

FINAL REPORT

# Midland Road **CORRIDOR STUDY**

Prepared for:

Prepared by: Kimley»Horn

July 2017

# ACKNOWLEDGMENTS

The Midland Road Corridor Study provides a framework for implementing improvements along Midland Road. The vision for this corridor has come into focus through a planning process that involved local residents, stakeholders, a steering committee, the North Carolina Department of Transportation (NCDOT), Moore County, the Town of Southern Pines, and the Village of Pinehurst. Their efforts have been integral in developing this study and are greatly appreciated.

## STEERING COMMITTEE

Chuck Dumas, NCDOT

Brandon Jones, NCDOT

Travis Morgan, NCDOT

David Willett, NCDOT

Kelly Becker, NCDOT

Doumit Ishak, NCDOT

Debra Ensminger, Moore County

Mike Fields, Southern Pines

Jim Simeon, Southern Pines

Adam Lindsay, Southern Pines

John Bouldry, Pinehurst

John Cashion, Pinehurst

Jeff Batton, Pinehurst

## PROJECT TEAM

**Kimley-Horn**

Richard Adams

Travis Fluitt

Kevin Baumann

Erin Thompson

Melissa Brand

Brandon White

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# INTRODUCTION AND BACKGROUND

The Midland Road Corridor Study represents a collaborative effort to determine the safety, mobility, and access issues that contribute to the need for improvements along one of the most iconic and historic roadways in North Carolina. The corridor serves many purposes for the communities in the area, including a vibrant residential neighborhood access, a commuter throughway, a primary east-west spine route, and access to local businesses. The North Carolina Department of Transportation (NCDOT), in partnership with Moore County, the Village of Pinehurst, and the Town of Southern Pines, conducted this study in an effort to create a guiding document for future development and roadway improvements along Midland Road. This document ties together all the efforts from this study into one unified plan—the Midland Road Corridor Study.

Midland Road is a significant local corridor. The need for a coordinated, long-term approach to the corridor is heightened by recent development along the corridor and increased safety issues. This study has created the framework for visioning the future of Midland Road, and this report catalogs these visioning efforts, outlines the issues, and presents recommendations to achieve a long-term vision for this historic corridor.

## STUDY AREA

The study area for this project extends along a 4.5-mile stretch of Midland Road (NC 2) from the US 15/501 traffic circle in Pinehurst to Clark Street in Southern Pines. The project team worked in partnership with a Project Steering Committee (made up of representatives from NCDOT, the Village of Pinehurst, the Town of Southern Pines, and Moore County) to develop specific transportation recommendations along the corridor. Detailed analysis of traffic and crash conditions focused on Midland Road and key cross streets along the corridor, such as Airport Road, Knoll Road, Pee Dee Road/Pennsylvania Avenue, Central Drive (NC 22) and the US 1 interchange.

## REPORT CONTENTS

The Midland Road Corridor Study's focus on planning, public involvement, and developing actionable transportation recommendations is reflected in the contents of the report. This document is organized into the following sections:

- **Planning Process** — Outlines the involvement of stakeholders and the general public in the recording of issues along the corridor and the development of transportation recommendations.
- **Roadway Issues and Observations** — Describes a series of issues and observations related to the functionality and safety of the corridor.
- **Roadway Recommendations** — Describes the preferred set of transportation recommendations and documents the resulting performance of the corridor.
- **Implementation Plan** — Outlines a strategy to fully implement the transportation recommendations.

# PLANNING PROCESS

Successful planning projects are rooted in an inclusive process of strong community involvement. For the Midland Road Corridor Study, the underlying principle for understanding local dynamics was collaborative planning through stakeholder coordination. This coordination occurred through a variety of avenues, including a Steering Committee, stakeholder interviews, an online survey and web-based graphical input tool, and traditional public meetings for interested citizens.

## STEERING COMMITTEE

The Steering Committee was established to assist NCDOT and the Kimley-Horn team in guiding the planning process. The primary focus of the Steering Committee was to guide the review of existing conditions and the development of recommendations. The committee was comprised of the following groups of professionals and elected officials:

- NCDOT (Division, Congestion Management, and Mobility/ Safety Staff)
- Town of Southern Pines (council members and staff)
- Village of Pinehurst (council members and staff)
- Moore County

At a kickoff meeting in May 2015, the Steering Committee emphasized the following:

- Safety is a major concern along this corridor
- Public outreach, particularly to residents of both municipalities, will be critical to the success of the project
- Developing improvements that preserve the historic and scenic nature of the road is encouraged
- There is strong support for eliminating some of the existing median crossovers along the corridor, especially the natural and gravel crossovers
- Alternative transportation options (e.g., road diet, roundabouts, synchronized streets) should be considered as a part of this study

## STAKEHOLDER INTERVIEWS

For specialized attention to specific matters impacting the development and deployment of transportation strategies, stakeholders were identified for detailed discussions with the project team. These conversations provided insight into issues and opportunities spanning the social, economic, and transportation spectrum. Feedback gathered helped guide the analysis, strategies, and transportation improvements. Specific stakeholder meetings were held with representatives of:

- Businesses
- Local schools
- Utilities
- Public safety
- Home owners associations
- Local country clubs
- Citizen groups

General themes from these conversations included:

- As the Steering Committee noted, safety is perceived to be poor along the corridor
  - Stakeholders observed that more often than not, when a crash occurs, a tree is somehow involved
  - The prevalence of numerous median openings (many of them unauthorized) with limited space and problematic sight distances contribute to crashes
- Many stakeholders were not opposed to selective clearing of damaged or unhealthy trees to provide better sight distance
- Some stakeholders were in favor of reducing the cross section to two lanes with bike lanes or pedestrian paths, while others wanted to maintain the existing four-lane section
  - In either case, most stakeholders supported maintaining the character of the road as an important part of any proposed improvements

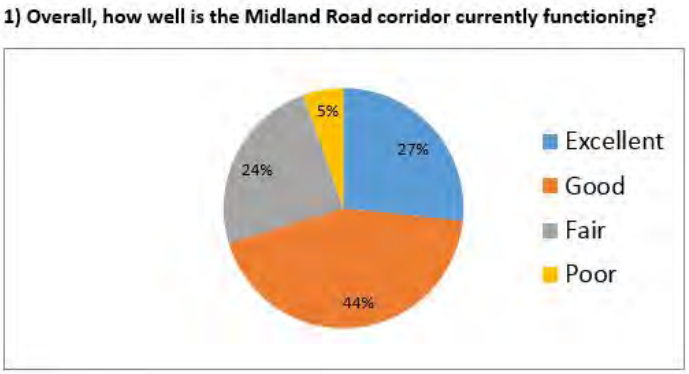
- Stormwater is an issue in some areas that needs to be addressed

The outcome of these interviews helped guide the project team in the development of preliminary improvement alternatives along the corridor.

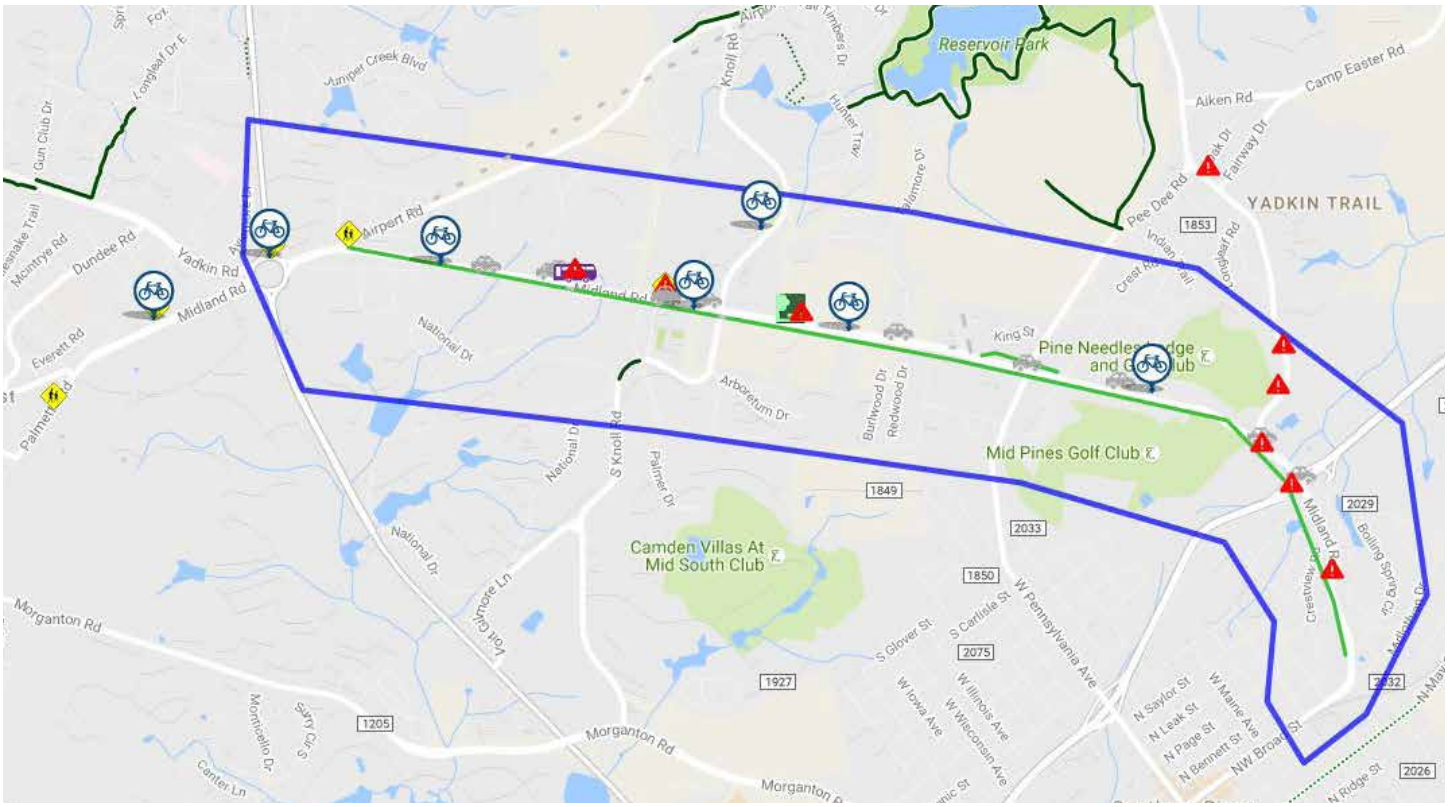
## PUBLIC PARTICIPATION

Interested citizens—particularly those vested in the future of Midland Road between Pinehurst and Southern Pines—were invited to join local staff and the consultant team at public meetings the evenings of July 9 and December 10, 2015 at Pinecrest High School. The public meetings offered another environment in which to present existing conditions and review preliminary concepts for enhancing safety, reducing congestion, and preserving the iconic nature of Midland Road.

After the July 9th public meeting, which focused on existing conditions and allowed participants to physically construct concepts of the corridor through the "Street Builder" activity, the public was invited to participate in an online survey regarding the corridor and how it functions. The survey included an online mapping tool that allowed users to provide comments on the map at specific locations, segments, or for the corridor as a whole and categorize their comments by mode type, such as bicycle, pedestrian, auto, or transit. Members of the public emphasized a number of the same issues as the Steering Committee and stakeholder group.




*Online Survey Input*



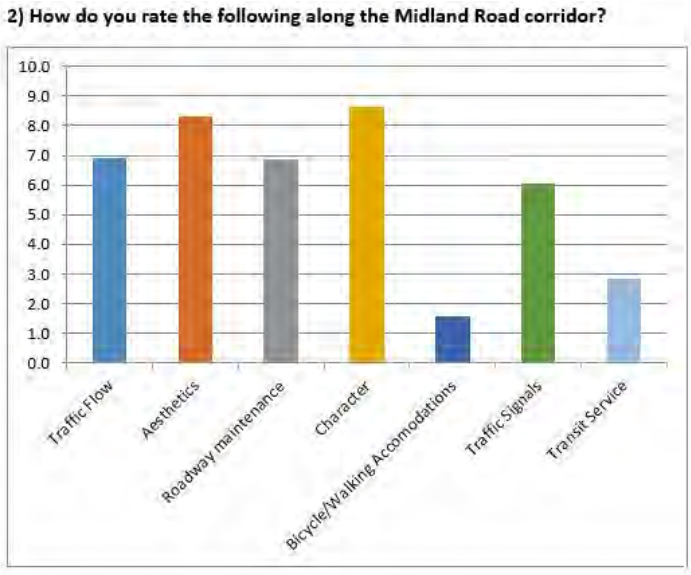

*Online Mapping Tool Input*

In addition to the issues listed above, other concerns about how Midland Road functions today included:

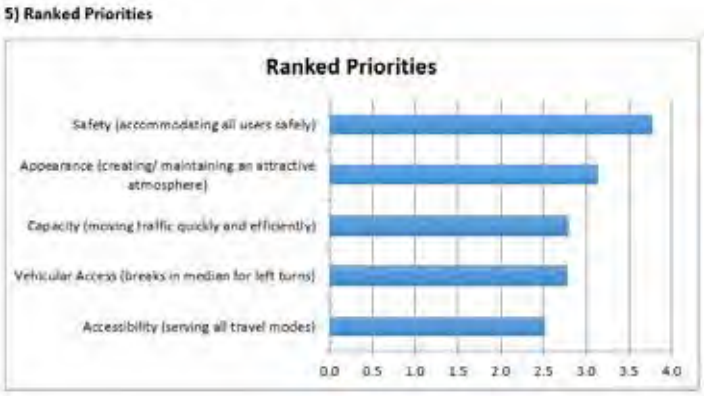
- Proposing to reduce the speed limit from 45 MPH to 35 MPH
- Improving safety and operations at the intersection of Midland Road and Central Drive (NC 22)
- The desire for increased sight distance and visibility at the US 1 ramps
- The desire to limit new development along Midland Road without an implementation plan
- Improving access and safety for bicyclists and pedestrians along the corridor

The December 10th meeting focused on the presentation of preliminary improvement alternative concepts and allowed the public to provide comments and feedback on some preferred options. The outcome of this meeting, in addition to feedback from the Steering Committee, informed the development of the preferred transportation improvements and implementation strategy for the corridor.

*Public Meeting Activities*




*Online Survey Input*




*Online Survey Input*

# ROADWAY ISSUES AND OBSERVATIONS

The Midland Road Corridor serves a significant role in the region as a gateway to both Pinehurst and Southern Pines. For many, the corridor holds a special meaning based on the presence of scores of pine trees in the median and on the shoulders of the highway.

