



2014 Avery County Comprehensive Transportation Plan



This page intentionally left blank.

2014 Avery County Comprehensive Transportation Plan

Prepared by:	Matthew Quesenberry, EI, Project Engineer Pam Cook, PE, Mountains Planning Group Supervisor Transportation Planning Branch N.C. Department of Transportation
In Cooperation with:	Avery County Town of Banner Elk Town of Beech Mountain Town of Crossnore Town of Crossnore Town of Elk Park Town of Newland Town of Newland Town of Seven Devils Village of Sugar Mountain High Country Rural Planning Organization
	Published: May 2015 Published: May 2015 SEAL 014862 Pam R. Cook
ľ	Mountains Planning Group Supervisor

Cover photograph by Ed Evans

This page intentionally left blank.

Table of Contents

i

Chapter 1: Analysis of the Existing and Future Transportation System

1.1 Analysis Methodology and Data Requirements		1-1
	a) Roadway System Analysis	1-1
	i. Traffic Crash Assessment	1-3
	ii. Bridge Deficiency Assessment	1-3
	b) Public Transportation and Rail	1-17
	i. Public Transportation	1-17
	ii. Rail	1-18
	c) Bicycles and Pedestrians	1-18
	d) Land Use	1-19
1.2	Consideration of the Natural and Human Environment	1-21
1.3	Public Involvement	1-22

Chapter 2: Recommendations

2.1	Unaddressed Deficiencies	2-1
2.2	Implementation	2-2
2.3	Problem Statements	2-3
	a) Highway	2-4
	b) Public Transportation and Rail	2-33
	c) Bicycle	2-33
	d) Pedestrian	2-35

Appendices

A-1
B-1
C-1
D-1
E-1
F-1
G-1
H-1
I-1
J-1
•

List of Figures

Figure 1: Comprehensive Transportation Plan	iii
Figure 2: 2012 Volumes and Capacity Deficiencies	1-5
Figure 3: 2040 Volumes and Capacity Deficiencies	1-9
Figure 4: High Frequency Crash Locations	1-13
Figure 5: Deficient Bridges	1-15
Figure 6: Environmental Features	1-25
Figure 7: Typical Cross Sections	D-2
Figure 8: Level of Service Illustrations	E-2
Figure 9: Future Population Projection Scenarios	G-2
Figure 10: Avery County Future Land Use Map	G-5
Figure 11: NC 184 New Facility Alternatives	I-5
Figure 12: NC 194 New Facility Alternatives	I-9
Figure 13: 2013 Seasonal Count Locations	J-2
Figure 14: NC 105 Monthly 2013 Count Capacities	J-13
Figure 15: NC 105 Monthly 2040 Count Capacities	J-15

List of Tables

Table 1: Environmental Features	1-21
Table 2: Avery County CTP Adoption Meetings	1-23
Table 3: NC 184 Characteristics & Traffic Volumes	2-10
Table 4: NC 194 Characteristics & Traffic Volumes	2-15
Table 5: CTP Inventory and Recommendations	C-3
Table 6: Deficient Bridges	F-2
Table 7: Population/Employment Data Adoption Meetings	G-1
Table 8: Census Population	G-1
Table 9: Future Population Projection Scenarios	G-2
Table 10: County Population Growth Comparison	G-3
Table 11: Employment Data	G-4
Table 12: Population/Employment Summary	G-4
Table 13: Avery County CTP Adoption Meetings	H-14
Table 14: 2013 Seasonal County Locations	J-1
Table 15: February 2013 Seasonal Traffic Counts	J-4
Table 16: April 2013 Seasonal Traffic Counts	J-5
Table 17: June 2013 Seasonal Traffic Counts	J-6
Table 18: August 2013 Seasonal Traffic Counts	J-7
Table 19: October 2013 Seasonal Traffic Counts	J-8
Table 20: 2013 Monthly Seasonal Count Comparison	J-9
Table 21: 2013 Monthly Seasonal Count Capacities	J-10
Table 22: NC 105 Monthly 2013 Count Capacities	J-11
Table 23: NC 105 Monthly 2040 Count Capacities	J-11

Executive Summary

In November of 2012, the Transportation Planning Branch of the North Carolina Department of Transportation (NCDOT) and Avery County initiated a study to cooperatively develop the Avery County Comprehensive Transportation Plan (CTP), which includes Banner Elk, Beech Mountain, Crossnore, Elk Park, Newland, Seven Devils, and Sugar Mountain. This is a long range multi-modal transportation plan that covers transportation needs through the year 2040. Modes of transportation evaluated as part of this plan include: highway, public transportation and rail, bicycle, and pedestrian. This plan does not cover routine maintenance or minor operations issues. Refer to Appendix A for contact information on these types of issues.

Findings of this CTP study were based on an analysis of the transportation system, environmental screening, and public input, which are detailed in Chapter 1. Figure 1 shows the CTP maps, which were mutually adopted by NCDOT in 2014. Descriptive information and definitions for designations depicted on the CTP maps can be found in Appendix B. Implementation of the plan is the responsibility of Avery County, its municipalities, and NCDOT. Refer to Chapter 2 for information on the implementation process.

This report documents the recommendations for improvements that are included in the Avery County CTP. The major recommendations for improvements are listed below. More detailed information about these and other recommendations can be found in Chapter 2.

<u>HIGHWAY</u>

- US 19E/NC 194, TIP No. R-2520: Widen to a multi-lane boulevard with bicycle accommodations from Mitchell County to US 221 (Linville Falls Highway).
- US 221, TIP No. R-2595/R-2596 & AVER0003-H: Widen to a multi-lane boulevard with bicycle accommodations from Burke County to NC 105 in Linville.
- US 321, TIP No. R-5016: Widen to a multi-lane expressway with bicycle accommodations from Watauga County to Tennessee.
- NC 105, TIP No. R-2566: Widen to a multi-lane facility with bicycle accommodations from US 221 to Watauga County.
- NC 184 (Tynecastle Highway), TIP Project R-2811: Widen to a four lane boulevard with bicycle and pedestrian accommodations from NC 105 to Banner Creek Road (SR 1341).
- NC 184, AVER0001-H: Construct a two lane major thoroughfare with 12 foot lanes and bicycle accommodations on new location from NC 184 (Tynecastle Highway),

near Banner Creek Road (SR 1341), to the intersection of NC 194 (Banner Elk Highway) and Elkview Place.

• NC 194 Alternate, AVER0002-H: Construct a two lane major thoroughfare with 12 foot lanes and bicycle accommodations, partially on new location in western Newland, from NC 194 at Old Cranberry Street to NC 194 at Old Public Road.

BICYCLE/PEDESTRIAN

New State Bike Routes: The NCDOT 2013 WalkBikeNC Plan recommends the new NC Bike Route 11 (the "Mountain Route") and new Tennessee Connector Route in Avery County. The plan also recommends the rerouting of NC Bike Route 2. The recommendations from the plan are route designations that have already been implemented, though signage is not yet on the routes. Refer to Figure 1 – Sheet 4 to see exact locations.







Existing Needs Improvement Recommended Minor Thoroughfares Existing Needs Improvement ----- Recommended (\bullet) Existing Interchange (\bullet) Proposed Interchange ()Interchange Needs Improvement Existing Grade Separation ()Proposed Grade Separation

Other Major Thoroughfares



Sheet 2 of 5

Base map date: October 26, 2012

Refer to CTP document for more details

Highway Map

Avery County

Comprehensive Transportation Plan

Plan Date: August 25, 2014

Figure 1













1. Analysis of the Existing and Future Transportation System

A Comprehensive Transportation Plan (CTP) is developed to ensure that the transportation system will meet the needs of the region for the planning period. The CTP serves as an official guide to providing a well-coordinated, efficient, and economical transportation system for the future of the region. This document should be utilized by the local officials to ensure that planned transportation facilities reflect the needs of the public, while minimizing the disruption to local residents, businesses and environmental resources.

In order to develop a CTP, the following are considered:

- Analysis of the transportation system, including any local and statewide initiatives;
- Impacts to the natural and human environment, including natural resources, historic resources, homes, and businesses;
- Public input, including community vision and goals and objectives.

1.1 Analysis Methodology and Data Requirements

Reliable forecasts of future travel patterns must be estimated in order to analyze the ability of the transportation system to meet future travel demand. These forecasts depend on careful analysis of the character and intensity of existing and future land use and travel patterns.

An analysis of the transportation system looks at both current and future travel patterns and identifies existing and anticipated deficiencies. This is usually accomplished through a capacity deficiency analysis, a traffic crash analysis, and a system deficiency analysis. This information, along with population growth, economic development potential, and land use trends, is used to determine the potential impacts on the future transportation system.

Roadway System Analysis

An important stage in the development of a CTP is the analysis of the existing transportation system and its ability to serve the area's travel demand. Emphasis is placed not only on detecting the existing deficiencies, but also on understanding the causes of these deficiencies. Roadway deficiencies may result from inadequacies in pavement widths, intersection geometry, or intersection controls. System deficiencies may result from missing travel links, bypass routes, loop facilities, or radial routes; or improvements needed to meet statewide initiatives.

One of those statewide initiatives is the Strategic Highway Corridor (SHC) Vision Plan¹ adopted by the Board of Transportation on September 2, 2004. The SHC Vision Plan is

¹ For more information on the SHC Vision Plan, go to:

https://connect.ncdot.gov/projects/planning/Pages/NCTransportationNetwork.aspx

an initiative to protect and maximize the mobility and connectivity on a core set of transportation corridors throughout North Carolina, while promoting environmental stewardship through maximizing the use of existing facilities to the extent possible, and fostering economic prosperity through the quick and efficient movement of people and goods.

The primary purpose of the SHC Vision Plan is to provide a network of high-speed, safe, reliable highways throughout North Carolina. The primary goal to support this purpose is to create a greater consensus towards the development of a genuine vision for each corridor – specifically towards the identification of a desired facility type (Freeway, Expressway, Boulevard, or Thoroughfare) for each corridor. Individual CTPs shall incorporate the long-term vision of each corridor. Refer to Appendix A for contact information for the SHC Vision Plan.

In the development of this plan, travel demand was projected from 2012 to 2040 using a trend line analysis based on U.S. census population data from 1980 to 2010. In addition, local land use plans and growth expectations were used to further refine future growth rates and patterns. The established future growth rates were endorsed by the Avery County Commissioners (September 2, 2014), Banner Elk Town Council (April 14, 2014), Beech Mountain Town Council (April 8, 2014), Crossnore Town Council (May 13, 2014), Elk Park Town Council (April 7, 2014), Newland Town Council (May 13, 2014), Seven Devils Town Council (April 8, 2014), and Sugar Mountain Town Council (April 15, 2014). Refer to Appendix G for more detailed information on growth expectations and the socio-economic data forecasting methodology.

Existing and future travel demand is compared to existing roadway capacities. Capacity deficiencies occur when the traffic volume of a roadway exceeds the roadway's capacity. Roadways are considered near capacity when the traffic volume is at least eighty percent of the capacity. Refer to Figures 2 and 3 for existing and future capacity deficiencies. The 2040 traffic volume in Figure 3 is an estimate of the traffic volume in 2040 with only existing plus committed projects assumed to be in place, where committed is defined as projects programmed for construction in the 2012 – 2018 Transportation Improvement Program² (TIP).

Capacity is the maximum number of vehicles which have a "reasonable expectation" of passing over a given section of roadway, during a given time period under prevailing roadway and traffic conditions. Many factors contribute to the capacity of a roadway including the following:

- Geometry of the road (including number of lanes), horizontal and vertical alignment, and proximity of perceived obstructions to safe travel along the road;
- Typical users of the road, such as commuters, recreational travelers, and truck traffic;

² For more information on the TIP, go to: <u>https://connect.ncdot.gov/projects/planning/Pages/default.aspx</u>

- Access control, including streets and driveways, or lack thereof, along the roadway;
- Development along the road, including residential, commercial, agricultural, and industrial developments;
- Number of traffic signals along the route;
- Peaking characteristics of the traffic on the road;
- Characteristics of side-roads feeding into the road; and
- Directional split of traffic or the percentages of vehicles traveling in each direction along a road at any given time.

The relationship of travel demand compared to the roadway capacity determines the level of service (LOS) of a roadway. Six levels of service identify the range of possible conditions. Designations range from LOS A, which represents the best operating conditions, to LOS F, which represents the worst operating conditions.

LOS D indicates "practical capacity" of a roadway, or the capacity at which the public begins to experience delay. The practical capacity for each roadway was developed based on the 2000 Highway Capacity Manual using the Transportation Planning Branch's *LOS D Standards for Systems Level Planning*. Recommended improvements and overall design of the transportation plan were based upon achieving a minimum LOS D on existing facilities and a LOS C for new facilities. Refer to Appendix E for detailed information on LOS.

Traffic Crash Assessment

Traffic crashes are often used as an indicator for locating congestion and roadway problems. Crash patterns obtained from an analysis of crash data can lead to the identification of improvements that will reduce the number of crashes. The Traffic Safety Unit of NCDOT's Transportation Mobility and Safety Division identifies high frequency crashes at intersections and along roadway sections during a five year period. The high frequency crash locations examined during the development of the Avery County CTP occurred between January 1, 2007 and December 31, 2011. During this period, a total of thirty intersections and thirty-seven roadway sections were identified as having a high frequency of crashes as illustrated in Figure 4. Contact information for the Transportation Mobility and Safety Division can be found in Appendix A.

The NCDOT is actively involved with investigating and improving many of these locations. To request a more detailed analysis for any of these locations, or other intersections of concern, contact the Division Traffic Engineer (see Appendix A).

Bridge Deficiency Assessment

Bridges are a vital element of a highway system. First, they represent the highest unit investment of all elements of the system. Second, any inadequacy or deficiency in a

bridge reduces the value of the total investment. Third, a bridge presents the greatest opportunity of all potential highway failures for disruption of community welfare. Finally, and most importantly, a bridge represents the greatest opportunity of all highway failures for loss of life. For these reasons, it is imperative that bridges be constructed to the same design standards as the system of which they are a part.

