Efland-Buckhorn-Mebane Access Management Plan



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Orange County Planning Department

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Executive Summary

The Federal Highway Administration's (FHWA) official access management definition is the process that provides access to land development while simultaneously preserving the flow of traffic on the surrounding system in terms of safety, capacity, and speed. This plan promotes FHWA's access management practices by allowing local government to:

- Maintain the overall safety for all users of the transportation system;
- Minimize congestion and crash rates;
- Provide for efficient traffic flow and pedestrian and bicycle safety; and
- Provide appropriate access to adjacent business properties.

The original Efland-Buckhorn-Mebane Access Management Plan (E-B-M AMP) was adopted November 15, 2011 and it implemented Efland-Mebane Small Area Plan (2006) recommendations. It has also advanced several 2030 Comprehensive Plan goals and objectives.



The original plan identified access management strategies and areas where new connector roads would be needed to maintain and improve access within areas identified in the County's land use plan for economic development purposes. This plan was instrumental in gaining North Carolina Department of Transportation (NCDOT) acceptance and participation in roadwork improvements necessary to serve the Morinaga Candy Factory, which opened in 2016, with limited on-site surveying and analysis.

In 2017, a thorough existing conditions, environmental, and traffic analysis was completed through an engineering-based transportation study conducted by Volkert Inc., based in Raleigh, NC. Its Transportation Report for the Efland-Buckhorn-Mebane Study Area (See Appendix A), hereafter referred to as the 2017 Transportation Report, reinforces the original E-B-M AMP with a comprehensive investigation of the area's development potential, traffic impact and recommended improvements.



The E-B-M AMP is:

- A combination of the original adopted 2011 E-B-M AMP; 2017 Transportation Study; and County Planning, City of Mebane, and public comments.
- A long-range transportation vision for the area illustrating roadway alignment and corridor width necessary to serve future land uses and address traffic impact as development occurs.
- A plan that assists the County in promoting economic development through its development review process by encouraging developers to dedicate right-of-way necessary for future roads.

The E-B-M AMP is not:

- A proposal for, nor does it seek authorization for, funding right-of-way acquisition.
    - However, an AMP would be a necessary prerequisite to guide the investment to improve access, where necessary.

- A collection of future road design and construction projects, nor does it include a schedule.
- A guarantee that future development will occur or that roads will be built. The original Efland-Buckhorn-Mebane Access Management Plan (E-B-M AMP) was adopted November 15, 2011.

This update uses the 2017 Transportation Report to renew and replace the original 2011 Efland-Buckhorn-Mebane Economic Development District Access Management Plan. This plan takes into account input from local residents and businesses in the area through a public workshop conducted throughout the planning process. It also incorporates other road and intersection improvements recommended by planning staff based on their expertise and familiarity with economic development activities coordinated by the County's Economic Development Department.

I. Introduction

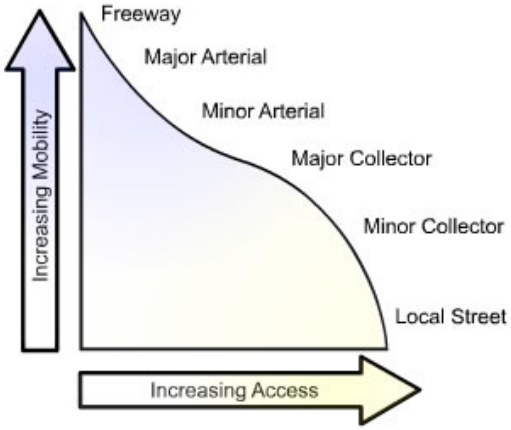
Orange County seeks to develop an access management plan in order to maintain and improve the functionality of the transportation network as the Efland-Buckhorn-Mebane (E-B-M) Study Area develops. This E-B-M AMP provides the basis and justification for requiring the dedication of right-of-way in the planning area. Orange County's Unified Development Ordinance (UDO) requires that proposed site plans demonstrate compliance with adopted access management plans.

As properties are developed, transportation interconnectivity and access become increasingly important. Orange County and regional metropolitan and rural planning organizations are dedicated to safe and efficient use of the transportation network through sound access management practices. These practices in form of local plans and policies are applied to highways, major arterials, and other roadways, including but not limited to:

- **Access Spacing**: Increasing the distance between traffic signals improves traffic flow on major roadways, reduces congestion, and improves air quality for heavily traveled corridors.
- **Driveway Spacing**: Fewer driveways spaced further apart allow for more orderly traffic merging and presents fewer challenges to drivers.
- **Safe Turning Lanes**: Dedicated left- and right-turn, indirect left-turns and U-turns, and roundabouts keep through-traffic flowing. Roundabouts provide an opportunity to reduce conflict points within intersections for safe travel.
- **Median Treatments**: Two-way left-turn lanes and non-traversable, raised medians are examples of some of the most effective means to regulate access and reduce crashes.
- **Right-of-Way Management**: Right-of-way reservation for future widenings, good sight distance, access location, and other access-related issues.

Such policies designate appropriate control levels for various land uses. Local residential streets are allowed full access, while commercial corridors have limited access. A wide range of road types are included, each requiring standards that ensure free traffic flow while allowing access to major businesses and other land uses along a road (FIGURE 1).

Figure 1: Access vs Mobility



Orange County uses Access management Plans to ensure land use decisions take into consideration their impacts on the transportation network. This practice is incorporated into the UDO as a means of implementing the County's 2030 Comprehensive Plan. The County currently has three Access Management Plans in place:

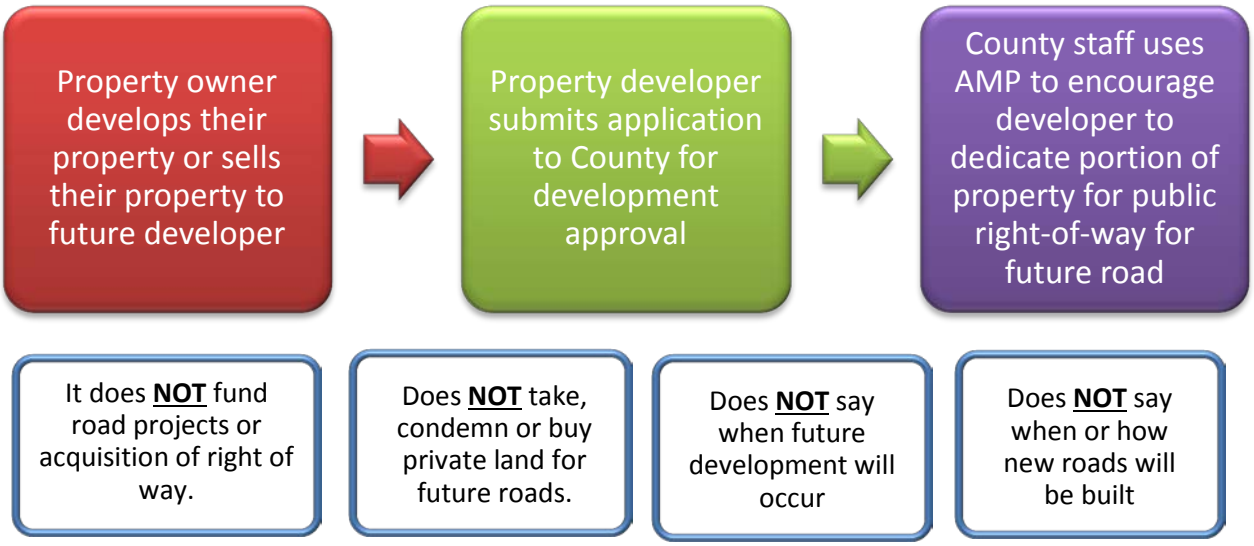
- Orange Grove Road (March 2003)
- Efland-Buckhorn-Mebane (November 2011)
- Eno Economic Development District (November 2013)

A review of current legal and regulatory practices lists some fundamental access management aspects and authority:

- Access management starts at the state level through enabling legislation;
- State-enabling legislation dictates power given to local jurisdictions; and
- Land use planning techniques can be used to promote access management.

Access Management Plans (AMPs) are proposed long-range transportation plans with elements such as possible new roads and connections to existing roads. These plans promote an orderly, cost effective, efficient and environmentally sensitive roadway program, which help guide development decisions and investment. Ultimately, Orange County seeks to develop an access management plan in order to maintain the functionality of and improve the transportation network as the area develops over time. These AMPs are primarily used when a property owner sells or subdivides their property, if they choose, for development (FIGURE 2)..

Figure 2 : How the Plan Works



A "Developer" is defined as: a person who develops real estate.

A property owner who seeks to make physical changes to their property for their own personal use or improve the property's sale potential is synonymous to "a person who develops real estate". This person must submit a development application to the County for approval. It is through this development review process where this plan is exercised to request right-of-way.

This regulatory framework is detailed in the following section.

A. State and Local Regulations

Under State law - North Carolina General Statutes (N.C.G.S.) § 136-66.2 - Metropolitan Planning Organizations (MPOs) and municipalities shall develop Comprehensive Transportation Plans (CTPs) in cooperation with the NCDOT. Orange County's is divided among three regional transportation agencies, each with a CTP. These agencies work with Orange County to meet state and federal regulations for all transportation projects, plans, and programs. They also ensure transportation planning is continuing, coordinated, and comprehensive (23 U.S.C. 134-135).

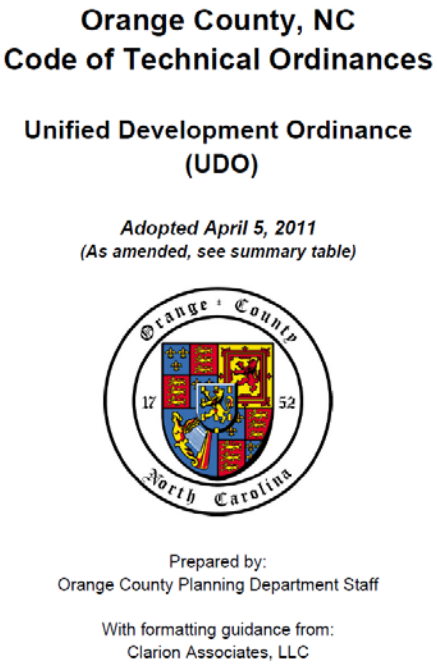
- Burlington-Graham Metropolitan Planning Organization (BG MPO)
- Durham-Chapel Hill-Carrboro Metropolitan Planning Organization (DCHC MPO)
- Triangle Area Rural Planning Organization (TARPO)

TARPO's CTP was adopted in 2013 and provides transportation project recommendations for Orange County's rural areas, while the MPO CTPs address the urbanized areas. DCHC MPO CTP was adopted in 2017 and a BG MPO CTP is currently underway.

It is important to note that the CTPs do not include every road on the highway system. As such, in accordance with state law, to complement the CTP roadway element, municipalities and MPOs may develop collector street plans. Additionally, locally approved transportation plans, such as the E-B-M AMP, may contain street or highway right-of-way alignment and dedication requirements, and collectively function as the collector street plan for the MPO or municipality as referenced in N.C.G.S. § 136-66.2.

The Orange County Unified Development Ordinance (UDO) section 2.5.3.(v) and reiterated in section 6.10.A.1.(b), includes the requirements for reserving and dedicating right of way or requiring road construction listed in Access Management Plans or on the CTP. Specific mention is also made to the dedication of right of way based on the concepts shown on the CTP and locally adopted transportation plans, in accordance with N.C.G.S. § 136 66.2 and § 136 66.10.

The CTP, collector street plan and locally adopted transportation plans pursuant to N.C.G.S. § 136-66.2 serve as the comprehensive legal framework referenced in N.C.G.S. § 136-66.10(a), addressing the reservation and dedication of right-of-way under local ordinances.



North Carolina requires development along state routes to be accordance with NCDOT's Policy on Street and Driveway Access to North Carolina Highways. This document sets specific driveway and street access points criteria regulating their location, design, and operation. When any construction work is done on state routes or adjacent to existing roadways, connection and access points must meet this state regulation; including properties being modified or expanded. While the state's policy focuses on the transportation network, local zoning ordinances and subdivision regulations address land use. Local access management plans play an important role in merging state policy and local authority in efforts to integrate land use and transportation, including Orange County planning processes.

B. Background and Planning Area

Several plans have been completed within the E-B-M area, beginning with the 1981 Comprehensive Plan, which was a Countywide plan addressing land uses for all of the County's townships. FIGURE 3 illustrates the AMP's chronology. The E-B-M AMP encompasses 4.25 square miles along I-85/I-40 between Efland and Mebane and is bounded by the following (FIGURE 4):

- North: US Highway 70
- South: West Ten Road/Bowman Road
- East: I-85/US-70 Connector
- West: Ben Wilson Road

Figure 3: Plan Chronology

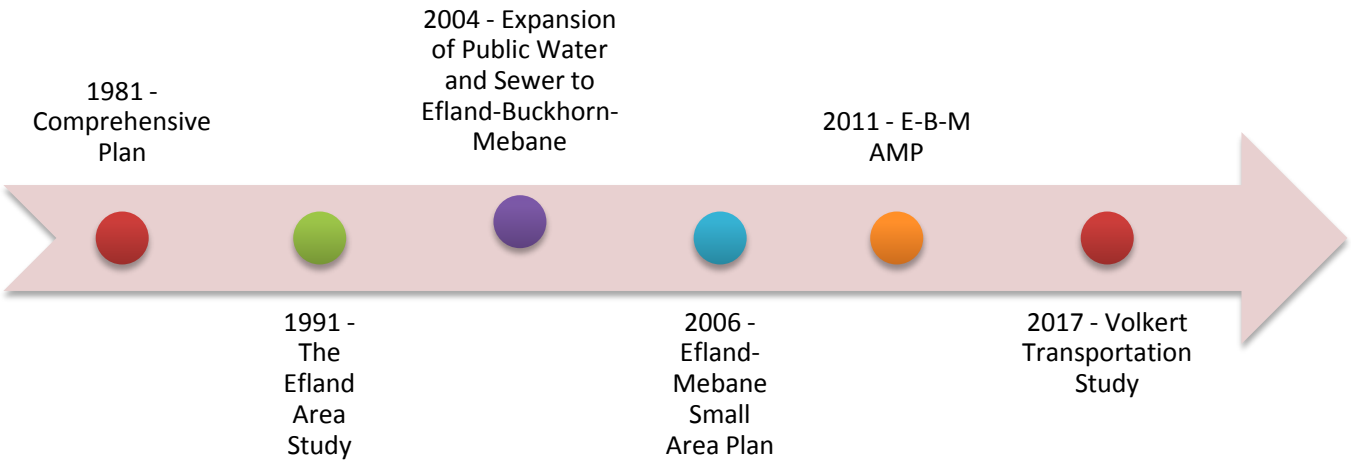
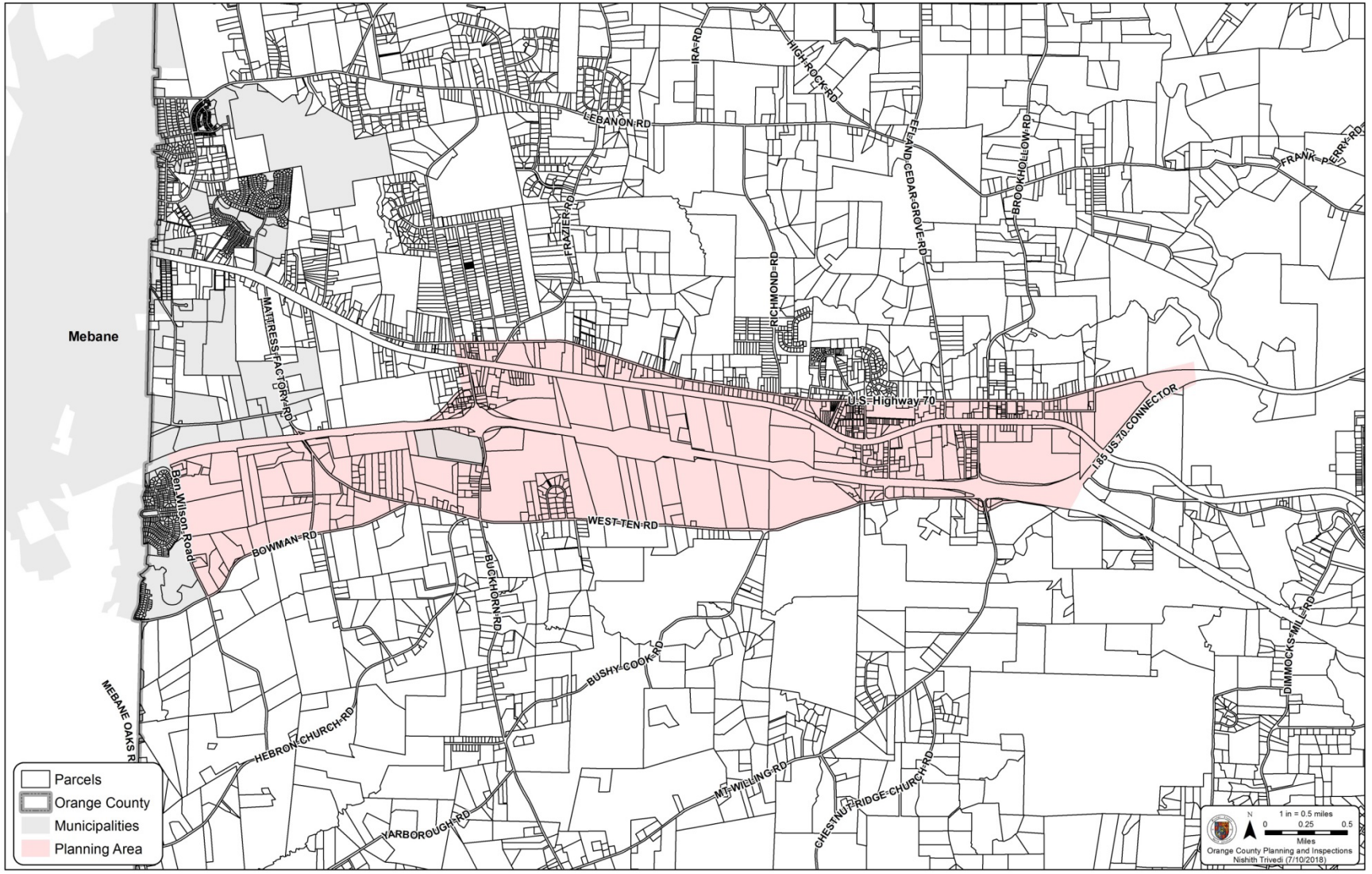


Figure 4: E-B-M AMP Planning Area Map



C. Goals and Objectives

This update advances goals and objectives of the Orange County's adopted 2030 Comprehensive Plan (adopted in 2008) to ensure land use decisions take into consideration their impact on the transportation network. Specific goals and objectives advanced include:

Economic Development (ED) Goal 2: Infrastructure that supports desired development.

- **Objective ED-2.1:** Encourage compact and higher density development in areas served by water and sewer.
- **Objective ED-2.2:** Encourage mixed use projects that support walkable communities.
- **Objective ED-2.3:** Promote public transportation, alternative modes of transportation, and encourage carpooling and park-and-ride participation.
- **Objective ED-2.5:** Identify lands suitable to accommodate the expansion and growth of commercial and industrial uses in the County.

Land Use (LU) Goal 1: Fiscally and environmentally responsible, sustainable growth, consistent with the provision of adequate services and facilities and a high quality of life.

- **Objective LU-1.1:** Coordinate the location of higher intensity / high density residential and non-residential development with existing or planned locations of public transportation, commercial and community services, and adequate supporting infrastructure (i.e., water and sewer, high-speed internet access, streets, and sidewalks), while avoiding areas with protected natural and cultural resources. This could be achieved by increasing allowable densities and creating new mixed-use zoning districts where adequate public services are available.
- **Objective LU-1.2:** Evaluate and report on whether existing and approved locations for future residential and non-residential developments are coordinated with the location of public transportation, commercial and community services, and adequate supporting infrastructure (i.e., water and sewer services, high-speed internet access, streets and sidewalks).

Transportation (T) Goal 3: Integrated land use planning and transportation planning that serves existing development, supports future development, and is consistent with the County's land use plans which include provisions for preserving the natural environment and community character.

- **Objective T-3.3:** Determine the policies to guide connectivity within and between residential developments based on their impact on neighborhood character.
- **Objective T-3.4:** Direct development to higher density mixed-use districts along transit corridors and make necessary multi-modal transportation improvements to service lands that are slated for future intense development, such as Economic Development Districts.
- **Objective T-3.5:** Use innovative techniques to increase mobility and reduce rush hour congestion.

Additionally this AMP advances the Efland Mebane Small Area Plan's following goals and objectives:

Goal: In the future, the planning area should be well served by reliable infrastructure to accommodate orderly, planned growth. The planning area will retain the core village area that will be the center of community life. An efficient multi-modal transportation system will operate in the area and commercial and light industrial uses both in the planning area and nearby will provide job opportunities to area residents. There will be a mix of housing types and sizes that will be economically accessible to a broad spectrum of working people. Parks and greenspace will be connected by a system of greenways that will allow people to enjoy a high-quality outdoor environment while also serving as corridors for wildlife migration.

- **Objective:** Orderly and planned expansion of the sewer system and a sufficient public water supply system.
- **Objective:** Preservation of community character while allowing for planned, sustainable residential and non-residential growth.
- **Objective:** Provision of an efficient, multi-modal transportation system.
- **Objective:** A greater level of intergovernmental coordination between Orange County and the other governmental entities in the planning area.

Given that a portion of the E-B-M AMP planning area is within the City of Mebane's planning area, as designated in the city's 2017 Mebane by Design Comprehensive Land Development Plan and addressed in the water and sewer agreement between Orange County and Mebane, Mebane, in coordination with Orange County, may seek to extend additional water and sewer lines into the planning area. Based on these policies, it is expected that any future development within the E-B-M planning area that requests water and sewer service from the City of Mebane may at some point be annexed by the City of Mebane. The planning process takes the adjacent city into consideration.

The plan aids in achieving these goals and objectives by ensuring that the future road design considers all available options as development occurs. As roads are built over time - either in the course of private development or through the State's Strategic Improvement Program - design of existing and proposed roads will take into account all available NCDOT approved options including but not limited to:

- Wide paved shoulders
- bike lanes and sidewalks
- transit services
- shared use path and markings
- turn lanes and roundabouts
- intelligent transportation systems (ITS)

Orange County will also continue promoting its transit and transportation demand management practices as potential options throughout the planning area, as it does throughout the county. Actual design of specific roads is outside the scope of this plan.

This plan is limited in scope with the primary purpose of ensuring that future development addresses the traffic impact it will cause. This is not a Comprehensive Transportation Plan but locally adopted plans are included in CTPs by reference. NCDOT standard street cross sections are included in the plan and they establish the desired right-of-way sought during development review. The plan also considers possible alternative cross-sections consistent with the necessary right-of-way. As this plan is not a CTP, it does not address nor prioritize travel mode. The actual design of individual roads will be conducted only when roads are implemented either through the site plan and development review process or NCDOT's design and public review phase. This plan serves as an overall vision for the area.

D. Planned Projects

I-85 bisects the planning area and is scheduled for pavement rehabilitation through NCDOT's adopted FY 2018-2027 State Transportation Improvement Program (STIP).

- TIP I-5954 & TIP I-5958 - I-40/I-85 pavement rehabilitation totaling $18,365,000 and covering 7.4 miles.

Prior to the state issuing the STIP every other year, NCDOT accepts a limited number of projects from Metropolitan Planning Organizations for inclusion through its Strategic Prioritization of Transportation (SPOT) process. Orange County submitted the following three projects in the planning area to BG MPO for consideration in the FY 2020-2029 STIP:

- SPOT ID – H140373 - Mattress Factory Road - extended to US-70 - $306,000
- SPOT ID – H090193 - I-40 – Mattress Factory Road Interchange - convert grade separation into interchange - $4,960,000
- SPOT ID – H090557 – Buckhorn Road – SR-1114 – widen to multi-lane with bike/ped accommodations - $14,674,000

While these projects will not be included in the FY 2020-2029 STIP, they are Orange County priorities for the E-B-M planning area. The City of Mebane has incorporated these three projects as part of its adopted 2040 Comprehensive Transportation Plan. While these projects are now part of Mebane's locally adopted plan, they also remain a priority for Orange County. The Buckhorn Road widening (SPOT ID H183915) is currently going through an express feasibility study conducted by NCDOT. The preliminary scope of the study includes:

- Rebuilding the I-85 interchange to improve access and egress
- Construction of a railroad grade separation on a realigned Buckhorn Road connecting to Frazier Road
- Realignment of Industrial Drive to Buckhorn Road with roundabout

Orange County is currently identifying other transportation priorities in the planning area for the future SPOT process so they may be considered in the next STIP.

II. Access Management Plan

The E-B-M AMP is updated using a strategic planning process. The detailed analysis included in the 2017 Transportation Study, located in APPENDIX B, documents the quantitative nature of the planning area, identifying key access management issues addressed by the original 2011 access management plan. This E-B-M AMP update is to follow a planning process similar to the original 2011 AMP. A community meeting was conducted to gather public input on the plan, including the issues, concerns, and recommendations of the attendees. Access Management strategies have been evaluated, recommended, and included in this document in order to execute a successful plan. A summary of the planning process is shown below in FIGURE 5 and detailed in this chapter.

Figure 5: Planning Process



A. Community Meeting

On August 28, 2018, Orange County Planning Department hosted a Community Meeting at Gravelly Hill Middle School, located within the planning area. Extensive outreach was conducted to get the public involved in the planning process, this included:

- Individual letters mailed to each property owner in - and within 500' of - the planning area notifying them of the Community Meeting and encouraging their participation.
- Posted on County website urging public involvement and keeping them updated on the plan's status.
- Provided a schedule requesting public participate when the plan goes before Planning Board, Orange County Unified Transportation Board and Board of County Commission for approval.

The Community Meeting was held in the gym at Gravelly Hill Middle School from 4:30 pm – 6:30 pm. Maps of the E-B-M planning area were displayed around the gym with comment cards and brief surveys soliciting their input while crafting the plan. Detail comments from the community meeting are included in Appendix C. They support the need for an update of the E-B-M AMP and are supportive of the implementation strategies necessary to address their transportation concerns in the planning area.

B. 2017 Transportation Study

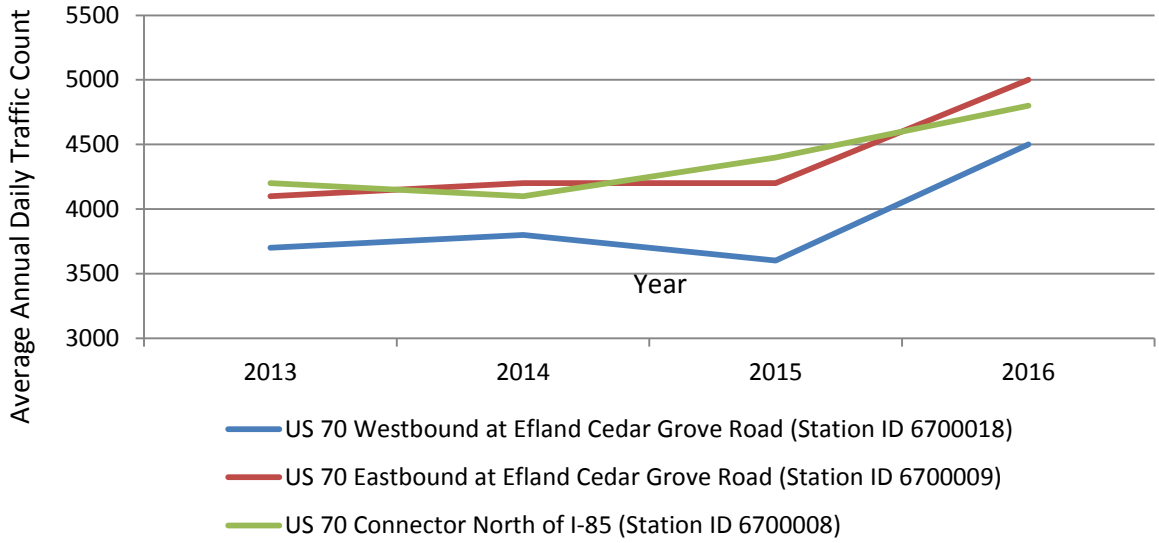
The 2017 Transportation Study (APPENDIX B) analyzed existing conditions for the planning area. The area is mostly rural in character with a few commercial properties scattered throughout. Sites such as Morinaga America Foods, Inc., Forma-Fab Metals, Cleora Sterling, and Gravelly-Hill Middle School are located within the planning area. I-85/I-40 bisects the area and is paralleled by US-70 and West Ten Road. Efland Fire Department Station 2, GE Industrial Solutions, and Efland Cheeks Elementary School as well as other uses are found along the area's border. Since the 2011 AMP's adoption and the subsequent 2017 Transportation Study, the planning area has been further analyzed, including updating traffic count and crash data and additional road and intersection improvements have been identified for the area.

In 2016, nineteen NCDOT traffic counting stations were located throughout the planning area (FIGURE 6). These stations count vehicular traffic traversing various corridors. Some stations collect traffic counts annually while others are collected every other year.

Key highlights of traffic count analysis:

- Station 6701742 – Buckhorn Road north of I-58 – currently accounts for twice as many vehicles (12,000) than 2006 (6,500).
- Stations 6701742 and 6701751 – I -85 within the planning area – currently has an estimated 30% more traffic volume (113,000) than in 2006 (88,000).
- Stations 6700018 and 6700009 – US-70 east of Efland Cedar Grove Road – continue experiencing increased traffic over the past few years (FIGURE 7).

Figure 6: US-70 Traffic Trends



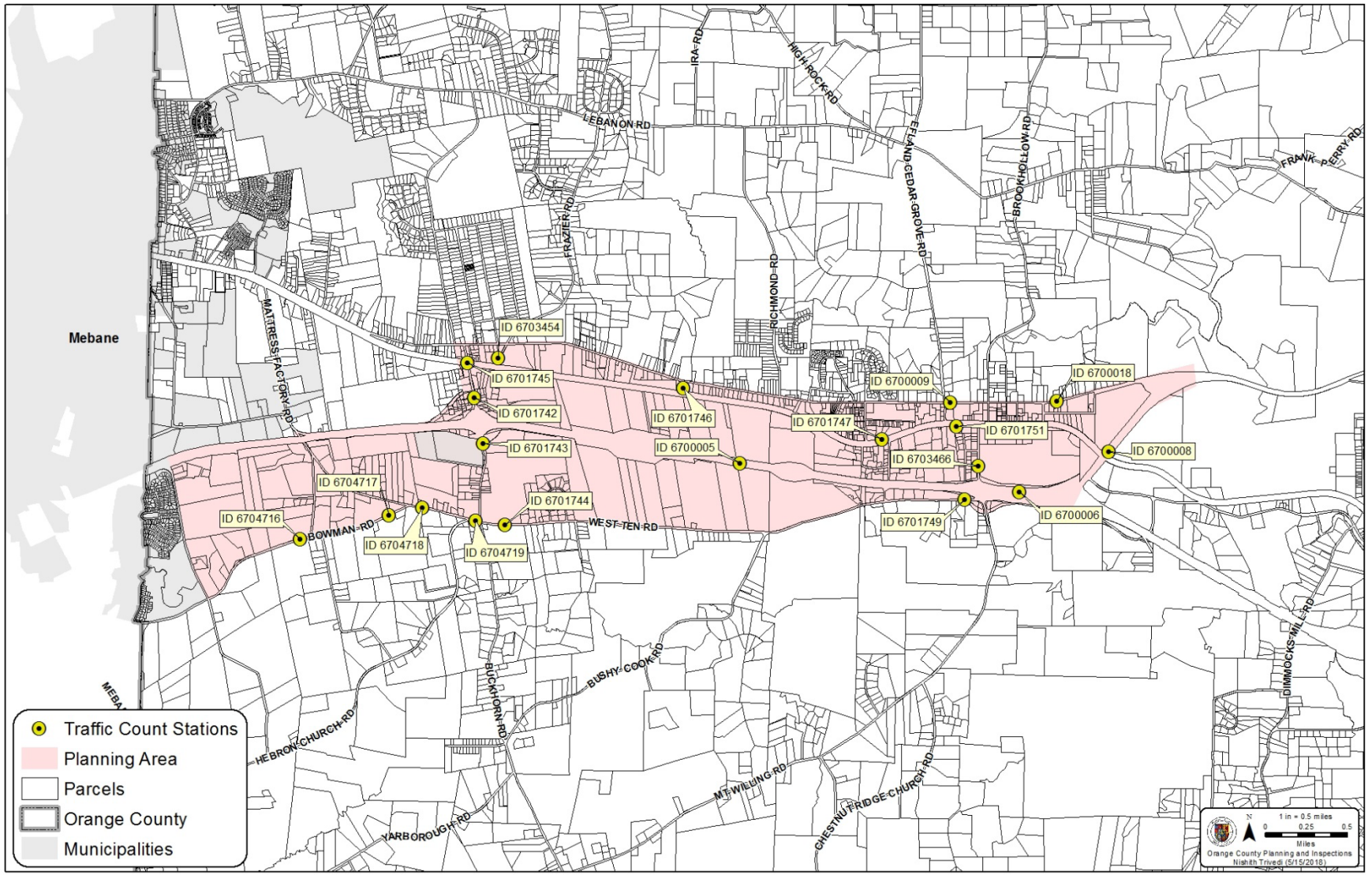
- Traffic count stations along West Ten Road and Bowman Road indicate traffic has more than doubled (TABLE 1).

ROUTE	Station ID	2003	2005	2007	2009	2011	2013
West Ten Road	6701749	830	870	1000	900	1000	1500
West Ten Road	6704718	980	910	1100	1000	1200	1400
West Ten Road	6704719	1200	1300	1400	1300	1600	1800
Bowman Road	6704717	440	460	610	630	770	840
Bowman Road	6704716	460	860	1200	1200	1500	1200

Table 1: Traffic Trends

Increased traffic in the area has also resulted in greater number of accidents in the planning area. Access Management policies must address this increased traffic to ensure safe travel for all users.

Figure 7: Traffic Count Stations Map



This plan update includes a brief safety analysis, an analysis not included in the 2017 Transportation Study. A total of 1,385 estimated crashes have been reported in the planning area over the past ten year. Accidents in the urban area - as determined by the U.S. Census - account for only 2.74% (38) of all crashes (FIGURE 8). The urban area is mainly along US-70. Crashes along rural streets in the E-B-M area have constantly been increasing over the past ten years as reported to NCDOT (FIGURE 9). Five accidents in rural area have resulted in fatalities.

This trend may continue as more accidents continue to occur along rural roads like Buckhorn Road, Bowman Road and West Ten Road. While US-70 portion of the planning area may be considered urban, the northern half is still rural. Access management policies will seek to reduce this growing trend, especially in the rural areas.

