



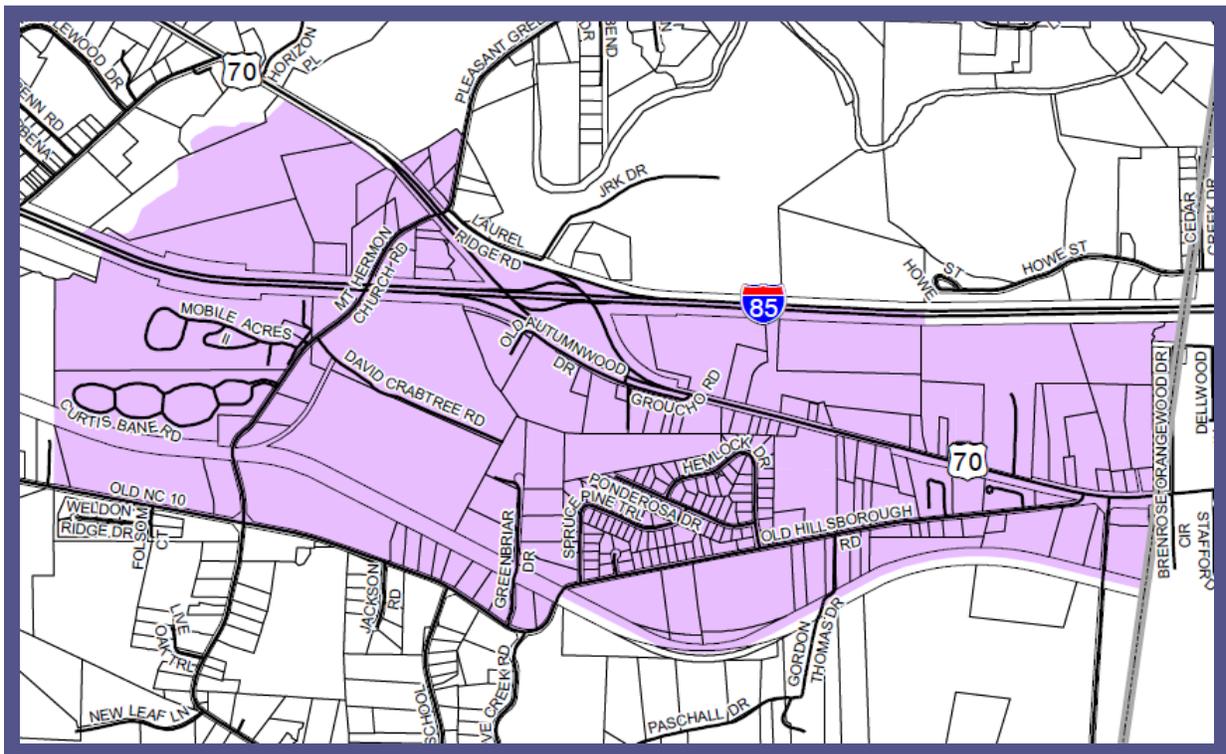
ORANGE COUNTY ENO ECONOMIC

DEVELOPMENT DISTRICT (EDD)

ACCESS MANAGEMENT PLAN

Adopted

November 19, 2013



Eno Economic Development District (EDD) Access Management Plan

Introduction

The Study Area for the Draft Eno EDD Access Management Plan is the area depicted as Economic Development Transition on the Orange County Future Land Use Map. The Study area contains approximately 980 acres and is primarily bounded by the NCRR /Norfolk Southern (NS) Railway to the south, I-85 to the north, US 70 to the northwest, and properties in the vicinity of Mt. Herman Church Road to the west. The I-85/US 70 interchange is located within the north/central part of the Study Area. The Whispering Pines residential subdivision, comprising approximately 67 acres, is included in the Study Area and is designated as a 10-year Transition Area on the Future Land Use Map. Maps of the Study Area follow on pages 2 and 3.

The majority of the area has been designated as an urban growth area since 1981 because of its proximity to I-85, US 70, the interchange of the two, and the NCRR/Norfolk Southern (NS) Railway.

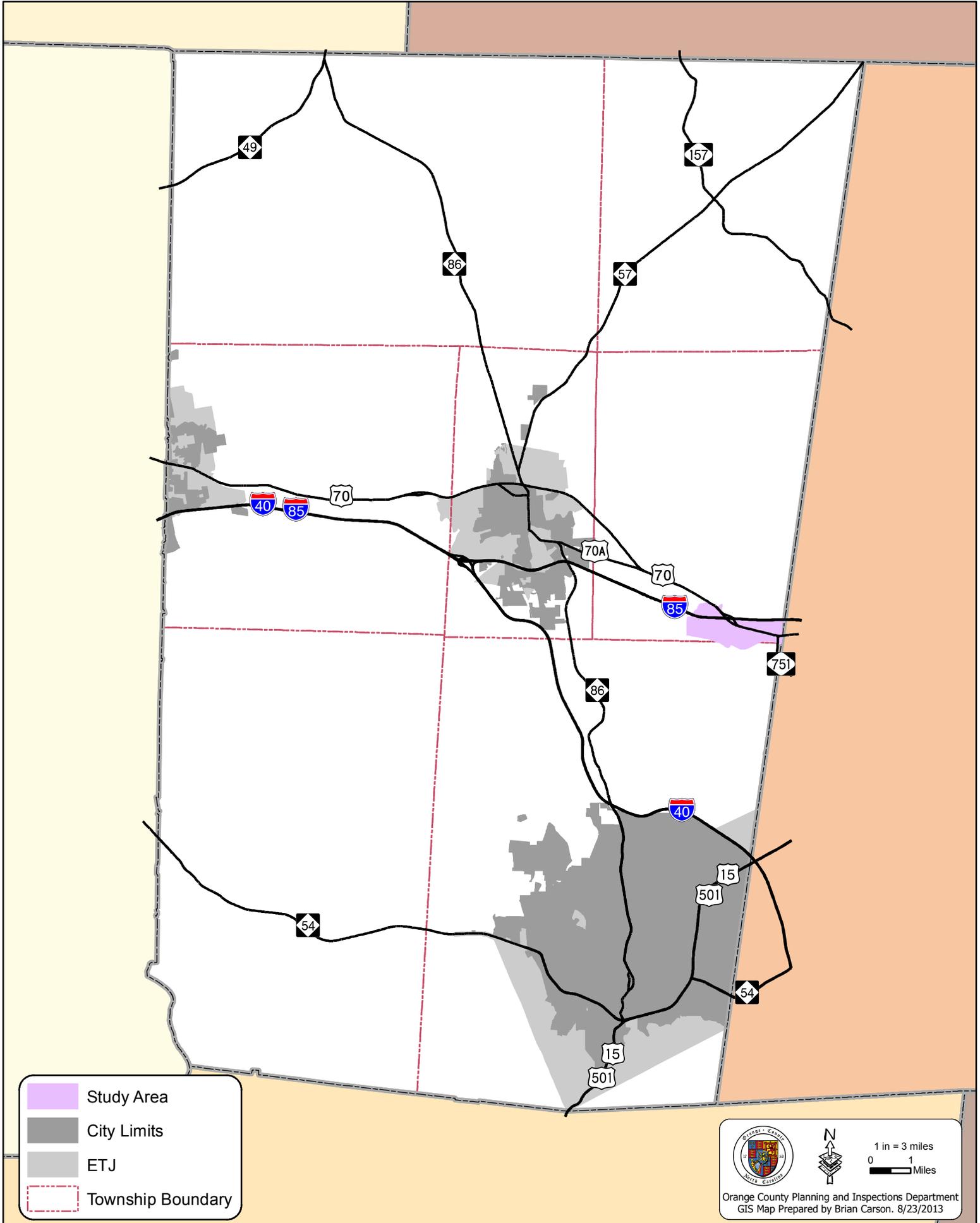
The future of the area for urban growth was originally defined by the 1981 Orange County Land Use Plan, and reinforced by the 2030 Comprehensive Plan (2008), and economic development land use and zoning amendments for the majority of the area in 1994. Envisioned land uses included non-residential commercial, office and industrial, with some higher density housing.

In 2006 the Orange County Board of County Commissioners (BOCC) approved the formation of a citizen Task Force to work with Economic Development and Planning Staff in developing a plan for the Eno EDD. The *Eno Economic Development District (EDD) Area Small Area Plan* was developed over the next two years as a collaborative effort by community representatives, elected officials, and staff of the Orange County Planning Department, and Durham City/County Planning Department. The Small Area Plan (adopted June 24, 2008; amended February 3, 2009) contains numerous recommendations in the following topic areas:

- Water and Sewer
- Land Use and Zoning
- Transportation
- Housing
- Parks, Recreation, and Open Space
- Communications
- Intergovernmental Issues
- Other Recommendations, including:
 - Potential Strategic Growth and Rural Conservation (SGRC Program)
 - Plan Updates
 - Implementation

The analysis within the Eno EDD Small Area Plan explains and supports the importance of this general area for higher intensity activity while preserving environmental and cultural resources of the Eno River to the north and Stoney Creek Basin to the west.

