US 29 - 70 Corridor Study

SAFETY • MOBILITY • SUSTAINABILITY

2011

Project Workbook

ACCESS & INTERSECTION IMPROVEMENT STUDY IN THE VICINITY OF DAVIDSON COUNTY COMMUNITY COLLEGE

The High Point
Metropolitan Planning Organization

Kimley-Horn & Associates, Inc. • Michael Baker Engineering, Inc. • Little & Associates

mpus.

1. Arena/Community Functions
2. Baseball Stadium
3. Softball Field
4. Soccer Fields
5. Practice Field
6. Tennis Complex
7. Environmental & Nature Sciences Center
8. Wind Power Generator
9. Recreation Trails
10. Nature Conservation Complex
11. Amphitheater
12. Animal Sanctuary
13. Future Campus Buildings
14. Sustainable Pine Plantation
15. Gardens
16. Future Pedestrian Overpass
17. DCCC Current Campus
18. Future Main Entrance

| PREFACE

Davidson County Community College (DCCC)—the only institution of higher education in Davidson and Davie Counties—serves over 16,000 people a year. In addition to enrollment and program growth, DCCC's Davidson County location has grown physically. In September 2009, DCCC announced a gift of 183 acres of land from Lexington residents Ed Hinkle and Talmadge Hinkle Silversides. Referred to as the LINK Campus, the land is located across US 29/70 from the Davidson Campus, giving DCCC the opportunity to expand. With space for a sports arena, a natural science building, hiking and cross-country trails, and additional academic buildings, the Link Campus is intended to be a true community resource.

The High Point Metropolitan Planning Organization (HPMPO) is responsible for maintaining a federally mandated, financially constrained long-range transportation plan (LRTP). The current LRTP encompasses the DCCC Campus and the future Link Campus. Furthermore, the plan identifies a planned interchange at the intersection of Old Greensboro Road and US 29-70, the intersection that connects the existing DCCC and future LINK campuses.

When considering the overlap between a traditional diamond interchange and the proposed master plan for the future LINK Campus a conflict was identified. The steep topography, streams and wetlands on the property influenced the programming of the LINK master plan clustering buildings near the high ground of the site…the same location as the proposed interchange. This conflict is one of the major catalysts for this study.

In 2010, a partnership was forged between Davidson County, the HPMPO, DCCC, the Piedmont Authority for Regional Transportation (PART), and the cities of Lexington and Thomasville to develop a coordinated strategy for access and land use along the US 29-70 corridor near DCCC. This partnership included development of a planning process to identify a preferred transportation solution at the intersection of US 29-70 and Old Greensboro Road. The contents of this workbook are a summary of their efforts.

1| INTRODUCTION

Since its construction in 1927, US 29-70 has played a vital role in Davidson County's roadway network. Designated as Business Loop Interstate-85, the corridor contributes to north/south regional mobility. Recently, Davidson County Community College (DCCC) revealed plans for campus expansion to include the additional 180 acres directly across US 29-70. The college developed a conceptual master plan for programming this space—the future LINK Campus—that embraces the green infrastructure of the area and includes several athletic fields and community facilities.

In 2010, a partnership was forged between Davidson County, the High Point MPO, Davidson County Community College, the Piedmont Authority for Regional Transportation (PART), and the neighboring cities of Lexington and Thomasville to develop a coordinated strategy for access and land use along the US 29-70 corridor near DCCC. This partnership included development of a planning process to identify a preferred transportation solution at the intersection of US 29-70 and Old Greensboro Road. This workbook represents a summary of the study now referred to as the US 29-70 Corridor Study.

Stakeholders collaborated to create alternatives for the intersection, as well as the means to evaluate each option. In fact, 12 different alternative strategies for access and connectivity were considered by the Project Advisory Committee. This unprecedented collaboration was intended to ensure that all perspectives were considered and that the outcome could be supported by everyone.

Study Sponsorship and Oversight

The corridor study was sponsored by the High Point Metropolitan Planning Organization (HPMPO). The HPMPO hired a consultant team to assist with the process. In addition, a Project Advisory Committee (PAC) was established to assist the consultant team in guiding the planning process. The primary focus of the PAC was to offer background and insight regarding local conditions and to offer feedback on alternatives strategies developed throughout the planning process. The PAC was comprised of a diverse group of individuals consisting of representation from the HPMPO, NCDOT, DCCC, PART, Davidson County and City of Lexington and Thomasville. A full list of Project Advisory Committee members can be found in the acknowledgments chapter of this workbook.

Project Approach and Process

Transparency and collaboration provided the core strategies for establishing trust among the participants of the planning process. The project team, including agency representatives, the consultant team, and other participants in the planning process, created a forum that allowed for a shared learning experience and timely communication among participants. Major elements of the planning process included:

- Issue Identification and Analysis
- Creation of Guiding Principles
- Alternatives Development
- Evaluation and Identification of a Recommended Improvement

Issue Identification and Analysis

This task included the collection of critical data and information including traffic volumes and forecast, crash data, master plans, environmental features and other considerations important in the identification of access, operations, and safety issues in the immediate vicinity. The purpose of this task was to clearly document existing conditions and define the problem. More information regarding these findings can be found in the Transportation Conditions chapter of this workbook.

Creation of Guiding Principles

The study process was structured around a flexible planning framework that was deliberate and transparent. In order to ensure that preconceived ideas didn't inadvertently influence an outcome the consultant team worked with the PAC on the creation of a set of Guiding Principles. These principles would be used as one set of criteria used to evaluate alternatives. The Guiding Principles were established using a participatory planning technique and were endorsed by the PAC:

GUIDING PRINCIPLES

- Improve conditions for eastbound AM left-turns (operations) onto Old Greensboro Road from US 29-70
- Enhance safety along the US 29-70 and Old Greensboro Road corridors
- Reduce impacts to land with the highest development potential (LINK Campus)
- Develop a coordinated long-term access strategy for area properties
- Develop an implementation plan that accounts for funding sources and availability
- Provide an effective strategy for bicycle/pedestrian/transit travel between the existing DCCC campus, the proposed LINK campus and the surrounding area
- Enhance the visual quality of the corridor in the vicinity of DCCC
- Minimize future travel problems associated with the LINK campus

Alternatives Development

The project team collaborated on the creation of a series of alternatives. This was accomplished through a partnership between the consultant team and PAC. In December 2010 a PAC work session was conducted where an expanded group of project participants were asked to develop solutions to the identified problems. They were divided into small groups and asked to create their ideal vision for an improvement that best addressed the issues and established Guiding Principles. The small groups drew on base maps and presented their ideas to the larger group for discussion.

Following the work session, the consultant team refined the concepts and created additional options. In total 12 options were refined and presented to the PAC. These options can be seen in greater detail in the Transportation Alternatives chapter of this workbook (Chapter 3).

Evaluation and Identification of a Recommended Improvement

Upon receipt of the 12 improvement options the PAC was asked to evaluate the options using the Guiding Principles endorsed earlier in the process. An evaluation matrix was used to gather the input from participants. After tabulation, the matrix allowed for a clear and unbiased comparison of the proposed solutions. An outcome of this process was the identification of three ideas that would be refined in asset of conceptual designs. The creation of these concepts allowed for a closer examination of the relative performance of the short-listed ideas. Ultimately the three concept designs were scrutinized in further detail against the Guiding Principles. In addition, cost and environmental permitting were considered as well as the timing and phasing of campus related capital investments. Empowered with this information the PAC identified a preferred improvement.

The concepts and evaluation process are further described in the Transportation Alternatives and the Preferred Option chapters of this workbook.

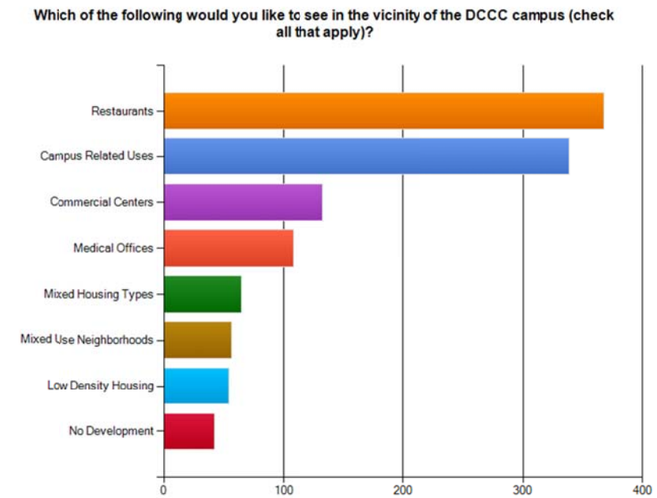
Public Outreach

The US 29-70 Corridor Study was primarily a technical process; however, efforts were made to ensure that stakeholders, transportation users, and the student body were included in the process. The strategy was to place an emphasis not only on education but more importantly on getting feedback from these groups. In order to achieve this, a multitude of outreach activities were initiated including:

- Project Questionnaire
- Stakeholder Interviews
- Project Symposium

Project Questionnaire

A brief three page questionnaire was used for this project. It included questions related to trip choice, connectivity, safety, connectivity, and desired outcomes. The questionnaire was offered in hard copy format as well as through the internet and was advertised through emails, and word of mouth. More than 350 questionnaires were completed and the results were presented to the PAC for consideration prior to the creation of the Guiding Principles. A copy of the questionnaire and results can be found in the workbook's appendix (page 8-1).



Key Stakeholder Interviews

Interviews were another method of outreach allowing for a one on one conversation with identified stakeholders. This forum provided a unique time for stakeholders to express the priorities and concerns of their respective groups. These interviews were incredibly valuable for the consultant team and helped to frame the parameters for the creation of the alternatives. Interviews were conducted with the following stakeholders:

Piedmont Authority for Regional Transportation
Mark Kirstner

North Carolina Department of Transportation, Division 9
Pat Ivey
JP Couch
Brett Abernathy

Davidson County
Guy Cornman
Billie Joe Kepley

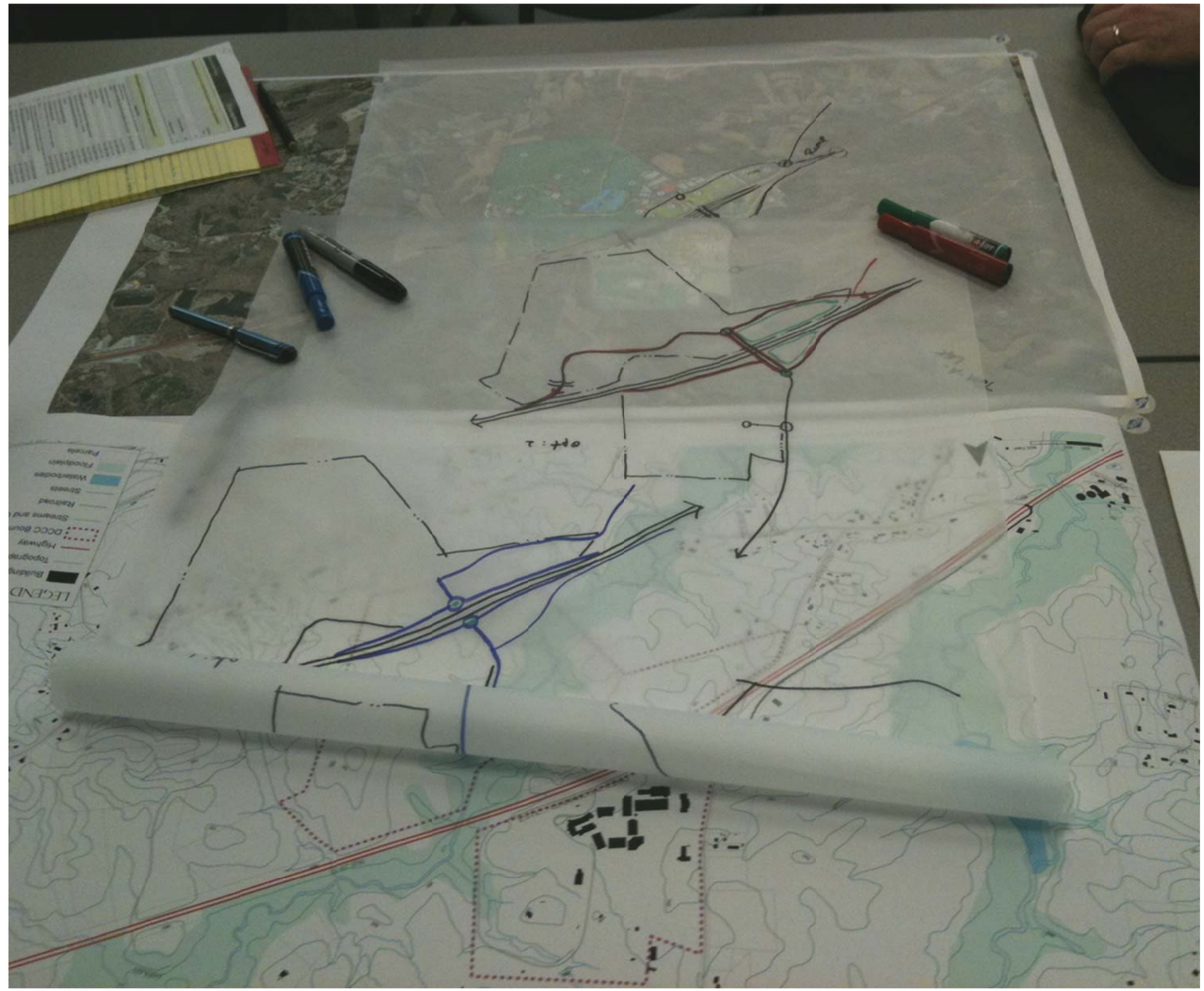
City of Thomasville
Brian Fulbright

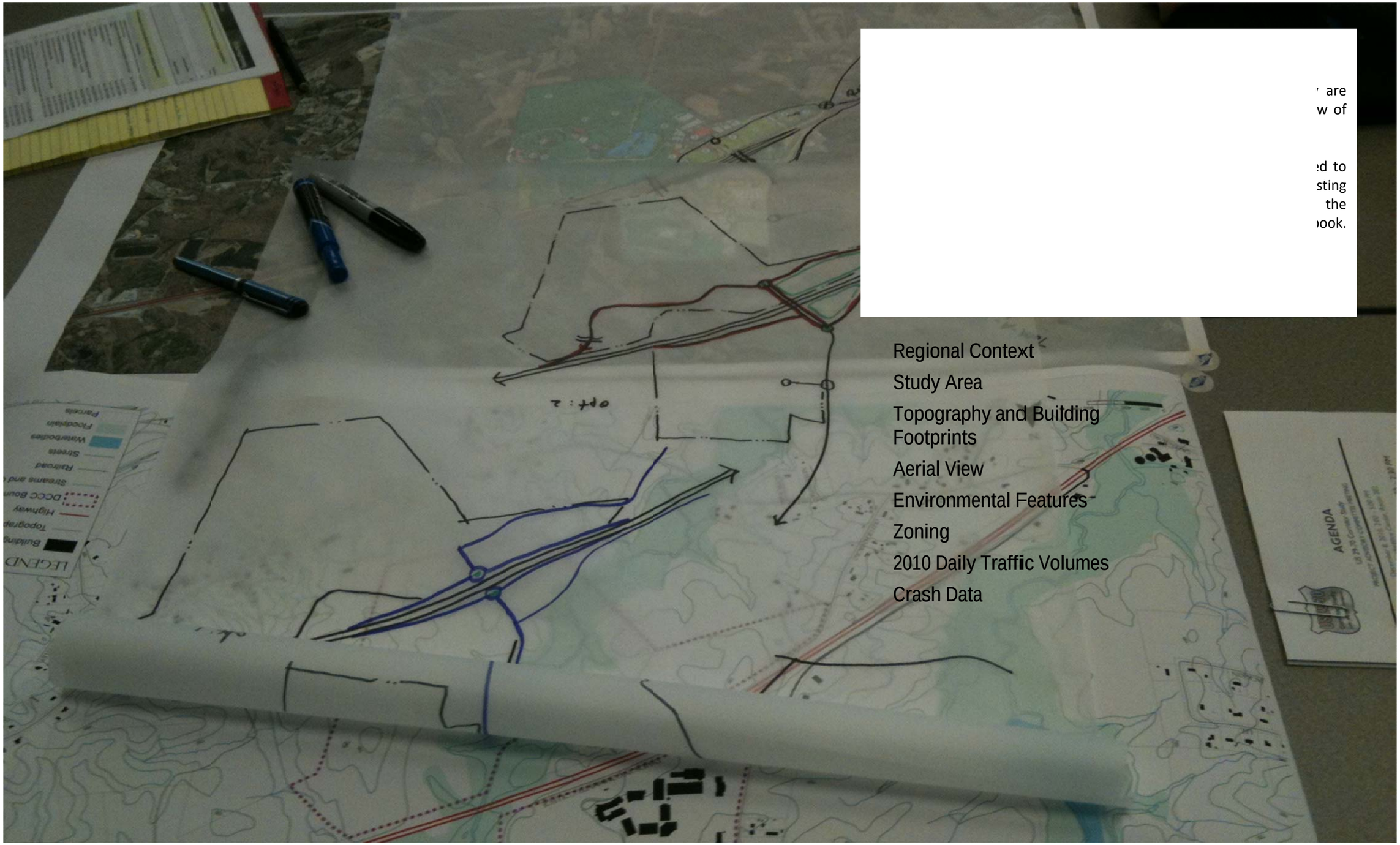
City of Lexington
Roger Jones

High Point Metropolitan Planning Organization
David Hyder

Davidson County Community College
Rusty Hunt
Jenny Varner

Project Symposium
A symposium was conducted November 3, 2010. Unlike a traditional workshop, members of the PAC made presentations that represented their interest in the US 29-70 corridor as well as current activities, plans, trends and considerations. This gave each stakeholder group an opportunity to share their perspectives. Presentations from the consultant team, HPMPO, NCDOT, PART, Davidson County, and DCCC were made during the symposium. At the conclusion of the symposium, draft Guiding Principles were created by the project advisory committee.