The NCDOT Structures Management Unit inspects all bridges in North Carolina at least once every two years. Bridges having the highest priority are replaced as federal and state funds become available. Nine deficient bridges were identified on roads evaluated as part of the CTP and are illustrated in Figure 5. Although none of these are scheduled for replacement in the 2012 – 2018 TIP, all nine bridges occur along roadways recommended for improvement in the CTP. As deficient bridges are replaced, every consideration should be given to proposed CTP recommendation and cross section associated with the recommendation. Table 6 in Appendix F gives a listing of the deficient bridges identified in the CTP and the ID number associated with CTP project proposal. Refer to Appendix F for more detailed bridge deficiency information.











Legend

Crash Intersections

- 50 and above
- ▲ 40 to 49
- 30 to 39
- 20 to 29
- 10 to 19
- 4 to 9

Crash Sections

50 and above 40 to 49 30 to 39 20 to 29 10 to 19

4 to 9

County Boundary

- Roads
- + Airport
 - Schools
 - Lees-McRae CollegeMunicipal BoundaryConservation Land
 - Rivers and Streams



High Frequency Crash Locations

January 1, 2007 to December 31, 2011

Avery County

Comprehensive Transportation Plan

Figure 4

Map date: January 14, 2014



Public Transportation and Rail

Public transportation and rail are vital modes of transportation that give alternatives for transporting people and goods from one place to another.

Public Transportation

North Carolina's public transportation systems serve more than 50 million passengers each year. Five categories define North Carolina's public transportation system: community, regional community, urban, regional urban and intercity.

- Community Transportation Local transportation efforts formerly centered on assisting clients of human service agencies. Today, the vast majority of rural systems serve the general public as well as those clients.
- Regional Community Transportation Regional community transportation systems are composed of two or more contiguous counties providing coordinated / consolidated service. Although such systems are not new, single-county systems are encouraged to consider mergers to form more regional systems.
- Urban Transportation There are currently nineteen urban transit systems operating in North Carolina, from locations such as Asheville and Hendersonville in the west to Jacksonville and Wilmington in the east. In addition, small urban systems provide service in three areas of the state. Consolidated urbancommunity transportation exists in five areas of the state. In those systems, one transportation system provides both urban and rural transportation within the county.
- Regional Urban Transportation Regional urban transit systems currently operate in three areas of the state. These systems connect multiple municipalities and counties.
- Intercity Transportation Intercity bus service is one of a few remaining examples of privately owned and operated public transportation in North Carolina. Intercity buses serve many cities and towns throughout the state and provide connections to locations in neighboring states, Amtrak passenger station and throughout the United States and Canada. Greyhound and Amtrak Thruway service operate in North Carolina. However, community, urban and regional transportation systems are providing increasing intercity service in North Carolina.

There are currently no existing or proposed fixed transit routes in Avery County. Avery County Transportation (ACT)³ is the primary transit provider in the county. ACT provides trips to Avery County citizens who schedule an appointment to be picked up and delivered to their desired destinations. Trips provided are for a minimal fare if within Avery County, along a designated "Demand Response" route. Citizens can also schedule routes to other locations around the county, outside the county, and even locations much further away (like Raleigh, NC or Johnson City, TN) for higher fare rates.

³ For more information about Avery County Transportation, go to:

http://www.averycountync.gov/departments/transportation_department.php.

This CTP does not propose any fixed transit routes. The CTP Steering Committee concluded that the current demand response routes provided by ACT are effectively transporting Avery County citizens and that fixed routes are not needed because they would not transport citizens as efficiently.

Rail

Today North Carolina has 3,245 miles of railroad tracks throughout the state. There are two types of trains that operate in the state, passenger trains and freight trains.

Intercity passenger service is provided by Amtrak which currently operates six passenger services daily in or through North Carolina serving 16 cities across the state. Five of the services are interstate (Crescent, Palmetto, Silver Meteor, Silver Star, and Carolinian passenger trains) and one service (Piedmont passenger train) operates exclusively within North Carolina. In addition to the six passenger services mentioned, Amtrak also operates its Auto Train service which passes through North Carolina but does not make any stops. Amtrak ridership demand has been on a rise in the state. In 2010 ridership was 840,000 and increased to 975,645 passengers in 2013.

The North Carolina Department of Transportation sponsors two passenger trains, the Carolinian and Piedmont. The Carolinian runs between Charlotte and New York City, while the Piedmont train carries passengers from Raleigh to Charlotte and back every day. However, no passenger trains operate over the rail line from High Point that dead ends at Asheboro or over the rail line that runs from Gulf, NC to Greensboro. Combined, the Carolinian and Piedmont carry more than 300,000 passengers each year.

There are two major freight railroad companies that operate in North Carolina, CSX Transportation and Norfolk Southern Corporation. Also, there are more than 17 smaller freight railroads, known as shortlines.

There are currently no existing or planned rail lines in Avery County. However, Avery County is in close proximity to a CSX rail line in Mitchell County. For more information, refer to Appendix A to contact the NCDOT Rail Division.

Bicycles & Pedestrians

Bicyclists and pedestrians are a growing part of the transportation system in North Carolina. Many communities are working to improve mobility for both cyclists and pedestrians.

NCDOT's Bicycle Policy, updated in 1991, clarifies responsibilities regarding the provision of bicycle facilities along the 77,000-mile state-maintained highway system. The policy details guidelines for planning, design, construction, maintenance, and operations pertaining to bicycle facilities and accommodations. All bicycle improvements undertaken by NCDOT are based upon this policy.

The 2000 NCDOT Pedestrian Policy Guidelines specifies that NCDOT will participate with localities in the construction of sidewalks as incidental features of highway improvement projects. At the request of a locality, state funds for a sidewalk are made available if matched by the requesting locality, using a sliding scale based on population.

NCDOT's administrative guidelines, adopted in 1994, ensure that greenways and greenway crossings are considered during the highway planning process. This policy was incorporated so that critical corridors which have been adopted by localities for future greenways will not be severed by highway construction.

Inventories of existing and planned bicycle and pedestrian facilities for the planning area are presented on Sheets 4 and 5 of Figure 1. The 2014 High Country Regional Bike Plan⁴, 2009 Banner Elk Pedestrian Plan⁵, 2010 Crossnore Bicycle & Pedestrian Plan⁶, and 2013 Beech Mountain Streetscape Plan⁷ were utilized in the development of these elements of the CTP. NC Bike Route 2 (the Mountains to Sea Route) currently follows the Blue Ridge Parkway for a short section in southeast Avery County. However, the 2013 NC Statewide Pedestrian and Bicycle Plan (WalkBikeNC)⁸ proposes rerouting NC Bike Route 2 to follow US 19E, Mullin Hill Road (SR 1106), NC 194 (Three Mile Road), and US 221 (Linville Falls Highway) from Mitchell County to McDowell County. NC Bike Route 11 is a new state bicycle route that has been proposed in the state plan to follow US 19E and NC 194 from Mitchell County to Watauga County. Also, US 19E from Elk Park to Tennessee is proposed in the state plan as a part of the proposed Tennessee Connector route from Bakersville, NC to Elk Park, NC, via a connection through Tennessee. All recommendations for bicycle and pedestrian facilities were coordinated with the local governments and the NCDOT Division of Bicycle and Pedestrian Transportation. Refer to Appendix A for contact information for the Division of Bicycle and Pedestrian Transportation.

Land Use

G.S. §136-66.2 requires that local areas have a current (less than five years old) land development plan prior to adoption of the CTP. For this CTP, the 2012 Avery County Land Use Plan⁹ was used to meet this requirement. The 2012 Avery County Land Use Plan was originally adopted in 2006 and then reaffirmed in 2012 with current demographic information.

Land use refers to the physical patterns of activities and functions within an area. Traffic demand in a given area is, in part, attributed to adjacent land use. For example, a large shopping center typically generates higher traffic volumes than a residential area. The spatial distribution of different types of land uses is a predominant

⁴ The 2014 High Country Regional Bike Plan can be viewed at: <u>http://regiond.org/Bike-Plan-2014-final.pdf</u>.

⁵ Contact the NCDOT Bicycle and Pedestrian Division to get a copy of this study (refer to Appendix A for contact information).

⁶ Contact the High Country RPO to get a copy of this study (refer to Appendix A for contact information).

⁷ Contact the Beech Mountain Planning Department to get a copy of this plan.

⁸ The 2013 NC Statewide Pedestrian & Bicycle Plan can be viewed at: <u>http://www.ncdot.gov/bikeped/planning/walkbikenc/</u>.

⁹ The Avery County Land Use Plan can be viewed at: <u>http://www.regiond.org/Avery-County-Land-Use-Plan-2012-web.pdf</u>.

determinant of when, where, and to what extent traffic congestion occurs. The travel demand between different land uses and the resulting impact on traffic conditions varies depending on the size, type, intensity, and spatial separation of development. Additionally, traffic volumes have different peaks based on the time of day and the day of the week. For transportation planning purposes, land use is divided into the following categories:

- Residential: Land devoted to the housing of people, with the exception of hotels and motels which are considered commercial.
- Commercial: Land devoted to retail trade including consumer and business services and their offices; this may be further stratified into retail and special retail classifications. Special retail would include high-traffic establishments, such as fast food restaurants and service stations; all other commercial establishments would be considered retail.
- Industrial: Land devoted to the manufacturing, storage, warehousing, and transportation of products.
- Public: Land devoted to social, religious, educational, cultural, and political activities; this would include the office and service employment establishments.
- Agricultural: Land devoted to the use of buildings or structures for the raising of non-domestic animals and/or growing of plants for food and other production.
- ◆ <u>Mixed Use:</u> Land devoted to a combination of any of the categories above.

Anticipated future land development is, in general, a logical extension of the present spatial land use distribution. Locations and types of expected growth within the planning area help to determine the location and type of proposed transportation improvements.

Areas of expected higher employment growth and traffic growth are NC 184 between NC 105 and NC 194 because of the many tourist/secondary resident destinations and Lees-McRae College nearby; the areas within and nearby the Towns of Newland and Banner Elk because of the availability of water and sewer services; NC 194 from Three Mile Road to southern Newland (including Crossnore) because of current development trends; the area southwest of Beech Mountain because of the potential for development around the Eagles Nest Lodges area; and NC 194 between Elk Park and Newland because of the potential for development/redevelopment of the golf course project area.

For detailed information on how land use and growth projections were developed for and applied in the CTP, refer to Appendix G.

1.2 Consideration of Natural and Human Environment

Environmental features are a key consideration in the transportation planning process. Section 102 of the National Environmental Policy Act¹⁰ (NEPA) requires consideration of impacts on wetlands, wildlife, water quality, historic properties, and public lands. While a full NEPA evaluation was not conducted as part of the CTP, every effort was made to minimize potential impacts to these features utilizing the best available data. Any potential impacts to these resources were identified as a part of the project recommendations in Chapter 2 of this report. Prior to implementing transportation recommendations of the CTP, a more detailed environmental study would need to be completed in cooperation with the appropriate environmental resource agencies.

A full listing of environmental features that are typically examined as a part of a CTP study is shown in the following table. Environmental features occurring within Avery County are shown in Figure 6 and are shown in bold text in Table 1.

Table 1 – Environmental Features • 24k Hydro Lines Inactive Hazard Substance • 303D Streams **Disposal Sites** • Airport Boundaries Landscape Habitat Indicator Guilds (LHIGs) Anadromous Fish Spawning Areas • Lees-McRae College (Polygon) **APNEP - Submerged Aquatic** • Vegetation Managed Areas Beach and Waterfront Access National Wetlands Inventory • Benthic Habitat (polygons) Natural Heritage Element **Bicycle Routes** • Occurrences Boating Access • NC-CREWS: N.C. Coastal Region Churches and Cemeteries Evaluation of Wetland Significance Colleges and Universities (Points) NCDOT Maintained Mitigation Conservation Tax Credit Sites **Properties** Railroads (1:24,000) Critical Habitat for Threatened Recreation Projects - Land and and Endangered Species (Spruce Water Conservation Fund Fir Moss Spider) Regional Trails **Emergency Operation Centers** • Sanitary Sewer Systems – Fish Nursery Areas Discharges, Pipes, Pumps, and • Geology – Formations & Fault **Treatment Plants** Lines

- Hazard Substance Disposal Sites (points & polygons)
- Hazardous Waste Facilities

- Schools (Public & Non-Public)
- Significant Natural Heritage Areas
- State Natural and Scenic Rivers

¹⁰ For more information on NEPA, go to: <u>https://ceq.doe.gov/</u>.

 Table 1 – Environmental Features (Cont.)

- High Quality Waters and Outstanding Resource Water Management
- Historic Resources National Register and Determined Eligible (points and polygons)
- Hospitals
- Hydrography 1:24,000-scale (polygons)

- State Parks
- Target Local Watersheds EEP
- Trout Streams (DWQ)
- Trout Waters WRC (arcs & polygons)
- Unique Wetlands
- Water Distribution Systems Pipes, Pumps, Tanks, Treatment Plants, and Wells
- Water Supply Watersheds

Archaeological sites were also considered but are not mapped due to restrictions associated with the sensitivity of the data.

1.3 Public Involvement

Public involvement is a key element in the transportation planning process. Adequate documentation of this process is essential for a seamless transfer of information from systems planning to project planning and design.

A meeting was held with the Avery County Board of Commissioners in September 2012 to formally initiate the study, provide an overview of the transportation planning process, and to gather input on area transportation needs.

Throughout the course of the study, the NCDOT Transportation Planning Branch cooperatively worked with the Avery County CTP Steering Committee, which consisted of representatives from many of the municipalities, the RPO, county staff, and others. While all municipalities were invited to send representatives, not all did. The committee provided information on current local plans, developed transportation vision and goals, discussed population and employment projections, and developed proposed CTP recommendations. Refer to Appendix H for detailed information on the vision statement, the goals and objectives survey and a listing of committee members.