Safety, access, and localized traffic congestion are the most pressing issues facing Midland Road. The frequency of recent severe crashes is alarming to locals, and the presence of numerous breaks in the tree-lined median makes access and vehicular conflicts unpredictable. In addition, the current traffic volumes along the corridor can cause backups and delays along stop-controlled side streets approaching Midland Road—especially during peak periods. For Midland Road to effectively connect residents, commuters, and visitors with their destinations, improvements are needed. This section discusses multimodal issues and observations to set the stage for the detailed recommendations that follow. These recommendations not only address the current needs along the corridor, but also anticipate future issues.

## ISSUE: TRAFFIC SAFETY

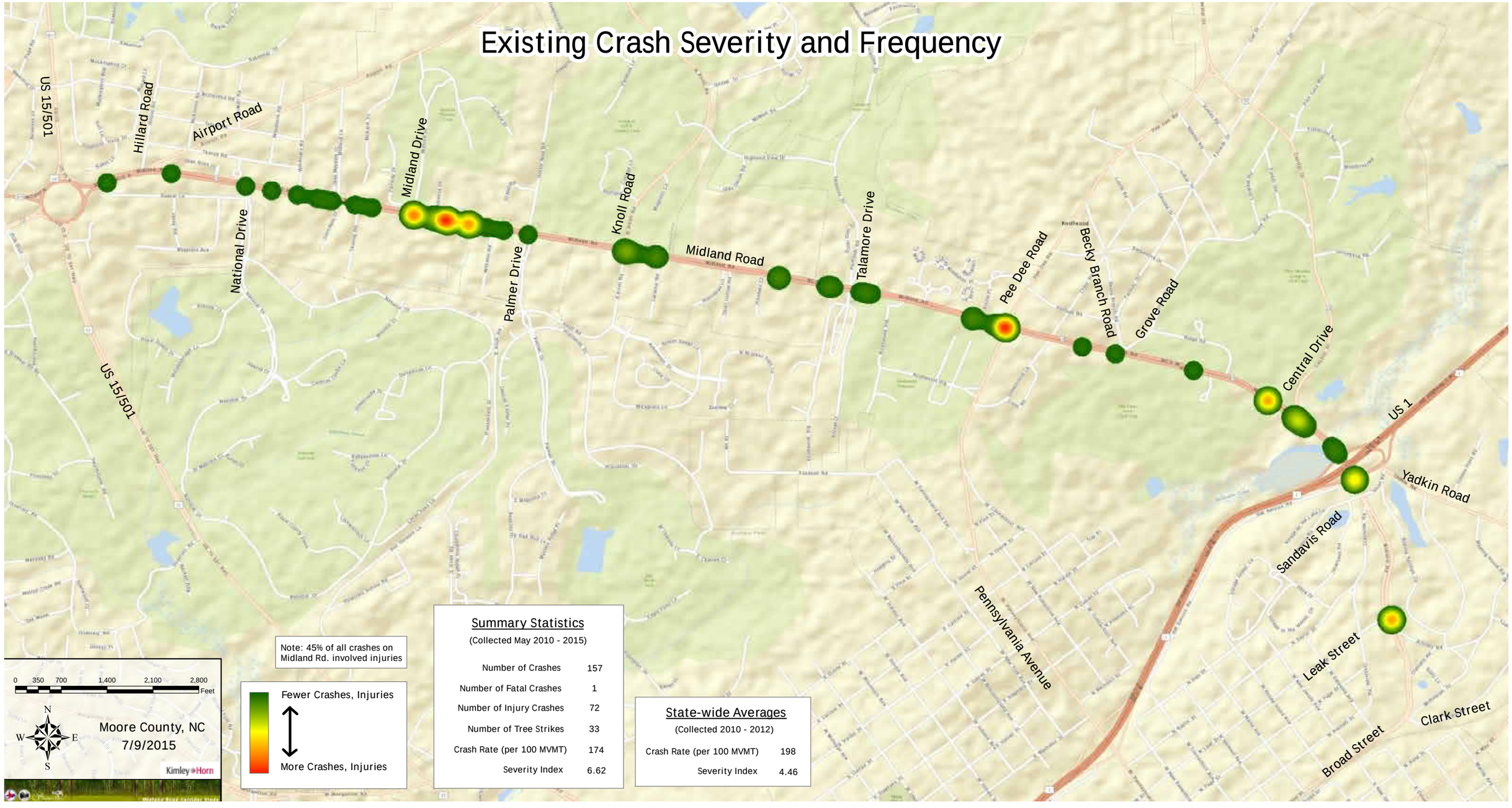
On Midland Road, traffic safety is a driving force behind public concern. Analysis of the five-year (May 1, 2010 to April 30, 2015) crash history for Midland Road between the US 15/501 traffic circle to Clark Street provided by NCDOT sheds light on the safety concerns for the corridor. The data shows 157 total crashes, 72 causing at least one injury, and one causing a fatality. These numbers represent reported crashes only, and it is likely additional crashes occurred. **Figure 3.1** displays a heat map of existing crash severity and frequency along the corridor, with warmer colors showing locations with high instances of crashes and injuries.

Analysis of the crash data along the corridor reveals the following:

- The overall crash rate for the corridor is 174 crashes per 100 million vehicle miles traveled. The average crash rate statewide for similar North Carolina routes is 198.
- Approximately 45% of all crashes on Midland Road involved injuries. The severity index for the corridor is 6.62, while the statewide average for similar North Carolina routes is 4.46.
- Based on the data, this indicates that the frequency of crashes along Midland Road is not significantly different or worse than the statewide average for similar routes. However, when a collision does occur, it is frequently more severe than the statewide average.
- Approximately 21% of all crashes in the sample involved tree strikes, and that only includes those that were specifically documented.
- The most common crash type along the corridor is angle, a crash type that typically occurs along roadways with significant left turns into and out of side street driveways. Angle crashes also are often the result of limited sight distance conditions. In the case of Midland Road, many of the left turns into and out of side streets involve vehicles moving through unofficial median openings that are made of gravel or dirt.

In general, several factors contribute to the severity of crashes along Midland Road. These contributing factors include the location of large pine trees within a few feet of the travel lane, lack of speed compliance, and unpredictable driver behavior due to the significant number of median crossovers and constrained sight distance in many locations.

Figure 3.1


Existing Crash Severity and Frequency
US 15/501
Hillard Road
Airport Road
National Drive
Midland Drive
Palmer Drive
Knoll Road
Midland Road
Talamore Drive
Pee Dee Road
Becky Branch Road
Grove Road
Central Drive
US 1
Yadkin Road
Sandavis Road
Pennsylvania Avenue
Leak Street
Clark Street
Broad Street
US 15/501
0 350 700 1,400 2,100 2,800
Feet
N
W
E
S
Moore County, NC
7/9/2015
Kimley»Horn
Note: 45% of all crashes on Midland Rd. involved injuries
Fewer Crashes, Injuries
More Crashes, Injuries
Summary Statistics
(Collected May 2010 - 2015)
Number of Crashes 157
Number of Fatal Crashes 1
Number of Injury Crashes 72
Number of Tree Strikes 33
Crash Rate (per 100 MVMT) 174
Severity Index 6.62
State-wide Averages
(Collected 2010 - 2012)
Crash Rate (per 100 MVMT) 198
Severity Index 4.46

## ISSUE: ACCESS MANAGEMENT

The ability for motorists to travel through a given roadway segment is essential for both transportation system efficiency and economic vitality. Access management balances the needs of motorists using a roadway with those of adjacent property owners dependent upon access to the roadway. With poor access management, the function and character of major roadways can deteriorate. This is a major issue currently facing Midland Road, particularly as it relates to the number of median openings, which are a combination of paved, gravel, and natural surfaces. Because the median along Midland Road is relatively narrow at approximately 20 feet, it is difficult for some vehicles to even fit in the median completely when yielding for a left-turn movement. This causes a dangerous scenario for vehicles in the inside travel lanes. **Figure 3.2** displays a map of existing median openings along the corridor.

In addition to the impact on vehicular crashes, poor access management can create an unsafe condition for bicyclists and pedestrians. Improving the efficiency and safety of the roadway through access management is critical to the sustainability of the corridor. Some of the hidden costs of poor access management include lower fuel economy and increased vehicle emissions.

## ISSUE: TRAFFIC CONGESTION

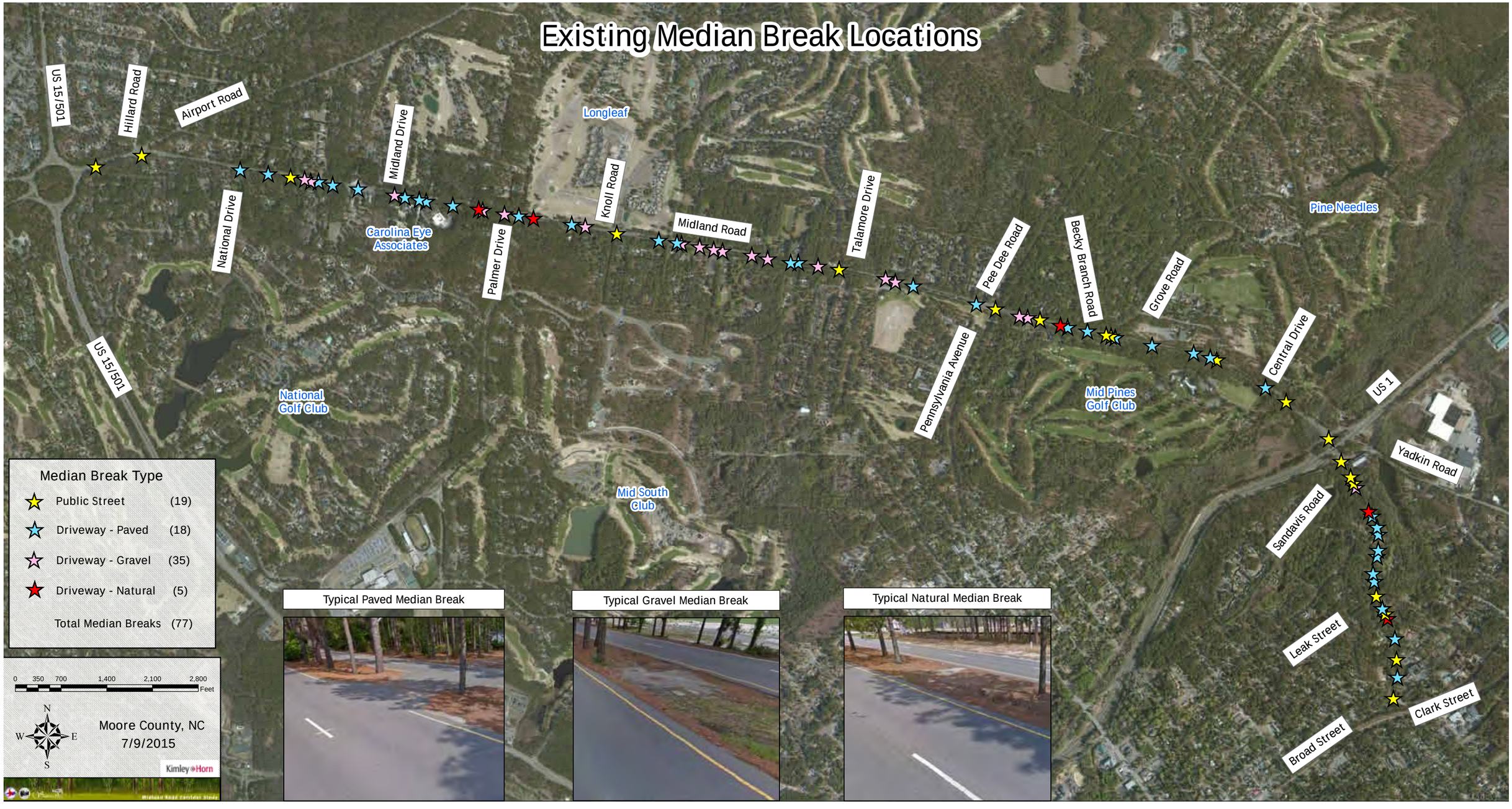
Midland Road currently carries approximately 15,000 vehicles per day to the west of US 1 and approximately 5,400 vehicles per day to the east of US 1. The volumes between US 1 and Airport Road create significant side street delay at a few locations in the morning and afternoon peak periods. An analysis of current and future traffic volumes along the corridor as well as projected future corridor congestion levels clearly indicate improvements will be necessary in the future.

In coordination with NCDOT staff, the scope of the traffic analysis included the evaluation of No-Build and Build conditions for the existing year (2015) and future year (2040). **Table 3.1** details the modeled levels-of-service (LOS) for the major intersections along the study corridor for the No-Build condition. LOS is a qualitative measure that describes operational conditions and motorist perceptions within a traffic stream. The Highway Capacity Manual defines six levels-of-service, LOS A through LOS F, with A representing the shortest average delays and F representing the longest average delays. LOS D is the typically accepted standard for signalized intersections in urbanized areas.

**Table 3.1 — Synchro Intersection Level-of-Service Summary**

| Intersection | Existing No-Build (2015) | | Future No-Build (2040) | |
|---|---|---|---|---|
| | AM Peak Hour | PM Peak Hour | AM Peak Hour | PM Peak Hour |
| Midland Road at Airport Road | SB - E (38.3)<br>EBL - B (13.5) | SB - C (19.3)<br>EBL - B (11.6) | SB - F (608.4)<br>EBL - D (30.6) | SB - F (369.7)<br>EBL - D (25.1) |
| Midland Road at Carolina Eye Associates Driveway | NB - C (19.0) | NB - C (15.7) | NB - D (34.2) | NB - D (27.2) |
| Midland Road at Knoll Road | A (9.8) | A (8.0) | B (12.2) | B (11.1) |
| Midland Road at Pee Dee Road/ Pennsylvania Avenue | C (23.7) | B (18.2) | D (35.1) | C (29.4) |
| Midland Road at Central Drive | SB - F (64.3) | SB - C (21.5) | SB - F (469.9) | SB - F (186.3) |
| Midland Road at US 1 Southbound Ramps | SB - C (16.5) | SB - B (12.9) | SB - E (37.8) | SB - C (21.8) |
| Midland Road at US 1 Northbound Ramps/Yadkin Road | SB - B (12.3)<br>NB - F (240.7) | SB - B (13.1)<br>NB - F (392.1) | SB - C (18.2)<br>NB - F (2132.2) | SB - E (36.3)<br>NB - F (4226.8) |
| Midland Road at Clark Street | SB - B (11.2)<br>EBL - A (8.3) | SB - B (10.8)<br>EBL - A (7.8) | SB - B (13.6)<br>EBL - A (8.1) | SB - B (12.8)<br>EBL - A (8.3) |

Figure 3.2


Existing Median Break Locations
US 15/501
Hillard Road
Airport Road
National Drive
Midland Drive
Carolina Eye Associates
Palmer Drive
Longleaf
Knoll Road
Midland Road
Talamore Drive
Pine Needles
Pee Dee Road
Becky Branch Road
Grove Road
Central Drive
US 1
Yadkin Road
Sandavis Road
Leak Street
Clark Street
Broad Street
Pennsylvania Avenue
Mid Pines Golf club
National Golf Club
Mid South Club
US 15/501
Median Break Type
Public Street (19)
Driveway - Paved (18)
Driveway - Gravel (35)
Driveway - Natural (5)
Total Median Breaks (77)
0 350 700 1,400 2,100 2,800
Feet
N
W
E
S
Moore County, NC
7/9/2015
Kimley»Horn
Typical Paved Median Break
Typical Gravel Median Break
Typical Natural Median Break

Synchro Version 9 software was used to determine the LOS for each intersection using Highway Capacity Manual methodology. Network cycle lengths and signal offsets were optimized for the future design year, and peak hour delay was analyzed. Several conclusions can be drawn from the existing and future conditions analyses:

- Most of the intersections along Midland Road are currently operating with acceptable vehicular delays and levels-of-service (LOS D or better). However, the intersections of Central Drive (NC 22) and the US 1 Northbound Ramps both experience long delays for the side street approach during peak hour traffic conditions.
- By 2040, without any roadway improvements, it is expected that vehicles will have increased difficulty making left turns onto Midland Road at unsignalized intersections as a result of the anticipated growth in traffic along Midland Road.
- If no roadway improvements are made along Midland Road, the traffic safety issues discussed earlier in this section are only expected to worsen, as many of the crashes along the corridor are triggered by vehicles making left turns to or from an unsignalized side street.

