered
- Existing Greenway Trail
- PROPOSED Trail in Capital Area Greenway Plan
- RECOMMENDED Addition to Capital Area Greenway Plan
- RECOMMENDED Improved bicycle/ pedestrian crossing
- Parcels
- Lakes & Streams
- Parks and Open Space
- Focus Areas
- Floodplain

0 .5 1 MILES

N

3. Foster Redevelopment and Economic Viability

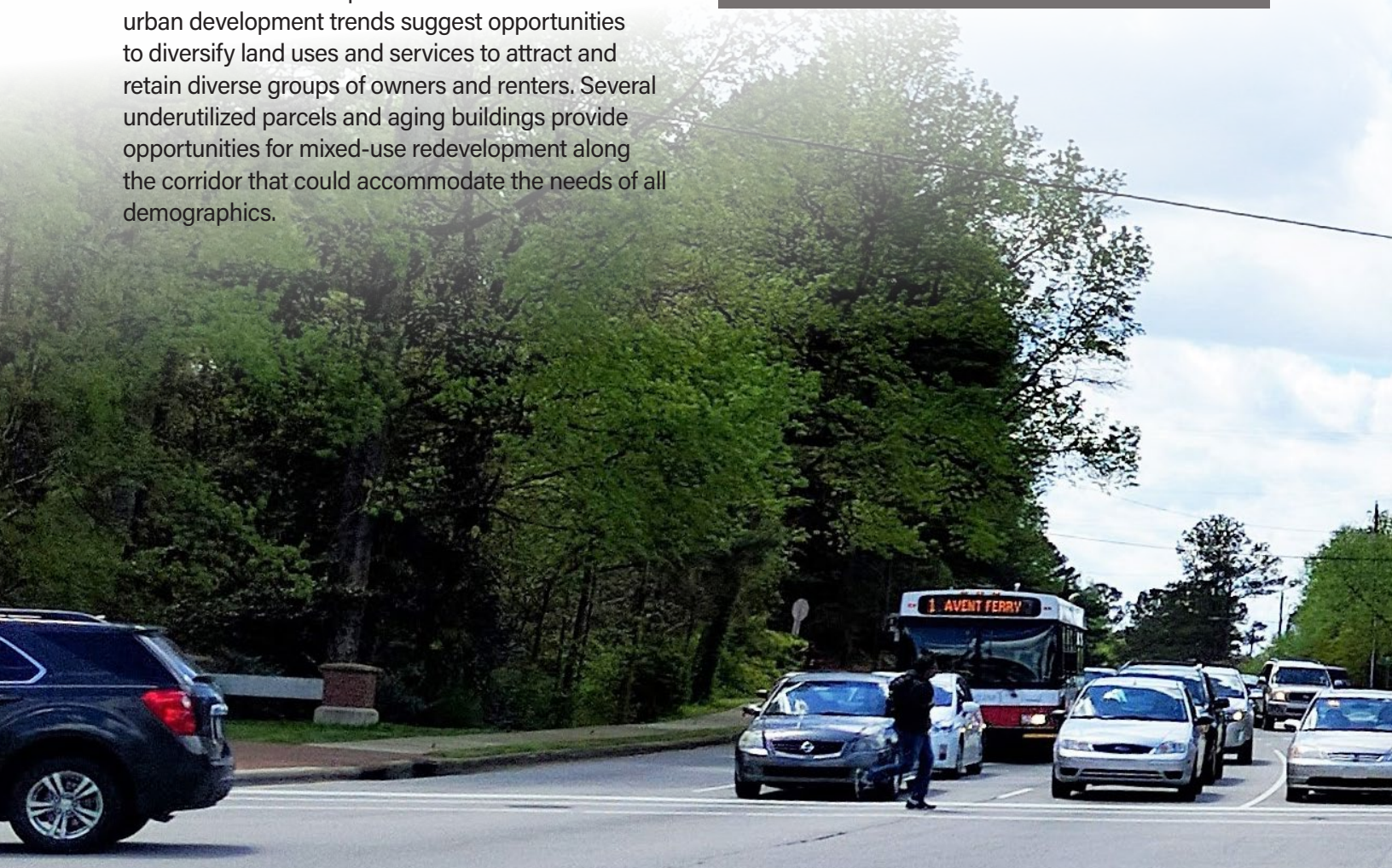
There is a substantial daily commuter volume through the corridor connecting to the University and Downtown Raleigh, providing a large base of potential retail consumers. However, many pass through the corridor without stopping to patronize existing businesses. There is an opportunity to expand public infrastructure to improve the corridor's commercial viability, to attract new private investment, and to support public-private partnerships crucial to broadening the economic strength of Avent Ferry Road. Public-private partnerships are critical to the long-term success of Avent Ferry Road and the plan should be prudent regarding where and how development should occur.

The corridor should provide age-in-place opportunities for older residents and enable many demographic groups to stay in the community. The corridor and surrounding areas would benefit from a plan to replace aging and outdated apartments with new residential options. National mixed-use urban development trends suggest opportunities to diversify land uses and services to attract and retain diverse groups of owners and renters. Several underutilized parcels and aging buildings provide opportunities for mixed-use redevelopment along the corridor that could accommodate the needs of all demographics.

Redevelopment and Economic Viability Strategies:

The market analysis suggests the following strategies to drive the corridor's economic development:

- Improve the safety and aesthetic appeal of the corridor.
- Formulate strategies to attract and retain residents.
- Make commercial services a high priority to support additional residential densities.
- Promote ease-of-access and movement and attractive place-making.
- Leverage public infrastructure improvements.
- Highlight and celebrate the area's diversity through partnerships.



Establishing a widely recognizable corridor within the city is a key opportunity for the Avent Ferry visioning process. This is often referred to as placemaking, or the process and philosophy of capitalizing on a local community's assets, inspirations, and potential with the intention of creating public spaces that promote people's health, happiness, and wellbeing. In part, placemaking is accomplished by implementing improvements to address the issues and accentuate the assets described below.

The development analysis suggests the following strategies to reinforce Avent Ferry Road's development identity:

- Establish consistent landscaping and signage standards.
- Define standards for building size, location, and quality.
- Integrate cohesive, unique art into the design.

Strategies for MVSC:

- Enhanced street network.
- Devise a master plan that includes a mix of uses at the Mission Valley Shopping Center.
- Upgrade and renovate the Mission Valley Shopping Center to attract a wider variety of food and beverage options; for example, breweries, international markets, restaurants, and local health food stores.
- Integrate flexible work space, housing, and lodging.
- Invest in multimodal transportation infrastructure that provide access to the Mission Valley area from NCSU, Centennial Campus, Dix Park, and points south along the corridor.
- Development scenarios including TOD overlay.

Strategies for AFSC:

- Devise a strategic master plan to include the Avent Ferry Shopping Center and NSCU (former and existing Greek housing) sites.
- Upgrade and renovate the Avent Ferry Shopping Center to integrate more traditional work spaces and housing options for a walkable mixed-use environment.
- Provide connectivity from redeveloped areas to existing greenways and pathways for an enhanced bicycle and pedestrian network.
- Street connectivity.

Strategies for Lake Johnson:

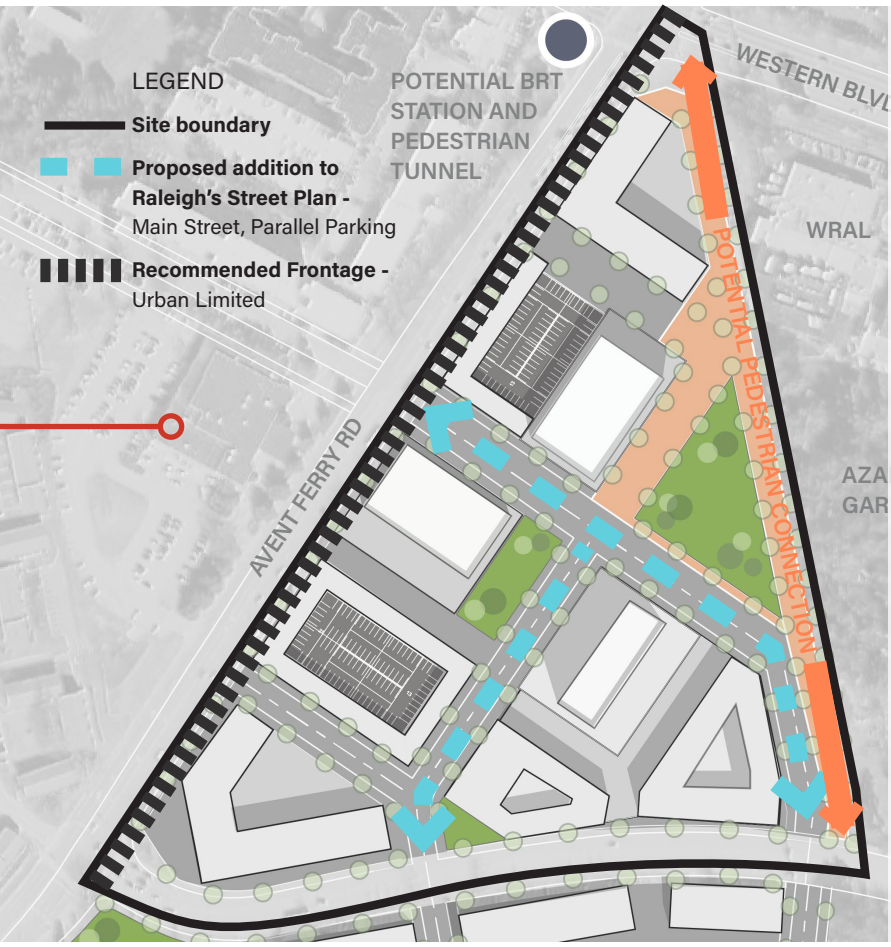
- Invest in transportation and park infrastructure for improved and appropriately scaled access to the Woodland Center and other Lake Johnson park destinations.
- Improve greenway access and wayfinding to Lake Johnson Park from Dix Park.
- Enhanced access and parking.

Proposed Comprehensive Plan Amendments for Mission Valley Shopping Center:

- Amend the Street Plan to create a urban street grid.
- Create a policy framework for height guidance that supports five- to seven-stories at the edges of the shopping center with allowances for additional height considered in exchange for significant public amenities.
- Urban Form for the shopping center should conform with the Urban Limited Frontage designation along Avent Ferry Road.
- New internal street networks should support buildings closer to the street edge.
- Due to its proximity to a future BRT stop, the site is recommended for consideration as a future Transit Overlay District with potential for denser mixed-use development.

Proposed Comprehensive Plan Amendments for Avent Ferry Shopping Center:

- Amend the Street Plan to create a urban street grid. (See map below)
- Create a policy framework for height guidance of three to five stories, with height along Avent Ferry Road not exceeding three stories. Additional height should be focused away from existing detached residential properties.
- Urban Form for the shopping center should conform with the Green Frontage designation.
- Provide connection from the site to the Walnut Creek Greenway.

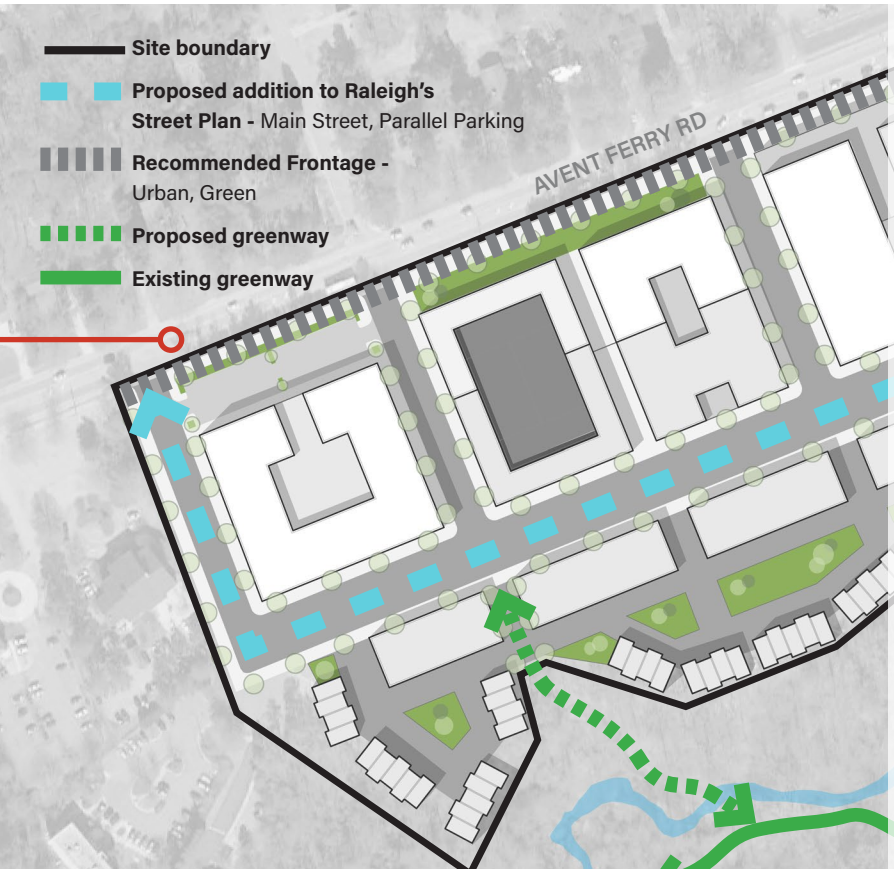


Targeted Focus Areas

Targeting specific focus area development nodes compliments the corridor's development strategy. Focused enhancements in public infrastructure and private development would help create destination hubs at strategic locations along the corridor. The three target areas identified in the study with the best opportunities for redevelopment are Mission Valley, Avent Ferry Shopping Center, and Lake Johnson.

Mission Valley Shopping Center

Mission Valley has the potential for a denser updated urban mixed-use development. Redevelopment could include replacing existing buildings and infilling parking lots with ground level active uses and multiple stories of residential and office uses.



Avent Ferry Shopping Center

Repositioning and reorienting structures at this pivotal intersection would create opportunities for additional retail uses, new housing options and improved circulation and access.

Lake Johnson

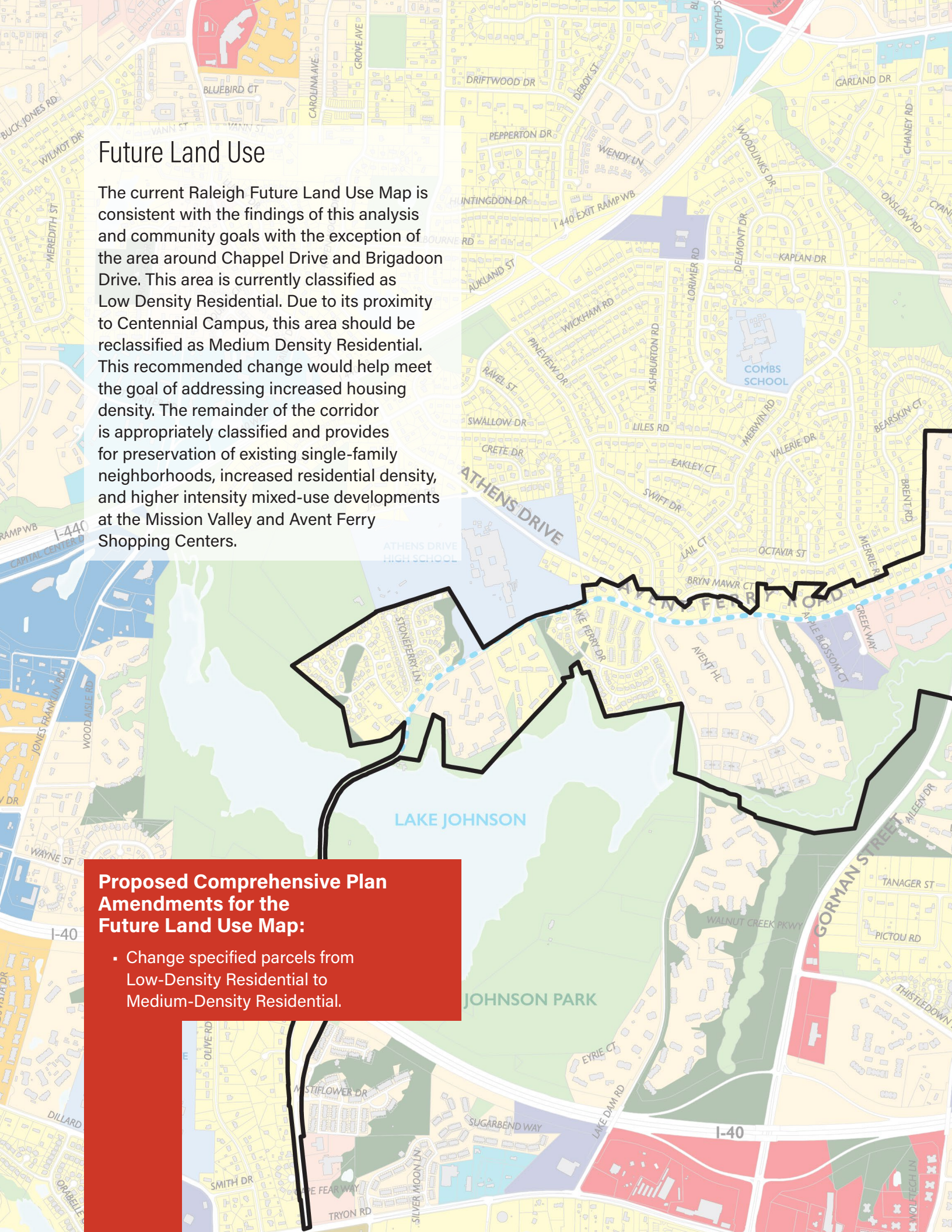
Lake Johnson Park is divided by Avent Ferry Road. It is a popular recreational destination and a significant ecological resource.

Implementation

A detailed table of steps for implementation of the design concepts and strategies are described in detail in Ch. 5 - Implementation of this report.

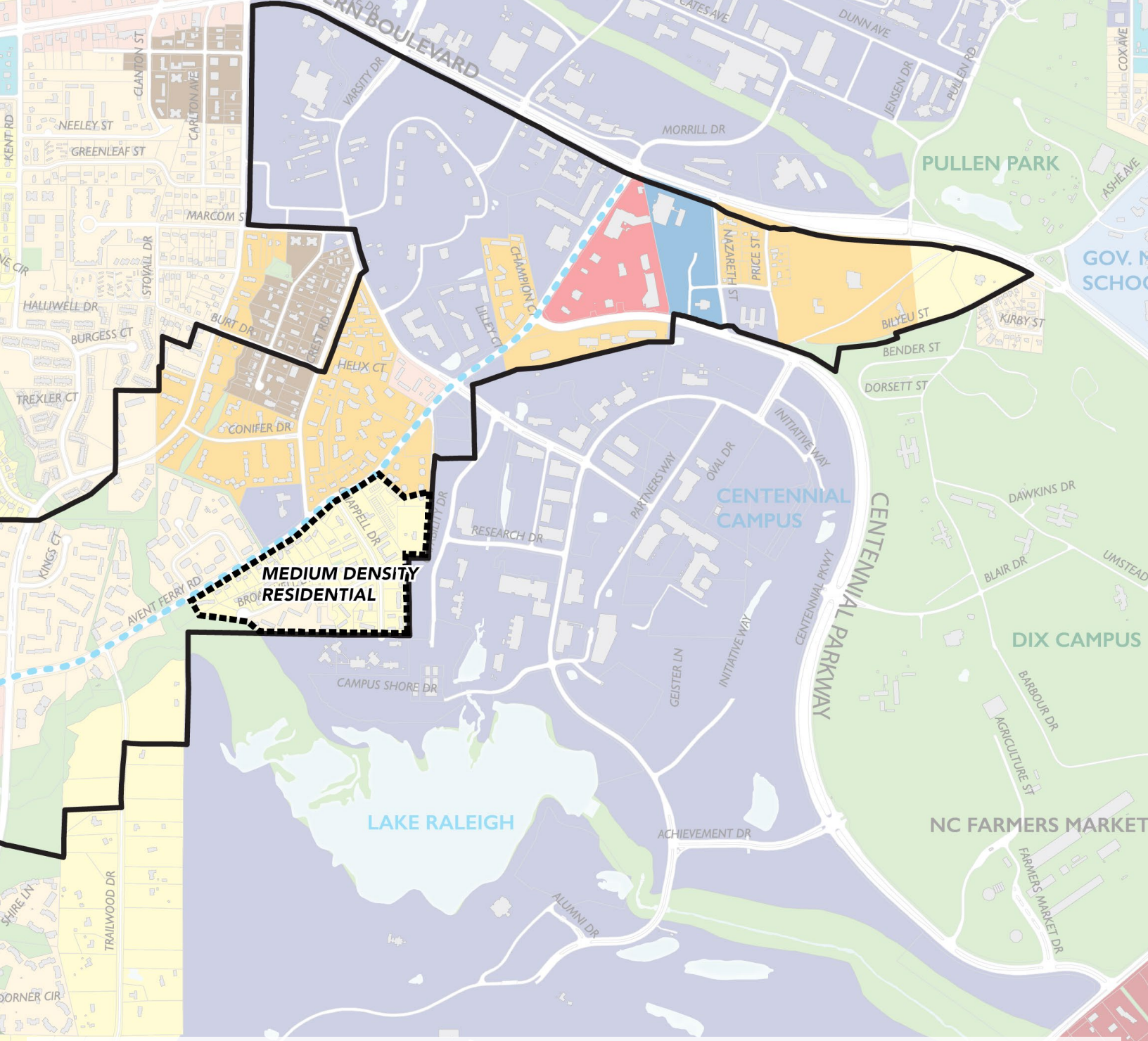
Future Land Use

The current Raleigh Future Land Use Map is consistent with the findings of this analysis and community goals with the exception of the area around Chappel Drive and Brigadoon Drive. This area is currently classified as Low Density Residential. Due to its proximity to Centennial Campus, this area should be reclassified as Medium Density Residential. This recommended change would help meet the goal of addressing increased housing density. The remainder of the corridor is appropriately classified and provides for preservation of existing single-family neighborhoods, increased residential density, and higher intensity mixed-use developments at the Mission Valley and Avent Ferry Shopping Centers.



Proposed Comprehensive Plan Amendments for the Future Land Use Map:

- Change specified parcels from Low-Density Residential to Medium-Density Residential.



The only recommended change to the FLUM map is outlined above. The parcels are recommended to change from Low-Density Residential to Medium-Density Residential.

FUTURE LAND USE

- Neighborhood Mixed Use
- Office & Residential Mixed Use
- Community Mixed Use
- Regional Mixed Use
- Central Business District
- Office/Research & Development
- Business & Commercial Services
- Institutional
- General Industrial
- Rural Residential
- Low Density Residential
- Medium Density Residential
- Moderate Density Residential
- High Density Residential
- Public Facilities
- Public Parks & Open Space
- Private Open Space
- Special Study Area
- Avent Ferry Study Area
- Avent Ferry Corridor
- Street
- Parcel

N

0 0.25 0.5 1 Miles

Scale: 1" = 1/8 Mile

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Avent Ferry
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CH. 2 - PUBLIC PROCESS

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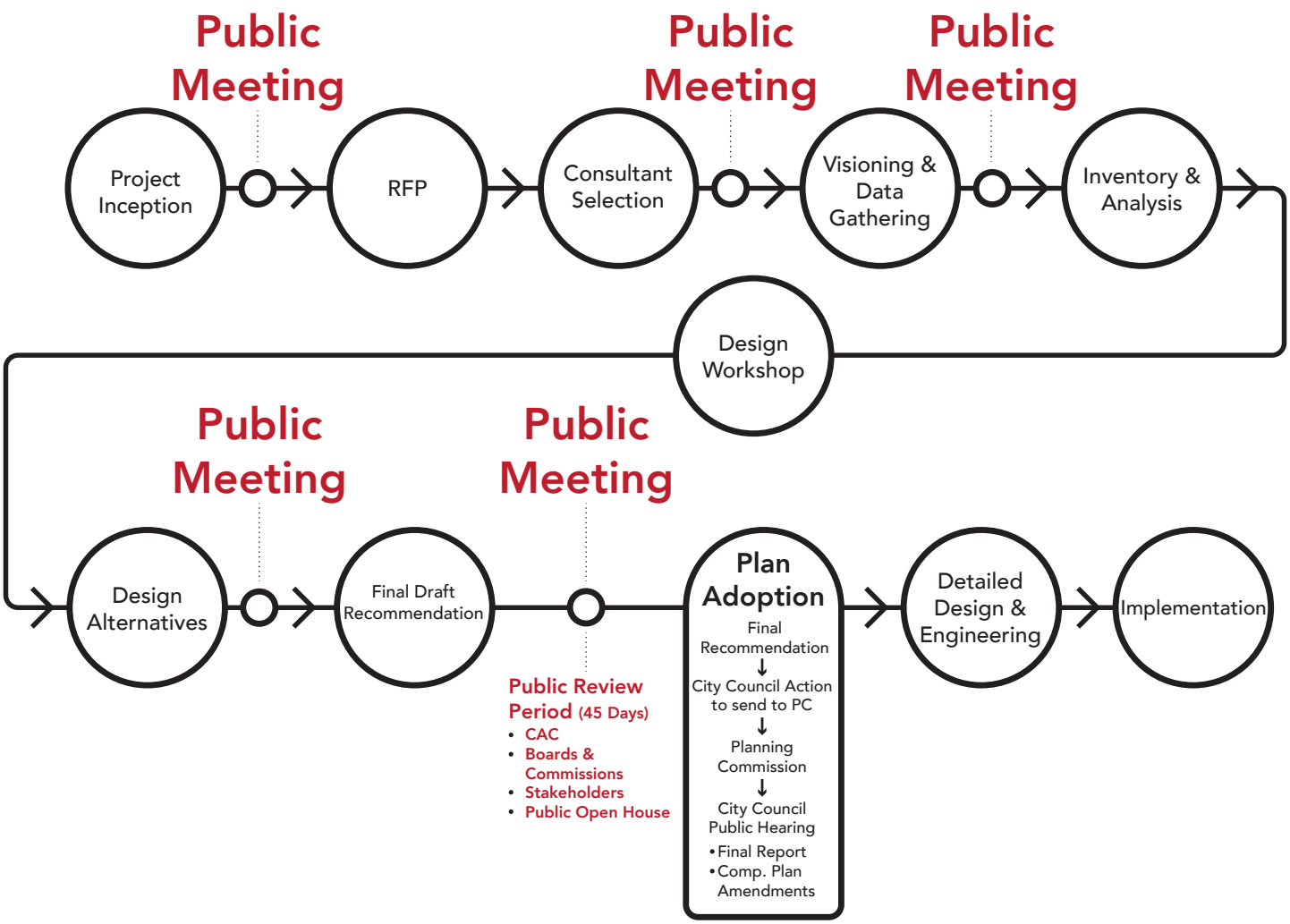
PUBLIC ENGAGEMENT SUMMARY

The objective of the Avent Ferry Road visioning workshops and meetings was to develop a vision for both the character of the public realm and future adjacent land uses. The information gathered from the workshops contributes to a framework of data, observations, and community input used to generate corridor concept designs and ultimately a single cohesive corridor vision. Participants were asked to identify assets, issues, and opportunities. The full record of the workshops is on the UDC website.

A highly interactive public engagement process was undertaken to ensure recommendations outlined in this report are consistent with community goals and aspirations for the corridor. The process began with a March 2016 visioning workshop where the community's initial thoughts were expressed related to notable issues and possible improvements needed in the corridor. This meeting was followed up with a March 2017 kickoff meeting that asked for detailed information regarding specific locations where improvements could be made. Following this meeting, the design team and Urban Design Center (UDC) conducted many focus group meetings with key landowners, NCSU, and city departments to understand their specific needs and interests.



The information gathered by these efforts was then analyzed and presented as a list of needs and potential options for improvement at a multi-day design workshop held at Mission Valley Shopping Center. At this workshop, stakeholders helped develop land use concepts for the Mission Valley and Avent Ferry Shopping Centers. Participants proposed greenway, bicycle, and pedestrian improvements and studied various street configurations.

Throughout the process, an online polling website was available for residents to provide further comment and respond to design proposals. Additionally, the UDC maintained ongoing outreach and provided regular updates to the Raleigh Citizen Advisory Councils, appointed boards and commissions as well as City Council.

The design team synthesized the feedback received through these pathways and, combined with their own analysis, developed multiple scenarios that tested alternate approaches to lane configurations, connectivity, transit options, and urban form. The design team also used results of the analysis to narrow the test cases to just a few plausible development scenarios. Two public workshops were then held in October 2017 to test the viability of each scenario. Participants provided their opinions on the pros and cons of each alternative. In March 2018, a design alternative meeting was held to solicit additional input on design work completed since the previous public workshop. The design team then worked with city staff to distill the feedback into the recommendations presented in this report. These recommendations are the best balance between cost, practicality, and positive impact on the corridor.

Kickoff Meeting

In March 2017, a public meeting was held to kick off the analysis and design phase of the project. The objective was to present initial findings and introduce the design team to the community. The record of input received at the kickoff meeting may be accessed via the UDC website. Data and user opinions were collected through a variety of methods including written comments, instant polling, and issue-oriented table discussions.

Preferred sections as a result of the Kickoff Meeting

Public Design Workshop

In October 2017, a public meeting was held to facilitate input during the design phase of the project. The objective was to present analysis and obtain feedback on the vision for the corridor, specifically related to corridor circulation and access to Lake Johnson, Mission Valley, and Avent Ferry Shopping Centers. Data reflecting respondent opinions were collected through a variety of methods including written comments, issue-oriented table discussions, and a street cross-section visioning exercises. Highlights of the workshop include:

- The most referenced issue was improving pedestrian and bicycle safety. The corridor presents both real and perceived threats to cyclists and pedestrians. Continuous bicycle lanes are inconsistent and narrow drive lanes cause conflicts between bicycles and vehicles. A high number of curb-cuts (driveways) present dangerous conflict points for both cyclists and pedestrians. Many sidewalks are narrow, broken, and often directly contiguous with the street. Some sections of the corridor lack sidewalks on one or both sides. Due to long distances between crosswalks, many pedestrians resort to crossing mid-block in often heavy traffic conditions. This safety issue was brought up frequently. Several also voiced a desire for additional greenway connections.
- Residents desire a safer and more efficient public transit system. Despite being the most used transit corridor in the city, quality bus stops are conspicuously absent. With the exception of a few small shelters, comfortable waiting facilities are deficient. Many attendees voiced their concern that bus stops created congestion and conflict with automobile traffic. Residents suggested dedicated bus lanes and bus pullouts be considered.

WEB SURVEY

WHAT ARE SOME QUICK FIXES THAT COULD BE DONE RIGHT AWAY TO IMPROVE THE AREA?

- BIKE LANES
- REDUCE SPEED LIMIT
- INCREASED SPEED LIMIT ENFORCEMENT
- MORE CROSSWALKS
- PLANTED MEDIAN/ROAD DIET
- CREATE A COMMUNITY IMPROVEMENT DISTRICT
- CREATE BRANDING FOR AREA
- MURAL PROGRAM
- WIDEN SIDEWALKS
- WIDEN AVENT FERRY NEAR ATHENS DRIVE HIGH SCHOOL
- REPAVE SURFACE

(14 RESPONSES)

WHAT ARE THE BIG ISSUES THAT NEED TO BE FIXED ALONG THE CORRIDOR?

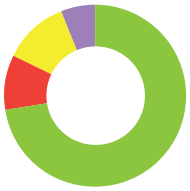
- IMPROVE PEDESTRIAN AND CYCLING SAFETY
- ENCOURAGE MIXED-USE, URBAN DEVELOPMENT
- INSTALL BUS BUMP-OUTS
- IMPROVE TRANSIT FUNCIONALITY
- SLOW CAR TRAFFIC
- MAKE AREA MORE BIKEABLE
- REDUCE ROAD WIDTH
- REDUCE AMOUNT OF IMPERVIOUS SURFACE
- ENCOURAGE WALKING, CYCLING AND TRANSIT
- BEAUTIFY THE AREA
- PRESERVE TREE CANOPY AND NATURAL AREAS
- IMPROVE MAINTENANCE AND SAFETY IN COMMERCIAL AREAS

(9 RESPONSES)

- Reducing the speed limit and incorporating traffic calming devices were common suggestions. However, many attendees had issues of traffic congestion and conflicts between automobiles, buses, and cyclists. These comments reflect a desire for faster, smoother flowing automobile service. Nevertheless, pedestrian safety was emphasized, particularly the need to direct pedestrians to designated street crossings.

- The aging and dated building stock along the corridor were noted. Generally, attendees felt corridor vision should allow taller buildings with increased population density at Mission Valley Shopping Center, while protecting the character and feel of the tree-lined residential sections to the south. Some noted the primary uses should be focused on the University, while others desire to see the corridor expand to include a larger demographic cross-section.

My primary mode of travel along Avent Ferry Road is:

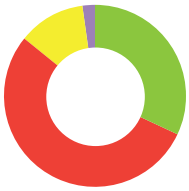


- 72.6% Car
- 11.8% Bike
- 9.8% By Foot
- 5.9% Bus

The most important Land Use fix is:

- 45.1% Promote new mixed use development
- 41.2% Promote a balance of the two
- 13.7% Preserve existing development types

How would you rate the safety of Avent Ferry Road?



- 2% Good
- 12% Neutral
- 54% Poor
- 32% Very Poor

The most important Public Realm / Streetscape fix is:

- 37.3% They are all equally important
- 21.6% Wider and continuous sidewalks
- 11.8% Crosswalks and signal countdowns
- 11.8% Bicycle lanes
- 9.8% They are not important
- 5.9% Additional street trees
- 2.0% More separaton between sidewalk and street

Which objectives are the most important for the corridor (Choose top 3)

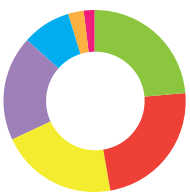
- 14.6% Create an identifiable aesthetic and image for the area
- 9.7% Improve access to transit services
- 13.2% Improve open space amenities and connections,
- 21.5% Improve bicycle safety, access, and circulation
- 8.3% Improve auto circulation and safety; reduce congestion
- 21.5% Improve pedestrian safety and circulation
- 11.1% Create a plan for redevelopment of key properties

Keypad and Online Polling

Online polling was utilized to reach a broader demographic than through public workshops alone. With greater flexibility for time and location, the community was invited to complete polls through the city website. Results include:

- A majority of respondents indicated they primarily access the corridor by automobile. Improvements in pedestrian and bicycle safety were the most important objectives.
- Respondents indicated additional important improvements should include enhanced bus stops, the elimination of curb-cuts, additional medians, wider continuous sidewalks, and the development of mixed-use projects.
- Online polling further indicated that the 25-year-old plus population is well and evenly represented. Unfortunately, despite outreach efforts, the 18 to 25-year-old demographic was underrepresented given that much of the housing in the corridor is occupied by largely transient college students and most of the retail and transit development serves this population. For future studies, we recommend additional alternative engagement tactics aimed at the 18 to 25 demographic, such as walk-up polling at retail centers and bus stops.

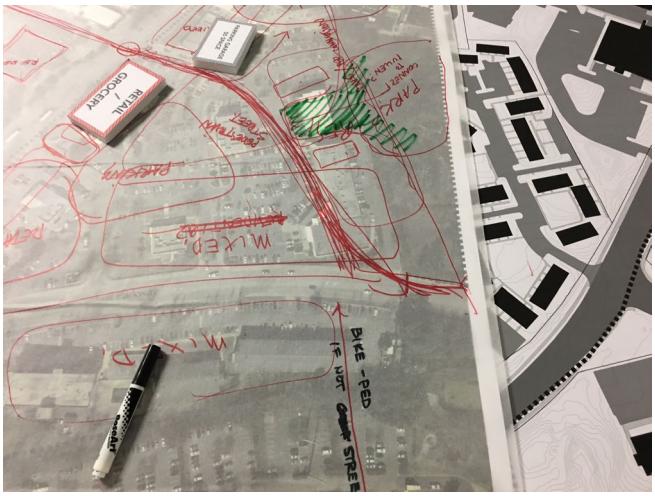
What safety issues concern you most along Avent Ferry Road?



- 23.7% Drivers not yielding to pedestrians
- 23.7% Lack of Crosswalks
- 20.8% Safety for Bicyclists
- 18.5% Lack of Pedestrian Signals
- 8.7% Safety for children coming from and going to school
- 2.9% Safety for folks going to church
- 1.7% None of the above

Workshop Design Concepts

Early data collection and survey results identified the Mission Valley and Avent Ferry Shopping Centers as focus areas which will require detailed future study related to connectivity and land use. Several concepts were developed during the workshops to identify configurations of retail, office, and residential uses on these properties. The arrangement of bicycle lanes, sidewalks, and vehicle lanes were also studied. The design team refined these concepts and presented findings for comment at the third public meeting. The final plans are illustrated later in this document. Overall findings are as follows:

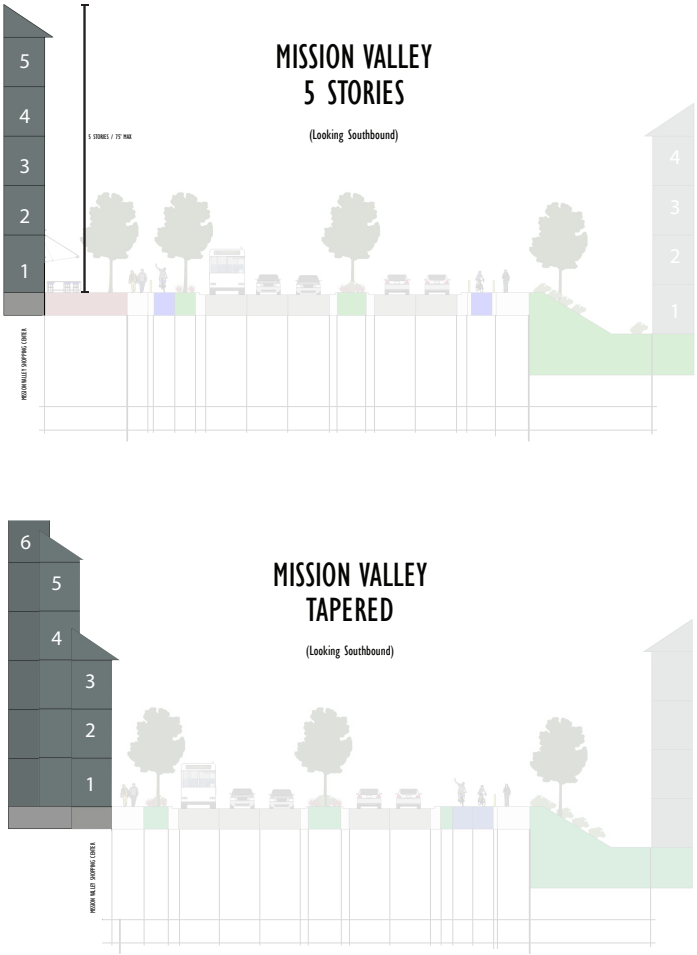


- Locate buildings closer to the street and eliminate parking between buildings and street.
- Take advantage of site topography for building siting/layout to reduce the perceived building heights. Locate taller buildings on the downhill portion of sites. This is especially important at Avent Ferry Shopping Center where there is a strong desire to avoid tall buildings adjacent to residential neighborhoods.
- Provide easy bicycle and pedestrian connections to adjacent properties at each shopping center. At Mission Valley this should include Centennial Campus, Main Campus, student housing, and Nazareth Street. At Avent Ferry Road, this should include simple and safe crossings to the single- and multi-family residential neighborhoods, as well as the greenway. This will help address the jaywalking issues along the corridor.
- Make sidewalks wide and provide ample space for streetscape amenities, outdoor dining, etc.
- Provide multiple, active public spaces at each development.

Design Alternatives Meeting

"We want to take only the best of the current trends in urban design: more walking, more biking, more transit, and more nature."

In March of 2018, a public meeting was held to review prepared design based on public input from previous meetings and workshops, as well as from City of Raleigh staff input. The record of input received at the Design Alternatives meeting may be accessed via the UDC website and in the appendix of this document. Data and user opinions were collected through a variety of methods including written comments, instant polling, issue-oriented table discussions, and review of alternative street cross-sections.



Example alternatives for Mission Valley's building height used during the Design Alternative meeting and survey

Highlights of the workshop and meeting include:

Redevelopment

"vibrancy without noise, traffic, and difficult parking."

Participants preferred redevelopment that retains a diversity of stores, preserving small businesses that serve diverse neighborhoods, both culturally and economically. Many participants feel it's important to maintain "the feel and character" of Raleigh as Raleigh continues to grow. Many agreed additional density with combined residential and retail, and continuing to provide student housing is preferable at Mission Valley. Reducing "the sea of parking" is mentioned, though others request that parking should be readily available for public use. Generally, the feeling was that the existing shopping centers were in need of updating.

One community member expressed concern over the possible economic impact to residents: "the changes could price out current residents, particularly renters."

Building Height

There was wide opinion regarding the limitation of building heights. Many participants wanted to densify the corridor in general, while many wanted to maintain building heights between three and five stories. People want buildings set back "as far from the street as possible" to preserve a green corridor to Lake Johnson and to allow plenty of light on sidewalks and bike paths. "Why propose buildings within the minimum setbacks?"

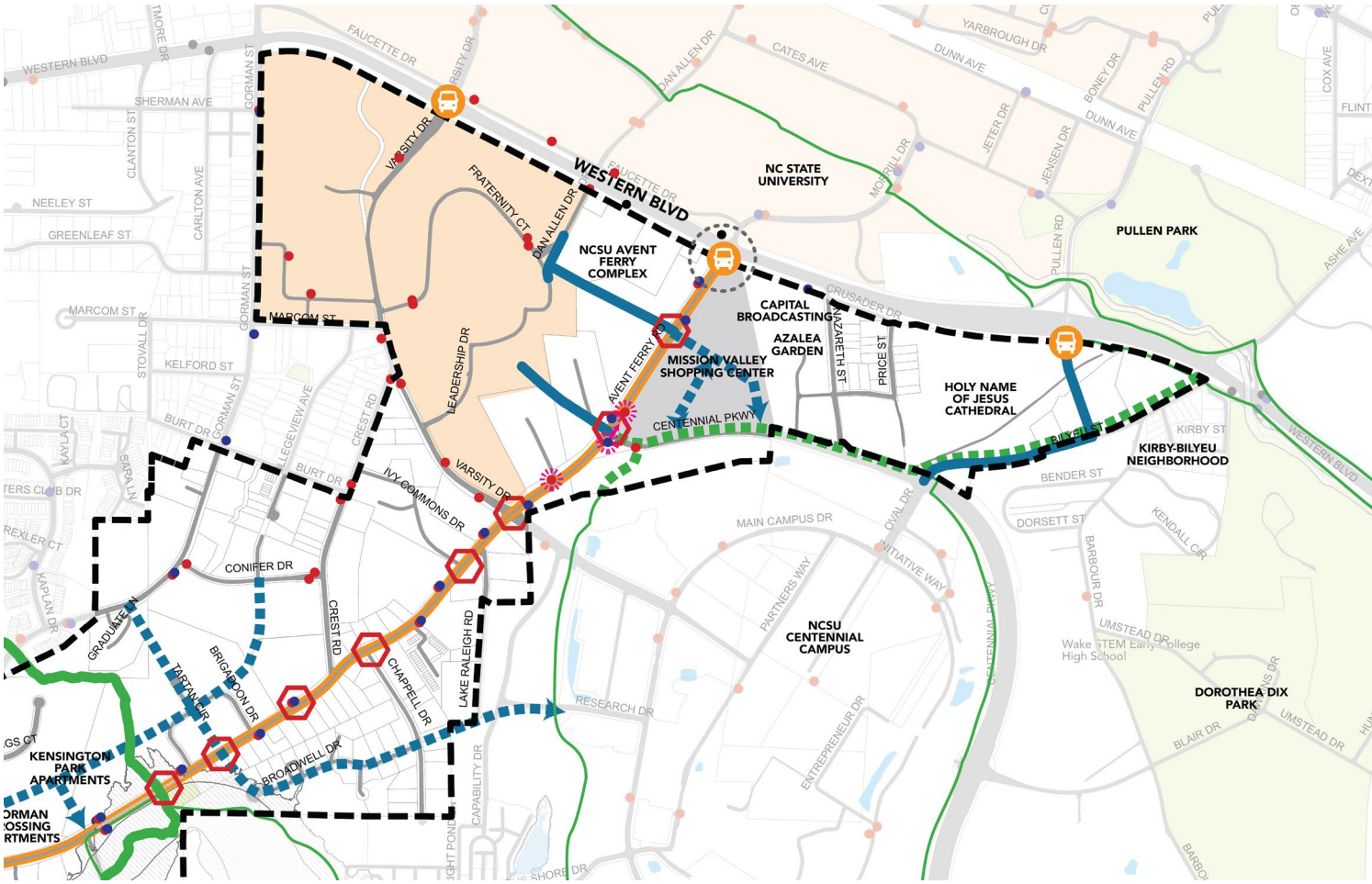
Connectivity

"[I] like that connectivity will be improved between currently disjointed neighborhoods."

Improvements to benefit public transit, bikes, pedestrians, and greenway users are all heavily and repeatedly emphasized in the public forums. Participants saw the corridor as a network for multimodal access requiring additional safety measures and uninterrupted connections "to create [a] holistic system that is safe and desirable."

Many people mention the need for suitable crosswalks and pedestrian corridor along Avent Ferry Road as it is perceived to be very difficult to safely cross from one side of the street to the other. Many people suggest renovating the corridor as if it is primarily a "pedestrian corridor."

Improved connection to the Raleigh greenway network was highly valued. The proposed greenway additions and extensions were whole-heartedly supported and additional expansion was requested. Specific greenway connections mentioned include an elevated crossing over Walnut Creek at Gorman Street, from Campus Shore Dr. northbound to Varsity Drive, and between Avent Ferry and Centennial Campus and Dorothea Dix Park.



Transportation and Traffic

"The biggest problems are buses blocking whole lanes of traffic when they stop, and pedestrians have a hard time crossing AF."

Reconciling flow and conflict between pedestrians, cyclists, and vehicles—particularly given increase in development—is a recurring concern. Participants shared concerns about inadequate traffic lights, bus stops, and crosswalks. All want improved access for pedestrians and bicycles. There is concern that two lanes doesn't provide the needed capacity to accomodate growth and transit needs along the corridor.

In discussions on regulating bicycle circulation, there was larger support for bicycle tracks on either side. Participants did request improved separation between bicycles and cars through structural dividers.

There was concern about widening the street over Lake Johnson. Increased street surface was seen as a detriment to the natural character of Lake Johnson. One participant stated, "Lake Johnson should be 'protected from traffic.'"

Additionally, community members requested improvements for vehicles and pedestrians at the entrance to the Lake Johnson Recreation Area.

Stormwater and Green Infrastructure

"We want to see responsible development for a change: rain gardens in medians and parking areas, pervious pavement, etc. Over-development will impact existing flooding problems."

Many comments pertained to wetlands, flooding, and poor stormwater treatment. Participants expressed interest in visible, above-ground stormwater detention and treatment through use of rain gardens and "cutting-edge stormwater management." Goals included: ameliorating toxic runoff, reducing flooding, and increasing public awareness of natural systems.

An example of green infrastructure implemented within the median

Green Space

"A strong green corridor is very appealing."

In addition to the desire to improve connection to the Raleigh greenway system, participants want to see additional park and recreation spaces along the corridor. Specific locations mentioned were at Lake Raleigh, at greenway intersections, and in the center of Mission Valley and Avent Ferry Shopping Centers.

2018 Online Polling Website Results

In April 2018, the Avent Ferry Road Corridor Study Online Forum also was made available to citizens who were unable to attend the in-person visioning sessions. The public was invited to respond to key questions regarding salient features of the proposed corridor renovation, as well as options pertaining to the corridor's potential use and vision. Many of the opinions gathered through this medium echoed those voiced at workshops. (Source material is available in the APPENDIX.)

Building Height at Mission Valley Shopping Center

Forty-two percent of participants preferred building height at the Mission Valley Shopping Center be tapered from three- to seven-stories. Some participants said the project is an ideal opportunity for densification.

"This is an ideal location for additional density. Developing to at least seven stories creates the best opportunity to capitalize on our transit investments. Combining additional density with transit connections provides the best opportunity to create a livable, sustainable place."

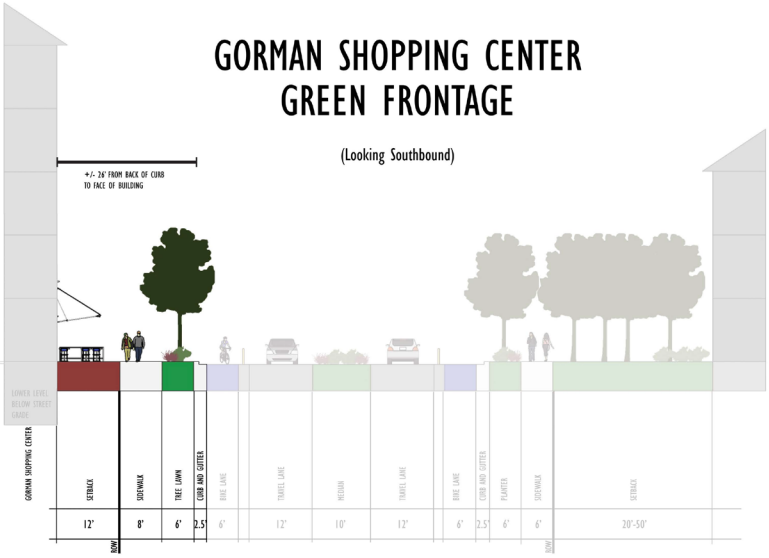
Frontage Typology

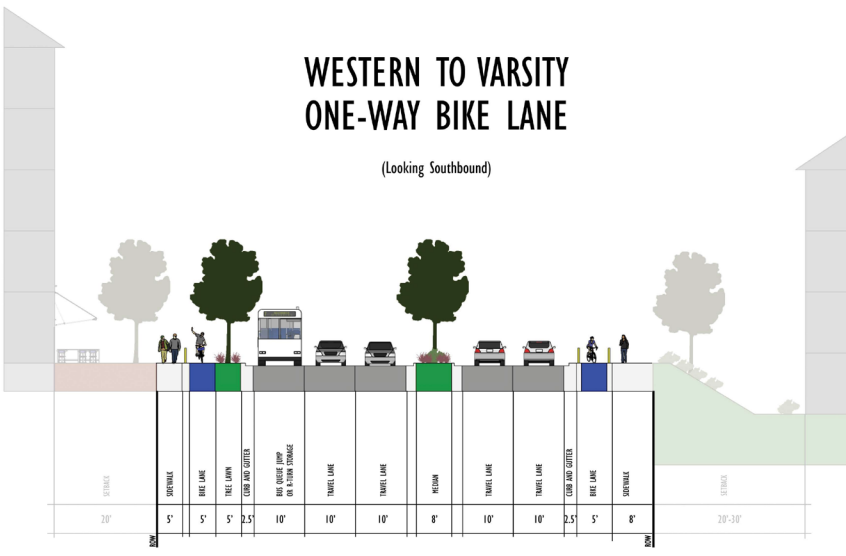
"We need...more space for plantings, more space for trees."

Eighty-three percent of participants preferred "Green" building farther from the street with landscaping, while 18 percent preferred "Urban" building close to the street.

In a strong majority, respondents preferred buildings set further back from the street with space for dining and sitting along with wide sidewalks. Frequently repeated was a desire for this broad frontage to be openly accessible to the public and vegetated.

"A zone between the buildings and the street that can accommodate dining, pocket parks, or other amenities is needed to make walking or biking on Avent Ferry Road a pleasant experience."





Building Height at Avent Ferry Road and Avent Ferry Shopping Center

"I'd love to see things like more...café tables, a coffee shop, greenery, little local dive bar/ lounge, more grass plots where pop-up markets, etc. can happen. Most importantly - ease of access and walkability to this center. I've seen neighborhoods near Asheville completely transform in this way as Asheville started to grow. And Raleigh as we know, is taking off."

Forty-two percent of participants preferred building height be tapered from three- to five-stories; 34 percent prefer three stories, and 13 percent prefer more than five stories.

The intersection with Gorman Street brought varied responses to building height but included broad consensus that the center could be better designed and better utilized. Responses included those preferring very tall buildings and lower density mid-rise development with ground level retail. One participant voiced great dismay that Avent Ferry may follow similar development patterns as Cameron Village, "Do we really need to shove in more over-priced apartments and condos?"

Street Section from Western Boulevard to Varsity Drive

Seventy-two percent of participants preferred a one-way bike lane on each side of the street, while 29 percent preferred a two-way bike lane on the south-bound side.

While some respondents saw two-way bike lanes as a way to "clearly prioritize bike traffic," others found them confusing and potentially dangerous.

Street Section from Varsity Drive to Gorman Street

Sixty-two percent of participants preferred a smaller median with the bike lane separated from the sidewalk with a tree planting strip; 39 percent of those who participated preferred a larger median with tree with the bike lane separated from the sidewalk with bollards.

Responding comments reinforced the value of trees for separation between people on foot, people on bikes, and cars. Increased separation is seen to increase feelings of safety and controlling pedestrian intrusion onto bike lanes.

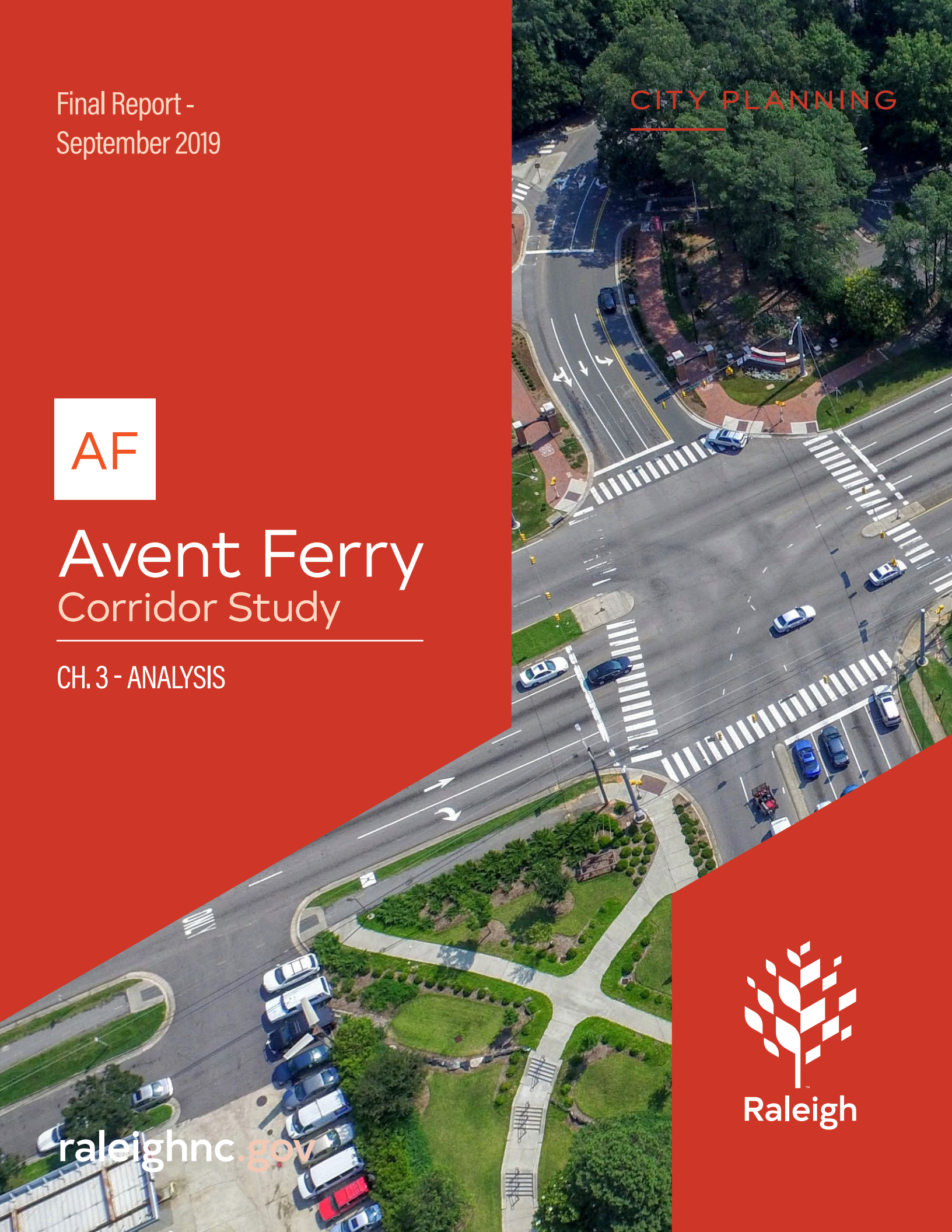
Final Report -
September 2019

CITY PLANNING

AF

Avent Ferry
Corridor Study

CH. 3 - ANALYSIS



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FINAL REPORT CONTENT

CHAPTERS:

CH. 1 - EXECUTIVE SUMMARY

CH. 2 - PUBLIC PROCESS

CH. 3 - ANALYSIS

CH. 4 - DESIGN CONCEPTS & RECOMMENDATIONS

CH. 5 - IMPLEMENTATION

APPENDIX

ANALYSIS

The Avent Ferry Road neighborhood character changes dramatically in just over three miles between Western Boulevard and Tryon Road. The Corridor's character has evolved over the many decades of community growth since the 1800's. Future development and visioning should first assess the current state of structures, infrastructure, and use to thoughtfully usher the corridor into the next century of homes, work places, and transportation.

The corridor was analyzed for the 2017 Issues and Opportunities report, which can be found in the Appendix. The following is a summary of the existing conditions of the corridor, the design needs, and the market needs that future recommendations will need to consider.

This section touches on:

- Existing Conditions Analysis
- Corridor Segment Analysis
- Transportation Conditions
- Real Estate Market Analysis

Existing Conditions

The majority of buildings in the corridor, both commercial and residential, were constructed in the 60's, 70's and 80's and the architecture is typical of that period. Commercial buildings are concentrated at the Mission Valley and Avent Ferry Shopping Centers, which are served by large surface lots. These centers are typical strip malls with associated outparcel buildings reaching the end of their expected lifespan. Retail tenants reflect a multi-ethnic, university population. Mission Valley Shopping Center and its immediate neighbors create a more urban character for that end of the corridor.

Immediately east of Mission Valley are several features the study seeks to connect. These include the Capitol Broadcasting property, the Holy Name of Jesus Cathedral, and the Kirby Bilyeu neighborhood. The study seeks to connect these features, keeping in mind that the single-family homes between the television studio tract and Cathedral campus are older and slated for mixed-use redevelopment.

NCSU's Centennial Campus is a 900-acre university research and corporate office complex in close proximity to the Avent Ferry Road corridor. Much of the pedestrian, transit, and automobile traffic in the area relates to the university. The needs of these users should be considered when making recommendations.

Multi-family residential developments dominate the corridor from Centennial Parkway to Gorman Street. These structures were mostly constructed in the early 1960's and are approaching the end of their useful lifecycle. The apartments are 2 to 3 stories and are generally set well back from the sidewalk in low-density configurations with substantial surface parking and ample connecting green spaces.

South of Gorman Street, the area is characterized by single-family housing on the north side and newer apartment complexes to the south. The single-family neighborhoods are stable and the houses are generally in good condition. The apartments to the south are partially obscured from view and do not impact the wooded character of the corridor.

Topography

Steep topography in some sections of the Avent Ferry Road corridor presents significant challenges when considering opportunities to creating active streetscapes. At Mission Valley, the difference in elevation ranges from minus 12 feet to plus 10 feet along the entire length of the University's Avent Ferry student housing complex. Similar elevation differences extend along the length of the corridor. Particularly notable is the elevation change on the south side of the street at Avent Ferry Shopping Center.

While challenging, the elevation differences offer interesting opportunities for redevelopment at the shopping centers. Such elevation changes allow for relatively easy incorporation of underground parking below street facing retail storefronts.

Streetscape and Landscape

The vegetated landscape is a driving factor behind the corridor's varying character. The denser vegetation lining the southern portion of the corridor screens nearby housing and creates a pleasant atmosphere. Landscape conditions and location of street trees along the remaining corridor are inconsistent. Many of the sidewalks lack shade, especially in areas with full southern exposure. Adding street trees will mitigate the heat and provide a more comfortable pedestrian experience.

The design process should also consider the existing concentration of power and telecom lines that will limit opportunities to install street trees and restrict tree height to small ornamental trees. To establish a substantial corridor of street trees, options to relocate power and telecom lines underground should be evaluated. The study focuses on street tree installation in areas now without existing trees.

Streetscape Amenities

Existing streetscape amenities including furniture and signage are uncoordinated throughout the corridor and do not reflect the unique community and innovative activities occurring in the neighborhood. Additionally, limited street furniture provided at bus stops is inadequate in some locations.