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Regional Context

Study Area

Topography and Building Footprints

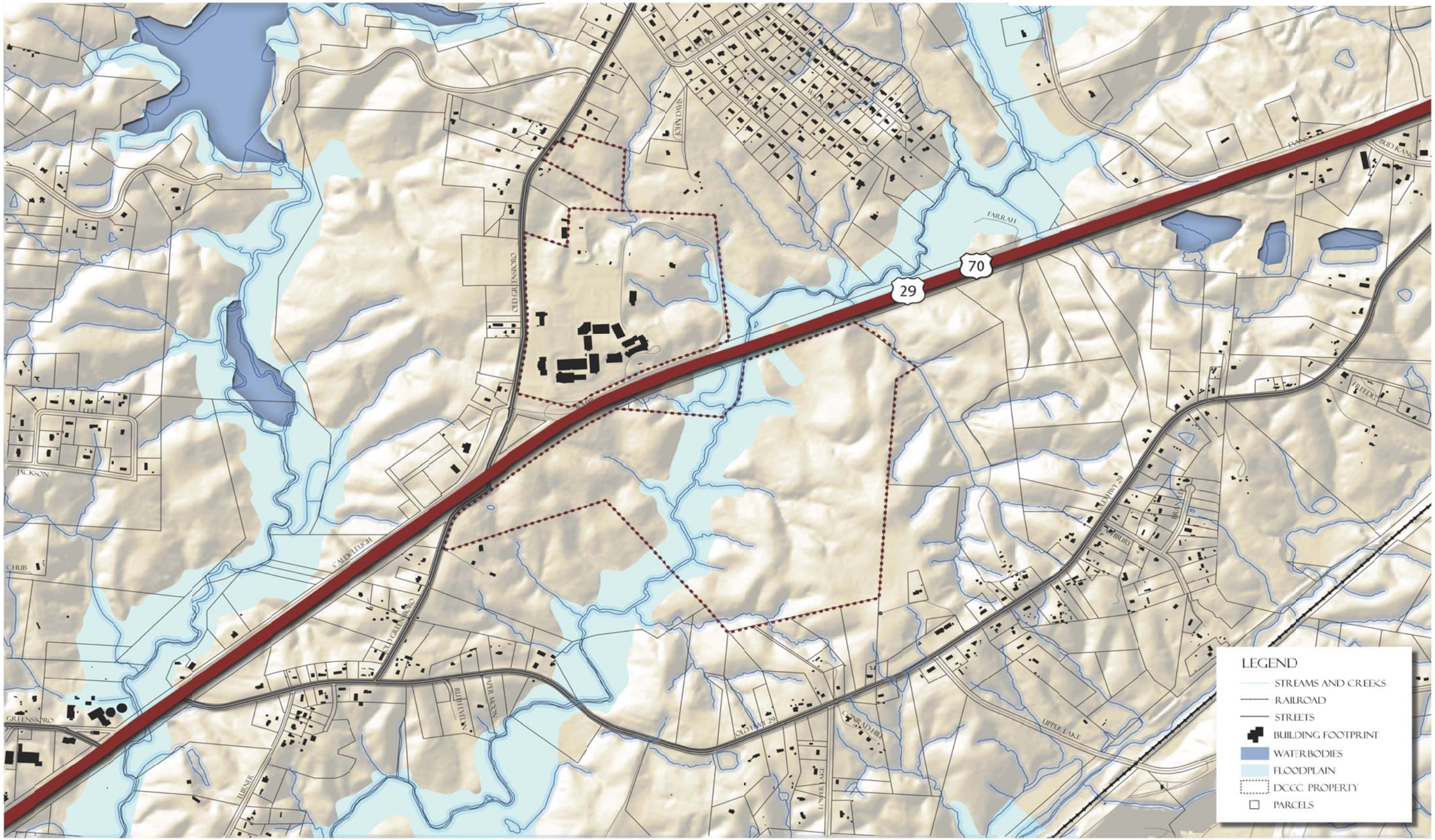
Aerial View

Environmental Features

Zoning

2010 Daily Traffic Volumes

Crash Data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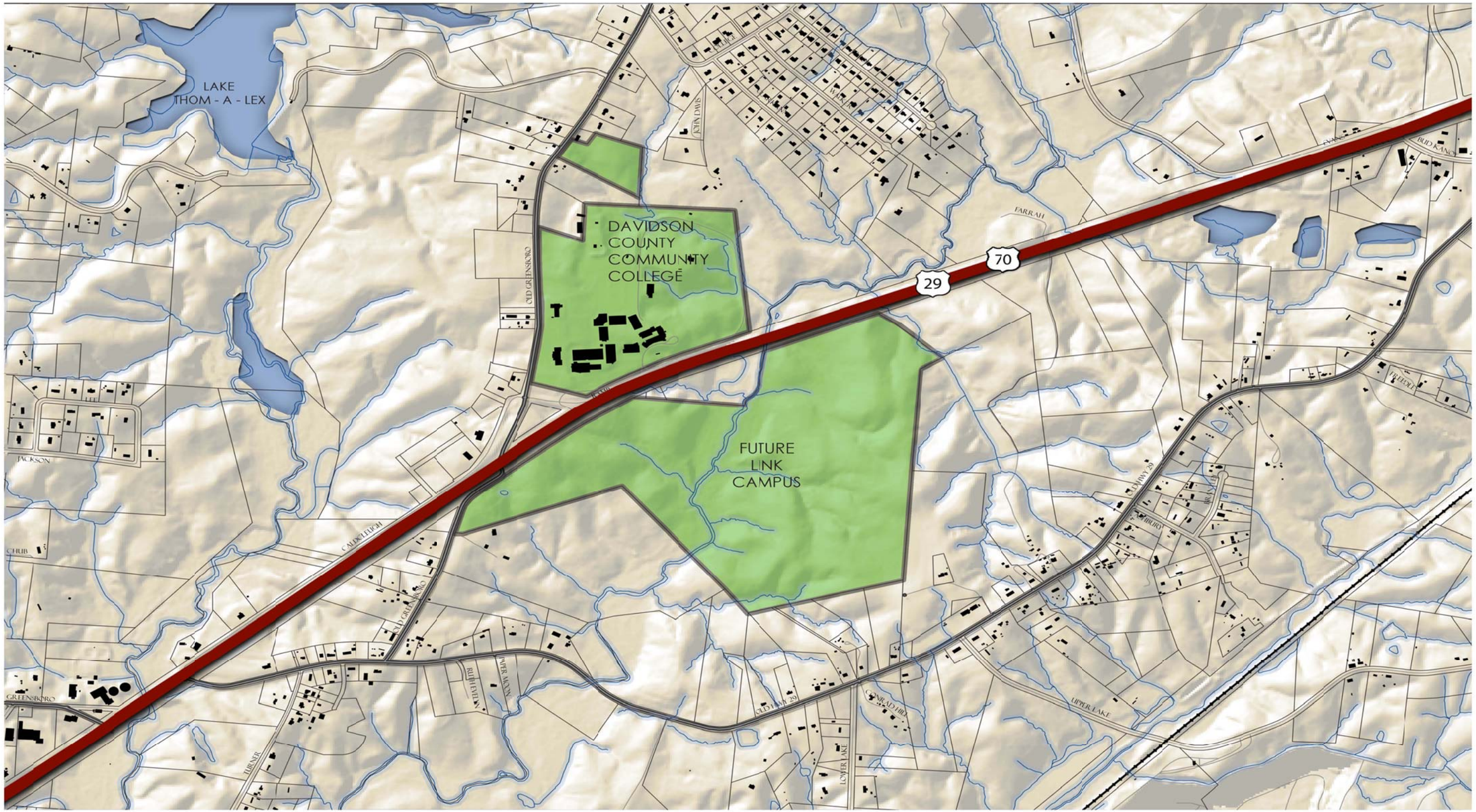
OLD GREENSBORO
FARRAH
JACKSON
CHUB
CALDWELL HIGH
GREENSBORO
TURNER
BLUFF HELEN
PAPER MOON
OLD HWY 29
CONRADTOWN
LOWER LAKE
UPPER LAKE
LEGEND
STREAMS AND CREEKS
RAILROAD
STREETS
BUILDING FOOTPRINT
WATERBODIES
FLOODPLAIN
DCCC PROPERTY
PARCELS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DAVIDSON
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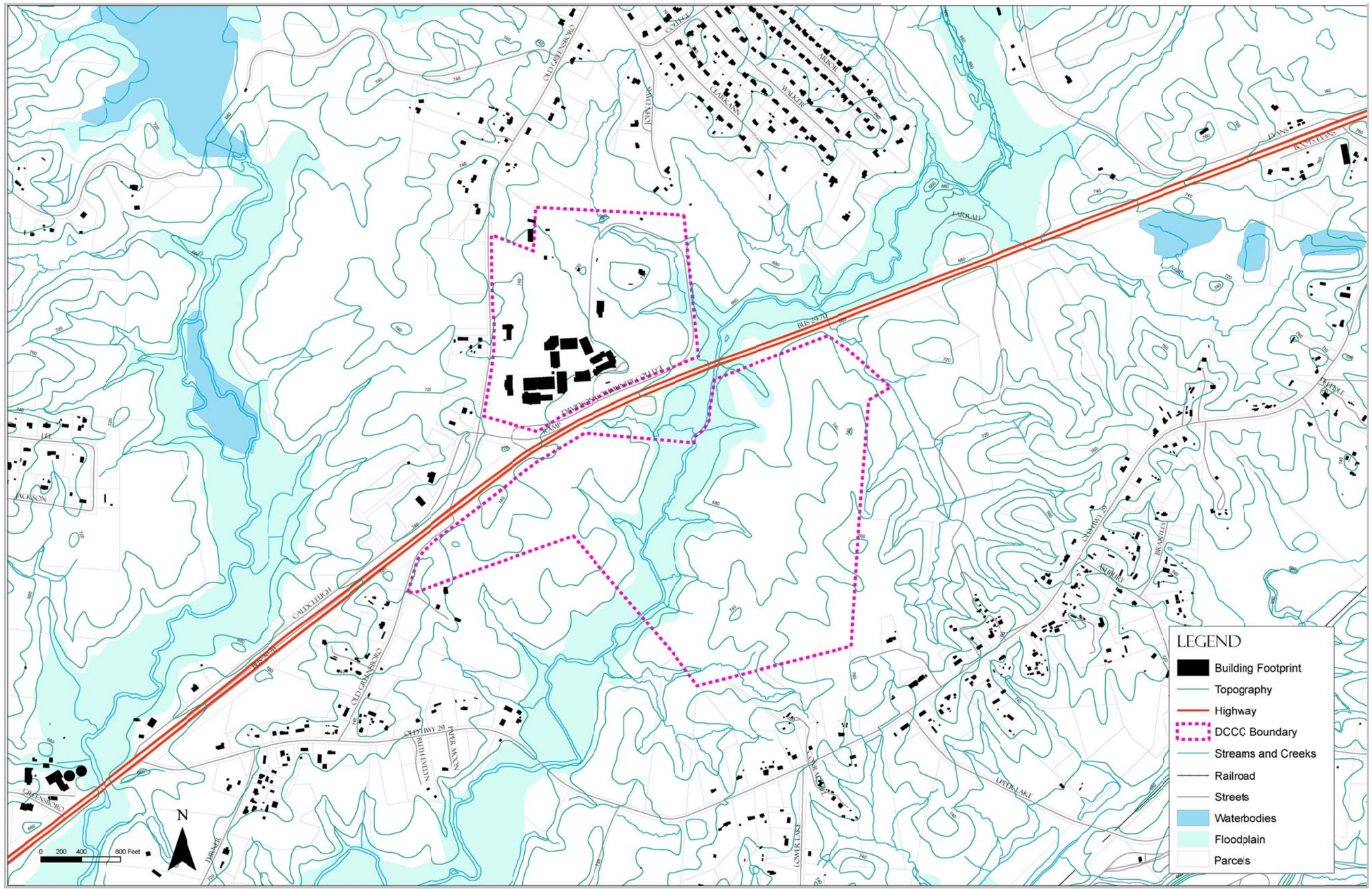
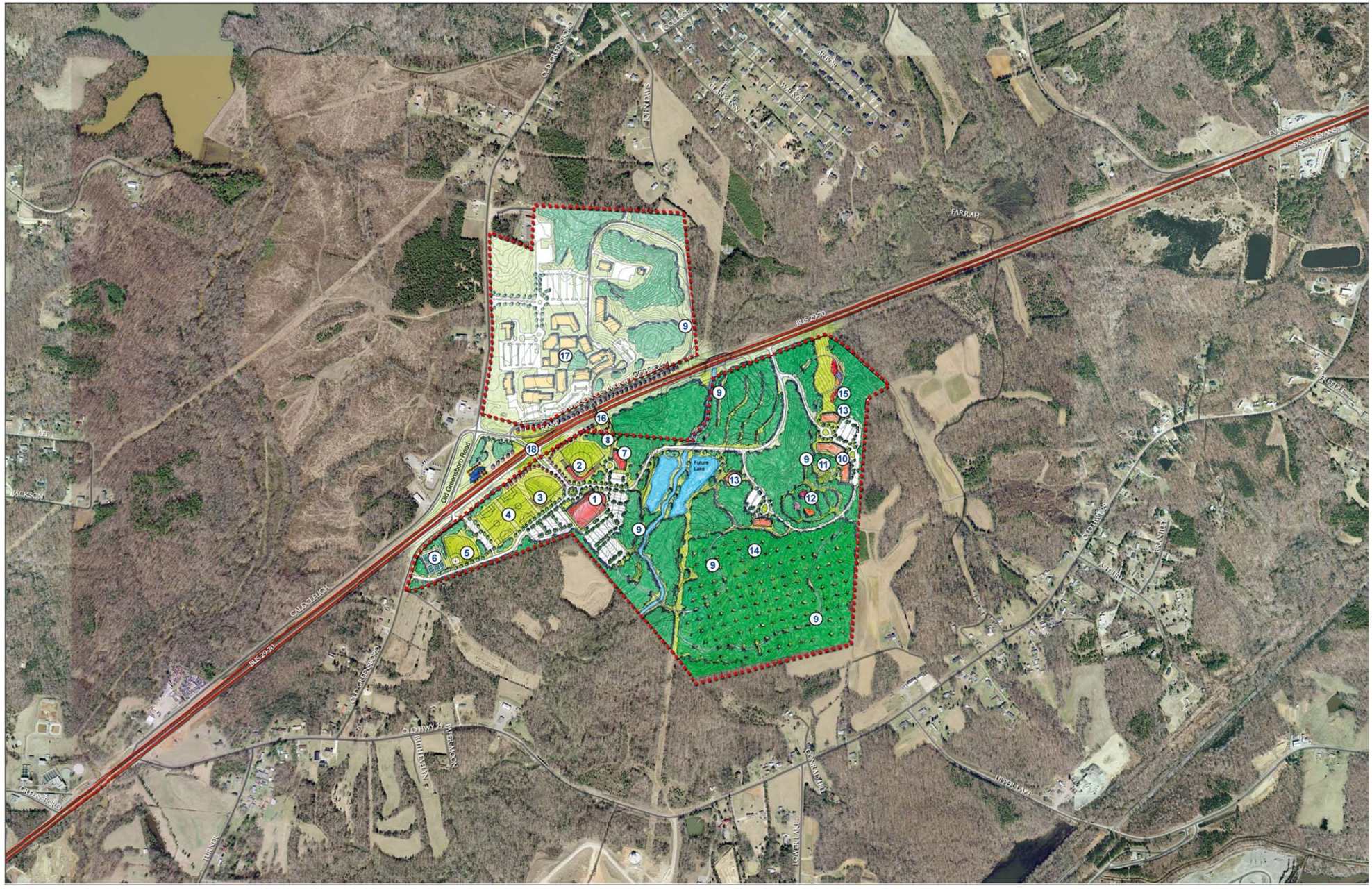
FARRAH
EVANS
BUD KANOY
PRIDDY
HIGHWAY 29
UPPER LAKE
LOWER LAKE
OLD HIGHWAY 29
RUTH EVELYN
INTER ARCADY
HARNER



Resource Maps


Old Greensboro Road
Future Lake
FARRAH
BUS 29/70
CALDWELL
LEE
JACKSON
TURNER
UPPER LAKE
LOWER LANE
CONNAUGHT
FREELE
ROOTS/EVANS
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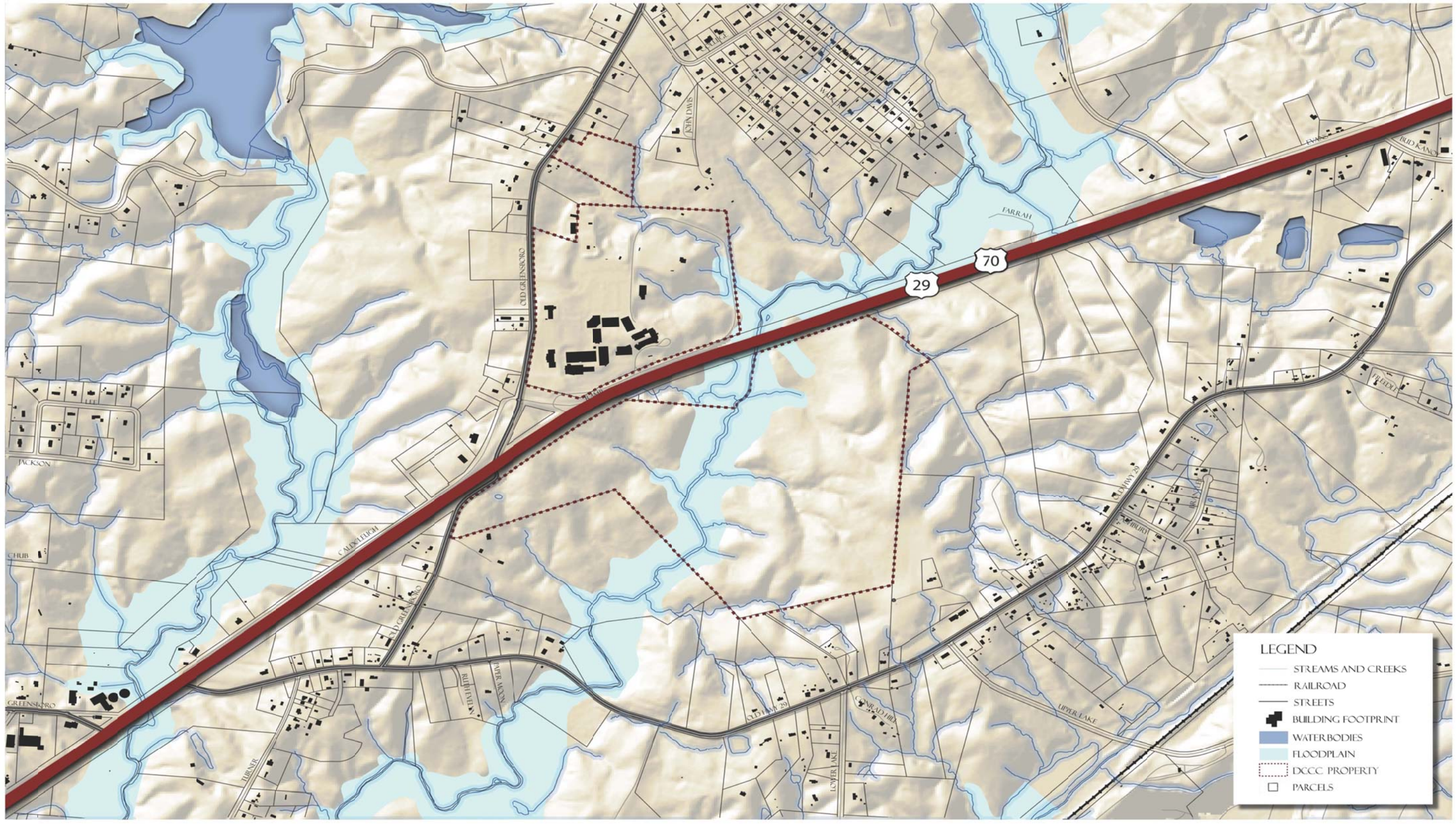
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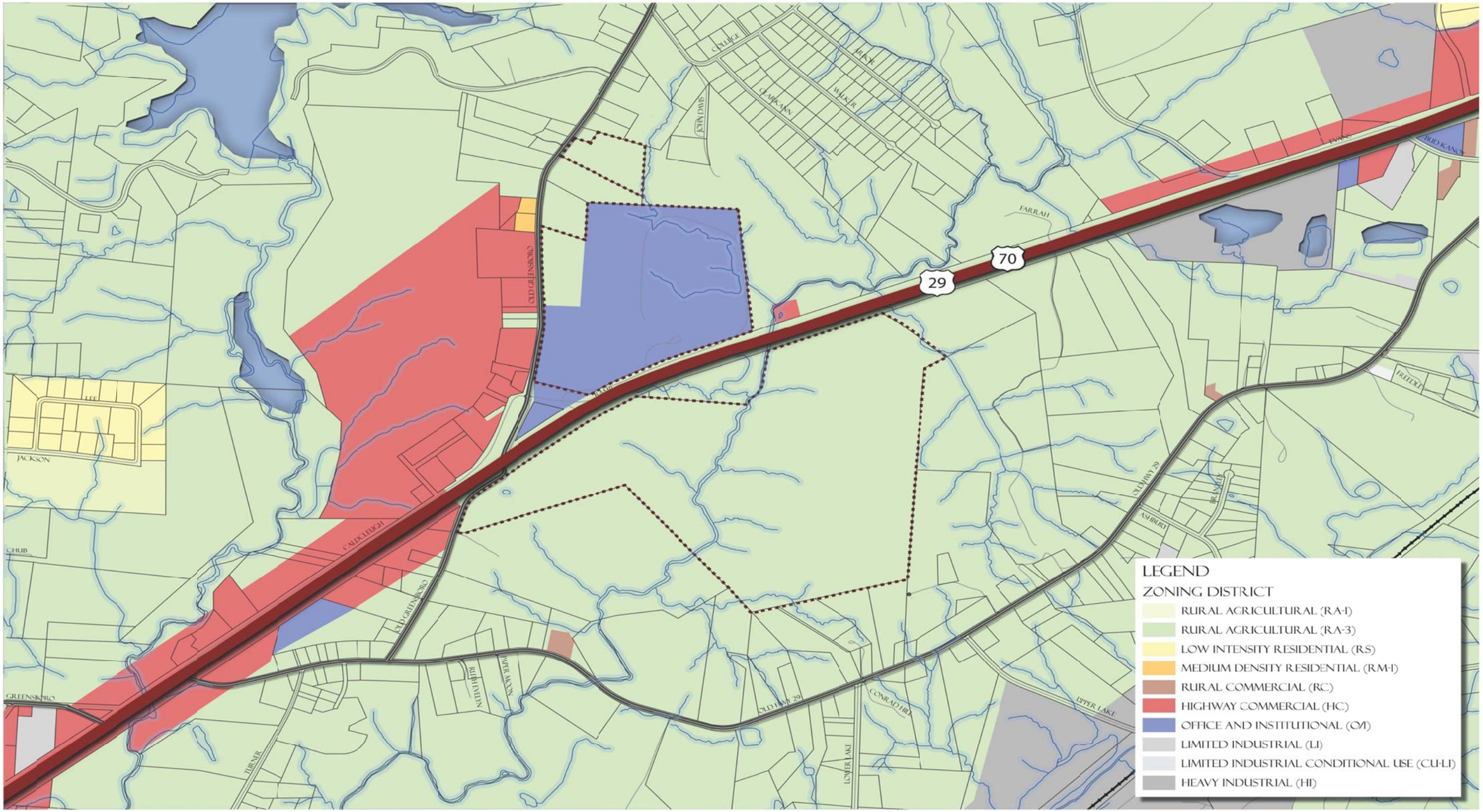
GREENSBORO
FARRAH
LEGEND
STREAMS AND CREEKS
RAILROAD
STREETS
BUILDING FOOTPRINT
WATERBODIES
FLOODPLAIN
DCCC PROPERTY
PARCELS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CALDCLEUGH
JACKSON
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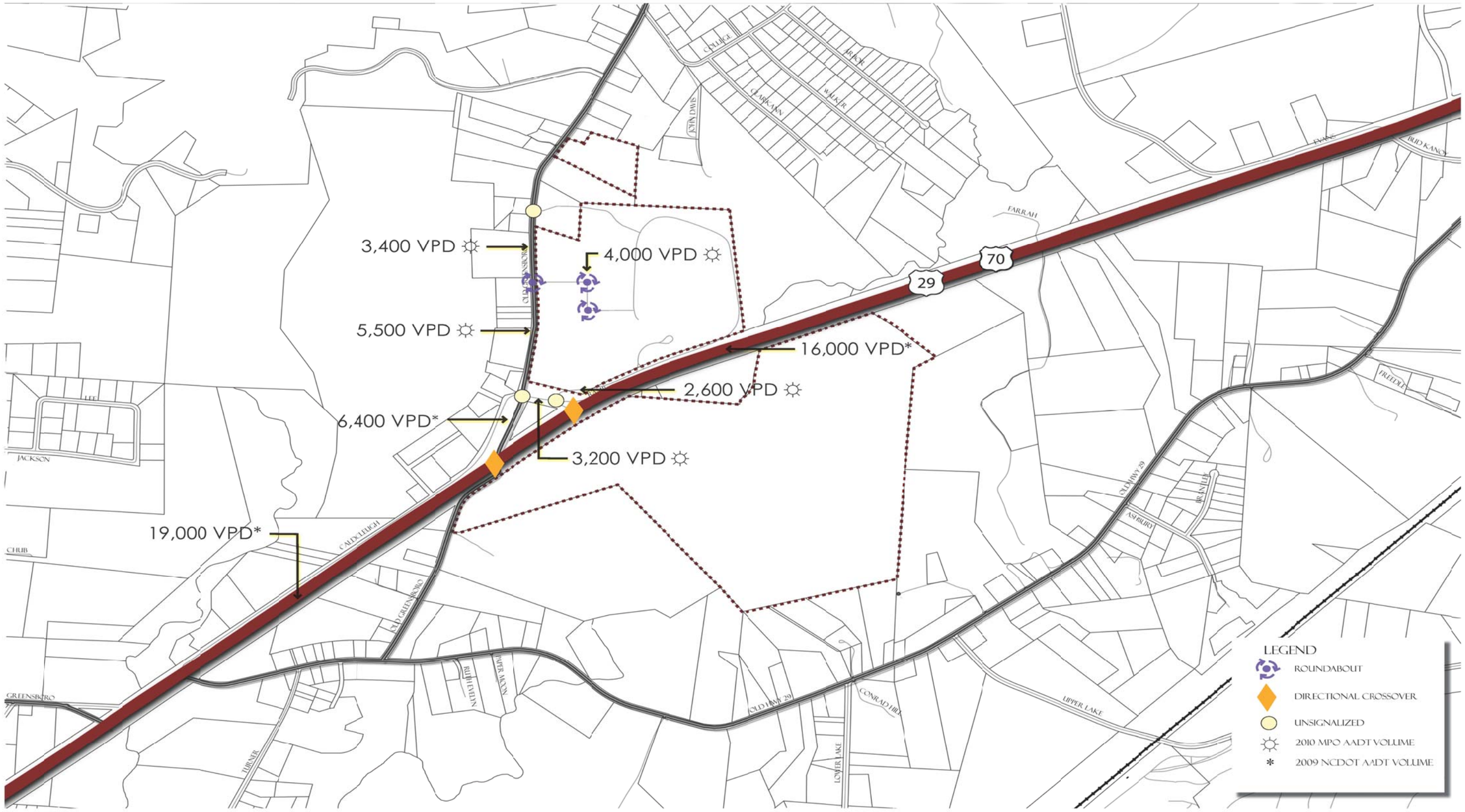
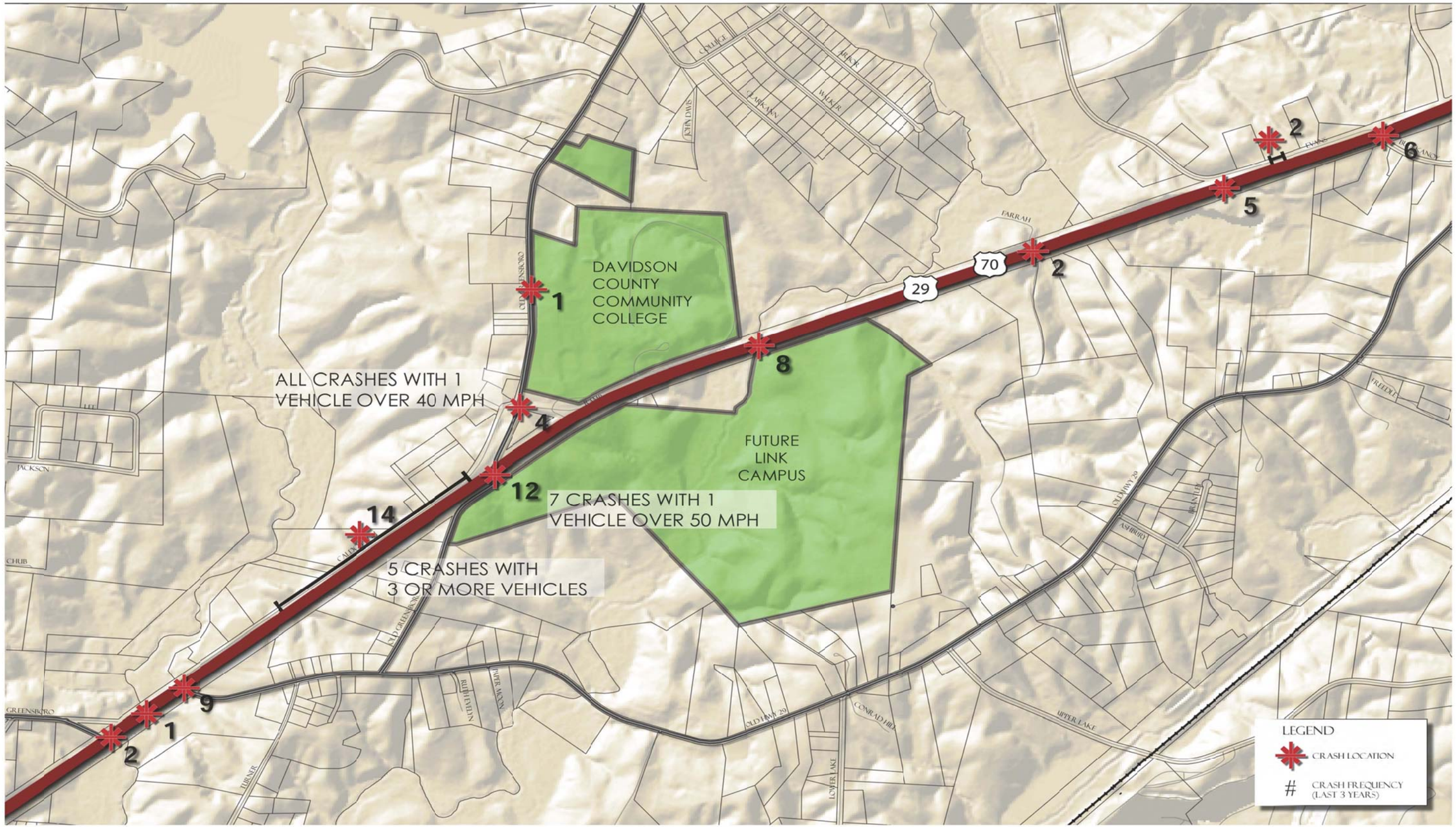
GREENSBORO
FARRAH
CLAYTON
WALKER
BROOK
CHURCH
KIM DAVIS
BIRD KANOY
FREEDOM
ASHBURY
OLD HWY 29
CONRAD HILL
UPPER LAKE
LOWER LAKE
RUTH EVELYN
PIPER MILLS
TURNER
LEGEND
ZONING DISTRICT
RURAL AGRICULTURAL (RA-1)
RURAL AGRICULTURAL (RA-3)
LOW INTENSITY RESIDENTIAL (RS)
MEDIUM DENSITY RESIDENTIAL (RM-1)
RURAL COMMERCIAL (RC)
HIGHWAY COMMERCIAL (HC)
OFFICE AND INSTITUTIONAL (OI)
LIMITED INDUSTRIAL (LI)
LIMITED INDUSTRIAL CONDITIONAL USE (CU-LI)
HEAVY INDUSTRIAL (HI)


3,400 VPD
4,000 VPD
5,500 VPD
16,000 VPD*
2,600 VPD
6,400 VPD*
3,200 VPD
19,000 VPD*
70
29
LEGEND
ROUNDABOUT
DIRECTIONAL CROSSOVER
UNSIGNALIZED
2010 MPO AADT VOLUME
2009 NCDOT AADT VOLUME


DAVIDSON COUNTY COMMUNITY COLLEGE
FUTURE LINK CAMPUS
ALL CRASHES WITH 1 VEHICLE OVER 40 MPH
7 CRASHES WITH 1 VEHICLE OVER 50 MPH
5 CRASHES WITH 3 OR MORE VEHICLES
29
70
1
2
4
8
12
14
9
1
2
2
5
6
LEGEND
CRASH LOCATION
CRASH FREQUENCY (LAST 3 YEARS)

3| TRANSPORTATION CONDITIONS

Since its construction in 1927, US 29-70 has played a vital role in Davidson County's roadway network as well as the state of North Carolina. Designated as Business Loop Interstate-85, the corridor is a component of a larger north/south Interstate corridor contributing to regional mobility. With the construction of I-85, traffic volumes on the roadway have lessened and land development pressures have changed. In Guilford County, this has led to compromises in the type of access permitted including the installation of new traffic signals. The installation of traffic signals along the corridor has a direct impact on travel times and trip assignments in the area.

The US 29-70 (Bus I-85) corridor is a strategic transportation connection stretching through three counties and serving as a parallel facility to Interstate 85. The corridor intersects with one Interstate, three US Highways, and three NC Highways. The corridor connects residents, commuters, and travelers to destinations outside the community. Within the study area, up to 16,000 vehicles per day travel along the corridor. *While a healthy volume, the daily usage is below the practical capacity of a facility of this caliber.* The lack of use demonstrates the underutilization of the corridor within the regional transportation system. Given the ideal location within the region, properties along the corridor are positioned to make positive contributions to the vitality of the region which will have the effect of creating a resurgence of traffic growth along the corridor.

NCDOT and the Governor's office have identified the US 29-70 corridor as a Strategic Highway Corridor (SHC) in the North Carolina Statewide Transportation Plan adopted by the Board of Transportation on September 2, 2004. The NCDOT developed the SHC policy in partnership with the Office of the Governor, the North Carolina Department of Commerce and the North Carolina Department of Environment and Natural Resources. This particular corridor can be seen on the Vision Plan for Division 9.

NCDOT's policy on SHC states, "these corridors are critical to statewide mobility and connectivity and promote a vision of modern, efficient transportation supportive of economic opportunities and environmental excellence." More information about the SHC policy and the Statewide Transportation Plan can be found on www.ncdot.org/planning/tpb/SHC/, the NCDOT Transportation Planning Branch website.

Transportation

US 29-70 is a four-lane, median divided section, ferrying area travelers, commuters, and residents between I-85, US 52, and other routes and the communities of Lexington, Thomasville, High Point and within Guilford and Davidson counties.

From a technical standpoint, the US 29-70 corridor is underutilized based on relatively low traffic volumes:

- 16,000 vehicles per day in the vicinity of DCCC
- 19,000 vehicles per day at the junction with US 64
- 17,000 vehicles per day at the junction with NC 68

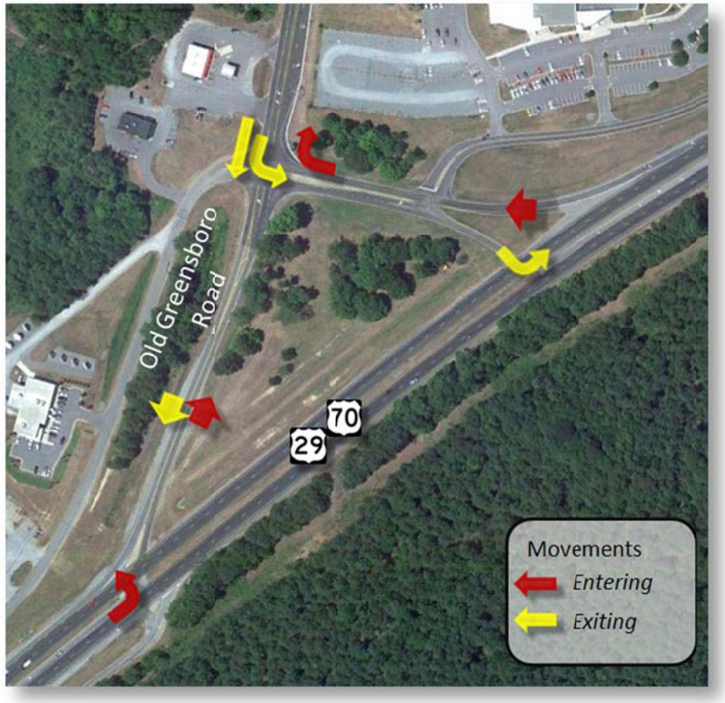
While traffic volumes may not be approaching the roads capacity, safety concerns are prevalent along the corridor. The rolling terrain along the corridor provides a scenic and pleasant drive but also create locations where visibility is obstructed.