Eno EDD - Vicinity Map



Since adoption, several Eno EDD Small Area Plan recommendations have been implemented including:

1. Land Use Plan Map amendments designating the development potential categories of the Eno EDD (which was included in the 2008 Comprehensive Plan, and amended through September, 2012);
2. The 'pre-zoning' of land to promote the economic development land use program (current zoning adopted in September, 2012);
3. Unified Development Ordinance (UDO) amendments for the creation and regulation of uses and development standards for the Eno EDD (which was included in the UDO adopted in 2011, and amended through January, 2013). The purpose of these amendments was to more strongly encourage quality, non-residential development in the EDD while balancing any adverse impacts to adjacent properties and the environment;
4. Development of a long range Capital Improvement Program (CIP) for all economic development zones;
5. The continued development of Orange County's Economic Development program;
6. There has been progress with the Plan's water and sewer recommendations:
 - An inter-local utility service agreement with the City of Durham was adopted in January, 2012 to further the area's economic development potential; and
 - A consultant (CDM Smith) is currently working on a preliminary engineering study for a public water and sewer master plan for the area;
7. The County is working cooperatively with Triangle Transit Authority to plan for options for a new bus services outlined in the Orange County Bus and Rail Investment Plan, including a possible cross-county route through the Eno Study Area;
8. Triangle Transit Authority has evaluated the best location for a future commuter rail transit stop within the Eno EDD area;
9. NCDOT has striped the pavement two feet from the shoulder of Old NC Hwy 10 to enhance safety for bicyclists;
10. The North Carolina Department of Transportation (NCDOT) prepared a draft concept plan for the re-design of the I-85/US 70 interchange in 2009; and
11. Projects for the widening of I-85 from I-40 to the Durham County line, including the re-design of the US 70 interchange, have been entered in the State's Transportation Improvement Program (TIP) for implementation in the future developmental program (post 2020); however, the State's new project prioritization process (currently under development) may allow the project to be funded sooner.

These initiatives are in preparation for economic development in the Eno EDD area. Land development in the EDD is intended to occur through coordination between Orange County and the City of Durham, who will be the service provider of public water and sewer. Properties will be annexed by the City if/when served public water/sewer. The purpose of adopted amendments accomplished in 2012 was to align Orange County land use and zoning classifications with the City of Durham's Urban Growth Area located within Orange County.

Additionally, NCDOT is currently proceeding with the closing of a private rail crossing closure on Greenbriar Drive that will re-route the access of properties on Greenbriar Drive north of the NCR/Norfolk Southern (NS) Railway through the Whispering Pines Subdivision.

The adopted objective of the Eno EDD Small Area Plan was the provision of an efficient, multi-modal transportation system. The first recommendation for the implementation of this objective is the approval of an access management program for US 70 and Old Highway 10 to provide better transportation systems and capacities as development proceeds in the area.

As properties are developed for non-residential land uses within the Eno EDD, transportation interconnectivity and access will become increasingly important, enhancing the importance of a formally adopted access management plan for the area. Formally adopted transportation plans are necessary to procure federal and state funding for projects and to require developer action and contribution in providing transportation infrastructure consistent with a master plan. Adopted access management plans can also be incorporated into regional transportation plans, which will enhance Orange County's collaboration with the Durham-Chapel Hill-Carrboro Metropolitan Planning Organization (DCHC MPO).

This report examines the US 70 and Old Highway 10 corridors within the area of the Eno EDD and recommends an access management concept to best meet local conditions and the needs of businesses and residents while maintaining the functionality of these important arterial facilities for current and future traffic. The improvement of the functionality of these arterials to both serve commuting and travelling traffic together with serving the businesses and residences along these routes is of high local and strategic importance as future development proceeds in the Eno EDD.

Existing Zoning and Land Use

Existing Land Use

The Study Area contains a variety of residential uses ranging from mobile home parks to modest single family homes on smaller lots, to large single family homes located on several acres of land. Additionally, the Study Area contains numerous commercial and industrial uses along Highway 70 and Mt. Herman Church Road. Five (5) parcels of land within the Focus Area are in the Agricultural Use Value program.

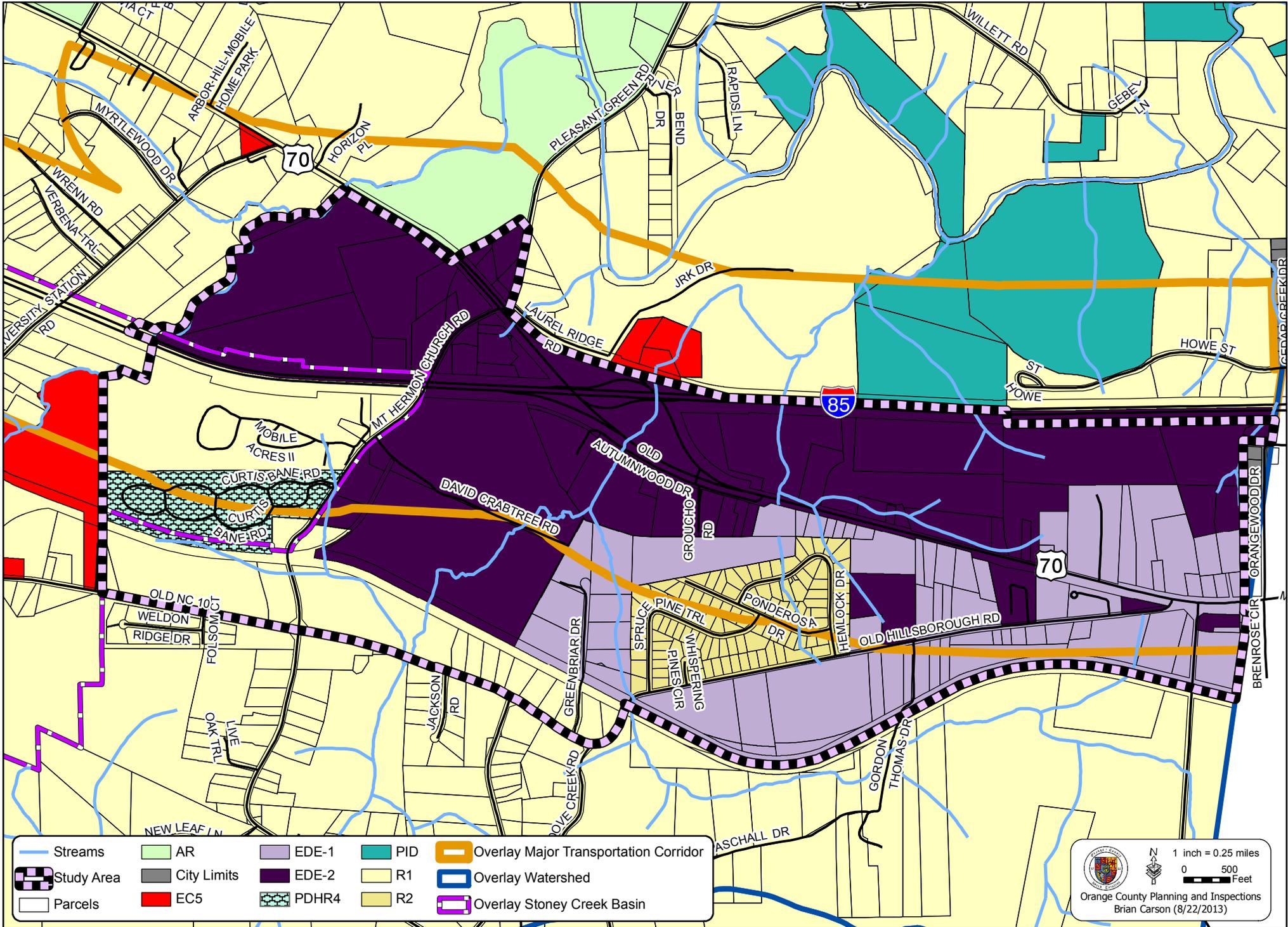
Existing Zoning

The existing zoning for the Study Area, derived from the Unified Development Ordinance (UDO) is depicted on the *Eno EDD - Zoning Map* on page 7. The Study Area is currently zoned EDD-1 (Economic Development Eno Lower Intensity) and EDE-2 (Economic Development Eno Higher Intensity). The Whispering Pines subdivision is currently zoned R2 (Low and Medium Intensity Residential). Remaining areas of the Study Area are currently zoned R1 (Rural Residential). Additionally, the Study Area is within the Major Transportation Corridor (MTC) zoning overlay district. The MTC, which measures approximately 1,250 feet from the edge of I-85 and US 70, requires higher developments standards for setbacks, buffering and landscaping within the district.

The following table describes the existing zoning districts found in the Study Area:

Existing Zoning District	Description
EDE-1 Economic Development Eno Lower Intensity	The purpose of the EDE-1 District is to provide locations for a range of lower intensity non-residential uses in the designated Eno Economic Development District.
EDE-2 Economic Development Eno Higher Intensity	The purpose of the EDE-2 District is to provide locations for a range of light industrial, distribution, retail, office, and service uses in the designated Eno Economic Development District.
R-1 Rural Residential	The purpose of the R-1 District is to provide locations for rural non-farm residential development, at very low intensities, in areas where the short and long-term solutions to domestic water supply and sewage disposal shall be individual wells and ground absorption system.
R-2 Low Intensity Residential	The purpose of the R-2 District is to provide locations for low intensity residential development and supporting recreational community service and educational uses in areas where urban services are available or are to be provided as part of the development process.
MTC Major Transportation Corridor	The intent of the MTC Overlay District is to protect and enhance important natural and environmental features through the provision of special controls of development along major transportation corridors.