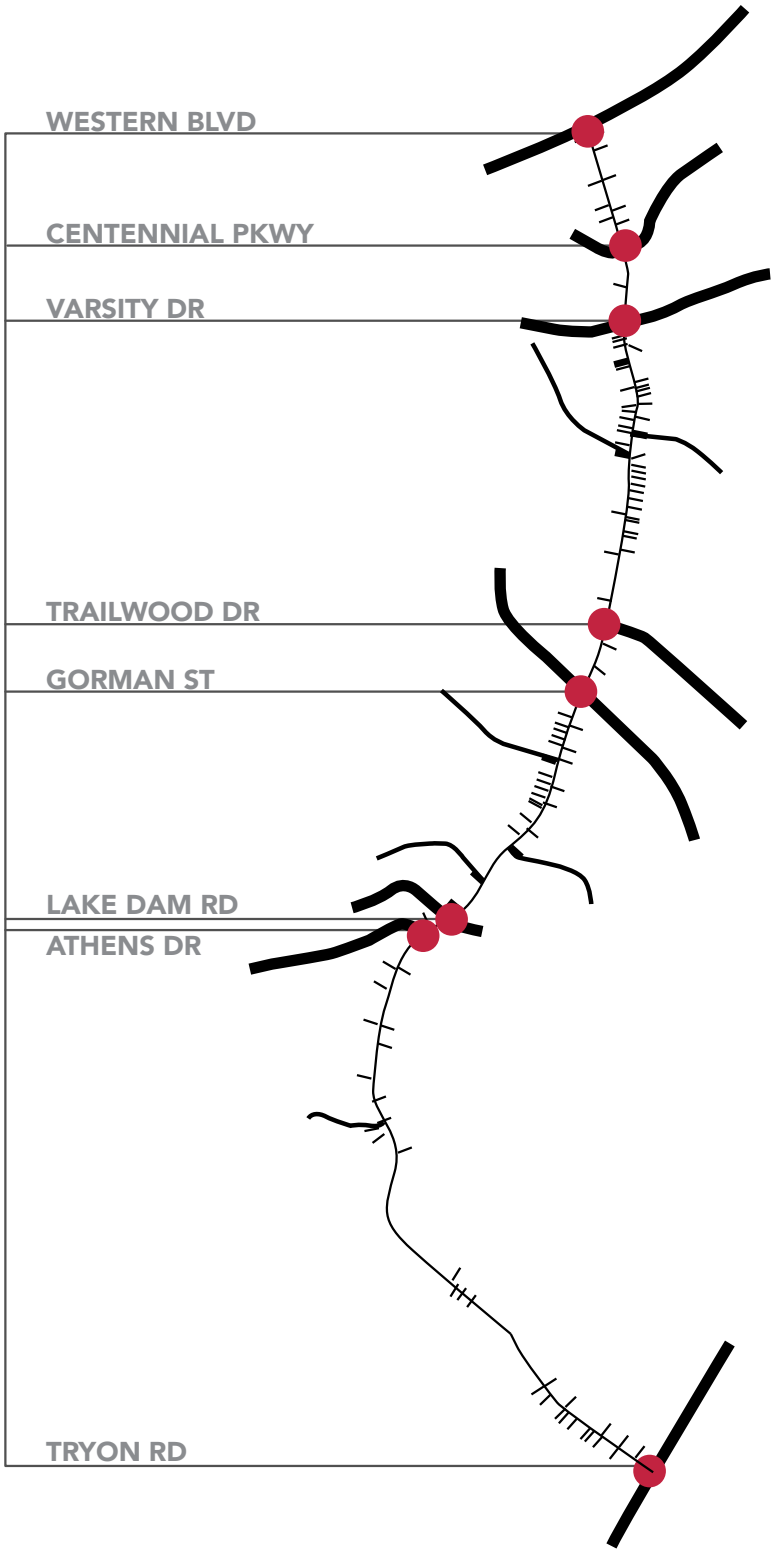
Sidewalks

Sidewalk quality was a common complaint in the public workshops and was confirmed by the consultant's assessment. They are undersized and not continuous throughout most of the corridor. Additionally, the sidewalks lack separation from the speeding traffic along the road. This contributes to an uncomfortable walking experience and lack of safety.

Uneven pavement, numerous curb cuts and bus stops also contribute to an unpleasant pedestrian experience and safety concerns. The sidewalks, both concrete and asphalt, are uneven, cracked, and broken in many locations along the corridor. Adjacent vegetation encroaches on the walkways in many locations thus reducing the useable widths.

Cycling Infrastructure

Cycling infrastructure on Avent Ferry Road is insufficient to meet the demand for safe cycling. Wide and comfortable cycling lanes are provided between Gorman Street and Athens Drive, but do not exist north of Gorman Street where demand is highest. The numerous driveways and curb cuts also create additional potential for bicycle/auto conflicts. The corridor vision should evaluate a means to provide separate bicycle lanes to fully protect riders from vehicular traffic. Where right-of-way widths do not permit such infrastructure, other means including striped bicycle lanes should be considered.



Safety

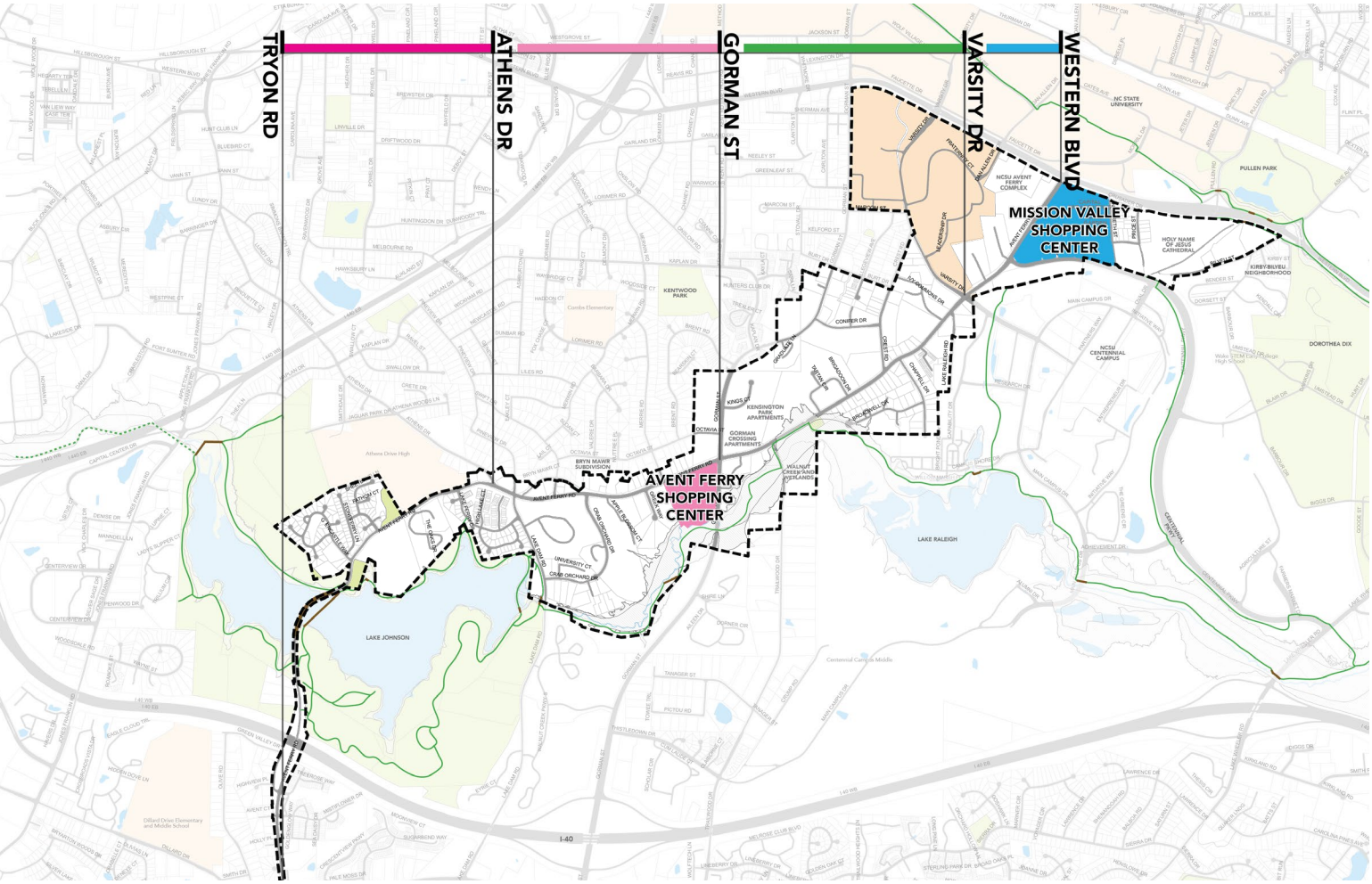
Interviews and informal discussion with corridor users and residents revealed that some areas of the corridor feel unsafe. Public safety records indicate the crime rate is relatively low within the study area suggesting that the perception may be due to the physical and visual characteristics of the corridor. Lighting, sightline, and other similar improvements to generally increase pedestrian activity along the corridor should be explored.

Intersection Spacing

Sidewalks are interrupted by a large number of curb cuts including driveways, shopping center entrances, and accesses to housing complexes. Each of these cuts creates the potential for automobile-pedestrian conflicts. Where possible, the number of curb cuts and drive-ways should be reduced.

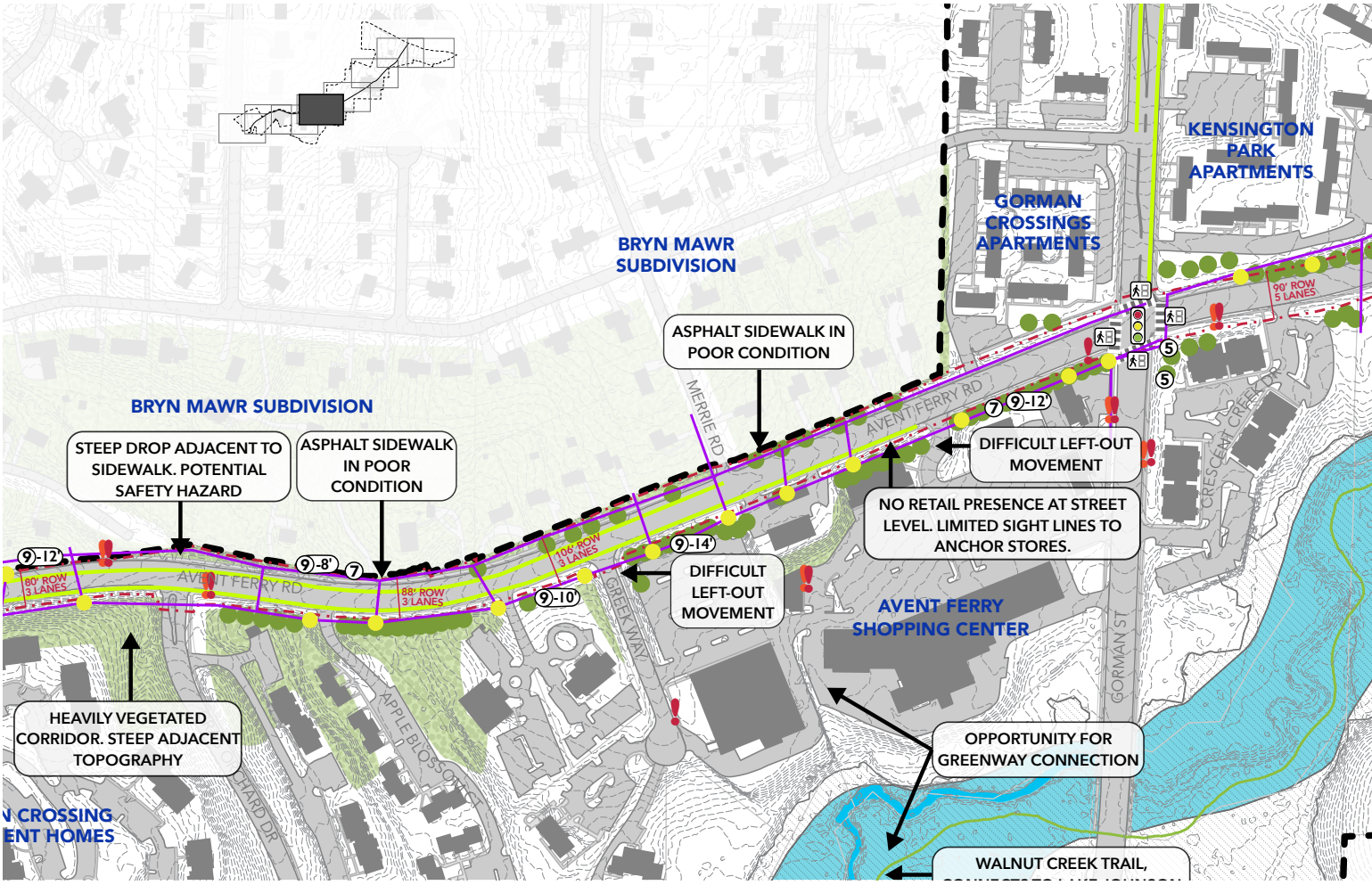
The most highly-used bus stops should be expanded to accommodate a large number of transit riders. At peak times, queues block sidewalks and expanded stops could alleviate this problem.

Jaywalking is a major safety issue in several locations on the corridor including at uncontrolled crossings by pedestrians between the dorms and Mission Valley Shopping Center, at the bus stops near Crest Road, and in the area around Brigadoon Drive. The crossings near Crest Road are particularly concerning due to short sight distances, roadway elevation changes, and accelerating southbound traffic. At all of these locations, crossing pedestrians are often standing in the turn lane while automobile traffic travels past at full speed. Nighttime crossings exacerbate the danger at these locations. Facilities to alleviate these dangers, such as crosswalks and medians to provide pedestrian refuge should be recommended.



Corridor Segments

For the streetscape analysis, the corridor was divided into four segments, each with its own character and recommendations. A general design framework for the corridor can be found in “Planning Themes” in the Design Concepts section. A brief description of the segments is presented here, with further elaboration on specific recommendations in the following sections.



Corridor Segment 1

Western Boulevard to Varsity Drive

This is the most urban portion of the corridor and includes Mission Valley Shopping Center, NCSU-related student housing, Centennial Parkway, and the properties around Nazareth Street.

This segment must serve various trip types while increasing its role as a destination. High-density and multi-use development should be complimented by dedicated transportation facilities that allow for safe connections along Avent Ferry Road between Western Boulevard, Centennial Parkway, and Varsity Drive.

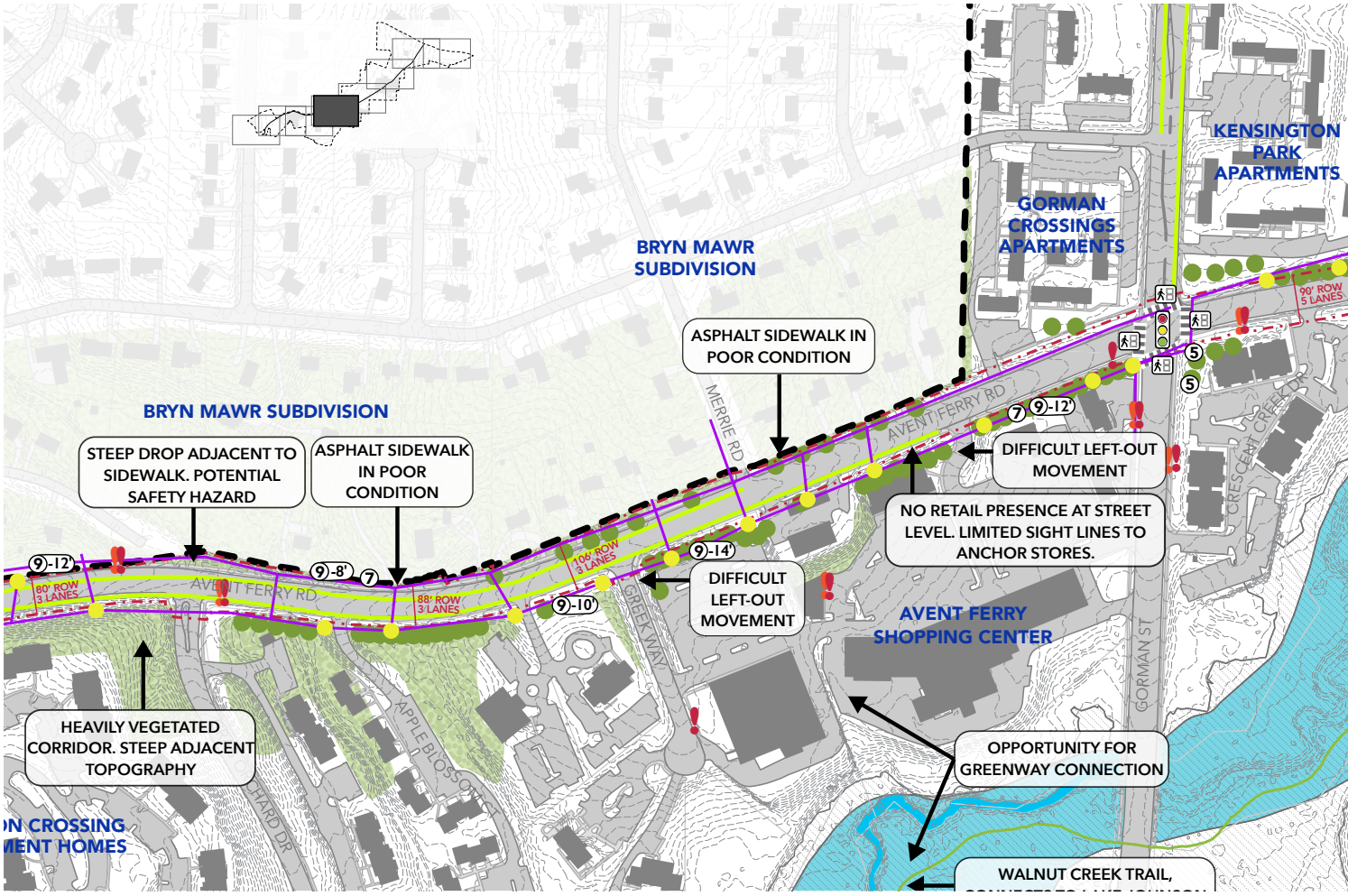
Dated buildings, large surface parking lots, and lack of landscaping induce a largely isolated, suburban character to the active shopping center.

Despite its adjacency, this area is detached from the Mission Valley activity. Opportunities to link these neighbors into a cohesive mixed- use district should be considered. Redevelopment impacts to the Kirby-Bilyeu neighborhood should also be evaluated.

Corridor Segment 2
Varsity Drive to Gorman Street

This segment consists predominantly of aging multifamily dwellings laid out in suburban, garden-style configurations. Buildings are set far from the street and separated from roadway by extensive surface parking. Driveway cuts and dead-end parking lots are typical.

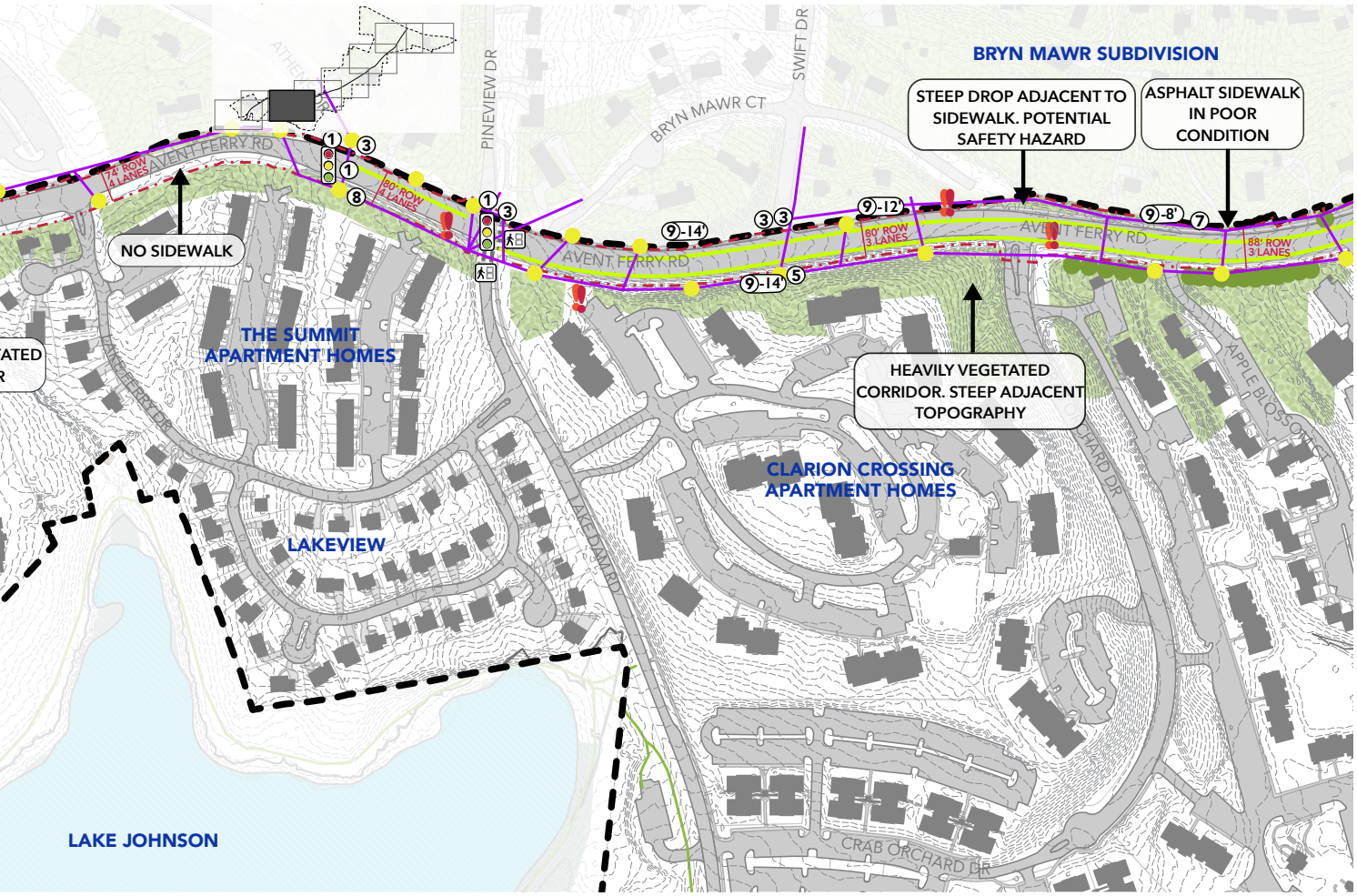
In contrast to existing development, new development is proposed to be street-facing with limited driveway cuts and parking visible from the street. Dedicated bicycle and pedestrian facilities above the curb with direct access to new development will provide separation from vehicular travel lanes to accommodate high traffic volumes and transit stops along the segment.



Corridor Segment 3
Gorman Street to Athens Drive

From Varsity Drive to Gorman Street there is primarily multi-family residential units with a few single- family homes. The high concentration of residents keeps sidewalks active, and a lower vehicle traffic volume results in higher speeds. This area also includes portions of the Walnut Creek wetlands and floodway. This large natural area, along with the landscaped grounds surrounding the multi-family buildings, create a more relaxed atmosphere compared to the Mission Valley area.

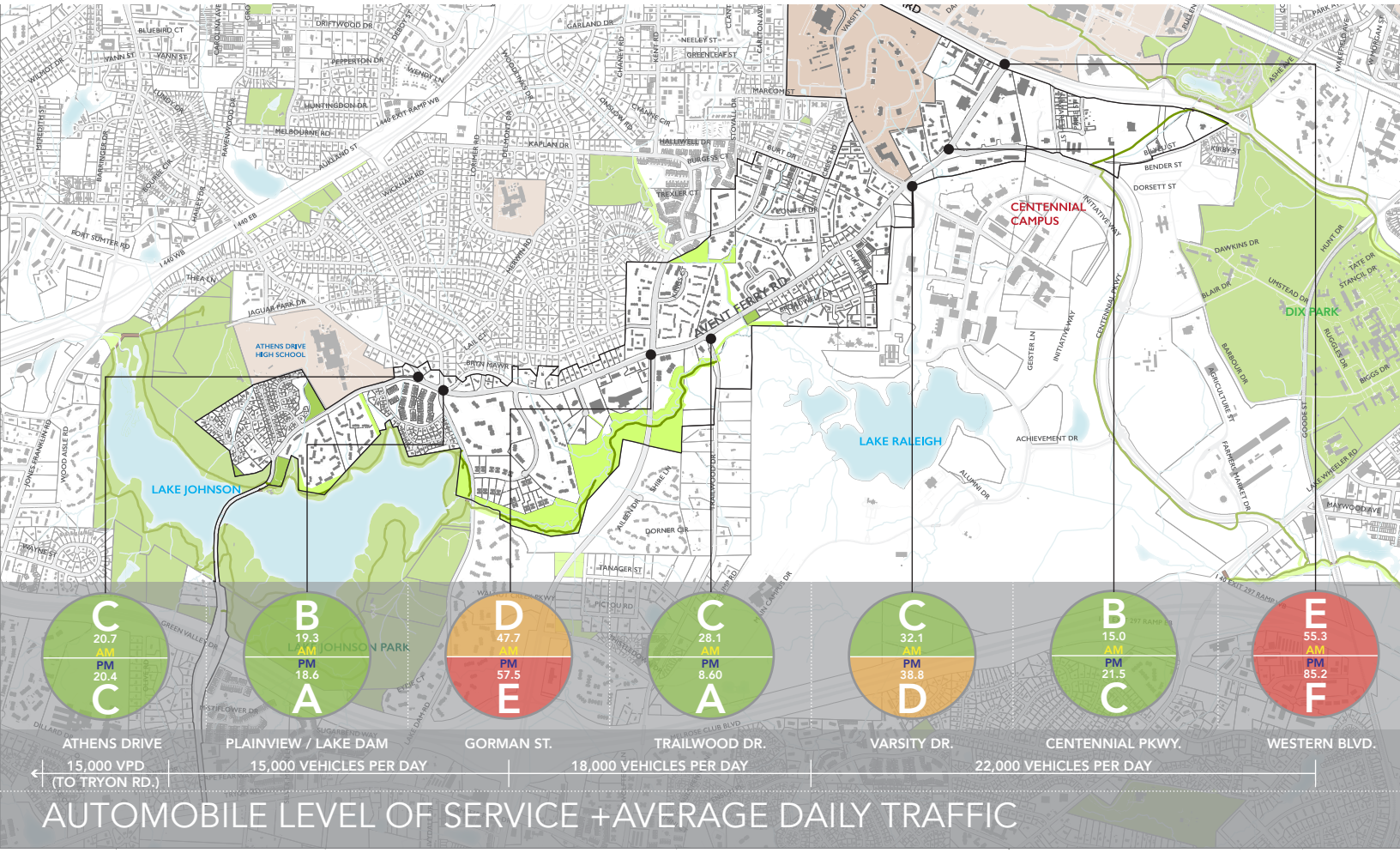
Gorman Street marks the transition from multi-family developments to single-family residential neighborhoods. The single-family neighborhoods are well-established and any redevelopment in this segment of the corridor should protect the family-friendly atmosphere. Avent Ferry Shopping Center anchors the Gorman Street intersection and provides a number of retail services to the surrounding neighborhood. The segment can increase retail services with additional residential and office space at the Avent Ferry Shopping Center. Providing connections from the surrounding single-family neighborhoods and multi-family complexes to the enhanced commercial center and existing transit stops will be key, including protected bicycle and pedestrian facilities.



Corridor Segment 4
Athens Drive to Tryon Road

Moving south from Athens Drive, traffic volume is lower and the number of roadway lanes is reduced. Irregular landscaping patterns define some sections of the street. These factors give the area a notably quieter, residential feel. Lake Johnson Park anchors this end of the corridor and establishes this segment as the recreational hub, providing opportunities for outdoor recreation.

As development in this segment will remain residential- and recreation- focused, establishing a consistent cross section throughout the segment will allow for greater connectivity between Tryon Road, Lake Johnson, and existing residential neighborhoods.



Transportation Conditions

Summary

Avent Ferry balances varied local users, including NCSU students, residents, retail and commercial centers, the new Catholic Diocese Center, and those using it to commute. GoRaleigh and the NCSU Wolfline provide regular transit service along the corridor. Some of the apartment complexes also offer shuttle services to and from the University. Many pedestrian and cyclists use the Avent Ferry Road corridor despite few crosswalks, inconsistent sidewalk/multiuse pathway patterns, and numerous curb cuts and driveways that create dangerous conflict points with vehicle traffic.

The Corridor is an optimum opportunity for transportation and land use improvements. With high traffic volumes, an average of over 1,000 transit boardings and alightings per day, and bicycle and pedestrian activities, there is an opportunity to restructure the corridor using a “complete streets” approach to create a safer and more vibrant corridor. “Complete street” principles are designed to facilitate the movement of people through a corridor using multiple-modes including transit, automobile, bicycle, and pedestrian.

Traffic along the corridor operates at acceptable levels of service (LOS), which is a measure of effectiveness based on average daily of trips per vehicle. The City of Raleigh LOS standard for the Corridor is LOS E or better, representing traffic volumes that are near capacity. Western Blvd and Avent Ferry Rd, Varsity Dr and Avent Ferry Rd, and Gorman St and Avent Ferry Rd are the three intersections with the highest congestion levels during the peak hours.

Many pedestrians, bicyclists, and transit riders utilize the corridor, and there is an opportunity to improve bicycle and pedestrian facilities as well as transit amenities along the corridor. Multiple driveways and intersections, along with few crosswalks, create a dangerous environment and conflict points with vehicle traffic for multi-modal users along the corridor. This section of Avent Ferry Road has higher than average vehicular crash rates, as compared to similar North Carolina roadways.

Traffic Analyses

- Traffic analysis results are based on the current timing plans and 2017 forecast traffic volumes. There is an opportunity to maintain the existing signal timing cycle lengths along the corridor while improving operations through changes to the cycle splits and the possible addition of transit signal priority.
- The Avent Ferry Road and Western Boulevard intersection currently operates at Level of Service (LOS) E during the AM peak hours and LOS F during PM peak hours. The AM peak hours meet the City of Raleigh acceptable standard (LOS E); however, the PM peak hours do not meet the standard. This intersection has the highest number of pedestrians crossing the intersection along the corridor. Construction of the pedestrian tunnel under Western Boulevard will eliminate some of the pedestrian safety concerns.
- The Avent Ferry Road and Gorman Street intersection operates at LOS D and E during the AM and PM peak hours, respectively. (Exclusive right-turn lanes on northbound and southbound Avent Ferry Road approaches would improve the overall LOS at the intersection)
- The signalized intersections along Avent Ferry Road at Pineview Drive/Lake Dam Road and Athens Drive are clustered together to operate as one signal system. These coordinated intersections both operate at an acceptable LOS. Pineview/Lake Dam Road operates at LOS B in the AM peak hours and LOS A in the PM peak hours. Athens Drive operates at an LOS C for both AM and PM peak hours.

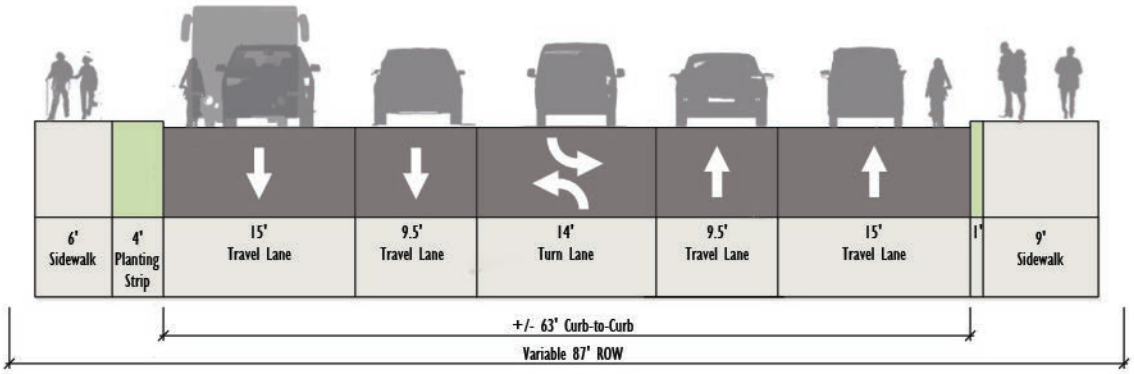
(More information on traffic analyses can be found in Ch. 4 - Design Concepts and Recomendations and the Appendix)

Cross Sections and Traffic Volume

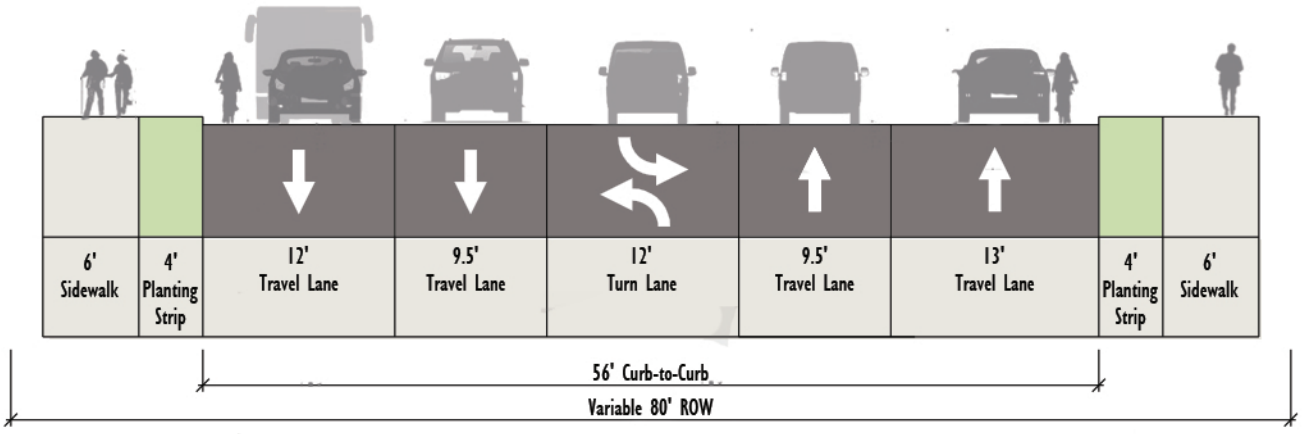
The 2015 Annual Average Daily Traffic (AADT) [provided by the North Carolina Department of Transportation (NCDOT)] along Avent Ferry Road was approximately 22,000 vehicles per day (vpd) near Western Boulevard and approximately 8,600 vpd near Tryon Road.

The **current** roadway consists of four cross-sections:

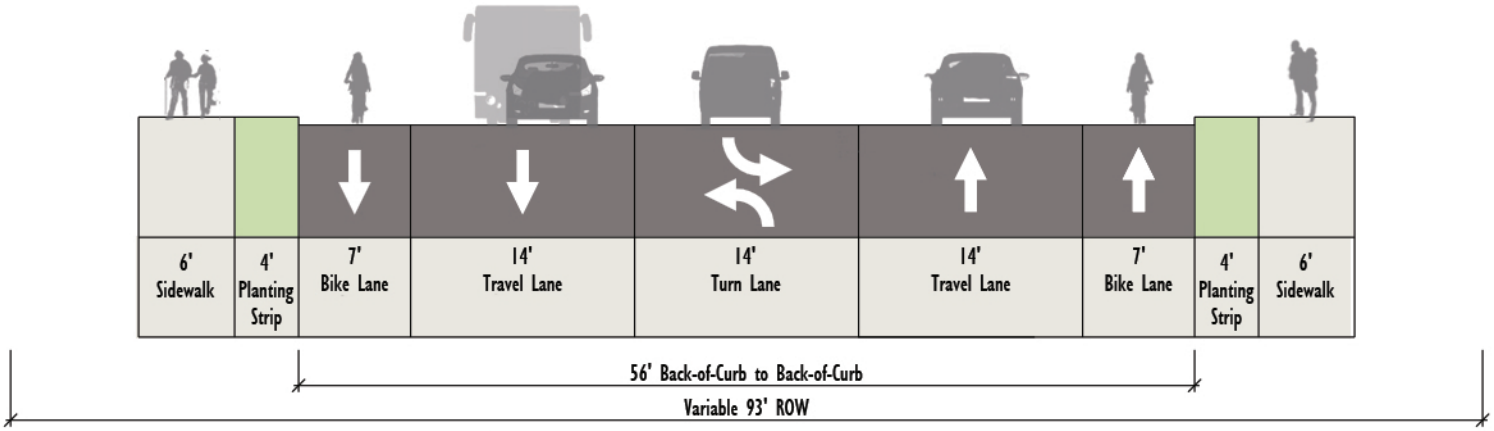
1. **Between Western Boulevard and Varsity Drive** the roadway includes two vehicle travel lanes in each direction and a center two-way left-turn lane. There are sidewalks and paved paths on both sides of the street. The variable-width roadway includes curb and gutter. The posted speed limit is 40 mph. The right-of-way is 104 feet.



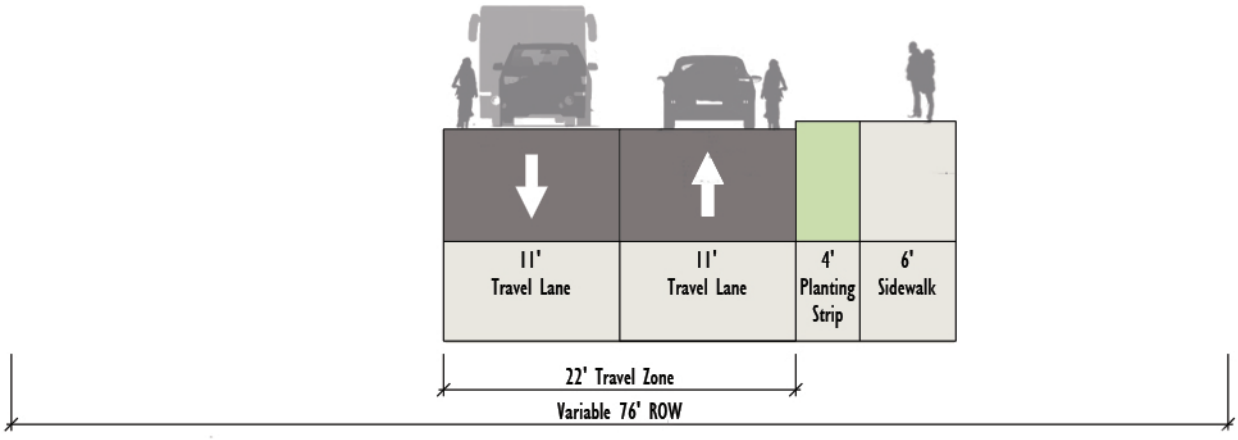
2. **Between Varsity Drive and Gorman Street** the roadway includes two vehicle travel lanes in each direction and a center two-way left-turn lane. There are inconsistent sidewalks and paved paths on both sides of the street. The ~56' roadway includes curb and gutter. The posted speed limit is 40 mph. The right-of-way is 80 feet.



3. **Between Gorman Street and Athens Drive** the roadway includes one vehicle travel lane in each direction of travel as well as a continuous center two-way left-turn lane. There are inconsistent sidewalks and paved paths on both sides. The ~56' wide roadway includes curb and gutter The posted speed limit is 40 mph. The right-of-way is 94 feet.



4. **Between Athens Drive and Tryon Road** the roadway includes one vehicle travel lane in each direction, some turn lanes, inconsistent sidewalks, and a paved path along the roadway. The roadway has varied width and curb and gutter is not continuous. The posted speed limit is 35 mph. The right-of-way is 72 feet.



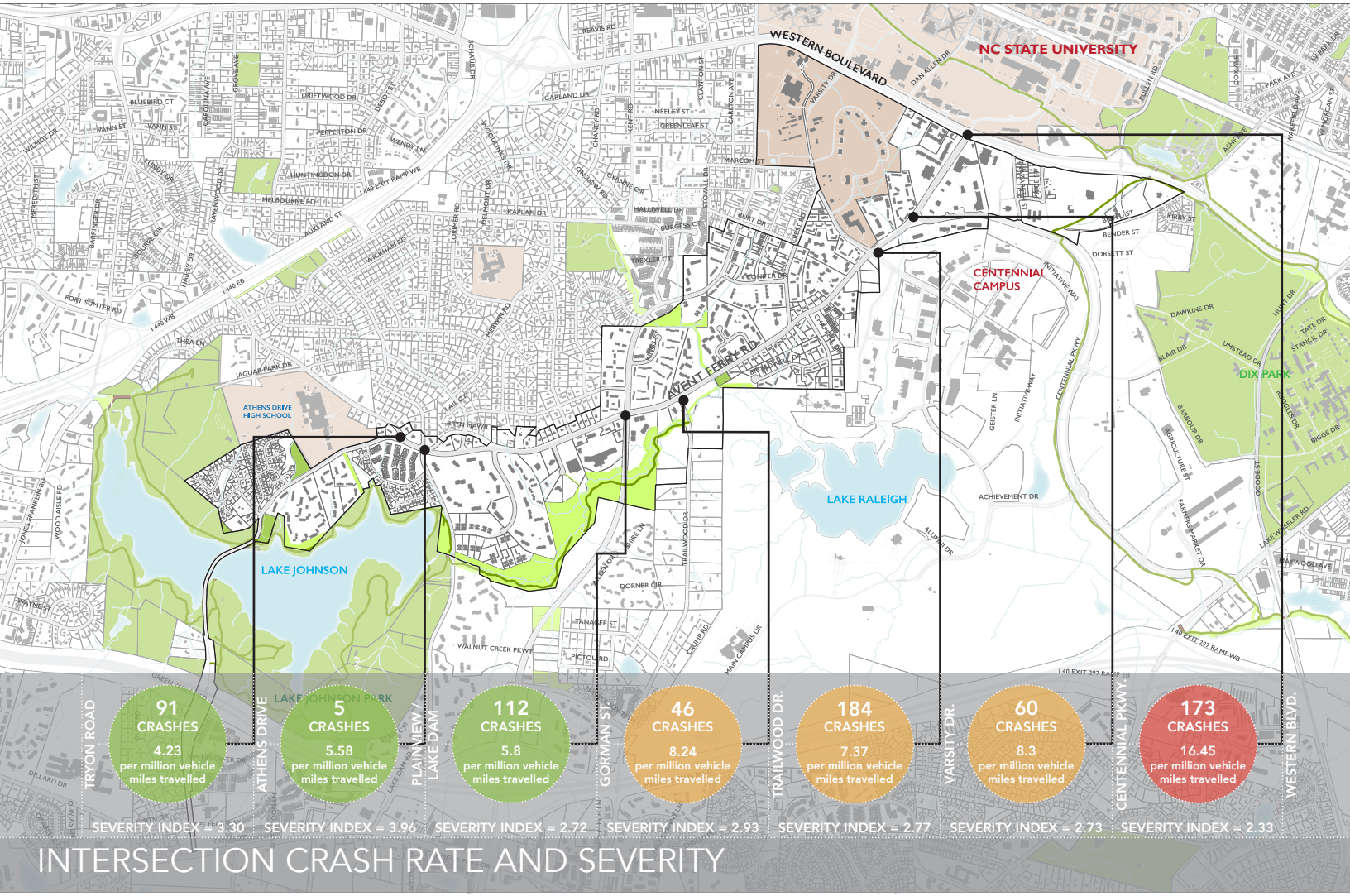
Crash Analysis

The crash analysis along the Avent Ferry Road corridor intersections and segments utilized NCDOT records. The analysis included aggregating the total number of crashes within 150 feet of the intersections, computing crash frequency, severity index, and equivalent property damage only (EPDO) at the major intersections along the corridor. The intersection safety analysis indicated the highest crash frequency locations were the Varsity Drive and Western Boulevard intersections, and the highest crash severity locations were the Centennial Parkway and Varsity Drive intersections.

Additionally, a summary of the crash data for roadway sections between intersections indicated the highest crash rate locations were the following:

- The section along Avent Ferry Road between Western Boulevard and Centennial Parkway had a crash rate of 16.45 crashes per million vehicle miles (MVM).
- The section along Avent Ferry Road between Pineview Drive and Athens Drive had a crash rate of 3.96 crashes/MVM.
- The section along Avent Ferry Road between Athens Drive and Tryon Road Drive had a crash rate of 3.96 crashes/MVM.

The major crash types found along Avent Ferry Road were, in order of frequency, Rear End, Angle, Left Turn, and Sideswipe.



INTERSECTION CRASH RATE AND SEVERITY

Vehicular Travel (Daily Traffic, Speeds, and Behavior)

Several traffic patterns were identified along Avent Ferry Road based on the traffic volumes and turning movement counts provided by the City of Raleigh. Field visits confirmed these intersections as congestion and queuing points:

- The peak directions along Avent Ferry Road are northbound during AM peak hours and southbound during PM peak hours.
- The largest traffic volumes, and associated congestion, along the corridor are between Varsity Drive and Athens Drive.
- There is significant northbound congestion at the Avent Ferry Road and Centennial Parkway and Avent Ferry Road and Western Boulevard intersections during both the AM and PM peak hours.
- The east- and westbound through movements along Varsity Drive at the Avent Ferry Road and Varsity Drive intersection are congested during AM and PM peak hours, respectively.
- The east- and westbound through movements along Gorman Street at the Avent Ferry Road and Gorman Street intersection are congested during AM and PM peak hours, respectively.

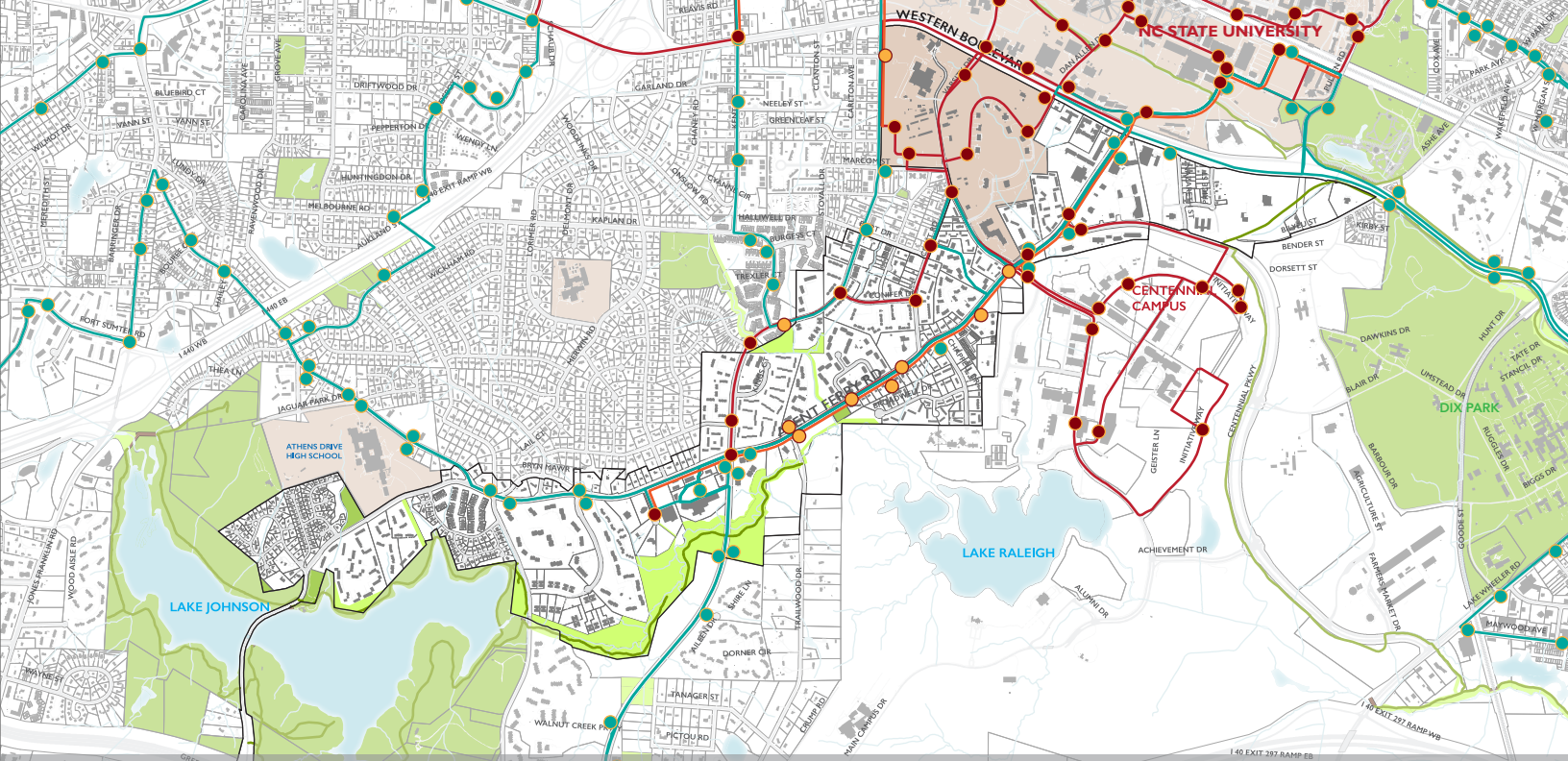
Overall, the traffic patterns indicate a substantial commuter corridor with through traffic moving along Avent Ferry Road. The key education and employment destinations driving this commuting pattern is NCSU Main Campus and the technology incubator at NCSU Centennial Campus. Commuters also move down the corridor using it as a connector to I-440 and I-40.

Transit Ridership

The Avent Ferry Road corridor has the highest transit ridership in Raleigh; two GoRaleigh routes (11 and 11L) and five NCSU Wolfline routes provide service. GoTriangle provides regional transit connectivity adjacent to the corridor with three routes that have stops along Western Boulevard just west of the Avent Ferry Road intersection. These connect the corridor with downtown, and eventually the BRT, making transit an important factor when considering recommendations for the corridor.

In addition to government-run transit, the NCSU Wolfline operates five routes along Avent Ferry Road and four private apartment shuttles use Avent Ferry Road to serve the NCSU campus.

There are numerous transit facilities along the corridor that improve comfort and provide access to transit, including bus shelters with benches at many stops as well as sidewalks on both sides of Avent Ferry Road. Two locations have GoRaleigh and Wolfline stops within a few hundred feet of each other but have different stop locations and amenities.



GORALEIGH AND NCSU WOLFLINE BUS ROUTES AND STOPS

Planned Capital Improvements

Possible improvements currently in various phases of planning and implementation include the following:

- Avent Ferry and Western Boulevard intersection: NCDOT project (TIP No. EB-5718) will add a bicycle/pedestrian tunnel just west of the intersection; construction will begin in FY 2021. This project will be coordinated with another NCDOT project (TIP No. B-5675) to replace the Pullen Road bridge over Western Boulevard; construction will begin in FY 2022.
- Avent Ferry bridge across Lake Johnson: NCDOT project (TIP Project# B-5130) will replace Avent Ferry Road bridge over Lake Johnson; construction will begin in FY 2018. The City of Raleigh also recently added sidewalk along both sides of the Avent Ferry Road bridge over I-40 to connect residential developments along Tryon Road and Lake Johnson Park, which improved pedestrian safety.
- The Lake Dam Bridge Road project is also underway and is anticipated to open in by summer of 2019. The process for designing and obtaining approvals for the bridge has been difficult and has extended the schedule for the project. The project is largely funded by the federal government through a program administered by the NC Department of Transportation with the City of Raleigh paying for the rest. Due to the projects proximity to Lake Johnson Park the relocation of utilities supported by the bridge has proven difficult and required consultation with the US Department of the Interior. Construction of the Avent Ferry Bridge will follow completion of the Lake Dam Bridge.

Real Estate Market

According to data recently collected by the City, there are approximately 1,600 acres within the corridor study area. Approximately 56 properties totaling 107 acres within the corridor have a reasonable likelihood of being redeveloped if the market appears favorable.

Analyzing real estate markets is art and science. The data represents a real time snapshot coupled with prevailing documented real estate trends. Demand for space is driven by several factors, including the local economy and job growth, transportation, infrastructure, land entitlements, and quality of life.

Real estate data is measured by submarkets, which may include specific geographic areas, such as census tracts or ZIP codes. These are important elements when determining local market capture in the context of the larger regional marketplace.

Retail/Office Space Requirements

Office
109,454 sq. ft.

Retail
416,198 sq. ft.

Housing
557 Units

Community at a Glance
ZIP Code 27606

KEY FACTORS

46,240
Population

28.4
Median Age

2.29
Average Household Size

$41,616
Median Household Income

EDUCATION

9%
No High School Diploma

13%
High School Graduate

26%
Some College

52%
Bachelor's/Grad/Prof Degree

BUSINESS

1,496
Total Businesses

18,565
Total Employees

EMPLOYMENT

70%
White Collar

12%
Blue Collar

18%
Services

4.9%
Unemployment Rate

RACE & ETHNICITY

The largest group: White Alone (62.22)
The smallest group: Pacific Islander Alone (0.05)

Bars show deviation from Wake County

Indicator	Value	Difference
White Alone	62.22	-2.13
Black Alone	18.24	-2.53
American Indian/Alaska Native Alone	0.56	+0.07
Asian Alone	10.89	+4.15
Pacific Islander Alone	0.05	0
Other Race	4.86	+0.09
Two or More Races	3.18	+0.34
Hispanic Origin (Any Race)	9.42	-0.83

TAPESTRY SEGMENTS

14B College Towns — 4,700 households — 25% of Households

11B Young and Restless — 4,170 households — 22% of Households

3B Metro Renters — 3,090 households — 16% of Households

INCOME

$41,616
Median Household Income

$27,999
Per Capita Income

$13,543
Median Net Worth

HOUSEHOLDS BY INCOME

The largest group: <$15,000 (18.2%)
The smallest group: $150,000 - $199,999 (4.0%)

Bars show deviation from Wake County

Indicator	Value	Difference
<$15,000	18.2%	+10.0%
$15,000 - $24,999	13.5%	+5.9%
$25,000 - $34,999	12.1%	+3.4%
$35,000 - $49,999	12.1%	-0.1%
$50,000 - $74,999	13.7%	-2.5%
$75,000 - $99,999	11.4%	-2.1%
$100,000 - $149,999	10.6%	-7.6%
$150,000 - $199,999	4.0%	-4.1%
$200,000+	4.4%	-2.9%

ANNUAL HOUSEHOLD SPENDING

$1,891
Apparel & Services

$175
Computers & Hardware

$2,915
Eating Out

$4,484
Groceries

$3,986
Health Care

ANNUAL LIFESTYLE SPENDING

$1,434
Travel

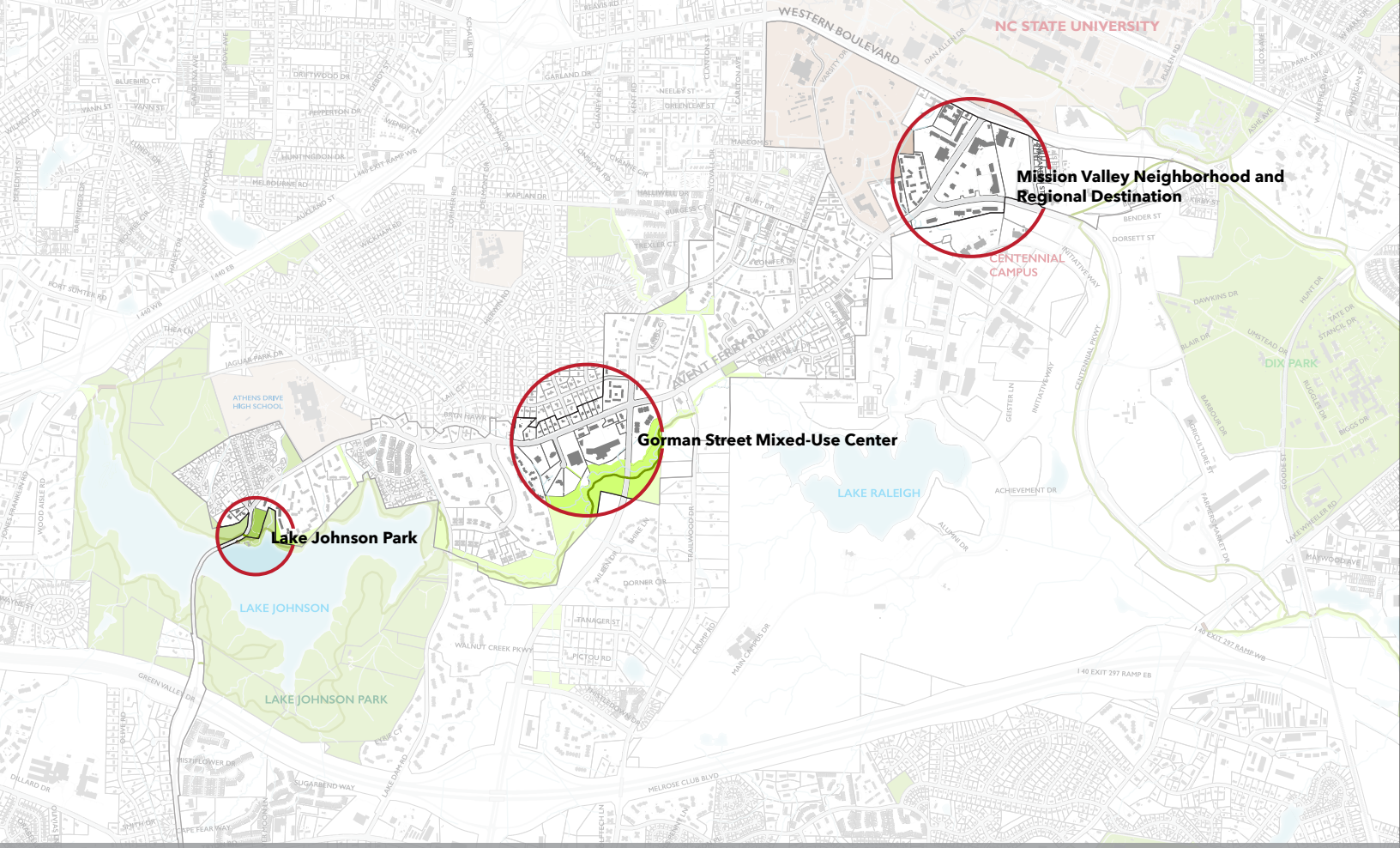
$45
Theatre/Operas/ Concerts

$63
Movies/Museums/ Parks

$49
Sports Events

$4
Online Games

ROSE ASSOCIATES



MARKET ASSESSMENT TARGET AREAS

Targeted Areas

The project team identified three targeted areas along the corridor with the greatest opportunity for redevelopment, including private reinvestment and public infrastructure improvements:

- Mission Valley – regional destination mixed-use (high-density) redevelopment area containing dining, shopping, entertainment, lodging, and housing.
- Avent Ferry Shopping Center– lifestyle center/ mixed-use (mid-density) redevelopment area featuring convenience retail, professional services, and housing.
- Lake Johnson – recreational area infill development (low-density) area including housing and recreation.

Work Space

The current economic cycle will continue to drive companies to the southeast in search of lower operating costs, skilled labor, and quality of life found in this region.

The Avent Ferry corridor could emerge as a desirable and viable business location, by adding new Class A office within mixed-use developments complementary to the Centennial Campus. The key areas for additional office space also include the Mission Valley area, adjacent to the Centennial Campus, and the Gorman Street intersection. Additional workspace along the corridor would provide space for future workers, namely millennials. The preferred locations would include those with good visibility and transportation access, primarily in the Mission Valley area near Centennial campus. The focus of workspace environments for the Avent Ferry corridor includes office and retail uses based on the project team's highest and best use analysis.

Office Demand

The economic development emphasis for the industries noted in previous sections point primarily to office uses. Additionally, other industries such as healthcare, education, and professional services diversify the demand for office space where other amenities and complementary uses co-exist, such as restaurants, retail, and housing. The corridor's location and reputation for shopping and dining adjacent to the campus makes the corridor well positioned for such development.

The implementation of transportation improvements along the corridor to create a central boulevard would connect the existing assets and recreation, while housing and commercial development could spark additional private investment. The resulting added daytime population would support the desired restaurants, retail, and other service businesses in the corridor.

Strategies include adopting comprehensive plan policies and incentives to support the plan and reduce entitlement uncertainty. A branding/ marketing effort should be included to support local and regional economic development.

Shopping and Entertainment

Retail formats are shifting from traditional malls and shopping centers to online sales, mixed-use and, "Main Street" brick and mortar formats. The survey respondents in the Avent Ferry corridor clearly want expanded options for new types of shopping, dining, and entertainment experiences.

Retail Demand Dynamics

The market demand dynamics for retail uses differ from office and industrial uses, as demand comes primarily from population, household, and income growth. Incomes across Wake County are strong; however, income averages diminish substantially within ZIP code 27606, which includes the Avent Ferry corridor.

The volume of automobile traffic is an important factor for the success of retail. Traffic data from NCDOT in 2015 indicates that Avent Ferry Road carries 18,000 cars per day at the intersection of Gorman Street and just over 22,000 cars per day near the entrance to Mission Valley Shopping Center, the strongest volume along the corridor. Therefore, Mission Valley traffic counts are stronger in support of regional or destination shopping/entertainment at this location.

The substantial available retail inventory and commensurate lease rates within the study area suggests that much of the vacant square footage is older, obsolete space that is losing favor against desired newer town center, mixed-use, and open "Main Street" concepts.

Retail Gap

Employment in retail industry sectors (retail trade and food services) totals 24.65 percent in the County, providing jobs and bringing consumer expenditures to the region. Supply and demand for retail is defined by the actual dollar expenditures within each category measured against demand within a given trade area.

Market analysis indicates few gaps for additional large-scale retail supply, until or unless there is a major shift in population growth through housing or job growth. However, within each industry group there are subsectors that do provide some opportunities in a limited number of formats. The subsectors demonstrating retail gaps include:

- Building materials, garden equipment, and supplies.
- General merchandise and other merchandise stores.
- Specialty food and food services.

These retail gaps echo feedback from the community. The success of retail along Avent Ferry is dependent upon property redevelopment momentum, together with local population, and income growth. The adjacency of new or revitalized projects to existing demand generators would create and drive synergy between residents, students, employees, and visitors.

Assuming the corridor's position in capturing a 15 percent share of the retail submarkets, demand estimates suggest the potential for 416,198 additional square feet of retail, including that which is replaced through redevelopment and/or relocation.

Consideration must be given to retail scale and size as urban markets are gaining preference. Retail should be considered in mixed-use formats, with integrated office and/or residential uses. The corridor provides a unique opportunity to provide new experiential environments that appeal to both millennials and baby boomers. This includes incorporating events at the WRAL Azalea Garden, Lake Johnson, and Dix Park.

