



WILMINGTON URBAN AREA  
Metropolitan Planning Organization

# US 17/NC 210 Corridor Study



March 2012



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# 1 Introduction

The Wilmington Urban Area Metropolitan Planning Organization (WMPO), the North Carolina Department of Transportation (NCDOT), and the North Carolina Board of Transportation commissioned this study to identify near-term strategies to address safety and mobility deficiencies on US 17 and NC 210 in Hampstead. The purpose of this study is to identify practical strategies that are consistent with the vision for Hampstead, that reduce the rate of injuries and fatalities in traffic crashes, reduce travel delay, and improve travel for pedestrians and bicyclists. This study report describes a preferred access plan for US 17 from Washington Acres Road to Sloop Point Loop Road (a distance of 5.54 miles) and for NC 210 from US 17 to Island Creek Road (a distance of 3.65 miles). For this report, US 17 is referred to as a north-south route and NC 210 as east-west.

Public outreach during the study process provided opportunities for the study team to gain knowledge from citizens and business owners that use US 17 and NC 210 on a daily basis. Nearly 400 citizens attended a locally-sponsored meeting in Hampstead in September 2010. Three subsequent public meetings sponsored by the WMPO were held in Hampstead. Public input provided information for making balanced decisions on spot improvements and a vision for the corridor when the Hampstead Bypass is constructed.

Several large roadway construction projects are currently under study and are years from completion. FS-0803 B is a long range feasibility study for the US 17 corridor that will identify the long term transportation needs in this area. This study is expected to be completed in Spring 2012. The Military Cutoff Road Extension on new location from Market Street to the US 17 Wilmington Bypass (STIP Project No. U-4751) is funded and scheduled to begin construction in 2017. The US 17 bypass of Hampstead (STIP Project No. R-3300) is funded for right-of-way acquisition to begin in 2017, but unfunded for construction and not expected to begin until after 2020. Separate but relevant studies are underway; both are led by NCDOT. One is the environmental impact study of the Military Cutoff Road Extension and US 17 bypass of Hampstead and the other is a feasibility study of ultimate roadway configurations for US 17, from I-140/US 17 Bypass to NC 50, with and without the Hampstead Bypass constructed. Current alternatives for the US 17 bypass of Hampstead include an interchange with NC 210 west of Hampstead. It is anticipated that once the construction of the bypass and its interchange with NC 210 is a reality, growth will occur along NC 210 west of Hampstead. Accordingly, this study addresses strategies to minimize growth-induced congestion and crashes on NC 210.

Growth is a driving force in Hampstead. From 2001 to 2009 in North Carolina, Pender County was the:

- 30th fastest growing county, based on total population increase
- 13th fastest growing county, based on percentage increase in population
- 6th fastest growing county with less than 65,000 population
- 4th fastest growing county along the coast in North Carolina

Hampstead is strategically located halfway between Jacksonville and Wilmington with convenient commutes to both cities. Areas to the north and south (Onslow and Brunswick counties specifically) have grown rapidly since 2000. Growth along the US 17 corridor averaged approximately 3 percent per year from 2000 to 2010 (see Figure 1). The combined increases in through traffic and locally-generated traffic in Hampstead contribute to the changing conditions on US 17. The distressed economy has affected Pender County and surrounding areas, impacting traffic growth projections slightly; however, the long term economic outlook is still positive. For the purpose of this study, peak hour traffic volumes on US 17 are forecasted to grow at a 2.5 percent annual average rate through the year 2020, a rate derived from long range forecasts, historic growth trends, and recently collected turning movement data.



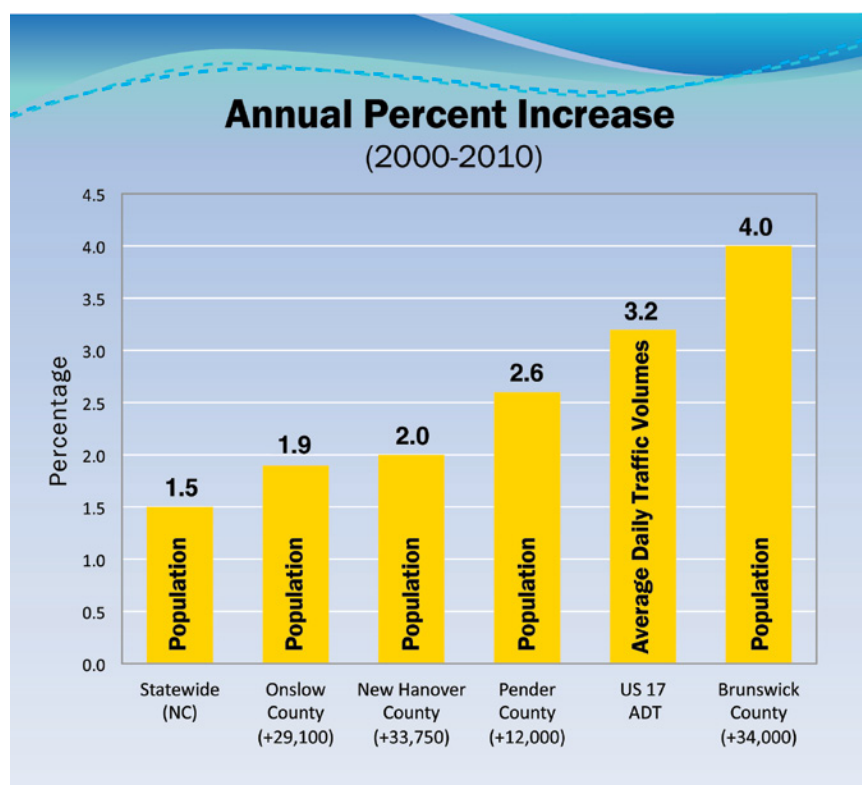
US 17 in Hampstead is a heavily traveled highway; carrying 28,000 to 33,000 vehicles per day (vpd) in the heart of the business district (see Table 1). For long range planning purposes (2035), daily traffic volume is still forecasted to increase by an average of 3.1 percent per year due to expected ongoing interest in coastal development in the Wilmington metro area and military-related growth at Camp Lejeune in Jacksonville.

The population in Onslow County is projected to grow by 2.6 percent per year, Brunswick County by 2.2 percent, Pender County by 1.5 percent, and New Hanover County by 1.3 percent.<sup>1</sup> Construction of the long-planned Hampstead Bypass will split traffic into long-distance trips (on the bypass) and locally-oriented traffic (on existing US 17 through Hampstead). The split is estimated to be 55 / 45 with the higher percentage on the bypass. The daily traffic volume on existing US 17 near Dan Owen Drive in Hampstead is forecasted to be 40,000 vpd by the year 2035 with 48,000 vpd on the Hampstead Bypass. A majority of vehicles on existing US 17 would be local trips made within Hampstead.

NC 210 west of US 17 carries 7,100 vpd and is expected to increase to 11,000 vpd in 2035 with the Hampstead Bypass. Without the bypass, the forecasted daily traffic volume on NC 210, by the year 2035, is 17,000 vpd.

The study corridors along US 17 and NC 210 carry a mix of local and through traffic; thus, speeds, turning movements, and driving behavior vary by day of the week and time of day. There are numerous driveways and a center two-way left-turn lane through much of the corridor on US 17 which add significantly to the number of conflict points, safety concerns and risk. One example is the predominant collision type in the area of the intersection of NC 210 and US 17, which is collisions due to turning movements. This can be improved by providing more controlled access to side-streets and driveways.

**Figure 1. Growth Along US 17 Corridor**



**Table 1. Historic Trends in Traffic Counts on US 17**

Year of traffic count	US 17 location		
	South of NC 210	North of NC 210	North of Hoover Road
2009	28,000 vpd	33,000 vpd	31,000 vpd
2005	25,000 vpd	34,000 vpd	28,000 vpd
2002	22,000 vpd	28,000 vpd	26,000 vpd
Average Annual Change	3.5%	2.4%	2.5%

<sup>1</sup> State of NC Office of State Budget and Management.

## 2 Summary

The following vision statement was adopted by the Pender County Board of Commissioners in the *2007 Coastal Pender Collector Street Plan*:

The community voiced a vision for US 17 as it passes through the heart of the Hampstead commercial area. “The commercial area is the stretch of highway between Washington Acres Road and Country Club Drive. Based on the extensive number of comments received at both open houses and via e-mail, fax, mail, and telephone, a ‘village boulevard’ cross-section seems to be the most favored. This cross-section would consist of a landscaped median, landscaped buffers, pedestrian and bicycle facilities and improved access management, which could include ‘superstreet’ intersections, frontage roads, backage roads, shared driveways, and deceleration lanes. The residents and business owners value the creation of a community identity for Hampstead. This identity should include an attractive main street, which can be a source of community pride.”

Suggested updates to the Vision Statement are offered with this study, as a result of: (1) hearings conducted by the Pender County Board of Commissioners considering overlay zoning districts; (2) comments made by land and business owners fronting US 17 in Hampstead; and (3) new wetlands mapping prepared for the Hampstead Bypass alternatives study. Recommended additions to the vision statement are:

The community vision for existing US 17 as it passes through the heart of the Hampstead commercial area between Washington Acres Road and Country Club Drive includes:

- Slower speeds with a new posted speed limit of 40 mph that is routinely enforced
- Right-turn deceleration lanes as needed to avoid injury crashes
- Improved access management
- Landscaped median that does not require widening on either side of the existing edge of pavement
- Landscaped planting areas spaced within the median where the median is at full width
- Cross-access between, and shared driveways by, adjacent commercial sites
- Backage roads that avoid damage to wetland areas, but provide access from US 17 addresses to a network of secondary streets to avoid US 17 travel
- Multi-use path for walking, bicycling and other forms of non-motorized travel

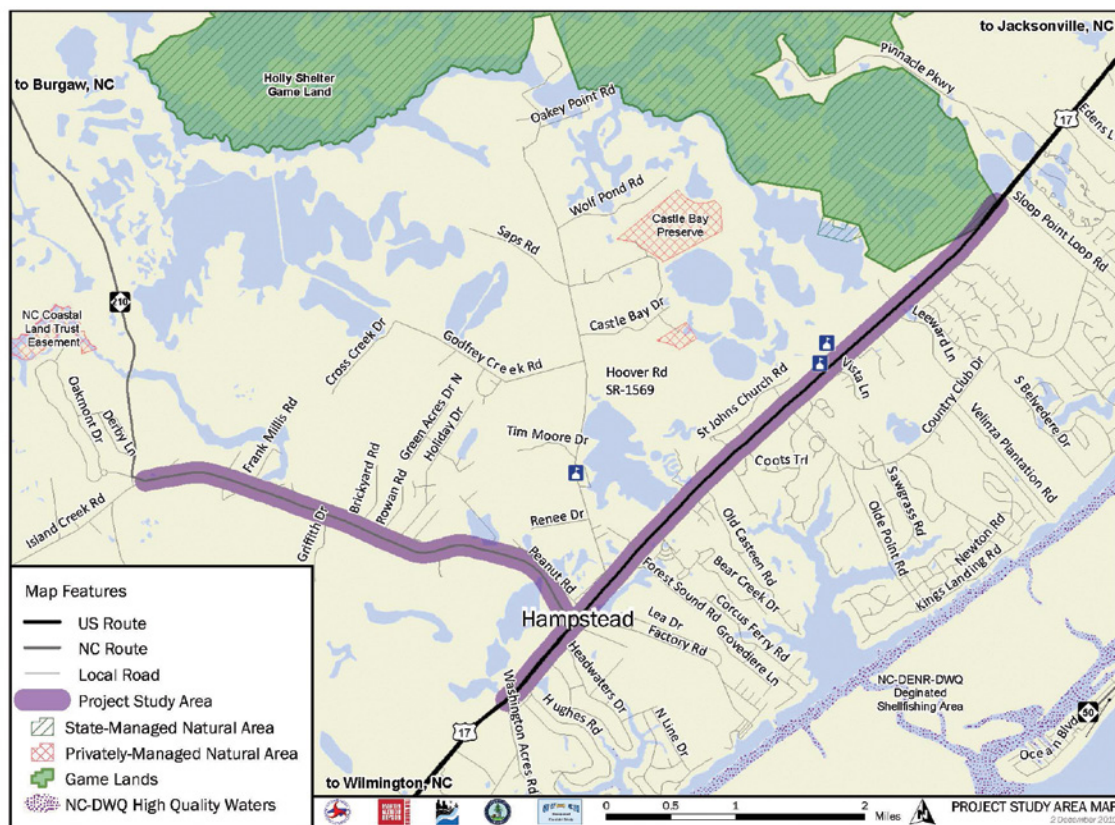
## 3 Existing Conditions

### 3.1 Study Area

The study area consists of US 17 from Washington Acres Road to Sloop Point Loop Road and NC 210 from US 17 to Island Creek Road (see Figure 2). A mix of commercial buildings line both sides of US 17 in Hampstead with numerous churches, office buildings, community facilities and some homes as well. Compared with sections of US 17 to the north and south, the section through Hampstead has a distinctively urban character with frequent driveways and a center two-way left turn lane throughout.

NC 210 from US 17 to Island Creek Road is predominately large lot single-family residential land uses with some light industrial businesses such as boat repair and seafood distribution businesses. Each home and business has one or more driveways on NC 210.

**Figure 2. US 17/NC 210 Corridor Study**



### 3.2 Roadway Geometry

The typical section does not vary along US 17 in Hampstead. A five-lane curb-and-gutter section exists with additional left- and right-turn lanes at some locations. Sidewalks do not exist on either side of US 17 in the study area. Lane widths are 12-feet-wide. The roadway is unsuitable for bicycling, given the 12-foot lane with adjacent curb and gutter and the high frequency of driveways and turning vehicles.

The typical section does not vary on NC 210 west of Hampstead. A two-lane undivided shoulder section with drainage ditches within a consistent 100 foot right-of-way exists. There are no sidewalks or multi-use paths on NC 210.

### 3.3 Functional Classifications

The North Carolina Statewide Functional Classification System (NCSFCS) and the Coastal Pender County Collector Street Plan show that US 17 is classified as a Principal Arterial throughout the study area. NC 210 is classified as a major collector.

### 3.4 Traffic

#### Existing Conditions

According to the NCDOT, in 2009 the Average Annual Daily Traffic (AADT) along US 17 was 28,000 vehicles per day (vpd) and 33,000 vpd to the south and north of NC 210, respectively; 31,000 vpd to the north of SR 1569 (Hoover Road) and 29,000 vpd to the south of SR 1565 (Country Club Drive). The 2009 AADT along NC 210 west of US 17 was 7,100 vpd.

Existing traffic volumes at major intersections in the study were obtained from NCDOT. These counts were collected in September and October 2010 during AM and PM peak periods. Existing peak hour turning movement volumes are shown in Appendix A, Figure A.2. The following intersections within the study area were analyzed for AM and PM peak hour operations:

- US 17 and SR 1582 (Washington Acres Road)
- US 17 and SR 1618 (Hughes Road)
- US 17 and SR 1673 (Deerfield Drive)
- US 17 and NC 210/Dan Owen Drive
- US 17 and SR 1570 (Peanut Road/Factory Road)
- US 17 and SR 1569 (Hoover Road)/Driveway
- US 17 and Forest Sound Road
- US 17 and SR 1593 (Jenkins Road)/SR 1565 (Country Club Drive)
- US 17 and Topsail School Entrance/Vista Lane
- US 17 and SR 1695 (Transfer Station Road)
- US 17 and SR 1675 (Long Leaf Drive)
- US 17 and SR 1563 (Sloop Point Loop Road)

An intersection capacity analysis was performed for the existing conditions. Traffic level of service (LOS) operations are reported on a letter scale, with “A” being the best operations and “F” being the worst or failing. Typically, operations are considered acceptable if they remain at a LOS D or better during peak travel hours. Sometimes, however, unsignalized

intersections may operate below LOS D during peak hours without warranting specific improvements. The reported operations at intersections describe operations during two peak hours of travel during the day, one in the AM and one in the PM. Table 2 provides a general description of various levels of service categories and delay ranges.

**Table 2. Level of Service Descriptions for Intersections**

Level of Service	Description	Signalized Intersection Delay	Unsignalized Intersection Delay
<b>A</b>	Little or no delay	<= 10 seconds	<= 10 seconds
<b>B</b>	Short traffic delay	10-20 seconds	10-15 seconds
<b>C</b>	Average traffic delay	20-35 seconds	15-25 seconds
<b>D</b>	Long traffic delay	35-55 seconds	25-35 seconds
<b>E</b>	Very long traffic delay	55-80 seconds	35-50 seconds
<b>F</b>	Unacceptable delay	> 80 seconds	> 50 seconds

Delay is expressed as the average amount of delay for all vehicles entering the intersection in the peak 15 minute period.

Analysis of the existing traffic volumes in the area indicate all the signalized intersections in the study area operate at acceptable levels of service (LOS). Some of the unsignalized intersections in the study area operate at acceptable LOS; intersections operating below acceptable levels during at least one peak hour include:

- SR 1582 (Washington Acres Road)
- SR 1618 (Hughes Road)
- SR 1570 (Peanut Road/Factory Road)
- Forest Sound Road

## Future Conditions

Future traffic demand was forecasted to the year 2020 by Martin/Alexiou/Bryson and to the year 2035 by the Transportation Planning Branch of NCDOT. Year 2020 traffic forecasts were prepared by assuming a 2.5 percent per year increase in through-traffic plus additional traffic from specific developments in Hampstead. Year 2035 forecasts were prepared using a blend of historic growth rates, projected population and employment growth along US 17 and NC 210, and the regional travel demand model for the Wilmington region. Without the Hampstead Bypass in place, the traffic volume just south of NC 210 is projected to increase to 70,600 vpd by the year 2035, an average annual increase of 3.62 percent over the 2009 AADT. Assuming the Hampstead Bypass is in place, the traffic volume in this location by 2035 is projected to increase to approximately, 37,000 vpd.

By 2035, the traffic volume on NC 210 west of US 17 is projected to be 17,000 vpd without the Hampstead Bypass and 11,000 vpd with the Hampstead Bypass.

Intersection capacity analysis was performed using the future year volumes. Based on the 2020 analysis which does not assume the Hampstead Bypass is in place, all the signalized intersections in the study area are projected to operate at LOS E or worse during at least one peak hour with the exception of US 17 at SR 1563 (Sloop Point Loop Road). This degradation in LOS is mostly due to the increase in through-traffic volumes along US 17 and operations are expected to improve once the Hampstead Bypass is constructed.

Draft findings of the US 17 Feasibility Study, a long-range look at improvements to this corridor, were available for comparison to the 2020 results. That report examined long-range alternatives for improving traffic along US 17. Improvements included widening to six lanes and implementing superstreet configurations and other conventional improvements as needed. This study is discussed further in Section 4. Based on the draft findings of that report, in 2035 without the Hampstead Bypass in place but other improvements constructed, five out of six intersections studied would operate at LOS F in peak periods. With the construction of the Hampstead Bypass, 2035 conditions are expected to improve; all studied intersections would improve to an acceptable LOS, except at US 17 / Dan Owen Drive, which is projected to improve, but still operate at LOS E.

A summary of the findings of the Existing (2010), Future (2020), and Future (2035) Year LOS analysis can be found in Appendix A.

## 3.5 Crash History

Crash history data for US 17 and NC 210 was analyzed for a 65-month period from August 1, 2005 through December 31, 2010. A 65-month period was analyzed in order to include the most up-to-date information possible at the time the analysis was conducted. Based on reported crashes compiled by the Pender County Sheriff Department, NC Highway Patrol, and NCDOT there were 628 crashes on US 17 and 92 on NC 210. An additional 20 crashes were recorded at the intersection of US 17 and NC 210. The US 17 total crash rate in the study area, which is a measure of the number



of crashes per vehicle miles traveled, is 186.62 per 100 million vehicle miles traveled (MVMT). This rate is 16 percent higher than the statewide average of 160 per MVMT for roads of similar function, location and configuration.

The NC 210 total crash rate in the study area is 211.30 per 100 MVMT. The statewide average crash rate for roadways of similar function, location and configuration to NC 210 is 177.26 crashes per 100 MVMT. The crash rate is 19 percent higher than the statewide average.

More than 40 percent of crashes on US 17 were rear end crashes. On NC 210, more than 21 percent of crashes were rear end type. Other frequent crash types on US 17 include left-turn crashes, animal-hit crashes, sideswipes and right-turn crashes. On NC 210, the frequent crash types include left-turn crashes, animal-hit crashes, right-turns, and sideswipes. There were no pedestrians or bicyclists involved in reported crashes on NC 210, but there were 2 pedestrians and one cyclist in the reported crashes on US 17.

A number of crashes could be corrected by installing a median, which would naturally preclude some of the crash types, such as left-turn crashes and angle collisions. Appendix A details specific locations where a median could correct these crash types.

The *Critical Crash Rate* is a statistically derived number that can be used as a tool to identify or screen for high accident locations. Locations with a crash rate higher than the critical rate may have a potential highway safety deficiency and may require additional analysis, according to NCDOT.

As listed in Table 3, the total crash rate on US 17 and NC 210 in the study area exceeds the *Critical Crash Rate*. This is one criterion, among others, that is used by NCDOT to prioritize projects for safety funds.

**Table 3. Critical crash rates for US 17 and NC 210**

County	Route	Length <sup>1</sup>	ADT	Time	Exposure	Crashes	Total Crash Rate			
						Total No. of Accidents	Total Accident Rate	Statewide Accident Rate	Critical Rate <sup>2</sup>	Exceeds Critical Rate?
Pender	NC 210	3.72	7,200	5	53.01	112	211.30	177.26	<b>208.28</b>	Yes
Pender	US 17	5.66	31,000	5	347.24	648	186.62	160.79	<b>172.13</b>	Yes

<sup>1</sup> Length is measured in miles

<sup>2</sup> Rates are expressed in 100 Million Vehicle Miles Traveled (MVMT)

### 3.6 Speed Surveys

NCDOT conducted radar speed surveys at five locations, between NC 210 and SR 1695 (Transfer Station Road) on US 17 in Hampstead on Wednesday August 31, 2010. The posted speed limit on US 17 in Hampstead at that time was 45 mph at all locations except for one location north of SR 1695 (Transfer Station Road) where the posted speed limit was 55 mph. Over the four sites where the posted speed limit was 45 mph, it was observed that 14 percent of vehicles traveled at or below the 45 mph speed limit. Another 43 percent traveled at 46 to 50 mph. Approximately 36 percent traveled at 51 to 55 mph and the remaining 7 percent traveled in excess of 55 mph.

At the location north of SR 1695 (Transfer Station Road) it was observed that 28 percent of vehicles traveled at or below the 55 mph speed limit, 52 percent traveled at 56 to 60 mph and 19 percent traveled at 61 to 65 mph. The remaining 1 percent traveled in excess of 65 mph.

### 3.7 Bicycle and Pedestrian Facilities

There are no sidewalks on either side of US 17 or NC 210 through the study area. US 17 received a walk score of 8 (on a scale of 1 to 100, with 100 being the best) according to *www.walkscore.com*, indicating that buildings are too spread-out to serve the needs of travel on foot. The East Coast Greenway will be an off-road multi-use path connecting Maine with Key West, Florida. It is envisioned as the urban parallel to the Appalachian Trail. Wilmington has designated Greenfield Lake Trail and Riverwalk as part of the future East Coast Greenway, and there is a trail route identified between Raleigh and New Bern. In the future, there is potential for a trail route along US 17 between this New Bern termini and Wilmington. However, there is not currently an identified route, meaning that Pender County, specifically along US 17, is considered a gap area for the East Coast Greenway.

North Carolina Bicycle Route #3, Ports of Call Route, runs through the study area. This route follows the coast for approximately 300 miles from South Carolina to Virginia, showcasing major ports of the US colonial era including Southport, Wilmington, New Bern, Bath, and Edenton in North Carolina. The route enters Hampstead along NC 210, turns and follows US 17 north through the study area, and turns off onto NC 210 again north of the project. This bike route also provides connections to NC Bike Routes 2, 4 and 5.

## 4 Previous Plans and Studies

### Cape Fear Commutes 2035 Transportation Plan

The Wilmington Urban Area Metropolitan Planning Organization (WMPO) prepared the Cape Fear Commutes 2035 Transportation Plan, which serves as the long range transportation plan for this area. The plan addresses all modes of transportation needs and solutions coupled with the required financial needs. In particular, the plan stated that the main barriers to bicyclists are a lack of direct, continuous, convenient, and safe system of bicycle facilities. The plan also recognizes the need to improve pedestrian facilities to encourage walking as an alternate mode of transportation.

### 2007 Coastal Pender County Collector Street Plan

The Hampstead and Scotts Hill areas in unincorporated coastal Pender County were added to the WMPO jurisdiction in August 2006. A collector street plan was prepared by Wilmington MPO staff and adopted by the Pender County Board of Commissioners on May 21, 2007. The goal of the Collector Street Plan is to provide a comprehensive guide for a Coastal Pender County collector street network that would:

- Improve connectivity
- Encourage multi-modal transportation
- Implement access management
- Maintain required traffic speeds
- Promote safety
- Enhance the beauty and environment for the existing and future residents, businesses and visitors

The Plan included a tool box of ordinances and recommendations to improve connectivity and mobility. One of the recommendations was for NCDOT to fast-track a Comprehensive Transportation Plan for Pender County. That study has been launched. Another recommendation was for the Pender County Board of Commissioners to use the Coastal Pender Collector Street Plan as a reference when reviewing all rezoning requests, major subdivisions and appeals. WMPO staff has submitted comments on specific rezoning requests since 2007, but the Board has not always required construction of recommended collector street plans. They cite opposition from neighbors and economic hardship for developers, among other reasons.



The 2007 *Coastal Pender County Collector Street Plan* included the following recommended roadway improvements for US 17 and NC 210:

- Improvements to the intersection of NC 210 and Island Creek Road (SR 1002) including the realignment of NC 210.
- Extend the “superstreet” cross-section (restricted left turns with signalized u-turns) on US Highway 17 to the north as funds become available, while improving the visual appeal of the Hampstead commercial area between Washington Acres Road and Country Club Drive.
- Construct right turn deceleration lanes along US Highway 17 at all intersecting state maintained roadways.

The map adopted with the *Collector Street Plan* identifies new collector streets, as well as recommended extensions of existing roadways. The new connections are categorized as priority new collector and new collector. Priority new collectors were rated highly favorable by the public, business owners, land owners, developers and others. They fulfill one or both of the two objectives cited by many who offered input, which are (1) alternatives to US 17, and (2) better east-west access. A priority new collector labeled “W Backage Road” parallels US 17 on the west side of Topsail High School and extends the length of Hampstead into Scotts Hill. However, a review of updated wetlands mapping prepared for the Hampstead Bypass project show extensive wetlands in the area where the “W Backage Road” was planned.

The new collectors are important as well, as they will provide alternatives to both NC 210 and US Highway 17. Many of these roadways follow existing farm roads and are spaced roughly 3,000 feet apart, the recommended spacing for the medium-intensity mixed suburban development expected to be prevalent in Coastal Pender County. Existing dirt and gravel roads were used when possible to minimize the financial impact on small landowners and also to ensure that required rights-of-way can feasibly be preserved even where large-scale subdivision is not likely to occur (i.e. RA zoning districts). These connections are intended to be constructed or reserved if and when the surrounding tracts of land become developed and/or subdivided. The map is not intended to be used as an engineering document. The connections between adjacent roadways and properties are more important than the exact path of the roadway. It is also recognized that due to certain environmental, legal, and logistical reasons some of the collector streets connections shown on the map may not be possible. However, throughout the development of this plan, significant efforts were made to anticipate any environmental issues which may affect the construction of the recommended roadways. An update of the *Collector Street Plan* is recommended.

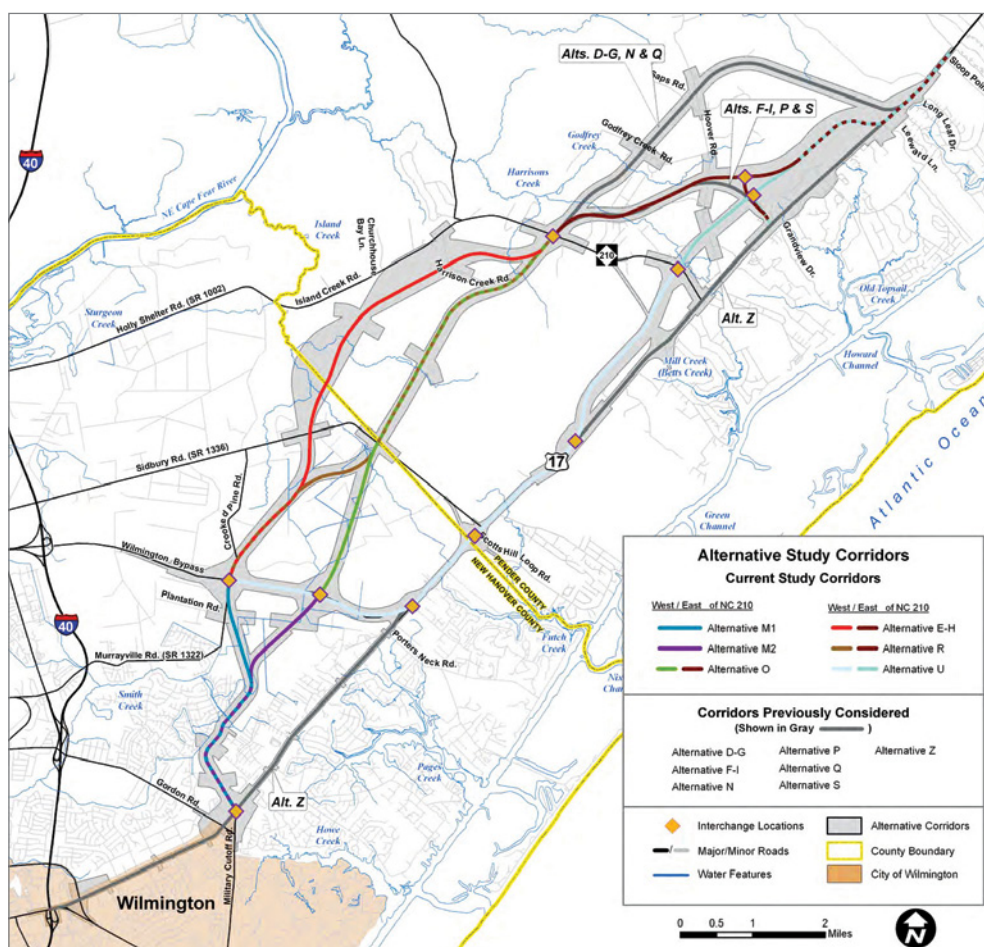
### **1997 NCDOT Thoroughfare Plan for Pender County**

The most current county thoroughfare plan was adopted by the Pender County Board of Commissioners in June 1997 and by the North Carolina Board of Transportation in September 1997. In the plan, NC 210 is classified as a major collector. Both US Highway 17 and the proposed Hampstead Bypass are identified as other principal arterials. The bypass alignment alternatives from this study are shown in Figure 3. Legislation defining projects eligible for Highway Trust Fund priority funding identified the Hampstead Bypass southern terminus and the Military Cutoff Road in New Hanover County.

### **Comprehensive Transportation Plan**

North Carolina Department of Transportation and Pender County are currently developing a *Comprehensive Transportation Plan* (CTP), which is a long-range multi-modal plan, including portions of Pender County that are outside of the Wilmington MPO jurisdiction. The CTP is being developed cooperatively between NCDOT, Pender County, the Cape Fear RPO, and representatives from the county and municipalities. The purpose of this transportation plan is to identify existing and future transportation deficiencies, while incorporating local land use plans and community goals. The primary objectives are to reduce traffic congestion and improve safety. The Pender County CTP can be used as a guide for future development and transportation decisions. The document will be completed by January of 2012.

**Figure 3. Preliminary Corridor Build Alternatives for Hampstead Bypass**



Source: Pender County Planning Department, March 9th, 2011

### NCDOT Feasibility Study of Long Term Measures on Existing US 17 in Hampstead

NCDOT is conducting a long range feasibility study for the US 17 corridor, between I-140/US 17 Bypass north of Wilmington and NC 50 in Holly Ridge. This study is examining long-term solutions for traffic along this corridor including conventional widening, superstreet configurations and freeway alternatives. This study takes into account the possible presence of the proposed Hampstead Bypass, which is also currently being studied by NCDOT. An Environmental Impact Statement (EIS) is being prepared for that bypass in accordance with the National Environmental Policy Act (NEPA) regulations. The US 17 corridor feasibility study is intended to provide insight into long-term solutions to handle projected traffic volumes along this entire corridor and is not intended to address the immediate spot-specific needs of the corridor.