The results of these analyses directly contributed to the preferred transportation improvement strategy. These improvements, as well as their projected benefits in terms of LOS and peak hour delay, are detailed in the roadway recommendations.

## ISSUE: BICYCLE AND PEDESTRIAN CONNECTIVITY

Establishing access for bicyclists and pedestrians to significant destinations and recreational areas in the community facilitates community ownership, improves public health, and supports quality of life. Priorities listed in the planning phase indicated support for multimodal transportation, specifically a desire for safer bicycle facilities. Specific observations related to the bicycle and pedestrian network include:

- While pedestrian use is perceived to be minimal in the area, there are no multi-use paths or designated pedestrian crossings along the corridor, and only a short stretch of sidewalk exists along the Carolina Eye Associates development frontage.
- Traveling Midland Road by bicycle can be a difficult task without any dedicated bike facilities.
- However, travelers who set off by bicycle, either to commute or for leisure, are common along Midland Road despite the lack of dedicated bike facilities.

Conversations with the Steering Committee and local stakeholders served to identify critical considerations as recommendations were developed. The top considerations included:

- Enhancing safety for bicyclists traveling along Midland Road
- Providing a multi-use path in a portion of the right-of-way that is reserved for non-motorized travel to encourage walking along the corridor
- Providing a multi-use path along Knoll Road north of Midland Road to provide bicycle/pedestrian connectivity to the existing greenway along Airport Road

# ROADWAY RECOMMENDATIONS

The vision for Midland Road is to develop an implementable solution that improves safety and enhances local and regional mobility without compromising the iconic nature of the corridor. The transportation recommendations for Midland Road were developed to address existing and anticipated future problems at intersections and mid-block median openings. This chapter details the safety improvements and expected congestion relief associated with the proposed transportation improvement strategy.

## RECOMMENDATIONS

### CROSS SECTION

The basic cross section for Midland Road will be unchanged from the existing (a four-lane divided facility) between the US 15/501 traffic circle and the US 1 interchange. It is expected that there will be some selective tree clearing and turn lane improvements at intersections and median crossovers that remain open to improve sight distance and operations or at other locations to improve tree health.

For the section of Midland Road between US 1 and Clark Street, this study proposes to restripe the existing pavement as a two-lane divided section with buffered bike lanes in both directions. Because the traffic volumes decrease significantly along Midland Road east of US 1, this is the only section of the corridor for which a reduction in vehicular travel lanes was found to be appropriate. The addition of bike lanes to this portion of the corridor is expected to improve multimodal connectivity to downtown Southern Pines. Additionally, the restriping of existing pavement in each direction will allow for the shifting of travel lanes to create a wider inside shoulder.

## AT A GLANCE

### RECOMMENDED TRANSPORTATION IMPROVEMENTS

**General Description:**

Enhanced access management and intersection improvements

**Cross Section:**

Traffic Circle to US 1 – No change to existing

US 1 to Clark Street – Road diet

**Proposed Major Projects:**

1. Airport Road – Roundabout
2. Thomas Road – Restripe and add bulbs for U-turns
3. Midland Road/Carolina Eye Associates – Access management and turn lanes
4. W. Pennsylvania Avenue/Pee Dee Road – Side street left-turn lanes, other intersection improvements, and signal upgrade
5. Mid Pines and Ridge Road – Access management and turn lanes
6. NC 22 (Central Drive) to US 1 – Roundabout and interchange improvements
7. US 1 to Clark Street – Road diet
8. Clark Street – Road diet and related improvements
9. Airport Road to East of US 1 – Multi-use path
10. Knoll Road between Midland Road and Airport Road – Multi-use path

**Access Management:**

Approximately 50 median closures (beyond those associated with the above projects)

3 conversions to directional crossovers

Left-turn and sight distance improvements for all median breaks that remain

**Resulting Median Breaks:**

- 9 full-movement intersections
- 4 directional crossovers
- 2 roundabouts

*Existing Section*

*Proposed Section between US 1 and Clark Street*

## MEDIAN CLOSURES

As discussed in the previous section, a non-traversable median is present throughout the extents of the Midland Road corridor. However, excess median openings, most of which are unpaved, undermine the safety and efficiency benefits of such median treatment. Consequently, this study proposes to close a number of median crossovers to achieve proper spacing along the corridor. Other factors such as the number of homes being accessed by a driveway and whether the street is public or private also played a part in the median closure recommendations.

The NCDOT Roadway Design Manual Section 1-6J provides median crossover guidelines for new and existing divided roadways in North Carolina. The manual notes that all-movement median crossover design "should be limited because it decreases capacity; increases delay and congestion; may increase pollutants from vehicles; and some studies indicate that they have a higher propensity for crashes." The manual also provides a specific requirement that all-movement crossovers "shall not be spaced any closer than 1,200 feet apart on divided highways with posted speed of 45 mph and less. Where this spacing requirement is not met and there is a defined need for left-turn access, then a directional crossover will be considered." This policy, along with the following factors, were considered in developing the recommended full-movement, directional crossover, and U-turn median opening locations for Midland Road:

- Public streets vs. private streets/driveways
- Number of homes accessed by streets/driveways
- Number and size of businesses accessed by streets or driveways
- Sight distance and other safety issues
- General traffic and circulation consideration

**Figure 4.1** displays a map of the proposed median openings to remain along the corridor and the intersection treatment by location. Turn lane improvements and minor clearing to improve sight distance are proposed (where needed) at median opening locations to remain. **Figures 4.2** and **4.3** show typical full-movement and directional crossover intersection recommendations.

Landscaping can be used to implement median closures, but it will also be important to consider sight distance as these closures are being completed. Additionally, any additional landscaping in the median should be implemented without introducing any new strike hazards for vehicles. **Figure 4.4** shows an example of what closing an existing median opening with landscaping could look like conceptually.

**Figure 4.4**


Figure 4.1

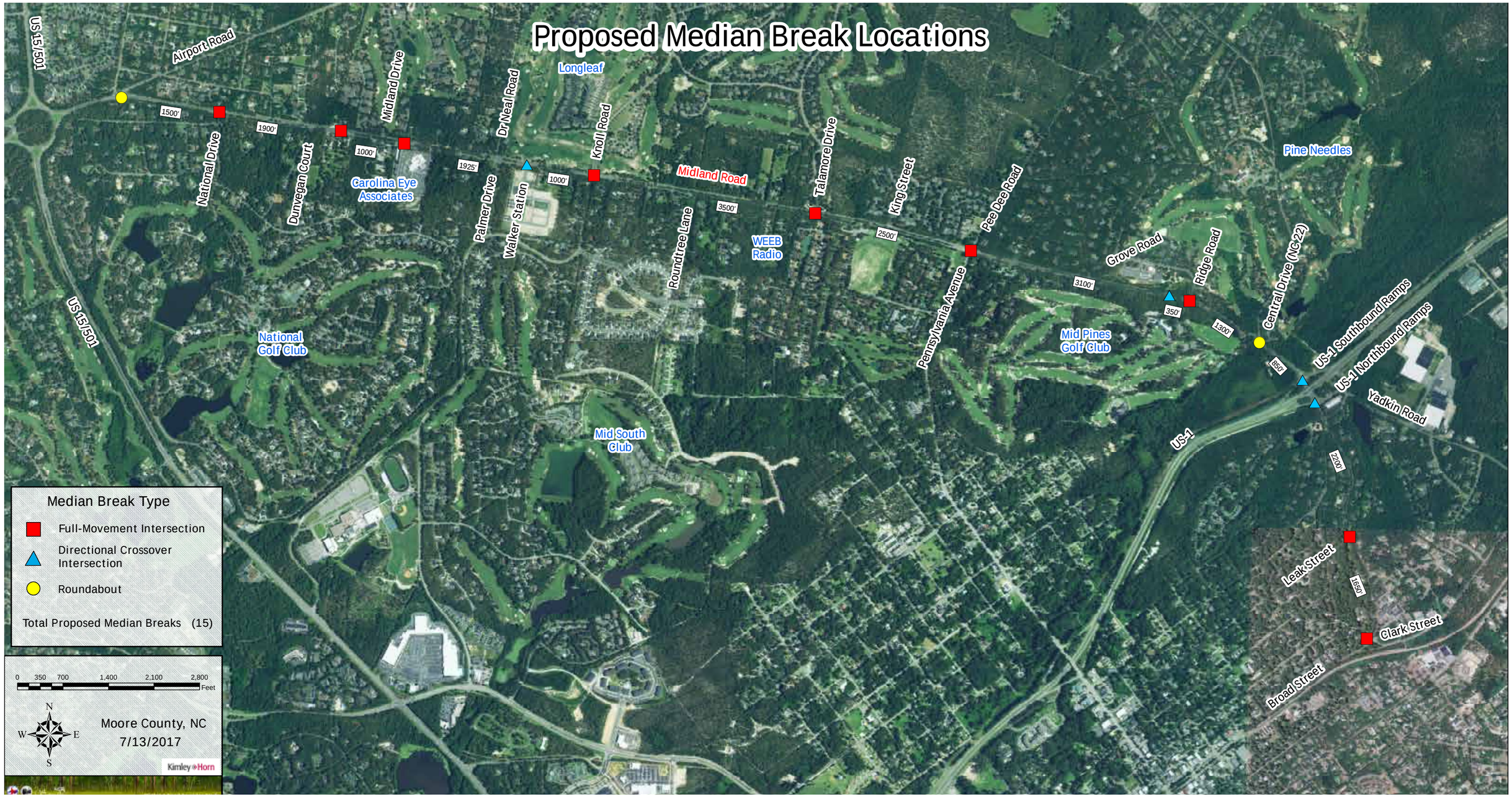

Proposed Median Break Locations
US 15/501
Airport Road
Midland Drive
Dr Neal Road
Longleaf
Knoll Road
Talamore Drive
King Street
Pee Dee Road
Pine Needles
National Drive
Dunvegan Court
Carolina Eye Associates
Palmer Drive
Walker Station
Midland Road
Roundtree Lane
WEEB Radio
Pennsylvania Avenue
Grove Road
Ridge Road
Central Drive (NC 22)
US-1 Southbound Ramps
US-1 Northbound Ramps
Yadkin Road
US-1
National Golf Club
Mid Pines Golf Club
Mid South Club
Leak Street
Clark Street
Broad Street
1500'
1900'
1000'
1925'
1000'
3500'
2500'
3100'
350'
1300'
850'
2200'
1650'
Median Break Type
Full-Movement Intersection
Directional Crossover Intersection
Roundabout
Total Proposed Median Breaks (15)
0 350 700 1,400 2,100 2,800
Feet
N
W
E
S
Moore County, NC
7/13/2017
Kimley»Horn

Figure 4.2

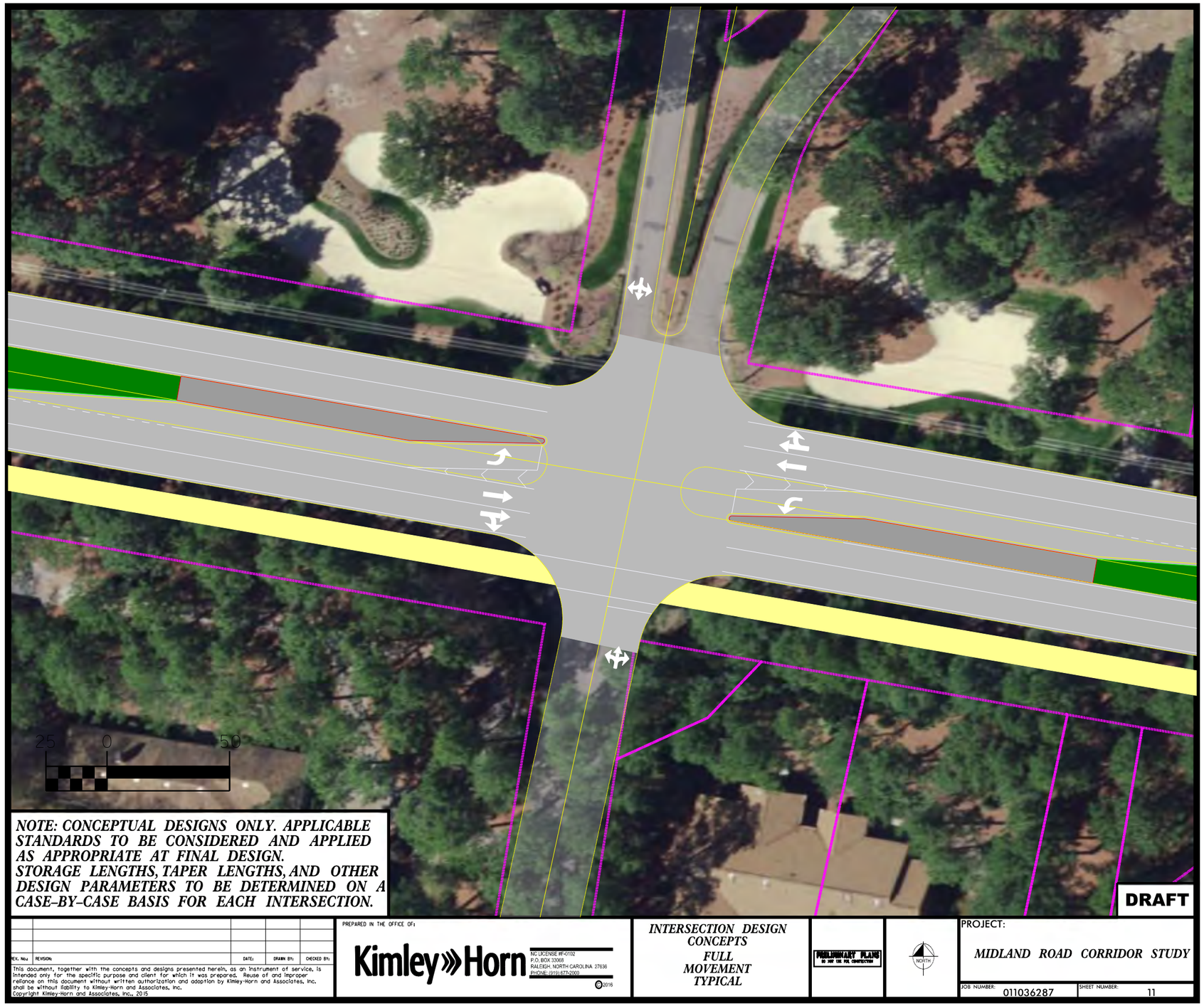

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Figure 4.3


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10

## BICYCLE AND PEDESTRIAN RECOMMENDATIONS

As discussed in the previous section, the existing facilities and access for bicyclists and pedestrians along Midland Road do not provide a sufficiently safe network for travel. One of the top priorities resulting from the planning phase of this study indicated support for improved multimodal transportation along the corridor. As a result, the bicycle and pedestrian recommendations provided below are expected to provide strategic connections and will help alleviate a number of the multimodal access issues expressed by stakeholders during the planning phase.