Eno EDD - Zoning



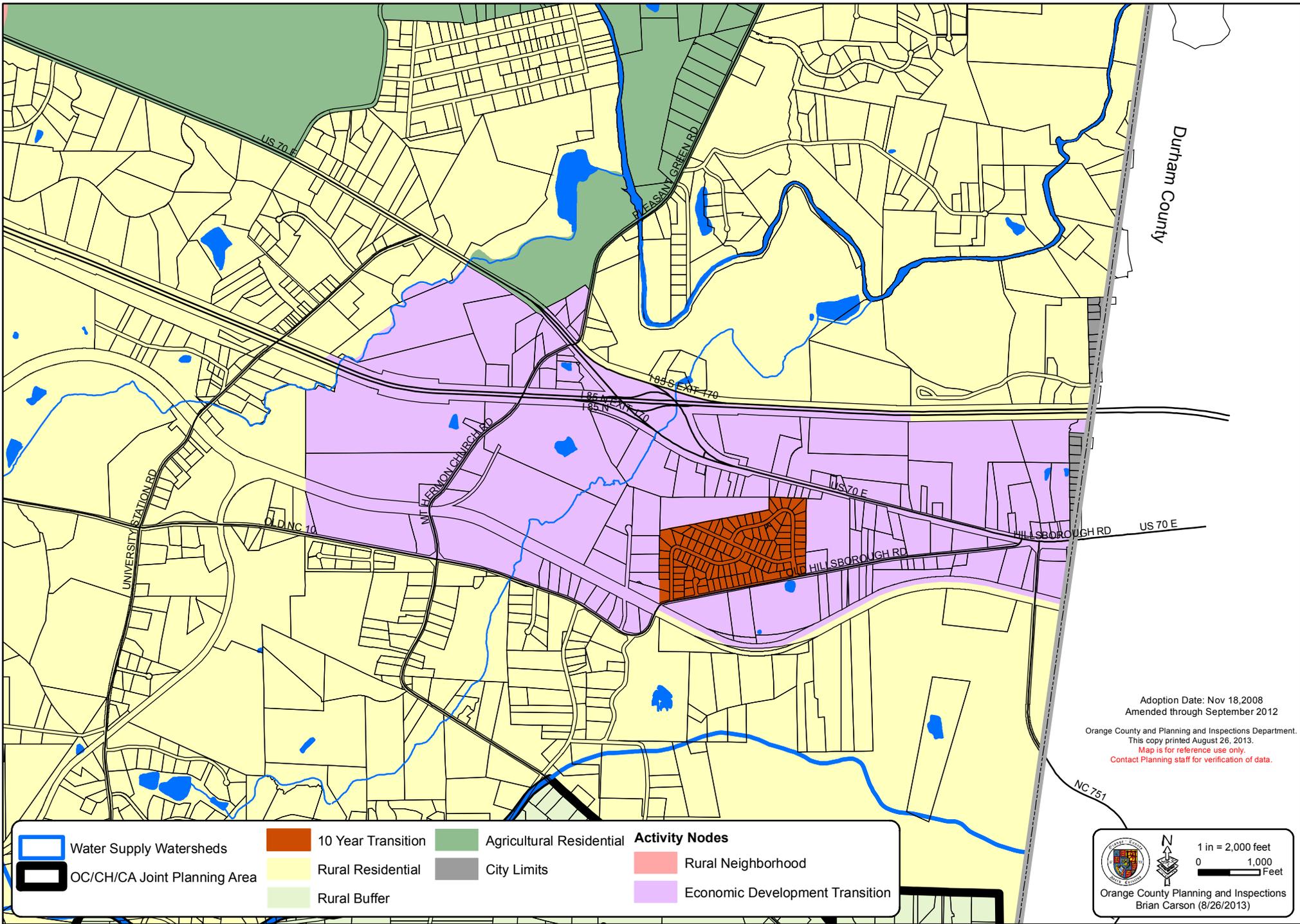
Future Land Use Designations

Future development of properties within the Study Area will be guided by the Eno EDD - *Future Land Use Map of the 2030 Orange County Comprehensive Plan*, depicted on page 9. As a component of the Comprehensive Plan, the Future Land Use Map provides the framework for long-range decision-making regarding the area's growth and development.

The following table describes the adopted future land use categories found in the Study Area:

Future Land Use Designation	Description
Economic Development Activity Node	Land in areas of the County which has been specifically targeted for economic development activity consisting of light industrial, distribution, office, service/retail uses, and flex space (typically one-story buildings designed, constructed, and marketed as suitable for use as offices but able to accommodate other uses such as a warehouse, showroom, manufacturing assembly, or similar operations.) Such areas are located adjacent to interstate and major arterial highways, and subject to special design criteria and performance standards.
10-Year Transition	Land located in areas that are in the process of changing from rural to urban densities and/or intensities, that are suitable for higher densities and/or intensities and could be provided with public utilities and services within the first 10 year phase of the Plan update, or where such utilities and services are already present or planned. Non-residential uses implemented in accordance with small area plans and/or overlay districts may be appropriate.
Resource Protection Area	Designated Primary Conservation Areas which contain sensitive environmental resources, historically significant sites, and features considered unbuildable because of their limitations or unsuitability for development. Includes wetlands and floodplains along drainage tributaries, steep slope areas (15% or greater), natural areas, wildlife habitats and corridors, and significant historic and archaeological sites.

Eno EDD - Future Land Use Map of the Orange County 2030 Comprehensive Plan



Adoption Date: Nov 18, 2008
 Amended through September 2012
 Orange County and Planning and Inspections Department.
 This copy printed August 26, 2013.
 Map is for reference use only.
 Contact Planning staff for verification of data.

	Water Supply Watersheds		10 Year Transition		Agricultural Residential	Activity Nodes	
	OC/CH/CA Joint Planning Area		Rural Residential		City Limits		Rural Neighborhood
			Rural Buffer				Economic Development Transition

N

1 in = 2,000 feet
 0 1,000 Feet

Orange County Planning and Inspections
 Brian Carson (8/26/2013)

Environmental Considerations for Access Management in the Study Area

The Eno EDD – Environmental Map on page 11 depicts the topography, floodplains, and wetlands in the Study Area. These environmental considerations will in some locations provide challenges to the development of access management strategies recommended in the Study Area.

Topography

The Study Area has gradual changes in topography except in the northwest and northeast portions. Elevation within the Study Area ranges from 340 feet above sea level to 550 feet above sea level. Slopes are not particularly steep even in the vicinity of drainageways except in the previously noted portions.

Floodplains

Floodplains are located within the Study Area predominantly along Rhodes Creek. Floodplains indicate areas of past and potential future flooding.