### 2004 NCDOT Strategic Highway Corridors

US Highway 17, referred to as *Corridor 52* in the *Strategic Highway Corridors Plan*, is envisioned as a future freeway in the Vision Plan for Southeastern North Carolina completed as part of the NCDOT *Strategic Highway Corridors* initiative. Both the Hampstead Bypass and the Wilmington Bypass are also classified as freeways by the plan. A freeway is defined as a high mobility, fully access controlled roadway with a minimum of four lanes and no driveways, traffic signals or at-grade intersections. The goal of the *Strategic Highway Corridors Plan* is to “create a greater consensus towards the development of a genuine vision for each corridor — specifically towards the identification of the desired facility type (freeway, expressway, boulevard, or thoroughfare) for each corridor.” US 17 is on the list of strategic corridors.

## 2005 Pender County CAMA Land Use Plan Update

The county's required Coastal Area Management Act plan offers several transportation recommendations. Regional transportation planning, regular updates of the thoroughfare plan, protecting highway capacity through land use regulation and transit expansion, and increased public transportation services for elderly and special needs population. The plan also supports the development of a greenway and hiking trail system. In order to preserve the existing highway capacity, the plan suggests that the county encourage cluster development patterns, direct growth into urban and transition areas, and require urban type infrastructure in major new developments. The CAMA plan also emphasizes the importance of locating residential areas near employment and shopping areas and major thoroughfares, and locating large commercial development at the intersections of major thoroughfares. Smaller neighborhood commercial centers are encouraged to be located on the collector street system with appropriate vehicular and pedestrian access. Office, industrial and multifamily residential is encouraged as a transition between single-family residential and commercial. The CAMA plan encourages all new development to meet minimum standards for access, Secondary Road Standards, connectivity requirements to adjacent developments, continuity of streets, trails and utility lines. The plan also recommends pedestrian and bicycle facilities in all new development especially in higher density neighborhoods. The plan recommends implementing a series of incentives to achieve the goals above. Under the draft CAMA plan almost the entire study area is classified as an "urban growth area," which "provides for the continued development of areas provided with water and/or sewer services or where the county is actively engaged in planning these community services."

## 2012-2018 State Transportation Improvement Program (STIP)

The STIP is a federally mandated statewide funding plan for transportation investments and it includes several projects in Coastal Pender County. The Draft STIP is a preliminary list of projects that NCDOT proposes to undertake. This Draft STIP will be reviewed by Metropolitan and Rural Planning Organizations and projects may change before the final STIP is approved later in 2011.

There are two adopted STIP improvements in the study area that pertain to US 17; they are the Hampstead Bypass (R-3300) and Military Cutoff Road (U-4751). Both projects are part of *North Carolina's Strategic Highway Corridor Initiative*, which is an effort to preserve and maximize the long-term interconnectivity of core transportation corridors in North Carolina.

The proposed US 17 Hampstead Bypass will extend from the intersection of the Wilmington Bypass and the proposed Military Cutoff Extension in New Hanover County to US 17 near Sloop Point Loop Road in Pender County. The Hampstead Bypass will be a four- to six-lane limited access freeway. Access to the proposed freeway would be provided at interchanges. The Hampstead Bypass is currently in the environmental studies phase. Funding for right-of-way acquisition is programmed for fiscal year 2017. Construction is unfunded. The current estimate is more than \$220 million and varies depending on the alternative alignments under study.


Project U-4751 is an extension of Military Cutoff Road on new location from Market Street (US 17 Business) to the US 17 Wilmington Bypass (John Jay Burney Jr. Freeway). Military Cutoff Road Extension is a proposed six-lane roadway on new location. Access to the roadway will be provided at an interchange with US 17 Business (Market Street) and signalized intersections with Putnam Drive, Lendire Road and Torchwood Boulevard. Only right turns will be allowed onto Military Cutoff Road Extension from Market Street at the signalized intersections. Signalized U-turn lanes will be provided.

Thirteen detailed study alternatives were initially developed for R-3300 and U-4751, as shown in the September 2008 project newsletter. Seven of the alternatives were dropped from further consideration because of anticipated impacts to the human and natural environments. Six of the original alternatives for R-3300 and U-4751 are still being considered, and are shown in Figure 3. The six detailed study alternatives being considered at this time include four

alternatives (labeled E-H, O, R, and U) for R-3300 and two alternatives (labeled M1 and M2) for U-4751. To select the six alternatives, the R-3300 and U-4751 team, consisting of federal, state and local agency representatives, reviewed the analysis results for the alternative corridors. Potential environmental, social and economic effects were evaluated to identify alternatives that best meet the purpose and need of the project while minimizing negative impacts. The Study Team also considered input provided by the public. This included comments from the April 2007 Citizens Informational Workshops, the public and agencies involved with the project.

The US 17 Corridor Study Team follows the North Carolina “NEPA/404 Merger Process” to reach concurrence at critical milestones related to project development and permitting. The Study Team reached agreement on the purpose and need for the project in September 2006 and alternatives for detailed study were selected in August 2007. The Study Team met again in April 2010 after preliminary design plans were prepared and environmental field data was collected for the alternatives selected for detailed study. The Study Team reviewed the information and agreed to carry six alternatives forward for additional analysis. In May 2010, the Study Team reached agreement on bridge locations and lengths.

**Public Involvement** is an important part of the planning process. NCDOT encourages citizen involvement with transportation projects and considers the citizens’ suggestions and concerns. Citizens’ informational workshops for the US 17 Corridor Study were held on April 23, 2007 in Hampstead and on April 24, 2007 in Wilmington. A total of 174 participants signed in at the workshops. A newsletter published in September 2010 describes the six alternatives.



North Carolina Department of Transportation

**US 17**  
Corridor Study  
New Hanover & Pender Counties  
100 miles, 10 miles, and 10 miles

### Notice Of Pre-Hearing Open Houses And Corridor Public Hearings For The Proposed Military Cutoff Road (State Road 1409) Extension And U.S. 17 Hampstead Bypass

The North Carolina Department of Transportation (NCDOT) will hold two (2) Pre-Hearing Open Houses and Corridor Public Hearings for the above mentioned highway projects at the following times and locations:

<p><b>When:</b> October 17, 2011  <b>Where:</b> Noble Middle School          6520 Market Street, Wilmington  <b>Pre-Hearing Open House:</b> 4 – 6:30 p.m.  <b>Formal Presentation:</b> 7 p.m.</p>	<p><b>When:</b> October 18, 2011  <b>Where:</b> Topsail High School          245 N. St. Johns Church Road, Hampstead  <b>Pre-Hearing Open House:</b> 4 – 6:30 p.m.  <b>Formal Presentation:</b> 7 p.m.</p>
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NCDOT representatives will be available at the Pre-Hearing Open Houses to answer questions and receive comments regarding the proposed projects. The opportunity to submit written comments and questions will be provided. Interested citizens may attend at any time during the above hours. The formal presentations will consist of an explanation of the proposed location, design, right of way and relocation requirements and procedures. Citizens will have the opportunity to comment or ask questions. The presentation and comments will be recorded and a transcript will be prepared.

NCDOT will provide auxiliary aids and services under the Americans with Disabilities Act for disabled persons who want to participate in this hearing. Anyone requiring special services should contact Mr. Robbins as early as possible so that arrangements can be made.

**FOR ADDITIONAL INFORMATION CONTACT:** Jamille Robbins, NCDOT – Human Environment Unit, 1598 Mail Service Center, Raleigh, NC 27699-1598, (919) 707-6085, [jrobbins@ncdot.gov](mailto:jrobbins@ncdot.gov)

Copies of the map and DEIS are available on the project website at: <http://www.ncdot.org/projects/US17HampsteadBypass>

The US Army Corps of Engineers, Wilmington District, also has the DEIS document available on their website which can be accessed at [http://www.saw.usace.army.mil/Wetlands/Notices/Current\\_notices.html](http://www.saw.usace.army.mil/Wetlands/Notices/Current_notices.html). Contained within this website is a local public notice drafted by the Corps announcing the release of this document as well as the description of the ongoing process in choosing the LEDPA (Least Environmentally Damaging Practicable Alternative) for the subject project.

**Next Steps for Hampstead Bypass and Military Cutoff Road Extension** — preliminary design and environmental analysis of the alternatives are being finalized and preparation of the Draft Environmental Impact Statement (DEIS) is nearing completion. The DEIS documents the environmental analysis of the project. The DEIS was signed 7/18/11 and a map of the proposed alternatives will be made available for public review at several local locations and presented to the public for comment at a public hearing. An announcement of the public hearing will be sent to individuals on the project mailing list and advertised in the local paper. The North Carolina Department of Transportation expects to conduct the public hearing in October 2011.



## 4.1 Other Projects in the Adopted STIP

- **R-2405:** Widening of US 17 between I-40 and Holly Ridge, completed in 2007.
- **Interstate 40 projects in Pender, New Hanover, Duplin, and Sampson counties:** Pavement reconstruction. Project funding of \$102 million; construction is underway.
- **B-4929:** replacement of the NC 50/NC 210 bridge over the Intracoastal Waterway. This \$35 million project is funded and scheduled to start construction in fiscal year 2014.
- **B-5304:** The replacement of the Crooked Run Road (SR 1324) bridge over Sill's Creek. Construction funding of \$1.1 million for this project is programmed for fiscal year 2018.
- **B-5312:** The replacement of the Old Maple Hill Road (SR 1520) bridge over Holly Shelter Creek. Construction funding of \$1.1 million for this project is programmed for fiscal year 2019.

### Pender County Comprehensive Parks and Recreation Master Plan

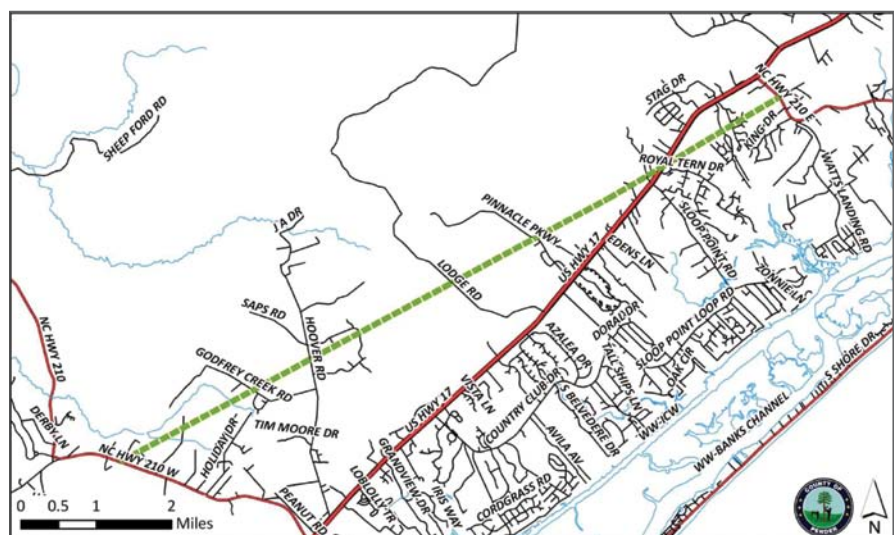
A corridor that is two miles from the US 17 business district (measured along Hoover Road as one connecting option) was identified and adopted in the Pender County Comprehensive Parks and Recreation Master Plan (2010). Closer to US 17 there are portions of the former Wilmington, Onslow and East Carolina Railroad line identified in the Master Plan as having potential to serve as a trail. Some of this was lost when US 17 was widened. Portions of the corridor still remain, although ownership has reverted back to adjacent landowners.

#### Coastal Pender Greenway

The Coastal Pender Greenway would utilize Progress Energy Company's easement, as shown in Figure 4, from NC Highway 210 near Surf City to NC Highway 210 near Island Creek Drive, although an alternate route would need to be negotiated through or around Castle Bay Golf Course. At the southern end of the Coastal Pender Greenway, trail users would then utilize the existing NC DOT Bicycle Route 3 — Ports of Call, which follows Island Creek Drive to Holly Shelter Road in New Hanover County, and through to Blue Clay Road where users could link with the planned Blue Clay Corridor bicycle facilities. Use of the Progress Energy Company's easement is limited to uses that do not interfere with maintaining power lines, facilities, and rights-of-way. Detailed planning of the Coastal Pender Greenway will require cooperation with Progress Energy Company staff to ensure the project conforms to Progress Energy Company's Transmission Line Right-of-Way Use Guidelines.

An alternate route may be pursued near the R-3300 (Hampstead Highway 17 Bypass) project. The development of a bicycle/pedestrian trail or multi-use path may be feasible adjacent to, but outside of, the bypass right-of-way.

**Figure 4. Recommended Coastal Pender Greenway**



Beginning in the late 1890s, Wilmington once served as an important rail center served by five rail lines, four of them owned by the Atlantic Coast Line Railroad (ACL), and three of them running through Pender County. Over time, mergers of rail and air lines took place and all of the ACL rail lines running to Wilmington were abandoned and the tracks were removed. Under NC state statutes, the ownership of these former rail corridors have reverted back to the adjacent property owners (with the exception of the former Wilmington to Weldon line running through central Pender County, which is now owned by NCDOT and reserved for future rail use), but the former ballasts mostly remain and would serve as ideal trail corridors.

The Coastal Pender Rail-Trail would provide a much-needed pedestrian and bicycle route along the busy US Highway 17. This facility would link together residential areas, shopping, schools, libraries, churches, Hampstead Kiwanis Park, and Scotts Hill Community Park. Development along this facility should include a bicycle/pedestrian connection to adjacent properties utilizing the former rail corridor where possible, and subdivisions along this facility should include an easement reserving the use of the former rail corridor or another route where feasible.

The map displays the study area in Currituck County, North Carolina. Key features include:

- Roads:** NC HWY 210, US HWY 17, NC HWY 50, and various local roads such as Pinnacle Point Rd, Lodge Rd, and Ocean Blvd.
- Water Bodies:** Currituck River, Currituck Bay, and various creeks and channels.
- Landmarks:** Currituck County Landfill (indicated by a red outline), Currituck County Courthouse, and various residential and commercial areas.
- Scale:** A scale bar at the bottom left indicates distances from 0 to 4 miles.
- Orientation:** A north arrow is located at the bottom right.

## 5 Public Involvement

Public involvement was a key element in studying the US 17 corridor. A Steering Committee comprised of representatives from Pender County, the Wilmington MPO, NCDOT and local Hampstead residents, business and property owners. A total of four committee meetings were held. Minutes from the each meeting can be found in Appendix B. A summary of comments from each community information workshop can also be found in Appendix B.

Three community information workshops were held; the first on December 16, 2010; the second on March 3, 2011; and the third on May 12, 2011. These were conducted in an informal setting at Topsail High School located on St. Johns Church Road in Hampstead. People listened to a consultant presentation before organizing into small groups for interaction and discussion with several questions prompted by facilitators. Participants were given the opportunity to offer their comments and suggestions. Staff and the consultant attended a community meeting hosted by citizens at the Methodist Church in September 2010.

Focus groups were organized; one for businesses, another for residents and a third for land developers and economic development professionals. Attendance was by invitation only. A summary of comments from each focus group can also be found in Appendix B. The most frequent comments received in writing since mid-December 2010 are as follows:

### **Public Comment Topic: Washington Acres Road and Hughes Road Traffic Control Measures**

Dozens of emails were submitted and many individuals attended the March 3, 2011 public meeting to voice their support to install a traffic signal at Washington Acres Road intersection and some of them voiced their concern about the temporary median installed in November 2010 at Hughes Road. A citizen sent a comment after the May 12, 2011 open house concerning the consultant's proposal to replace the temporary median with a permanent concrete raised median that would continue to prohibit left-turn movements from the Beacon Center to northbound US 17.

The consultant recommends that NCDOT consider Hughes Road/US 17 as a candidate to be signalized instead of Washington Acres Road. The consultant would not support signalizing both intersections as they are so close and they are interconnected via Center Drive. The case to signalize Hughes instead of Washington Acres is supported by the presence of the Beacon Center on the north side of US 17 at Hughes Road. If Hughes Road/US 17 is signalized, then several hundred feet of Hughes Road, between Center Drive and US 17, should be rebuilt to align better with the Beacon Center driveway. The consultant is unable to demonstrate whether or not Hughes Road/US 17 meets signal warrants since the temporary median changes traffic patterns.

### **Public Comment Topic: Peanut Road/Factory Road Median Impacts on Atlantic Seafood**

One of the written comments submitted by a citizen supported verbal discussions the consultant had with the business managers of Atlantic Seafood at the May 12, 2011 open house. The citizen mentioned the difficulty of access for tractor-trailer trucks approaching and leaving Atlantic Seafood.

The consultant acknowledges the difficulty tractor-trailer trucks have accessing Atlantic Seafood very frequently. A median opening at the north end of the Atlantic Seafood property on US 17 was considered, however, that location is only 1,100 feet from adjacent signalized intersections to the north at Hoover Road and to the south at NC 210/Dan Owen Drive. For the same reason a signal at Peanut Road/Factory Road is also not acceptable to NCDOT. This section of US 17 has the highest frequency of crashes over the past 5.5 years so it is a primary safety goal to eliminate conflict points (left turn movements).



Implementation of the 2007 Coastal Pender Collector Street Plan, when the Cypress Station development was approved by Pender County earlier in 2011, would have facilitated construction of a collector street along the old rail line connecting Atlantic Seafood with Hoover Road which may have solved the issue. However, that collector street was not required by Pender County and the Cypress Station developer chose to expand that development to preclude building that collector street. There must be a balance between the intensity of development permitted and the infrastructure needed to adequately and safely support development. A collector street or access easement connecting Atlantic Seafood with NC 210, potentially near the Eastern Outfitters retail store, may be pursued privately by the owners of Atlantic Seafood. This may give them the ability to turn trucks easily through the US 17 / NC 210 signalized intersection.

### **Public Comment Topic: Landscaping in the proposed US 17 median**

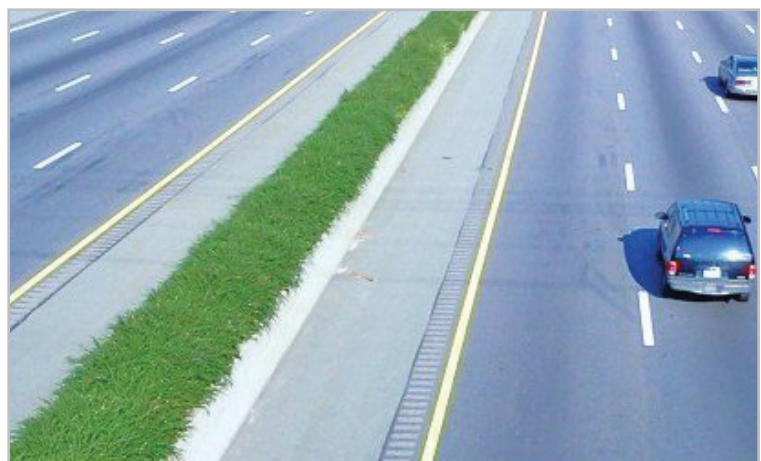
Many comments were received concerning the poor aesthetics of the proposed monolithic concrete median. A citizen summed it up by suggesting the use of a grass median and landscaping in the design. A typical grass median, like the one suggested, is shown in Figure 6.

The consultant considered proposing landscaping the median, but was unable to identify an organization willing to assume responsibility for ongoing maintenance. A 16-foot median is not suitable for NCDOT's typical wildflower program installation nor for a depressed grass median due to concerns for errant vehicles crossing the median and risking head-on collisions. A raised concrete median with grass should be considered by NCDOT, but there may be concerns with mowers damaging adjacent cars with flying rocks, etc. The minimum mowable width is 6 feet. The safety of maintenance workers is a concern and the practicality of closing lanes of traffic during maintenance activity may prove unpopular with likely motorist delays. The consultant considered sporadic installation of twin raised concrete jersey barriers (for crash worthiness) with a sufficient gap between the barriers such that plants or trees could be installed. The elevation above the street level should provide sufficient dirt and mulch so the underlying asphalt would not have to be demolished prior to installation. See Figure 7, for an example of this type of jersey barrier. A landscape architect should be consulted to identify drought and traffic exhaust tolerant plant and tree species that might not need permanent irrigation. The immature plants could be spray-watered for a while by passing water trucks, although that may require closing a lane of

**Figure 6. US 17 in Scotts Hill**



**Figure 7. Example of planted median with jersey barriers**



traffic in both directions during spraying. At both ends of the raised planter box, NCDOT will required crash-resistant attenuators (e.g. sand barrels) to minimize or avoid injury if an errant vehicle crashes into the end of the jersey barrier.

### **Public Comment Topic: Walking and Bicycling in Hampstead**

Several comments were submitted asking for safe facilities to serve pedestrians and bicyclists. The following is one of the comments submitted anonymously:

“Don’t forget to consider the safety of bicyclists on Hwy 17. A separate pathway off the highway is a possibility. (I don’t and would not ride a bicycle along Hwy 17 for safety reasons).”

The consultant estimates that additional right-of-way may be required to build a multi-use path along US 17 in Hampstead, in places with exclusive right-turn lanes and in places where bulbs are recommended for U-turn movements. The long-term vision for existing US 17 includes safe facilities for both modes of travel. The anticipated funding sources to be used to build the median depend on working within existing right-of-way.

### **Presentation to Board of Commissioners 10/3/2011**

M/A/B presented the recommended improvements proposed by the US 17/NC 210 Corridor Study to the Board of Commissioners. This presentation also included accident data, traffic volumes, existing and proposed traffic patterns and cost and funding considerations. Board members had questions about cost, access and the need for the NC 210 improvements. This presentation was not open to public comment.

### **Public Hearings**

Multiple public hearings were held toward the end of the study process to solicit public comment on the Corridor Study. Below is a summary of these meetings.

#### **Planning Board Meeting 11/1/2011**

M/A/B presented the recommended improvements proposed by the US 17/NC 210 Corridor Study to the Planning Board. This presentation also included accident data, traffic volumes, existing and proposed traffic patterns and cost and funding considerations.

Several members of the Board asked to see studies that had been done previously in a similar situation that would show how much safer the study area would be if the center lane was replaced with a median. The Board also asked if signalization was included in the study and whether these signals would be part of a coordinated system. Seven members of the public gave comments about the project. All seven citizens were against the project, citing concerns about the negative effects on businesses by reduced access and potential safety concerns at U-turns; cost; desire for area-specific treatments, increased enforcement of speeding, or collector streets to reduce traffic on US 17. The Board concluded the meeting by stating that additional information regarding similar studies of safety reductions was needed before a recommendation could be made.

#### **Board of County Commissioners Meeting 11/21/2011**

M/A/B presented the recommended improvements proposed by the US 17/NC 210 Corridor Study to the Board of Commissioners. This presentation also included accident data, traffic volumes, existing and proposed traffic patterns and cost and funding considerations. Information requested by the Planning Board about safety studies was also presented.

Five members of the public gave comments about the project. Two citizens spoke for the project, stating that the corridor recommendations benefitted many parties and may not negatively affect local businesses. Three citizens were against the project, citing concerns about harm to local businesses; and increased accidents and speeding along the corridors. The Board concluded the meeting by stating that it will decide whether to support the recommendations, but will only be supporting the general concept of the recommendations for improving and assuring safety along the two corridors.

### Planning Board Meeting 12/6/2011

Pender County's Senior Planner presented the Planning Board with the additional information requested at the previous meeting regarding accident types and locations, high crash areas along the project corridor, and how a median would impact safety and local businesses. A Board member made the motion to request that the US 17/NC 210 Corridor Study be taken into account by the Board and voted on such that the Hampstead Corridor would be safer. The vote carried 3-2 in favor of the motion.

### Board of County Commissioners Meeting 12/12/2011

Mr. Kozlosky of the MPO stated that if the Board endorses the Corridor Study, DOT will design a median. The Board discussed traffic signals, turn-arounds and the possibility of additional public hearings. A member of the Board expressed concern about the reduced access of emergency vehicles to accidents. Another member of the Board made a motion to approve the resolution with the caveat that the Board holds one more public hearing; the motion died for lack of a second.

### Board of County Commissioners Meeting 1/3/2012

Fourteen citizens spoke in the general comment portion of the Board of County Commissioners meeting. Eight spoke in support of passing the study citing safety as a priority for those travelling US 17. Four citizens spoke against the study with concerns about cost and effectiveness of the recommendations. Two citizens expressed concerns about safety but were neither for nor against the study.

The Board members asked NCDOT representatives whether the money for safety improvements could go toward the Hampstead Bypass and were told no. The Board expressed concern over details of the study but passed the resolution to endorse the concepts in the US 17/NC 210 Corridor Study.

## 6 Alternatives

This study had several constraints that all alternatives had to meet. All alternatives must be able to be implemented on a relatively short- to mid-term time and schedule. They must remain within the existing right of way to minimize costs and environmental impacts and fit funding program criteria. Alternatives must look at combinations of access management concepts. Projects must be phased in order to fit highly constrained budgets. Emergency Management Services (EMS) must not be hampered.

The study looked at strategies to address mobility and safety concerns on US 17 and NC 210 in Hampstead. A Preferred Access Plan was developed by the consulting team that has been forwarded as a recommendation to the Wilmington MPO, Pender County and NCDOT.

## 7 Recommendations

Continued and increased traffic law enforcement and construction of a network of secondary streets in Hampstead are recommended. A Preferred Access Plan for US 17 and NC 210 in Hampstead is also recommended. Each is discussed in more detail in this section.

### 7.1 Preferred Access Plan for US 17

The consultant recommends approval and subsequent implementation of the draft Preferred Access Plan (see Appendix C). Appendix B (Section B 9) includes a table describing how motorists would access some businesses in Hampstead with the median as proposed; it is only a partial list of altered access and is intended to be a guide. In addition to the design elements of the Preferred Access Plan, the following items are ideas to help guide the implementation of the Preferred Access Plan:

- NCDOT should use state and federal funding from all applicable funding programs to build a raised median and paved bulb-outs to facilitate U-turns at median openings on US 17 in Hampstead. The purpose of the median is

to eliminate unsafe left-turn movements by allowing left-turns and U-turns only at well-designed median opening intersections. The recently reconstructed intersections on US 17 in Scotts Hill and Sloop Point represent a good demonstration of how to implement the proposed access features in Hampstead.

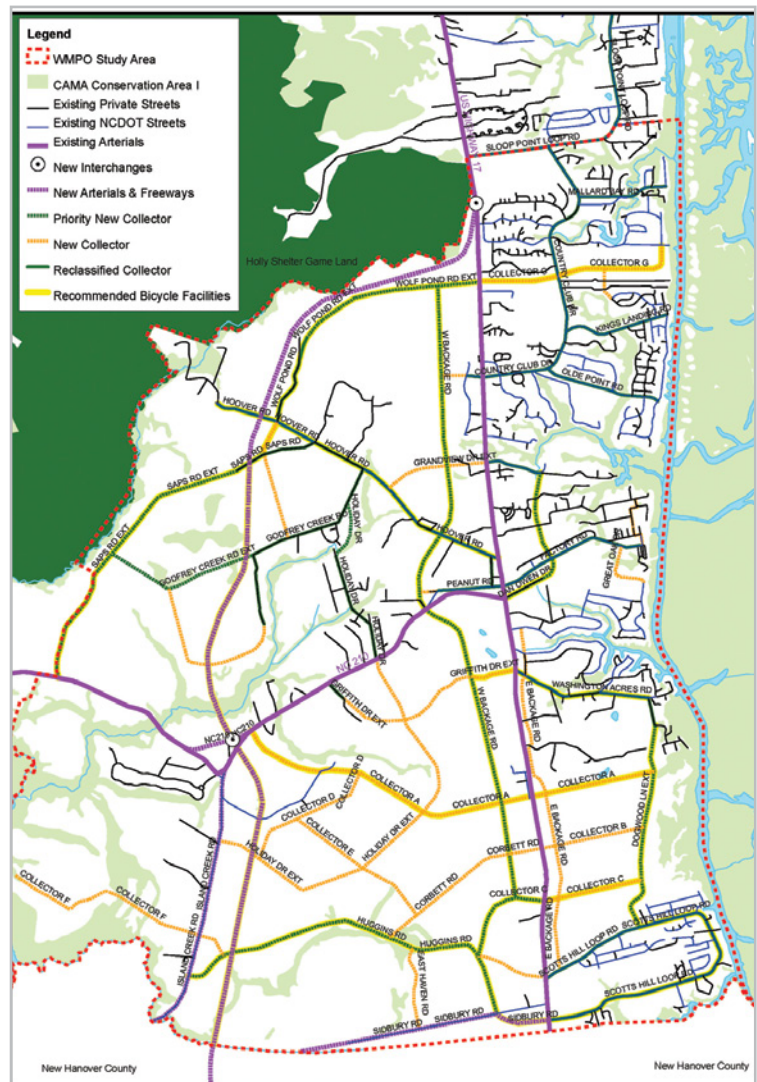
- It is recommended that NCDOT staff determine the location, sequence and details of construction implementation of the median based on factors including, but not limited to, the following:
  - Crash history and severity
  - Volume of left-turn traffic
  - Observation of traffic conflicts and driver confusion or unsafe driving behavior
  - Speed studies
  - Pending new development along US 17
  - Other factors deemed important by NCDOT
- In short sections on US 17, where the median does not conflict with left-turn lanes, NCDOT should consider building a raised median that can be planted and maintained by Pender County, but must meet NCDOT requirements. Specifics of design and maintenance would be determined during the detailed design phase.
- Pender County would fund plant material, installation, water, maintenance, and replacement, as necessary, of irrigation equipment in each median section. Plant material could be selected by a committee of Hampstead residents appointed by the Pender County Board of Commissioners. They may select from a menu of options prepared by Pender County staff that takes into account survivability in a harsh roadway environment, the cost of material, drought tolerance, and maintenance needs. If the median is not maintained to the satisfaction of NCDOT, the planting beds may be removed and replaced with a monolithic concrete median designed by NCDOT.
- NCDOT should remove the dura-curb and raised plastic paddles from the median of US 17 at Hughes Road. These were installed in late 2010 as a temporary measure to preserve safe traffic operations and test this type of installation. NCDOT will replace it with a raised concrete median similar to the typical installation recommended on US 17 throughout Hampstead. The new raised concrete median will prohibit left-turn movements from Hughes Road to southbound US 17 and it will prohibit left-turns from the private driveway for the Beacon Center to northbound US 17. Replacement of the temporary median with a raised concrete median is expected to minimize the issue that surfaced, as an unintended consequence of the dura-curb, when many motorists attempted to maneuver around the dura-curb to make illegal left turns.
- Following a comparative evaluation of superstreets and traffic signals at Washington Acres Road, NCDOT would make the appropriate decision. Prior to installation at Washington Acres Road, it is recommended that NCDOT reconstruct the easternmost section of Washington Acres to create a 90-degree angle of intersection with US 17. The existing angle of intersection is 60-degrees which produces awkward turning movements and sight distance limitations. Although the new traffic signal will greatly enhance the sight distance issues, rebuilding Washington Acres Road to create a 90-degree angle of intersection will improve the ease and safety of turning movements at this location. NCDOT should also consider building a northbound deceleration lane/exclusive right-turn lane in advance of the Washington Acres Road intersection.
- NCDOT should evaluate the feasibility of acquiring ownership of the right-of-way on Dan Owen Drive from US 17 to the future intersection with a proposed connector street near the United States Post Office. The connector street is proposed as a 25 to 35 mph, two-lane complete street (sidewalks and bike lanes) that will connect Dan Owen Drive with Factory Road. There is vacant land that is privately owned; thus NCDOT must approach the land owner with a proposal that offers fair-market value for the land needed for the street plus a concession that provides appropriate access to the remainder of the property.



Collectively, public ownership of Dan Owen Drive and the connector street will create an alternate route for local traffic between homes on Factory Road and retail stores at the Hampstead Crossing shopping center anchored by Food Lion grocery store.