The public involvement process included holding three public drop-in sessions in Avery County to present the proposed CTP to the public and solicit comments. The first meeting was held on July 22, 2014 at Riverside Elementary School in southwest Avery County; the second meeting was held on July 24, 2014 at the Avery County Senior Center in Newland, NC; the third meeting was held on July 29, 2014 at the Banner Elk Town Hall in Banner Elk, NC. Each session was publicized in the Avery Journal-Times and Avery Post newspapers and on the WECR radio station website. Each session was held from 4:30 PM – 6:30 PM. Nine comment forms were submitted either during these sessions or through the mail after the meetings.

The Avery County CTP was presented at two Avery County Commissioner meetings and several town council meetings. The purposes of these meetings were to discuss the plan recommendations, solicit further input from the public, and to seek adoption of the CTP. Table 2 below provides an overview of these meetings.

Date	Meeting	Adopted (Yes/No)
September 15, 2014	Avery County Commissioners	No
October 6, 2014	Avery County Commissioners	Yes
October 6, 2014	Elk Park Board of Aldermen	Yes
October 7, 2014	Newland Town Board	Yes
October 13, 2014	Banner Elk Town Council	Yes
October 14, 2014	Beech Mountain Town Council	Yes
October 14, 2014	Crossnore Board of Aldermen	No
October 28, 2014	Sugar Mountain Village Council	Yes
November 12, 2014	Seven Devils Town Council	Yes
December 9, 2014	Crossnore Board of Aldermen	Yes
December 17, 2014	High Country RPO TAC	Yes
January 8, 2015	NCDOT Board of Transportation	Yes

 Table 2 – Avery County CTP Adoption Meetings

The High Country RPO endorsed the CTP on December 17, 2014. The North Carolina Department of Transportation mutually adopted the Avery County CTP on January 8, 2015.

This page intentionally left blank.





- Churches & Cemeteries
- Colleges and Universities
- Schools
- Hospitals
- Historic Resources Sites
- ----- 24k Hydro Lines



Spruce Fir Moss Spider



🔀 Conservation Tax Credit Property



Historic Resources Areas





NCDOT Maintained Mitigation Sites

Land & Water Conservation Funds

Significant Natural Heritage Areas





Roads





Environmental Features Map

Avery County

Comprehensive Transportation Plan

Figure 6

Hydrography Areas

Sheet 1 of 5

Map date: December 30, 2013





Nandscape Habitat Indicator Guilds

Target Local Watersheds



- Roads

Municipal Boundary



Environmental Features Map

Avery County

Comprehensive Transportation Plan

Figure 6

Sheet 2 of 5



Legend

Inactive Hazard Substance **Disposal Sites** Water Supply Watersheds

Fault Lines

Trout Streams DWQ

Trout Waters WRC



High Quality Waters



Roads

Municipal Boundary



⊐Miles

Environmental Features Map

Avery County

Comprehensive **Transportation Plan**

Figure 6

Map date: December 30, 2013

Sheet 3 of 5


Legend

- Sanitary Sewer Systems Discharges Bicycle Routes V
- 0 Sanitary Sewer Systems - Pumps
- Water Distribution Systems Wells
- **Emergency Operation Centers** ٠
- Sewer Treatment Plants ()
- \bigcirc Water Pumping Stations
- Water Distribution Tanks \square
- WTP
- Water Distribution Treatment Plants
 - Sanitary Sewer Systems Pipes Water Distribution Systems - Pipes

- RegionalTrails
- 303D Streams
- State Natural and Scenic Rivers



- Roads
- Natural Heritage Element Occurence
 - **Municipal Boundaries**



Environmental Features Map

Avery County

Comprehensive **Transportation Plan**

Figure 6

Map date: December 30, 2013

Sheet 4 of 5



Legend

Geologic Formations



- Granodiorite gneiss
- Greenstone
- Linville Metadiabase
- Lower Chilhowee Group
- Meta-arkose



Metagraywacke Metamorphosed granitic rock Metasiltstone Migmatitic biotite-hornblende gneisses Muscovite-biotite gneiss Quartz diorite to granodiorite Upper Chilhowee Group **County Boundary** Roads



Environmental Features Map

Avery County

Comprehensive **Transportation Plan**

Figure 6

2. Recommendations

This chapter presents recommendations for each mode of transportation in the 2014 Avery County CTP as shown in Figure 1. More detailed information on each recommendation is tabulated in Appendix C. Refer to Appendix I for documentation of project alternatives and scenarios that were studied, but are not included in the adopted CTP.

NCDOT adopted a "Complete Streets¹" policy in July 2009. The policy directs the Department to consider and incorporate several modes of transportation when building new projects or making improvements to existing infrastructure. Under this policy, the Department will collaborate with cities, towns and communities during the planning and design phases of projects. Together, they will decide how to provide the transportation options needed to serve the community and complement the context of the area. The benefits of this approach include:

- making it easier for travelers to get where they need to go;
- encouraging the use of alternative forms of transportation;
- building more sustainable communities;
- increasing connectivity between neighborhoods, streets, and transit systems;
- improving safety for pedestrians, cyclists, and motorists.

Complete streets are streets designed to be safe and comfortable for all users, including pedestrians, bicyclists, transit riders, motorists and individuals of all ages and capabilities. These streets generally include sidewalks, appropriate bicycle facilities, transit stops, right-sized street widths, context-based traffic speeds, and are well-integrated with surrounding land uses. The complete street policy and concepts were utilized in the development of the CTP. The CTP proposes projects that include multi-modal project recommendations as documented in the problem statements within this chapter. Refer to Appendix C for recommended cross sections for all project proposals and Appendix D for more detailed information on the typical cross sections.

2.1 Unaddressed Deficiencies

The following deficiencies were identified during the development of the CTP but remain unaddressed.

NC 194 north of Newland from Old Public Road, the proposed connection of NC 194 Alternate (AVER0002-H), to Barney Road (SR 1344) is projected to be over capacity in the year 2040. Extending the proposed NC 194 Alternate further north along NC 194 to alleviate future congestion was considered, but deemed unfeasible due to its anticipated high construction costs. Widening the road was also considered, but Newland does not desire to have this portion of NC 194 widened at this time. See AVER0004-H in this report for additional information.

¹ For more information on Complete Streets, go to: <u>http://www.completestreetsnc.org/</u>.

Seven Devils straddles the Avery and Watauga County line and has an elevation of 3,944 feet. The only roadway access to Seven Devils is via Seven Devils Road (SR 1151) in Watauga County. In recent years there has been growing concern about wild fires in the area. In the event that Seven Devils Road (SR 1151) in Watauga County is closed due to wild fires or other natural disasters, an alternative access route between Seven Devils and the surrounding road network would be needed for emergency purposes. The 2013 Watauga County CTP² studied two possible locations for a route, with one of the studied routes located in Avery County. The Avery County alternative involved extending Arnett Road (SR 1338) up the mountain to Skiview Road in Seven Devils. However, this proposal was deemed unfeasible at this time. Additional study is required to select an appropriate alternative. Reference AVER0005-H in this report and WATA0012-H in the Watauga County CTP for more information.

2.2 Implementation

The CTP is based on the projected growth for the planning area. It is possible that actual growth patterns will differ from those logically anticipated. As a result, it may be necessary to accelerate or delay the implementation of some recommendations found within this plan. Some portions of the plan may require revisions in order to accommodate unexpected changes in development. Therefore, any changes made to one element of the CTP should be consistent with the other elements.

Initiative for implementing the CTP rests predominately with the policy boards and citizens of the county and its municipalities. As transportation needs throughout the state exceed available funding, it is imperative that the local planning area aggressively pursue funding for priority projects. Projects should be prioritized locally and submitted to the High Country RPO for regional prioritization and submittal to NCDOT. Refer to Appendix A for contact information on regional prioritization and funding. Local governments may use the CTP to guide development and protect corridors for the recommended projects. It is critical that NCDOT and local governments coordinate on relevant land development reviews and all transportation projects to ensure proper implementation of the CTP. Local governments and NCDOT share the responsibility for access management and the planning, design and construction of the recommended projects.

Recommended improvements shown on the CTP map represent an agreement of identified transportation deficiencies and potential solutions to address the deficiencies. While the CTP does propose recommended solutions, it may not represent the final location or cross section associated with the improvement. All CTP recommendations are based on high level systems analyses that seek to minimize impacts to the natural and human environment. Prior to implementing projects from the CTP, additional analysis will be necessary to meet the National Environmental Policy Act (NEPA) or the

² The Watauga CTP can be viewed at: <u>https://connect.ncdot.gov/projects/planning/Pages/CTP-</u> <u>Details.aspx?study_id=Watauga%20County.</u>

North Carolina (or State) Environmental Policy Act³ (SEPA). During the NEPA/SEPA process, the specific project location and cross section will be determined based on environmental analysis and public input. This CTP may be used to support transportation decision making and provide transportation planning data in the NEPA/SEPA process.

2.3 Problem Statements

The following pages contain problem statements for each recommendation, organized by CTP modal element. The information provided in the problem statement is intended to help support decisions made in the NEPA/SEPA process. A full, minimum or reference problem statement is presented for each recommendation, with full problem statements occurring first in each section. Full problem statements are denoted by a gray shaded box containing project information. Minimum problem statements are more concise and less detailed than full problem statements, but include all known or readily available information. Reference problem statements are developed for TIP projects where the purpose and need for the project has already been established.

³ For more information on SEPA, go to: <u>http://www.doa.nc.gov/clearing/faq.aspx</u>.

HIGHWAY

NC 184 (Tynecastle Highway), Proposed improvements from NC 105 to Banner Creek Road (SR 1341)

Local ID: R-2811 Last Updated: 9/12/14

Identified Problem

NC 184 (Tynecastle Highway) from Castle Rock Drive to Banner Creek Road (SR 1341) is currently nearing capacity. By 2040, NC 184 (Tynecastle Highway) will be near or over capacity from NC 105 to Banner Creek Road (SR 1341). The purpose of this project is to accommodate projected traffic volumes in order to maintain a Level of Service (LOS) D on the facility.

Justification of Need

NC 184 (Tynecastle Highway) from NC 105 to Banner Creek Road (SR 1341) currently has two 11 foot lanes, with a speed limit of 45 miles per hour (mph) from NC 105 to Castle Rock Drive and a 35 mph speed limit from Castle Rock Drive to Banner Creek Road (SR 1341). The 2012 traffic volume⁴ is 9,700 vehicles per day (vpd) from NC 105 to Banner Creek Road (SR 1341). The Level of Service (LOS) D capacity of NC 184 is 14,100 vpd from NC 105 to Castle Rock Drive and 11,200 vpd from Castle Rock Drive to Banner Creek Road (SR 1341). The estimated 2040 traffic volume⁵ is projected to be 12,800 vpd from NC 105 to Banner Creek Road (SR 1341).

NC 184 (Tynecastle Highway) is classified as a major collector on the



 ⁴ The median of 2009-2012 AADT values were used as 2012 traffic volumes for R-2811. Unadjusted 2012 AADT volumes were not considered representative of recent historical AADT data for roadway. Refer to Appendix G for a detailed explanation.
⁵ Projected 2040 AADT based off of adjusted 2012 AADT values. Refer to Appendix G for a detailed explanation.

Federal Functional Classification System, and this stretch of NC 184 is on the regional tier of the North Carolina Multimodal Investment Network (NCMIN). Regional tier facilities can serve statewide transportation, but they usually connect major population centers and provide a more localized function including land access.

NC 184 (Tynecastle Highway) is the primary route in northeastern Avery County that provides access to Sugar Mountain, Banner Elk, and Beech Mountain for local residents, in addition to tourists and secondary home residents that routinely visit throughout the year. Many seasonal events occur at locations along NC 184, such as skiing and the Wooly Worm Festival⁶ in Banner Elk (which drew more than 20,000 attendees in 2013). Although not directly off of NC 184, the Highland Games takes place in nearby Grandfather Mountain⁷ and attracts around 30,000 annual attendees.

Community Vision and Problem History

The CTP Steering Committee developed three objectives that should be accomplished by potential solutions that would address the identified problem. These objectives are to create a more efficient road network that is not dependent on back road short cuts, to address traffic deficiencies that hinder the flow of commerce, and to ease regional mobility for citizens and visitors by improving travel conditions along key arterials.

The 2010-2030 Banner Elk Land Use Plan⁸ states that any widening improvements that are made to NC 184 should not occur north of Dobbins Road (SR 1337) to prevent the destruction of the downtown's appearance and to protect businesses in downtown. The plan emphasizes the importance of bicycle/pedestrian facilities, safety, and a cohesive and uniform look for the entrance into Banner Elk.

The 2013-2030 Beech Mountain Comprehensive Plan⁹ advocates for improvements to NC 105 and NC 184 to increase the ease of accessibility from Boone and other locations to Beech Mountain, but only if the improvements are done in a way that maintains the character of the landscape and improves the roads in the least invasive manner possible.

CTP Project Proposal

Project Description and Overview

The CTP proposes widening NC 184 (Tynecastle Highway) from NC 105 to Banner Creek Road (SR 1341) to a four lane boulevard with bicycle and pedestrian accommodations.

⁸ The 2010-2030 Banner Elk Land Use Plan can be accessed at:

⁶ For more information, go to: <u>http://www.woollyworm.com/</u>.

⁷ For more information, go to: <u>http://www.grandfather.com/media/gmhg-facts.php</u>.

<u>http://www.townofbannerelk.org/images/stories/Final%20Edit,%20All%20Pages.pdf</u>. ⁹ The 2013-2030 Beech Mountain Comprehensive Plan can be accessed at:

http://www.townofbeechmountain.com/images/pln_insp_docs/CompPlan_Adopted.pdf.

The NCDOT Traffic Safety Unit identified the NC 105 and NC 184 intersection as one of three intersections with the most vehicle crashes (22 crashes) among intersections in Avery County from January 1, 2007 through December 31, 2011. Also, the NC 184 road segment from NC 105 to Castle Rock Drive was identified as having the fourth most crashes for road segments in the county (22 crashes) over the same time period.