Figure 8: Crash by Severity

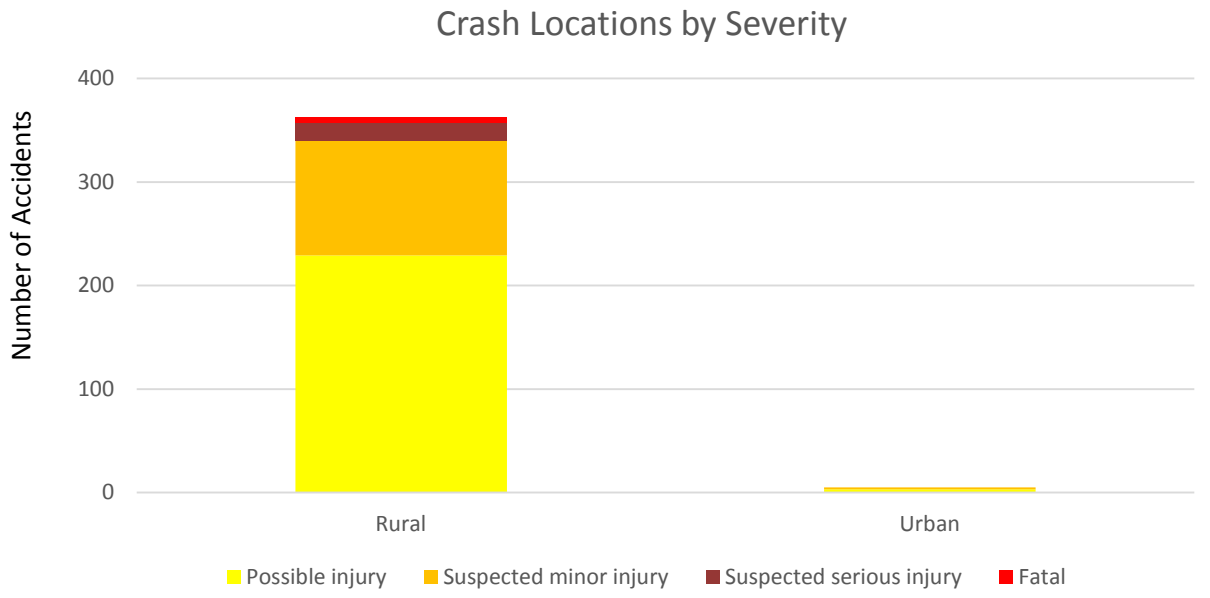


Figure 9: Crash Frequency Trend

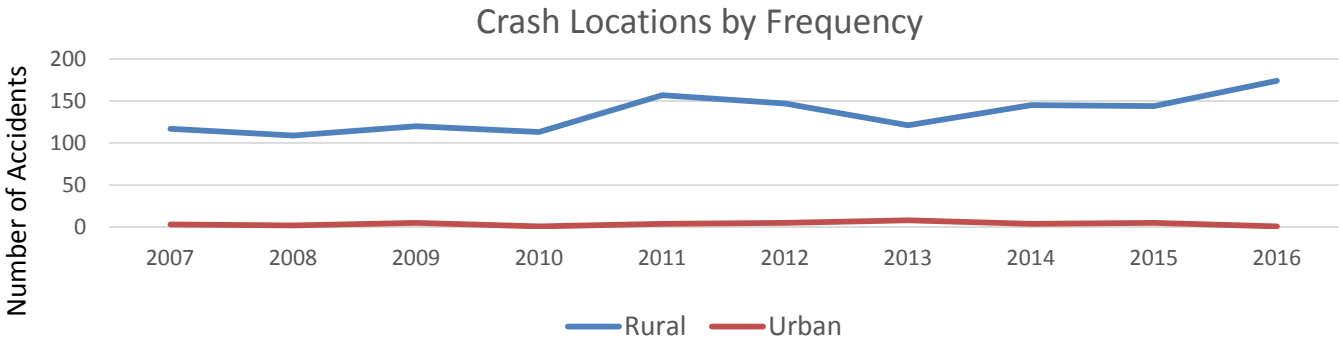
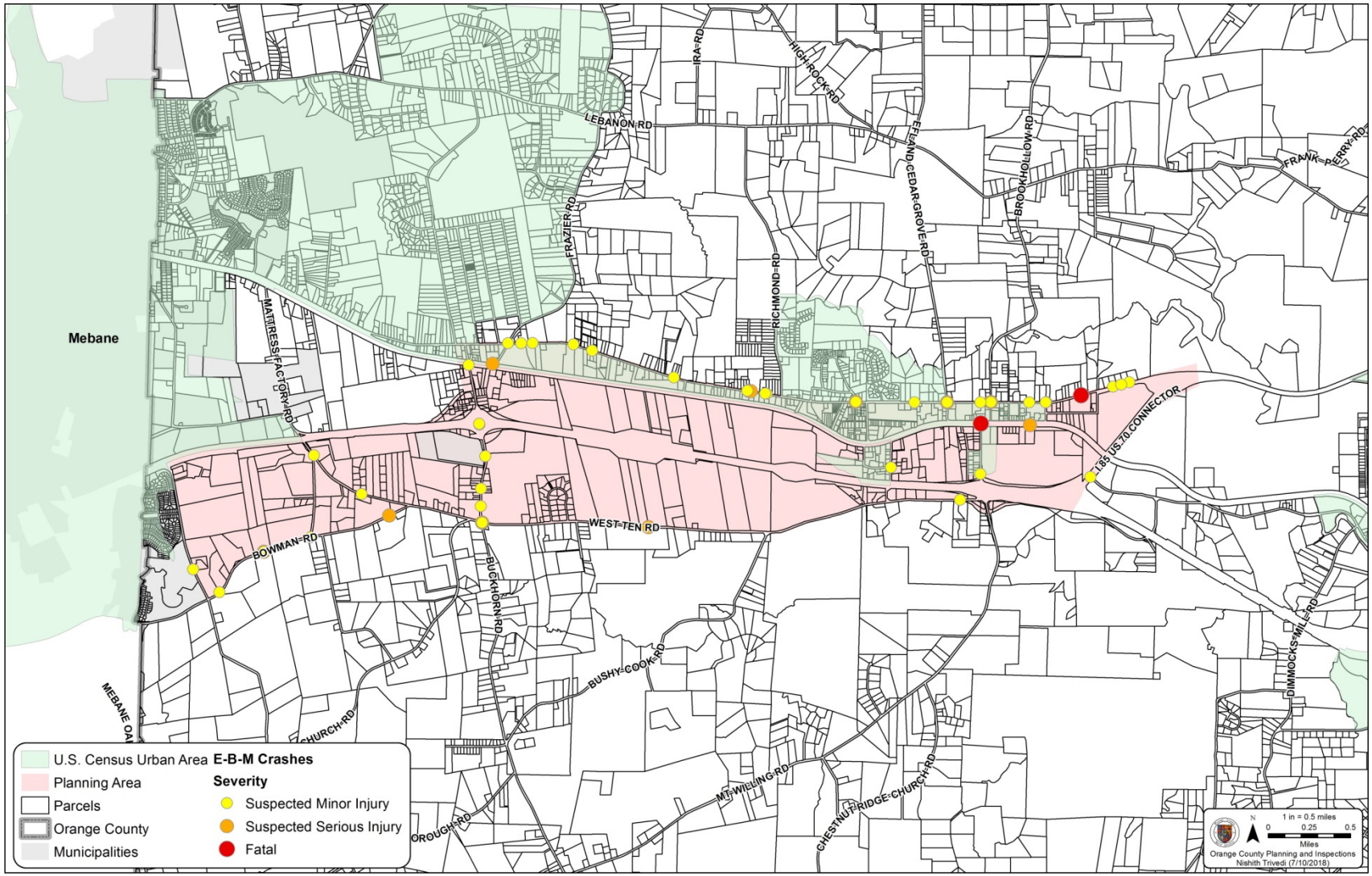


Figure 10: Crash Severity Map



1. Land Use Matrix and Future Network

As part of the 2017 Transportation Study, the planning area was divided into eighteen potential development sites called "pods". These sites were analyzed and their maximum buildable area was determined APPENDIX B. Institute of Transportation Engineers (ITE) trip generations were also evaluated to ascertain development impact on the transportation network. The Pod analysis, street cross sections and intersection improvements were developed to help identify and mitigate the traffic impact through this process and made as part of updated AMP.

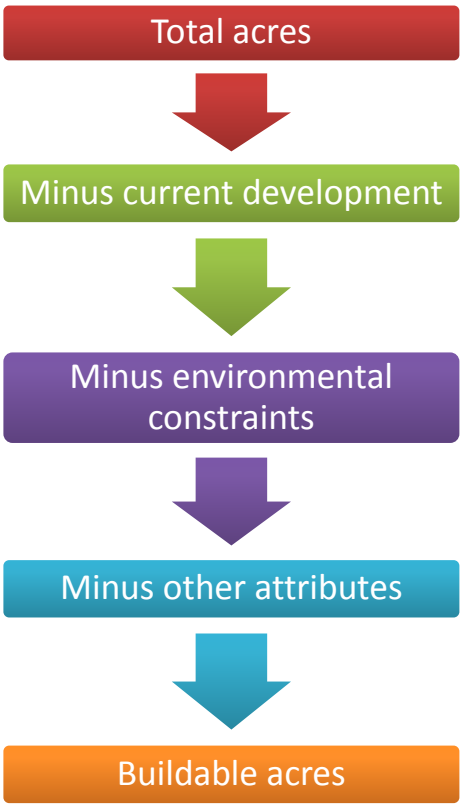
2. Pod Delineation and Analysis

The analysis completed as part of the Study estimates a total 638.2 buildable acres (27.73% of 2301.5 gross acres), due to environmental constraints and other factors. Pods range in size from 22 to 362 acres. A summary of each pod's buildable acres is shown below (TABLE 2 & FIGURE 11). Refer to the 2017 Transportation Study in APPENDIX B for additional information and assumptions used in the analysis.

Pod	Gross Acres	Buildable Acres	Constraints/ Attributes	Percentage Buildable
1	343.41	86.79	256.62	25.27%
2	75.35	19.06	56.29	25.29%
3	257.53	81.01	176.52	31.46%
4	362.35	135.16	227.19	37.30%
5	138.95	0.00	138.95	0.00%
6	109.73	19.65	90.08	17.91%
7	22.01	7.47	14.54	33.94%
8	243.19	70.07	173.12	28.81%
9	55.96	18.15	37.81	32.43%
10	192.12	48.60	143.52	25.30%
11	62.20	7.14	55.06	11.48%
12	35.32	4.91	30.41	13.92%
13	49.26	15.23	34.03	30.91%
14	63.26	8.52	54.74	13.47%
15	49.91	11.07	38.84	22.19%
16	23.59	1.76	21.83	7.44%
17	144.61	79.31	65.30	54.84%
18	72.77	24.28	48.49	33.36%
Total	2301.52	638.17	1663.35	27.73%

Table 2: POD Buildable Acreage

Figure 11: POD Delineation Process

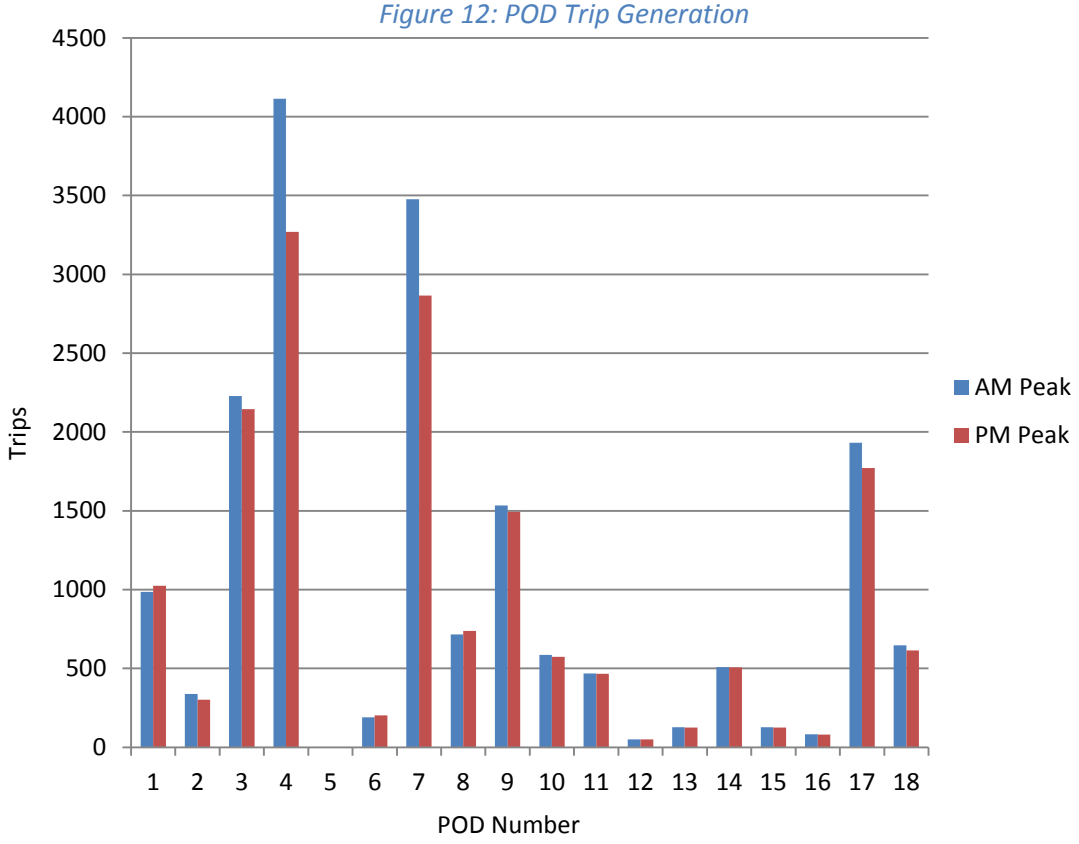


These pods were also used to estimate how much additional traffic future development could generate. Each year, ITE publishes trip generations for individual land uses. Based on current analysis, if all pods were developed over time and based on the designated land uses and current zoning, the planning area could experience an additional 172,829 vehicular trips per day on the roads. Below is a summary of daily, morning, and evening peak hour trip generations for the planning area (TABLE 3 & FIGURE 12).

Pod	Daily
1	7,440
2	2,781
3	21,917
4	40,416
5	0
6	1,998
7	36,955
8	5,088
9	17,736
10	4,336
11	4,516
12	392
13	925
14	4,896
15	1,010
16	772
17	16,228
18	5,422

Table 3: POD Daily Trips

Figure 12: POD Trip Generation



3. Intersection Analysis

Various intersections in the planning area were analyzed for potential improvements. This investigation is based on the Annual Average Daily Traffic (AADT) being projected from 2014-2025 using historic trends. NCDOT monitors the AADT data and the 2017 Transportation Study estimates a 3% annual increase over the past 15 years. This data is collected from traffic count stations located throughout the planning area and helps in determining each road's Level of Service (LOS). ITE defines the various LOS as described below:

- LOS A: Free flow with individual users unaffected by others in the traffic stream.
- LOS B: Stable flow with freedom to select speed with some influence by others.
- LOS C: Restricted flow remaining stable with significant interaction with others.
- LOS D: High-density flow with speed and maneuverability restricted but steady traffic stream.
- LOS E: Unstable flow with poor comfort and convenience level.
- LOS F: Forced flow characterized by stop-and-go waves and increased accident exposure.

Refer to the 2017 Transportation Study for detail information on the planning area's LOS. It provides the engineering bases for requiring developers mitigate the traffic impact they will have on existing transportation network in accordance with the County's adopted 2030 Comprehensive Plan goals and objectives.

C. Recommendations - Future Roadway and Intersection Improvements

Based on the information presented in the 2017 Transportation Study and taking into account public comments, functional classification, design speed, traffic volumes, character and composition of traffic and type of right-of-way, the roadway network and intersection improvements are recommended on the following pages.

In order to meet the goals and objectives identified on page 15, this AMP update recommends the following actions:

- Require right-of-way dedication - based on the "Street Cross-Section Requirements" below - for all development throughout the Planning Area and acquire necessary easements for infrastructure improvements.
- Work with NCDOT to pursue funding to advance the following improvements:
    - Install a traffic light at high frequency crash intersections to ensure safety for all users and assist traffic flow.
    - Install a crosswalk with a flashing light at key intersections in the planning area.
- Consider a provision that any development having ingress/egress in the Planning Area either construct its fair share of recommended improvements or provide payment in lieu of such improvements.
- Work with developers, the Orange County Economic Development Department, and Orange County Planning and Inspection Department to implement access management recommendations.
- Identify and promote transportation projects in the planning area to respective planning organizations and NCDOT.
- Pursue NCDOT SPOT Safety projects for key intersections throughout the planning area.
- Support NCDOT's County Complete Street Policy, which was being updated at the time this Plan was prepared, to address multi-modal travel and protect pedestrian and bicycle circulation around residential subdivisions and commercial areas.
- Take transit services into consideration as the E-B-M AMP is implemented. Currently, Orange County Public Transportation operates one route in the planning area called the Orange-Alamance route. Consideration will also be given to transit as additional routes are added.

1. Street Cross-Section Requirements

Many existing roads will no longer have the capacity to handle the projected 172,829 additional vehicular trips. New roads will have to be constructed while existing ones may require widening. Road design plays an important role in access management. Several road cross sections have been designed to help address increased traffic. This AMP update also takes into consideration bicycle and pedestrian requirements along the proposed cross sections as demonstrated below (FIGURES 13-20).

The following information is for FIGURES 13 AND 14 below:

- All new streets east of Buckhorn Road including:
  - Southern Drive
  - Forrest Road
- Recommended: 2 lanes undivided with:
  - 5' wide paved shoulder or
  - Curb and gutter, bike lane and sidewalk

Figure 13: NCDOT Standard Street Cross Section 2A

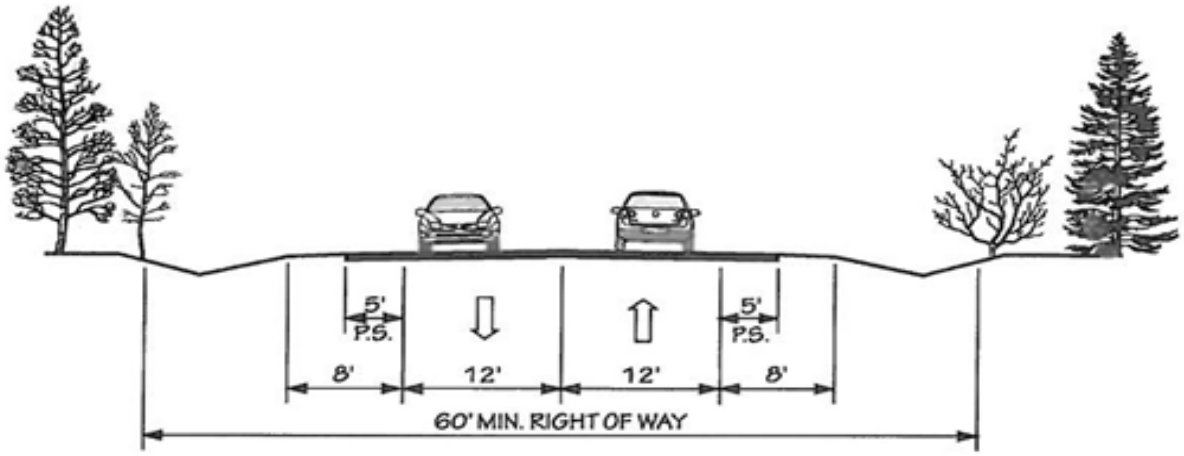
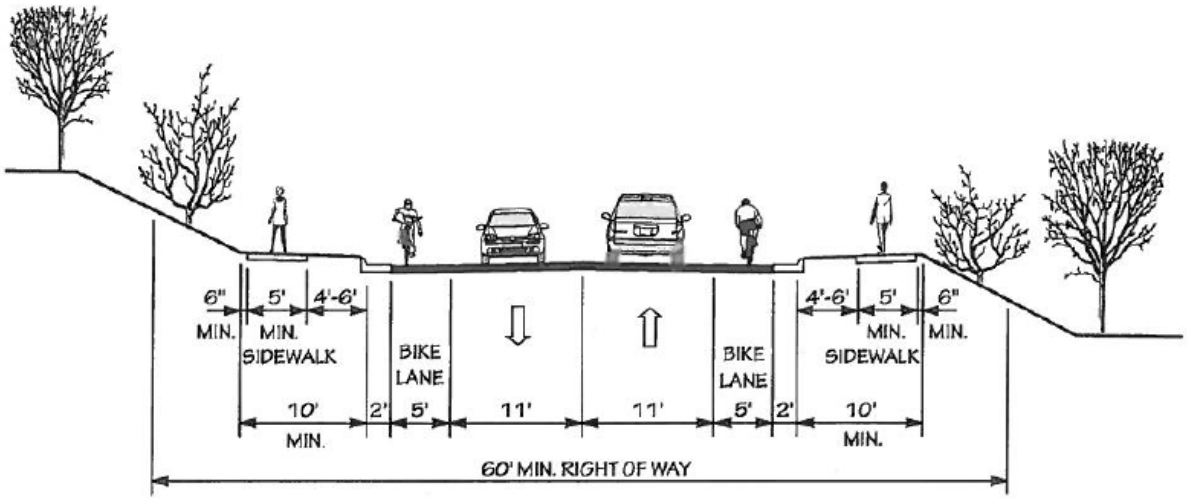


Figure 14: NCDOT Standard Street Cross Section 2E



The following information is for FIGURES 15 AND 16 below:

- All new streets west of Buckhorn Road, including:
  - Bowman Road
  - Rock Quarry Road
  - Ben Wilson Road
- Recommended: 2 lanes:
  - Undivided, 4' wide paved shoulder and sidewalk or
  - Divided, raised median, curb & gutter, bike lanes and sidewalk

Figure 15: NCDOT Standard Street Cross Section 2D

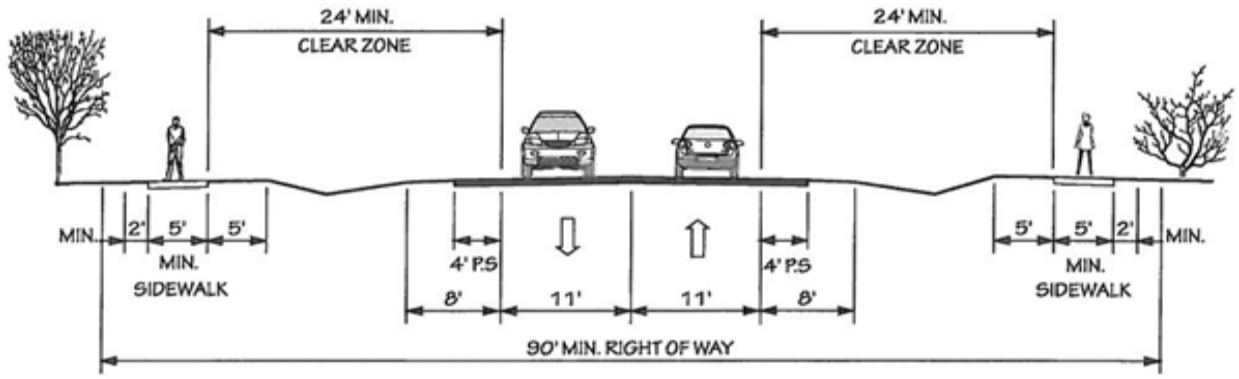
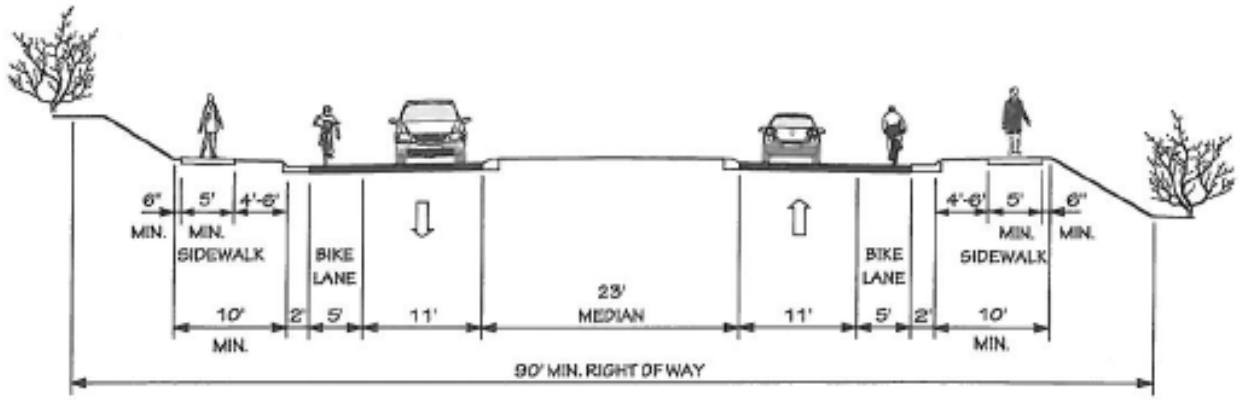


Figure 16: NCDOT Standards Street Cross Section 2J



The following information is for FIGURES 17 AND 18 below:

- Existing streets:
  - Ben Wilson Road
  - West Ten Road (east of Ben Wilson Road)
- Recommended: 2 lanes with 2 way left turn lane:
  - 5' wide paved shoulder or
  - Curb & gutter, bike lane and sidewalks
- To be achieved through the State Transportation Improvement Program (STIP)

Figure 17: NCDOT Standard Street Cross Section 3A

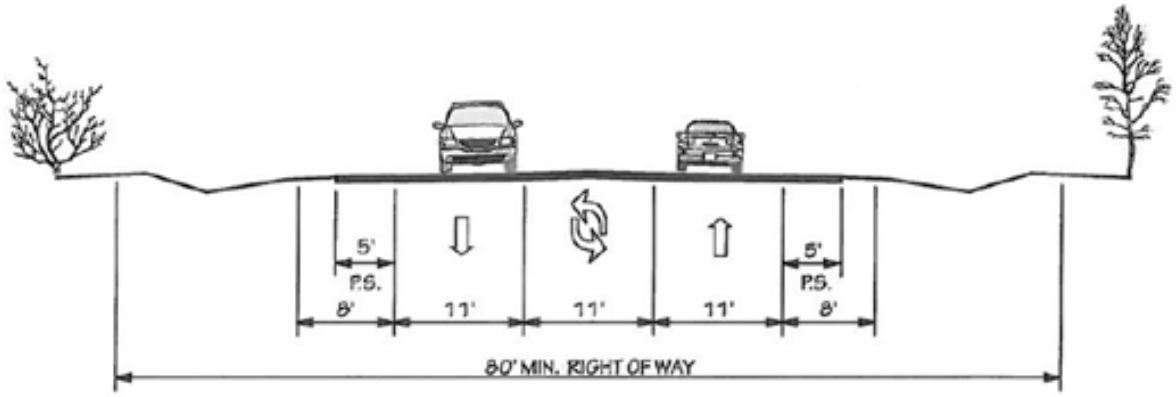
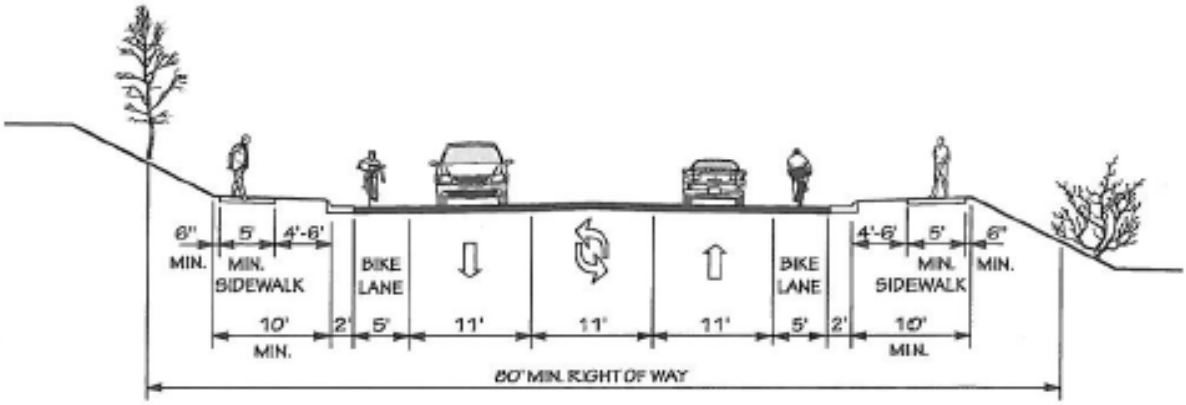


Figure 18: NCDOT Standards Street Cross Section 3C



The following information is for FIGURES 19 AND 20 below:

- Existing streets:
  - Buckhorn Road
  - Mt. Willing Road
  - West Ten Road (west of Ben Wilson Road)
- Recommended: 4 lanes divided and raised median with:
  - Curb & gutter, wide outside lanes and sidewalk or
  - Curb & gutter, bike lane and sidewalks
- To be achieved through the State Transportation Improvement Program (STIP)

Figure 19: NCDOT Standards Street Cross Section 4F

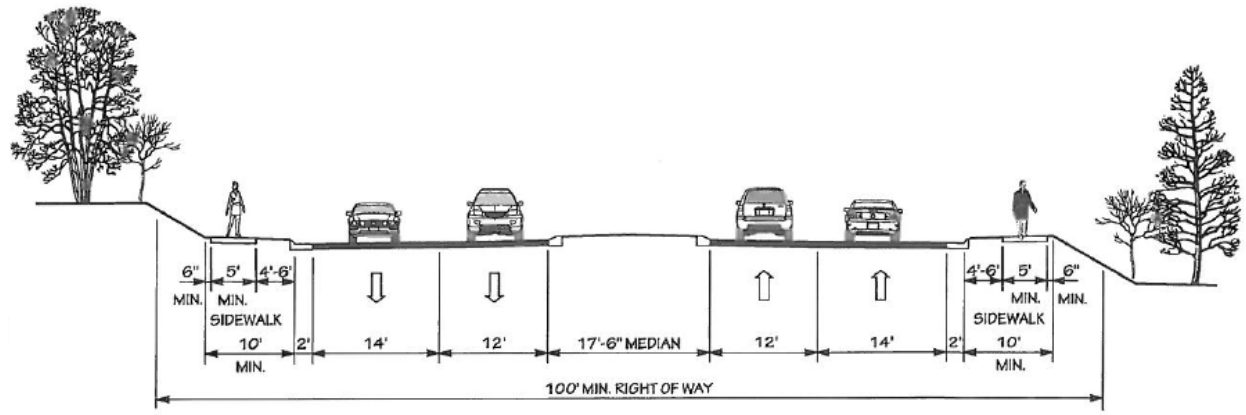
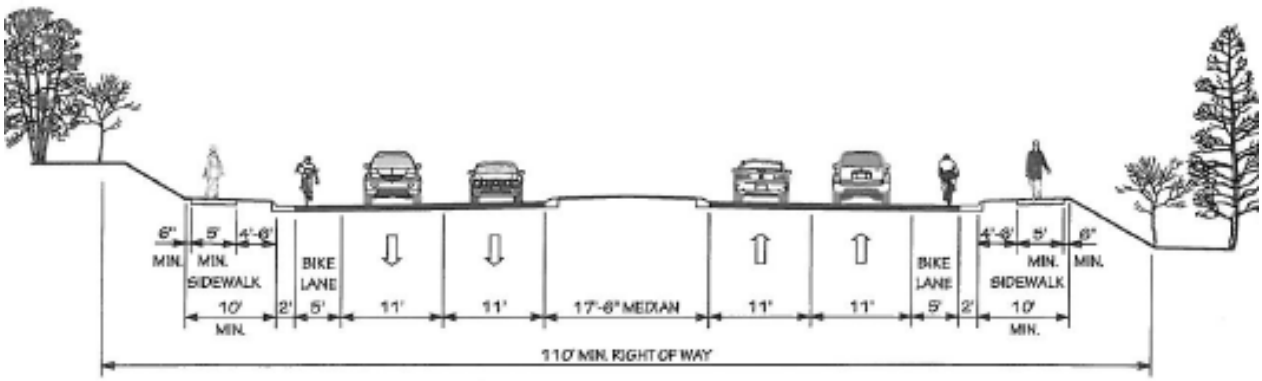


Figure 20: NCDOT Standard Street Cross Section 4G



Implementation of the future roadway network and recommended cross sections is intended to occur over time and largely through the development approval process. Developers are required to dedicate right-of-way consistent with the recommended cross sections and construct roads in accordance with NCDOT Roadway Design Manual requirements. While the cross sections are designed for local and collector roads, their capacity is taken into account as intersections are also analyzed and recommendations are provided in an effort to address traffic impact.

2. Intersection Improvement Requirements and TIA

Evaluating LOS determines the necessary recommendations at various intersections in the planning area. For reference, many municipal governments adopt policies like TIAs that require that new development not decrease LOS below level C or D. Determining the LOS for a given roadway involves complex calculations taking into account factors such as roadway grades and lane width. The 2017 Transportation Study identified the following intersections as those requiring specific improvements by developers and any transportation projects associated with them (TABLE 4).

The 2017 Transportation Study serves as an overall Traffic Impact Analysis (TIA) for the E-B-M area, as each pod's development potential was modeled in accordance with Section 6:17 - Traffic Impact Analysis – of the County's UDO. The purpose of a TIA is to "insure that proposed developments do not adversely affect the highway network and to identify any traffic problems associated with access from the site to the existing transportation network." TIAs also document the required traffic mitigations that must be incorporated into the proposed development. A TIA is required for all special use permits, subdivisions, conditional zoning applications and site plans. This is for all applications with an estimated trip generation exceeding 800 daily trips as the pods have previously demonstrated.

Intersection	Recommendation
Ben Wilson Road at New Road A	South bound right turn lane North bound right turn lane West bound right and left turn lane
West Ten Road at New Road A	Right and left turn lanes in all directions
West Ten Road at Buckhorn Road	Right and left turn lanes in all directions
Mt. Willing Road at New Road H	Right and left turn lanes in all directions
US-70/I-85 Connector	West bound left turn lane East bound right turn lane Northbound right and left turn lane

Table 4: Intersection Recommendations

Future intersection improvements may also involve roundabouts and advances in intelligent transportation systems (ITS). Advances in ITS may also be implemented at various intersections to help improve safety and mobility. Some of these advancements include but are not limited to:

- Curve Speed, Work Zone, and Do Not Pass Warnings

- Stop Sign Gap Assistance
- Traffic Signal Priority, Operation and Benchmarking
- Automated Traffic Signal Performance Measures
- Emergency Transportation System Operations
- Traffic Incident and Road Weather Management

Roundabouts are possible at any intersection in place of signalized intersections. The use of roundabouts requires meeting NCDOT traffic warrant. They must also meet with NCDOT's Traffic Engineering Policies, Practices, and Legal Authority (TEPPL). While the 2017 Transportation Study did not include roundabouts as possible intersection improvements, this update incorporates them as possibilities.

The AMP for the planning area consists of planned streets intersections as illustrated in FIGURE 21. Details of these intersection improvements are located on pp. 26-42 of APPENDIX B.

D. AMP Update and Implementation

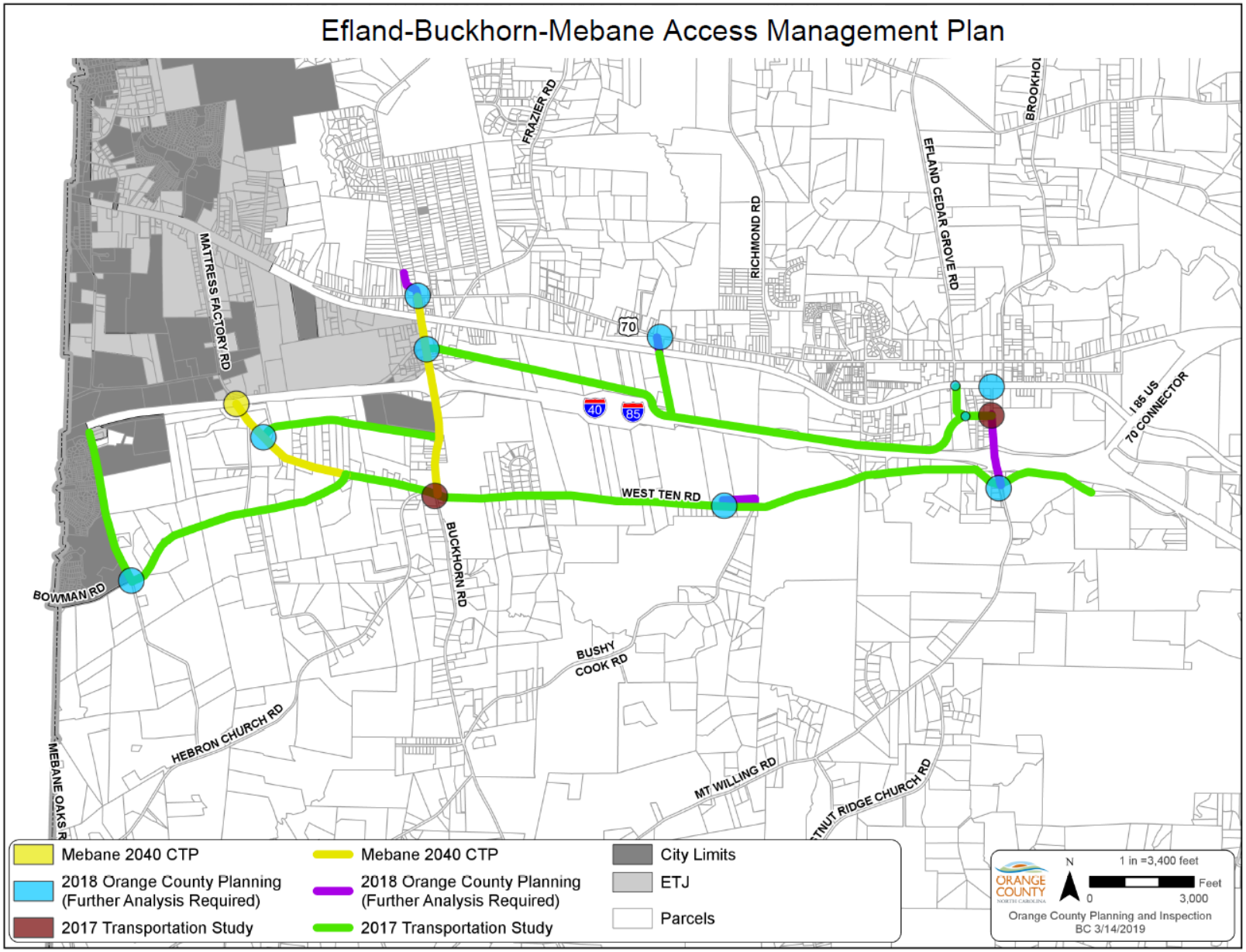
Developers proposing projects within this area will be required to provide the appropriate street cross sections and intersection improvements as specified in this plan. The E-B-M AMP update includes the original 2011 AMP by carrying forward its list of access management concepts, treatments, and considerations as listed in TABLE 5.

Concepts	Treatments
Driveway-Related Crashes, Spacing, Density and Consolidation	Access Management and Pedestrian Safety
Intersection Spacing and Traffic Signal Spacing	Driveway Grade and Width
Functional Areas of Intersections and Conflict Points	Clearing Driveways Away From Corners and Driveway Turn Radius
Speed Differential Between Turning Vehicles And Through Traffic	Shared/Joint Driveways and/or Cross Access
Benefits and Economic Impacts of Access Management	Dedicated Left And Right Turning Lanes
	Continuous Two-Way Left-Turn Lanes
Considerations	Three-Lane Roadways With Two-Way Left-Turn Lanes
Internal Circulation In Land Developments and Sight Distance	Raised Medians at Intersections and Continuous Raised Median
Incorporating Aesthetics Into Access Management	Comparison Of Raised Median And Two-Way Left-Turn Lanes
Clear Zones, Utility Placement And Lighting	Frontage and Backage Roads

Table 5: AMP Practices

A detail explanation of each concept, treatment and consideration is provided in APPENDIX A at the end of this Plan. The E-B-M AMP below (FIGURE 21) illustrated the road network and intersection improvements planned in the area. This plan is based on detail transportation analysis as documented in the 2017 Transportation Study (APPENDIX B) and public comments gathered throughout the planning process.