- NCDOT should build a median on US 17 from NC 210 to Hoover Road without a median opening at Factory Road/Peanut Road, and the flashing traffic signal at the Factory Road/Peanut Road intersection should be removed. This intersection is located too close to the signalized intersection of US 17 and NC 210, and the flashing signal creates confusion for some motorists who see signals at both intersections at the same time. Some added pavement on the northwest corner of the intersection of Peanut Road/US 17 (Atlantic Seafood corner) is recommended to provide easier southbound right-turn movements at this location. Three collector streets are recommended that could relieve some of the inconvenience created by the median; these are (1) a connector from Dan Owen Drive to Factory Road, (2) a connector from Peanut Road to NC 210, and (3) a connector from Peanut Road to Hoover Road. The latter would be just west of the Atlantic Seafood business and adjacent to the new Cypress Station development recently approved. Access to the traffic signal at Hoover Road and US 17 would be particularly helpful to Atlantic Seafood which generates substantial truck traffic. A connector street between Peanut Road and NC 210 would also help Atlantic Seafood truck movements.
- Additional collector streets shown in Figure 8, taken from the *2007 Coastal Pender County Collector Street Plan* can be built by the appropriate property owners before or after construction of the US 17 median. A network of secondary streets may aid residents, business owners and their customers in accessing areas in Hampstead more conveniently than the planned system of median openings and U-turns on US 17. There is unlikely to be public funding available to build collector streets; however, planning, design and maintenance assistance may be discussed through contact with regional NCDOT officials or Wilmington MPO staff.
- At each signalized intersection and median opening on US 17, it is recommended that NCDOT install backplates behind each signal head to improve visibility. When the signal head has no backplate, the light and color can get lost in the background. Also, larger cross street-name signs should be posted, or perhaps an advance sign indicating which cross street is next.

**Figure 8. 2007 Coastal Pender County Collector Street Plan**



## 7.2 Preferred Access Plan for NC 210 west of US 17

The consultant recommends approval and subsequent implementation of the draft Preferred Access Plan (see Appendix C) which includes all of the following elements.

An average daily traffic (ADT) volume of 11,000 vehicles per day on a four-lane divided road would provide level of service (LOS) A for motorists while a 2- or 3-lane section would provide LOS E. For this reason, it is recommended to reserve a 120-foot wide corridor which is greater than the existing 100 foot right-of-way; thus, any development application fronting on NC 210 would be expected to provide 10 feet for a public right-of-way. Initial construction of a widened NC 210 could be a two-lane median-divided section with paved shoulders, a ditch on both sides and a multi-use path on one side. The multi-use path would be built at the edge of the right-of-way to maximize distance from the travel way and ensure adequate width for a drainage ditch. This section can be widened to a four-lane divided section when the traffic volume exceeds 11,000 vpd and widening is warranted. The paved shoulders will provide an adequate bikeway if debris is swept periodically. It would also serve as a breakdown lane for motor vehicles.

## 7.3 Opinion of Probable Construction Cost

A conceptual-level opinion of probable construction cost for the preferred access plans are summarized in Table 4. This estimate does not include the implementation of a multi-use path. The opinion of probable construction cost for this level of planning is developed by estimating the quantities of major construction items, applying unit costs to those items, and then adding percentages for miscellaneous items and mobilization, as well as for engineering and contingencies. Quantities for the major items are based on the conceptual plans and typical sections, and unit costs are based on recent NCDOT bid pricing. These are preliminary estimates and will need to be refined as future decisions are made, and further details are known.

**Table 4. Opinion of Probable Construction Cost**

Segment Description	Distance	Construction Cost
<b>US 17</b> – add concrete median to convert 5-lane to 4-lane divided with median	5.54 miles	\$7,360,000
<b>NC 210</b> – reconstruct existing 2-lane highway to 2-lane divided with raised grass median, wide paved shoulders and a 10-foot multi-use path along the right-of-way line	3.65 miles	\$7,880,000

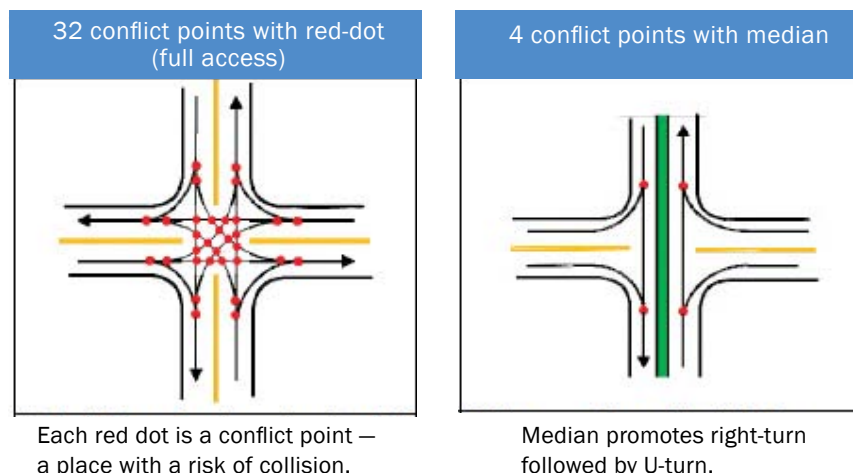
## 7.4 Access Management Initiatives

Access management refers to controlling ingress and egress along a corridor in order to maintain or enhance the capacity and preserve public safety along the corridor. Access management initiatives include providing full left- and right-turn movements only at major intersections, requiring developers to provide access between adjacent residential neighborhoods or connectivity between parking lots for commercial properties, and limiting the number of driveways within a corridor.

Based on several studies, five-lane sections with center turn lanes have higher crash rates than four-lane median-divided roads. This is due partly to a much greater number of conflict points. Figure 9 shows the conflict points at a full movement intersection as compared to a right-in/right-out intersection resulting from implementing a median.

Recent research suggests that any facility with an Average Annual Daily Traffic (AADT) volume of 28,000 vehicles per day (vpd) or greater in the current year or within the 20 year horizon should be median divided for safety concerns.

**Figure 9. Conflict points**



As discussed previously, the current daily volumes on US 17 exceed this threshold and will continue to exceed this threshold in future years. According to the *NCHRP Report 420, Impacts of Access Management Techniques- TRB 1999*, indirect left-turns, or U-turns, are increasingly being used as an alternative to direct left-turns. This maneuver has been reported to produce safety, capacity and travel-time benefits. By implementing right-turns followed by U-turns in place of direct left-turns, reductions of 46% in average crash rate and 63% in injury/fatal crash rates have been reported (*Superstreet Benefits and Capacities- NCSU-ITRE for NCDOT 2010*). Specific research has also been done to evaluate the safety impact of replacing an existing center left-turn lane with a median. According to the *Access Management Manual- TRB 2003*, this retro-fit can result in a 15-57% reduction in overall crashes on a 4-lane road. One specific case study resulted in a 37% reduction in overall crash rate and a 48% reduction in injury crash rate.

It can be expected that the implementation of medians along the study corridor will result in improved safety. Due to the nature of vehicle collisions, many variables affect the rate of crashes - some of which cannot be predicted through models. However, a substantial amount of research has been completed to date, resulting in prediction models for typical crash reductions due to certain countermeasures that are put into place. Based on data reported in the *FHWA Desktop Reference for Crash Reduction Factors, FHWA 2007*, the installation of a median can be expected to reduce the overall crash rate by approximately 15% and has been shown to reduce the number of fatal crashes by approximately 65%. The plan also includes other improvements such as exclusive right-turn lanes, signal phasing improvements and realignment of side streets to improve sight distance. These countermeasures, although not directly related to median installation, will also factor into the overall improved safety of the corridor.

Additionally, a frequent response to the implementation of medians is the concern that restricting left-turn movements will hurt businesses in the area. Access management strategies have no impact on the demand for goods and services within an area. Providing a safer, more efficient environment for customers through the use of medians has proven to actually improve businesses in some areas. “Before and After” studies in Florida, Iowa, Minnesota, and Texas have all shown that most businesses (86%) do as well or better after the installation of a median in front of the business. The type of business that medians are most likely to negatively impact are those that rely on pass-by business, such as gas stations or fast food chains. A recent report on the economic effects of access management techniques in North Carolina, completed by NCSU Institute for Transportation Research and Education and the UNC Highway Safety Research Center, summarizes how customers reported median installation to have no effect or a positive effect on their decisions to use certain businesses. At sit-down restaurants, customers’ decisions were affected in this way 83% of the time; at gas stations 50% of the time; and at fast food restaurants 69% of the time. Recommendations from the



Citizens Informational Workshop on this issue were taken into account. Because the area is predominately commercial, there is an expectation that over time individual property owners will work together to develop cross access between adjacent parcels. The existing street network in the study corridor does not provide good secondary connectivity. Installing a raised median on US 17 is likely to encourage more private property owner discussions about building a secondary street network.

## 7.5 Collector Street Network Recommendation

Limited implementation of the collector street construction recommendations have been accomplished since the 2007 adoption of the Coastal Pender County Collector Street Plan. There are some inherent problems with the plan that could be corrected with an update. Specifically, updates could include:

- Environmental concerns; new and better mapping information showing the extent of wetlands. Some of these wetlands are in the path of proposed collector streets.
- Economic concerns; hardship claimed by developers who may prefer cheaper road construction standards and loss of a few buildable parcels by building through streets instead of cul-de-sacs.

To mitigate these concerns and launch an aggressive program of completing a collector street network, the following is recommended:

- Update the study to identify new road alignments that avoid or minimize wetland damage.
- Create collector street design standards that allow narrow width streets to minimize speeding, incorporate natural traffic calming measures including changes in direction and street name changes, and allow eyebrow type street insets within the development giving developers a slight parcel-bonus to offset their economic hardship claim.
- Pender County could participate in regional discussions and efforts to supplement inadequate state and federal transportation funding. Recommendations in the Cape Fear Commutes 2035 Transportation Plan include the following:
  - Regional Transportation Commission — regional partners should investigate forming a regional transportation commission that would have the authority to generate revenue from taxes and transportation user charges, such as tolls, to pay for future transportation projects of regional importance. Commission membership would be comprised of representatives from the three counties in the region.
  - Tax Increment Financing (TIF)/District Improvement Financing (DIF) — TIFs and DIFs are innovative financing tools that target districts or specific projects for redevelopment through use of tax increments. A tax increment is the difference between the beginning assessed value of the targeted property in its underdeveloped state and the assessed value going forward, as the planned improvements develop.
  - Adequate public facilities requirements — which often address localized deficiencies, the monies can often be pooled to fund larger projects beyond the scope of a single developer. The monies raised from these requirements also have the potential to free up funds for other projects.

The benefits of an efficiently interconnected collector street network are as follows:

- Distributes traffic and potential congestion
- Relieves burden on US 17 by giving local citizens alternate routes
- Creates bicycling and walking routes on low volume, low speed streets
- Improves emergency response time
- Improves public service delivery
- Increases water pressure in homes and businesses

## 7.6 Land Use and Policy Review

### Evaluation of Existing Land Use Patterns and Recommendations

The US 17 Corridor is classified as Mixed Use in the 2010 Comprehensive Plan and is zoned predominantly as General Business, Office & Institutional and Planned Development. No activity nodes or centers have been designated in current or previous plans. Consequently, individual business offices and strip commercial development are the predominant land uses. Many of these establishments were built prior to the NCDOT implementing stricter driveway access regulations in 2003. Consequently, there are numerous driveways too close together resulting in conflicting turning movements and an overabundance of traffic accidents. It is difficult to convert existing strip development into more sustainable development. There are vacant tracts remaining along the US 17 corridor suitable for mixed use development. The construction of a median may induce the assembly of smaller parcels into larger ones to access median openings.

The NC 210 Corridor is classified as Mixed Use in the vicinity of US 17 and as Suburban Growth along the remaining section in the study area. Most of the NC 210 Corridor is zoned as Residential Performance. Much of the NC 210 Corridor is still undeveloped which affords the opportunity to initiate better driveway and access management tools as well as conduct a land use study in preparation for anticipated greater traffic and development pressures once the Hampstead Bypass is built.

The Rocky Point/Topsail Water and Sewer District is currently providing water services to portions of the study area with plans to extend water service along NC 210 within the next three years. Integra is now conducting survey work and designing the proposed sewer system that will serve portions of US 17 and NC 210. These utility improvements will support mixed-use development that may provide better opportunities to implement improved driveway and access designs.

The 2009 Coastal Pender Small Area Plan includes future land use plans for the US 17 corridor. As shown in Figure 10, major portions of US 17 within the study area are planned for future mixed-use development, which will support the planned suburban growth of areas located west of US 17.

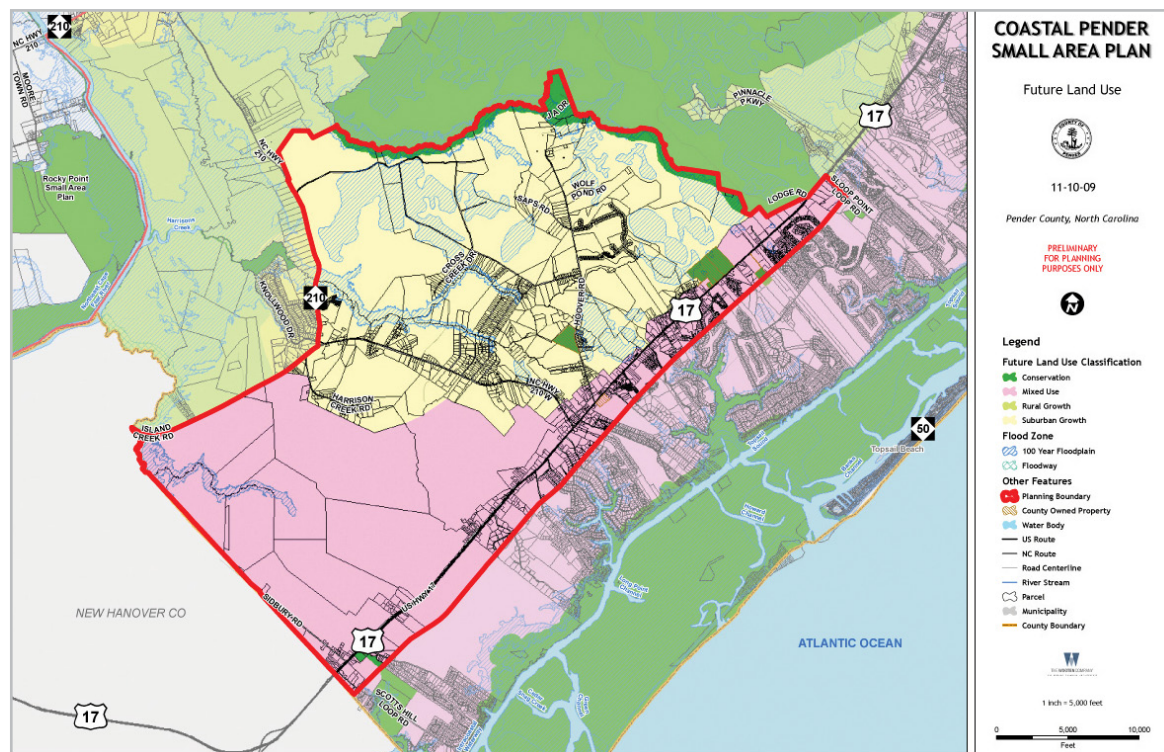
The NC 210/US 17 Bypass interchange provides a special opportunity to create an attractive commercial node at that intersection. A neighborhood planning effort should be undertaken in the near future to create several land use scenarios or even a design charrette for that area.

The Pender County Unified Development Ordinance (UDO) was adopted in June 2010, and has been amended as recently as September 2011. This document is intended to provide specific guidelines for development to ensure safe and efficient development occurs. As new development continues along the Hampstead US 17 and NC 210 corridors, local authorities should ensure adherence to the UDO and take advantage of opportunities that present themselves to make improvements to traffic flow and access management under these guidelines, including the closure or consolidation of driveways along US 17. This usually occurs in the review and approval process for new projects as well as revisions and land use changes for existing development.

### Require Traffic Impact Analysis for Major Developments

Even though existing and future traffic counts are required by the Ordinance for some major developments, a Traffic Impact Analysis is not mentioned. A traffic analysis should be required for any project generating more than 100 peak hour trips. These studies enable local governments to mitigate the impacts of additional traffic during the project approval process. Several jurisdictions within the MPO have already adopted guidelines and processes for completing these studies.

**Figure 10. 2009 Coastal Pender Small Area Plan – Future Land Use**



## Special Corridor Zoning Requirements

Zoning maps for the corridors show that most of the land is already zoned for commercial or planned development with residential properties still predominate along the NC 210 corridor. Future land use patterns are already determined by the development regulations within these districts. Any modifications to these land use scenarios will require a zoning change or the addition of new regulations that may be written especially for the corridors. This would be an easy way to provide additional oversight in the development review process with a special emphasis on the transportation issues facing the Hampstead area. Nearby jurisdictions have utilized this approach to improve the functionality and appearance of their corridors.

Following an update of the Plan, incorporate transportation recommendations from the Coastal Pender Collector Street Plan into the UDO including recommendations for improved roadway interconnectivity and shared driveways and parking. Many of the WMPO 2007 Collector Street plan recommendations still need to be incorporated into the latest UDO ordinance.

## 7.7 Traffic Law Enforcement Recommendation

Currently, Pender County has a mutual enforcement relationship and agreement with the North Carolina Highway Patrol to enforce traffic laws on US 17. Five deputies routinely patrol US 17 in Hampstead. They issue an average of 175 speeding citations each month. Recently, private donations supported the purchase of a digital read-out portable radar speed trailer that is now in use in Hampstead.

According to Pender County Manager Rick Benton's report to the Board of Commissioners on May 2, 2011, priorities for the 2011-2012 budget regarding public safety are to maintain current force levels, offset the cost of new mandatory requirements that increase jail detention costs, and fund a new jail/law enforcement center. The budget shows a

15 percent increase over last year, but with the loss of 4 staff positions (from 91 to 87). One priority for the coming fiscal year is to begin planning for a new jail / law enforcement center. With adoption of the US 17 / NC 210 Corridor Study and Pender County approval, it is recommended that Pender County add traffic law enforcement personnel on US 17 in Hampstead in the ensuing budgets beginning with 2012-2013 through the mutual enforcement relationship with the State Highway Patrol. In addition to speeding citations, the enforcement teams should continue to enforce red-light running violators, tailgating, and reckless driving including using the center turn lane to pass. If necessary, Pender County Sheriff Carson Smith should initiate discussions with the courts and judges in Pender County to increase the percentage of cited motorists whose violations are upheld by the court system. There must be a financial penalty for motorists to take traffic laws seriously. Ultimately, Hampstead should have a reputation similar to that created by the Town of Holly Ridge; that is, “if you speed here, you’ll get a ticket”.

## 8 Policy Recommendations

### 8.1 Access Management

Future decisions concerning land use along US 17 should continue to follow the adopted land use plans and the vision the residents want for this area. These land use decisions should take into account best practices for access management such as driveway density (to consolidate or eliminate driveways where possible) and required connectivity between commercial properties.

### 8.2 Design Elements

**Typical Section** — the basic typical section for US 17 is proposed to be a raised concrete median with two travel lanes in each direction and left-turn lanes at each median opening. Right turn lanes will be provided at key intersections.

**Median** — the median should be designed as a raised concrete median for 45 mph operations. However, in areas where the spacing between median openings is long enough, a raised grass median with mountable concrete curb and gutter, along with planting, if desired, that meets NCDOT requirements, may be installed if Pender County agrees to pay for ongoing plant material and maintenance. NCDOT will fund a raised concrete or grass median, but will not fund landscape planting materials other than grass, nor the maintenance of any landscaping.

**Median Openings and U-turn Accommodations** — median openings are recommended at the following locations in the study corridor:

- **Washington Acres Road** — superstreet, or a full median opening, with traffic signal when warranted and reconstruct Washington Acres Road between Center Drive and US 17 so that the center line of its intersection with US 17 shifts approximately 130 feet south of the existing intersection center line and the angle of intersection approximates 90 degrees.
- **Hughes Road** — leftover type median opening permitting only the northbound left-turn (into Beacon Center). Only right-turn movements would be allowed to and from the side street.
- **Deerfield Drive** — superstreet design with paired leftovers for left-turn movements from US 17. Paved U-turn bulbs would also be built 800 to 1,000 feet to the north (at Headwaters Drive) and south to accommodate U-turn movements.
- **NC 210/Dan Owen Drive** — full median opening maintaining existing traffic signal.

- **Factory Road/Peanut Road** — full median would be constructed restricting all left-turn movements. Only right-turns to and from side streets would be allowed. A paved U-turn bulb would be built 600 feet to the north to accommodate vehicles wishing to go south from Factory Road. A southbound right-turn would be constructed.
- **Atlantic Seafood** — a U-turn bulb is recommended in the vicinity of a platted, but unpaved, road adjacent to the Atlantic Seafood site.
- **Hoover Road** — full median opening maintaining existing traffic signal.
- **Forest Sound Road** — full median would be constructed restricting all left-turn movements. U-turn bulbs are recommended approximately 250 feet north of Forest Sound Road to serve northbound and southbound U-turns from the paired left-turn median opening located just north of this intersection.
- **Hampstead United Methodist Church** — a future collector street is planned just north of Hampstead United Methodist Church. The street could serve one parcel, in which case it would intersect US 17 with a right-in / right-out only configuration. The collector street could however be extended by private property owners to serve multiple parcels; by doing so, sufficient traffic volume may be served such that a traffic signal on US 17 or a superstreet type median opening may be warranted. If approved by NCDOT, then the collector street, median opening and/or traffic signal would be funded by private sources.
- **Loblolly Trail** — U-turn bulbs are recommended approximately 800 to 1,000 feet north of the intersection of US 17 and Loblolly Trail. A bulb would be built on both sides of US 17, to serve northbound and southbound U-turns.
- **Grandview Drive** — a leftover type median opening that provides southbound left-turn movements from US 17, but does not serve left-turns from Grandview Drive onto southbound US 17.
- **William Store Road** — full median would be constructed restricting all left-turn movements. U-turn bulbs are recommended approximately 700 feet north of the intersection of US 17 and William Store Road to serve northbound and southbound U-turns from the paired left-turn median opening located just north of this intersection.
- **Country Club Drive/Jenkins Road** — full median opening maintaining existing traffic signal. No widening for u-turns. U-turn bulbs are recommended approximately 1,300 feet north of the intersection of US 17 and Country Club Drive/Jenkins Road to serve northbound and southbound U-turns from the paired left-turn median opening located north of this intersection.
- **Topsail Middle/Topsail Elementary Schools** — full median opening maintaining existing traffic signal. No widening for U-turns.
- **Transfer Station Road** — a leftover type median opening that provides southbound left-turn movements from US 17. Superstreet or full median opening and traffic signal if warranted and approved by NCDOT, to be funded by private sources.
- **Leeward Lane** — full median would be constructed restricting all left-turn movements. U-turn bulbs are recommended approximately 1,000 feet north of the intersection to serve northbound and southbound U-turns from the paired left-turn median opening located north of this intersection.
- **Long Leaf Drive** — leftover median opening for southbound left turns. Only right-turn movements would be allowed to and from Long Leaf Drive.
- **Sloop Point Loop Road** — full median opening maintaining existing traffic signal. No widening for U-turns.

It should be noted that in addition to the specific median openings listed above, median crossings and openings for emergency services such as fire stations and EMS stations will be considered during the design phase of the project. Coordination with people such as the fire chief will be important during this phase of the process.



### 8.2.1 Bike Lanes

To create the median, each of the four travel lanes must be narrowed by one foot resulting in 11-foot lanes. A wide outside lane suitable for a shared lane (motor vehicle and bicycle) requires a minimum of 14 feet, but is preferably 15 feet wide. A bicycle lane separated from the travel lane with a solid white stripe would require an additional 4 feet of pavement on each side of the roadway. Both bikeway options would require widening on the outside edges of US 17. Bike lanes are not recommended at this time due to the construction cost (widening of pavement, replacement of curb and gutter, replacement of drainage facilities, etc.,) and the potential cost of acquiring additional right-of-way. This recommendation can be revisited once confirmation of final design details for the construction of the Hampstead Bypass is determined, and the need for long-term improvements for US 17 through Hampstead can be further defined.

### 8.2.2 Sidewalks

In most places on US 17 in the study area, there is sufficient space within the existing right-of-way to provide a multi-use path on both sides of US 17 in Hampstead. Figures 11 and 12 show the proportion of area of Hampstead within walking distance (one mile) of the Food Lion, Pender County Library, and Topsail Schools. These figures also show the proportion of area within cycling distance (five miles).

Construction of a multi-use path on both sides of US 17 would improve the safety of people walking and cycling. Based on conceptual design layouts on aerial photos, a ten-foot wide multi-use path may fit within the existing right-of-way on both sides of US 17 in Hampstead. The right-of-way width is consistently 100 feet wide. The typical section now ranges from 60 feet up to 90 feet where there are right-turn lanes, with curb and gutter on both sides. In the segments of US 17 without right-turn lanes, it is conceptually feasible to add a ten-foot multi-use path on both sides of the road. One concept for the design is to provide a three-foot wide grass strip behind the back of curb on each side, a ten-foot wide multi-use path, and two feet behind the path/sidewalk for a utility strip. In addition to right-turn lanes, other potential conflicts may arise with one or a combination of the following features:

- Underground or above ground utilities
- Drainage ditches
- Culverts
- Vertical elevation / slopes
- Buildings at the edge of right-of-way
- Parking lots at the edge of right-of-way
- Plans to build paved bulb-outs to handle U-turn movements on US 17

There is a small cemetery which would require narrowing the path along that property. There are some areas where construction limits would be outside of the right of way due to existing fill sections. As one example, the Scotchman Store at Country Club and US 17 would be affected with a ten-foot path built on the east side of US 17.

**Figure 11.**  
**Walking and biking to school in Hampstead**



**Figure 12.**  
**Walking and biking to store in Hampstead**



## 9 Implementation Plan

### 9.1 Project Phasing

NCDOT's goal is to obtain funding for the entire project and implement the recommended improvements under one contract. However, if funds are limited they will determine the sequence of project phases based on need and funding amounts. At this point, NCDOT has identified some priority segments for improvement based on efficiency and need for safety at certain locations. Table 5 summarizes the top three (3) priorities for improvement. These improvements would be implemented as funding becomes available, as discussed below.

**Table 5. Improvement Implementation Priorities**

Priority	Location	Specific Improvement(s) and Comments
1	US 17 at NC 210/Dan Owen Drive	Median implementation and signal improvements
2	US 17 at GoGas/Hardware/Loblolly Drive Commercial Area	Median implementation and driveway consolidation
*	US 17 at Hoover Road	May be implemented as part of Priority 1 or 2; Median implementation and signal improvements
3	US 17 at Washington Acres Road	Intersection realignment and speed enforcement

### 9.2 Project Funding

A combination of state and federal funding sources to be identified by NCDOT may be used. Funding from the Hazard Elimination Program will be pursued; this program is intended to develop larger improvement projects to address safety and potential safety issues. The program is funded with 90% federal funds and 10% state funds. The cost of Hazard Elimination Program projects typically ranges between \$400,000 and \$1 million. A Safety Oversight Committee (SOC) reviews and recommends Hazard Elimination projects to the Board of Transportation (BOT) for approval and funding. These projects are prioritized for funding according to a safety benefit to cost (B/C) ratio, with the safety benefit being based on crash reduction. Once approved and funded by the BOT, these projects become part of the State Transportation Improvement Program (STIP).

### 9.3 Conclusion

US 17 in Hampstead is a strategic highway corridor in North Carolina. It serves a wide range of travel needs in the local Hampstead community and it is the key highway link connecting Wilmington with Jacksonville and New Bern. Furthermore, the route is heavily used by people visiting nearby beaches and traveling on long-distance trips. There are many commercial retail businesses fronting both sides of US 17 in Hampstead that depend on access for their customers. The combination of different user groups, length of trip, and drivers' expectation for reasonable travel times are often in direct conflict with local desires for access to businesses. In fact, the crash records reflect numerous auto crashes with one vehicle reported traveling 45 mph or more colliding with another vehicle traveling 5 mph or less. Sight distances from driveways are generally adequate, but motorists departing from businesses sometimes take unnecessary risks or simply don't adequately judge the speed of oncoming traffic. The collision rate on US 17 in Hampstead is 16 percent higher than expected when compared with similar types of 5-lane roads in North Carolina.

Recent access management improvements in nearby Scotts Hill and Sloop Point offer a successful demonstration of what is now recommended in Hampstead. A median is recommended in Hampstead with only limited median



openings. These openings would be spaced at distances that provide opportunity for U-turns without excessive extra travel length, while maintaining adequate distance to achieve the safety benefit of this type of facility. Each median opening will be well-designed with exclusive left turn lanes, tapers and superstreet configurations to accommodate U-turns. Opportunities will be created for large tractor-trailer trucks to make U-turns. Based on examples of this facility type being implemented, it is expected that the crash rate in Hampstead will be reduced after this corridor is converted to a median divided facility with superstreet configurations along its length.

## Appendix

## Appendix A

### TRAFFIC

## APPENDIX A - TRAFFIC

### A 1. EXISTING CONDITIONS

Turning movement counts collected in September and October 2010 were obtained from NCDOT Division Engineering Office at major intersections along US 17. These counts were collected during the weekday AM and PM peak hours at intersections in the study area.

Table A - 1 summarizes the schedule used to obtain the turning movement data.

**Table A - 1 Weekday Peak Hour Turning Movement Count Schedule**

Intersection	Time of Data Collection	Date of Count
US 17 and SR 1582 (Washington Acres Road)	6:30 AM – 8:30 AM 4:00 PM – 6:00 PM	Thursday 17-Mar-11
US 17 and SR 1618 (Hughes Road)	6:30 AM – 8:30 AM 4:00 PM – 6:00 PM	Wednesday 22-Sep-10
US 17 and SR 1673 (Deerfield Drive)	6:30 AM – 8:30 AM 4:00 PM – 6:00 PM	Tuesday 28-Sep-10
US 17 and SR 1741 (Headwaters Drive)	6:30 AM – 8:30 AM 4:00 PM – 6:00 PM	Wednesday 22-Sep-10
US 17 and NC 210/Dan Owens Drive	6:30 AM – 8:30 AM 4:00 PM – 6:00 PM	Wednesday 6-Oct-10
US 17 and SR 1570 (Peanut Road/Factory Road)	6:30 AM – 8:30 AM 4:00 PM – 6:00 PM	Wednesday 3-Mar-10
US 17 and SR 1569 (Hoover Road)/Driveway	6:30 AM – 8:30 AM 4:00 PM – 6:00 PM	Tuesday 12-Oct-10
US 17 and Forest Sound Drive	6:30 AM – 8:30 AM 4:00 PM – 6:00 PM	Wednesday 13-Oct-10
US 17 and SR 1565 (Country Club Drive)/SR 1593 (Jenkins Road)	6:30 AM – 8:30 AM 4:00 PM – 6:00 PM	Tuesday 19-Oct-10
US 17 and Topsail School Entrance/Vista Lane	6:30 AM – 8:30 AM 4:00 PM – 6:00 PM	Wednesday 20-Oct-10
US 17 and SR 1675 (Long Leaf Drive)	6:30 AM – 8:30 AM 4:00 PM – 6:00 PM	Tuesday 26-Oct-10
US 17 and SR 1563 (Sloop Point Loop Road)	6:30 AM – 8:30 AM 4:00 PM – 6:00 PM	Wednesday 3-Nov-10

In November, 2010, NCDOT installed a dura-curb median at the US 17 and SR 1618 (Hughes Road) intersection to restrict the southbound traffic on US 17 from making a left-turn onto SR 1618 (Hughes Road). Therefore, more recent counts were collected on March 17, 2011 at the US 17 and SR 1582 (Washington Acres Road) to reflect the change in traffic patterns due to the change in access at US 17 and SR 1618 (Hughes Road) intersection. After the installation of the median, some traffic from US 17 and SR 1618 (Hughes Road) intersection moved to SR 1582 (Washington Acres Road) resulting in an increase traffic turning left onto US 17 at SR 1582 (Washington Acres Road). This is resulted in some U-turn traffic at SR 1582 (Washington Acres Road), as well.

## A 2. FUTURE YEAR CONDITIONS

An annual growth of 2.5 percent was applied to the turning movement counts to forecast future growth in background traffic between 2010 and 2020, the interim analysis year assumed for this study. In addition, trips related to specific approved developments were added to the background growth to create a composite Year 2020 Traffic Volume dataset. Manual adjustments were made to the future (2020) year volumes to reasonably balance traffic volume between intersections; that is, to offset differences in traffic counts between adjacent intersections. To obtain, the future (2020) year volumes with recommended median and lane configurations, traffic was redistributed at appropriate intersections to account for changes such as converting existing full-movement intersections to right-in/right-out and leftover type intersections.