Natural & Human Environmental Context

Based on a planning level environmental assessment using available GIS data, the proposed project is in the vicinity (300 feet from centerline) of and may potentially impact significant natural heritage areas, wetlands, streams, hydrography areas, target local watershed areas, landscape habitat indicator guilds, macrosite areas, high quality waters, trout streams, natural heritage element occurrence areas, sewer pipes, and water pipes.

According to the FS-0811A¹⁰ feasibility study, which was completed March 18, 2010, the widening of NC 184 from NC 105 to Hickory Nut Gap Road (SR 1342) is anticipated to have impacts to properties along NC 184. It is anticipated that a four lane divided roadway with a 23 foot raised grass median would be 79 feet wide from edge of pavement to edge of pavement. It would have 12 foot wide travel lanes, 8 foot shoulders, and 150 feet of right of way would relocate 10 residences and 63 businesses. These are anticipated impacts that could increase if development around the road increases prior to construction or decrease based on efforts by the NCDOT Roadway Design Unit to design a facility that minimizes impacts.

The R-2811 feasibility study¹¹, which was completed September 24, 1992, stated that the widening of NC 184 may require placing fill in Flattop Creek, Horse Bottom Creek, Shawneehaw Creek, and the Elk River. The study stated that since Elk River is potentially a trout stream that any rechannelization may be subject to restrictions; and that a Corps of Engineers Individual Permit may be required. The 1992 feasibility study identified 20 businesses and 6 residences that may need to be relocated.

Relationship to Land Use Plans

The existing land use along NC 184 (Tynecastle Highway) is primarily commercial with many of the businesses very close to and potentially within the right-of-way. Many of the businesses have lengthy parking lots that merge on to NC 184 (Tynecastle Highway) with no official entrances. Business types that can be found along NC 184 (Tynecastle Highway) include but are not limited to a grocery store, snowboard and ski shops, hardware stores, and restaurants. Behind the layer of businesses right along NC 184 (Tynecastle Highway), residential units can be found on both sides of the road (with more residential units on the west side of the road). The Sugar Mountain Ski Resort is off of Sugar Mountain Drive to the west of NC 184 (Tynecastle Highway).

¹⁰ Contact the NCDOT Feasibility Studies Unit for information on this study (reference Appendix A for contact information).

¹¹ Contact the NCDOT Feasibility Studies Unit for information on this study (reference Appendix A for contact information).

The county expects much of the future development to occur in the area around NC 184 (Tynecastle Highway) from NC 105 to Banner Elk. The CTP Steering Committee identified this same region as one of five high growth areas in Avery County that will experience higher employment and traffic growth than other areas in the county. High employment and traffic growth is expected on NC 184 because of the many tourist and secondary resident destinations in the area. Most prominently, there are two major ski resorts (the Sugar Mountain Resort and the Beech Mountain Resort) off of NC 184. Also, the close proximity of NC 184 to Lees-McRae College generates additional traffic on the roadway.

Linkages to Other Plans and Proposed Project History

The project description for R-2811 includes widening NC 184 to a multi-lane facility from NC 105 to Hickory Nut Gap Road (SR 1342). However, the CTP proposes that the project limits for R-2811 be shortened by moving the project's northern boundary further south, from Hickory Nut Gap Road (SR 1342) to Banner Creek Road (SR 1341). The change to the northern boundary is proposed to avoid potential impacts to a historic resource property (the Robert C. and Elsie H. Lowe House) and to avoid potential impacts to Mill Pond. Additionally, changing to the northern project terminus would connect directly into AVER0001-H, the proposed NC 184 Alternate facility around the western side of Banner Elk. Projected capacity issues north of Banner Creek Road (SR 1341) would be addressed by the AVER0001-H project. Project R-2811 is not currently funded within the 2012 – 2018 TIP and is scheduled for reprioritization.

The 1992 feasibility study for R-2811 recommended widening NC 184 to five lanes from NC 105 to NC 194 to "improve regional transportation needs" for tourists and local residents, to reduce accident rates, and to alleviate the 1992 level of service (LOS) E traffic conditions and anticipated future LOS F conditions on the roadway. The study also indicated that the crash rate on NC 184 was higher than the statewide crash rate from January 1, 1989 – December 31, 1991 time period.

The 2010 feasibility study FS-0811A proposed widening NC 184 from NC 105 to Hickory Nut Gap Road (SR 1342) to a four lane divided facility with the main project purpose being to improve traffic safety and operations along NC 184. Existing traffic conditions (2010) in the FS-0811A study were listed as LOS E and 2035 traffic conditions were projected to stay at an LOS E if no improvements were made. Traffic volumes in 2010 ranged from 10,100 vpd to 12,000 vpd and 2035 traffic volumes were anticipated to range from 14,100 vpd to 17,600 vpd.

The 1985 Banner Elk Thoroughfare Plan¹², 1993 Region D Thoroughfare Plan¹³, and 2003 Banner Elk and Beech Mountain Thoroughfare Plan¹⁴ (not adopted by Banner Elk

 ¹² Contact the NCDOT Transportation Planning Branch for a copy of this study (reference Appendix A for contact information).
¹³ The 1993 Region D Thoroughfare Plan can be accessed at:

<u>http://digital.ncdcr.gov/cdm/compoundobject/collection/p249901coll22/id/279109/rec/1.</u> ¹⁴ The 2003 Banner Elk and Beech Mountain Thoroughfare Plan can be accessed at: http://digital.ncdcr.gov/cdm/ref/collection/p249901coll22/id/188312.

but adopted by Beech Mountain) all proposed widening NC 184 for various segment lengths (depending on scope of NC 184 that was considered in the study).

Multi-modal Considerations

Bicycle and pedestrian facilities are recommended along this entire section of NC 184 (Tynecastle Highway).

Public/ Stakeholder Involvement

During the development of the CTP, Banner Elk expressed a desire not to have any project impacts further north than Dobbins Road (SR 1337), which is where the entrance sign to Banner Elk is located.

A Goals & Objectives (G&O) survey conducted for this CTP revealed the following:

- Banner Elk was identified as the second most common destination in the county with 25% (20 of 81) of respondents identifying the town as the destination of their daily commute. Sugar Mountain was identified as one of the least common destinations in the county with 1.2% (1 of 81) of respondents identifying the town as the destination of their daily commute.
- NC 184 from NC 105 to Banner Elk was identified as the most commonly used route in the county with 50% (37 of 74) of respondents identifying the route as commonly used. NC 105 from Linville to Watauga County was identified as the second most commonly used route in the county with 47% (35 of 74) of respondents identifying the route as commonly used. NC 184 from Banner Elk to Beech Mountain was identified by 15% (11 of 74) of respondents.
- When asked if the potential benefits of a four lane facility through Avery County outweighs the potential impacts of such a facility, 51% (40 of 79) of respondents answered yes and 49% (39 of 79) answered no.
- When asked which improvements should be considered to address the traffic problems in the area, 60% (47 of 78) of respondents identified widening existing roads as the second most identified improvement that should be considered. It should be noted that the question did distinguish between minor (widening travel lanes by a few feet) and major widening (i.e.: widening from 2 lanes to 4 lanes). Adding on-road bike lanes was identified by 45% (25 of 78) of respondents and expanding sidewalks was identified by 26% (20 of 78) of respondents.

At a public involvement meeting at Banner Elk Town Hall on July 29, 2014, a citizen made the point that widening NC 184 (Tynecastle Highway) would have too many impacts to the properties around the road. The citizen then provided a written comment that stated, "In deciding mode/design consideration of all alternatives – cost/impact/location – more lanes not always best."



Identified Problem

NC 184 (Tynecastle Highway/Shawneehaw Avenue) from Banner Creek Road (SR 1341) to Hickory Nut Gap Road (SR 1342) is currently near capacity. By 2040, this facility is projected to be over capacity from Banner Creek Road (SR 1341) to NC 184/NC 194 (Main Street). NC 184/NC 194 (Main Street) from NC 184 (Shawneehaw Avenue) to NC 184 (Beech Mountain Parkway) is projected to be at capacity in the year 2040. The purpose of this project is to accommodate projected traffic volumes in order to maintain a Level of Service (LOS) D on these facilities.

Justification of Need

Banner Elk is uniquely situated in a valley at the base of the popular tourist and secondary home destination of Beech Mountain. NC 184 (Tynecastle Highway/Shawneehaw Avenue) and NC 184/NC 194 (Main Street) are the primary routes in Banner Elk that provide access for local residents, tourists, and secondary home residents that routinely visit throughout the year.

The existing characteristics and projected traffic volumes for NC 184 (Tynecastle Highway/Shawneehaw Avenue) from Banner Creek Road (SR 1341) to NC 184/NC 194 (Main Street) and for NC 184/NC 194 (Main Street) from NC 184 (Shawneehaw Avenue) to NC 184 (Beech Mountain Parkway) are given in Table 3 below:

Roadway Section	NC 184 from Banner Creek Road (SR 1341) to Hickory Nut Gap Road (SR 1342)	NC 184 from Hickory Nut Gap Road (SR 1342) to NC 184/NC 194 (Main Street)	NC 184/NC 194 (Main Street) from NC 184 (Shawneehaw Avenue) to NC 184 (Beech Mountain Parkway)
# Lanes	2	2	2
Lane Width (feet)	11	11	11
Speed Limit (mph)	25 to 35	25	25 to 35
2012 AADT ¹⁵ (vpd)	9,700	8,200	8,000
2012 LOS D Capacity (vpd)	11,200	10,600	10,600
2040 AADT (vpd)	12,800	10,800	10,600

Table 3- NC 184 Characteristics & Traffic Vo	olumes
--	--------

Miles per hour (mph), Annual Daily Traffic Volume (AADT), Vehicles per Day (vpd)

During the development of the CTP, the NCDOT Traffic Survey Group collected traffic data five times at 29 locations to analyze the seasonal nature of traffic in Avery County. Refer to Tables 20 and 21 in Appendix J for 2013 seasonal traffic counts collected on NC 184 (Shawneehaw Avenue) south of NC 194 (Main Street). When projecting traffic volumes to 2040 based on 2013 seasonal traffic counts, this location would be nearing capacity 3 out of the 5 months considered and over capacity for 1 out of the 5 months.

Community Vision and Problem History

Banner Elk stakeholders involved in CTP development believe that widening roads in Downtown Banner Elk, particularly NC 184/NC 194 (Main Street) and NC 184 (Shawneehaw Avenue), would go against the town's desire to be a very pedestrian and bicycle friendly community. The vision statement for the 2009 Banner Elk Pedestrian Plan is: "The Town of Banner Elk is a more walkable and bicycle-friendly community that meets the needs of students, visitors, businesses, and residents of all age groups through an integrated network of greenways, walkways, and bicycle paths."

The 1997 NCDOT feasibility study¹⁶ for project R-3604 identified NC 184/NC 194 (Main Street) as operating at an LOS E in 1996 and having anticipated future LOS F conditions on the roadway. The 2003 Banner Elk & Beech Mountain Thoroughfare Plan¹⁷ (not adopted by Banner Elk but adopted by Beech Mountain) identified both facilities as deficient in the year 2025.

http://digital.ncdcr.gov/cdm/ref/collection/p249901coll22/id/188312.

¹⁵ The median of 2009-2012 AADT values were used as 2012 AADT values for NC 184 (Tynecastle Highway/Shawneehaw Avenue). Unadjusted 2012 AADT volumes were not considered representative of recent historical AADT data for roadway. Refer to Appendix G for a detailed explanation.

 ¹⁶ Contact the NCDOT Feasibility Studies Unit for information on this study (reference Appendix A for contact information).
¹⁷ The 2003 Banner Elk and Beech Mountain Thoroughfare Plan can be accessed at:

The 2013-2030 Beech Mountain Comprehensive Plan¹⁸ advocates for improvements to NC 184 to increase the ease of accessibility from Boone and other locations to Beech Mountain, but only if the improvements are done in a way that maintains the character of the landscape and improves the roads in the least invasive manner possible.

CTP Project Proposal

Project Description and Overview

The CTP proposes constructing a two lane major thoroughfare with 12 foot lanes and bicycle accommodations on new location from NC 184 (Tynecastle Highway), near Banner Creek Road (SR 1341), to the intersection of NC 194 (Banner Elk Highway) and Elkview Place. Providing a facility for vehicles whose destination is not Banner Elk will alleviate congestion on both NC 184 (Tynecastle Highway/Shawneehaw Avenue) and NC 184/NC 194 (Main Street) by removing vehicle trips that do not have an origin or destination in Banner Elk. This will provide better driving conditions for both local Banner Elk traffic and for trips heading to Beech Mountain, Elk Park, or Tennessee. For information on other alternatives that were evaluated, refer to Appendix I.

For January 1, 2007 through December 31, 2011, the Traffic Safety Unit of the NCDOT Traffic Safety and Mobility Division identified the following high frequency crash locations:

- The intersection of NC 184 (Shawneehaw Avenue) and NC 184/NC 194 (Main Street) experienced 7 vehicle crashes.
- The intersection of NC 184 (Beech Mountain Parkway) and NC 184/NC 194 (Main Street) experienced 7 vehicle crashes.
- The intersection of NC 184 (Shawneehaw Avenue) and Central Way Street experienced 4 crashes.

Natural & Human Environmental Context

Based on a planning level environmental assessment using available GIS data, the proposed project crosses the Elk River and is also in the vicinity (300 feet from centerline) of and may potentially impact streams, land owned by Lees-McRae College, Grandfather Academy (Grandfather Home for Children), a wetland, significant natural heritage areas, the Elk River Airport, trout streams, fault lines, natural heritage element occurrence areas, sewer pipes, water pipes, a sanitary sewer system treatment and discharge plant, and sanitary sewer system pumps. There are also sharp elevation changes along this route that may potentially lead to high cut and fill costs and impacts to the natural scenery of the area. NC 194 (Banner Elk Highway/Main Street/Balm Highway has been designated part of NC State Bike Route 11.