Key Area	Industry Summary	7-Minute Drive Time		
		Demand	Supply	Retail Gap (Surplus)
Mission Valley @ Avent Ferry	Total Retail Trade	$627,896,939	$811,611,046	($183,714,107)
	Total Food & Drink	$69,383,833	$228,270,532	($158,886,699)
Gorman Street @ Avent Ferry	Total Retail Trade	$502,037,077	$724,121,727	($222,084,650)
	Total Food & Drink	$55,895,750	$97,899,562	($42,003,812)
Lake Johnson @ Avent Ferry	Total Retail Trade	$488,005,181	$927,240,548	($439,235,367)
	Total Food & Drink	$54,619,723	$104,104,134	($49,484,411)

Source: ESRI, Rose Associates

Housing

The Raleigh metro area is a popular destination as represented by its growth rate over the last 15 years. In 2000, the City of Raleigh had 297,715 people. The latest 2016 estimates suggest the population grew by almost 50 percent and added nearly 147,000 people. During the same period, ZIP code 27606 grew to 46,240 people, dominated by students.

Census data suggests that the City of Raleigh has added 64,210 housing units since 2000, while new housing growth was slower in the Avent Ferry corridor. About half of the corridor's housing stock is renter-occupied versus owner-occupied, with a predominance of student housing.

The status of the housing units along the Avent Ferry corridor suggests some possible options to consider in the future to increase diversity of the housing stock. The City of Raleigh has three primary Tapestry© Segments that comprise the majority of millennial households: Young and Restless, Up and Coming Families, and Bright Young Professionals. By contrast, the 27606 ZIP code intensifies this dynamic by its student population together with singles and young families, with most households in these segments: College Towns, Young and Restless, and Metro Renters. According to data from N.C. State University, there are 8,934 total beds in the University's student housing program, with 1,309 in the Avent Ferry corridor. The market should consider this young, socio-economically diverse population, as the majority of this demographic are one- or two-person households.

Recent housing data from Triangle Multiple Listing Services, Inc. provides monthly market statistics to gauge the regional housing market. Per its February 2017 report, new Wake County listings were up 9.4 percent to 2,041. Inventory shrank 7.9 percent to 3,122 units. Prices moved higher as the median sales price was up 8.2 percent to $265,000. Days on market decreased 13 percent to 47 days. The month's supply of inventory was down 14.3 percent to 1.8 months, indicating that demand increased relative to supply.

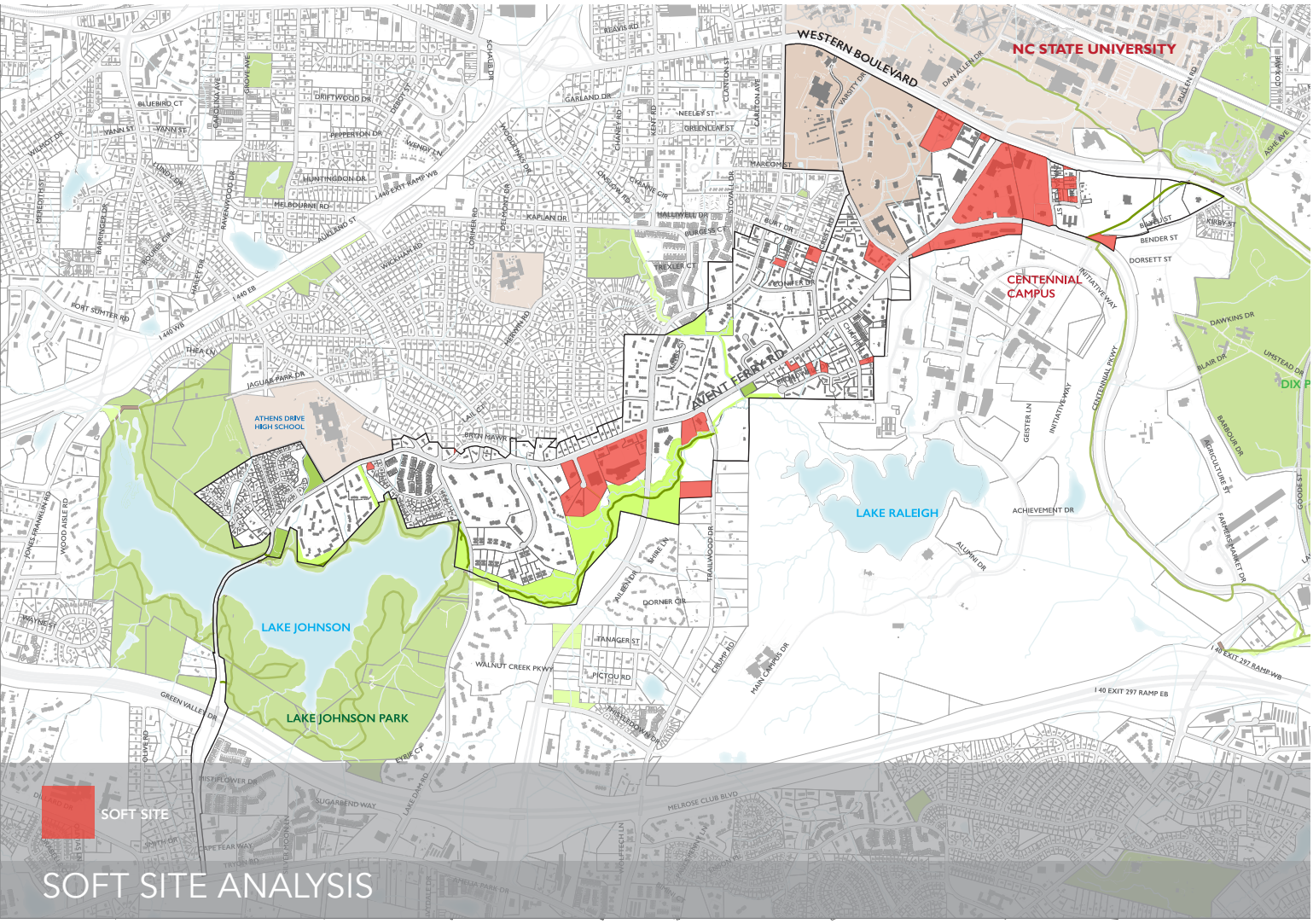
Future Housing Considerations

Based on job and population growth, as well as household size estimates, housing demand for the corridor is estimated to be 557 units over the next 10 years. The information gathered and shared about citizen preferences for housing and other development options available suggests that apart from mobility and transportation concerns, area residents are ready for new housing choices along the Avent Ferry corridor; therefore, additional housing alternatives deserve consideration.

Soft Sites

Soft sites are parcels, or groups of parcels, with a reasonable likelihood of being redeveloped if public sector actions and/or market trends combine to raise land value through new development versus continuing the status quo.

Soft sites include vacant tracts, sites which are "under developed," and sites with abandoned or deteriorated structures. Identification of soft sites leads to a better understanding of an area's redevelopment potential. However, it should be understood that many soft sites may not actually redevelop due to factors such as, property owner preferences, environmental conditions, or a variety of other factors.



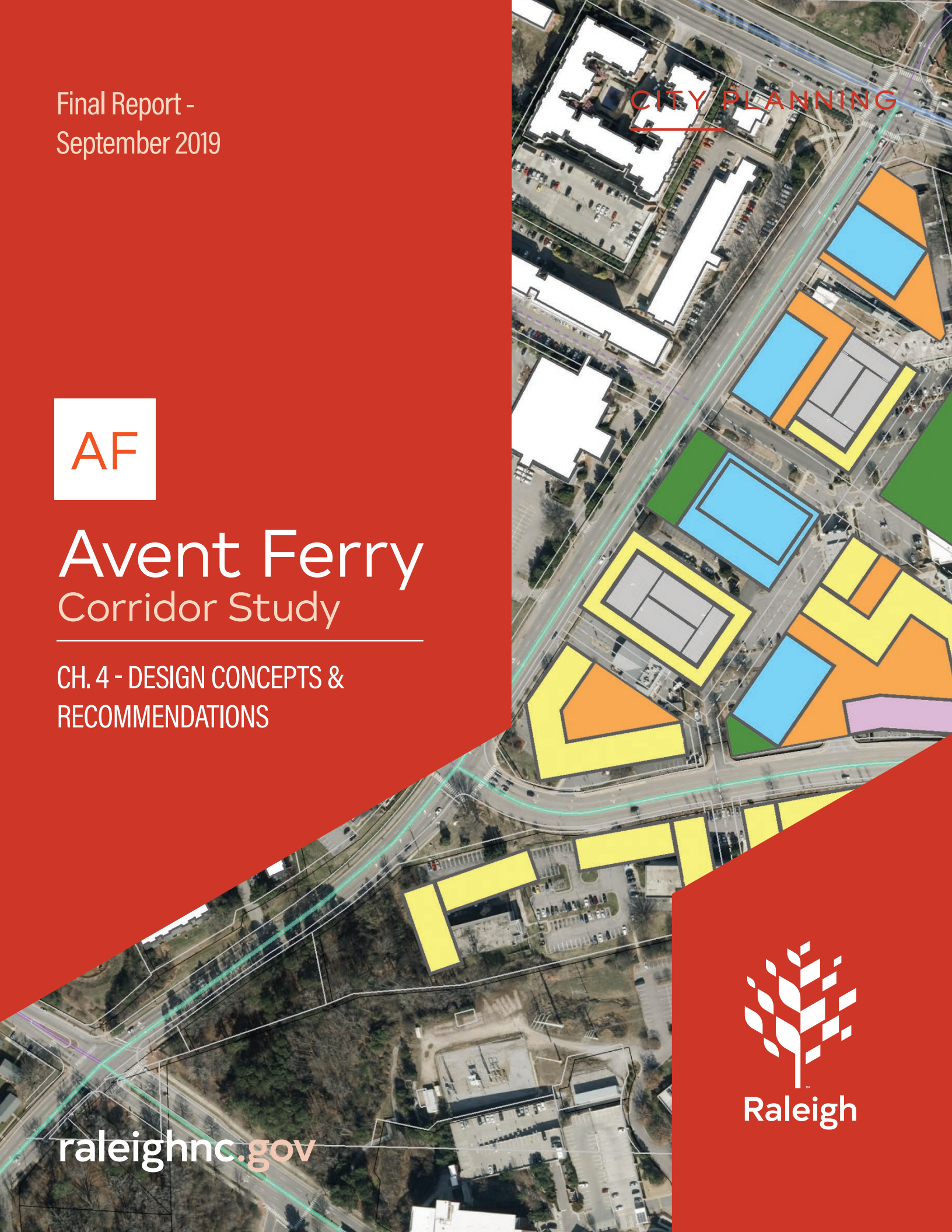
Final Report -
September 2019

CITY PLANNING

AF

Avent Ferry
Corridor Study

CH. 4 - DESIGN CONCEPTS & RECOMMENDATIONS



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FINAL REPORT CONTENT

CHAPTERS:

CH. 1 - EXECUTIVE SUMMARY

CH. 2 - PUBLIC PROCESS

CH. 3 - ANALYSIS

CH. 4 - DESIGN CONCEPTS & RECOMMENDATIONS

CH. 5 - IMPLEMENTATION

APPENDIX

DESIGN CONCEPTS

Thanks to public input, a list of goals for the corridor was created. These goals can be sorted into three categories that became the concepts we used to craft feasible policy recommendations.

Overal Goals for the Avent Ferry Corridor Study

- Enhance economic vitality and livability.
- Promote ease-of-access and movement with complete streets design.
- Leverage public infrastructure to better secure long-term corridor stability.
- Identify market opportunities for redevelopment.
- Retain and expand commercial services as a high priority.
- Celebrate and highlight the area's economic and ethnic diversity.
- Develop a mix of residential types to attract and retain residents.
- Create walkable, mixed-use development at key nodes.
- Strengthen overall connectivity within and to surrounding areas.
- Improve the safety and aesthetic appeal of the corridor.
- Provide feasible implementation items.

Design Concepts

1. Develop a distinct district with a unified identity compatible with the existing character of each corridor segment.

2. Adapt a complete streets concept to safely and efficiently accommodate pedestrians, cyclists, transit users, and motorists.

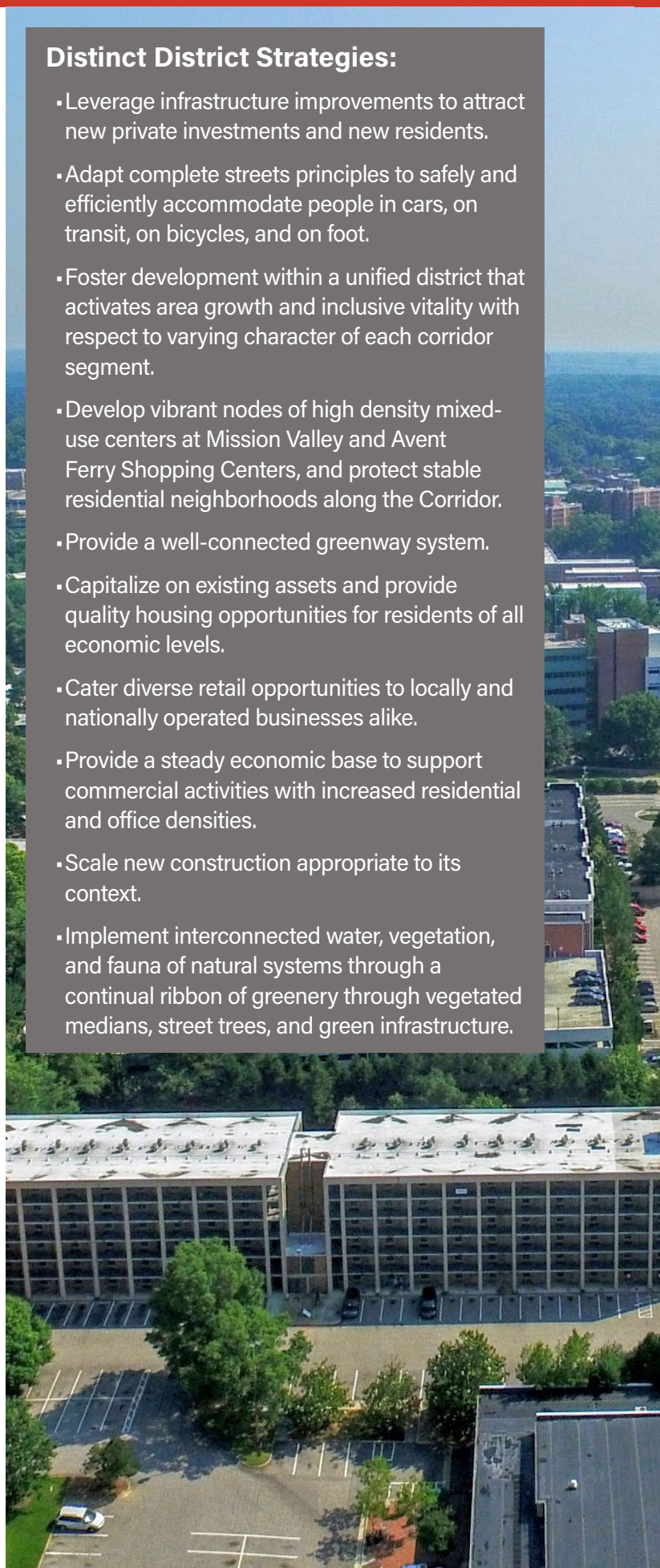
3. Foster development that activates area growth with respect to the varying character of each corridor segment.

1 Develop a Distinct District

Conversations throughout the course of this study have been motivated by an underlying desire to leverage the energy of a diverse population, outstanding recreational assets, and a high-tech research campus to transform the corridor area into a creative community that encourages new investment and attracts new residents. The corridor should be characterized by a modern and efficient transportation network, vibrant mixed-use centers, and well-connected greenway system. New development should expand upon these existing assets and provide quality housing opportunities for residents of all economic levels. More diverse retail opportunities should cater to locally and nationally operated retailers alike. Residential and office densities should increase to provide a steady economic base to support these commercial activities and multimodal transit options should safely and conveniently connect these uses. New construction should be appropriately scaled, creating nodes of higher density at Mission Valley and Avent Ferry Shopping Centers and protecting the stable residential atmosphere in the balance of the corridor. The Corridor should implement contemporary understanding of natural systems including water, vegetation, and fauna through a continual ribbon of greenery through vegetated medians, street trees, and green infrastructure.

Targeted Site Themes

The character of the Avent Ferry corridor changes from urban commercial to suburban residential. Three targeted catalyst areas were identified to build place-based strategies for economic development to support current and future land uses. The target areas are geographically bookended by the destination-oriented center at Mission Valley, focused on employment, dining and entertainment and the Lake Johnson area, focused on recreation and housing. The central target location at Avent Ferry Shopping Center continues to serve the corridor residents and the surrounding area with a convenience-oriented center focused around a grocery anchor.



Distinct District Strategies:

- Leverage infrastructure improvements to attract new private investments and new residents.
- Adapt complete streets principles to safely and efficiently accommodate people in cars, on transit, on bicycles, and on foot.
- Foster development within a unified district that activates area growth and inclusive vitality with respect to varying character of each corridor segment.
- Develop vibrant nodes of high density mixed-use centers at Mission Valley and Avent Ferry Shopping Centers, and protect stable residential neighborhoods along the Corridor.
- Provide a well-connected greenway system.
- Capitalize on existing assets and provide quality housing opportunities for residents of all economic levels.
- Cater diverse retail opportunities to locally and nationally operated businesses alike.
- Provide a steady economic base to support commercial activities with increased residential and office densities.
- Scale new construction appropriate to its context.
- Implement interconnected water, vegetation, and fauna of natural systems through a continual ribbon of greenery through vegetated medians, street trees, and green infrastructure.

2 Adapt Complete Streets Corridor

Multi Modal Access

Transportation design and planning for most of Avent Ferry Road's history has been focused on the safe movement of cars and trucks. As community values and needs have shifted over the past 15 years, new best practices are now important to better accommodate bicyclists, pedestrians, and transit riders. As documented by the public engagement efforts of this study, demand for transportation services has evolved to include quality transit, bicycle facilities, and more walkable communities. The concept of "Complete Streets" has emerged as a comprehensive strategy to address public demand for multi-modal transit choices. Complete Streets are principles that provide an efficient multi-modal transportation network so the accessibility, mobility, and safety needs of motorists, transit users, bicyclists and pedestrians of all ages and abilities are safely accommodated. The NCDOT has established extensive policies and guidelines for implementing complete streets. The report recommendations apply the guidelines to streets within the Avent Ferry Corridor by supporting protected sidewalks, bike lanes, safe crossings, quality transit stop amenities, and green infrastructure elements.

A major multi-modal opportunity planned for the corridor is the proposed Bus Rapid Transit line along Western Boulevard. This line will provide high-frequency bus travel options connecting the corridor to downtown Raleigh, NCSU, and west Raleigh. Future high intensity development around these transit stops should cater to transit ridership. Specific development strategies to achieve this goal are described later in this report.

Complete Streets Strategies:

- Transform Avent Ferry Corridor into a Complete Street designed and operated to enable safe access for all users, including pedestrians, bicyclists, motorists, and transit riders of all ages and abilities.
- Improve key intersections along Avent Ferry to address bike/pedestrian safety, access, and crossings.
- Provide safe and secure pedestrian and bicycle crossing across Western Boulevard (NCDOT underpass) to connect to both sides of the Avent Ferry corridor.
- Enhance bicycle and pedestrian safety with grade-separated bicycle lanes, separated sidewalks, and isolated bicycle and vehicular lanes at busy intersections.
- Improve and augment pedestrian connections between neighborhoods, University, Lake Johnson, and shopping centers.
- Provide for higher density development near future BRT transit stops.
- Improve bus stop amenities to encourage transit use.
- Enhance connections to the greenway system.

An example of a major street thoroughfare designed as a complete street.
Photo credit: Urban Street Design Guide, National Association of City Transportation Officials

3 Foster Redevelopment and Economic Viability

Market Analysis

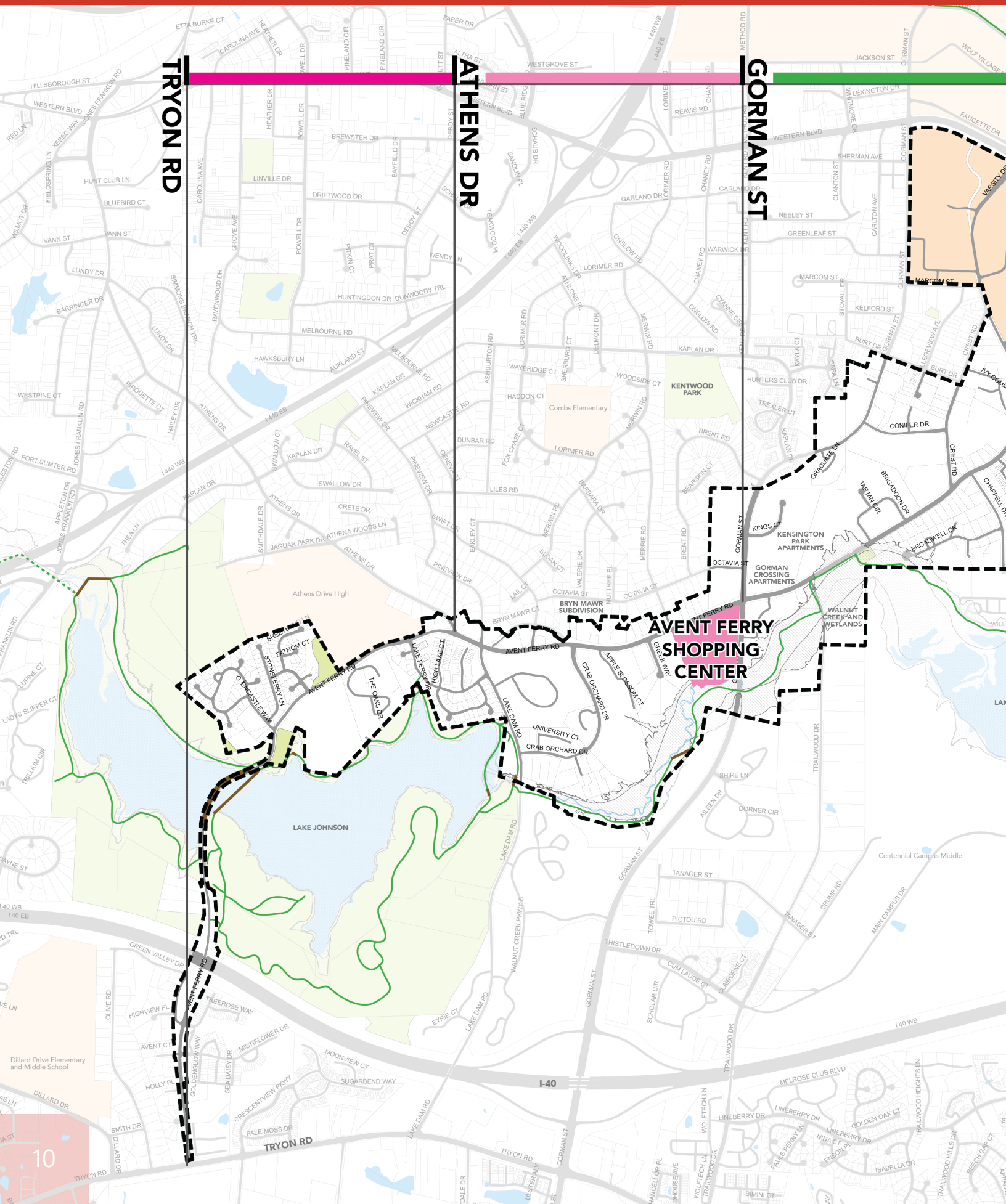
The comprehensive market analysis suggests the following principles should drive the economic development strategy for the corridor.

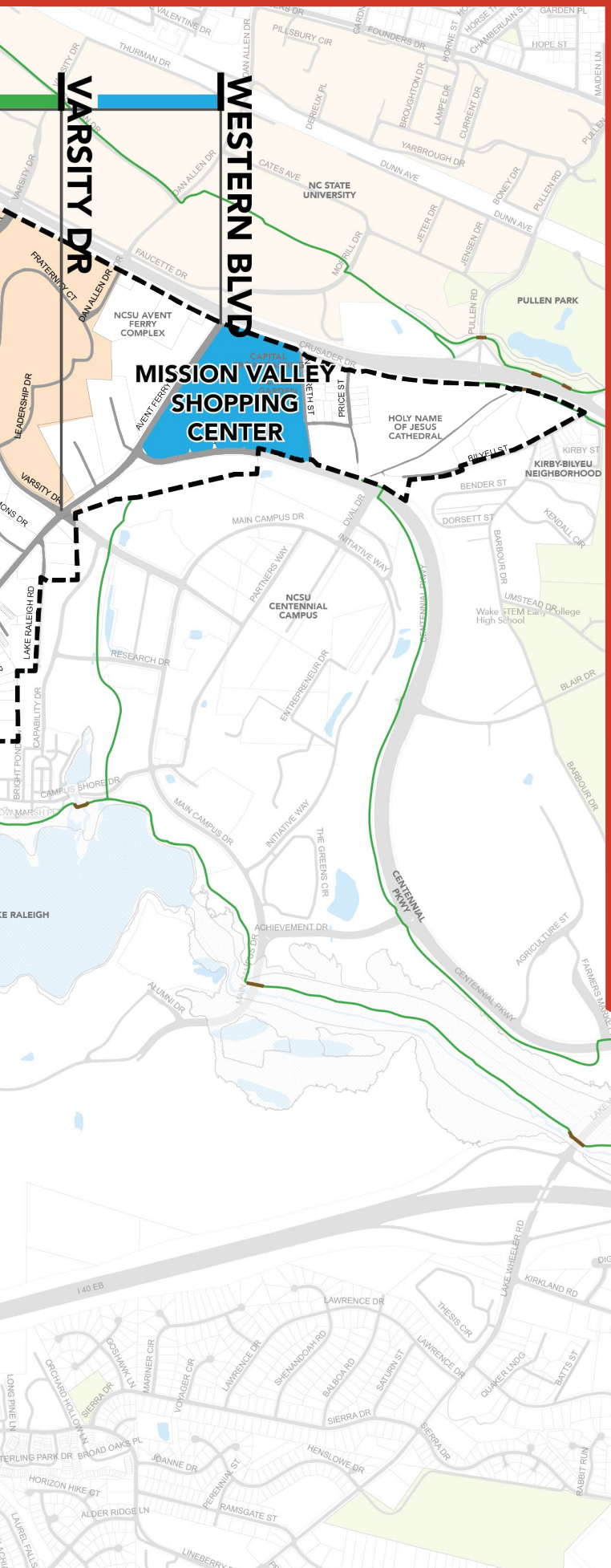
Redevelopment and Economic Viability Strategies:

- Improve the safety and aesthetic appeal of the corridor to reflect the community's commitment to the corridor and to attract private investment.
- Formulate strategies to attract and retain older generations and established residents.
- Make shopping, dining, entertainment, and employment opportunities high priorities to support expanded housing lifestyle options.
- Promote ease-of-access and movement, as well as attractive place-making to improve and enhance the resident and visitor experience.
- Leverage public infrastructure improvements as a catalyst for private investment to provide additional lifestyle options and experiences and help "sell" the corridor. This would attract new investment, provide jobs and economic mobility for the community, as well as an increased tax base.
- Develop collaborative partnerships with and among the Raleigh Area Development Authority, NCSU Centennial Campus, Wake County and Raleigh Economic Development, and the Greater Raleigh Chamber of Commerce to provide marketing assistance and create a recognizable brand for the corridor.
- Highlight and celebrate the area's diversity through partnerships.

Entrance to the Avent Ferry Shopping Center with larger tenants listed
Photo credit: Weingarten Realty

Street sign at in NC State University's Centennial Campus
Photo credit: visitraleigh.com


TRYON RD
ATHENS DR
GORMAN ST
AVENT FERRY SHOPPING CENTER
KENTWOOD PARK
KENSINGTON PARK APARTMENTS
GORMAN CROSSING APARTMENTS
BRYN MAWR SUBDIVISION
WALNUT CREEK AND WETLANDS
LAKE JOHNSON
Athens Drive High
Combs Elementary
Dillard Drive Elementary and Middle School
Centennial Campus Middle
I-40
AVENT FERRY RD
LAKE DAM RD
CRAB ORCHARD DR
UNIVERSITY CT
HUNTINGDON DR
DUNWOODY TRL
MELBOURNE RD
HAWKSBURY LN
KAPLAN DR
WICKHAM RD
NEWCASTLE RD
DUNBAR RD
LORIMER RD
LILES RD
SWALLOW DR
CRETE DR
ATHENA WOODS LN
JAGUAR PARK DR
SWIFT LN
PINEVIEW DR
BRENT RD
OCTAVIA ST
KINGS CT
BROADWELL DR
CONIFER DR
KELFORD ST
MARCOM ST
NEELEY ST
GREENLEAF ST
WESTGROVE ST
JACKSON ST
WESTERN BLVD
SHERMAN AVE
REAVIS RD
GARLAND DR
WARWICK DR
ONSLOW RD
WOODSIDE CT
HADDON CT
WAYBRIDGE CT
SHERBURG CT
ASHBURTON RD
ATHLONE PL
WOODLINKS DR
MERWIN RD
DELMONT DR
HUNTERS CLUB DR
TREXLER CT
BEARSKIN CT
GRADLAKE LN
TARTAN DR
BRIGADOON DR
CREST RD
CHAPPELL DR
EGGEVIEW AVE
BURT DR
STOVALL DR
KAYLA CT
SPRA LN
IVY COMM
VARSITY DR
CLANTON ST
CARLTON AVE
WHITMORE DR
LEXINGTON DR
FAUCETTE DR
WOLF VILLAGE
METHOD RD
LORIMER RD
CHANEY RD
CHANNE CIR
KENT RD
I 440 WB
I 440 EB
I 40 WB
I 40 EB
ETTA BURKE CT
CAROLINA AVE
HEATHER DR
POWELL DR
PINELAND CIR
FABER DR
ALTHA ST
BLUE RIDGE RD
SCHAUB DR
SANDLIN PL
TERRYWOOD PL
DEBOY ST
BAYFIELD DR
BREWSTER DR
LINVILLE DR
DRIFTWOOD DR
HUNT CLUB LN
BLUEBIRD CT
VANN ST
LUNDY DR
BARRINGER DR
RAVENWOOD DR
GROVE AVE
PITKIN CT
PRAT CT
WENDY LN
SIMMONS BRANCH TRL
HILLSBOROUGH ST
WESTERN BLVD
JONES FRANKLIN RD
XEBEC WAY
FIELDSPRING LN
RED LN
WILMOT DR
WESTPINE CT
PIROUETTE CT
HAILEY DR
FORT SUMTER RD
APPLETON DR
THEA LN
SMITHDALE DR
SWALLOW CT
RAVEL ST
GENEVA CT
FOX CHASE CT
BARBARA DR
MERRIE RD
NUTTREE PL
VALERIE DR
SLOAN CT
EAKLEY CT
LAN CT
BRYN MAWR CT
SHIELD LN
PATHOM CT
STONEFERRY LN
GWENCASTLE WAY
THE OAKS SBR
LAKE FERRY DR
HIGH LAKE CT
APPLE BLOSSOM CT
GREEK WAY
TRAILWOOD DR
SHIRE LN
AILEEN DR
DORNER CIR
LUPINE CT
LADY'S SLIPPER CT
TRILLIUM CIR
WAYNE ST
GREEN VALLEY DR
OLIVE RD
HIGHVIEW PL
TREEROSE WAY
AVENT CT
MISTIFLOWER DR
GOLDENGLOW WAY
SEA DAISY DR
HOLLY PL
MOONVIEW CT
SUGARBEND WAY
CRESCENTVIEW PKWY
PALE MOSS DR
SMITH DR
DILLARD DR
EYRIE CT
WALNUT CREEK PKWY
TANAGER ST
TOWEE TRL
PICTOU RD
THISTLEDOWN DR
CUM LAUDE CT
CLAIBORNE CT
SCHOLAR CIR
CRUMP RD
MAIN CAMPUS DR
MELROSE CLUB BLVD
LINEBERRY DR
GOLDEN OAK CT
NINA CT
ENSON PL
PAUL'S PENNY LN
WOLFTECH LN
ISABELLA DR
BIMINI CT
BEECH GAP CT
TRAILWOOD HEIGHTS LN
TRAILWOOD HILLS DR
CHANCELLOR PL
CHANCELLOR AVE
LUSTER LN
DALE DR



DESIGN RECOMMENDATIONS

Based on extensive analysis, public review, and consultation with design and planning experts, the following recommendations are proposed. This chapter breaks up recommendations into the following:

COMPLETE STREETS RECOMMENDATIONS
- TRANSPORTATION
- STREETSCAPE
- BICYCLE AND PEDESTRIAN

FOCUS AREA RECOMMENDATIONS

LAND USE & DEVELOPMENT RECOMMENDATIONS

STORMWATER MANAGEMENT RECOMMENDATIONS

DESIGN DETAIL RECOMMENDATIONS

Complete Streets Recommendations

Transportation

The Avent Ferry Road corridor currently serves two types of traffic movements; (1) commuters connecting through the corridor and (2) local traffic moving to destinations within the corridor. Finding a balance between serving local uses, such as residential, retail and intercampus trips, as well as serving the needs of daily commuters, is challenging. In addition to vehicular traffic, many local trips within the corridor utilize transit services or bicycle and pedestrian facilities.

This corridor study employs a "Complete Streets" approach to present transportation improvements to better accommodate local multimodal travel and support current and future land uses. The recommended transportation infrastructure improvements are designed to accommodate the changing land use and density as the corridor redevelops. The recommended roadway configurations, with enhanced bicycle and pedestrian facilities, would facilitate a higher quality of active transportation access to destinations within and adjacent to the corridor. The proposed improvements will also facilitate automobile trips that originate or terminate within or adjacent to the corridor, including single- and multi-family residential, Mission Valley Shopping Center, Avent Ferry Shopping Center, NCSU Main and Centennial Campuses, and the Catholic Diocese of Raleigh.

The proposed roadway configuration will calm traffic and create a safer environment for all transportation modes while still meeting acceptable levels of service (LOS) standards, LOS E, set by the City of Raleigh. Protected, elevated bicycle lanes are proposed in both directions along the entire corridor. The corridor has a higher bicycle usage than most collector roads in Raleigh, used predominately by students commuting to the NCSU campuses. Dedicated bicycle facilities protected from automobile traffic will be significantly safer for cyclists utilizing the corridor. Providing a safe means of transportation for all modes is the goal of the complete streets design principles.

An example of a bike lane and bus stop operating in tandem on a street in Seattle, WA
Image source: pedbikeimages.org, SDOT

Consolidating Transit Resources

Locations where GoRaleigh and Wolfline stops are separated by a few hundred feet but have different stop locations and amenities provide an opportunity for GoRaleigh and Wolfline to coordinate stops and allow Wolfline riders the use of existing GoRaleigh transit facilities.

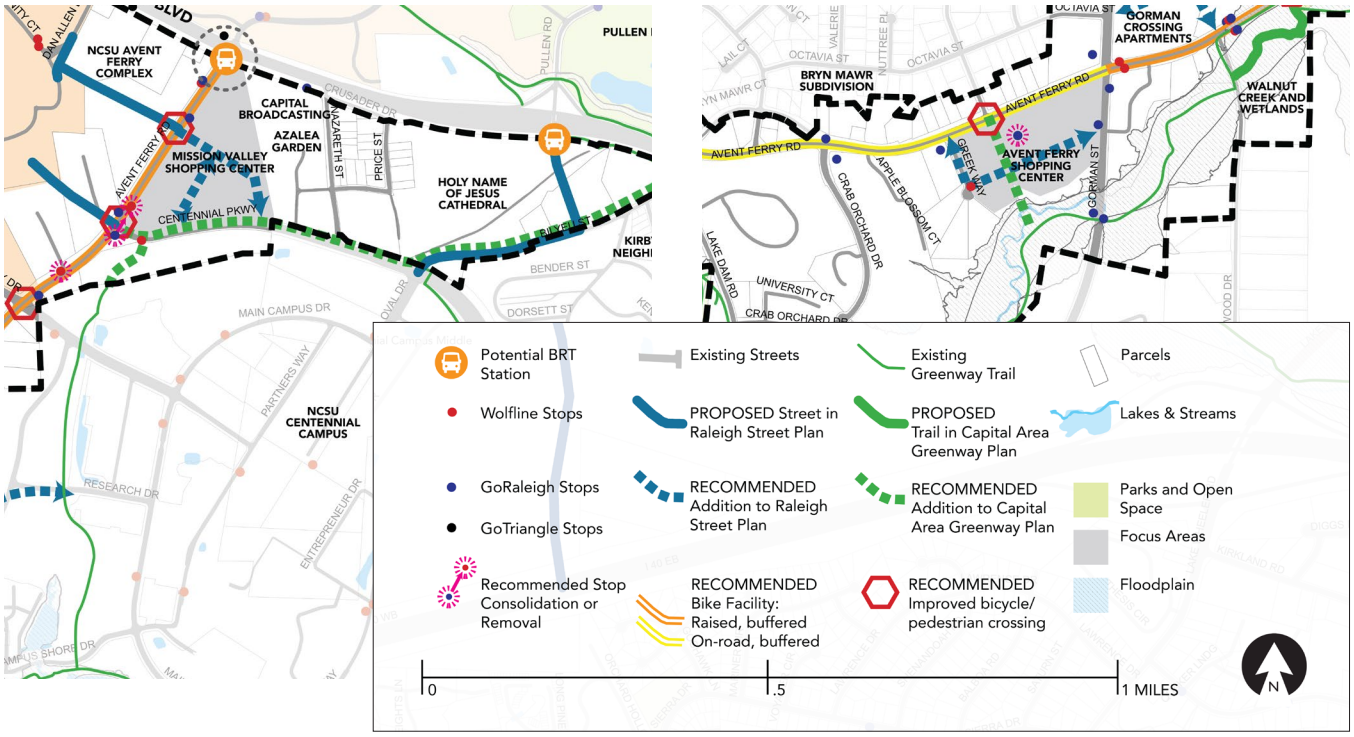
The first location is at the Avent Ferry Road and Centennial Parkway intersection; the GoRaleigh stop, located south of the intersection, has a bus shelter and bench while the Wolfline stop, located north of the intersection, has no amenities. The second stop location is along the Avent Ferry Shopping Center frontage. The GoRaleigh stop has a shelter and multiple benches while the Wolfline stop, located west of the Avent Ferry Shopping Center along Greek Way, has no amenities. In addition to providing more amenities for Wolfline riders, this approach would streamline bus stops, reduce confusion, and create a more predictable traffic pattern near bus stops.

The Wolfline will restructure two routes from Avent Ferry Road to Pullen Road once the City of Raleigh completes the Pullen Road Extension to Centennial Parkway in late 2018. These bus lines will continue to service areas between the NCSU Main Campus and Centennial Campus. These two routes will bypass Avent Ferry Road and use Pullen Road Extension as the main thoroughfare to connect NCSU Main and Centennial Campuses.

Transit Considerations

Although dedicated transit lanes were not included in the final corridor recommendations, the project team considered dedicated transit lanes and shared transit and bicycles lanes between Western Boulevard and Varsity Drive and between Varsity Drive and Gorman Street along Avent Ferry Road. Ultimately, configurations with dedicated transit lanes require trade-offs between increasing vehicle congestion and delay along those segments or eliminating dedicated bicycle facilities.

An alternative was developed to assess a configuration with a single, northbound dedicated transit lane between Western Boulevard and Varsity Drive. This limited dedicated transit lane would require a shared transit and bicycles



An example of BRT infrastructure that may be incorporated at Mission Valley Shopping Center and Western Blvd.
Image source: Wake County Transit Plan

lane, due to the limited right-of-way. Having dedicated bicycle infrastructure was prioritized for the corridor and the right-of-way could not accommodate both dedicated bicycle infrastructure and dedicated transit lanes along most segments of Avent Ferry Road. As such, dedicated transit lanes and shared transit and bicycle lanes were not included in the final recommendations.

Potential Centennial Parkway Realignment

In response to stakeholder input, the impact of a potential realignment of Centennial Parkway to traffic at the Avent Ferry Road and the Centennial Parkway intersection was analyzed. A series of design assumptions were used to test the LOS and intersection movements and delays based on the basic realignment concepts developed through stakeholder input.

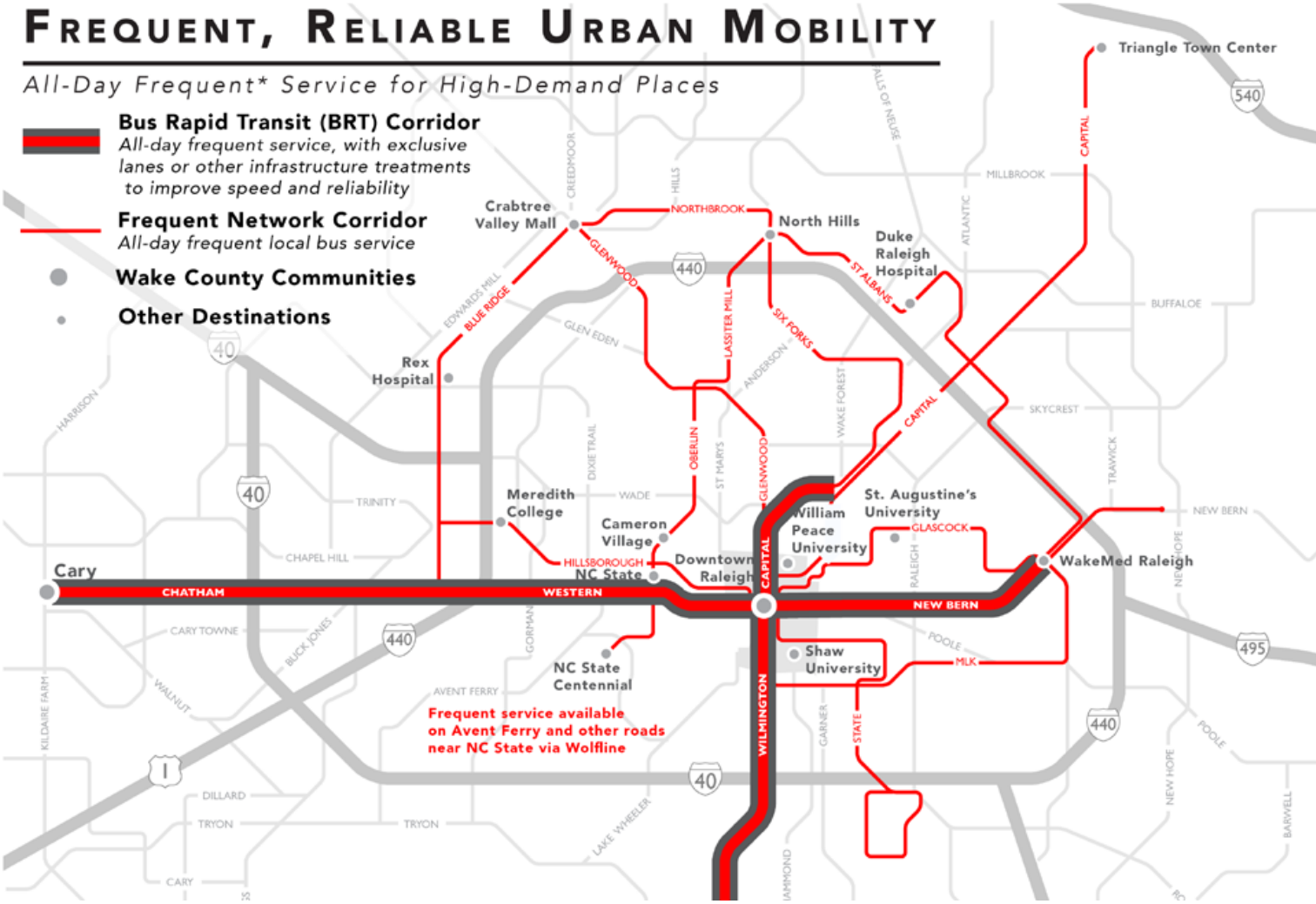


Image source: Wake County Transit Plan

Alignment with Wake County and NCDOT Transportation Plans

Future implementation of the 2016 Wake County Transit Plan includes a BRT line along Western Boulevard with a proposed station close to the Western Boulevard and Avent Ferry Road intersection. The BRT improves bus speed, frequency, and reliability by adding dedicated transit lanes, transit signal prioritization, level-boarding platforms, and off-vehicle fare payment. Providing first-/last-mile multi-modal connectivity from Avent Ferry Road to the Western Boulevard BRT station is key to increasing transit ridership in the corridor. Currently, the BRT station, access to Mission Valley Shopping Center, and a planned pedestrian underpass between NCSU Main Campus and Avent Ferry student housing (discussed below) is being considered in isolation. However, the success of each of these improvements will be far greater if they are considered as part of an overall solution to pedestrian, bicycle, and vehicular movements at the intersection. Efforts should be made to link the four corners of the intersection and the BRT station via the proposed underpass. The current underpass concept should be re-envisioned with this as the driving design priority. Additional construction funds should be allocated as necessary.

NCDOT is planning a bicycle/pedestrian underpass below Western Boulevard at the intersection with Avent Ferry Road. This tunnel will enhance connections between the North Carolina State University (NCSU) Main Campus, Mission Valley Shopping Center, and Centennial Campus. However, current concept designs for the underpass indicate the tunnel entrance will be located on the west side of Avent Ferry Road. While this will improve safety for those crossing Western Boulevard, the proposal does not address the safety for pedestrians and cyclists crossing Avent Ferry Road between Mission Valley Shopping Center and Avent Ferry student housing, nor does it provide safe connection to the proposed BRT station east of the Western Boulevard/Avent Ferry Road intersection. Further complicating this approach, a "west-side-only" underpass entrance requires two-way cycle lanes be located on the west side of Avent Ferry Road.

The two-way cycle lanes are undesirable because it presents safety issues with two-directional bicycle traffic on a steep grade and requires an additional crossing to move northbound cyclists to the west side of the street.

Given the expected redevelopment of Mission Valley into a large mixed-use community, the final underpass design should accommodate the substantial increase in bicycle and pedestrian traffic to and from the shopping center. Therefore, it is highly recommended the tunnel provide grade-separated access to both sides of Avent Ferry Road. This solution should be evaluated during the underpass design process.

Pedestrians crossing Western Boulevard at Avent Ferry Road near NC State University
Image source: newsobserver.com, file photo

Streetscape Recommendations

The corridor was divided into four segments along Avent Ferry Road to develop alternative roadway configurations:

1. Western Boulevard to Varsity Drive
2. Varsity Drive to Gorman Street
3. Gorman Street to Athens Drive
4. Athens Drive to Tryon Road

A series of alternatives were created and refined to study each segment. Typical street sections were created, utilizing existing right-of-way to provide a planning-level design including roadways, transit, and bicycle and pedestrian facilities. The alternatives were analyzed using existing traffic conditions to assess the corridor LOS and queuing delays at intersections.

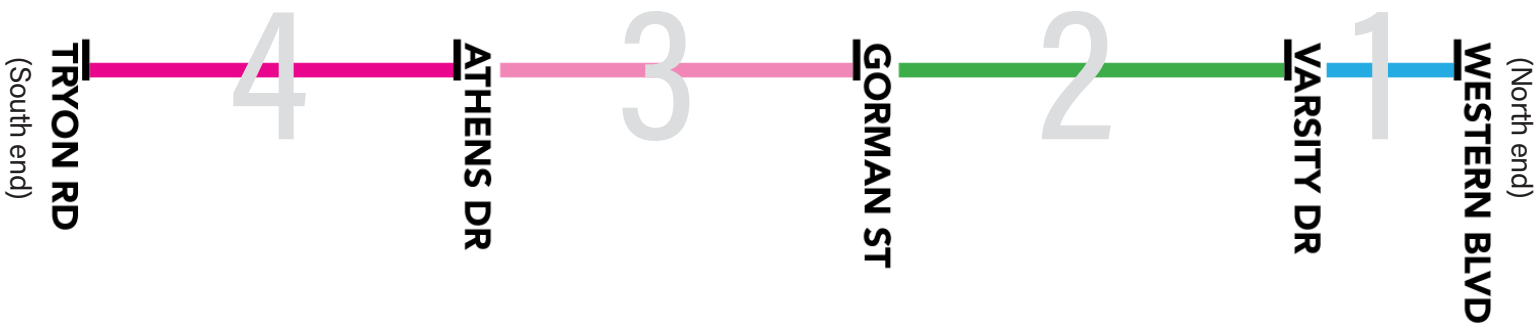
There are a few noteworthy features that apply to all four segment lane configurations. The proposed dedicated bicycle lanes would be buffered from vehicular traffic, allowing a continuous path along Avent Ferry Road between Western Boulevard and Tryon Road. Some elements of the roadway design, such as lane widths and the median width, are narrower than City of Raleigh roadway design standards; however, the proposed streetscape details are recommended for adoption as a streetscape plan. Improvements outside of private redevelopment should be budgeted as CIP items for implementation. Please see the implementation table in the final chapter for more detailed information.

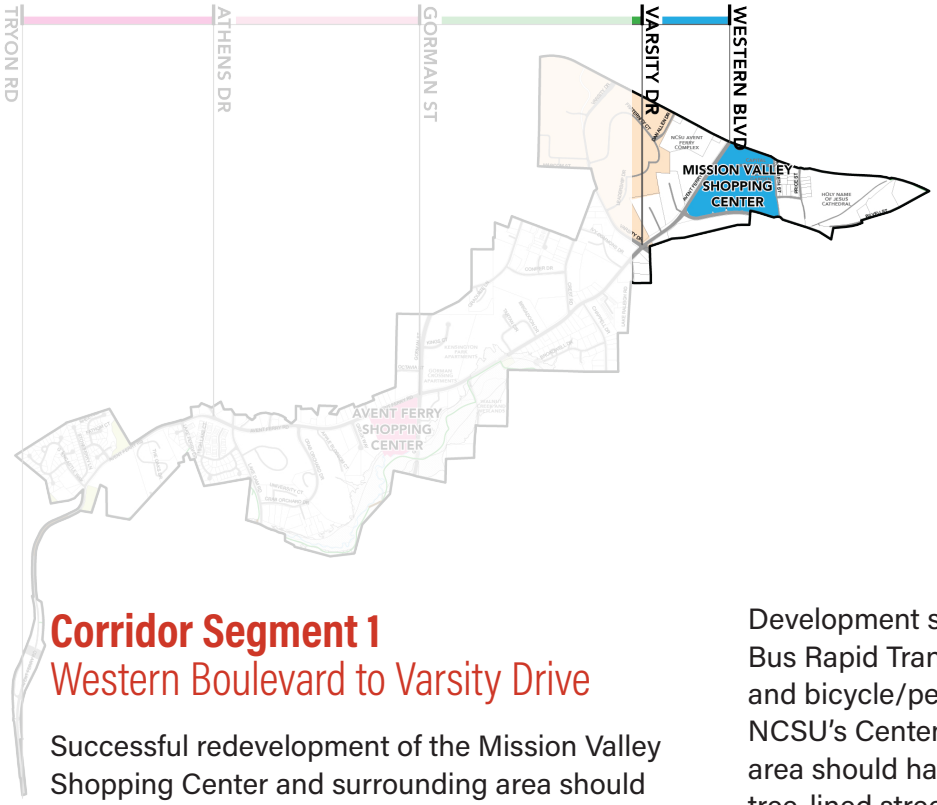
Assessment Criteria

Initially, each segment had two to three potential alternatives. The alternatives were created based on the character of the street segment and public comments from the October 2017 Avent Ferry Public Design Workshops. While the alternatives drew heavily from public feedback, the typical sections were refined to fit within the existing right-of-way and to meet engineering and safety standards. The alternatives were assessed on the following criteria:

- Vehicular Traffic Level of Service: Would the proposed typical section meet the acceptable LOS for the City of Raleigh? Which alternative would provide the best level of service during the AM and PM peak hours?
- Accommodating Bicycle and Pedestrian Facilities: Which typical sections would provide safe and efficient bicycle and pedestrian mobility?
- Fitting with Character of the Corridor, the Complete Street Approach, and Future Redevelopment Opportunities: Would the typical section create a vibrant place with transit and active transportation options? Would it serve the local traffic along the corridor? Would it facilitate future planned or proposed redevelopment along the corridor?

As alternatives were analyzed, each were refined and new lane configurations tested to establish a typical section to better meet each of the above criteria.





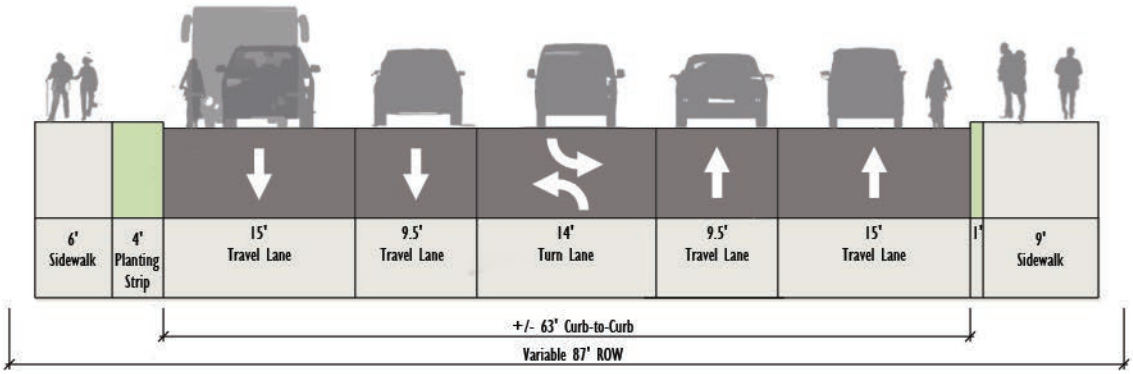
Corridor Segment 1
Western Boulevard to Varsity Drive

Successful redevelopment of the Mission Valley Shopping Center and surrounding area should serve as a catalyst for further investment in the corridor. The highest residential density and highest allowable building height in the corridor should be developed here. Height should taper to the rear of the site away from Avent Ferry Road.

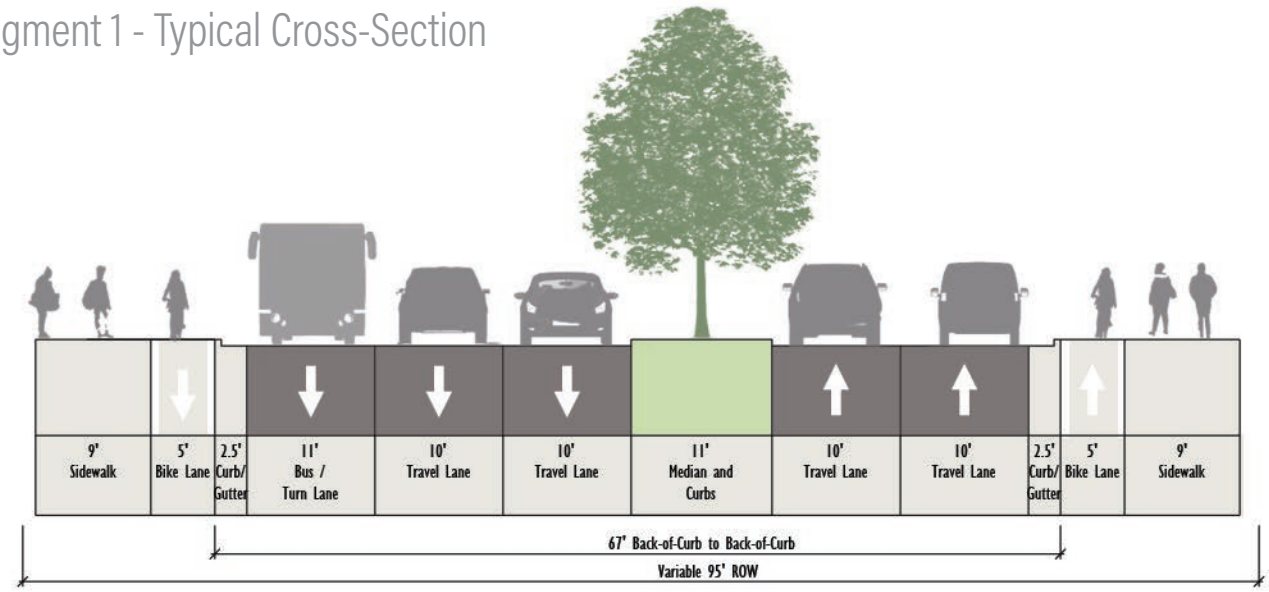
Development should capitalize on the proposed Bus Rapid Transit line on Western Boulevard and bicycle/pedestrian traffic moving between NCSU's Centennial and Main Campuses. This area should have a distinctly urban feel with tree-lined streets flanked by a variety of retail establishments on the ground level. Parking should primarily be structured and screened from street view.

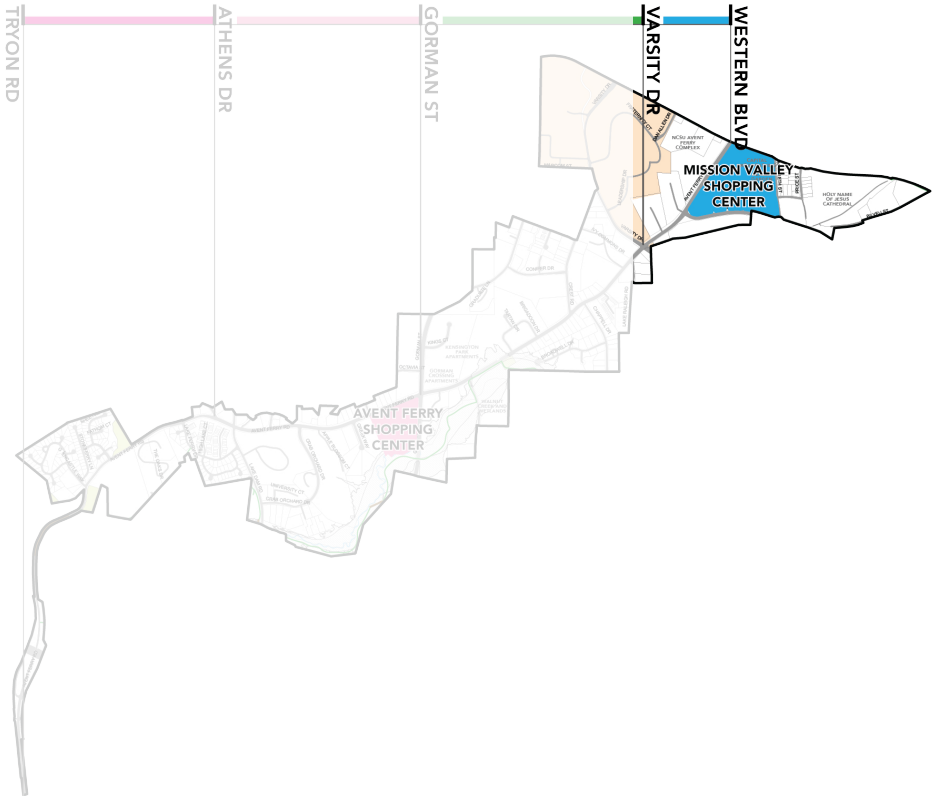
Looking north on Avent Ferry towards Mission Valley and Western Blvd.

Segment 1 - Existing Conditions



Segment 1 - Typical Cross-Section





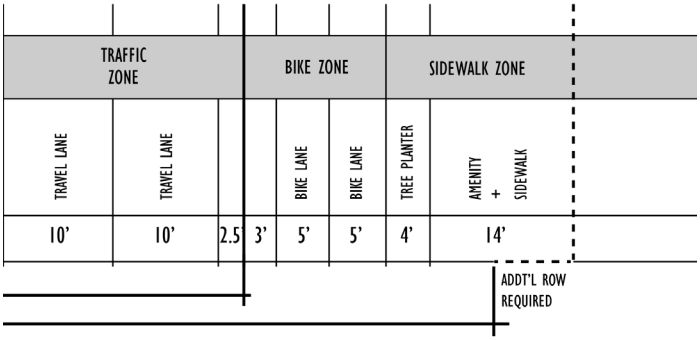
Segment 1 - Option A

SIDEWALK ZONE	BIKE ZONE		TRAFFIC ZONE			MEDIAN ZONE	TRAFFIC ZONE		BIKE ZONE		SIDEWALK ZONE
AMENITY + SIDEWALK	BIKE LANE	TREE PLANTER		BUS/TURN LANE	TRAVEL LANE	TRAVEL LANE	MEDIAN	TRAVEL LANE	TRAVEL LANE	TREE PLANTER	BIKE LANE	AMENITY + SIDEWALK
14'	5'	4'	2.5'	11'	10'	10'	11'	10'	10'	2.5'	4'	5'	14'

ADDT'L ROW REQUIRED — 67' CURB-TO-CURB — ADDT'L ROW REQUIRED

VARIABLE 113' ROW

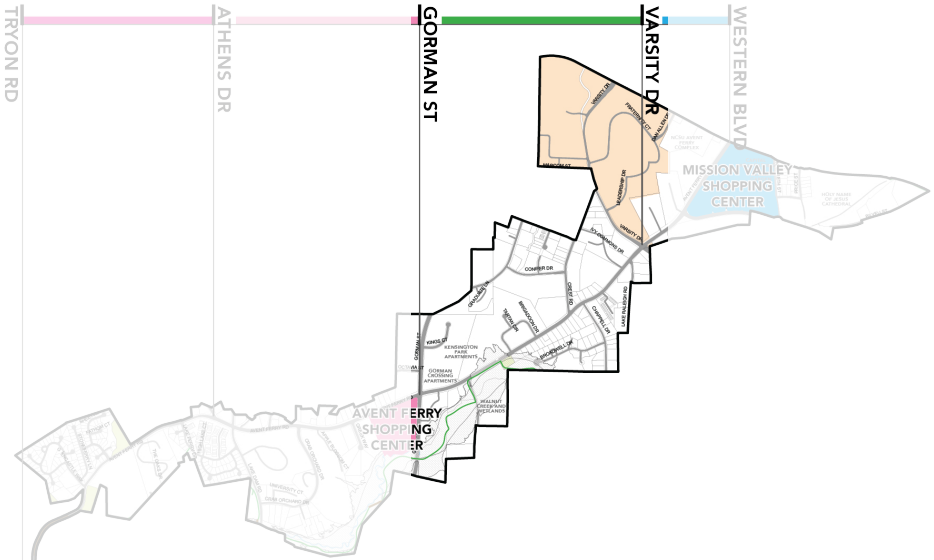
Segment 1 - Option B



Segment 1 - Recommended Cross Section - Western Blvd to Varsity Drive

The recommended design for this segment is two 10′ northbound vehicle travel lanes, one northbound 11′ que jump/turn lane, two 10′ southbound vehicle travel lanes, an 11′ center planting strip/median, 5′ raised and buffered bicycle lanes on both sides of the street and 14′ sidewalks on both sides of the street.