Originally constructed in the 1950's under the Eisenhower Interstate System as I-85, the facility has seen little change. Over the 60+ years since its construction design standards and methodologies have changed. Over the years the NCDOT Division 9 has worked to update critical pieces of the corridor that had reached their function design life.

Given the rural context, environmental features, and the control of access along US 29-70 in the immediate vicinity, there is limited street connectivity along the corridor. The presence of Rich Fork Creek to the north of the DCCC and Abbotts Creek to the south, further limit connectivity.

Listed as a major thoroughfare on the HPMPO's thoroughfare plan, Old Greensboro Road is a major north/south facility connecting the US 29-70 corridor to other areas of the community and region north of the study area. Constructed prior to 1900, the Old Greensboro Road alignment traverses along the ridge line running between Rich Fork and Abbotts Creeks.

Today's intersection of Old Greensboro Road is split by movement. Prior to its current configuration, a single unsignalized intersection existed. Due to safety concerns associated with limited visibility, and presence of correctable traffic crashes, the intersection was reconstructed as a series of directional crossovers. With the construction of the directional crossover, connectivity between the northern and southern sections of Old Greensboro Road was severed.



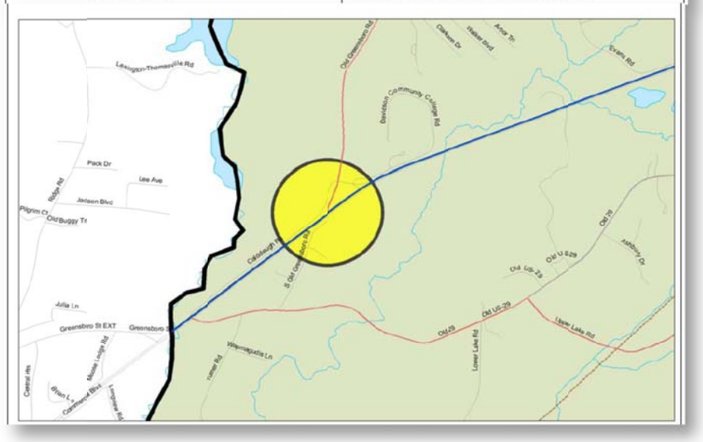
Planned & Committed Improvements

The NCDOT under TIP Project B-4859 plans to replace the northbound travel lane bridge over Rich Fork Creek. The southbound travel lane bridge was replaced recently. The northbound bridge is planned for replacement in 2013.

The High Point Metropolitan Planning Organization (HPMPO) ranks the intersection of US 29-70 and Old Greensboro Road as the number four priority for the HPMPO. An interchange is listed as the improvement for this intersection as a part of the Long Range Transportation Plan (LRTP). Funding is not committed for this interchange; nonetheless, the interchange option represents one strategy for managing traffic safety and mobility in the vicinity of the DCCC.

I-85 Business/Old Greensboro Road Interchange

Priority Ranking	Project Description: Construct a new interchange at the existing intersection of I-85 Bus. And Old Greensboro Road.	
4	From:	To:
Project Cost Estimate $31,853,000		
NCDOT Division: 9	Jurisdiction: Davidson County	



Transit

The Piedmont Authority for Regional Transportation (PART) provides a fixed route bus service along the US 29-70 corridor from Lexington to Greensboro. According to PART a northbound and southbound service is provided with morning and evening stops along the route.

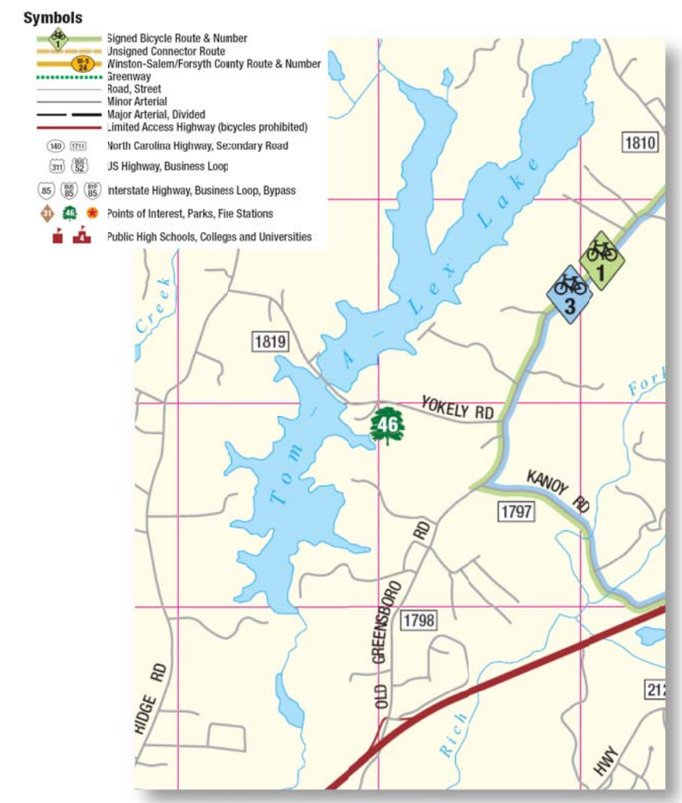
Davidson County Community College is stop three along Route 9. As published by PART there is one AM pick-up/drop-off times for the northbound and southbound routes. In the PM there are two northbound stops and three southbound pick-up/drop-off times.

Bike & Pedestrian Conditions

The US 29-70 corridor as a partially control of access facility is not conducive to bike or pedestrian facilities. The control of access designation along the facility creates a barrier between properties on either side of the corridor.

Because the rural nature of the study area there are no sidewalks or bike lanes along Old Greensboro Road or the other state maintained facilities in the study area. However, there are two bike lanes that pass within close proximity of the study area. Bike routes 1 and 3 follow Olld Greensboro Road turning at Kanoy Road just north of DCCC.

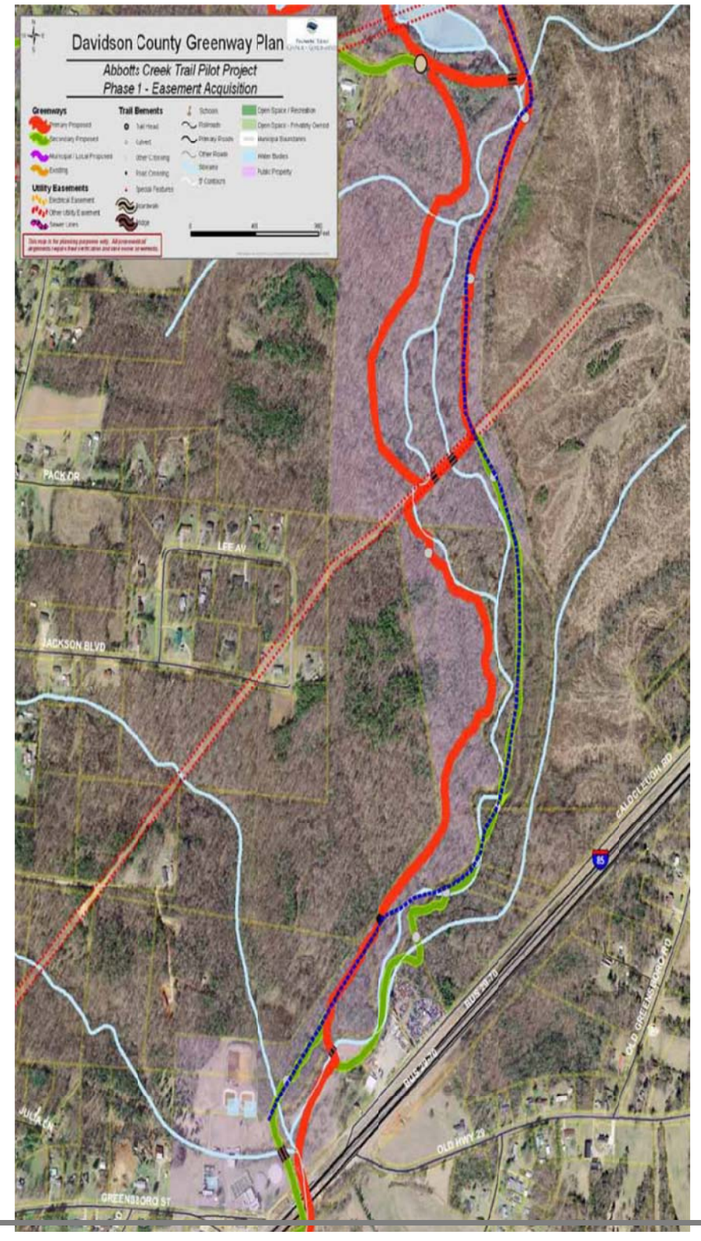
Old Greensboro Road with its gentle rolling hills and widening roadway and low traffic volumes is popular with riders of all types. Many evenings both groups and single cyclists can be found along Old Greensboro Road.



The DCCC campus has an intricate network of sidewalk facilities connecting points of interests and buildings within the campus. The community college also has several nature trails for recreational use. With the lack of on street facilities on the adjacent roadway network, the facilities provide only internal connectivity.

In 2011 Davidson County received a grant from the North Carolina Clean Water Trust to fund the first greenway in the county. The greenway trail will run from Lake Thom-a-Lex to US 29-70. The 1.5 mile trial will improve access to the reservoir and provide pedestrians and bicyclists an alternative to the two-lane roadways that currently provide access to the facility.

The greenway will create a buffer along Abbotts Creek. Greenways help sediments and other pollutants out of the stream.



Safety

Between March 2007 and February 2010 there were 60 reported crashes along the 2.77 mile section of US 29-70 between Greensboro Street to Bud Kanoy Road. These crashes included 26 injury crashes and No fatalities. The overall crash rate for this section of roadway is 131.76 per 100 million vehicle miles traveled. The statewide average for a 4-lane rural US Highway is 83.74 per 100 million vehicle miles traveled and 85.57 per 100 million vehicle miles traveled for a 4-lane divided primary route. Both crash rates have been provided since the US 29-70 corridor is both a primary route and a US Highway. Regardless the category this section of US 29-70 adjacent to the DCCC campus is 57% higher than the statewide average for a similar facility.

A review of the crash data indicated that the majority of the crashes occurring along US 29-70 are rear-end/stop slow. The highest frequency of crashes along the corridor occurred at the northbound left-over movement with Old Greensboro Road and the portion of the roadway associated with left-turn lane for the movement. Crash data at this location shows a combination of rear-end, sideswipe and left-turn collision types. Twenty-six crashes were reported for this section of roadway.

The crash data also revealed that in 89% of the crashes occurring at the northbound left-over, one of the vehicles was traveling at a speed greater than twice that of the other vehicle(s) in the collision. The median and 25th percentile speed was calculated to be 0 mph while the 75th percentile speed was calculated to be 52.5 mph. Even with the number of severe crashes have been minimal, only three reported, vehicle speeds such as those reported have the potential to increase the severity of the injuries.

The second highest collision type was fixed object crashes. Eleven crashes were reported along the corridor within the study area. The highest percentage of this collision type was reported at the bridge over Rich Fork Creek with eight being reported. These crashes are also associated with the northbound approach. The original bridge from the 1950's is narrow, offering limited horizontal clearances between the travel way and the bridge parapet. As mentioned earlier, the northbound bridge is scheduled to be replaced in 2013.

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Operations

Current traffic volumes along US 29-70 and Old Greensboro Road operate at acceptable levels-of-service along the roadway segments as well as at the intersections. Given that the community college is a vibrant and growing college it will be a major traffic generator in the foreseeable future. There has also been development pressure on nearby vacant parcels. With the future development of the LINK Campus traffic volumes will only continue to increase. The presence of the community college in the corridor also results in heavy morning as well as lunch peaks. As the area continues to develop the current access configuration will fail and become a point of congestion along the US 29-70 corridor.

In 2009 the NCDOT improved the section of Old Greensboro Road between Caldcleugh Road and the DCCC entrance. Improvements included the installation of a single lane roundabout between Old Greensboro Road and the DCCC entrance. The roundabout includes a bypass lane for the northbound entering movement. Old Greensboro Road was also widened to allow for dual northbound travel lanes. The additional northbound lane transitions into the bypass lane.

During the construction of the improvements along Old Greensboro Road, DCCC reconfigured the internal network to streamline entering and exiting movements. The improvements included straightening the main driveway and the installation of a series of roundabouts to distribute traffic to the appropriate parking fields.

Project Need

The primary purposes for the study and the resulting transportation improvement project are to improve safety along the US 29-70 corridor at the intersection with Old Greensboro Road, improve mobility to the existing campus and the proposed LINK Campus, accommodate future growth, and to promote economic development consistent with community planning efforts.

The US 29-70 corridor is a major north/south facility on the North Carolina Strategic Highway Corridor system. It provides important statewide access to major transportation corridors and is an important parallel facility to I-85 through Davidson, Randolph, and Guilford Counties. Linking to I-74, I-85, US 64, US 52, US 311, NC 8, NC 109, and NC 68, US 29-70 serves regional travelers and connects residential, commercial and employment centers throughout the counties it passes through.

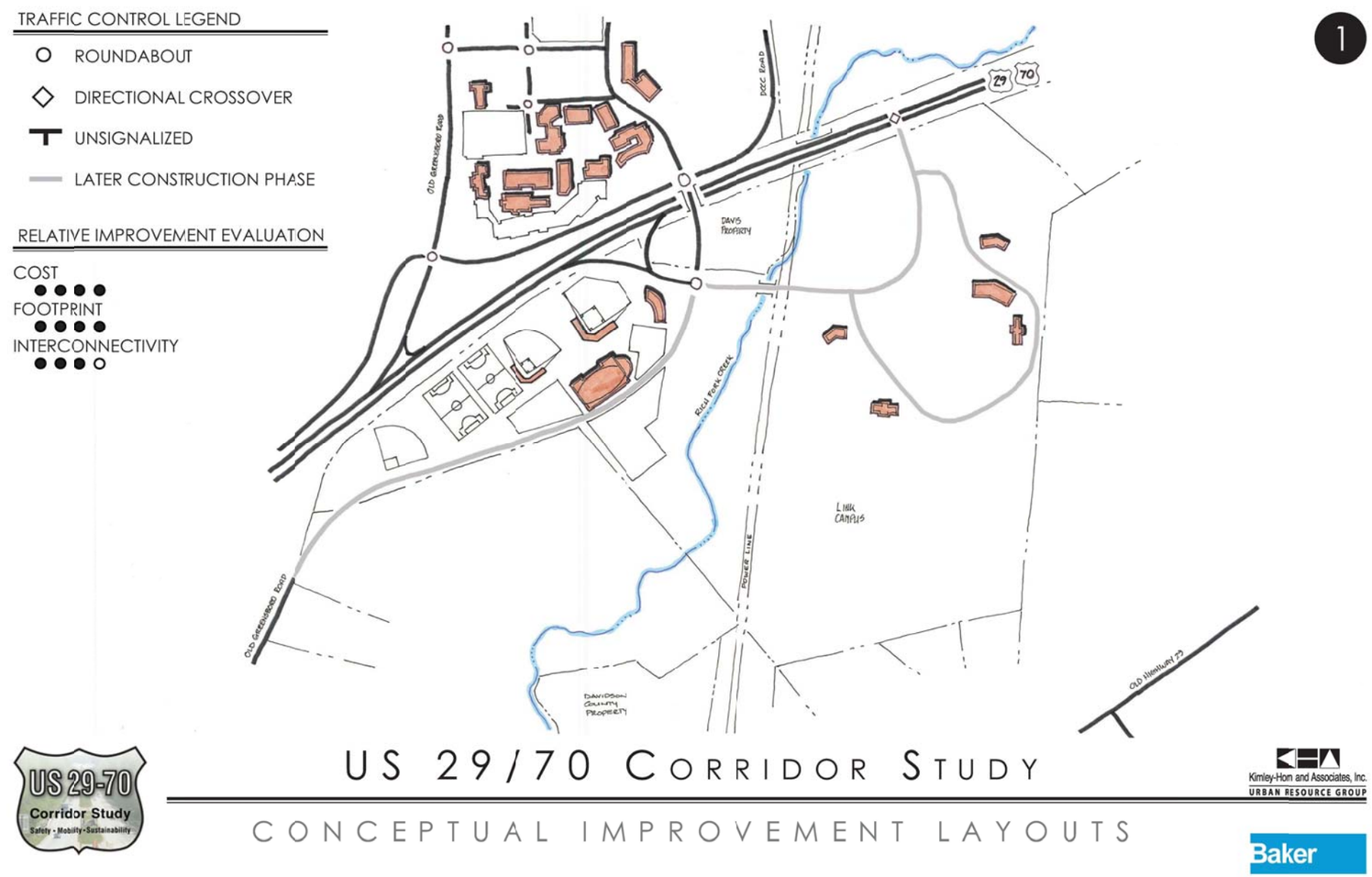
4| TRANSPORTATION ALTERNATIVES

After creating the Guiding Principles, the Project Advisory Committee (PAC) collaborated with the consultant team on the creation of transportation alternatives. This section provides a summary of these alternatives.

More than Brainstorming

The PAC played an integral part of the planning process. Their local knowledge and professional experience offered a collective insight that if overlooked would have minimized the success of the study. Their efforts went beyond the creation of the Guiding Principles. PAC members were asked to collaborate in small groups to create a set of alternatives intended to respond to the goals and objectives described by the endorsed Guiding Principles. Empowered with the resource materials presented earlier in this workbook, PAC participants sketched ideas on maps and presented their respective ideas to the collective group. The consultant team then refined their ideas and created a few more alternatives for consideration. In total, 12 alternatives were generated (additional variations of some of these themes were also considered).

This was an unconstrained exercise intended to respond to the transportation concerns discussed in Chapter 3. The following pages offer an overview of each alternative.



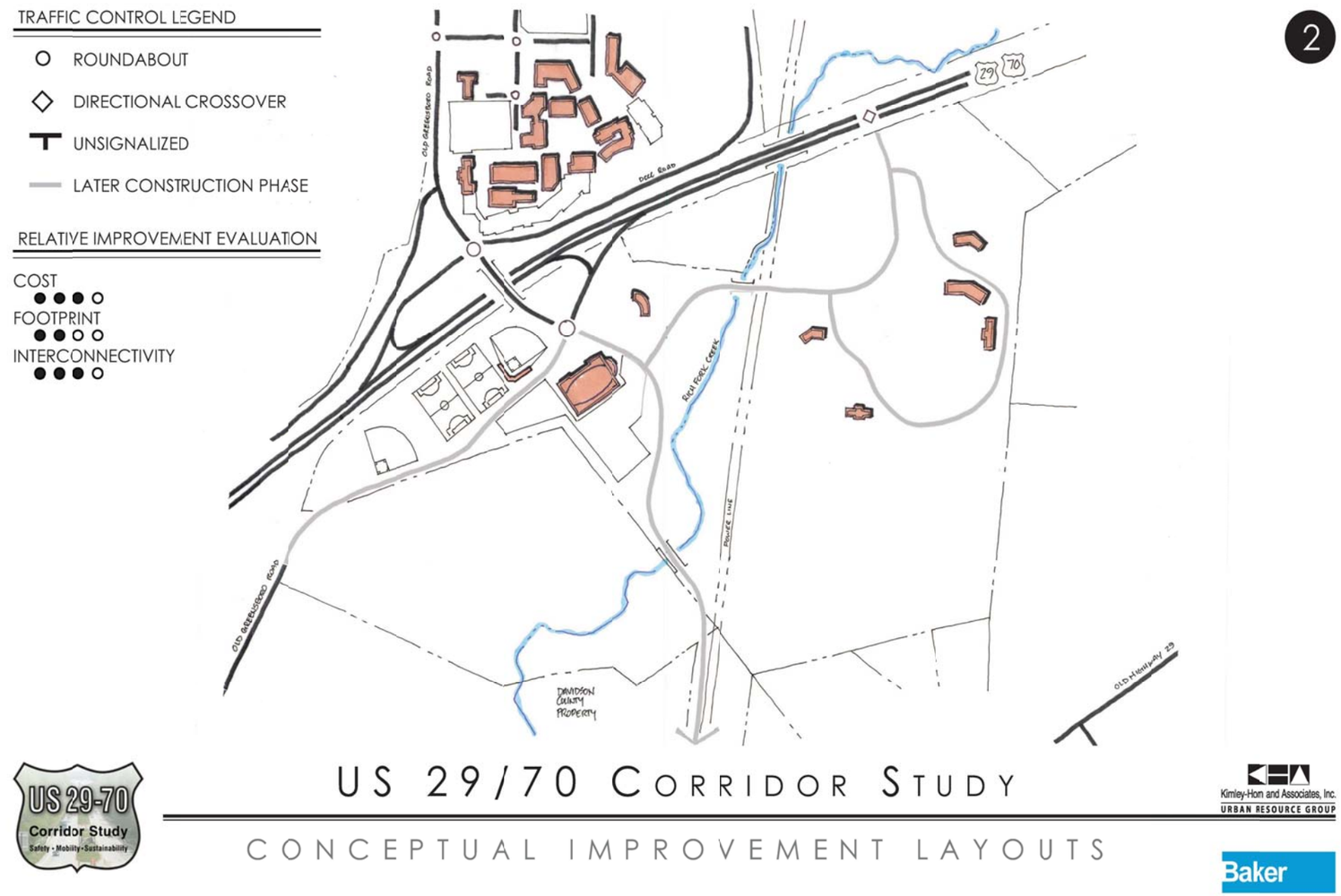
1

Conceptual Improvement 1

Conceptual Improvement 1 proposes the construction of an interchange along the eastern side of the existing campus. The interchange ramps for eastbound and westbound traffic area split with only the eastbound ramps having direct access to the overpass of US 29-70. The existing westbound on-ramp is retained at its current location with the off-ramp movement being incorporated into the movement.

Bike and pedestrian connectivity between the two campuses would occur via the US 29-70 overpass. With the interchange being located along the eastern portion of the campus it limits disruption of the current vision plan for the LINK Campus.

The interchange was sited at this location to take advantage of the grade difference between DCCC Road and US 29-70. Unfortunately, south of US 29-70 the topography is less than favorable and would likely require considerable quantities of fill material or the use of other construction strategies to mitigate the impacts to the natural environment.



Conceptual Improvement 2

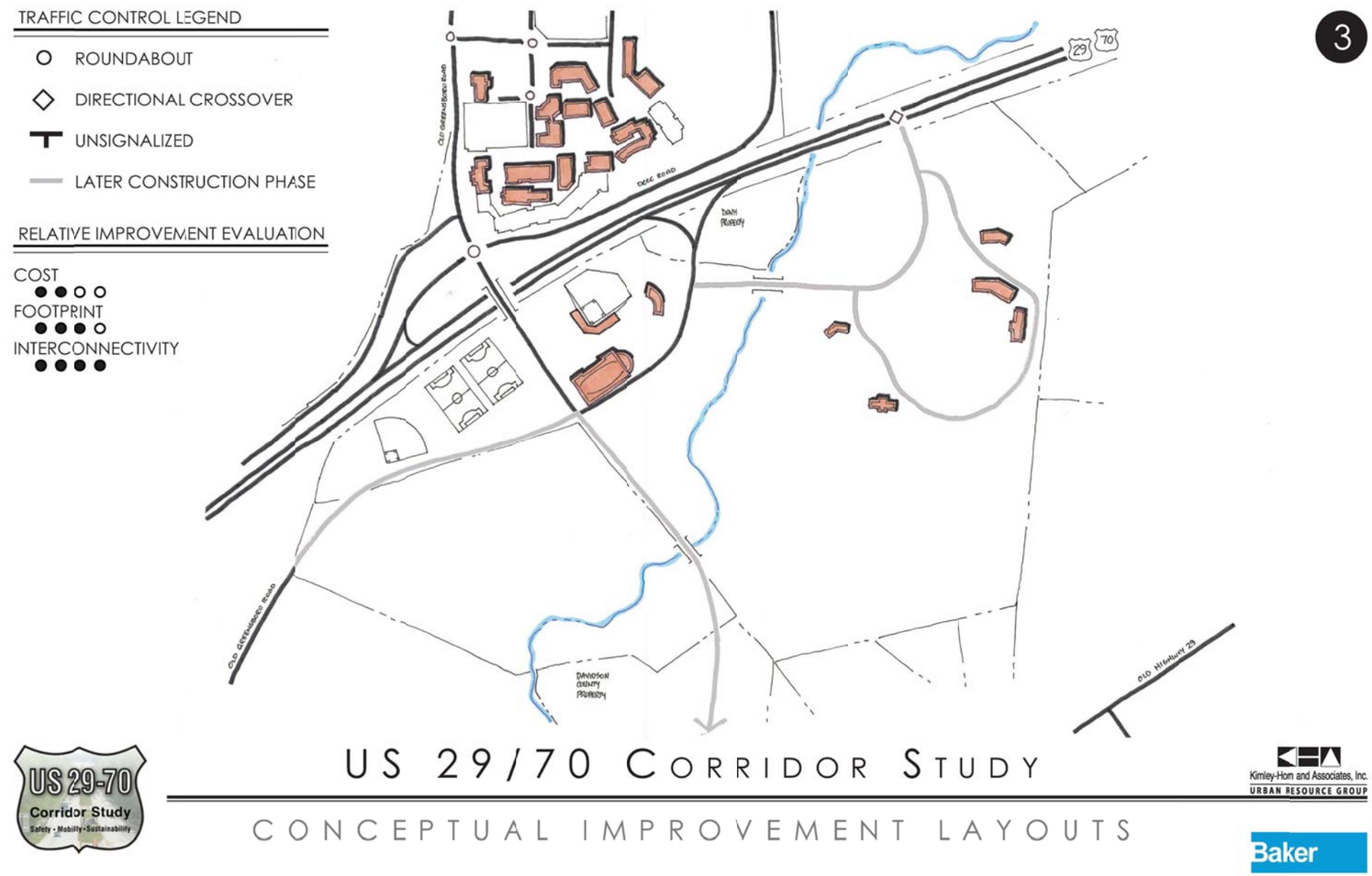
Conceptual Improvement 2 proposes the construction of an intersection along the western edge of the campus utilizing Old Greensboro Road. The construction of the interchange as proposed would reconnect the historical alignment of Old Greensboro Road to Old Highway 29 prior to it being severed with the I-85 project in the 1950's. The interchange configuration is a tight, offset partial cloverleaf. Roundabouts are proposed at both ramp intersections with Old Greensboro Road to minimize the bridge footprint which will allow for a greater accommodation of pedestrian and bicycle facilities.

Old Greensboro Road is realigned and creates the fourth leg to the eastbound interchange ramp intersection. DCCC Road creates the fourth leg to the westbound ramp intersection.

Bicycle and pedestrians accommodations would be included on the interchange bridge over US 29-70.

The interchange was sited at this location to take advantage of Old Greensboro Road, existing infrastructure, and its proximity to parking, destinations, and pedestrian activity.