¹⁸ The 2013-2030 Beech Mountain Comprehensive Plan can be accessed at: <u>http://www.townofbeechmountain.com/images/pln_insp_docs/CompPlan_Adopted.pdf</u>.

The 1997 feasibility study for R-3604 estimated that a five lane facility would relocate 3 residences and 5 businesses.

Relationship to Land Use Plans

Banner Elk's main routes, NC 184 (Tynecastle Highway/Shawneehaw Avenue) and NC 184/NC 194 (Main Street) serve numerous local destinations. Lees-McRae College is located along NC 184/NC 194 (Main Street), which generates vehicle, pedestrian, and bicycle traffic along the roadway. NC 184 (Shawneehaw Avenue) has several local businesses and restaurants along it.

The 2010-2030 Banner Elk Land Use Plan¹⁹ does not endorse a "western bypass" around town, but it does acknowledge that the NC 184 Alternate route, as identified in the 2003 Banner Elk and Beech Mountain Thoroughfare Plan (not adopted by Banner Elk), would alleviate unnecessary pass-through traffic, would create a more efficient roadway network, and would reduce the risk of accidents by allowing traffic with destinations outside of town the ability to avoid the slower traffic in town. The land use plan identifies "central business district" and "medical-educational" (Lees-McRae College) as the predominant existing zoning types along NC 184 (Shawneehaw Avenue) and NC 184/NC 194 (Main Street) in the heart of Downtown Banner Elk. Widening in Downtown Banner Elk would be unfeasible due to the close proximity of these developments to the roadway.

The 2010-2030 Banner Elk Land Use Plan has a goal to establish a visual corridor overlay district along NC 184 (Shawneehaw Avenue/Tynecastle Highway) to improve the appearance of the main entrance into town and to encourage connectivity to Sugar Mountain, in an effort to help the current business infrastructure thrive. During the development of the CTP, stakeholders within Banner Elk expressed that the widening of NC 184 north of Dobbins Road (SR 1337) goes against the intended effects of establishing a visual corridor overlay district. Also, a representative from Lees-McRae College expressed that widening in Banner Elk could make the roads in Banner Elk more unsafe for bicyclists by encouraging increased vehicle speeds.

Linkages to Other Plans and Proposed Project History

NC 184/NC 194 (Main Street) and NC 184 (Shawneehaw Avenue) are both classified as major collectors on the Federal Functional Classification System and are both on the regional tier of the North Carolina Multimodal Investment Network (NCMIN). Regional tier facilities connect major population centers and serve local land use.

The 1985 Banner Elk Thoroughfare Plan and the 2003 Banner Elk and Beech Mountain Thoroughfare Plan (not adopted by Banner Elk but adopted by Beech Mountain) both proposed a two lane facility on new location that follows the same approximate path as the current CTP project proposal. The current CTP project proposal avoids close

¹⁹ The 2010-2030 Banner Elk Land Use Plan can be accessed at:

http://www.townofbannerelk.org/images/stories/Final%20Edit,%20All%20Pages.pdf.

proximity to Wildcat Lake (unlike the 1985 Thoroughfare Plan); however, the current CTP proposal comes within close proximity to the eastern end of the Grandfather Home for Children school. Various attempts were made to contact representatives from the Grandfather Home for Children School to solicit feedback on the proposal, but no response was provided by anyone contacted.

Transportation Improvement Program (TIP) project R-3604 is no longer included within the TIP; however, the project description included widening NC 184/NC 194 (Main Street) to a five lane facility from NC 184 (Beech Mountain Parkway) to NC 184 (Shawneehaw Avenue). Project R-3604 was removed from the TIP in 2005 at the request of Banner Elk. During the development of this CTP, Banner Elk expressed strong opposition to the widening of NC 184/NC 194 (Main Street) due to the potential for impacts to Lees-McRae College, residences, and businesses in close proximity to the roadway.

Within this CTP, the proposed facility would connect to the proposed four lane widening of NC 184 (R-2811) at Banner Creek Road (SR 1341).

Multi-modal Considerations

Lees-McRae College has a robust bicycling program that leads to many bicyclists using roads in close proximity to the college. Therefore, bicycle accommodations are recommended along the entire facility.

Public/ Stakeholder Involvement

A Goals & Objectives (G&O) survey conducted for this CTP revealed the following:

- Banner Elk was identified as the second most common destination in the county with 25% (20 of 81) of respondents identifying the town as the destination of their daily commute. Beech Mountain only had 3.7% (3 of 81) of respondents identifying the town as the destination of their daily commute.
- NC 184 from NC 105 to Banner Elk was identified as the most commonly used route in the county with 50% (37 of 74) of respondents identifying the route as commonly used. NC 184 from Banner Elk to Beech Mountain had 15% (11 of 74) of respondents identify the route as commonly used. NC 194 from Banner Elk to Cranberry was identified by 20% (15 of 74) of respondents.
- When asked which improvements should be considered to address the traffic problems in the area, adding on-road bike lanes was identified by 45% (25 of 78) of respondents. The second least identified improvement that should be considered was building new roadways as identified by 14% (11 of 78) of respondents.
- When asked how much money we should be spending on particular items, 43% (32 of 74) of respondents identified that "less" or "much less" money should be spent on building new major roads in Avery County.

Local ID: AVER0002-H Last Updated: 9/12/14

Identified Problem

NC 194 in Newland from NC 181 (Linville Street) to Old Public Road is currently near or over capacity. By 2040, NC 194 will be near or over capacity from Old Public Road to Old Cranberry Street. The purpose of this project is to accommodate projected traffic volumes in order to maintain a Level of Service (LOS) D on the facility.

Justification of Need

NC 194 is the primary north to south route in Newland and central Avery County. There are no other continuous north-south routes through Newland. All other north-south facilities terminate after a few blocks. Therefore, drivers alternative have no options to avoid the already congested NC 194 in downtown Newland.

NC 194 is classified as a minor arterial on the Federal Functional Classification System and this stretch of NC 194 is on the regional tier of the North Carolina Multimodal Investment Network (NCMIN). Regional tier facilities connect major population centers and serve local land use. NC 194 currently serves two purposes: to provide a vital link between



Tennessee and North Carolina and to serve as the primary local downtown street for Newland.

The existing characteristics and projected traffic volumes for NC 194 from Old Cranberry Street to Old Public Road are given in Table 4 below:

Roadway Section	NC 194 from Old Cranberry Street to NC 181 (Linville Street)	NC 194 from NC 181 (Linville Street) to Old Toe River Road (SR 1157)	NC 194 from Old Toe River Road (SR 1157) to Old Public Road
# Lanes	2	2	2
Lane Width (feet)	12	12	12
Speed Limit (mph)	25	25	25
2012 AADT ²⁰ (vpd)	8,000	11,000	8,900
2012 LOS D Capacity (vpd)	11,000	11,000	11,000
2040 AADT (vpd)	10,600	14,500	11,800

Table 4- NC 194 Characteristics & Traffic Volumes

During the development of the CTP, the NCDOT Traffic Survey Group collected traffic data five times at 29 locations to analyze the seasonal nature of traffic in Avery County. Refer to Tables 20 and 21 in Appendix J for 2013 seasonal traffic counts collected on NC 194 north of NC 181 (Linville Street). The location is over capacity in 2013 based on 4 of the 5 months of data collected (the one month not over capacity was the month that a mudslide washed out NC 194 north of Newland) and is projected to be over capacity in 2040, based on 2013 seasonal traffic counts, for 5 of the 5 months considered.

Community Vision and Problem History

The CTP Steering Committee developed three objectives that should be accomplished by potential solutions that would address the identified problem. These objectives are to create a more efficient road network that is not dependent on back road short cuts, to address traffic deficiencies that hinder the flow of commerce, and to ease regional mobility for citizens and visitors by improving travel conditions along key arterials.

According to the 2008 Newland Comprehensive Plan²¹, NC 194 is serving two functions as both the primary route for through traffic with origins and destinations outside of Newland and as the town's "Main Street" for local traffic. NC 194 within the Newland corporate limits was identified as over capacity in both the 1994 Newland Thoroughfare Plan²² and the 2002 Supplement to the 1994 Newland Thoroughfare Plan²³ (the 2002 supplement was never adopted by Newland).

²⁰ The median of 2009-2012 AADT values were used as 2012 AADT values for NC 184 (Tynecastle Highway/Shawneehaw Avenue). Unadjusted 2012 AADT volumes were not considered representative of recent historical AADT data for roadway. *Refer to Appendix G for a detailed explanation.*

Contact the High Country RPO for information on this plan (reference Appendix A for contact information).

²² The 1994 Newland Thoroughfare Plan can be accessed at:

http://digital.ncdcr.gov/cdm/compoundobject/collection/p249901coll22/id/280326/rec/1.

Contact the NCDOT Transportation Planning Branch for a copy of this plan (reference Appendix A for contact information).

CTP Project Proposal

Project Description and Overview

The CTP proposes a two lane major thoroughfare with 12 foot lanes, partially on new location in western Newland from NC 194 at Old Cranberry Street to NC 194 at Old Public Road. Bicycle accommodations are recommended along the entire facility. The existing Old Public Road and Old Cranberry Street would be utilized as a part of this new facility and would be upgraded. This route will make Newland less dependent on existing NC 194 as its only means of north-south travel. For more information relating to this specific route location and other route location alternatives that were evaluated, refer to Appendix I.

The NCDOT Traffic Safety Unit identified the following as high crash locations from January 1, 2007 through December 31, 2011:

- The intersection of NC 194 (Pineola Street) and NC 181 (Linville Street) experienced 10 vehicle crashes.
- The intersection of NC 194 (Pineola Street) and Ash Street experienced 8 vehicle crashes.

Natural & Human Environmental Context

Based on a planning level environmental assessment using available GIS data, the proposed project crosses the North Toe River and is also in the vicinity (300 feet from centerline) of and may potentially impact streams, lands managed for conservation, the Newland Cemetery, target local watersheds, trout streams, fault lines, regional trails, sewer pipes, water pipes, and a water distribution treatment plant and water well.

Relationship to Land Use Plans

The predominant existing land use type in downtown Newland along NC 194 is commercial/retail development that is right along the roadway. The Newland Comprehensive Plan states that the heavy through traffic along NC 194 in downtown Newland is incompatible with the pedestrian-oriented small businesses in the area. Also, two of the goals in the Newland Comprehensive Plan are to preserve and enhance the small-town character of Newland and to foster the development of business.

The Newland Comprehensive Plan identifies the existing land use along Old Cranberry Street as predominantly single-family residential with other uses including a cemetery, apartments, vacant land, and a single commercial property near the intersection of Old Cranberry Street and NC 194. The Newland Comprehensive Plan has an action step to encourage commercial development in the town limits near Old Cranberry Street. The primary land use along Old Public Road is single-family residential, including several mobile homes.

Linkages to Other Plans and Proposed Project History

The 2008 Newland Comprehensive Plan states that NC 194 consists mainly of throughtraffic with origins and destinations outside of Newland, which results in noise and congestion as an issue for the town. The plan identifies providing connections within the town and connecting the town to other locations as the two transportation related objectives. The three identified transportation issues are parking, pedestrian traffic, and vehicular traffic. The plan referenced the 1994 Newland Thoroughfare Plan and the 2002 Supplement to the Newland Thoroughfare Plan (the 2002 supplement was never adopted by Newland) on the NC 194 Bypass. It also highlights other ideas such as oneway street pairs and encouraging the sharing of driveway cuts.

The 1994 Newland Thoroughfare Plan recommended a bypass around the eastern side of Newland that would become NC 194 and make existing NC 194 a designated business route. The 2002 Supplement to the 1994 Newland Thoroughfare Plan identified an eastern bypass around Newland as unfeasible due to low projected traffic volumes and high construction costs. Instead, the 2002 plan proposed the development of a bypass around the western side of town. Newland did not adopt the 2002 Supplement to the 1994 Newland Thoroughfare Plan because the Newland Town Council preferred the eastern bypass and believed that it would become feasible to build in the future as traffic volumes grew. The proposed route locations from the 1994 and 2002 plans are shown in Appendix I.

The 1993 Region D Thoroughfare Plan²⁴ identified NC 194 from US 221 (Linville Falls Highway) to NC 181 (Linville Street) as approaching capacity by 2020, but the plan did not recommend any improvements to the road segment.

Multi-modal Considerations

Bicycle accommodations are recommended along the entire facility.

Public/ Stakeholder Involvement

A Goals & Objectives (G&O) survey conducted for this CTP revealed the following:

- Newland was identified as the most common destination in the county with 26% (21 of 81) of respondents identifying the town as the destination of their daily commute.
- NC 194 from US 221 to Newland was identified as commonly used by 26% (19 of 74) of respondents. NC 194 from Newland to Cranberry (near Elk Park) had 22% (16 of 74) of respondents identify the route as commonly used. NC 181 from Linville to Newland was identified as commonly used by 34% (25 of 74) of respondents.
- When asked which improvements should be considered to address the traffic problems in the area, adding on-road bike lanes was identified by 45% (25 of 78) of

²⁴ The 1993 Region D Thoroughfare Plan can be accessed at: <u>http://digital.ncdcr.gov/cdm/compoundobject/collection/p249901coll22/id/279109/rec/1.</u>

respondents. The second least identified improvement that should be considered was building new roadways as identified by 14% (11 of 78) of respondents.

• When asked how much money we should be spending on particular items, 43% (32 of 74) of respondents identified that "less" or "much less" money should be spent on building new major roads in Avery County.

A citizen survey completed as a part of the 2008 Newland Comprehensive Plan identified a bypass around Newland as having only 37% support from respondents. The same survey revealed that 54% of respondents indicated that traffic congestion is a problem for the town.

US 19E/NC 194, TIP No. R-2520

US 19E/NC 194 (Three Mile Road) from Mitchell County to US 221 (Linville Falls Highway) does not meet the future mobility needs in western North Carolina. This facility is intended to provide mobility between Asheville and Boone.