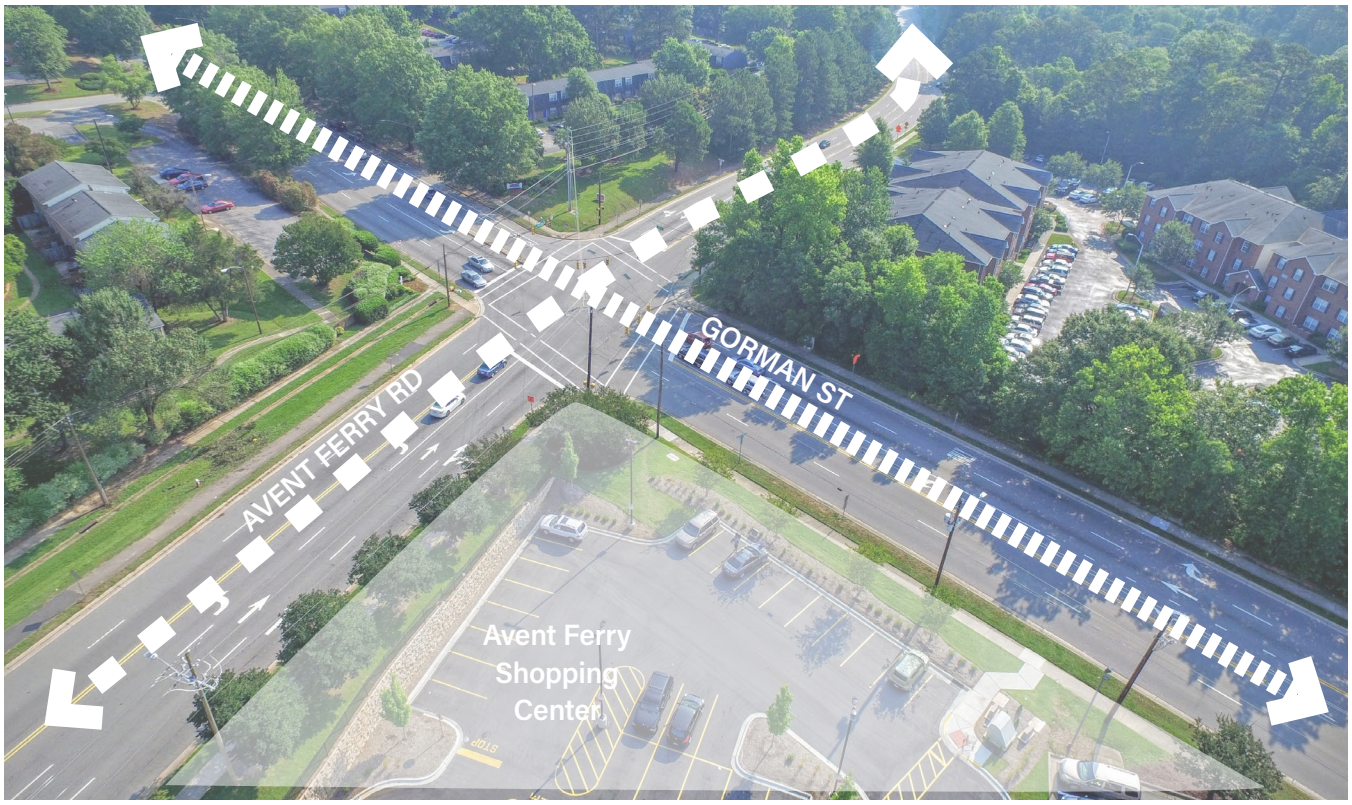
If the proposed pedestrian tunnel crossing at Western Boulevard is constructed on only one side of Avent Ferry, a two-way bicycle track is recommended for that side of the road to provide safe access for people on bicycles (option B).



Corridor Segment 2
Varsity Drive to Gorman Street

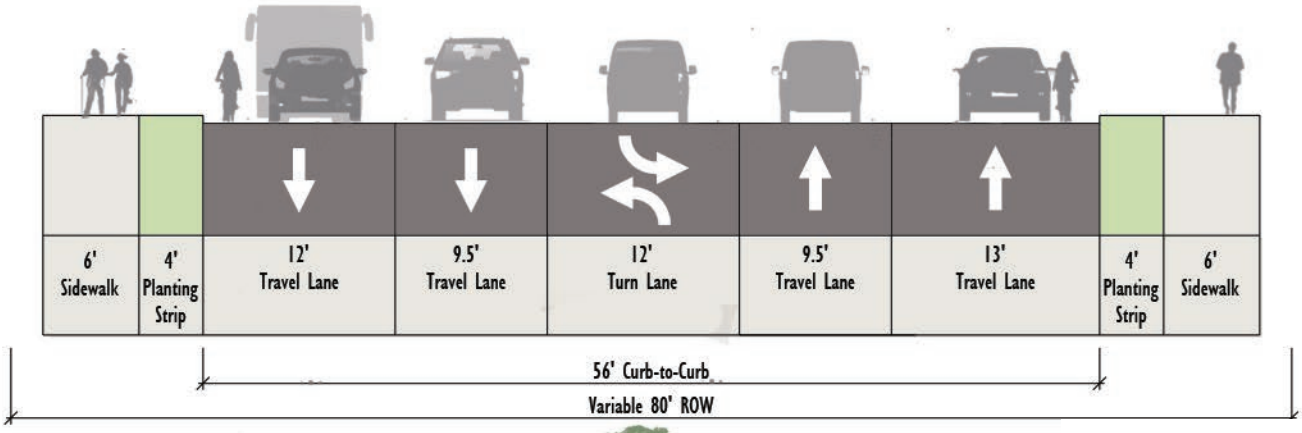
The primary goal for this segment of the corridor is to redevelop with new buildings sited closer to the street with a well-connected internal street network. Building height should be moderate and contribute to a residential feel.

Housing demand in the area suggests additional housing density is appropriate between Centennial and Gorman Street. As redevelopment inevitably occurs in these areas, consideration should be given to the development form and impact to the corridor's character. Setbacks should be maintained for consistency with the suburban character of the area, with taller buildings deeper within the site.

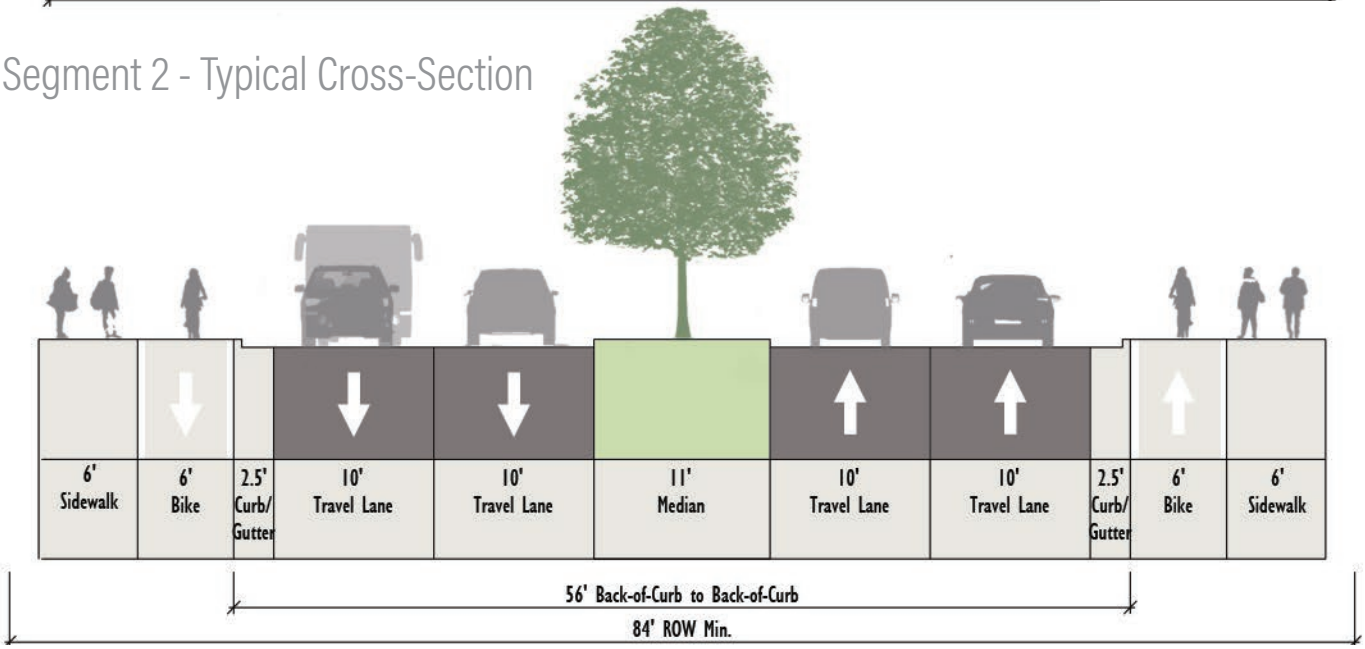


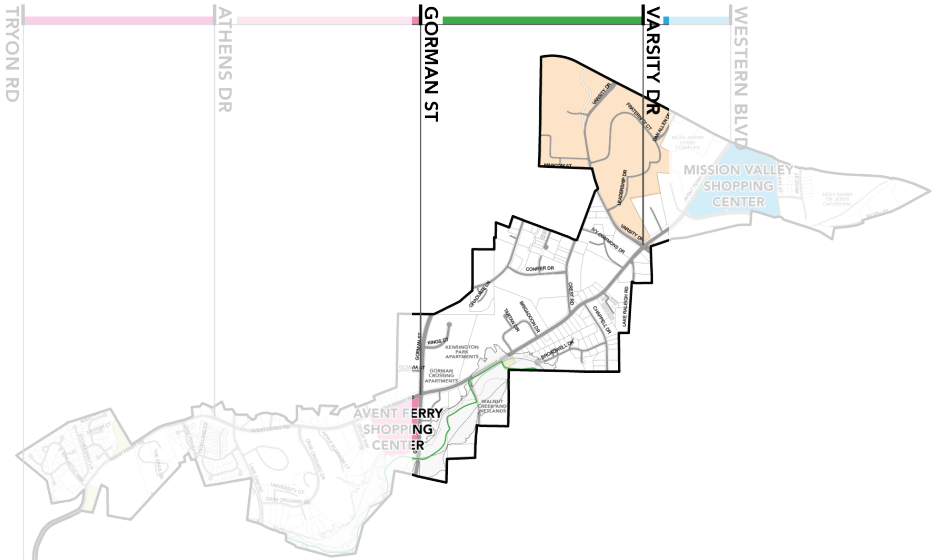
Looking northwest on Avent Ferry.

Segment 2 - Existing Conditions



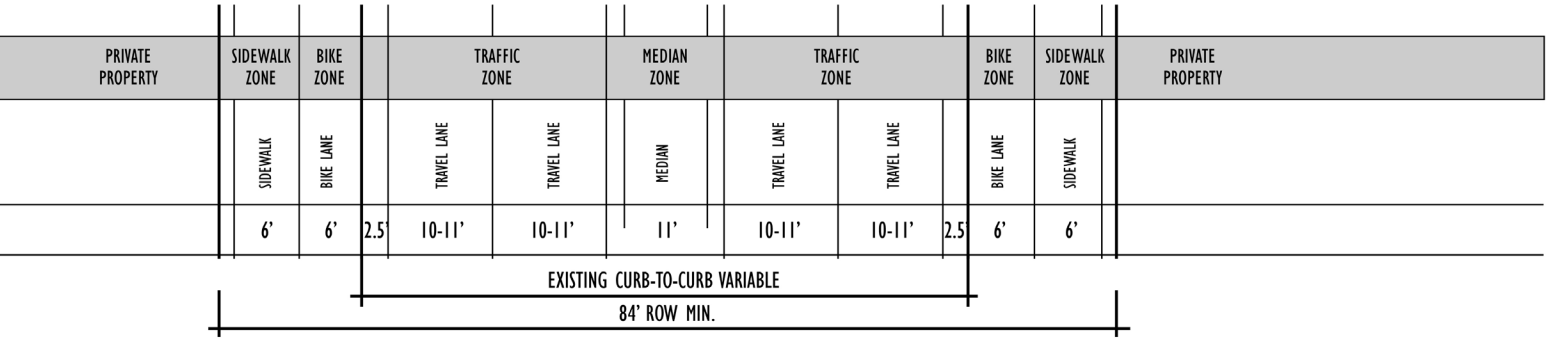
Segment 2 - Typical Cross-Section

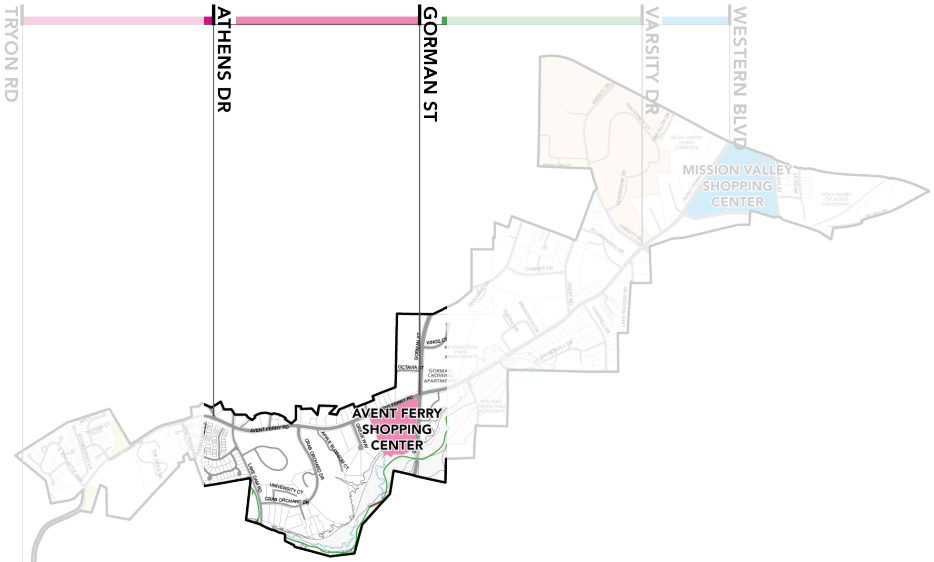




Segment 2 - Recommended Cross Section - Varsity Drive to Gorman Street

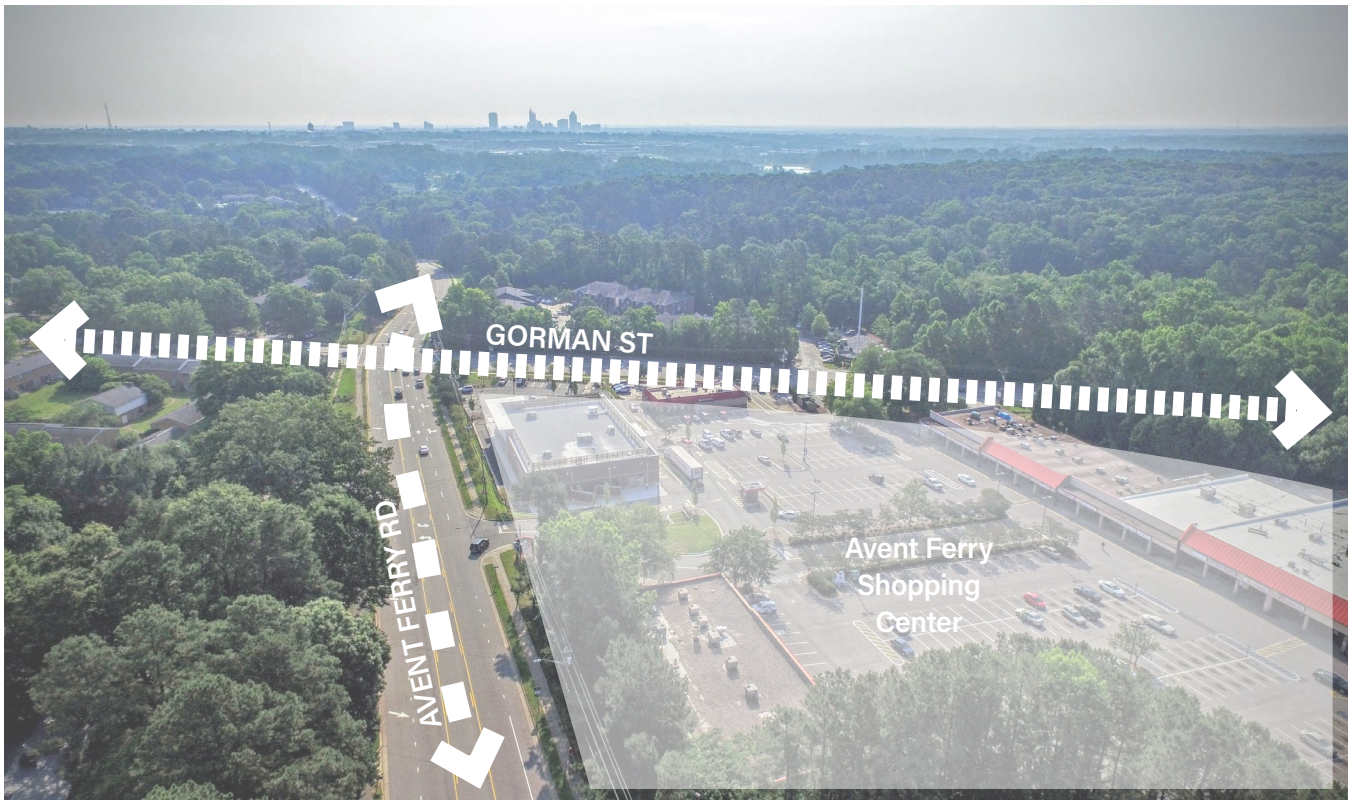
The recommended design for this segment is two 10-11' vehicle travel lanes in each direction, an 11' center planting strip/median, 6' raised and buffered bicycle lanes on both sides of the street and 6' sidewalks on both sides of the street.





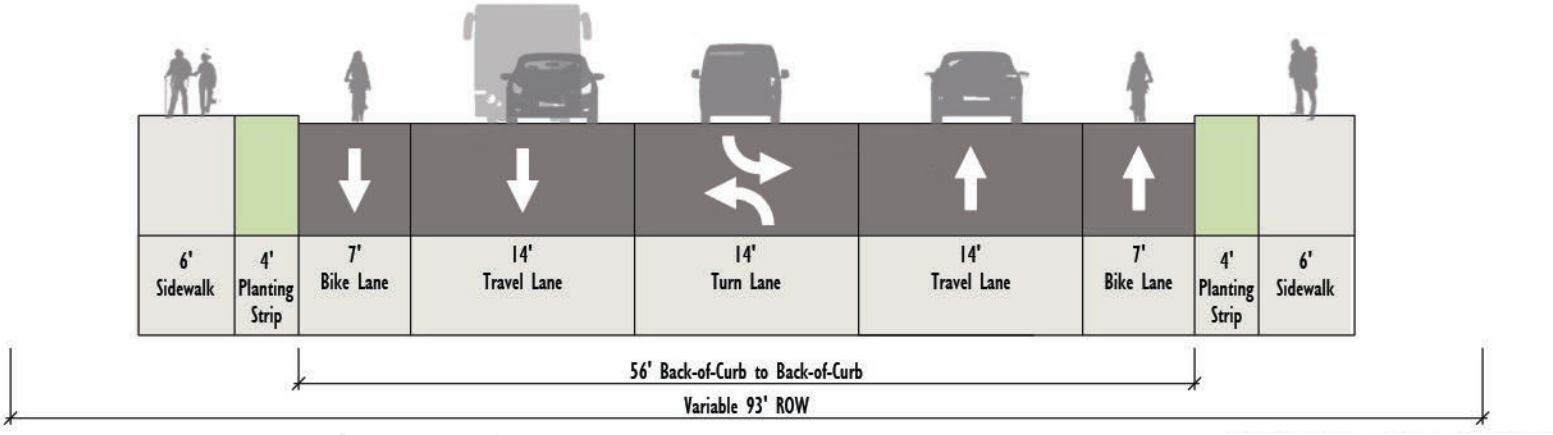
Corridor Segment 3
Gorman Street to Athens Drive

As noted earlier, the Avent Ferry Shopping Center currently anchors the intersection at Gorman Street and provides a number of retail services to the surrounding neighborhood. This pattern should be enhanced by updating the center into a high-quality Neighborhood Mixed-Use Center that adds residential and office space to the tenant mix.

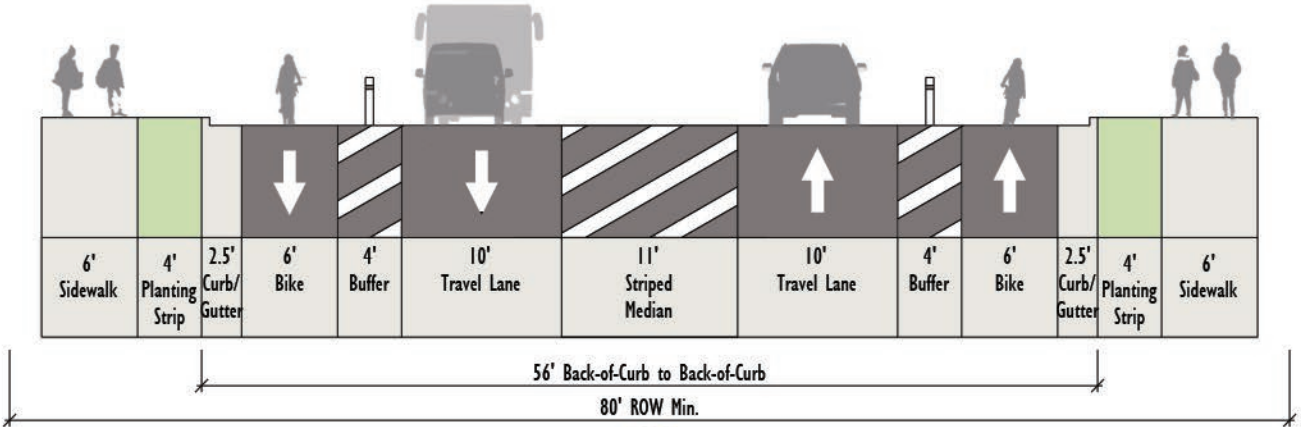


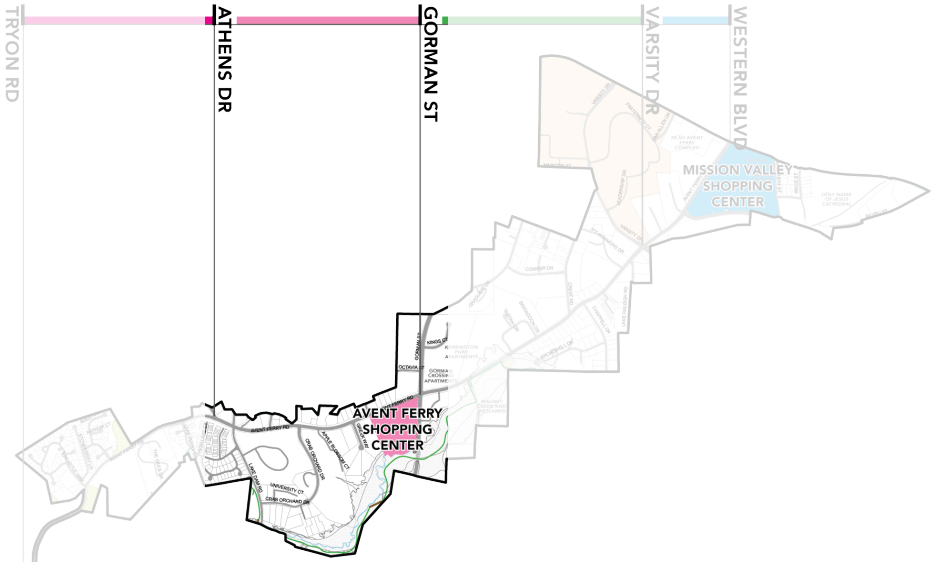
Looking north on Avent Ferry with the Avent Ferry Shopping Center highlighted.

Segment 3 - Existing Conditions



Segment 3 - Typical Cross-Section





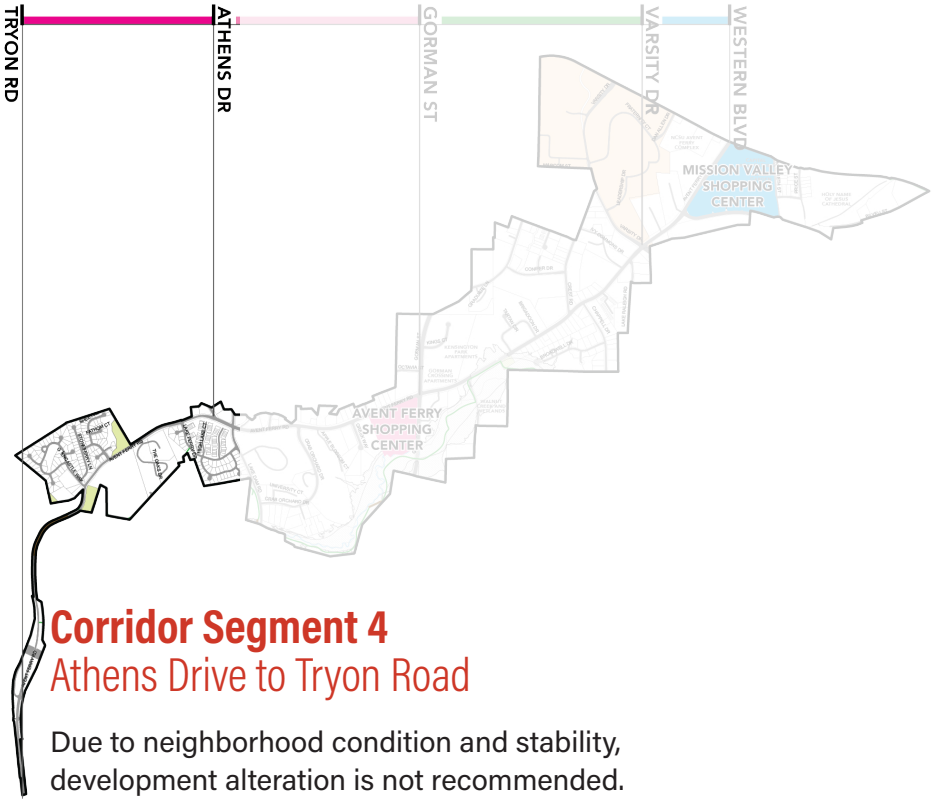
Segment 3 - Recommended Cross Section - Gorman Street to Athens Drive

As noted earlier, the Avent Ferry Shopping Center currently anchors the intersection at Gorman Street and provides a number of retail services to the surrounding neighborhood. This pattern should be enhanced by updating the center into a high-quality Neighborhood Mixed-Use Center that adds residential and office space to the tenant mix.

The recommended design for this segment is one 11' vehicle travel lane in both directions, an 11' center planting strip/median, 6' on-street, buffered bicycle lanes on both sides of the street and 6' sidewalks on both sides of the street.

PRIVATE PROPERTY	SIDEWALK ZONE		BIKE ZONE			TRAFFIC ZONE	MEDIAN ZONE	TRAFFIC ZONE	BIKE ZONE			SIDEWALK ZONE		PRIVATE PROPERTY
	SIDEWALK	TREE PLANTER		BIKE LANE		TRAVEL LANE	MEDIAN	TRAVEL LANE		BIKE LANE		TREE PLANTER	SIDEWALK	
	6'	6'	2.5'	6'	3'	11'	11'	11'	3'	6'	2.5'	6'	6'	

EXISTING 56' CURB-TO-CURB

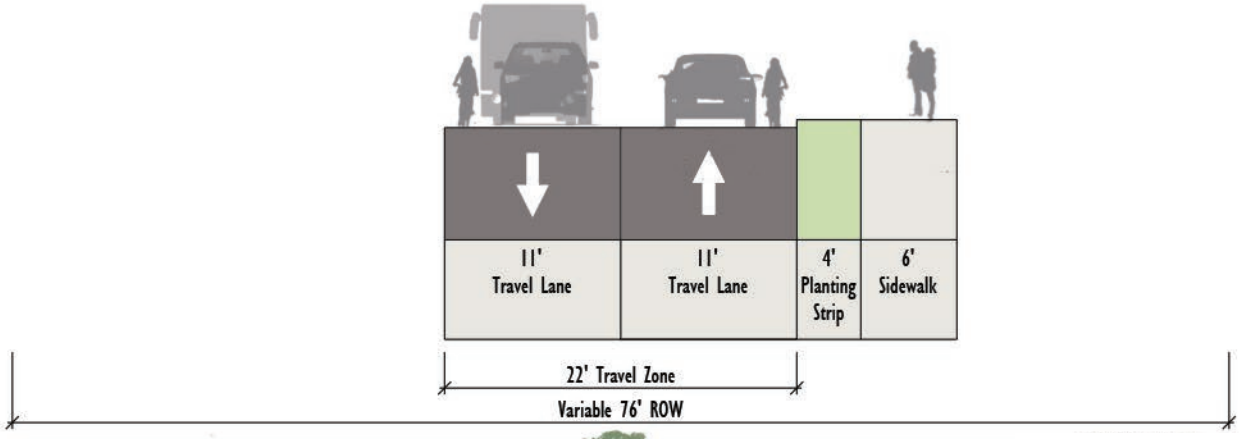


Corridor Segment 4
Athens Drive to Tryon Road

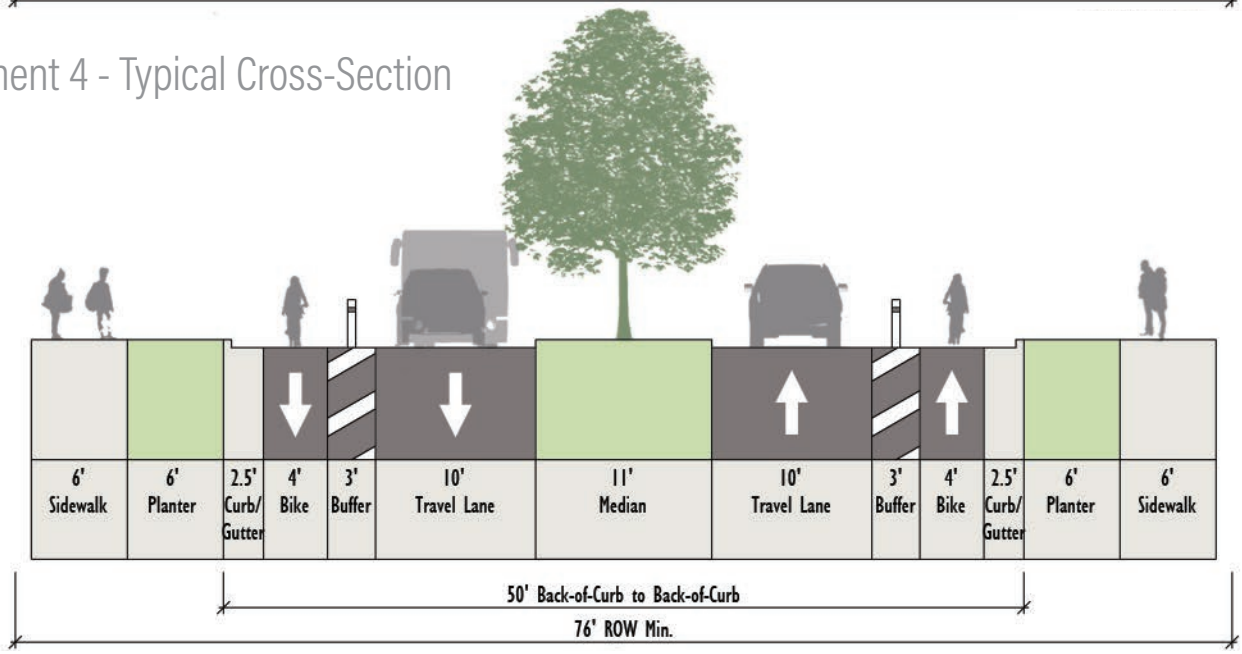
Due to neighborhood condition and stability, development alteration is not recommended. Since this portion of the corridor is anchored and largely occupied by Lake Johnson Park, the primary focus should be to close gaps in the sidewalk and greenway network.

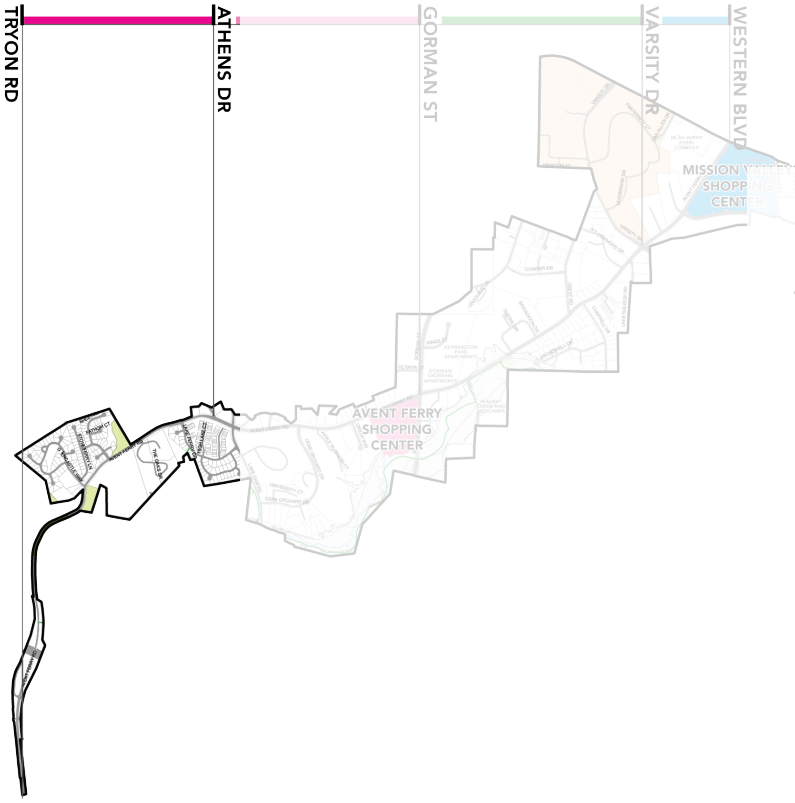
Looking north on Avent Ferry towards Lake Johnson.

Segment 4 - Existing Conditions



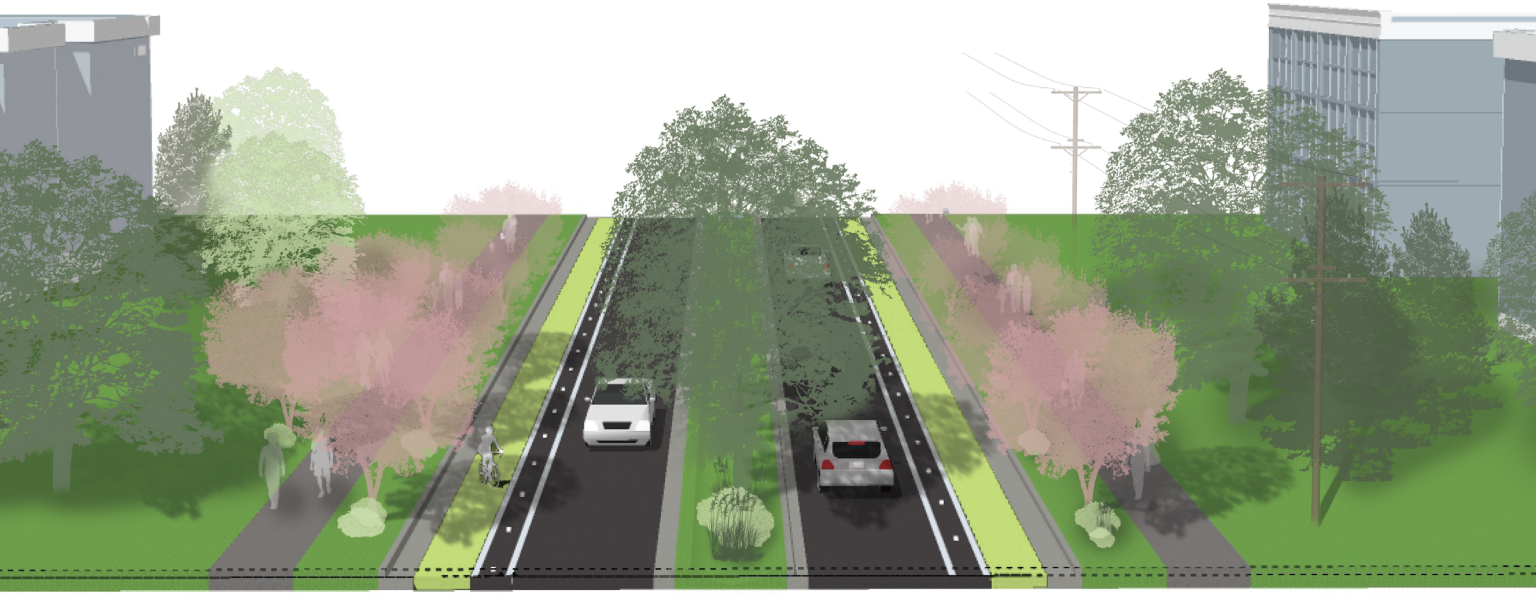
Segment 4 - Typical Cross-Section

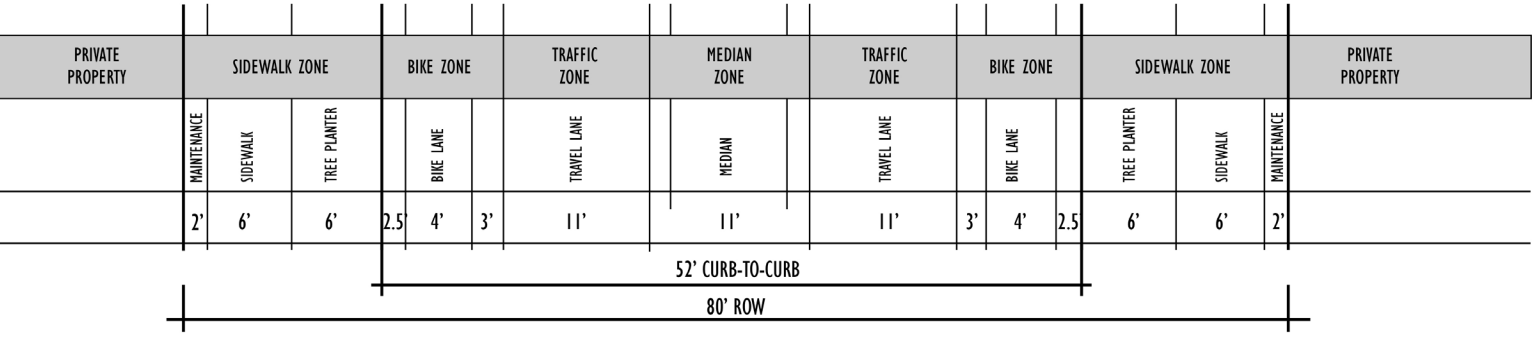




Segment 4 - Recommended Cross Section - Athens Drive to Tryon Road

The recommended design for this segment is one 11′ vehicle travel lane in each direction, an 11′ center planting strip/median, 4′ on-street, buffered bicycle lanes and 6′ sidewalks on both sides of the street.





Traffic Analysis Results for Final Streetscape Recommendations

The final roadway configurations were analyzed to see how each segment would perform at current levels of traffic volume. The queuing delay was also analyzed for the signalized intersections at the corridor. The analysis used the Synchro analysis software to evaluate both AM and PM peak hour conditions along the corridor. All of the Avent Ferry Road corridor segments would perform at satisfactory level of service for City of Raleigh standards, LOS E or better. The segment and signalized intersection LOS results assumed optimized traffic signal timing splits.

Service at Peak Hours - LOS E Defined

The worst-case scenario for any of the segments is LOS E. According to the North American Highway Capacity Manual, LOS E is defined as "unstable flow, operating at capacity. Flow becomes irregular and speed varies rapidly because there are virtually no usable gaps to maneuver in the traffic stream and speeds rarely reach the posted limit. Vehicle spacing is about 6 car lengths, but speeds are still at or above 50 mi/h(80 km/h). Any disruption to traffic flow, such as merging ramp traffic or lane changes, will create a shock wave affecting traffic upstream... This is a common standard in larger urban areas, where some roadway congestion is inevitable."

At signalized intersections, LOS E estimates a 55-80 second wait. At unsignalized intersections, LOS E estimates a 35-50 second wait.

Avent Ferry Segment Level of Service Summary Table

Segment Name From & To	Type of analysis performed (using HCS 7.4)		LOS						COMMENT
			AM			PM			
	NB/EB	SB/WB	NB/EB	SB/WB	Worst Case	NB/EB	SB/WB	Worst Case	
Western to Varsity	Multilane		C	A	C	C	C	C	Acceptable
Versity to Gorman (NEW)	Multilane		C	A	C	C	B	C	Acceptable
Gorman to Athens	Two Lane w/ Raised Median		C	B	C	C	D	D	Acceptable
Athens to Tryon	Two Lane w/ Raised Median		D		D	E		E	Acceptable

The above table shows the levels of service using the PROPOSED streetscape. All of the proposed streetscape modifications along the Avent Ferry corridor keep LOS consistent with, or improve, previous estimates.

Bicycle and Pedestrian Recommendations

Because Avent Ferry Road evolved to primarily serve vehicular traffic, linkages that provide easy movement for pedestrians and bicycles have significant gaps that must be closed in order to realize the vision of a well-connected corridor linking people with jobs and recreational opportunities. Overall strategies to address these gaps include installation of continuous bicycle lanes along the full length of the corridor, replacement of dead-end parking and multiple curbs with a network of "complete streets", and extending the greenway network to commercial/recreational centers and the City-wide greenway network. A vital element of the Avent Ferry Corridor vision is to improve bicycle and pedestrian connectivity. The Complete Streets approach to transportation infrastructure and the redevelopment recommendations complement one another to create a vibrant and safe district. Providing active transportation options is key to creating these vibrant spaces.

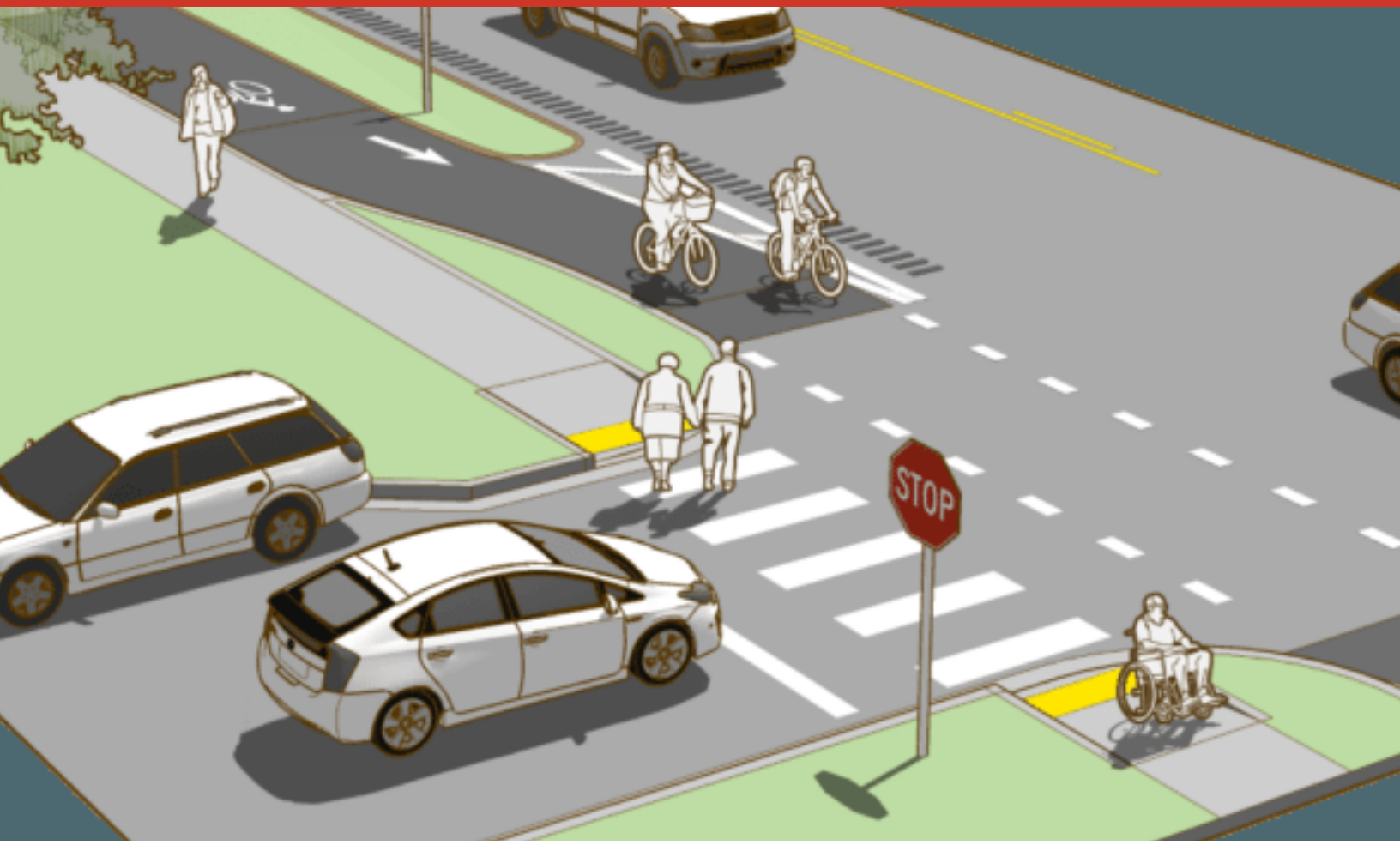
Raised (above-the-curb) bicycle and pedestrian infrastructure are recommended on both sides of Avent Ferry Road. The buffered and dedicated bicycle facilities would encourage active transportation options and create a safer cyclist experience. The bicycle and pedestrian infrastructure would connect to the planned tunnel under Western Boulevard at the Avent Ferry Road and Western Boulevard intersection. The bicycle and pedestrian tunnel will connect the NCSU Main Campus and Avent Ferry Road.

The improved facilities would connect and activate the recommended high-density land use along the corridor. When street-facing retail and commercial developments replace automobile-oriented shopping centers and strip malls along the corridor, the volume of pedestrians and cyclists from residential and employment centers should increase.

The existing right-of-way requires assessing trade-offs between expanded vehicular capacity and bicycle and pedestrian infrastructure. To establish a continuous, raised bicycle lane on both sides of Avent Ferry Road and a robust sidewalk infrastructure, some segments require reducing vehicle lane capacity and constraining future lane expansions. Bicycle and pedestrian infrastructure are key priorities for Avent Ferry Road, given the character of the corridor and the Complete Streets project approach. Providing dedicated transit lanes and improving bicycle and pedestrian facilities would require reducing vehicular capacity and likely adding delay and congestion during both the AM and PM peak hours.

The current number of conflict points present along the Avent Ferry Road sidewalks and multi-use path is a safety concern. The driveways crossing the current infrastructure could result in accidents between vehicular traffic and cyclists and pedestrians. Parking should be placed behind any retail and commercial redevelopment buildings to reduce these conflict points. Consolidating and moving driveways and situating entrances off Avent Ferry Road to side streets would reduce the number of bicycle and pedestrian accidents.

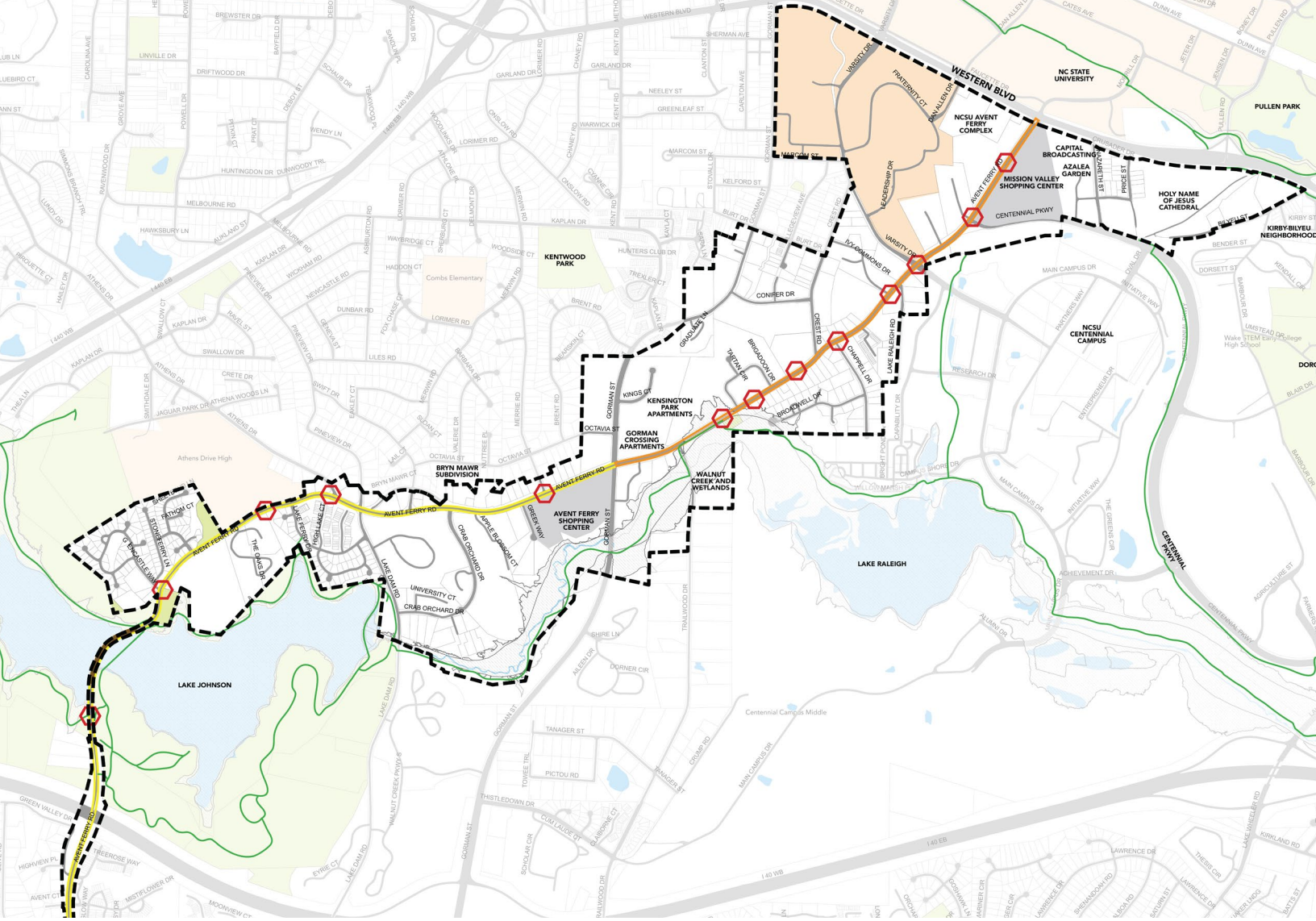
The recommended roadway design has bicycle and pedestrian crossings at each signalized intersection along Avent Ferry Road, along with some mid-block pedestrian crossing with median refuge islands. The mid-block crossings could be signalized with a call button, meaning the signal would remain green for north- and southbound vehicle traffic unless a pedestrian is crossing the street. Mid-block crossings would likely cause vehicle delays, specifically the two segments with higher traffic volume – between Western Boulevard and Varsity Drive, and between Varsity Drive and Gorman Street.



An example of a raised and physically separated bike lane. A buffer between the bicyclist and both pedestrians and vehicles provides a safer environment for all. Image source: ruraldesignguide.com

A new signalized pedestrian crossing accessing the Mission Valley Shopping Center would have to be a mid-block crossing with a pedestrian refuge. A mid-block signalized pedestrian crossing was previously tested along Avent Ferry Road between Western Boulevard and Centennial Parkway to access the Mission Valley Shopping center. The results showed placement would cause queuing at that section of the roadway. If the potential realignment to Centennial Parkway moves forward, this would provide an opportunity to install a signalized intersection crosswalk into the Mission Valley Shopping Center development.

The proposed dedicated, raised bicycle lanes would include crossings at signalized intersections, bicycle detector loops, and signal timing adjustments. Impacts to the LOS and queuing delay along Avent Ferry Road during the AM and PM peak hours would be minimal and would not reduce any intersection or segment LOS below the City of Raleigh standards.



It is recommended that the red areas outlined in the map above provide enhanced crosswalk treatments to improve safety for pedestrians and cyclists crossing Avent Ferry Road. The treatments will vary based on location and need and will be determined during a future, more detailed study.

Intersections and Crossings

To improve bicycle and pedestrian safety, several new street crossings are required. These crossings are most needed in the long stretches of signalized segments between Western Boulevard and Centennial Parkway, and between Crest Road and Gorman Street. Within these segments, pedestrians are crossing at non-intersection locations (jaywalking) which requires them to estimate vehicle speeds, adjust their walking speed, determine gaps in traffic, and predict vehicle travel paths. Installing raised medians or pedestrian crossing islands would improve safety by simplifying crossing maneuvers and allowing pedestrians to cross one direction of traffic at a time. The proposed street sections outlined in the Transportation Recommendations section provides for such medians. Desired locations are indicated in the proposed Connectivity Map. A detailed study of crosswalk designs is necessary in these locations to determine the appropriate crosswalk treatments. Design may be as minimal as basic striping to increase visibility or as intensive as fully controlled crossings with traffic signals and call buttons. Installation of simple concrete islands in the existing center turn lane may be practical short-term solutions to increase safety.

The volume of bicycle traffic in the corridor warrants intersection design to meet the standards outlined by the BikeRaleigh Plan and the Urban Bikeway Design Guide published by the National Association of City Transportation Officials (NACTO). These designs reduce conflict between bicyclists (and other vulnerable roadway users) and vehicles by heightening the level of visibility, denoting a clear right-of-way, and enabling eye contact and awareness with competing transportation modes. Intersection

treatments should resolve queuing and merging maneuvers for bicyclists which are often coordinated with timed or specialized signals.

The configuration of safe intersections for bicyclists should include elements such as color, signage, medians, signal detection, and pavement markings. Intersection design should consider existing and anticipated bicyclist, pedestrian, and motorist movements. In all cases, the degree of mixing or separation between bicyclists and other modes is intended to reduce the risk of crashes and increase bicyclist comfort and safety. The level of treatment required for bicyclists at each intersection will depend on the bicycle facility type used and whether bicycle facilities are intersecting the adjacent street and land use. A detailed engineering study should be prepared at each proposed location to determine the appropriate treatments.

See the Materials and Paving section for further recommendations.

Transit Stops

The combined ridership of NCSU's Wolfline and GoRaleigh routes through the corridor results in the highest transit ridership in the City. This heavy demand warrants enhanced facilities to include large shelters and ample seating. Stops near Mission Valley, Centennial Parkway, Crest Road, and Gorman Street should be enlarged. All stops should, at a minimum, have a concrete pad, bench, and shelter. Where stop consolidation is recommended, any opportunity to share transit amenities should be explored. Sharing facilities will improve user experience for all riders and reduce stop location confusion.

Bike Lanes

Bicycle ridership is also heavy in the corridor. A network of interconnected bike lanes is emerging, but critical linkages should be made to connect major destinations. Designated bike lanes currently exist on Gorman Street and on Avent Ferry Road from Gorman Street to Athens Drive. Adding continuous lanes from Gorman Street to Western Boulevard should be a priority. Lateral connections via Centennial Parkway, Varsity Drive, and Crest Road are also important. New bike lanes will be provided as part of the Lake Johnson causeway reconstruction and should be extended to connect to existing lanes on Avent Ferry Road.

To the maximum extent possible, cyclists should be separated or protected from automobile traffic. The ideal bicycle lane should be raised 6" above the roadway, similar to a sidewalk, and separated from both pedestrians and automobiles by a vegetated strip. Where such a condition is not feasible, a combination of pavement material changes and/or mountable curbs should be employed.

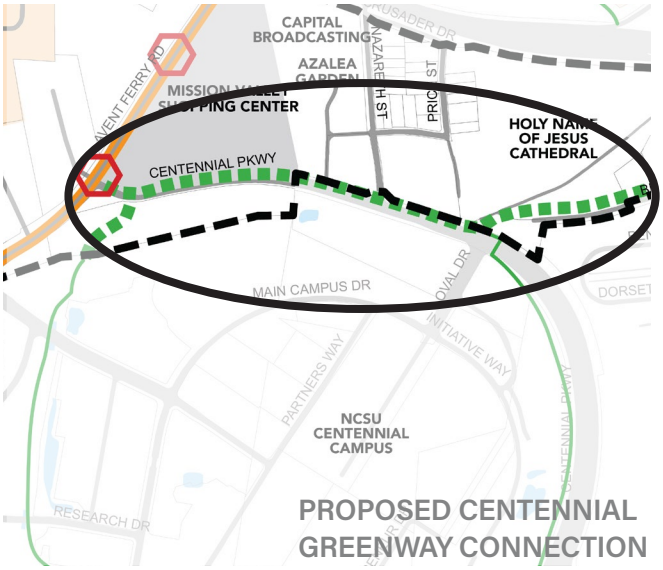
Intersections and driveway cuts should also receive special treatments to minimize bicycle-automobile conflicts. These treatments should follow those outlined in the BikeRaleigh Plan and the Urban Bikeway Design Guide published by the National Association of City Transportation Officials (NACTO). See the Materials and Paving section for further recommendations.

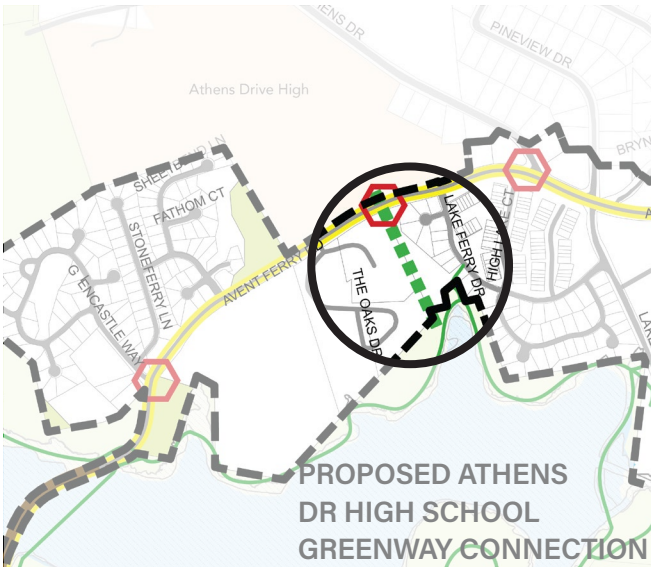
Parks, Greenways & Stroll Ways

Greenways consistently ranked as a priority among public workshop attendees and survey respondents. Currently, a greenway exists linking Lake Johnson to Centennial Campus on the southeast side of Avent Ferry Road. A greenway also extends along the south side of Western Boulevard and provides a connection to the larger Raleigh greenway system. However, connections to and across Avent Ferry Road are extremely limited. These connections are at the intersection of Western Boulevard, a point near Brigadoon Drive and Lake Johnson. The City has acquired easements which should be used to provide greenway connections to Athens Drive High School and Kaplan Drive. The Athens Drive High School connection would provide direct access to overflow parking and the Athens Drive Public Library. The Kaplan Drive connection would provide access to residents through the Kensington Park development and Kentwood City Park. Greenway construction in these easements should be prioritized.

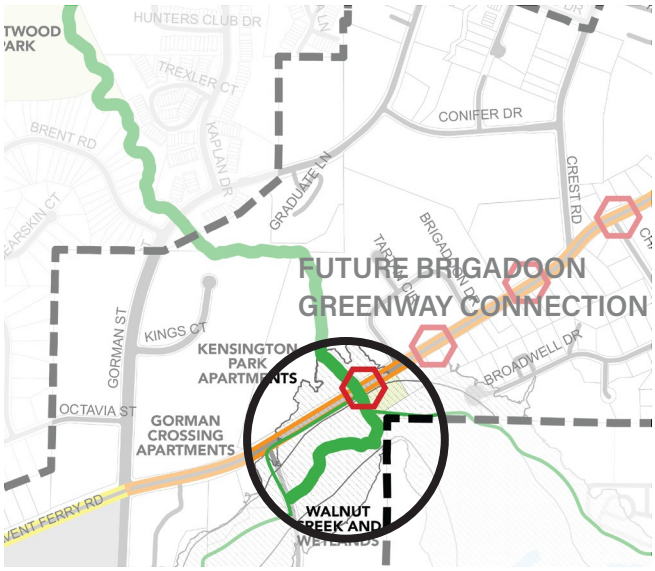
Greenway entrances should be enhanced with wayfinding signage that shows their locations within the overall system and provides distances to regional destinations such as Dorthea Dix Park, State Farmers Market, NCSU, Downtown, Lake Johnson, Meredith College, North Carolina Museum of Art, Crabtree Valley, and North Hills.