Impacts to the natural environment are minimized as the interchange is located in an area with no topographic or environmental constraints.



Conceptual Improvement 3

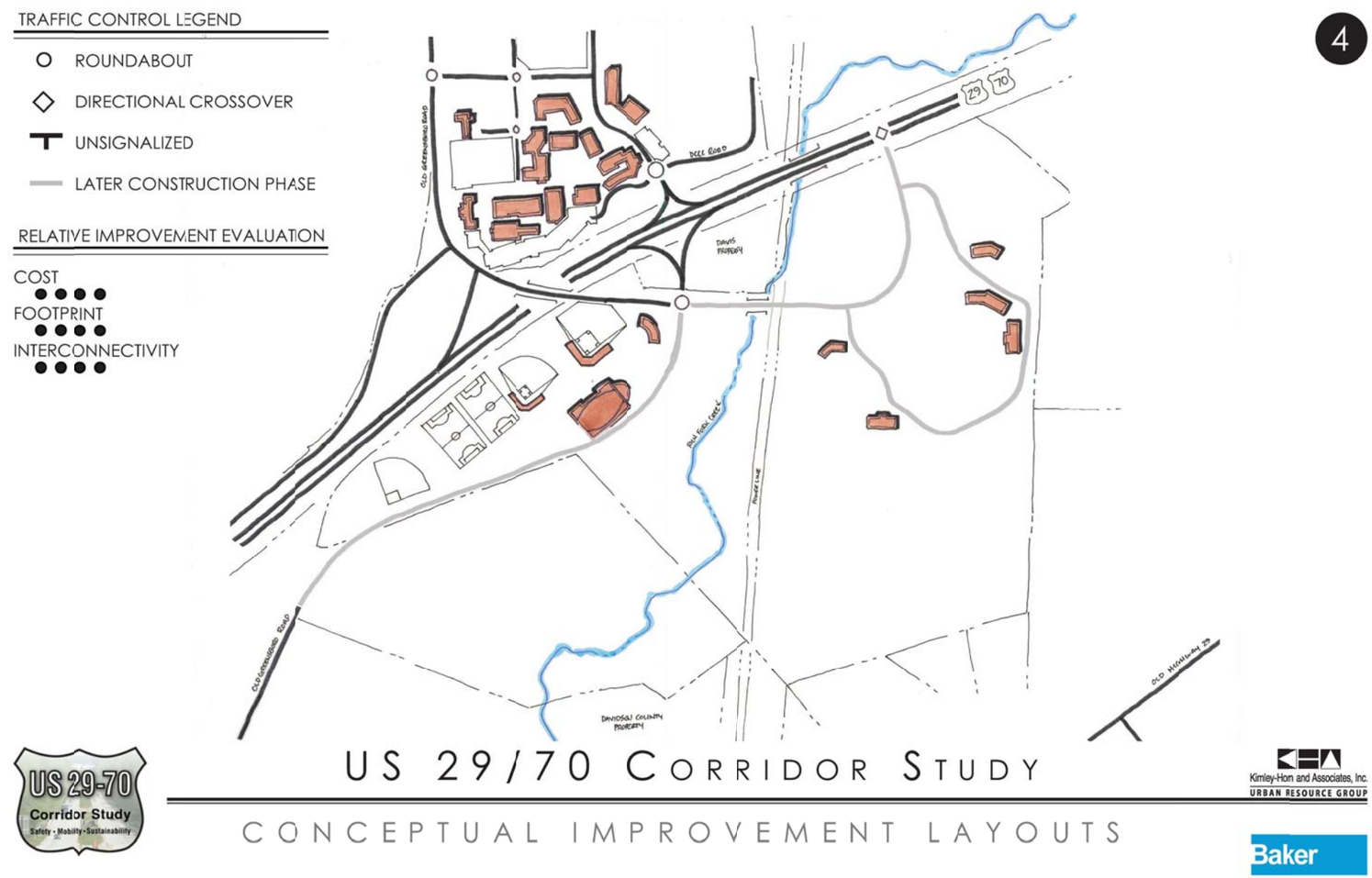
Conceptual Improvement 3 like 2 proposes the construction of the intersection along the western edge of the campus. Unlike 2, Conceptual Improvement 3 relocates the eastbound ramp and intersects Old Greensboro Road near the southern property line of the LINK Campus. This realignment was done to minimize the impact of the interchange on developable property on the LINK Campus. The resulting offset requires that the eastbound on and off-ramps traverse through property that is not a part of the LINK Campus.

The interchange has the potential to reconnect Old Greensboro Road to Old Highway 29 to the south. Old Greensboro Road is realigned and creates the fourth leg to the eastbound interchange ramp intersection. DCCC Road creates the fourth leg to the westbound ramp intersection.

Bicycle and pedestrians area accommodated on the interchange bridge over US 29-70.

The interchange was sited at this location to take advantage of Old Greensboro Road, existing infrastructure, and its proximity to parking, destinations, and pedestrian activity.

Impacts to the natural environment are minimized as the interchange is located in an area with no topographic or environmental constraints. However, the eastbound ramp does traverse through areas where environmental impacts may occur.



4

Conceptual Improvement 4

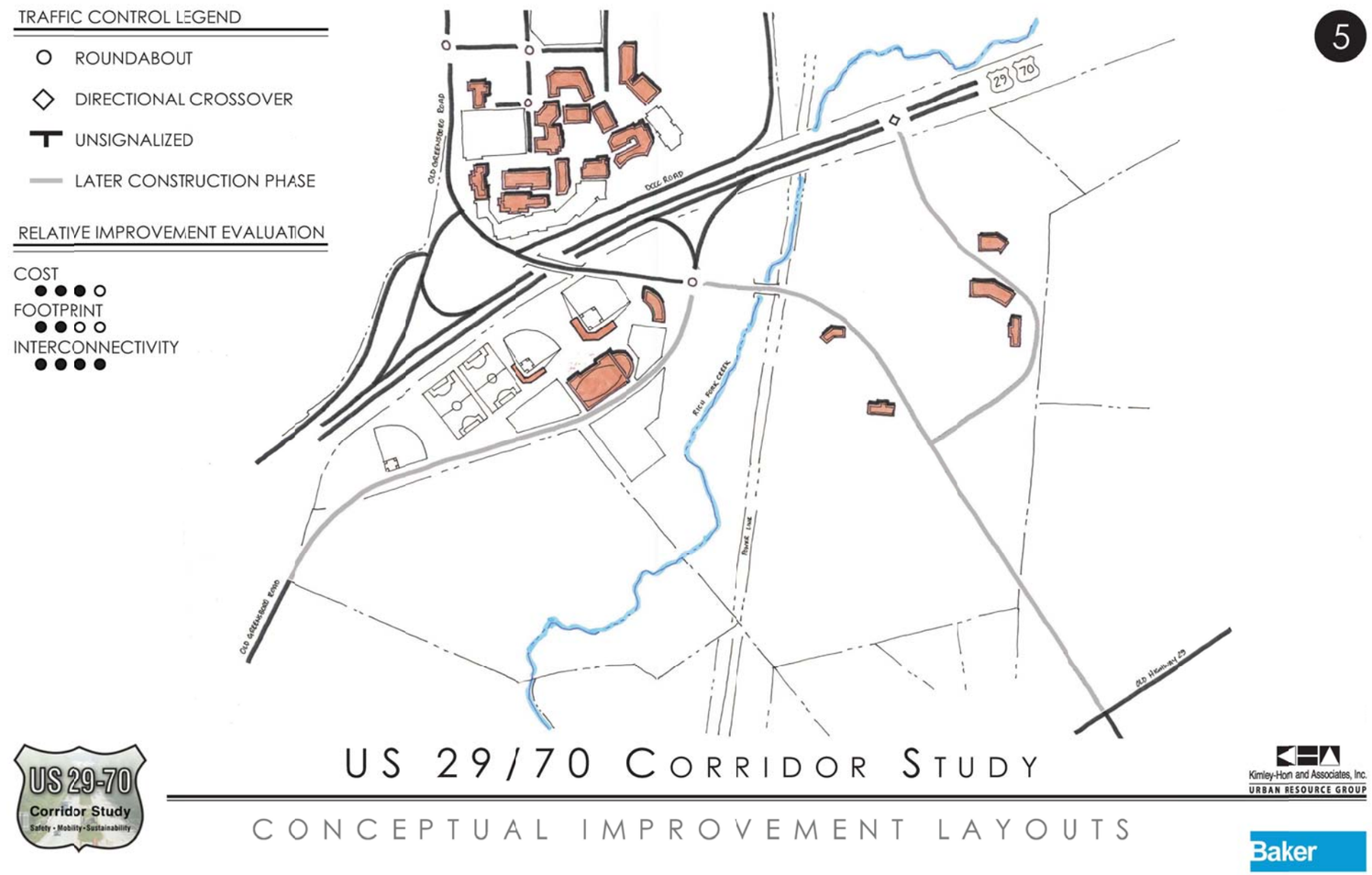
Conceptual Improvement 4 combines elements of 1, 2, and 3 to create a split interchange configuration. Conceptual Improvement 4 constructs a diagonal grade separation (bridge) across US 29-70 that connects the ramp loops back to a new at-grade intersection with US 29-70 to the east. This new intersection would be a directional crossover design.

Old Greensboro Road is realigned to the eastbound ramp intersection along the southern property line of the LINK Campus. Westbound ramps provide direct access to the campus via a new road and a realignment of DCCC Road. DCCC Road is realigned and no longer connects to Old Greensboro Road.

This interchange configuration does not provide for the potential to reconnect Old Greensboro Road to Old Highway 29 to the south. Bicycle and pedestrians accommodations would be provided on the interchange bridge over US 29-70.

The interchange was sited at this location to take advantage of Old Greensboro Road, existing infrastructure, and its proximity to parking, destinations, and pedestrian activity.

Impacts to the natural environment may be high as the ramps are located in a sensitive environmental area.



Conceptual Improvement 5

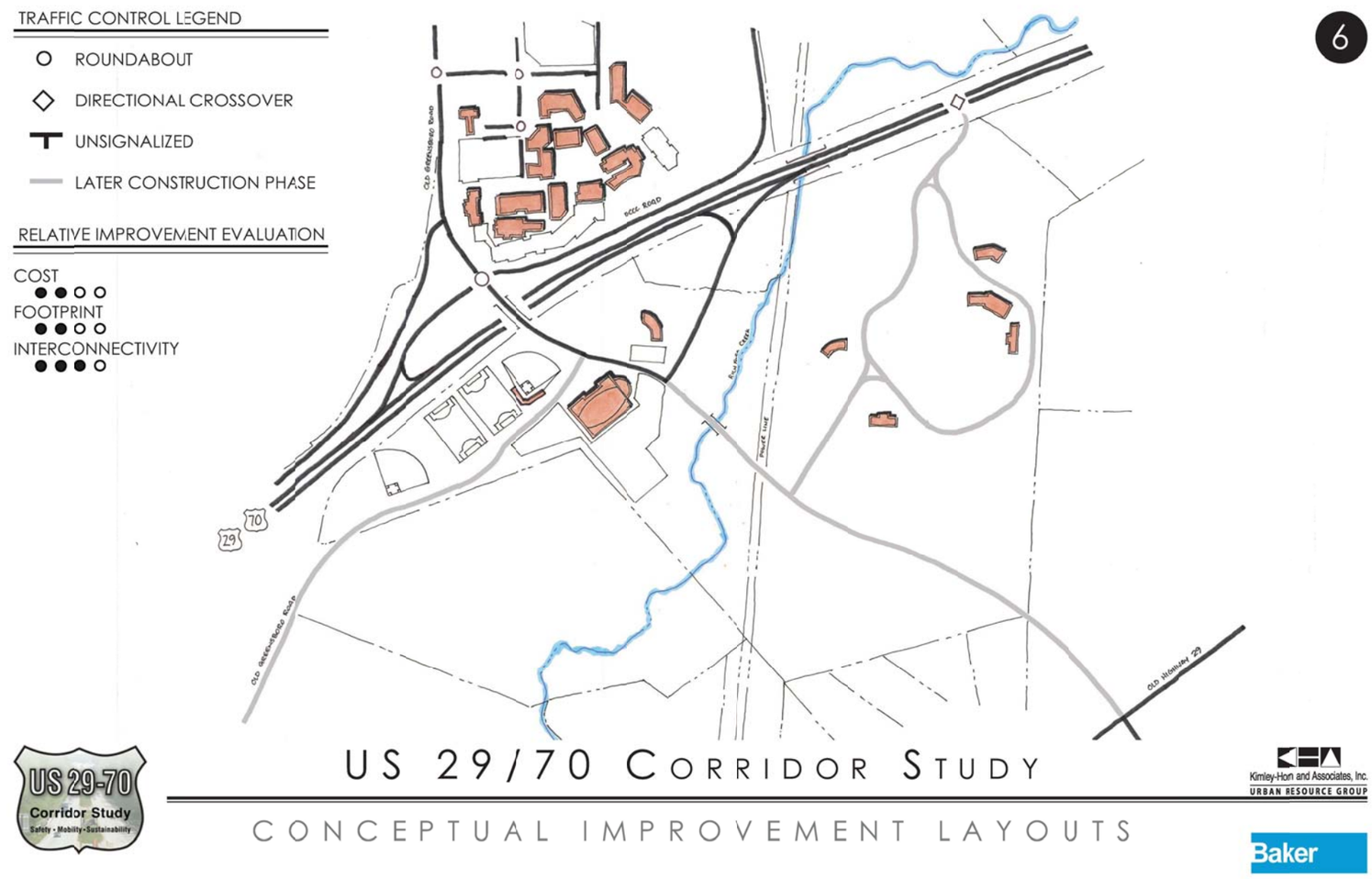
Conceptual Improvement 5 includes the same realignment of Old Greensboro Road as Conceptual Improvement 4. However, option 5 utilizes a partial cloverleaf configuration for the westbound ramps.

This option includes a realignment of Old Greensboro Road to the eastbound ramp intersection along the southern property line for the LINK Campus. DCCC Road would connect to Old Greensboro Road midpoint between the westbound and eastbound ramps.

This interchange configuration does provide for the potential to reconnect Old Greensboro Road to Old Highway 29 to the south. Bicycle and pedestrians accommodation would be provided on the interchange bridge over US 29-70.

The interchange was sited at this location to take advantage of Old Greensboro Road, existing infrastructure, and its proximity to parking, destinations, and pedestrian activity.

Impacts to the natural environment may be high as the eastbound ramps are located in sensitive environmental areas.



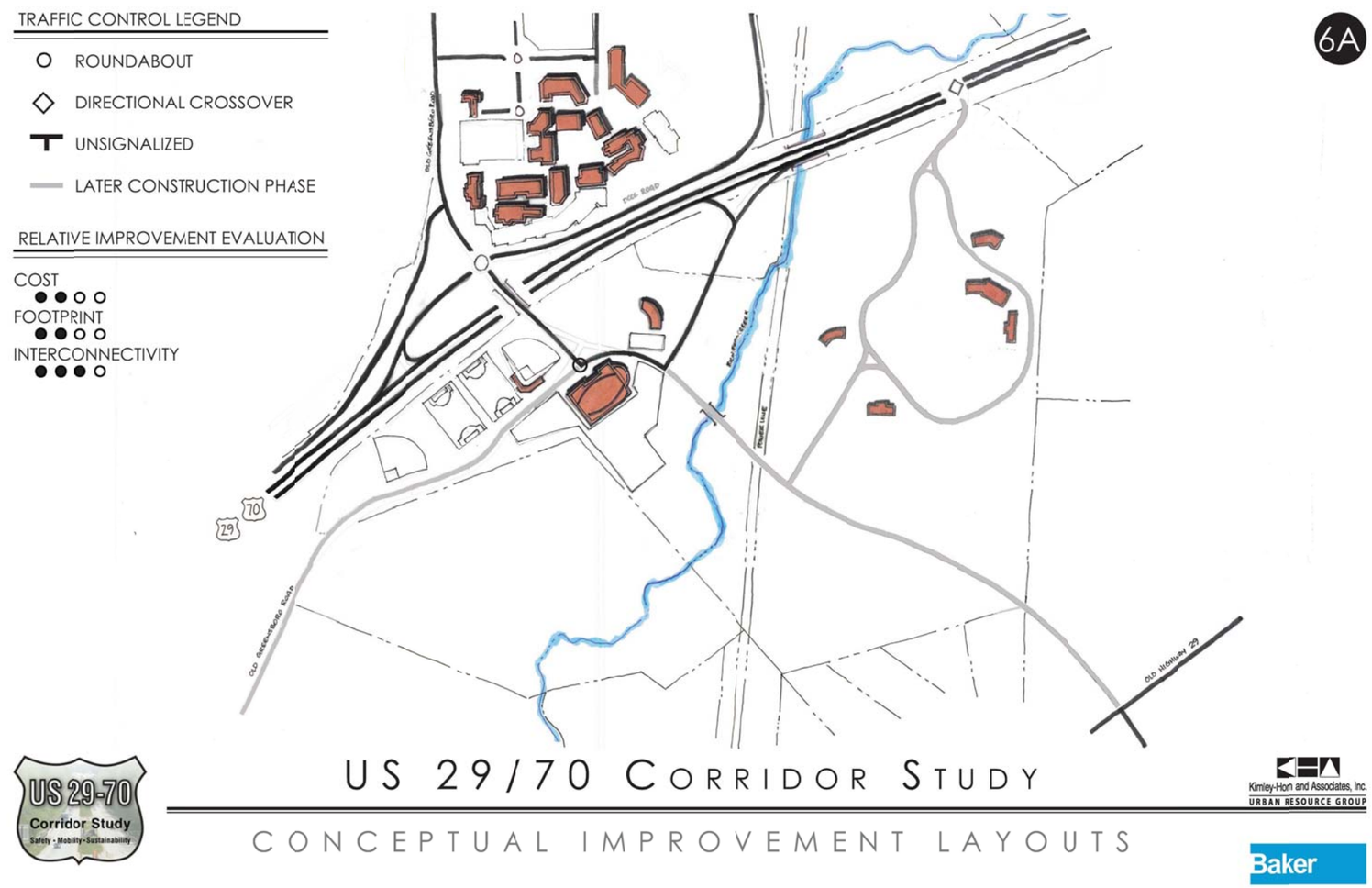
Conceptual Improvement 6

Conceptual Improvement 6 includes the same realignment of Old Greensboro Road as option 2. Conceptual improvement 6 utilizes a partial cloverleaf configuration for the westbound and eastbound ramps. This interchange configuration offers the potential to reconnect Old Greensboro Road to Old Highway 29 to the south. Bicycle and pedestrians accommodations are provided on the interchange bridge over US 29-70.

This option includes the realignment of Old Greensboro Road to a new intersection with Old Greensboro Road. The new alignment passes between the athletic fields and the auditorium on the LINK Campus Vision Plan. The intersections of S. Old Greensboro Road and the eastbound ramps are offset. DCCC Road connects to Old Greensboro Road at a new intersection with the westbound ramps.

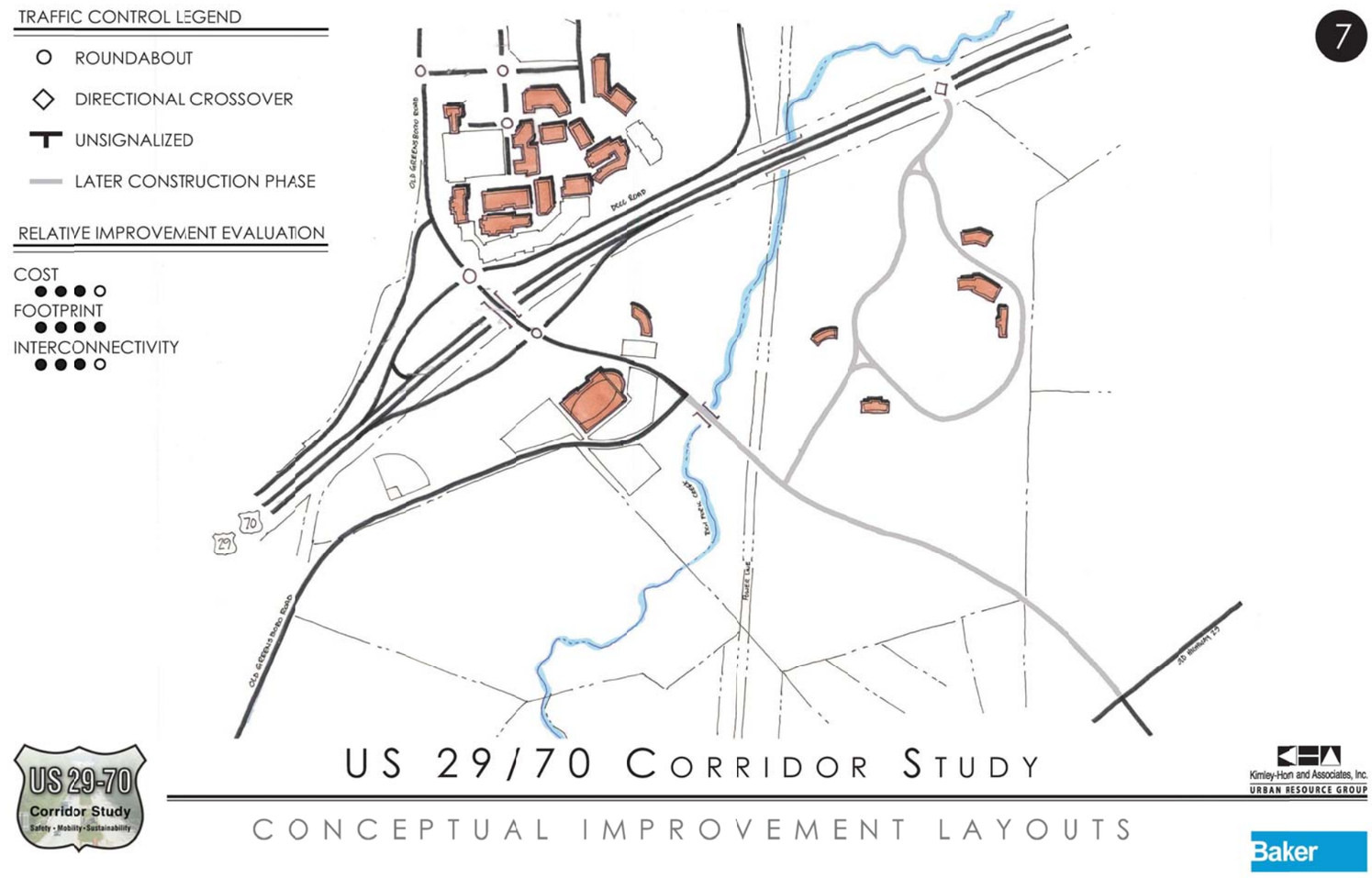
The interchange was sited at this location to take advantage of Old Greensboro Road, existing infrastructure, and its proximity to parking, destinations, and pedestrian activity.

Impacts to the natural environment may be high as the eastbound ramps are located in likely sensitive environmental areas.



Conceptual Improvement 6a

Conceptual Improvement 6a is a slight variation to 6. The variation is found in the intersection of Old Greensboro Road and S. Old Greensboro Road. Conceptual Improvement 6a "tees" Old Greensboro Road into S. Old Greensboro Road. The intent with this intersection configuration was rooted in placemaking for the college. By terminating Old Greensboro Road in front of the proposed auditorium identified on the LINK Campus Vision Plan it created a sense of arrival into the campus rather than a road through the campus. The intersection control envisioned to be a roundabout but could take many forms.



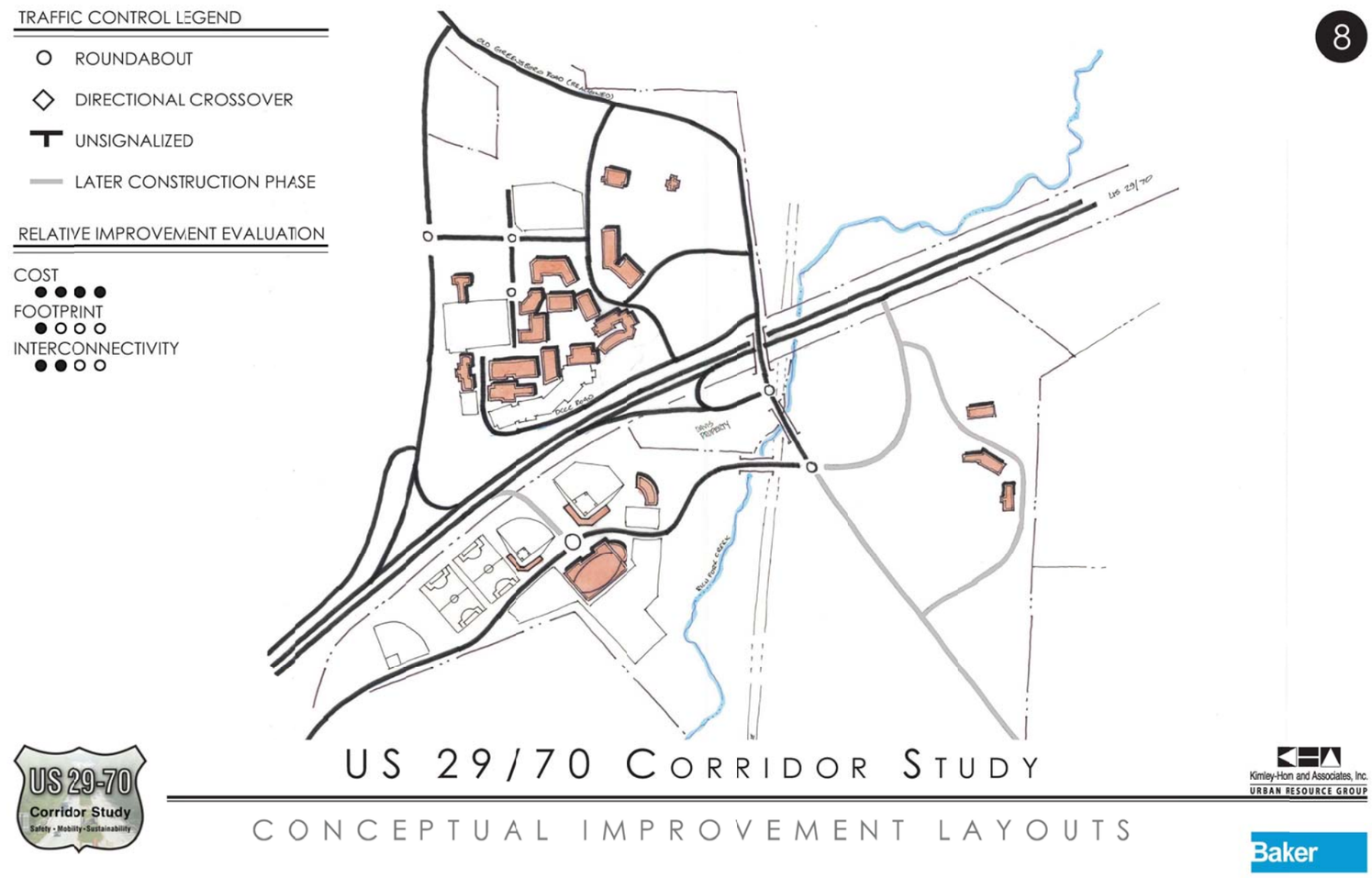
Conceptual Improvement 7

Conceptual Improvement 7 incorporates a tight diamond interchange configuration for all ramps with the exception of the westbound off-ramp which utilizes a loop ramp. This configuration was utilized as it allows DCCC Road to be the fourth leg to the westbound ramp intersection.