Figure 21: E-B-M AMP



III. Implementation

The following is a list of plans, policies, and regulations currently in place aimed at addressing relevant issues:

- Orange County 2030 Comprehensive Plan
- Orange County Unified Development Ordinance
- E-B-M Small Area Plan and Access Management Plan

Consistent with adopted plans and access management practices, following is a list of criteria considered during the development review process:

1. Restrict access where possible from the functional area of intersections.
2. Control turning movements at entrances where recommended by a TIA, right-in/right-out entrance design prevents left ingress and egress turning movements.
3. Limit or share access through a proposed development in order to prevent vehicles from backing up on to the major roads and to enhance onsite circulation.
4. Space intersections and driveway access points to plan for reduced traffic conflict points as traffic congestion increases:
   a. Align major intersections and minor entrances with positive offset(s) to increase safety for all users.
   b. Provide a limited number of strategically located median crossovers in the planning area.
   c. Add exclusive turn lanes where required by NCDOT.
   d. Provide adequate separation between traffic signals to expand road's traffic capacity and simplify signal synchronization.
5. Where feasible along arterials and collectors, share joint entrance(s) with adjoining property owner(s) through the recordation of joint access easements with maintenance provisions by adjoining property owner(s).
6. Where feasible along arterials, provide vehicular and pedestrian and bicycle connections between adjoining properties through the recordation of access easement(s) with maintenance provisions, and construct connection(s) to the boundary with adjoining undeveloped parcel(s).
7. Provide frontage roads with non-residential development/redevelopment to increase safety for all users on arterials and collector roads, and promote non-residential development for economic benefit.
8. Provide an interconnected street network in the planning area as generally indicated on the map (FIGURE 16)
9. Provide an interior access network from identified primary access points along arterial and collector roads.
10. Accommodate transit, bicyclists and pedestrians on roadways in the planning area.
11. Limit perennial stream crossings, and impacts to wetlands and steep topographical areas.
12. Required future road cross-sections shall be subject to NCDOT and Orange County review and are incorporated in the Burlington Graham, Triangle Area Rural Planning Organization and Durham-Chapel Hill-Carrboro Metropolitan Planning Organization Comprehensive Transportation Plans (CTP) by reference.

A. Roles and Responsibilities

NCDOT has full authority over state roads but not over local land use decisions. Orange County regulates land use decisions but does not own or maintain local roads. Therefore, coordination is essential in balancing the two authorities when it comes to access management policies and procedures. Each agency has authority over a different part of the process and the partnership benefits the public, developer, and property owner whose financial investment is at stake.

Role/Responsibility of the NCDOT

NCDOT is responsible for regulating the location, design, construction, and maintenance of street and driveway connections on the State Highway system. The NCDOT recognizes landowners have certain reasonable rights of access consistent with their needs. However, access connections are a major contributor to traffic congestion and poor roadway facility operations that can result in decreased highway capacity, and increased safety hazards. Early NCDOT review of development proposals helps ensure conformance with access management requirements and provides NCDOT an opportunity to suggest changes prior to local project approval, which may occur well in advance of a request for a driveway permit. The NCDOT Access Management Group (of the Congestion Management Section of the Traffic Engineering and Safety Systems Branch) examines the potential safety and capacity impacts that new or expanding traffic generation may have on the state roadway system and provides recommendations based on the analysis. This process typically requires the completion of a Traffic Impact Analysis by the Developer/ Property Owner/Applicant. Other recommendations may range from denying access, to requiring the developer to construct additional travel or turn lanes, access restrictions, internal traffic pattern operations or installing new traffic signals to minimize the traffic impact.

Role/Responsibility of Orange County

Several sections of the Orange County UDO assist with implementation of the E-B-M AMP. The UDO requires site plans to comply with County adopted access management, transportation and/or connectivity plans and to denote the location of future roadways(s) and access easements, whether public or private, and to ensure and encourage future connectivity. The UDO also provides additional requirements for Economic Development Districts as well as the Major Transportation Corridor Overlay District (MTC). An important implementation tool for access management is the UDO requirement of a traffic impact analysis for all special use permits, major subdivisions, conditional zoning applications, site plans that exceed 800 trips per day, and for 80 or more dwelling units of residential development. Additionally, a traffic impact analysis may be required when a road capacity or safety issue exists. The purpose of the traffic impact analysis is to insure that proposed developments do not adversely affect the road network and to identify any traffic problems associated with access from the site to the existing transportation network. The objective of the traffic impact analysis is to identify solutions to potential problems and to present improvements to be incorporated into the proposed development.

As individual developments occur in the planning area, permits can be issued that conform to the access management plan, or permits outlining conditions (whether through conditional zoning, special use permits, or site plan reviews) can be issued so that the development will ultimately be in conformance. NCDOT representatives provide technical assistance and support. Orange County can assist the NCDOT by attaching conditions to development approvals to require actions from the developer that support access management. This may include conditions that require unified access and circulations systems, alternative access roads, or joint and cross access. All development in the planning area must be in accordance with NCDOT *Policy on Street and Driveway Access to North Carolina Highways*.

Continued intergovernmental coordination with the City of Mebane will be important to realizing desired development and access management within the planning area since the City will be the service provider of public water and sanitary sewer.

Role/Responsibility of the Developer /Property Owner/Applicant

A development applicant, such as the property owner and/or developer, is required to coordinate with Orange County and the NCDOT to identify possible conflicts with local, state, or federal regulations and plans, including adopted access management plans. A traffic impact analysis may be required to be prepared by the applicant's engineer, to determine any traffic concerns associated with access from the site to the existing transportation network, and to identify solutions to potential problems for incorporation into the proposed development. Additionally, prior to beginning any site disturbance work, the applicant is responsible for obtaining all applicable permits required for construction within the highway right-of-way resulting from development, including but not limited to, a Street and Driveway Access Permit issued by the NCDOT District Engineer, and all applicable environmental permits (i.e., erosion control, water quality, and wetlands). All applicants are required to coordinate with all agencies involved, including other local governments, to identify conflicting or overlapping access issues.

B. Resources

The plan may require future updates as development occurs and other access management issues are identified. While North Carolina counties do not own or maintain local roads, they do have certain authority over land use decisions, and through innovative use of local regulations, Orange County can adopt local policies and ordinances aimed at addressing specific issues such as access management. A variety of tools are made available including and not limited to:

- Land Development Regulations
- Special Service Districts
- Intergovernmental Agreements
- Complete Streets Policy
- Exactions

IV. Appendix

A. 2011 E-B-M EDD AMP

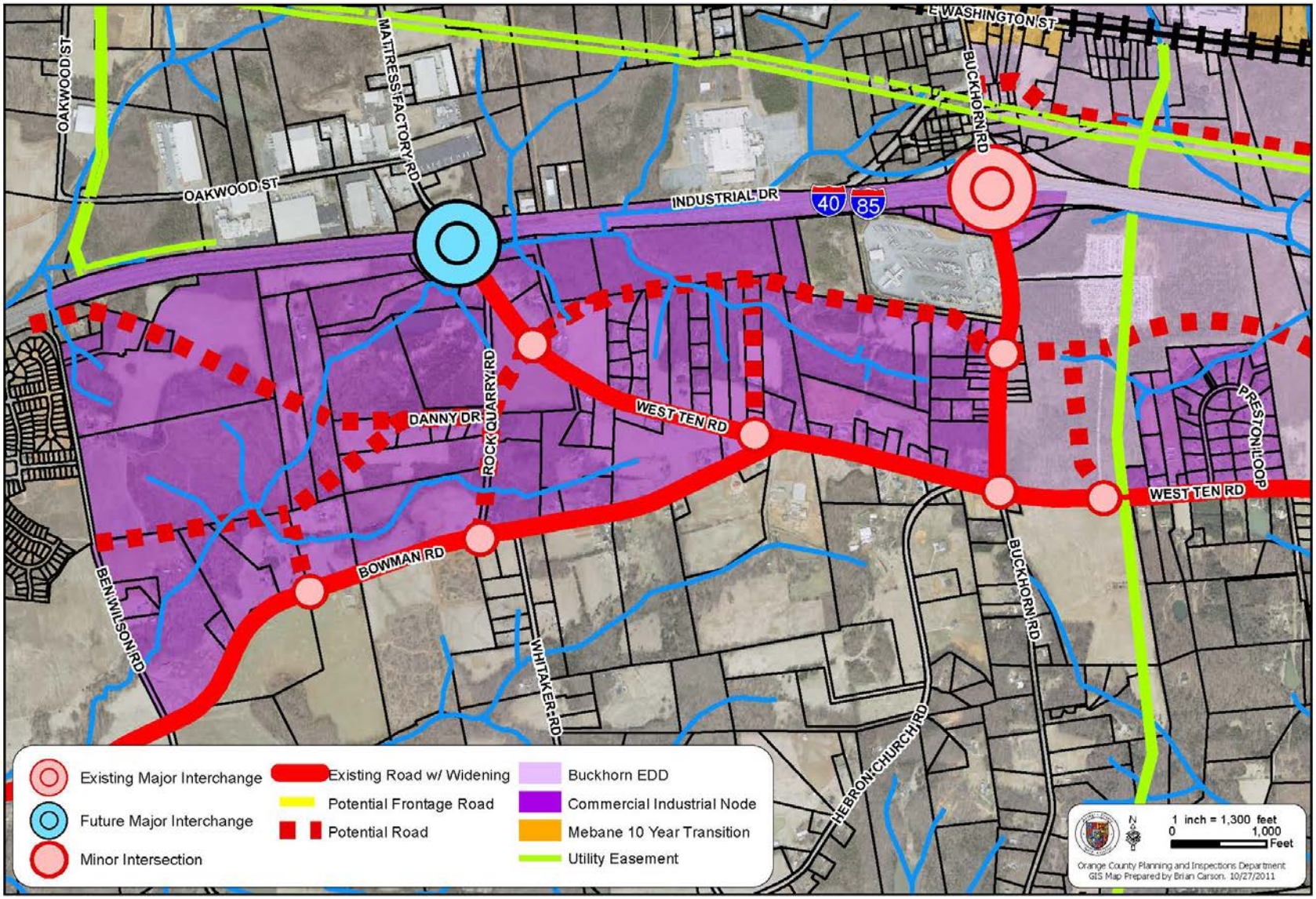
B. 2017 E-B-M Transportation Study

C. Community Meeting

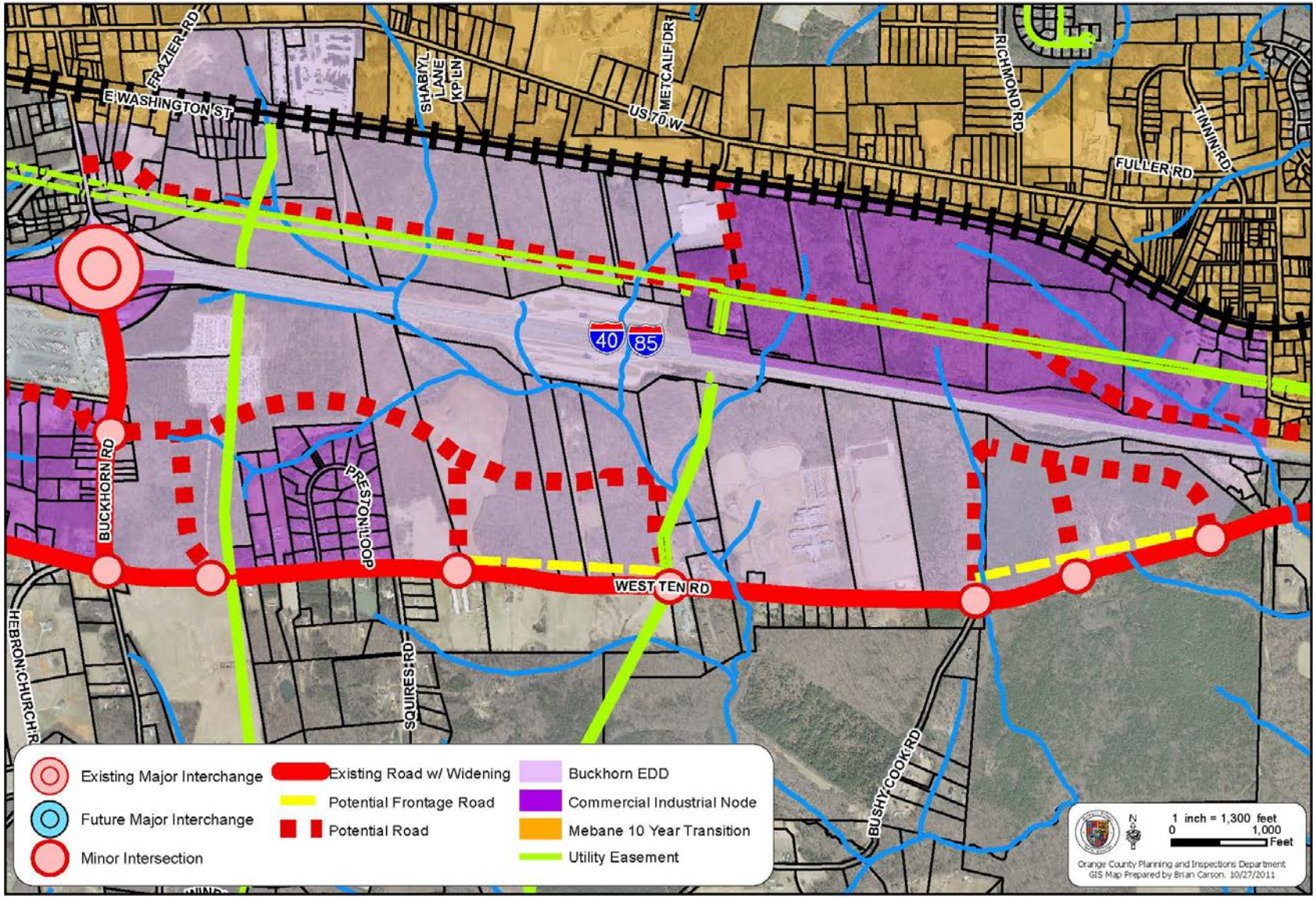
APPENDIX A

2011 Efland-Buckhorn-Mebane Access Management Plan

Efland-Buckhorn-Mebane Access Management Plan - Map A

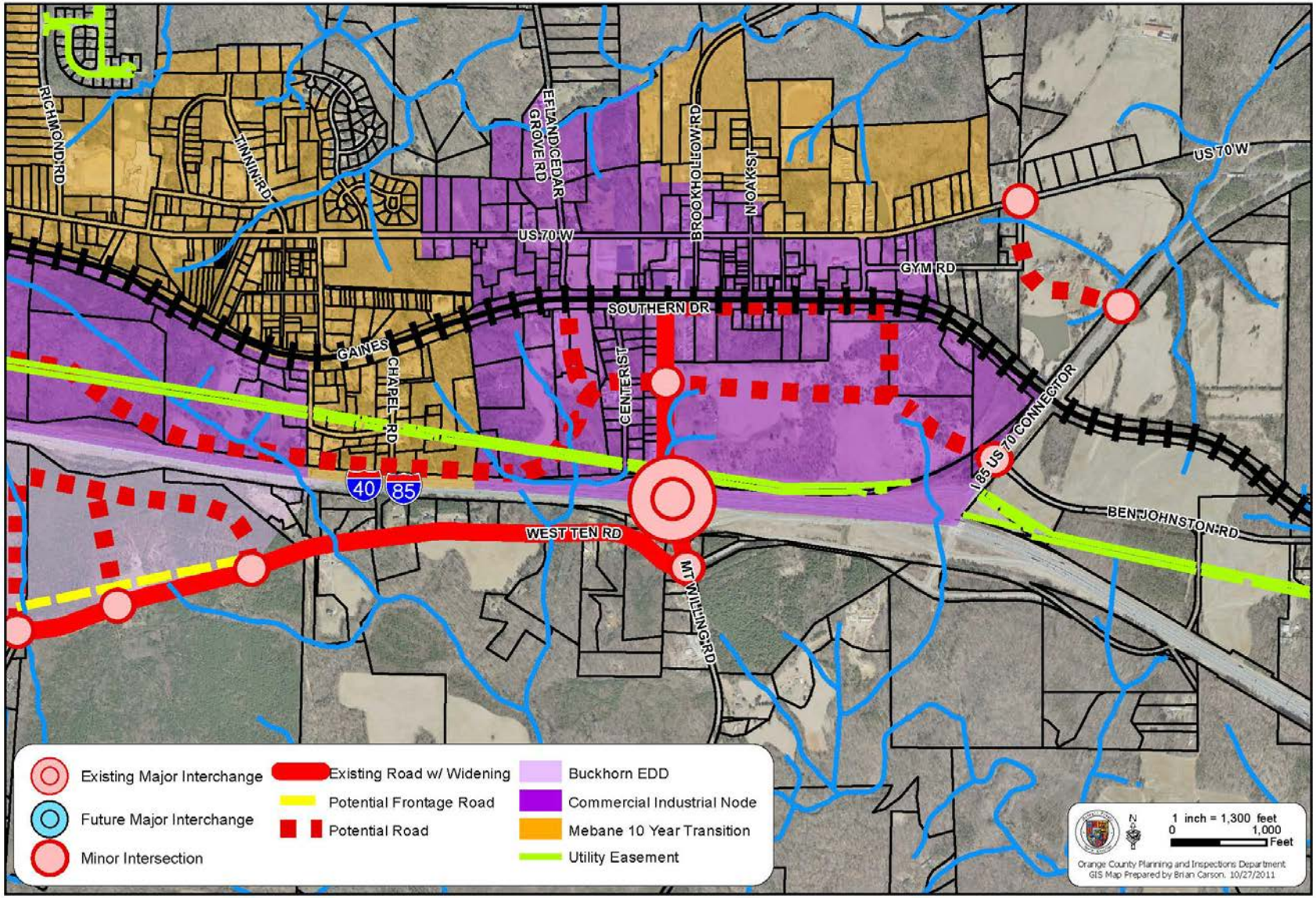


Efland-Buckhorn-Mebane Access Management Plan - Map B



Note: The locations of potential roads and intersections are conceptual and reflect the County's intent to improve access and connectivity. Specific locations will be determined on a case by case basis as development occurs and site specifics are analyzed.

Efland-Buckhorn-Mebane Access Management Plan - Map C



Note: The locations of potential roads and intersections are conceptual and reflect the County's intent to improve access and connectivity. Specific locations will be determined on a case by case basis as development occurs and site specifics are analyzed.

ACCESS MANAGEMENT PROGRAM
(To Be Applied Within Corridors And Development Zones)

ACCESS MANAGEMENT CONCEPTS

1. Driveway-Related Crashes

Much of access management involves managing traffic movements into and out of commercial driveways. The reason for this is that driveway traffic generates a large number of crashes on major roads and streets-arterials and collectors.

2. Driveway Spacing

Maintaining an adequate spacing between commercial driveways is one of the most critical aspects of access management.

3. Driveway Density And Driveway Consolidation

Driveway density (the number of driveways per block or per mile) and driveway consolidation are very important considerations in access management. These roadway characteristics are basic issues in any access management plan or program.

4. Intersection Spacing And Traffic Signal Spacing

Although most discussions about access management focus on the management of private driveways, proper spacing of roadway intersections is an equally important access management issue.

Why is intersection spacing important?

The importance of intersection spacing is similar to that of driveway spacing. As the number of intersections per mile increase, the opportunity for crashes increases. The existence of too many intersections per mile also increases delay and congestion. On the other hand, not providing an adequately dense street network forces motorists and pedestrians to travel farther to their destinations.

5. Functional Areas Of Intersections

It is important to protect the functional area of an intersection from driveway access. Driveways located within this area may result in higher crash rates and increased congestion.

What is the functional area of an intersection?

The functional area of an intersection is that area beyond the physical intersection of two roadways that comprises decision and maneuvering distance, plus any required vehicle storage length. The functional area includes the length of road upstream from an oncoming intersection needed by motorists to perceive the

intersection and begin maneuvers to negotiate it. The upstream area consists of distance for travel during a perception-reaction time, travel for maneuvering and deceleration, and queue storage. The functional area also includes the length of road downstream from the intersection needed to reduce conflicts between through traffic and vehicles entering and exiting a property.

6. Conflict Points

Conflicts points are commonly used to explain the accident potential of a roadway. Access management strategies are typically designed to reduce the number and density of conflict points.

What is a conflict point?

A conflict point is the point at which a highway user crossing, merging with, or diverging from a road or driveway conflicts with another highway user using the same road or driveway. It is any point where the paths of two through or turning vehicles diverge, merge, or cross.

7. Speed Differential Between Turning Vehicles And Through Traffic

Speed differential is a simple yet important concept that forms the basis for many access management measures.

What is speed differential?

Speed differential is the difference between the speed of vehicles that are continuing along the main roadway versus those that are entering and exiting the driveway For instance, if through traffic generally moves at 35 miles per hour and cars have to slow to 10 miles per hour to enter a driveway, the speed differential at and near that driveway is 25 miles per hour.

Why is speed differential important?

A speed differential above 20 miles per hour begins to present safety concerns. When the speed differential approaches 30 to 35 miles per hour, the likelihood of a collision between fast moving through vehicles and turning vehicles increases very quickly.

8. Benefits Of Access Management

An effective, local access management program can play an important role in preserving highway capacity, reducing crashes, and avoiding or minimizing costly remedial roadway improvements. The traveling public would then benefit from faster and safer travel. The great majority of businesses would benefit from increased economic vitality along a well-managed corridor. Taxpayers would benefit from more efficient use of existing facilities. And public agencies would benefit from the relatively low cost of access management; they could then use their resources for other needs.

9. Economic Impacts Of Access Management

Business owners often are concerned that changes in access to their premises will have temporary or permanent impacts on their sales. They are concerned that changes in direct access to their property-such as consolidating driveways or installing raised medians will lead to declines in patronage and sales. Perceived impacts of access management on adjacent commercial businesses and landowners are often major impediments to projects moving forward. In the case of access management, perceptions are often worse than reality.

Access management before development offers clarity and relieves the post-development difficulty in retrofitting.

10. Access Management And Pedestrian Safety

Access management is usually promoted as a way to improve driving conditions for motorists. Clearly, access management techniques can lead to roads and streets that are dramatically safer and much easier and more pleasant to drive. However, research also indicates that several key access management techniques are just as valuable to pedestrians. These include:

- reducing the number of driveways, particularly commercial driveways, within a given distance (per block or mile)
- providing for greater distance separation between driveway
- providing a safe refuge for pedestrian crossings with raised medians

COMMON ACCESS MANAGEMENT TREATMENTS

11. Driveway Grade

Along older urban arterial streets, it is common to find rather steep driveways with grades (or slopes) of 5-10 percent or more. Driveways with steep grades were often constructed to allow the driveway and connecting parking lots to drain more efficiently and to save earth-moving costs. On the other hand, more recently constructed arterials typically feature very gentle driveway grades. Driveway grade is an important – yet often overlooked – safety consideration.

The maximum practical grade for driveways varies between 8-14 percent for low-volume driveways and five percent for high-volume driveways (a 30-foot long driveway with a 14 percent grade would rise or fall about four feet along its length).
Furthermore, the maximum practical change in grade is about 12 percent. Above this value, many vehicles will scrape their bumpers or other low-hanging parts on the driveway, potentially causing damage to the vehicle and driveway or roadway surface. While this may be the maximum practical grade, it is much safer to use a smaller grade. A minimal grade (say, two percent) is still needed for drainage.

12. Driveway Width

Along older urban arterial streets, it is common to find many narrow driveways. Older commercial driveway and parking lot designs tended to use ten to fifteen foot wide driveways. This type of design will safely accommodate only one vehicle at a time, either an entering or an exiting vehicle. Another common problem is driveways in urban and rural areas that are too wide. In some cases, the driveway may have no discernible boundaries or curbs. Both situations create operational and safety concerns. A properly designed driveway helps turning traffic move off the roadway more quickly and reduces the likelihood of crashes.

13. Clearing Driveways Away From Corners

Clearing driveways away from corners is the simplest, yet perhaps the most critical access management treatment.

What is corner clearance?

Corner clearance is the minimum distance required between an intersection and an adjacent driveway along an arterial road or collector street.

14. Shared/Joint Driveways And/Or Cross Access

Driveway spacing and driveway density are important considerations in managing access. When driveways are spaced too closely together or the number of driveways per block or mile becomes too large, a significant increase in traffic accident rates occurs. Traffic also tends to become congested more quickly in such situations.

What is driveway sharing?

A shared driveway is when two or more adjacent properties use the same driveway for ingress and/or egress. Shared driveways are very common in newer commercial areas, for instance at strip malls, regional shopping centers, and office parks. Sharing driveways is simply good design practice since conflict points caused by motorists entering and leaving the businesses are reduced. This will, in turn, tend to reduce traffic accidents associated with turning traffic and improve the traffic flow on the main road.

What are joint and cross access?

Joint and cross access are formal, legal methods of ensuring that adjacent properties can share driveways. In the case of joint access, two adjacent property owners share a driveway along their common property line. In the case of cross access, one property owner has the legal right to access and use a driveway that is on the adjacent property owner's land.

Joint and cross access can be built into private real estate titles through easements. They can also be encouraged or required in local planning or design standards or in municipal and county ordinances.

15. Continuous Two-Way Left-Turn Lanes

Continuous two-way-left-turn lanes (TWLTL) are a common access management treatment when combined with driveway consolidation and corner clearance. TWLTLs simultaneously provide a separate lane for left turning vehicles and property access. Typically, they are used as the center lane of a five-lane roadway. A less common design involves three lanes, a TWLTL in the center for left turns and one lane in each direction for through traffic.

Recent theory suggests avoiding this design unless road right-of-way conditions are restrictive.

16. Three-Lane Roadways With Two-Way Left-Turn Lanes

Continuous two-way left-turn lanes (TWLTL) are a common access management treatment. Typically, they are used in the center of a four-lane roadway. However, a less-common design involving three lanes – a TWLTL in the center for left turns and one lane in each direction for through traffic – is being used more and more frequently. At first, the idea of a three-lane road may seem strange. But under the right circumstances they can work very well, operating better and more safely than a four-lane undivided road.

17. Raised Medians At Intersections

Raised medians with left-turn lanes at intersections offer a cost-effective means for reducing accidents and improving operations at higher volume intersections. The left-turn lanes separate slower turning vehicles from through traffic and provide a protected space for these vehicles to decelerate and turn. The raised median prohibits left turns into and out of driveways that may be located too close to the functional area of the intersection.

18. Continuous Raised Median

Continuous raised medians with well-designed median openings are among the most important features for managing access to create a safe and efficient highway system.

19. Comparison Of Raised Median And Two-Way Left-Turn Lanes

Because raised medians are the most restrictive access management treatment, building a raised median along an arterial is often very controversial among business and property owners. Two-way left-turn lanes (TWLTL) are much less so. Business persons and property owners feel that installation of raised medians will have a large, negative impact on their customers, sales, and property values. Therefore, TWLTLs are often suggested as a compromise solution. However, TWLTLs also represent a safety compromise when compared to raised medians. They should be used with care.

20. Frontage And Backage Roads

Frontage and backage roads run parallel the mainline route and provide alternative access to property. Property access is provided along the frontage or backage road, which accesses the arterial via a cross road (with a traffic signal if necessary). This reduces the number and density of conflict points associated with strip development. These roads are generally applicable to commercial development.

A *backage road* provides access to the rear side of commercial properties located between the backage road and the arterial. It also provides access to properties located on the opposite side of the backage road from the arterial, thus increasing land values and reducing infrastructure costs to individual properties.

A *frontage road* provides access to the front side of commercial properties located along the arterial. Care must be taken to ensure adequate separation between the arterial and the intersection of the frontage and cross roads.

Why are frontage and backage roads important?

Frontage and backage roads reduce conflict points between through traffic and turning traffic associated with strip development and direct property access to the arterial. Conflict points are associated with reduced levels of roadway safety and operations. Studies have shown that when driveway access to arterial roadways is granted to too many property owners without considering future traffic volumes and road classifications, the additional driveways increase the rate of accidents and decrease the efficiency of the roadway.

21. Dedicated Left And Right Turning Lanes

One of the major concerns of transportation engineers and planners in cities and suburban areas is keeping through traffic moving at a smooth and even pace. When traffic can't move at an even pace, delays and congestion are the result. This frustrates motorists and creates opportunities for "fender-bender" crashes. One of the simplest ways to accomplish smooth and even traffic is to remove the turning traffic from the through traffic flow at road intersections and near busy driveways. Often, dedicated turning lanes are provided to serve that purpose. Many times turning lanes are used in conjunction with raised medians and medians at intersections to provide additional safety by protecting turning traffic.

22. Driveway Turn Radius

Turn radius refers to the extent that the edge of a commercial driveway is "rounded" to permit easier entry and exit by turning vehicles. Driveway entrances with longer turn radii help slower, turning traffic move off the arterial more quickly. They also help traffic leaving a driveway turn and enter the stream of traffic more efficiently. Guidelines for turn radii are generally applied to non-residential developments and subdivisions.

23. Internal Circulation In Land Developments

Internal site design is probably the most neglected discussion point in access management. It would be natural to think that access management concerns stop at the roadway right-of-way line, but in fact they carry through into the property that is provided with access.

Why is internal site design important?

The movement of traffic into and out of properties can be dramatically affected by the internal design for on-site circulation. The internal design of circulation on a property may help or hinder traffic turning off or onto an arterial street. This in turn affects the speed differential between turning and through traffic.

What is the best way to design for internal circulation?

The internal circulation of a land development functions well when it is designed with respect to highway access point(s) rather than the building(s). Design should start from the outside in and finish with the parking and building. Very often, the opposite approach is taken. The circulation design of driveways and parking lots are done last. Here is the optimal internal circulation design approach:

1. Provide safe and reasonable access to and from the street to motorists and pedestrians.
2. Provide a reasonable transition between the access and the internal circulation, especially by making sure the driveways are wide and long enough.
3. Design the parking area and individual parking spaces.
4. Design the building footprint within the constraints of the internal circulation and the parking.

OTHER CORRIDOR DESIGN CONSIDERATIONS

24. Sight Distance

Guidelines for adequate sight distance are one of the most important and basic approaches a community can take in managing access to its roadways. Sight distance guidelines can help communities ensure that its arterials are safe for motorists and pedestrians. Sight distance guidelines can also help communities promote adequate spacing of residential and commercial driveways.

What is sight distance?

Sight distance is the length of highway visible to a driver. A safe sight distance is the distance needed by a driver on an arterial, or a driver exiting a driveway or street, to verify that the road is clear and avoid conflicts with other vehicles. Sigh lines must be kept free of objects which might interfere with the ability of drivers to see other vehicles. Features such as hills, curves in the road, vegetation, other landscaping, signs, and buildings can reduce sight distance.

25. Incorporating Aesthetics Into Access Management

Access management projects often involve widening existing roadways to add either an additional two-way-left-turn lane (TWLTL) or a raised median. Such projects can lead to a wide expanse of concrete and asphalt. An aesthetically pleasing treatment, however, does not need to run counter to sound access management practices. In fact, aesthetics can and should be incorporated into access management project plans.

Why are aesthetics important?

Access management projects are much more likely to be accepted by the public and by business owners of adjacent properties if they look good as well as improve safety and traffic flow.

26. Clear Zones, Utility Placement And Lighting

Adequate clear zones with proper placement of utilities and sufficient lighting are essential components of well designed roadways. Proper design will help ensure sufficient sight distance and improve roadway operating safety.

What is a clear zone?

The American Association of State Highway and Transportation Officials (AASHTO) *Green Book* states that “a clear zone is used to designate the unobstructed, relatively flat area provided beyond the edge of the traveled way for the recovery of errant vehicles.” Utilities, structures, signs, trees, and other objects should not be located within the clear zone.

Figure 1a.

80’ PROPOSED STREET CROSS SECTION
SHOULDER SECTION

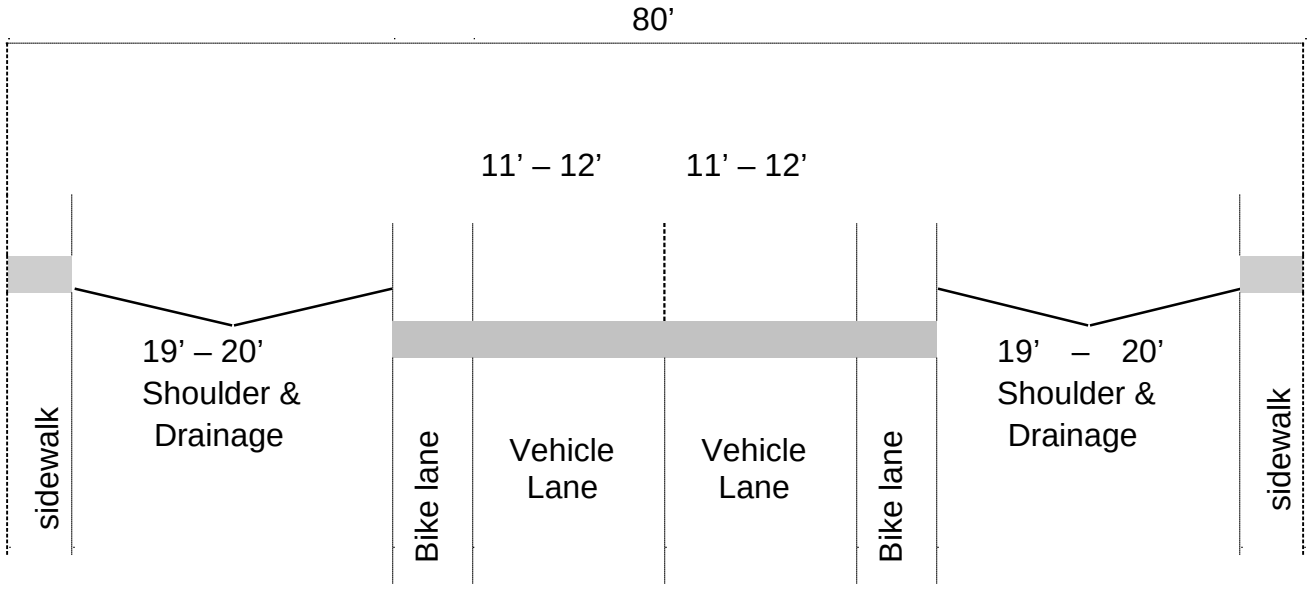
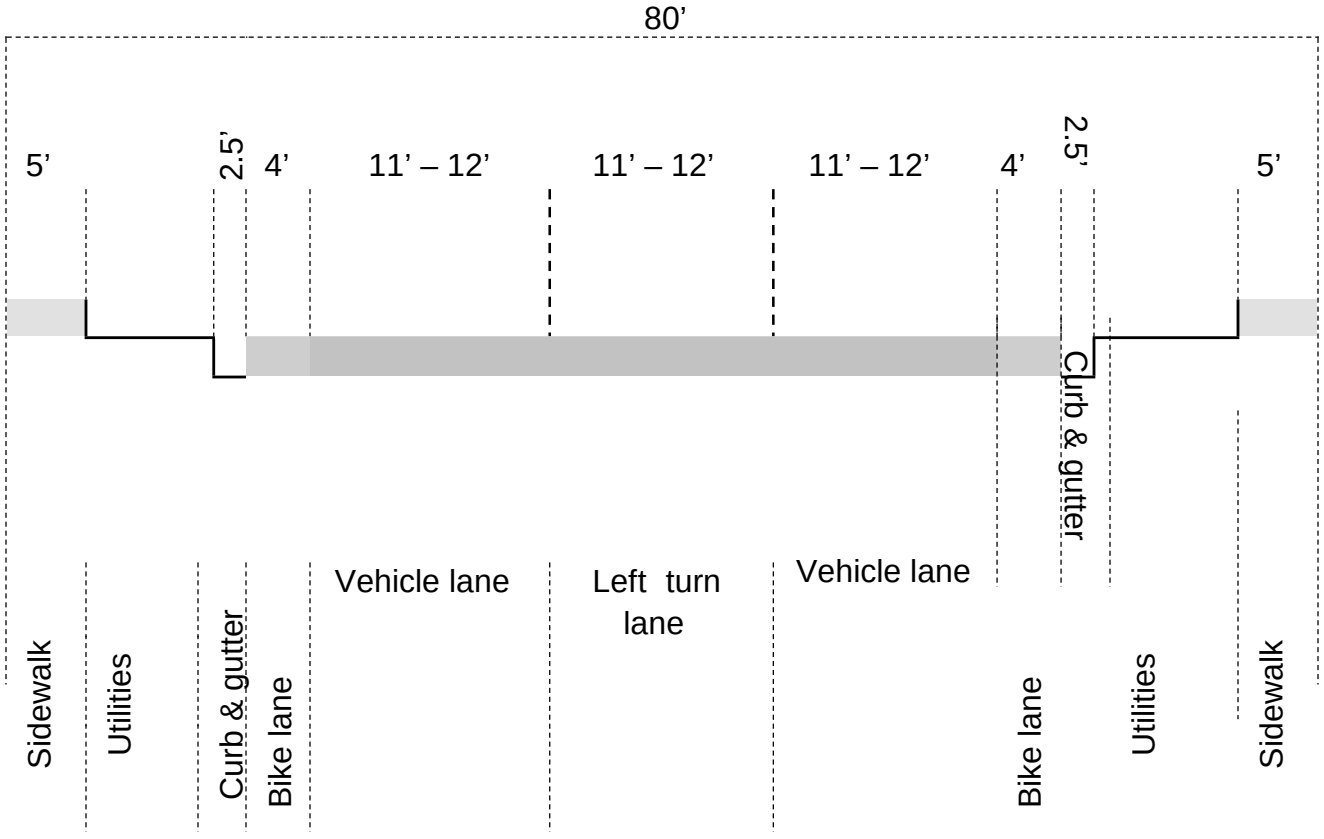


Figure 1b.

80’ PROPOSED STREET CROSS SECTION
CURB & GUTTER SECTION



APPENDIX B

2017 Transportation Study

Transportation Report for the Efland-Buckhorn-Mebane Study Area

ORANGE COUNTY
NORTH CAROLINA

Prepared For:

Orange County Planning & Inspections Department
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May 2017

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Section 1 - Introduction

PURPOSE AND BACKGROUND

The primary purpose of this technical report is to develop a roadway network to support investment in the Efland-Buckhorn-Mebane Study Area, based on an examination of existing plans, future land use, environmental constraints, cultural and historic resources, key transportation considerations, and future development potential. The data presented in this technical report will provide the basis and justification for requiring the dedication of rights-of-way in the Efland-Buckhorn-Mebane Study Area and may serve as an appendix to the updated Efland-Buckhorn-Mebane Study Area Access Management Plan.

Access management of the road network in the study area will facilitate access to land for development, while maintaining the safety and efficiency of the State's transportation system. The goals of an access management plan include creating access to new developments and ensuring that existing facilities remain operating at a functional level. Within Orange County, the Efland-Buckhorn-Mebane Study Area was selected as a location to encourage future economic development activities, based on its strategic location along major transportation corridors. The Efland-Buckhorn-Mebane Study Area runs along the north side of I-40 between Buckhorn Road and I-85/US 70 Connector and along the south side of I-40 from Ben Wilson Road and Mt. Willing Road. Recent growth along the I-85/40 corridor has resulted in an average increase of traffic of 3% each year; with the expected growth of residential activity and office, service, research, commercial and industrial development in the study area, the future traffic is anticipated to also intensify. A map of the project study area is shown in Figure 1.