Intersection level of service (LOS) analysis was performed for the typical weekday AM and PM peak hours using *Synchro/SimTraffic Professional Version 7* under both Existing (2010) and Future (2020) conditions. A summary of the findings for the LOS analysis for intersections along US 17 can be found in Table A - 2. The storage lengths at turn lanes were determined based on the 95th percentile queues obtained from *Synchro, Version 7*. That is, the 95th percentile queue is the maximum back of queue considering the 95<sup>th</sup> percentile peak hour traffic volumes.

Several of the intersections within the study area were studied as part of a US 17 NCDOT Feasibility Study (FS-0803B). This study investigated a longer-term design year (2035) and utilized forecasts prepared by the NCDOT Transportation Planning Branch. Table A - 2 provides the projected long-term operations, both with and without the Hampstead Bypass in place (Alternatives 1 and 2 in the US 17 Feasibility Study). Both scenarios assume widening existing US 17 to add one additional through lane in each direction and upgrading to include a median where there is not one present. Additionally, the intersections in the study area were improved by adding turn lanes, traffic signals, or superstreet intersections where necessary to improve them to an acceptable LOS. A summary of the capacity analysis results are in Table A - 2.

Capacity analysis was completed using *Highway Capacity Software Plus (HCS+)* for NC 210. Based on the capacity analysis for the two-lane highway, NC 210 is projected to operate acceptably under the existing configurations during both Existing (2010) and Interim (2020) conditions. Table A - 3 details the results of the segment analysis for NC 210.

Figures on the pages that follow this depict information used to assess traffic levels of service. They are:

Figure A.1: Existing (2010) Lane Configurations and Traffic Control

Figure A.2: Existing (2010) AM and PM Peak Hour Turning Movement Volumes

Figure A.3: Composite Estimate of Approved Development Site Traffic

Figure A.4: 2020 5-lane section - AM and PM Turning Movement Peak Hour Volumes

Figure A.5: 2020 4-lane median-divided section - AM and PM Turning Movement Peak Hour Volumes



**Table A - 2 Level of Service and Delay Summary**

Intersection	2010 Existing		2020 Recommended		2035 Build without Hampstead Bypass <sup>1</sup>		2035 Build with Hampstead Bypass <sup>2</sup>	
	AM	PM	AM	PM	AM	PM	AM	PM
US 17 & SR 1582 (Washington Acres Road) (unsignalized, signalized by 2020)	(NB-D)	(NB-E)	C (NB-D) 25.5 sec	E (EB-F) 72.1 sec	F (WB-F) 239.5 sec	F (EB-F) 259.3 sec	B (NB-D) 17.7 sec	B (NB-E) 19.1 sec
US 17 & SR 1618 (Hughes Road) (unsignalized)	(SB-D)	(SB-F)	(SB-D)	(SB-E)	C (NB-F) 21.7 sec	C (NB-F) 25.1 sec	B (NB-D) 13.4 sec	A (NB-E) 9.8 sec
US 17 & SR 1673 (Deerfield Drive) (unsignalized)	(NB-B)	(SB-C)	(NB-C)	(NB-D)	F (WB-F) 239.5 sec	F (NB-F) 312.1 sec	B (NB-D) 10.3 sec	A (NB-E) 8.3 sec
US 17 & NC 210/Dan Owen Drive (signalized)	C (SB-E) 31.1 sec	D (SB-F) 54.9 sec	E (SB-F) 79.8 sec	F (EB-F) 242.2 sec	F (WB-F) 253.3 sec	F (EB-F) 265.1 sec	E (NB-F) 66.2 sec	E (SB-F) 62.6 sec
US 17 & Factory Road/Peanut Road (unsignalized)	(SB-F)	(NB-E)	(SB-E)	(NB-F)	E (NB-F) 76.0 sec	F (EB-F) 222.0 sec	(SB-C)	(SB-B)
US 17 & Hoover Road/Driveway (signalized)	C (SB-D) 25.7 sec	B (SB-D) 16.5 sec	F (WB-F) 167.4 sec	F (WB-F) 206.4 sec	N/A	N/A	N/A	N/A
US 17 & Forest Sound Road (unsignalized)	(NB-F)	(NB-F)	(NB-B)	(NB-C)	N/A	N/A	N/A	N/A
US 17 & New Median opening east of Old Marsh Road (unsignalized)	-	-	(SB-E)	(SB-F)	N/A	N/A	N/A	N/A
US 17 & SR 1593 (Jenkins Road)/SR 1565 (Country Club Drive) (signalized)	D (NB-F) 41.4 sec	C (NB-F) 25.3 sec	F (NB-F) 134.8 sec	F (NB-F) 146.3 sec	F (SB-F) 91.4 sec	F (NB-F) 94.0 sec	C (SB-D) 30.0 sec	C (SB-E) 34.9 sec
US 17 & Topsail School Entrance/Vista Lane (signalized)	C (NB-D) 31.3 sec	B (SB-D) 11.5 sec	F (WB-F) 94.7 sec	E (WB-F) 76.9 sec	N/A	N/A	N/A	N/A
US 17 & Transfer Station Road/Bayberry Driveway (unsignalized, signalized by 2020)	(NB-C)	(NB-C)	D (NB-F) 54.9 sec	F (WB-F) 287.9 sec	N/A	N/A	N/A	N/A
US 17 & SR 1675 (Long Leaf Drive) (unsignalized)	(NB-D)	(NB-D)	(NB-C)	(NB-D)	N/A	N/A	N/A	N/A
US 17 & SR 1563 (Sloop Point Loop Road) (signalized)	B (NB-C) 18.4 sec	B (NB-D) 11.9 sec	B (NB-D) 18.7 sec	B (NB-D) 18.9 sec	N/A	N/A	N/A	N/A

LEGEND: X = Overall Intersection LOS; (XX-X) = Worst Approach-Worst Approach LOS; XX.X sec = Delay in seconds

<sup>1</sup> Obtained from US 17 Feasibility Study (NCDOT FS-0803B) – Alternative #1

<sup>2</sup> Obtained from US 17 Feasibility Study (NCDOT FS-0803B) – Alternative #2

**Table A - 3 Segment Capacity Analysis along NC 210**

Scenario	Segment Type	LOS	
		AM	PM
Existing (2010)	Two-lane	C	C
Future (2020)	Two-lane	D	D

### A 3. CRASH ANALYSIS

The crash analysis was derived from available crash data obtained from NCDOT. The data covered the period from August 1, 2005 to December 31, 2010. The duration of crash data is 5.5 years which is longer than the typical 5 year study period in order to consider crash data during the last six months of 2010.

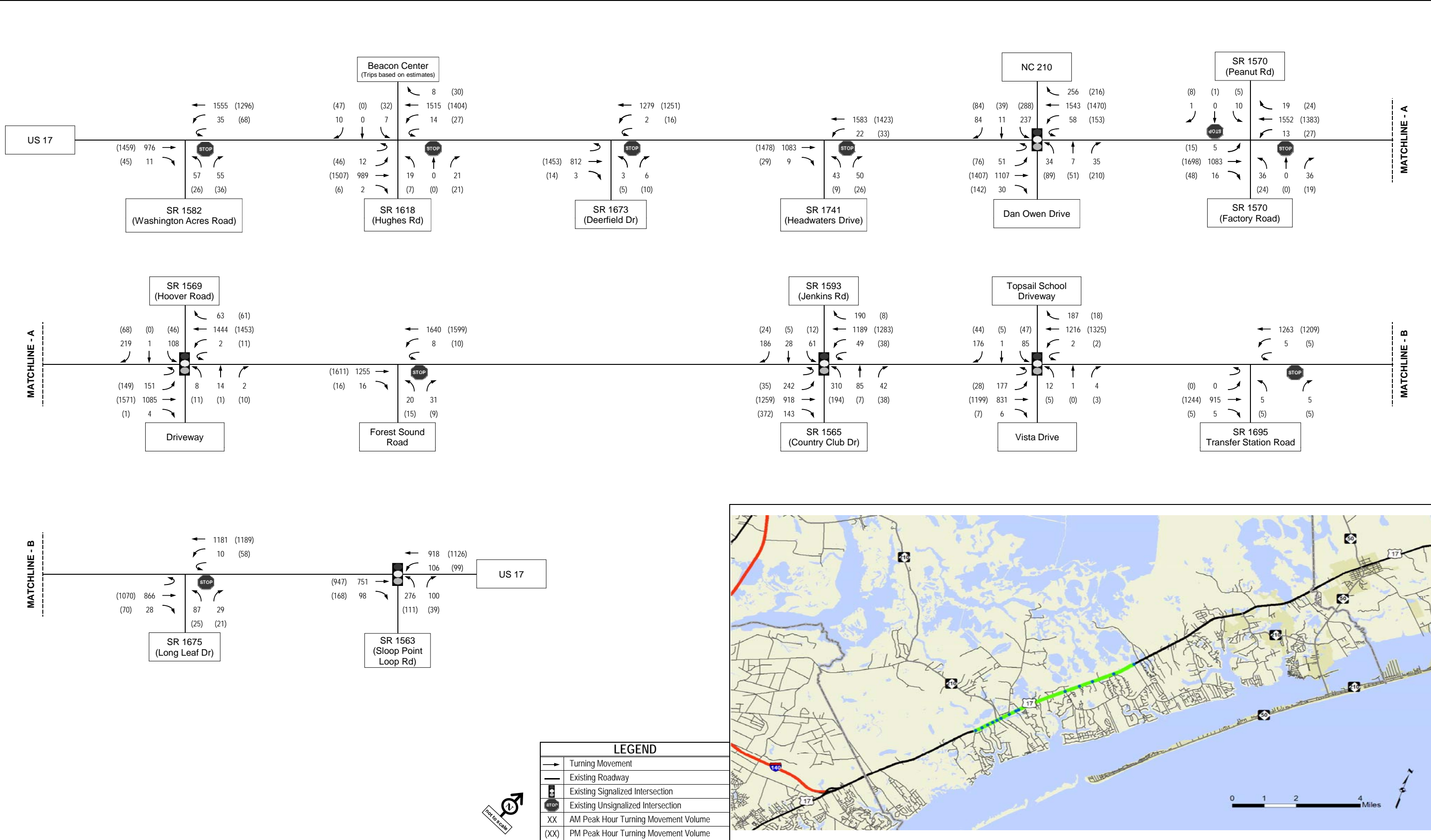
The most common collision type along the US 17 corridor was rear-end crashes followed by left-turns crashes. Rear-end collisions generally indicate overall congestion issues, as these type of collisions occur mainly in areas where there is frequent “stop and go” traffic or at traffic signals where vehicles may stop suddenly stop to avoid running a red light. Turning collisions often indicate the need for more controlled access to side streets, thereby localizing the turning movements, making them more predictable to on-coming traffic. Along with turning collisions, installing medians to control access may also result in significant reduction head-on and angle collisions. Also, installing backplates and larger signal lens at existing signalized intersections is recommended.

Table A - 4 details the total number of crashes correctable with a median along US 17 in the study area.

**Table A - 4 US 17 Corridor Collisions Potentially Correctable with Median**

US 17 and NC 210 Crash Summary, Correctable with Median									
Mile Post		Intersection	Mid-Block	Traffic Control	Length in miles	Angle	Left- turns	Head On	TOTAL
FROM	TO								
3.77	3.80	Washington Acres Road (SR 1582)		Unsignalized	0.03	0	9	0	9
3.81	3.98		Between Washington Acres - Hughes		0.17	0	1	0	1
3.99	4.05	Hughes Road (SR 1618)		Unsignalized	0.06	1	0	0	1
4.05	4.17		Between Hughes and Deerfield		0.12	0	1	0	1
4.18	4.26	Deerfield		Unsignalized	0.08	0	2	0	2
4.27	4.54		Between Deerfield and NC 210		0.27	2	15	3	20
4.55	4.58	NC 210/Dan Owens Drive		Signalized	0.03	6	13	0	19
4.59	4.64		Between NC 210 and Factory Rd/Peanut Rd		0.05	0	6	0	6
4.65	4.71	Factory Road/Peanut Road		Unsignalized	0.06	6	10	0	16
4.72	4.91		Between Factory Rd/Peanut Rd and Hoover		0.19	0	2	0	2
4.92	4.98	Hoover Road (SR 1569)		Signalized	0.06	1	15	0	16
4.99	5.15		Between Hoover and Forest Sound		0.16	0	4	1	5
5.16	5.21	Forest Sound		Unsignalized	0.05	0	3	0	3
5.22	5.45		Between Forest Sound and Loblolly		0.23	0	7	0	7
5.46	5.49	Loblolly Trail		Unsignalized	0.03	0	7	0	7
5.50	5.93		Between Loblolly and Grandview		0.43	0	1	1	2
5.94	6.00	Grandview		Unsignalized	0.06	0	0	0	0
6.01	6.42		Between Grandview and Williams Store		0.41	0	3	0	3
6.43	6.49	William's Store Road (SR 1568)		Unsignalized	0.06	1	1	0	2
6.50	7.02		Between Williams Store and Country Club		0.52	2	4	0	6
7.03	7.09	Country Club (SR 1565)/Jenkins Road (SR 1593)		Signalized	0.06	2	15	0	17
7.10	7.49		Between Country Club and Vista		0.39	0	2	0	2
7.50	7.56	Vista Lane/Topsail School Entrance		Signalized	0.06	0	3	1	4
7.57	7.86		Between Vista and Transfer Station		0.29	1	1	0	2
7.87	7.93	Transfer Station (SR 1695)		Unsignalized	0.06	0	0	1	1
7.94	8.62		Between Transfer Station and Long Leaf		0.68	0	2	0	2
8.63	8.69	Long Leaf (SR 1675)		Signalized	0.06	0	3	0	3
8.70	9.40		Between Long Leaf and Sloop Pt Loop		0.70	0	0	1	1
9.41	9.43	Sloop Point Loop Road (SR 1563)		Signalized	0.02	0	12	0	12
		<b>CORRIDOR-WIDE TOTAL</b>				<b>22</b>	<b>142</b>	<b>8</b>	<b>172</b>

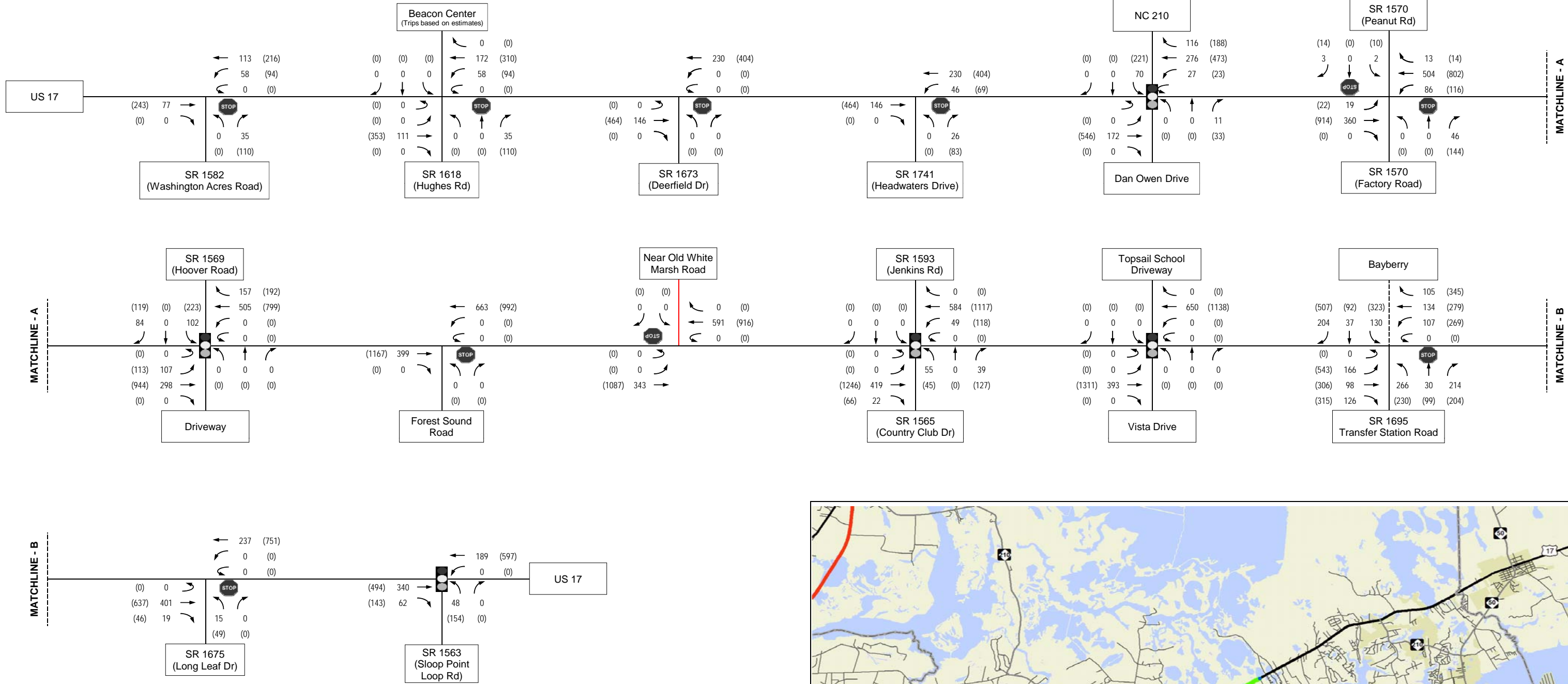




US 17/NC 210 Corridor Study

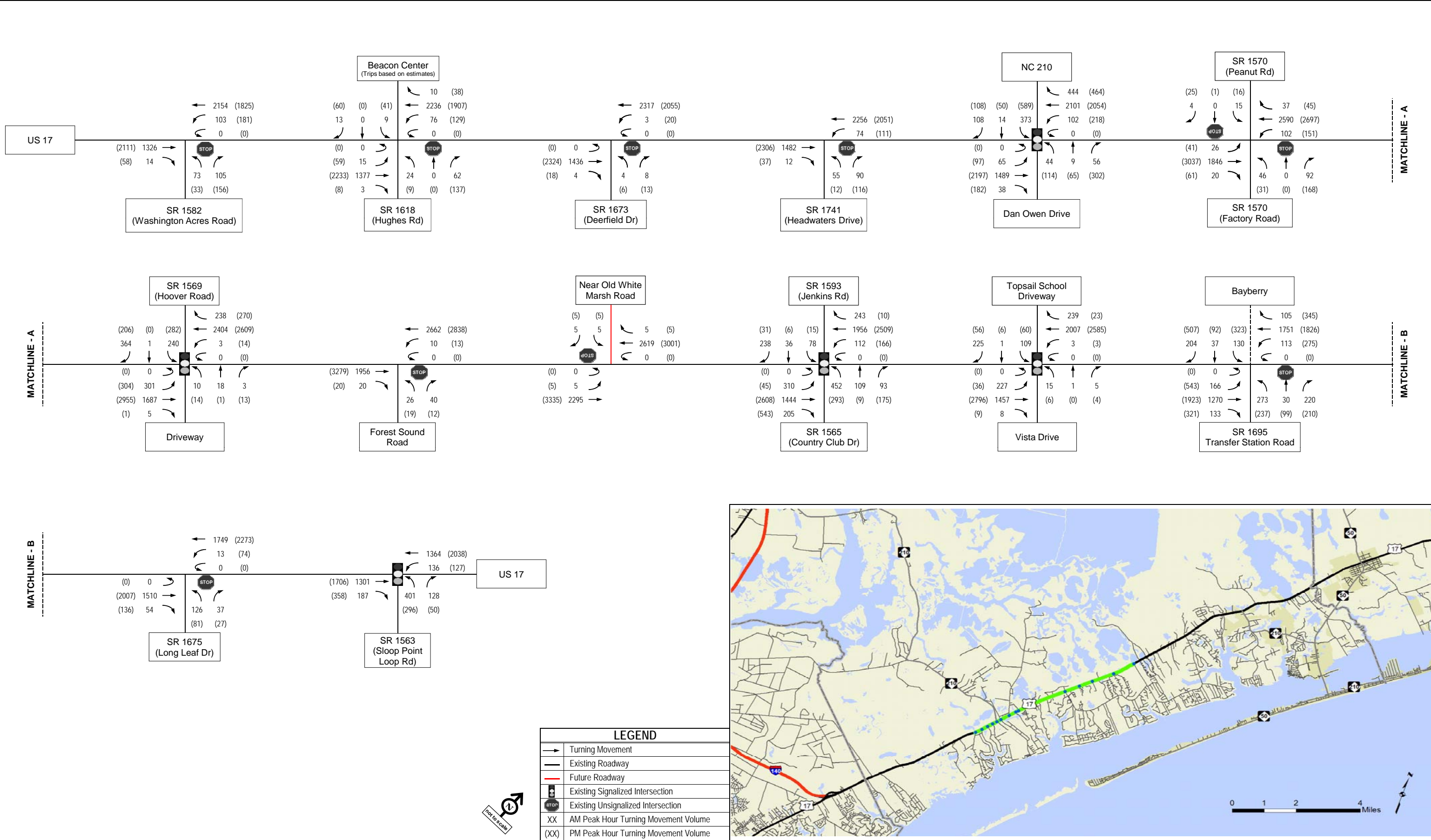
Figure A.2  
Existing (2010) AM and PM Peak Hour Turning Movement  
Volumes





LEGEND	
	Turning Movement
	Existing Roadway
	Future Roadway
	Existing Signalized Intersection
	Existing Unsignalized Intersection
XX	AM Peak Hour Turning Movement Volume
(XX)	PM Peak Hour Turning Movement Volume

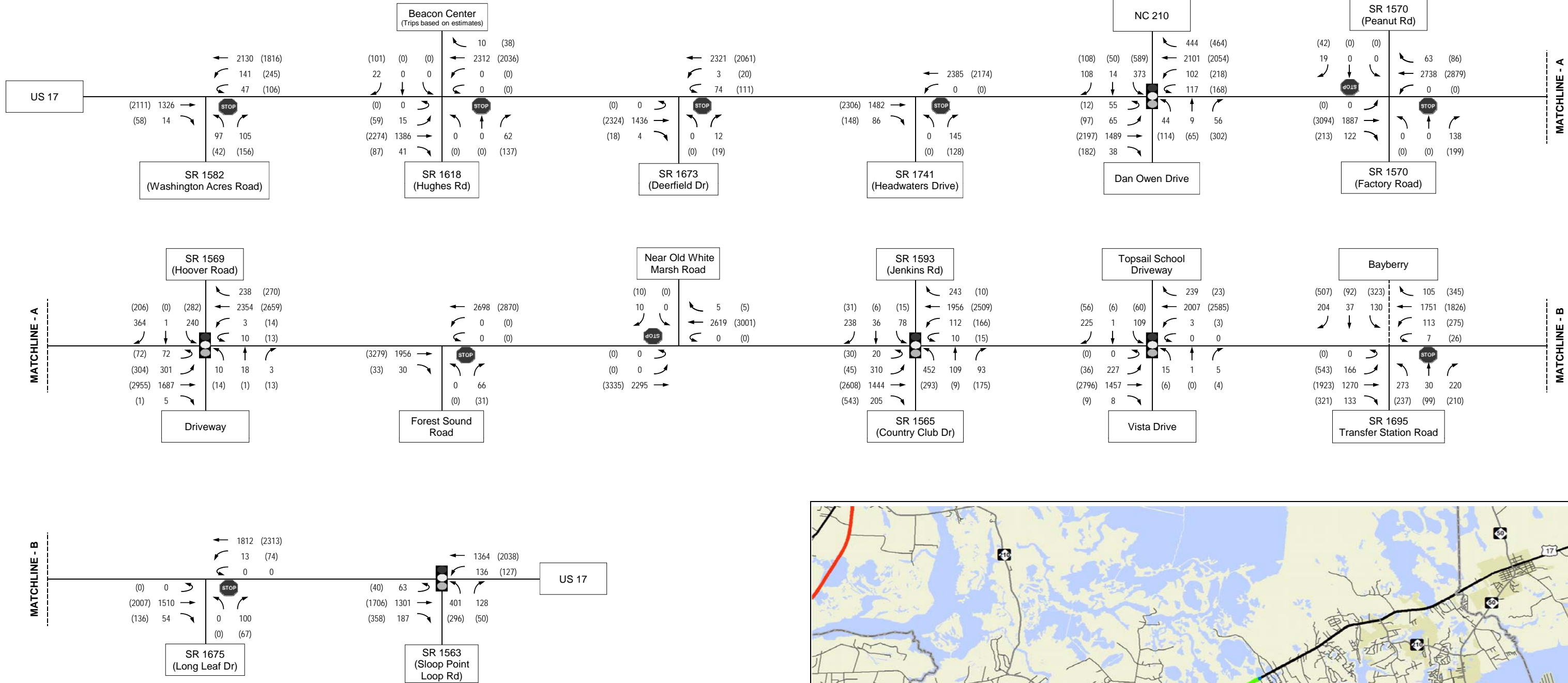




US 17/NC 210 Corridor Study

Figure A.4  
2020 5-lane section - AM and PM Peak Hour Turning  
Movement Volumes





LEGEND	
	Turning Movement
	Existing Roadway
	Future Roadway
	Existing Signalized Intersection
	Existing Unsignalized Intersection
XX	AM Peak Hour Turning Movement Volume
(XX)	PM Peak Hour Turning Movement Volume



US 17/NC 210 Corridor Study

Figure A.5  
2020 4-lane median-divided section - AM and PM Peak Hour  
Turning Movement Volumes

**Appendix B**  
**PUBLIC MEETINGS**

## APPENDIX B - PUBLIC COMMENTS

### Contents

- B 1. Public Comments submitted at the public workshop on December 16, 2010 at Topsail High School
- B 2. Public Comments submitted at the public workshop on March 3, 2011 at Topsail High School
- B 3. Public Comments submitted in writing at the May 12, 2011 Open House at Topsail High School
- B 4. Public Comments Submitted via e-mail
- B 5. September 7, 2010 Citizen Meeting
- B 6. US 17/ NC 210 Business Focus Group Session – 2/7/2011
- B 7. US 17/ NC 210 Resident Focus Group Session – 2/8/2011
- B 8. US 17/ NC 210 Economic Development Focus Group Session – 2/22/2011
- B 9. Partial List of Access Changes With Raised Median
- B 10. Frequently asked Questions – Posted to Project Website

### B 1. PUBLIC COMMENT SUBMITTED AT THE PUBLIC WORKSHOP ON DECEMBER 16, 2010 AT TOPSAIL HIGH SCHOOL

#### Question: Most Important Action To Take Immediately

Index cards were handed to each attendee with instructions to write down their opinion as to the most important action to take immediately to enhance US 17 and/or NC 210 and to be specific about location. The following suggestions were made:

#### Areawide

- Consistent law enforcement of speed limits (listed on 3 index cards)
- Post radar signs [speed feedback signs]
- Reduce speed limit again

#### Specific to a Location

- Signage and/or lighting on both access points entering Hampstead [gateways] informing drivers of the 45 mph zone throughout Hampstead
- Entering the high school area [on US 17], there should be signage and/or lights informing drivers they are entering a school zone
- Topsail Elementary School gets a lot of traffic on weekdays and special events. Open [extend?] Godfrey Creek Road all the way to the school to handle school traffic from NC 210
- Ace, Go Gas, and Dollar General need something ASAP
- [Act at:] Go Gas / Hampstead Village
- [Act at:] Recycling Stations/Transfer Station Road
- [Act at:] Hoover Road Signal
- [Act at:] West side of US 17 from Hoover to NC 210
- [Act at:] Washington Acres intersection





**Question: What do you think are potential engineering solutions to improving US 17?**

***Area-wide Engineering Suggestions***

- It is important to keep in mind while making improvements that traffic should continue to be free-flowing and smooth on US 17. That is a good thing.
- US 17 is a major highway passing through the Hampstead community. There needs to be a better design to handle both the high volume of local and through traffic.
- Make signs easier to read; very confusing now
- Phase or synchronize traffic signals [there was a lot of support for this. The folks in one group went so far as to suggest adding additional signals to help coordinate traffic. They specifically mentioned the Methodist Church as a place a signal could be added.]
- Increase the duration of “All-red” times at signals [after one direction goes to red and before the other direction turns green]
- Make it safe to make left-hand turns on US 17
- Provide safe and controlled U-turn spaces
- Michigan turns would be good for some places. [A Michigan turn is a right-turn followed by a U-turn at the next safest location to do so]
- There was support for the elimination of left turns at signals and the use of Quadrant roads to allow that movement. [Quadrant roads require motorists who want to turn at a main intersection to turn in advance or after the main intersection and use a secondary road system to make the main intersection operate efficiently. That simplifies the signal phasing at the main intersection and reduces overall delay.]
- Speed limit should be 35 mph in the Hampstead section of US 17. The recent change from 55 to 45 mph has not slowed down the traffic enough to improve safety. Reduce speed limit to 35 mph. [Facilitator asked but got no support for speed limit below 35 mph]
- Improved access management including consolidating driveways, requiring shared driveways for proximate parcels, and connecting parking lots.
- Fewer driveways to US 17. Consolidate driveways wherever possible to simplify conflicts.
- Improve visibility when two vehicles attempt to exit the same driveway at the same time.
- There were issues raised about sunlight conflicts during certain times of the year.
- Update the Unified Development Ordinance to include better access management regulations. Some business owners stated a willingness to consider access management but didn’t want all access eliminated as that would have a negative impact on their business. [NCDOT rarely closes all driveways to a business as that is anti-business and would require purchasing the business at state expense. Instead, a strategy of consolidating driveways serving the same business or having adjacent businesses share a driveway is often pursued. Another strategy is to limit left-turn movements into or out of a business driveway where public safety is a concern.]
- Provide a [grass or raised curb] median and diminish the use of "Suicide Lanes" [2-way left-turn lanes]
- Some speeders will drive in the median turn lane or use it to pass other vehicles. However, there often is not anything to turn to so why not eliminate the median turn lane for these parts of the road.
- Extra deceleration lanes/right turn lanes should be considered throughout. With right turns into high activity places, there are a lot of near misses for rear-ending. The angle of some turns requires slowing down a lot, but with high speeds, this leads to dangerous conditions.

- Develop service road connecting properties off of US 17, especially in the Go Gas area.
- Utilizing service roads to access businesses either in front of business or in behind. One suggestion was to use the abandoned railroad right of way.
- Most roads go to or from the water so there aren't really any parallel roads for local traffic other than US 17. There may be some spots where parallel roads could be added that would alleviate some pressure on US 17.
- A lower priority item is bike lanes; one gentleman biked some which was considered very dangerous by general consensus.
- There are not many pedestrians and they weren't seen as a high priority.
- Improve the visibility on the north end. This was most tied to the vertical alignment [sight distance] along the road.
- Visibility or lighting did not seem to be a major issue along the corridor; only at the specific locations it was mentioned.

#### ***Engineering Suggestions - Specific to a Location***

- Adding treatments to the roadside when you come in to Hampstead [at community gateways on US 17]. This was more about place-making than changes to the street. The goal was to reinforce the lower speed limit message.
- The intersection at Country Club Drive is a concern where there are two left turn lanes to get to the school and an Exxon Station. People try to take a left out of the Exxon station to head south which is a move that requires crossing 4 lanes. You should not be able to take a left coming out of the Exxon station.
- Hoover Rd. [at US 17] intersection is a concern. There was a desire to do something about the limited sight distance at Hoover Road, but there were no specific solutions offered.
- Spring Branch Junction making a left turn across two lanes and a widened lane is a concern.
- Transfer Station Road right turn is a concern. There should be a deceleration lane / right turn lane. There is a problem with near misses for rear-ending.
- Factory Rd is a hard place to get out of going south.
- Ace Hardware [driveway] is a concern.
- One suggestion was to buy the property behind the post office and build a road that would connect to Dan Owen Drive so that people could come out of Factory Road and take the new road to the Food Lion shopping center and/or use the traffic signal at US 17/Dan Owen.
- One suggestion was for NCDOT to buy the front part of the area by the Methodist church and Dominoes to provide a little entrance with a signal.
- In the High School area, there are no warnings that it is a school zone, except for some really small signs. There should be a lowered speed limit during the hours when school is starting or ending, and there should be blinking signs conspicuously placed to mark it as a school zone.
- Not much was viewed as a problem on NC 210. After Peanut Road, it is smooth sailing on 210.