US 19E/NC 194 is currently a two lane major thoroughfare with travel lanes that range in width from 10 to 12 feet. All of US 19E/NC 194 has two lanes except for a 1.1 mile section that has four lanes on US 19E from Bent Road (SR 1103) to 0.3 miles north of Mullin Hill Road (SR 1106). US 19E/NC 194 is classified as a principal arterial on the Federal Classification System and is on the statewide tier of the North Carolina Multimodal Investment Network (NCMIN). Statewide facilities serve long distance trips, connect regional centers, have the highest usage, and serve mobility. US 19E/NC 194 is designated as a boulevard on NCDOT's Strategic Highway Corridor (SHC) Vision Plan adopted on September 2, 2004. TIP project R-2520 includes widening US 19E/NC 194 to a multi-lane boulevard from a point east of Spruce Pine in Mitchell County to US 221 (Linville Falls Highway) in Avery County. R-2520 is currently an unfunded intrastate project in the 2012 – 2018 TIP and is scheduled for reprioritization.

It is recommended that US 19E/NC 194 (Three Mile Road) from Mitchell County to US 221 (Linville Falls Highway) be widened to a multi-lane boulevard with bicycle accommodations. Since there are no other transportation deficiencies associated with this facility, this project should be re-assessed after the North Carolina Transportation Network²⁵ (NCTN) has been finalized, which includes Strategic Transportation Corridors that will replace the existing Strategic Highway Corridors.

The NCDOT Traffic Safety Unit identified the following intersections as high frequency vehicle crash locations from January 1, 2007 through December 31, 2011:

- NC 194 (Three Mile Road) at US 221 (Linville Falls Highway) 22 crashes (tied with two other intersections for having the most crashes in the county)
- NC 194 (Three Mile Road) at Mullin Hill Road (SR 1106) 4 crashes
- West loop intersection of NC 194 (Three Mile Road) at Old Three Mile Road (SR 1111) 5 crashes
- East loop intersection of NC 194 (Three Mile Road) at Old Three Mile Road (SR 1111) 5 crashes

During the same period, the following road segments were identified as high crash locations:

- NC 194 (Three Mile Road) from Mullin Hill Road (SR 1106) to Little Buck Hill Road (SR 1109) - experienced 10 crashes
- NC 194 (Three Mile Road) from Little Buck Hill Road (SR 1109) to Prison Camp Road (SR 1110) - 6 crashes

²⁵ For more information on the NCTN, go to: <u>https://connect.ncdot.gov/projects/planning/Pages/NCTransportationNetwork.aspx</u>

Based on a planning level environmental assessment using available GIS data, the proposed project crosses the North Toe River and is also in the vicinity (300 feet from centerline) of and may potentially impact streams, churches and cemeteries, lands managed for conservation (NC Ecosystem Enhancement Program Easements), wetlands, landscape habitat indicator guilds, historic resource properties, target local watershed areas, water supply watershed areas, trout streams, natural heritage element occurrence areas, a proposed regional trail (Overmountain Victory National Historic Trail), water pipes, fault lines, and the entrance to Mayland Community College (just the entrance, not the main school building itself). US 19E has been designated part of NC State Bike Routes 2 and 11 for varying lengths. NC 194 (Three Mile Road has been designated as part of NC State Bike Route 2.

On April 1, 2014, the High Country Rural Planning Organization (RPO) and NCDOT met with several Crossnore citizens (and people who live in the Three Mile area) to discuss transportation related concerns in Crossnore. At the meeting, it was emphasized how important it is that any and all human and environmental impacts from the widening of NC 194 (Three Mile Road) be minimized as much as possible (this was later re-emphasized by some of the same citizens at public involvement meetings on July 22, 2014 and July 24, 2014). One citizen who lives in close proximity to NC 194 (Three Mile Road) stated that not all local churches and cemeteries along NC 194 were referenced on the environmental map provided in the Avery CTP and that a more detailed analysis on impacts to churches and cemeteries near NC 194 needs to be completed before widening the roadway. Local citizens that live along NC 194 (Three Mile Road) believe that maintaining this road as a two lane facility is the best option to maintain the scenic, natural heritage of the region.

The 1993 Region D Thoroughfare Plan²⁶ projects the majority of US 19E and NC 194 (Three Mile Road) to be over an LOS D capacity in the year 2020. The thoroughfare plan did not recommend a specific cross section for US 19E/NC 194 (Three Mile Road) other than the multi-lane cross section that was recommended as part of TIP project R-2520.

US 221 (Linville Falls Highway), TIP No. R-2595

US 221 (Linville Falls Highway) from NC 194 (Three Mile Road) to NC 181 in Linville does not meet the future mobility needs in western North Carolina. This facility is intended to provide mobility from Boone to both Asheville and Spartanburg, SC.

US 221 is currently a two lane major thoroughfare with two 11 to 12 foot lanes. It is classified as a principal arterial on the Federal Classification System and is on the statewide tier of the North Carolina Multimodal Investment Network (NCMIN). Statewide facilities serve long distance trips, connect regional centers, have the highest usage, and serve mobility. US 221 (Linville Falls Highway) is designated as a boulevard on NCDOT's Strategic Highway Corridor (SHC) Vision Plan adopted on

²⁶ The 1993 Region D Thoroughfare Plan can be accessed at:

http://digital.ncdcr.gov/cdm/compoundobject/collection/p249901coll22/id/279109/rec/1.

September 2, 2004. The segment of US 221 from NC 194 (Three Mile Road) to NC 181 in Linville is part of SHC Corridor 10 (Asheville, NC to Boone, NC) and SHC Corridor 12 (Spartanburg, SC to Boone, NC). TIP project R-2595 includes widening US 221 to a multi-lane boulevard from NC 194 (Three Mile Road) to NC 181 in Linville. R-2595 is currently an unfunded intrastate project in the 2012 - 2018 TIP and is scheduled for reprioritization.

It is recommended that US 221 (Linville Falls Highway) from NC 194 (Three Mile Road) to NC 181 in Linville be widened to a multi-lane boulevard with bicycle accommodations. Consideration should be given to re-routing part of US 221 (Linville Falls Highway) to the east of the Crossnore Presbyterian Church to avoid impacts to historic resource properties. Since there are no other transportation deficiencies associated with this facility, this project should be re-assessed after the North Carolina Transportation Network²⁷ (NCTN) has been finalized, which includes Strategic Transportation Corridors that will replace the existing Strategic Highway Corridors.

The NCDOT Traffic Safety Unit identified the following intersections as high frequency vehicle crash locations from January 1, 2007 through December 31, 2011:

- US 221/NC 194 (Linville Falls Highway) at NC 194 (Three Mile Road) 22 crashes (one of three intersections tied for having the most crashes in the county)
- US 221/NC 194 (Linville Falls Highway) at Greene Road (SR 1536) 5 crashes
- US 221/NC 194 (Linville Falls Highway) at NC 194 (Millers Gap Highway) 22 crashes (one of three intersections tied for having the most crashes in the county)
- US 221 (Linville Falls Highway) at Pineola Baptist Church Road (SR 1505) 4 crashes
- US 221/NC 181 (Linville Falls Highway) at NC 181 (Jonas Ridge Highway) 16 crashes
- US 221/NC 181 (Linville Falls Highway) at Linville Avenue (SR 1545) 4 crashes
- US 221/NC 181 (Linville Falls Highway) at NC 181 (Newland Highway/Mitchell Avenue) 16 crashes

Additionally, the following road segments were identified as high crash locations during the same period:

- US 221/NC 194 (Linville Falls Highway) from NC 194 (Three Mile Road) to Camp Creek Road (SR 1525) - 7 crashes
- US 221/NC 194 (Linville Falls Highway) from Stamey Branch Road (SR 1114) to Greene Road (SR 1536) - 14 crashes

²⁷ For more information on the NCTN, go to: <u>https://connect.ncdot.gov/projects/planning/Pages/NCTransportationNetwork.aspx</u>

- US 221/NC 194 (Linville Falls Highway) from Greene Road (SR 1536) to Dellinger Road (SR 1148) - 11 crashes
- US 221 (Linville Falls Highway) from Mill Timber Creek Road (SR 1503) to Pineola Baptist Church Road (SR 1505) 5 crashes
- US 221/NC 181 (Linville Falls Highway) from Black Bear Trail (approximately 1.1 miles south of Linville Avenue (SR 1545)) to Linville Avenue (SR 1545) 5 crashes

According to the R-2595 feasibility study²⁸, which was completed March 30, 2011, the widening of US 221 is anticipated to have significant impacts to properties along US 221. The feasibility study cited the 2011 Average Daily Traffic (ADT) volumes as ranging from 5.800 – 8.000 vpd. The 2035 traffic volumes were anticipated to range between 8,100 and 11,300 vpd. The feasibility study states that the existing segment of US 221 operates at a Level of Service (LOS) E under 2011 traffic volumes and will operate at a LOS F in 2035 if no improvements are made. Truck traffic is estimated to make up 11% of daily traffic. Also, the study identified that between 2004 and 2007, 109 crashes were reported within the project limits, which produced a crash rate that was lower than the statewide crash rate. The study indicated that a four lane roadway with a 46 foot depressed median would be 102 feet from edge of pavement to edge of pavement. The facility would have 12 foot wide travel lanes, 8 foot shoulders, and 250 feet of right of way and would relocate 69 residences and 41 businesses. These anticipated impacts may increase if development along the corridor increases prior to construction or decrease based on efforts by the NCDOT Roadway Design Unit to design a facility that minimizes impacts. The feasibility study also identified potential impacts to FR Gill State Forest Nursery and the potentially historic properties of the Ray Wiseman House and the Crossnore Presbyterian Church. Additional potential impacts were identified in the feasibility study.

Based on a planning level environmental assessment using available GIS data, the proposed project is in the vicinity (300 feet from centerline) of and may potentially impact streams, historic resource areas, wetlands, hydrography areas, Gill State Forest, the Linville River, lands managed for conservation, significant natural heritage areas, state park land, landscape habitat indicator guilds, target local watershed areas, historic national register districts, an inactive hazardous substance disposal site, trout streams, trout waters, fault lines, natural heritage element occurrence areas, regional trails, a water distribution treatment plant, a water distribution well, sewer pipes, and water pipes. R-2595 is within 300 feet of NC State Bike Route 2 when US 221 (Linville Falls Highway) intersects NC 194 (Three Mile Road). Additionally, the NCDOT Structures Management Unit has identified bridge number 165 over the Linville River (south of US 221/Mitchell Avenue) as functionally obsolete. Bridge number 27 goes over the Linville River west of NC 181 (Jonas Ridge Highway) and is classified as both functionally obsolete and structurally deficient (refer to Appendix F and Figure 5).

²⁸ Contact the NCDOT Feasibility Studies Unit for more information on this study (reference Appendix A for contact information).

The Ray Wiseman House, George and Anna Watkins House (Three Oaks), Crossnore Presbyterian Church, Milligan S. Wise House (destroyed by fire January 2014), and Marmon House are all historic resource properties that are within 300 feet of the centerline of US 221 (Linville Falls Highway). In particular, US 221 (Linville Falls Highway) around its intersection with Dellinger Road (SR 1148) is wedged between the Crossnore Presbyterian Church property and the Milligan S. Wise House property. During a meeting with Crossnore citizens on April 1, 2014 (highlighted in paragraph below), it was recommended that US 221 (Linville Falls Highway) be diverted to a facility on new location that avoids these historic properties by bypassing to the east of Crossnore Presbyterian Church. This idea appealed to the Crossnore citizens at the meeting because it also straightened out the existing curve in US 221 (Linville Falls Highway) as it passed by Crossnore.

On April 1, 2014, the High Country Rural Planning Organization (RPO) and NCDOT met with several Crossnore citizens to discuss transportation related concerns in Crossnore. At the meeting, Crossnore citizens emphasized the importance of minimizing human and environmental impacts from the widening of US 221 (this was later re-emphasized by some of the same citizens at a public involvement meeting on July 24, 2014 in Newland). In particular, the Crossnore Presbyterian Church, which is a nationally registered historic site in close proximity to US 221, was identified as having great importance to the community and that no impacts should occur to the church or its property. Local citizens that live along this corridor believe that maintaining this road as a two lane facility is the best option to maintain the scenic, natural heritage of the region.

US 221 (Linville Falls Highway), TIP No. R-2596

US 221 (Linville Falls Highway) from Burke County to NC 194 (Three Mile Road) does not meet the future mobility needs in western North Carolina. This facility is intended to provide mobility between Spartanburg, SC and Boone, NC.

US 221 is a principal arterial on the Federal Classification System and is on the statewide tier of the North Carolina Multimodal Investment Network (NCMIN). Statewide facilities serve long distance trips, connect regional centers, have the highest usage, and serve mobility. US 221 is designated as a boulevard on NCDOT's Strategic Highway Corridor (SHC) Vision Plan adopted on September 2, 2004. TIP project R-2596 includes widening US 221 to a multi-lane boulevard from NC 226 in McDowell County to NC 194 (Three Mile Road) in Avery County. The portion of this project from NC 226 to North Cove School Road (SR 1569) in McDowell County has been completed. The remaining portion of R-2596 is currently an unfunded intrastate project in the 2012 – 2018 TIP and is scheduled for reprioritization.

It is recommended that US 221 (Linville Falls Highway) from Burke County to NC 194 (Three Mile Road) be widened to a multi-lane boulevard with bicycle accommodations.

Since there are no other transportation deficiencies associated with this facility, this project should be re-assessed after the North Carolina Transportation Network²⁹ (NCTN) has been finalized, which includes Strategic Transportation Corridors that will replace the existing Strategic Highway Corridors.

The NCDOT Traffic Safety Unit identified the US 221/NC 194 (Linville Falls Highway) and NC 194 (Three Mile Road) intersection as a high vehicle crash location. The intersection experienced 22 vehicle crashes (one of three intersections tied for having the most crashes in the county) from January 1, 2007 through December 31, 2011. Also, the US 221 (Linville Falls Highway) road segment from Hobbs Lane (SR 1101) to Pisgah Church Road (SR 1112) experienced 7 crashes over the same time period.