ACCESS MANAGEMENT

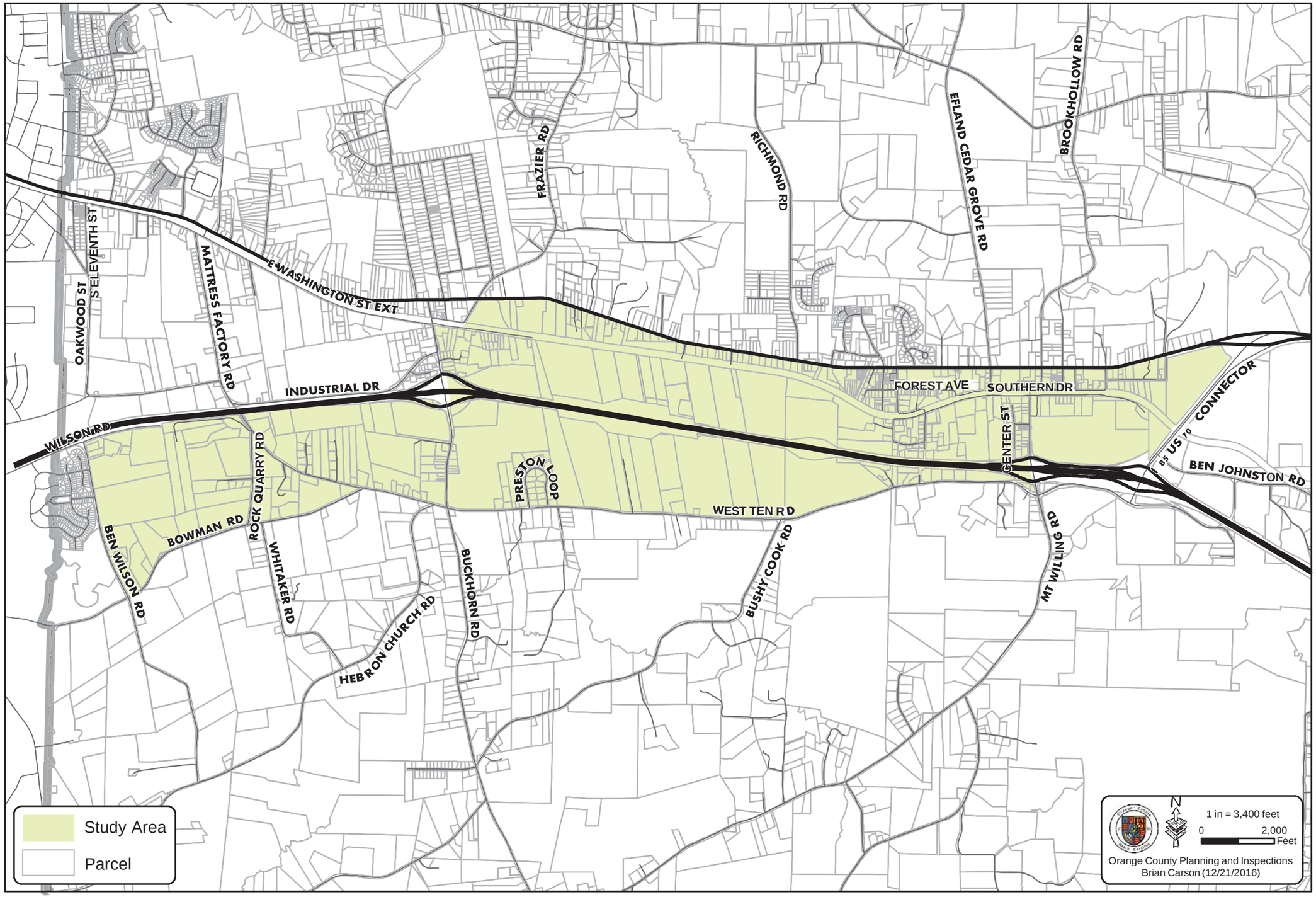
Access management is the systematic control of the location, spacing, design and operation of driveways, median openings, interchanges and street connections to a roadway[1]. The Federal Highway Administration's (FHWA) official definition of access management is *"the process that provides access to land development while simultaneously preserving the flow of traffic on the surrounding system in terms of safety, capacity, and speed."* By controlling these access points, a local or state government can:

- ✧ Maintain the overall safety of the transportation system;
- ✧ Minimize congestion;
- ✧ Provide for efficient traffic flow and pedestrian safety;
- ✧ Minimize crash rates; and
- ✧ Provide appropriate access to adjacent business properties.

Ultimately, Orange County seeks to develop an access management plan in order to maintain the functionality of the transportation network as the Efland-Buckhorn-Mebane Study Area develops.

[1] Access Management Manual, Transportation Research Board, Washington D.C. 2003

Study Area for the Efland-Buckhorn-Mebane Transportation Report - Figure 1



BUSINESS IMPACTS

Addressing the roadway network and access management issues during the planning and development of land in the study area and transportation projects can help a community in various ways. Customers are seeking businesses with unblocked driveways and easy access while businesses are seeking access to signalized intersections and interconnected developments which allow easy access to interstate facilities. Having a plan in place to address the needs of the community is critical to the economic prosperity of the region and ultimately to the State of North Carolina.

COMPREHENSIVE TRANSPORTATION PLAN (CTP)

The North Carolina Department of Transportation and Orange County adopted the Orange County Comprehensive Transportation Plan (CTP), which provides project recommendations for rural areas of the county, in 2013. The Durham-Chapel Hill-Carrboro MPO (DCHC MPO) CTP is currently under development and will be adopted in 2017. This plan addressed future transportation needs in the urbanized areas. The Orange County Unified Development Ordinance (UDO) will be used to further foster economic development in the Mebane/Buckhorn Economic Development District (EDD).

Under State law (N.C.G.S. § 136-66.2), Metropolitan Planning Organizations (MPOs) and municipalities shall develop Comprehensive Transportation Plans (CTPs) in cooperation with the North Carolina Department of Transportation (NCDOT). For municipalities and counties, or portions thereof, located within an MPO planning area, the development of a CTP shall be by the MPO in cooperation with the NCDOT. The CTP is not required to be fiscally constrained and no minimum horizon year or update timeframes are specified. The CTP is the element of the Metropolitan Transportation Plan (MTP) that identifies transportation needs before fiscal constraint is applied.

Under Federal law (23 U.S. Code § 134), MPOs are required to prepare a MTP. The MTP is required to address the federal planning requirements in 23 U.S.C. § 134, which include being fiscally constrained, having a minimum 20 year horizon, and being updated every 4 years in air quality non-attainment or maintenance areas (every 5 years in attainment areas).

It is important to note that the CTP/MTP does not include every road on the highway system. As such, in accordance with G.S. § 136-66.2, to complement the roadway element of the CTP, municipalities and MPOs may develop a collector street plan and/or include additional projects that may be included in the transportation plan if reasonable additional resources beyond those identified in the financial plan were available to assist in developing the roadway network. The Department of Transportation may review and provide comments but is not required to provide approval of the collector street plan. The CTP and the locally approved collector street plan(s) work together to identify the future transportation system. The street and highway elements of the plans developed pursuant to G.S. § 136-66.2 shall serve as the plan referenced in G.S. § 136-66.10(a), which addresses the reservation and dedication of right-of-way under local ordinances.

Locally approved transportation plans may contain street or highway right-of-way alignment and dedication recommendations or requirements, and collectively function as the collector street plan for the MPO or municipality as referenced under G.S. § 136-66.2.

The concepts shown on a CTP are for planning purposes and are subject to change. These concepts will need additional analysis to meet state and federal environmental regulations, to determine final locations and designs, and to be funded for implementation. The Orange County UDO, Sections 6 and 7 includes the requirements for reserving and dedicating right of way or requiring construction of roads listed in Access Management Plans or on the CTP. Specific mention is also made to the dedication of right of way based on the concepts shown on the CTP and local collector street plans, based on N.C.G.S.
§ 136 66.2 and § 136 66.10.

Section 2 – Existing Conditions

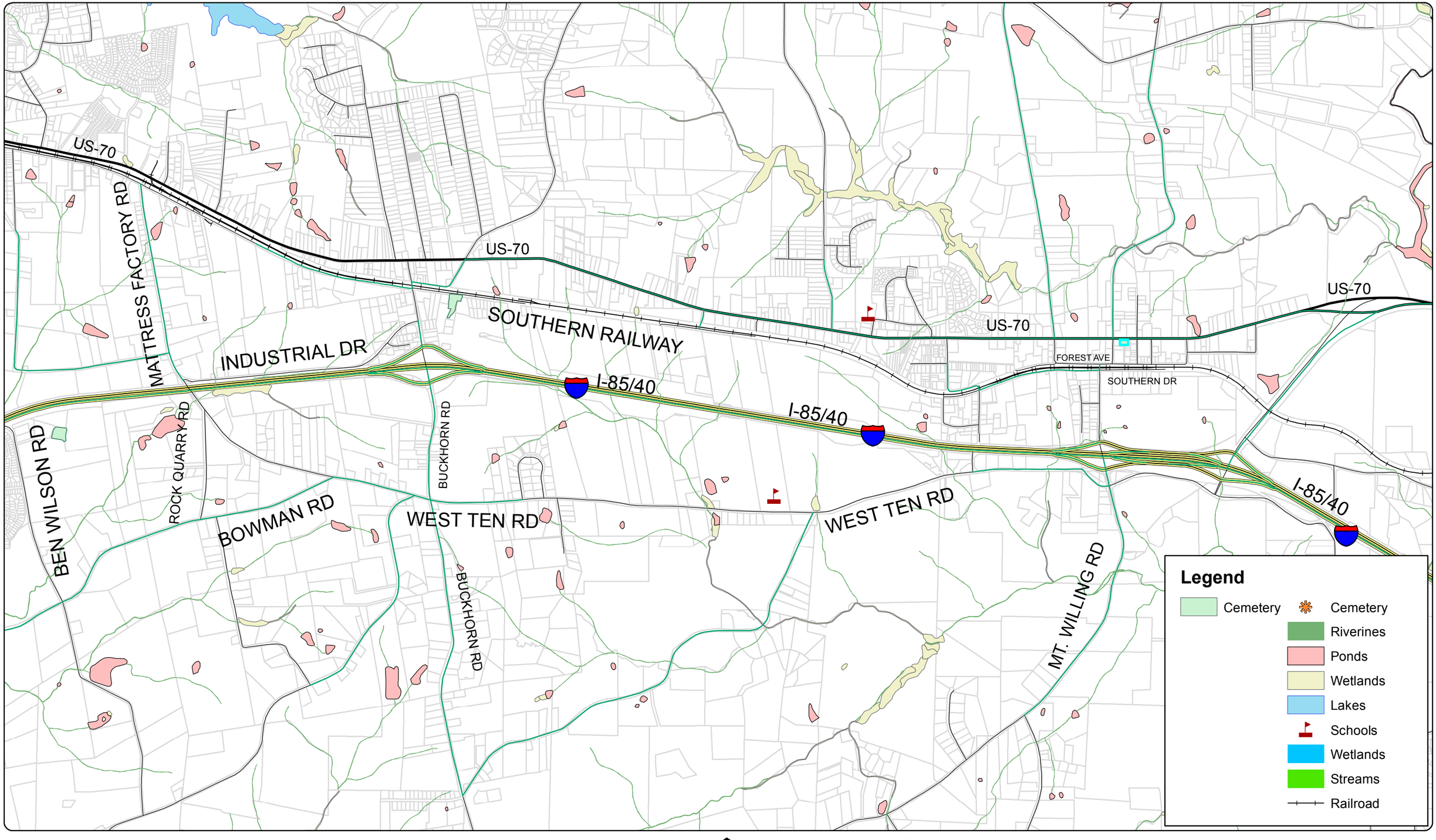
ENVIRONMENTAL FEATURES

To begin the transportation report development process, Orange County's environmental contractor, Pilot Environmental, Inc. (PEI) conducted preliminary studies within the Study Area: Wetlands determination, threatened and endangered species determination. Specifically, PEI's field work and use of existing federal and state agency data determined the presence of any streams, ponds and Wetlands, assessment of potential historic properties/structures and/or archaeological remains, and obtain information regarding federally protected threatened and endangered species that could be located in the area. The project was broken into four study areas: 1A, 1B, 2A, and 2B, a map of which is shown in Attachment A. The purpose of the work was to document environmentally sensitive areas to assist the County in long-range planning and regulating future road networks related to development proposals in the area. The future road network proposals will ultimately be developed to mitigate impacts on environmental features in the Study Area. Figure 2 depicts the Existing Conditions, highlighting water features, schools, and cemeteries. Figure 3 contains Environmental Features including endangered species and elevation contours.

CULTURAL FEATURES

PEI also conducted a cultural resources inquiry in the Study Area. A cemetery and several historic structures were located. PEI submitted a letter to the State Historic Preservation Office (SHPO) soliciting comments pertaining to the Study Area. Copies of their responses are shown in Attachment B. SHPO determined that the road network as proposed will not have an effect on any of the historic structure, and additionally, the cemetery is protected in accordance with NCGS Chapter 65.

Portions of the Study Area also have a high probability for the presence of archeological resources. Archaeological data was obtained but is not depicted on Figure 2 in order to protect sensitive areas of archaeological interest.



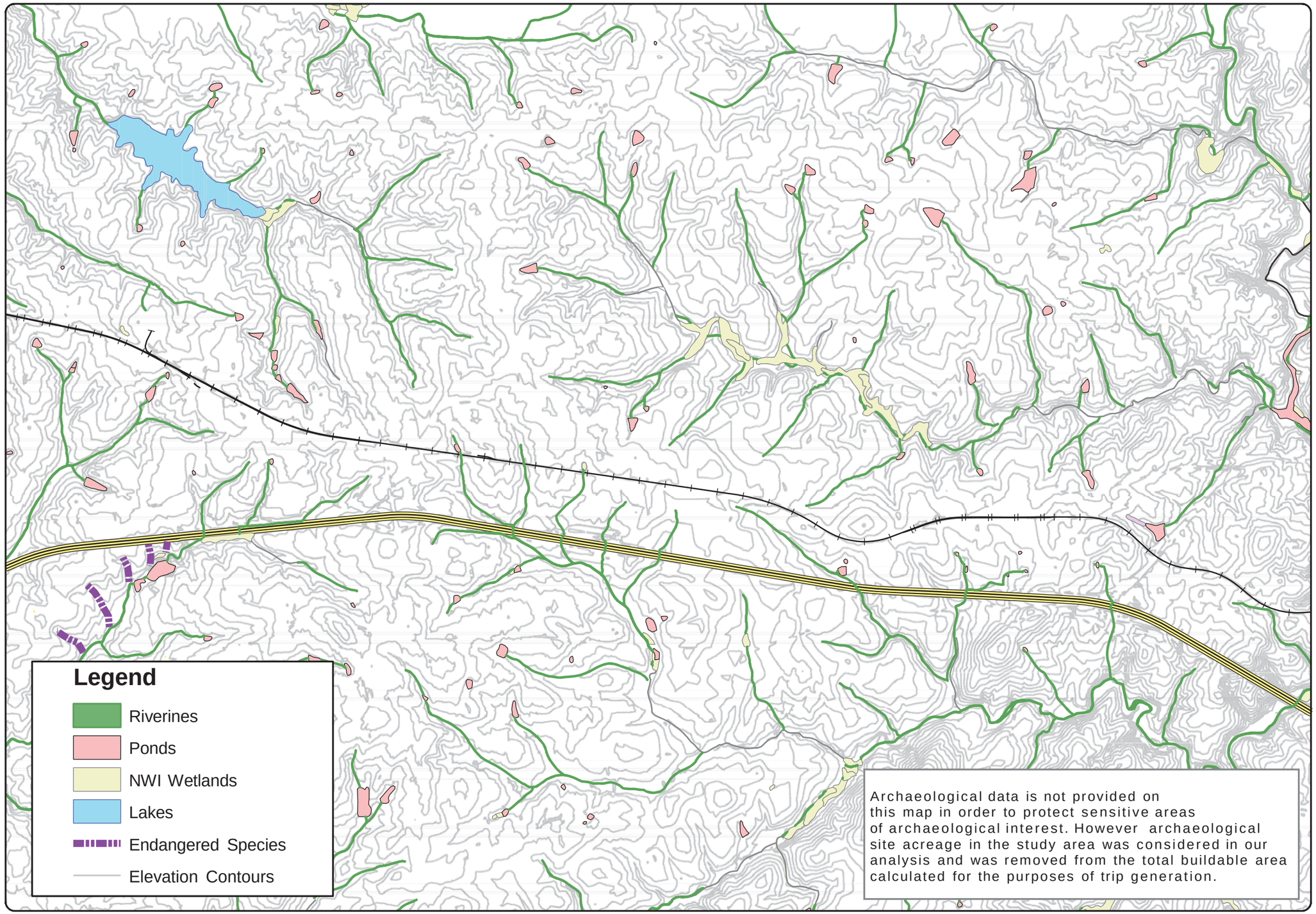
VOLKERT

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Note: This map is for presentation use only and not to be used for construction purposes.

Existing Conditions
Figure 2



VOLKERT

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Note: This map is for presentation use only and not to be used for construction purposes.

Environmental Features Map
Figure 3

EXISTING ROADWAY NETWORK

The project area (shown in Figure 1) is approximately 4.25 square miles bounded on the west by Ben Wilson Road, on the east by The I-85/US-70 Connector, on the north by US-70, and on the south by West Ten Road and Bowman Road. The area lies between two municipalities, Mebane and Hillsborough. A description of the transportation facilities in the general vicinity of the project study area is as follows:

I-40/I-85 is an eight-lane interstate that runs concurrently through Guilford, Alamance, and Orange Counties. I-40 diverges from I-85 at exit 163 south of Hillsborough. The posted speed limit is 65 mph and the AADT is 98,000 vehicles/day.

Ben Wilson Road is a two-lane major connector which is accessed from the Mebane Oaks Road interchange on I-85/40 and carries mainly residential traffic. It was recently extended to act as a service road for employees of Morinaga America Foods, Inc. The extension of Ben Wilson Road to Mebane Oaks Road has been studied, however plans have not been approved and will not be discussed in this report. The posted speed limit is 35 mph.

West Ten Road is a two-lane major connector south of I-40/I-85 which runs from Mattress Factory Road to the I-85 Connector. The posted speed limit is 55 mph, except for a 45 mph section near Gravelly Hill Middle School, and the AADT is 1,800 vehicles/day.

Mattress Factory Road is a two-lane major connector that is north of I-40/85 which runs from East Washington Street (SR 1303) to West Ten Road, intersecting at I-40/85. The posted speed limit is 35 mph and the AADT is 2,500 vehicles/day.

Buckhorn Road is a two-lane major connector stretching from US-70 in the north to Orange Grove Road (SR 1006) in the south. Within the study area, i.e. from US-70 to West Ten Road, Buckhorn Road has a posted speed of 35 mph and the AADT is 2,700 vehicles/day.

US 70 is a two-lane road classified as an Other Principal Arterial, which provides east-west access across Orange County from I-85 and Durham in the east to Mebane in the west. US-70 represents the northern boundary of the study area. The posted speed limit is 45 mph and the AADT is between 3,600 and 5,300 vehicles/day.

I-85/US-70 Connector is a four-lane interstate providing access between I-40/I-85 and US-70. A full access interchange is provided at I-40/I-85, while a partial access interchange is present at US-70. The partial access interchange restricts westbound travel onto US 70 from the I-85/US-70 Connector and southbound travel from US-70 onto the I-85/US-70 Connector. The posted speed limit is 55 mph and the AADT is 4,400 vehicles/day.

Section 3 – Future Network

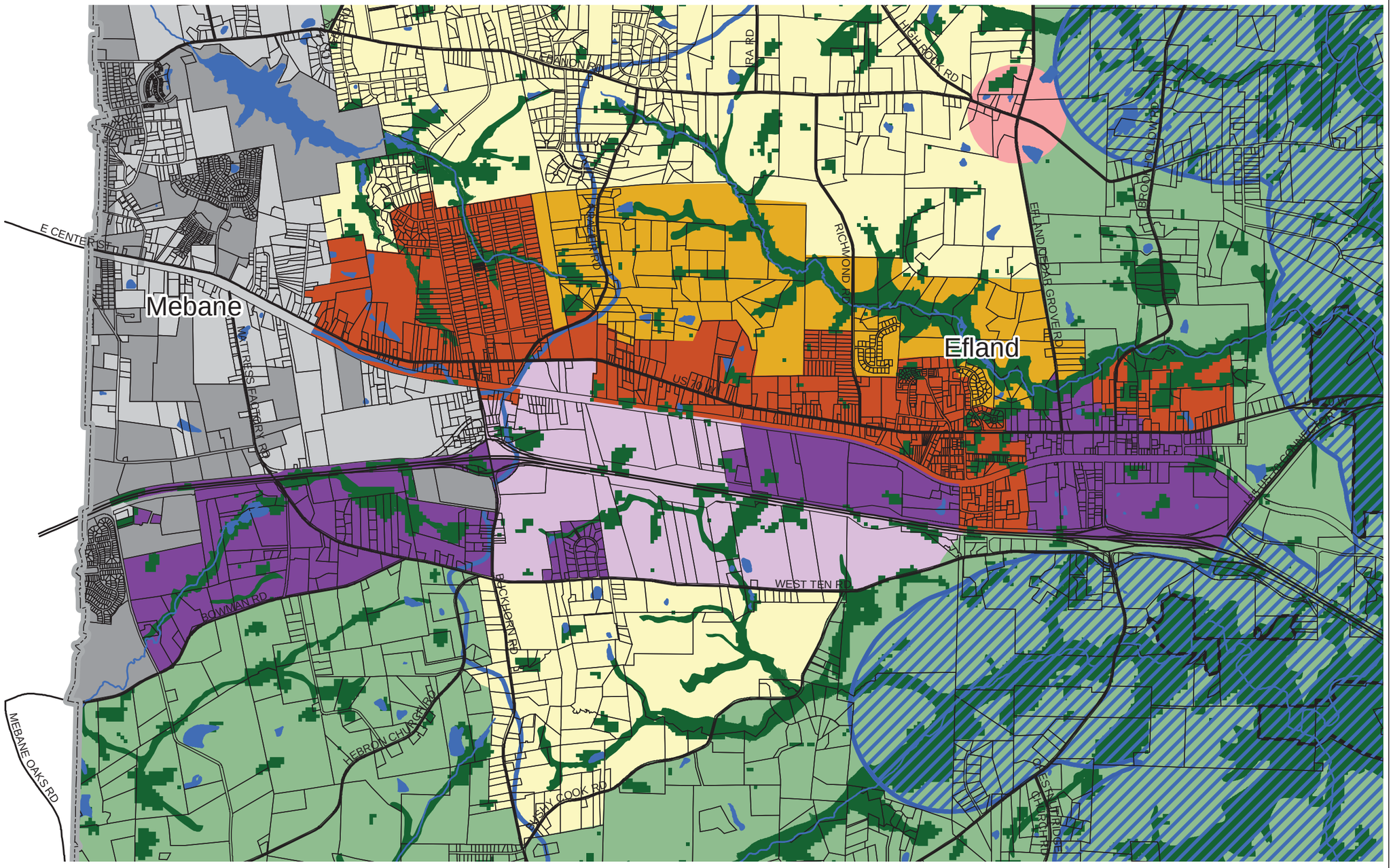
FUTURE LAND USE MAP

The Future Land Use Map (FLUM) (Figure 4) is a key component of the adopted Orange County 2030 Comprehensive Plan. The FLUM provides guidance and direction regarding future land use planning and development efforts undertaken in the county, including the Study Area. The FLUM defines the location of appropriate land use classifications that would achieve a desired pattern of development, and is critical for achieving sustainable growth.

Implementation of the stated land use goals and objectives of the Comprehensive Plan is accomplished primarily through the application of zoning districts consistent with the FLUM. The land use classifications depicted by the FLUM provide the locations in the county where certain zoning districts may or may not be appropriate. The classifications designated for the Study Area are: Commercial- Industrial Transition; Economic Development Transition Activity Node; and 10-Year Transition. A variety of zoning districts are appropriate for these classifications with specifics provided through a Land Use and Zoning Matrix that is included in the Comprehensive Plan. If a proposed zoning district is not compatible with the classifications contained in the Matrix, re-zoning cannot take place unless the FLUM is amended.

The land use classifications of the FLUM, together with the existing and projected future zoning districts, informed a build-out analysis for the Study Area. The analysis provides an estimation of future development. It serves as the basis for estimations of the amount of additional traffic that could be generated if the Study Area was developed to its full potential, as well as serving as a tool for planning for future improvements to the transportation network.

General Study Area
Future Land Use Map of the Orange County Comprehensive Plan



Watershed Critical Areas
Water Supply Watersheds
Resource Protection Areas
Public Interest Areas

10 Year Transition
20 Year Transition
Rural Residential

Agricultural Residential
City Limits
ETJ

Activity Nodes
Rural Neighborhood
Economic Development Transition
Commercial-Industrial Transition

Figure 4

N W E S

0 1,000 Feet
1 in = 3,500 feet

Adoption Date: Nov 18,2008
Amended through November 2014

Orange County and Planning and Inspections Department.
This copy printed July 19, 2016.
Map is for reference use only.
Contact Planning staff for verification of data.

STUDY AREA BUILDOUT ANALYSIS

An important element of the Transportation Report for the Efland-Buckhorn-Mebane Study Area was the preparation of a buildout analysis. The buildout analysis provides an estimation of future development and helps determine quantity and location of future growth. The analysis utilized an Orange County parcel map with a GIS overlay, and was based upon a number of attributes, among the most important being:

- Existing land uses;
- Existing zoning; and
- The adopted Future Land Use Plan

Delineation of Development Pods

Based primarily on a combination of the existing road network, the existing Zoning Map, and the designated future land use (per the adopted Land Use Plan), eighteen (18) development pods were created as a base for estimating future trip generation for the study area. The development pods are depicted in Figure 5, and range in size from 22 acres to 362 acres.

The buildout analysis process incorporated a number of attributes:

- Zoning and Future Land Use Plan designations for the pods.
- Gross acreages of development pods, undeveloped land, current non-residential land, current residential acreages including subdivisions and development, existing non-residential development, and other developed area to be preserved;
- Documentation of environmental and cultural constraints by developable areas;
- Estimation of appropriate land uses by ITE codes;
- Consideration of development regulations restricting the percentage of site development;
- Provision of public services (water, sewer);
- Proximity of interstate interchanges;
- Proximity of and potential access to the rail line;
- Potential impact of future transit (OPT); and
- An applied market reduction factor based on location and available public services.

The primary concern in the study area in terms of developing a feasible future roadway network are the presence of streams that have a fifty-foot vegetative buffer based on the Neuse River Riparian Buffer Rules. While roadway crossing of streams are allowable per the buffer rules, Volkert attempted to minimize stream crossings in the development of the future roadway network and assumed that no development would take place within the stream buffers.

The trip generation analysis is summarized in the spreadsheet provided in Attachment C. The result of the analysis was the estimated buildable acres per pod. The analysis provides valuable estimated projections about future land uses and development potential, and serves as the basis for estimations of the amount of additional traffic that could be generated if the study area was developed to its full potential. The analysis also serves as a tool to be used to consider future needs and improvements to the transportation network serving the Study Area.

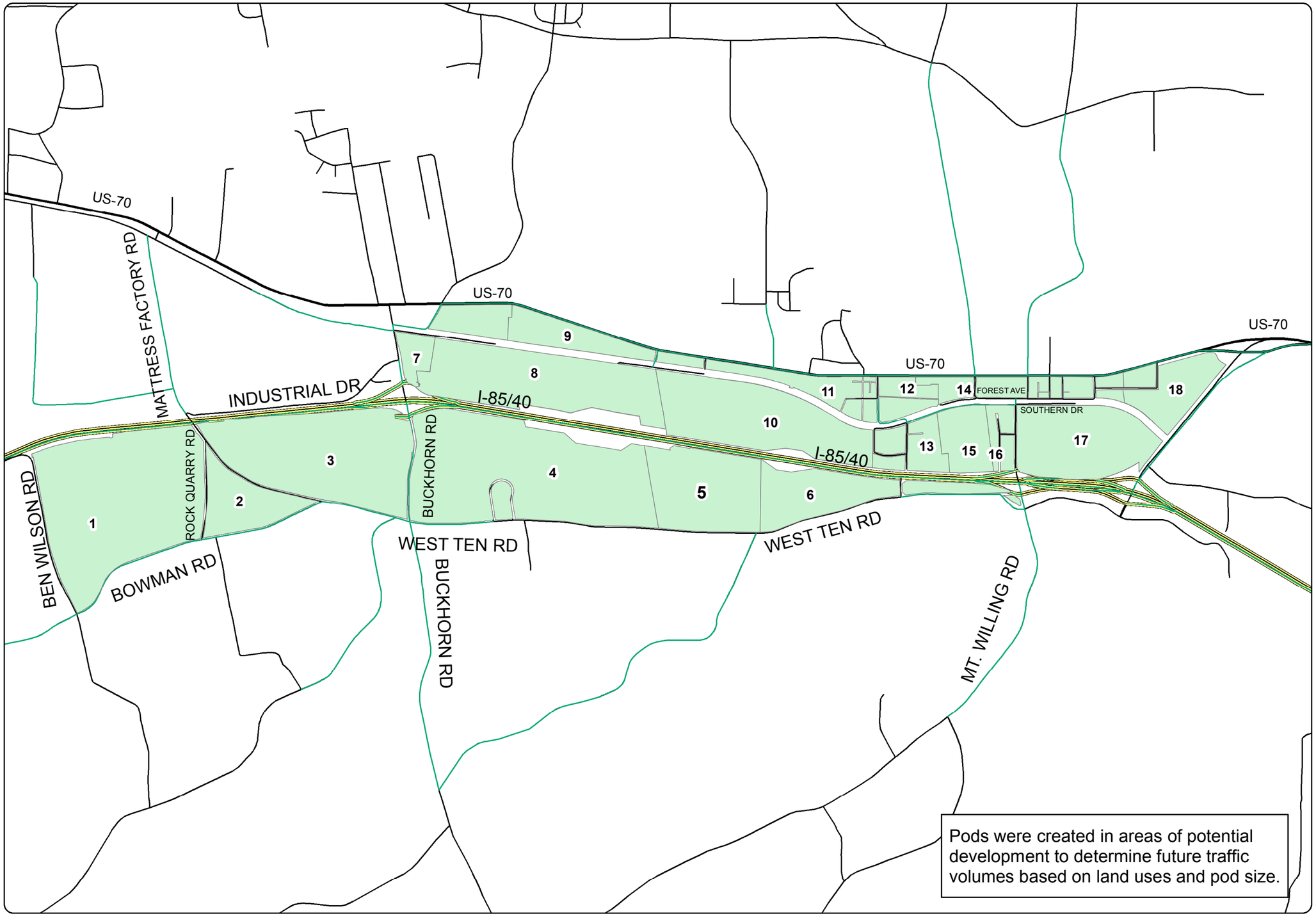
Future Traffic

Future trips to and from the development pods were determined by combining data from existing transportation impact analyses (TIAs) in the vicinity, NCDOT traffic counts, and trip generation data, calculated based on various land use codes and the buildable areas of the pods. The formulas and land use codes used to determine the trip data area listed in Attachment C. The anticipated number of vehicles generated from the development in each pod in shown in Table 1 below.

Table 1 – Anticipated Traffic Generated from Development

Pod	Area (acres)	Total Daily Traffic	AM Peak Hour	PM Peak Hour
1	86.8	7,440	986	1,025
2	19.1	2,781	338	302
3	81.0	21,917	2,227	2,144
4	135.2	40,432	4,114	3,270
5, 6	19.7	1,998	189	203
7	7.5	36,955	3,476	2,865
8	70.1	5,088	715	738
9	18.1	17,736	1,534	1,492
10	48.6	4,336	586	574
11	7.1	4,516	468	466
12	4.9	392	51	49
13	15.2	925	128	124
14	8.5	4,896	509	507
15	11.1	1,010	127	124
16	1.8	772	81	81
17	79.3	16,228	1,931	1,770
18	24.3	5,422	647	614

Note: Pods 5 and 6 were combined because Pod 5 did not have any developable area. There are plans for the development of additional soccer fields at the Soccer.com center in Pod 5 which will add another 3 vehicles to the peak hour of Pod 5/6.



VOLKERT

0 0.5 1 Miles

N

Note: This map is for presentation use only and not to be used for construction purposes.

Development Pod Map
Figure 5

FUTURE ROADWAY NETWORK

Based on the information presented in this report and taking into account functional classification, design speed, traffic volumes, character and composition of traffic and type of right-of-way, the roadway network on the following pages is recommended. NCDOT Annual Average Daily Traffic (AADT) counts were used to determine the traffic volumes surrounding the study area, while traffic studies for adjacent streets were also used to inform this analysis. In recommending these new facilities, Orange County used the following criteria as guidelines:

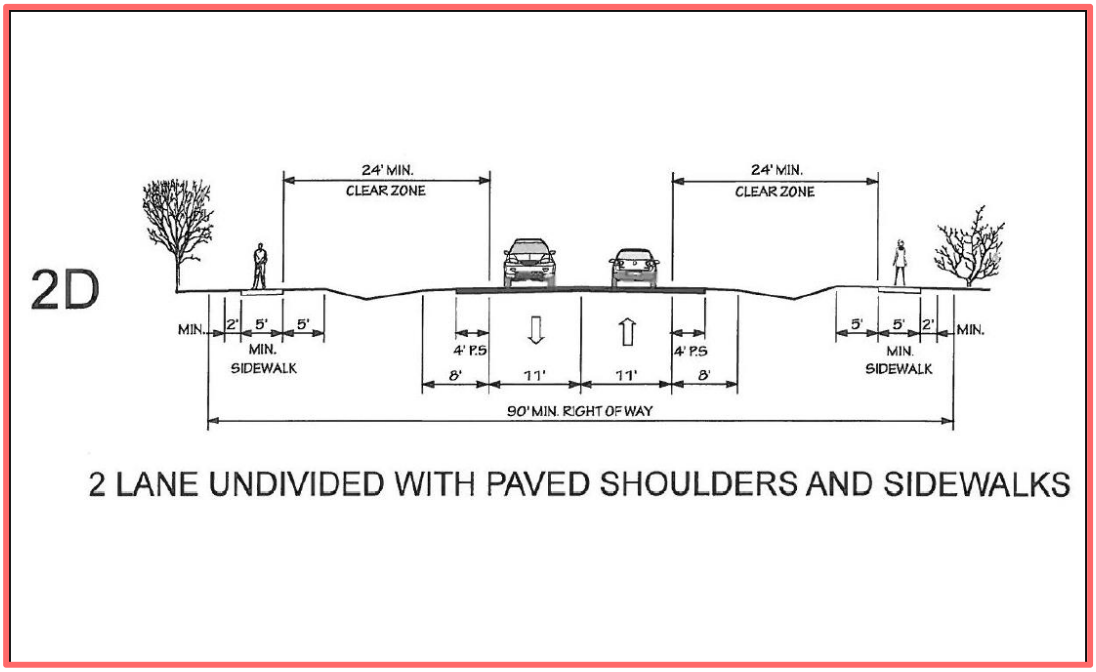
1. Serve all of the future development areas
2. Keep traffic off of the existing roadway network
3. Provide access to the existing interchanges
4. Minimize stream crossings
5. Avoid historical areas, cemeteries, and archaeological resources
6. Avoid currently developed properties
7. Avoid wetlands, poor soil, and rock
8. Create better conditions for non-automobile modes

Roads will be constructed to the design speeds provided for each cross-section.

TYPICAL SECTIONS

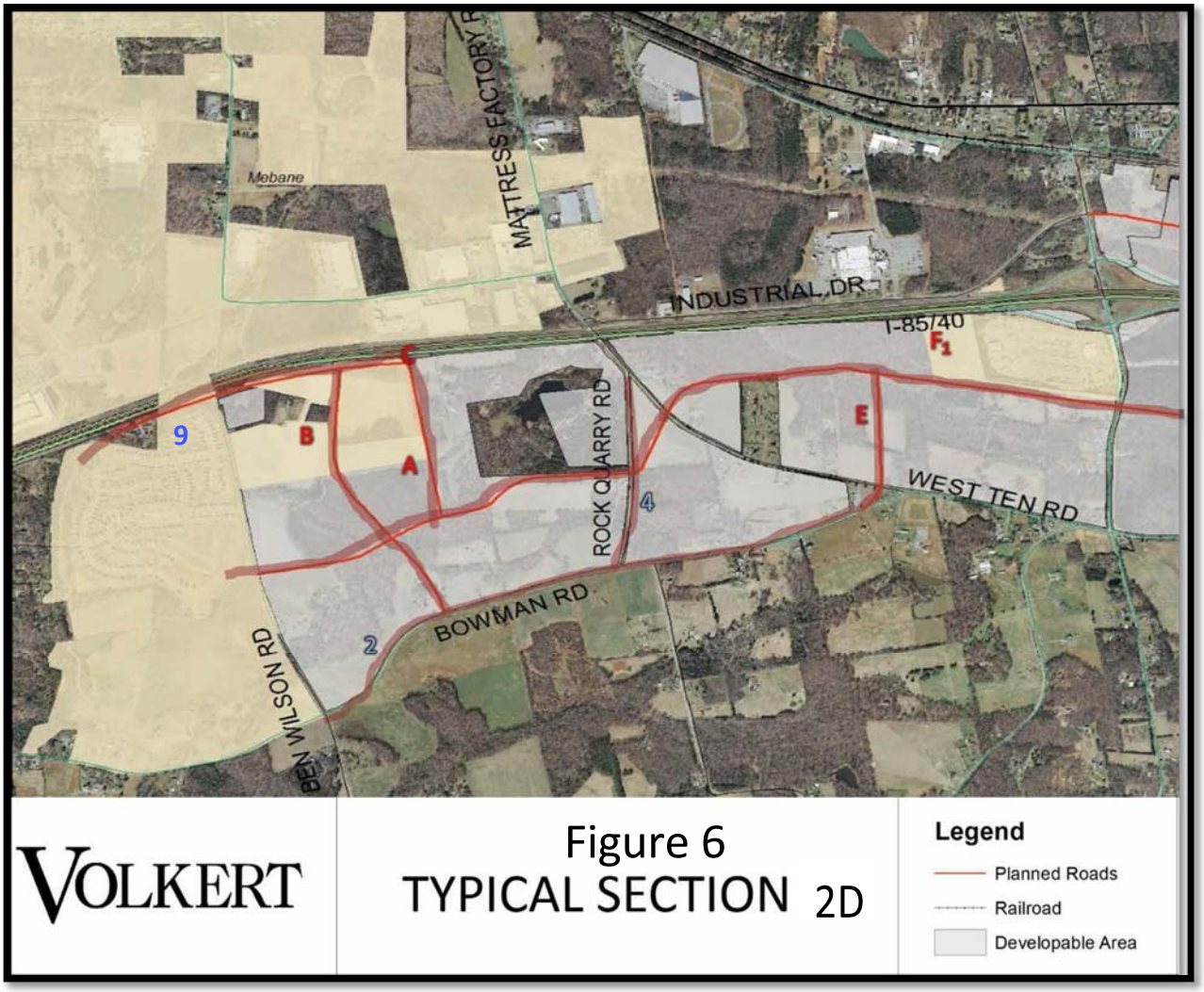
Typical sections for the proposed streets were evaluated and selected based on an analysis of future traffic volumes, the NCDOT Average Annual Daily Traffic and NCDOT's Roadway Design Manual guidelines. All roads are classified as local roads or minor collectors according to NCDOT Functional Classification Maps.