The greenway intersects Avent Ferry Road near Brigadoon Drive. The City-owned property on the southeast side of Avent Ferry Road is an excellent opportunity to create a neighborhood greenway hub. An improved crosswalk with traffic signal is essential in this location.





An example of a mid-block crossing across a planted median with stormwater collection. Photo source: buffalorising.com, Newell Nussbaumer; Buffalo, NY



"Stroll ways" are multi-purpose paths that create a safe environment for less experienced or younger bicyclists, or for pedestrians that prefer to walk in a pathway that is separated from the bike and pedestrian networks design into the typical Avent Ferry cross sections. These are often implemented as large sidewalks with-in private developments. As redevelopment occurs along the corridor, developers should provide stroll ways to circulate within their developments. These stroll ways should provide connections to the City maintained network of sidewalks and bike lanes.

Lake Johnson attracts a large number of visitors. At peak times, the existing parking lots on Avent Ferry Road are overwhelmed and cause congestion at park entrances. Where possible, these parking lots should be expanded and include access improvements. Additionally, signage on Avent Ferry Road in the vicinity of Athens Drive and Lake Dam Road should be provided directing users to existing parking at Athens Drive High School, Lake Dam Road, and the Crowder Center. This should reduce demand at the Avent Ferry Road facilities.

Safety

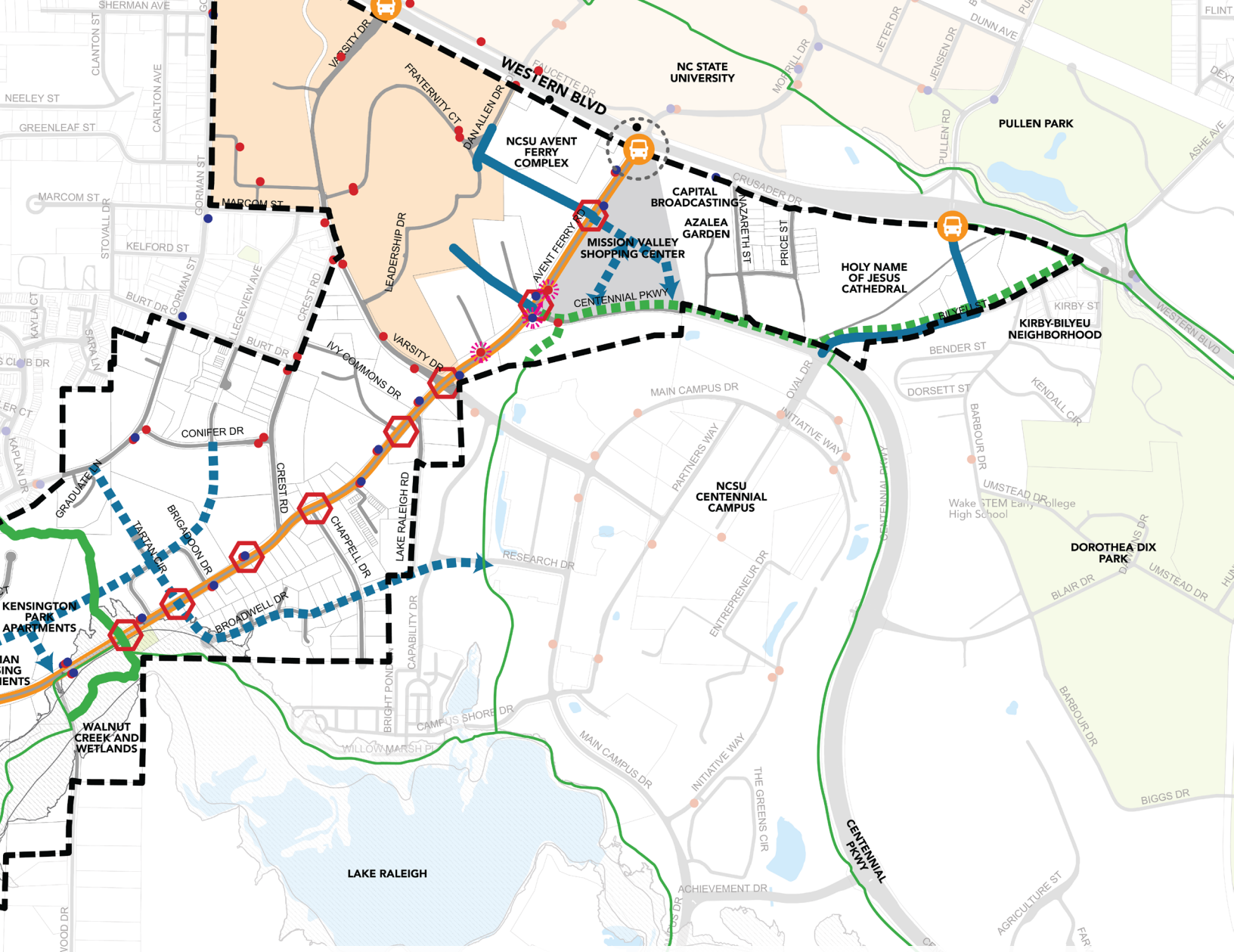
Public demand for upgraded pedestrian and bicycle facilities has been consistently emphasized in this study. Participants noted locations throughout the corridor where improvements are needed to encourage safe pedestrian crossing and enhanced bicycle accommodations. In addition to closing the connectivity gaps outlined previously, installation of safe crosswalks at common crossing points should be a top priority. Other strategies, outlined in more detail later in this report include provisions for grade separated bicycle lanes, intersections designed to isolate bicycle and vehicular lanes, and sidewalks located a safe distance from vehicular traffic.

The proposed Connectivity Map highlights specific locations where safety may be dramatically improved. It also outlines a theoretical street grid that should be implemented as individual properties are redeveloped. Each new redevelopment plan should attempt to provide the connections described on this map.

Redevelopment of Mission Valley Shopping Center and Avent Ferry Shopping Center will eventually create nodes of activity that bookend the corridor segment between Western Blvd and Gorman Street. Redevelopment in the rest of the corridor should occur at a lower intensity than either of the shopping centers but implement several key design principles. This will help create a network of connected streets and pedestrian and bicycle paths. Parking between buildings and Avent Ferry Road should be eliminated, dead-end streets avoided, and driveway cuts reduced. Redevelopment should interconnect projects with internal streets and access for pedestrians and cyclists. This will allow residents to move between developments without necessarily accessing Avent Ferry Road.

Proposed Comprehensive Plan Amendments for Raleigh Street and Greenway Plans:

- The dashed, dark blue streets shown in the map above are recommended additions to the Street Plan.
- The dashed, dark green lines shown in the map are recommended additions to the Capital Greenway Master Plan.



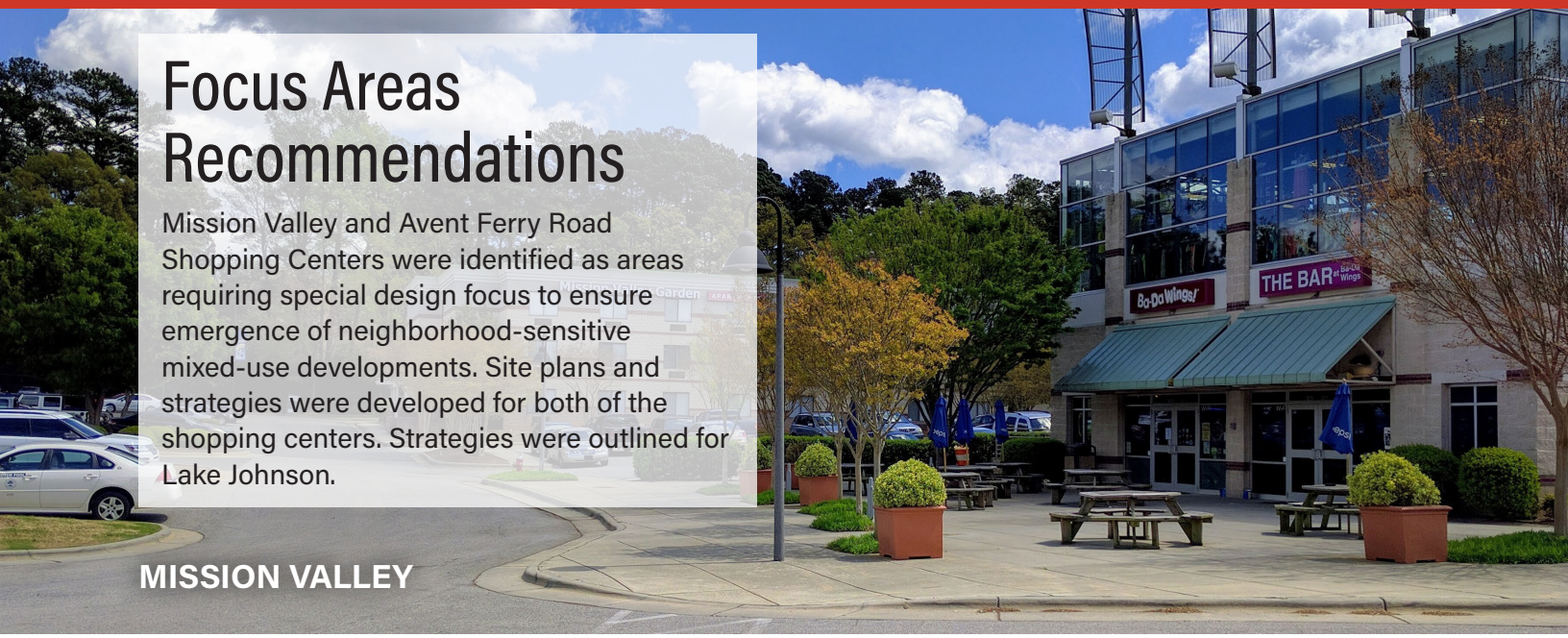
The proposed streets within the focus areas are recommended as Main Street, Parallel Parking street type. For more information on this street type, please see the site plan for each focus area on .pgs 48 and 50. The recommended streets outside of the focus areas would be Neighborhood Streets, refer to Unified Development Ordinance (UDO) for more details on this street type.

CONNECTIVITY LEGEND

- Potential BRT Station
- Wolfline Stops
- GoRaleigh Stops
- GoTriangle Stops
- Recommended Stop Consolidation or Removal
- Existing Streets
- PROPOSED Street in Raleigh Street Plan
- RECOMMENDED Addition to Raleigh Street Plan
- RECOMMENDED Bike Facility: Raised, buffered On-road, buffered
- Existing Greenway Trail
- PROPOSED Trail in Capital Area Greenway Plan
- RECOMMENDED Addition to Capital Area Greenway Plan
- RECOMMENDED Improved bicycle/ pedestrian crossing
- Parcels
- Lakes & Streams
- Parks and Open Space
- Focus Areas
- Floodplain

Focus Areas Recommendations

Mission Valley and Avent Ferry Road Shopping Centers were identified as areas requiring special design focus to ensure emergence of neighborhood-sensitive mixed-use developments. Site plans and strategies were developed for both of the shopping centers. Strategies were outlined for Lake Johnson.



MISSION VALLEY

AVENT FERRY SHOPPING CENTER

LAKE JOHNSON

Strategies for MVSC:

- Enhance street network.
- Devise a master plan that includes a mix of uses at the Mission Valley Shopping Center.
- Upgrade and renovate the Mission Valley Shopping Center to attract a wider variety of food and beverage options; for example, breweries, international markets, restaurants, and local health food stores.
- Integrate flexible work space, housing, and lodging.
- Invest in multimodal transportation infrastructure that provides access to the Mission Valley area from NCSU, Centennial Campus, Dix Park, and points south along the corridor.
- Explore development scenarios including TOD overlay.

Mission Valley Mixed-Use Regional Destination

Situated along the southern edge of the business and civic districts of Downtown Raleigh, this area is a key center of influence and close to NCSU, parks, public facilities, and the downtown business and government core. This area has potential for a successful urban retrofit, with new, denser mixed-use office and retail development. Redevelopment could include replacing Mission Valley's existing buildings, eliminating surface parking, and providing convenience-oriented retail.

Strategies for AFSC:

- Devise a strategic master plan to include the Avent Ferry Shopping Center and NSCU (former and existing Greek housing) sites.
- Upgrade and renovate the Avent Ferry Shopping Center to integrate more traditional work spaces and housing options for a walkable mixed-use environment.
- Provide connectivity from redeveloped areas to existing greenways and pathways for an enhanced bicycle and pedestrian network.
- Create street connectivity.

Avent Ferry Shopping Center Mixed-Use Neighborhood Center

Repositioning this area would create an opportunity for additional retail uses and other new housing options. Such redevelopment would also strengthen existing stores and businesses in this section of the corridor and provide opportunities for others to relocate to this "central place."

Strategies for Lake Johnson:

- Invest in transportation and park infrastructure for improved and appropriately scaled access to the Woodland Center and other Lake Johnson park destinations.
- Improve greenway access and wayfinding to Lake Johnson Park from Dix Park.
- Enhance access and parking.

Lake Johnson Recreational Area

Lake Johnson Park is bifurcated by Avent Ferry Road and is a popular regional and local recreational destination that also serves as a significant ecological resource and preserve. The park includes the Thomas G. Crowder Woodland Center.

Mission Valley Shopping Center

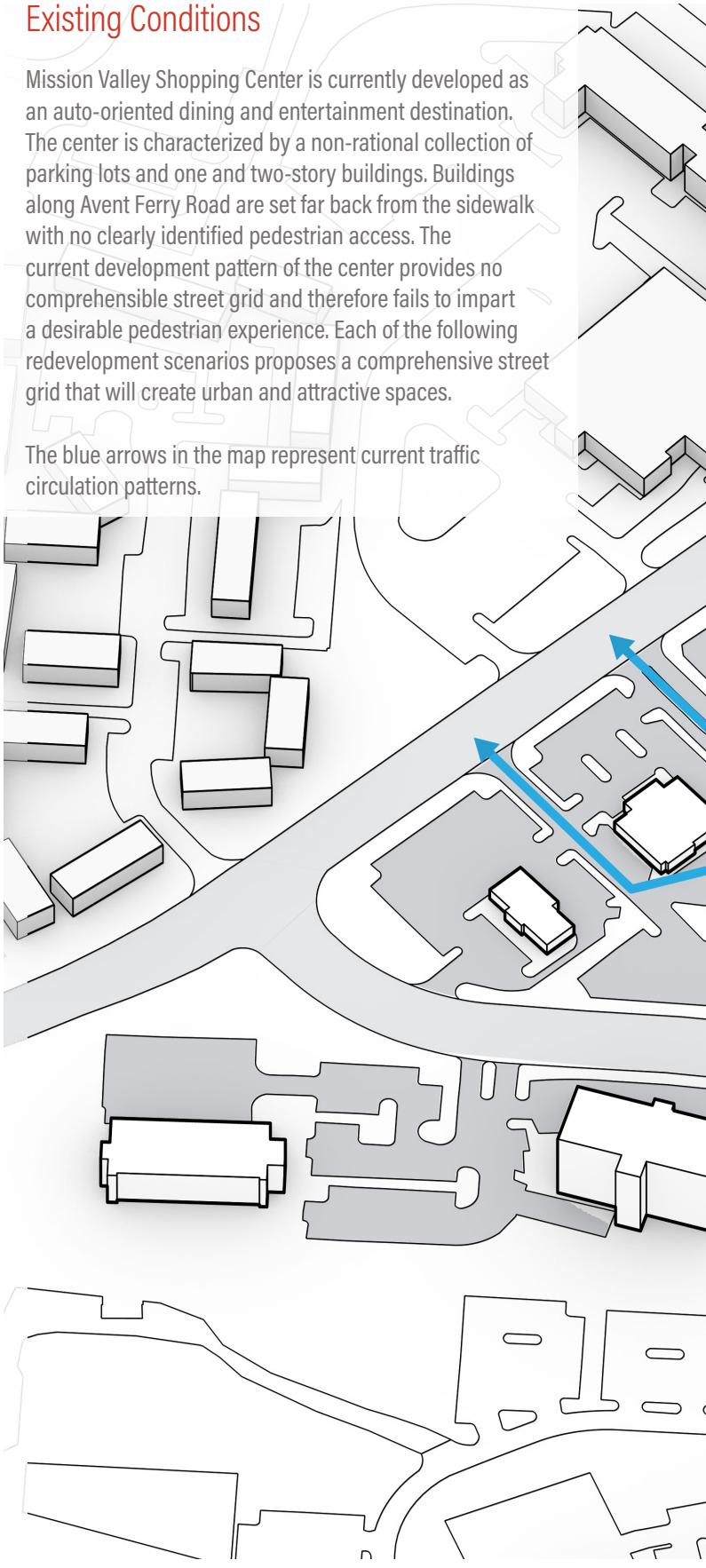
Vision

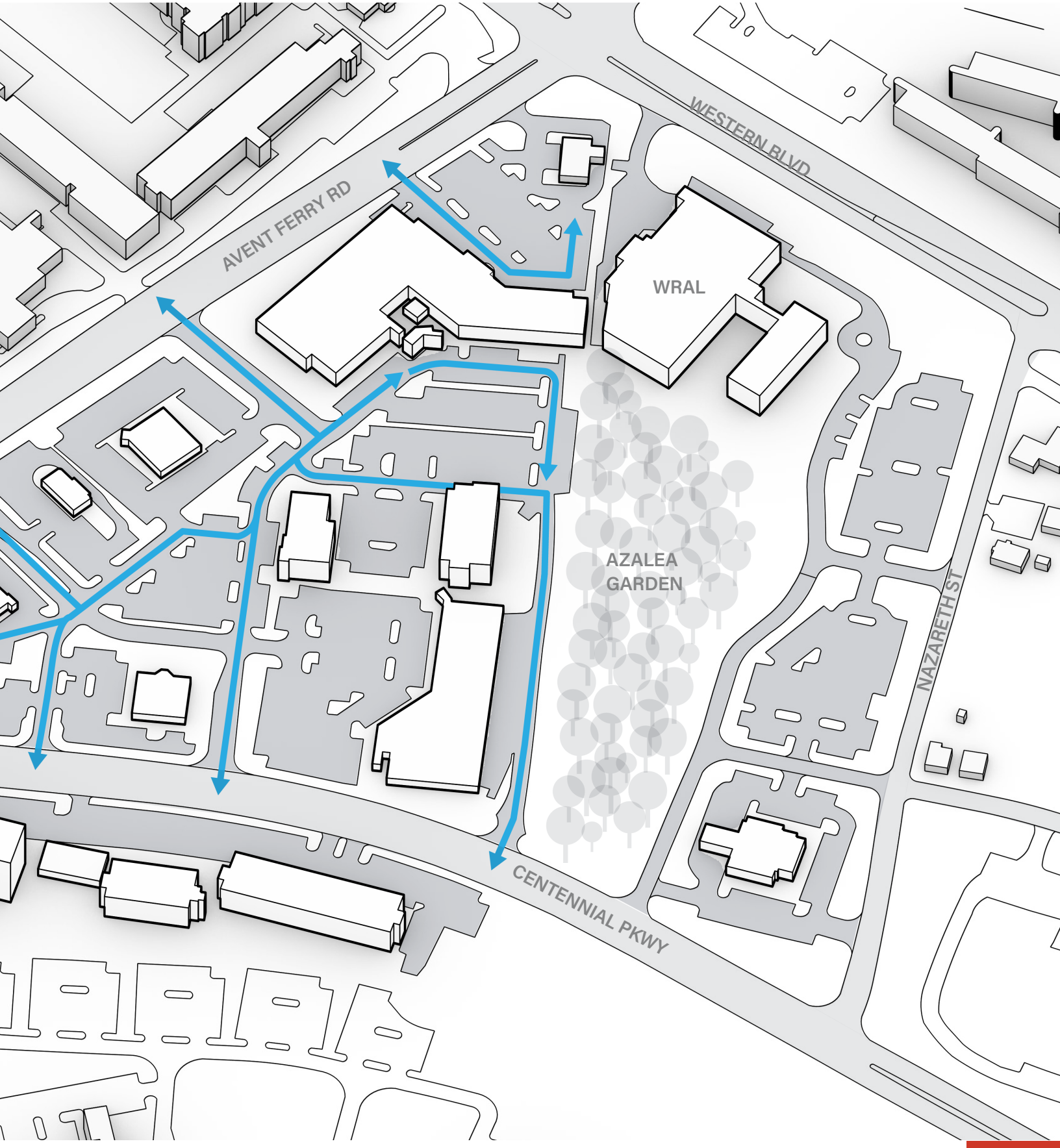
Mission Valley Shopping Center (MVSC) and the surrounding properties should be redeveloped as a regional mixed-use center and serve as a catalyst and anchor for further development along the corridor. The development should leverage transit opportunities provided by the proposed BRT route along Western Boulevard, mixed-use developments on Centennial Campus and adjacent properties, and the development of the Dorthea Dix Park property. The community should emerge as a highly connected nucleus of activity linking all the surrounding uses. The redevelopment should substantially increase residential density and provide for a diverse mix of street-level retail uses. The community should continue to support the diverse collection of small business that give the existing shopping center its international character and also allow for the inclusion of anchor retailers, hotel, and other regional amenities. Public and semi-private space should be abundant and provide diverse programming opportunities indicative of a vibrant urban neighborhood. Green infrastructure to reduce stormwater impacts and lessen the carbon footprint are encouraged. Much denser development, including taller buildings, should be considered in this area.

Existing Conditions

Mission Valley Shopping Center is currently developed as an auto-oriented dining and entertainment destination. The center is characterized by a non-rational collection of parking lots and one and two-story buildings. Buildings along Avent Ferry Road are set far back from the sidewalk with no clearly identified pedestrian access. The current development pattern of the center provides no comprehensible street grid and therefore fails to impart a desirable pedestrian experience. Each of the following redevelopment scenarios proposes a comprehensive street grid that will create urban and attractive spaces.

The blue arrows in the map represent current traffic circulation patterns.




WESTERN BLVD
AVENT FERRY RD
WRAL
AZALEA
GARDEN
NAZARETH ST
CENTENNIAL PKWY

MVSC Planning Recommendations

Height and building relationships to the street are key elements in defining the look, feel, and experience of an urban neighborhood. Several concepts were tested during the public workshops and in a follow-up online survey. The consensus among participants and respondents was to set a height limit of five to seven stories for the building façades facing the street with a maximum height of seven stories. Additional height allowances should be considered if other public space or amenities are proposed. Additional height should also consider topography, proximity to adjacent properties, and shade/wind impacts along pedestrian corridors.

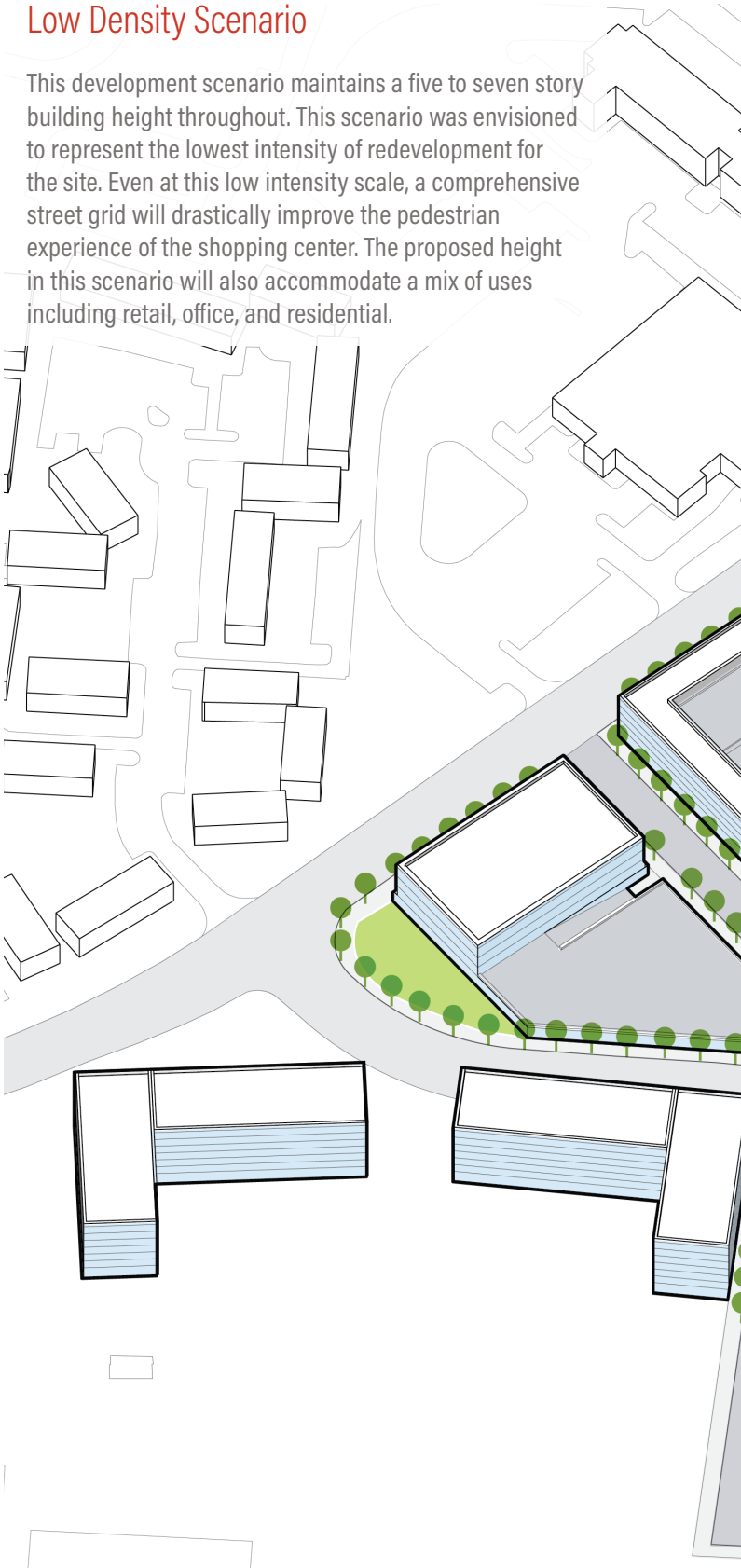
Respondents emphasized the importance of a quality pedestrian experience that provides ample sidewalk space for outdoor dining and amenities. To accomplish this, an Urban Limited Frontage is recommended. Typically, Urban Limited Frontages are applied where the desire is to keep buildings relatively close to the street, but parking is undesirable between buildings and the curb. The modified frontage allows a 0' setback with a maximum of 20' between curb and face-of-building. At MVSC, any landscaping included within the frontage should be met with a mix of landscape areas, street trees, trees in pits or planters, and wide sidewalks. Paving is desirable within the setback to provide urban streetscape amenities. Trees should be planted according to the Raleigh Tree Manual to ensure their health and longevity.

The existing Avent Ferry Road right-of-way is 95'. This width does not provide adequate space to meet demands for a wider sidewalk, street trees, and protected bicycle lane. Therefore, future development should dedicate 7'-9' (variable) right-of-way along Avent Ferry Road to accommodate a 14' minimum sidewalk, 6' bike lane, and 6' planting/amenity strip. Maximum streetscape width from back of curb to build-to line should be 20'. This includes the recommended 14' sidewalks.

To accommodate all the goals described above, MVSC will eventually need to be rezoned. A rezoning will allow for the desired increase in residential density and create an urban environment comfortable for pedestrians and bicyclists.

Low Density Scenario

This development scenario maintains a five to seven story building height throughout. This scenario was envisioned to represent the lowest intensity of redevelopment for the site. Even at this low intensity scale, a comprehensive street grid will drastically improve the pedestrian experience of the shopping center. The proposed height in this scenario will also accommodate a mix of uses including retail, office, and residential.




POTENTIAL BRT STATION
AND PEDESTRIAN TUNNEL
WESTERN BLVD
AVENT FERRY RD
WRAL
AZALEA
GARDEN
NAZARETH ST
CENTENNIAL PKWY

An additional goal within the MVSC vision is to maximize its proximity to a future BRT stop near the Avent Ferry Road and Western Boulevard intersection. A Transit Oriented District (TOD) overlay should be considered for this area and structured parking emphasized. The TOD provides for reduced parking requirements and limits the amount of allowable surface parking. To further leverage the benefits of the planned BRT station, adequate public space should be provided adjacent to the station. This space should serve as a gateway/ gathering area for transit riders. Current design guidelines call for buildings to occupy the property corners at street intersections.

Connectivity is a critical concern for the success of the future MVSC redevelopment. Currently the site consists of a confusing network of surface parking and poor connection to Centennial Campus to the south as well as student housing to the west. Redevelopment should clarify internal circulation and provide safe and intuitive connections to neighboring properties.

Pedestrian crossings to Centennial Campus should be coordinated with NCSU and accommodate pedestrian “desire lines” identified in their recently completed campus connectivity plan. Along Avent Ferry Road, pedestrian crossings should be spaced no more than 600’ apart. Pedestrian refuges should be provided in the center median to facilitate Avent Ferry Road crossings.

Medium Density Scenario

This development scenario maintains a five to seven story building height at the edges of the shopping center with the exception of a single centralized twelve story tower. The same improved street grid is utilized in this scenario. In exchange for a selectively located increased allowance for height, this scenario proposes a pedestrian promenade that extends the length of the shopping center from north to south. Tadeoffs for additional height should be leveraged additional public amenities.


POTENTIAL BRT STATION
AND PEDESTRIAN TUNNEL
WESTERN BLVD
AVENT FERRY RD
WRAL
POTENTIAL PEDESTRIAN CONNECTION
AZALEA
GARDEN
NAZARETH ST
CENTENNIAL PKWY

Active public space is critical to the success of an urban mixed-use development and facilitates social interactions and community cohesiveness. Public spaces of varying sizes should be distributed throughout the development. A large central public space should anchor the development. Other public and semi-public spaces should include the BRT plaza, sidewalk dining, and small pocket parks. Rooftop plazas and gardens are also encouraged.

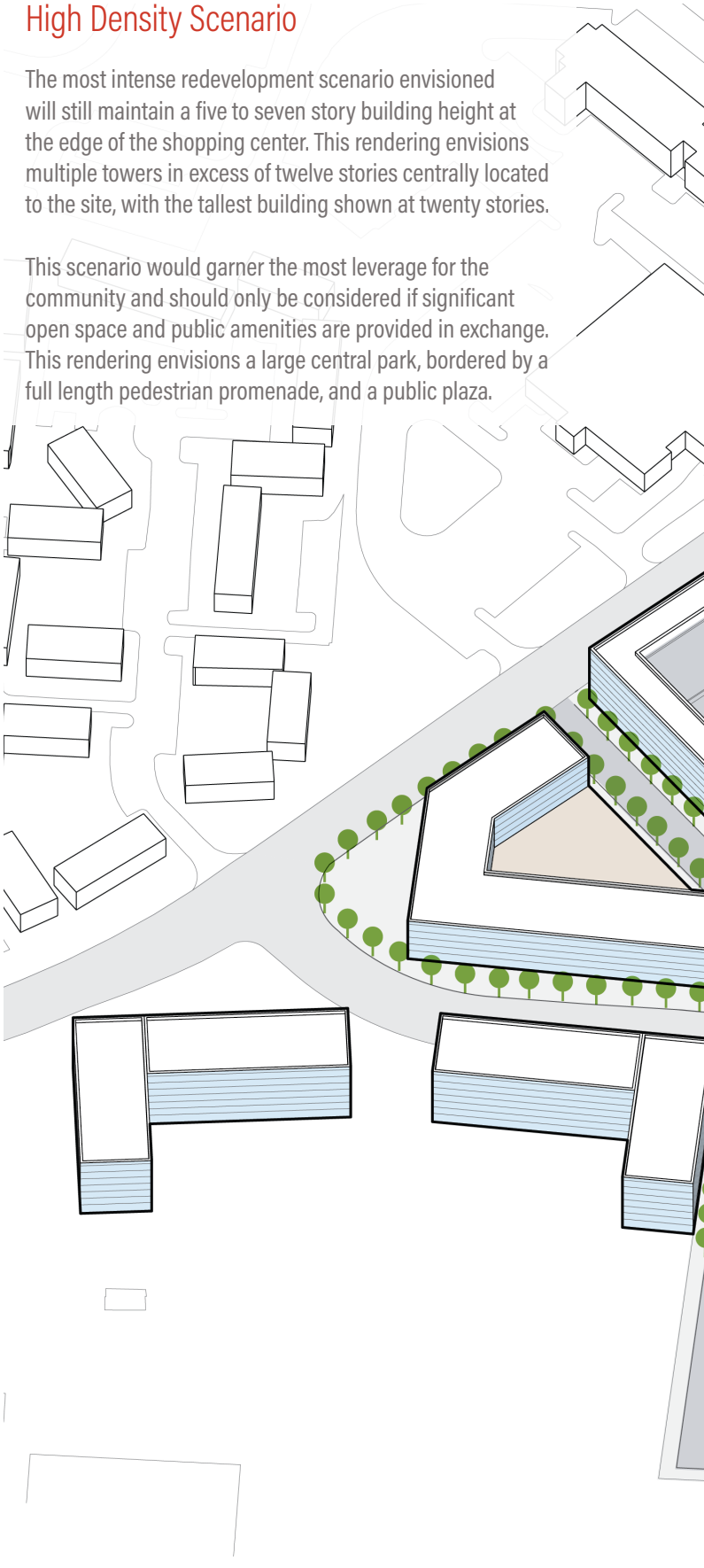
Mission Valley Shopping Center should be considered part of a larger district that incorporates the properties extending eastward to the Holy Name of Jesus Cathedral. Redevelopment on these properties should also maximize their proximity to the future BRT stations, Dorthea Dix Park, and Centennial Campus. Buildings on these properties should be of a complimentary scale to the shopping center, but taper in height towards the Cathedral. Nazareth Street should be recognized as a primary bicycle and pedestrian connection for students moving between NCSU's Centennial and Main Campuses.

A detailed master plan for this area would help to ensure a unified redevelopment vision for MVSC.

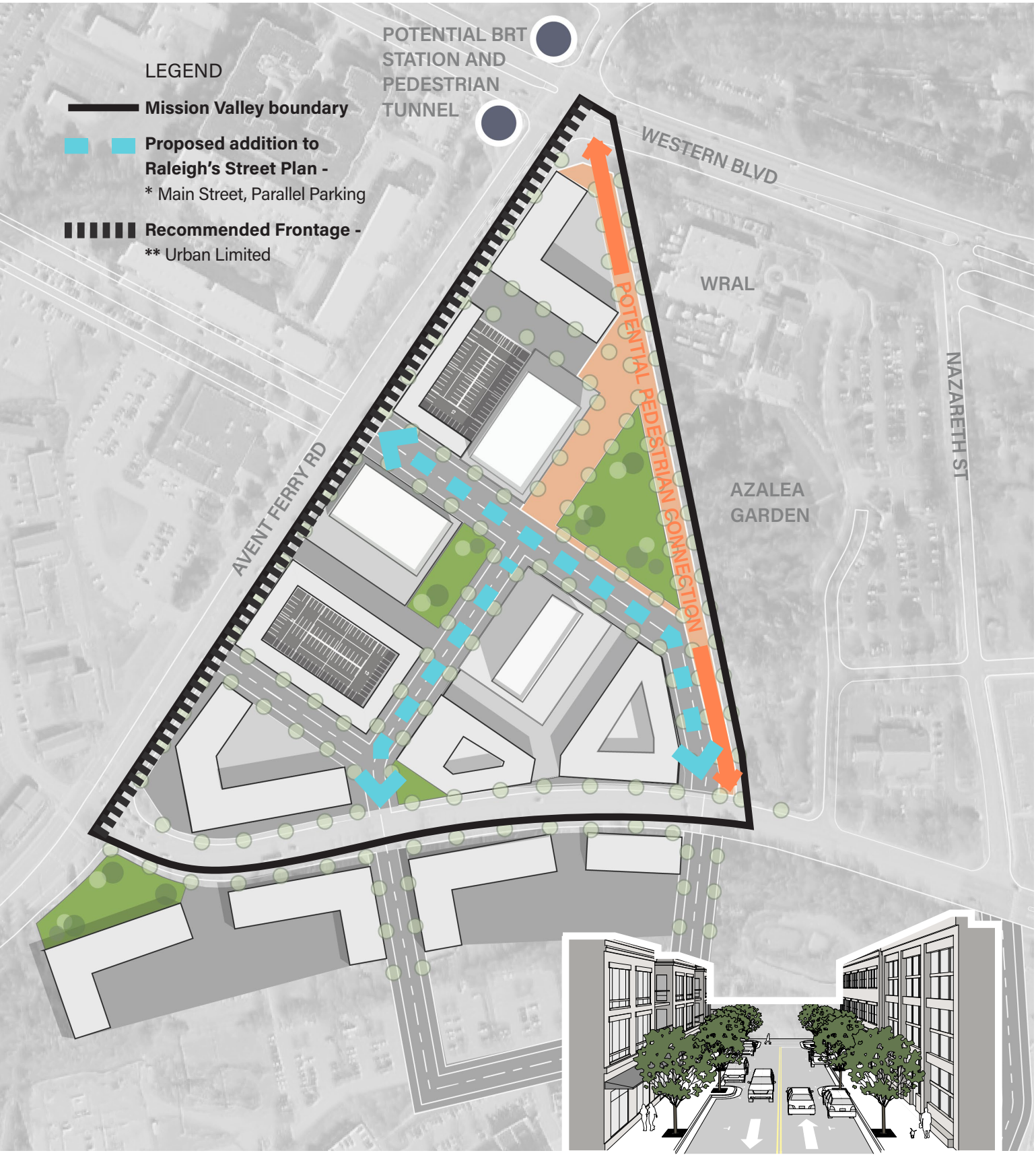
High Density Scenario

The most intense redevelopment scenario envisioned will still maintain a five to seven story building height at the edge of the shopping center. This rendering envisions multiple towers in excess of twelve stories centrally located to the site, with the tallest building shown at twenty stories.

This scenario would garner the most leverage for the community and should only be considered if significant open space and public amenities are provided in exchange. This rendering envisions a large central park, bordered by a full length pedestrian promenade, and a public plaza.




POTENTIAL BRT STATION
AND PEDESTRIAN TUNNEL
WESTERN BLVD
AVENT FERRY RD
WRAL
POTENTIAL PEDESTRIAN CONNECTION
POTENTIAL
OPEN SPACE
AZALEA
GARDEN
NAZARETH ST
CENTENNIAL PKWY

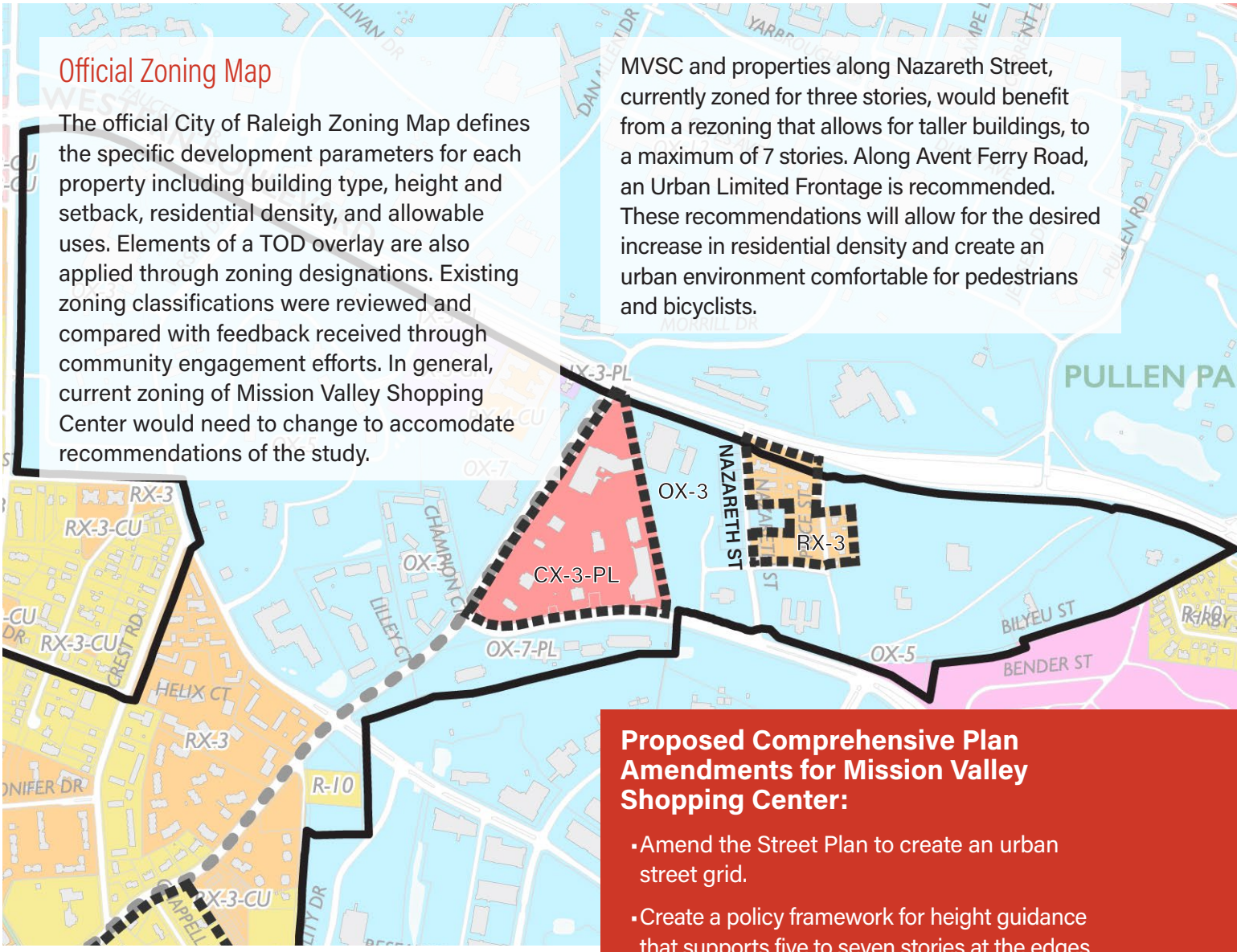


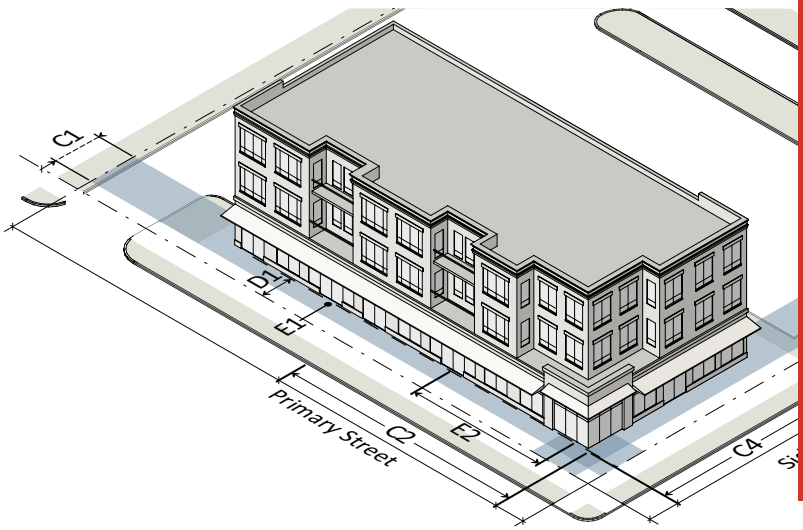
* Example image of Main Street, Parallel Parking from Raleigh's Unified Development Ordinance

Official Zoning Map

The official City of Raleigh Zoning Map defines the specific development parameters for each property including building type, height and setback, residential density, and allowable uses. Elements of a TOD overlay are also applied through zoning designations. Existing zoning classifications were reviewed and compared with feedback received through community engagement efforts. In general, current zoning of Mission Valley Shopping Center would need to change to accomodate recommendations of the study.

MVSC and properties along Nazareth Street, currently zoned for three stories, would benefit from a rezoning that allows for taller buildings, to a maximum of 7 stories. Along Avent Ferry Road, an Urban Limited Frontage is recommended. These recommendations will allow for the desired increase in residential density and create an urban environment comfortable for pedestrians and bicyclists.





** Example image of Urban Limited Frontage from Raleigh's Unified Development Ordinance

Proposed Comprehensive Plan Amendments for Mission Valley Shopping Center:

- Amend the Street Plan to create an urban street grid.
- Create a policy framework for height guidance that supports five to seven stories at the edges of the shopping center with allowances for additional height considered in exchange for significant public amenities.
- Urban Form for the shopping center should conform with the Urban Limited Frontage designation along Avent Ferry Road.
- New internal street networks should support buildings closer to the street edge.
- Due to its proximity to a future BRT stop, the site is recommended for consideration as a future Transit Overlay District with potential for denser mixed-use development.

Avent Ferry Shopping Center

Vision

The Avent Ferry Shopping Center (AFSC) marks a transition between the higher density multi-family developments to the northeast and the single-family neighborhoods southwest of Gorman Street. As such, AFSC should be repositioned as a mid-density lifestyle mixed-use center that creates opportunities for additional retail, office, and housing options. AFSC should redevelop in a manner sensitive to the adjacent single-family neighborhoods in scale and density, and provide the community with a friendly, walkable, mixed-use amenity. Diversification of uses should expand entertainment and recreational offerings for the surrounding neighborhoods. A central public space or square should be included in the long-term redevelopment strategy.

AFSC Planning Recommendations

Ideally, the Avent Ferry Shopping Center would be entirely redeveloped in a single phase to create a neighborhood mixed-use center. However, long-term lease agreements and recent out-parcel construction make that unrealistic. Therefore, short-term renovations and redevelopment should be encouraged to raise the center's identity as a neighborhood hub by encouraging improved connectivity and appearance.

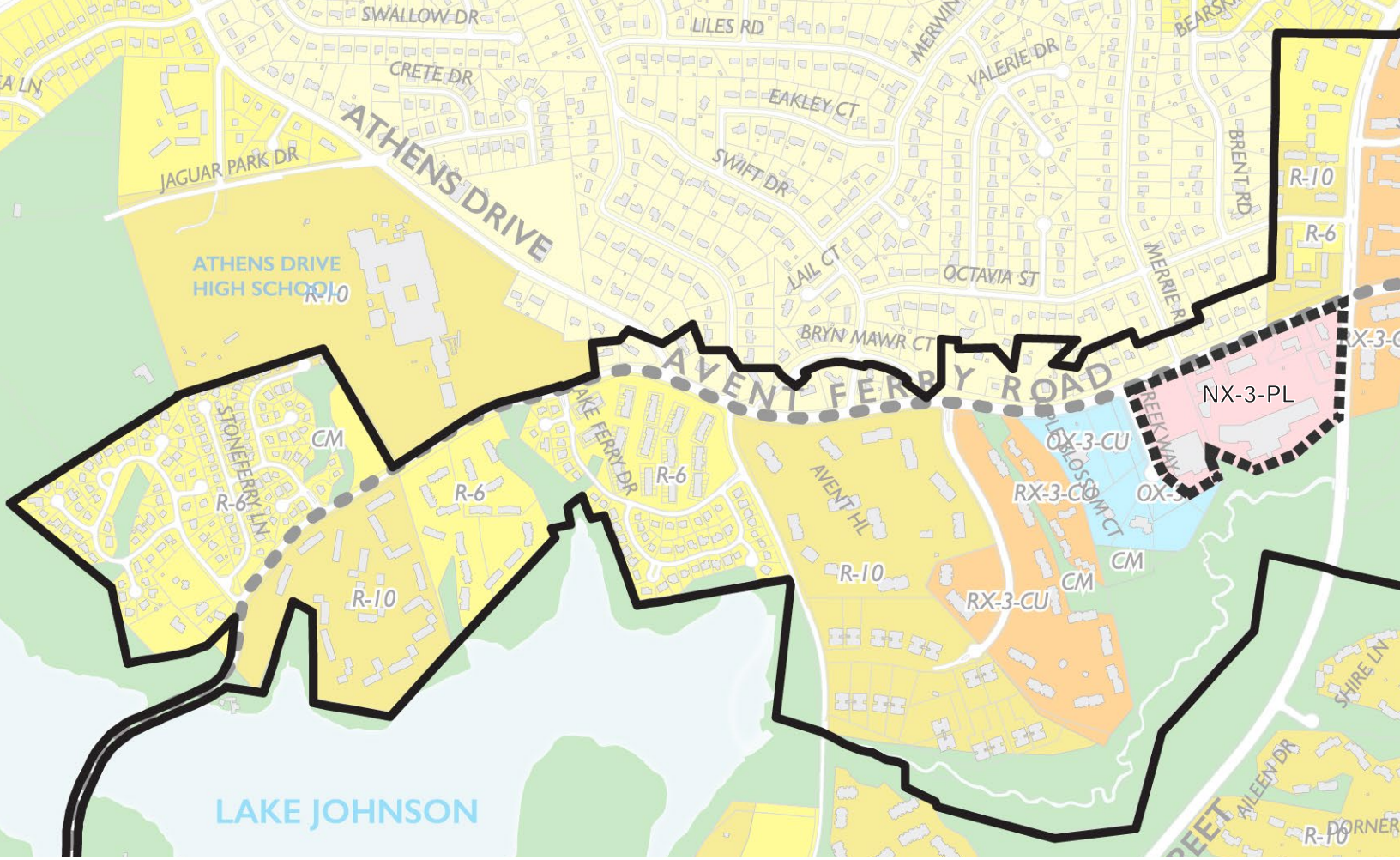
Proposed Comprehensive Plan Amendments for Avent Ferry Shopping Center:

- Amend the Street Plan to create an urban street grid.
- Create a policy framework for height guidance of three to five stories, with height along Avent Ferry Road not exceeding three stories. Additional height should be focused away from existing detached residential properties.
- Urban Form for the shopping center should conform with the Green Frontage designation.
- Provide connection from the site to the Walnut Creek Greenway.

Potential Redevelopment Pattern

Any redevelopment scenario for the Avent Ferry Shopping center should establish an urban street grid to position the site as a pedestrian friendly neighborhood center. Building heights should not exceed three stories along Avent Ferry Road and buildings as tall as five stories should be considered at other locations on the property. This redevelopment scenario lays out a comprehensive street grid and potential building placement. Redevelopment of this site should include retail, office, and residential uses.

*Example image of Main Street, Parallel Parking from Raleigh's Unified Development Ordinance



The AFSC is outlined with its existing zoning labeled. By recommending increased height and a green, urban frontage at the Avent Ferry Shopping Center, wider sidewalks and more robust public amenities will be possible.

Workshop participants and online survey respondents indicated that building height at the street frontage should be limited to three stories. Building heights internal to the site should be capped at five stories. Additional height may be authorized if more public space is dedicated. However, expanded height should only be allowed on the wetland-facing side of the property. Height on the Avent Ferry Road frontage should not exceed three stories.

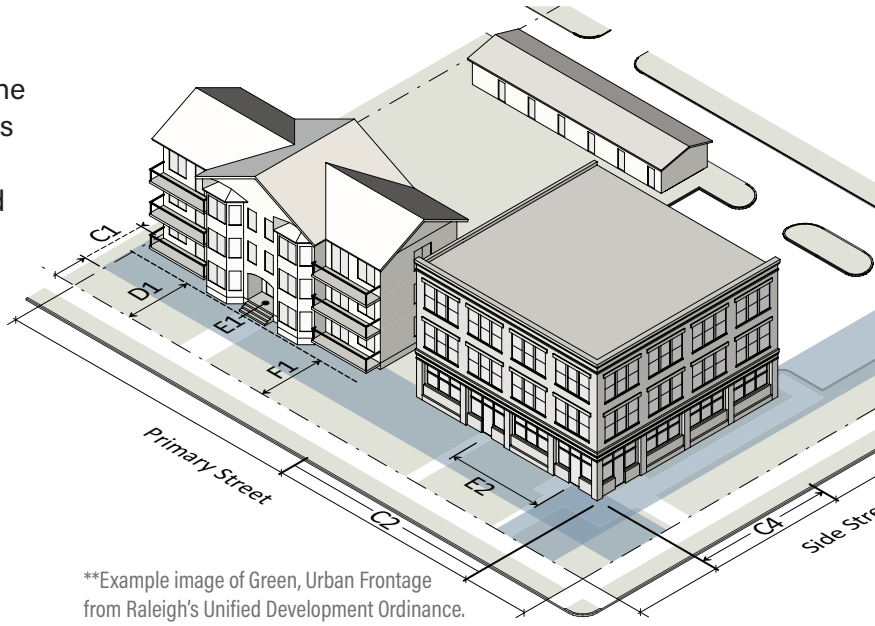
Similar to the MVSC, Green Frontage areas are intended to provide space to accommodate a wide sidewalk with street-side dining and other amenities. The landscaping within the frontage should include a mix of landscape areas, street trees, trees in planters, and wide sidewalks. Paving is desirable within the setback to support urban streetscape amenities. Trees should be planted according to the 2015 City Tree Manual prepared by the City of Raleigh Parks, Recreation and Cultural Resources Department, and Urban Forestry to ensure their health and longevity.

It is important to improve pedestrian connectivity within the Corridor and surrounding areas. The site is adjacent to the Walnut Creek Greenway and a link from the south side of the property to greenway should constructed. An improved pedestrian crossing at Merrie Road should also be built. The crossing in this area should provide a median for pedestrian refuge.

The residential parcel discussed below is outlined labeled with its current zoning, R-10. By increasing the recommended building height for key parcels along the Avent Ferry Corridor, safer, more connected streets and pedestrian/bicycle networks will be possible.

Official Zoning Map

In general, current zonings are consistent with the community vision; however, specific adjustments to street frontages and building heights are necessary. These recommendations are detailed in the specific site discussions found in the Implementation section of this document.



**Example image of Green, Urban Frontage from Raleigh's Unified Development Ordinance. This type of frontage is recommended for the Avent Ferry Shopping Center, along Avent Ferry Road.

Future Land Use

The Raleigh Future Land Use Map provides general guidance regarding the type and density of development that should be pursued for specific properties. The Map is an official part of the 2030 Comprehensive Plan and guides the City's policy and development decisions, particularly with regard to site planning and rezoning requests. In general, development proposals and rezoning requests consistent with the Future Land Use Map are more easily approved through the regulatory and site permitting processes. The map outlines future land uses, though in many cases the classifications of the Map match existing uses and conditions. Dominant classifications in the Avent Ferry Corridor include institutional, public parks and open space, residential of varying density, and mixed-use centers.

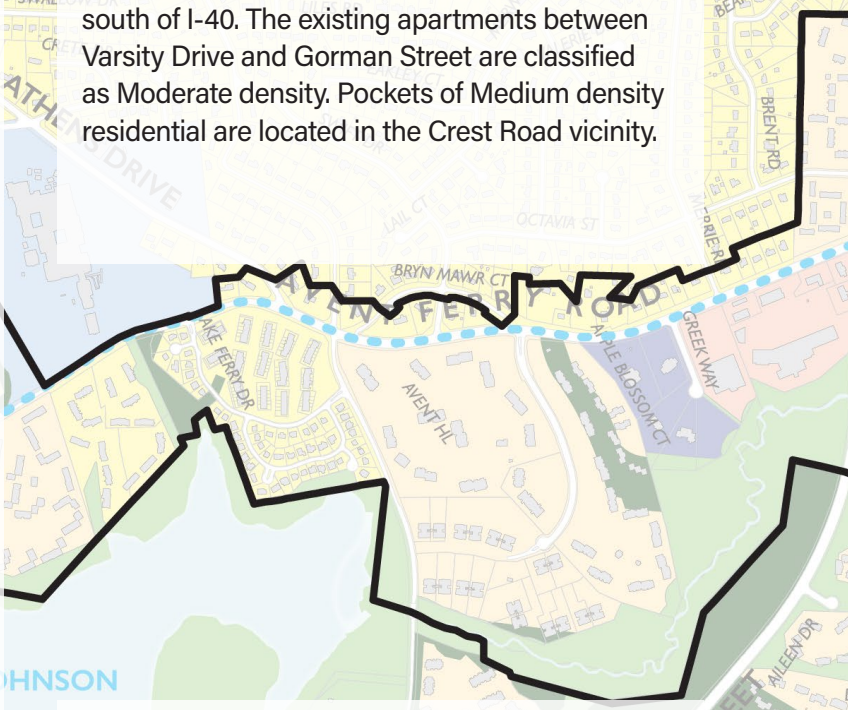
Key features in the corridor include mixed-use classifications at Mission Valley and Avent Ferry Shopping Centers. Mission Valley is classified as a Community Mixed-Use. This classification provides for mid-rise buildings and a wide variety of commercial uses including regional attractors like movie theaters, hotels, and large format grocery, and department stores. Smaller, boutique restaurants and retail operations are also encouraged.

Avent Ferry Shopping Center is classified as Neighborhood Mixed Use. This is a lower intensity development type compared to Community Mixed-Use. This category facilitates development with service areas within approximately one square mile. These areas should be pedestrian-friendly environments and provide services aimed at the local neighborhood including restaurants, drug stores, small professional offices, and small to mid-size specialty grocery stores. Building heights are generally three stories.

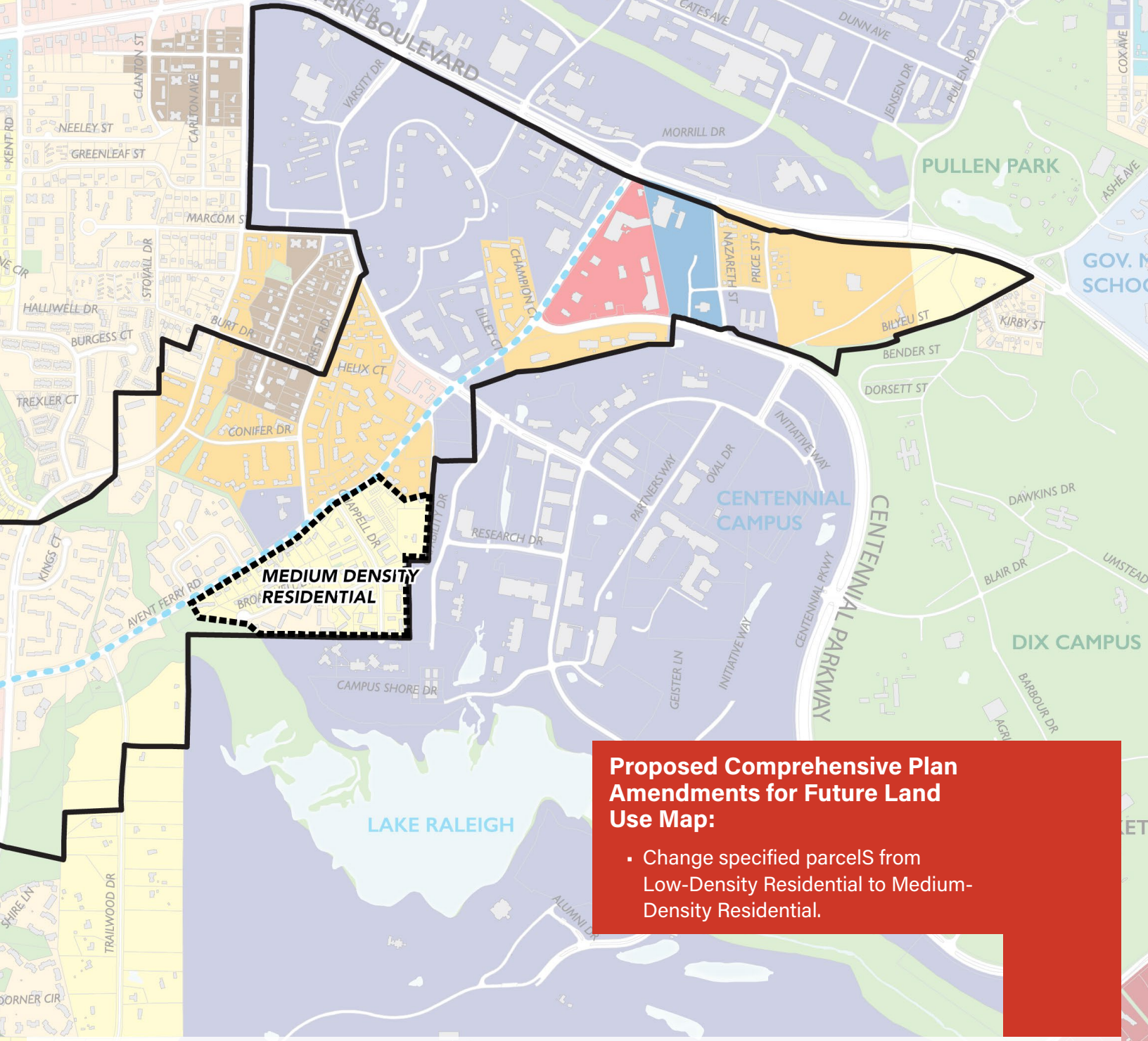
Much of the corridor is owned by NC State University and falls within the Institutional classification. Site-specific land use decisions on these properties are guided by the University's latest master plans.

Lake Johnson Park occupies a large portion of the southern corridor. New development will not occur on this property and its classification is protected.

The balance of the corridor is classified as Low (single-family houses), Moderate (garden apartments) or Medium (townhome/apartment complexes) Residential. Low density residential includes the single- family neighborhoods between Gorman Street and Athens Drive and south of I-40. The existing apartments between Varsity Drive and Gorman Street are classified as Moderate density. Pockets of Medium density residential are located in the Crest Road vicinity.



The current Raleigh Future Land Use Map is consistent with the findings of this analysis and community goals with the exception of the area around Chappel Drive and Brigadoon Drive. This area is currently classified as Low Density Residential. To meet the goals of increased housing density and because of its proximity to Centennial Campus, this area should be reclassified to Medium Density Residential. The remainder of the corridor is appropriately classified and provides for preservation of existing single-family neighborhoods, increased residential density, and higher intensity mixed-use developments at the Mission Valley and Avent Ferry Shopping Centers.



Proposed Comprehensive Plan Amendments for Future Land Use Map:

- Change specified parcelS from Low-Density Residential to Medium-Density Residential.