- Provide a multi-use path on the south side of Midland Road between Airport Road and San Davis Road, just east of the US 1 interchange. The multi-use path would be constructed in a portion of the right-of-way that is reserved for non-motorized travel.
- Construct crosswalks as appropriate for the multi-use path at intersection crossings along the corridor.
- Restripe the existing pavement between US 1 and Clark Street as a two-lane divided section with buffered bike lanes in both directions (as noted previously).
- Provide a multi-use path along Knoll Road between Midland Road and Airport Road.

Exhibits showing the proposed multi-use path, bike lanes, and crosswalks along the corridor are provided as a part of the design concepts on pages 19-27.

*Example Multi-Use Path*

# TRAFFIC CONGESTION AND SAFETY IMPROVEMENTS

The following improvements (shown in the exhibits on pages 19-26) are recommended at the major intersections along the corridor to improve congestion, intersection delay, and safety:

## AIRPORT ROAD

- Construct a roundabout
- Close the median opening at Beaver Lane
- Consider installing a traffic signal in the interim if the volume warrants are met
- It is expected that the installation of roundabouts at this intersection and at Central Drive will provide a gateway feature for each municipality, will help accommodate truck U-turns necessitated by median closures, and may reduce truck through traffic

## THOMAS ROAD

- Close median opening at Dunvegan Court
- Maintain approximately 400 feet of five-lane undivided section in the vicinity of Thomas Road and construct radius improvements at Thomas Road and bulb at east end to facilitate U-turns.

## MIDLAND ROAD/CAROLINA EYE ASSOCIATES

- Convert Ironwood Cafe intersection to a right-in/right-out
- Maintain full-movement access at Carolina Eye Associates intersection and add eastbound to westbound U-turn lane and associated bulb-out; also remove signage and other sight distance obstructions currently impacting vehicles making a left-turn from the side street

## KNOLL ROAD

- Maintain as full-movement signalized intersection with existing laneage
- NCDOT has installed protective/permissive left-turn phases for Midland Road
- Construct minor radius improvements to facilitate U-turns

## W. PENNSYLVANIA AVENUE/PEE DEE ROAD

- Maintain as full-movement signalized intersection with turn lane improvements on side street approaches
- Construct left-turn lane improvements on side street approaches
- Improve drainage issue
- Flare radii in corners to accommodate U-turns

## MID PINES AND RIDGE ROAD

- Maintain full movement access at Ridge Road
- Convert Mid Pines access to directional crossover

## NC 22 (CENTRAL DRIVE)

- Construct a roundabout to be built in conjunction with the US 1 interchange synchronized street
- It is expected that the installation of roundabouts at this intersection and at Airport Road will provide a gateway feature for each municipality, will help accommodate truck U-turns necessitated by median closures, and may reduce truck through traffic

## US HIGHWAY 1

- Convert to directional crossovers to create a “synchronized street” operation, with the cross section dropping to a two-lane section east of the US 1 Northbound Ramps
- Re-sign the US 1 Northbound off-ramps; with the first ramp heading east to Southern Pines and the second ramp (loop) west to Pinehurst

## CLARK STREET/W. DELAWARE AVENUE

- Convert Midland Road to a two-lane divided section, beginning at the US 1 interchange and ending just east of Clark Street

In addition, the following improvements are recommended, but are not shown in detailed exhibits:

## NATIONAL DRIVE

- Construct minor radius improvements to facilitate U-turns

## TALAMORE DRIVE

- Maintain as a full movement intersection
- Construct eastbound and westbound left-turn lanes with 100-foot bay taper, 50 feet of additional deceleration length (full width) and 50 feet of storage with positive offset alignment on the left-turn lanes

## LEAK STREET

- Construct 100-foot bay tapers (no full width storage) for left turn movement on US 1
- Maintain 50-foot-wide median opening

Airport Road Intersection


*NOTE: CONCEPTUAL DESIGNS ONLY. APPLICABLE STANDARDS TO BE CONSIDERED AND APPLIED AS APPROPRIATE AT FINAL DESIGN.*

**DRAFT**

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|---|---|---|---|---|
| | | | | |



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Kimley»Horn
NC LICENSE #F-0102
P.O. BOX 33068
RALEIGH, NORTH CAROLINA 27636
PHONE: (919) 677-2000



*INTERSECTION DESIGN CONCEPTS*

*AIRPORT ROAD*

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

25 0 50

NORTH

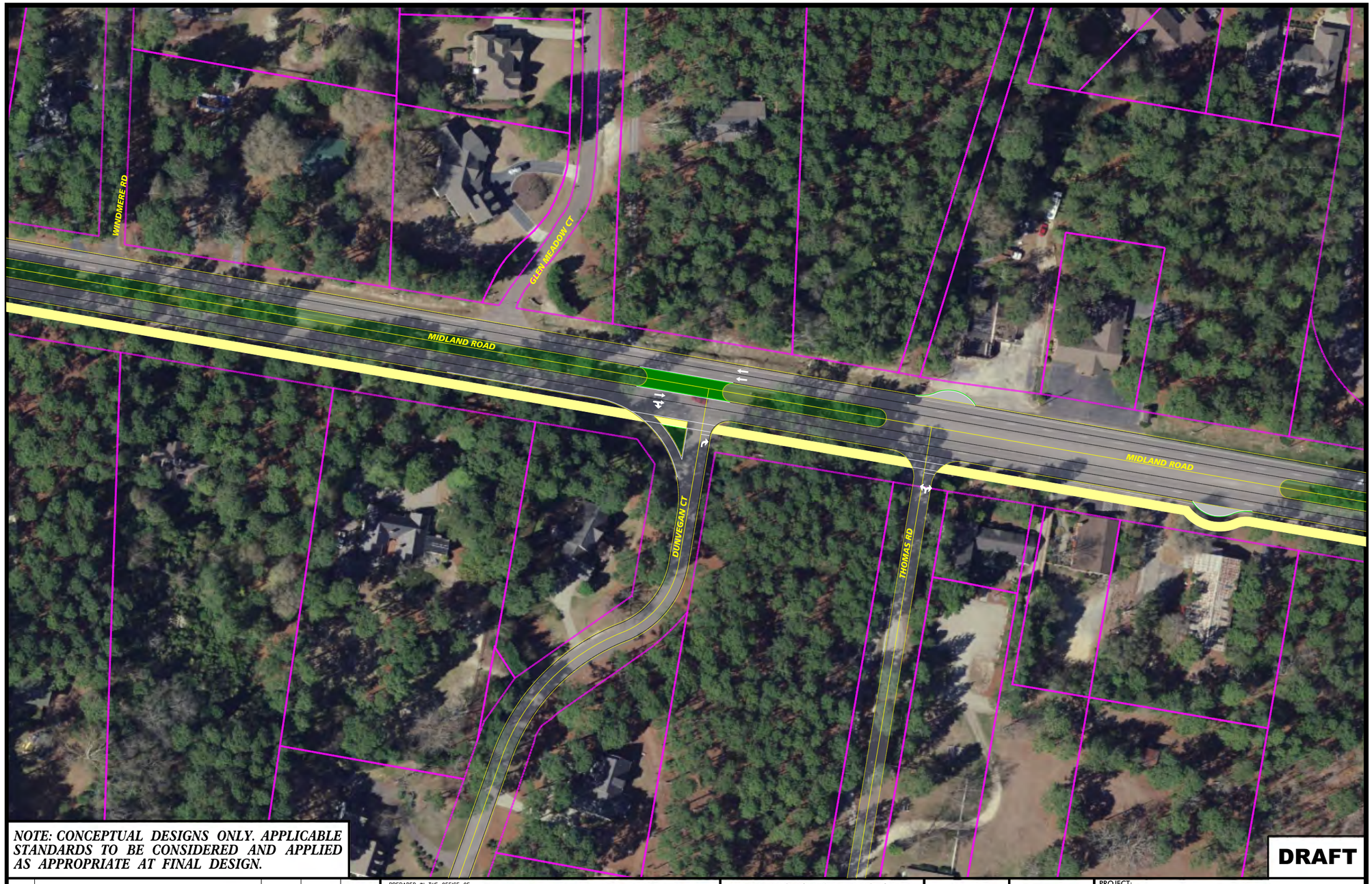
PROJECT:

*MIDLAND ROAD CORRIDOR STUDY*

JOB NUMBER: 011036287

SHEET NUMBER: 1

Thomas Road


WINDMERE RD
GLEN MEADOW CT
MIDLAND ROAD
MIDLAND ROAD
DUNVEGAN CT
THOMAS RD
NOTE: CONCEPTUAL DESIGNS ONLY. APPLICABLE STANDARDS TO BE CONSIDERED AND APPLIED AS APPROPRIATE AT FINAL DESIGN.
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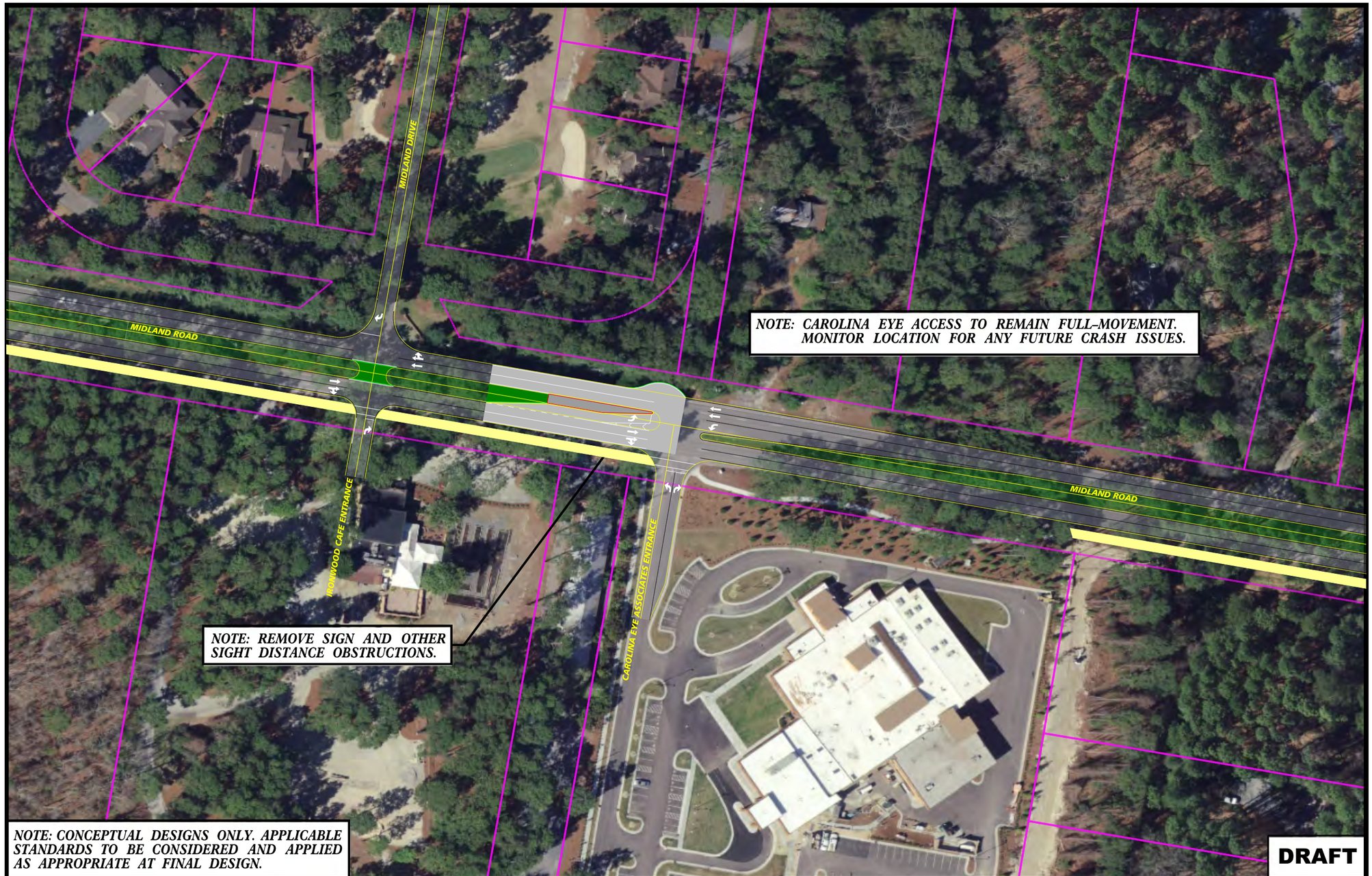
INTERSECTION DESIGN CONCEPTS
DUNVEGAN COURT AND THOMAS ROAD
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
25 0 50
NORTH
PROJECT:
MIDLAND ROAD CORRIDOR STUDY
JOB NUMBER: 011036287
SHEET NUMBER: 2

Midland Road/Carolina Eye Associates

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INTERSECTION DESIGN CONCEPTS
MIDLAND DRIVE AND CAROLINA EYE ASSOC.