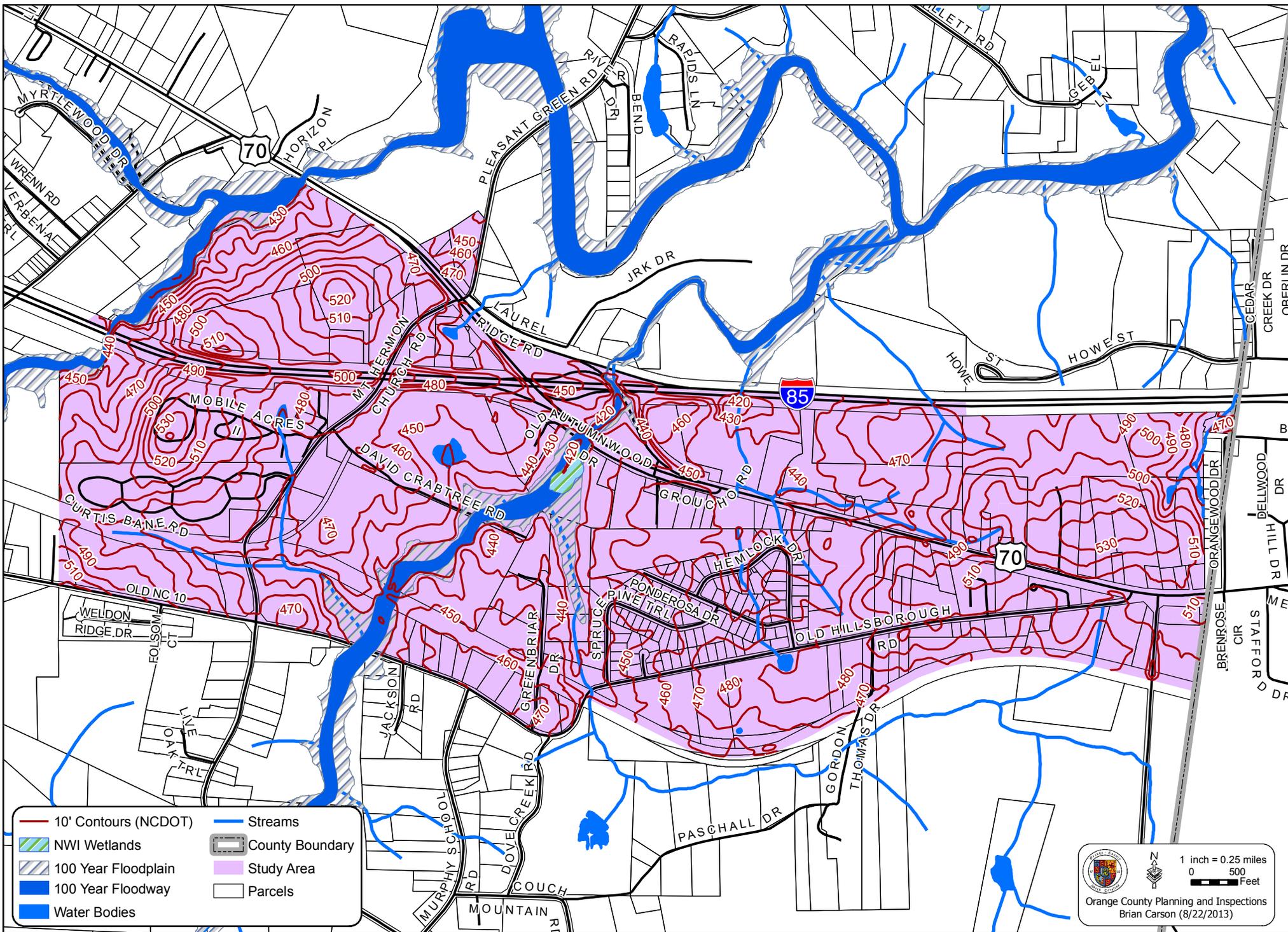
Wetlands

Potential wetlands have also been identified throughout the Study Area by using the presence of Bottomland Hardwood Forest vegetation as an indicator for the presence of wetlands. Wetlands are generally unsuitable for development and normally require additional regulatory oversight and permitting by the U.S. Army Corps of Engineers.

Environmental Benefit of Access Management

From an environmental perspective, improved traffic flow afforded through an access management plan for the Eno EDD area could also translate into greater fuel efficiency and reduced vehicular emissions along the I-85, US 70 and Old NC 10 corridors.

Eno EDD - Environmental Map



- 10' Contours (NCDOT)
- Streams
- ▨ NWI Wetlands
- ▨ 100 Year Floodplain
- 100 Year Floodway
- Water Bodies
- County Boundary
- Study Area
- Parcels

1 inch = 0.25 miles
 0 500 Feet

Orange County Planning and Inspections
 Brian Carson (8/22/2013)

Existing Transportation Conditions

Functional Classification of Roads within the Eno Economic Development District (EDD)

Roads within the Eno EDD have been classified using a road classification system refined from the NC Department of Transportation’s classification system.

Category	General Description
Interstate	Major traffic-carrying facilities that are part of the Federal Interstate Highway system; trip length characteristics are predominantly long-distance intra- and inter-state. Right-of-way width is a minimum of 230-feet and can increase to over 300-feet, depending on the number of lanes.
Arterial	The primary traffic-carrying facilities in the county; trip length and travel density characteristics of substantial inter-county travel or of serving urban-type development; typically would include rural freeways. Right-of-way width is typically 70- to 110-feet, depending on the number of lanes and whether bicycle lanes are provided.
Collector	Facilities that generally service intra-county travel. Provides the network connection between local roads and the arterial system. Shorter lengths, lower volumes, and more land access than the arterial system. Right-of-way width is typically 60- to 100-feet, depending on the number of lanes and whether bicycle lanes are provided.
Local	Primarily serves as access to adjacent land use. Any traffic is local in nature; therefore volumes and length are relatively low. Local roads comprise all remaining public roads not classified as a higher function. Right-of-way width is typically 60- to 80-feet.

The Eno EDD – NCDOT Road Functional Classification Map on page 13 depicts the following road classifications in the Eno EDD. The Map also provides sub-classifications of the primary classifications listed above.

- I-85 through the Study Area is classified as an Interstate.
- US 70 is classified as a Minor Arterial through the Study Area.
- Old NC 10 is a two-lane Major Collector road west of Mt. Herman Church Road. Mt. Herman Church Road and Pleasant Green Road area also two-lane Major Collector road.
- Old NC 10 east of Mt. Herman Church Road, the US 70 frontage road, and several surrounding streets area classified as Local roads.

Future cross-sections of roads within the Eno EDD are anticipated as follows:

1. US 70 is anticipated to have a minimum width of 100 feet (to allow for medians and turn lanes), with greater widths likely in proximity to the I-85 interchange;
2. Mt. Herman Church Road is anticipated to have a width of 70 feet (to allow for turn lanes); and

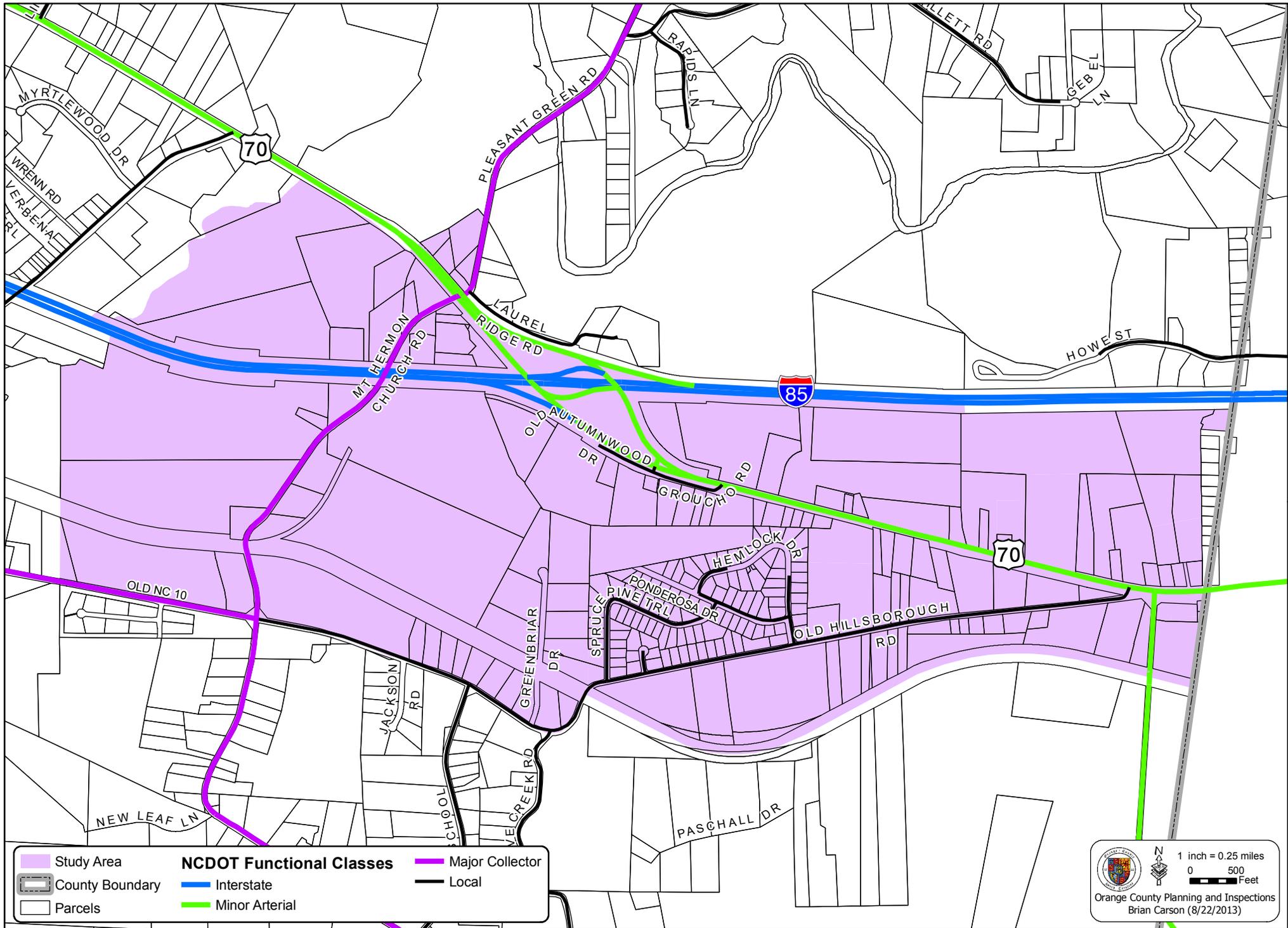
3. Old NC Hwy 10 is anticipated to have a width of 70 feet (to allow for turn lanes at some locations, bike lanes, and a sidewalk); and
4. Future frontage and interior roads are anticipated to have widths ranging from 60 to 70 feet, depending on land use and traffic flows.

Medians - There are existing medians in the vicinity of the I-85/US 70 interchange.