Conceptual Improvement 7 utilizes the same realignment of Old Greensboro Road as 6. This interchange configuration offers the potential to reconnect Old Greensboro Road to Old Highway 29 to the south. Bicycle and pedestrians accommodations are provided on the interchange bridge over US 29-70.

S. Old Greensboro Road is realigned to a new intersection with Old Greensboro Road. The new alignment passes along the southern property line of the LINK Campus. The intersection with realigned Old Greensboro Road is a sufficient distance away from the eastbound ramp intersection. DCCC Road connects to Old Greensboro Road at a new intersection with the westbound ramps.

The interchange was sited at this location to take advantage of Old Greensboro Road, existing infrastructure, and its proximity to parking, destinations, and pedestrian activity. Impacts to the natural environment are low as the ramps are located outside of likely sensitive environmental areas.



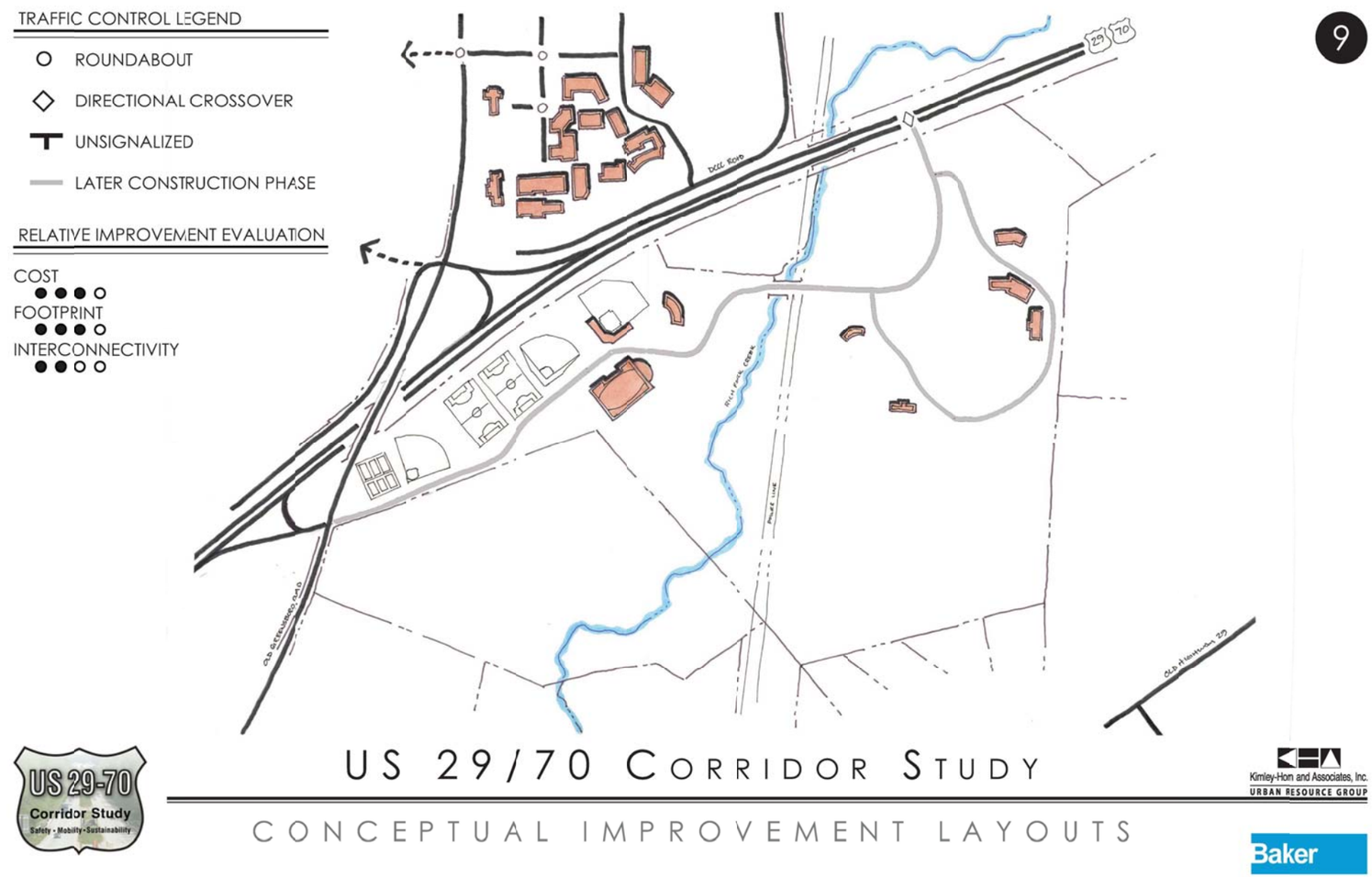
Conceptual Improvement 8

Conceptual Improvement 8 is unique from the other improvements in that it considers a wholesale realignment of Old Greensboro Road to the eastern property line of the DCCC Campus. The realignment utilizes a split interchange configuration similar to Conceptual Improvement 1 with the east and westbound ramps being separated. Access to both the DCCC Campus and the LINK Campus may be more circuitous depending on the direction of travel.

Conceptual Improvement 8 includes the potential to reconnect Old Greensboro Road to Old Highway 29 to the south. Bicycle and pedestrians accommodations would be provided on the interchange bridge over US 29-70.

S. Old Greensboro Road is realigned to a new intersection with Old Greensboro Road. The new alignment passes south of the proposed athletic fields but to the north of the planned auditorium. The intersection with realigned Old Greensboro Road is a sufficient distance away from the eastbound ramp intersection. DCCC Road is realigned to provide internal connectivity to the existing parking fields.

Conceptual Improvement 8 capitalizes on restoring the connectivity of Old Greensboro Road to Old Highway 49 and creating additional connectivity with Upper Lake Road. The interchange configuration was configured based on the influence of Rich Fork Creek and DCCC. Impacts to the natural environment may be high as the ramps are located in sensitive environmental areas. Significant bridging would be necessary for implementation.



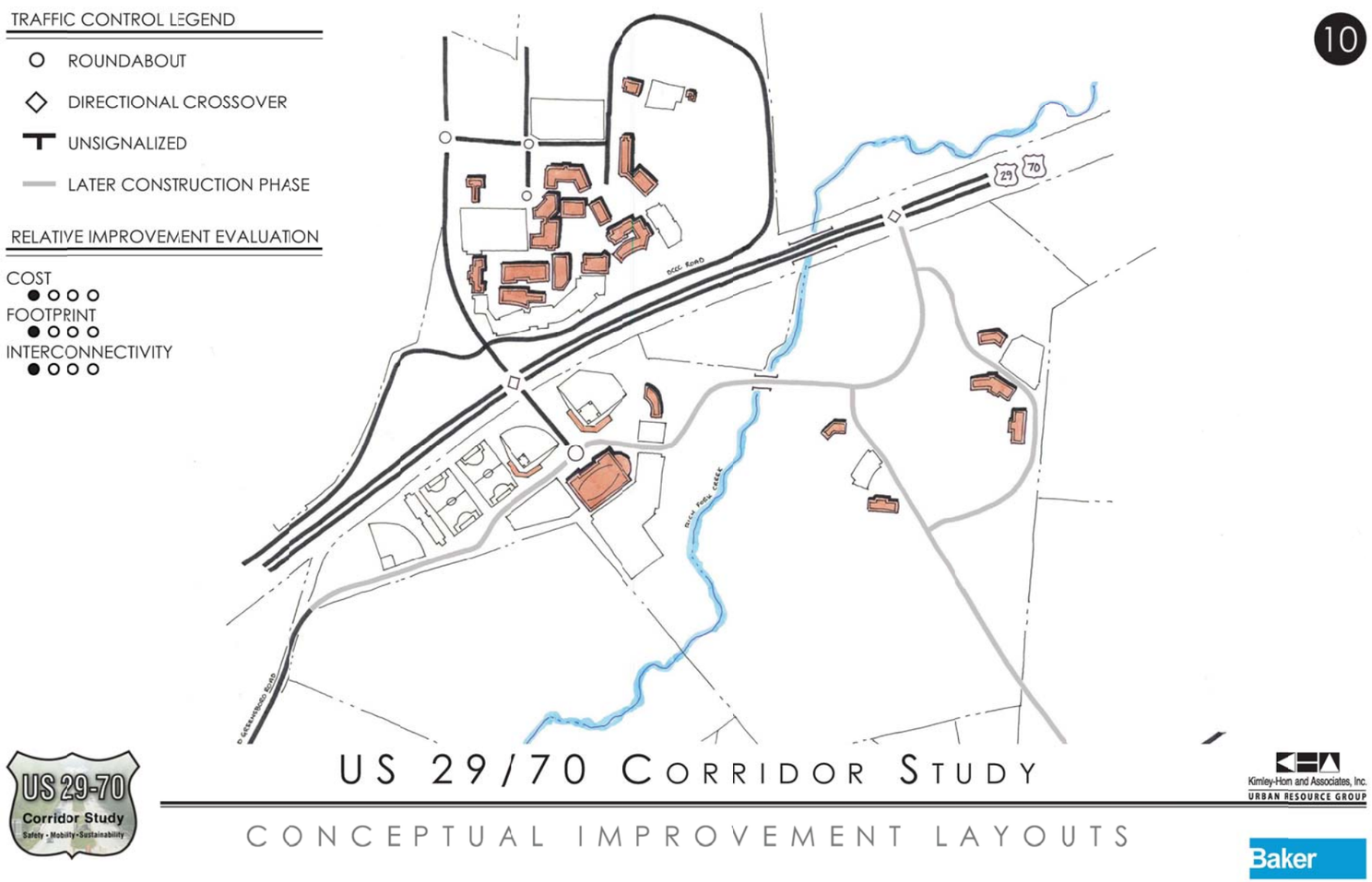
Conceptual Improvement 9

Conceptual Improvement 9, more than any of the other alternatives, restores the original connection between Old Greensboro Road and Old Highway 29 prior to the construction of US 29-70. This alternative proposes an offset, partial cloverleaf with the ramps located in the northeast and southwest quadrants of the intersection.

Access to the LINK Campus would occur at the eastbound ramp intersection. The connector road passes south of the proposed athletic fields but to the north of the planned auditorium. Under this alternative DCCC Road would be terminated prior to the connection to Old Greensboro Road.

Bicycle and pedestrians accommodations would be provided on the interchange bridge over US 29-70. This alternative moves the connection for these modes farther from their likely destinations and activity areas.

Impacts to the natural environment should be low as the ramps are located outside sensitive environmental areas.



10

Conceptual Improvement 10

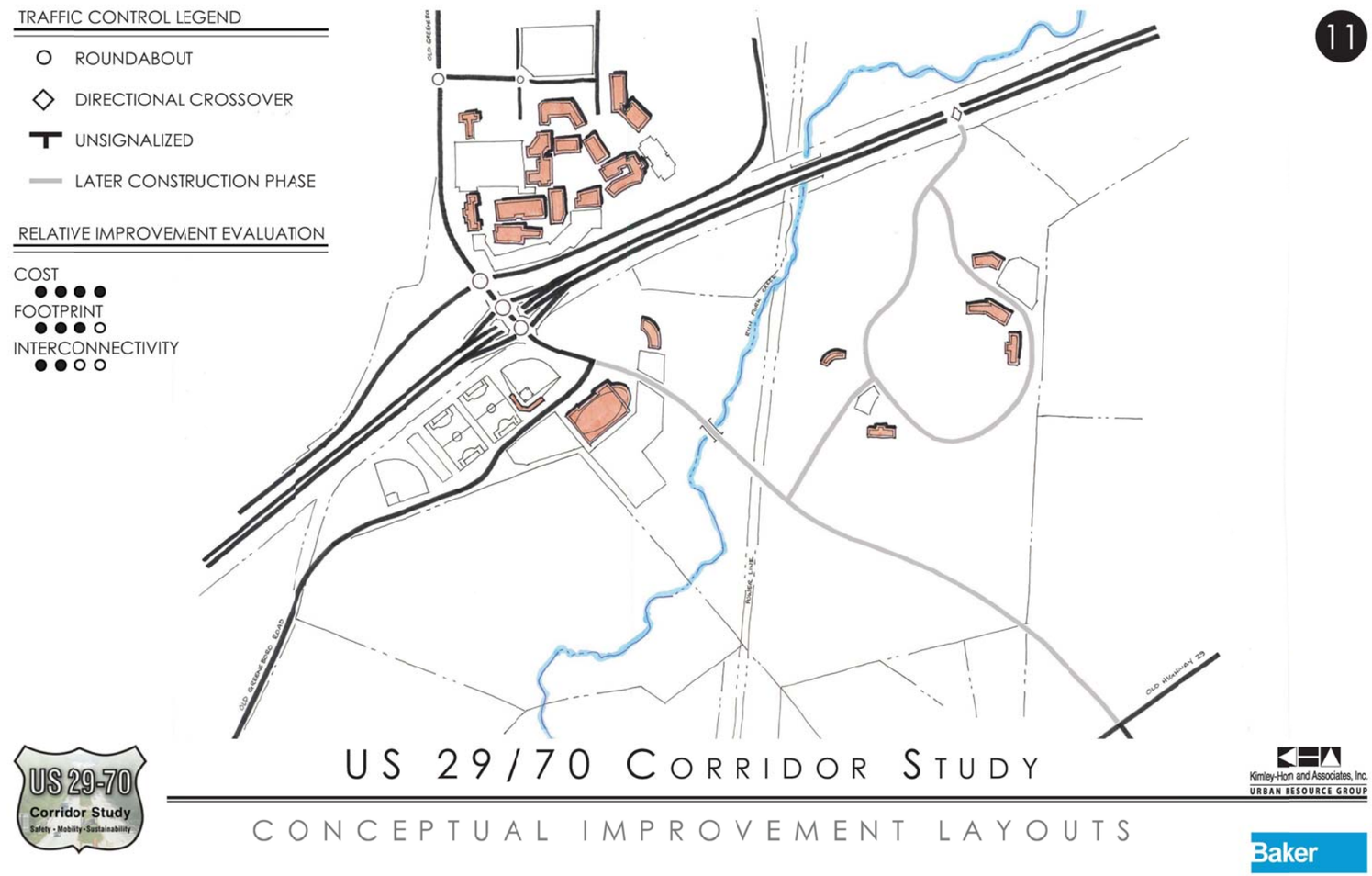
Conceptual Improvement 10 is a departure from the rest of the alternatives in that it moves away from the use of an interchange to provide access to the LINK Campus and main DCCC Campus. Instead is uses a directional cross over(s) located at a central location to provide access.

The location of the directional crossover is in alignment where a future bridge crossing could be sited if needed. Old Greensboro Road to the north is realigned to the directional crossover.

Access to the LINK Campus would be at the directional crossover for Old Greensboro Road. S. Old Greensboro Road would be realigned to the south of the proposed athletic fields but to the north of the planned auditorium. DCCC Road would remain in its current configuration.

Bicycle and pedestrian connectivity between the two campuses would need to occur via an exclusive bridge designed for these movements.

Impacts to the natural environment should be minimal as the directional crossover would be constructed within the existing right-of-way outside of sensitive environmental features.



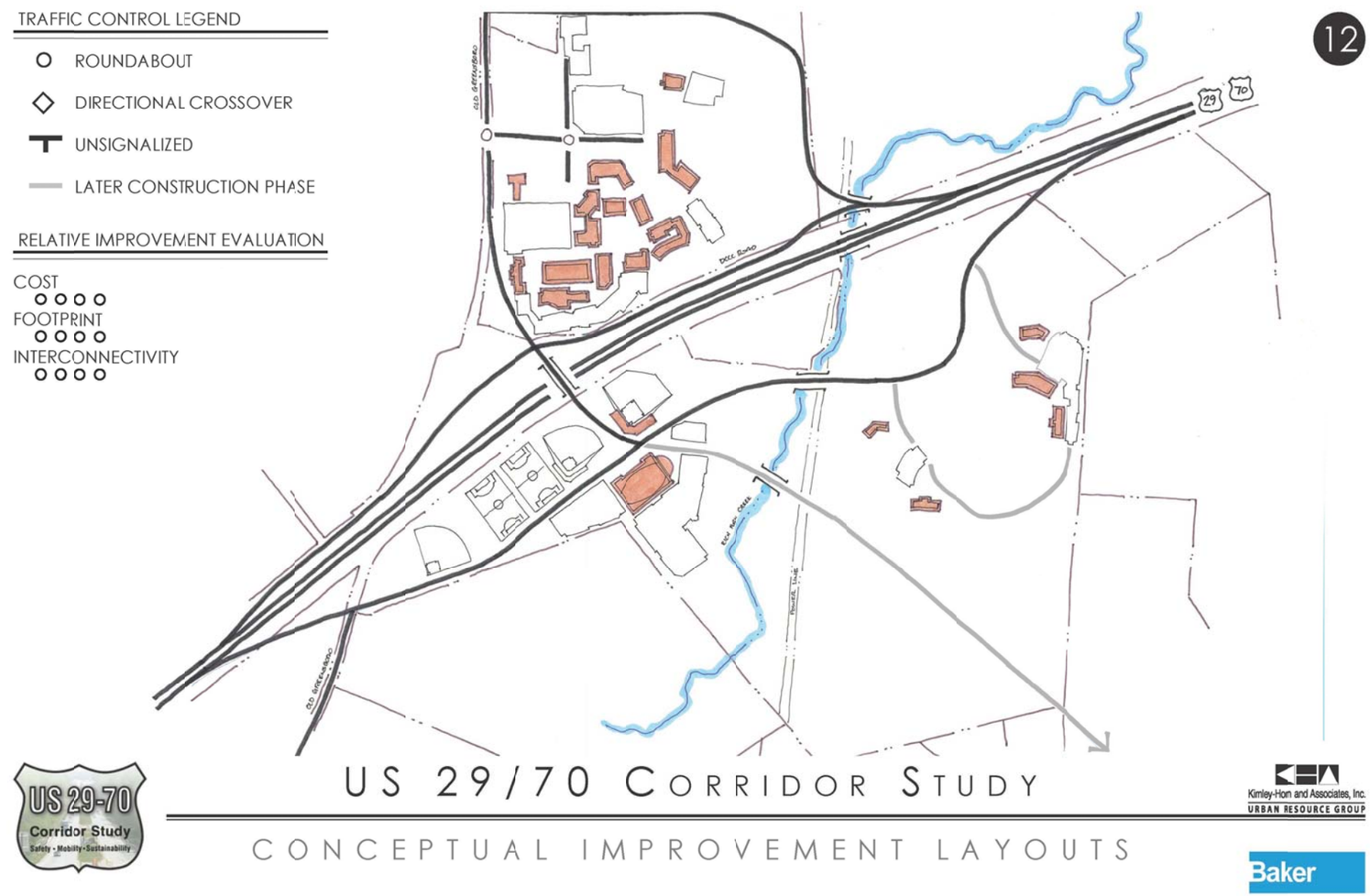
Conceptual Improvement 11

Conceptual Improvement 11 incorporates a tight diamond interchange like Conceptual Improvement 7. The difference between the two alternatives is that Conceptual Improvement 11 utilizes retaining walls to minimize the impacts to adjacent properties. The benefit of this type of interchange is that construction can occur inside a reduced physical footprint thereby reducing the amount of right-of-way required and associated impacts. This alternative utilizes roundabouts under an hourglass configuration to process traffic from and to the ramps with US 29-70.

Under this configuration DCCC Road remains in its current alignment. To accommodate the close proximity of the intersection to the interchange a roundabout is proposed for traffic control; however traditional intersection configurations may also be an option. Conceptual Improvement 11 provides for a realignment of Old Greensboro Road connecting to Upper Lake Road.

S. Old Greensboro Road would be realigned to a new intersection with Old Greensboro Road. The new alignment passes along the southern property line of the LINK Campus. The intersection with realigned Old Greensboro Road is a sufficient distance away from the eastbound ramp intersection. Bicycle and pedestrian accommodations would be provided on the interchange bridge over US 29-70.

The interchange was sited at this location to take advantage of Old Greensboro Road, existing infrastructure, and its proximity to parking, destinations, and pedestrian activity. Impacts to the natural environment should be low as the ramps are located outside of identified sensitive environmental areas.



Conceptual Improvement 12

Conceptual Improvement 12 utilizes a set of parallel, one-way frontage roads to provide access to the LINK Campus and the main DCCC campus. The one-way parallel facilities function like on/off ramps with the exception that they offer driveway access points. A centrally located bridge that incorporates the realignment of Old Greensboro Road provides connectivity between the two campuses for pedestrians, bicyclist, and motorists. Conceptual Improvement 12 provides for a realignment of Old Greensboro Road connecting to Upper Lake Road.

S. Old Greensboro Road "tees" into the eastbound ramp on its current alignment. Under this configuration DCCC Road remains in its current alignment as it is incorporated into the ramp system. Operations would be converted to one-way along this portion of DCCC Road. Bicycle and pedestrian accommodations would be provided on the interchange bridge over US 29-70.

The interchange was sited at this location to take advantage of Old Greensboro Road, existing infrastructure, and its proximity to parking, destinations, and pedestrian activity. Impacts to the natural environment should be low considering the ramps are located outside of identified sensitive environmental areas.

Evaluation Process

During the December 2010 PAC meeting, the consultant team provided the 11 conceptual improvement layouts to the PAC for additional consideration. Their packet of information also included a qualitative evaluation of the relative characteristics for each alternative including information regarding cost, physical footprint, and connectivity.

Based on input from the PAC, the consultant team developed a 12th layout that captured concepts developed in the group exercise.

PAC members were then charged with the following tasks before the next PAC meeting:

- Determine what they liked and disliked about each layout
- Evaluate/score each layout against the guiding principles
- Create additional layouts for consideration by the group

Short Listing of Alternatives

At the January PAC meeting, each member of the PAC provided an overview of how each of the Conceptual Improvements embodied the endorsed Guiding Principles. The PAC members were also given the opportunity to provide input on which of the Guiding Principles they thought was most important.

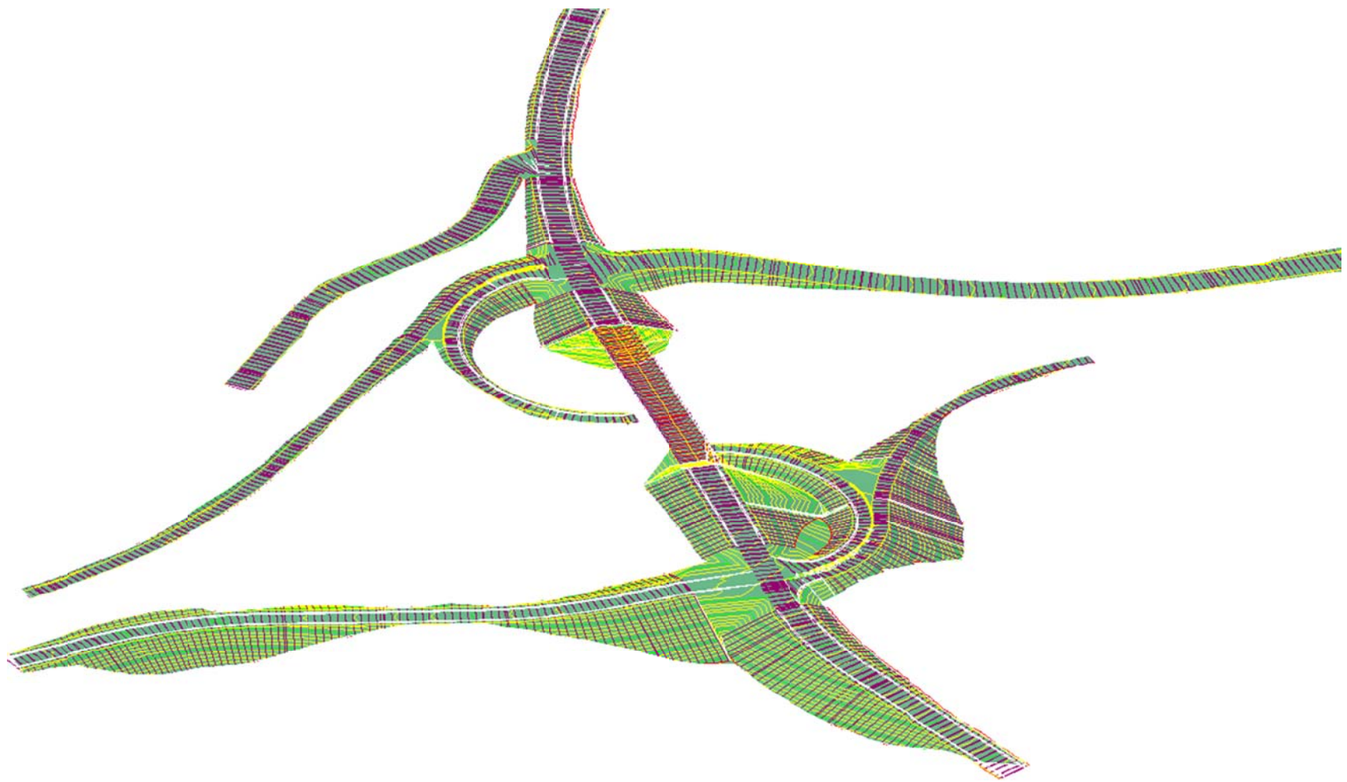
The table below shows the results of the Conceptual Improvement and Guiding Principle ranking. Copies of the individual rankings can be found in the Appendix.

The PAC members used the results to eliminate some options from further considerations. The three Conceptual Improvements identified through this process for further consideration included:

- Conceptual Improvement 2
- Conceptual Improvement 3
- Conceptual Improvement 12

The consultant team was then charged with the responsibility of generating conceptual design plans for the three options providing a more detailed evaluation.