#### ***Question: What do you think are potential enforcement improvements for controlling traffic on US 17?***

- Need consistency of enforcement. Just issuing speeding tickets occasionally does little to reduce speeding and change drivers' behavior.

- Enforcement was really desired to keep speeds in check and prevent dangerous moves like people passing or driving in the median. Speeding and tailgating are real problems.
- Hampstead needs to earn the reputation of being a strict enforcement area such as does "Holly Ridge, NC" and "Emporia, VA. " (Note: The Town of Holly Ridge has a police department that coordinates "Driving While Impaired" checkpoints complete with the "Bat Mobile" that has a magistrate on board. )
- Many other small towns like Biloxi, MS also have a "strict enforcement" reputation. Biloxi has a magistrate on duty 24 hours a day to process speeding tickets as well as to dispense the cases of drivers who are disrespectful to the police.
- Should have warning signs at the community entrances noting that radar is used to control speeding.
- Better enforcement on weekends to control military "joy" trips to Wilmington.
- Drivers are not responding to the new median controls placed at one of the Washington Acres entrances. Many have seen drivers pass right through the barriers and continue to make left hand turns. One participant noticed that a driver was stopped by the NC Highway Patrol for doing this maneuver.

**Question 3: What education efforts could be implemented to improve roadway safety?**

- Education and Encouragement was thought to only work on locals who weren't deemed to be as big a problem as people driving through Hampstead.
- Drivers themselves need to be more aware of the hazards along US 17, especially making left-hand turns and U-Turns.
- The Barrier by Beacon / Washington Acres is confusing, "looks like a mistake," and is a reactive decision. There is often a line of traffic in the mornings on Washington Acres Road trying to head south to Wilmington. The general consensus is that the barrier is a mistake. Most people want to take a left out in the mornings to go to Wilmington and a right out in the evenings to go to the Food Lion. Some wanted to know about the possibility of a traffic light.
- Need signs by the Washington Acres median improvement to direct drivers where it would be safe to make U-turns.
- Engineering and enforcement improvements are needed and locals will learn and adapt to changes by using US 17.

**Other comments:**

Future Development: One participant mentioned that a new development with 1,000 homes is planned for the site across from the existing County Waste Disposal site on US 17. US 17 study improvements should consider planned as well as existing development.

Military Convoys: Numerous military convoys pass through Hampstead. Many of these are "Training Exercises" associated with Camp LeJeune. These are very heavy vehicles that do not stop quickly.

Washington Acres: Keep the 45 mph limit and make the Hwy 17/Washington Acres Rd intersection a Right turn only and install a traffic signal with a "Michigan" turn at Hughes Rd.

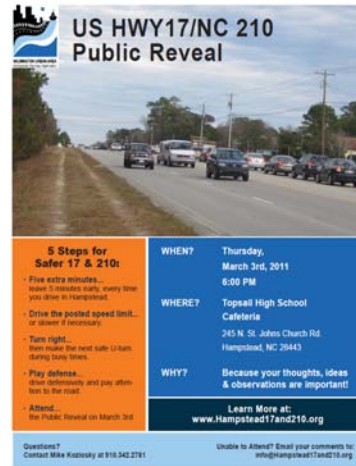
Go Gas: Mr. Frank Taylor of Go Gas was in this small group. Mr. Taylor mentioned that the Go Gas property was originally considerably larger but has been reduced as US 17 has been widened. Any new improvements to US 17 would probably result in the gas tanks having to be moved. The Go Gas station was the first commercial development in this area. The Ace Hardware complex was

built later. The driveway access for this commercial use was placed too close to the existing Go Gas driveways. All of the commercial uses in the Go Gas area would need to agree to improvements such as connecting driveways or building a service road before such an improvement was implemented. There have been no traffic accidents in front of Go Gas since the speed limit was reduced from 55 to 45 mph. There has never been an accident involving a Go Gas delivery truck. Any restrictions limiting left-hand turns into Go Gas would impose a major hardship for the fuel delivery trucks. The delivery trucks would have to travel 13 miles out of their way in order to find a suitable site to make a U-turn. This would also be an impact for any large delivery trucks servicing other Hampstead businesses. Mr. Taylor stated that the nearest edge of the traffic lane on US 17 is 72 feet from the nearest edge of his underground fuel storage tank.

## **B 2. PUBLIC COMMENTS SUBMITTED AT THE PUBLIC WORKSHOP ON MARCH 3, 2011 AT TOPSAIL HIGH SCHOOL**

On March 3, 2011 a public workshop was held at Topsail High School. It was an opportunity for M/A/B to present the consultants' preliminary recommendations to improve safety on US 17 and to introduce long range planning and visioning on NC 210 and US 17. Immediately following a 45 minute power point presentation from M/A/B, about 70 participants split into 3 break-out groups to discuss the following questions:

1. Which recommendations do you agree with?
2. Which recommendations do you disagree with?
  - o Do they politely disagree, but would not do anything about it, OR
  - o Do they disagree strongly and are likely to voice their opposition to decision-makers
  - o What should US 17 or NC 210 look like in order to fulfill your vision of Hampstead in the future?



### **Feedback from Break-out Groups**

#### **Emphasis**

Percentage of importance: (poll taken only in one break-out group)

- 40% voted for Recommendation 1 – law enforcement as most important
- 5% - Recommendation 2 – secondary streets
- 40% - Recommendation 3 - signals
- 15% - Recommendation 4 - median

### **Comments on Recommendation 1 - Local Law Enforcement**

#### **Group 1:**

- Use increased property tax revenues to fund this
- Target AM and PM peak periods for majority of unsafe drivers
- Are there safe locations / curb cuts for pulling over vehicles?
- Improved safety near school zone is most important (ALL agreed)

#### **Group 2:**

- Enforce 45 mph speed limit - Washington Acres residents have not noticed any reduction in speeding on US 17 since the speed limit was lowered by 10 mph
- Need "CONSISTENT" enforcement
- Need to realize that 75 percent of people ticketed for speeding are not actually charged with this violation
- Speed is not the issue - it is the ability of drivers
- Use the "Red Light" Cameras to help control speeding through red lights
- Install "rumble strips" where the 45 mph speed limits begin on US 17
- How effective are Highway Safety Corridors in Virginia?



- This suggestion is one of my lowest priorities, locals will get most of the tickets
- Would need consistent enforcement to be effective
- Group vote on Highway Safety Corridor concept, after discussion: 5 Support, 4 Against and 3 Not sure

*Group 3:*

- Supports increased enforcement and use of speed radar signs
- Deputize special officers just for traffic enforcement

*Group 4:*

- Motorists are driving at speeds higher than the posted speed limit on US 17. This seemed to be a major concern throughout the corridor. However, some citizens were more concerned about this near the Washington Acres intersection as it is the first intersection coming into Hampstead.
- There was very positive feedback about the flashing speed signals

***Comments on Recommendation 2 - Secondary Streets***

*Group 1:*

- Connecting NC-210 to the school complex is a priority (ALL agreed)
- Fire Department / Emergency Services would appreciate having alternative routes for traffic during incidents
- Must be interconnected streets north & south of US-17 in order to function
- This recommendation does not help thru-traffic
- Priority should be Washington Acres to the Food Lion / NC-210, south side (ALL agreed)
- Is there a complete collector street plan for the WMPO?

*Group 2:*

- Imperative - we need secondary roads
- Need to amend Pender County land use regulations in order to require developers to build collector roads as recommended in 2007 Collector Street Plan
- Require connectivity of parking lots for new commercial development

*Group 3:*

None

*Group 4:*

- Some citizens suggested that it will be good have a roadway connecting all the three schools without having to drive back on to US 17.

***Comments on Recommendation 3 - Traffic Signal Study***

*Group 1:*

- The severity of collision types (t-bone) for the u-turn design is higher than installing a series of traffic signals (rear end)
- Would signal timing encourage people to speed in order to miss red-lights?
- There should be a traffic signal at Washington Acres (ALL agreed)

- Perhaps the 45 mph speed limit should begin at Whitebridge, prior to Washington Acres (ALL agreed)

*Group 2:*

- Group consensus was that signalized u-turns were necessary at key U-turn intersections
- Not all U-turns would need to be signalized
- One participant stated that some people were confused and anxious when the Scott's Hill signalized U-turn intersections were first installed but now believe these signals help provide sufficient breaks in traffic so drivers can make a safe U-turn
- Do not need to have U-turn signals operating 24 hours per day

*Group 3:*

- Increase length of yellow time at signals

*Group 4:*

- The second concern was that many drivers are not aware that they are approaching a signalized intersection. And once they realize, they end up slamming their breaks at the last minute. This is also an issue due to the high speeds they are travelling at.

***Comments on Recommendation 4 - Concrete Median(s)***

*Group 1:*

- Cue length waiting for u-turn movement will be VERY LONG (ALL)
- Leland / US-17 has a very well-functioning median design, however it may have been privately-funded and has much wider right-of-way (1-person)
- Why concrete? Wouldn't this be better if it was vegetated? (ALL)
- The u-turn design is a 'VERY bad concept' because it will be 'unsafe' (1-person)

*Group 2:*

- Need to have medians in correct locations to control left-hand turns and improve traffic safety
- Group consensus was that the new Duracurb with paddles median at Country Club Road was very effective. Some wondered how this median impacted the nearby gas station and businesses
- One participant stated that "Suicide lanes" need to be eliminated and are the major cause of accidents. These turning lanes should never have been developed by NCDOT in the first place. Others thought that the fifth lane was adequate in rural areas, but extremely dangerous in congested areas such as Hampstead.
- Installing medians is cheaper than building secondary roads.
- The Washington Acres Duracurb median is causing some problems. Many drivers leaving Beacon Village are turning onto Washington Acres Road and making the U-turns at the SE Center Drive intersection. Betsy Perry stated that she uses SE Center Drive to travel back to the northbound lane of US 17. This route is much safer than making U-turns on Washington Acres Road. She suggested that NCDOT should install a directional sign so drivers would be aware of this route.

*Group 3:*

- U turn openings must be signalized for it to work. Too much traffic to wait
- Prefer landscaped medians over concrete
- Consolidate driveways at GoGas and Dollar General/Andy's Pizza

*Group 4:*

- Other area they were concerned about is near the Go Gas station. Many citizens expressed strong agreement with putting up the median at this location.
- Not all citizens were positive about the median openings near Washington Acres, Hughes Road and Deerfield Drive. However, they seem more favorable to median openings with signal control.

***Long Term Vision Input***

*Group 1:*

- Off-road greenway trail for bicycles and even moped / scooter would be desired (ALL agreed)

*Group 2:*

**Vision for US 17**

- Bicyclists do use US 17 and the highway needs to be improved to accommodate them.
- US 17 needs to be improved to be functional.
- Preplanning?
- Would be great to have landscaped medians.
- It is disappointing that the proposed overlay district was not approved. We lost the opportunity to improve the appearance of the US 17 corridor.
- We need to have the Hampstead bypass built in order for through traffic to be redirected. Hampstead would then have more of a community atmosphere once US 17 Business is used mostly by local residents.

**Vision for NC 210**

- NC 210 should be improved to 4 lanes with medians in conjunction with the building of the Hampstead Bypass.
- NC 210 should have multi-use trails serving bicyclists and pedestrians or at least have bike lanes along the sides of the road.
- What is the current ROW for NC 210? This may restrict how this road is improved.
- Driveways need to be consolidated.
- Many school buses now travel along NC 210 and slows down traffic considerably. This problem would be reduced if a good collector street system is created as new development is built along NC 210.

**Vision for Transit**

- Group consensus was that there would be insufficient demand for transit in Hampstead in the future.

- Perhaps expresses buses from the Hampstead area to Wilmington and Jacksonville would be feasible.
- Al Freimark mentioned that the WMPO future plans recommend transit services from Surf City to Wilmington.

*Group 3:*

- No on sidewalks or multi-use path along US 17

Additional Break-out Group Summary

**Biggest Problems**

- Left-hand turns on US 17
- Inattentive drivers
- Motorists failing to reduce speed in the 45 mph zone on US 17
- Tailgating
- Drivers believing that left-hand lanes are the "fast" lanes and "right" hand lanes are the slow lanes
- Some drivers violate the law by passing in the "suicide" lane
- Drivers' ability to drive - problem for all age groups

**Other Comments**

There are many planned developments in the Hampstead area. There is insufficient capacity on the existing roads to accommodate the future growth.

### B 3. PUBLIC COMMENTS SUBMITTED IN WRITING AT THE MAY 12, 2011 OPEN HOUSE AT TOPSAIL HIGH SCHOOL

1. Overall I think it is a good plan
2. Need to get Factory Road to Dan Owen connection completed early
3. Put map on Website (last meeting you did not do it in a timely period). [Note: the maps are now posted on the web at [www.hampstead17and210.org](http://www.hampstead17and210.org)]
4. Washington Acres Road needs a right hand turn onto 17N at proposed signal
5. I like the workshop and the information, however from a safety aspect; the median needs to happen quickly-the bypass as the budget allows but I would love to be able to use it.
6. The proposed light at Washington Ares will help a lot!
7. South bound at trash/recycle desperately needs an acceleration lane.
8. South bound at Hoover the left u-turn needs to hold sufficient cars.
9. We need a pull off lane at the Senior Center Topsail on 17. Traffic comes up to an old driver. It is becoming more unsafe for the elderly to turn right into the narrow driveway while looking in the mirror. Being older driver has been a benefit.
10. My congratulations and thank you for assuming a stop light at the intersection of Hwy. 17 and Washington Road. Your consideration for the median at St. Jude Church will be of great help for a congregation that is growing and at present serves many coming from Surf City. The team answering our questions are to be given kudos for their knowledge and patience. Job well done but please make it happen soon!
11. The county needs to add more access roads to plan. These would reduce the traffic on Hwy. 17. Cement dividers will not stop people from crossing over them.
12. New strip mall being built next to Go-Gas station?? Why? Put access road behind all of these strip malls.
13. We live in Majestic Oaks development and it is sometimes very difficult to make a left or even a right turn out of Factory Road due to Hwy 17, Rte. 210 and traffic coming out of Food Lion plaza & CVS. A traffic light is desperately needed for safety reasons at the intersection of Factory Road and Hwy 17.
14. Don't forget to consider the safety of bicyclists on Hwy 17. A separate pathway off the highway is a possibility. (I don't and would not ride a bicycle along Hwy 17 for safety reasons)
15. A bypass is a must-from the start of the 45mph (going south) the speed limit to Country Club Road light is .6 miles. From Country Club to the US 17/210 intersection is 2.3 miles then add on another 0.5 miles to get past most of the turnoff's etc. Make the speed limit 35 mph in this 2.8 mile area.
16. In the public meeting NCDOT said "the purpose of US 17 is to move traffic". It would be better to say that its purpose is to move traffic safely.
17. We need more police cars enforcing the 45 speed limit. More tickets may be the only way to get them to slow down.
18. If the concrete median is added and therefore the lanes will decrease (proposed) to 11 feet, the speed limit needs to be enforced.
19. Approve of Washington Acres traffic light.
20. Could balance state budget by issuing speeding tickets.





21. Approve of median.
22. I believe that a small section of the median should be green and landscaped rather than concrete. I recognize that because of cost it can only be a small section (perhaps 500). I plan to raise this issue with the Board of Commissioners at their Public Hearing on this proposal and will ask them to give some cost estimates for this option. I understand that the county would only have to pay half of the cost under the current formula to maintain the landscaping. [Note from M/A/B that it is our understanding NCDOT will not pay anything to maintain a landscaped median. The cost would go to Pender County. This is the reason M/A/B recommends a concrete island].
23. It is surprising & disappointing that the consultant did not at least include a landscape median in a small section. Landscaped medians are considered a “best practice” and it seems to show a lack of creativity and effort that the consultant failed to include this option. Policy makers need to be shown options so that they can make the best decision.
24. On left hand turns and U turns-what is the stacking length for traffic to develop?
25. Will these be traffic lights similar to the lights at Scott’s Hill?
26. Can the collector road proposed be extended up to Grandview Drive?
27. Can a second collector road be added closer to the .... Connection up to Sloop Point Loop?
28. Can the bypass be extended deeper into Holly Shelter and connect up at Hwy 210/17 by using similar construction method used at Washington NC hwy 17 bypass?
29. Bike lanes are needed for Hwy 17. This is a great place to start.
30. I am very happy to see that you will install traffic lights at Washington Acres and Hwy 17. This is very important. Making a left turn from Washington Acres onto Hwy 17 going south is very dangerous. Presently the center lane markings do not let you go into the center lane.
31. An easy & low cost temporary fix would be to make (mark) on entrance lane for left turns into Hwy 17 going south. This would at least let you drive into a dedicated lane, crossing the northbound Hwy 17 traffic and allow you to enter the southbound traffic when safe.
32. The proposed bypass would solve all of the problems as long as it goes all the way to the existing divided hwy. Forget the rest of it!!!
33. Topsail middle & Topsail elementary are mixed up.
34. How does it effect emergency vehicle response time?
35. Lower speed limit from Sloop Point Road to Whitebridge subdivision to 35 mph.
36. In areas of U turn – there should be no right onto road until major 17 traffic has turned.
37. Require elderly >65 years to have annual driving tests – including in car driving exams.
38. Don’t lower the speed limit – Write tickets for people passing in turn lane and excess speed over 5 mph over limit.
39. Write tickets for stupid and dangerous driving actions – tailgating, high beams, short cutting.
40. Must have south bound traffic on bypass.
41. Hope funding will preclude any changes. It will be impossible to get around Hampstead!
42. Providing any bike lanes? Bicycles i.e.,
43. Bypass NOW...quite stalling....if we had the bypass all these suggestions would be a moot point, obtain the land now before more development, new subdivisions, Bypass....
44. Where is bypass going in relation to Castle Bay off of Hoover Road?
45. Topsail Regional Library (proposed, not funded) access off Hwy 17 –
46. Leave Hampstead along and simply educate drivers
47. We need to exit on Country Club Rd – going south and will have to go all around the world to get there.
48. Proposed Hampstead Bypass Alternative EH is too short! It needs to be further north, towards Sloop Point Rd. It also needs to end south of Washington Acres Rd.

49. Provide Bike lanes. Agree with above comment that bypass should start near Sloop Point Road and extend south of Washington Acres. Also 17 could use crosswalks across highway particularly near NC 210. So when do we get started?
50. We need sidewalks – get the cars off of the road entirely. I live on Lea Dr. and won't walk to the Food Lion because it is dangerous – speeding cars & no sidewalks.
51. Proposed Bypass EH covers a very short portion in Hampstead. Seems like a waste of money to build such a short bypass. Start bypass before NC 210 and end past sloop point road.
52. EH Alternative makes no account of future development along Rt 17 which has already started.
53. Hampstead needs an alternative route other than just 17.
54. This is totally a waste of taxpayer's money. Do you realize gas is \$3.50+ and this will waste a lot of gas.
55. The Mia-Pow Rd Access should avoid the existing real estate. The corridor can go through many hundreds of acres.
56. The logistics do not make any sense! Bypass should connect to I40 or I440 to elevate traffic.
57. Don't waste the money. Set Speed limit to 40 mph & enforce – Mark LH lanes as thru lanes
58. Were you're designers drunk or smoking Wacky Tobacy?
59. Don't spend tax payers money especially since you're over budget – how can you keep building with 0 money – law enforcement will have to do their jobs – ticket where appropriate –
60. If you are going to build a “Hampstead By-pass” – do so. What you are proposing is a total waste of taxpayer's \$. Why dump more traffic out in the middle of the “death trap” that we already have? Start at Sloop Point and Join the I-140 already in existence.
61. Yeah to that!
62. Whatever, do it soon. US 17 is shaking me to death.
63. Get cops on Hwy 17 and have speed traps Daily! This town has nothing but bad middle school, Principal, teachers & Cops!

#### **B 4. PUBLIC COMMENTS SUBMITTED VIA E-MAIL:**

**1. Mr. Tony Musolino**                      *Sent May 30, 2011*

"This entire program is believed by many to be the end of any construction of a bypass for this area. We have been told since 1988 that a bypass would be built yet here we are 20 years later and no further along than we were back then. This sudden rush to make all these changes to Hampstead traffic supports the belief that the bypass is not going to happen.

However, I have very carefully reviewed the access changes with raised medium plans for Highway 17 in Hampstead North Carolina. While much of the proposal is well thought out and is feasible there are at least three recommended sites that will not only cause a dangerous safety hazard but, an economic impact on businesses in the area as well. Let me first begin with what I see as a major safety hazard along the highway:

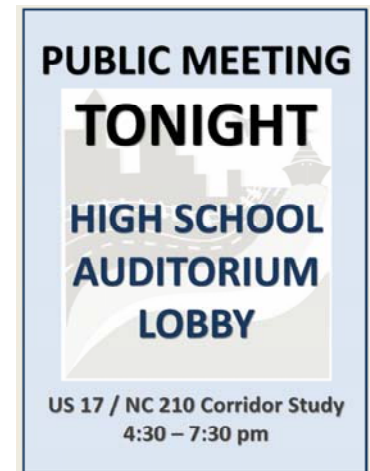
Your proposal at the Beacon Center is to have those folks coming out of the center and wishing to travel north to turn right travel a quarter of a mile and turn left at a "new signal" at Washington Acres Road. This may sound reasonable but as a matter of safety and judgment it is not a sound policy. The Beacon is a **Major Medical Facility** and as a result many persons living in Hampstead visit that building.

The majority of these people are seniors and after having been treated by a physician may be confused or otherwise preoccupied when they leave the center. If they are to turn right then go to the light and make a U-turn will cause an additional stress and distraction on them. (Let us not forget that the last two fatalities along Highway 17 involved senior citizens making wrong turns – this double turning (first to the right and then travel a few hundred feet and make a U-turn) is additional burden on the driving senior).

I suggest rather than placing the traffic light At Washington Acres Road the traffic light be placed at Hughes Road with the turnaround built at that area. This would give the Beacon patients less problems turning north to return home. The additional safety factor involved is that at the Washington Acres intersection there is a curve in the road that can (and currently does) create visibility problem for those driving south as you cannot always see what's coming North, although the traffic light would partially eliminate this problem.

At the Deerfield Subdivision you have access to a church at that intersection and if a median opening is not put there it will require parishioners to drive south to either the Hughes Road or Washington Acres turnaround. The majority of the congregation travel from the North to that church and a median opening or a light would be respectful to the members of the church. The additional advantage of having the median crossover at this point will be to allow persons in Hampstead to travel to the Port City Java Café located at that intersection. **This business is a major meeting place for businesses to meet both locally and from out of town.**

Economically speaking the requirements placed on 18 wheelers to gain access to The Atlantic Seafood businesses is enormous. You require that an 18 wheeler traveling north and wanting to go to Atlantic Seafood must travel to Hoover Road and U-turn at that intersection. Cyprus Station is being built and across the road is a Pizza Parlor and Subway. This is now and will be in the future a very busy intersection – the requirements to be able to turn an 18 wheeler at this intersection will encroach on the properties on either side of the road and require downshifting and expenditures of



fuel to make the turn. The same situation exists for an 18 wheeler leaving Atlantic Seafood and wanting to travel north in this instance they are to make a U-turn at the intersection of 210 And Hwy. 17- again this is a safety hazard (we have a bank, a gas station and entrance to a major food and post office complex at that intersection) and negotiating this type of U-turn will cause extra shifting and fuel consumption.

I would recommend that a median opening be designed just slightly north of the Atlantic Seafood Complex which will allow traffic traveling north to the business to cross over into the parking area of the complex. At the same time I would suggest that a traffic light be installed at factory Road allowing traffic to move smoothly from the community onto Highway 17. This would be most certainly less expensive than building a collector street between Dan Owen and Factory Road). A short collector road could be built across the front Of Atlantic Seafood and into Peanut Road thus allowing 18 wheelers requiring access to the northbound Lane of Highway 17 to make a northbound turn at the Factory Road/Peanut Road intersection traffic light.

Diesel fuel prices at this time are in excess of four dollars a gallon and there is no foreseeable reduction in cost. The requirement to make tight U-turn with these big rigs causes additional fuel consumption which in turn causes an additional cost to the product being delivered either to or from the Atlantic Seafood business. While it may seem minimal the costs will be passed on and all of us will pay for those two U-turns and in these times and in the future unnecessary costs hurt our economy. While I am not a traffic engineer I do believe that the recommendations made will not only enhance the safety of the citizens of this area but at the same time control traffic and enable people to travel safely from their medical appointments, to their church and allow access to a major North Carolina businesses (Atlantic Seafood) as well as to allow business to be conducted at the Port City Java Café.”

**2. Mr. Charles Wilson**                      **Sent June 2, 2011**

“I have also seen instances where a median may be concrete (as proposed) but the median contains cut outs of the concrete to allow for plants in the area cut out. For example, if a concrete median is 100" in length the median may contain ten (10) cut out holes to allow for ten shrubs. If you install low maintenance shrubs, once established, maintenance is minimal. I believe that some mix of targeted grass medians as well as concrete medians with defined spacesw cut out for shrubs is simply another option. I agree very much with Don Ellson about both the attractiveness and environmental soundness of the grass medians, however.

- why, after receiving positive public response, was the option of a grass median not included in the report?
- how much would it cost to include it?..to maintain it?
- could the \$\$\$ come out of the wildflower fund...or other fund?”

**3. Burt Millette**                                      **Sent May 19, 2011**

“As a member of the Pender County Planning Board, I emphatically agree with Mr Wilson's observations and recommendations. I don't know what the incremental cost is of vegetative strip vs concrete barrier, but in a project of this scope it cannot be a deal breaker. As another thought, why can't funding for a vegetative strip come from the wildflower fund?”

**4. Chuck Wilson**                                      **Sent May 19, 2011**

“I agree with Al that we are in a time with a beer pocketbook. I believe, however, that we can do something on a beer pocketbook. For example, I believe that instead of putting in a concrete barrier

along all of the entire proposed areas, NCDOT could instead put in a grass median for just a very short distance ....for example even 500 feet. Done in the right location in Hampstead it could have quite an impact for reasonably little cost. Also, the consultant could have included a suggestion for better landscaping the corner of Highway 210 and Highway 17 where RBC bank is located. That is an entrance to our downtown coming from south to north on Highway 17. Both of these suggestions are beer budget suggestions. Many areas of the Wilmington Metropolitan area are seeing some landscaped medians and the cost/benefits to those areas are significant. I will fully expect that New Hanover County will move to include landscaping improvements along Market St. as a result of the WMPO recommendations for that segment. I wonder if the consultant just thought we were out in the "country" out here and that we wouldn't know the difference? I believe we should all speak up for achieving some landscaping improvements to be included as a part of any final actions. It should not be all or nothing. Thanks much."

**Mr. Wilson** *Sent May 19, 2011*

"Good morning: First, thank you for the WMPO's efforts to study and make recommendations to improve the safety of Highway 17. I am sure that most of the recommendations are on target and make sense. I am both surprised and disappointed in one issue not even referenced in the study, however. That is the issue of landscaping. There are three reasons for my surprise and disappointment:

First, the issue was raised in a public session held at the Methodist Church in Hampstead and was well received that night. You were in attendance as was a representative from the consulting firm.

Second, it is fair to say that recommending some landscaping in the medians is considered a "best practice" today and that consultants normally include such a recommendation for defined segments. Third, the consulting study developed through the WMPO for the Market St. segment of Highway 17 in New Hanover County recommended numerous landscaping improvements including some landscaped medians. Fourth, the failure to include such a recommendation for at least a small segment of Highway 17 prohibits our county board from even being aware of this as an option. Good consultants provide such information so that elected officials have the needed information on which to make informed decisions. I asked one of representatives of the consulting firm about the absence of any landscaping recommendations at the recent information session and she said it was because we don't have a government to take responsibility for landscaping. That is simply not true. The name of our government is Pender County just as New Hanover County government manages the unincorporated areas of New Hanover County. In any event, this is a serious and surprising omission on the part of the consultant. I would therefore urge that a correction to this draft plan be made incorporating practical and manageable landscaping recommendations. As always, thanks much for your good efforts on behalf of Pender County."

**5. Nancy McKelvey** *Sent May 23, 2011*

"I'm writing to thank you for taking action to make Hwy 17 through Hampstead safer for all motorists. Along with safety factors, I feel it is important to include best environmental practices and vegetation to enhance the visual aspect of the median. I understand the Market Street renovation in Wilmington will include these best practices and urge they be incorporated in Hampstead Hwy 17 project. Thank you for considering these ideas."

**6. Don Ellson.** *Sent May 21, 2011*

"I'd like to express my support for Chuck Wilson's comment about landscaping on Hwy 17 in Hampstead. And if it would be helpful, I'm sure we can get a strong resolution of support from the

full PenderWatch board of directors at our next board meeting June 8. As you certainly have heard many times, Highway 17 is "Hampstead's Main Street." It's vitally important for state and metropolitan agencies to support our local efforts to make it safe, efficient, and attractive. Landscaping the median strip as part of the proposed safety improvements on the highway would, I believe, contribute significantly to Hampstead's further development as a commercial center and as a community. Chuck noted that median-strip beautification is a common Best Management Practice for modern urban thoroughfares -- and that WMPO is supporting landscaping for the Market Street renovations just a few miles down the road. I should think it would be hard not to support it in Hampstead as well. Among other things, plantings would help mitigate the problem of polluted storm water runoff from the highway, and they might also help soften any local frustrations about the new detours and U-turns.

I hope you will ask the consultants to include some innovative aesthetic improvements in their final proposal. Of course there would be some added construction and maintenance costs involved, but I can't imagine they would be prohibitive. I really believe attractive landscaping here would enhance civic pride and the value of the overall project. Thanks for your attention."

**7. David Wrede** *Sent May 15, 2011*

"I was not able to ask this question at the recent meeting.

I heard at the meeting that since the center (turn) lane was being reduced to a concrete median, the size of the traffic lanes would be increased in width.

Does this proposed plan include a bicycle lane? We have a lot of bicycle traffic through Hampstead on 17 and 210. More of us would visit local business more via bicycle if we have a safe a place to stay out of the other highway traffic. Highway 17 has bicycle lanes on each side of Hampstead, but not where traffic becomes the most dense."

**8. David Wrede** *Sent May 18, 2011*

"I did not catch that the traffic lanes would be reduced. I was watching two semi's side by side this morning. That is going to make a very tight fit through here. I guess also the reduced lanes will change the perception that it is not safe to travel faster than 45 in the narrowed corridor. Maybe that will help to reduce the high speed through here.

Thanks for your efforts."



## **B 5. SEPTEMBER 7, 2010 CITIZEN MEETING:**

Notes by Tom Dugan from 9/7 Meeting: (posted on website [www.hampsteadsafe17.info](http://www.hampsteadsafe17.info))

### ***Suggestions raised by attendees:***

The following ideas from the community meeting focused around enforcement and warning of enforcement activities. As many communities have signs warning drivers that they were entering a radar type of zone, it would appear that this could be a relatively low cost addition to increased coverage provided by the Sheriff's patrols.

#### *Specific suggestions include:*

- Speed Monitors at both ends of area
- More consistent speed enforcement
- Signage indicating speed enforcement area
- Speed trap ahead
- Early warning
- Rumble strips warning of drop in speed limit
- Media campaign warning of enforcement
- Blue lights on stands into town

The remaining ideas involved additional traffic controls and changes to the infrastructure and would require funding and planning approvals.

- Traffic light at entrance to Washington Acres
- Lower speed limit in Hampstead, begin incremental reduction in advance of Hampstead
- Make Fire Station light fully functional
- Add deceleration lanes for right hand turns
- Yellow flashing lights warning of stop lights ahead
- Close off CVS Pharmacy driveway onto US 17
- Remove center turn lane
- Create solid median
- Roundabout turning circles at each end of area
- Parallel access roads - No left turns when exiting from businesses onto US 17
- Move entrance to Dollar General property

Representatives told us that their study will not be completed until June 2011. Nothing can be done until the study is completed and then funding appropriated. In the interim, there is nothing that they can offer to help. That leaves us with the County and Highway Patrol for any immediate solutions.

The Highway Patrol has twelve troopers assigned to Pender County. They have to cover I-140, NC 210 and US 17, all shifts, all year. That spreads them very thin and does not allow for any dedicated focus on our area alone.

But, at the end of the meeting we were able to get an agreement from both the Sheriff and the County that we would get consistent traffic enforcement for at least the near term. Our recommendation would be to get monthly updates from the Sheriff's Department as to the number of tickets issued and number of Deputy shifts performed on traffic control duty in our area. These numbers could then be published as verification of traffic enforcement.