Signalized/Unsignalized Intersections – The majority of the intersections in the Study Area are currently unsignalized. There are three existing signalized intersections:

1. US 70/NC 751;
2. US 70/Mr. Herman Church Road; and
3. Old NC 10/Mr. Herman Church Road.

Eno EDD - NCDOT Road Functional Classification



	Study Area	NCDOT Functional Classes		Major Collector	
	County Boundary		Interstate		Local
	Parcels		Minor Arterial		

1 inch = 0.25 miles
 0 500 Feet
 Orange County Planning and Inspections
 Brian Carson (8/22/2013)

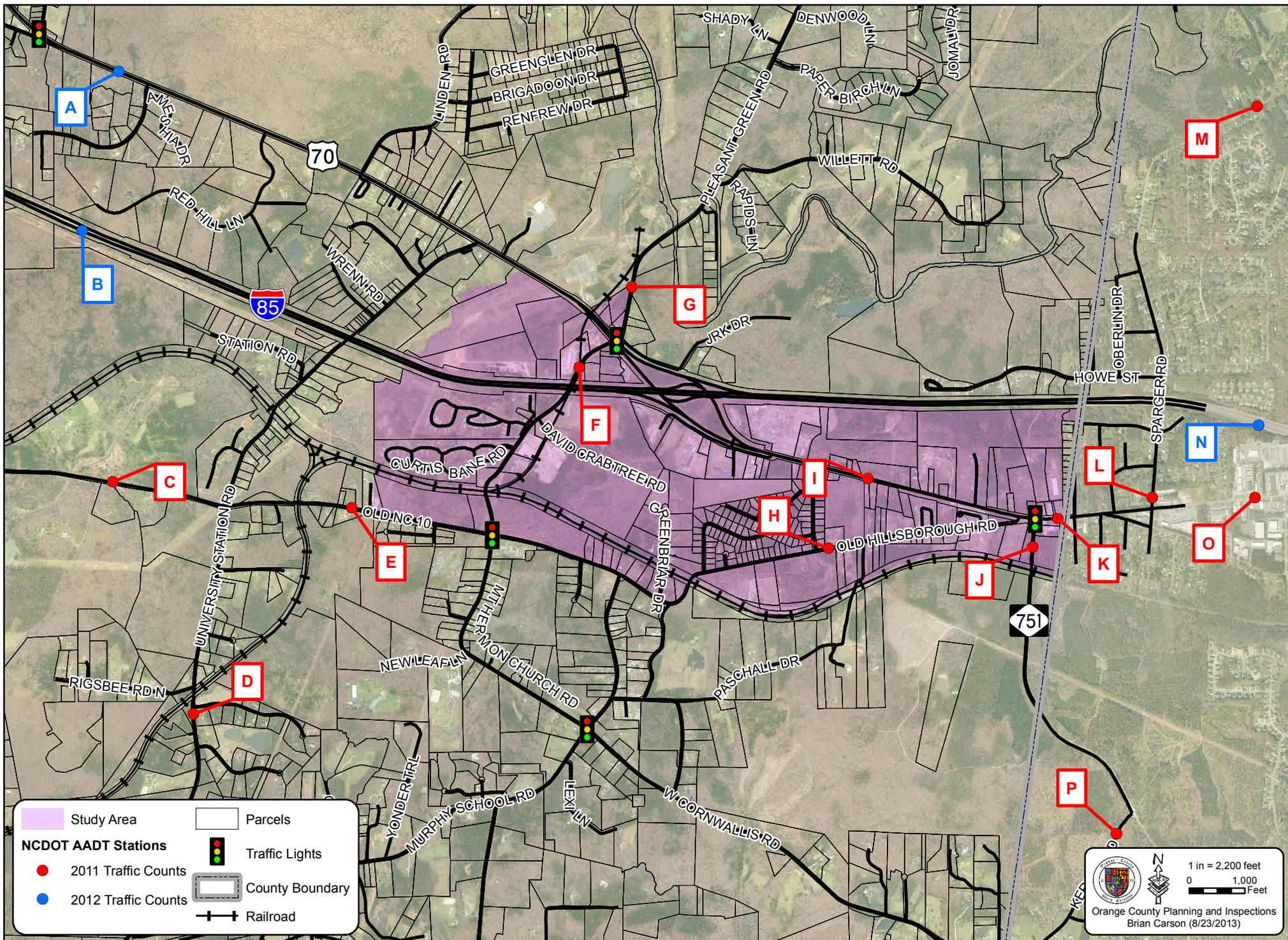
Traffic Counts

The table below shows the Annual Average Daily Traffic (AADT) counts collected by the North Carolina Department of Transportation (NCDOT) in 2011 and 2012. NCDOT does not collect traffic count data at every collection site every year. Years for which no data was collected at a specific point do not have a value in the chart showing the count. The *Eno EDD and Surrounding Area – AADT Traffic Counts* Map on page 15 depicts the points at the corresponding ID numbers provided in the table.

Annual Average Daily Traffic Counts
2011-2012

ID	Location	2011 AADT	2012 AADT
A	US 70 west of Seven Springs Road	12,000	12,000
B	I-85 east of the NC 86 interchange and west of the US interchange	36,000	39,000
C	Old NC 10 between New Hope Church Road and University Station Road	2,400	
D	University Station Road at Windy Hill Road	960	
E	Old NC 10 between University Station Road and Mt. Hermon Church Road	2,400	
F	Mt. Herman Church Road between I-85 and US 70	2,300	
G	Pleasant Green Road north of US 70	3,500	
H	Old Hillsborough Road between Hemlock Drive and NC 751	2,200	
I	US 70 between I-85 and NC 751	6,800	
J	NC 751 south of US 70	4,800	
K	US 70 between NC 751 and the Durham County line	8,500	
L	Sparger Road immediately north of US 70	6,000	
M	Sparger Road west of Cole Mill Road	4,200	
N	I-85 in Durham County east of Sparger Road	45,000	49,000
O	US 70 east of the Durham County line	8,600	
P	NC 751 east of the Durham County line	2,100	

Eno EDD and Surrounding Area - AADT Traffic Counts



Traffic Level of Service (LOS)

Average Daily Traffic relates directly to a concept called “Level of Service” (LOS). LOS is a measure used by traffic engineers to determine the effectiveness of elements of transportation infrastructure. LOS is most commonly used to analyze highways by categorizing traffic flow with corresponding safe driving conditions. LOS calculations attempt to describe the traffic conditions of a given roadway as it relates to the carrying capacity of the road. The following are descriptions of LOS:

Level of Service	Description of Operating Condition
A	Free flow. Individual users are virtually unaffected by the presence of others in the traffic stream. Freedom to select desired speeds and maneuver within the traffic stream is extremely high (< 10.0 second delay per vehicle).
B	Stable flow but the presence of other users in the traffic stream begins to be noticed. Freedom to select desired speeds is relatively unaffected, but there is a slight decline in the freedom to maneuver within the traffic stream (10.0-15.0 second delay per vehicle).
C	Stable flow but marks the beginning of the range in flow in which the operation of individual users becomes significantly affected by interactions with others in the traffic stream. Selection of speed affected and maneuvering within the traffic stream requires substantial vigilance on the part of the user (15.1-25.0 second delay per vehicle).
D	High-density but stable flow. Speed and freedom to maneuver are severely restricted. Small increases in traffic flow will generally cause operational problems at this level (25.1 to 35.0 second delay per vehicle).
E	Operating conditions at or near the capacity level. Speeds are reduced to a low, but relatively uniform level. Freedom to maneuver within the traffic stream is extremely difficult (35.1 to 20.0 second delay per vehicle).
F	Forced or breakdown flow. In the extreme, speed can be reduced to zero (Delay in excess of 50.0 seconds per vehicle).

Source: *Highway Capacity Manual*, Transportation Research Board, 2010.

For reference, many municipal governments adopt policies requiring that new development not decrease LOS below level C or D. Whether Level C or D is chosen depends upon the individual policy decision of the local government and/or the jurisdiction having maintenance control. In North Carolina, municipalities maintain roads but counties, such as Orange, do not. Determining the LOS for a given roadway involves complex calculations taking into account factors such as roadway grades and lane width. However, generalized tables have been developed to serve as a guide in determining LOS using Average Daily Traffic (ADT) counts.

The following table depicts the information relevant to the planning area:

Average Daily Traffic and Generalized Level of Service					
Total Number of Lanes	A	B	C	D	E
Freeways in Urbanizing Areas					
4	23,500	38,700	52,500	62,200	69,100
6	36,400	59,800	81,100	96,000	106,700
8	49,100	80,900	109,600	129,800	144,400
State Two-Way Arterials (Less than 2 signalized intersections per mile)					
2, Undivided	*	4,000	13,100	15,500	16,300
State Two-Way Arterials (2 to 4.5 signalized intersections per mile)					
2, Undivided	*	*	10,500	14,500	15,300
Major County Roadways					
2, Undivided	*	*	7,000	13,600	14,600
Signalized Intersections on Major County Roadways					
2, Undivided	*	*	4,400	9,400	12,000

* - Not Determined

Source: *Eno Economic Development District (EDD) Area Small Area Plan (2008)*

The Orange County/North Carolina DOT road classifications that correspond to the categories shown above are as follows:

Interstate: Freeways in Urbanizing Areas
 Arterial: State Two-Way Arterials
 Collector: Major County Roadways
 Local: (not addressed)

Comparison of Average Daily Traffic (ADT) Counts and Generalized Level of Service shows that all roadways within the Focus Area are operating at Level of Service (LOS) C or better. ID Points B, N, K and I are the areas with LOS at or just slightly better than "C."

High Frequency Crash Locations

High frequency crash locations within the Study Area from 2007-2011 are depicted on the *Eno EDD and Surrounding Area – High Frequency Crash Locations Map* on page 19. The data was obtained from the North Carolina Department of Transportation (NCDOT) and is meant to provide a broad overview of existing accident rates for sections of roadway and intersections within the Study Area.