PRELIMINARY PLANS
NOT FOR CONSTRUCTION

25 0 50
NORTH

PROJECT:
MIDLAND ROAD CORRIDOR STUDY

JOB NUMBER: 011036287
SHEET NUMBER: 3

Knoll Road Intersection


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| | | | | |

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*INTERSECTION DESIGN CONCEPTS*

*KNOLL ROAD*

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

25 0 50

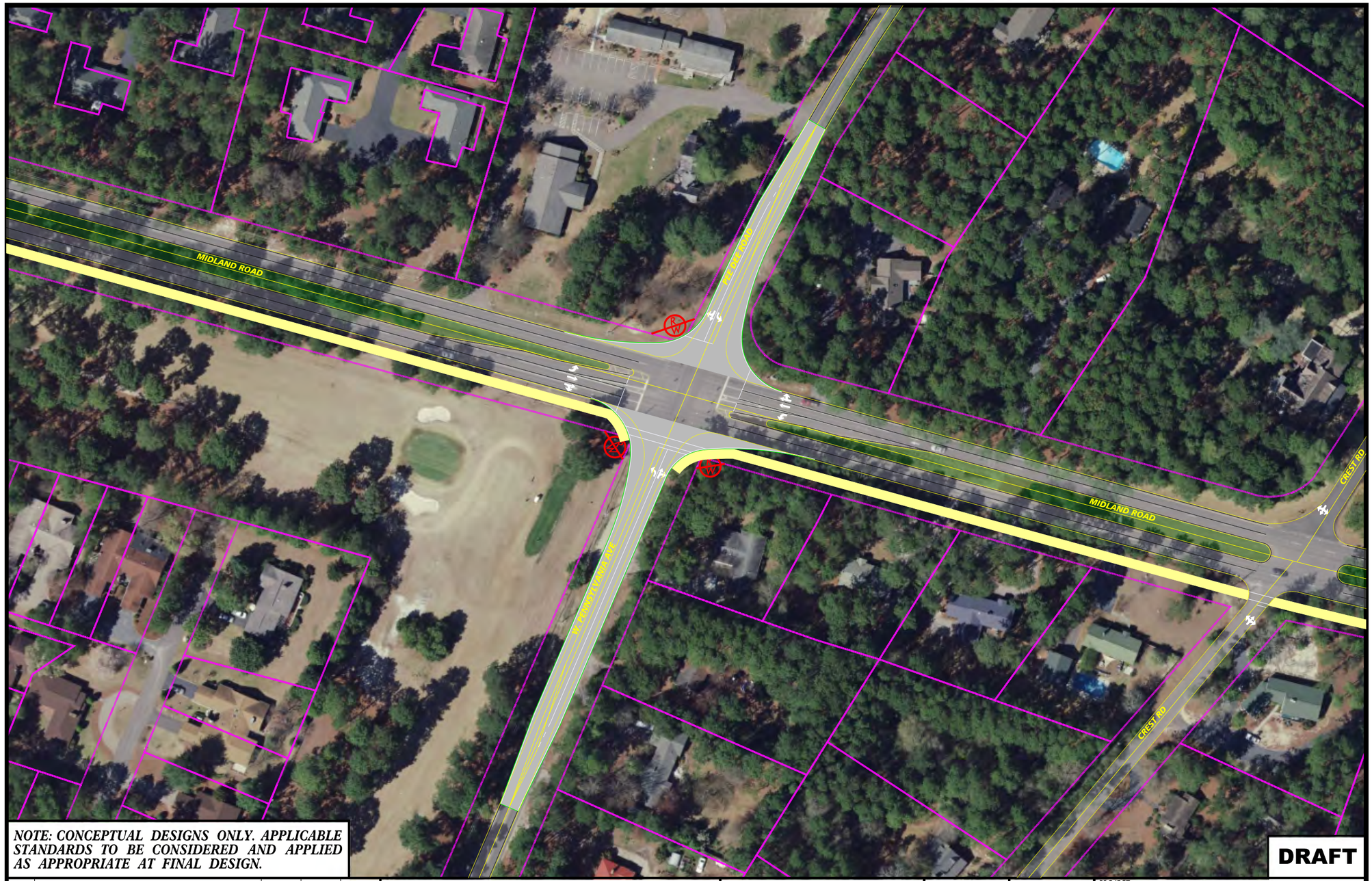
NORTH

PROJECT:

*MIDLAND ROAD CORRIDOR STUDY*

| JOB NUMBER: | 011036287 | SHEET NUMBER: | 4 |
|---|---|---|---|

Pee Dee Road/Pennsylvania Avenue Intersection



Mid Pines and Ridge Road


*NOTE: CONCEPTUAL DESIGNS ONLY. APPLICABLE STANDARDS TO BE CONSIDERED AND APPLIED AS APPROPRIATE AT FINAL DESIGN.*

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*INTERSECTION DESIGN CONCEPTS*
*MID PINES AND RIDGE ROAD*

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

25 0 50
NORTH

PROJECT:
*MIDLAND ROAD CORRIDOR STUDY*

JOB NUMBER: 011036287
SHEET NUMBER: 6

Carolina Drive (NC 22) Intersection


*NOTE: CONCEPTUAL DESIGNS ONLY. APPLICABLE STANDARDS TO BE CONSIDERED AND APPLIED AS APPROPRIATE AT FINAL DESIGN.*

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*INTERSECTION DESIGN CONCEPTS*

*NC 22 (CENTRAL DRIVE)*

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

25 0 50

NORTH

PROJECT:

*MIDLAND ROAD CORRIDOR STUDY*

JOB NUMBER: 011036287

SHEET NUMBER: 7

US 1 Interchange

Clark Street

**Table 4.1** details the Synchro modeled levels-of-service (LOS) for the major intersections along the study corridor for the proposed build condition.

The proposed improvements were modeled for both AM and PM peak hour conditions. Each improvement was developed to maximize LOS improvement where significant congestion exists today. As shown in Table 4.1 the proposed recommendations show significant improvements to delay and LOS along the corridor.

The proposed transportation improvement plan was developed to address problems identified through analysis and discussions with stakeholders and the general public. Each recommendation was selected based on its potential to mitigate congestion issues but also to reduce the potential for future crashes. With that in mind, the following potential safety benefits could be derived from these improvements based on trends in crash data when similar treatments are implemented.

- Closing many of the natural, gravel, and unofficial paved median openings along the corridor is expected to reduce angle crashes along the corridor, which is the most common crash type in the study area.
- Synchronized street improvements, as recommended at the US 1 interchange, reduce the number of conflict points from 32 at an intersection down to 14 and have been shown to reduce fatal and injury crashes by 60% and all crashes by 42% over traditional intersections.
- Adding left-turn lanes at unsignalized intersections (e.g., the Midland Road and Talamore Drive intersection) can reduce the overall number of crashes by nearly 50%.
- Roundabout installations, as recommended at Airport Road and Central Drive (NC 22), can reduce the overall number of crashes at an intersection by nearly 50%. They also drastically reduce crash severity.

**Table 4.1 — Synchro Intersection Level-of-Service Summary**

| Intersection | Future No Build (2040) | | Future Build (2040) | |
|---|---|---|---|---|
| | AM Peak Hour | PM Peak Hour | AM Peak Hour | PM Peak Hour |
| Midland Rd. at Airport Rd. | SB - F (608.4)<br>EBL - D (30.6) | SB - F (369.7)<br>EBL - D (25.1) | C (15.6)<br>(Roundabout) | B (11.7)<br>(Roundabout) |
| Midland Rd. at Carolina Eye Associates Dwy. | NB - D (34.2) | NB - D (27.2) | NB - D (26.4) | NB - D (27.5) |
| Midland Rd. at Knoll Rd. (Signalized) | B (12.2) | B (11.1) | B (12.3) | B (11.2) |
| Midland Rd. at Pee Dee Rd./<br>Pennsylvania Ave. (Signalized) | D (35.1) | C (29.4) | C (28.6) | C (22.3) |
| Midland Rd. at Central Dr. | SB – F (469.9) | SB – F (186.3) | B (11.1)<br>(Roundabout) | A (7.4)<br>(Roundabout) |
| Midland Rd. at US 1<br>Southbound Ramps | SB – E (37.8) | SB – C (21.8) | SB – Free<br>WBL – C (18.7) | SB – Free<br>WBL – C (21.7) |
| Midland Rd. at US 1<br>Northbound Ramps / Yadkin Rd. | SB - C (18.2)<br>NB – F (2132.2) | SB - E (36.3)<br>NB - F (4226.8) | SB - C (24.3)<br>EBL – E (35.1)<br>NB – B (11.7) | SB - D (27.8)<br>EBL – F (104.8)<br>NB – B (11.3) |
| Midland Rd. at Clark St. | SB - B (13.6)<br>EBL - A (8.1) | SB - B (12.8)<br>EBL - A (8.3) | SB - B (14.3)<br>EBL - A (8.1) | SB - B (13.7)<br>EBL - A (8.3) |

The Transportation Mobility and Safety Division at NCDOT regularly posts standardized crash cost estimates for the state. The injury costs include estimates of medical costs, public services, loss of productivity, employer cost, property damage and change in quality of life. In 2015, Mobility and Safety published the following average crash costs based on crash severity. Fatal or Type A - $4,451,000; Type B or C - $117,000; Property Damage Only - $6,700. Applying these costs to the crashes on Midland Road between the US 15/501 traffic circle and Clark Street could result in significant savings for the people of Pinehurst and Southern Pines. As an example, if all crashes along the corridor are reduced by 20%, the savings would total nearly $1.2 million annually.

# IMPLEMENTATION PLAN

The guiding vision developed at the outset of the Midland Road Corridor Study reflected a concerted effort to develop a plan that can be implemented. A well-designed Action Plan, or Implementation Plan, is a critical element to meet the needs of the traveling public. The intent of the Implementation Plan is to enable NCDOT and other decision-makers to track progress and schedule future year improvements. Additionally, this plan is intended to be a guiding document for NCDOT in considering future access and development along the corridor.

The implementation steps and projects identified in this section will be executed in phases and will be subject to a variety of factors, including the availability of personnel and financial resources necessary to implement specific improvements. In the project summary table that follows, cost estimates are identified to achieve the full implementation of the project.

## FUNDING CONSIDERATIONS

As with any planning and project development process, the feasibility of implementing one or more projects ultimately comes down to the funding sources available and the amount of revenue that can be generated from a particular funding strategy. NCDOT recently changed transportation laws that govern how federal and state transportation dollars are spent throughout the state. Since 2013, the Strategic Transportation Investments (STI) Law and the subsequent implementation of the Strategic Mobility Formula governs how dollars are allocated among various projects across the state. The Strategic Mobility Formula is performance-based and awards funding for the highest-scoring projects at the division, regional, and statewide tiers.

The Implementation Plan Matrix (**Table 5.1** below) provides a summary of individual projects based on the corridor-wide recommendations that were highlighted in the previous section. Improvements along the corridor have been broken out into individual projects that can be implemented in multiple phases based on the funding sources available.

**Table 5.1 — Implementation Plan Matrix**

| | Project | Probable Construction Cost |
|---|---|---|
| 1 | Airport Road – Roundabout | $2.1 million |
| 2 | Thomas Road – Access Management | $77,000 |
| 3 | Midland Road/Carolina Eye Associates – Access Management | $214,000 |
| 4 | W. Pennsylvania Avenue/Pee Dee Road – Widening Side Streets | $757,000 |
| 5 | Mid Pines and Ridge Road – Access management | $565,000 |
| 6 | NC 22 (Central Drive) to US 1 – Roundabout and Interchange Modifications | $1.06 million* |
| 7 | US 1 to Clark Street – Road Diet *(excluding intersection improvements)* | $301,000 |
| 8 | Clark Street – Road Diet and Related Improvements | $271,000 |
| 9 | Midland Road – Multi-use Path | $1.6 million |
| 10 | Knoll Road – Multi-use Path | $457,000 |

**per NCDOT*

# CONCLUSION

Midland Road serves many purposes. As one of the most iconic and historic roadways in North Carolina, Midland Road provides access to vibrant residential neighborhoods and local businesses, but also is a commuter throughway and a primary east-west spine route. The corridor serves as a gateway to both Southern Pines and Pinehurst, and as a result, improvements to safety and mobility must respect the values of this region and its residents, business owners, and visitors. NCDOT, in partnership with these stakeholders, conducted the Midland Road Corridor Study in an effort to create a guiding document for future development and roadway improvements along Midland Road.

This study has created the framework for visioning the future of Midland Road, and it represents a proactive approach to address identified needs along the corridor through stakeholder involvement. The realization that federal and state dollars are becoming more difficult to secure is one illustration of why a proactive approach is welcomed for improving this corridor. One thing is certain, funding and implementing the Midland Road Corridor Study will require partnership among local officials. Ultimately, continued collaboration between state and local agencies, economic development partners, and the general public will provide more opportunities to foster a safe, aesthetically-pleasing, and well-balanced multimodal transportation system that supports this critical gateway corridor.

# APPENDIX

# Midland Road Corridor Study

Between Airport Road and W Deleware Avenue
Opinion of Probable Construction Cost Summary
Corridor Concept Designs Estimate

**Project:** Midland Road Corridor Study
**Date:** 8/7/2017
**Prepared By:** Kimley-Horn and Associates, Inc.


**Intersection Specific Costs:**

| | | | |
|---|---|---|---|
| Airport Road Intersection | $ | 2,135,000.00 | |
| Median Open Area near Thomas Road | $ | 97,000.00 | |
| Carolina Eye Associates Entrance | $ | 214,000.00 | |
| Knoll Road Intersection | $ | 291,000.00 | |
| Talamore Drive (designs per directional crossover typical) | $ | 301,000.00 | |
| PeeDee Road and Pennsylvania Avenue Intersection | $ | 757,000.00 | |
| Mid Pines | $ | 214,000.00 | |
| Ridge Road | $ | 164,000.00 | |
| Central Drive to US 1 - Roundabout and Interchange | $ | 1,060,000.00 | * |
| Leak Street | $ | 351,000.00 | |
| Crestview Road - Midblock Crossing | $ | 77,000.00 | |
| Clark Street Intersection | $ | 271,000.00 | |
| **Subtotal:** | *$* | *5,932,000.00* | |

* per NCDOT

**Linear Costs:**

| | | |
|---|---|---|
| Road Diet - excluding Intersection locations (.65 miles) | $ | 301,000.00 |
| 10' Sidewalk (4 miles) | $ | 1,594,000.00 |
| Knoll Multipath (1.2 miles) | $ | 457,000.00 |
| **Subtotal:** | *$* | *2,352,000.00* |

**Median Closure Costs:**

| | | |
|---|---|---|
| Median Closures | $ | 420,000.00 |
| **Subtotal:** | *$* | *420,000.00* |

| | | |
|---|---|---|
| **Corridor Total:** | **$** | **8,704,000.00** |

**Notes and Assumptions:**

1. The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.

2. This estimate is based on current year pricing. If used for budgetary purposes, annual inflation rates should be applied as appropriate.