A. For proposed streets A- F1, 2 and 4 (seen in figure 6) the cross section 2D includes 2 lanes undivided with paved shoulders and sidewalks. Due to the proximity of the City of Mebane, the city may consider annexation of some additional areas at a future date and then will assume the costs of sidewalk construction and maintenance. An annexation process would include coordination with Orange County.



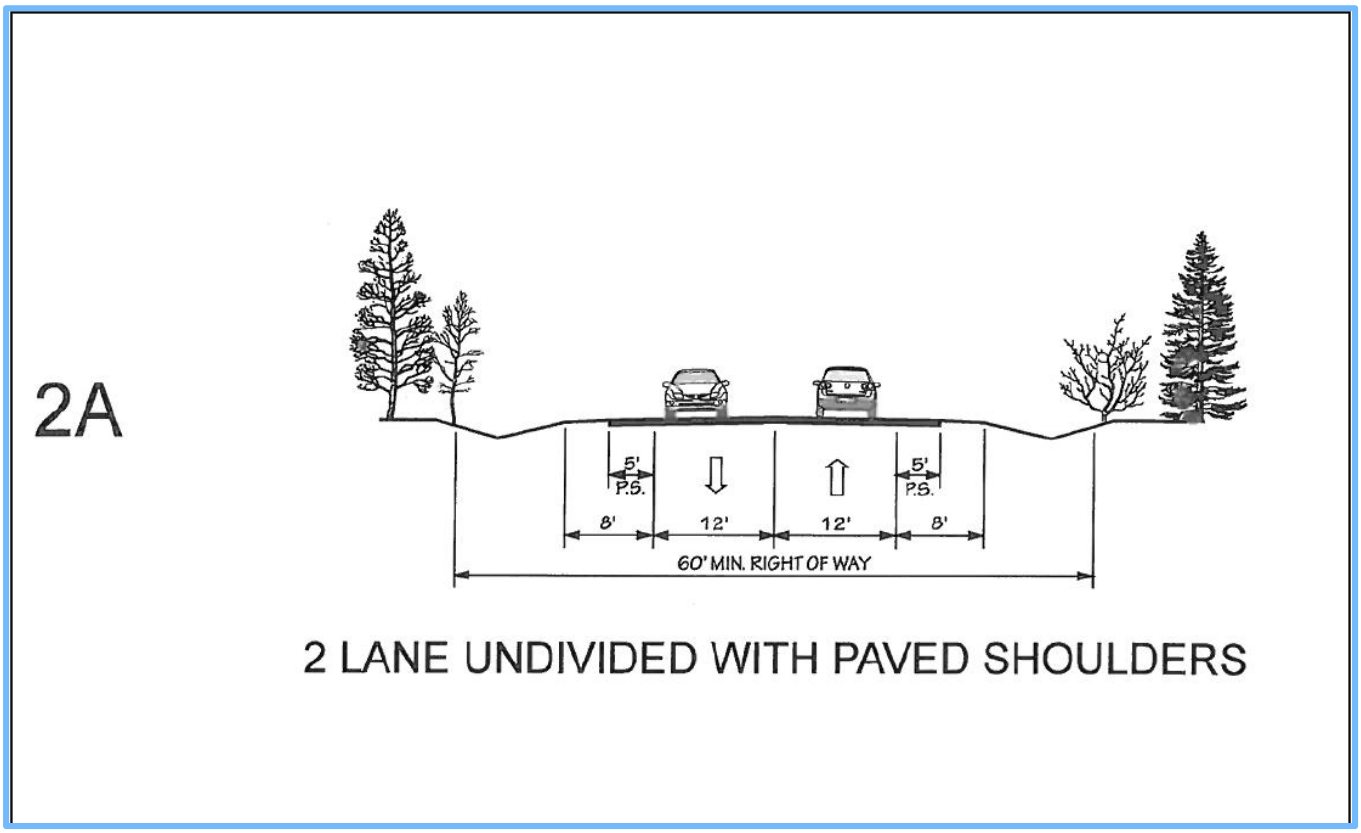
Roadway Table for Typical Section 2D

Roadway Name	Map Identifier	Roadway Type	Responsible Party	Proposed Cross-Section Type (Line Color)
New A	A	New	Developer Built with Sidewalk in ROW (Future Mebane Area)	Two Lane, Ditch, Sidewalk
New B	B	New	Developer Built with Sidewalk in ROW (Future Mebane Area)	Two Lane, Ditch, Sidewalk
New C	C	New	Developer Built with Sidewalk in ROW (Future Mebane Area)	Two Lane, Ditch, Sidewalk
New E	E	New	Developer Built with Sidewalk in ROW (Future Mebane Area)	Two Lane, Ditch, Sidewalk
New F1	F1	New	Developer Built with Sidewalk in ROW (Future Mebane Area)	Two Lane, Ditch, Sidewalk
Bowman	2	Existing	State TIP	Two Lane, Ditch, Sidewalk
Rock Quarry	4	Existing	State TIP/Developer	Two Lane, Ditch, Sidewalk
Wilson	9	Existing	State TIP	Two Lane, Ditch, Sidewalk



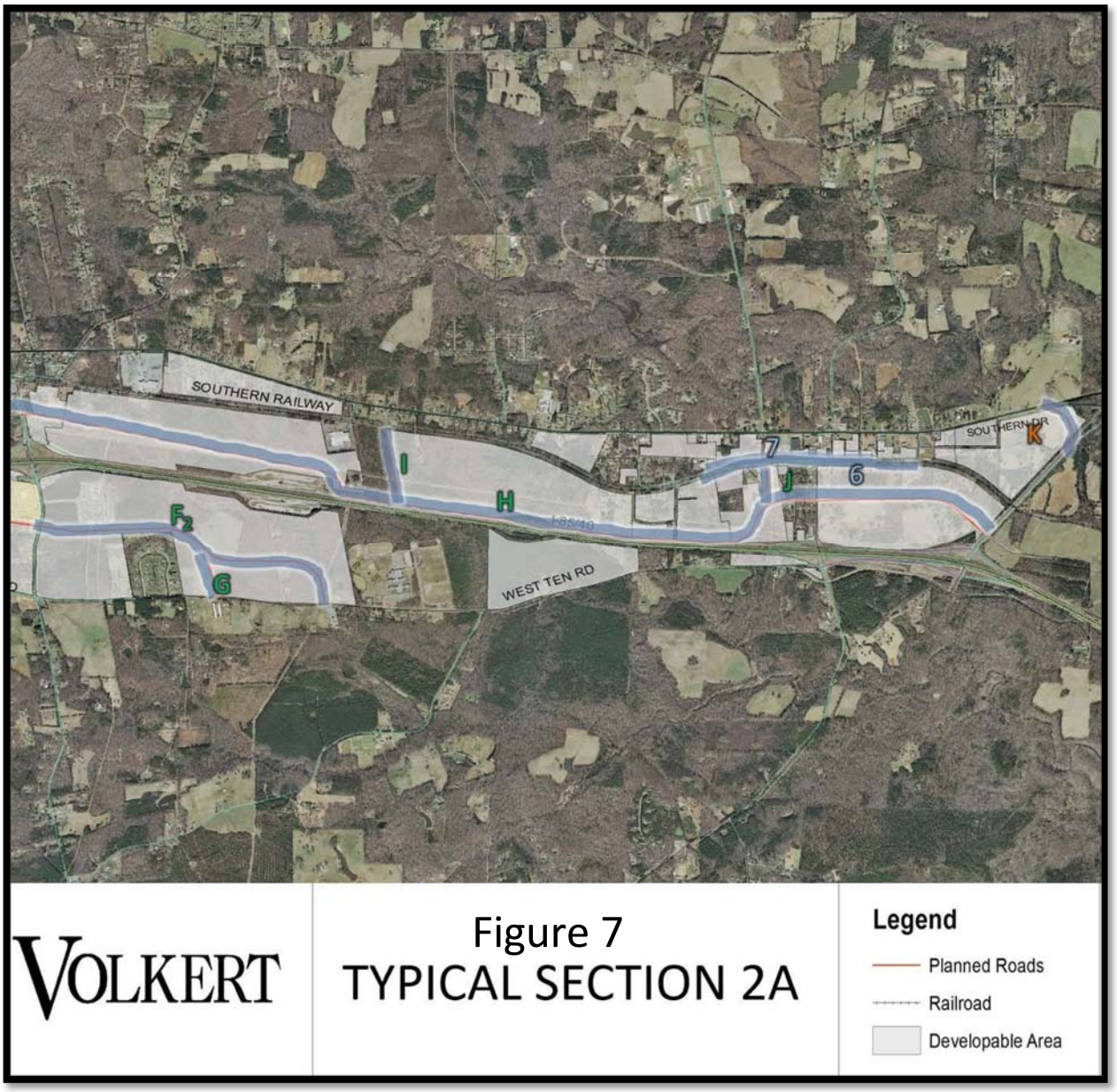
It is recommended that the above map be constructed according to cross-section 2D

B. For proposed streets F2-K, 6, and 7 (seen in figure 7), the cross section 2A includes 2 lanes undivided with paved shoulders. As these roads are not anticipated to fall within the jurisdiction of any neighboring community in the foreseeable future, no pedestrian amenities are included in this area. The County does not build or maintain infrastructure.



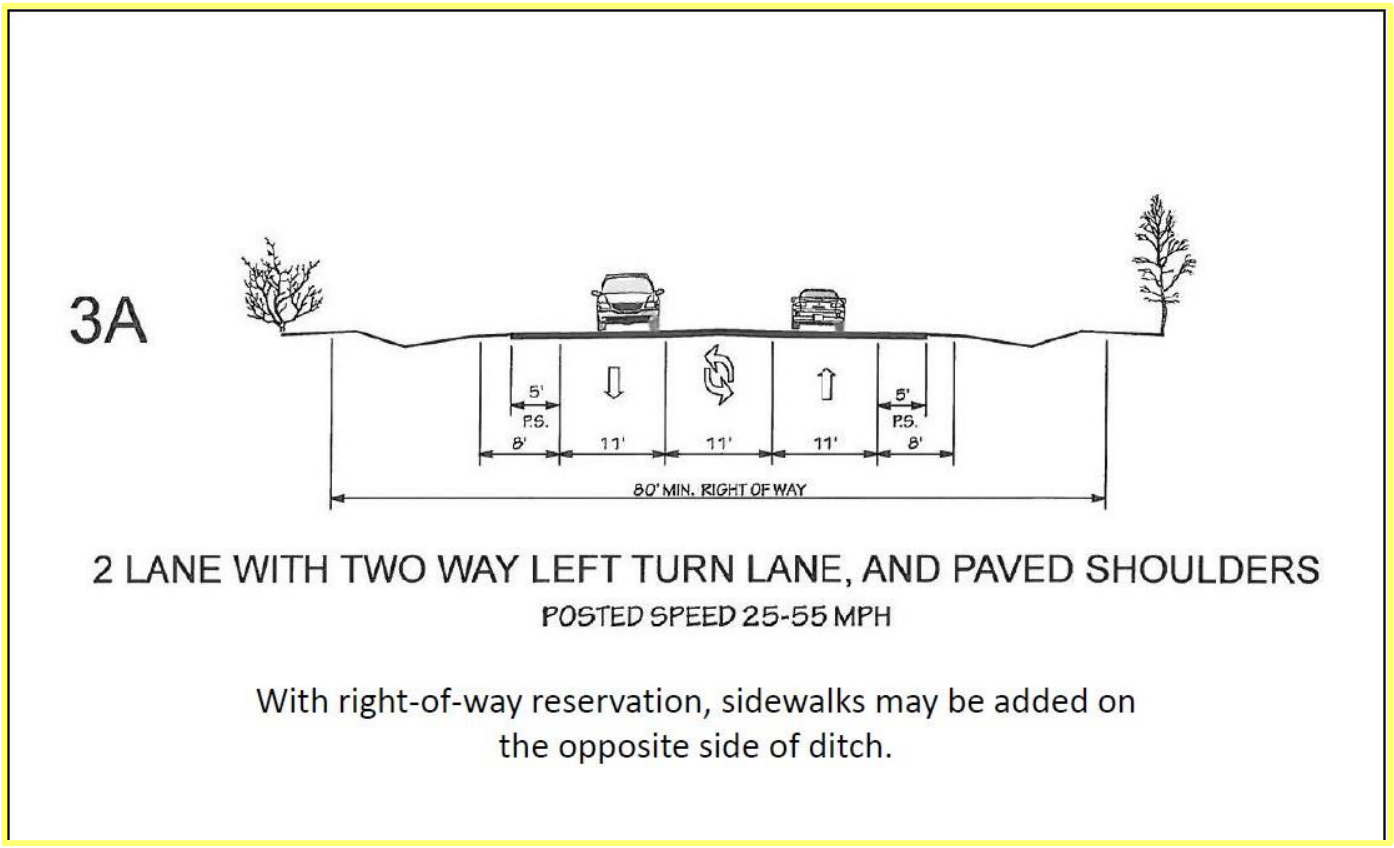
Roadway Table for Typical Section 2A

Roadway Name	Map Identifier	Roadway Type	Responsible Party	Proposed Cross-Section Type (Line Color)
New F2	F2	New	Developer Built (Sidewalk Built Outside of ROW by Developer per Ordinance)	Two Lane, Ditch Section
New G	G	New	Developer Built (Sidewalk Built Outside of ROW by Developer per Ordinance)	Two Lane, Ditch Section
New H	H	New	Developer Built (Sidewalk Built Outside of ROW by Developer per Ordinance)	Two Lane, Ditch Section
New I	I	New	Developer Built (Sidewalk Built Outside of ROW by Developer per Ordinance)	Two Lane, Ditch Section
New J	J	New	Developer Built (Sidewalk Built Outside of ROW by Developer per Ordinance)	Two Lane, Ditch Section
New K	K	Existing	State TIP	Two Lane, Ditch Section
Southern	6	Existing	No Improvement Possible due to Rail Right-of-Way	Two Lane, Ditch Section
Forest	7	Existing	No Improvement Possible due to Rail Right-of-Way	Two Lane, Ditch Section



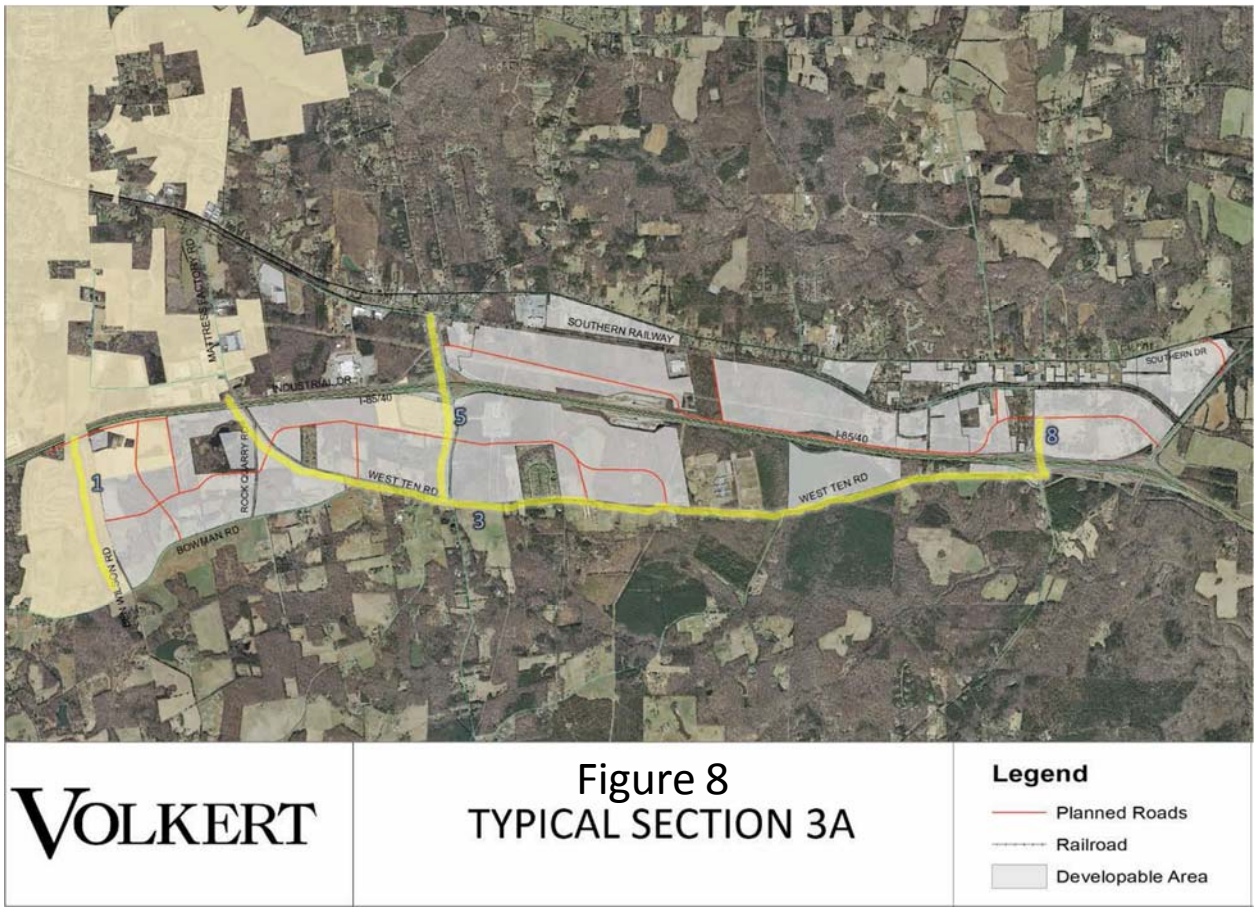
It is recommended that the above map be constructed according to cross-section 2A

C. For proposed roads 1, 3, 5, and 8 (seen in figure 8), the cross section 3A includes 2 lanes with a two-way left turn lane and paved shoulders. The cross sections depicted by this cross section may also include sidewalks with the proper right-of-way reservation.



Roadway Table for Typical Section 3A

Roadway Name	Map Identifier	Roadway Type	Responsible Party	Current Cross-Section Type	Proposed Cross-Section Type (Line Color)
Ben Wilson	1	Existing	State TIP	Two Lane, Ditch	Three Lane, Ditch, Sidewalk
West Ten	3	Existing	State TIP	Two Lane, Ditch	Three Lane, Ditch, Sidewalk
Buckhorn	5	Existing	State TIP	Two Lane, Ditch	Three Lane, Ditch, Sidewalk
Mt Willing	8	Existing	State TIP	Two Lane, Ditch	Three Lane, Ditch, Sidewalk



VOLKERT

Figure 8
TYPICAL SECTION 3A

Legend
- Planned Roads
- Railroad
- Developable Area

It is recommended that the above map be constructed according to cross-section 3A

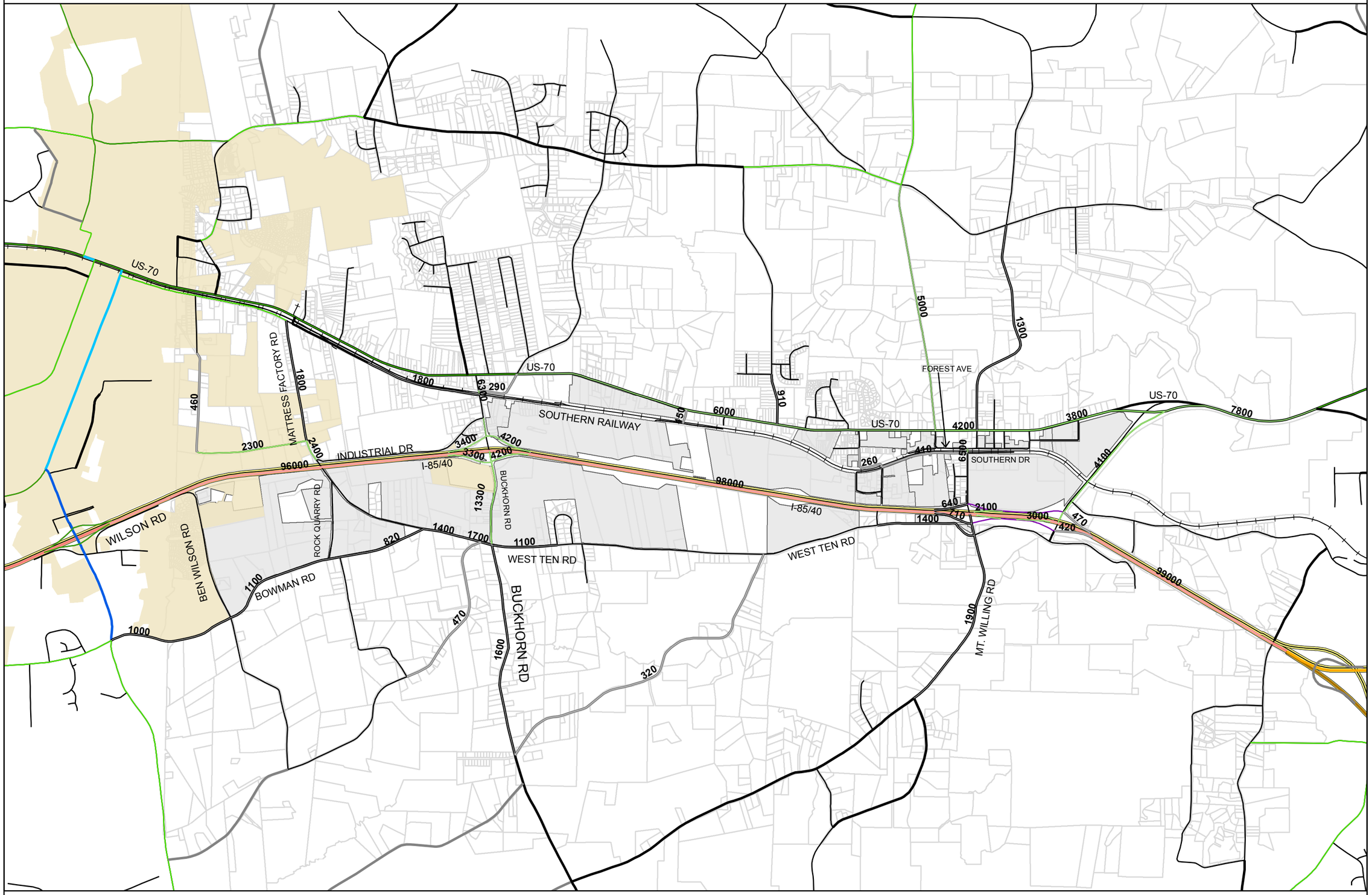
TRAFFIC VOLUME ANALYSIS

After developing the proposed roadway network, Volkert assigned the traffic volumes generated as discussed above to the roadway network. Information indicating the process used to generate traffic volumes is included in Attachment D.

For the areas with future development proposed, Volkert assumed that all traffic would be going to/ coming from the closest interchange, i.e.: traffic on the west side of the study area would be going to the interchange at Buckhorn Road and I-40 and any traffic on the east side would be going to the interchange at Mount Willing Road and I-40. The Pod Traffic volumes generated in Table 1 were added to the future 2025 AADTs of the existing roadway network based on the proposed access points. Pod traffic volumes were assigned proportionally to each access point. Volkert assumed that fifty percent of the project traffic going through the interchanges would be headed westbound on I-40 and the other fifty percent would be headed eastbound.

These volumes were added to the volumes from the NCDOT traffic volume maps for the area to give a general idea of how many lanes would need to be created for new roads or added to existing roads. The daily traffic volumes along with the AM and PM peak hour traffic volumes are provided in the following figures for the Buckhorn Road, W. Ten Road, and Mt. Willing Road interchanges with I-40. Existing and future AADT's are shown in figures 9 and 10 respectively. It should be noted that a future interchange at Mattress Factory Road has been proposed by the Burlington-Graham Metropolitan Planning Organization (B-G MPO) and will significantly impact traffic counts if constructed. Recommendations for the future road network are to 2025 and may require additional technical analysis at the time of implementation.

Based on future traffic forecasts, an initial 3-lane cross-section will be sufficient to handle traffic on Buckhorn Road in the short term; however, it will likely be necessary to retain right-of-way to allow for a four-lane with median or five-lane cross-section as warranted in the future.

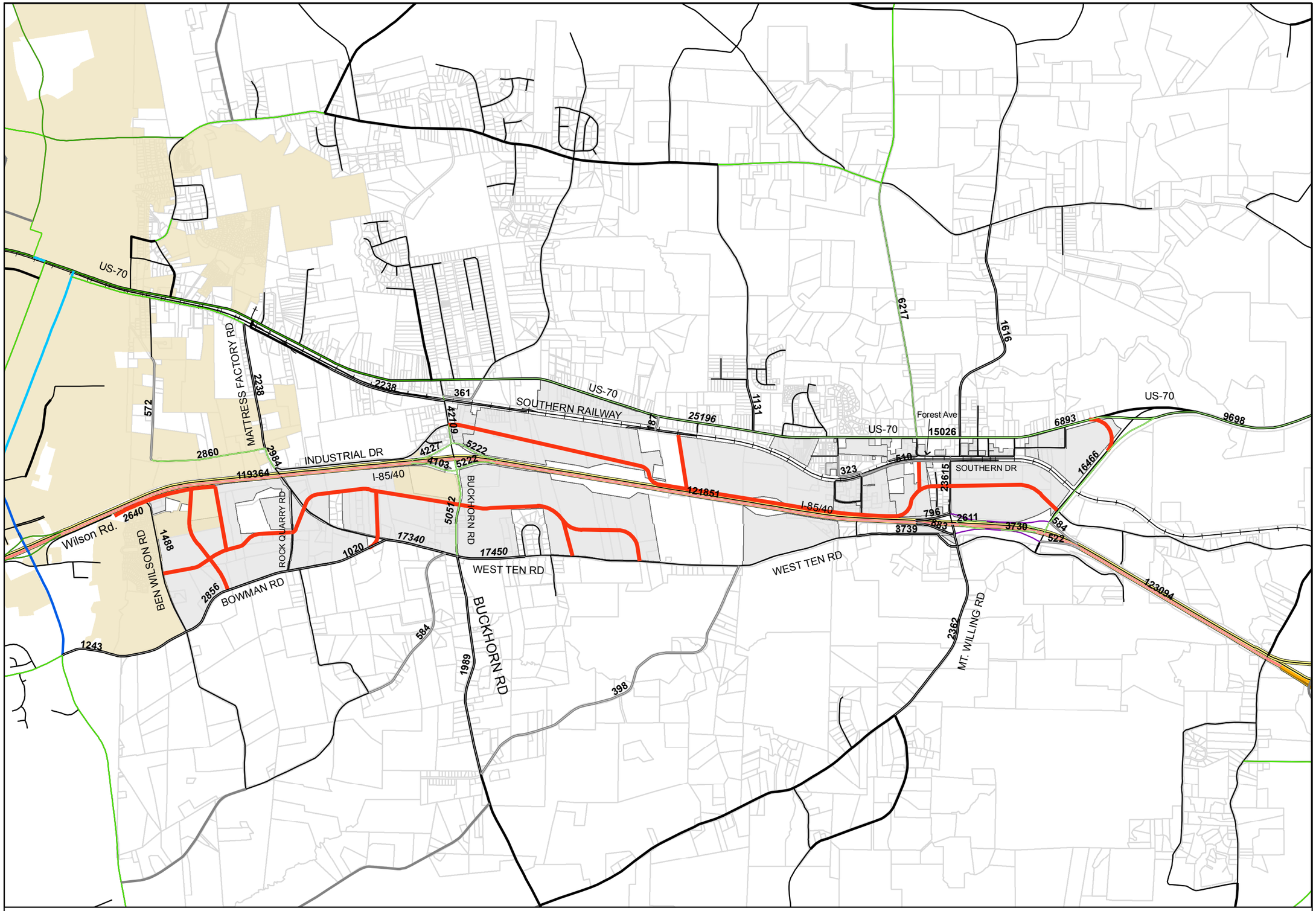


VOLKERT

0 0.5 1 Miles

Note: This map is for presentation use only and not to be used for construction purposes.

2014 AADT
Figure 9



VOLKERT

0 0.5 1 Miles

Note: This map is for presentation use only and not to be used for construction purposes.

2025 AADT
Figure 10

INTERSECTION ANALYSIS

To complete the intersection analysis, the traffic volumes derived from the development pods were applied to the study intersections shown in figure 11. Travel demand was projected from 2014-2025 by the trend line analysis method.

This method projects Annual Average Daily Traffic (AADT) based on historical trends. Traffic volumes over the past 15 years in this area has increased at 3% annually accordingly. Traffic in the study intersections were increased to the year 2025 by that rate.

Both the 2014 and 2025 traffic volumes at the intersections are shown in the following figures. Cross sections for the 5 intersections were determined based on the estimated traffic from the capacity analysis, and coordination with NCDOT. The Level of Service (LOS) was calculated for each new and existing intersection using Synchro. LOS is based on a measure of the average time delay at an intersection and ranges from A to F, with A having the shortest delay time and F having the longest. According to NCDOT Level of Service Definitions the six levels of service are defined as:

LOS A: Describes primarily free flow conditions

LOS B: Represents reasonably free flow conditions

LOS C: Provides for stable operations, but flows approach the range in which small increases will cause substantial deterioration in service

LOS D: Borders on unstable flow

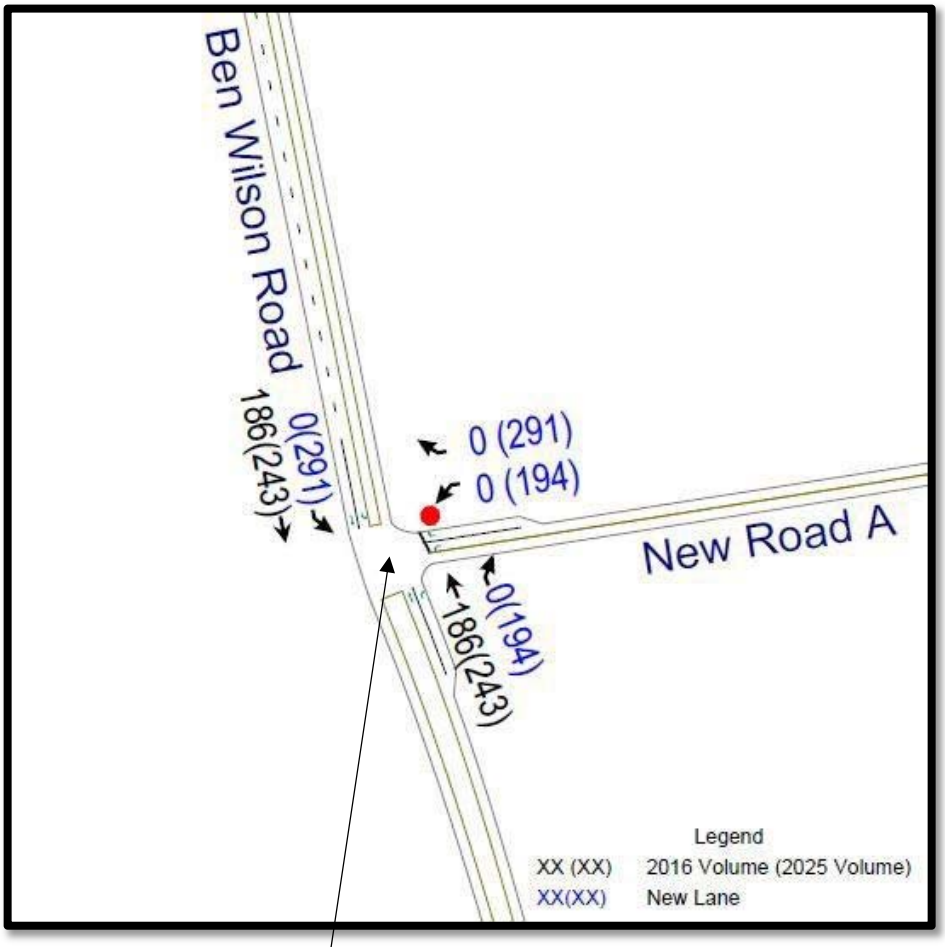
LOS E: Describes operation at capacity

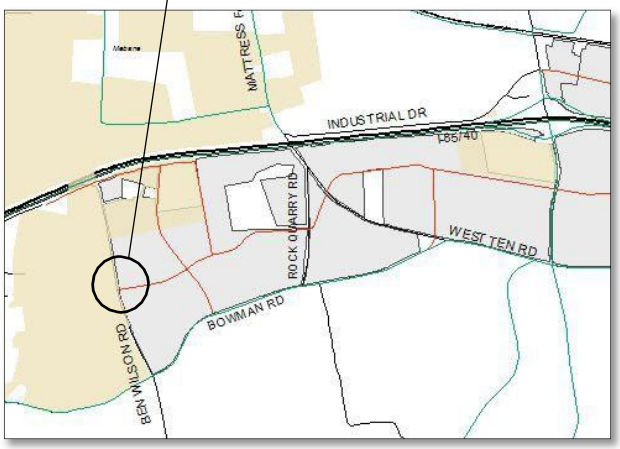
LOS F: Describes forced or breakdown flow

The five intersections studied by Volkert were:

1) New Road A at Ben Wilson Road
2) New Road A at West Ten Road
3) West Ten Road at Buckhorn Road
4) New Road H at Mt. Willing Road
5) US-70/I-85 Connector

1) **New Road A and Ben Wilson Road** - Ben Wilson Road is a two-lane road with a speed limit of 35 mph. This roadway currently operates at LOS C and would operate at LOS A after adding turn lanes to accommodate the anticipated traffic in 2025 on New Road A.





New Road A and Ben Wilson Road

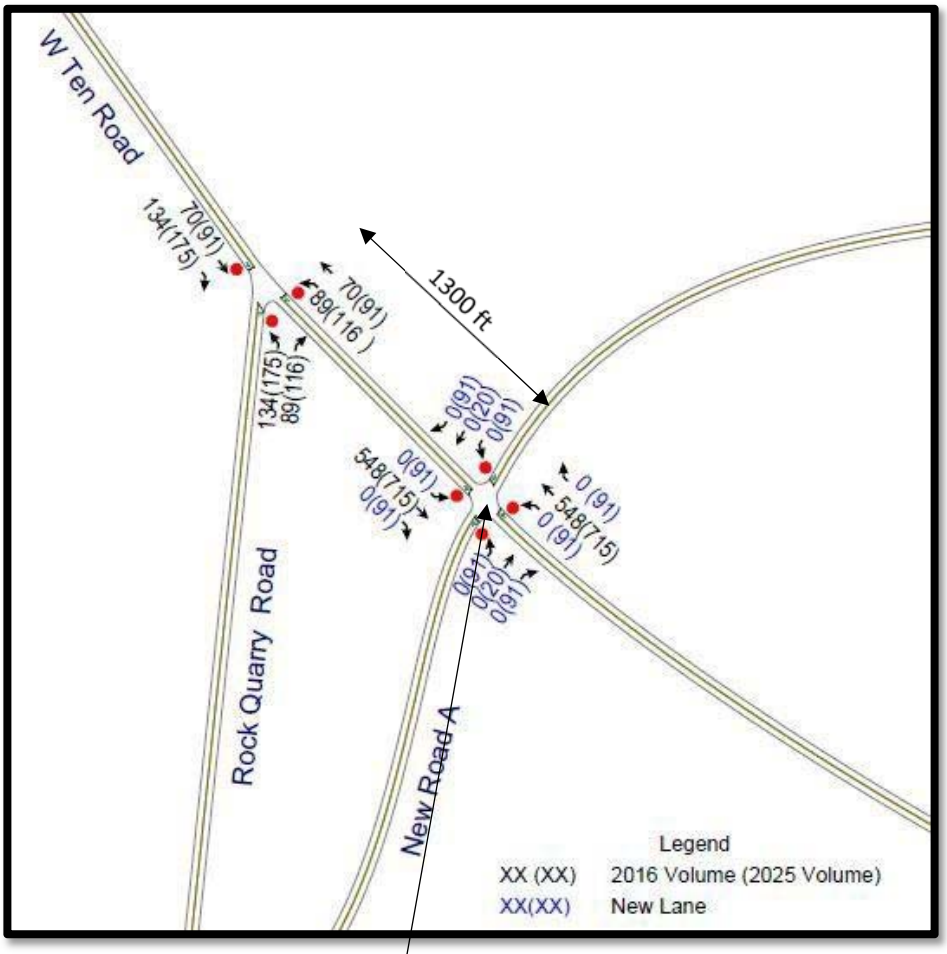


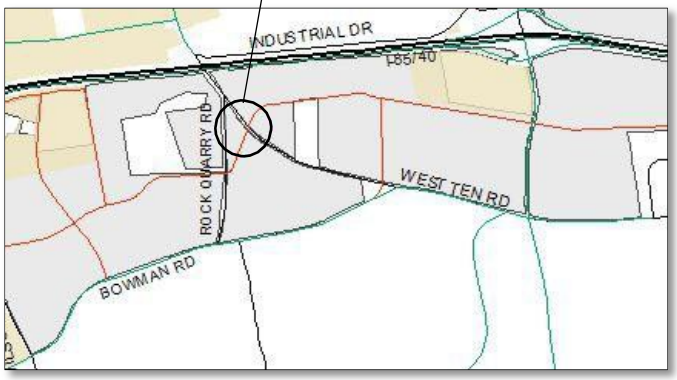



Ben Wilson and New Road A


Ben Wilson and New Road A

2) **New Road A and West Ten Road** – West Ten Road is a two-lane road with an existing intersection at Rock Quarry Road. The proposed intersection with New Road A would be 1300 ft from the intersection with Rock Quarry Road. This roadway currently operates at LOS B and would operate at LOS D after adding turn lanes to accommodate the anticipated traffic in 2025 of the New Road A.