According to the R-2596 feasibility study³⁰, which was completed March 31, 2011, the widening of US 221 is anticipated to have some impacts to properties along US 221. This project was identified in the R-2595 feasibility study that was completed in 2011. The feasibility study cited the 2011 Average Daily Traffic (ADT) volumes as ranging from 2,900 – 3,500 vpd. The 2035 traffic volumes were anticipated to range between 4,600 and 5,200 vpd. The feasibility study states that the existing segment of US 221 operates at a Level of Service (LOS) C under 2011 traffic volumes and at a LOS C in 2035 if no improvements are made. Truck traffic is estimated to make up 12% of daily traffic. Also, the study identified that between 2004 and 2007, 45 crashes were reported within the project limits, which produced a crash rate that was lower than the statewide crash rate. The study indicated that a four lane roadway with a 46 foot depressed median would be 102 feet from edge of pavement to edge of pavement. The facility would have 12 foot wide travel lanes, 8 foot shoulders, and 250 feet of right of way. Section C of R-2596 runs from English Road (SR 1571) in McDowell County to NC 194 (Three Mile Road) and would relocate 22 residences and 6 businesses over the section C project segment. These anticipated impacts may increase if development along the corridor increases prior to construction or decrease based on efforts by the NCDOT Roadway Design Unit to design a facility that minimizes impacts. The feasibility study also identified potential impacts to various sites in Linville Falls (in Burke and McDowell Counties) and the David Franklin Cabin.

Based on a planning level environmental assessment using available GIS data, the proposed project is in the vicinity (300 feet from centerline) of and may potentially impact lands managed for conservation, a church and its cemetery, streams, landscape habitat indicator guilds, historic resource areas, target local watershed areas, water supply watershed areas, trout streams, and natural heritage element occurrence areas. This portion of US 221 (Linville Falls Highway) has been designated part of NC State Bike Route 2. Additionally, the NCDOT Structures Management Unit has identified bridge number 11 on the Blue Ridge Parkway, which goes over US 221 (Linville Falls Highway), as functionally obsolete (refer to Appendix F and Figure 5).

 ²⁹ For more information on the NCTN, go to: <u>https://connect.ncdot.gov/projects/planning/Pages/NCTransportationNetwork.aspx</u>
³⁰ Contact the NCDOT Feasibility Studies Unit for more information on this study (reference Appendix A for contact information).

On April 1, 2014, the High Country Rural Planning Organization (RPO) and NCDOT met with several Crossnore citizens to discuss transportation related concerns in Crossnore. At the meeting, Crossnore citizens emphasized the importance of minimizing human and environmental impacts from the widening of US 221 (this was later re-emphasized by some of the same citizens at a public involvement meeting on July 24, 2014 in Newland). The local citizens that live along this corridor believe that maintaining this road as a two lane facility is the best option to maintain the scenic, natural heritage of the region.

US 221 (Mitchell Avenue), AVER0003-H

US 221 (Mitchell Avenue) in Linville from US 221/NC 181 (Linville Falls Highway) to NC 105 is currently approaching capacity and is projected to be over capacity in 2040. The purpose of this project is to accommodate projected traffic volumes in order to maintain a Level of Service (LOS) D on the facility.

US 221 (Mitchell Avenue) is a principal arterial on the Federal Classification System and is on the statewide tier of the North Carolina Multimodal Investment Network (NCMIN). Statewide facilities serve long distance trips, connect regional centers, have the highest usage, and serve mobility. US 221 (Mitchell Avenue) currently has two 12 foot lanes with a speed limit that is mostly 35 miles per hour (mph) with a short segment of 55 mph near US 221/NC 181 (Linville Falls Highway). The 2012 Annual Average Daily Traffic (AADT) volume along this section of roadway is 9,900 vehicles per day (vpd), with a Level of Service (LOS) D capacity of 11,600 vpd. The estimated 2040 traffic volume is 12,000 vpd.

During the development of the CTP, the NCDOT Traffic Survey Group collected traffic data five times at 29 locations to analyze the seasonal nature of traffic in Avery County. Refer to Tables 20 and 21 in Appendix J for 2013 seasonal traffic counts collected on US 221 (Mitchell Avenue). The location is over capacity in 2013 based on 1 of the 5 months of data collected and near capacity for 2 of the 5 months that data was collected. US 221 (Mitchell Avenue) is projected to be over capacity in 2040, based on 2013 seasonal traffic counts, for 3 of the 5 months considered and near capacity based on 2 of the 5 months considered.

From January 1, 2007 through December 31, 2011, the NCDOT Traffic Safety Unit identified 16 vehicle crashes at the US221 (Mitchell Avenue) and US 221/NC 181 (Linville Falls Highway) intersection and 12 vehicle crashes at the US 221 (Mitchell Avenue) and NC 105 intersection.

It is recommended that US 221 (Mitchell Avenue) from US 221/NC 181 (Linville Falls Highway) to NC 105 be widened to a multi-lane boulevard with bicycle accommodations. US 221 (Mitchell Avenue) is also designated as a boulevard on NCDOT's Strategic Highway Corridor (SHC) Vision Plan adopted on September 2, 2004. Improving this facility will help maintain mobility as a part of SHC corridors 10 (Asheville, NC to Boone, NC) and 12 (Spartanburg, SC to Boone, NC).

The widening of this approximate 0.6 mile stretch of US 221 (Mitchell Avenue) to a multi-lane boulevard will provide a critical connection between projects R-2595 and R-2566, which both recommend widening US 221 (Linville Falls Highway) and NC 105 to multi-lane boulevards.

Based on a planning level environmental assessment using available GIS data, the proposed project is in the vicinity (300 feet from centerline) of and may potentially impact streams, a church, a historic resource area, target local watershed areas, historic national register districts, an inactive hazardous substance disposal site, trout streams, and natural heritage element occurrence areas.

US 321, TIP No. R-5016

US 321 from Watauga County to Tennessee does not meet the future mobility needs in western North Carolina and into Tennessee. This facility is intended to provide mobility in northern Avery County and, ultimately, connectivity between Johnson City, TN and Gastonia, NC.

US 321 is a principal arterial on the Federal Classification System and is on the statewide tier of the North Carolina Multimodal Investment Network (NCMIN). Statewide facilities serve long distance trips, connect regional centers, have the highest usage, and serve mobility. US 321 is designated as an expressway on NCDOT's Strategic Highway Corridor (SHC) Vision Plan adopted on September 2, 2004. The portion of US 321 from Gastonia, NC to Johnson City, TN is part of Corridor 15 in the SHC Vision Plan report. US 321 is currently a two lane facility with a speed limit of 55 miles per hour and lane widths of 11 feet.

US 321 from Watauga County to Tennessee is recommended to be upgraded to an expressway with bicycle accommodations. As development occurs along this corridor every effort should be made to limit access in order to maintain mobility. TIP project R-5016 includes widening US 321 to a multi-lane facility from US 421 in Watauga County to Tennessee. R-5016 is currently an unfunded intrastate project in the 2012 – 2018 TIP and is scheduled for reprioritization. Since there are no other transportation deficiencies associated with this facility, this project should be re-assessed after the North Carolina Transportation Network³¹ (NCTN) has been finalized, which includes Strategic Transportation Corridors that will replace the existing Strategic Highway Corridors.

The NCDOT Traffic Safety Unit identified the US 321 road segment from Buckeye Road (SR 1314) to Flat Springs Road (SR 1316) as a high vehicle crash location, with 11 crashes occurring from January 1, 2007 through December 31, 2011. The R-5016 feasibility study (titled FS-0511A and completed in 2006) identified that between 2001 and 2004, 148 crashes were reported within the project limits, which produced a crash rate that was significantly higher than the statewide crash rate. The most prevalent

³¹ For more information on the NCTN, go to: <u>https://connect.ncdot.gov/projects/planning/Pages/NCTransportationNetwork.aspx</u>.

crash types identified in the feasibility study were rear end, ran off road, and fixed object, which are indicative of a narrow roadway with poor alignment and narrow shoulders.

AVER0006-H recommends paving Buckeye Creek Road (SR 1312) from Pine Ridge Road (just past the Watauga County line) to Buckeye Road (SR 1314). It is important to note that if Buckeye Creek Road (SR 1312) becomes a fully paved alternate entrance into Beech Mountain in the future, the additional capacity of the proposed project would be beneficial in handling the additional traffic volumes; however, it is anticipated that the majority of commuters and tourists traveling to and from Beech Mountain would still use NC 184 (Beech Mountain Parkway) as the main entrance to Beech Mountain.

The 2013-2030 Beech Mountain Comprehensive Plan³² advocates for improvements to US 321 to increase the ease of accessibility from Boone and other points beyond, but only if the improvements are done in a way that maintains the character of the landscape and improves the roads in the least invasive manner possible. The Avery County portion of this project has not been identified on any previous transportation plan. R-5016 continues into Watauga County as an expressway as documented in the Watauga CTP³³.

According to the FS-0511A feasibility study³⁴ for R-5016, which was completed October 19, 2006, the 2006 Average Daily Traffic (ADT) volumes range from 1,500 vpd just east of Tennessee to 7,500 vpd just west of US 421 in Watauga County. The 2035 traffic volumes were anticipated to range between 4,900 vpd just east of Tennessee and 15,000 vpd just west of US 421. The feasibility study states that the existing segment of US 321 operates at a Level of Service (LOS) D under 2006 traffic volumes and at a LOS D at a two different intersections in 2035 if no improvements are made. Truck traffic is estimated to make up 6% of daily traffic. The study also indicated that the widening of US 321 is anticipated to have some impacts to properties along US 321. The study stated that a four lane roadway with a 23 foot raised grass median would be 79 feet from edge of pavement to edge of pavement. The facility would have 12 foot wide travel lanes, 8 foot shoulders, and take a variable amount of right of way that will range from 150 to 500 feet due to the mountainous topography. The feasibility study anticipates that 65 residences and 16 businesses will be relocated due to this project. These anticipated impacts may increase if development along the corridor increases prior to construction or decrease based on efforts by the NCDOT Roadway Design Unit to design a facility that minimizes impacts. The study identified various sites that may potentially be historic properties, none of which were identified in Avery County during the development of the CTP.

³² The 2013-2030 Beech Mountain Comprehensive Plan can be accessed at:

http://www.townofbeechmountain.com/images/pln_insp_docs/CompPlan_Adopted.pdf. The Watauga CTP can be viewed at: <u>https://connect.ncdot.gov/projects/planning/Pages/CTP-</u>

<u>Details.aspx?study_id=Watauga%20County</u>. ³⁴ Contact the NCDOT Feasibility Studies Unit for more information on this study (reference Appendix A for contact information).

Based on a planning level environmental assessment using available GIS data, the proposed project is in the vicinity (300 feet from centerline) of and may potentially impact landscape habitat indicator guild areas, streams, historic resource areas, high quality waters (the Watauga River basin), trout streams, natural heritage element occurrence areas, and a proposed regional trail. Additionally, the NCDOT Structures Management Unit identified bridge number 2 (a culvert) over Beech Creek as structurally deficient (refer to Appendix F and Figure 5).

NC 105, TIP No. R-2566

NC 105 is currently near capacity from NC 184 to Watauga County. By 2040, NC 105 from US 221 to Watauga County is projected to be near capacity. Additionally, the NCDOT Traffic Survey Group collected traffic data five times at 29 locations to analyze the seasonal nature of traffic in Avery County. Refer to Appendix J for 2013 seasonal traffic counts collected. The seasonal traffic count data collected in 2013 showed that NC 105 from NC 184 to Watauga County was over capacity 3 out of the 5 months that data was collected. Projecting the 2013 seasonal count data to 2040 shows NC 105 from NC 184 to Watauga County as over capacity for all 5 months projected and NC 105 from US 221 to NC 184 as over capacity for 3 out of the 5 months projected.

The 2012-2018 TIP includes project R-2566 that is intended to address this problem. R-2566 includes widening NC 105 to multi-lanes from US 221 to the NC 105 Bypass (SR 1107) in Boone. However, the portion of this project within Avery County is not currently funded in the TIP. This project is currently in the project development process for environmental analysis. For additional information about this project, including the Purpose and Need, contact NCDOT's Project Development and Environmental Analysis Branch (PDEA) or visit the project website³⁵.

The 2013-2030 Beech Mountain Comprehensive Plan³⁶ advocates for improvements to NC 105 and NC 184 to increase the ease of accessibility from Boone and other locations to Beech Mountain, but only if the improvements are done in a way that maintains the character of the landscape and improves the roads in the least invasive manner possible.

The NCDOT Traffic Safety Unit identified the NC 105 and NC 184 intersection as one of three intersections with the most vehicle crashes (22 crashes) among intersections in Avery County from January 1, 2007 through December 31, 2011. Also, the NC 105 road segments from Tanglewood Cemetery Road (SR 1548) to NC 184 and from NC 184 to the Berry Road (SR 1339) western intersection had 56 crashes and 32 crashes, respectively, over the same time period (the 2 highest amounts for Avery County).

 ³⁵ The R-2566 project website can be viewed at: <u>http://www.ncdot.gov/projects/nc105widening/</u>.
³⁶ The 2013-2030 Beech Mountain Comprehensive Plan can be accessed at:

http://www.townofbeechmountain.com/images/pln_insp_docs/CompPlan_Adopted.pdf.

NC 194, AVER0004-H

NC 194 north of Newland from Old Public Road to Barney Road (SR 1344) is projected to be over capacity in the year 2040. Improvements are needed to accommodate projected traffic volumes in order to maintain a Level of Service (LOS) D on the facility.

NC 194 is classified as a minor arterial on the Federal Functional Classification System, and this stretch of NC 194 is on the regional tier of the North Carolina Multimodal Investment Network³⁷ (NCMIN). Regional tier facilities connect major population centers and serve local land use. This section of NC 194 has two 11 foot lanes and a 35 mile per hour (mph) speed limit.

The 2012 traffic volume on this section of NC 194 is 8,900 vehicles per day (vpd). By 2040, the volume is projected to be 11,800 vpd, which is higher than the current Level of Service (LOS) D capacity of 11,200 vpd.