Crashes have been grouped by number in the following five categories, identified on the map in different colors:

1. 4-9
2. 10-19
3. 20-29
4. 40-49
5. 50 and above

The categories identify both intersections and sections of roadways.

The highest number of crashes, 50 and above, were on the sections of I-85 west and east of the US 70 interchange, dropping in number across the Durham County line to the east to between 40-49 crashes.

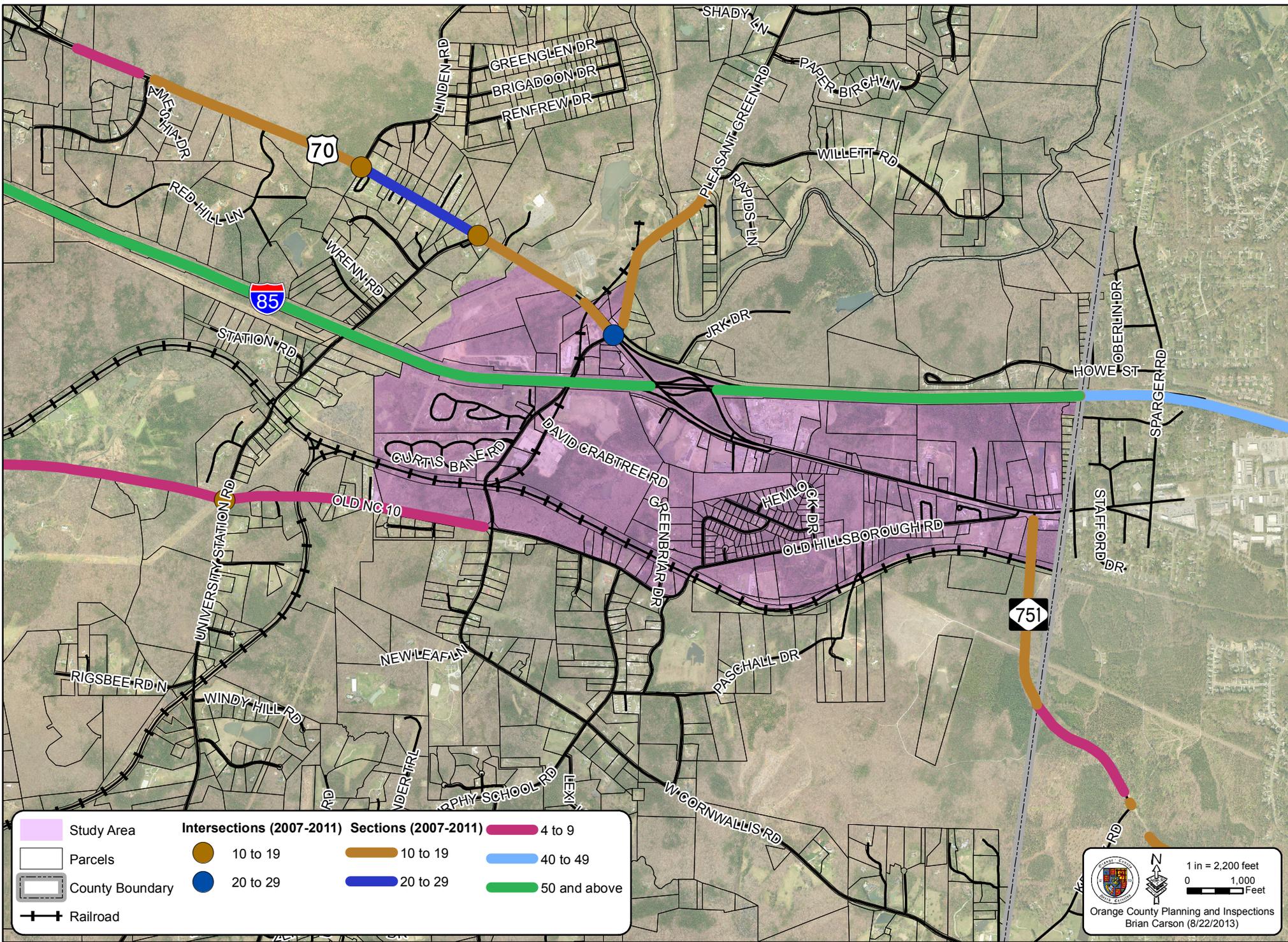
A section of US 70, between University Station Road and Linden Road, had between 20-29 crashes, with these two intersections and the adjacent sections of US 70 having between 10-19 crashes. Pleasant Green Road north of US 70 and NC 751 south of US 70 also had between 20-29 crashes.

Old NC 10 west of Mt. Herman Church Road, NC 751 across the county line to the east, and US 70 west of Ameshia Drive has between 4-9 crashes.

The purpose of the North Carolina Highway Safety Improvement Program (HSIP) is to provide a continuous and systematic process that identifies, reviews and addresses specific traffic safety concerns, including crash data. The analysis of crash data is used to identify where, when, and why crashes are occurring, which can then lead to mitigation of the crash issues through a determination of potential access management countermeasures including the following:

- Installation/adjustment of auxiliary lanes (left turn, right turn, etc.)
- Installation or removal of a traffic signal
- Adjustment of signal phasing, timing, and/or system
- Installation or widening of shoulders
- Installation of median islands, leftovers, etc.

Eno EDD and Surrounding Area - High Frequency Crash Locations



Interstate Interchange

The I-85/US 70 interchange is located within the north/central part of the Study Area. Because interchanges invite development and traffic, it is essential to have requirements in place that address issues of compatibility and function. Access management plans and regulations help to preserve the safety and efficiency of interchange areas as development occurs.

NCDOT has long range plans to redesign the I-85/US 70 interchange and designed a concept plan for the redesign in 2009. The conceptual design will impact access management concepts for the Eno EDD area, particularly the potential location of frontage roads and the spacing of access points from interchange ramps. The redesign of the interchange is currently included with a multi-phase project for the widening of I-85 from I-40 to the Durham County line. The projects have been entered in the State's Transportation Improvement Program (TIP) for implementation in the future developmental program (post 2020); however, the State's new project Strategic Mobility Formula prioritization process may allow the project to be funded sooner.

The *Eno EDD – NCDOT Draft Interchange Concept Map* follows on page 22.

Rail

Although rail traffic has decreased considerably in North Carolina, the NCRR/Norfolk Southern (NS) Railway, which is the southerly boundary of the Study Area, is still used for general rail transport and intrastate commuter service provided by Amtrak. Additionally, there is a rail spur line to Chapel Hill in the western portion of the Study Area, east of University Station Road that is still used for deliveries to the UNC campus. There is also a rail spur that is in private use, east of Herman Church Road.

The North Carolina Railroad's (NCRR) Long Range Capital Plan identifies a corridor beginning east of Old NC Highway 10 stretching until approximately University Station Road to be double tracked to increase freight capacities. This is currently an unfunded project.

The Triangle Transit Authority (TTA) completed final plans for Phase I of its regional commuter rail service in the Triangle and attempted to procure Federal funding to implement Phase I service that would link Raleigh, Cary and Durham. However, due to changes in federal cost-effectiveness guidelines, the project has been shelved for the near future. At this time, the future of Triangle commuter rail service is uncertain due to funding considerations.

Historically, University Station was located near the spur rail line that reaches to Chapel Hill. UNC students, faculty, and visitors would have used University Station in their travels to and from campus and other areas. If the Region pursues commuter rail in the future, the spur line to Chapel Hill would likely become an important connector within the rail network. Triangle Transit Authority has identified a recommended location for a future passenger rail stop within the Study Area (west of Greenbriar Drive).

Pedestrians and Bicycles

Approximate two-foot bike lanes have been striped along Old NC 10 and Old Hillsborough Road. These bicycle facilities are consistent with the rural expressway character of the roads. A bike lane project is proposed on NC 751 at the eastern edge of the Study Area. The project is included in the Durham-Chapel Hill-Carrboro Metropolitan Planning Organization (DCHC MPO) Metropolitan Transportation Plan (MTP). This bike lane would provide connectivity with the lanes along Old NC 10 and Old Hillsborough Road.

Many of the arterials and collector roadways in the Eno EDD area do not currently have continuous pedestrian or bicycle facilities. As these existing rural areas transition to urbanized areas, pedestrian and bicycle facilities will be encouraged for the surrounding arterial and collector streets.

Bus, Car/Van Pool, and Park-and-Ride Lots

General bus services do not serve the Eno EDD area at this time. However, Orange Public Transit (OPT) provides social service transit service for area senior citizens and low income residents who can arrange for transportation to and from medical appointments through OPT.

OPT and Triangle Transit Authority (TTA) are currently in a planning phase for new bus services included in the adopted Orange County Bus and Rail Investment Plan (OCBRIP). A cross-county route, with stops along the way, is one of the initial regional routes being planned. This route will cross through the Eno EDD area on its way to Durham.

Triangle Transit Authority (TTA) operates a ridesharing matching service for commuters who are interested in carpooling. In addition, TTA operates vanpools that are made up of at least seven commuters who live and work near each other and who share approximately the same work hours. One leg of the vanpool's trip must begin or end in Wake, Durham, or Orange County. TTA provides the van, pays for gas and insurance; and arranges, oversees, and pays for all maintenance. Riders pay a monthly fare based on the average daily round-trip mileage. Commuters who are interested in joining a vanpool may contact TTA to inquire about joining an existing vanpool or starting a new vanpool.