3. No environmental costs are included.

4. The Engineer has made an assumption of land value to come up with R/W acquisition costs. It is the responsibility of the owner to come up with final property values and acquisition costs.

5. No public utility (water / sewer) costs are incuded.

6. The Engineer has made the assumption that the existing pavement is sufficient for overlay.

# Midland Road Corridor Improvements

Conceptual Estimate
Opinion of Probable Construction Cost Summary
Midland Road at Airport Road Intersection

**Project:** Midland Road Corridor Improvements
**Date:** 8/7/2017
**Prepared By:** Kimley-Horn


**Probable Project Costs Summary:**

| | Length (Miles) | Cost Per Mile | Cost |
|---|---|---|---|
| 2-lane Roundabout | | | $ 900,000.00 |
| Widening Construction Cost 300 lf | 0.06 | $ 1,500,000.00 | $ 90,000.00 |
| Cul-de-sac | | | $ 60,000.00 |
| Lanscaping | | | $ 155,800.00 |
| Utility Relocation Costs: | | | |
| Public: | | | $ - |
| Private: | | | $ - |
| R/W and Easement Acquisition: | | | |
| Right-of-Way (0.1 Acres): | | 65K/Acre | $ 6,500.00 |
| Construction Easement (.15 Acres): | | 40K/Acre | $ 6,000.00 |
| Environmental Mitigation Costs: | | | $ - |
| **Subtotal** | | | **$ 1,218,300.00** |
| **30% Contingency** | | | **$ 365,490.00** |
| **Total - Construction** | | | **$ 1,590,000.00** |
| Engineering (Approximate) | | | **$ 325,000.00** |
| Construction management, engineering, and inspections (Approximate) | | | **$ 220,000.00** |
| **Project Total:** | | | **$ 2,135,000.00** |

**Notes and Assumptions:**

1. The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.

2. This estimate is based on current year pricing. If used for budgetary purposes, annual inflation rates should be applied as appropriate.

3. No environmental costs are included.

4. The Engineer has made an assumption of land value to come up with R/W acquisition costs. It is the responsibility of the owner to come up with final property values and acquisition costs.

5. No public utility (water / sewer) costs are incuded.

6. The Engineer has made the assumption that the existing pavement is sufficient for overlay.

7. The Engineer has made the assumption that curb and gutter will be used to reduce the project footprint for the

# Midland Road Corridor Improvements

Conceptual Estimate
Opinion of Probable Construction Cost Summary
Midland Road Open Area near Thomas Road

**Project:** Midland Road Corridor Improvements
**Date:** 8/7/2017
**Prepared By:** Kimley-Horn


**Probable Project Costs Summary:**

| | Length (Miles) | Cost Per Mile | Cost |
|---|---|---|---|
| Widening Construction Cost 0 lf | 0 | $ 1,500,000.00 | $ - |
| Bulbout x 2 | | | $ 60,000.00 |
| Utility Relocation Costs: | | | |
| Public: | | | $ - |
| Private: | | | $ - |
| R/W and Easement Acquisition: | | | |
| Right-of-Way (0 Acres): | | 65K/Acre | $ - |
| Construction Easement (0 Acres): | | 40K/Acre | $ - |
| Environmental Mitigation Costs: | | | $ - |
| **Subtotal** | | | **$ 60,000.00** |
| **30% Contingency** | | | **$ 18,000.00** |
| **Total - Construction** | | | **$ 80,000.00** |
| Engineering (Approximate) | | | **$ 10,000.00** |
| Construction management, engineering, and inspections (Approximate) | | | **$ 7,000.00** |
| **Project Total:** | | | **$ 97,000.00** |

**Notes and Assumptions:**

1. The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.

2. This estimate is based on current year pricing. If used for budgetary purposes, annual inflation rates should be applied as appropriate.

3. No environmental costs are included.

4. The Engineer has made an assumption of land value to come up with R/W acquisition costs. It is the responsibility of the owner to come up with final property values and acquisition costs.

5. No public utility (water / sewer) costs are incuded.

6. The Engineer has made the assumption that the existing pavement is sufficient for overlay.

# Midland Road Corridor Improvements

Conceptual Estimate
Opinion of Probable Construction Cost Summary
Midland Road at Carolina Eye Associates Entrance

**Project:** Midland Road Corridor Improvements
**Date:** 8/7/2017
**Prepared By:** Kimley-Horn


**Probable Project Costs Summary:**

| | Length (Miles) | Cost Per Mile | Cost |
|---|---|---|---|
| Widening Construction Cost 200 lf | 0.04 | $ 2,200,000.00 | $ 88,000.00 |
| Concrete Medians for Offset Lefts | | | $ 20,000.00 |
| Bulbout | | | $ 30,000.00 |
| Utility Relocation Costs: | | | |
| Public: | | | $ - |
| Private: | | | $ - |
| R/W and Easement Acquisition: | | | |
| Right-of-Way (0 Acres): | | 65K/Acre | $ - |
| Construction Easement (0.01 Acres): | | 40K/Acre | $ 400.00 |
| Environmental Mitigation Costs: | | | $ - |
| **Subtotal** | | | **$ 138,400.00** |
| **30% Contingency** | | | **$ 41,520.00** |
| **Total - Construction** | | | **$ 180,000.00** |
| Engineering (Approximate) | | | **$ 20,000.00** |
| Construction management, engineering, and inspections (Approximate) | | | **$ 14,000.00** |
| **Project Total:** | | | **$ 214,000.00** |

**Notes and Assumptions:**

1. The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.

2. This estimate is based on current year pricing. If used for budgetary purposes, annual inflation rates should be applied as appropriate.

3. No environmental costs are included.

4. The Engineer has made an assumption of land value to come up with R/W acquisition costs. It is the responsibility of the owner to come up with final property values and acquisition costs.

5. No public utility (water / sewer) costs are incuded.

6. The Engineer has made the assumption that the existing pavement is sufficient for overlay.

# Midland Road Corridor Improvements

Conceptual Estimate
Opinion of Probable Construction Cost Summary
Midland Road at Knoll Road Intersection

**Project:** Midland Road Corridor Improvements
**Date:** 8/7/2017
**Prepared By:** Kimley-Horn


**Probable Project Costs Summary:**

| | Length (Miles) | Cost Per Mile | Cost |
|---|---|---|---|
| Widening Construction Cost 100 lf | 0.02 | $ 1,500,000.00 | $ 30,000.00 |
| Signal Upgrade | | | $ 150,000.00 |
| Utility Relocation Costs: | | | |
| Public: | | | $ - |
| Private: | | | $ - |
| R/W and Easement Acquisition: | | | |
| Right-of-Way (0 Acres): | | 65K/Acre | $ - |
| Construction Easement (0.01 Acres): | | 40K/Acre | $ 400.00 |
| Environmental Mitigation Costs: | | | $ - |
| **Subtotal** | | | **$ 180,400.00** |
| **30% Contingency** | | | **$ 54,120.00** |
| **Total - Construction** | | | **$ 240,000.00** |
| Engineering (Approximate) | | | **$ 30,000.00** |
| Construction management, engineering, and inspections (Approximate) | | | **$ 21,000.00** |
| **Project Total:** | | | **$ 291,000.00** |

**Notes and Assumptions:**

1. The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.

2. This estimate is based on current year pricing. If used for budgetary purposes, annual inflation rates should be applied as appropriate.

3. No environmental costs are included.

4. The Engineer has made an assumption of land value to come up with R/W acquisition costs. It is the responsibility of the owner to come up with final property values and acquisition costs.

5. No public utility (water / sewer) costs are incuded.

6. The Engineer has made the assumption that the existing pavement is sufficient for overlay.

# Midland Road Corridor Improvements

Conceptual Estimate
Opinion of Probable Construction Cost Summary
Midland Road at Talamore Drive Intersection

**Project:** Midland Road Corridor Improvements
**Date:** 8/7/2017
**Prepared By:** Kimley-Horn
**Page:** 

**Probable Project Costs Summary:**

| | Length (Miles) | Cost Per Mile | Cost |
|---|---|---|---|
| Widening Construction Cost 560 lf | 0.11 | $ 1,500,000.00 | $ 165,000.00 |
| Divided Median 250 lf | 0.05 | $ 53,000.00 | $ 2,650.00 |
| Concrete Medians for Offset Lefts | | | $ 20,000.00 |
| Utility Relocation Costs: | | | |
| Public: | | | $ - |
| Private: | | | $ - |
| R/W and Easement Acquisition: | | | |
| Right-of-Way (0 Acres): | | 65K/Acre | $ - |
| Construction Easement (0.03 Acres): | | 40K/Acre | $ 1,200.00 |
| Environmental Mitigation Costs: | | | $ - |
| **Subtotal** | | | **$ 188,850.00** |
| **30% Contingency** | | | **$ 56,655.00** |
| **Total - Construction** | | | **$ 250,000.00** |
| Engineering (Approximate) | | | **$ 30,000.00** |
| Construction management, engineering, and inspections (Approximate) | | | **$ 21,000.00** |
| **Project Total:** | | | **$ 301,000.00** |

**Notes and Assumptions:**

1. The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.

2. This estimate is based on current year pricing. If used for budgetary purposes, annual inflation rates should be applied as appropriate.

3. No environmental costs are included.

4. The Engineer has made an assumption of land value to come up with R/W acquisition costs. It is the responsibility of the owner to come up with final property values and acquisition costs.

5. No public utility (water / sewer) costs are incuded.

6. The Engineer has made the assumption that the existing pavement is sufficient for overlay.

# Midland Road Corridor Improvements

Conceptual Estimate
Opinion of Probable Construction Cost Summary
Midland Road at PeeDee Road and Pennsylvania Avenue Intersection

**Project:** Midland Road Corridor Improvements
**Date:** 8/7/2017
**Prepared By:** Kimley-Horn


**Probable Project Costs Summary:**

| | Length (Miles) | Cost Per Mile | Cost |
|---|---|---|---|
| Widening Construction Cost 900 lf | 0.19 | $ 1,500,000.00 | $ 285,000.00 |
| Temp Signal (2 ea.) | | | $ 50,000.00 |
| Signal Upgrade | | | $ 150,000.00 |
| Utility Relocation Costs: | | | |
| Public: | | | $ - |
| Private: | | | $ - |
| R/W and Easement Acquisition: | | | |
| Right-of-Way (0.03 Acres): | | 65K/Acre | $ 2,000.00 |
| Construction Easement (0.11 Acres): | | 40K/Acre | $ 4,400.00 |
| Environmental Mitigation Costs: | | | $ - |
| **Subtotal** | | | **$ 491,400.00** |
| **30% Contingency** | | | **$ 147,420.00** |
| **Total - Construction** | | | **$ 640,000.00** |
| Engineering (Approximate) | | | **$ 70,000.00** |
| Construction management, engineering, and inspections (Approximate) | | | **$ 47,000.00** |
| **Project Total:** | | | **$ 757,000.00** |

**Notes and Assumptions:**

1. The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.

2. This estimate is based on current year pricing. If used for budgetary purposes, annual inflation rates should be applied as appropriate.

3. No environmental costs are included.

4. The Engineer has made an assumption of land value to come up with R/W acquisition costs. It is the responsibility of the owner to come up with final property values and acquisition costs.

5. No public utility (water / sewer) costs are incuded.

6. The Engineer has made the assumption that the existing pavement is sufficient for overlay.

# Midland Road Corridor Improvements

Conceptual Estimate
Opinion of Probable Construction Cost Summary
Midland Road at Mid Pines Entrance

**Project:** Midland Road Corridor Improvements
**Date:** 8/7/2017
**Prepared By:** Kimley-Horn
**Page:** 8 of 17

**Probable Project Costs Summary:**

| | Length (Miles) | Cost Per Mile | | Cost |
|---|---|---|---|---|
| Widening Construction Cost 200 lf | 0.04 | $ 2,200,000.00 | $ | 88,000.00 |
| Concrete Medians for Offset Left | | | $ | 50,000.00 |
| Bulbout | | | $ | - |
| Utility Relocation Costs: | | | | |
| Public: | | | $ | - |
| Private: | | | $ | - |
| R/W and Easement Acquisition: | | | | |
| Right-of-Way (0 Acres): | | 65K/Acre | $ | - |
| Construction Easement (0.01 Acres): | | 40K/Acre | $ | - |
| Environmental Mitigation Costs: | | | $ | - |
| **Subtotal** | | | **$** | **138,000.00** |
| **30% Contingency** | | | **$** | **41,400.00** |
| **Total - Construction** | | | **$** | **180,000.00** |
| Engineering (Approximate) | | | **$** | **20,000.00** |
| Construction management, engineering, and inspections (Approximate) | | | **$** | **14,000.00** |
| **Project Total:** | | | **$** | **214,000.00** |

**Notes and Assumptions:**

1. The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.

2. This estimate is based on current year pricing. If used for budgetary purposes, annual inflation rates should be applied as appropriate.

3. No environmental costs are included.

4. The Engineer has made an assumption of land value to come up with R/W acquisition costs. It is the responsibility of the owner to come up with final property values and acquisition costs.

5. No public utility (water / sewer) costs are incuded.

6. The Engineer has made the assumption that the existing pavement is sufficient for overlay.

# Midland Road Corridor Improvements

Conceptual Estimate
Opinion of Probable Construction Cost Summary
Midland Road at Ridge Road Intersection

**Project:** Midland Road Corridor Improvements
**Date:** 8/7/2017
**Prepared By:** Kimley-Horn


**Probable Project Costs Summary:**

| | Length (Miles) | Cost Per Mile | Cost |
|---|---|---|---|
| Widening Construction Cost 260 lf | 0.05 | $ 1,500,000.00 | $ 75,000.00 |
| Divided Median 250 lf | 0.05 | $ 53,000.00 | $ 2,650.00 |
| Concrete Medians for Offset Lefts | | | $ 12,500.00 |
| Landscaping 50 lf (low ground cover only) | | | $ 3,000.00 |
| Utility Relocation Costs: | | | |
| Public: | | | $ - |
| Private: | | | $ - |
| R/W and Easement Acquisition: | | | |
| Right-of-Way (0.0 Acres): | | 65K/Acre | $ - |
| Construction Easement (0.01 Acres): | | 40K/Acre | $ 400.00 |
| Environmental Mitigation Costs: | | | $ - |
| **Subtotal** | | | **$ 93,550.00** |
| **30% Contingency** | | | **$ 28,065.00** |
| **Total - Construction** | | | **$ 130,000.00** |
| Engineering (Approximate) | | | **$ 20,000.00** |
| Construction management, engineering, and inspections (Approximate) | | | **$ 14,000.00** |
| **Project Total:** | | | **$ 164,000.00** |

**Notes and Assumptions:**

1. The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.

2. This estimate is based on current year pricing. If used for budgetary purposes, annual inflation rates should be applied as appropriate.