CONCEPTUAL LAYOUT													
1	2	3	4	5	6	6a	7	8	9	10	11	12	Voting Score
6	1	2	0	5	4	0	0	6	0	0	0	3	
1	2	3	4	5	6	6a	7	8	9	10	11	12	Guiding Principle
6	3	1	7	4	8	0	5	2	9	11	10	12	



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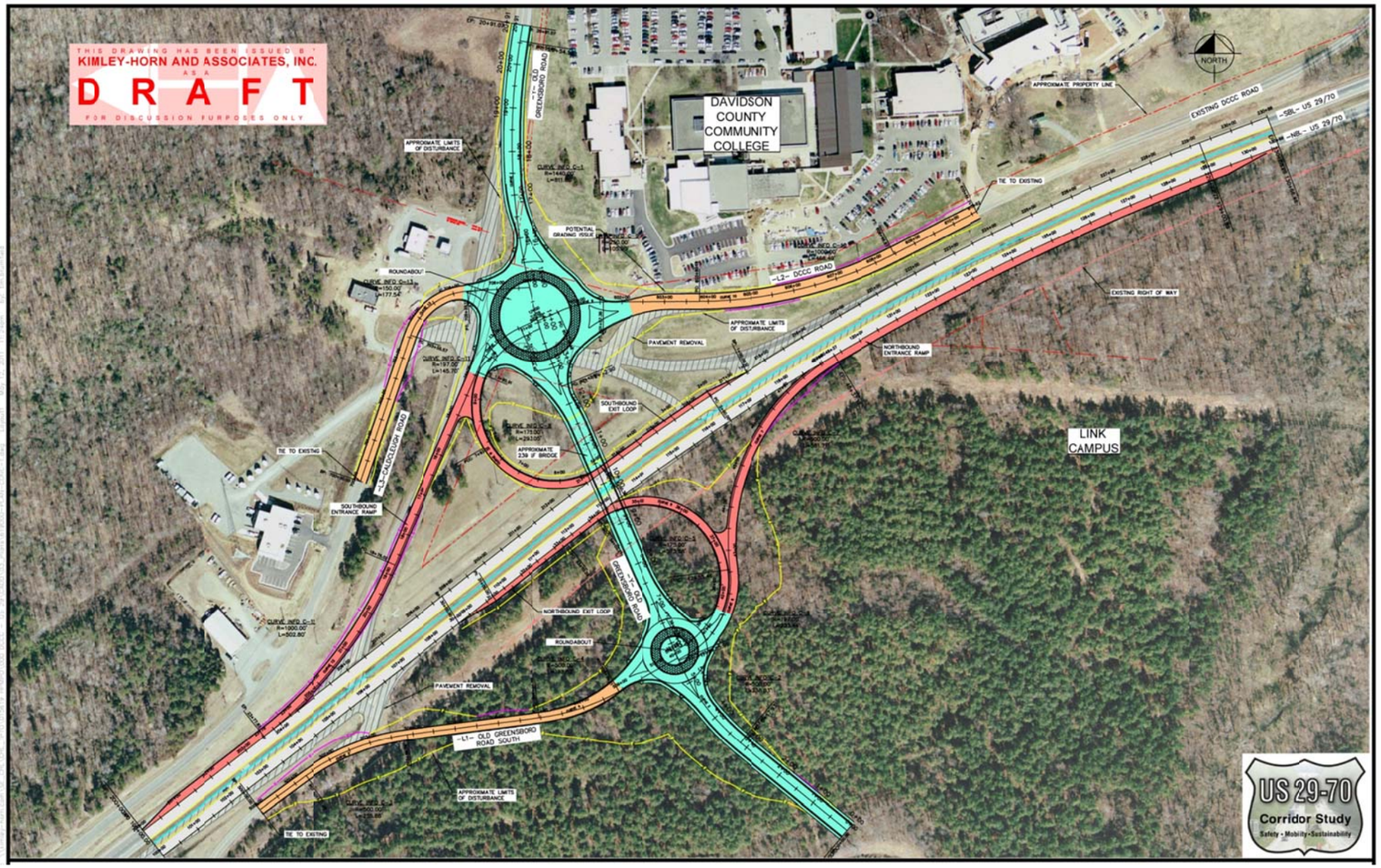
Conceptual Design Plans

After selection of the three preferred alternatives, functional design plans were prepared using available topographical, GIS, and aerial data. While this information is less detailed than survey data, it is an affordable means to establish a relative understanding of the potential impacts to environmental features, the built environment and probable construction cost.

Functional design plans were developed based on best practices including current NCDOT and AASHTO (American Association of State Highway and Transportation Officials) roadway design guidelines. Horizontal and vertical functional design plans were prepared to determine the potential impacts and constructability of the three selected alternatives.

The three selected alternatives incorporated an interchange grade separation between US 29-70 and Old Greensboro Road. Close attention was placed on the alignment and placement of the interchange to minimize impacts to the built environment of the DCCC Campus, the planned development of the LINK Campus, environmental constraints associated with Rich Fork Creek to the east, and the integration with US 29-70.

Each of the conceptual designs is discussed on the following pages.



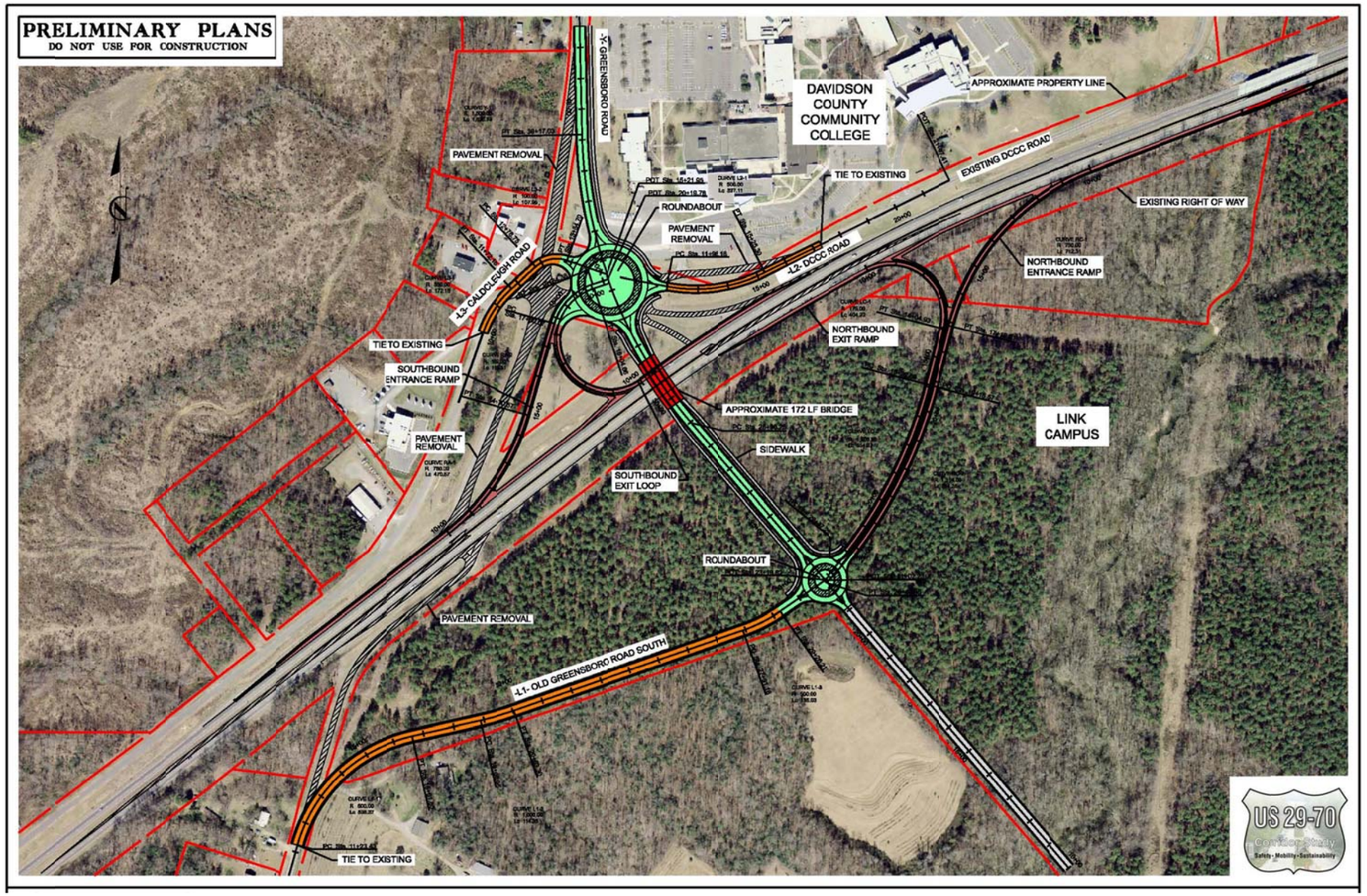
Concept Design Layout 2

Concept Design Layout 2 utilizes a perpendicular crossing of US 29-70. The interchange configuration represents an offset partial cloverleaf configuration with exiting movements for the east and westbound approaches utilizing the loop ramps. Entering movements utilize traditional ramps. This is an effective ramp configuration that appropriately manages traffic speed based on the movement being performed. For movements exiting from US 29-70 the loop ramp configuration will slow traffic down as it is approaching the roundabout at the ramp terminals. The traditional straight ramp allows vehicles entering the highway to achieve an appropriate speed prior to merging with US 29-70 traffic.

Both ramp terminals include roundabouts for traffic control. A traditional intersection would also work at these locations. Due to the proximity of DCCC Road and Caldcleugh Road, the roundabout for the westbound ramps accommodates five approaches.

A preliminary Opinion of Probable Construction Cost (OPCC) was prepared for the concept design. The OPCC utilizes inputs developed from these conceptual design plans.

Construction Cost:	$8,700,000
Earthwork:	$1,500,000
New Pavement:	$1,201,500
Drainage:	$190,000
Bridge:	$1,920,000
TOTAL:	**$13,511,500**



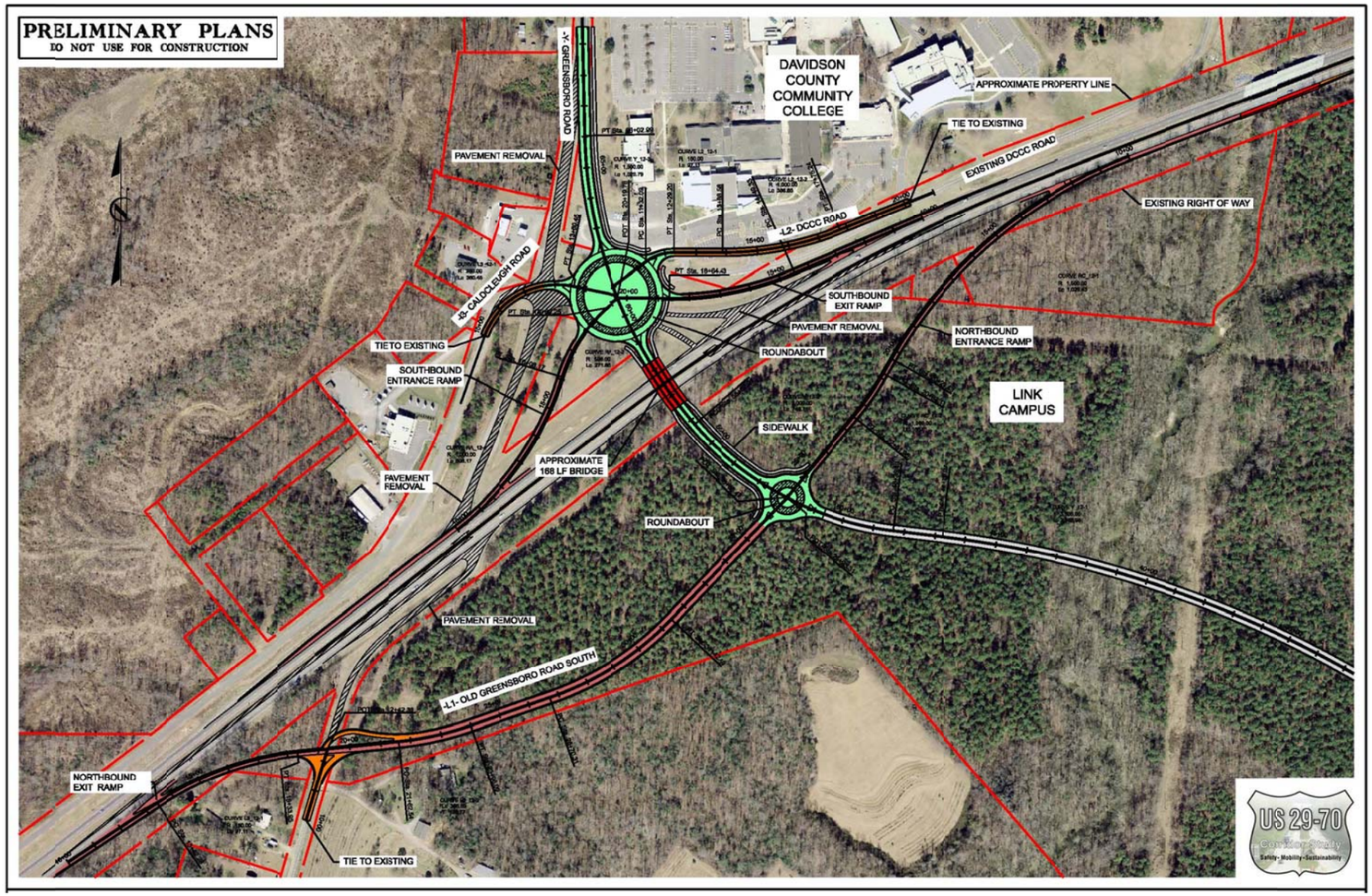
Concept Design Layout 3

Concept Design Layout 3 includes a perpendicular crossing of US 29-70. The interchange configuration represents an offset partial cloverleaf configuration with highway exiting movements for the east and westbound approaches utilizing the loop ramps. Concept Design 3 varies from Concept Design 2 in the configuration of the eastbound ramp system and the realignment of S. Old Greensboro Road. Concept Design 3 locates the ramps system along the southern property line of the LINK Campus. Locating the ramp system in this configuration elongates the ramp length and increases the area of impact along US 29-70 including the bridge over Rich Fork Creek.

Both ramp terminals include roundabouts for traffic control. A traditional intersection would also work at these locations. Due to the proximity of DCCC Road and Caldcleugh Road, the roundabout for the westbound ramps accommodates five approaches.

A preliminary Opinion of Probable Construction Cost (OPCC) was prepared for the concept design. The OPCC utilizes inputs developed from the conceptual design plans.

Construction Cost:	$9,200,000
Earthwork:	$1,560,000
New Pavement:	$1,615,500
Drainage:	$190,000
Bridge:	$1,638,500
TOTAL:	**$14,204,000**



Concept Design Layout 12

Concept Design 12, like 3, uses an elongated ramp configuration for the eastbound ramps. Unlike concept design 3, 12 incorporates a traditional straight ramp configuration. The eastbound ramp configuration is atypical in that it provides both two-way and one-way operations. From the departure with US 29-70 to the point at which S. Old Greensboro Road "tees" into the eastbound ramp the ramp has one-way operations. At the intersection "tee" the ramp functions as a two-way street allowing driveway access to the LINK campus. East of the roundabout the ramp functions with one-way operations.

Both ramp terminals include roundabouts for traffic control. A traditional intersection would also work at these locations. Due to the proximity of DCCC Road and Caldcleugh Road, the roundabout for the westbound ramps accommodates six approaches.

A preliminary Opinion of Probable Construction Cost (OPCC) was prepared for the concept design. The OPCC utilizes inputs developed from the conceptual design plans.

Construction Cost:	$9,100,000
Earthwork:	$1,530,000
New Pavement:	$1,712,000
Drainage:	$190,000
Bridge:	$1,606,500
TOTAL:	**$**$14,138,500

5| PREFERRED ALTERNATIVE

Project Overview & Benefits

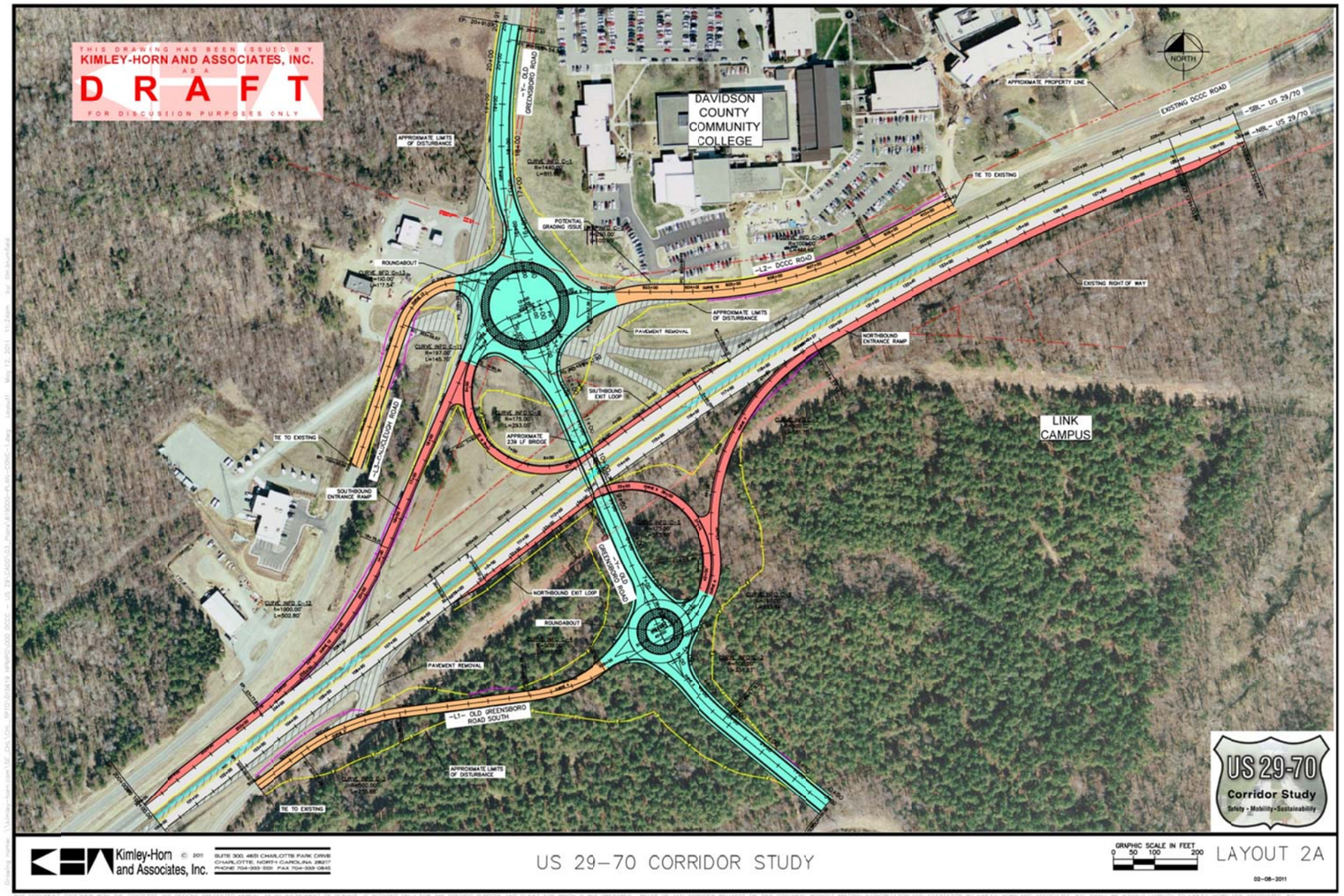
While there are many priorities for the corridor (connectivity between campuses, economic vitality, and preservation of long term corridor capacity), access and mobility were the primary catalyst for this project and the core issues needing a solution due to their influence on each of the other priorities.

The content of this workbook clearly documents the comprehensive approach to evaluating a full range of transportation alternatives intended to address the competing interest between mobility and access within the vicinity. The result of the planning process was the identification of a preferred alternative. Concept Design 2 was determined by the PAC to best fulfill the intentions of the endorsed Guiding Principles. It also responds to the high priorities of the PAC by minimizing impacts to the LINK Campus, and offering the desired level of access and mobility between the campuses.

Concept Design Layout 2 provides the essential connection between the LINK Campus and the DCCC Campus by creating an unimpeded connection for motorists, bicycles, and pedestrians and eliminates interaction with through trips on US 29-70. This has the added benefit of preserving operations and travel times on US 29-70.

The preferred alternative also alleviates the existing safety concerns along US 29-70. The interchange removes the conflict points associated with the left-turning movements to and from US 29-70. The interchange also alleviates the sight distance issues associated with the rolling terrain of US 29-70.

The historical connection between Old Greensboro Road and Old Highway 29 is reinforced with the implementation of the interchange. While the interchange does not complete the connection it does provide for a future connection to Old Highway 29-70.

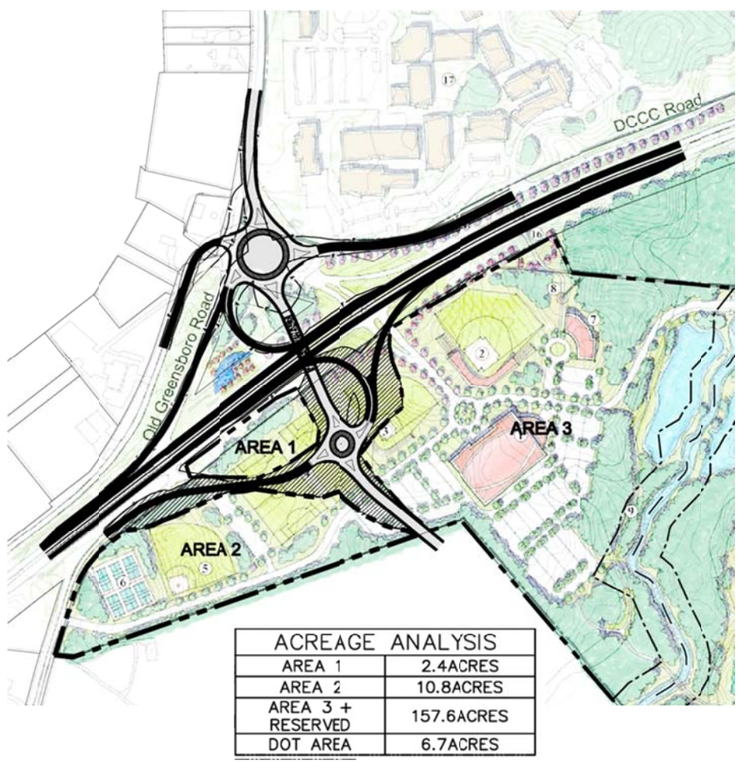


The preferred alternative reduces the number of permits required for construction by utilizing the existing right-of-way to the fullest extents and by locating the interchange near the confluence of US 29-70 and Old Greensboro Road.

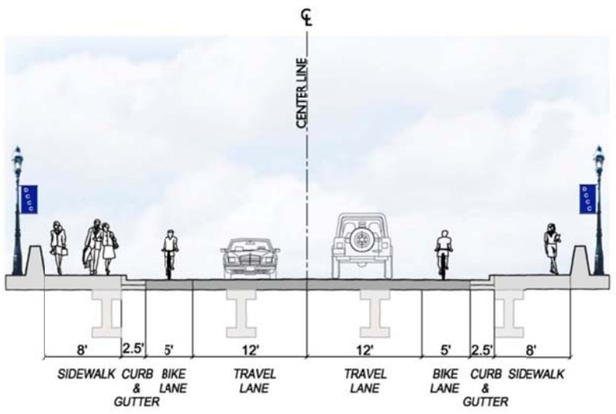
Preferred Alternative: Concept Design 2

Campus Impacts Minimized

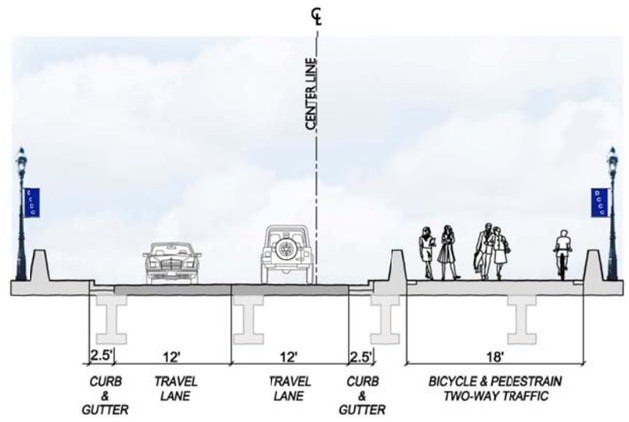
As previously discussed, DCCC was concerned about the potential impacts of transportation alternatives on the programming areas related to the limited amount of buildable areas identified on the LINK Campus Vision Plan. The result of the planning process was the selection of a preferred alternative that minimized these impacts. The preferred alternative maximizes the available developable area for the LINK Campus while minimizing the necessary right-of-way needed for the construction of the interchange. The offset partial cloverleaf interchange configuration allows for additional area to be utilized for programming that other interchange configurations would not allow.



Option 1



Option 2



Accommodating Buses, Walkers, and Bikes

While access and mobility for the motorist is important, especially in the rural setting of the campuses, access for other travel modes including bicycle, pedestrian, and transit are also important. Accommodation for these modes is designed into the preferred alternative from the ground up.

With PART providing bus service to the campus the selected alternative needed to accommodate the necessary turning templates of the vehicles servicing the campus. Turning templates were utilized to determine the ability of a SU-vehicle (BUS) to navigate the interchange. No deficiencies were identified.

The grade separation between Old Greensboro Road and US 29-70 will provide a safe crossing for both pedestrians and bicyclists traveling between campuses and those in the community who choose to travel by either mode of transportation. Two options for providing connectivity for pedestrians and bicyclists have been identified for the grade separation. Option 1 provides separate facilities for bicyclists and pedestrians. Option 2 provides for a shared use facility that is barrier separated from the motor vehicle traffic (graphics top left of page). Both of the pedestrian and bicycle options on the grade separation will provide safe connectivity between the two campuses and to points beyond. Consideration should be given to which type of facility best suites the type and volume utilizing the facility. *Future design processes should consider the campus setting and the probability for peaking conditions associated with class changes and special events prior to selecting a strategy for accommodating bikes and pedestrians.*

Placemaking

The grade separation gives the ability for DCCC to brand this section of US 29-70. Branding of the corridor will create a sense of arrival distinguishing it from the rest of the corridor. The image to the left is an example of how the grade separation might be branded. DCCC, HPMPO and NCDOT should agree on an appropriate set of design themes for lighting, bridge details, and signage and landscaping,

6| CALL TO ACTION

Benefits of the Project

Concept Design 2 described Chapter 5 was selected as the preferred alternative for a variety of reasons:

- The interchange provides an essential connection between the existing DCCC Campus and the LINK Campus
- Safety concerns related to access along US 29-70 are alleviated with the interchange
- Access and mobility for DCCC and the surrounding community are improved and simplified
- The adopted High Point MPO Long Range Transportation Plan calls for an interchange at the intersection of US 29/70 and Old Greensboro Road
- The High Point MPO ranks the interchange at DCCC as their #2 priority
- Travel times and long-term capacity of the US 29-70 corridor will be improved with the planned interchange
- Economic development opportunities are currently stifled by the access concerns along US 29-70. This alternative creates a node for which new business activity and development can occur on the surrounding property benefiting the county, region and state
- The interchange reinforces the historic connection between Old Greensboro Road on the north and south sides of US 29/70
- The preferred alternative minimizes environmental impacts, thereby reducing the number of permits required for construction

Next Steps

Given the critical role DCCC plays in the education, public health, job creation, and training in the community, there is a sense of urgency to expedite implementation of this plan. This project complements the overall sustainable planning initiatives being promoted throughout the region and represents an investment in community facilities that will help promote the economic vitality of the region. Identifying the most appropriate outcome is a major milestone in the process; however, several work tasks remain. These include:

- Securing a committed funding source for the transportation improvement
- Completion of SEPA-NEPA documentation and associated permits
- Final construction design plans
- Right-of-way dedication and acquisition
- Construction

Additional Action Items

In addition to this project, there are a number of additional tasks that require follow-through by participants (local regional, and state) in order to fully realize the vision established during the planning process including:

a) **Study Endorsement:** The results of the US 29-70 Corridor Study should be carefully considered and endorsed by the HPMPO, DCCC, NCDOT and Davidson County. This endorsement will memorize the agreements established during the planning process and reduce the risk of having to revisit some of the issues contemplated during the study. Endorsement should happen as individual entities and collectively. *A Memorandum of Understanding that is endorsed by these collective parties will guarantee a consistent partnership remains in place until implementation is complete.*

b) **Update LRTP:** The High Point Urban Area LRTP should be amended to reflect the recommendations of this study.

c) **Comprehensive US 29-70 Corridor Study:** While this study provides guidance on the preferred access and intersection configuration in the vicinity of DCCC, a comprehensive study for the remainder of the corridor should be completed. This study will include an assessment of existing conditions, infrastructure needs, and preferred access planning as well as beautification and gateway treatments. Given the strategic designation of the corridor, the timing of this project will be important to the HPMPO and other stakeholder groups including DCCC.

d) **Connect Trails and Greenways:** DCCC and Davidson County should coordinate on establishing a link between the existing planned portion of the Abbotts Creek greenway trail (soon to be under construction) and a spur trail that connects to the existing DCCC Campus and future LINK Campus.

e) **Establish Design Themes:** The design of any new infrastructure should be done with the recognition of area context. Specifically, the close proximity of DCCC. Given the organic evolution of DCCC there isn't a cohesive design theme. However, new infrastructure has an opportunity to establish a recognized identity for the area around the Old Greensboro Road intersection. *Davidson County, DCCC and NCDOT should collaborate on an acceptable approach to design including signing so that a sense of arrival is clearly established when passing through and accessing the study area*. Recommendations include: coordinated wayfinding and signing, materials and lighting details and landscaping.