At the present time, there are no official park-and-ride lots located in the Eno EDD area.

Access Management Strategies

Access management is the systematic control of the location, spacing, design and operation of driveways, median openings, interchanges and street connections to a roadway. The chief goal of access management planning is to reduce the number and severity of conflicts between through moving traffic and traffic attempting to turn. Successfully managing these conflicts can result in fewer automobile and pedestrian accidents, reduced congestion and preservation of public investment in the road network. Access management strategies attempt to reduce and combine access points along major roadways while still encouraging complete circulation systems. The result is a street system that functions safer and more efficiently.

As development grows along a roadway, there must be an effective plan to manage street access to increase public safety, extend the life of the roadway, reduce congestion, and support alternative modes of transportation, and improve the overall appearance of the roadway. Better mobility expands the market reach of businesses and enhances the efficient movement of people and goods. With the absence of access management, arterial roadways can deteriorate functionally and aesthetically as well as affect economic, physical, social and environmental characteristics in the following ways:

- Increased vehicular accidents
- Collisions involving pedestrians and cyclists
- Reduction in roadway efficiency
- Unattractive strip non-residential development
- Decay of scenic views
- Dispersion of higher traffic volumes on adjacent lower class (local) streets
- Increase in commute times, fuel consumption, emissions, area of paved surfaces

Some of the specific ways that the functionality of roadways can be improved in the Study Area is through the application of planning, regulatory, and design strategies relating to access management. The following strategies are excerpted from the Access Management Program adopted by the Board of County Commissioners on November 15, 2011:

- Policies, guidelines and regulations issued by state and local agencies having permit authority on development and roadway infrastructure improvements;
- State and county regulations, codes, plans and guidelines that are enforceable;
- Land development regulations by state and local jurisdictions that address property access and related issues;
- Understanding of access implications by property owners, developers, and businesses;
- The spacing and location of driveways;
- Driveway consolidation;
- Driveway width;
- Guidelines for adequate sight distance;
- Protection of the functional area of intersections and interchanges;
- The redesign of poorly functioning intersections and interchanges;

- Intersection spacing and traffic signal spacing;
- Construction of right and left turn lanes;
- The development of strategically placed raised medians;
- The control of median openings;
- Median U-turn treatments or directional crossover to control turning movements
- Strategic connectivity to other roadways;
- The development of auxiliary lanes such as frontage roads; and
- The long-term development of multi-modal options;

Eno EDD - Access Management Concept Map and Criteria

The *Eno EDD – Access Management Concept Map* has been prepared utilizing land use, zoning, environmental, transportation data, and evaluating the desired access management strategies for the area. The map provides a concept for future locations and public street connections for properties and streets within the Study Area. The intent of the map is to guide the design of site-access driveways and internal circulation routes for properties located within the management area that are likely to be developed at some point in the future.

For those properties that may not be redeveloped by the time the I-85/US-70 interchange is redesigned, the Plan will also be useful for evaluating how access to those sites should continue to be served. Given that development proposals may be years in the future and the details of their layout is unknown, the conceptual access management map focuses on depicting criteria for development of the future transportation network within the Study Area.

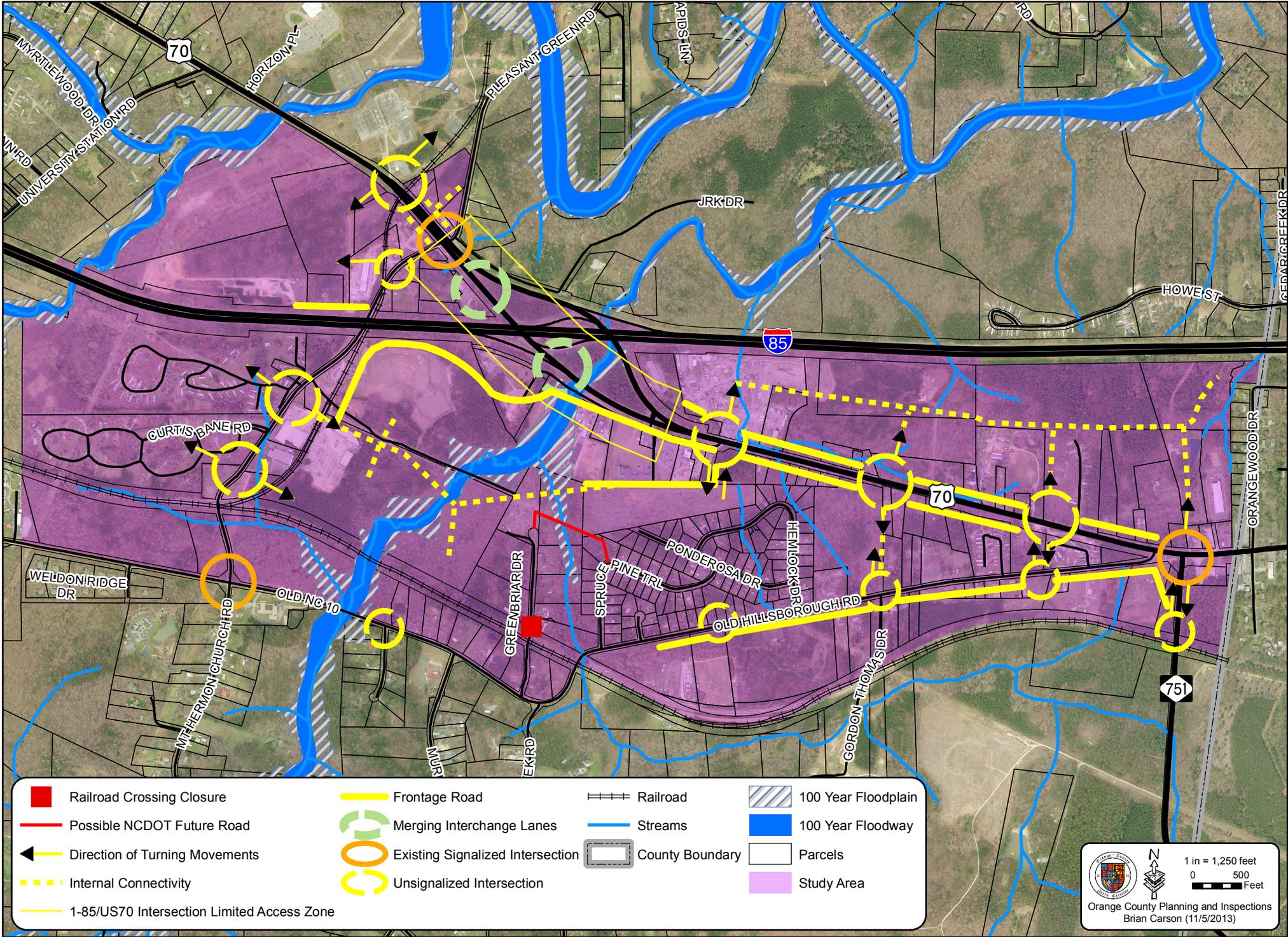
Accompanying the *Eno EDD – Access Management Concept Map* is a set of written access management criteria to guide interpretation and implementation of the map. The Map follows the policies on page 25.

Access Management Criteria – A Guide to Interpreting and Implementing the Eno EDD Access Management Map

Through the following criteria the *Eno EDD – Access Management Concept Map* supports transportation and land use objectives articulated in adopted plans:

1. Restrict access where possible from the functional area of intersections and the I-85/US 70 interchange.
2. Control turning movements at entrances:
 - a. Where recommended by a traffic study, right-in/right-out entrance design prevents left ingress and egress turning movements.
 - b. Limit access to a defined point of ingress and egress through the development of an entrance that prevent vehicles from backing up on to the highway and enhances on-site circulation.
3. Space intersections and driveway access points to plan for reduced traffic conflict points as traffic congestion increases:
 - a. Align major intersections.
 - b. Align minor entrances with positive offset(s) to increase safety.
 - c. Provide a limited number of strategically located median crossovers on US 70.
 - d. Add exclusive turn lanes where required by NCDOT.
4. Provide adequate separation between traffic signals to expand road's traffic capacity and simplify signal synchronization. [Note: the Access Management Concept Map depicts existing signalized (and unsignalized) intersections. As development progresses, some unsignalized intersections may be required to be signalized by the NCDOT.]
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 with adjoining property owner(s).
6. Where feasible along arterials, provide vehicular and pedestrian 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. As properties develop, establish connectivity between the US 70 Frontage Road and future non-residential development to the south.
8. Provide frontage roads with non-residential development/redevelopment to increase safety on arterials and collector roads, and promote non-residential development for economic benefit.
9. Provide an interconnected street network in the Study Area as generally indicated on the map.
10. Provide an interior access network from identified primary access points along arterial and collector roads.
11. There shall be no access by non-residential development through the 10-year Transition Area until the area commences a transition in urban densities and/or intensities that are suitable for higher densities and/or intensities.
12. Accommodate transit, bicyclists and pedestrians on roadways in the Study Area.
13. Limit perennial stream crossings, and impacts to wetlands and steep topographical areas.
14. Required future cross-sections for roads shall be subject to NCDOT and Orange County review and approval, and included in the Durham-Chapel Hill-Carrboro Metropolitan Planning Organization (DCHC MPO) Comprehensive Transportation Plan (CTP).