3. No environmental costs are included.

4. The Engineer has made an assumption of land value to come up with R/W acquisition costs. It is the responsibility of the owner to come up with final property values and acquisition costs.

5. No public utility (water / sewer) costs are incuded.

6. The Engineer has made the assumption that the existing pavement is sufficient for overlay.

# Midland Road Corridor Improvements

Conceptual Estimate
Opinion of Probable Construction Cost Summary
Midland Road at Crestview Road - Midblock Crossing

**Project:** Midland Road Corridor Improvements
**Date:** 8/7/2017
**Prepared By:** Kimley-Horn


**Probable Project Costs Summary:**

| | Length (Miles) | Cost Per Mile | Cost |
|---|---|---|---|
| Widening Construction Cost 100 lf | 0.02 | $ 1,500,000.00 | $ 30,000.00 |
| Concrete Medians for Midblock Crossing | | | $ 8,000.00 |
| Pavement Markings | | | $ 2,000.00 |
| Utility Relocation Costs: | | | |
| Public: | | | $ - |
| Private: | | | $ - |
| R/W and Easement Acquisition: | | | |
| Right-of-Way (0 Acres): | | 65K/Acre | $ - |
| Construction Easement (0.0 Acres): | | 40K/Acre | $ - |
| Environmental Mitigation Costs: | | | $ - |
| **Subtotal** | | | **$ 40,000.00** |
| **30% Contingency** | | | **$ 12,000.00** |
| **Total - Construction** | | | **$ 60,000.00** |
| Engineering (Approximate) | | | **$ 10,000.00** |
| Construction management, engineering, and inspections (Approximate) | | | **$ 7,000.00** |
| **Project Total:** | | | **$ 77,000.00** |

**Notes and Assumptions:**

1. The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.

2. This estimate is based on current year pricing. If used for budgetary purposes, annual inflation rates should be applied as appropriate.

3. No environmental costs are included.

4. The Engineer has made an assumption of land value to come up with R/W acquisition costs. It is the responsibility of the owner to come up with final property values and acquisition costs.

5. No public utility (water / sewer) costs are incuded.

6. The Engineer has made the assumption that the existing pavement is sufficient for overlay.

# Midland Road Corridor Improvements

Conceptual Estimate
Opinion of Probable Construction Cost Summary
Midland Road at Clark Street Intersection

**Project:** Midland Road Corridor Improvements
**Date:** 8/7/2017
**Prepared By:** Kimley-Horn


**Probable Project Costs Summary:**

| | Length (Miles) | Cost Per Mile | Cost |
|---|---|---|---|
| Widening Construction Cost 350 lf | 0.07 | $ 1,500,000.00 | $ 105,000.00 |
| Divided Median 280 lf | 0.5 | $ 53,000.00 | $ 26,500.00 |
| Curb Median | | | $ 2,000.00 |
| Lanscaping | | | $ 30,000.00 |
| Utility Relocation Costs: | | | |
| Public: | | | $ - |
| Private: | | | $ - |
| R/W and Easement Acquisition: | | | |
| Right-of-Way (0 Acres): | | 65K/Acre | $ - |
| Construction Easement (0.00 Acres): | | 40K/Acre | $ - |
| Environmental Mitigation Costs: | | | $ - |
| **Subtotal** | | | **$ 163,500.00** |
| **30% Contingency** | | | **$ 49,050.00** |
| **Total - Construction** | | | **$ 220,000.00** |
| Engineering (Approximate) | | | **$ 30,000.00** |
| Construction management, engineering, and inspections (Approximate) | | | **$ 21,000.00** |
| **Project Total:** | | | **$ 271,000.00** |

**Notes and Assumptions:**

1. The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.

2. This estimate is based on current year pricing. If used for budgetary purposes, annual inflation rates should be applied as appropriate.

3. No environmental costs are included.

4. The Engineer has made an assumption of land value to come up with R/W acquisition costs. It is the responsibility of the owner to come up with final property values and acquisition costs.

5. No public utility (water / sewer) costs are incuded.

6. The Engineer has made the assumption that the existing pavement is sufficient for overlay.

# Midland Road Corridor Improvements

Conceptual Estimate
Opinion of Probable Construction Cost Summary
Midland Road Road Diet from Crestview Rd to Clark St

**Project:** Midland Road Corridor Improvements
**Date:** 8/7/2017
**Prepared By:** Kimley-Horn
**Page:** 12 of 17

**Probable Project Costs Summary:**

| | Length (Miles) | Cost Per Mile | Cost |
|---|---|---|---|
| Overlay | 0.65 | $ 245,000.00 | $ 159,250.00 |
| Pavement Markings | 0.65 | $ 40,000.00 | $ 26,000.00 |
| Utility Relocation Costs: | | | |
| Public: | | | $ - |
| Private: | | | $ - |
| R/W and Easement Acquisition: | | | |
| Right-of-Way (0 Acres): | | 65K/Acre | $ - |
| Construction Easement (0 Acres): | | 40K/Acre | $ - |
| Environmental Mitigation Costs: | | | $ - |
| **Subtotal** | | | **$ 185,250.00** |
| **30% Contingency** | | | **$ 55,575.00** |
| **Total - Construction** | | | **$ 250,000.00** |
| Engineering (Approximate) | | | **$ 30,000.00** |
| Construction management, engineering, and inspections (Approximate) | | | **$ 21,000.00** |
| **Project Total:** | | | **$ 301,000.00** |

**Notes and Assumptions:**

1. The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.

2. This estimate is based on current year pricing. If used for budgetary purposes, annual inflation rates should be applied as appropriate.

3. No environmental costs are included.

4. The Engineer has made an assumption of land value to come up with R/W acquisition costs. It is the responsibility of the owner to come up with final property values and acquisition costs.

5. No public utility (water / sewer) costs are incuded.

6. The Engineer has made the assumption that the existing pavement is sufficient for overlay.

# Midland Road Corridor Improvements

Conceptual Estimate
Opinion of Probable Construction Cost Summary
Midland Road Pedestrian Improvements Airport Road to Crestview Road

**Project:** Midland Road Corridor Improvements
**Date:** 8/7/2017
**Prepared By:** Kimley-Horn


**Probable Project Costs Summary:**

| | Length (Miles) | Cost Per Mile | Cost |
|---|---|---|---|
| 10' Sidewalk - one side | 4 | $ 250,000.00 | $ 1,000,000.00 |
| Utility Relocation Costs: | | | |
| Public: | | | $ - |
| Private: | | | $ - |
| R/W and Easement Acquisition: | | | |
| Right-of-Way (0 Acres): | | 65K/Acre | $ - |
| Construction Easement (1.0 Acres): | | 40K/Acre | $ 40,000.00 |
| Environmental Mitigation Costs: | | | $ - |
| **Subtotal** | | | **$ 1,040,000.00** |
| **30% Contingency** | | | **$ 312,000.00** |
| **Total - Construction** | | | **$ 1,360,000.00** |
| Engineering (Approximate) | | | **$ 140,000.00** |
| Construction management, engineering, and inspections (Approximate) | | | **$ 94,000.00** |
| **Project Total:** | | | **$ 1,594,000.00** |

**Notes and Assumptions:**

1. The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.

2. This estimate is based on current year pricing. If used for budgetary purposes, annual inflation rates should be applied as appropriate.

3. No environmental costs are included.

4. The Engineer has made an assumption of land value to come up with R/W acquisition costs. It is the responsibility of the owner to come up with final property values and acquisition costs.

5. No public utility (water / sewer) costs are incuded.

6. The Engineer has made the assumption that the existing pavement is sufficient for overlay.

# Midland Road Corridor Improvements

Conceptual Estimate
Opinion of Probable Construction Cost Summary
Multipath from Intersection of Midland/Knoll to Intersection of Knoll/Airport

**Project:** Midland Road Corridor Improvements
**Date:** 8/7/2017
**Prepared By:** Kimley-Horn


**Probable Project Costs Summary:**

| | Length (Miles) | Cost Per Mile | Cost |
|---|---|---|---|
| 10' Sidewalk - one side | 1.2 | $ 250,000.00 | $ 300,000.00 |
| Utility Relocation Costs: | | | |
| Public: | | | $ - |
| Private: | | | $ - |
| R/W and Easement Acquisition: | | | |
| Right-of-Way (0 Acres): | | 65K/Acre | $ - |
| Construction Easement (0 Acres): | | 40K/Acre | $ - |
| Environmental Mitigation Costs: | | | $ - |
| **Subtotal** | | | **$ 300,000.00** |
| **30% Contingency** | | | **$ 90,000.00** |
| **Total - Construction** | | | **$ 390,000.00** |
| Engineering (Approximate) | | | **$ 40,000.00** |
| Construction management, engineering, and inspections (Approximate) | | | **$ 27,000.00** |
| **Project Total:** | | | **$ 457,000.00** |

**Notes and Assumptions:**

1. The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.

2. This estimate is based on current year pricing. If used for budgetary purposes, annual inflation rates should be applied as appropriate.

3. No environmental costs are included.

4. The Engineer has made an assumption of land value to come up with R/W acquisition costs. It is the responsibility of the owner to come up with final property values and acquisition costs.

5. No public utility (water / sewer) costs are incuded.

6. The Engineer has made the assumption that the existing pavement is sufficient for overlay.

Midland Road Corridor Improvements
Conceptual Estimate
Opinion of Probable Cost Summary
Midland Road - Median Closures

| Latitude / Longitude | Width (Feet) | Surface Type | Notes | Latitude Degrees | Latitude Minutes | Longitude Degrees | Longitude Minutes | Latitude Degrees FINAL | Longitude Degrees FINAL | | Landscaping Cost per 40 Linear Feet | Roadway Cost Per 40 Linear Feet | Total Cost (without Contingency) | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 39° 10.883 N 79° 22.889 W | 70 | Asphalt | Driveways | 35 | 10.833 | -79 | -22.889 | 35.18055 | -79.38148333 | 1 | $6,000.00 | $1,000.00 | $12,250.00 | |
| 35° 10.924 N 79° 22.092 W | 37 | Asphalt | Clematis Rd. | 35 | 10.924 | -79 | -22.092 | 35.18206667 | -79.3682 | 2 | $6,000.00 | $1,000.00 | $6,475.00 | |
| 35° 10.974 N 79° 22.899 W | 15 | Asphalt | Driveways | 35 | 10.974 | -79 | -22.899 | 35.1829 | -79.38165 | 3 | $6,000.00 | $1,000.00 | $2,625.00 | |
| 35° 11.025 N 79° 22.922 W | 15 | Natural | Driveways | 35 | 11.025 | -79 | -22.922 | 35.18375 | -79.38203333 | 4 | $6,000.00 | $400.00 | $2,400.00 | |
| 39° 11.037 N 79° 22.929 W | 20 | Asphalt | Artillery Rd. | 35 | 11.037 | -79 | -22.929 | 35.18395 | -79.38215 | 5 | $6,000.00 | $1,000.00 | $3,500.00 | |
| 35° 11.050 N 79° 22.938 W | 25 | Asphalt | Artillery Rd. | 35 | 11.05 | -79 | -22.938 | 35.18416667 | -79.3823 | 6 | $6,000.00 | $1,000.00 | $4,375.00 | |
| 35° 11.078 N 79° 22.952 W | 25 ft. | Asphalt | North Leak St. | 35 | 11.078 | -79 | -22.592 | 35.18463333 | -79.37653333 | 7 | $0.00 | $0.00 | $0.00 | |
| 35° 11.119 N 79° 22.963 W | 25 | Asphalt | Driveways | 35 | 11.119 | -79 | -22.963 | 35.18531667 | -79.38271667 | 8 | $6,000.00 | $1,000.00 | $4,375.00 | |
| 39° 11.139 N 79° 22.967 W | 18 | Asphalt | Driveways | 35 | 11.139 | -79 | -22.967 | 35.18565 | -79.38278333 | 9 | $6,000.00 | $1,000.00 | $3,150.00 | |
| 35° 11.182 N 79° 22.955 W | 25 | Asphalt | Driveways | 35 | 11.182 | -79 | -22.955 | 35.18636667 | -79.38258333 | 10 | $6,000.00 | $1,000.00 | $4,375.00 | |
| 35° 11.198 N 79° 22.951 W | 20 | Asphalt | Driveways | 35 | 11.198 | -79 | -22.951 | 35.18663333 | -79.38251667 | 11 | $6,000.00 | $1,000.00 | $3,500.00 | |
| 35° 11.238 N 79° 22.951 W | 25 | Asphalt | Driveways | 35 | 11.238 | -79 | -22.951 | 35.1873 | -79.38251667 | 12 | $6,000.00 | $1,000.00 | $4,375.00 | |
| 35° 11.256 N 79° 22.955 W | 25 | Asphalt | Driveways | 35 | 11.256 | -79 | -22.955 | 35.1876 | -79.38258333 | 13 | $6,000.00 | $1,000.00 | $4,375.00 | |
| 35° 11.284 N 79° 22.971 W | 20 | Asphalt | Driveways | 35 | 11.284 | -79 | -22.971 | 35.18806667 | -79.38285 | 14 | $6,000.00 | $1,000.00 | $3,500.00 | |
| 35° 11.296 N 79° 22.981 W | 25 | Asphalt | Driveways | 35 | 11.296 | -79 | -22.981 | 35.18826667 | -79.38301667 | 15 | $6,000.00 | $1,000.00 | $4,375.00 | |
| 35° 11.356 N 79° 23.021 W | 20 | Gravel | Crestview Rd. | 35 | 11.356 | -79 | -23.021 | 35.18926667 | -79.38368333 | 16 | $6,000.00 | $400.00 | $3,200.00 | |
| 35° 11.367 N 79° 23.028 W | 70 | Asphalt | Short Rd. & Crestview Rd. | 35 | 11.367 | -79 | -23.028 | 35.18945 | -79.3838 | 17 | $6,000.00 | $1,000.00 | $12,250.00 | |
| 35° 11.383 N 79° 23.037 W | 25 | Asphalt | Short Rd. & San Davis Rd. | 35 | 11.383 | -79 | -23.037 | 35.18971667 | -79.38395 | 18 | $6,000.00 | $1,000.00 | $4,375.00 | |
| 35° 11.422 N 79° 23.066 W | 86 ft. | Asphalt | US 1 West Ramp | 35 | 11.422 | -79 | -23.066 | 35.19036667 | -79.38443333 | 19 | $0.00 | $0.00 | $0.00 | |
| 35° 11.408 N 79° 23.102 W | 100ft. | Asphalt | US 1 East Ramp | 35 | 11.408 | -79 | -23.102 | 35.19013333 | -79.38503333 | 20 | $0.00 | $0.00 | $0.00 | |
| 35° 11.575 N 79° 23.102 W | 60 ft. | Asphalt | Central Dr. | 35 | 11.575 | -79 | -23.102 | 35.19291667 | -79.38503333 | 21 | $0.00 | $0.00 | $0.00 | |
| 35° 11.608 N 79° 23.300 W | 20 | Asphalt | Driveways | 35 | 11.608 | -79 | -23.3 | 35.19346667 | -79.38833333 | 22 | $6,000.00 | $1,000.00 | $3,500.00 | |
| 35° 11.677 N 79°23.450 W | 25 ft. | Asphalt | Ridge Rd. | 35 | 11.677 | -79 | -23.45 | 35.19461667 | -79.39083333 | 23 | $0.00 | $0.00 | $0.00 | |
| 35° 11.683 N 79° 23.470 W | 20 | Asphalt | Midpines Driveway | 35 | 11.683 | -79 | -23.47 | 35.19471667 | -79.39116667 | 24 | $0.00 | $0.00 | $0.00 | median closure for outbound driveway |
| 35° 11.694 N 79° 23.521 W | 25 ft. | Asphalt | Midpines Driveway | 35 | 11.694 | -79 | -23.521 | 35.1949 | -79.39201667 | 25 | $0.00 | $0.00 | $0.00 | |