The only recommended change to the FLUM map is outlined above. The parcels are recommended to change from Low-Density Residential to Medium-Density Residential.

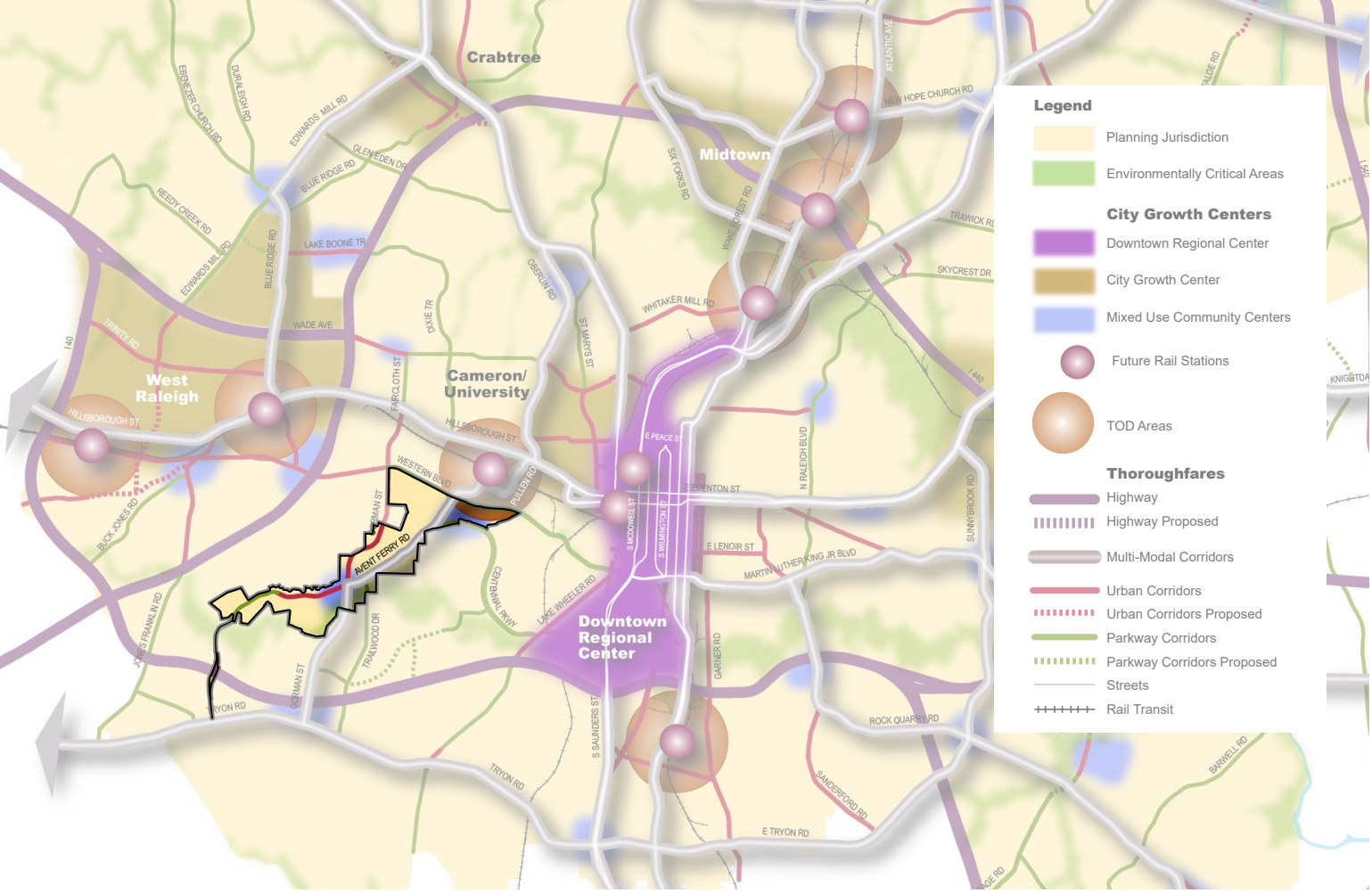
FUTURE LAND USE

- Neighborhood Mixed Use
- Office & Residential Mixed Use
- Community Mixed Use
- Regional Mixed Use
- Central Business District
- Office/Research & Development
- Business & Commercial Services
- Institutional
- General Industrial
- Rural Residential
- Low Density Residential
- Medium Density Residential
- Moderate Density Residential
- High Density Residential
- Public Facilities
- Public Parks & Open Space
- Private Open Space
- Special Study Area
- Avent Ferry Study Area
- Avent Ferry Corridor
- Street
- Parcel

N

0 0.25 0.5 1 Miles

Scale: 1" = 1/8 Mile



The current Growth Framework Map with the Avent Ferry Corridor Study boundary outlined in black. This map aligns with the Study's findings and no changes are recommended.

Off-Corridor Improvements

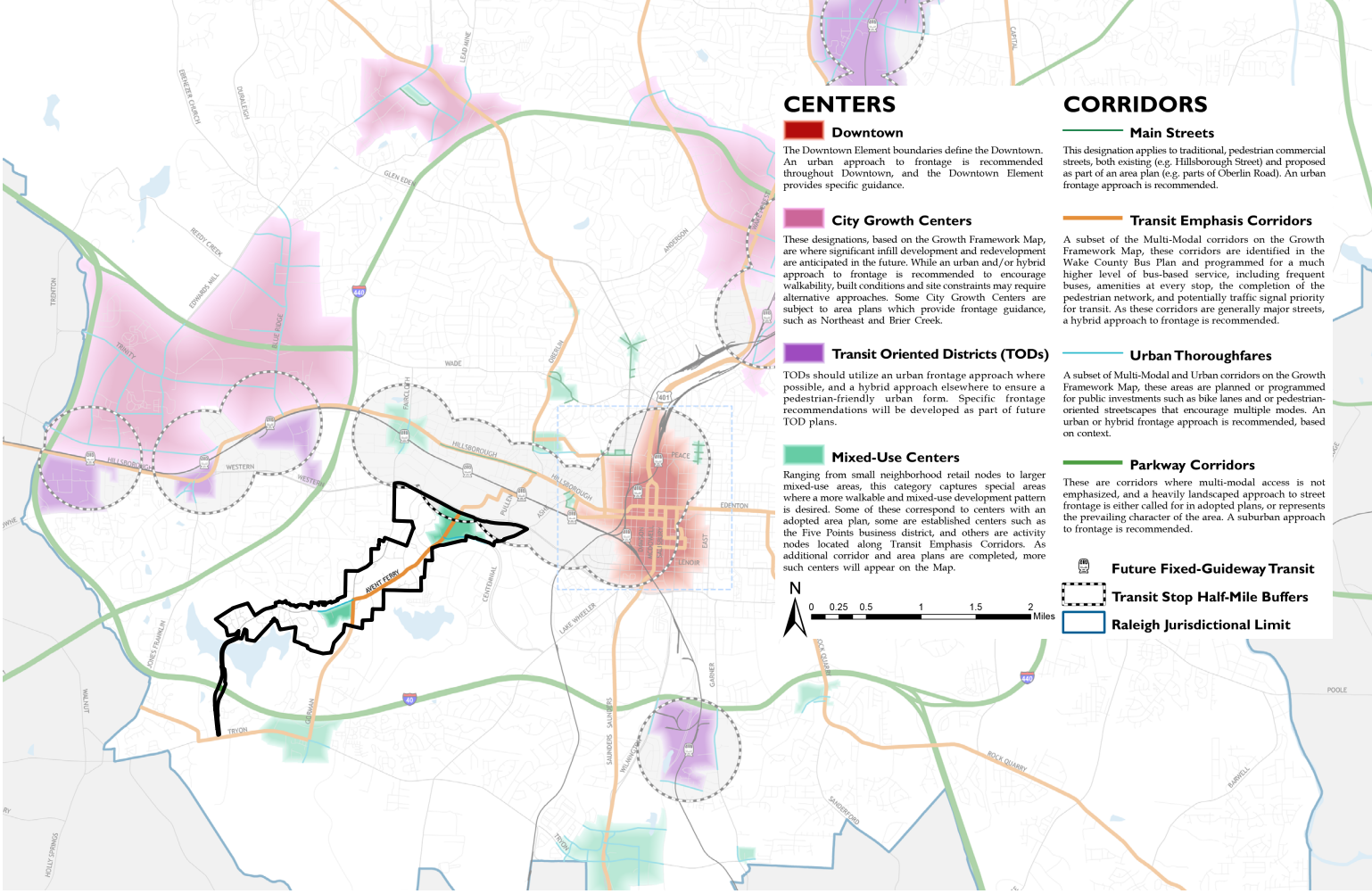
There are several opportunities to improve connectivity between Avent Ferry Road proper and surrounding areas of influence. Those areas include the Fraternity Court, Dix Park, and the Crest Road areas.

NCSU has prepared a master plan for Fraternity Court and Greek Village Drive which includes potential connections to Champion Court and the parking lot for the Avent Ferry Residence Hall. The connection through the parking lot presents an opportunity to provide a comfortable and safe linkage to Mission Valley Shopping Center. The final location of the internal drive to be constructed through the shopping center should align with the Fraternity Court connection. Ultimately, this will create a continuous pedestrian and bicycle corridor from Fraternity Court to Nazareth Street and Dix Park.

Dix Park is undergoing an intensive master planning process which will consider broader connectivity to the surrounding neighborhoods, Centennial Campus, and Downtown Raleigh. As these connections are defined, the Avent Ferry Connectivity Map should be revisited to ensure all possible linkages to the park are developed through greenway, transit, and/or bicycle lanes.

Growth Framework

The Raleigh Growth Framework map is an official part of the Comprehensive Plan and outlines in broad strokes mixed-use community centers, transit routes, and areas appropriate for Transit Oriented Development (TOD). One such TOD is proposed in the area around the Avent Ferry Road and Western Boulevard intersection where a bus rapid transit station is proposed. The map also indicates mixed-use centers at the Mission Valley and Avent Ferry Shopping Centers. The current growth framework map is consistent with community feedback. No changes are proposed.



Current Growth Framework Map with the Avent Ferry Corridor Study boundary outlined in black. The map aligns with the Study's findings, no changes are recommended.

Urban Form

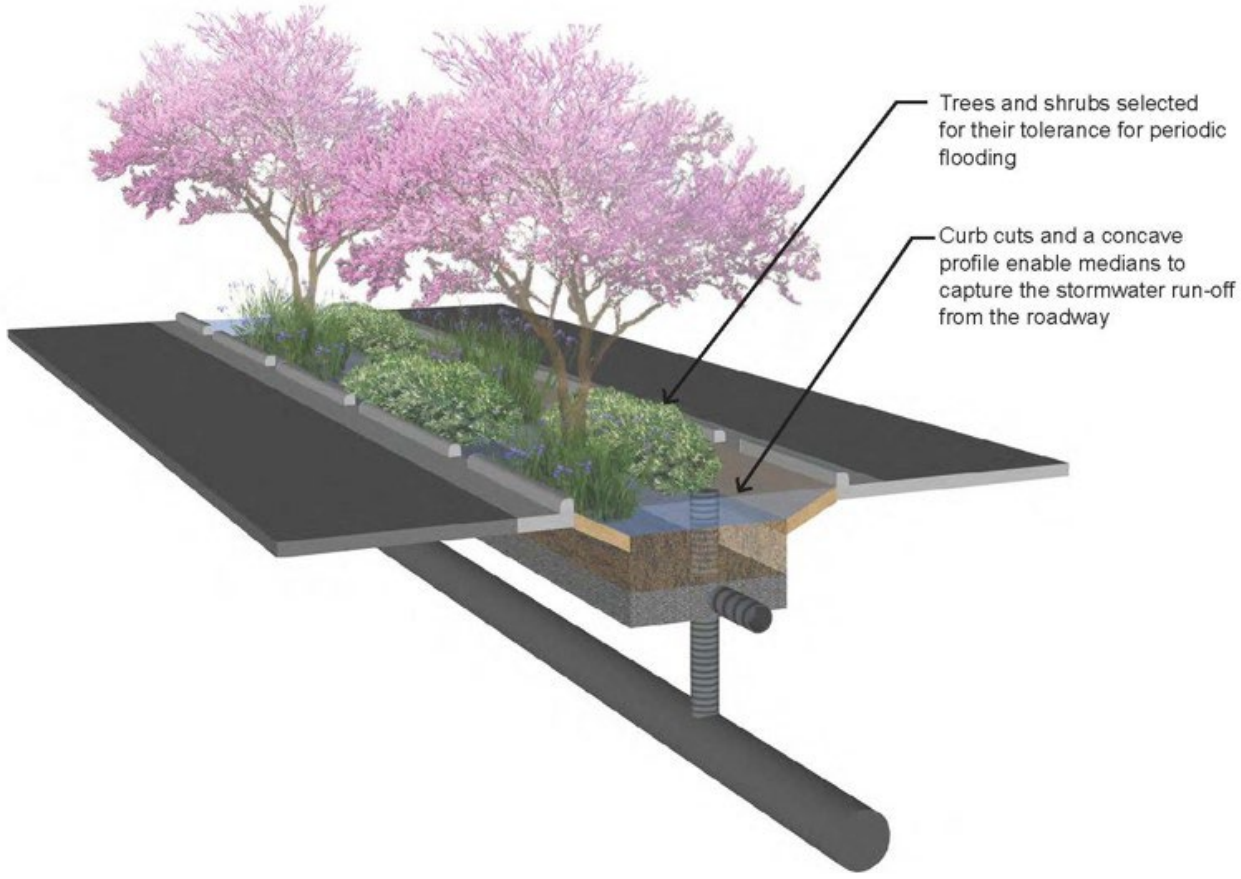
The Urban Form Map indicates locations for corridors of special significance where street frontage should be directly shaped by zoning designations. Avent Ferry Road is classified as a Transit Emphasis Corridor on this map. This type of corridor is programmed for high frequency bus-based services with amenities at each stop, a seamless bicycle and pedestrian network, and supportive hybrid street frontages. The current Urban Form Map is consistent with community feedback and no changes are proposed.

Roadway Stormwater Infrastructure Recommendations

Recommendations for stormwater utilities tailored to these typical sections are:

- Pervious pavement with filtration material for bike paths is recommended. This will allow runoff from the bicycle lane and sidewalk infrastructure to flow through the pavement and be filtered through a mix of aggregates (typically No. 8 aggregate bedding course, No. 57 stone open graded base and No. 2 stone sub-base) specified for maximum infiltration. An overflow drainage system would ensure flooding could be controlled in an extreme weather event.
- A "Green" stormwater gutter system between bike lanes and roadway is recommended. The green gutter would manage stormwater and provide a planted buffer between the roadway and the protected bicycle lane. Curb cuts allow the "green gutter" to collect stormwater from both the roadway and the bicycle and pedestrian facilities.
- A stormwater tree trench, a system of trees connected by an underground infiltration structure, is recommended for the 8' planted median. While tree trenches are often embedded in paved strips between roadways and sidewalk facilities, a stormwater tree trench would be located within the center median embedded in a green space with other native and adapted vegetation.

The recommended infrastructure improvements will complement the Complete Streets approach and serve as stormwater management strategy.



An example of stormwater infrastructure that could be incorporated into the 8' or larger medians along Avent Ferry Rd.

Stormwater Management

Integration of stormwater best management practices in the streetscape can improve water quality, support a variety of vegetation, and contribute to the corridor aesthetic and identity. Green Infrastructure such as biofiltration basins of specially selected vegetation and soils should be integrated into median and the sidewalk zones to capture the first 1 - 1.5" of rainfall wherever possible. This "first flush" of stormwater contains the highest levels of pollutants and debris as it washes off street and sidewalk surfaces. Captured in rain gardens or other stormwater devices, these contaminants can be removed and contained without discharging into the piped stormwater system and ultimately to the Neuse River. Designs should be adjusted for varying filtration, infiltration, and storage capacity while draining any standing water within two days. Overflow drains should connect to the underground stormwater systems for larger rain events.

While variation may occur between the four corridor segments, stormwater treatment and storage devices should be detailed consistently throughout the corridor. As a high-visibility element, continuity in materials and plant character should contribute to unification of the corridor identity.

An example of geen infrastructure separating pedestrian and/or bicycle facilities from the roadway.
Image source: Landscape Architecture Magazine // Design by: Alta, Russellville, Arkansas

Design Detail Recommendations

Furniture

Established guidelines of street amenity design standards would assist in creating a unified corridor identity while clearly reinforcing the change of character from north to south. Influenced by the character of corridor landmarks, street furnishings should display contemporary design that fits the modern character of Centennial Campus as well as the wooded landscape of Lake Johnson Park. Corridor amenities should include benches, bus shelters, bicycle racks, and trash/recycling receptacles.

The style and materials of NCSU's Centennial Campus should help inform the identity of the Avent Ferry Corridor from Western Blvd. to south of Centennial Campus. Hunt Library is pictured here.
Photo source: ArchDaily, Design by: Snøhetta

Art

Art in the public space creates iconic elements and memorable spaces that contribute to overall identity in a powerful way. The impacts of public art should be leveraged through strategic placement as well as integration efforts with artists, engineers, urban designers, and landscape architects early in the corridor design process. A close working relationship should result in seamless integration of art into the overall corridor in components such as street furnishings and other freestanding expressive works. Successful integration of art along Avent Ferry is important to the corridor and deserving of early planning and funding commitments.

It is important to integrate art throughout the corridor, emphasizing tactile and interactive installations. Potential high-visibility locations include:

- Corridor gateways
- Roadway intersections
- Capital Area Greenway connections
- Medians
- Transit stops
- Special paving and crosswalks

Materials and Paving

A consistent palette of paving materials and treatments will have a significant impact on the corridor character. Consistent material treatments selected for sidewalks and crosswalks should be used throughout the corridor and extend to pedestrian refuges, bus stops, seating areas, and other streetscape elements. Sidewalks installed by adjacent developers should respond to the approved materials palette to create congruous connections.

A variety of factors should influence material selection, including aesthetics, installation cost, longevity, and stormwater permeability.

As Avent Ferry meanders south, it takes on a more naturalistic landscape. Any implementation along this portion of the corridor should mimic this aesthetic. Lake Johnson Boathouse is pictured here. Photo source: Explore Raleigh

DESIGN RECOMMENDATIONS

MATERIAL	COST (PER SQ.FT.)	DURABILITY (YEARS)	SIDEWALK	BIKE LANE	CROSS WALK	MEDIAN/ PEDESTRIAN REFUGES*
Asphalt	$5-$9	4-8	Not Acceptable	Acceptable	Acceptable	Not Acceptable
Heavy Duty Concrete	$6-$9	15-30	**Not Acceptable**	**Preferred**	Acceptable	Acceptable
Concrete Sidewalk	$3.50-$5.50	15-30	**Preferred**	**Not Acceptable**	**Not Acceptable**	**Not Acceptable**
Colored and/ or Stamped Concrete	$15-$20	15-30	**Preferred**	**Preferred**	Acceptable	Acceptable
Stamped Asphalt	$9-$12	4-8	Not Acceptable	Not Acceptable	Acceptable	Not Acceptable
Brick	$10-$16	20-40+	**Preferred**	Acceptable	**Preferred**	Acceptable
Concrete Pavers	$7-$20	20-40	**Preferred**	Acceptable	**Preferred**	**Preferred**
Permeable Pavers	$6-$15	20-40	**Preferred**	Acceptable	Not Acceptable	**Preferred**

*Install where hardened median is required or where bicycle and pedestrian facilities cross median. Otherwise medians should be well landscaped.

Street Lights and Power Poles

Overhead power lines add visual clutter to the corridor and restrict opportunities to plant large shade trees. A long-term goal should be to locate these lines underground. As lines are moved underground, decorative metal light poles should be installed. Pedestrian-scaled lighting should be added during construction of new developments. In lieu of buried power lines, the City should consider relocating poles and consolidating lines in the center island to accommodate street trees along sidewalks.

Signage and Monumentation

Signage is a powerful way to create a common identity throughout the corridor. A comprehensive signage plan should be developed and implemented for the corridor. The signage plan should emphasize the predominant corridor character including ethnic diversity and high-tech research activities. The plans should include a hierarchy of signage types and purposes including:

- Monument/Icon: include bold and iconic installations that speak to the corridor's brand and identity.
- Corridor Directional: direct pedestrians and drivers to destinations and amenities in area such as NCSU, Mission Valley, Dorthea Dix Park, etc.
- Educational: describe GI infrastructure within streetscape.
- Neighborhood Gateway - identify mixed use and residential community entrances.
- Greenway – highlight entrances and connectivity to destinations.

Example of signange at the entrance to the Neuse River Greenway.

The development analysis suggests the following strategies to reinforce Avent Ferry Road's development identity:

- Establish consistent landscaping and signage standards.
- Define standards for building size, location, and quality.
- Integrate repetitive, unique art into the design.

Planting

Anchored by NCSU at one end and Lake Johnson Park at the other, the selected plant species reflect the endemic landscape of the North Carolina piedmont. The plant palette should also contribute to the distinctive character of the corridor. A cohesive plant list should be installed throughout the corridor win medians, the sidewalk amenity zone, and development entrances. The proposed Avent Ferry Road corridor plant palette of vertically layered trees, shrubs, and groundcovers should provide year-round interest through variation in plant habit, texture, and color. Additionally, by prioritizing use of native and nectar and pollen rich plant material, the plant schedule should contribute to the creation of sustainable pollinator habitats to support Raleigh's designation as a "Bee City USA" municipality.

Planting along the roadway, bike lanes, and sidewalks should be adequately spaced from the pavement with consideration of mature size to prevent overgrowth into travel lanes visible along the corridor today. Appropriate plant selections and placement can reduce pruning maintenance and contribute to a safer and more enjoyable commute.

For a plant list that includes species for overall trees, shrubs, groundcovers, and bioretention candidates, please see details in the appendix.

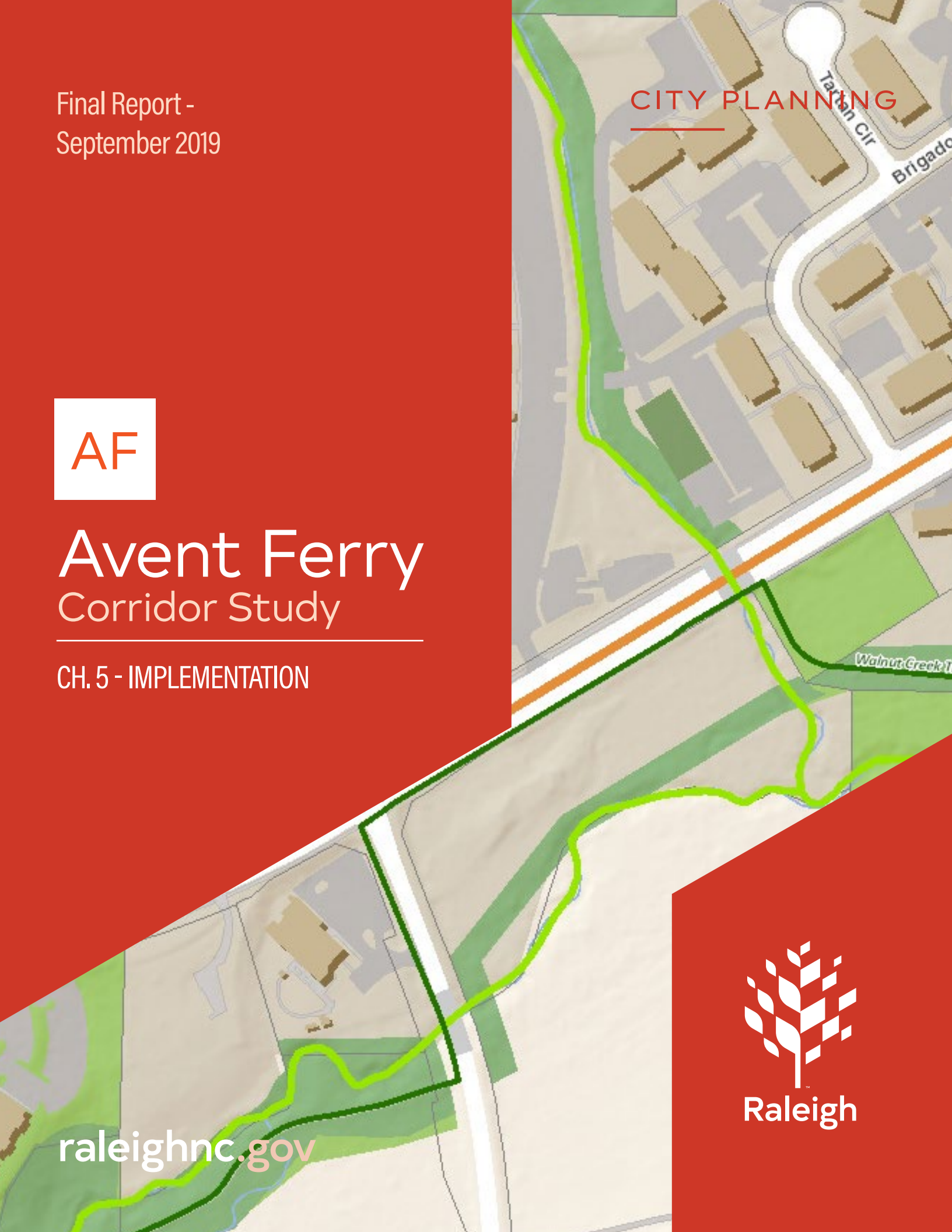
Final Report -
September 2019

CITY PLANNING

AF

Avent Ferry
Corridor Study

CH. 5 - IMPLEMENTATION



Raleigh

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FINAL REPORT CONTENT

CHAPTERS:

CH. 1 - EXECUTIVE SUMMARY

CH. 2 - PUBLIC PROCESS

CH. 3 - ANALYSIS

CH. 4 - DESIGN CONCEPTS & RECOMMENDATIONS

CH. 5 - IMPLEMENTATION 

APPENDIX

IMPLEMENTATION

This report outlines a unified vision for the corridor along with the related development and transportation planning to encourage a vibrant and delightful corridor. These recommendations will require the coordinated resources of the City, transit operators, utility providers, NC State University, and private land owners within and adjacent to the corridor. To build consensus and support for future implementation, this report was developed jointly with residents, businesses, stakeholders, and policy-makers through an input process that prioritized voices of influencers and those impacted by development decisions.

Discussion and understanding of private planning efforts is important for gauging the practical future of the corridor. Additionally, city investment has a broader reach and greater impact when combined with private development. Current land owners and area developers were partners throughout the planning efforts to aid in assessing the existing likelihood of development in each node and length of the Avent Ferry Corridor. Each development opportunity was evaluated to balance current market conditions and demand within the region, required investment, scale of project, and projected political desirability. These anticipated private investment priorities are reflected in the phasing and action items associated with each focus area.

Long term realization of the corridor vision requires multiple levels of execution from acquisition of funding to ongoing promotion of the vision within the community of stakeholders. The Avent Ferry Corridor vision will require multiple years of effort to achieve complete implementation. Some actions may be undertaken quickly and with minimal investment while others will require large capital allocations or significant commitment from private developers through redevelopment and streetscape improvements. The proposed implementation plan balances practicality, budget, and potential impact to categorize projects as near-, medium- and long-term actions. Short-term actions are generally those that the City can accomplish without further study. These short-term actions (3-5 years timeframe) may address community prioritized issues, augment existing development momentum, and be visible to the community. These early achievements build excitement and can catalyze subsequent projects. Medium (5-10 years timeframe) and long- term (10+ years timeframe) actions require further study or are dependent on outside investment.

In addition to the three time scales, the following prioritization and phasing recommendations identify “easy wins” throughout the implementation process. These smaller scale but high visibility projects can kick-off larger scale capital projects to re-activate the community and build excitement.

Prioritization and Phasing

Implementation recommendations are listed below with projects and actions discussed within each corridor segment. Actions may take place across multiple segments at a time or efforts may focus in one segment as resources allow. Implementation is prioritized by safety, potential to serve as a catalyst for continued corridor improvement, and opportunity to leverage expected private development as listed above.

Corridor-Wide Tactics and Improvements

The momentum of support encouraged through the planning process should be continued through formation of a citizen's alliance group convened and led by community leaders. This group should be kept abreast of the ongoing planning, design, and construction processes through meetings, social media, direct mailing, and/or digital newsletters. This group, in turn, can advocate for and, when appropriate, challenge decisions to move implementation forward with the support of the community. Equally essential is a focused "champion" within the Raleigh political structure or community at-large to advocate for the ongoing implementation of the plan.

Early efforts should be made to refocus the planned pedestrian tunnel below Western Boulevard to provide access to both sides of the Avent Ferry corridor. With initial planning underway at the time of this report, prioritization should be to ensure this new linkage is considered in concert with NCSU, the proposed bus rapid transit system, and the Avent Ferry corridor as a whole.

Though planned for implementation across the full length of the corridor, many of the corridor-wide transportation improvements should be undertaken incrementally. Reduction of the speed limit is recommended for the entire corridor. While this is a "free-standing" improvement that is not dependent on other actions, speed limit reduction should not be a near-term change. Public input prioritized faster and easier vehicular movement, so a speed limit reduction would appear to be counterproductive early in the corridor improvement process. Instead, speed limit reduction should follow high visibility improvements such as art installation and central planted medians to increase community buy-in.

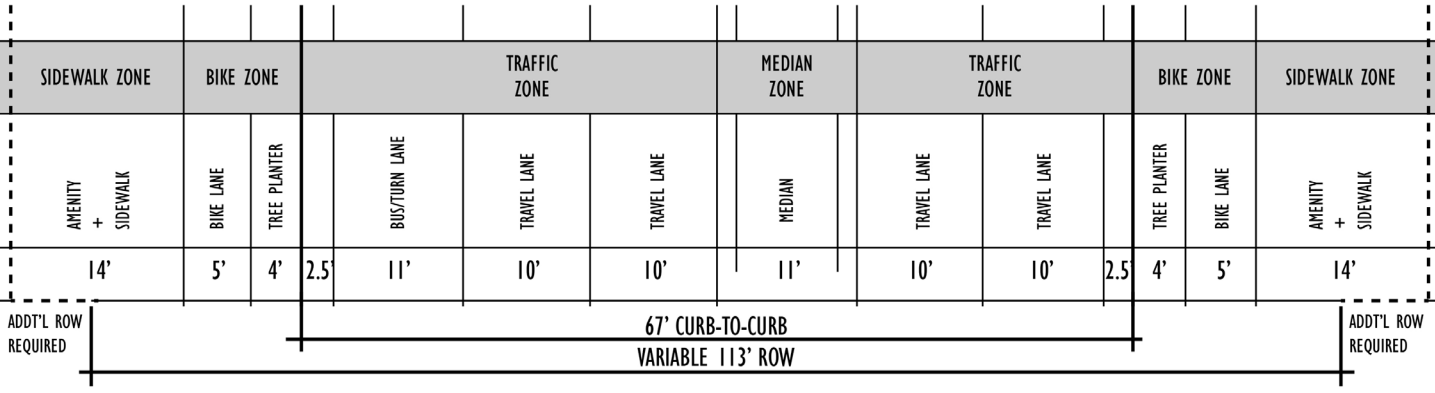
Corridor Segment 1
Western Boulevard to Varsity Drive

This northern most segment of the corridor has been identified as a gateway as well as a development node anticipated to undergo significant change in the near term. For these reasons, implementation in this segment should prioritize establishing the corridor character and support of catalytic development. Priority in this portion of the Corridor should be on fostering sustainable and diverse mixed-use development. Priority should be given to the review of zoning and planning documents to ensure development is in line with the corridor vision and is supported.

Leveraging this anticipated development to incorporate public art and streetscape amenity improvements within the corridor furnishings and plantings vocabulary will provide great value in establishing a corridor identity with the potential to spur additional higher-value development.

Public concerns for bicycle safety and driver frustrations with bus stacking at bus stops near the Mission Valley Shopping Center as well as clear public interest in improving the driving experience at this portion of the corridor emphasizes the demand for realigning the right-of-way and traffic. Removing the existing street and establishing the traffic lanes, center median, bicycles lanes, planters, and sidewalk areas as described in this report should be undertaken as soon as resources are available.

Segment 1: Western Blvd to Varsity Drive



Corridor Segment 2
Varsity Drive to Gorman Street

The highest priority actions for the Varsity Drive to Gorman Street segment relate to pedestrian safety. Unsafe pedestrian crossings near Brigadoon Drive and Crest Road should be addressed as soon as possible. Possible interventions include installation of pedestrian refuge medians and signalized crosswalks. These pedestrian crosswalks require a dedicated study and assessment of signalization types and traffic impact when resources are available so that resulting recommendations will be available prior to segment-wide right-of-way improvements.

Longer term actions are to support redevelopment of aging multi-family residences.

Segment 2: Varisty Drive to Gorman Street

PRIVATE PROPERTY	SIDEWALK ZONE	BIKE ZONE		TRAFFIC ZONE		MEDIAN ZONE	TRAFFIC ZONE		BIKE ZONE	SIDEWALK ZONE	PRIVATE PROPERTY
	SIDEWALK	BIKE LANE		TRAVEL LANE	TRAVEL LANE	MEDIAN	TRAVEL LANE	TRAVEL LANE	BIKE LANE	SIDEWALK	
	6’	6’	2.5’	10-11’	10-11’	11’	10-11’	10-11’	2.5’	6’	6’

EXISTING CURB-TO-CURB VARIABLE

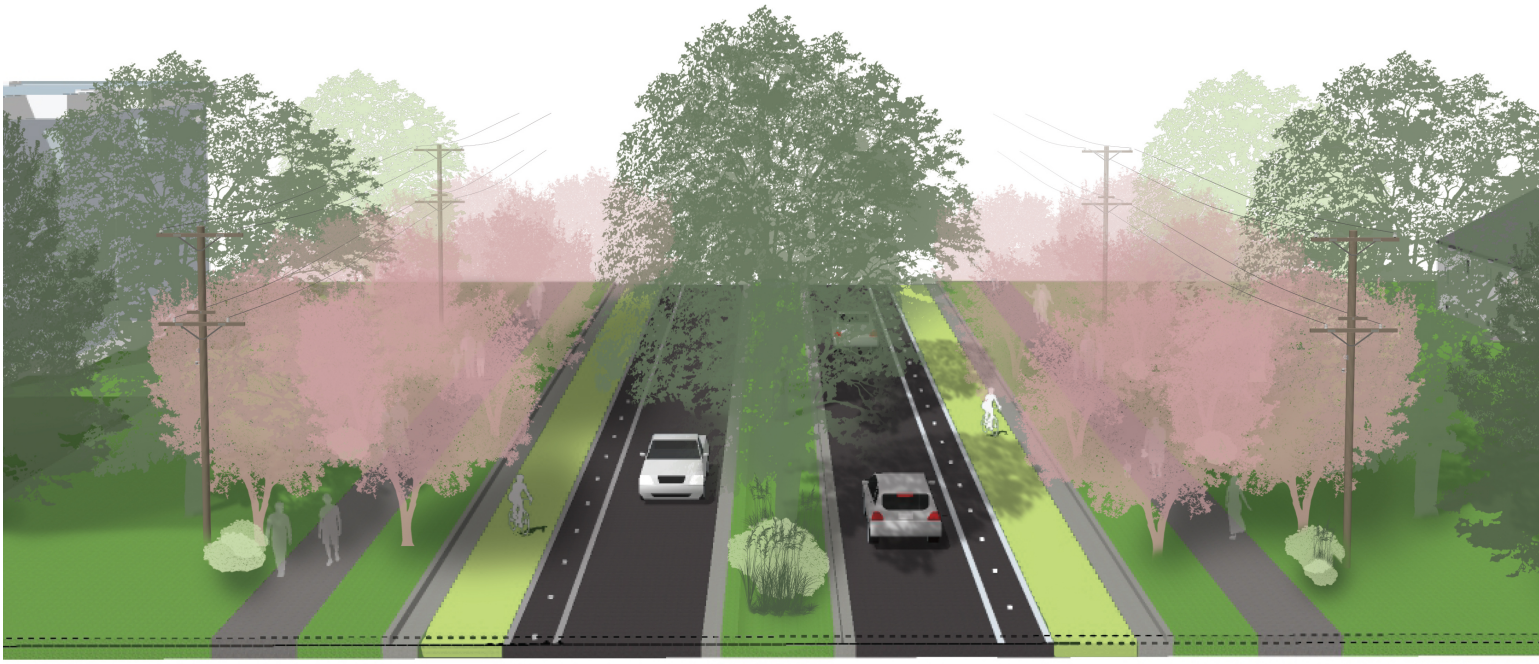
84’ ROW MIN.

Corridor Segment 3
Gorman Street to Athens Drive

Support of redevelopment of the Avent Ferry Shopping Center is a long-term priority. Rather than depend on development to create improvement momentum, short-term efforts should be focused on improvement of the street section.

Revising traffic lanes between Gorman Street and Athens Drive provides an attainable portion to enact the proposed street section. Leaving the existing curb and gutter and full depth asphalt in place, lane paint can provide an early completed revision. This update is especially valuable where the existing south-bound bike lane ends in the uphill approach to Athens Drive. Removal of the full depth of the center of the street for installation of a central planted median is a recommended addition to contribute to the overall corridor character.

Segment 3: Gorman Street to Athens Drive



PRIVATE PROPERTY	SIDEWALK ZONE		BIKE ZONE			TRAFFIC ZONE	MEDIAN ZONE	TRAFFIC ZONE	BIKE ZONE			SIDEWALK ZONE		PRIVATE PROPERTY
	SIDEWALK	TREE PLANTER		BIKE LANE		TRAVEL LANE	MEDIAN	TRAVEL LANE		BIKE LANE		TREE PLANTER	SIDEWALK	
	6'	6'	2.5'	6'	3'	11'	11'	11'	3'	6'	2.5'	6'	6'	

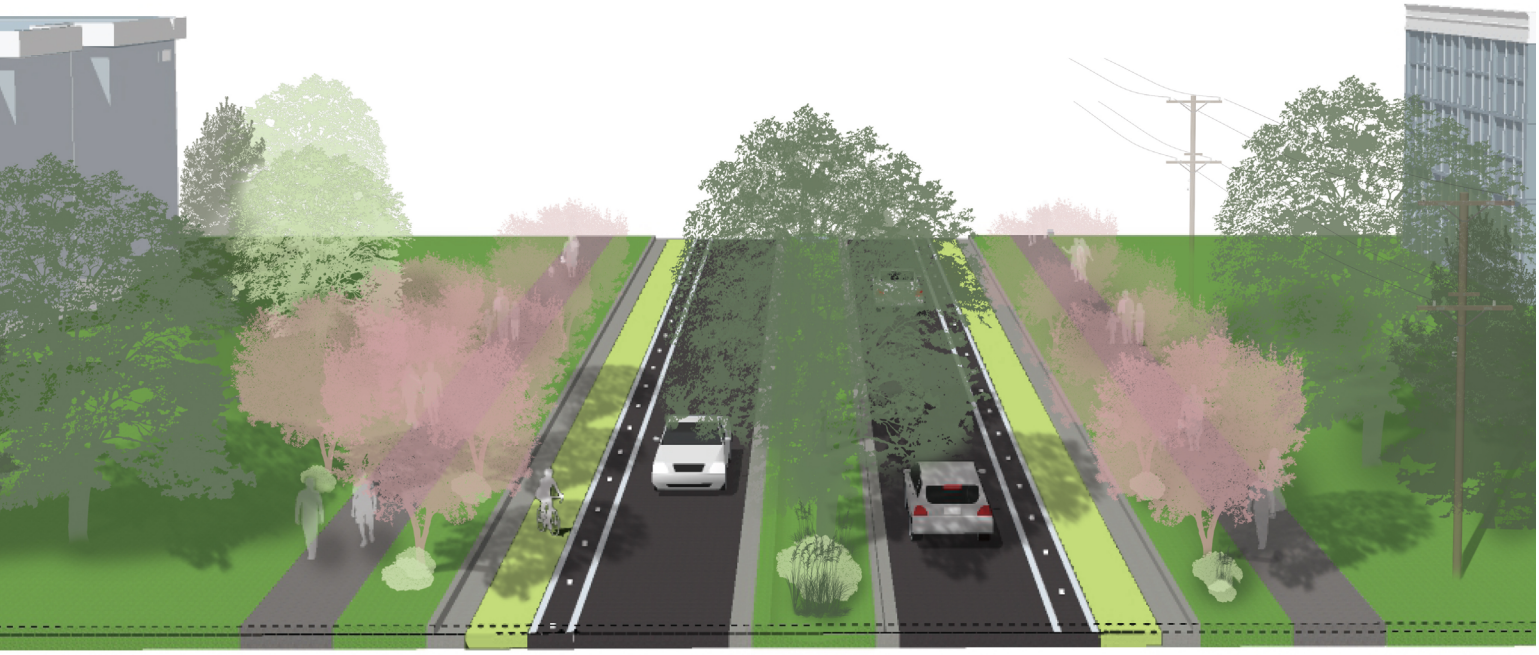
EXISTING 56' CURB-TO-CURB

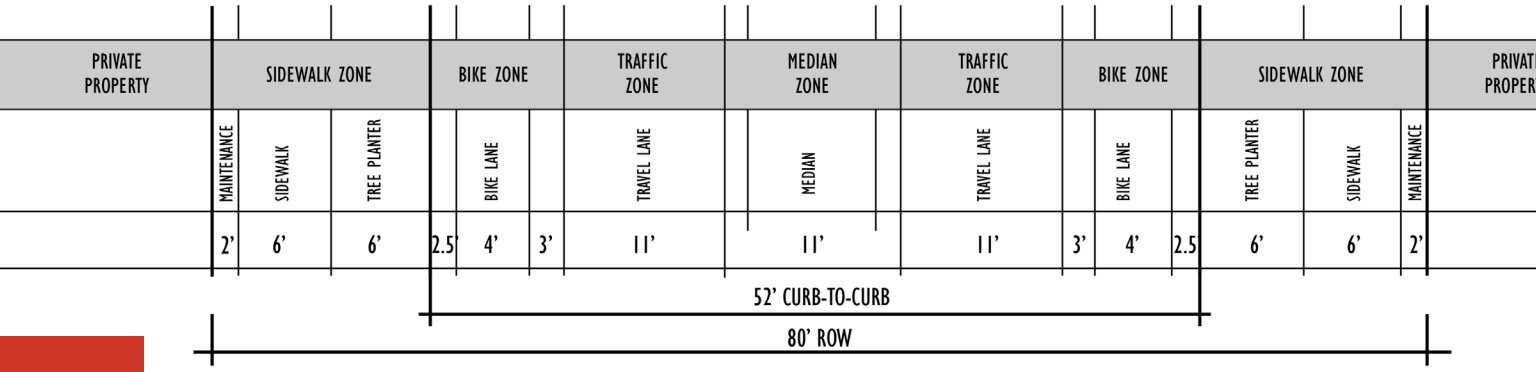
Corridor Segment 4
Athens Drive to Tryon Road

Similar to the northern-most segment, the southern segment connecting Avent Ferry to Tryon Road serves as a corridor gateway. Implementation priority should be focused on establishing the corridor character. While this heavily wooded and naturalistic portion of the corridor differs in character from the urban district bordering NCSU, use of public art, planted medians, and other unifying elements are important to establishing the corridor identity, a priority identified through citizen outreach. Installation of high-visibility projects along this segment can help further projects gain traction.

A high visibility and relatively low cost project may include installation of sidewalk from Athens Drive to the Lake Johnson Recreation Area. Currently without continual pedestrian access, providing this pedestrian connection is a safety issue.

Segment 4: Athens Drive to Tryon Road





Implementation Matrix/ Budgeting Estimates

The following chart is a compiled Implementation Matrix composed of key action items determined as a result of this study. Organized by segment of the corridor, these action items identify policies and tasks which should be considered by the City to work towards realizing the Vision outlined for the Avent Ferry Corridor. Many of the items were highlighted in the preceding pages. Some additional items were added to the Matrix to guide the City in establishing policies and taking actions which will encourage development in the Corridor and adjacent properties.

Implementation Matrix
September, 2018

ACTION	IMPLEMENTATION PRIORITY			RESPONSIBLE AGENCY	AREA OF IMPACT (0=none, 1=low, 2=medium, 3=high)						COMMENTS
	NEAR	MID	LONG		TRANS.	SAFETY	VISUAL	CONNECT.	ECON. DEVELOP.	ECOLOGY	
Corridor-wide											
URBAN DESIGN / IMAGE & CHARACTER											
Development of Public Art Plan		X		Raleigh Parks, Rec. & Cult. Res.	0	0	3	0	1	0	
Development of Signage Plan		X		Raleigh Planning, Raleigh Parks, Rec. & Cult. Res.	2	1	2	3	1	0	
Adopt Corridor Plant Palette		X		Raleigh Parks, Rec. & Cult. Res., Raleigh Planning	0	0	3	0	0	3	Install in conjuction with development and infrastructure projects
TRANSPORTATION & CONNECTIVITY											
Reevaluate Western Blvd. Pedestrian Underpass to connect all corners of Wester Blvd. and Avent Ferry	X			RDOT, NCDOT, GoRaleigh	3	3	2	3	1	0	
Construct BRT Station and Western Blvd. Pedestrian Underpass		X		Raleigh Eng. Services	3	3	2	3	1	0	
Consolidate Bus Stops	X			GoRaleigh, Wolfline	3	3	2	2	0	0	
Improve Bus Stop Amenities		X		GoRaleigh	3	1	2	1	1	0	
Reduce Speed Limit			X	RDOT, NCDOT	3	3	0	1	0	0	

ACTION	IMPLEMENTATION PRIORITY			RESPONSIBLE AGENCY	AREA OF IMPACT (0=none, 1=low, 2=medium, 3=high)						COMMENTS
	NEAR	MID	LONG		TRANS.	SAFETY	VISUAL	CONNECT.	ECON. DEVELOP.	ECOLOGY	
Western Boulevard to Varsity Drive											
DEVELOPMENT STRATEGY											
Foster strategic partnerships to encourage sustainable, mixed-use and mixed-income development		X		Raleigh Planning, Raleigh ED, NCSU	1	1	1	2	2	1	
Review Comprehensive Plan and UDO for alignment with proposed redevelopment concepts	X			Raleigh Planning	3	3	3	3	3	3	Primary mechinism to enforce sustainable development across all areas of impact
Support Mission Valley and Surrounding Parcels to align with proposed redevelopment concepts		X		Raleigh Planning, Property	2	0	1	1	2	0	TOD focus
Promote existing funding mechanisms to encourage sustainable mixed-use development		X		Raleigh Planning, Econ. Dev., Housing & Neighborhoods	0	0	2	0	3	0	
URBAN DESIGN / IMAGE & CHARACTER											
Install Public Art as northern corridor gateway	X			Raleigh Parks, Recreation & Cultural Resources	0	0	3	0	2	0	
Install Public Art at strategic locations		X		Raleigh Parks, Recreation & Cultural Resources	0	0	3	0	2	0	
Utilize Low Impact Development practices and Green Infrastructure with new development including vegetated sidewalk planters for infiltration		X		Raleigh Eng. Services	0	1	3	0	0	3	
TRANSPORTATION & CONNECTIVITY											
Western Boulevard to Centennial Parkway Full Streetscape and Cross Section implementation	X			RDOT, Raleigh Planning, Raleigh Eng. Services, NCDOT	3	3	3	3	2	2	
Centennial Parkway to Varsity Drive Full Streetscape and Cross Section implementation	X			RDOT, Raleigh Planning, Raleigh Eng. Services, NCDOT	3	3	3	3	2	2	

ACTION	IMPLEMENTATION PRIORITY			RESPONSIBLE AGENCY	AREA OF IMPACT (0=none, 1=low, 2=medium, 3=high)						COMMENTS
	NEAR	MID	LONG		TRANS.	SAFETY	VISUAL	CONNECT.	ECON. DEVELOP.	ECOLOGY	
Varsity Drive to Gorman Street											
DEVELOPMENT STRATEGY											
Redevelop Aging MultiFamily Properties			X	Raleigh ED, Private PO	1	3	3	3	3	2	
Pursue land and/or easement acquisition for expanded greenway connections and parks				Raleigh Parks, Rec.&Cultural Resources, RDOT							
URBAN DESIGN / IMAGE & CHARACTER											
Improve wayfinding at greenway intersection	X			Raleigh Parks, Rec.&Cultural Resources							
Street median Green Infrastructure installation		X		Raleigh Eng. Services	0	1	3	0	0	3	
Enhance Brigadoon Greenway Trailhead			X	Raleigh Parks, Rec. & Cultural Resources	0	1	3	0	2	2	
TRANSPORTATION & CONNECTIVITY											
Quick-build bicycle lane, sidewalks, and street restriping	X			RDOT, NCDOT, Raleigh Eng. Services	3	3	3	3	2	2	
Full Streetscape and Cross Section implementation		X		RDOT, NCDOT, Raleigh Eng. Services	3	3	3	3	2	2	
Study and assessment of signalization types and traffic impact	X			RDOT, Raleigh Eng. Services	0	3	1	3	0	0	
Evaluate consolidation of bus stops and pedestrian crossing improvements	X			RDOT, Raleigh Eng. Services, GoRaleigh	0	3	1	3	0	0	
Install Kaplan Drive Greenway Connection			X	Raleigh: Parks, Rec. & Cultural Resources	1	1	0	3	0	0	

ACTION	IMPLEMENTATION PRIORITY			RESPONSIBLE AGENCY	AREA OF IMPACT (0=none, 1=low, 2=medium, 3=high)						COMMENTS
	NEAR	MID	LONG		TRANS.	SAFETY	VISUAL	CONNECT.	ECON. DEVELOP.	ECOLOGY	
Gorman Street to Athens Drive											
DEVELOPMENT STRATEGY											
Support a Master Plan for site redevelopment		X		Raleigh Planning	0	0	3	1	2	1	Increases Tree Canopy, Creates Neighborhood atmosphere
URBAN DESIGN / IMAGE & CHARACTER											
Planted street median		X		Raleigh Eng. Services	0	1	3	0	0	3	
TRANSPORTATION & CONNECTIVITY											
Quick-build Street restriping	X			RDOT, Raleigh Eng. Services	3	3	2	3	1	0	
Median installation		X		RDOT, Raleigh Eng. Services	3	3	3	3	2	2	
Street Tree installation		X		RDOT, Raleigh Eng. Services	1	0	3	0	2	3	
Avent Ferry Shopping Center Crossing		X		RDOT, Raleigh Eng. Services	0	3	1	3	0	0	
Install Greenway Connection to Avent Ferry Shopping Center			X	Raleigh Parks, Rec. & Cultural Resources	1	1	0	2	1	0	

Funding

A portion of the Avent Ferry corridor study area falls within the City's targeted Economic Development program area. Businesses and properties located along the corridor may qualify for economic incentives such as the Business Investment Grant (BIG), Building Up-fit Grant (BUG), and the Façade Grant Program. The City may also wish to explore additional funding strategies including Public Private Partnerships, establishing Tax Increment Financing, establishing a Municipal Services District, securing grants, and other community economic development funding sources. City Capital Improvement Funds (CIP) is expected to fund many of the infrastructure recommendations.

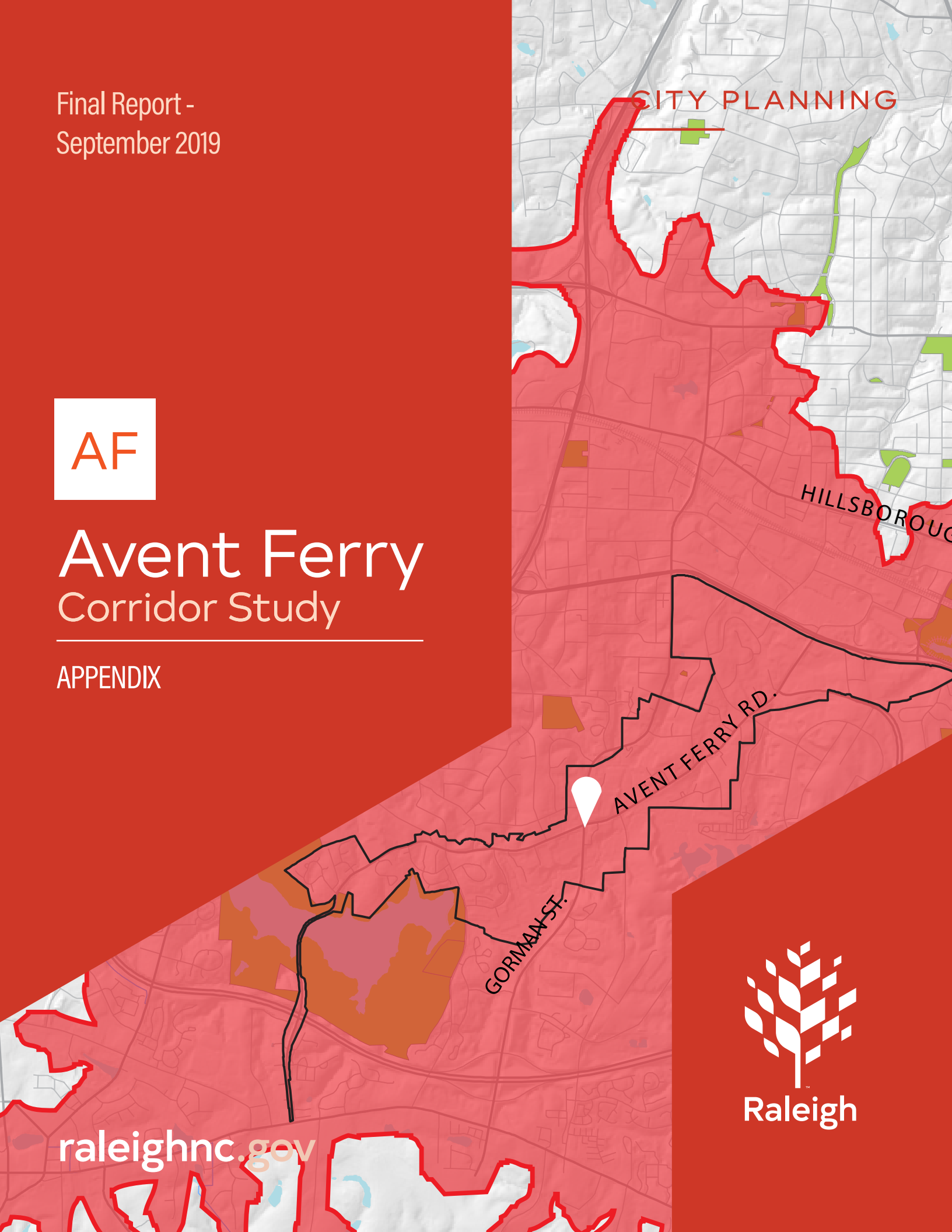
ACTION	IMPLEMENTATION PRIORITY			RESPONSIBLE AGENCY	AREA OF IMPACT (0=none, 1=low, 2=medium, 3=high)						COMMENTS
	NEAR	MID	LONG		TRANS.	SAFETY	VISUAL	CONNECT.	ECON. DEVELOP.	ECOLOGY	
Athens Drive to Tryon Road											
DEVELOPMENT STRATEGY											
Expand Lake Johnson parking options where feasible		X		Raleigh Parks, Rec. & Cultural Resources	2	2	2	1	0	1	
URBAN DESIGN / IMAGE & CHARACTER											
Install Public Art as southern corridor gateway	X			Raleigh Parks, Rec. & Cultural Resources	0	0	3	0	2	0	
Install Public Art at strategic locations		X		Raleigh Parks, Rec. & Cultural Resources	0	0	3	0	2	0	
Utilize Low Impact Development practices and Green Infrastructure with new development including vegetated street median		X		Raleigh Eng, Services	0	1	3	0	0	3	
TRANSPORTATION & CONNECTIVITY											
Avent Ferry ROW street improvements to install bike,ped, curb and gutter		X		RDOT, Raleigh Eng. Services, NCDOT	3	3	3	3	2	2	
Pedestrian Crossing South of Lake Johnson Causeway		x		RDOT, Raleigh Eng. Services	0	3	1	3	0	0	
Install Lake Johnson/Athens Drive Parking Greenway Connection with protected crossing		x		Raleigh Parks, Rec. & Cultural Resources	2	3	0	3	0	0	
Access Management - Closure of excess curb cuts		x		RDOT	2	3	1	0	0	0	

Final Report -
September 2019

AF

Avent Ferry
Corridor Study

APPENDIX



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FINAL REPORT CONTENT

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CH. 3 - ANALYSIS

CH. 4 - DESIGN CONCEPTS & RECOMMENDATIONS

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A. Plant Palette

A list of recommended species to add vibrancy and cohesiveness to the corridor.

Overall Plant Pallette - **Trees**

Shumard Oak
Quercus shumardii

Loblolly Pine
Pinus taeda

Trident Maple
Acer buergerianum

Tulip Poplar
Lirodendron tulipifera

Carolina Silverbell
Halesia carolina

Serviceberry
Amelanchier canadensis

Washington Hawthorne
Crataegus phaenopyrum

Redbud
Cercis canadensis

Overall Plant Pallette - **Shrubs and Groundcovers**

Sweetspire
Itea virginica

Blood Twig Dogwood
Cornus Sanguinea

Blue False Indigo
Baptisia australis

Switchgrass
Panicum vergatum
(multiple varieties/cultivars)

Vibernum
Viburnum spp.
(multiple varieties/cultivars)

Box-leafed Holly
ilex crenata

Mountain Mint
Pycnanthemum muticum

Pennsylvania Sedge
Carex pennsylvanica

BioretentionPlant Pallette - **Trees**

Swamp White Oak
Quercus bicolor

Black Gum
Nyssa sylvatica

Bald Cypress
Taxodium distchum

Ironwood
Carpinus caroliniana

Fringe Tree
Chionanthus virginicus

Witch Hazel
Hamamelis virginiana

BioretentionPlant Pallette - **Shrubs and Groundcovers**

Beautyberrry
Callicarpa americana

Buttonbush
Cephalanthus occidentalis

Sweet Pepperbush
Clethra alnifolia

Inkberry
Ilex glabra

Blue Flag Iris
Iris virginica

Mountain Mint
Pycnanthemum muticum

Blue Cardinal Flower
Lobelia siphilitica

Tussock Sedge
Carex stricta

Fringed Sedge
Carex crinita

Creek Sedge
Carex amphibola

B. Design Alternatives Survey & Results

AF Avent Ferry
Corridor Study

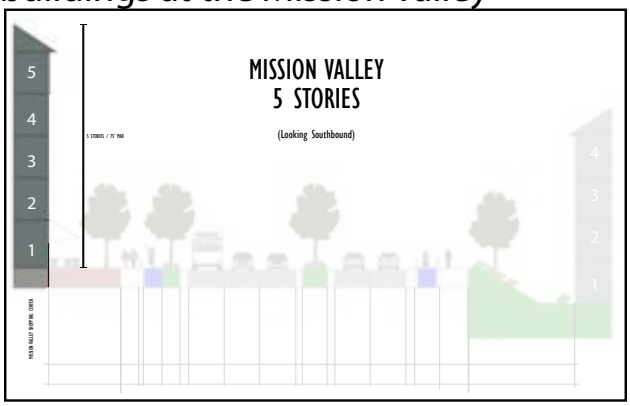
Please complete the following survey and leave this paper with a City staff member. A space is provided at the end for comments. Survey is also available online at www.publicinput.com/2566.