New road A and W Ten Road

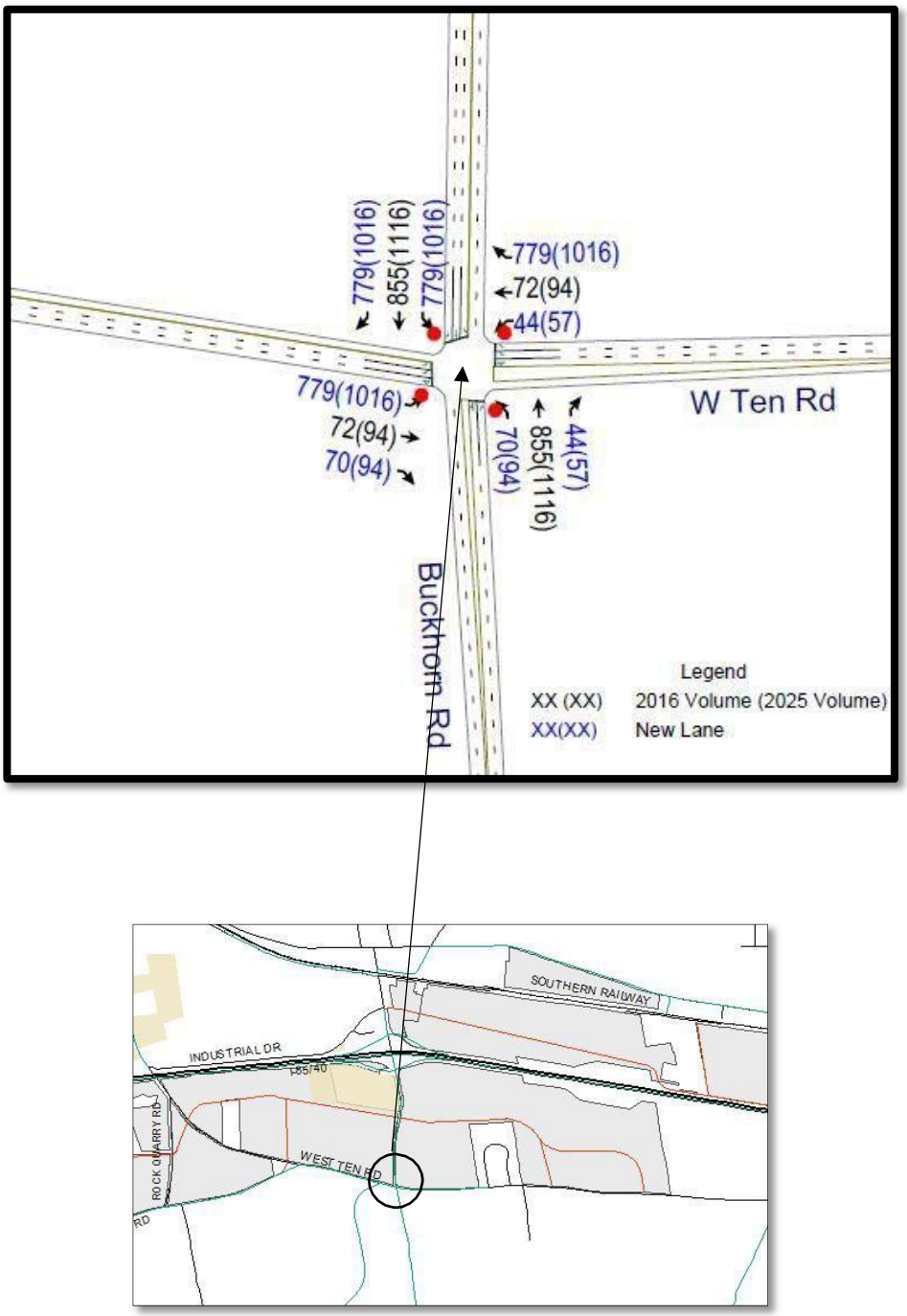





W Ten and New Road A


W Ten and New Road A

3) **West Ten Road and Buckhorn Road** - West Ten Road is an existing two-lane road with a speed limit of 55 mph. Buckhorn Road is two-lane road with a speed limit of 45 mph. This intersection currently operates at LOS F and would continue to operate at LOS F after adding turn lanes to accommodate the anticipated traffic in 2025. Based on future traffic forecasts, it will it will likely be necessary to retain additional right-of-way to allow for a wider intersection cross-section with additional lanes, as warranted based on technical analysis at the time of implementation.



W Ten Road and Buckhorn Road

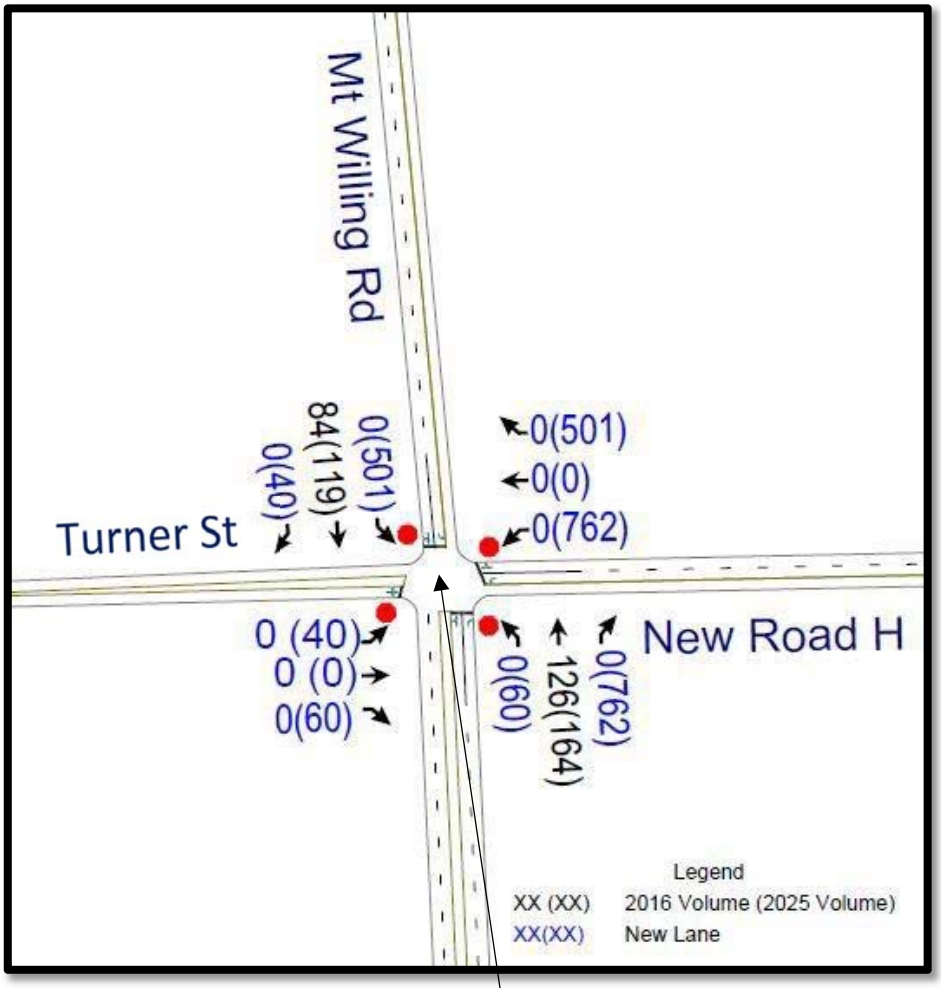


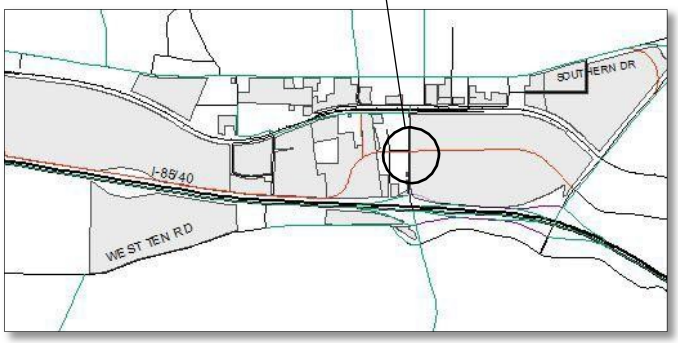



W Ten and Buckhorn


W Ten and Buckhorn

4) **New Road H and Mt. Willing Road** - Mt. Willing Road is a two-lane road with a speed limit of 45 mph. This roadway currently operates at LOS C and would continue to operate at LOS C after adding turn lanes to accommodate the anticipated traffic in 2025 at the New Road H.





New Road H and Mt. Willing Road





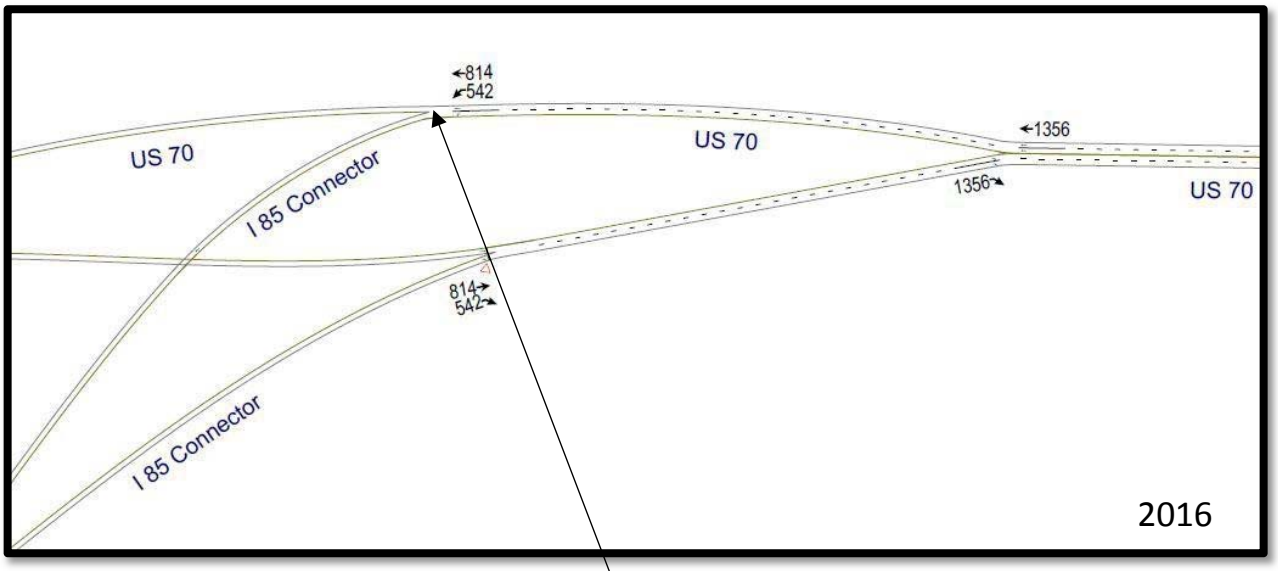


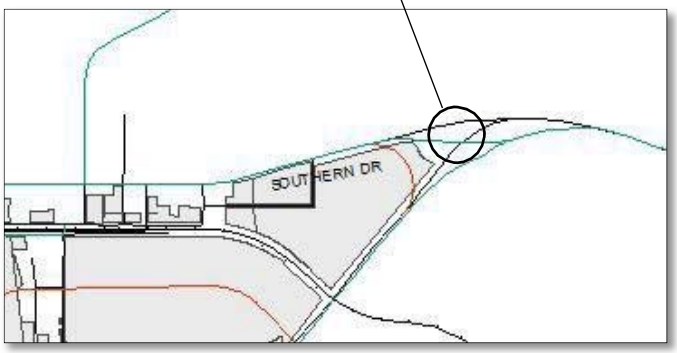
Mt Willing and New Road H

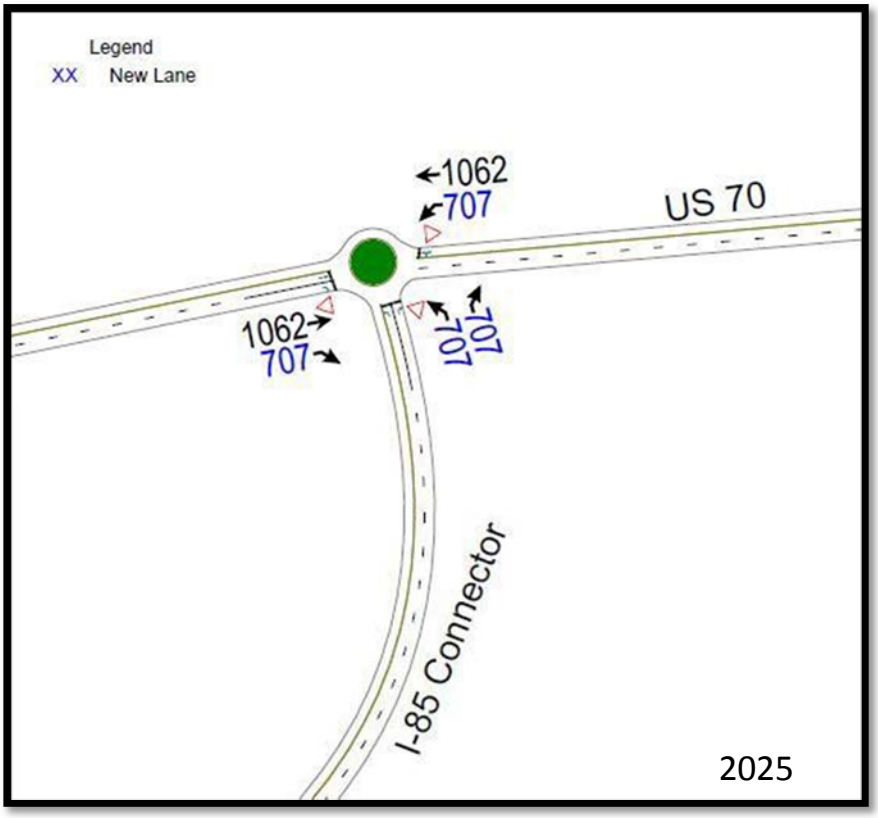


Mt Willing and New Road H

5) **US-70/I-85 Connector –** US-70 is a two-lane road with a speed limit of 50 mph. I-85 Connector is a four-lane divided highway with a speed limit of 55 mph. This current configuration operates at LOS C. Poor connectivity led to an interchange reconfiguration project which did not score well enough to receive funding in NCDOT's prioritization process, and a more cost effective alternative was requested. NCDOT Highway Division 7 has studied this intersection to determine whether a roundabout or signalization would be more effective in the realignment of the intersection and determined a roundabout would yield better results. With the realignment and added traffic for 2025, this intersection would operate at LOS D.







A conceptual map of a possible intersection improvement is shown above.

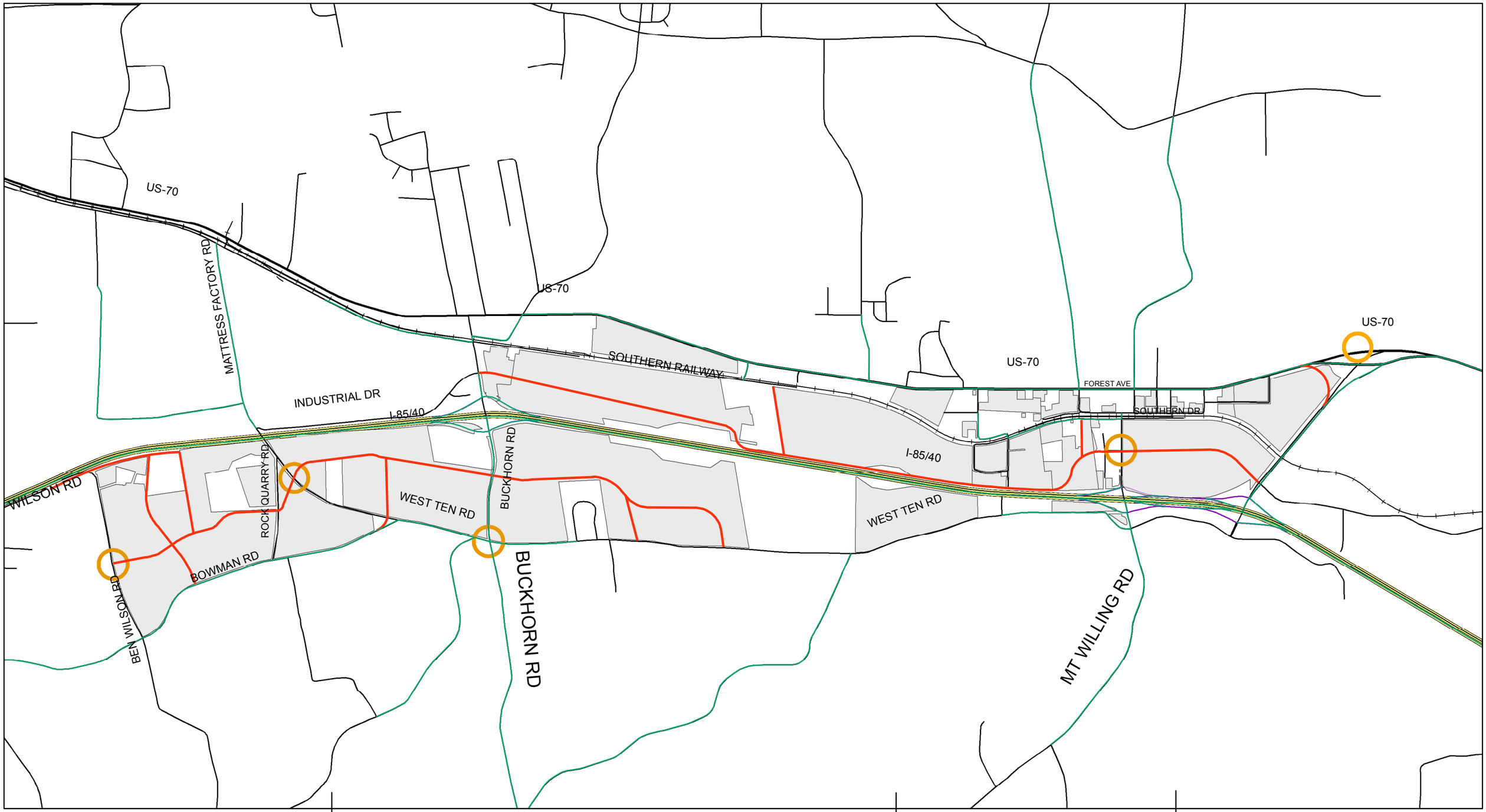
US 70/I-85 Connector






US 70 and I-85


US 70 and I-85



VOLKERT

STUDY INTERSECTIONS
Figure 11

Legend

- Planned Roads
- Study Intersections
- Railroad
- Developable Area

N

0 0.25 0.5 1 Miles

Section 4 – Cost Analysis

CONCEPTUAL DESIGN

Volkert refined the roadway networks based on the forecast future traffic volumes. Specifically turn lanes were added at key locations with high turning volumes and signals were assumed to be located at areas with high crossing and turning volumes. The conceptual design took all environmental features into consideration and outlined the locations of planned roads, taking into account where the planned roads would cross the water sources. The roads generally avoid all environmental features. The conceptual design also includes frontage roads as access management options.

Most of these roads are intended to provide access to the areas of assumed development. Others, such as new roads, are placed to connect existing roads to other existing roads in order to provide more connections within the system. In order to accommodate new traffic from the pods, changes to existing roads were also proposed.

CONSTRUCTION COST ESTIMATE

Using the conceptual analysis described above, cost estimates were developed for each new road and for roadway improvements to the existing roadways. Table 2 below details the cost for each new roadway based on the recommended typical section. The overall cost for constructing the approximately 11 miles of roadway is $30.9 million.

Table 2 - Construction Cost Estimates for New Roads

New Road	Typical Section	Sidewalk	Length (mi)	Cost Estimate
A	2D	Y	1.52	$4,351,189
B	2D	Y	0.69	$1,975,653
C	2D	Y	1.16	$3,321,323
D	2D	Y	0.47	$1,345,883
E	2D	Y	0.37	$1,059,139
F1	2D	Y	0.52	$1,488,508
F2	2A	N	1.28	$3,520,000
G	2A	N	0.23	$632,500
H	2A	N	3.99	$10,972,500
I	2A	N	0.34	$935,500
J	2A	N	0.18	$495,000
K	2A	N	0.29	$797,500
Total			11.04	$30,894,260

Table 3 details the cost for upgrading the existing roadways described in this report. Bowman and Rock Quarry Roads are already the recommended typical section and therefore the costs shown are for adding sidewalk. The overall cost for upgrading these existing roadways is $13.6 million.

Table 3 - Construction Cost Estimates for Updating Existing Roads

Widened Road	Typical Section	Sidewalk	Length (mi)	Cost
Ben Wilson Rd	3A	Y	0.85	$1,672,794
Bowman Rd	2D	Y	1.42	$159,722
W Ten Rd	3A	Y	4.33	$8,505,230
Rock Quarry Rd	2D	Y	0.5	$56,372
Buckhorn Rd	3A	Y	1.10	$2,156,046
Mt Willing Rd	3A	Y	0.55	$1,078,023
Total			8.75	$13,628,190

Southern and Forest Roads, identified in the report, have no recommended improvements and are not shown in either table.

Section 5 - Conclusion

The primary purpose of this transportation report is to inform development of a roadway network to support investment in the Efland-Buckhorn-Mebane Study Area. The new roadways identified in this report have been located in such a way as to take into consideration environmental features and cultural resources. Typical sections for both the new and existing roadways are recommended based on the anticipated growth of the 18 development pods identified by Orange County.

Five key intersections were studied, forecasting future traffic volumes in the year 2025. Volkert was able to refine the proposed roadway networks, specifically adding turn lanes at key locations. A Level of Service (LOS) rating was calculated for each intersection. The total cost to provide the identified roadway network and associated improvements to existing roads is approximately $44 million.

ATTACHMENT A



VOLKERT

0 0.5 1 Miles

Note: This map is for presentation use only and not to be used for construction purposes.

ATTACHMENT A

Environmental Features Map

ATTACHMENT B

North Carolina Department of Cultural Resources
State Historic Preservation Office
Ramona M. Bartos, Administrator

Governor Pat McCrory
Secretary Susan Kluttz

Office of Archives and History
Deputy Secretary Kevin Cherry

June 18, 2015

Bradley Luckey
Pilot Environmental, Inc.
PO Box 128
Kernersville, NC 27285

Re: Construct Road Network, I-40 900 Acre Tract, Efland, PEI 1012, Orange County, ER 15-1240

Dear Mr. Luckey:

Thank you for your letter of May 28, 2015, transmitting information for our review concerning the above project.

There are no recorded archaeological sites within the proposed project area, although it has never been systematically surveyed for the presence of archaeological resources. The adjacent property that has been surveyed contains several Native American archaeological sites. Certain portions of your proposed project area have a high probability for the presence of such resources. In addition, the Orange County soil survey dated 1977 shows the location of a cemetery within your project area. Although cemeteries are not ordinarily eligible for inclusion in the National Register of Historic Places, they are protected by state statutes. If the cemetery is to be affected by your proposed project, it will need to be preserved or moved in accordance with NCGS Chapter 65.

If your project is subject to Section 106 of the National Historic Preservation Act, we recommend that you forward project plans to us so we can delineate those areas that should be subjected to a comprehensive survey by an experienced archaeologist in order to identify and evaluate the significance of archaeological remains that may be damaged or destroyed by the proposed development. Potential effects on unknown resources must be assessed prior to the initiation of construction activities.

Two copies of the resulting archaeological survey report, as well as one copy of the appropriate site forms, should be forwarded to us for review and comment as soon as they are available and well in advance of any construction activities.

A list of archaeological consultants who have conducted or expressed an interest in contract work in North Carolina is available at www.archaeology.ncdcr.gov/ncarch/resource/consultants.htm. The archaeologists listed, or any other experienced archaeologist, may be contacted to conduct the recommended survey.

We have determined that the project as proposed will not have an effect on any historic structures.

The above comments are made pursuant to Section 106 of the National Historic Preservation Act and the Advisory Council on Historic Preservation's Regulations for Compliance with Section 106 codified at 36 CFR Part 800.

Thank you for your cooperation and consideration. If you have questions concerning the above comment, contact Renee Gledhill-Earley, environmental review coordinator, at 919-807-6579 or environmental.review@ncdcr.gov. In all future communication concerning this project, please cite the above referenced tracking number.

Sincerely,

Renee Gledhill-Earley

for Ramona M. Bartos

June 18, 2015

Bradley Luckey bluckey@pilotenviro.com
Pilot Environmental, Inc.
PO Box 128
Kernersville, NC 27285

Re: Construct Road Network, I-40, 300 Acre Tract, Efland, Orange County, ER 15-1241

Dear Mr. Luckey:

Thank you for your letter of May 28, 2015, concerning the above-referenced undertaking. We have reviewed the materials submitted and offer the following comments.

There are no known archaeological sites within the proposed project area. Based on our knowledge of the a r e a , it is unlikely that any archaeological resources that may be eligible for inclusion in the National Register of Historic Places will be affected by the project. We, therefore, recommend that no archaeological investigation be conducted in connection with this project.

The S.C. Forrest II House (OR1409), which may be eligible for listing in the National Register of Historic Places is located on the north side of US 70 and within direct view of the three hundred acre tract being considered for road construction. In addition, there are a number of surveyed properties also located within the project area. We will offer a determination of effect once a detailed scope of work has been submitted for environmental review.

The above comments are made pursuant to Section 106 of the National Historic Preservation Act and the Advisory Council on Historic Preservation's Regulations for Compliance with Section 106 codified at 36 CFR Part 800.

Thank you for your cooperation and consideration. If you have questions concerning the above comment, contact Renee Gledhill-Earley, environmental review coordinator, at 919-807-6579 or environmental.review@ncdcr.gov. In all future communication concerning this project, please cite the above referenced tracking number.

Sincerely,

Renee Gledhill-Earley

for Ramona M. Bartos

July 7, 2014

David S. Brame
Pilot Environmental, Inc.
PO Box 128
Kernersville, NC 27285

Re: Construct Roads on a 400 Acre Tract, Wilson Road/Bowman Road, Mebane, PEI 1012, Orange County, ER 14-1189

Dear Mr. Brame:

Thank you for your letter of June 3, 2014, transmitting information for our review concerning the above project.

There are two previously recorded archaeological sites within the proposed project area. These two sites, 31OR640 and 31OR641, were recorded during a survey for the Buckhorn-Mebane EDD Phase 2 water and sewer improvements project by Orange County. The archaeological survey was conducted as a result of Orange County policy, not for Section 106 of the National Historic Preservation Act compliance, so our office has not yet received a complete copy of the resulting report.

The information we do have concerning these two archaeological sites indicates that one site, 31OR640 contains a buried cultural horizon and it may be eligible for inclusion in the National Register of Historic Places. Site 31OR641 has been recommended as not eligible and no additional work is recommended by the consultant. The map included with your request for comments did not indicate the proposed locations for the roads, so we are unable to determine if either site will be affected.

If your project is subject to Section 106, we recommend that you forward specific information regarding the locations of the proposed roads and any other plans for the property so we may determine effects. In the meantime, we will request a copy of the archaeological report from Orange County so we have complete site information.

We have checked our maps and files and find that there are three properties in the project area that were identified in a 1993-1994 county survey of historic buildings. They are the Ben Wilson House (OR1141), Heath Log House (OR1662) and L. M. Ray House (OR1663). From our GIS, they appear to still be standing and may have outbuildings associated with them. If your project has the potential to affect these buildings, their p o t e n t i a l for National Register eligibility will need to be determined.

The above comments are made pursuant to Section 106 of the National Historic Preservation Act and the Advisory Council on Historic Preservation's Regulations for Compliance with Section 106 codified at 36 CFR Part 800.

Thank you for your cooperation and consideration. If you have questions concerning the above comment, contact Renee Gledhill-Earley, environmental review coordinator, at 919-807-6579 or renee.gledhill- earley@ncdcr.gov. In all future communication concerning this project, please cite the above referenced tracking number.

Sincerely,

Renee Gledhill-Earley

for Ramona M. Bartos

North Carolina Department of Cultural Resources
State Historic Preservation Office
Ramona M. Bartos, Administrator

Governor Pat McCrory
Secretary Susan Kluttz

Office of Archives and History
Deputy Secretary Kevin Cherry

April 21, 2015

Brad Luckey
Pilot Environmental, Inc.
PO Box 128
Kernersville, NC 27285

Re: Develop Road Network for Mixed Use Site, Project Area 2B, Buckhorn Road & West Ten Road, Mebane, Orange County, ER 15-0780

Dear Mr. Luckey:

Thank you for your letter of April 6, 2015, concerning the above project.

We have conducted a review of the project and are aware of no historic resources which would be affected by the project. Therefore, we have no comment on the project as proposed.

The above comments are made pursuant to Section 106 of the National Historic Preservation Act and the Advisory Council on Historic Preservation's Regulations for Compliance with Section 106 codified at 36 CFR Part 800.

Thank you for your cooperation and consideration. If you have questions concerning the above comment, contact Renee Gledhill-Earley, environmental review coordinator, at 919-807-6579 or environmental.review@ncdcr.gov. In all future communication concerning this project, please cite the above referenced tracking number.

Sincerely,

Renee Gledhill-Earley

for Ramona M. Bartos

ATTACHMENT C

Formulas

Pod 1 Daily Traffic=(Pod 1 Area in 1000s Sq Ft)*0.5*(Rate of Daily Traffic for LUC 110)*(Floor Area Ratio)+(Pod 1 Area in 1000s Sq Ft)*0.25*(Rate of Daily Traffic for LUC 140)+(Pod 1 Area in 1000s Sq Ft)*0.25*(Rate of Daily Traffic for LUC 150)

Other pods are calculated the same way

Assumptions for Pod Traffic

- Pod 1 (4996000 sq ft)
    - 50% General Light Industrial (110)
    - 25% Manufacturing (140)
    - 25% Warehousing (150)
    - Pod 2 (1198000 sq ft)
    - 100% General Light Industrial (110)
    - Pod 3 (4265000 sq ft)
    - 47% General Light Industrial (110)
    - 50% Manufacturing (140)
    - 3% High Turnover Sit Down Restaurant (932)
    - Pod 4 (7113000 sq ft)
    - 90% General Light Industrial (110)
    - 8% Warehousing (150)
    - 1% Fast Food Restaurant with Drive Thru Window (934)
    - 1% Gasoline/Service Station with Convenience Market (945)
- Pod 5 (0 sq ft)
    - None
- Pod 6 (1032000 sq ft)
    - 100% Single Family Detached Housing (210)
- Pod 7 (392000 sq ft)
    - 20% Fast Food Restaurant with Drive Thru Window (934)
    - 25% Gasoline/Service Station with Convenience Market and Car Wash (946)
        - 6 gas pumps
    - 55% General Light Industrial (110)
- Pod 8 (3803000 sq ft)
    - 50% General Light Industrial (110)
    - 50% Manufacturing (140)
- Pod 9 (1076000 sq ft)
    - 70% General Light Industrial (110)
    - 2% Fast Food Restaurant without Drive Thru Window (933)
    - 15% Automobile Care Center (942)
    - 13% Automobile Parts and Service Center (943)
- Pod 10 (2910000 sq ft)
    - 50% General Light Industrial (110)

    - 25% Manufacturing (140)
    - 25% Warehousing (150)
- Pod 11 (423000 sq ft)
    - 100% General Light Industrial (110)
- Pod 12 (292000 sq ft)
    - 100% General Light Industrial (110)
- Pod 13 (880000 sq ft)
    - 100% General Light Industrial (110)
- Pod 14 (501000 sq ft)
    - 100% General Light Industrial (110)
- Pod 15 (662000 sq ft)
    - 100% General Light Industrial (110)
- Pod 16 (91000 sq ft)
    - 100% General Light Industrial (110)
- Pod 17 (4156000 sq ft)
    - 100% Business Park (770)
- Pod 18 (1446000 sq ft)
    - 100% Warehousing (150)

Assumptions for total traffic

3% Increase in traffic each year until 2025

Assumptions from Mattress Factory Traffic Planning Study:

- Mattress Factory Road and Industrial Drive
    - 50% of combined WBL and SBT traffic into Pod 2
    - 50% of combined WBL and SBT traffic into Pod 3
    - 50% of combined NBT and NBR traffic out of Pod 2
    - 50% of combined NBT and NBR traffic out of Pod 3
- At Buckhorn Road and I 40 WB Ramps:
    - 100% of combined NBT and WBR traffic into Pod 7
    - 100% of combined SBT and SBR traffic out of Pod 7
- At Buckhorn Road and I 40 EB Ramps:
    - 50% of combined SBT and EBR traffic into Pod 3
    - 50% of combined SBT and EBR traffic into Pod 4
    - 50% of combined NBT and NBR traffic out of Pod 3
    - 50% of combined NBT and NBR traffic out of Pod 4
- Daily traffic is 10 times the average of the AM and PM traffic

Assumptions from Bowman Road Residential Development TIA:

- At Ben Wilson Road and Bowman Road
    - NBT, NBR, EBT, and EBL are considered traffic into Pod 1
    - SBT, SBL, SBR, WBT, WBL, and WBR are considered traffic out of Pod 1
    - Daily traffic is 10 times the average of the AM and PM

      traffic Assumptions from NCDOT AADT

- AM and PM traffic are each 10% of the daily traffic
- Any traffic shown on the border of a pod was assumed to go to that pod
    - If traffic is shown at a point on a road that borders two pods, it was split evenly between the two

Pod Information for Trip Generation Analysis - Mebane/Buckhorn Economic Development District Transportation Plan

Pod ID		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Gross Acreage		343.41	75.35	257.53	362.35	138.95	109.73	22.01	243.19	55.96	192.12	62.2	35.32	49.26	63.26	49.91	23.59	144.61	72.77
Current Zoning		O/RM, AR	AR	O/RM, R1	EDB-2, R1, PDHR1	EDB-2	EDB-2, R1, AR	EDB-2, R1	EDB-2, R1	R1, EC5	R1	R1, EC5	R1	R1, AR	R1, EI, NC2, I2	R1, AR, I1	LC1, NC2, R1	O/RM, AR, R1	AR
Future Land Use Plan Designation		Comm-Ind Trans	Comm-Ind Trans	Comm-Ind Trans	Comm-Ind Trans; Econ-Dev Trans	Econ-Dev Trans	Econ-Dev Trans, Agri-Res	10-Year Trans, Econ-Dev Trans	Econ-Dev Trans, Comm-Ind Trans	10-Year Trans	Comm-Ind Trans	10-Year Trans	10-Year Trans	10-Year Trans	Comm-Ind Trans	Comm-Ind Trans	Comm-Ind Trans	Comm-Ind Trans	Agri-Res
Undeveloped Land		129.48	17.41	90.5	131.43	0	75.72	11.65	188.48	8.37	134.94	19.88	15.79	18.49	9.1	38.79	7.09	20.41	0
Current Dev. Non Residential Acreage		26.76	2.35	30.7	128.5	138.95	0	1.86	49.57	0	25.87	1.34	3.14	0	32.62	11.03	4.1	0	0
Current Dev. Residential Acreage		187.16	53.59	136.29	102.42	0	33.99	8.47	5.12	47.57	31.31	41.03	13.39	30.78	21.53	0.09	12.41	124.19	72.77
TO BE PRESERVED: Existing Non-Residential Development, Established Residential Areas/Subdivisions, Other Developed Areas		54.71	4.35	41.64	32.84	138.95	15.44	4.71	49.80	1.39	25.87	39.33	19.28	0.31	32.62	11.03	18.80	0.00	0.00
Gross Redevelopable Area (Acres)		288.70	71.00	215.89	329.51	0.00	94.29	17.30	193.39	54.57	166.26	22.87	16.04	48.95	30.64	38.88	4.79	144.61	72.77
Environmental Constraints of Developable Parcels	Wetlands	X	X	X	X	-	X	X	X	X	X	X	-	X	X	X	X	X	X
	Severe Slopes	X	-	X	X	-	X	X	X	-	X	-	-	X	-	-	-	X	X
	Conservation Lands	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Floodplains	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Streams and Required Buffers	X	X	X	X	-	X	-	X	X	X	X	X	X	-	X	X	X	X
	Historic Sites (On Register of Historic Places)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Archaeological	X	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Cemetery	X	X	-	-	-		X	X	-	-	X	-	X	X	-	-	-	-
	Utility Easements	X	X	X	X	-	X	X	X	X	X	X	-	X	-	X	X	X	X
	Total	47.56	6.84	40.08	49.32	0.00	6.23	1.52	41.83	5.80	32.75	3.01	1.62	7.35	0.11	10.63	1.40	12.30	19.42
Gross Redevelopable Area minus Environmental Constraints (Acres)		241.15	64.17	175.81	280.19	138.95	88.06	15.77	151.56	48.77	133.51	19.85	14.41	41.61	30.54	28.25	3.39	132.31	53.35
ITE Trip Generation Codes		110, 140, 150	110	110, 140, 932	110, 150, 934, 945		210	934, 946	110, 140	110, 933, 942, 943	110, 140, 150	110	110	110	110	110	110	770	150
% Watershed/Impervious Surface Restriction		0%	0%	-5%	-30%	N/A	-69%	-15%	-30%	-30%	-30%	-30%	-30%	-30%	-30%	-30%	-30%	-30%	-30%
% Setbacks, Parking, Etc. (adjusted for double-counting)		-39%	-45%	-31%	-3%	N/A	0%	-21%	-3%	-9%	-5%	-12%	-15%	-10%	-25%	0%	0%	11%	0%
Estimated Acreage of Development		147.1	35.3	112.5	187.7	0.0	27.3	10.1	101.5	29.8	86.8	11.5	7.9	25.0	13.7	19.8	2.4	107.2	37.3
Other Attributes	Water/Sewer?	Sewer	Water	Water / Sewer	Water / Sewer	Water / Sewer	Water / Sewer	Water / Sewer	Water	Water / Sewer	None	Water / Sewer	Water / Sewer	Water	Water / Sewer	None	Water / Sewer	Water / Sewer	Water / Sewer
	Proximity of Interstate Interchange?	-	-	X	X	-	X	X	X	-	-	-	-	-	-	-	X	X	X
	Interstate Exposure?	X	-	X	X	X	X	X	X	-	X	-	-	X	-	X	X	X	-
	Proximity to Rail?	-	-	-	-	-	-	X	X	X	X	X	X	X	X	X	X	X	X
	Future Transit?	-	-	-	-	-	-	-	-	-	-	X	X	X	X	-	-	-	-
Market Reduction Factor		22%	22%	13%	13%	N/A	13%	11%	14%	17%	23%	16%	16%	19%	16%	23%	11%	11%	11%
Buildable Area (Acres)		114.7	27.5	97.9	163.3	0	23.7	9.0	87.3	24.7	66.8	9.7	6.7	20.2	11.5	15.2	2.1	95.4	33.2

ITE Codes: 110 (General Light Industrial), 140 (Manufacturing). 150 (Warehousing), 210 (Single-Family Detached Housing), 932 (High-Turnover Sit-Down Restaurant), 933 (Fast-Food Restaurant without Drive-Thru Window), 934 (Fast-Food Restaurant with Drive-Thru Windown), 942 (Automobile Care Center), 943 (Automobile Parts and Servic Center), 945 (Gasoline/Service Station with Convenience Market), 946 (Gasoline/Service Station with Convenience Market and Car Wash

ATTACHMENT D

Pod Traffic

Pod	Acres	1000 Sq. Ft.	Daily	Daily In	Daily Out	AM	AM In	AM Out	PM	PM In	PM Out
1	86.8	3781	4334	2167	2167	705	577	128	685	231	453
2	19.1	832	989	495	495	143	119	24	139	31	108
3	81.0	3528	17006	8503	8503	1731	1147	585	1657	866	792
4	135.2	5893	37459	18730	18730	3780	2242	1538	3009	1282	1728
5	0	0	0	0	0	0	0	0	0	0	0
6	19.7	858	513	256	256	41	13	28	54	36	18
7	7.5	327	25826	12913	12913	2363	1219	1144	1752	898	854
8	70.1	3054	3178	1589	1589	524	461	63	547	211	336
9	18.1	788	14394	7197	7197	1199	669	531	1158	509	650
10	48.6	2117	2426	1213	1213	395	323	71	383	130	254
11	7.1	309	368	184	184	53	44	9	52	11	40
12	4.9	213	254	127	127	37	31	6	36	8	28
13	15.2	662	787	394	394	114	95	19	110	24	86
14	8.5	370	440	220	220	64	53	11	62	14	48
15	11.1	484	575	287	287	83	69	14	81	18	63
16	1.8	78	93	47	47	14	11	2	13	3	10
17	79.3	3454	11878	5939	5939	1496	1271	224	1335	267	1068
18	24.3	1059	1391	695	695	244	175	68	211	74	137
	638.3		121913								

Land Use Codes	Daily	Daily In	Daily Out	AM	AM In	AM Out	PM	PM In	PM Out
110	51.80	25.90	25.90	7.51	6.23	1.28	7.26	1.60	5.66
140	38.88	19.44	19.44	7.44	6.92	0.52	8.35	4.43	3.92
150	57.23	28.62	28.62	10.03	7.22	2.81	8.69	3.04	5.65
210	26.04	13.02	13.02	2.06	0.64	1.42	2.74	1.81	0.93
770	149.79	74.895	74.895	18.86	16.031	2.829	16.84	3.368	13.472
932	127.15	63.58	63.58	10.81	5.95	4.86	9.85	5.91	3.94
933	716.00	358.00	358.00	43.87	26.32	17.55	26.15	13.34	12.81
934	496.12	248.06	248.06	45.42	23.16	22.26	32.65	16.98	15.67
942	26.80	13.40	13.40	2.25	1.49	0.77	3.11	1.49	1.62
943	44.60	22.30	22.30	4.46	1.87	2.59	4.46	1.87	2.59
945	162.78	81.39	81.39	10.16	5.08	5.08	13.51	6.76	6.76
946	152.84	76.42	76.42	11.84	6.04	5.80	13.86	7.07	6.79

*Pod Acreage has been used to generate the AADT.