Midland Road Corridor Improvements
Conceptual Estimate
Opinion of Probable Cost Summary
Midland Road - Median Closures

| Latitude / Longitude | Width (Feet) | Surface Type | Notes | Latitude Degrees | Latitude Minutes | Longitude Degrees | Longitude Minutes | Latitude Degrees FINAL | Longitude Degrees FINAL | | Landscaping Cost per 40 Linear Feet | Roadway Cost Per 40 Linear Feet | Total Cost (without Contingency) | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 35° 11.713 N 79° 23.649 W | 20 | Asphalt | Driveways | 35 | 11.713 | -79 | -23.649 | 35.19521667 | -79.39415 | 26 | $6,000.00 | $1,000.00 | $3,500.00 | |
| 35° 11.725 N 79° 23.775 W | 25 | Asphalt | Driveways | 35 | 11.725 | -79 | -23.775 | 35.19541667 | -79.39625 | 27 | $6,000.00 | $1,000.00 | $4,375.00 | |
| 35° 11.736 N 79° 23.755 W | 30 | Asphalt | Grove Rd. | 35 | 11.736 | -79 | -23.775 | 35.1956 | -79.39625 | 28 | $6,000.00 | $1,000.00 | $5,250.00 | |
| 35° 11.739 N 79° 23.790 W | 30 | Asphalt | Fairway Rd. | 35 | 11.739 | -79 | -23.79 | 35.19565 | -79.3965 | 29 | $6,000.00 | $1,000.00 | $5,250.00 | |
| 35° 11.749 N 79° 23.848 W | 30 | Asphalt | Driveways | 35 | 11.749 | -79 | -23.848 | 35.19581667 | -79.39746667 | 30 | $6,000.00 | $1,000.00 | $5,250.00 | |
| 35° 11.758 N 79° 23.909 W | 15 | Asphalt | Driveways | 35 | 11.758 | -79 | -23.909 | 35.19596667 | -79.39848333 | 31 | $6,000.00 | $1,000.00 | $2,625.00 | |
| 35° 11.763 N 79° 23.931 W | 15 | Natural | Driveways | 35 | 11.763 | -79 | -23.931 | 35.19605 | -79.39885 | 32 | $6,000.00 | $400.00 | $2,400.00 | |
| 35° 11.777 N 79° 23.994 W | 74 | Asphalt | Crest Rd. | 35 | 11.777 | -79 | -23.994 | 35.19628333 | -79.3999 | 33 | $6,000.00 | $1,000.00 | $12,950.00 | |
| 35° 11.782 N 79° 24.032 W | 10 | Asphalt | Driveways | 35 | 11.782 | -79 | -24.032 | 35.19636667 | -79.40053333 | 34 | $6,000.00 | $1,000.00 | $1,750.00 | |
| 35° 11.786 N 79° 24.057 W | 20 | Natural | Driveways | 35 | 11.786 | -79 | -24.057 | 35.19643333 | -79.40095 | 35 | $6,000.00 | $400.00 | $3,200.00 | |
| 35° 11.083 N 79° 24.132 W | 173 ft. | Asphalt | Peedee Rd. & Pennsylvania Rd. | 35 | 11.083 | -79 | -24.132 | 35.18471667 | -79.4022 | 36 | $0.00 | $0.00 | $0.00 | |
| 35° 11.861 N 79° 24.384 W | 40 | Asphalt | Middleton Place Driveway | 35 | 11.861 | -79 | -24.384 | 35.19768333 | -79.4064 | 37 | $6,000.00 | $1,000.00 | $7,000.00 | |
| 35° 11.871 N 79° 24.439 W | 50 | Gravel | Knollwood Driveway | 35 | 11.871 | -79 | -24.439 | 35.19785 | -79.40731667 | 38 | $6,000.00 | $400.00 | $8,000.00 | |
| 35° 11.879 N 79° 24.469 W | 15 | Gravel | Knollwood Driveway | 35 | 11.879 | -79 | -24.469 | 35.19798333 | -79.40781667 | 39 | $6,000.00 | $400.00 | $2,400.00 | |
| 35° 11.902 N 79° 24.612 W | 45 ft. | Asphalt | Talamore Dr. | 35 | 11.902 | -79 | -24.612 | 35.19836667 | -79.4102 | 40 | $0.00 | $0.00 | $0.00 | |
| 35° 11.910 N 79° 24.677 W | 15 | Gravel | Driveways | 35 | 11.91 | -79 | -24.677 | 35.1985 | -79.41128333 | 41 | $6,000.00 | $400.00 | $2,400.00 | |
| 35° 11.919 N 79° 24.738 W | 25 | Asphalt | Driveways | 35 | 11.919 | -79 | -24.738 | 35.19865 | -79.4123 | 42 | $6,000.00 | $1,000.00 | $4,375.00 | |
| 35° 11.919 N 79° 24.761 W | 55 | Asphalt | Driveways | 35 | 11.919 | -79 | -24.761 | 35.19865 | -79.41268333 | 43 | $6,000.00 | $1,000.00 | $9,625.00 | |
| 35° 11.928 N 79° 24.832 W | 18 | Gravel | Driveways / Pinefield Court Rd. | 35 | 11.928 | -79 | -24.832 | 35.1988 | -79.41386667 | 44 | $6,000.00 | $400.00 | $2,880.00 | |
| 35° 11.937 N 79° 24.881 W | 20 | Gravel | Driveways | 35 | 11.937 | -79 | -24.881 | 35.19895 | -79.41468333 | 45 | $6,000.00 | $400.00 | $3,200.00 | |
| 35° 11.947 N 79° 24.971 W | 20 | Gravel | Quail Hollow Place | 35 | 11.947 | -79 | -24.971 | 35.19911667 | -79.41618333 | 46 | $6,000.00 | $400.00 | $3,200.00 | |
| 35° 11.951 N 79° 24.998 W | 25 | Gravel | Driveways | 35 | 11.951 | -79 | -24.998 | 35.19918333 | -79.41663333 | 47 | $6,000.00 | $400.00 | $4,000.00 | |
| 35° 11.958 N 79° 25.041 W | 15 | Gravel | Driveways | 35 | 11.958 | -79 | -25.041 | 35.1993 | -79.41735 | 48 | $6,000.00 | $400.00 | $2,400.00 | |
| 35° 11.965 N 79° 25.097 W | 20 | Asphalt | Driveways | 35 | 11.965 | -79 | -25.097 | 35.19941667 | -79.41828333 | 49 | $6,000.00 | $1,000.00 | $3,500.00 | |
| 35° 11.968 N 79° 25.111 W | 15 | Gravel | Driveways | 35 | 11.968 | -79 | -25.111 | 35.19946667 | -79.41851667 | 50 | $6,000.00 | $400.00 | $2,400.00 | |
| 35° 11.974 N 79° 25.167 W | 25 | Asphalt | Cardinal Rd. | 35 | 11.974 | -79 | -25.167 | 35.19956667 | -79.41945 | 51 | $6,000.00 | $1,000.00 | $4,375.00 | |
| 35° 11.958 N 79° 25.320 W | 135 ft. | Asphalt | Knoll Rd. | 35 | 11.958 | -79 | -25.32 | 35.1993 | -79.422 | 52 | $0.00 | $0.00 | $0.00 | |
| 35° 12.013 N 79° 25.435 W | 20 | Asphalt | Driveways | 35 | 12.013 | -79 | -25.435 | 35.20021667 | -79.42391667 | 53 | $6,000.00 | $1,000.00 | $3,500.00 | |
| 35° 12.023 N 79° 25.435 W | 25 ft. | Asphalt | Walker Station Ave. | 35 | 12.023 | -79 | -25.435 | 35.20038333 | -79.42391667 | 54 | $0.00 | $0.00 | $0.00 | |

Midland Road Corridor Improvements
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Midland Road - Median Closures

| Latitude / Longitude | Width (Feet) | Surface Type | Notes | Latitude Degrees | Latitude Minutes | Longitude Degrees | Longitude Minutes | Latitude Degrees FINAL | Longitude Degrees FINAL | | Landscaping Cost per 40 Linear Feet | Roadway Cost Per 40 Linear Feet | Total Cost (without Contingency) | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 35° 22.028 N 79° 25.553 W | 15 | Asphalt | Driveways | 35 | 12.028 | -79 | -25.553 | 35.20046667 | -79.42588333 | 55 | $6,000.00 | $1,000.00 | $2,625.00 | |
| 35° 12.034 N 79° 25.598 W | 115 | Asphalt | Midsouth Club | 35 | 12.034 | -79 | -25.598 | 35.20056667 | -79.42663333 | 56 | $6,000.00 | $1,000.00 | $20,125.00 | |
| 35° 12.039 N 79° 25.642 W | 15 | Gravel | Driveways | 35 | 12.039 | -79 | -25.642 | 35.20065 | -79.42736667 | 57 | $6,000.00 | $400.00 | $2,400.00 | |
| 35° 12.048 N 79° 25.709 W | 30 | Gravel | Williams Rd. | 35 | 12.048 | -79 | -25.709 | 35.2008 | -79.42848333 | 58 | $6,000.00 | $400.00 | $4,800.00 | |
| 35° 12.051 N 79° 25.721 W | 15 | Asphalt | Driveways | 35 | 12.051 | -79 | -25.721 | 35.20085 | -79.42868333 | 59 | $6,000.00 | $1,000.00 | $2,625.00 | |
| 35° 12.060 N 79° 25.801 W | 25 | Asphalt | Median Crossover / No Drives | 35 | 12.06 | -79 | -25.801 | 35.201 | -79.43001667 | 60 | $6,000.00 | $1,000.00 | $4,375.00 | |
| 35° 12.070 N 79° 25.883 W | 50 ft. | Asphalt | Carolina Eye Enterance | 35 | 12.07 | -79 | -25.883 | 35.20116667 | -79.43138333 | 61 | $0.00 | $0.00 | $0.00 | |
| 35° 12.074 N 79° 25.904 W | 20 | Asphalt | Driveways | 35 | 12.074 | -79 | -25.904 | 35.20123333 | -79.43173333 | 62 | $6,000.00 | $1,000.00 | $3,500.00 | |
| 35° 12.080 N 79° 25.948 W | 20 | Asphalt | Midland Country Club Enterance | 35 | 12.08 | -79 | -25.948 | 35.20133333 | -79.43246667 | 63 | $6,000.00 | $1,000.00 | $3,500.00 | |
| 35° 12.086 N 79° 25.980 W | 20 | Gravel | Driveways | 35 | 12.086 | -79 | -25.98 | 35.20143333 | -79.433 | 64 | $6,000.00 | $400.00 | $3,200.00 | |
| 35° 12.101 N 79° 26.092 W | 425 | Asphalt | Cat Health Clinic | 35 | 12.101 | -79 | -26.092 | 35.20168333 | -79.43486667 | 65 | $0.00 | $0.00 | $0.00 | See Median Reforestation Estimate |
| 35° 12.112 N 79° 26.168 W | 50 ft. | Asphalt | Dunn Vegan Court / Midland Ln. | 35 | 12.112 | -79 | -26.128 | 35.20186667 | -79.43546667 | 66 | $6,000.00 | $1,000.00 | $175.00 | |
| 35° 12.119 N 79° 26.214 W | 30 | Asphalt | Glenn Meadow Ct. | 35 | 12.119 | -79 | -26.214 | 35.20198333 | -79.4369 | 67 | $6,000.00 | $1,000.00 | $5,250.00 | |
| 35° 12.122 N 79° 26.235 W | 10 | Asphalt | Driveways | 35 | 12.112 | -79 | -26.235 | 35.20186667 | -79.43725 | 68 | $6,000.00 | $1,000.00 | $1,750.00 | |
| 35° 12.125 N 79° 26.257 W | 25 | Asphalt | Driveways | 35 | 12.125 | -79 | -26.257 | 35.20208333 | -79.43761667 | 69 | $6,000.00 | $1,000.00 | $4,375.00 | |
| 35° 12.130 N 79° 26.300 W | 30 | Asphalt | Windmere Rd. | 35 | 12.13 | -79 | -26.3 | 35.20216667 | -79.43833333 | 70 | $6,000.00 | $1,000.00 | $5,250.00 | |
| 35° 12.138 N 79° 26.369 W | 20 | Asphalt | Driveways | 35 | 12.138 | -79 | -26.369 | 35.2023 | -79.43948333 | 71 | $6,000.00 | $1,000.00 | $3,500.00 | |
| 35° 12.148 N 79° 26.455 W | 80 ft. | Asphalt | Pinehurst National | 35 | 12.148 | -79 | -26.455 | 35.20246667 | -79.44091667 | 72 | $0.00 | $0.00 | $0.00 | |
| 35° 12.156 N 79° 26.758 W | 70 ft. | Asphalt | Airport Rd. | 35 | 12.156 | -79 | -26.758 | 35.2026 | -79.44596667 | 73 | $0.00 | $0.00 | $0.00 | |
| 35° 12.154 N 79° 26.899 W | 40 | Asphalt | Beaver Ln. | 35 | 12.154 | -79 | -26.899 | 35.20256667 | -79.44831667 | 74 | $6,000.00 | $1,000.00 | $7,000.00 | |

| | |
|---|---|
| Subtotal: | $271,230.00 |
| Contingency (30%): | $81,369.00 |
| Total - Construction: | $353,000.00 |
| Engineering (Approximate) | $ 40,000.00 |
| Construction management, engineering, and inspections (Approximate) | $ 27,000.00 |
| **Project Total:** | **$420,000.00** |