We will be looking into additional signage coming into the area at both ends of our portion of 17 that would alert drivers to the fact that they are entering a radar protected zone and for them to reduce speed. Fear of tickets is our biggest ally.

## **B 6. US 17/ NC 210 BUSINESS FOCUS GROUP SESSION - 2/7/2011**

### **Meeting Location: Pender County Annex**

#### **Group Attendees (by invitation):**

- Frank Taylor, Go Gas – [ftaylor@gogas.net](mailto:ftaylor@gogas.net)
- Betsy Perry, Ace Hardware employee - [perrydice1@yahoo.com](mailto:perrydice1@yahoo.com)
- Joseph J. Smith, Jr., Atlantic Seafood - [smithfish@yahoo.com](mailto:smithfish@yahoo.com)
- Michael Smithe, USPS Sneads Ferry Postal Manager, Acting Manager Hampstead Postal Office - [Michael.G.Smithe@usps.gov](mailto:Michael.G.Smithe@usps.gov)
- Sonya Edens, EI, RSC Engineering, PLLC - [sonya@rscengineering.com](mailto:sonya@rscengineering.com)
- Roger Henderson, MAB Project Manager - [rogerhenderson@mabtrans.com](mailto:rogerhenderson@mabtrans.com)
- Peggy Hayes, Hayes Planning Associates - [hayesplan@gmail.com](mailto:hayesplan@gmail.com)
- Mike Kozlosky, WMPO Director - [mike.kozlosky@wilmingtonnc.gov](mailto:mike.kozlosky@wilmingtonnc.gov)
- Tara Murphy, WMPO - [tara.murphy@wilmingtonnc.gov](mailto:tara.murphy@wilmingtonnc.gov)
- Suraiya Rafhid, WMPO - [suraiya.rafhid@wilmingtonnc.gov](mailto:suraiya.rafhid@wilmingtonnc.gov)
- Kyle Breuer, Pender County Planning Director- [kbreuer@pendercountync.gov](mailto:kbreuer@pendercountync.gov)

### **Introductions and Study Overview**

Roger Henderson began the meeting with introductions and encouraging focus group members to share the business perspective as this is a group of business-related individuals. Several participants responded that they are not authorized to speak on behalf of the business where they work. Roger stated three focus group meetings will be held considering the viewpoints of business leaders, local residents and developers/ economic development leaders. He also announced that the second public workshop will held on March 3 at the Topsail High School.

Roger introduced three broad concepts to enhance safety on US 17. He indicated that the crash history on NC 210 is nowhere near the level of crashes on US 17 and so the part of the study related to NC 210 will look at maintaining that condition even if development activity along NC 210 increases.

#### **Broad Concepts for US 17 Safety:**

1. Take various actions that will create a reputation or image that Hampstead is not a place to speed. Other places like Holly Ridge, NC and Emporia, VA have that image. It takes near constant enforcement which has not been provided to date because of the high cost and need for current law enforcement personnel to cover other parts of Pender County. The crash analysis revealed that speed differential is certainly a problem in Hampstead resulting in more serious accidents. Many of the crashes involved vehicles traveling 45 mph or faster hitting a vehicle driving about 20 to 25 mph.

One possibility is for the NCDOT to implement "Highway Safety Corridors" as has been done in Virginia. Speeding fines are much higher in such corridors.

2. Build a secondary street system. Pender County adopted a Collector Street Plan a few years ago that mapped where future secondary streets might be built. These will be primarily two-lane streets that would be built by developers on their property as they build their developments. Thus, an interconnected street system is many years away and dependent on the economy.

3. NCDOT would continue to install median installations like the one recently installed on US 17 at Hughes Road / Beacon Center that restrict some left-turn movements. Roger showed an aerial map of the US 17 study area that showed the number of crashes reported over the last 5.5 years from mid-2005 through December 2010. The map showed differences in the number of crashes at individual locations. Roger indicated that if this approach is recommended, that the number of crashes will be used to help prioritize which median installations should be built sooner than others.

### ***Focus Group Responses:***

Mr. Frank Taylor represents Go Gas which is in the study corridor on the north side of US 17. He asked why more stop lights weren't mentioned by Roger. A brief response was offered by Roger, stating that NCDOT must approve new traffic signals and they are reluctant to do so unless the actual traffic count on the mainline and the side street meet or exceed a minimum volume of traffic. That minimum (also called a warrant) is very high and difficult to meet. They do make special exceptions for school areas.

Mr. Taylor went on to say that the strip retail center just west of his gas station (tenants include Andy's Pizza and Dominoes Pizza) was built after his gas station, but someone approved a change to the strip center driveway location that resulted in the existing situation which has 2 driveways too close together. Roger responded that the good news is that wouldn't be allowed again as NCDOT approves driveway permits and they made the rules tougher in 2003, which was after the strip center was approved. Mr. Taylor asked Roger to approach the owner of the strip retail center to inquire about moving their driveway to the west side of the site and close the existing driveway that is too close to the gas station driveway. Roger agreed to ask.

Mr. Taylor indicated that the median installations would require some safe places to do U-turns even for the large trucks that deliver gas to his gas station. He later asked that any median installation be considerate of his need to compete with other nearby gas stations, stating that they compete not just on price but also on convenience. That is, if left-turns are restricted at his driveways that they also be restricted at the same time at other gas stations nearby.

Mr. Taylor also informed the group that NCDOT will not post this section of US 17 as a 35 mph speed limit because it is unincorporated.

Ms. Perry offered her doubts that the enforcement approach would be sufficient, reminding everyone what happened a few months ago when law enforcement moved to other sections of Pender County after an intensive effort to cite speeders on US 17 in Hampstead. She said word got out quickly and speeds increased very soon afterward. Roger responded that the approach, if recommended, would include a statement that to create a reputation that Hampstead is not a good place to speed would require near constant enforcement of the speed limit and a dedicated team of law enforcement officers. Ms. Perry asked that the 45 mph speed limit be enforced in both travel lanes since some motorists believe the left lane is for people to speed past the other lane. She stated that the Hampstead for a Safe 17 group is opposed to a 35 mph speed limit because it will increase commute times.

Mr. Michael Smithe is the US Postmaster in Sneads Ferry and is currently serving as the interim Postmaster for Hampstead. He supports reducing the speed limit in Hampstead to 35 mph for the safety of his postal carriers who must deliver to mailboxes on US 17 and they do so in a vehicle. The USPS has determined that city delivery service (on foot patrol) is not practical. He also stated that the USPS would not discourage businesses or residents from renting PO Boxes or installing a NDCBU (cluster box) to help mail delivery along US 17.

Mr. Smithe said that building secondary streets would not help his carriers serve US 17 addresses. He supports the median installations.

Ms. Sonya Edens represents RSC Engineering of Hampstead and is soon to be a new Planning Board member for Pender County. Her business is located on US 17 in the study area. She stated her opposition to secondary streets if they disrupt neighborhood peace and safety. She also reminded the group that building secondary streets would take too long to complete. She travels US 17 many times daily and stated her support for the median installations.

Ms. Edens stated some interest in seeing a secondary street built to connect subdivisions with the Food Lion shopping center as this would take local trips off of US 17, but only on the condition that it not disrupt any neighborhoods.

Mr. Joseph Smith owns Atlantic Seafood and he stated his support to complete that portion of the secondary street system that is just north of his property. It is where he grew up and he said when the old railroad right-of-way was abandoned the land was split and sold to land owners on both sides. He acquired some at that time and is willing to do what he can to get the road built. He stated that a new secondary street on the old rail bed would help his business turn the many trucks that come in and out of his site.

Mr. Kyle Breuer representing Pender County Planning Department informed the group of the Cypress Station land development proposal currently being considered by Pender County. It includes a McDonald's restaurant. The current discussion would not require a public street on the old rail bed right-of-way previously discussed by Mr. Smith. It would require a concrete median island on US 17 for about 90 feet that would restrict left-turn movements in and out of the Subway restaurant across the street from the Cypress Station development, as well as into and out of the development itself.

Mike Kozlosky of the Wilmington MPO is the Project Director for this study and stated his interest in seeing an interconnected secondary street system someday, but it would be built by developers since the County is not in the business of building streets. He said that NCDOT and WMPO support moving forward with median installations to improve safety. He said this study will recommend a preferred access plan for future leftovers and median openings as a mid-term solution. He said that increased enforcement is a short-term solution. The construction of the Hampstead US 17 Bypass will not begin until way beyond 2020 given the current environmental and financial constraints.

The meeting adjourned at 4 pm. Roger said that a written summary of comments will be e-mailed to all participants and that they could change anything attributed to them. The revised written record will become public information after each participant has had a reasonable opportunity to review and offer their comments and revisions.

## **B 7. US 17/ NC 210 RESIDENT FOCUS GROUP SESSION - 2/8/2011**

### **Meeting Location: Pender County Annex**

#### **Group Attendees (by invitation):**

- Robert Reid, Olde Pointe resident and Volunteer Fire Departments, [rrreidar@charter.net](mailto:rrreidar@charter.net)
- Donald Robinson, Deerfield resident, [dsrrunnuh@aol.com](mailto:dsrrunnuh@aol.com)
- Ken Just, Millcreek Village resident, [kjust@charter.net](mailto:kjust@charter.net)
- Al Freimark, Olde Point resident and WMPO Task Force Member, [alfreimark@charter.net](mailto:alfreimark@charter.net)
- Bobbi Crawford, Deerfield resident, [bobbi3344@bellsouth.net](mailto:bobbi3344@bellsouth.net)
- Karna Godridge, Olde Point resident, [kardolaum@charter.net](mailto:kardolaum@charter.net)
- Roger Henderson, MAB Project Manager, [rogerhenderson@mabtrans.com](mailto:rogerhenderson@mabtrans.com)
- Peggy Hayes, Hayes Planning Associates, [hayesplan@gmail.com](mailto:hayesplan@gmail.com)
- Tara Murphy, WMPO, [tara.murphy@wilmingtonnc.gov](mailto:tara.murphy@wilmingtonnc.gov)
- Kyle Breuer, Pender County Planning Director, [kbreuer@pendercountync.gov](mailto:kbreuer@pendercountync.gov)

#### **Introductions and Study Overview**

Mr. Roger Henderson began the meeting with introductions and encouraging the focus group members consisting of local residents to share their perspectives about US 17 and NC 210. Roger stated three focus group meetings will be held considering the viewpoints of business leaders, local residents and developers/ economic development leaders. He also announced that the second public workshop will held on March 3 at the Topsail High School. Meeting announcements will soon be distributed.

Roger introduced three broad concepts to enhance safety on US 17. He indicated that the crash history on NC 210 is nowhere near the level of crashes on US 17 and so the part of the study related to NC 210 will look at maintaining that condition even if development activity along NC 210 increases.

#### **Broad Concepts for US 17 Safety:**

1. Enforcement: Take various actions that will create a reputation or image that Hampstead is not a place to speed. Other places like Holly Ridge, NC and Emporia, VA have that image. The Hampstead community is patrolled by the Pender County Sheriff Department and the NC State Highway Patrol. It takes constant enforcement to control speeding violations which has not been provided to date because the county and state law enforcement personnel must patrol Hampstead as well as other parts of Pender County. Roger stated that what is needed is a dedicated team consisting of two to four officers patrolling US17 in the Hampstead area. The recent Pender County Board of Commissioners' decision to purchase radar display devices that will be deployed to this area will also help.
2. NCDOT would continue to install median installations like the one recently installed on US 17 at Hughes Road / Beacon Center that restricts some left-turn movements. Another median was being installed today at the Country Club Road and US 17 intersection. Roger showed an aerial map of the US 17 study area that showed the number of crashes reported over the last 5.5 years from mid-2005 through December 2010. The map showed differences in the number of crashes at individual locations. Many of the crashes occur at the signalized intersections. Roger indicated that if this approach is recommended, that the number of crashes will be used to help prioritize which median installations should be built sooner than others.



3. Build a secondary street system. Pender County adopted a Collector Street Plan several years ago that mapped where future secondary streets might be built. These will be primarily two-lane streets that would be built by developers as they build their developments. Thus, an interconnected street system is many years away and dependent on the economy since the collector roads will not be built until new development begins.

### ***Focus Group Responses:***

Mr. Bob Reid stated that many traffic accidents happen at the signalized intersections as drivers "try to beat the yellow light." He observes this driving behavior many times while waiting at the Country Club/US 17 intersection. The study crash data confirms that many accidents do occur at the signalized intersections. Moreover, a local youth presented his analysis with the same conclusion at the most recent Highway 17 Safety meeting. Mr. Reid suggested that "camera enforcement" and "rumble strips" may reduce the occurrence of drivers running red lights. Mr. Reid noted that the proposed secondary street system is "hopscotch" because there are no continuous collector streets along both sides of US 17. The Beacon Village median is still not working as it should, even with the recent changes. The median simply is not long enough to stop some drivers from making dangerous U-turns. Better enforcement is also needed to make drivers more alert since many drivers still are texting while driving.

Mr. Al Freimark asked what are the major transportation problems in the Hampstead area between now and 2020. Roger Henderson first responded by saying that the Hampstead Bypass is currently a NCDOT unfunded transportation project. Right-of-way acquisitions could begin in 2017, but the bypass construction would not occur until 2020 to 2025 given existing environmental and financial constraints. Consequently, it is very important to develop traffic measures that would make US 17 safer in the Hampstead area. Unfortunately, we just cannot wait for the Bypass to be built some 10 to 15 years from now. Mr. Breuer commented that developing the Collector Street system is necessary and would help to get local traffic off of US 17. Pender County would need to adopt supporting ordinance regulations mandating that developers build collector streets as noted in the 2007 Collector Street Plan. Mr. Breuer noted that there have been many subdivisions approved in the Hampstead area but none of these subdivisions have been platted to date. He also stated that the development of additional sewer services is the responsibility of the developers needing this infrastructure. Mr. Breuer further stated that the Pender County Board of Commissioners passed a resolution asking the NCDOT to build the Hampstead Bypass first before considering expanding US 17 into a six-lane highway through Hampstead. Surf City and Topsail Island mayors also support building the Hampstead Bypass first.

Mr. Freimark believes that a collector street system in Hampstead would only capture about 5 percent of the local traffic thereby leaving the remaining 95 percent traveling on US 17. Roger replied that it may capture more than 5 percent, but the key is to offer an alternate route for motorists who choose slower streets. For example, some seniors and others who prefer to drive slowly may prefer to use the secondary streets.

Mr. Ken Just asked whether secondary street systems actually work. Mr. Henderson replied that once the secondary street network is complete that the collector streets alleviate local congestion problems. For example, a connector street linking Hoover Road to Peanut Road would very beneficial. Currently, there is no way to bypass accidents along US17 in this vicinity while the collector street would provide an alternative.

Mr. Just also mentioned that beach traffic related to Surf City and Topsail Island is a major traffic generator during the peak summer season. Every Saturday during the summer, 20,000 beach renters

leave as another 20,000 come to vacation. Many of these beach visitors drive through Hampstead to get on I-40 or go south to Wilmington and beyond. Roger replied the secondary streets would not be appropriate for beach travelers, but if used by locals that would relieve some traffic capacity on US 17.

Mr. Just stated making left-hand turns on US 17 is very dangerous. It makes sense to drive an extra 1/2 mile and make a controlled left-hand turn than risk having an accident. He suggested taking out the turning lane in order to make room for the safety measures being discussed.

Ms. Bobbi Crawford stated that her husband will not make a left-hand turn when leaving Deerfield - it's just too dangerous. There must be U-turn lanes equipped with lights to make it safe. Ms. Crawford suggested that a collector street should be built from Deerfield Drive to Headwater Drive and install a traffic signal at the Washington Acres/ US 17 intersection. Hughes Road would also be included. Ms. Crawford noted that there are many residences in this area and such an improvement would allow many people to have a signalized intersection to US 17. Mr. Henderson remarked that connecting these residences with a collector street would make it more feasible for the intersection to have sufficient traffic volume to "warrant" or justify a traffic signal.

Mr. Donald Robinson noted that the Superstreet design as now exists in Porter's Neck and Waterford areas is a great concept since drivers must comply with the road design.

Ms. Karna Godridge noted that the property at the northeast corner of US 17 and Peanut Road is for sale. The property would facilitate installing what she calls a "jug handle" that would eliminate the need to turn left from US 17 onto Factory Road. She also suggested that deceleration lanes for right turns be installed where possible, especially at the recycling facility on the north side of US 17.

She also noted that it would be beneficial to have a collector street linking Factory Road to Dan Owen Drive. The new road would pass between CVS and the Post Office. This connected area would then have access to the US 17/Dan Owen Drive signalized intersection. It is not possible to have a traffic signal at Factory Road because it is located too close to the Dan Owen Drive signal. The yellow flashing lights located at US 17 and Peanut Road could then be removed.

Group discussion then focused on the benefits of having Dan Owen Drive become a "real street." This shopping center drive could be extended to connect with the proposed Majestic Oaks development that was to be built behind the Food Lion shopping center. Such a road would connect with NC 210 and become an East/West collector street that is really needed. Mr. Freemark stated that developers do not like to take responsibility to build roads prior to the development being built since it increases their "upfront" infrastructure costs. Mr. Breuer mentioned that the Majestic Oaks property is now a bank-owned property and the future of this project is not known at this time.

Next the group discussed how better traffic enforcement could be financed. Mr. Freemark stated that the Hampstead/Topsail Island/ Surf City has 40 percent of the county's population but provides 69 percent of the county's revenue. Consequently, the Hampstead area could receive a dedicated law enforcement team without raising taxes. It also was suggested that Pender County's General Fund has an excess of at least 30 percent for this year and there should be sufficient funds to hire more sheriffs for traffic patrol.

Three other options were discussed:

1. Implementing a one-cent special county tax that would provide funds for transportation projects. The suggestion was for raising either the Sales Tax or an Ad Valorem tax. Reaction was mixed with some thinking such a tax would never be adopted and another questioning the legality of such a tax.

2. Implementing a Business Improvement District. The City of Raleigh developed a "Municipal Service District (MSD)" in the Hillsborough Street area across from NC State University. This special tax district was supported by local businesses and property owners who wanted additional safety, lighting and security services than what the city usually provides. Such a district tax could be implemented for a stipulated number of years. The group was not very supportive of implementing such a district. Why should local businesses subsidize the much needed traffic improvements? Businesses are struggling now and it would not be fair to increase the tax burden for Hampstead's commercial establishments. Plus US 17 is a major highway used by numerous people and the cost for transportation improvements should be distributed more equitably.
3. Implement a one-cent tax for the Hampstead and Sloop Point Fire Districts. These two fire districts cover most of the study area. A one-cent per hundred dollar valuation tax in these two fire districts would generate about \$200,000 that should be sufficient to pay for four sheriffs to patrol traffic in the Hampstead area. Some in the group discussion were very supportive while another thought that such a special tax would be illegal. A third participant contended that the Hampstead area already contributes more than its fair share of county revenues and that the county should be providing more revenues to sustain growth.

The Resident Focus Group summarized its recommendations as follows:

- Better enforcement of traffic regulations is needed in the Hampstead area and Pender County should be able to provide financial support to provide four sheriffs designated for traffic patrols in this study area.
- US 17 needs a median design that would facilitate making safe left-hand turns along this highway,
- The recent Beacon Village median was poorly designed and redesigned. NCDOT should monitor this improvement and develop a better plan.
- The Go Gas/ Andy's Strip Center Shopping Center is very dangerous because the driveways are too close together. A traffic improvement in the area should be a top priority.

## **B 8. US 17/ NC 210 ECONOMIC DEVELOPMENT FOCUS GROUP SESSION - 2/22/2011**

### **Meeting Location: Pender County Annex**

#### **Group Attendees (by invitation):**

- Randy Cox, Coldwell Banker – [randycox@seacoastrealty.com](mailto:randycox@seacoastrealty.com)
- Ryan David, Urban Ltd. – [rdavid@urbad-ltd.com](mailto:rdavid@urbad-ltd.com)
- Peggy Hayes, Hayes Planning Associates – [hayesplan@gmail.com](mailto:hayesplan@gmail.com)
- Kyle Breuer, Pender County Planning Director – [kbreuer@pendercountync.gov](mailto:kbreuer@pendercountync.gov)
- Laura Fisher, M/A/B – [laurafisher@mabtrans.com](mailto:laurafisher@mabtrans.com)

### **Introductions and Study Overview**

Peggy Hayes began the meeting with introductions and encouraging focus group members to share the development perspective. Peggy explained that three focus group meetings will be held considering the viewpoints of business leaders, local residents and developers/ economic development leaders. She also announced that the second public workshop will held on March 3 at the Topsail High School.

Peggy introduced three broad concepts to enhance safety on US 17. She indicated that the crash history on NC 210 is nowhere near the level of crashes on US 17 and so the part of the study related to NC 210 will look at maintaining that condition even if development activity along NC 210 increases.

#### **Broad Concepts for US 17 Safety:**

1. Take various actions that will create a reputation or image that Hampstead is not a place to speed. Other places like Holly Ridge, NC and Emporia, VA have that image. It takes near constant enforcement which has not been provided to date because of the high cost and need for current law enforcement personnel to cover other parts of Pender County. The crash analysis revealed that speed differential is certainly a problem in Hampstead resulting in more serious accidents. Many of the crashes involved vehicles traveling 45 mph or faster hitting a vehicle driving about 20 to 25 mph.

One possibility is for the NCDOT to implement "Highway Safety Corridors" as has been done in Virginia. Speeding fines are much higher in such corridors.

2. Build a secondary street system. Pender County adopted a Collector Street Plan a few years ago that mapped where future secondary streets might be built. These will be primarily two-lane streets that would be built by developers on their property as they build their developments. Thus, an interconnected street system is many years away and dependent on the economy.
3. NCDOT would continue to install median installations like the one recently installed on US 17 at Hughes Road / Beacon Center that restrict some left-turn movements. Peggy showed an aerial map of the US 17 study area that showed the number of crashes reported over the last 5.5 years from mid-2005 through December 2010. The map showed differences in the number of crashes at individual locations. Peggy indicated that if this approach is recommended, that the number of crashes will be used to help prioritize which median installations should be built sooner than others.

### **Focus Group Responses:**

Mr. Randy Cox stated that a major problem along US 17 is that there is no interconnectivity between parcels. The hardware store/Go Gas area is a big problem area.

Mr. Ryan David stated that lighting is also a big issue. When driving at night it can be difficult to distinguish when a driver is leaving the higher speed divided roadway and entering the lower speed 5-lane road.

It was noted that the signal at NC 210 is the last signal on the south side of Hampstead and drivers heading toward Wilmington tend to speed up to catch the light, and then some rear-end those turning into the gas station and Hardees. Heading northbound, the signal at NC 210 is the first one in a long stretch from Wilmington so it may surprise some motorists.

Mr. Kyle Breuer stated that Pender County is going to try to enforce interconnectivity between parcels to be developed.

Mr. Cox believes that without connectivity there will be complaints from businesses about not being able to turn left when medians are installed in the future. He questioned whether it is possible to retroactively mandate the connection of drives and parking lots. Mr. Breuer replied that it is not possible but that frontage roads can be encouraged with future development.

Mr. David suggested that signals will slow traffic. Mr. Breuer questioned whether a signal will improve safety.

Ms. Peggy Hayes asked if the reduction of the posted speed to 45 mph changed the corridor. Mr. Cox said that he slows down in the area. Mr. David replied that the 45 mph speed limit will help but vehicles need to actually slow down to 45 mph.

Mr. Cox noted that the center turn lane is an issue. Vehicles must quickly get into the turn lane and stop in a short distance due to the volume of traffic.

Mr. David thinks that the spot median blocks (“Duracurb”) may cause more dangerous U-turns. He suggests a pork chop concrete island be placed at Hughes St. to help remind those coming to the intersection that a left turn onto south US 17 is not permitted.

Mr. David suggested that the County should ask for dedicated right of way for future road widening from developers. He feels that a 26’ wide raised median is too much for a future plan. Mr. Breuer noted that citizens like the wide median and it can be used for landscaping. It was discussed that medians and landscaping can be used for traffic calming to slow traffic.

There was interest from the group in an updated Corridor Plan for Pender County.

Ms. Hayes recalled recommendations from previous focus groups for collector streets to connect Peanut Road to NC 210, Factory Road to Dan Owen Drive and Deerfield Road to Hughes Road. Mr. Breuer questioned whether the Planning Board will ok backage roads as opposed to connecting parking lots.

Mr. Cox noted that sewer will be coming down US 17 in the near future and will spur development.

The meeting adjourned at 4 pm. Peggy said that a written summary of comments will be e-mailed to all participants and that they could change anything attributed to them. The revised written record will become public information after each participant has had a reasonable opportunity to review and offer their comments and revisions.



## B 9. PARTIAL LIST OF ACCESS CHANGES WITH RAISED MEDIAN

A partial list of some businesses / subdivisions in Hampstead to show how the consultant draft Preferred Access Plan (raised median on US 17) would affect access patterns. All distances are approximate and provided to give reference to required additional travel distance needed to reach U-turn points. Final design elements may alter these distances slightly.

Access to / from Business or Subdivision					
	Inbound		Outbound		
Business or Subdivision	From north	From south	To north	To south	Comments
ABC liquor store	Right into site.	U-turn at the site.	Right on US 17, go 700 ft, U-turn at Deerfield Dr.	Right on US 17	
Ace Hardware	Right into front of store.	Go 1,300 ft past the store, U-turn.	Right on US 17, go 1,300 ft, U-turn.	Right on US 17 from front of store.	
Andy's Pizza / Dominos / Dollar General	Right into front of store.	Go 1,300 ft past the store, U-turn.	Right on US 17, go 900 ft, U-turn.	Right on US 17 from front of store.	
Atlantic Seafood	Right into site	U-turn at the site.	Right on US 17, go 3,500 ft, U-turn at NC 210 signal; large trucks go 3,600 feet and U-turn near Hughes Rd.	Right on US 17	NCDOT may build Collector Street network allowing back access to NC 210 or Hoover Road where left-turns can be made at signals.
Beacon Center	Right turn into site	Left turn into site at leftover-type median opening	Right, then quarter-mile turn left at new signal at Wash. Acres Rd.	Right from site	Existing temporary dura-curb and plastic paddles to be replaced with raised concrete median
Belvedere Plantation	U-turn bulbs to be built for both directions on US 17 midway between Leeward Lane and Long Leaf Drive.				Leeward Lane converted to right-in / right-out. Long Leaf Drive converted to a leftover with southbound US 17 left-turn access.
BP at Sloop Pt. Rd.					No change to existing access
BP at NC 210	Right into site	U-turn at NC 210 signal	Right on NC 210, left at US 17 signal	Right on US 17	If vehicles are queued on NC 210 at US 17 signal,
CVS drug store	Left at signal at NC 210/Dan Owen Dr.	Thru signal, right into site	Right on US 17	Right on Dan Owen Dr., left on US 17	
Deerfield subdivision Deerfield Drive Port City Java	Left onto Deerfield Drive	Right into Deerfield Dr or Port City Java	Right on US 17	Right on US 17 to 800-1000 ft to U-turn at Headwaters Dr.	
Exxon/Scotchman					No change to existing access
Factory Road	Go 600 ft. past street, U-turn at NC 210. Large trucks go 2,600 ft past Factory Road, then U-turn near Hughes Rd.	Right on Factory	Right on US 17	Right on US 17, go 500ft then U-turn.	NCDOT may build new collector street between Dan Owen Drive and Factory Road, adjacent to the Post Office; the NC 210 signal could then be used for left-turn movements.
Food Lion/Hampstead Station via Dan	Left at signal at NC 210 / Dan Owen Dr.	Right-turn into shopping center at US 17 driveway	Right on US 17	Turn left on Dan Owen Dr. then, left at signal on US 17	Driveway on US 17 at Hampstead Station will be converted to a right-in/right-

Access to / from Business or Subdivision					
	Inbound		Outbound		
Business or Subdivision	From north	From south	To north	To south	Comments
Forest Sound Road	Go 1,200 ft. past street, U-turn at Hoover Rd. Trucks go 1.1 miles, then U-turn at Hughes Rd.	Right at street	Right on US 17	Right on US 17, go 150 ft, U-turn	Outbound vehicles going south are required to make a quick merge to make the U-turn. If not possible, second U-turn opportunity is 2,650 feet north past Loblolly Trail.
Go Gas	Right into front of store.	Go 1000 ft past store, U-turn.	Right on US 17, go 1100 ft, U-turn near Forest Sound Dr.	Right on US 17 from front of store.	
Grandview Drive	Left at street via new leftover-type median opening.	Right at street	Right on US 17	Right on US 17, in 2,100 ft, then U-turn.	Leftover type median opening at Grandview Dr may be eliminated when Hampstead Bypass connector is built nearby.
Hampstead Village	Go past by 700 ft, U-turn at Forest Sound Dr.	Right turn from US 17	Right on US 17	Right on US 17, go 1,500 ft, then U-turn.	
Headwaters Drive	Go 1,600 ft past Headwaters, then U-turn at Deerfield Dr.	Right at Headwaters Dr.	Right on US 17	Right on US 17, in 700 feet U-turn at NC 210/Dan Owen Dr signal	
Hess / Hardees/Wilco	Right into site	Go 100-700 ft. past store, U-turn at NC 210 signal. Large trucks go 1,300 ft past store, then U-turn.	Right on US 17, in 2,100 ft, U-turn	Right on US 17	
Hoover Road					No change to access.
Jebby's	Right into site	Go 3,500 ft past site, U-turn.	Right on US 17, go 150 ft or 2,600 ft, then U-turn.	Right on US 17	
Library	Right at site	Go 400 ft. past site, then U-turn.	Right on US 17, go 800 ft., U-turn at Country Club signal.	Right on US 17	
Loblolly Trail	Go past the site, go 1,750 ft, then U-turn at Forest Sound Dr.	Right at street	Right on US 17	Right on US 17, in 800 ft, then U-turn.	
Olde Point subdivision					No change to access via Country Club Drive. US 17 access changed to right-in / right-out only.
Peanut Road	Right on Peanut	Go 500 ft past Peanut Rd, then U-turn.	Right on US 17, in 600 ft. U-turn at NC 210 signal. Trucks go 3,150 ft, then U-turn.	Right on US 17	
Pender County Annex	Go 400 ft past site, then U-turn or access from Long Leaf Dr.	Right at site	Right at site	Right on US 17, go 3,600 ft, U-turn at Sloop Point Loop Rd.	

Access to / from Business or Subdivision					
	Inbound		Outbound		
Business or Subdivision	From north	From south	To north	To south	Comments
Topsail schools					No change
Transfer Station Road					New superstreet or signal if and when warrants are met
U.S. Post Office					No change
Washington Acres subdivision	Left at new superstreet or signal at Wash.Acres Rd.	Right at Wash.Acres or Hughes Rd.	Right at Wash. Acres or Hughes	Left at new signal or right on US 17, go 1,300 ft, then U-turn at Beacon Center. Trucks turn right on US 17, go 2/3 mile, then U-turn.	
Williams Store Road	Go 1,300 ft past store, the U-turn.	Right at street	Right on US 17	Right on US 17, go 800 ft, then U-turn.	

## **B 10. FREQUENTLY ASKED QUESTIONS – POSTED TO PROJECT WEBSITE**

[www.hampstead17and210.org](http://www.hampstead17and210.org)

### **General Process**

#### ***A. What is the study process?***

The corridor study is a planning initiative and technical analysis administered by the Wilmington Urban Area Metropolitan Planning Organization ([www.wmpo.org](http://www.wmpo.org)) to consider a wide range of ideas to improve safety and mobility. Roadway changes will be prioritized for incremental funding through state and federal transportation sources. The study begins with this public workshop and continues through May 2011 by meeting with focus groups of area residents and stakeholders. The study defines the goals and objectives, evaluates existing and future transportation conditions, identifies and confirms transportation needs, and evaluates the goals and objectives against various ideas. The study report will include priorities and implementation strategies. The consultants are M/A/B of Raleigh and Hayes Planning of Wilmington.

#### ***B. What other studies are underway in the project area?***

The North Carolina Department of Transportation (NCDOT) is conducting a very detailed environmental study (“U-4751”) also known as Military Road Cut Off Extension and (“R-3300”) commonly known as the Hampstead Bypass project. This study involves consulting firms who follow the federal procedures for environmental studies. Maps and preliminary designs are in preparation under the supervision of NCDOT Project Development and Environmental Analysis Branch (Jay McInnis, Unit Head and Olivia Farr, Project Coordinator/Manager) and consultant Mulkey Engineers. Info can be found at NCDOT’s project website: (<http://www.ncdot.org/projects/us17hampsteadbypass/>).