Total Traffic

Pod	Daily	Total AM	Total PM
1	7440	986	1025
2	2781	338	302
3	21917	2227	2144
4 & 5	40432	4114	3270
5	0	0	0
6	1998	189	203
7	36955	3476	2865
8	5088	715	738
9	17736	1534	1492
10	4336	586	574
11	4516	468	466
12	392	51	49
13	925	128	124
14	4896	509	507
15	1010	127	124
16	772	81	81
17	16228	1931	1770
18	5422	647	614
	172844	18107	16348

Existing Traffic

2011 Existing Traffic from Mebane TIA & Wilson Rd							
Pod	Daily	AM	AM In	AM Out	PM	PM In	PM Out
1	1100	110	66	44	110	66	44
2	795	93	51	42	66	36	30
3	3555	401	186	215	310	170	140
4	460	78	34	44	14	8	6
5							
6							
7	540	54	15	39	54	33	21
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							

2014 NCDOT AADT			
Pod	Daily	AM	PM
1	1100	110	110
2	820	82	82
3	745	29	120
4	2300	230	230
5	0	0	0
6	1400	140	140
7	9900	990	990
8	1800	180	180
9	3150	315	315
10	1800	180	180
11	3910	391	391
12	130	13	13
13	130	13	13
14	4200	420	420
15	410	41	41
16	640	64	64
17	4100	410	410
18	3800	380	380

2015 Existing Traffic from Bowman Road Residential TIA							
Pod	Daily	AM	AM In	AM Out	PM	PM In	PM Out
1	645	36	16	19	93	32	61
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							

2016 Existing Traffic (3% increase/year)							
Pod	Daily	AM	AM	In	AM	Out PM	PM	PM Out
1	1275	128	77	51	128	77	51
2	922	108	59	49	77	42	35
3	4121	465	216	249	359	197	162
4	533	90	40	51	16	9	7
5							
6							
7	626	63	18	45	63	38	24
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							

2016 NCDOT AADT			
Pod	Daily	AM	PM
1	1167	117	117
2	870	87	87
3	790	31	127
4	2440	244	244
5	0	0	0
6	1485	149	149
7	10503	1050	1050
8	1910	191	191
9	3342	334	334
10	1910	191	191
11	4148	415	415
12	138	14	14
13	138	14	14
14	4456	446	446
15	435	43	43
16	679	68	68
17	4350	435	435
18	4031	403	403

2016 Existing Traffic from Bowman Road Residential TIA							
Pod	Daily	AM	AM In	AM Out	PM	PM In	PM Out
1	664	37	17	20	96	33	63
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							

APPENDIX C

Community Meeting

Tuesday, August 28, 2018 Orange County Planning Department hosted a community meeting at Gravely Hill Middle School Auditorium. An estimated 100 property owners, residents, and businesses attended the meeting where they received information on the planning process and current analysis of the area. People signed in, picked up a copy of the agenda, map, and survey, explored the boards, saw a brief presentation and spoke with staff.



Here are some key highlights from the meeting:

- People spoke one-on-on with staff regarding specific properties and neighborhoods.
- Some submitted comments in person and through email and filled out a survey.
- NCDOT's Division Engineer Chuck Edwards attended the meeting to answer any questions.
- Durham-Chapel Hill-Carrboro Metropolitan Planning Organization (DCHC MPO) Aaron Cain attended.
- Cy Stober, Mebane's Development Director, also added to address any questions for Mebane.
- People wanted to know more about future sewer and water infrastructure planned for the area.

The following is a collection of all the material, comments, surveys, questions and answers provided during the community meeting and public review.

ORANGE COUNTY
NORTH CAROLINA

Community Meeting
Efland-Buckhorn-Mebane Access Management Plan
August 28, 2018, 4:30 – 6:30 pm
Gravelly Hill Middle School Auditorium
4801 W Ten Rd, Efland, NC 27243

What is an Access Management Plan?
Access Management Plans are proposed long-range master plans of possible new roads and connections to existing roads. These plans promote an orderly, cost effective, efficient and environmentally sensitive roadway program, which help guide development decisions and investment. Ultimately, Orange County seeks to develop an access management plan in order to maintain the functionality of the transportation network as the Efland-Buckhorn-Mebane Study Area develops over time.

Purpose:
- Gain information on the current 2011 plan and 2017 Transportation Study
- Provide comments, get answer to your questions, and see next steps

Format:
The meeting is primarily open house with the following agenda:
- 4:30 – 5:45 pm – open discussion with staff
- 5:45 – 6:15 pm – presentation with question and answer
- 6:15 – 6:30 pm – complete surveys and provide comments

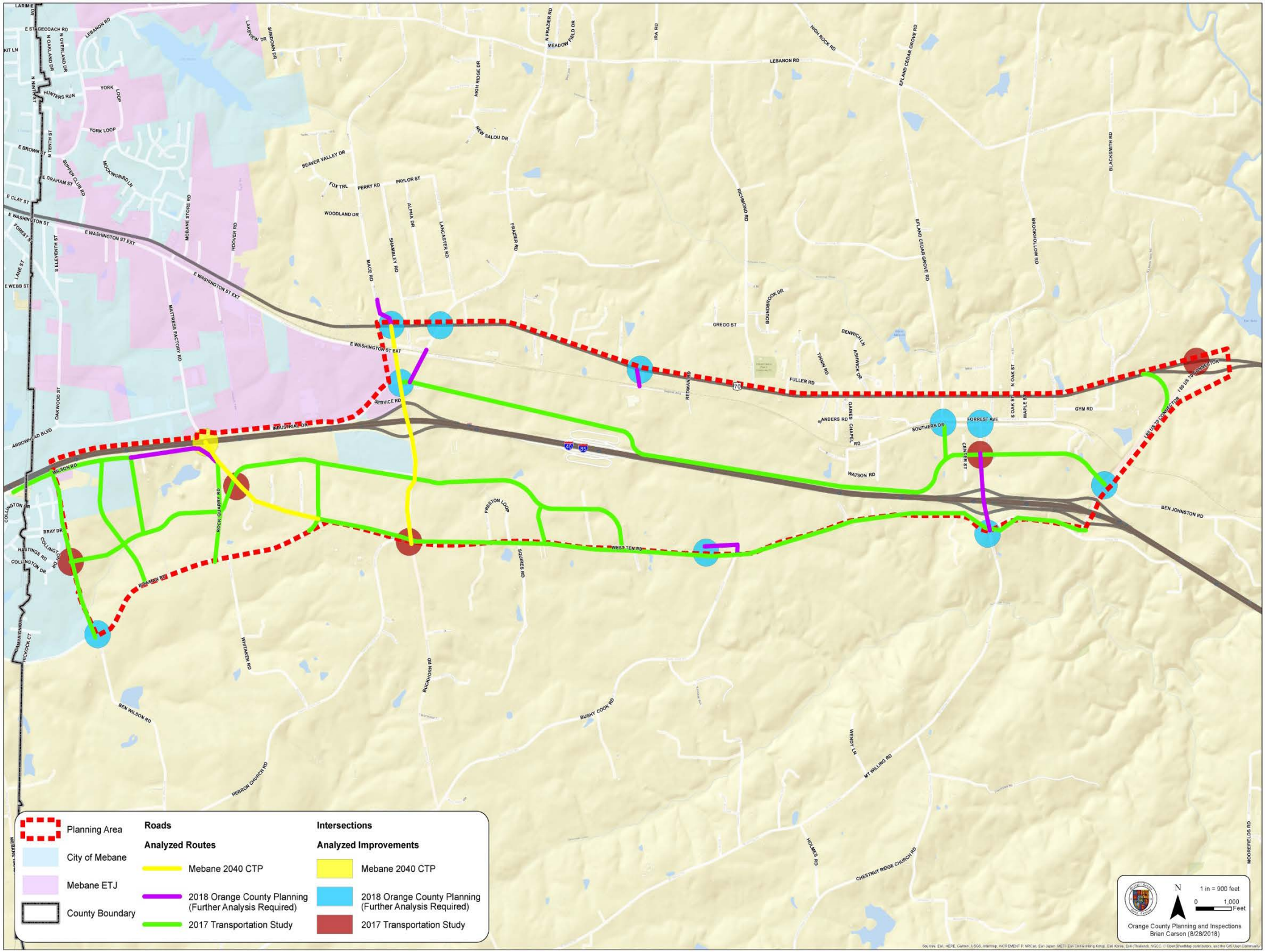
How can I participate tonight?
Review the material, ask questions, and provide comments directly to staff, complete survey and leave with staff.

Next Steps
Orange County Planning Board – September 5, 2018
Orange Unified Transportation Board – September 19, 2018

A formal public hearing on a proposed Access Management Plan will be held by the Board of County Commissioners later this year, currently targeted for November. You will receive another written notice about the public hearing closer to the hearing date.

Staff Contact:
Nishith Trivedi, Orange County Planning Department
131 W. Margaret Lane, Suite 201
P.O. Box 8181
Hillsborough, NC 27278
E-mail: ntrivedi@orangecountync.gov Phone: (919) 245-2582

Website: http://www.orangecountync.gov/departments/planning_and_inspections/efland-buckhorn-mebane_access_management_plan/index.php


Planning Area
City of Mebane
Mebane ETJ
County Boundary
Roads
Analyzed Routes
Mebane 2040 CTP
2018 Orange County Planning (Further Analysis Required)
2017 Transportation Study
Intersections
Analyzed Improvements
Mebane 2040 CTP
2018 Orange County Planning (Further Analysis Required)
2017 Transportation Study
N
1 in = 900 feet
0
1,000
Feet
Orange County Planning and Inspections
Brian Carson (8/28/2018)
LEBANON RD
E WASHINGTON ST EXT
INDUSTRIAL DR
SERVICE RD
FULLER RD
GREGG ST
GYM RD
SOUTHERN DR
FORREST AVE
WATSON RD
WEST TEN RD
BEN JOHNSTON RD
I 85 SB CONNECTOR
I 85 US 70 CONNECTOR
BUSHY COOK RD
BEN WILSON RD
HEBRON CHURCH RD
CHESTNUT RIDGE CHURCH RD
MT WILLING RD
WILSON RD
BRANNON RD
BRAY DR
COLLINGTON DR
ARROWHEAD BLVD
MATTRESS FACTORY RD
MCEANE STORE RD
HOOVEN RD
FRAZIER RD
RICHMOND RD
EPLAND CEDAR GROVE RD
HIGH ROCK RD
BLACKSMITH RD
BROOKHOLLOW RD
BOUNDBROOK DR
BENWICH LN
ASHWICK DR
TRINH RD
SANDERS RD
GAINES CHAPEL RD
CENTER ST
N OAK ST
S OAK ST
MAPLE ST
PRESTON LOOP
SQUIRES RD
WHITAKER RD
BUCHHORN DR
ROCK QUARRY RD
OAKWOOD ST
S ELEVENTH ST
N TENTH ST
N MAIN ST
LANE ST
E WEBB ST
E CLAY ST
E GRAHAM ST
E BROWN ST
SUPPER CLUB RD
MOCKINGBIRD LN
YORK LOOP
HUNTERS RUN
N OVERLAND DR
N OAKLAND DR
E STAGECOACH RD
KIT LN
LAKEVIEW DR
SUNDOWN DR
HIGH RIDGE DR
N FRAZIER RD
MEADOW FIELD DR
IRA RD
NEW SALOU DR
BEAVER VALLEY DR
FOX TRL
PERRY RD
PAYLOR ST
WOODLAND DR
ALPHA DR
LANCASTER RD
SHAMBLEY RD
MACE RD
HICKOCK CT
HASTINGS RD
WENDY LN
HOLMES RD
MOOREFIELDS RD

ORANGE COUNTY
NORTH CAROLINA

What mode of travel do you use most often?

☐ Car ☐ Bike
☐ Transit ☐ Walk

How long is your commute?

☐ 5 – 15 min ☐ 16 – 30 min
☐ 31 – 60 min ☐ > 1 hour

What roads do you use most often?

Do you support the analyzed street network? ☐ Yes No ☐

If not, what street network do you suggest?

Do you support the analyzed street cross section? ☐ Yes No ☐

If not, what street cross section do you suggest?

Any additional comments:

_____
_____
_____
_____
_____
_____
_____

ORANGE COUNTY
NORTH CAROLINA

Efland-Buckhorn-Mebane Access Management Plan

Community Meeting Sign-in

	Name	I live along...	Email	I heard about this meeting from...
Example	John & Jane Doe	US-70	John@att net	Website, Email, Newsletter, Word of Mouth
1	Mary McMillian	315 Buckhorn Rd-Owner	jdm240@aol.com	letter
2	Bernice Walton	sister	"	letter
3	Margaret Mc Bullo		margaretstephens43@gmail.com	
4	Julie Laws	Center St.	julielaws56@hotmail.com	letter
5	Charlie Martin	Hwy 70	mmartin15@bellsouth.net	Letter
6	Gary Allison		gallsn@aol.com	Letter
7	Johnny Cates	WEST Jones	CATESmill@gmail	Letter
8	Joyce Clayton	2614 mt willing	rejoyce740@nc.rr.net	letter
9	Freddie Wynn	7340 Old County Line	freddie_wynn@hpe.honda.com	letter
10	Bruce Sims	Preston Loop		Letter
11	Billie Womble	Watson Rd.	Alsreen565.bm@gmail	letter
12	Luvelia Moore	WATSON RD	-	letter
13	NAOLA FEARRINGTON	Buckhorn Rd	naolafearrington@nc.rr.net	Letter
14	Gregory Jones	wife		letter
15	Nedegal Jones			letter

ORANGE COUNTY
NORTH CAROLINA

Efland-Buckhorn-Mebane Access Management Plan

Community Meeting Sign-in

	Name	I live along...	Email	I heard about this meeting from...
Example	John & Jane Doe	US-70	John@att.net	Website, Email, Newsletter, Word of Mouth
1	Nancy B. Ashley	104 Peppertree	Nashley1941@yahoo.com	
2	Robert Purcell	5524 US 70	RP140485@aol.com	Newsletter
3	Kelly Gallagher	300 Cortes St	Kelly.Gallagher@gmail.com	mail
4	Ed Sharpe	3907 West Ten	ed.sharpe@duke.edu	Newsletter - Mail
5	MARIE McADOO	4110 SANDERS RD, EFLAND, N.C.	mariemcadoo311@gmail.com	
6	Bonnie Hauser	4301 SUGAR LOAF	bahauser@aol	facebook
7	Cindy Rayno (daughter of Jane Williams)	3110 Fieldstone, Mebane	Cindyrayno@gmail.com	Newsletter
8	Bobby Cobb	Hwy 70 WEST	BOBBYCOBB83@gmail.com	NEWSLETTER
9	Aimee Tatterall	West 10	abtaller@gmail.com	email
10	Lisa Andrews	Mt Willing	lisacole@hotmail.com	searching orange website
11	Lacy Andrews	Wallington Ct		
12	Danny Wilson	(Rock Quarry) Danny Dr.	anitawilson6905	letter
13	Anita Wilson	(Rock Quarry) Danny Dr	anitawilson6905@gmail.com	letter
14	Valerie Curry	Mt. Willing	vcurry@orangecountync.gov	letter
15	Doug Brown	WEST TEN	douglasrpm1@earthlink.net	LETTER

ORANGE COUNTY
NORTH CAROLINA

Efland-Buckhorn-Mebane Access Management Plan

Community Meeting Sign-in

	Name	I live along...	Email	I heard about this meeting from...
Example	John & Jane Doe	US-70	John@att.net	Website, Email, Newsletter, Word of Mouth
1	Brenda Allen	Mattress Factory Rd		Letter
2	[illegible]	Buckhorn	mmbe@mebtel.net	Letter
3	LeVonne Mickler	Buckhorn	LeVonnem@aol.com	word of mouth
4	Walter Bright	—	—	—
5	Carolyn Foteat	719 Buckhorn		
6	Wendy Williams	US 70	WWilliams@adonis.edu	Letter
7	Benny Cecil	Former Talk	bcecil@dc.rr.com	
8	Dennis Graves	Buckhorn	dennisgraves-1 at net zero.com	Letter
9	Donald Efland			Letter
10	Nancy Sandlin	85/40	ntsandlin@gmail.com	Letter
11	R.W. Jennings	Buckland Road Efland		Letter
12	Beau Abbott	US 70	beabbott317@twc.com	word of mouth
13				
14				
15				

ORANGE COUNTY
NORTH CAROLINA

Efland-Buckhorn-Mebane Access Management Plan

Community Meeting Sign-in

	Name	I live along...	Email	I heard about this meeting from...
Example	John & Jane Doe	US-70	John@att.net	Website, Email, Newsletter, Word of Mouth
1	JOE FERRANDO	BUCKHORN RD		MAIL
2	Lisa Hall	Gym Rd	lnhall1614@gmail.com	mail
3	Alyson Gulassa	Collington Dr	alyson.gulassa@yahoo.com	mail
4	David Windham	Southern Dr.		county
5	Charles L. Windham	southern dr.	plumboy620@outlook.com	county
6	Janet Harris	Preston Loop	janet.harris@volvo.com	mail
7	Kathy Coombs	1302 Ben Wilson Rd.	kathykcoombs@hotmail.com	Mail
8	Ben Lloyd	70 W	[illegible]	
9	Steven & Karin Duggins	West Ten	Karind23@gmail.com	mail
10	Dora McAdoo		dora1@gmail.com	mail
11	AARON CAIN		AARON.CAIN@DURHAMNC.GOV	STAFF
12	John Douglas Swepson			
13	Euler K Swepson			
14	John Bannon	Bushy Creek	johnbannon13@gmail.com	email/mail
15	LARRY FORREST	WASHINGTON ST	LFORREST@[illegible]	MAIL

LFORREST

ORANGE COUNTY
NORTH CAROLINA

Efland-Buckhorn-Mebane Access Management Plan

Community Meeting Sign-in

	Name	I live along...	Email	I heard about this meeting from...
Example	John & Jane Doe	US-70	John@att.net	Website, Email, Newsletter, Word of Mouth
1	LEO ALLISON	Watson Rd	←	lele2@mebtel.net
2	MARY ALLISON	Watson Rd	←	lele2@mebtel.net
3	Jason Cates	West Ten Rd		letter Mail
4	GLORIA MARTIN	WEST TEN RD	G MARTIN @	MAIL
5	DENNIS MARTIN	WEST TEN RD	MEBTEL.NET " "	MAIL
6	Jennifer Smith	US 70	metamorphosisfaces @gmail.com	mail
7	Amy Efland	US 70	mefland@centurylink.net	Mail
8	Marsha Efland	Brookhollow	mhuntefland@gmail.com	Mail
9	Rose Pinnix	Buckhorn	rdpinnix@gmail.com	Mail
10	Josh Wolfe	Moorefield		Mail
11	Jose Bocanegra	Buckhorn	jobocan674@gmail.com	mail
12	Dwayne Gordon	Preston Loop	DWAYNE.GORDON@ORANGE.K12NC.US	mail
13	Amy Hagan	Preston Loop	magiclelo@yahoo.com	neighbor
14	Carolyn Wilson	Benwilson Rd	cardynlizwilson@yahoo.com	mail
15				

ORANGE COUNTY
NORTH CAROLINA

Efland-Buckhorn-Mebane Access Management Plan

Community Meeting Sign-in

	Name	I live along...	Email	I heard about this meeting from...
Example	Walter & Barb Booth	Mace Rd	bbooth[illegible]@rr.com	Website, Email, Newsletter, Word of Mouth
1	Dawn Hunsicker	Lyndon Lane	Hot mail: Andunlicker@aol.com	11
2	Patricia Roberts	Richmond Rd	Patricia Roberts 77 gmail	Bonnie Hauser
3	SAM GHARBO	BENWICH LANE		HOA - ASHWICK
4				
5				
6				
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10				
11				
12				
13				
14				
15				

ORANGE COUNTY
NORTH CAROLINA

What mode of travel do you use most often? ☑ Car ☐ Bike ☐ Transit ☐ Walk

How long is your commute? ☑ 5 – 15 min ☑ 16 – 30 min ☐ 31 – 60 min ☐ > 1 hour

What roads do you use most often?
70 / EFLAND CEDAR GROVE RD / MT. WILLING

Do you support the analyzed street network? ☐ Yes ☐ No MOSTLY

If not, what street network do you suggest?

Do you support the analyzed street cross section? ☐ Yes ☐ No TO MANY QUESTIONS

If not, what street cross section do you suggest?
EFLAND VILLAGE / CEDAR GROVE RD. / MT. WILLING / 70

Any additional comments:
- 70/85 CONNECTOR – STUDY AND UPDATE
- EFLAND CEDAR GROVE INTERSECTION 70 – STUDY AND UPDATE
- EFLAND VILLAGE / MT. WILLING / 70 / EFLAND CEDAR GROVE RD.
  ↳ THEN ENTIRE AREA NEEDS TO BE COORDINATED IN A EFFORT TO MAKE IT VIABLE AND USEFUL
- WHAT ABOUT PURSUING IKEA FOR THE 80 AC LOT NOW THAT CARY WILL NOT HAVE IT. IKEA SEEMED INTERESTED IN THIS REGION.

ORANGE COUNTY
NORTH CAROLINA

What mode of travel do you use most often? ☒ Car ☐ Bike ☐ Transit ☐ Walk

How long is your commute? ☒ 5 – 15 min ☐ 16 – 30 min ☐ 31 – 60 min ☐ > 1 hour

What roads do you use most often?
NS 70 - I40/85

Do you support the analyzed street network? ☐ Yes ☐ No

If not, what street network do you suggest?
still confused

Do you support the analyzed street cross section? ☐ Yes ☐ No

If not, what street cross section do you suggest?
still confused

Any additional comments:
No 4 way stop intersections
Round abouts!

ORANGE COUNTY
NORTH CAROLINA

What mode of travel do you use most often?

- [x] Car
- [ ] Bike
- [ ] Transit
- [ ] Walk

How long is your commute?

- [x] 5 – 15 min
- [ ] 16 – 30 min
- [ ] 31 – 60 min
- [ ] > 1 hour

What roads do you use most often?

Brookhollow, US-70, Efland-Cedar Grove, I-40/85, NC-Willing

Do you support the analyzed street network?

- [ ] Yes
- [x] No

If not, what street network do you suggest?

to many unknowns

Do you support the analyzed street cross section?

- [ ] Yes
- [x] No

If not, what street cross section do you suggest?

to many unknowns

Any additional comments:

ORANGE COUNTY
NORTH CAROLINA

What mode of travel do you use most often?

☒ Car ☐ Bike
☐ Transit ☐ Walk

How long is your commute?

☒ 5 – 15 min ☐ 16 – 30 min
☐ 31 – 60 min ☐ > 1 hour

What roads do you use most often?

US 70

Do you support the analyzed street network? ☒ Yes ☐ No

If not, what street network do you suggest?

Do you support the analyzed street cross section? ☒ Yes ☐ No

If not, what street cross section do you suggest?

Any additional comments:

ORANGE COUNTY
NORTH CAROLINA

What mode of travel do you use most often? ☒ Car ☐ Bike ☐ Transit ☐ Walk

How long is your commute? ☐ 5 – 15 min ☒ 16 – 30 min ☐ 31 – 60 min ☐ > 1 hour

What roads do you use most often?

Do you support the analyzed street network? ☐ Yes ☒ No

If not, what street network do you suggest? focus on the TO corridor not residential Mt Willing/Turner

Do you support the analyzed street cross section? ☐ Yes ☐ No

If not, what street cross section do you suggest?

Any additional comments:
I do not want to see more traffic flow along Mt Willing rd. or Turner. It is too residential. Traffic needs to be diverted from this area via the TO corridor + the necessary additions that would be more logical in that area.
I am a homeowner on Mt Willing

ORANGE COUNTY
NORTH CAROLINA

What mode of travel do you use most often? ☑ Car ☐ Bike ☐ Transit ☐ Walk

How long is your commute? ☐ 5 – 15 min ☑ 16 – 30 min ☐ 31 – 60 min ☐ > 1 hour

What roads do you use most often? West Ten / Buckhorn

Do you support the analyzed street network? ☑ Yes ☐ No

If not, what street network do you suggest?

Do you support the analyzed street cross section? ☑ Yes ☐ No

If not, what street cross section do you suggest?

Any additional comments:

ORANGE COUNTY
NORTH CAROLINA

What mode of travel do you use most often? ☑ Car ☐ Bike ☐ Transit ☐ Walk

How long is your commute? ☐ 5 – 15 min ☐ 16 – 30 min ☑ 31 – 60 min ☐ > 1 hour

What roads do you use most often?

Do you support the analyzed street network? ☑ Yes ☐ No

If not, what street network do you suggest?

Do you support the analyzed street cross section? ☑ Yes ☐ No

If not, what street cross section do you suggest?

Any additional comments:

ORANGE COUNTY
NORTH CAROLINA

What mode of travel do you use most often?

- [x] Car
- [ ] Bike
- [ ] Transit
- [ ] Walk

How long is your commute?

- [ ] 5 – 15 min
- [ ] 16 – 30 min
- [x] 31 – 60 min
- [ ] > 1 hour

What roads do you use most often?
West Ten, Mt Willing, Efland Cedar Grove, Hwy 70, Interstate 40

Do you support the analyzed street network?

- [ ] Yes
- [ ] No
- [x] Not Sure

If not, what street network do you suggest?
like to see proposed zoning

Do you support the analyzed street cross section?

- [ ] Yes
- [ ] No

If not, what street cross section do you suggest?

Any additional comments:
I would like to see what zoning to industry & Residential

ORANGE COUNTY
NORTH CAROLINA

What mode of travel do you use most often? ☑ Car ☐ Bike ☐ Transit ☐ Walk

How long is your commute? ☐ 5 – 15 min ☐ 16 – 30 min ☑ 31 – 60 min ☐ > 1 hour

What roads do you use most often? Hwy 70 & I-40/85

Do you support the analyzed street network? ☐ Yes ☐ No ☑ MAYBE

If not, what street network do you suggest? UNSURE

Do you support the analyzed street cross section? ☐ Yes ☐ No ☑ UNSURE

If not, what street cross section do you suggest? UNSURE

Any additional comments: NOT ENOUGH INFORMATION YET TO ASK INTELLIGENT QUESTIONS

ORANGE COUNTY
NORTH CAROLINA

What mode of travel do you use most often? ☑ Car ☐ Bike ☐ Transit ☑ Walk

How long is your commute? ☐ 5 – 15 min ☑ 16 – 30 min ☐ 31 – 60 min ☐ > 1 hour

What roads do you use most often? Mattress Factory, West Ten, Rock Quarry, Bowman Rd.

Do you support the analyzed street network? ☑ Yes ☐ No

If not, what street network do you suggest?

Do you support the analyzed street cross section? ☑ Yes ☐ No

If not, what street cross section do you suggest?

Any additional comments: I own Property At Intersection Mattress Factory Industrial Drive. Also own the property from candy factory the drive to Rock Quarry

Judd Hayes
336-516-4017

ORANGE COUNTY
NORTH CAROLINA

What mode of travel do you use most often? ☑ Car ☐ Bike ☐ Transit ☐ Walk

How long is your commute? ☑ 5 – 15 min ☐ 16 – 30 min ☐ 31 – 60 min ☐ > 1 hour

What roads do you use most often? Interstate and 70

Do you support the analyzed street network? ☑ Yes ☐ No

If not, what street network do you suggest?

Do you support the analyzed street cross section? ☑ Yes ☐ No

If not, what street cross section do you suggest?

Any additional comments: Please develop this part of Orange County, nothing changes. Orange County is very slow or no development at all. (Buckhorn Road)

ORANGE COUNTY
NORTH CAROLINA

What mode of travel do you use most often? ☒ Car ☐ Bike ☐ Transit ☐ Walk

How long is your commute? ☒ 5 – 15 min ☐ 16 – 30 min ☐ 31 – 60 min ☐ > 1 hour

What roads do you use most often? Borland Road, Orange Grove, Mt Willing & Buckhorn

Do you support the analyzed street network? ☒ Yes ☐ No

If not, what street network do you suggest?

Do you support the analyzed street cross section? ☒ Yes ☐ No

If not, what street cross section do you suggest?

Any additional comments:

ORANGE COUNTY
NORTH CAROLINA

What mode of travel do you use most often? ☒ Car ☐ Bike ☐ Transit ☐ Walk

How long is your commute? ☒ 5 – 15 min ☐ 16 – 30 min ☐ 31 – 60 min ☐ > 1 hour

What roads do you use most often?
West 10, buckhorn Rd

Do you support the analyzed street network? ☑ Yes ☐ No

If not, what street network do you suggest?

Do you support the analyzed street cross section? ☑ Yes ☐ No

If not, what street cross section do you suggest?

Any additional comments:

ORANGE COUNTY
NORTH CAROLINA

What mode of travel do you use most often? ☒ Car ☐ Bike ☐ Transit ☐ Walk

How long is your commute? ☐ 5 – 15 min ☐ 16 – 30 min ☒ 31 – 60 min ☐ > 1 hour

What roads do you use most often?
West Ten; Buckhorn

Do you support the analyzed street network? ☒ Yes ☐ No

If not, what street network do you suggest?

Do you support the analyzed street cross section? ☒ Yes ☐ No

If not, what street cross section do you suggest?

Any additional comments:

ORANGE COUNTY
NORTH CAROLINA

What mode of travel do you use most often? ☑ Car ☐ Bike ☐ Transit ☐ Walk

How long is your commute? ☐ 5 – 15 min ☐ 16 – 30 min ☑ 31 – 60 min ☐ > 1 hour

What roads do you use most often? Center St, Turner St, Mt Willing

Do you support the analyzed street network? ☐ Yes ☑ No

If not, what street network do you suggest? I support full turning movements at the 70/85 Connector. I live on Center Street in Efland and do not support extending Turner St.

Do you support the analyzed street cross section? ☐ Yes ☐ No

If not, what street cross section do you suggest?

Any additional comments: I agree with a meeting attendee today who said neighborhoods should be preserved. Being able to turn right from 70 at the connector would preserve my Center St. neighborhood.

People for Progress Committee

Post Office Box 754
Mebane, North Carolina 27302

To: Craig Benedict, Orange County Planning Dir.
Subject: Efland- Buckhorn Access Management Plan
Date: March 25, 2019

The citizens/property owners of Orange County's Efland – Buckhorn community, members of the People for Progress Committee, and officers and members of Hunter's Chapel African Methodist Episcopal Church and Mount Moriah Missionary Baptist Church go on record in opposition to the proposed Traffic Separation Study (dated September 11, 2017) recommendations for Buckhorn Road and its vicinity.

We met on March 12, 2019 at Mount Moriah Baptist Church. We were joined by Mr. Craig Benedict of the Orange County Planning Dept. and some of his staff members. They shared with us the proposed changes to the traffic patterns along Buckhorn Road, and how it could impact the community going forward. There was a lengthy discussion concerning the cemeteries, new traffic patterns, noise pollution, safety, property values, and displaced family homes.

It is our opinion that the proposed Traffic Separation Study and the Extraterritorial Jurisdiction (ETJ) of the city of Mebane is overreach and will only serve to erode and erase our community, culture, history and institutions.

The property owners along the proposed traffic route (Buckhorn Road) are 95% black. The two churches have been in existence for over 279 years collectively and are a staple in the community. The proposed flyover will drastically impact our community in a negative way. We are asking that the proposed Traffic Separation Study for Buckhorn Road be removed from the plans and that closing the train crossing at Buckhorn Road is no longer an option.

Further, we ask the Orange County Board of Commissioners for a Resolution honoring the wishes of our community, and that we can be assured that the Efland-Buckhorn-Mebane Access Management Plan will not surface in the long range plans for the Efland-Buckhorn community's residential and economic future.

Respectfully submitted,

Mrs. Naola Fearrington, Secretary

Rev. Vernon P. Burns, Pastor, Hunter's Chapel AME Church

Rev. Norman T. Umstead, Jr., Pastor, Mt. Moriah Baptist Church
Chair, People for Progress Committee

From: Wendy Williams <wwilliams@elon.edu>
Sent: Tuesday, August 28, 2018 10:26 PM
To: Nishith Trivedi
Subject: EBM access Management Plan

I wanted to give feedback after attending the community meeting tonight. I live at 6131 US 70 just east of the intersection of Buckhorn Road and US 70. I'm in strong favor of a potential bridge over the railroad tracks that would connect with Frazier Road. I can see where that would provide business access.

For me personally, the intersection at Buckhorn and 70 is really dangerous. It needs a stoplight because two northbound lanes at the north end of Buckhorn have been unofficially created. One turns right and one turns left onto 70 which leaves neither lane with good visibility. Tractor trailers have a hard time turning at that intersection and they are frequent because of avoiding the weigh station.

Even though I think the current intersection needs a stoplight, I can definitely see traffic backing up at the at the stoplights on 70 creating a headache for people accessing Shambley road and my driveway.