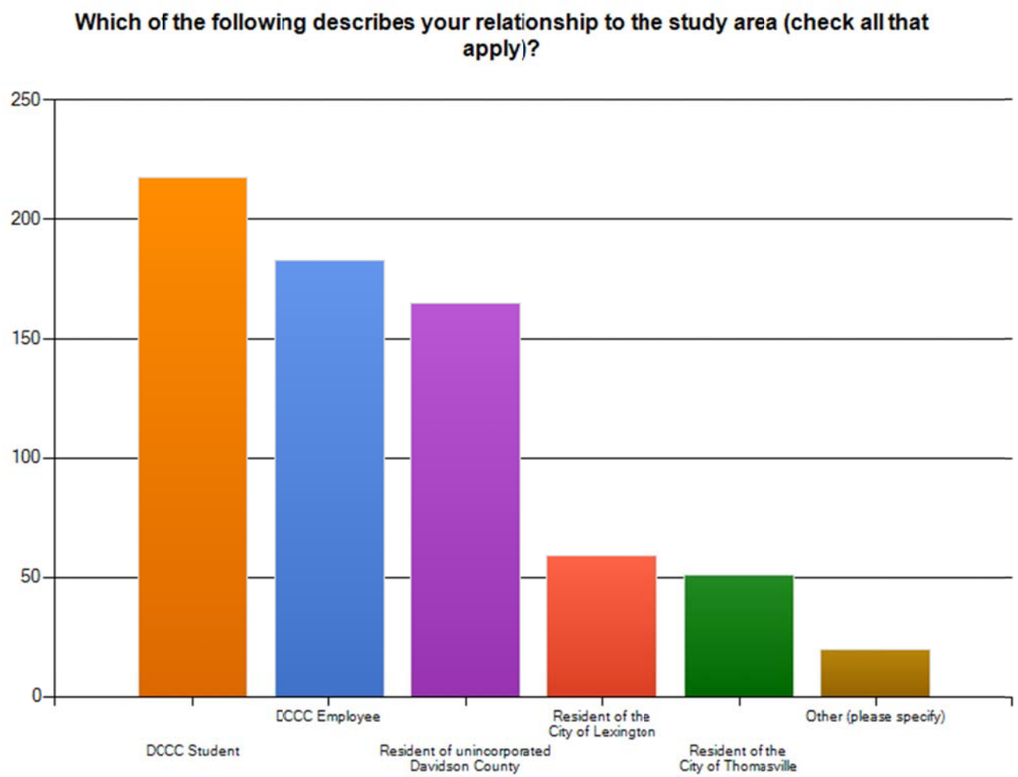
f) **Endorsement of the Preferred Access:** Endorsement of the preferred access configuration contained herein by the HPMPO, NCDOT, and Davidson County will ensure a consistent implementation of the plan. It will likewise allow DCCC to continue with some certainty the development of a revised master plan for the LINK Campus that respects the alignment and access configurations for this portion of US 29-70.

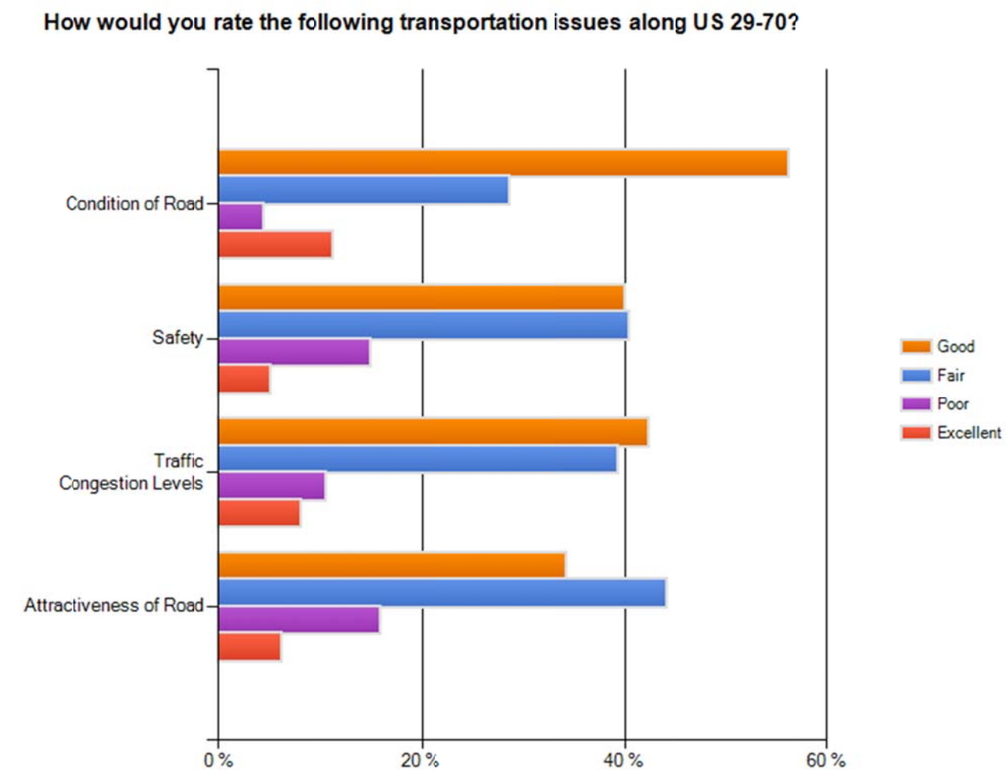
g) **Amend the LINK Campus Vision Plan:** The endorsement of the preferred alternative will allow DCCC to move forward with the creation of a revised master plan for the LINK Campus that is responsive to the preferred set of transportation improvements.

h) **Financial Partnership:** The expense associated with implementation suggests that an exclusive local funding source is not likely. In addition, the traditional process for funding via the North Carolina Transportation Improvements Program may not yield a desired project schedule. If the parties involved are interested in improving their chance of decreased implementation duration creativity, initiative, and partnerships may prove beneficial. Considerations that may increase the likelihood of funding include: adoption of a the Memorandum of Understanding, dedication of right-of-way by affected property owners (rather than NCDOT right-of-way acquisition, and the use of local dollars supplemented with funds from grants and programs external to existing NCDOT funding should help elevate the exposure of the project and increase the likelihood of securing full funding and implementation in a timely manner.

ices"

QUESTIONNAIRE SUMMARY RESULTS


Which of the following describes your relationship to the study area (check all that apply)?
250
200
150
100
50
0
DCCC Student
DCCC Employee
Resident of unincorporated Davidson County
Resident of the City of Lexington
Resident of the City of Thomasville
Other (please specify)


How would you rate the following transportation issues along US 29-70?
Condition of Road
Safety
Traffic Congestion Levels
Attractiveness of Road
0 %
20 %
40 %
60 %
Good
Fair
Poor
Excellent

US 29-70 Corridor Study SurveyMonkey

What are your existing concerns along the US 29-70 corridor?

	Response Count
	469
answered question	469
skipped question	0

3. What are your existing concerns along the US 29-70 corridor?

	Response Text	
1	Traffic backs up from Lexington trying to enter the DCCC campus. Even the long turn lane cannot hold the number of cars wanting to turn left into DCCC in the morning hours.	Oct 28, 2010 5:56 PM
2	$'s available, spot safety, median crossings, connection service roads	Nov 8, 2010 4:13 PM
3	at grade intersections. substandard design.	Nov 9, 2010 7:26 PM
4	vehicle conflicts	Nov 9, 2010 7:28 PM
5	access & exit	Nov 9, 2010 7:32 PM
6	access points that create points of conflict	Nov 9, 2010 7:38 PM
7	long term viability and safety	Nov 9, 2010 7:41 PM
8	access to adjoining property for economic development	Nov 9, 2010 7:44 PM
9	stop sign entry points.	Nov 9, 2010 7:48 PM
10	safety, accessibility	Nov 9, 2010 7:52 PM
11	access to DCCC and new LINK Campus	Nov 9, 2010 7:53 PM
12	campus growhth - new campus	Nov 9, 2010 7:55 PM
13	The number of access points	Nov 15, 2010 7:25 PM
14	Traffic congestion, accidents.	Nov 18, 2010 12:34 PM
15	Traffic crossing highway can create dangerous situations.	Nov 18, 2010 12:41 PM
16	Maintenance of road.	Nov 18, 2010 12:42 PM
17	My primary concerns stem with the exit to the college. Traffic coming out of DCCC's service road and heading N on BUS 85 presents a danger especially during peak hours.	Nov 18, 2010 12:43 PM
18	None	Nov 18, 2010 12:44 PM
19	Bottle neck traffic at certain hours.	Nov 18, 2010 12:45 PM
20	new road to campus	Nov 18, 2010 12:46 PM
21	Safety of students and staff	Nov 18, 2010 12:46 PM
22	Leaving campus from Old Greensboro - crossing 29/70 to head Northbound...	Nov 18, 2010 12:48 PM
23	The congestion during certain times of the day and of the semester.	Nov 18, 2010 12:48 PM
24	The left turn access into the campus is inadequate.	Nov 18, 2010 12:54 PM
25	None	Nov 18, 2010 12:55 PM

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US 29-70 Corridor Study SurveyMonkey

What concerns do you have about the planned campus expansion?

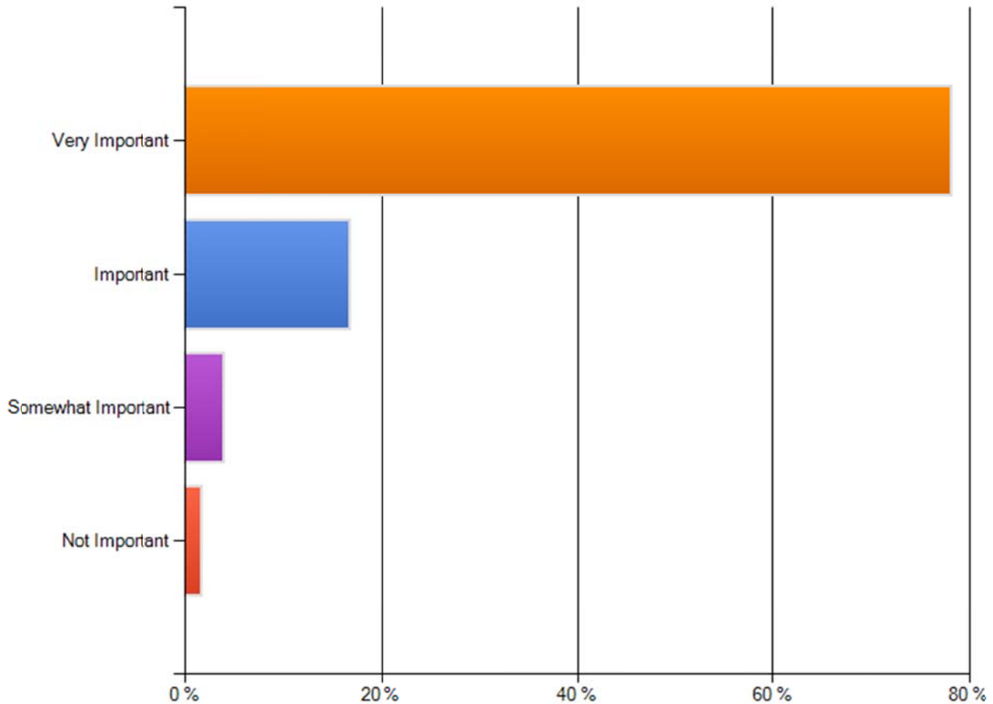
	Response Count
	469
answered question	469
skipped question	0

4. What concerns do you have about the planned campus expansion?

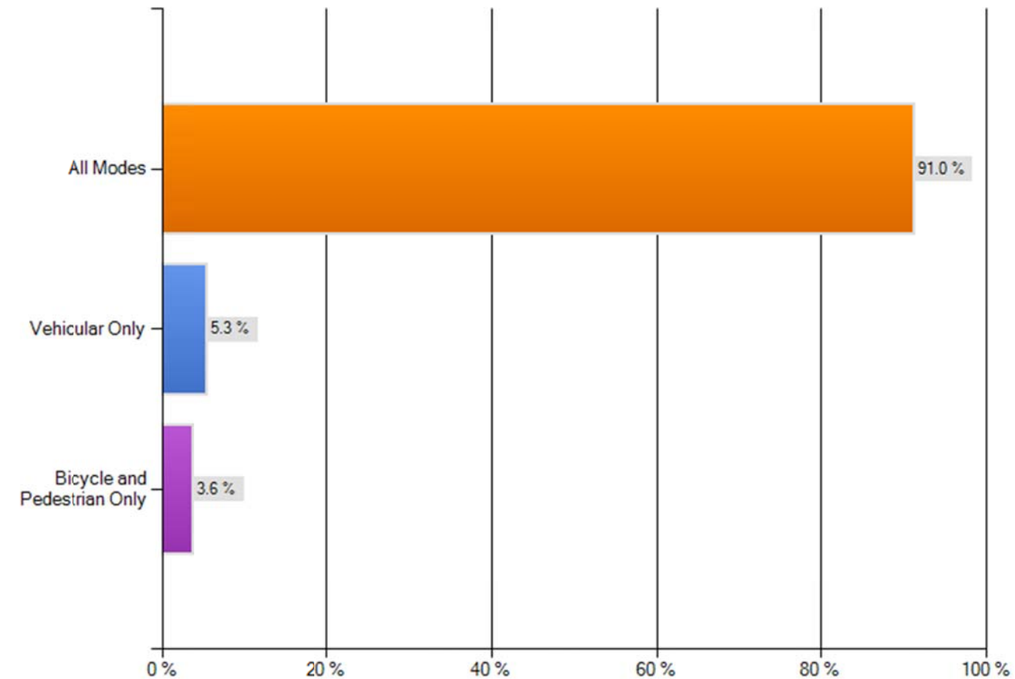
	Response Text	
1	Insufficient access from existing campus to the new campus. No current efficient entrance to the new campus.	Oct 28, 2010 5:56 PM
2	planned growth, different likely scenarios with transportation solution to match needs	Nov 8, 2010 4:13 PM
3	at grade intersections. traffic signal.	Nov 9, 2010 7:26 PM
4	access in economical way	Nov 9, 2010 7:28 PM
5	access & safety	Nov 9, 2010 7:32 PM
6	impact on environment	Nov 9, 2010 7:38 PM
7	no answer	Nov 9, 2010 7:41 PM
8	limited land availability on northside & access to property on south side	Nov 9, 2010 7:44 PM
9	incorporation of greenways as a method of entry. bus friendly.	Nov 9, 2010 7:48 PM
10	how to access traffic and people to the LINK campus	Nov 9, 2010 7:52 PM
11	no response	Nov 9, 2010 7:53 PM
12	we need to move ahead with plans quickly	Nov 9, 2010 7:55 PM
13	Access to the new campus off of US 29-70	Nov 15, 2010 7:25 PM
14	Not sure except for parking, traffic.	Nov 18, 2010 12:34 PM
15	Ease of access to both sides of the highway. Additional traffic congestion	Nov 18, 2010 12:41 PM
16	None	Nov 18, 2010 12:42 PM
17	I worry about students and faculty walking to the Link campus. Our students aren't the most responsible and them walking near a busy highway presents the opportunity for accidents.	Nov 18, 2010 12:43 PM
18	Safety of students/employees getting back and forth across campus.	Nov 18, 2010 12:44 PM
19	Students walking across the highway or more cars going back and forth.	Nov 18, 2010 12:45 PM
20	getting from one side of 85 to the other	Nov 18, 2010 12:46 PM
21	The difficulty of getting back and forth between campuses	Nov 18, 2010 12:46 PM
22	pedestrian crossing 29/70 which will happen all-day 7am-10pm.	Nov 18, 2010 12:48 PM
23	The construction traffic that will come with it, as well as the additional traffic that will come after it is completed and starts being used regularly.	Nov 18, 2010 12:48 PM

1 of 15

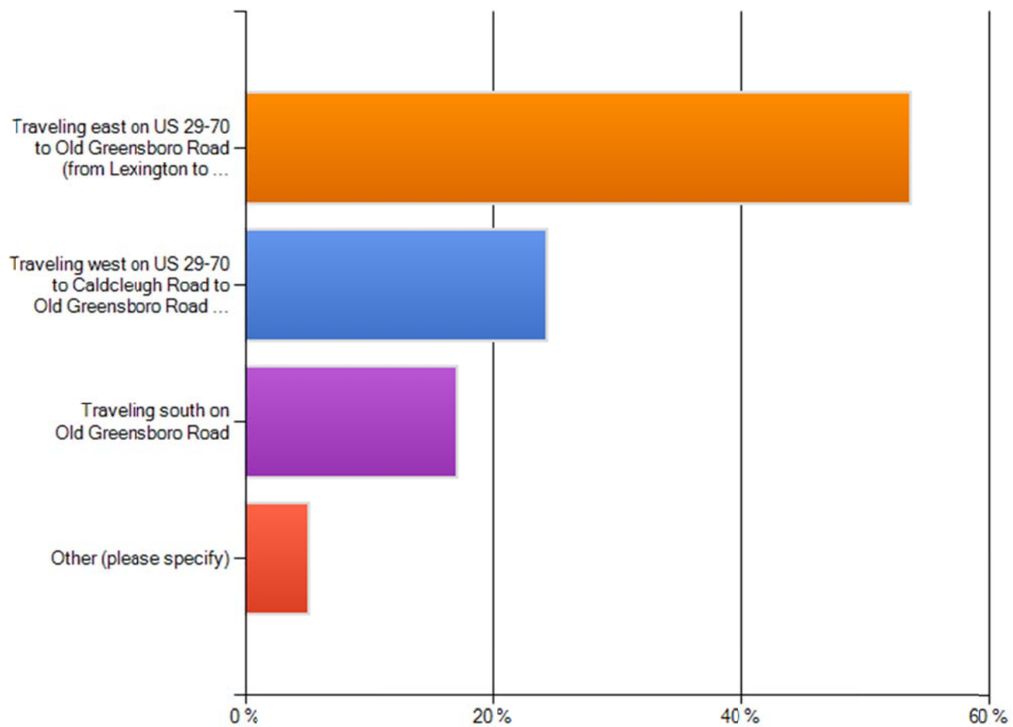
Connectivity between the existing and planned DCCC campus is:



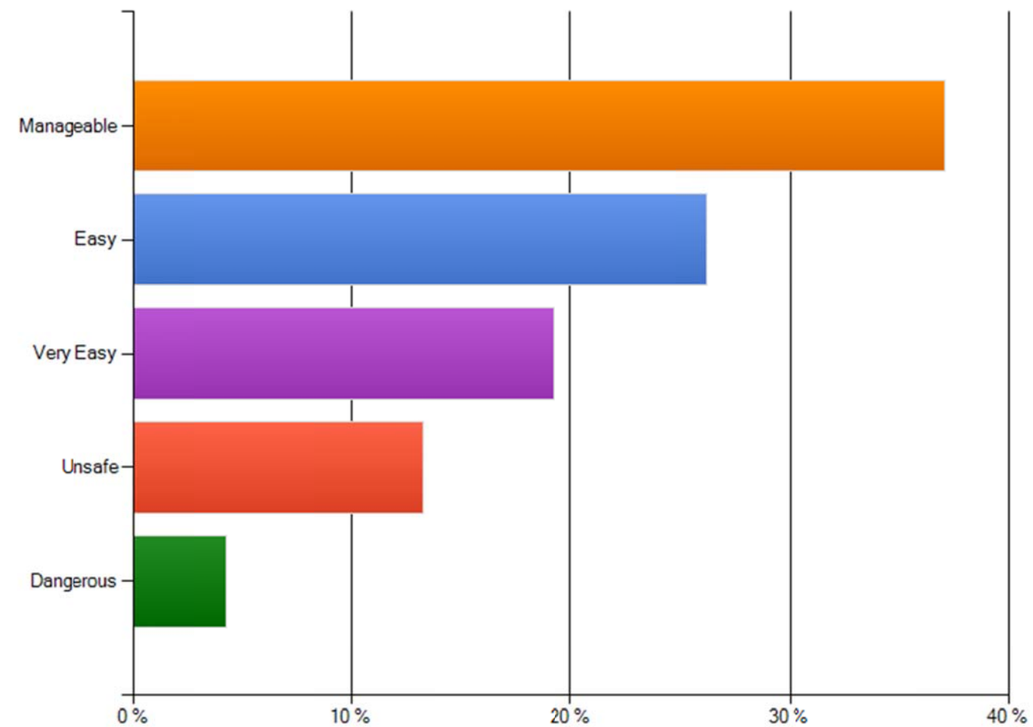
Connectivity between the existing and planned campus should include the following modes:

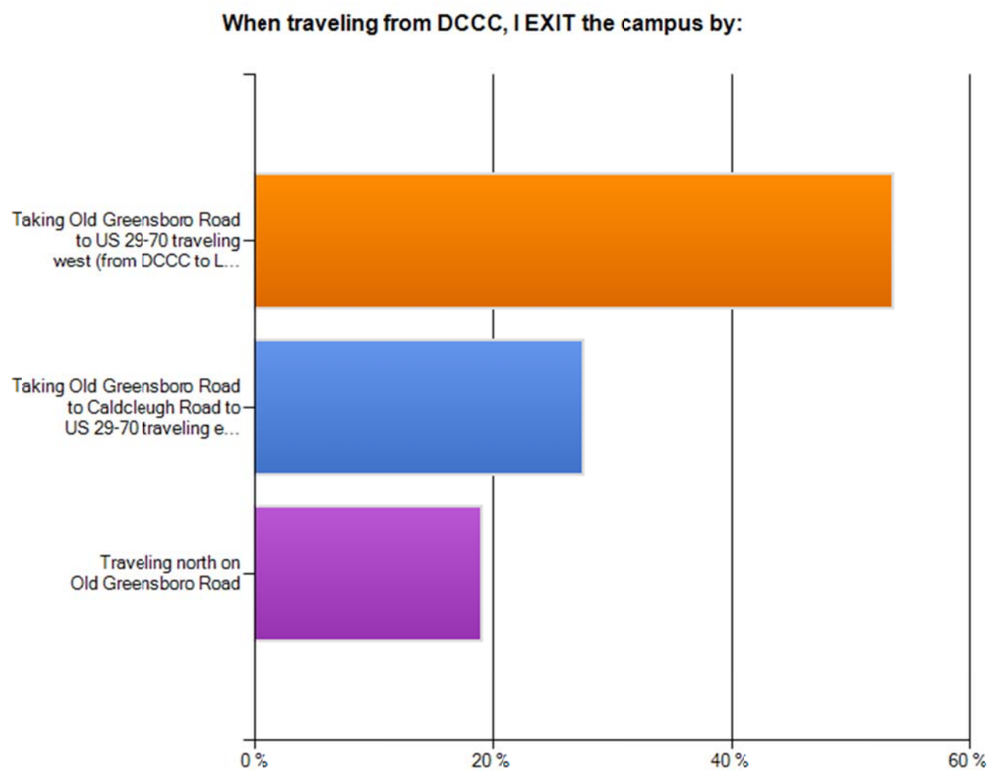


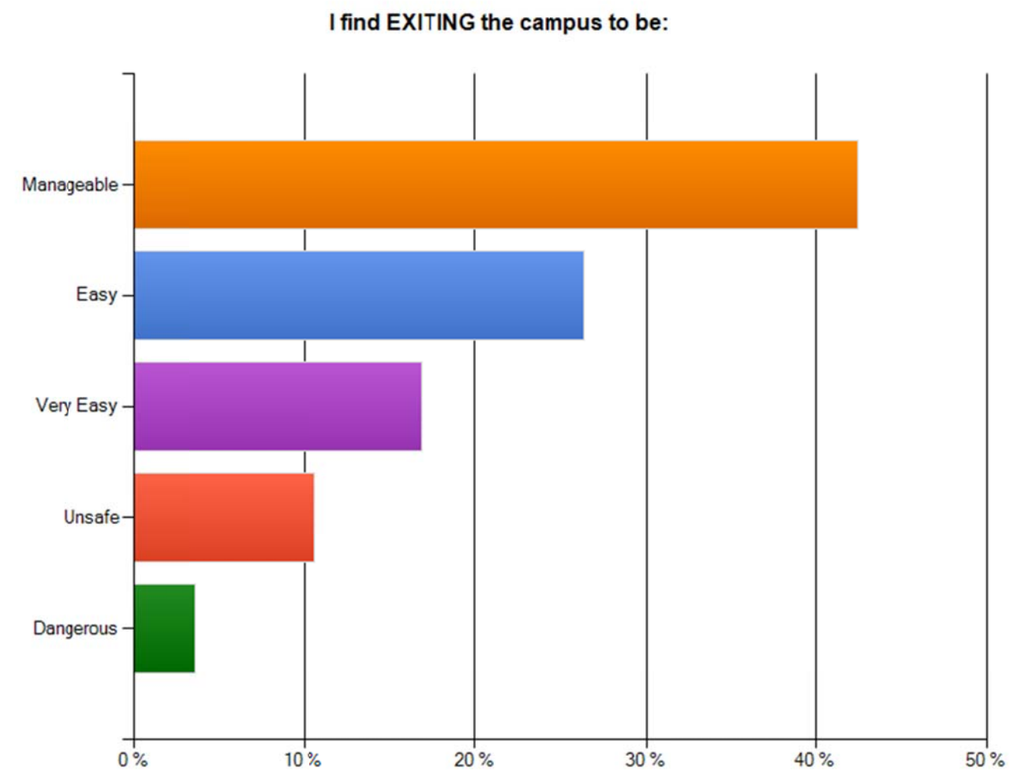
When traveling to DCCC, I ENTER the campus by:



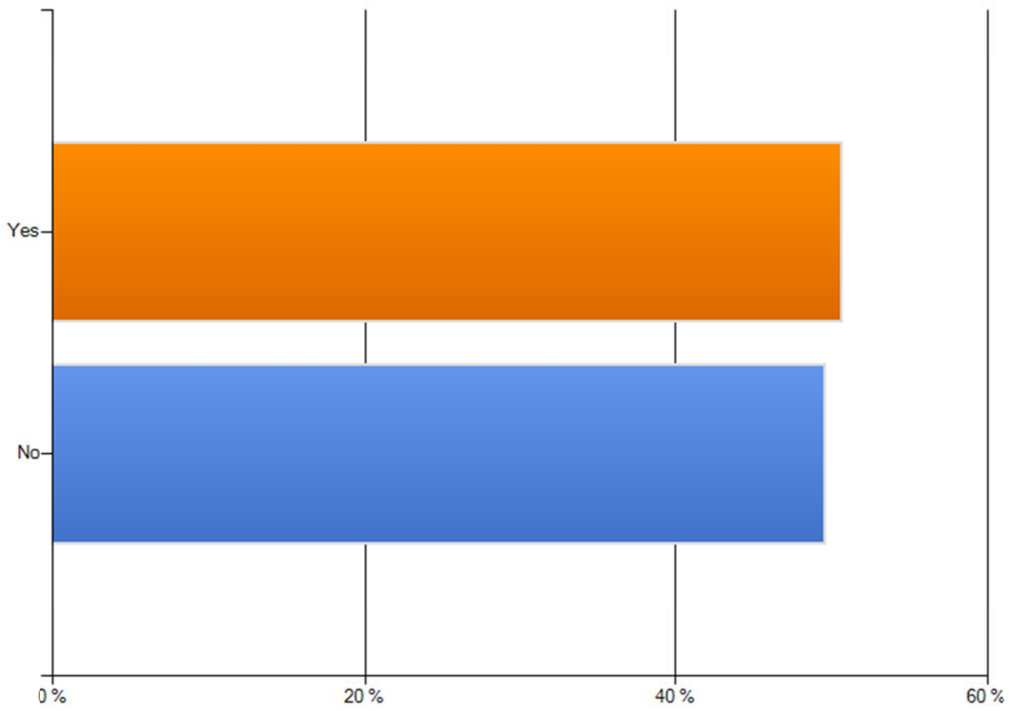
I find ENTERING the campus to be:




When traveling from DCCC, I EXIT the campus by:
Taking Old Greensboro Road to US 29-70 traveling west (from DCCC to L...
Taking Old Greensboro Road to Caldcleugh Road to US 29-70 traveling e...
Traveling north on Old Greensboro Road
0 %
20 %
40 %
60 %


I find EXITING the campus to be:
Manageable
Easy
Very Easy
Unsafe
Dangerous
0 %
10 %
20 %
30 %
40 %
50 %

When considering trips to and from DCCC, I feel improvements need to be made.