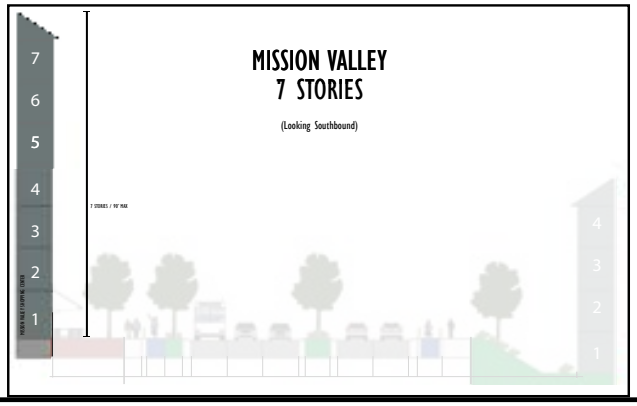
Catalyst Sites

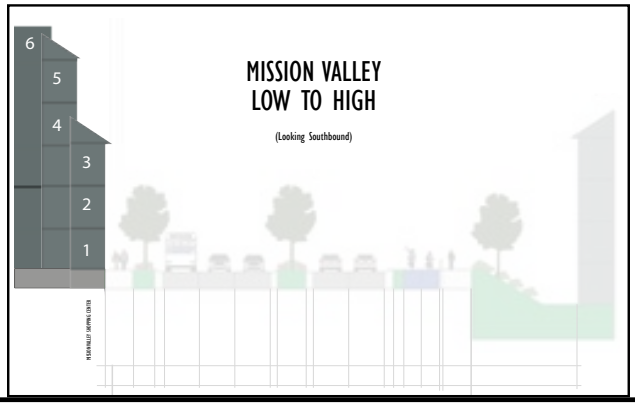
A. Mission Valley Shopping Center

1. Which height option do you prefer for buildings at the Mission Valley Shopping Center?

- ☐ Less than 5 stories
- ☐ 5 stories
- ☐ Tapered from 3 to 6
- ☐ 7 stories
- ☐ More than 7 stories

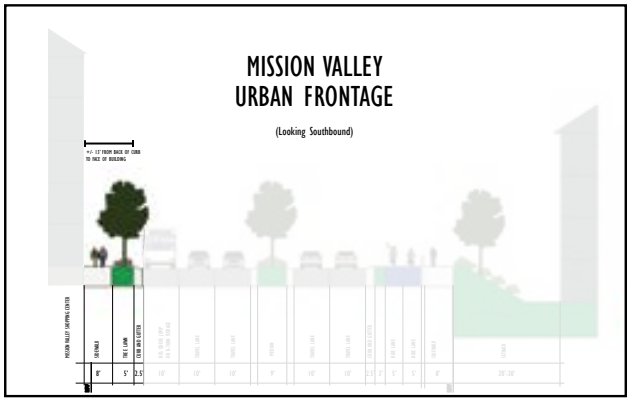


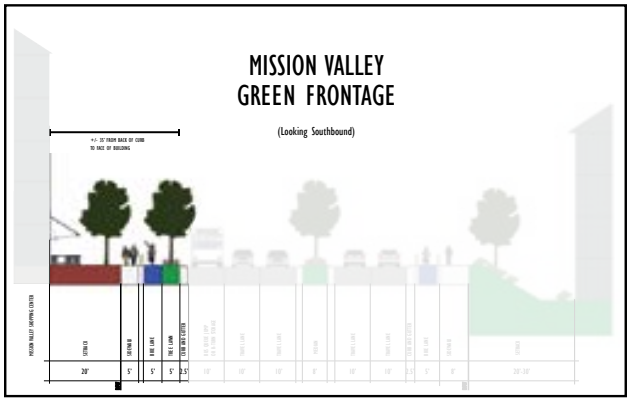




2. Which frontage (setback) do you prefer for any new buildings at the Mission Valley Shopping Center?

- ☐ Green - Building farther from street, with landscaping
- ☐ Urban - Building closer to street





Results:

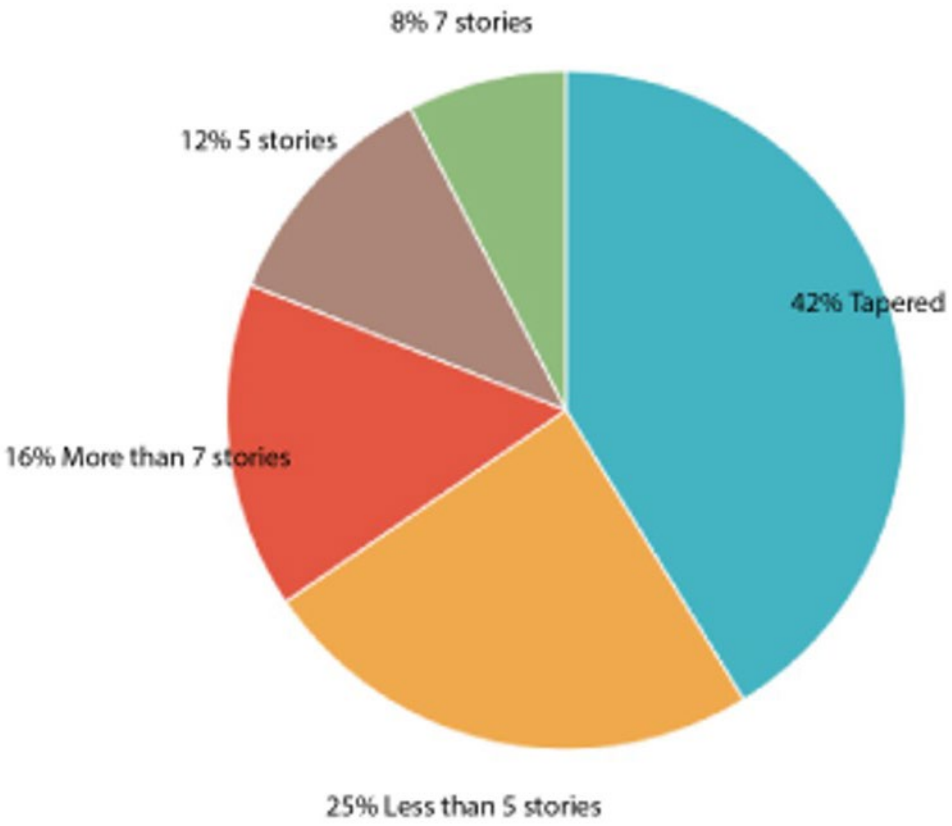
41% Tapered from 3 to 7

24 % Less than 5 Stories

16% More than 7 stories

11% 5 Stories

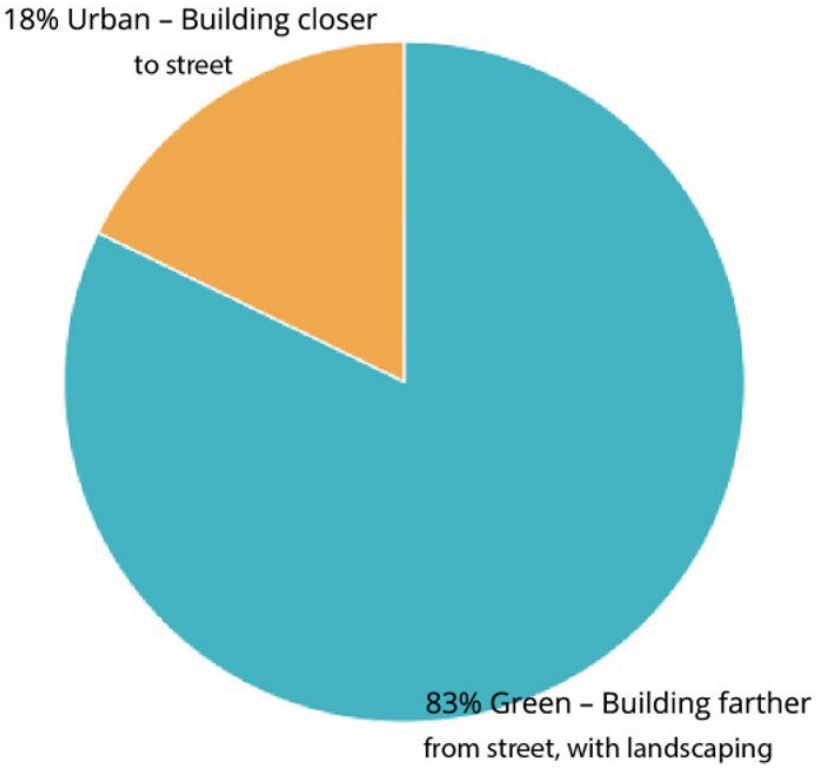
8% 7 Stories



Results:

82% Green frontage

18% Urban Frontage



Catalyst Sites

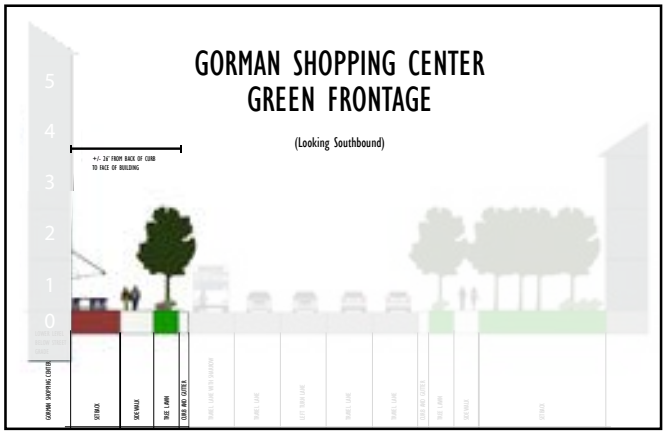
B. Gorman Street Shopping Center

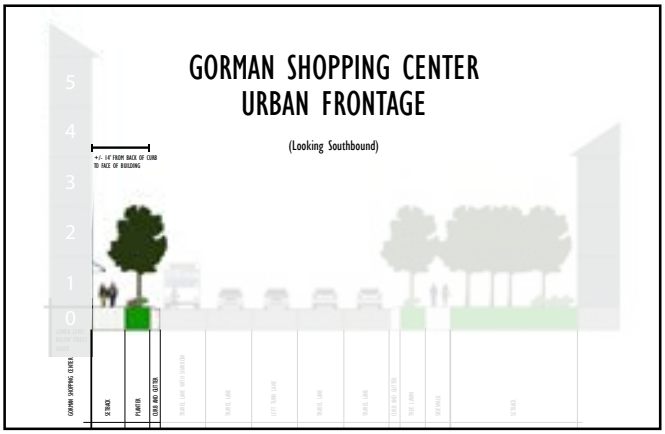
1. Which height option do you prefer for the shopping center at Avent Ferry Road and Gorman Street?

- ☐ 3 stories
- ☐ 4 stories
- ☐ Tapered from 3-5 stories
- ☐ 5 stories
- ☐ More than 5 stories

2. Which frontage (setback) do you prefer for the shopping center at Avent Ferry Road and Gorman Street?

- ☐ Green - Building farther from street, with landscaping
- ☐ Urban - Building closer to street





Results:

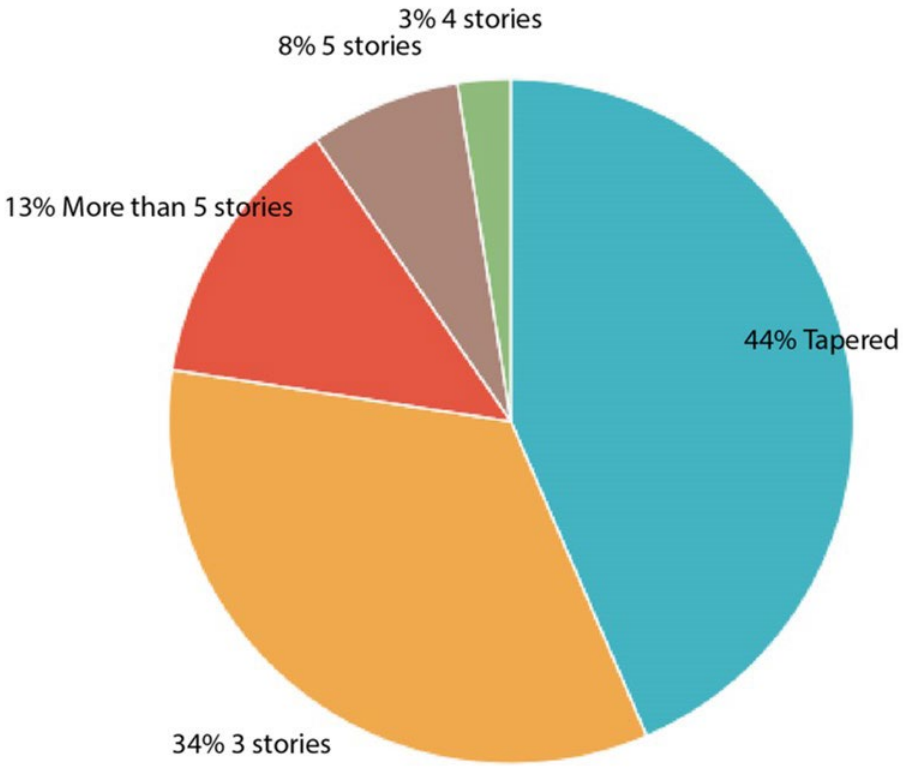
41% Tapered from 3 to 5

33% 3 Stories

3% More than 5 stories

7% 5 Stories

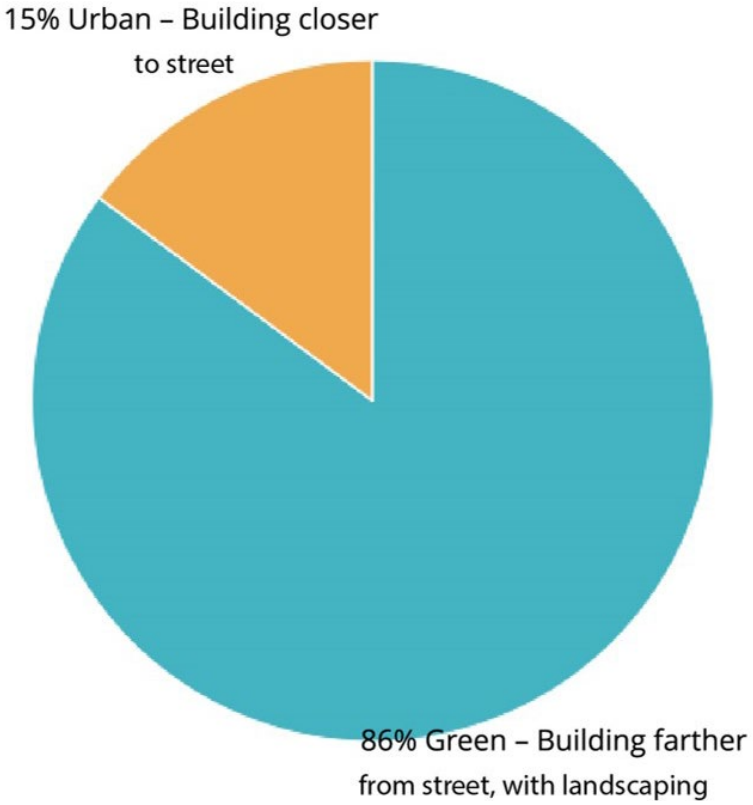
3% 4 Stories



Results:

85% Green frontage

15% Urban frontage

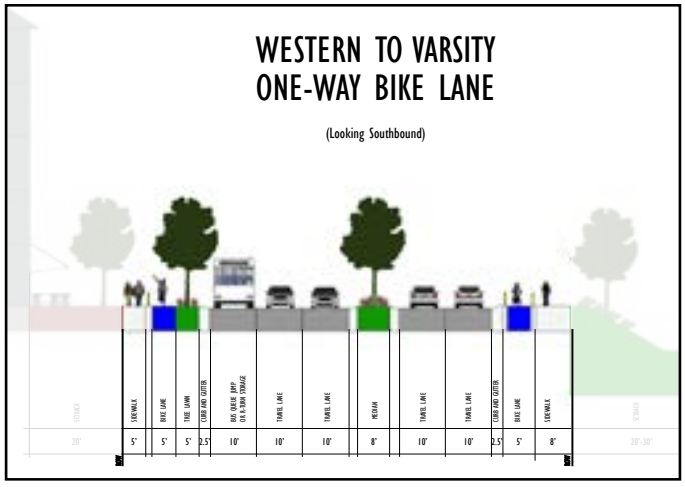


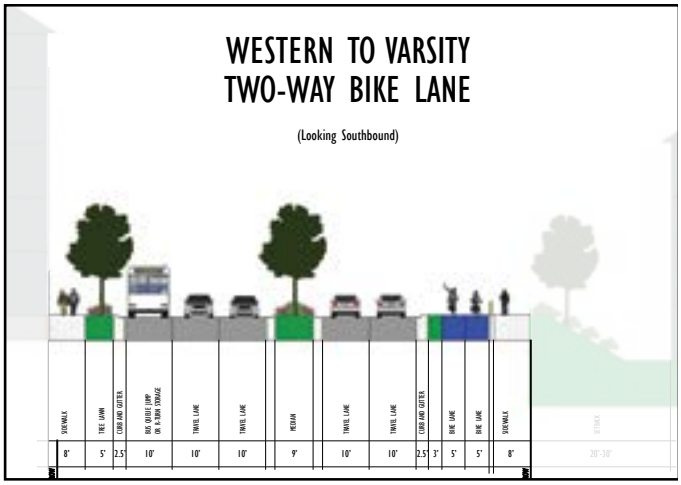
Street Sections

C. Western to Varsity

1. For the segment from Western Boulevard to Varsity Drive, which street section do you prefer?

- ☐ One-way bike lane on each side
- ☐ Two-way bike lane, on South-bound side

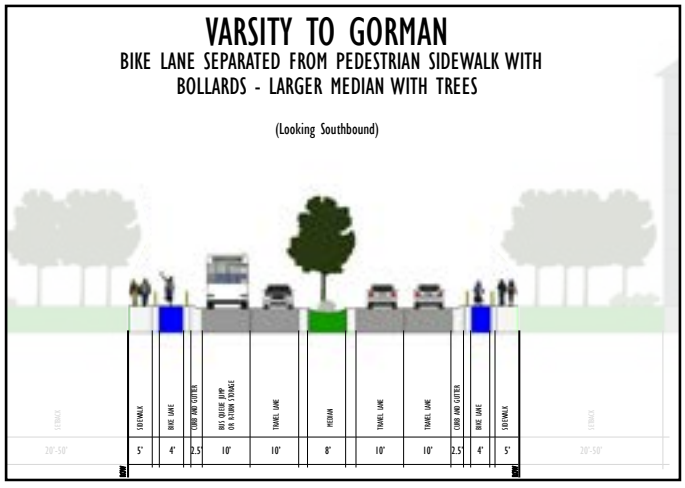


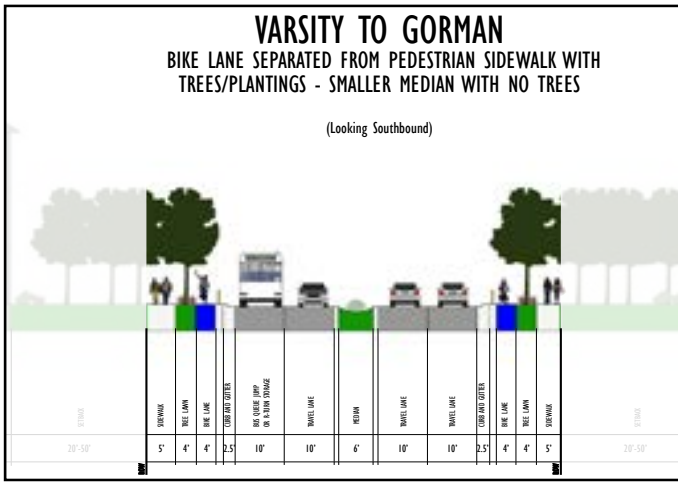


D. Varsity to Gorman

1. For the segment from Varsity Drive to Gorman Street, what street section do you prefer?

- ☐ Smaller median / Bike lane separated from the sidewalk with planting strip
- ☐ Larger median with trees / Bike lane separated from the sidewalk with bollards

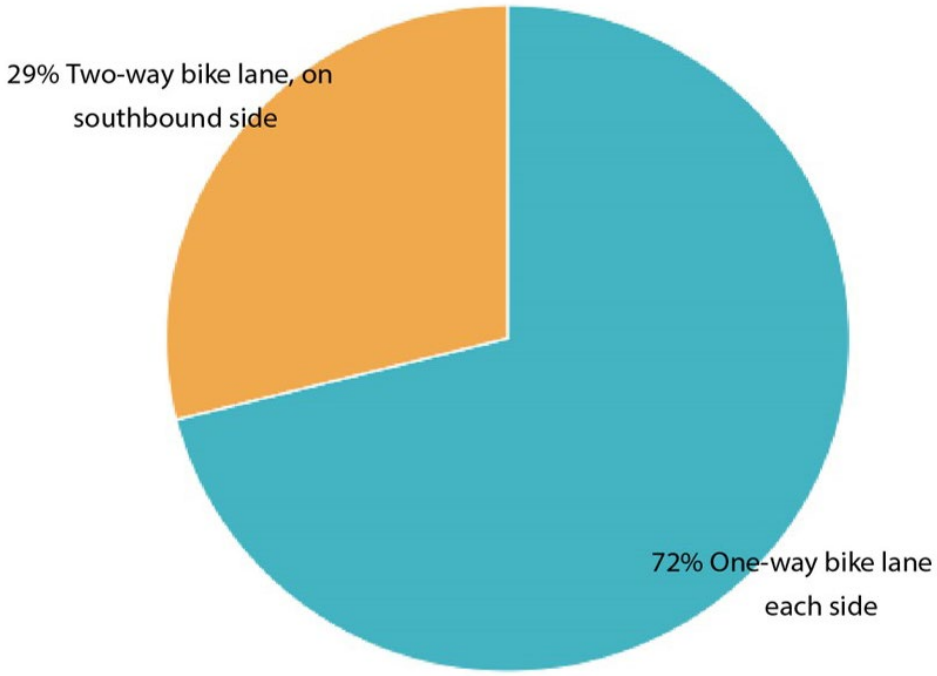




Results:

71% One-way bike lane

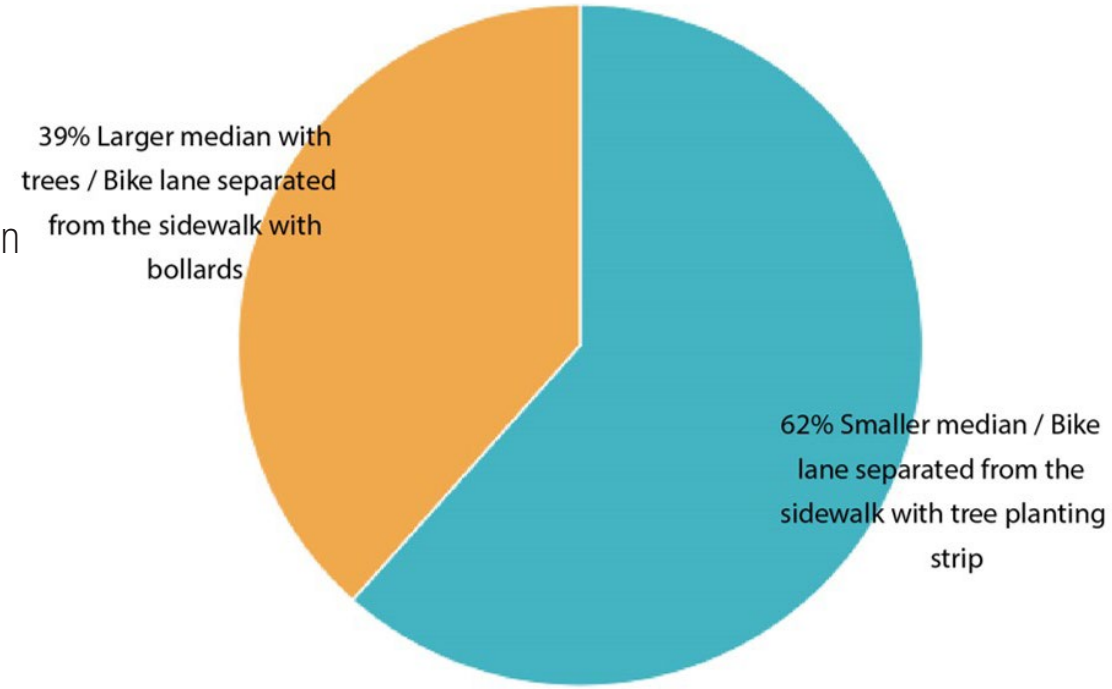
29% Two-way bike lane



Results:

62% Smaller median

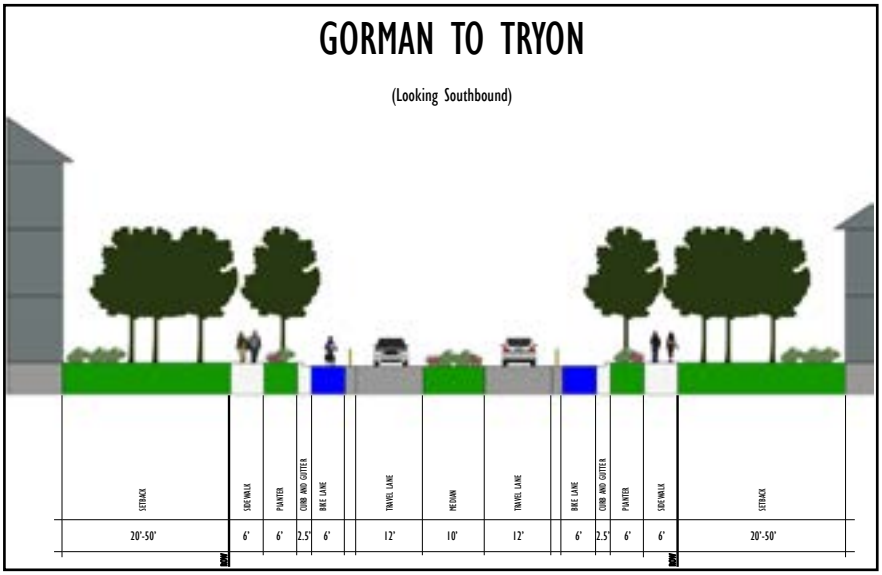
8% Larger planted median



Street Sections

E. Gorman to Tryon

1. Please tell us any comments you have about this street section.



C. Draft Final Report Survey Results

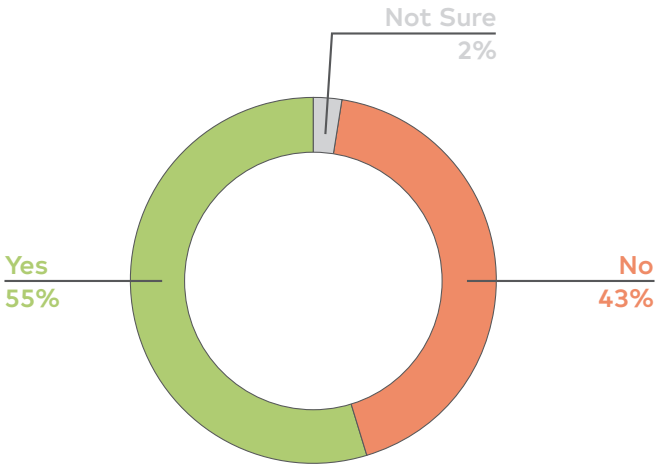
The Avent Ferry Final Draft Recommendations survey measured the community's assessment of how well the policy recommendations in the report achieved the goals set at the initial stages of the project. These goals fell into the three categories of developing a district with a unified identity, fostering economic development, and adapting to a complete streets concept for safely accommodate all types of users. It was launched at the public meeting on November 5, 2018 and was closed on January 20, 2019. During that time, staff advertised the survey on social media, held pop up meetings to engage with the community around the study area, and canvassed around the corridor on foot to promote the survey. At the end of the public comment period, 218 people had completed the survey, leaving 2,163 unique responses and 266 comments.

Overall, the responses indicate that the public supports the policy recommendations as a means of achieving the goals for the corridor. When asked to prioritize their goals from most important to least, respondents ranked "accessibility and safety of travel" as their top priority, followed by "encouraging economic vitality" and "improving the aesthetic quality of the built environment". The least important goal among respondents was "limiting redevelopment in the area". The survey included optional demographic questions, and respondents represented a mix of ages.

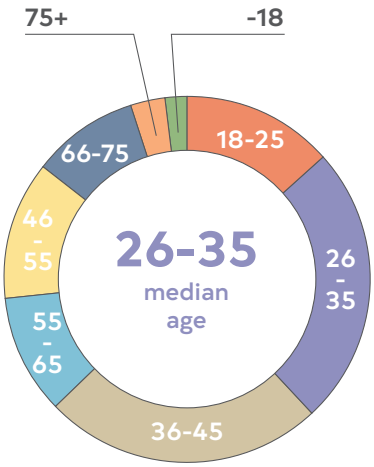
All questions that asked respondents the extent to which they believed the recommendations would achieve the goals had supportive results on average. One of the questions with the widest range of responses was the one concerning approval of building heights at Mission Valley. However, the comments indicate that respondents differed in the ways they disapproved, as there were comments supporting more and less restrictive height recommendations. Respondents on average also supported increased density for the area if it meant create housing availability, and they supported increasing building height to accommodate more open space.

In the future, staff should consider adding a question that asks how the respondent typically commutes, whether it be by car, on foot, by transit, or by bike. This is particularly important in studies that have a transportation emphasis.

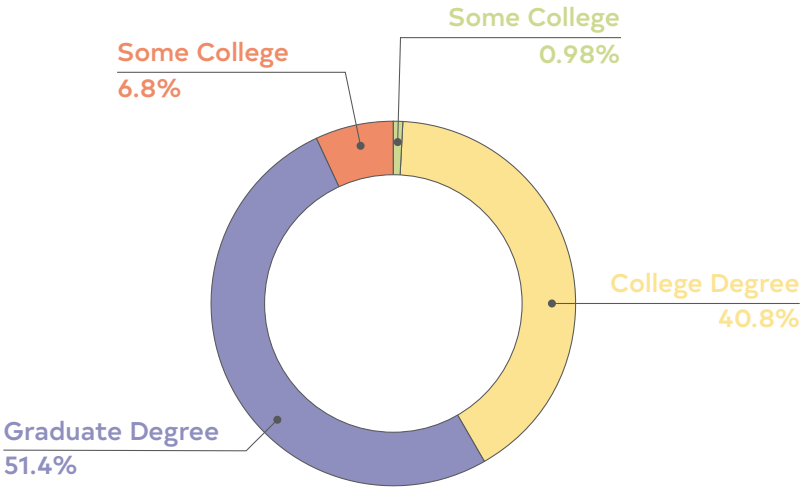
Do you currently live in the area?



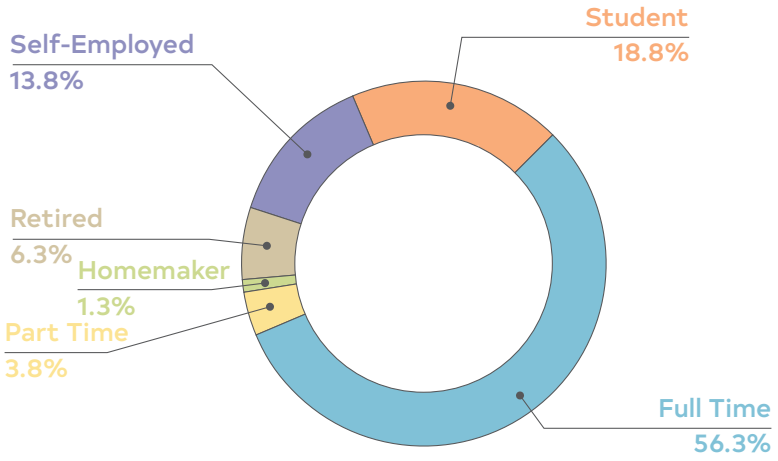
What is your age?

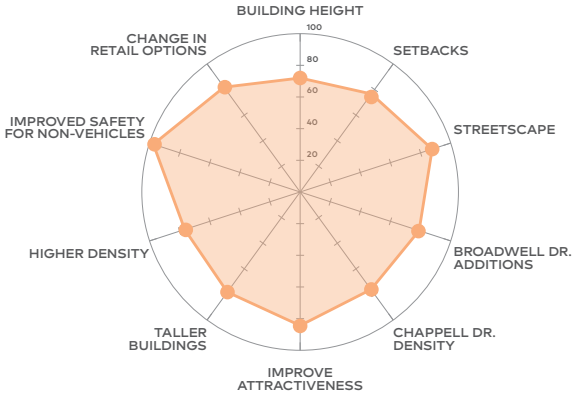


What is your highest formal education level?

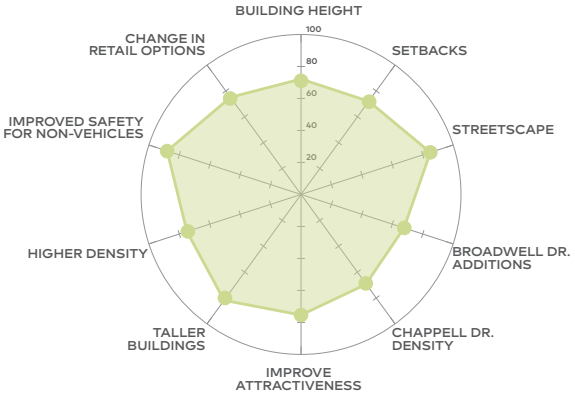


What is your employment status?

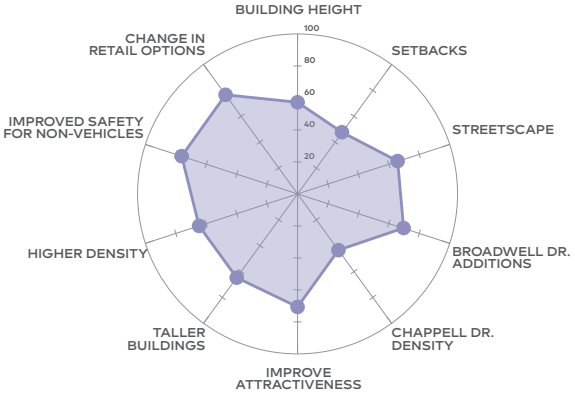




18-35



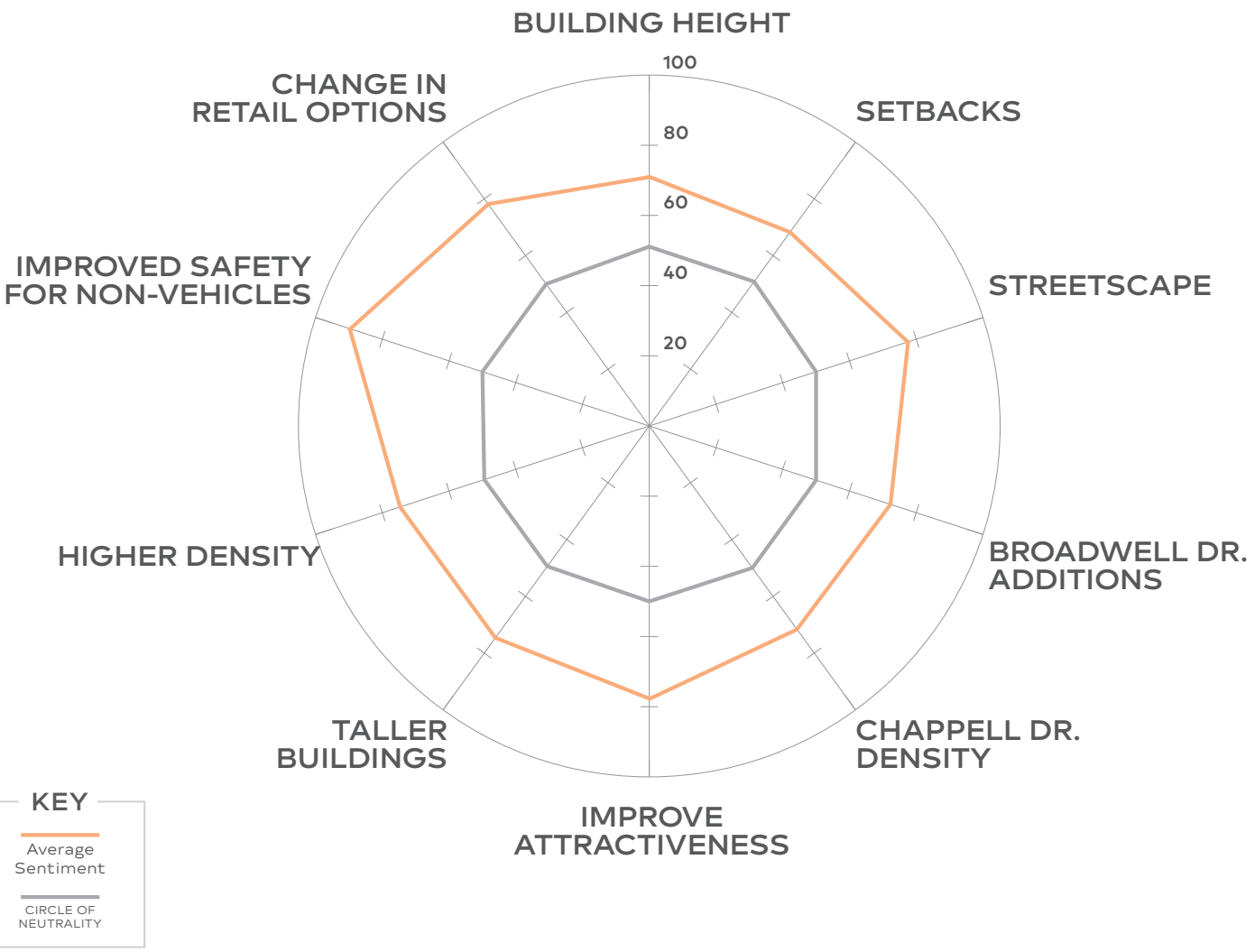
36-55

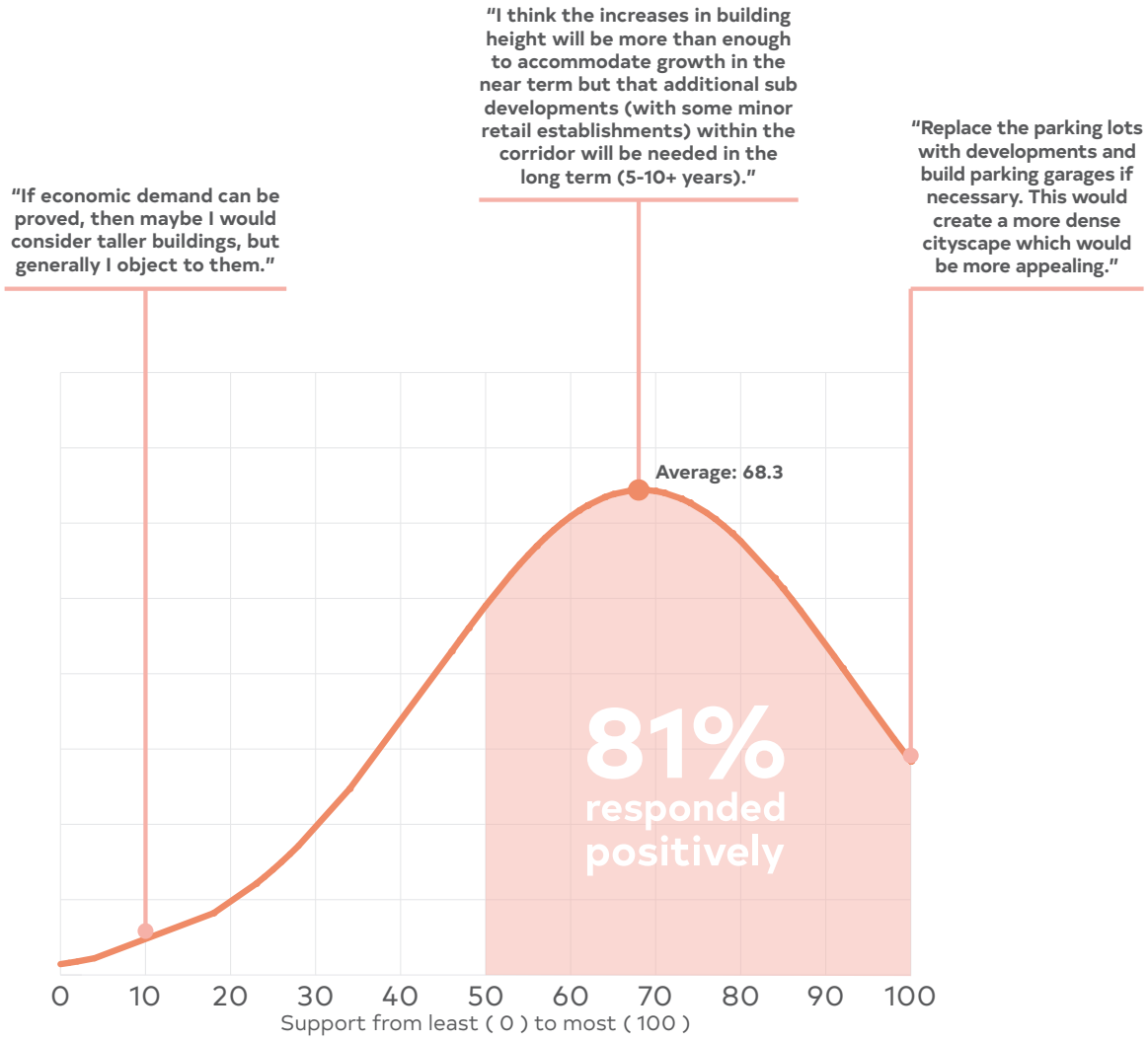


55+

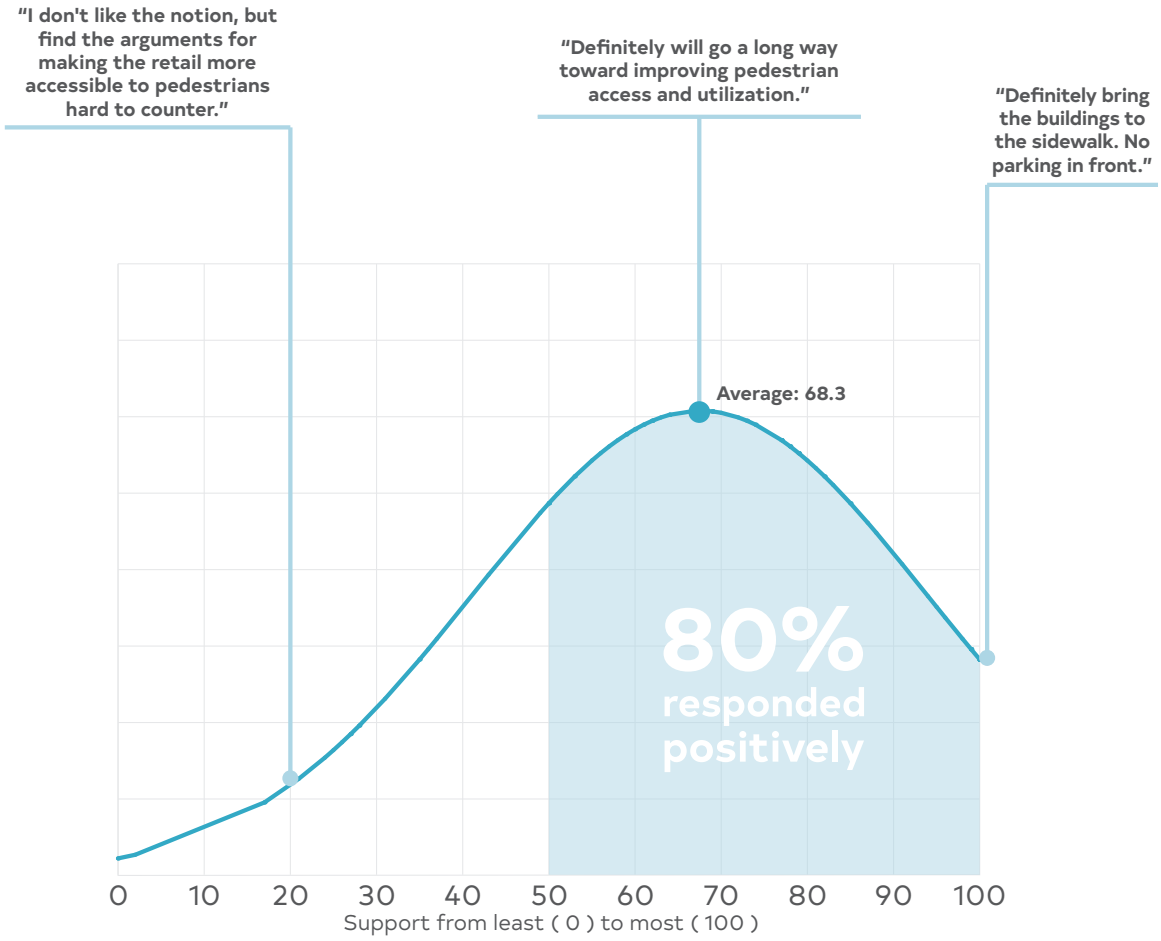
Support of Concepts, by Age

(Points closer to edge of circle denote greater support)

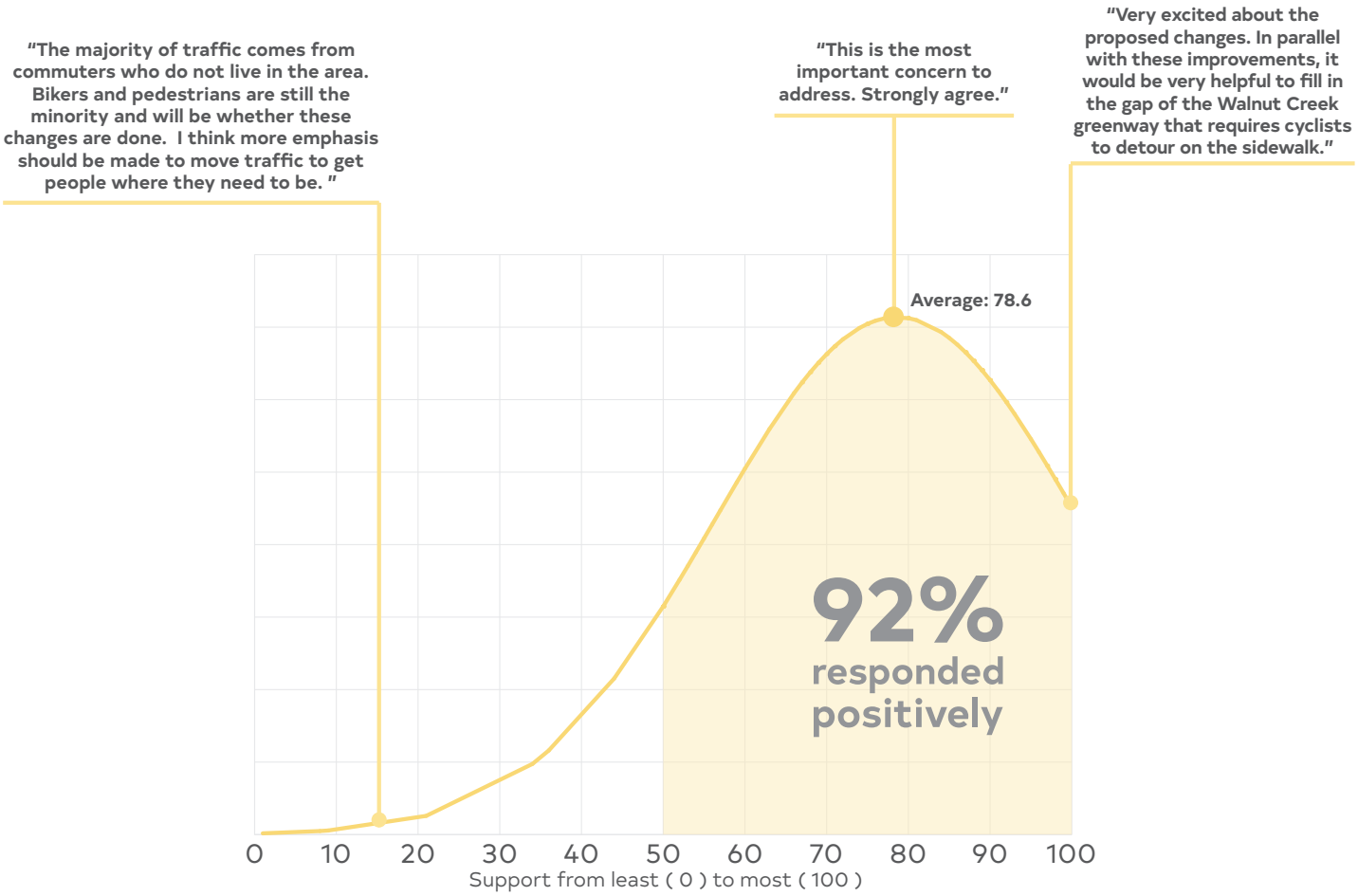

BUILDING HEIGHT
SETBACKS
STREETSCAPE
BROADWELL DR. ADDITIONS
CHAPPELL DR. DENSITY
IMPROVE ATTRACTIVENESS
TALLER BUILDINGS
HIGHER DENSITY
IMPROVED SAFETY FOR NON-VEHICLES
CHANGE IN RETAIL OPTIONS
100
80
60
40
20
KEY
Average Sentiment
CIRCLE OF NEUTRALITY



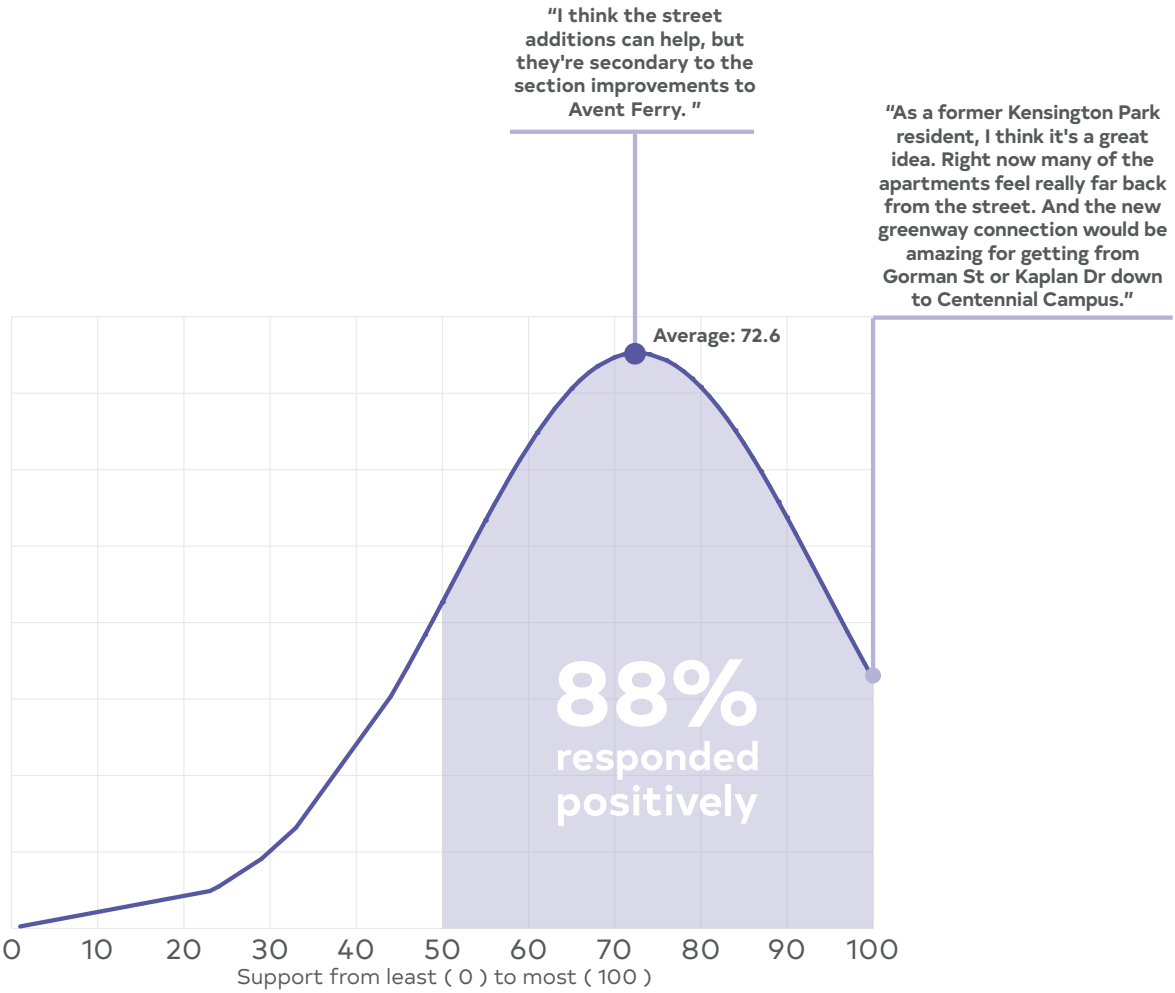
To what degree do you think an increase in building height in the Mission Valley (to 5-7 stories) and Avent Ferry (to 3-5 stories) shopping centers could meet the goal of accommodating increasing economic demand (including housing, retail, and office space)?



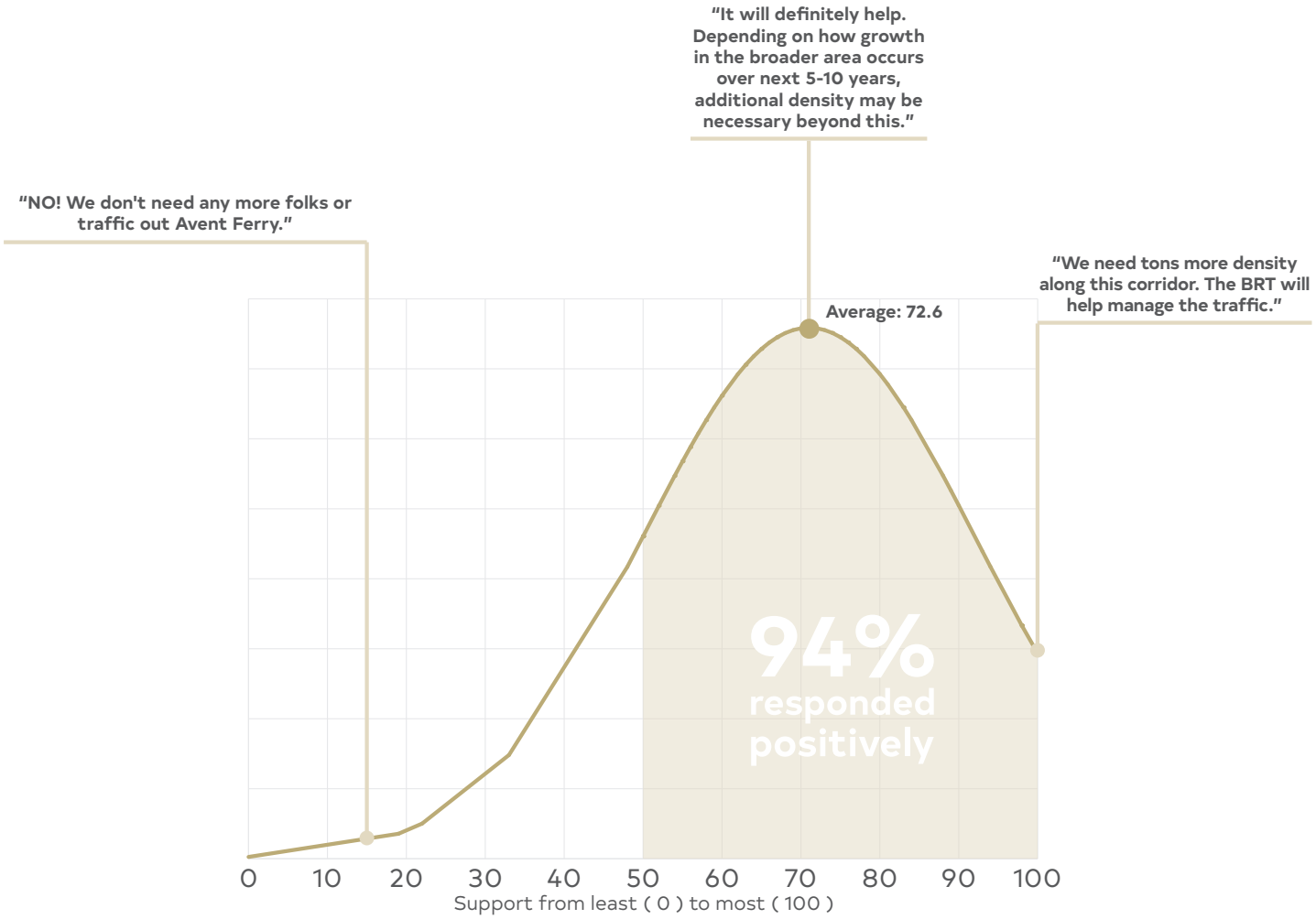
To what degree do you think placing buildings in the Avent Ferry and Mission Valley shopping centers closer to the street could meet the goal of improving pedestrian access?



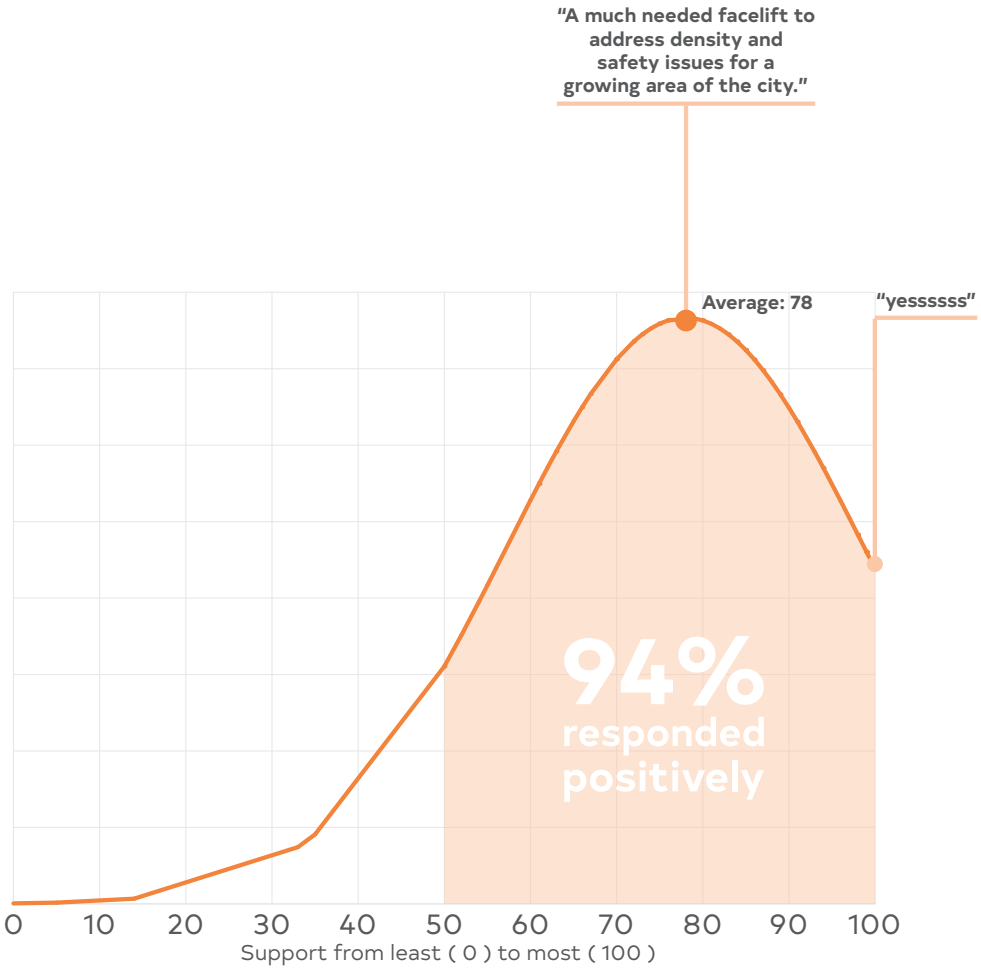
To what degree do you think the recommended changes to Avent Ferry Road (including adding medians with greenery, creating continuous sidewalks, and setting bike lanes in a buffered zone) could meet the goal of improving travel conditions for all users?



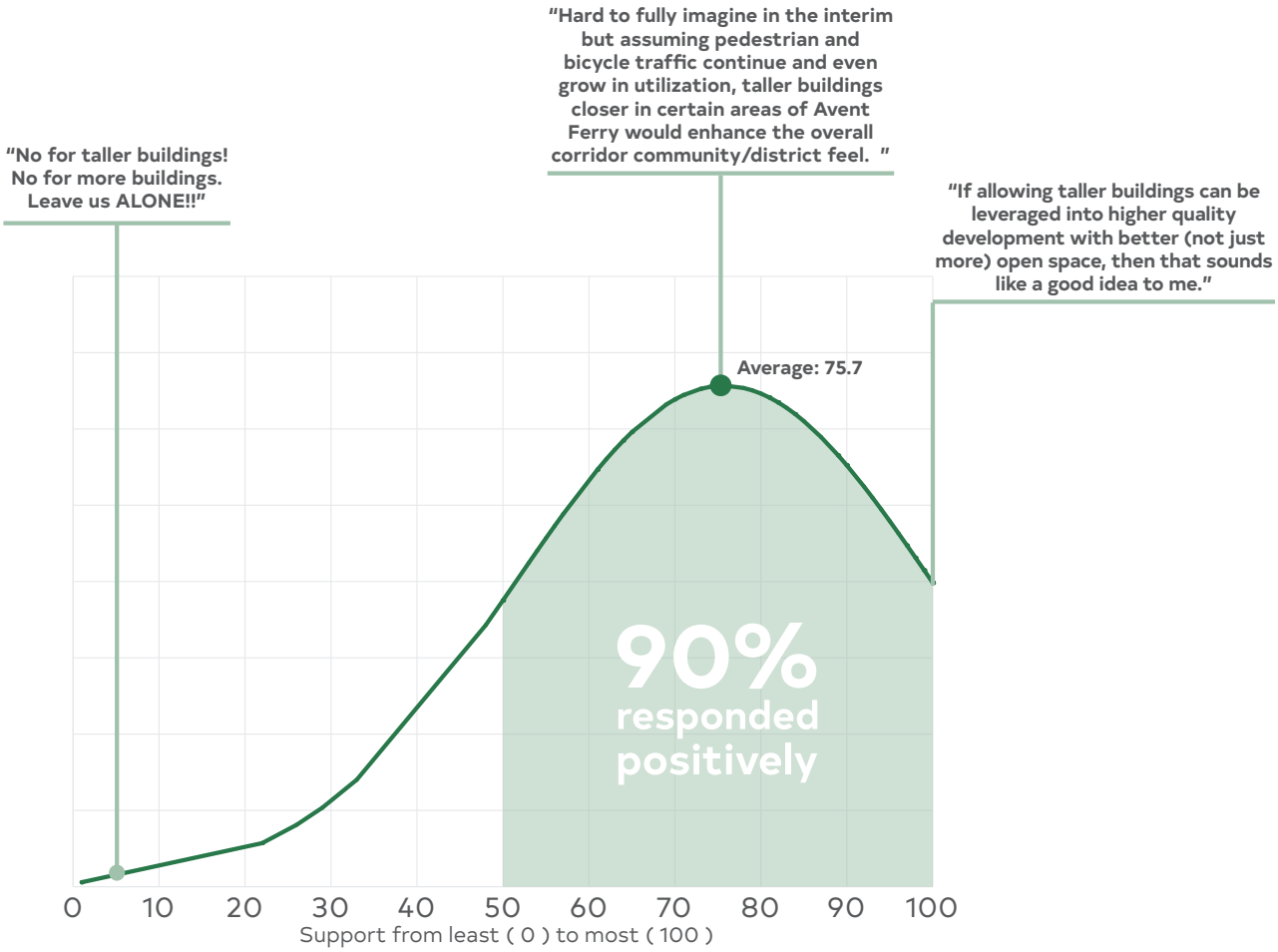
To what degree do you think the recommended street additions around Broadwell Drive and Kensington Park Apartments, along with the Greenway connections, could meet the goal of making the Avent Ferry area feel more connected?