I think rather than spending money to widen Buckhorn all the way to US 70, hopefully the Frazier bridge can get fast-tracked for funding. The bridge project would reduce accidents at the intersection of Buckhorn Road and 70 as well as the accidents at the intersection of Frazier Road and 70. And, another huge bonus for residents is that maybe the train horns wouldn't need to blow with a bridge in place. Emergency vehicles, that frequently need to get from US 70 to the interstate could greatly benefit from the Frazier Bridge as well.

I also think the Mace Road extension is a great idea. Although I could see where that could negatively affect the way of life of the community living on Mace Road.

There are quite a fair amount of people who walk along the road in front of our house. They have always walked by to get to the nearby convenience store, but now they are walking to the Dollar General as well. One lady even rides her motorized wheelchair along the shoulder of 70 to get to the store. Maybe sidewalks could be incorporated at some point.

I also think that the time is near for adding stoplights at the on and off ramps of Buckhorn Road and I-85/I-40.

Thanks for asking for community input!

Wendy Williams

From: Nishith Trivedi
Sent: Wednesday, August 29, 2018 11:16 AM
To: 'Wendy Williams'
Subject: RE: EBM access Management Plan

Thank you very much for these comments. We have included them in the material we are putting in preparing the draft plan. Please let us know if you have any more concerns. Look forward to hearing from you.

Thank you.

Sincerely,
Nishith Trivedi

From: Carl W <cspan@epbfi.com>
Sent: Saturday, August 25, 2018 4:22 PM
To: Nishith Trivedi
Subject: Tuesday's meeting

re: Buckhorn / Efland Development Plan Meeting

Hi Nishith,

Thanks for calling the other day. Will there be a recording or transcript made of the meeting Tuesday, so that if I cannot make the trip, I can still learn about other questions that were asked, and the answers given?

I have a question - I did not notice in the 62 page PDF where it discusses compensation to landowners for the acreage lost to the proposed road, right of way, etc. What can you tell me about how you expect that to play out?

Thank you.

Sincerely,

Carl Westman, landowner
Chattanooga, TN

From: Nishith Trivedi
Sent: Monday, August 27, 2018 7:41 AM
To: 'Carl W'
Subject: RE: Tuesday's meeting

Mr. Westman,

It was great speaking with you. Thank you very much for your comments. No, there will not be a transcript or recording. I will post the presentation on our website after the meeting along with the draft plan after it is complete. All comments from the meeting, phone, email etc. will be included in the draft along with all Q and A.

That is a great question and we will be addressing that at the meeting. Right now please rest assured there is no taking of land, there are no plans for Orange County nor the state to take land for the possibility of future roads so there is no compensation. The plan is simply for the preparation of future development to ensure the transportation network is addressed. Developers may be required to dedicate part of their development for the public right of way so that they and others can access their property.

We will address this more at the meeting tomorrow and include this discussion in the draft plan. Thank you for the question and please let me know should you have any others.

Sincerely,
Nishith Trivedi

Douglas Efland
Donald Efland
PO Box 246
Efland, NC 27243

September 27, 2018

Mr. Nishith Trivedi
Transportation Planner
Orange County Planning and Inspections Department
Hillsborough, NC 27278

We receive a notification letter from the Orange County Planning Department and wish to address the issue of the long-range planning for the EBM-AMP area. We also attended the public information session at Gravely Hill Middle School concerning this subject. As it was presented, we would request that the western most proposed blue dot for a new intersection over the railroad tracks in the Efland area located at the curve where Forrest Ave. transitions to Efland Cedar Grove Road, and also including a portion of Southern Drive, be eliminated from the EBM-AMP. The logic behind our request is because there is no realistic conceivable way to make an overpass or underpass for crossing the railroad tracks at this location for the following reasons:

For an overpass, there is not enough distance from Hwy 70 to this location to accommodate the steep grade that would be required. The railroad track at this location is already 15 to 25 feet above the roadbed level on the Efland Cedar Grove Road side. NCDOT requirements for minimum vertical clearance of a road over a Railroad is 23 ½ feet. This would require a combined vertical earthen buildup and bridge above the current Efland Cedar Grove Road roadbed of approximately 40 to 50 feet (for comparison minimum Interstate vertical clearance is 16 to 17 feet). Even if it was realistic to think there was enough distance from Hwy 70 to accommodate the grade requirement for this new overpass the impact on adjacent landowners would be extreme. Efland Presbyterian Church would most likely lose their parking area that includes handicap parking. The homeowners on the western side of the Efland Cedar Grove Road section of the new required slope would lose all access to their homes and would most likely face eminent domain. Forrest Avenue and Southern Drive would become dead end roads.

The topography does not lend itself to an underpass either. Severe excavation would have to take place on both sides of the railroad and would include the associated problems mentioned with the overpass issue.

The idea of a new intersection with a level crossing is also unrealistic. It offers no advantage to the current roadway. It would only create parallel roads to the current roads and introduce an additional intersection to the current traffic flow. It also would require a vertical buildup of Efland Cedar Grove Road and result in making dead end roads of Forrest Avenue and Southern Drive and eliminate western homeowners' access to their houses.

It is easy to place a blue dot in this location and hold it out as an area for future study, but it has implications for any landowner surrounding it. This area is one of the few locations in the "Efland Area Commercial Industrial Node" that has both water and sewer. To designate it an area of "Future Analysis Required" would have negative implications for any potential buyer because no one in the Planning department would be able to define what the county would require for regulatory compliance or right-of-way designation. As such, it would eliminate anyone's interest in the area for purchase or development.

We currently do not know of any long-range plans by either the NCDOT or Southern Railroad for any new intersection in the Efland area, and at the public information forum it was expressed that the County was not aware of any plans either. We also have heard in the past about Southern Railroads unwillingness to share information or co-ordinate with the county. We first heard this idea of an over-under-pass mentioned in 1978, which was 40 years ago. It seems to reappear every few years as wishful thinking. For anyone who stands adjacent to the curve on Forrest Avenue and looks at the height required of a railroad overpass, and the distance to Hwy 70, it becomes apparent that the idea is not realistic and does not require "Future Analysis". For these reasons we think Orange County's resources would be much better allocated to serve the area by removing the western blue dot on EBM-AMP in Efland and developing a plan with NCDOT to connect Hwy70 to the interstate in both directions at the Hwy 70 Connector. This would also eliminate any required co-ordination with Southern Railroad for a new intersection.

Lastly: I (Doug Efland) personally sat through an extended series of monthly meetings with the Planning Department during the development of separate zoning overlays for the north side of the railroad tracks vs the south side of the railroad tracks in Efland. The stated purpose of the two separate zoning overlays were to preserve the village character on the north side while the county was constructing infrastructure on the south side to accommodate development along the interstate corridor. During this process we worked together as a citizen group with the Planning Department, and wrestled with different height restrictions for buildings and signs on the north side vs the south side among other things. To even contemplate for "Future Analysis" the creation of a colossal geographic feature taller than any structures that would be allowable, and then placed in the heart of the Village of Efland negates any planning the County has previously put in place. This would permanently change the character of Efland.

To reiterate, we think there should be increased thought about a two-way connection on the west side of the Hwy 70 connector and the removal of any verbiage or designation for consideration of any railroad over-under-pass from the Village of Efland's portion of the updated EBM-AMP. We appreciate your time spent with us and your consideration of our concerns.

Sincerely,

Douglas Efland

Donald Efland

To: Craig Benedict; Tom Altieri; Abigaile Pittman
Subject: RE: Questions about "DRAFT - Efland-Buckhorn-Mebane Access Management Plan"

From: Kim Livingston
Sent: Tuesday, October 09, 2018 10:09 AM
To: Barry Jacobs (External); David Stancil
Cc: Craig Benedict
Subject: RE: Questions about "DRAFT - Efland-Buckhorn-Mebane Access Management Plan"

Commissioner Jacobs,

I have reviewed the draft Efland-Buckhorn-Mebane Access Management Plan and the noted endangered species in the report. The only reference to endangered species are in the "Environmental Features Map, Figure 3." The environmental consultants identified some tributaries to Haw Creek as having endangered species; however, the NC Natural Heritage Program does not have records of endangered species in these tributaries or in the entire study area.

I will need to consult with Planning to determine if endangered species were found in the Haw Creek tributaries. If so, I can work with Planning and the NC Natural Heritage Program to list these species within their database and determine the best protection strategies.

Thank you for bringing this to my attention. I will inquire and be back in touch.

Kim Livingston, Land Conservation Manager
Orange County
Department of Environment, Agriculture, Parks and Recreation

306A Revere Rd (PO Box 8181) Hillsborough NC 27278
(919) 245-2514 | www.orangecountync.gov/DEAPR

To: Craig Benedict; Tom Altieri; Abigaile Pittman
Subject: RE: Questions about "DRAFT - Efland-Buckhorn-Mebane Access Management Plan"

-----Forwarded Message-----
From: Catherine Matthews
Sent: Oct 5, 2018 1:27 PM
To: ocbocc@orangecountync.gov
Subject: Questions about "DRAFT - Efland-Buckhorn-Mebane Access Management Plan"

Hello Commissioners,

I have just read the "DRAFT - Efland-Buckhorn-Mebane Access Management Plan" and I have questions about the endangered species that were noted in the report.

First, what are the endangered species as I did not see them noted in text or on the environmental features map.

Second, I could not find any statements about plans to protect these species.

Third, I know that we have a number of species of concern in the area covered by this report. What steps are planned to attend to for example the decreasing numbers of our state reptile, the eastern box turtle, or one of our state amphibians, the marbled salamander, which are both found here.

It seems like this would be an ideal time for the commission to consider installing safe road crossings for these species and others.

Thank you,

Dr. Catherine E. Matthews
Professor Emerita, K-12 Science Education & Environmental Education
Department of Teacher Education & Higher Education, UNCG

October 3, 2018 Planning Board Meeting

ORANGE COUNTY PLANNING DEPARTMENT
131 W. MARGARET LANE, SUITE 201
HILLSBOROUGH, NORTH CAROLINA 27278

AGENDA
ORANGE COUNTY PLANNING BOARD

NOTE CHANGE FROM USUAL LOCATION!!

WHITTED BUILDING
300 WEST TRYON STREET, 2ND FLOOR
HILLSBOROUGH, NORTH CAROLINA 27278

Wednesday, October 3, 2018

Regular Meeting – 7:00 pm

No.	Page(s)	Agenda Item
7.	13 - 152	**EFLAND-BUCKHORN-MEBANE ACCESS MANAGEMENT PLAN** - To make a recommendation to the BOCC on updates to the Efland-Buckhorn-Mebane Access Management Plan. **Presenter:** Nish Trivedi, Transportation Planner
8.		**ADJOURNMENT**

MEETING SIGN-IN SHEET

Meeting:	Orange County Planning Board	**Meeting Date:**	October 3, 2018
Facilitator:	Orange County Planning Staff	**Place/Room:**	Whitted Building, Room 230

Name	Contact Info	Address
Wyatt Lowery	(336)516-4677	1774 Mebane Oaks Rd
Brenda Allen	(919)563-5208	402 E. McPherson Dr. Mebane
Richard & Brenda Bright	336-263-5121	405 W. Jackson St. Mebane
Carolyn Hicks	9195633478	1003 Buckhorn Rd Mebane NC
Walter Joe Bright	336 945-9-6302	601 Ponderosa Ln. Mebane N.C.
JoAnn Hayles	984-364-0921	1000 Bushy Cork Rd Efland
Amanda High	919-605-1439	5612 Preston Loop, Mebane
Steven Ramarge	919-740-6323	321 Mt. Willing Rd. Efland
[illegible]	336-599-4439	6962 Burlington Rd Hurdle Mills 27541 N.C.
[illegible]	336-516-2001	6334 Rabbit Run Mebane
Sonny Jones	336-269-6550	6334 RABBIT RUN LN MEBANE
Kristen Marbais	919-414-0489	118 Efland Cedar Grove Rd, Efland
[illegible]	919.815.4556	3507 W. Lyon Efland Rd, Efland
Robert Riley, Jr.	919-906-9468	4111 Marvin Lane Efland
Carolyn Wilson	919-619-8422	P.O. Box 1280 Hillsborough NC 27278
Cindy Raymo	919-637-3476	P.O. Box 422 Mebane, NC 27302
Cathene L. Watson	919.928.4486	517 Watson Rd, Efland NC 27243
Robert E. Jones	(919)563-5729	6008 E. Washington St. Mebane 27302
Mike Ruffin	919) 304 0585	MEBANE

MEETING SIGN-IN SHEET

Meeting:	Orange County Planning Board	**Meeting Date:**	October 3, 2018
Facilitator:	Orange County Planning Staff	**Place/Room:**	Whitted Building, Room 230

Name	Contact Info	Address
Barry Parker	336 260-5267	PO Box 818, Mebane NC 27302
Cheryl Parker	"	"
Nancy Schlosser	919 304-5518	104 Pepper Tree DR. Mebane NC
Debra Elmore	919 563-1607	1015 Buckhorn Rd Mebane, NC
Julie Laws	919-632-6461	206 Center St., Efland, NC
Peggie Murray	919 219 4273	3004 Gym Rd Efland
Jean Forrest Brooks	9199066157	1725 E Scarlett Mint Hills
Cy Stober	919 304.9211	City of Mebane Planning 102 S. Fifth St., Mebane
DOUG EFLAND	919-819-5366	PO BOX 98 EFLAND N.C.
Beverly Stokes	2026588619	429 Gaines Chapel Rd Efland 27243
Nikki Mayer	919 672-5996	5615 Preston Loop, Mebane, NC 27302
Laura Mayer	919-423-8597	5615 Preston Loop, Mebane 27302
NATALIE GIVANS	919-337-0108	118 Tadworth Ct, Mebane 27302
Marcella Sweeney	919-337_0108	118 Tadworth Ct Mebane 27302
Gabriel Santander	919 308 84-16	915 Buckhorn rd, Mebane
Phil Holland	919-210-4305	7515 Bowman Rd Mebane
Audie J Carter	336-263-0885	5601 Preston Loop Rd Mebane
?		

MEETING SIGN-IN SHEET

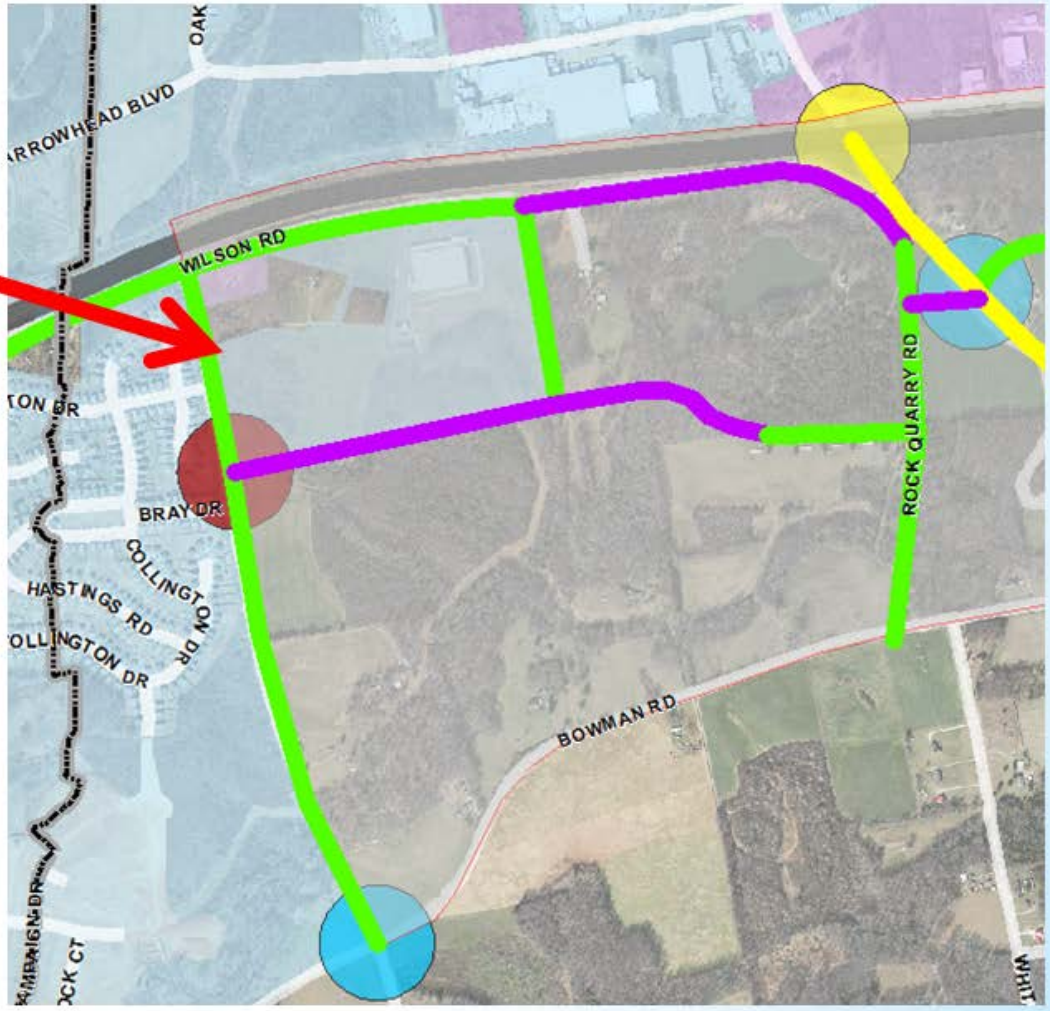
Meeting:	Orange County Planning Board	**Meeting Date:**	October 3, 2018
Facilitator:	Orange County Planning Staff	**Place/Room:**	Whitted Building, Room 230

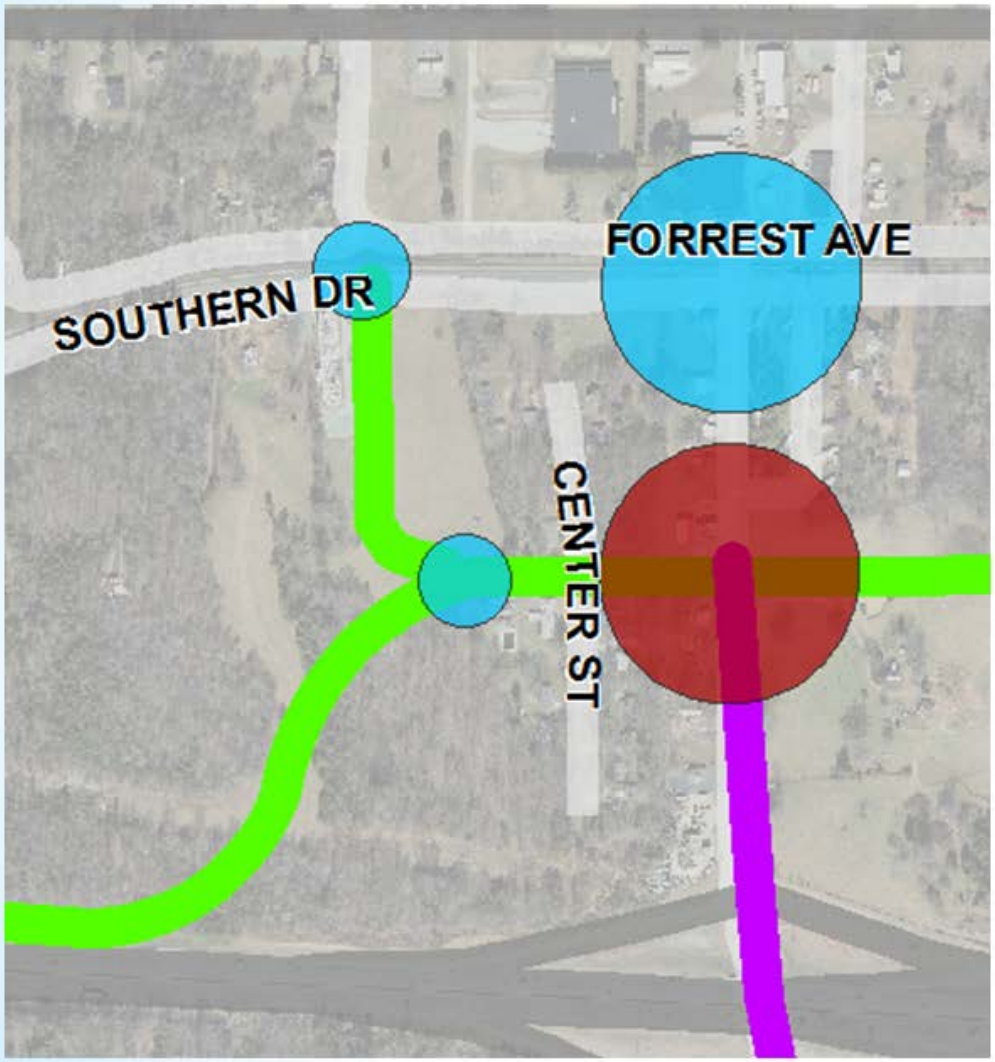
Name	Contact Info	Address
Fatima Hernandez	(919)923-9797	512 Hurricane Alley Chapel Hill NC, 27514
Octavio Hernández	(919) 692 3381	
Doug Middleton	336-578-3987	
LeVonne Swepson Miller	336-202-1254	719 Buckhorn Rd
Patsy Walker	919-563-5841	325 Buckhorn Rd Mebane NC 27302
Paul Fredrick	919-914-0563	6510 Hwy 70
Ben Lloyd	919 880-5680	2701 US Hwy 70 W Efland
Cray Lloyd	919 923-3488	3303 US Hwy 70 W Efland
Dillon Holland	919-830-3865	7515 Bowman Rd Mebane NC
Corey Walton	919-452-0892	5659 Preston Loop Mebane, NC. 27302



Alternative East-West access

- Protects environmental resources and reduces stream crossings
- T-Intersections and S curve moved
- Road to cemetery removed
- Reduces and improves future intersections along West Ten Road
- North access connects to existing Rock Quarry Road



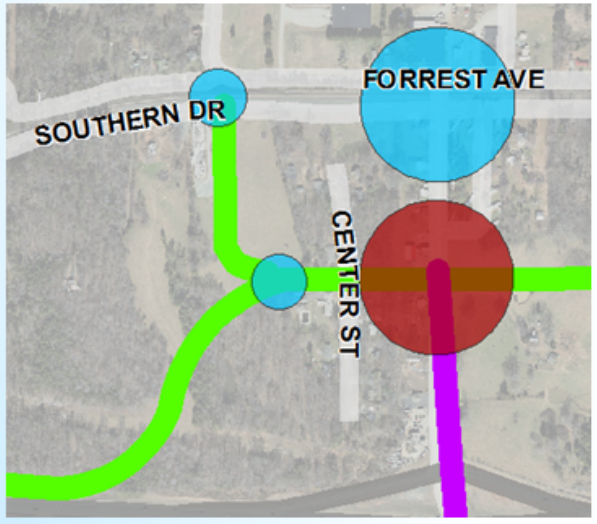


Efland-Cedar Grove Road at Railroad

- No overpass or underpass planned, proposed, designed, etc.
- Straightens Efland-Cedar Grove Road
- No specific recommendations are made for railroad intersection(s)
- Roundabout could be considered for 3 way intersection west of Center St.



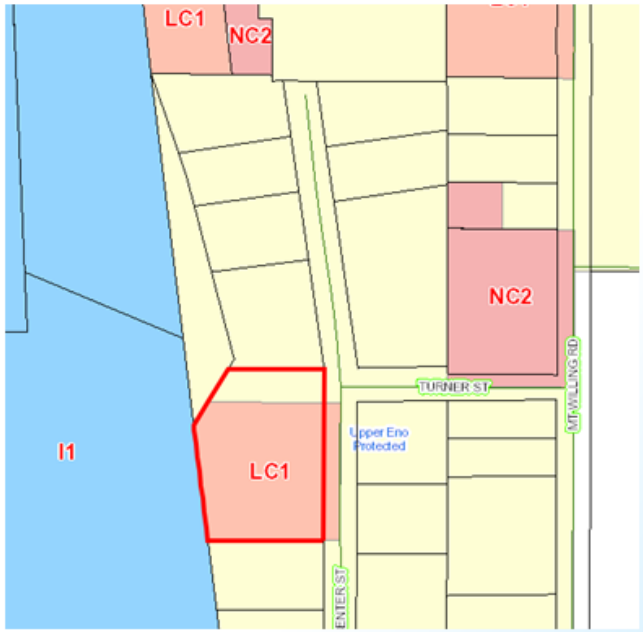
2011 E-B-M AMP



2018 Draft E-B-M AMP

Turner Street Extension – No Change

- Carried forward from 2011 plan
- Provide access to land locked parcels
- Zoned LC-1 – must connect to Arterial or Collector per UDO
  - Center St. is Local
- Right of way will be requested when properties are developed.



October 17, 2018 OUTBoard Meeting

AGENDA
Orange Unified Transportation Board
October 17, 2018
6:30 p.m.

You can bring your laptops/tablets if you would like to use them.

Conference Room 004 (Lower Floor) Orange County West Campus
131 West Margaret Lane, Hillsborough

17 4.b. Efland-Buckhorn-Mebane Access Management Plan Update (Nish Trivedi) – To make a recommendation on the Efland-Buckhorn-Mebane Access Management Plan (E-B-M AMP).

OUTBoard Action: Recommend that the BOCC approve the E-B-M AMP.

Orange County OUTBoard Meeting 10/17/18

NAME	Address
Betty Rogers for Dollie Doby	3101 Buckhorn Rd, Efland, NC 27243
Brian & Bonnie Myers	5213 US 70, Mebane, NC 27302
Jennifer R Terrell	3308 E. Washington Ext. Mebane NC 27302
ANTHONY O. CORBETT	104 FRAZIER RD MEBANE, NC 27302
Mai Nguyen & Huong Nguyen	"(919)601-3945"
Octavio Hernandez Lesso	512 Hurricane Aly Chapel Hill NC 27514
Dana Richardson	1116 Bonaparte Dr. Hoore NC
Jolanda Williams	4005 W. Ten Rd Efland, NC 27243
Angie M. Whitted	128 W. Union St. Hillsborough NC 27278
Cy STOBER	CITY OF MEBANE, 106 E. WASHINGTON ST., MEBANE, NC 27302
Krista Marbais	118 Efland CedarGrove Rd, Efland, NC
Richard & Brenda Bright	405 W. Jackson St Mebane N.C 27302
Robert Jones	6008 E. Washington St. Mebane, N.C. 27302
Knox Efland	PO Box 2411 Halls Mill Rd, Efland, NC 27243

Questions and Answers

The following questions and answers are paraphrased as the meeting was not recorded.

Question: Will any of the current roads be removed?

Answer: No

Question: So all existing roads will stay?

Answer: Yes

Question: What are you planning around the Preston Loop area?

Answer: Nothing in the subdivision. There will be a 100' buffer between the residential area and the surrounding large parcels should future development occur. We also want to make sure a road network through that development will be sufficient to address the increased traffic brought on by that new development.

Question: Can you tell us about the sewer and water infrastructure north of I-85 and Buckhorn Road mainly for several residents there that are not tied to any lines even though we are supposed to?

Answer: There is an agreement in place for that area's connection to Mebane's water and sewer.

Question: What about US-70? What are the findings along that road and are there any recommendations for it?

Answer: While there are no findings in the 2017 Transportation Study, we has staff will be studying this corridor more in determining what is best needed to ensure safe access along this route. It has been identified by NCDOT and DCHC MPO as a Strategic Freight Corridor. There are several intersections identified by staff that may require improvements to address the increasing traffic especially around Efland-Cedar Grove Road, I-85 connector, and Buckhorn Road. The map will be updated as more information is collected and appropriate access management solution is determined.

Question: What is actually going to develop in this area?

Answer: The 2017 Transportation Study, economic development nature of the area and an ever expanding water and sewer services have primed this area for all manner of residential and non-residential growth. The 2017 Transportation Study documents future residential, commercial, industrial, retail, restaurants, business parks and warehouses all along 18 different sections of the area. Future land use designations allow for commercial-industrial transition, economic development transition, agriculture-residential, and 10-year transition.

Question: When will all these roads occur?

Answer: As development occurs. There is no horizon or set year when this transportation network will be realized. Even since the 2011 E-B-M AMP, only one road, the one to Morinaga, has actually been constructed.

Question: Why do you have a road cutting through the residents along Center Street?

Answer: This is part of the planned Turner Street which calls for a 50' right of way and extends it Ben Johnston Road. It is the current right of way still in existence passed on from the original owner. We are studying how to address the growing traffic in the area; especially should the large property east of the neighborhood be fully developed.

Question: When will Mebane expand into this area with all its growth?

Answer: The western portion of the planning area, to Buckhorn road, is seen as how far the city will grow. However, the city cannot annex the area on its own. Developers and property owners must petition to annex into the city due to changes in state law.

Frequently Asked Questions, Public Comments and Responses

#	Description	Source	Response
1	The City requests the removal of both north-south (N-S) roads between Ben Wilson and Rock Quarry Roads, as the Volkert study shows environmental and cultural site conflicts with them both	City of Mebane	Planning Director Recommended approving this request. Planning Board and OUTBoard approved Planning Director's Recommendation.
2	The City requests the relocation of the east-west (E-W) road between Ben Wilson and Rock Quarry Roads so that it connects Bray Drive and Danny Drive in order to decrease stream crossings		
3	The City prefers that the new intersection on West Ten Road between the intersections of Rock Quarry and Bowman Roads be avoided – is it possible to use Old Country Lane as a E-W connection and improve the existing three-way intersection with Rock Quarry and West Ten Roads? The City will await any further comment on this intersection until traffic projection concerns can be resolved – they may show the need for this proposed intersection		
4	The City would like to consider another route between West Ten Road and Buckhorn Road that reduces stream crossings and affects (again, the City awaits data discrepancy resolution or demonstration of limited access). The City believes that an alternate route could provide a similar transportation value with less concerns		
5	the City of Mebane shares Orange County's goal of developing the Efland-Buckhorn-Mebane study area for economic development, at least within the geographic realm of the City's future growth area.		Acknowledged and appreciated

#	Description	Source	Response
6	The projected traffic volume shown in the Volkert study differs with the projections of the Transportation Demand Model (TDM) maintained and operated by the Piedmont Authority for Regional Transportation and the Triangle Regional Model (TRM) operated by Triangle J Council Of Governments. The City of Mebane wants to ensure that new roads in its future growth area are warranted due to concerns about projected levels of service and/or limited access. The information that has been provided to date does not provide justification of either. Once the City and County agree upon traffic volume projections, declining LOS for (some) roads may be demonstrated, warranting road improvements and/or the need for new routes.	City of Mebane	Current and future traffic volume (Average Annual Daily Traffic) is determined by multiple sources. The Travel Demand Models (TDM) in Orange County are administered by different agencies, using different socioeconomic inputs, are conducted indepenent of one another, and produces results ending at different horizon years. These models also differ from NCDOT's own statewide TDM. Here is a summary of the various TDMs that illustrate future traffic in Orange County and the E-B-M AMP area. * Piedmont Triad Regional Model (PTRMv4.2 – 2013 Base Year / 2040 Design Year). The PTRMv4.2 is the travel demand model officially adopted by BGMPO and other agencies for long-range transportation planning. * Triangle Regional Model (TRMv6 – 2013 Base Year / 2045 Design Year). As of February 2018, TRMv6 is the official travel demand model used by DCHC MPO and CAMPO and other agencies. * NC Statewide Travel Model (NCSTM – 2015 Base Year / 2040 Design Year). The NC Statewide Travel Model covers the entire state of NC, although at a highly aggregated scale. Orange County continues working with local jurisdictions in coordinating updates to both TDM and TRM. While there are lots of discrepencies between the different models, they all say the same thing: Traffic will continue to increase. The only difference is in the severity of the increase. The plan is designed to address the constant increasing nature of the traffic in the area.
7	What is the railroad doing at Efland-Cedar Grove Road, will there be an overpass?	Public Conversation	Inquired with NCDOT about any plan, projects, studies, etc. NCDOT requests Orange County conduct a Feasibility Study through the MPO and determine the best solutions necessary to address increasing vehicle and freight traffic along the railroad cooridor in Efland.
8	We are trying to sell our property, the circle at Efland-Cedar Grove Road and the railroad may scare of potential buyers.		

#	Description	Source	Response
9	The intersection at Turner extension and Efland-Cedar Grove Road would better be suited with a roundabout rather than a T-intersection. If Efland-Cedar Grove Road were to connect to Turner Street, it should curve into it allowing traffic to flow, similar to the other street curving into it.	Public Conversation	Inquired with NCDOT about any plan, projects, studies, etc. NCDOT requests Orange County conduct a Feasibility Study through the MPO and determine the best solutions necessary to address increasing vehicle and freight traffic along the railroad cooridor in Efland.
10	Will you take my property for these roads, will you compensate me for roads going through my property, will the County condemn my property for these roads?	August 28, 2018 Community Meeting Gravely Hill Middle School	No. This is an unfunded Plan. Right-of-way dedication is to be obtained through the development review process. The plan does not seek funding to buy property for these roads nor does it seek any authorization take any property for them. The County is not in the road making business. This plan is a prerequsite necessary for legal standing so that the County may request property owners who seek to make changes to their property and submit a development application to dedicate some land for the public if necessary should a road be planned for their area.
11	Will County build these roads? When will these roads be built?		
12	Will any of the current roads be removed?		No
13	So all existing roads will stay?		Yes
14	What are you planning around the Preston Loop area?		Nothing in the subdivision. There will be a 100' buffer between the residential area and the surrounding large parcels should future development occur. We also want to make sure a road network through that development will be sufficient to address the increased traffic brought on by that new development. The entire network, once realized, could direct traffic directly to Buckhorn Road instead of West Ten Road.
15	Can you tell us about the sewer and water infrastructure north of I-85 and Buckhorn Road mainly for several residents there that are not tied to any lines even though they should be?		There is an agreement in place for that area's connection to Mebane's water and sewer.

#	Description	Source	Response
16	What about US-70? What are the findings along that road and are there any recommendations for it?	August 28, 2018 Community Meeting Gravely Hill Middle School	While there are no findings in the 2017 Transportation Study, staff will be studying this corridor more in determining what is best needed to ensure safe access along this route. It has been identified by NCDOT and DCHC MPO as a Strategic Freight Corridor. There are several intersections identified by staff that may require improvements to address the increasing traffic especially around Efland-Cedar Grove Road, I-85 connector, and Buckhorn Road. The map will be updated as more information is collected and if a more appropriate access management solution is determined.
17	What is actually going to develop in this area?		The 2017 Transportation Study, economic development nature of the area and expanding water and sewer services have primed this area for higher density residential and non-residential growth. The 2017 Transportation Study documents future residential, commercial, industrial, retail, restaurants, business parks and warehouses all along 18 different sections of the area. Future land use designations allow for commercial-industrial transition, economic development transition, agriculture-residential, and 10-year transition.
18	When will all these roads occur?		As development occurs. There is no horizon or set year when this transportation network will be realized. Since the 2011 E-B-M AMP, only one road, the one to Morinaga, has actually been constructed.
19	Why do you have a road cutting through the residents along Center Street?		This is part of the planned Turner Street which calls for a 50' right of way and extends it Ben Johnston Road. It is the current right of way still in existence passed on from the original owner. We are studying how to address the growing traffic in the area; especially if the large property to the east is fully developed.

#	Description	Source	Response
20	When will Mebane expand into this area with all its growth?		The western portion of the planning area, to Buckhorn road, is seen as how far the city will grow. However, the city cannot annex the area on its own. Developers and property owners must petition to annex into the city due to changes in state law.
21	What is the traffic in this area going to be like in the future and how was it determined?		The 2017 Transportation Study used the POD analysis to determine how much traffic would be generated (Table 1 p. 13). These values "were added to the future 2025 AADTs of the existing roadway network based on the proposed access points." (p.22). The results are presented in Figure 10 p. 24 of the 2017 Transportation Study.
22	70/85 Connector - Study and update		The 2017 Transportation Study provides some recommendations at this intersection.
23	Not enough information to ask intelligent question		The draft plan and 2017 Transportation Study goes into greater detail.
24	Efland Cedar Grove Intersection 70 - Study and update		
25	Efland Village/Mt. Willing/70/Efland Cedar Grove Road The entire area needs to be coordinated in an effort to make it viable		NCDOT was contacted, requesting their stand on any improvements along Efland Cedar Grove, Mt. Willing, and Railroad
26	What about pursuing IKEA for the 80 Acre lot now that Cary will not have it. IKEA seemed interested in this region.	Survey	IKEA is no longer interested in this region. They pulled out of Cary as of May 2018 (The News Observer), after they got their approval.
27	No four way stop intersections, Roundabouts!		Acknowledged and appreciated
28	I own property at intersection Mattress Factory Road and Industrial Drive. Also own property from candy factory the drive to Rock Quarry		Acknowledged and appreciated
29	I would like to see what zoning to industrial and residential		Orange County's Zoning Map is available to the public and published online at https://gis.orangecountync.gov:8443/orangeNCGIS/zoning.htm
30	Please develop this part of Orange County (Buckhorn Road), nothing changes. Orange County is very slow or no development at all.		We are conducting this planning exercise in an effort to address future development anticiapted in the area.

#	Description	Source	Response
31	I do not want to see more traffic flow along Mt. Willing road or Turner. It is too residential. Traffic needs to be deviated from this area via the 70 connector and the necessary additions that would be more local in that area. I am a homeowner on Mt. Willing.	Survey	Traffic will continue to increase throughout the planning area as development continues to occure, especially along those roads providing direct access to the I-40/I-85 interchange as Mt. Willing does. Mt. Willing road is minor collector road (NCDOT) and is used by commuters and trucks traveling north and south from Efland-Cedar Grove Road. It provides more immediate access than US-70 connector. Plan recommends more study be done at railroad crossings in Efland to address the constant increasing traffic.
32	I support full turning movements at the 70/85 connector. I live on Center Street in Efland and do not support extending Turner Street		Orange County's original adopted 2011 Efland-Buckhorn-Mebane Access Management Plan included the Turner Street extension which was based existing right-of-way, zoning, future land use map, need to provide access to land locked parcels, etc... all serving as bases to carry forward the originally adopted extension into the new updated plan.
33	I agree with a meeting attendee today who said neighborhoods should be preserved. Being able to turn right from 70 onto the connector should preserve my Center Street neighborhood.		