NCDOT is also conducting a separate study focusing on long-term design options for existing US 17 from NC 50 in Onslow County to Interstate 140 in New Hanover County, including the stretch through Hampstead. The study is called “US 17 Feasibility Study” (“FS-0803B”) led by NCDOT - Feasibility Studies Unit. The consultant is M/A/B.

### **Financial/Political Process**

#### ***C. Where will the funds come from?***

The US 17 / NC 210 corridor study is being administered by the Wilmington Metropolitan Planning Organization ([www.wmpo.org](http://www.wmpo.org)) with funds allocated from NCDOT. Implementation of study recommendations regarding roadway changes will be prioritized for incremental design and implementation.

### **Local Considerations**

#### ***D. Will the traffic safety problem go away when the Hampstead Bypass is complete?***

NCDOT estimates that construction of the Hampstead Bypass is at least 10 years from now and changes are needed soon for US 17 through Hampstead. The US 17 / NC 210 Corridor Study will recommend changes that provide some relief in the near-term and mid-term before 2020.

***E. Why did the plastic paddles and “Dura-Curb” get inserted in the median of US 17 at Washington Acres?***

NCDOT installed it ([www.duracurb.net](http://www.duracurb.net)) because of vehicle crash concerns at that location. By installing the paddles and dura-curb in the median island, they want motorists entering US 17 from a side street or driveway to turn right and then travel to the next safe spot to do a U turn. This concept is called a “Left over”. There are places where left-turns are allowed in both directions from US 17 going to side streets, but left-turns are not allowed out onto US 17; these are called “Paired Left overs”.

NCDOT took this action in advance of completing the study because of safety concerns at this location.

***F. What is the impact on businesses and jobs?***

A goal is to preserve jobs in Hampstead. You are encouraged to patronize businesses here and not let safety changes to US 17 change where you do business.

***G. Why is NC 210 west of US 17 included in the study?***

The corridor study includes NC 210 because some growth is expected to occur along NC 210 between US 17 and Island Creek Road in the next 10 years and we want to be ready with the appropriate driveway designs. An interchange is planned on NC 210 with the Hampstead Bypass for construction after 2020.

***Public Involvement***

***H. How can I hear about future meetings and draft reports?***

Send us e-mail at the following: [Hampstead17and210@gmail.com](mailto:Hampstead17and210@gmail.com). If you only want to talk with someone about your ideas, you can call Project Manager Roger Henderson at 919.829.0328 or Project Director Mike Kozlosky at 910.341.3258. Please allow us a couple of business days to return phone calls.



**Appendix C**  
**ILLUSTRATIONS SHOWING PREFERRED**  
**ACCESS PLAN**

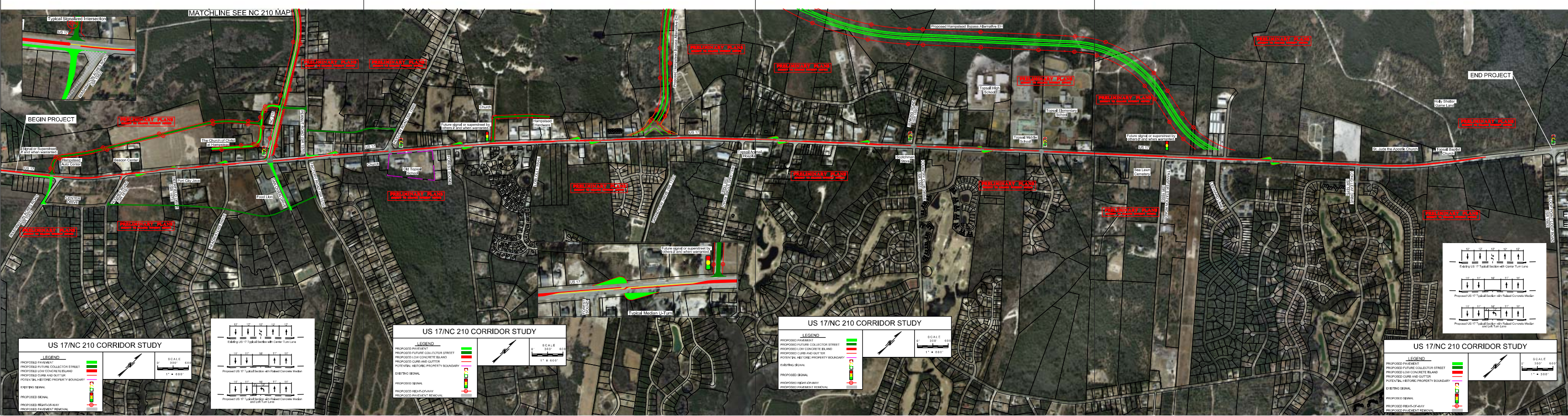


US 17 Detail 1

US 17 Detail 2

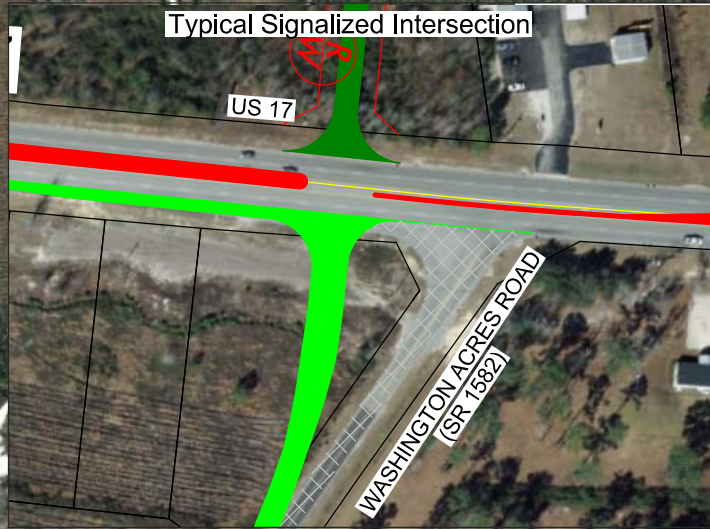
US 17 Detail 3

US 17 Detail 4





MATCHLINE SEE NC 210 MAP



**PRELIMINARY PLAN**  
**SUBJECT TO CHANGE WITHOUT NOTICE**

BEGIN PROJECT

**PRELIMINARY PLANS**  
**SUBJECT TO CHANGE WITHOUT NOTICE**

Signal or Superstreet if and when warranted.

Hampstead  
Auto Center

Beacon Center

The Church of Christ  
at Hampstead

NC 210

PEANUT ROAD (SR 1570)

FACTORY ROAD (SR 1570)

Food Lion

CENTER  
DRIVE

HUGHES ROAD  
(SR 1618)

## Port City Java

DEERFIELD DRIVE  
(SR 1673)

**PRELIMINARY PLANS**  
**SUBJECT TO CHANGE WITHOUT NOTICE**

## US 17/NC 210 CORRIDOR STUDY

## LEGEND

PROPOSED PAVEMENT  
PROPOSED FUTURE COLLECTOR STREET  
PROPOSED LOW CONCRETE ISLAND  
PROPOSED CURB AND GUTTER  
POTENTIAL HISTORIC PROPERTY BOUNDARY

EXISTING SIGNAL

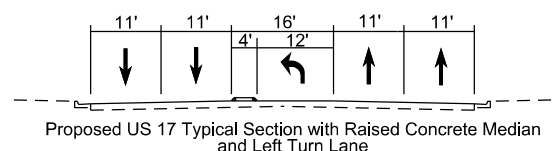
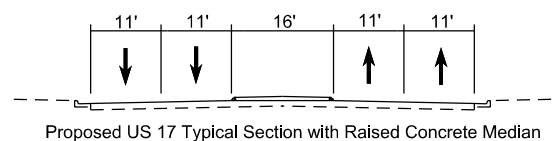
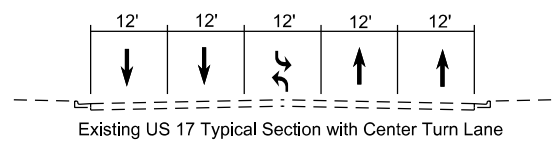
PROPOSED SIGNAL

### PROPOSED RIGHT-OF-WAY

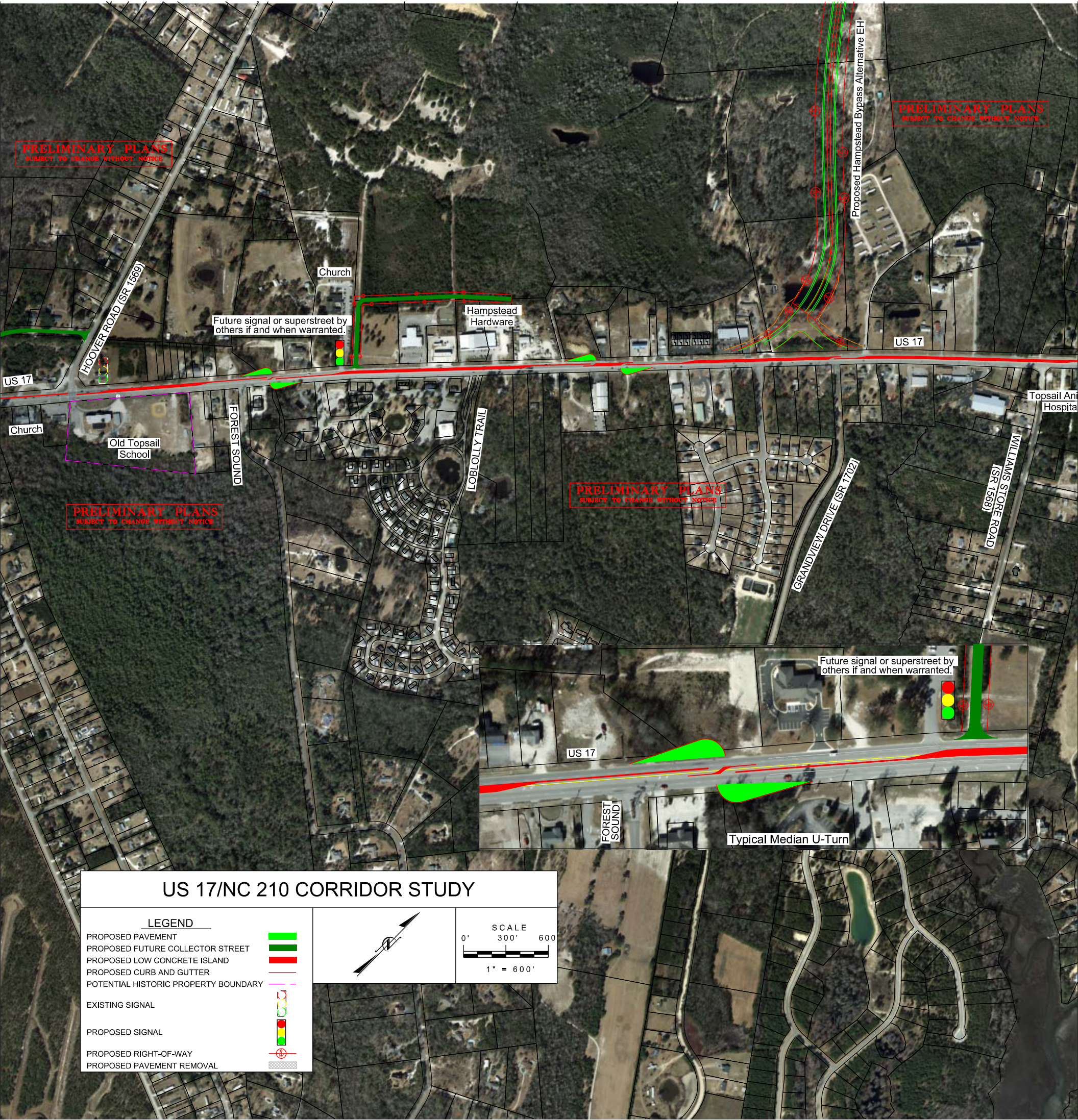
### PROPOSED PAVEMENT REMOVAL



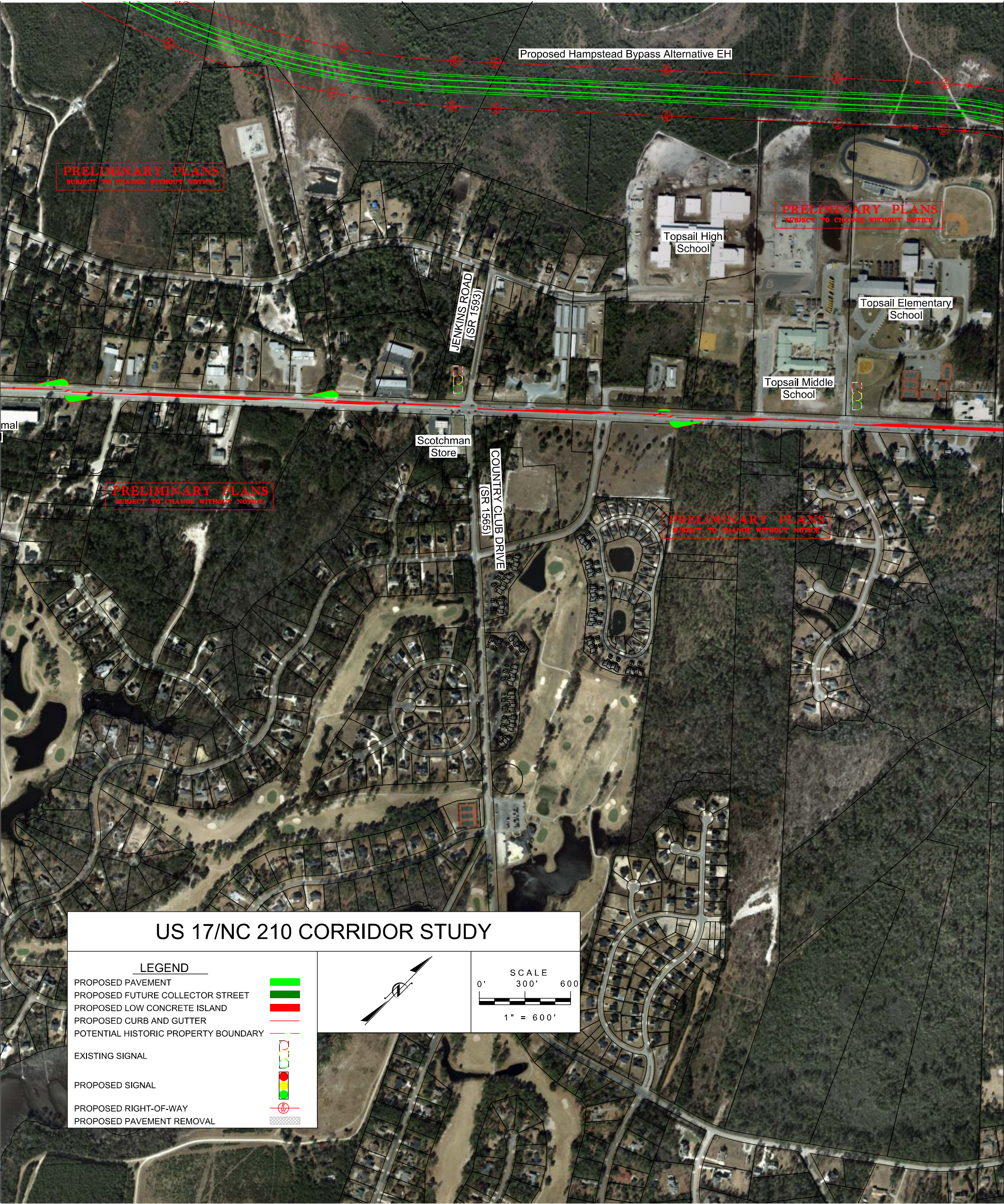
SCALE



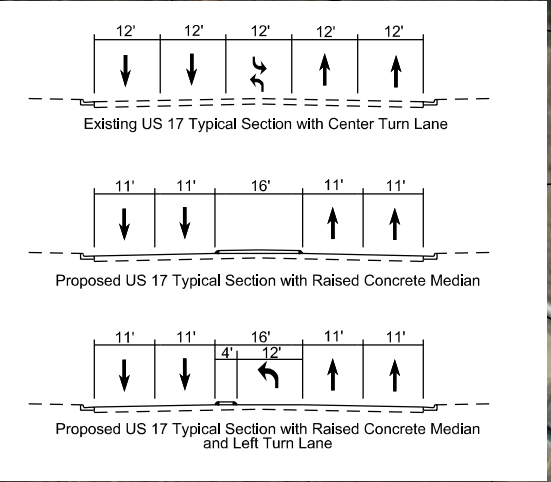
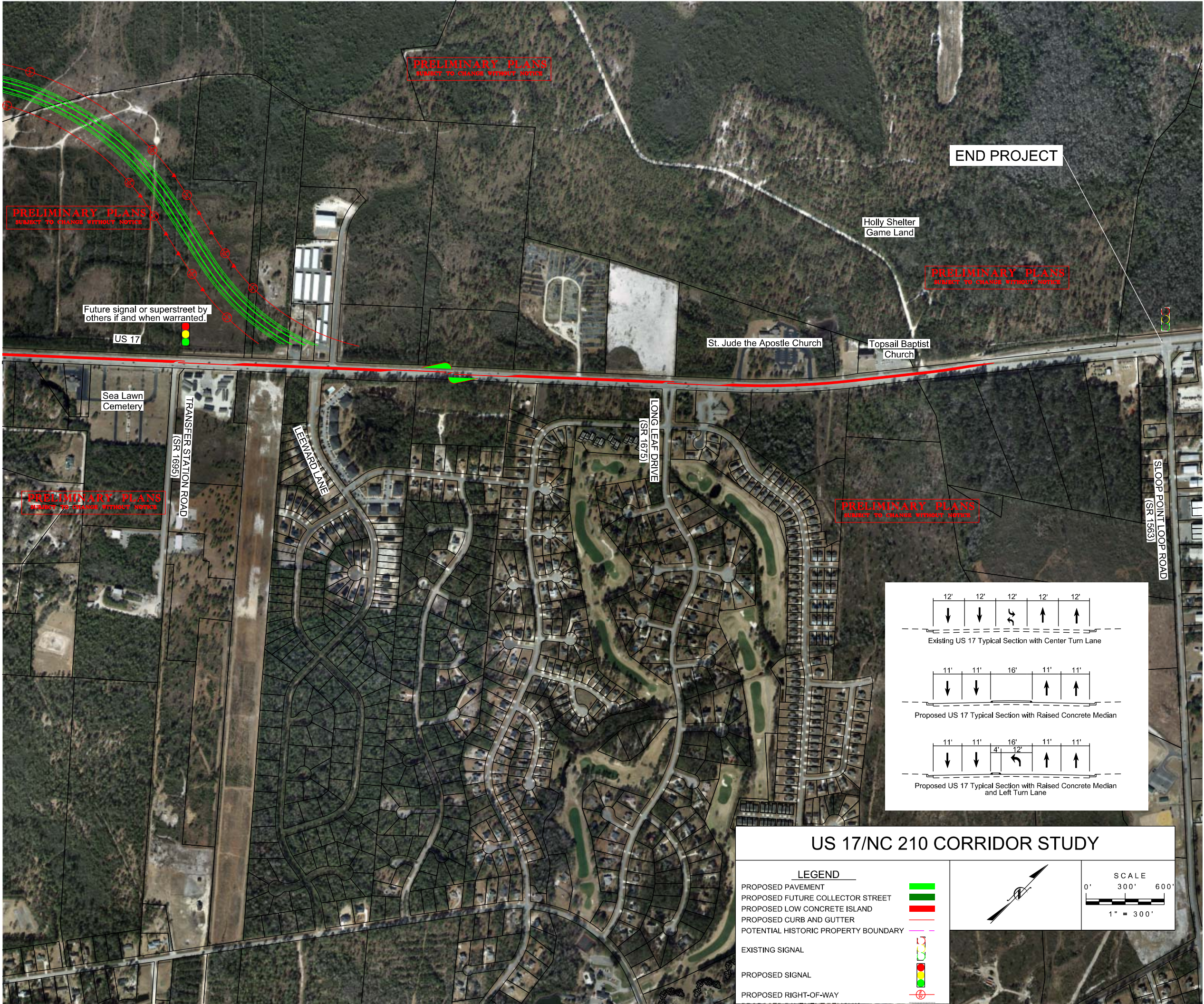












## US 17/NC 210 CORRIDOR STUDY

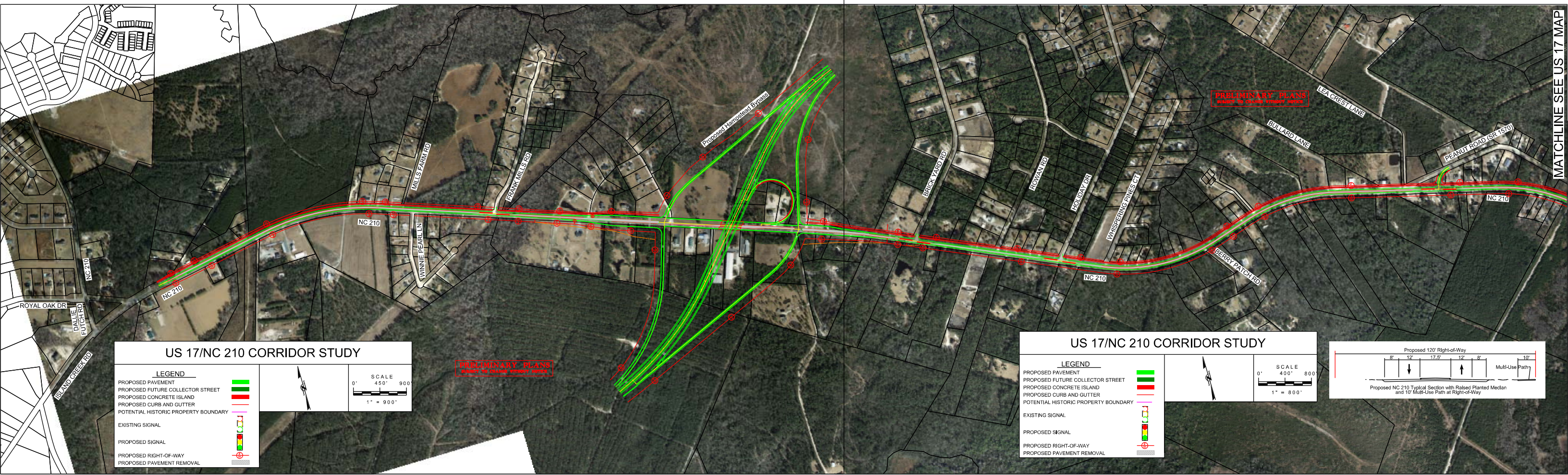
LEGEND	
PROPOSED PAVEMENT	
PROPOSED FUTURE COLLECTOR STREET	
PROPOSED LOW CONCRETE ISLAND	
PROPOSED CURB AND GUTTER	
POTENTIAL HISTORIC PROPERTY BOUNDARY	
EXISTING SIGNAL	
PROPOSED SIGNAL	
PROPOSED RIGHT-OF-WAY	

SCALE  
0' 300' 600'  
1" = 300'

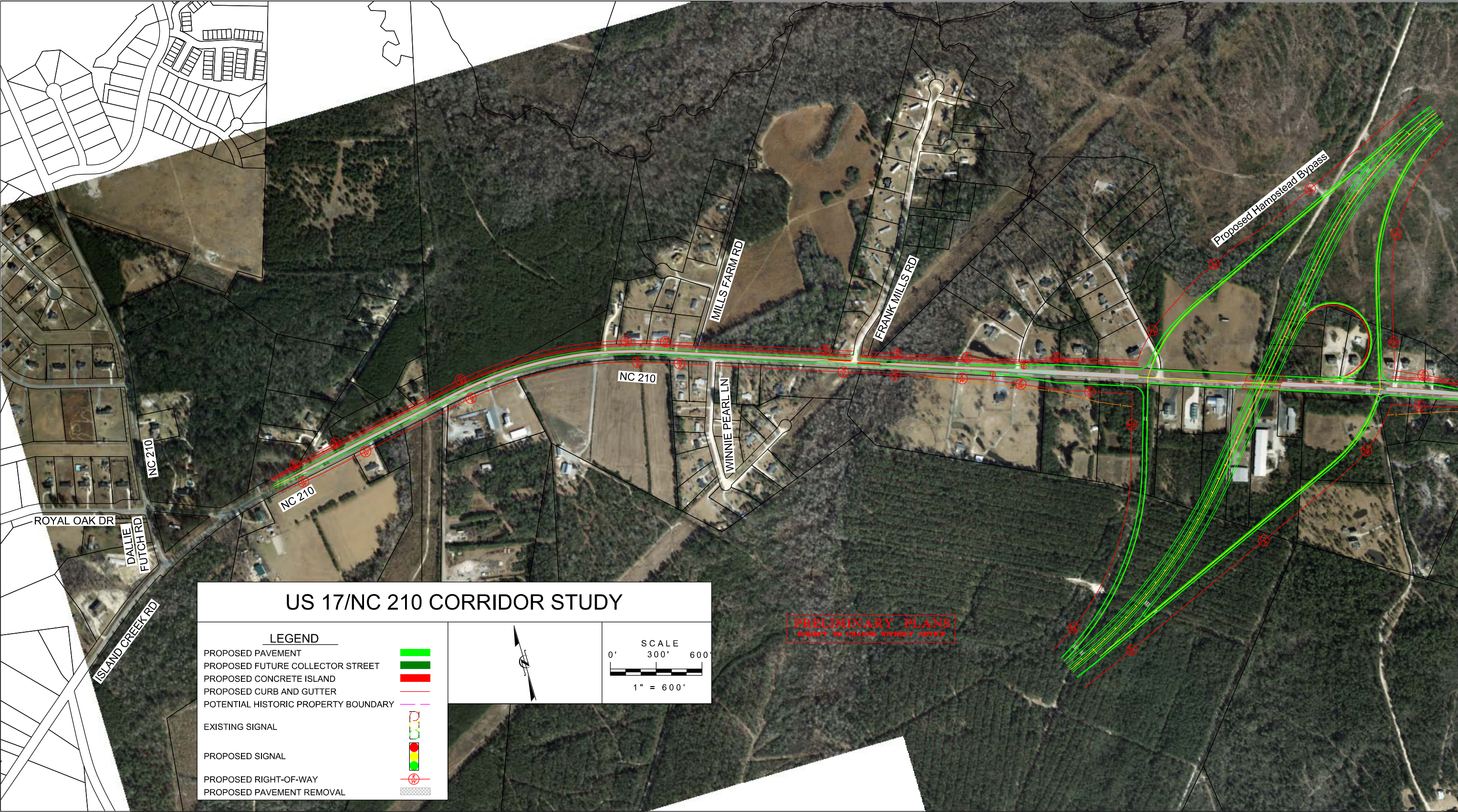


# NC 210 Detail 1

# NC 210 Detail 2



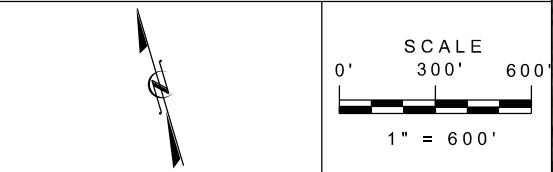




# US 17/NC 210 CORRIDOR STUDY

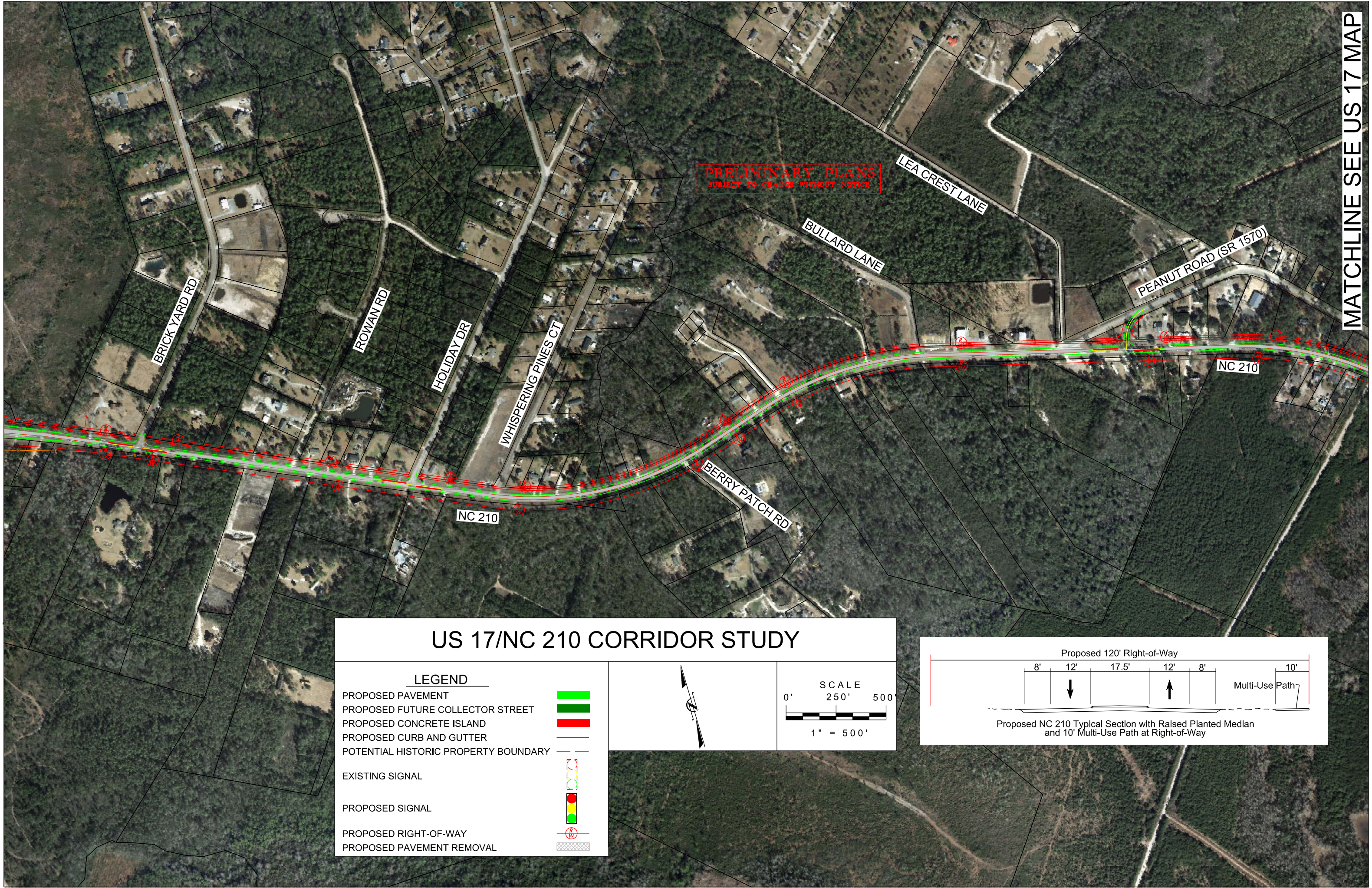
## LEGEND

- PROPOSED PAVEMENT
- PROPOSED FUTURE COLLECTOR STREET
- PROPOSED CONCRETE ISLAND
- PROPOSED CURB AND GUTTER
- POTENTIAL HISTORIC PROPERTY BOUNDARY
- EXISTING SIGNAL
- PROPOSED SIGNAL
- PROPOSED RIGHT-OF-WAY
- PROPOSED PAVEMENT REMOVAL



PRELIMINARY PLANS  
SUBJECT TO CHANGE WITHOUT NOTICE

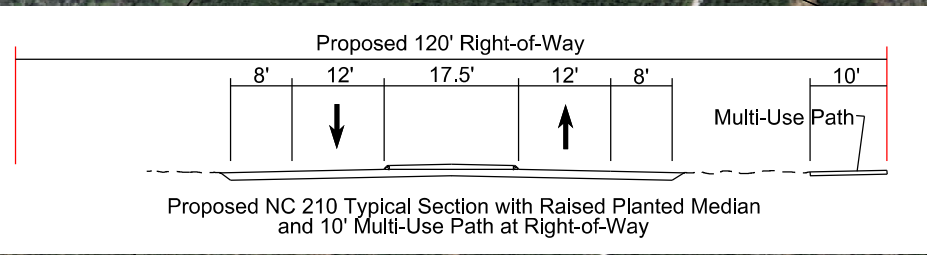
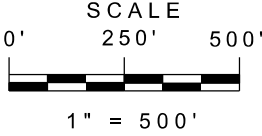




# US 17/NC 210 CORRIDOR STUDY

## LEGEND

- PROPOSED PAVEMENT
- PROPOSED FUTURE COLLECTOR STREET
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**Appendix D**  
**TRAFFIC SAFETY REPORT**

## APPENDIX D – TRAFFIC SAFETY REPORT

### US 17/NC 210 SAFETY AUDIT OBSERVATIONS

Developing recommendations to improve the long-term safety along the US 17 corridor was a major emphasis of this study. Once available crash data was reviewed an on-site evaluation was conducted to identify the probable causes for the types of collisions exhibited in the crash reports. Other safety deficiencies observed in the field were also noted. For each specific issue, a variety of probable countermeasures were identified. These improvements were largely incorporated into the proposed design and formed the basis of many of the recommendations of this study. The safety issues identified and suggested improvements along the corridor are summarized in the tables contained within this Appendix.