Eno EDD - Access Management Concept Map



Implementation

Coordination

The North Carolina Department of Transportation (NCDOT) lacks authority over the land development process, and Orange County lacks authority over access permitting decisions on state highways. Together, these factors make coordination essential and to create consistent standards and procedures in the Study Area. Coordination between NCDOT and the County must consider the effects of its decisions on the entire Eno EDD Study Area if the partnership is to work efficiently. Because each agency has authority over a different part of the process, they can achieve far more through mutual cooperation than either agency can achieve alone. Coordination is also beneficial to the public and the developer or property owner whose financial investment is at stake.

Role/Responsibility of the NCDOT

The North Carolina Department of Transportation (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 help ensure conformance with access management requirements and provides NCDOT an opportunity to suggest changes prior to local plat 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 generations may have on the state roadway system and provides recommendations based on the analysis. This process typically requires the completion of a Traffic Impact Study 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 Unified Development Ordinance (UDO) (adopted 2011) will assist with implementation of the Eno EDD Access Management Plan. The UDO requires site plans to comply with County adopted access management, transportation and/or connectivity plans and denote the location of future roadway(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), to ensure that a development proposal complies with EDD and MTC policies, procedures and regulations.

An important implementation tool for access management is the UDO requirement of a traffic impact study for all special use permits, subdivisions, conditional zoning applications, and site plans that exceed 800 trips per day, or 80 or more dwelling units for residential development. Additionally, a traffic impact study 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 highway network and to identify any traffic problems associated with access from the site to the existing transportation network. The objective of the traffic impact study is to identify solutions to potential problems and to present improvements to be incorporated into the proposed development.

As individual developments occur in the Eno EDD Study Area, permits can be issued that conform to the access management plan, or permits outlining conditions (whether through conditional or special use zoning, or site plans) can be issued so that the development will ultimately be in conformance. NCDOT representatives encourage this process by providing 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.

Continued intergovernmental coordination with the City of Durham will be important to realizing desired development and access management within the Study Area since the City will be the service provider of public water and sanitary sewer. Parcels within the area are within the City's future annexation area and will be annexed if/when served by public water/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 an adopted Eno EDD Access Management Plan. A traffic impact study may be required to be prepared by the applicant's engineer, to determine any traffic problems associated with access from the site to the existing transportation network, and identify solutions to potential problems to be incorporated into the proposed development. Additionally, prior to beginning any development 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).

In the event that other new developments are in the vicinity of the proposed development, the applicant is required to coordinate with any other involved agencies, including other local governments to identify conflicting or overlapping access issues.

APPENDIX

Goals, Transportation Objective and Recommendations of the Eno Economic Development District (EDD) Area Small Area Plan, 2008

SAP Goal: In the future, the Focus Area should be well served by reliable infrastructure to accommodate orderly, planned growth. An efficient multi-modal transportation system will operate in the area and commercial and light industrial uses will provide job opportunities to area and County residents.

Transportation Objective: Provision of an efficient, multi-modal transportation system.

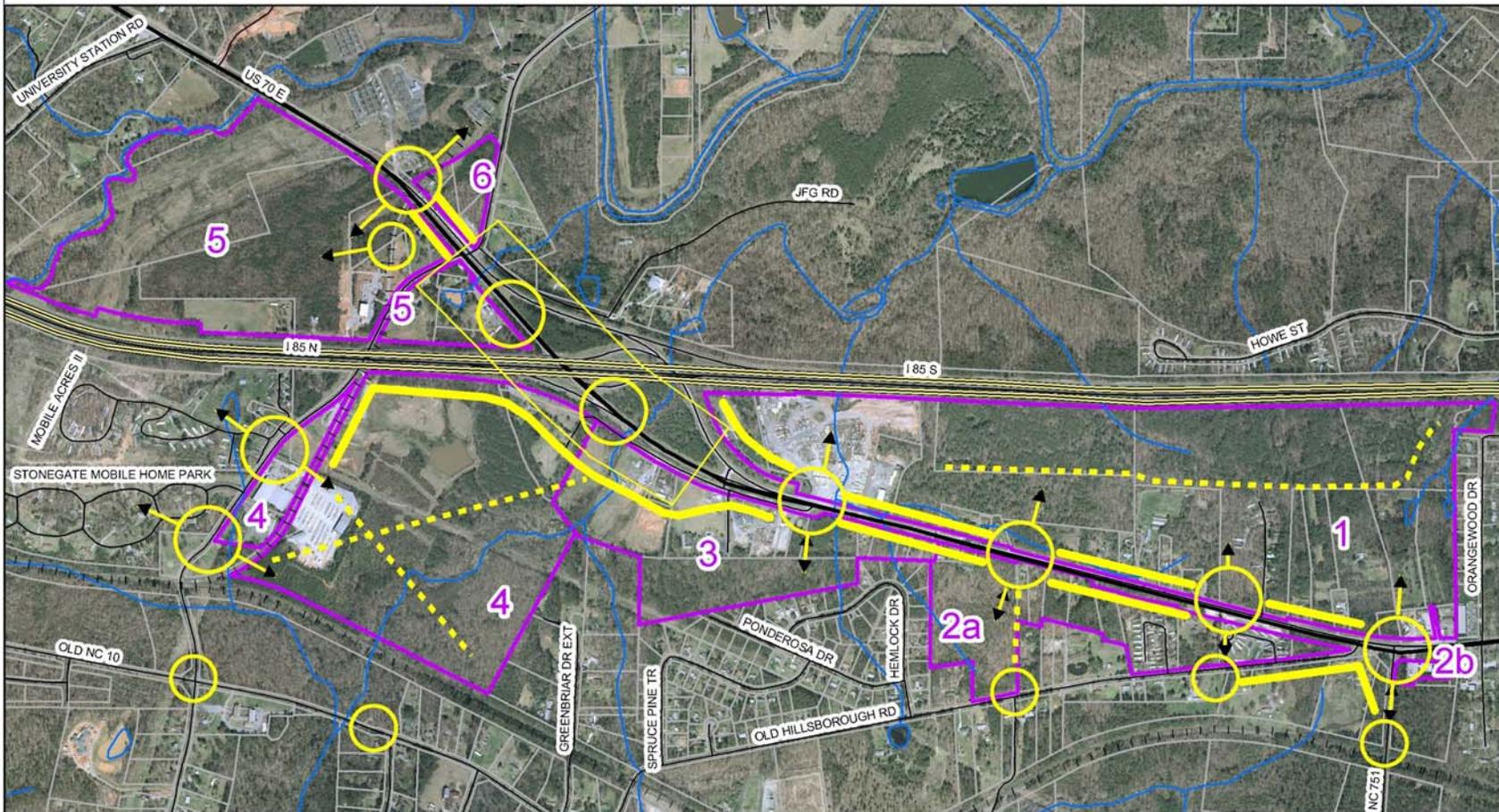
The vehicular transportation system in the planning area generally functions well, but there are some concerns, especially regarding motorized vehicle flows during peak traffic hours. However, some peak hour congestion is also to be expected in an urban or suburban area. The key is managing the transportation system such that it can function as safely and efficiently as possible.

Sidewalks and bicycles lanes do not exist anywhere in the Focus area. The shoulders along Highway 70 are paved 1 to 2 feet beyond the automobile travel lane and people use these paved shoulders as informal bicycle lanes. Broadening transportation alternatives beyond the passenger car is important. "Alternative" transportation modes such as pedestrian, bicycle, and mass transit are part of an intermodal transportation system.

The following are recommendations pertaining to transportation:

1. Approve an access management program for US 70 and Old Highway 10 as shown on Map 23. This will provide better transportation systems and capacities as development proceeds in the area. (See Appendix B for an explanation of access management techniques).
2. Support the proposed future improvements by NCDOT that will redesign the I-85/US 70 interchange. Limited access near the interchange will prompt an enhanced service road and access system to ensure equitable access to defined full access intersections. NCDOT should be strongly encouraged to incorporate bridge designs that allow wildlife to cross safely under the bridge and that allow pedestrian passage along any existing or planned trail-system connectors.
3. Evaluate the feasibility of providing bicycle lanes along Old NC 10.
4. Evaluate the feasibility and need to provide sidewalks along Highway 70 as the area develops.
5. The ability to have a commuter train station in the future should be explored. A station could serve the existing Amtrak service or a station could be incorporated into the future Triangle commuter rail system.
6. The county should work cooperatively with Triangle Transit Authority (TTA) to provide bus service in the area.

Eno EDD Transportation Access Management Concept Plan



From the Eno Economic Development District (EDD) Area Small Area Plan, Adopted June 24, 2008

Legend



- Eno EDD Areas
- I-85/US70 Intersection Limited Access Zone
- Frontage
- Internal Connectivity
- Primary Intersections

- | | |
|--------------------|--------------------|
| Area 1 - 186 acres | Area 4 - 115 acres |
| Area 2a - 40 acres | Area 5 - 106 acres |
| Area 2b - 2 acres | Area 6 - 7 acres |
| Area 3 - 52 acres | |



Orange County Planning and Inspections Department
 GIS Map Prepared by Miriam Coleman, April 09, 2008
 Projection: North Carolina State Plane (feet)
 Datum: North American 1983