12. If you answered Yes to Question 11, what improvements do you feel need to

	Response Text	
170	Bridge with appropriate exchanges and stoplights, not traffic circles. traffic circles are a hinderance to emergency vehicles. students pay no attention to traffic in the circle pattern at all.	Dec 5, 2010 5:03 PM
171	the entrance and exit are horrible especially when you enter and the round about is two lanes and then goes to 1 and 1/2	Dec 5, 2010 5:23 PM
172	A stoplight upon crossing to the highway to prevent accidents	Dec 6, 2010 12:33 AM
173	Cut hill down more at the entrance if possiable you can't see on coming traffic.	Dec 6, 2010 5:31 AM
174	An exit ramp and overpass	Dec 6, 2010 1:47 PM
175	Maybe a bridge over to east bound side.	Dec 6, 2010 2:21 PM
176	There should be an easy way to get back onto bus 85 north. During rush hours, it is difficult to go north.	Dec 6, 2010 3:31 PM
177	More parking, easier and safer access while entering and exiting highway	Dec 6, 2010 4:41 PM
178	A larger campus, and better organization of how people pull in and out of the campus. The congestion from the high school makes the roads evern more dangerous.	Dec 6, 2010 4:56 PM
179	getting in and out of the campus	Dec 6, 2010 5:04 PM
180	possibly building turning lane (2) off the highway. Widening Old Greensboro road for a turning lane.	Dec 6, 2010 6:44 PM
181	crossing 85	Dec 7, 2010 1:26 PM
182	Possibly a traffic light, not sure	Dec 7, 2010 1:40 PM
183	turn signal on 29/70.	Dec 7, 2010 4:36 PM
184	Additional lanes.	Dec 7, 2010 4:51 PM
185	It is unsafe for the people to be standing in the road smoking. they don't get out of the way.	Dec 7, 2010 10:43 PM
186	I enter 29/70 from old hwy 29 -- traffic on highway very busy. There are usually garbage trucks, school buses and aggressive drivers	Dec 8, 2010 1:50 AM
187	Widen the road and make a better turning lane.	Dec 8, 2010 2:14 AM
188	more parking and better accessability from lot to lot.	Dec 8, 2010 2:54 AM
189	TRAFFIC LIGHTS	Dec 8, 2010 9:52 AM
190	There needs to be a safer separate lane for college traffic only	Dec 8, 2010 12:25 PM
191	The 29/70 Interchange does not flow well at all. The on ramp or merge lane to travel from Old Greensboro to 29/70 South is too short. The interchange from Old Greensboro Rd. to 29/70 North seems unsafe at times.	Dec 8, 2010 6:42 PM
192	Stoplight at the intersection from Bus 52	Dec 8, 2010 7:07 PM
193	There are not enough entrances and exits to the school parking lot. Trying to funnel all the traffic through three entrances is ridiculous when there could easily be six or seven. You have created bottlenecks.	Dec 8, 2010 10:02 PM
194	More parking and if new campus is erected there should be either a bridge to connect the two, or a transit system.	Dec 9, 2010 2:01 AM
195	better visablity and better road structure	Dec 9, 2010 2:15 PM
196	the general road conditions	Dec 9, 2010 8:17 PM
197	The road conditions on I85 from the Rowan County/Davidson County Line to 29/70 and 29/70 itself between I85 and DCCC. The roads are horrible.	Dec 9, 2010 9:38 PM
198	Take out round abouts on campus	Dec 10, 2010 2:06 PM
199	Safer methods of exiting 29/70 coming from Lexington, and safer methods of accessing 29/70 going toward Thomasville.	Dec 10, 2010 5:14 PM
200	the roads at the entrances are confusing	Dec 11, 2010 5:26 AM

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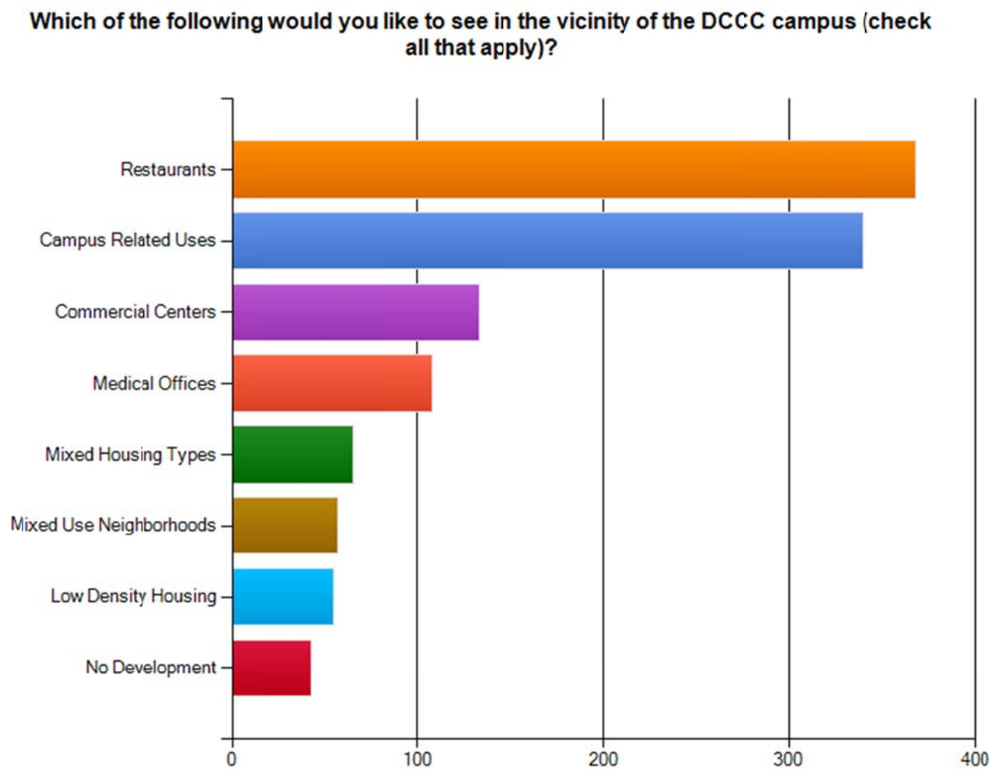
Which of the following would you like to see in the vicinity of the DCCC campus (check all that apply)?
Restaurants
Campus Related Uses
Commercial Centers
Medical Offices
Mixed Housing Types
Mixed Use Neighborhoods
Low Density Housing
No Development
0
100
200
300
400

PRELIMINARY ENVIRONMENTAL SCREENING

EXISTING CONDITIONS

Before any public outreach activities took place or any design alternatives were developed, the consultant team documented existing conditions in the corridor to gain an understanding of its current status in terms of transportation, land use, design characteristics, and other considerations. The consultant team made field visits, conducted an environmental screening, prepared base mapping, and reviewed committed projects, traffic and development plans within the study area.

The existing environmental features, land use/zoning framework, and existing transportation network of the US 29-70 corridor all were considered during this study. Examining these elements helped establish a framework for determining critical improvements in the context of future growth and the existing development pattern.

Environment

A screening-level evaluation was performed based on currently available geographic information system (GIS) information. Intensive field surveys for natural resources and historic sites were not performed as part of this study. In an effort to identify environmental resources that could have an impact on the proposed design options, the study area for the environmental screening includes the Davidson County Community College and surrounding area.

Natural Resources

The study area is located in the Yadkin/Pee Dee River Basin. There are no riparian buffer rules in place for this area. Lake Tom-A-Lex and the portion of Abbotts Creek upstream of US 29-70 are designated by the NC Division of Water Quality as a Water Supply Watershed Class III Critical Area. The lake serves as the drinking water supply for Lexington and Thomasville. All other streams in the study area, including Abbotts Creek south of US 29-70, are classified as Class C water bodies. Class C water resources are used for aquatic life propagation and survival, fishing, wildlife, secondary recreation, and agriculture.

Lake Tom-A-Lex is included on the 303(d) list of impaired waters for excess chlorophyll. Downstream of Lake Tom-A-Lex, Abbots Creek is listed for turbidity and copper concentrations and Rich Fork is listed for high fecal coliform concentrations.

National Wetlands Inventory (NWI) and data from the NCOneMap website were used to identify wetland and stream resources in the study area. While potentially useful for preliminary planning purposes, NWI-mapped wetland boundaries and locations of stream channels are rarely accurate to within a meter of field-determined jurisdictional boundaries.

The floodplains in the study area are associated with Abbotts Creek and Rich Fork creek. The figure at the end of this section shows the 100-year (Zone AE) and 500-year (Zone X-500) floodplains.

The US Department of the Interior National Park Service and the US Department of Agriculture Forest Service maintain a list of designated rivers, as well as rivers which may be eligible, for wild and scenic rivers designation. These rivers are listed on the National Rivers Inventory and are afforded a degree of protection under the federal Wild and Scenic Rivers Act. The State of North Carolina also maintains a state river designation intended to protect certain free flowing rivers or segments with outstanding natural, scenic, educational, recreational, geologic, fish and wildlife, historic, scientific or other cultural values. *No federally designated, state designated, or National River Inventory waters occur within the study area.*

Protected Species

Plants and animals with a federal classification of Endangered (E), Threatened (T), Proposed Endangered (PE), and Proposed Threatened (PT) are protected under the provisions of Section 7 and Section 9 of the Endangered Species Act (ESA) of 1973. The US Fish and Wildlife Service (USFWS) lists species under federal protection for Davidson County (updated September 22, 2010).

Species under Federal Protection

Scientific Name	Common Name	Status*
Vertebrate		
Clemmys muhlenbergii	Bog Turtle	T (S/A)
Vascular Plant		
Helianthus schweinitzii	Schweinitz's sunflower	E

Notes:

* E Endangered denotes a species in danger of extinction throughout all or a significant portion of its range.

T(S/A) Threatened due to similarity of appearance denotes a species that closely resembles in appearance to an endangered or threatened species that enforcement personnel would have substantial difficulty in differentiating between the listed and unlisted species.

In the July 9, 2007 Federal Register (72:37346-37372), the bald eagle was declared recovered, and removed (de-listed) from the Federal List of Threatened and Endangered wildlife. This de-listing took effect August 8, 2007. After de-listing, the Bald and Golden Eagle Protection Act (Eagle Act) becomes the primary law protecting bald eagles.

Habitat for the bald eagle primarily consists of mature forest in proximity to large bodies of open water for foraging. Large dominant trees are utilized for nesting sites, typically within 1.0 mile of open water.

A desktop-GIS assessment of the study area, as well as the area within a 1.13 mile radius (1.0 mile plus 660 feet) of the project limits was performed on September 28, 2011. Lake Thom-A-Lex, a water body large enough or sufficiently open to be considered a potential feeding source was identified within this area. A search of the Natural Heritage Program (NHP) database on September 28, 2011 revealed no known occurrences of this species within 2.0 miles of the study area. However, due to the potential presence of mature forest with large dominant trees, it is recommended that a search of the area within 660 feet of the project limits be conducted for eagle nests.

Federal Species of Concern (FSC) are not legally protected under the ESA and are not subject to any of its provisions, including Section 7, until they are formally proposed or listed as Threatened or Endangered. Organisms that are listed as Endangered (E), Threatened (T), or Special Concern (SC) on the list of Rare Plant and Animal Species are afforded state protection under the State Endangered Species Act and the North Carolina Plant Protection and Conservation Act of 1979. The table below lists the FSC species for Davidson County, as well as the state protected species and their state classifications.

Federal Species of Concern and State Protected Species

Scientific Name	Common Name	NC Status
Vertebrates		
Myotis leibii	Eastern small-footed bat	SC
Lanius ludovicianus	Loggerhead Shrike	SC
Crotalus horridus	Timber Rattlesnake	SC
Ambystoma talpoideum	Mole salamander	SC
Etheostoma collis collis	Carolina darter	SC
*Moxostoma robustum**	Robust Redhorse	E
Invertebrates		
Lampsilis radiata	Eastern Lampmussel	T
Strophitus undulatus	Creeper	T
Cambarus catagius	Greensboro burrowing crayfish	SC
Plants		
Plantago cordata	Heart-leaf plantain	E
Symphyotrichum georgianum	Georgia aster	T
Lotus unifoliolatus var. *helleri*	Prairie birdfoot-trefoil	SR-T

Notes:

* E Endangered denotes a species whose continued existence as a viable component of the State's flora or fauna is in jeopardy.

T Threatened denotes a species which is likely to become an endangered species within the forseeable future throughout all or a significant portion of its range.

SC Special Concern denotes a species requiring monitoring but which may be collected and sold under regulations adopted under the provisions of the Plant Protection and Conservation Act (GS 19B 106:202.12). Only propagated material may be sold of Special Concern species that are also listed as Threatened or Endangered.

SR-T Significantly Rare denotes a species not listed by the NC Plant Conservation Program as "E", "T", or "C", which exists in the state in small numbers. The species is rare throughout its range (fewer than 100 populations total).

The most recent search of the NHP database conducted on February 8, 2011, listed one species that has been documented within two miles of the study area, the Eastern small-footed bat.

Cultural Resources

A review of sites listed in the National Register of Historic Places (NRHP) was performed to identify sites within the study area that are protected by Section 106 of the National Historic Preservation Act of 1966 and Section 4(f) of the Department of Transportation Act of 1966.

There are no sites in the study area currently listed in the NRHP. Based on a review of the North Carolina State Historic Preservation Office (NC-HPO) website, there is one Study List site, the Alexander Caldeleugh House, in the study area. According to NC-HPO, the use of a study list is a preliminary step in the review of potential nominations to the NRHP and identifies properties and districts that are likely eligible for the NRHP, but for which formal nominations for the list have not been conducted. Of the over 2,700 nominations submitted for the NRHP from the Study List in North Carolina, only seven have been rejected by the National Register as not eligible.

Section 6(f) of the Land and Water Conservation Act requires that recreation land acquired or developed with assistance under this section remain in use exclusively for public outdoor recreation. There are no known properties within the study area that have been acquired or developed with assistance of Section 6(f) funds.

Hazardous Materials

The US Environmental Protection Agency's (USEPA's) EnviroMapper website and the North Carolina Department of Natural Resources (NCDENR) databases of underground storage tanks (USTs) and mines were queried to determine potential environmental concerns in the study area. The attached figure shows a site with potential hazardous waste concerns, locations of known UST's, as well as a former mine in the study area.

Voluntary Agricultural Districts

Voluntary Agricultural Districts (VADs) are established through county ordinances to promote the preservation and protection of farmland. Davidson County passed its VAD ordinance in 2006. As of November 2007, the county was in the process of developing a Farmland Preservation Plan (FPP). In December 2010, Davidson County Commissioners voted to delay the plan by 90 days for stakeholder input and modification.

Air Quality

Davidson County is currently in attainment of all the National Ambient Air Quality Standards (NAAQS). The USEPA designated the counties of Guilford, Davidson, Forsyth and Davie for the one hour ozone (O_3) standard. The 1990 Clean Air Act Amendments designated these areas as moderate non-attainment area for the one hour O_3 standard. However, due to improved monitoring data, this area was redesignated as maintenance for the one hour O_3 standard on November 8, 1993.

On April 2, 2008, the USEPA revoked the one hour standard for the Triad Area counties of Guilford, Davidson, Forsyth and Davie under rulemaking effective on April 15, 2008. As of April 15, 2009, the Triad Area will no longer have to demonstrate conformity for the one-hour ozone (O_3) standard. Davidson County is designated as a nonattainment area for the PM 2.5 standard.

The HPMPO is responsible for updates to the Long Range Transportation Plan (LRTP) and air quality conformity issues in the study area. Any recommended improvements that evolve from the study area that are not currently on the North Carolina Department of Transportation (NCDOT) State Transportation Improvement Program (STIP) or the HPMPO LRTP would have to be placed in either the STIP or a LRTP if they potentially affect air quality attainment/nonattainment/maintenance status, regulations and/or guidance.

Additionally, discussion regarding Mobile Source Air Toxics (MSATs), particulate matter (PM 2.5) hot-spot analysis, and carbon monoxide (CO) analysis may be required in future National Environmental Policy Act (NEPA) studies.

Land Use/Zoning

Land Use

Land uses in the study area consist primarily of large tracts of vacant and environmentally sensitive lands and low density residential uses. Some scattered commercial uses, including restaurants and gas stations, have frontage on US 29-70.

Zoning

The study area is located entirely within Davidson County and is subject to Davidson County zoning. The majority of the study area is zoned Rural Agricultural (RA-3). The DCCC Campus is zoned office and institutional (O/I). The majority of frontage along US 29-70 and the portion of Old Greensboro Road adjacent to DCCC is zoned Highway Commercial (HC). Existing zoning can be viewed in Chapter 3: Resource Mapping.

Committed Projects

Committed and Programmed Projects

NCDOT oversees the State's Transportation Improvement Program (STIP), a seven-year spending budget that allocates funding for transportation projects throughout the state. According to the Draft STIP, there are four bridge replacement projects funded along the corridor: B-3159, B-4497, B-4499, and B-4859. Table X lists the projects that are currently slated for construction in the vicinity of the study area.

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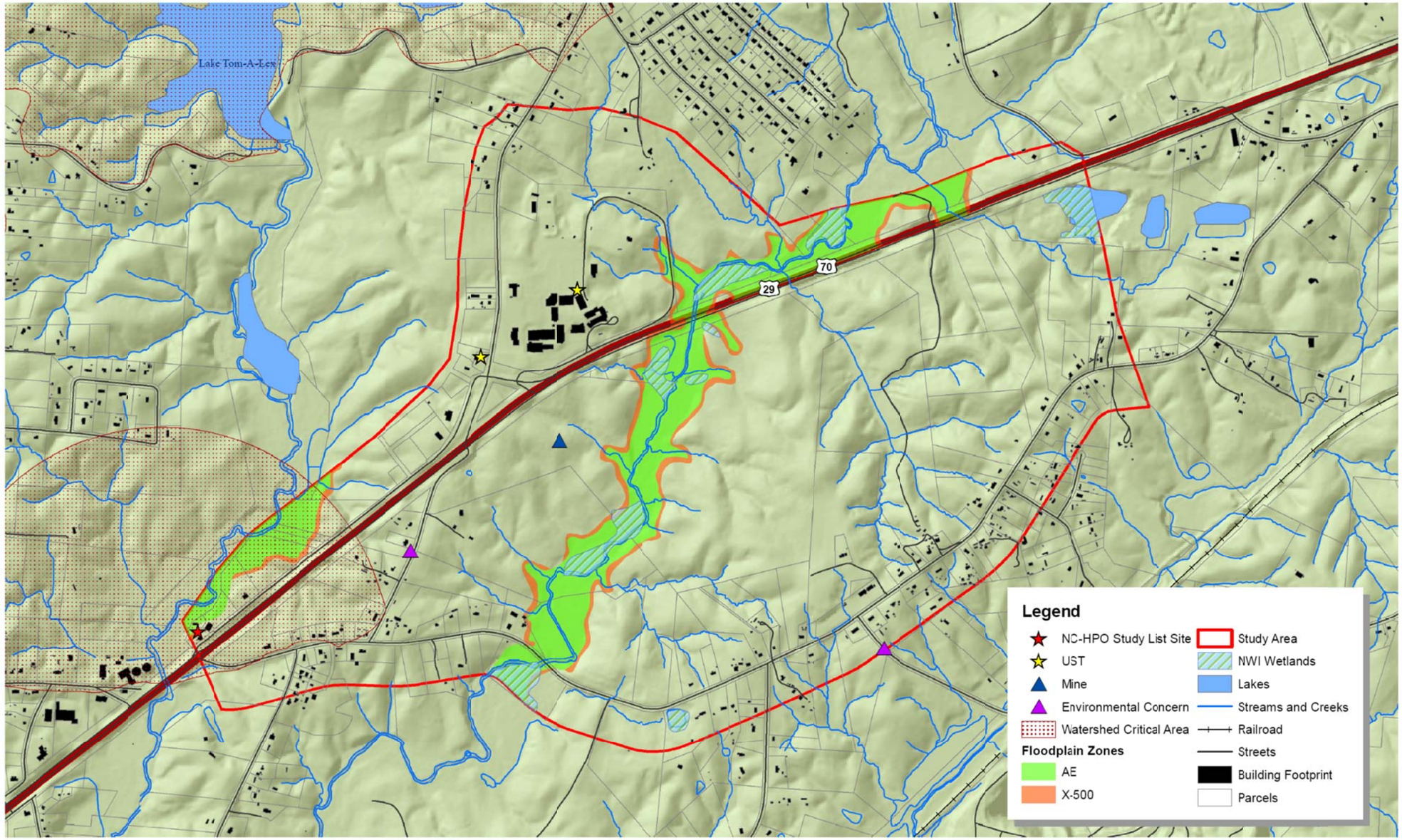

ENVIRONMENTAL CONTRAINTS

PAC Evaluation-Scoring

DCCC

EVALUATION OF CONCEPTUAL IMPROVEMENT LAYOUTS

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Guiding Principles

1. *Improve conditions for eastbound AM left-turns (operations) onto Old Greensboro Road from US 29-70.*
2. *Enhance safety along the US 29-70 and Old Greensboro Road corridors.*
3. *Reduce impacts to land with the highest development potential (LINK campus).*
4. *Develop a coordinated long-term access strategy for area properties.*
5. *Develop an implementation plan that accounts for funding sources and availability.*
6. *Provide an effective strategy for bicycle/pedestrian/transit travel between the existing DCCC campus, the proposed LINK campus, and the surrounding area.* 2, 6, 10, 11
7. *Enhance the visual quality of the corridor in the vicinity of DCCC.*
8. *Minimize future travel problems associated with the LINK campus.*

Evaluation of Conceptual Improvement Layouts

Conceptual Layout #	Guiding Principle 1	2	3	4	5	6	7	8		
1	4	4	4	3	4	2	2	2	25	5
2	4	4	2	4	4	4	4	3	29	1
3	3	4	2	3	4	4	3	2	25	5
4	4	4	4	3	4	3	3	3	28	2a
5	4	4	4	3	4	3	3	3	28	2b
6	3	4	2	3	4	4	2	2	24	
7	4	4	1	3	4	4	2	4	26	4
8	2	4	3	2	4	0	1	2	18	
9	3	4	3	3	4	1	3	3	24	
10	0	0	3	3	4	1	4	0	15	
11	0	0	2	3	4	1	3	0	13	
12										

DAVIDSON COUNTY

EVALUATION OF CONCEPTUAL IMPROVEMENT LAYOUTS

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Evaluation of Conceptual Improvement Layouts

Conceptual Layout #	Guiding Principle 1	2	3	4	5	6	7	8	
1	4	3	2	2	3	3	3	3	23
2	4	3	3	4	3	4	3	4	28
3	4	3	4	3	3	3	3	2	25
4	3	3	4	2	3	3	3	3	24
5	4	3	4	3	3	4	4	3	28
6	3	2	3	3	3	3	3	2	22
7	3	3	3	4	3	4	3	4	27
8	3	3	4	1	3	1	4	3	22
9	1	2	2	2	3	1	2	2	15
10	0	0	2	2	3	0	3	1	11
11	4	3	3	2	2	4	2	3	23
12 GA	4	3	3	3	3	4	3	4	27

LEXINGTON

EVALUATION OF CONCEPTUAL IMPROVEMENT LAYOUTS

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Evaluation of Conceptual Improvement Layouts

Conceptual Layout #	Guiding Principle							
	1	2	3	4	5	6	7	8
1			?			X ?		
2	X ?						X	
3								
4							X	
5							X	
6							X	
7							X	
8							X	
9								
10								
11						X		
12								

NCDOT

EVALUATION OF CONCEPTUAL IMPROVEMENT LAYOUTS

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Evaluation of Conceptual Improvement Layouts

Conceptual Layout #	Guiding Principle								
	1	2	3	4	5	6	7	8	
1	4	4	2	3	1	4	4	3	25
2	4	4	1	4	1	4	4	3	25
3	4	4	2	4	1	4	4	3	26
4	4	3	2	3	1	2	2	2	19
5	4	3	2	3	1	2	2	2	19
6	4	3	2	3	1	2	2	2	19
7	4	3	2	3	1	2	2	2	17
8	4	2	3	3	1	2	3	3	21
9	4	1	2	2	1	1	2	1	13
10	4	4	3	3	1	1	3	4	23
11	0	1	3	1	3	0	2	1	11
12	3	3	2	3	1	3	2	3	20

THOMASVILLE

EVALUATION OF CONCEPTUAL IMPROVEMENT LAYOUTS

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Evaluation of Conceptual Improvement Layouts

Conceptual Layout #	Guiding Principle							
	1	2	3	4	5	6	7	8
1	2	2	4	2	2	2	3	3
2	3	3	3	2	2	3	2	3
3	2	3	2	2	2	3	2	2
4	3	2	4	2	2	2	1	2
5	3	3	4	2	2	4	1	3
6	2	3	3	2	2	3	2	2
7	2	3	2	2	2	3	2	2
8	2	2	4	2	2	2	3	2
9	2	2	4	2	2	2	2	2
10	1	1	4	2	2	0	4	0
11	2	2	3	2	2	2	1	1
12	3	2	4	2	2	3	1	2

Garrett Same as 6