D 1. General Corridor Issues	
Safety Issue	Suggested Improvements
<p><b>1.1 Driveway Issues</b></p> <ul style="list-style-type: none"> <li>There are a significant number of closely spaced, full access driveways, particularly in the commercial area of Hampstead. Their close proximity to each other results in increased conflicts and may create driver confusion.</li> <li>Many of the driveways have very small curb radii and stem lengths which force the right-turning vehicles to almost come to a stop before turning into the businesses from US 17. This factor likely contributes to rear-end collisions.</li> <li>There is a general lack of interconnectivity between businesses and uses along the corridor, which require vehicles to turn onto US 17 for short distances and result in an excessive number of driveways.</li> </ul>	<p><i>Near Term:</i></p> <ul style="list-style-type: none"> <li>Construct a median along US 17 restricting many of the driveways to right-in/right-out movements.</li> </ul> <p><i>Intermediate:</i></p> <ul style="list-style-type: none"> <li>Consider constructing exclusive right-turn lanes at the higher volume driveways and intersections to assist drivers making right-turns at those locations and avoiding conflicts with through traffic along US 17.</li> </ul> <p><i>Long Term:</i></p> <ul style="list-style-type: none"> <li>Consider access management strategies such as adding a backage road, consolidating driveways, and/or providing interconnectivity between the businesses.</li> <li>Ensure adequate driveway radii, driveway stem lengths, and interconnectivity for future development along the corridor.</li> <li>Area should promote interconnectivity between adjacent businesses. With interconnected parcels, the number of driveways may be reduced, reducing vehicle conflict points along US 17. Repetitive trips to and from US 17 can also be reduced as vehicles may use of the interconnections and service or backage roads.</li> </ul>



*Small radius results in slower entering speeds and driving over the existing radius curbs.*

<p><b>1.2 Two-Way Left-Turn Lane</b></p> <ul style="list-style-type: none"> <li>• Five-lane facilities generally have a higher crash rate than comparable four-lane divided facilities. This difference is particularly evident in urban locations with a high number of full access driveways. A median provides a physical barrier between each direction of travel and reduces the number of conflict points at each driveway.</li> </ul>	<p><i>Near Term:</i></p> <ul style="list-style-type: none"> <li>• Construct a median along US 17 which will force left-turns to median openings at the signals or superstreet intersections.</li> </ul>
<p><b>1.3 Nighttime visibility of intersections</b></p> <ul style="list-style-type: none"> <li>• There is generally no street lighting along the road or at the intersections. Intersection lighting helps drivers identify the location of intersections at night and also helps to define the limits of the intersection. It also improves pedestrian safety by enhancing their conspicuity at night.</li> </ul>	<p><i>Intermediate:</i></p> <ul style="list-style-type: none"> <li>• Consider the installation of lighting at prominent intersections along the US 17 corridor to provide adequate lighting in each quadrant of the intersections.</li> </ul>
<p><b>1.4 Wayfinding</b></p> <ul style="list-style-type: none"> <li>• The project location has notable seasonal tourist traffic, meaning that many drivers in the area are likely to be unfamiliar with the street layout.</li> </ul>	<p><i>Intermediate:</i></p> <ul style="list-style-type: none"> <li>• Consider placing road signs on signal span wire to denote intersections and installing other wayfinding improvements.</li> </ul>
<p><b>1.5 Lack of pedestrian and bicycle accommodations</b></p> <ul style="list-style-type: none"> <li>• There are minimal sidewalk or other pedestrian accommodations along US 17</li> <li>• There are minimal bicycle accommodations along US 17</li> </ul>	<p><i>Intermediate:</i></p> <ul style="list-style-type: none"> <li>• Consider construction of a multiuse path on both sides of US 17 between Washington Acres Road and Sloop Point Loop Road.</li> </ul>



## D 2. US 17 and SR 1582 (Washington Acres Road)

### Crash Data Trends

- Nine of ten crashes were left-turn collisions
- Nine of ten collisions involved a vehicle travelling at least 45 mph with that vehicle typically traveling in the northbound direction along US 17

### **Safety Issue**

### **Suggested Improvements**

#### **2.1 Grade and Visibility issues**

- The Washington Acres Road approach sits at a lower elevation than US 17. As a result, drivers on Washington Acres Road have reduced sight distance. The intersection in general is not as visible to drivers along US 17 as the approach is somewhat sunken.



*Above photo shows the sight distance and visibility at the US 17 and Washington Acres Road intersection looking south at US 17.*

#### *Near Term:*

- Reduce the speed limit on US 17 to 45 mph before reaching Washington Acres Road intersection. This would give additional time for the westbound vehicles to make turns from Washington Acres Road onto US 17.
- Place a warning sign ahead of the intersection alerting drivers to the upcoming stop controlled intersection.
- Consider adding a flashing beacon to warn drivers of the intersection.

#### *Intermediate:*

- Consider superstreet or signalizing the intersection, which is expected to improve the safety at Washington Acres Road.
- As an alternative, construct a median along US 17 restricting left-turns from Washington Acres onto US 17. This will force the left-turning traffic to make right-turns at US 17 and a U-turn at a median opening north of Hughes Road. This will eliminate the left-turn from Washington Acres; however right-turns will still need to wait for an appropriate gap in traffic.
- Change vertical and horizontal alignment of Washington Acres approach so that it ties into US 17 more gradually and at a ninety degree angle.

#### **2.2 Skewed intersection**

- The US 17 and Washington Acres Road intersection is skewed and hence some drivers from the Washington Acres Road approach may have difficulty looking over their shoulders to turn right.

#### *Near Term:*

- Reduce the speed limit on US 17 to 45 mph before reaching the Washington Acres Road intersection.
- Consider restriping approach so that drivers approach the intersection at a more perpendicular angle.



*Above aerial image from Google Maps® shows the angle at which Washington Acres Road intersects US 17.*

*Intermediate:*

- Realign Washington Acres Road to intersect US 17 perpendicularly.

**2.3 High speeds on US 17**

- The posted speed limit on US 17 at its intersection with Washington Acres Road and Hughes Road is 55 mph. This results in a larger gap required for vehicles turning left onto or off of US 17.

*Near Term:*

- Reduce the speed limit on US 17 before reaching Washington Acres Road intersection to 45 mph.
- Place a warning sign ahead of the intersection alerting drivers to the upcoming stop controlled intersection.
- Consider flashing beacon affixed to speed limit signs to further alert drivers of the posted speed.

### D 3. US 17 east of SR 1673 (Deerfield Drive), ABC Store, Food Lion, Hardees and Wilco

#### Crash Data Trends

- High number of left-turn and rear-end crashes.
- High rate of crashes west of NC 210 (6<sup>th</sup> highest crash location).

Safety Issue	Suggested Improvements
<p><b>3.1 Driveway Issues</b> – There are several existing driveways onto US 17 between Deerfield Drive and NC 210 on the west side of US 17.</p> <ul style="list-style-type: none"> <li>• These driveways interfere with the functional area of the US 17 and NC 210 intersection.</li> <li>• Their close proximity to each other also causes driver confusion and results in increased conflict points.</li> <li>• The driveways have very small radii which forces the right-turning vehicles to almost come to a stop to turn into the businesses from US 17. This factor likely contributes to rear-end collisions.</li> </ul>	<p><i>Near Term:</i></p> <ul style="list-style-type: none"> <li>• Construct a median along US 17 restricting all the driveways to right-in/right-out movements.</li> </ul> <p><i>Intermediate:</i></p> <ul style="list-style-type: none"> <li>• Consider constructing an exclusive right-turn lane on southbound US 17 at the high volume driveways to assist drivers making turns in and out of businesses to avoid conflicts with through traffic along US 17.</li> </ul> <p><i>Long Term:</i></p> <ul style="list-style-type: none"> <li>• Consider access management strategies such as adding a backage road, consolidating driveways, and/or providing interconnectivity between the businesses.</li> <li>• Ensure adequate driveway radii, driveway stem lengths, and interconnectivity for future development along the corridor.</li> </ul>
<p><b>3.2 Sight Distance</b></p> <ul style="list-style-type: none"> <li>• The stop sign is placed behind the large stone Deerfield neighborhood sign, restricting sight distance to the south for drivers exiting Deerfield.</li> </ul> <div data-bbox="203 1417 812 1858" data-label="Image"> </div> <p><i>Deerfield sign blocking sight lines to the south</i></p>	<p><i>Near Term:</i></p> <ul style="list-style-type: none"> <li>• Move stop sign closer to US 17. May consider adding a second stop sign on the left side or relocate the stone wall.</li> </ul>

<p><b>3.3 Left-Turn Restriction</b></p> <ul style="list-style-type: none"> <li>The left-turn out restriction at Food Lion is not well marked or enforced.</li> </ul> <div data-bbox="203 315 824 714" data-label="Image"> </div> <p><i>Food Lion shopping center driveway onto US 17</i></p>	<p><i>Near Term:</i></p> <ul style="list-style-type: none"> <li>Add a no-left turn sign to alert drivers of the left-turn prohibition.</li> <li>Construct a median to help enforce the restriction.</li> <li>Adopt an ordinance, if necessary, to allow enforcement of the turn restriction.</li> </ul>
<p><b>3.4 Lack of pedestrian accommodations</b></p> <ul style="list-style-type: none"> <li>There are no sidewalks along US 17 despite evidence (worn grass path behind curb lines) of pedestrian demand within this area.</li> </ul>	<p><i>Long Term:</i></p> <ul style="list-style-type: none"> <li>Consider adding sidewalks or multiuse paths along both sides of US 17.</li> <li>Ensure adequate sidewalks are constructed in conjunction with future development or redevelopment along the corridor.</li> </ul>

#### **D 4. US 17 and NC 210/Dan Owen Drive**

##### Crash Data Trends

- Highest crash frequency along corridor.
- Highest number of angle, sideswipe and right-turning collisions along corridor.
- There appears to be a significant amount of red light running occurring at this location based on the crash data. Approximately nine crashes involved red light running in the southbound direction and two involved red light running in the northbound direction.

<b>Safety Issue</b>	<b>Suggested Improvements</b>
<b>4.1 Red Light Running Contributing to Crashes –</b> <ul style="list-style-type: none"><li>• The count data indicated a significant amount of red light running in the southbound direction.</li></ul>	<i>Near Term:</i> <ul style="list-style-type: none"><li>• Consider installing an advanced signal warning sign to help alert drivers. A flashing beacon or ‘be prepared to stop’ sign would further warn drivers</li><li>• There are only two signal heads for drivers in the southbound direction. Increasing the number of heads or including near-side signal heads would further improve visibility.</li><li>• Consider adding back plates to the existing signal heads to improve the contrast between the traffic signals and the surrounding backgrounds during both day and night conditions.</li><li>• Provide targeted enforcement to reduce red light running violations.</li><li>• Consider switching from permitted+protected left-turn phasing to protected only left-turn phasing along US 17 approaches.</li></ul>
<b>4.2 Signal Design</b> <ul style="list-style-type: none"><li>• The signal design is based on a 35 mph speed along US 17; however the posted speed is actually 45 mph. As a result, the pulse detectors are too close to the signal, yellow change intervals are too short, and a variety of other signal timing elements need to be updated.</li></ul>	<i>Near Term:</i> <ul style="list-style-type: none"><li>• Update the signal design to represent current speeds along US 17. Adequate placement of the pulse detectors will reduce vehicles captured in the ‘dilemma zone’ and potential red light running.</li></ul>



*Difficult to see signal head from eastbound right-turn lane. Consider installing additional signal head on right side.*

#### **4.3 Lack of Pedestrian Accommodations**

- There are no sidewalks or crosswalks at this intersection.
- Broken and inadequately placed wheelchair ramps are located in multiple corners of the intersection.



*Sweeping southbound right-turn creates wide pedestrian path across intersection. Consider raised island to provide a refuge for crossing pedestrians.*

#### *Long Term:*

- Consider adding sidewalks or multiuse paths along both sides of US 17 and NC 210.
- Ensure adequate sidewalks are constructed in conjunction with future redevelopment in the vicinity of this intersection.
- Provide adequate ADA wheelchair ramps at intersection corners. Add crosswalk and pedestrian phasing as pedestrian volumes warrant.



*Broken wheelchair ramp along east side of US 17 located 75' behind stop bar rather than in front of the stop bar*



<b>D 5. US 17 between NC 210/Dan Owen Drive and SR 1570 (Factory Road/Peanut Road)</b>	
<u>Crash Data Trends</u> <ul style="list-style-type: none"> <li>Six of eleven crashes were left-turn collisions.</li> </ul>	
<b>Safety Issue</b>	<b>Suggested Improvements</b>
<b>5.1 Driveway Locations and Attributes</b> <ul style="list-style-type: none"> <li>Currently there are several full-access driveways onto US 17 along this stretch that create numerous conflict points. Several driveways on the west side of US 17 south of Peanut Road have very short stem lengths which require very slow turning movements from US 17. Adding right-turn lanes near the driveways reduce the conflict between through vehicles and vehicles slowing down to turn right.</li> </ul>	<p><i>Near Term:</i></p> <ul style="list-style-type: none"> <li>Construct a median along US 17 restricting all the driveways to right-in/right-outs.</li> </ul> <p><i>Intermediate:</i></p> <ul style="list-style-type: none"> <li>Constructing an exclusive right-turn lane on southbound US 17 will help vehicles making turns in and out of businesses slow down to make the turn without conflicting with through traffic on US 17.</li> </ul>

## D 6. US 17 and SR 1570 (Factory Road/Peanut Road)

### Crash Data Trends

- Very high number of collisions at this location. The 39 reported collisions were the fourth highest crash location and easily the most for any unsignalized location.
- Location had the highest number of angle collisions (6) the highest number of rear-end (20) and left-turn (10) collisions of any unsignalized intersection.

### Safety Issue

### Suggested Improvements

#### 6.1 Poor Sight Distance

- The building in the southeast quadrant creates sight distance problems for vehicles turning from Factory Road.



*Drivers must pull their vehicles past the stop sign and lean forward to see past the adjacent building.*



*Parked car at transmission shop blocks sight distance in northwest corner.*

#### *Near Term:*

- Move stop bar and stop sign closer to the intersection.

#### *Intermediate:*

- Construct a median to restrict left-turning and through movements from Factory Road and Peanut Road.
- Consider constructing a new roadway sections between Factory Road and Dan Owen Drive enabling left-turning traffic to shift to the existing signal at Dan Owen/US 17. Similarly, provide a connection between NC 210 and Peanut Road.

#### 6.2 Lack of Right-Turn Lanes

- This intersection does not have right-turn lanes in either the northbound or southbound directions.

#### *Intermediate:*

- Constructing an exclusive right-turn lane on southbound US 17 will help vehicles making turns in and out of businesses slow down to make the turn without conflicting with through traffic on US 17.

<p><b>6.3 Driveways in the Functional Area</b></p> <ul style="list-style-type: none"> <li>• There are several existing driveways onto US 17 that interfere with the functionality of the intersection.</li> </ul>	<p><i>Near Term:</i></p> <ul style="list-style-type: none"> <li>• Construct a median along US 17 restricting all the driveways to right-in/right-outs.</li> </ul> <p><i>Intermediate:</i></p> <ul style="list-style-type: none"> <li>• Consider access management strategies such as adding a backage road, consolidating driveways, and/or providing interconnectivity between the businesses.</li> </ul>
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## D 7. US 17 and SR 1569 (Hoover Road)

### Crash Data Trends

- Third highest number of crashes along the corridor.
- Highest number of left-turn crashes (16) with 5 involving northbound and 5 involving eastbound left-turning movements.
- Relatively high number of collisions due to red light running.

### **Safety Issue**

#### **7.1 Left-Turn Collision Issues**

- Left turning crashes are the most common type of crashes at this intersection.

#### **7.2 Red Light Running**

- The count data indicated a significant amount of red light running in the southbound direction.



*Small driveway radius in the northeast corner causes drivers to traverse the curb. Consider increasing driveway radius and roadway width.*

### **Suggested Improvements**

#### *Near Term:*

- Consider installing an advanced signal warning sign to help alert drivers. A flashing beacon or 'be prepared to stop' sign would warn drivers.
- There are only two signal heads for drivers in the southbound direction. Increasing the number of heads or including near-side signal heads would further improve visibility.
- Consider adding back plates to the existing signal heads to improve the contrast between the traffic signals and the surrounding backgrounds during both day and night conditions.
- Provide targeted enforcement to reduce red light running violations.
- Consider switching the permitted and protected phasing on the northbound approach to protected only. Consider changing the existing permitted left-turn to protected and permitted or protected only phasing on the other three approaches.

## D 8. US 17 near Go Gas, Loblolly Trail, etc.

### Crash Data Trends

- Seven of eighteen crashes were left-turn collisions. Three were right-turning collisions.
- Third highest crash location among unsignalized intersections.

### **Safety Issue**

#### **8.1 Driveway Issues**

- The number of driveways as well as their close proximity to each other can increase conflict points and cause driver confusion.
- No interconnectivity between commercial developments requires drivers to use US 17 to travel short distances between sites.
- Driveways do not align across from each other (e.g. Loblolly Trail located between Ace Hardware driveways) resulting in conflicts within the two-way left-turn lane between opposing left-turning vehicles.



*Multiple closely spaced one-way driveways may create driver confusion.*

### **Suggested Improvements**

#### *Near Term:*

- Construct a median along US 17 restricting all the driveways to right-in/right-outs.

#### *Intermediate:*

- Consider access management strategies such as adding a backage road, consolidating driveways, and/or providing interconnectivity between the businesses. Consider superstreet or signalizing a collector street access to multiple properties if the collector street can be extended in the future, if signal warrants are met, and if developers pay for the signal or superstreet design.
- Consider constructing an exclusive right-turn lane on southbound US 17 at the high volume driveways to assist drivers making turns in and out of businesses and avoiding conflicts with through traffic along US 17.
- Ensure adequate driveway radii, driveway stem lengths, and interconnectivity for future development along the corridor.

## **D 9. US 17 and SR 1593 (Jenkins Road)/SR 1565 (Country Club Drive)**

### Crash Data Trends

- Second highest crash location along the corridor.
- Highest number of rear-end collisions (30 of the 53 total crashes).
- High number of left-turn collisions (15 of the 53 total crashes).

<b>Safety Issue</b>	<b>Suggested Improvements</b>
<p><b>9.1 Rear End Collision Issues</b></p> <ul style="list-style-type: none"><li>• Significant number of rear end collisions with most occurring in the northbound direction.</li></ul> <p><b>9.2 Left-Turn Collision Issues</b></p> <ul style="list-style-type: none"><li>• Left turning crashes are the most common type of crashes at this intersection.</li></ul> <p><b>9.3 Red Light Running</b></p> <ul style="list-style-type: none"><li>• The count data indicated a significant amount of red light running in the southbound direction.</li></ul>	<p><i>Near Term:</i></p> <ul style="list-style-type: none"><li>• Consider installing an advanced signal warning sign to help alert drivers. A flashing beacon or 'be prepared to stop' sign would further warn drivers.</li><li>• There are only two signal heads for drivers in the southbound direction. Increasing the number of heads or including near-side signal heads would further improve visibility.</li><li>• Consider adding back plates to the existing signal heads to improve the contrast between the traffic signals and the surrounding backgrounds during both day and night conditions.</li><li>• Provide targeted enforcement to reduce red light running violations.</li><li>• Consider switching the permitted and protected phasing on the northbound approach to protected only. Change the existing permitted left-turn to protected and permitted or protected only phasing on the other three approaches.</li></ul>



## D 10. US 17 and SR 1563 (Sloop Point Road)

### Crash Data Trends

- Fifth highest crash location.
- Very common crash type was the southbound left-turn being hit by a northbound through vehicle.
- Three run off the road collisions.

### Safety Issue

#### 10.1 Left-turn Crashes

- Very high number of same street left-turning crashes.



*View of oncoming vehicles from current SB left-turn lane.*



*Improved view if left-turn is offset.*

### Suggested Improvements

#### *Near Term:*

- Consider adding signal heads or back plates to the existing signal heads to improve the contrast between the traffic signals and the surrounding backgrounds during both day and night conditions.
- Consider switching the permitted and protected phasing on the southbound approach to protected only.
- Move the left-turn stop bar location back on westbound approach to improve visibility for right-turning vehicles and to reduce the possibility of clipping from opposing left-turning vehicles.

#### *Intermediate:*

- Consider starting the 45 mph speed limit zone at this intersection rather than immediately south of this intersection.

#### *Long Term*

- Offset the southbound left-turn lane for better visibility of the oncoming traffic.



*Consider offset stop bars at the westbound signal approach. Right turning vehicles would have better sight distance and southbound left-turning vehicles can turn more directly and efficiently.*

**Appendix E**  
**LAND USE AND POLICY REVIEW REPORT**

## APPENDIX E – LAND USE AND POLICY REVIEW REPORT

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*Prepared by HAYES PLANNING ASSOCIATES*

### **E 1. REVIEW OF LAND USE PLANS AND REGULATIONS**

#### ***Pender County Comprehensive Land Use Plan (Adopted June 21, 2010)***

The recently adopted Pender County Comprehensive Plan has policies directing growth in the Coastal Pender area in a Small Area Plan as well as established county-wide goals and policies that pertain to growth management and transportation.

#### ***Coastal Pender Small Area Plan***

##### *Future Land Use Classifications for Study Area*

Two future land use classifications are featured in the Study Area. The US 17 corridor from Washington Acres Road to Sloop Point Loop Road and the NC 210 commercial area bordering the US 17 intersection are classified as Mixed Use. According to the Comprehensive Plan, "Mixed Use areas should be characterized by physically and aesthetically unified developments containing a mixture of commercial, office, institutional, and high- and medium-density residential uses, arranged in a walk-able, compact, and pedestrian and transit friendly manner." (Page III:4)

The NC 210 corridor is classified as Suburban Growth from the intersection of Island Creek Road to Pansy Lane. The Suburban Growth classification "identifies those areas of Pender County where significant residential growth is expected to occur within the planning horizon. Areas designated as Suburban Growth are located primarily adjacent to municipal planning jurisdictions and within or near high growth, unincorporated areas of the County, i.e., Hampstead/Scotts Hill, Rocky Point, and portions of US 421 South. Suburban Growth designates areas where public water and public sewer are available or are planned in the near future." (Page III:3)

*Recommendation:* The Coastal Pender County Collector Street Plan should be updated to reflect new information about the location of wetlands discovered during planning for the Hampstead Bypass along with recent land developments that now preclude some of the collector streets previously recommended.

##### *Coastal Pender Land Use Policies*

#### **Coastal Pender Goal 4A.1**

The primary goal of the Coastal Pender Small Area Plan is to direct higher density residential and mixed use growth toward the Scotts Hill area, closer to the New Hanover/ Wilmington metro area. Development can be expected to continue in the Hampstead community but growth is to be focused more towards the southeastern edge of the Coastal Pender area. Coordinating future growth with the adjacent local governments of Surf City to the north and New Hanover County to the south and east are of prime importance.

Large scale developments should expect to be supported by public utilities and closely evaluated through a coordinated development review process. Commercial, office and mixed used infill, re-development of existing sites and development of new sites are expected to continue as market forces permit along the US Highway 17 corridor in Hampstead.



New land use proposals and approvals should closely consider the status of future transportation projects such as the US Highway 17 / Hampstead Bypass. Development should be encouraged and required to protect and support the integrity of historical and cultural sites within the area.

#### Policy 4A.1.2

The preference is for larger-scale developments that plan for and provide public utilities that serve on a regional basis or that can be expanded to serve a regional purpose. Individual on-site well and septic systems and small package plants that provide water or sewer service on a small scale should not be permitted. Integra, a private utility company, has offered to provide sewer services to new developments along US 17 as arranged by private developers.

#### Policy 4A.1.3

Establish flexible development regulations which encourage a variety of mixed use infill and re-development along the US Highway 17 corridor. Many of the large tracts along US 17 north of NC 210 are zoned "Planned Development," a mixed-use zoning classification that offers flexible development regulations.

#### Policy 4A.1.5

The US 17/Hampstead Bypass project has not yet designated a "corridor" in which a specific alignment will be designed and built. The process to designate a corridor should encourage maximum participation in gathering public input on selecting the final corridor and public support to fully fund the project. When the corridor is selected, revise the Coastal Pender Small Area Plan to reflect the proposed corridor and if necessary revise future land uses to the most appropriate category, depending on the final location of the corridor. Regulations should also be revised reflecting all legislative authority to protect the corridor from future development plans and to encourage approval of development proposals which are in harmony with the bypass project. Furthermore, adopt regulations that offer development incentives to projects that assist with right of way dedications or construction of portions of the bypass, as appropriate. The US 17 / Hampstead Bypass project is still being planned and a corridor has not yet been designated. Land acquisition for the Hampstead Bypass is not anticipated until 2020 or later. However, corridor protection legislation has been recently introduced in the North Carolina State Legislature that would substantially reduce local government's ability to protect the Bypass route.

Recommendation - Future Planning of US 17 Bypass and NC 210: A NC 210 Corridor Study should be prepared with a special emphasis on the proposed US 17 By-Pass and NC 210 interchange.

#### Policy 4A.1.6

Special historical/cultural features present in the Coastal Pender Small Area Plan include Popular Grove Plantation, Browntown School, Topsail Battery Earthworks, and Sloop Point post office, among others. Incorporate UDO regulations that enable future development projects that are adjacent to or near these sites to assist in their preservation and/or restoration. Encourage original "industries" such as seafood markets within the Hampstead area to continue as viable business and community icons. (Section II: 29 and 30) The Topsail Presbyterian Church, Topsail Battery and the George Washington Oak Tree are not located in the Study Area. There is a historic marker located at 13887 US 17 that is positioned just south of the intersection of US 17 and Hughes Road. The former Topsail High School building is eligible for study but has not been designated as an historic or architectural site.

Recommendation: Special care should be taken to preserve the historic marker located in the vicinity of US 17 and Hughes Road when proposed improvements are constructed in this area.

Review of Minor Developments: In reviewing the newly adopted Unified Development Ordinance it appears that several subdivision exemptions presently exist in the Ordinance that would allow for some "minor" development to occur along the corridor without going through the regular approval process. These include the Family Subdivisions and 3-Lot Divisions along NCDOT roads. The Ordinance Administrator and the Technical Review Committee should have the discretion of requiring a more formal review of these type of land divisions within the Hampstead and NC 210 Corridors. This is also true for the Master Development Plan requirements as they apply to the General Business and Planned Development Districts which have several waivers in place for smaller projects.

## ***E 2. TRANSPORTATION GOALS AND POLICIES RELATING TO US 17 AND NC 210 CORRIDOR STUDY***

### Transportation Goal 2B.1

Manage the timing, location and intensity of growth by coordinating transportation improvements in accordance with the Comprehensive Land Use Plan and the Coastal Pender Collector Street Plan.

### ***Policies Regarding Transportation Planning***

#### Policy 2B.1.1

Ensure that the Pender County Comprehensive Transportation Plan is updated and that it is coordinated with the Comprehensive Land Use Plan.

Comment: Pender County is now developing its first Comprehensive Transportation Plan (CTP) that will update the 1997 Thoroughfare Plan. The CTP will be incorporated in the 2010 Pender County Comprehensive Plan

#### Policy 2B.1.2

Ensure that Pender County's transportation needs are adequately addressed through the Wilmington MPO and Cape Fear RPO Transportation Improvement Program requests.

Comment: The WMPO authorized this US 17/ NC 210 Study.

#### Policy 2B.1.12

The County should consider conducting studies and engaging in special planning initiatives for major transportation corridors within its jurisdiction to implement supportive plans and ordinances to assist in accomplishing the following objectives:

- preserving and maintaining existing and future transportation facilities and corridors;
- improving safety, site access and design standards;
- enabling continuity and community identity;
- enhancing aesthetic appearances of non-residential developments using reasonable architectural standards;
- enhancing landscaping and sign regulations, and flexible yard, bulk, and area requirements.

Comment: Pender County has endorsed this planning effort for the US 17 and NC 210 study. The County's ability to preserve future transportation corridors is at risk if the recently proposed state legislation is passed.

#### Policy 2B.1.6

The County shall work with the NCDOT, MPO, and the RPO to encourage alternative forms of transportation including regional rail, local transit, Transportation Demand Measures such as van-pooling and ride sharing, and an inter-modal transportation system.

Comment: The WMPO Cape Fear Commutes 2035 study recommends that an Express Bus route from Hampstead-Wilmington be established once demand warrants it.

#### Policy 2B1.10

Allow and encourage flexible road design standards, incorporating low impact development and smart growth principles.

Comment: Pender County is now developing its first Comprehensive Transportation Plan (CTP) and plans to incorporate many of the 2007 Coastal Pender Collector Street road design recommendations into the county's land use regulations.

#### Policy 2B.1.5

The County should utilize the legislatively enabled authority vested them to work with public and private partners to explore and implement an array or innovative techniques for financing new surface transportation projects as well as providing improvements to current facilities.

Comment: Some participants in the US 17/ NC 210 study public meetings have advocated various methods for Pender County to help finance transportation improvements.

### ***Policies Endorsing the 2007 Coastal Pender Collector Street Plan***

#### Policy 2B.1.3

The County should utilize and promote a hierarchical, functional transportation system, that prioritizes needed improvements, and promotes the proper arrangement of land use patterns to ensure and determine the proper levels of service (LOS) to reduce any associated negative impacts to the overall transportation network.

#### Policy 2B.1.4

Adopt regulations that require new developments and individual sites throughout the County to provide vehicular and pedestrian interconnectivity to existing or planned adjacent sites and adjoining developments.

#### Policy 2B.1.7

Ensure that the Coastal Pender Collector Street Plan, adopted on May 21, 2007, is used consistently when reviewing and approving new development proposals within the Hampstead and Scotts Hill areas of the County. Consider applying Plan recommendations for roadway connectivity to all new developments countywide.

#### Policy 2B.1.8

As recommended in the Coastal Pender Collector Street Plan, develop a system to track and monitor all future right-of-way dedications, "paper streets", and stub-outs. Research recorded documents to expand the database to include existing / paper streets to ensure maximum coordination and connectivity.

#### Policy 2B.1.9

As recommended in the Coastal Pender Collector Street Plan, all new streets that have the potential to connect to adjacent developments should be constructed to NCDOT secondary road standards and accepted for public maintenance to ensure future connectivity.

#### Policy 2B.1.11

Within the UDO, incorporate recommended "Regulatory and Policy Tools" set out in the Coastal Pender Collector Street Plan.

The Pender County Planning Board is reviewing the county's land use regulations to promote interconnectivity between adjacent properties, mandate many of the 2007 Collector Street Plan recommendations and improve access management land use regulations.

#### Policy 4A.1.4

Incorporate transportation recommendations from the Coastal Pender Collector Street Plan into the UDO including recommendations for improved roadway interconnectivity and shared driveways. Many of the WMPO 2007 Collector Street plan recommendations still need to be incorporated into the UDO ordinance adopted in July 2010.

Recommendation: Many of the recommendations already contained in the Pender County's Land Use Plan along with the Coastal Pender Collector Street Plan deserve an opportunity to be implemented. Adding additional opportunities for review and approval of any new development proposal or any modification to existing projects or land use changes is the surest way of reaching those goals and objectives or as the plan says "to re-envision both the function and appearance of US Highway 17 and NC 210"