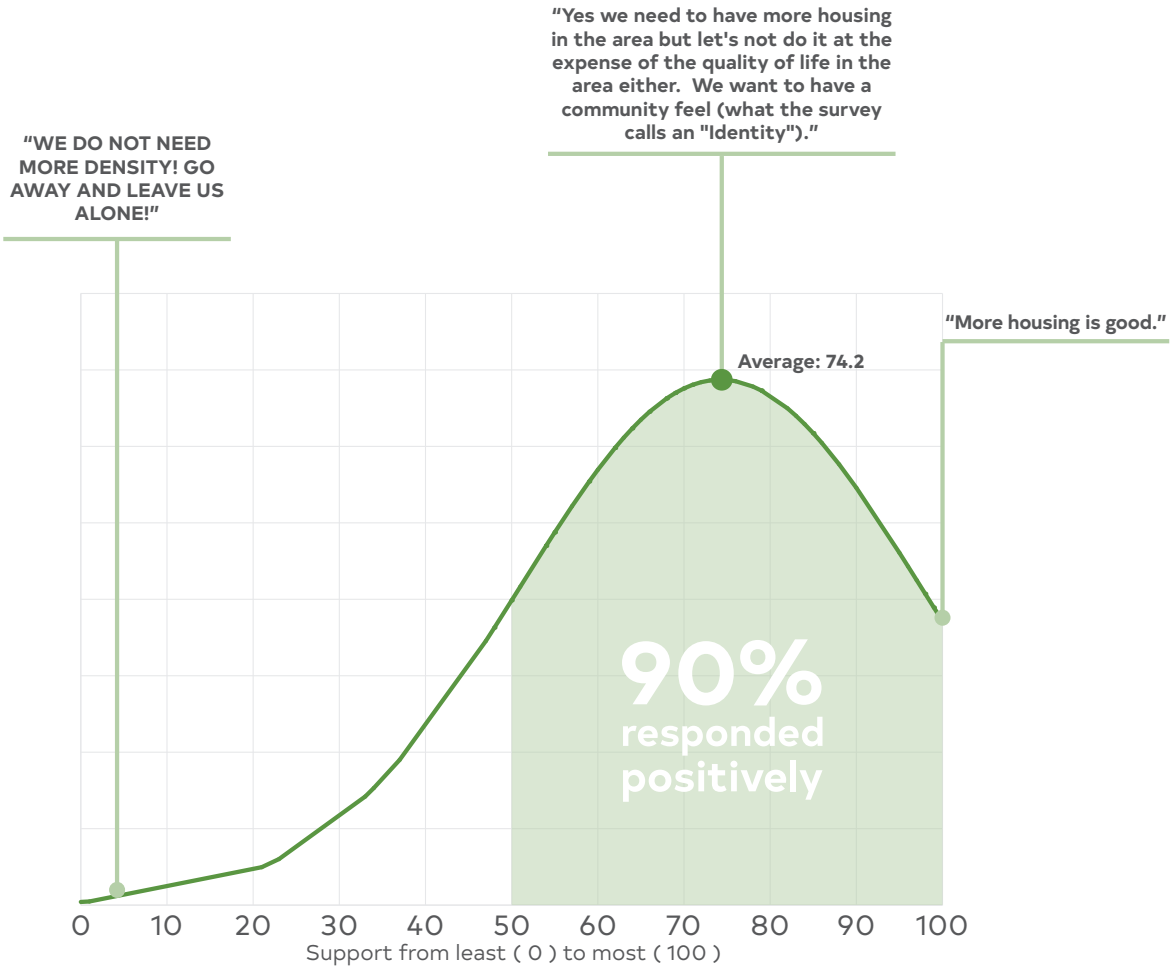
To what degree do you think increasing the suggested density around Chappell Drive could meet the goal of increasing housing supply?



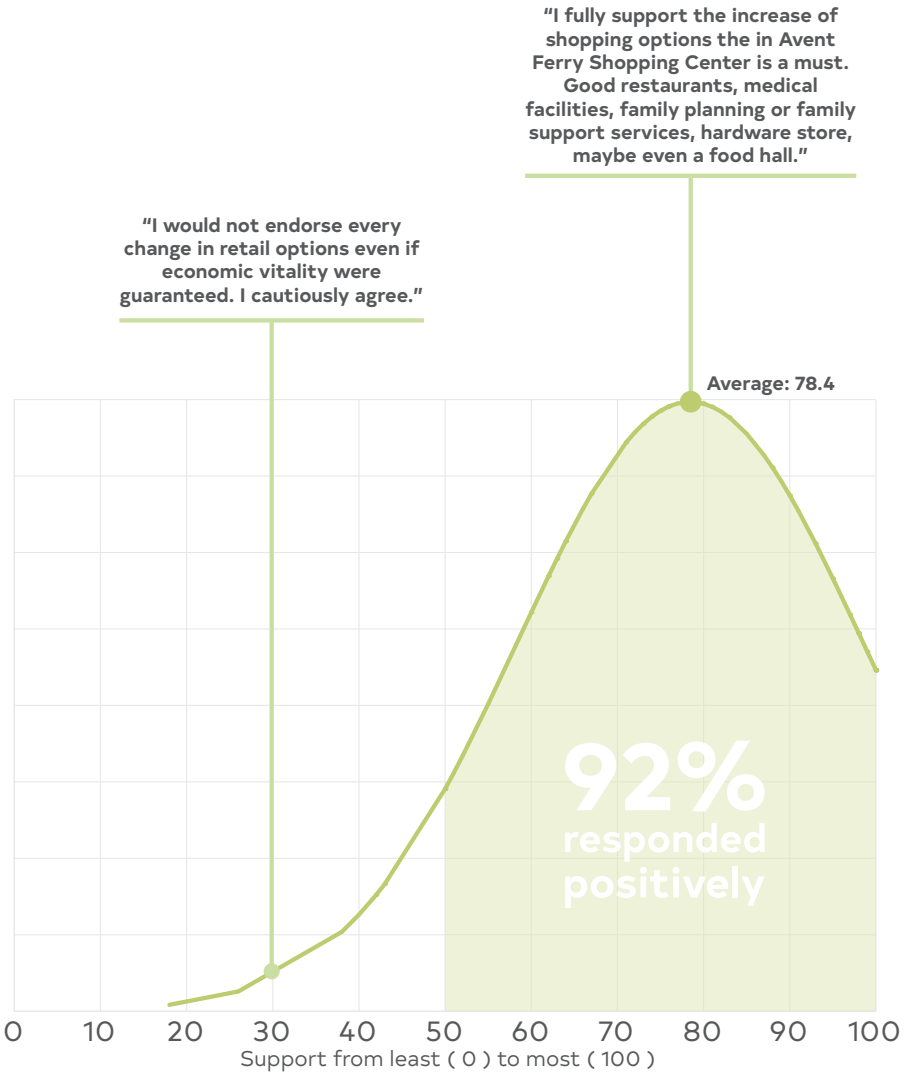
To what degree do you think the recommendations as a whole could meet the goal of enhancing the physical and cultural attractiveness of Avent Ferry?



There should be taller buildings along Avent Ferry if it means that there will be more open space.



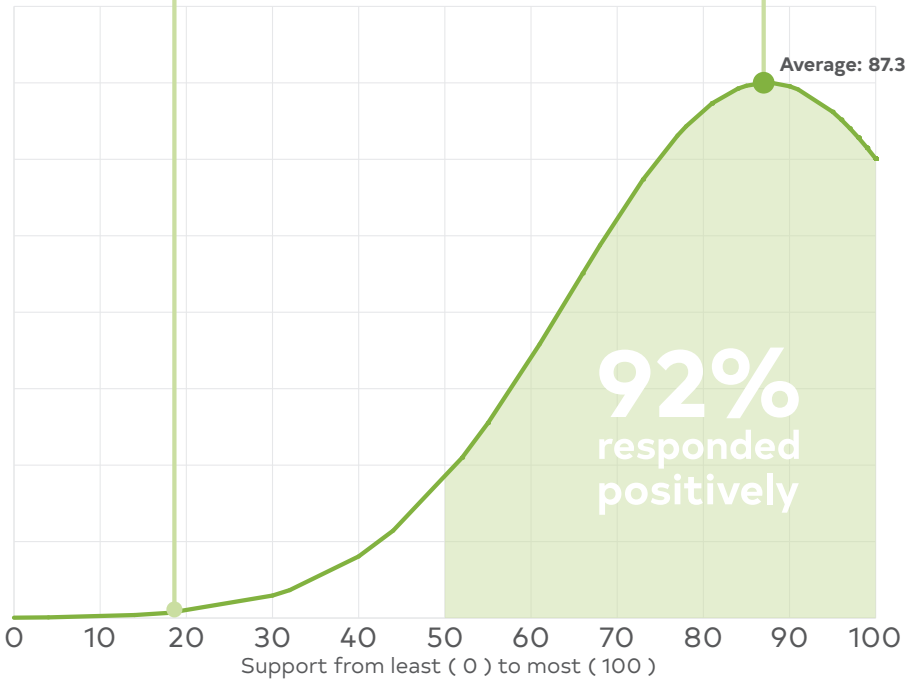
Buildings along Avent Ferry should allow for more density if it increases the availability of housing in the area.



A change in current retail options is acceptable as long as new development increases the economic vitality of the area.

"Quit punishing drivers by narrowing streets from two-lanes to one-lane and now lowering speed limits for the few cyclists. One of the comments made in the meeting by one of the city official is that more people would utilize the bike lanes if this plan was implemented. People driving from Johnson County, Apex, Holly Springs, Cary, will not be on bikes. They work at NCSU, or other businesses around Raleigh. There will be no more bikers then there are now and I rarely see them now."

"Yes we need to create a plan that is safer for pedestrians and that slows drivers down. We currently have pedestrians trying to cross without any available crosswalks, using the turn lane as a 'safe zone' while we have drivers using the same turn lane to pass illegally. Bad combination. "

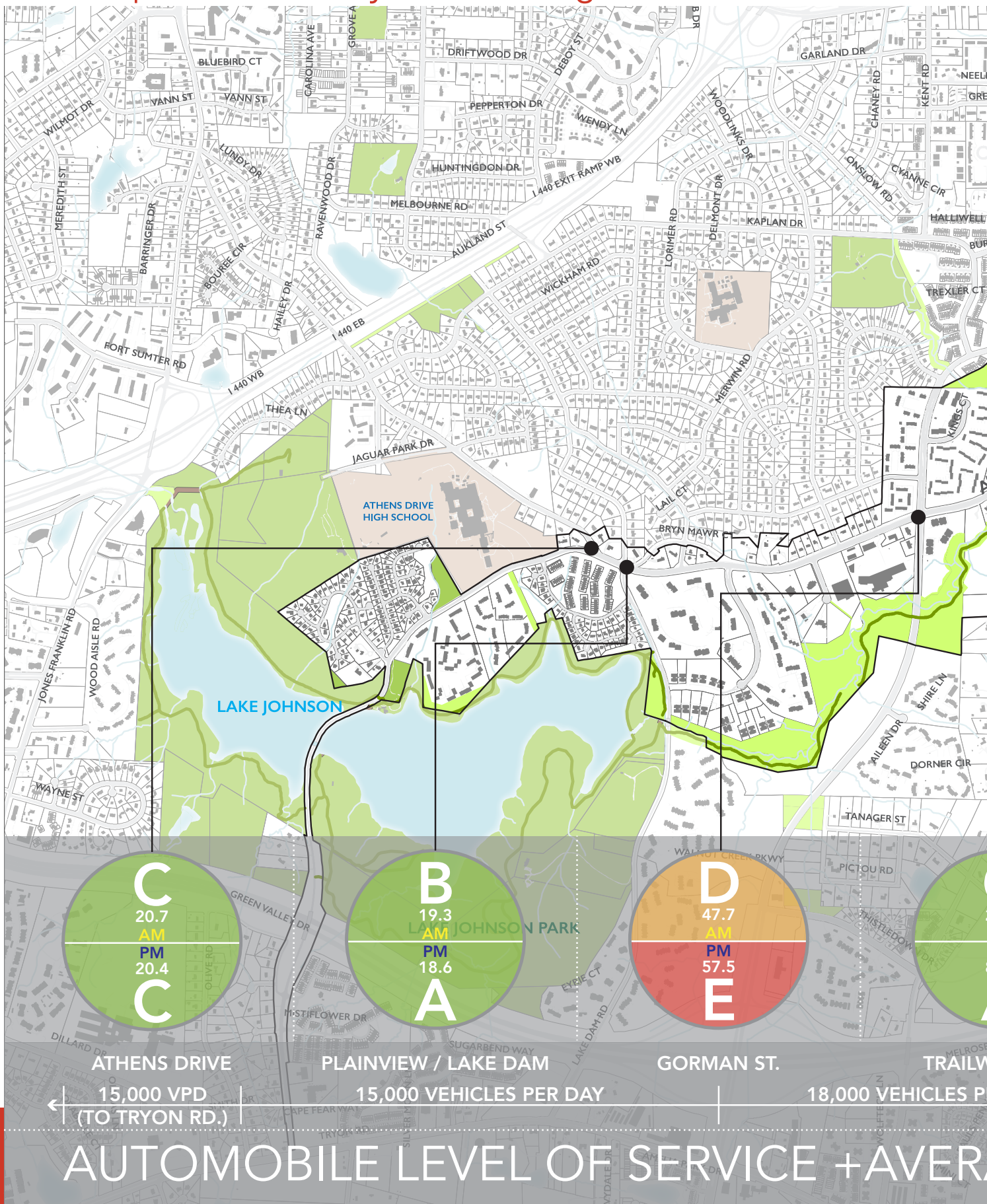


Creating a street plan that is safer for pedestrians, cyclists, and bus riders is important even if it means lower speed limits for drivers.

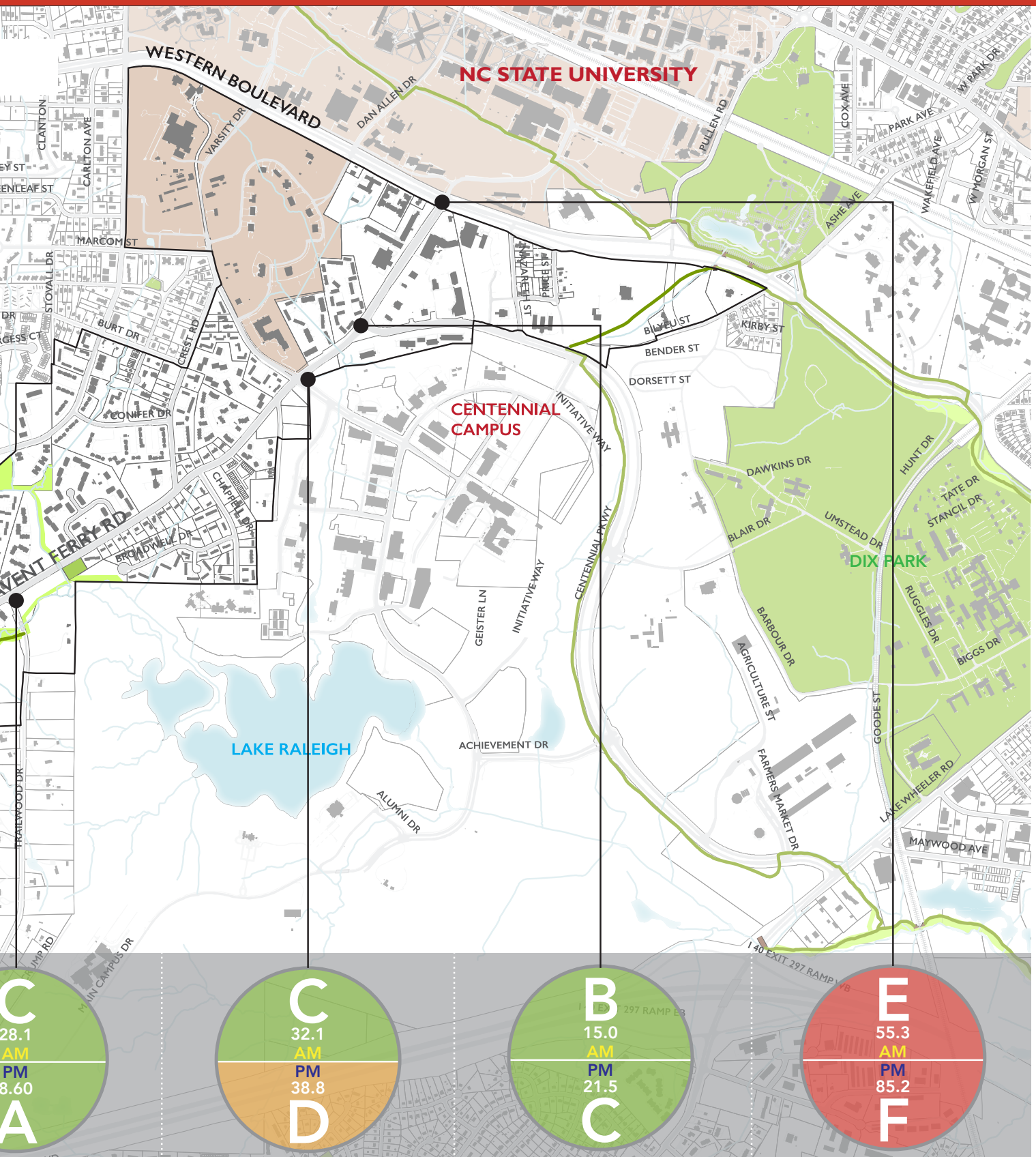
Residents have different goals for the neighborhood. We've listed some below. Please rank the following goals in order of priority from most important to least important.

1. Making Avent Ferry safer for all travelers, including drivers, cyclists, and pedestrians
2. Encouraging economic vitality
3. Improving the aesthetic quality of the built environment
4. Preserving and creating green spaces
5. Creating a cohesive identity for the area
6. Limiting redevelopment in the area

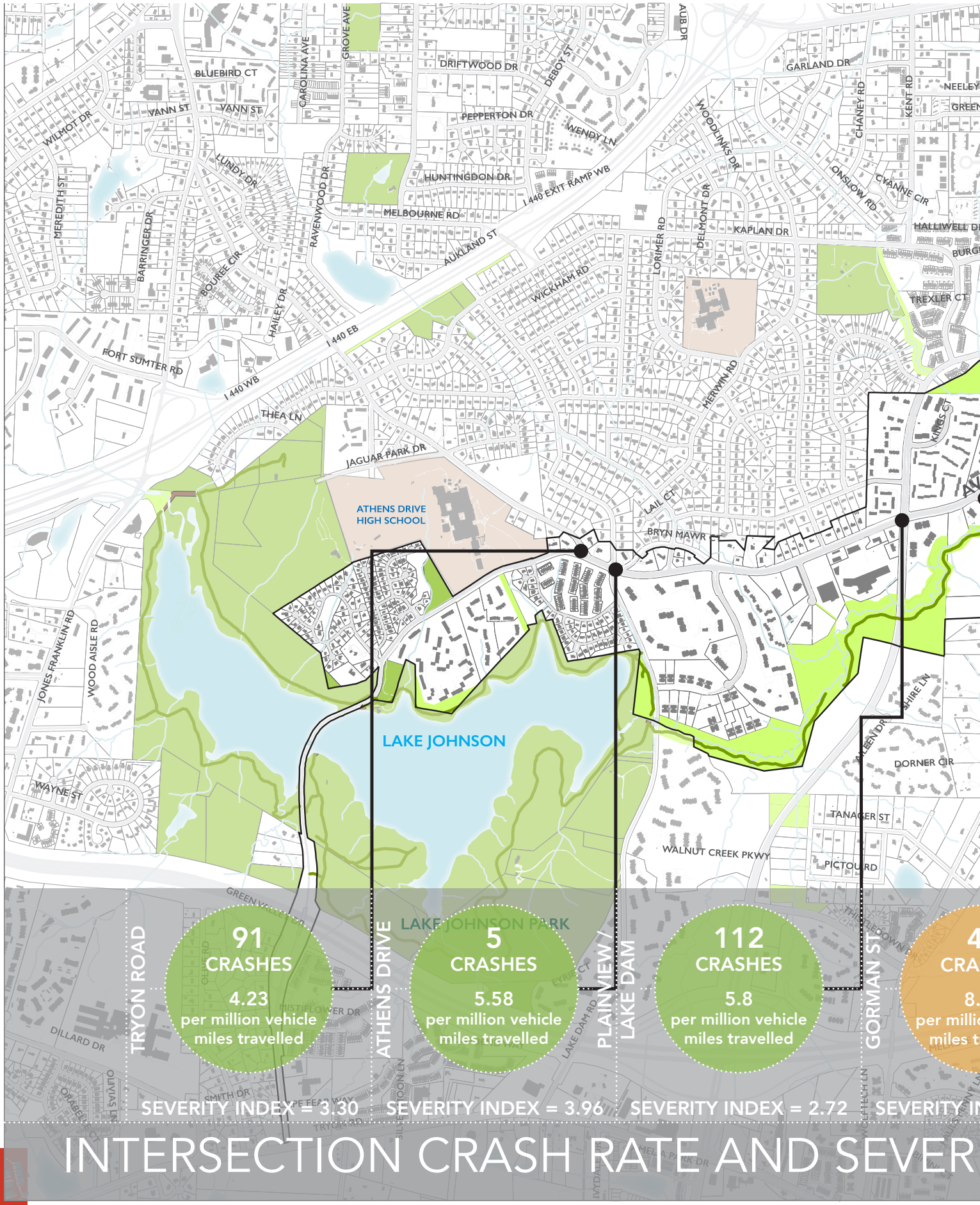
D. Transportation Analysis - Existing Conditions



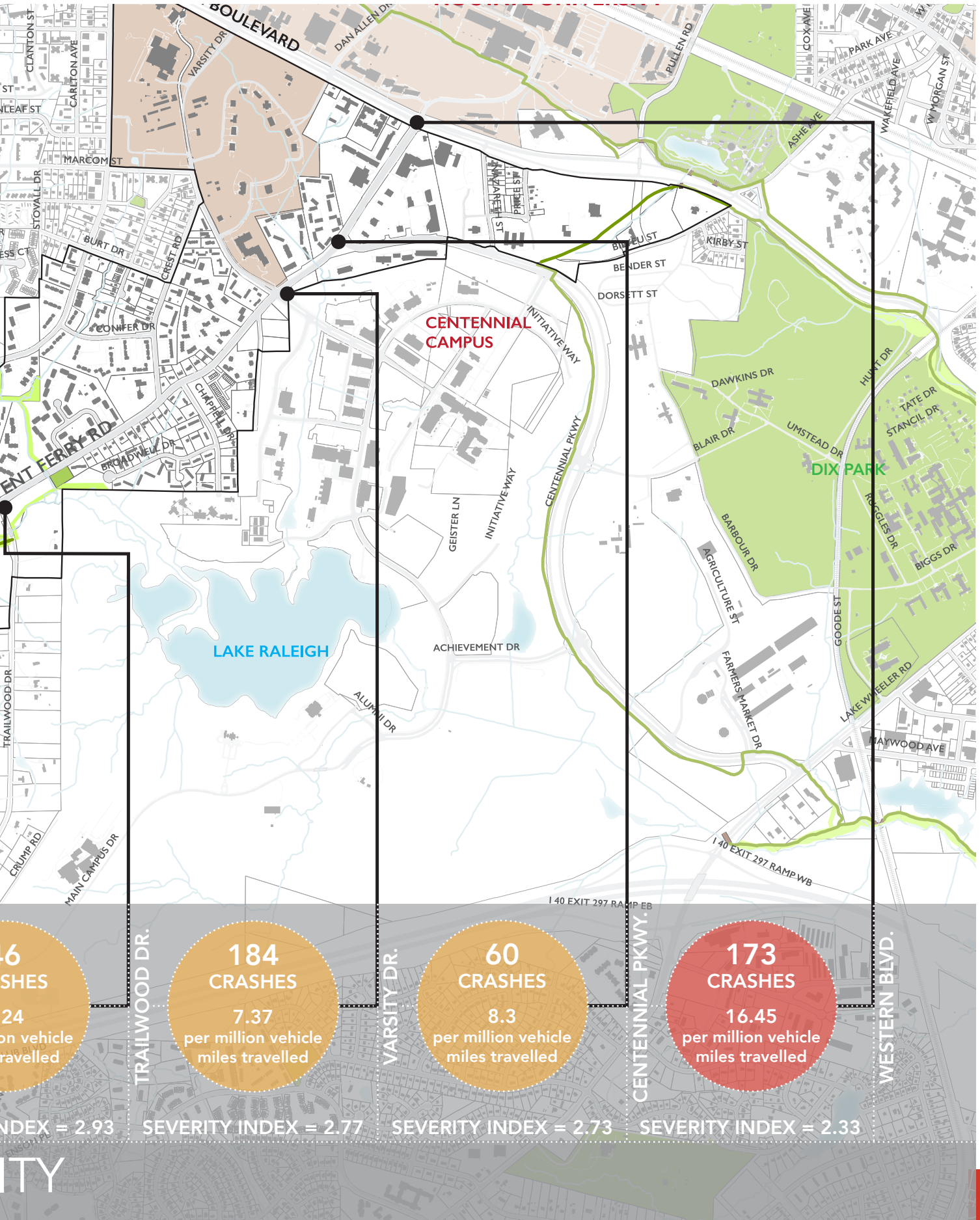
AUTOMOBILE LEVEL OF SERVICE +AVER



AGE DAILY TRAFFIC



INTERSECTION CRASH RATE AND SEVER


BOULEVARD
CENTENNIAL CAMPUS
LAKE RALEIGH
DIX PARK
INITIATIVE WAY
CENTENNIAL PKWY
DAWKINS DR
HUNT DR
TATE DR
STANCIL DR
BLAIR DR
UMSTEAD DR
BARBOUR DR
AGRICULTURE ST
GOODE ST
BIGGS DR
ROGGLES DR
FARMERS MARKET DR
LAKE WHEELER RD
MAYWOOD AVE
ACHIEVEMENT DR
GEISTER LN
ALUMNI DR
MAIN CAMPUS DR
CRUMP RD
TRAILWOOD DR
VARSITY DR
BURT DR
CREST RD
CONIFER DR
BROADWELL DR
CHAPANOKA DR
MARCOM ST
STOVALL DR
CARLTON AVE
CLANTON ST
DAN ALLEN DR
PULLEN RD
COX AVE
PARK AVE
WAKEFIELD AVE
W MORGAN ST
ASHE AVE
KIRBY ST
BENDER ST
DORSETT ST
I 40 EXIT 297 RAMP WB
I 40 EXIT 297 RAMP EB
TRAILWOOD DR.
184
CRASHES
7.37
per million vehicle miles travelled
SEVERITY INDEX = 2.77
VARSITY DR.
60
CRASHES
8.3
per million vehicle miles travelled
SEVERITY INDEX = 2.73
CENTENNIAL PKWY.
173
CRASHES
16.45
per million vehicle miles travelled
SEVERITY INDEX = 2.33
WESTERN BLVD.

Level of Service without Improvements

Avent Ferry Corridor Study Results

Intersection	Approach		2014 AM Delay (sec)	2014 AM LOS	2014 PM Delay (sec)	2014 PM LOS	2017 AM Delay (sec)	2017 AM LOS	2017 PM Delay (sec)	2017 PM LOS
Western Blvd @ Avent Ferry Rd. / Morrill Dr.	Signalized	**Intersection Average**	**50.6**	**D**	**71.2**	**E**	**55.3**	**E**	**85.2**	**F**
		EB - Western Blvd	40.9	D	54.4	D	42.5	D	56.9	E
		WB - Western Blvd	49.4	D	57.7	E	51.1	D	58.2	E
		NB - Avent Ferry Rd	61.9	E	92.6	F	74.7	E	127.0	F
		SB - Morrill Dr	66.9	E	117.9	F	65.2	E	166.0	F
Avent Ferry Rd. @ Champion Ct. / Centennial Pkwy	Signalized	**Intersection Average**	**14.8**	**B**	**20.2**	**C**	**15.1**	**B**	**21.0**	**C**
		EB - Champion Ct	58.1	E	58.4	E	58.5	E	59.0	E
		WB - Centennial Pkwy	52.4	D	47.5	D	52.7	D	46.8	D
		NB - Avent Ferry Rd	5.5	A	11.4	B	5.8	A	12.9	B
		SB - Avent Ferry Rd	6.4	A	11.1	B	6.7	A	12.2	B
Avent Ferry Rd. @ Varsity Dr.	Signalized	**Intersection Average**	**31.4**	**C**	**35.8**	**D**	**34.0**	**C**	**38.4**	**D**
		EB - Varsity Dr	56.3	E	62.2	E	60.2	E	68.6	E
		WB - Varsity Dr	24.2	C	32.6	C	24.5	C	34.2	C
		NB - Avent Ferry Rd	24.3	C	38.6	D	25.6	C	40.5	D
		SB - Avent Ferry Rd	27.5	C	28.8	C	32.5	C	32.1	C
Avent Ferry Rd. @ Trailwood Dr.	Signalized	**Intersection Average**	**27.3**	**C**	**8.0**	**A**	**28.1**	**C**	**8.5**	**A**
		EB - Avent Ferry Rd	30.0	C	8.3	A	30.5	C	9.5	A
		WB - Avent Ferry Rd	0.9	A	2.0	A	0.9	A	2.5	A
		NB - Trailwood Dr	40.6	D	48.8	D	42.6	D	46.9	D
Avent Ferry Rd. @ Gorman St.	Signalized	**Intersection Average**	**44.9**	**D**	**49.7**	**D**	**48.1**	**D**	**57.8**	**E**
		EB - Avent Ferry Rd	39.6	D	46.5	D	43.4	D	47.9	D
		WB - Avent Ferry Rd	52.4	D	41.6	D	58.8	E	46.9	D
		NB - Gorman St	46.0	D	51.8	D	48.0	D	53.3	D
		SB - Gorman St	46.4	D	63.0	E	47.9	D	84.5	F
Avent Ferry Rd. @ Lake Dam Rd. / Pineview Dr.	Signalized	**Intersection Average**	**18.8**	**B**	**17.6**	**B**	**19.3**	**B**	**18.6**	**B**
		EB - Avent Ferry Rd	9.5	A	9.6	A	10.0	B	9.9	A
		WB - Avent Ferry Rd	15.0	B	15.2	B	15.9	B	15.9	B
		NB - Lake Dam Rd	42.0	D	41.9	D	42.3	D	45.5	D
		SB - Pineview Dr	25.3	C	31.6	C	24.8	C	32.1	C
Avent Ferry Rd. @ Athens Dr.	Signalized	**Intersection Average**	**19.9**	**B**	**19.5**	**B**	**20.7**	**C**	**20.4**	**C**
		EB - Avent Ferry Rd	19.4	B	16.6	B	21.1	C	18.1	B
		WB - Avent Ferry Rd	22.0	C	20.1	C	22.8	C	21.2	C
		SB - Athens Dr	18.1	B	20.6	C	17.4	B	20.7	C

Level of Service with Improvements

Avent Ferry Corridor Study Results

Intersection {Future}	Approach		Existing (2014)				Current (2017)				With Improvements (2017)			
			AM		PM		AM		PM		AM		PM	
			Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS
Western Blvd @ Avent Ferry Rd. / Morrill Dr.	Signalized	**Intersection Average**	**50.6**	**D**	**71.2**	**E**	**55.3**	**E**	**85.2**	**F**	**52.9**	**D**	**77.4**	**E**
		EB - Western Blvd	40.9	D	54.4	D	42.5	D	56.9	E	40.8	D	62.0	E
		WB - Western Blvd	49.4	D	57.7	E	51.1	D	58.2	E	46.7	D	67.6	E
		NB - Avent Ferry Rd	61.9	E	92.6	F	74.7	E	127.0	F	72.7	E	101.6	F
		SB - Morrill Dr	66.9	E	117.9	F	65.2	E	166.0	F	69.8	E	105.9	F
Avent Ferry Rd. @ Champion Ct. / Centennial Pkwy	Signalized	**Intersection Average**	**14.8**	**B**	**20.2**	**C**	**15.1**	**B**	**21.0**	**C**	**13.8**	**B**	**21.0**	**C**
		EB - Champion Ct	58.1	E	58.4	E	58.5	E	59.0	E	58.5	E	59.0	E
		WB - Centennial Pkwy	52.4	D	47.5	D	52.7	D	46.8	D	54.6	D	51.8	D
		NB - Avent Ferry Rd	5.5	A	11.4	B	5.8	A	12.9	B	2.7	A	11.1	B
		SB - Avent Ferry Rd	6.4	A	11.1	B	6.7	A	12.2	B	6.7	A	10.9	B
Avent Ferry Rd. @ Varsity Dr.	Signalized	**Intersection Average**	**31.4**	**C**	**35.8**	**D**	**34.0**	**C**	**38.4**	**D**	**33.9**	**C**	**37.4**	**D**
		EB - Varsity Dr	56.3	E	62.2	E	60.2	E	68.6	E	57.3	E	68.1	E
		WB - Varsity Dr	24.2	C	32.6	C	24.5	C	34.2	C	23.9	C	36.0	D
		NB - Avent Ferry Rd	24.3	C	38.6	D	25.6	C	40.5	D	27.8	C	38.9	D
		SB - Avent Ferry Rd	27.5	C	28.8	C	32.5	C	32.1	C	29.4	C	28.4	C
Avent Ferry Rd. @ Trailwood Dr.	Signalized	**Intersection Average**	**27.3**	**C**	**8.0**	**A**	**28.1**	**C**	**8.5**	**A**	**29.7**	**C**	**8.9**	**A**
		EB - Avent Ferry Rd	30.0	C	8.3	A	30.5	C	9.5	A	32.0	C	10.0	A
		WB - Avent Ferry Rd	0.9	A	2.0	A	0.9	A	2.5	A	0.8	A	2.9	A
		NB - Trailwood Dr	40.6	D	48.8	D	42.6	D	46.9	D	45.6	D	46.7	D
Avent Ferry Rd. @ Gorman St.	Signalized	**Intersection Average**	**44.9**	**D**	**49.7**	**D**	**48.1**	**D**	**57.8**	**E**	**45.9**	**D**	**48.2**	**D**
		EB - Avent Ferry Rd	39.6	D	46.5	D	43.4	D	47.9	D	42.4	D	50.1	D
		WB - Avent Ferry Rd	52.4	D	41.6	D	58.8	E	46.9	D	57.6	E	40.9	D
		NB - Gorman St	46.0	D	51.8	D	48.0	D	53.3	D	44.7	D	44.3	D
		SB - Gorman St	46.4	D	63.0	E	47.9	D	84.5	F	45.1	D	60.7	E
Avent Ferry Rd. @ Lake Dam Rd. / Pineview Dr.	Signalized	**Intersection Average**	**18.8**	**B**	**17.6**	**B**	**19.3**	**B**	**18.6**	**B**	**19.3**	**B**	**18.2**	**B**
		EB - Avent Ferry Rd	9.5	A	9.6	A	10.0	B	9.9	A	10.0	B	10.3	B
		WB - Avent Ferry Rd	15.0	B	15.2	B	15.9	B	15.9	B	15.9	B	15.6	B
		NB - Lake Dam Rd	42.0	D	41.9	D	42.3	D	45.5	D	42.3	D	43.2	D
		SB - Pineview Dr	25.3	C	31.6	C	24.8	C	32.1	C	24.8	C	31.3	C
Avent Ferry Rd. @ Athens Dr.	Signalized	**Intersection Average**	**19.9**	**B**	**19.5**	**B**	**20.7**	**C**	**20.4**	**C**	**20.7**	**C**	**20.3**	**C**
		EB - Avent Ferry Rd	19.4	B	16.6	B	21.1	C	18.1	B	21.1	C	17.3	B
		WB - Avent Ferry Rd	22.0	C	20.1	C	22.8	C	21.2	C	22.8	C	21.1	C
		SB - Athens Dr	18.1	B	20.6	C	17.4	B	20.7	C	17.4	B	21.4	C

F. Centennial Parkway Realignment Memo

AVENT FERRY CORRIDOR STUDY: CENTENNIAL PARKWAY REALIGNMENT AND INTERCHANGE

In response to stakeholder input, the City of Raleigh asked the project team to examine the impact of a potential realignment of Centennial Parkway on Avent Ferry Road traffic. Using the basic realignment presented to the project team, a series of assumptions was designed to test the Level of Service (LOS) and intersection movements and delays.

The proposed realignment would divert the existing Centennial Parkway through the proposed redeveloped Mission Valley Shopping Center (see Appendix A). Centennial Parkway crosses Avent Ferry Road and connects to Fraternity Court on the west side of the signalized intersection. The current signalized intersection at Centennial Parkway/Champion Court and Avent Ferry Road would eliminate left turns from Centennial Parkway onto Avent Ferry Road. Centennial Parkway would be converted to a stop-controlled and left-in only intersection. The former Centennial Parkway and Champion Court intersection will be a right-out only intersection.

This analysis is conceptual and volumes for the new links were coded in Synchro based on the assumptions noted below. If the Centennial Parkway realignment were to move forward, a more thorough volume development and traffic forecast would need to be performed. Additionally, changes to land use and the design of the Mission Valley Shopping Center would need to be considered in any future traffic analysis.

Below is a list of the assumptions made by the project team. The proposed realignment is conceptual and required many assumptions to conduct basic traffic analysis.

ASSUMPTIONS:

1. The existing intersection at Avent Ferry Road and Centennial Parkway/Champion Court converted to a left-in only intersection with all the left turns restricted out of Centennial Parkway and Champion Court.
2. The old link for Centennial Parkway is converted to a 2-lane (or possibly 3-lane depending on driveways) roadway with one lane in each direction, between Avent Ferry Road and the new realigned Centennial Parkway.
3. The realigned Centennial Parkway is a 4-lane segment with 2 lanes in each direction. The old Centennial Parkway link will be 2 lanes with a stop controlled approach at the intersection.
4. The new signalized intersection for Centennial Parkway and Avent Ferry Road connects to Fraternity Court and is coded as a 4-phased signal in synchro, with protected left turn phasing for the southbound left turn from Avent Ferry Road and the westbound left turn from new Centennial Parkway.
5. A 300 foot storage length provided for the westbound left turn from the new Centennial Parkway approach and a 200 foot eastbound storage lane is assumed for the approach from the 2-lane connector road to Fraternity Court.
6. The Centennial Parkway and Avent Ferry Road intersection is realigned to follow the existing driveway for Mission Valley Shopping Center.
7. The current number of left turn movements at the intersection of Centennial Parkway/Champion Court and Avent Ferry Road is assumed to be the volume of turning movements at the new intersection between Avent Ferry Road and new Centennial Parkway.

8. The current volume of right turning movements into Centennial Parkway is assumed at the old Centennial Parkway link with the exception of 25 vehicles that were redirected to the new Centennial Parkway intersection.

9. The current volume of right turning movements into old Centennial Parkway is assumed to remain the same with the exception of the additional 25 vehicles redirected in assumption eight.

FINDINGS:

1. During the AM Peak hour, the new Centennial Parkway intersection performs at a LOS C with an intersection delay of 26 seconds. The southbound left from Avent Ferry Road has a movement delay of 53 seconds and a 95th percentile queue length of 93 feet.

2. During the PM Peak hour, the new Centennial Parkway intersection performs at a LOS D with an intersection delay of 37.8 seconds. The southbound left from Avent Ferry Road has a movement delay of 63 seconds and a 95th percentile queue length of 168 feet.

3. During the AM Peak hour, the Western Boulevard intersection performs at a LOS D with an intersection delay of 54.2 seconds. The northbound left at Western Boulevard has a movement delay of 46 seconds and a 95th percentile queue length of 242 feet.

4. During the PM Peak hour, the Western Boulevard intersection performs at a LOS E with an intersection delay of 68.8 seconds. The northbound left at Western Boulevard has a delay of 65 seconds and a 95th percentile queue length of 357 feet.

5. The northbound through movement on Avent Ferry Road at Western Boulevard operates at a LOS E with a movement delay of 68.4 seconds during the AM Peak hour and an LOS F with a delay of 99.9 seconds during the PM Peak hour. The queue length for the northbound through movement at Western Boulevard is 601 feet for AM Peak hour and 607 feet for PM Peak hour.

6. The westbound left from new Centennial Parkway operates at a LOS F. The new road alignment would require two left-turn lanes (since it exceeds the City standard of 300 turning movements per left turn lane). The intersection has a movement delay of 92.2 seconds and 95th percentile queue length of 222 feet.

7. The old intersection of Centennial Parkway and Avent Ferry Road performs at a LOS B during AM Peak and LOS B during PM Peak.

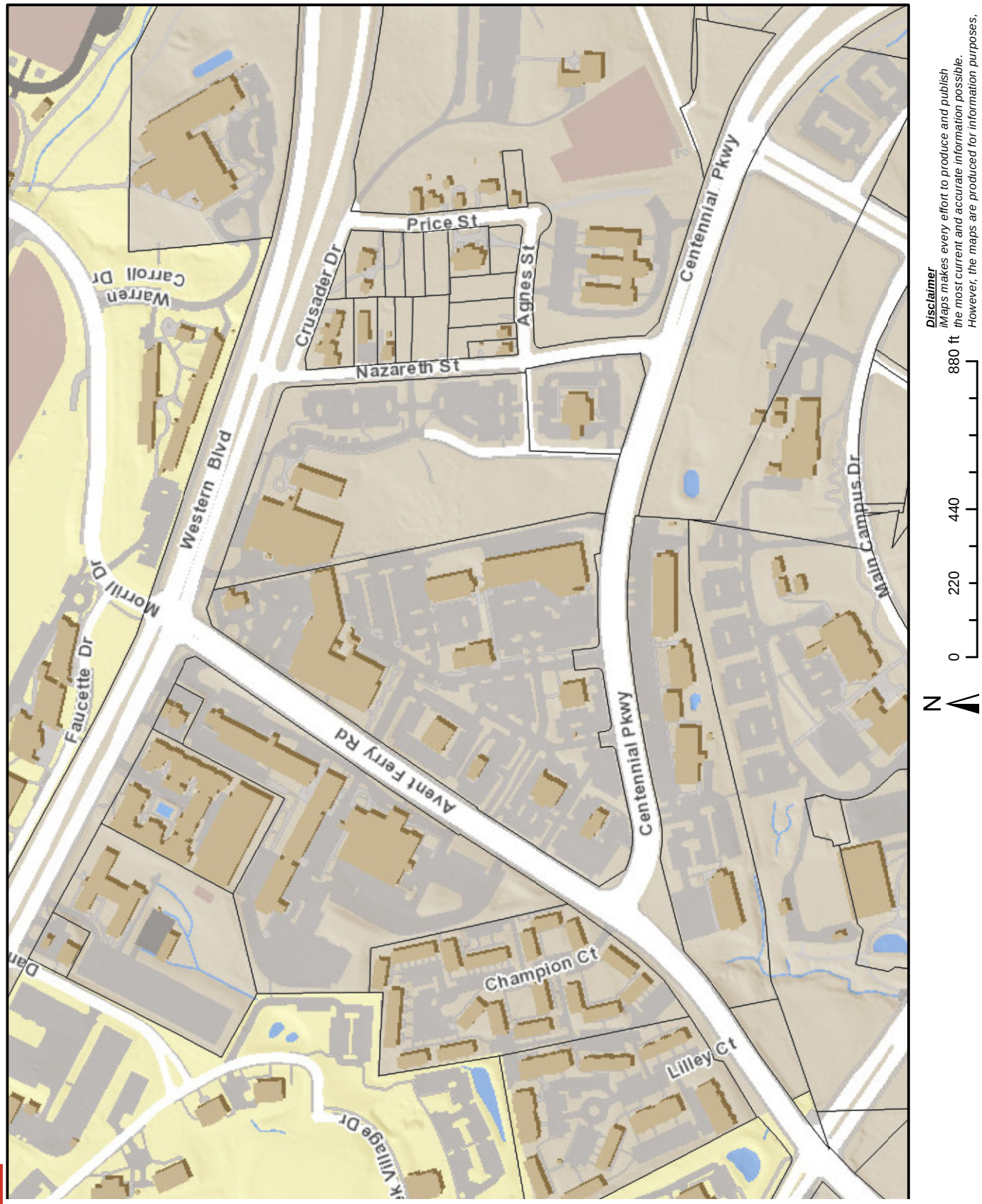
CONCLUSIONS:

1. Realignment of Centennial Parkway to Mission Valley Shopping Center will cause queuing and storage delays at the Avent Ferry Road/Centennial Parkway intersection and the Avent Ferry/Western Boulevard. Specifically, there would be stacking in the northbound left-turn lane at the Avent Ferry Road/Western Boulevard intersection and the southbound left-turn at the Avent Ferry Road/New Centennial Parkway intersection.

2. The distance between the stop bars on northbound Western Boulevard and southbound new Centennial Parkway will be approximately 600 feet which could be insufficient storage capacity for the left turns on Avent Ferry Road causing stacking and delays from Western Boulevard and Varsity Road during PM peak period.

3. A potential alignment that could reduce the queuing problem is to extend the proposed alignment from Fraternity Court to Varsity Drive to create a parallel route to Western Boulevard that would allow traffic to enter Western Boulevard from Varsity Road.

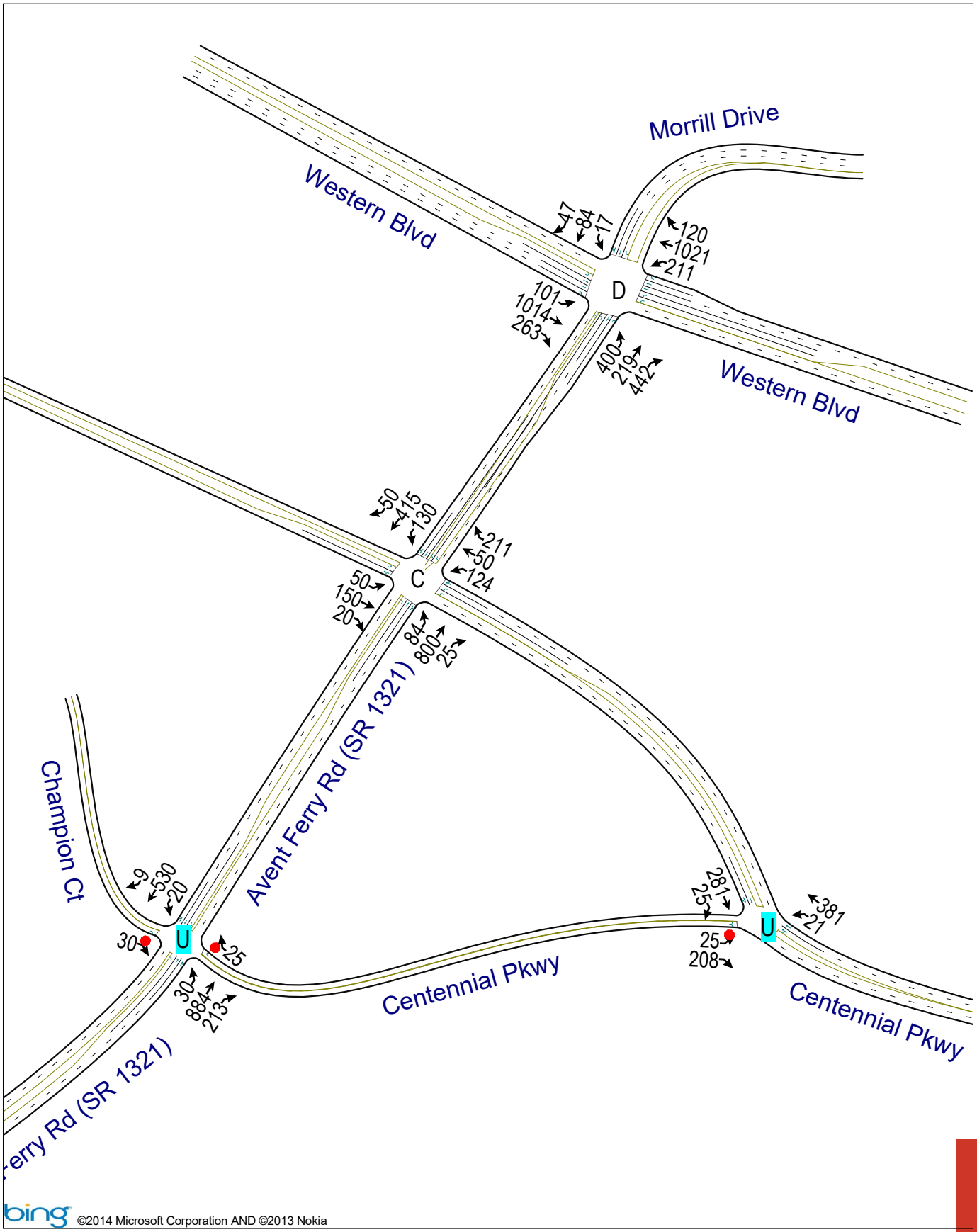
Potential Realignment of Centennial Parkway and Avent Ferry Intersection



Disclaimer
Maps makes every effort to produce and publish the most current and accurate information possible. However, the maps are produced for information purposes,

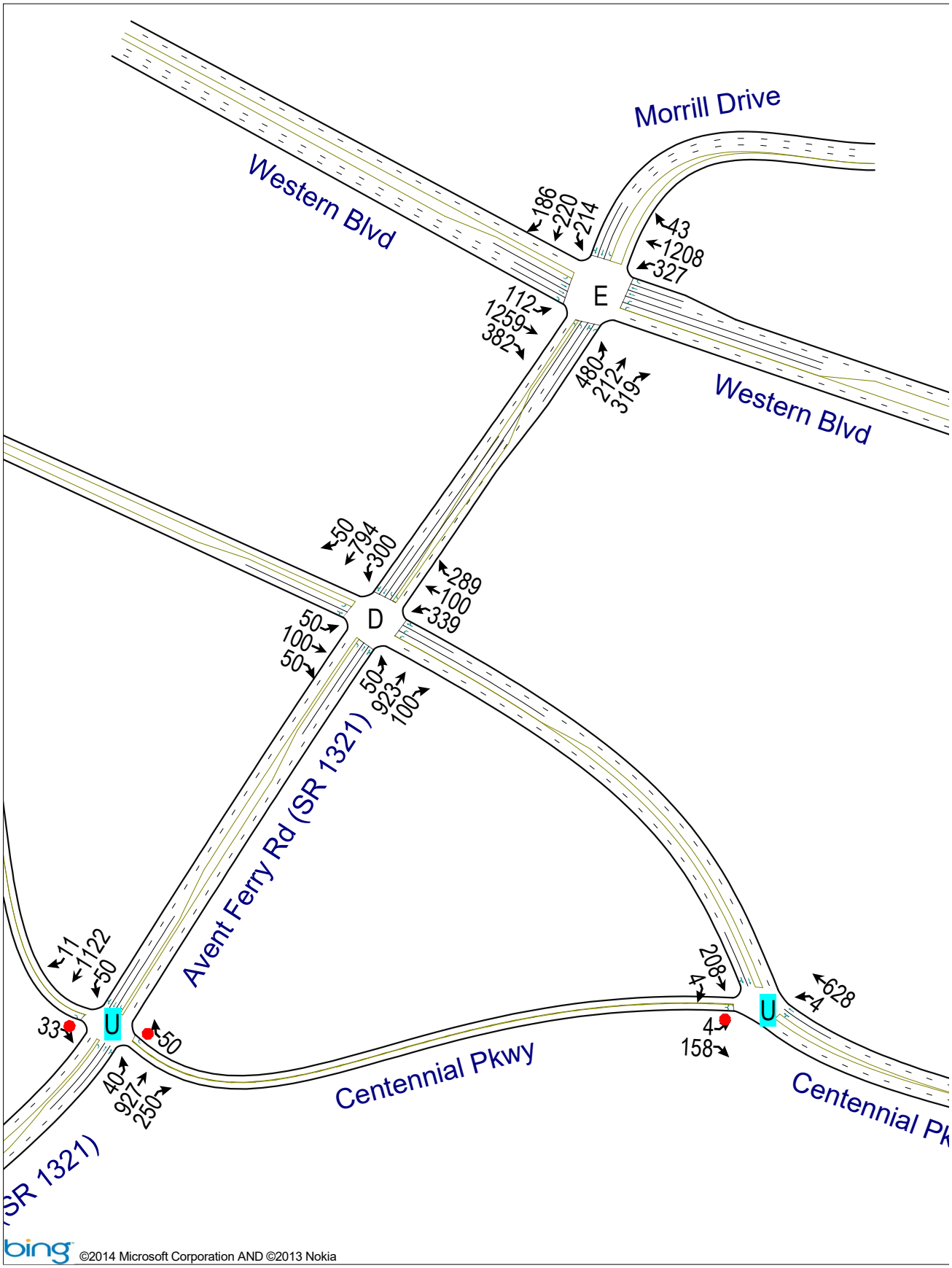
Avent Ferry Corridor - Centennial Realignment Intersection Traffic Volumes & Level of Service

Avent Ferry Corridor Study - Centennial Realigment **Intersection Traffic Volumes**

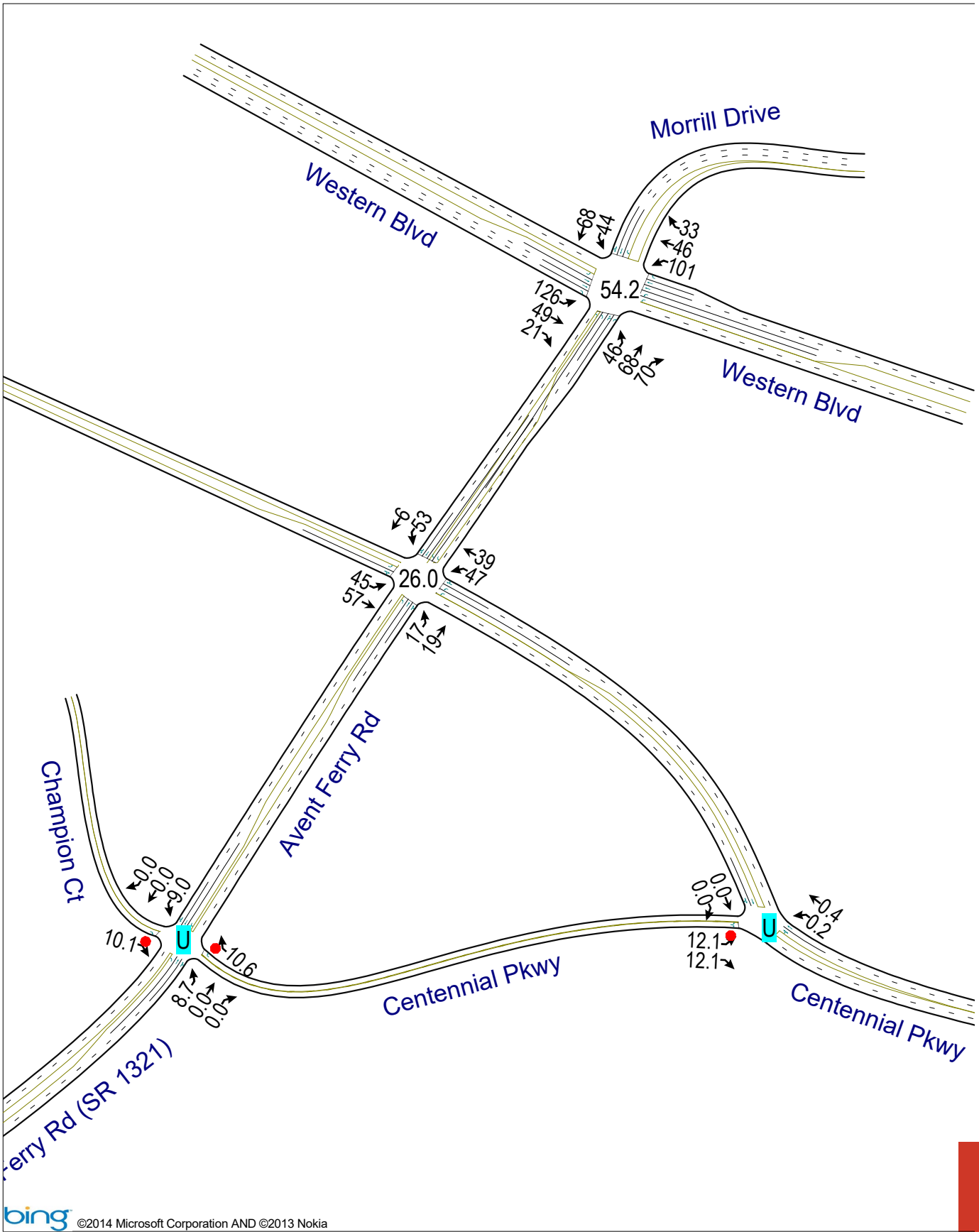


Avent Ferry Corridor - Centennial Realignment Intersection & Movement Delays

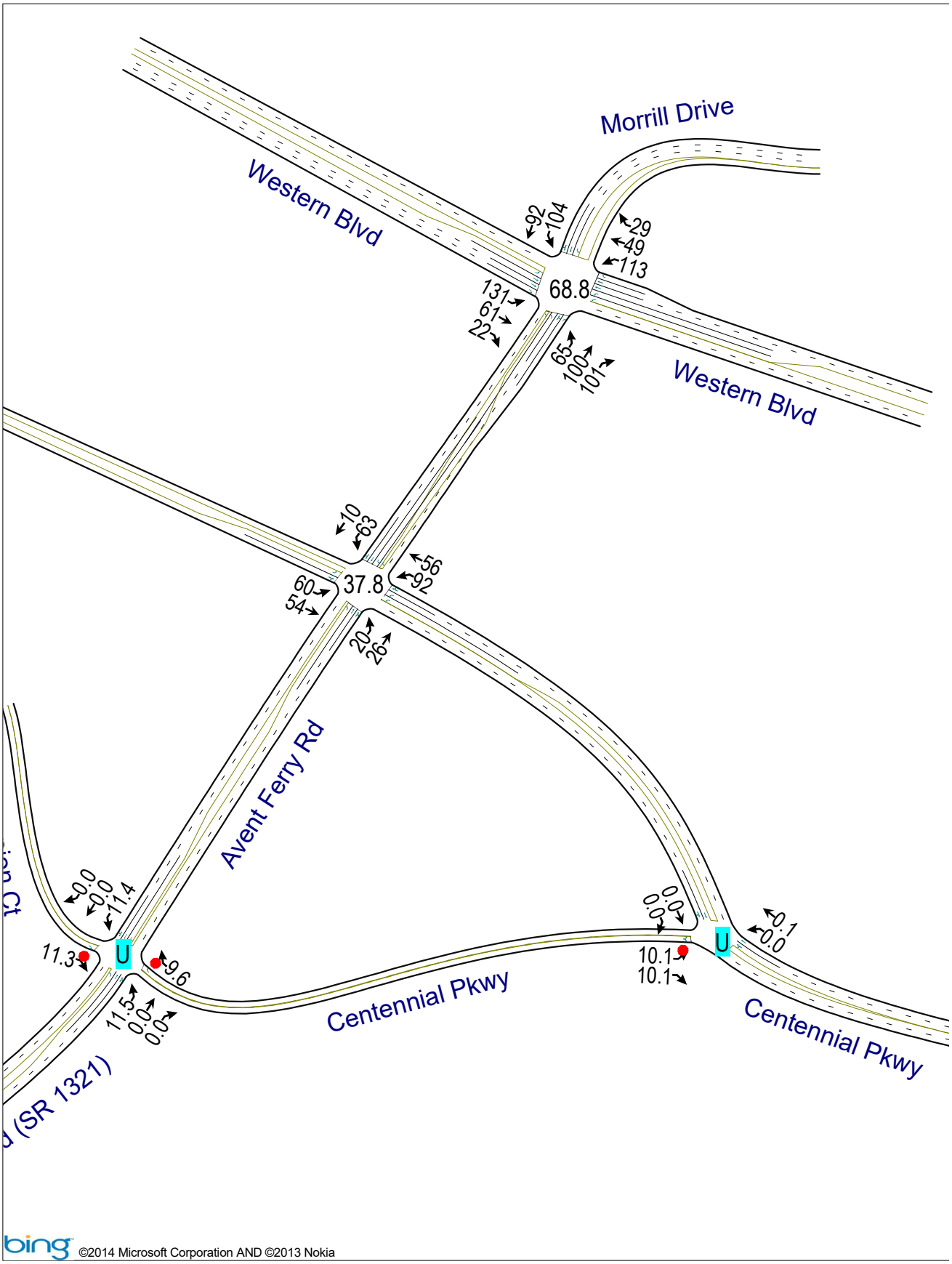
Avent Ferry Corridor Study - Centennial Realignment **Intersection Traffic Volumes**



Avent Ferry Corridor Study - Centennial Realigment **Intersection and Movement Delay**



Avent Ferry Corridor Study - Centennial Realignment **Intersection and Movement Delay**



G. Capital Cost Estimates

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Traffic Improvements Cost Estimate

PROJECT	UNIT COST	UNITS	TOTAL
Western Blvd to Varsity Dr			
5-lane, 2.5' curb and gutter	$5,000,000/mile	0.46	$2,312,330
8' planted median, 2.5' curb and gutter	$800,000/mile	0.32	$252,847
Street trees/planters	$500	330	$165,000
Above-curb 5' bike lane and 8' sidewalk on each side	$750,000 /mile	0.46	$346,849
Mid-block pedestrian crosswalk from Mission Valley Shopping Center to housing			
Full signalized	-	-	$150,000
HAWK beacon	-	-	$125,000
Hybrid beacons	-	-	$100,000
Improve Western Boulevard Intersection with bicycle signals	$25,000	1	$25,000
Improve Centennial Drive Intersection with bicycle signals	$25,000	1	$25,000
Bus shelter	$15,000	5	$75,000
Utility widening	$30,000/mile	1.69	$50,700
SUBTOTAL:			**$3,627,726**
Contingency (+30%)			$1,088,318
Design/Construction expenses (+15%)			$544,159
TOTAL COST:			**$5,260,203**

City of Raleigh
City Planning Department
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CITY PLANNING