The CTP does not include a project proposal to address this deficiency. Since the projected volume is only anticipated to exceed capacity by a minimal amount, this deficiency will be re-evaluated with the next CTP update. Extending the proposed NC 194 Alternate (AVER0002-H) further north along NC 194 to alleviate future congestion was considered, but deemed unfeasible due to its anticipated high construction costs. Widening the road was also considered, but Newland does not desire to have this portion of NC 194 widened at this time.

Improvements to this roadway were identified in the 1994 Newland Thoroughfare Plan, which recommended a three lane design that included a two way left turn lane for this segment of NC 194. The 2008 Newland Comprehensive Plan also recommended that a turning lane be added on this stretch of NC 194.

Arnett Road (SR 1338)/ Skiview Road (SR 1374), AVER0005-H

Seven Devils straddles the Avery and Watauga County line and has an elevation of 3,944 feet. The only roadway access to Seven Devils is via Seven Devils Road (SR 1151) in Watauga County. In recent years there has been growing concern about wild fires in the area. In the event that Seven Devils Road (SR 1151) in Watauga County is closed due to wild fires or other natural disasters, an alternative access route between Seven Devils and the surrounding road network would be needed for emergency purposes.

Two new location facilities were evaluated during the development of the 2013 Watauga County CTP³⁸ (reference problem statement WATA0012-H). However, neither proved adequately feasible to include in the Watauga County CTP. The first was a connection from western Seven Devils to Arnett Road (SR 1338) in Avery County. This facility has

³⁷ For more information on NCMIN, visit: <u>http://www.ncdot.gov/performance/reform/NCMINmaps/</u>

³⁸ The Watauga CTP can be viewed at: <u>https://connect.ncdot.gov/projects/planning/Pages/CTP-</u> Details.aspx?study_id=Watauga%20County.

already been built but was not allowed to open due to a court injunction. This alternative was rejected for the Watauga County CTP because of legal concerns over the court injunction. The second alternative was to connect eastern Seven Devils to Justus Road (SR 1137) in Watauga County. This alternative would involve Rhobo Lane, a private neighborhood road. This alternative was rejected because Rhobo Lane is not up to secondary road standards, and therefore not eligible for the Secondary Road Program. There was also a concern about the single property that would have to be purchased within Seven Devils to complete the facility. Further study is needed to select a location for the facility. The new facility is recommended to be constructed as a 2 lane minor thoroughfare.

Based on a planning level environmental assessment using available GIS data, the proposed Arnett Road (SR 1338) connection is in the vicinity (300 feet from centerline) of and may potentially impact a stream, wetlands, a hydrography area, landscape habitat indicator guilds, target local watershed areas, macrosite land (Grandfather Mountain/Wilson Creek macrosite), a trout stream, high quality waters (the Watauga River basin), and water pipes.

Buckeye Creek Road (SR 1312), AVER0006-H

Beech Mountain is the highest town in the eastern United States with an elevation of 5,506 feet. The only paved roadway access to Beech Mountain is via NC 184 in Watauga County. In recent years there has been growing concern about wild fires in the area. In the event that NC 184 is closed due to wild fires or other natural disasters, an alternative access route between Beech Mountain and the surrounding network would be needed for emergency purposes.

Buckeye Creek Road (SR 1312) was one of three facilities that were evaluated in the 2013-2030 Beech Mountain Comprehensive Plan³⁹ as potential egress routes in the event of an emergency evacuation. The other two potential egress route connections were from Cherry Gap to Presnell School Road and from Elderberry Ridge to Shawneehaw Road (SR 1127) in Watauga County. The 2013 Watauga County CTP⁴⁰ proposed extending Presnell School Road (SR 1125 in Watauga County) to Cherry Gap as well (reference WATA0011-H). Among the three potential emergency evacuation routes, Buckeye Creek Road (SR 1312) was selected as an alternate egress route since it is an existing road and no new construction would be required. The Buckeye Creek Road (SR 1312) route also has the benefit of being on the opposite side of Beech Mountain, away from the main entrance, which is important in a wild fire scenario where the main entrance to town is closed and drivers need to use a route that is far away from the wild fire.

It is recommended that the gravel portion of Buckeye Creek Road (SR 1312) be paved and that all of Buckeye Creek Road from Pine Ridge Road (just past the Watauga

³⁹ The 2013-2030 Beech Mountain Comprehensive Plan can be accessed at:

<u>http://www.townofbeechmountain.com/images/pln_insp_docs/CompPlan_Adopted.pdf</u>. ⁴⁰ The Watauga CTP can be viewed at: <u>https://connect.ncdot.gov/projects/planning/Pages/CTP-</u>

Details.aspx?study_id=Watauga%20County.

County line) to Buckeye Road (SR 1314) be widened to 12 foot lanes to provide an alternative evacuation route in the event of an emergency. Increasing connectivity to US 321 would be an added benefit as well. Additionally, a potential connection from Elderberry Ridge to Shawneehaw Road (SR 1127) in Watauga County should be studied further as a potential emergency evacuation route for Beech Mountain.

Based on a planning level environmental assessment using available GIS data, the proposed Buckeye Creek Road (SR 1312) project is in the vicinity (300 feet from centerline) of and may potentially impact streams, lands managed for conservation, land and water conservation fund area (Buckeye Creek Recreation Area), landscape habitat indicator guilds, trout streams, water supply watersheds, Watauga River basin – high quality waters, natural heritage element occurrence areas, water pipes, sewer pipes, and proposed and existing regional trails.

MINOR WIDENING IMPROVEMENTS

The following facilities do not have current or future capacity deficiencies, but were identified as candidates for upgrading to NCDOT design standards. Implementation of the proposed projects should be coordinated through NCDOT's Highway Division 11 office (reference Appendix A for contact information).

- **US 19E, AVER0007-H:** From NC 194 (Three Mile Road) to Big Plumtree Creek Road (SR 1114) - Widen to 12 foot lanes with wide paved shoulders to accommodate bicyclists (minimum of 4 foot paved shoulders as identified in the High Country Regional Bicycle Plan⁴¹ or less if not feasible).
- **US 19E, AVER0008-H:** From Squirrel Creek Road (SR 1121) to NC 194 Widen to 12 foot lanes with wide paved shoulders to accommodate bicyclists. Paved shoulders should be a minimum of 4 feet from Squirrel Creek Road (SR 1121) to Cranberry and 4 to 5 feet from Cranberry to NC 194 as identified in the High Country Regional Bicycle Plan or less if not feasible.
- **US 221, AVER0009-H:** From NC 105 to the Caldwell County Widen to 12 foot lanes with wide paved shoulders to accommodate bicyclists (minimum of 2 foot paved shoulders as identified in the High Country Regional Bicycle Plan or less if not feasible).
- NC 184 (Beech Mountain Parkway), AVER0010-H: From NC 184/NC 194 (Main Street) to Elderberry Ridge Widen to 12 foot lanes with passing lanes where feasible. Add wide paved shoulders to accommodate bicyclists (minimum of a 4 foot paved shoulder on at least the northbound lane of the road as identified in the High Country Regional Bicycle Plan or less if not feasible).
- NC 194 (Balm Highway), AVER0011-H: From the eastern Banner Elk town limits to Watauga County Widen to 12 foot lanes with wide paved shoulders to accommodate bicyclists (minimum of 4 foot paved shoulders as identified in the High Country Regional Bicycle Plan or less as feasible). Reference the 1995 feasibility

⁴¹ The 2014 High Country Regional Bike Plan can be viewed at: <u>http://regiond.org/Bike-Plan-2014-final.pdf</u>.

study on R-2710 for additional background information on this segment of roadway (R-2710 project limits are no longer in Avery County).

- NC 194 (Elk Park Highway/Banner Elk Highway), AVER0012-H: From US 19E near Elk Park to NC 184 (Beech Mountain Parkway) Widen to 12 foot lanes with wide paved shoulders to accommodate bicyclists. Paved shoulders should be a minimum of 4 feet on at least the north side of the road from US 19E to the Banner Elk town limits and there should be 4 foot bike lanes from the Banner Elk town limits to NC 184 (Beech Mountain Parkway) as identified in the High Country Regional Bicycle Plan, or less if not feasible.
- Avery County High School Road (SR 1370), AVER0013-H: From NC 194 (Millers Gap Highway) to NC 181 Widen to 12 foot lanes.
- Beech Mountain Road (SR 1308/SR 1310/SR 1316)/Buckeye Road (SR 1312/SR 1314), AVER0014-H: From NC 194 (Banner Elk Highway) to US 321 Widen to 12 foot lanes. Add wide paved shoulders from NC 194 (Banner Elk Highway) to Buckeye Road (SR 1312/SR 1314)/Flat Springs Road (SR 1316) to accommodate bicyclists.
- **Hickory Nut Gap Road (SR 1342), AVER0015-H:** From the Newland town limits to NC 184 (Shawneehaw Avenue) Widen to 12 foot lanes with wide paved shoulders to accommodate bicyclists (minimum of 2 foot paved shoulders as identified in the High Country Regional Bicycle Plan or less if not feasible).
- Lick Log Road (SR 1121)/Big Plumtree Creek Road (SR 1114), AVER0016-H: From US 19E to Squirrel Creek Road (SR 1121/SR 1138) – Widen to 12 foot lanes with wide paved shoulders to accommodate bicyclists (minimum of 2 foot paved shoulders as identified in the High Country Regional Bicycle Plan or less if not feasible).
- Mount Pleasant Road (SR 1143), AVER0017-H: From the western Crossnore town limits to Squirrel Creek Road (SR 1138)/Spanish Oak Road (SR 1117) – Widen to 12 foot lanes.
- **Mullin Hill Road (SR 1106), AVER0018-H:** From US 19E to NC 194 (Three Mile Road) Widen to 12 foot lanes with wide paved shoulders to accommodate bicyclists (minimum of 4 to 6 foot paved shoulders as identified in the High Country Regional Bicycle Plan or less if not feasible).
- Old Toe River Road (SR 1157), AVER0019-H: From US 19E to Old Public Road in Newland pave the unpaved portion of the roadway (from US 19E to 1.2 miles east of US 19E) and widen the entire facility to 12 foot lanes with wide paved shoulders to accommodate bicyclists.
- Spanish Oak Road (SR 1117/SR 1153), AVER0020-H: From Mount Pleasant Road (SR 1143) to NC 194 (Millers Gap Highway) Widen to 12 foot lanes.
- Squirrel Creek Road (SR 1121/SR 1138), AVER0021-H: From US 19E to Mount Pleasant Road (SR 1143) Widen to 12 foot lanes. Add wide paved shoulders from US 19E to Lick Log Road (SR 1121) to accommodate bicyclists (minimum of 2 foot paved shoulders as identified in the High Country Regional Bicycle Plan or less if not feasible).

PUBLIC TRANSPORTATION & RAIL

A public transportation and rail assessment was completed during the development of the CTP. The CTP Steering Committee concluded that the current demand response routes provided by Avery County Transportation⁴² (ACT) are effectively transporting Avery County citizens and that fixed routes are not needed because they would not transport citizens as efficiently. Refer to Chapter 1 for more detailed information.

There are currently no rail lines serving Avery County, and the NCDOT Rail Division confirmed that there are no rail lines planned to be built in Avery County in the foreseeable future. The CTP Steering Committee discussed ideas on how to take advantage of the existing rail line that runs through Spruce Pine, a few miles southwest of the county line, but no course of action was planned.

BICYCLE

The 2014 High Country Regional Bike Plan⁴³ and the 2010 Crossnore Bicycle and Pedestrian Plan⁴⁴ were utilized in the development of the bicycle element of the CTP. Bicycle facility improvements recommended on the bicycle map of Figure 1 of the CTP were either identified in one of the two plans cited above or identified by the CTP Steering Committee. Descriptions of the recommended facilities identified in the 2014 High Country Regional Bike Plan and the 2010 Crossnore Bicycle and Pedestrian Plan are not listed in the CTP, but can be referenced in each of their respective plans. In accordance with American Association of State Highway and Transportation Officials (AASHTO), roadways identified as bicycle routes should incorporate the following standards as roadway improvements are made and funding is available:

- Curb & gutter sections require at minimum 5 foot bike lanes or 14 foot wide shoulder lanes.
- Shoulder sections require a minimum of 4 foot paved shoulder.
- All bridges along the roadways where bike facilities are recommended shall be equipped with 54 inch railings.

Bicyclists on roadways are a frequent site on Avery County roads due to bicycling's popularity as a ten time national championship sport at Lees-McRae College, a minor to choose in the college's academic curriculum, nearby annual bicycle races, and as a tourist activity. There has been great emphasis by local citizens to improve the many narrow roadways in the county so that both bicyclists and auto vehicle drivers will have more room to share the road and avoid crashes and to provide more recreational biking opportunities for tourists. No bicycle crash safety study was completed as a part of this CTP but anecdotal evidence suggests that crashes between cars and bicycles are common.

⁴² For more information about Avery County Transportation, reference: <u>http://www.averycountync.gov/departments/transportation_department.php</u>.

⁴³ The 2014 High Country Regional Bike Plan can be viewed at: <u>http://regiond.org/Bike-Plan-2014-final.pdf</u>.

⁴⁴ Contact the High Country RPO for more information on this study (reference Appendix A for contact information).

New On Road Facilities:

- NC 184, AVER0001-H: From Banner Creek Road (SR 1341) to NC 194 (Banner Elk Highway)
- NC 194 Alternate, AVER0002-H: From NC 194 at Old Cranberry Street to NC 194 at Old Public Road

Improvement to Existing Facilities:

- **US 19E, AVER0001-B:** From Winters Street (approximate ending point of 4 foot bike lane proposed in the High Country Regional Bike Plan) to Tennessee improve existing facilities to match new designation as the "Tennessee Connector" state bicycle route, designated in NCDOT's 2013 WalkBikeNC⁴⁵ plan.
- US 19E, AVER0002-B: From Big Plumtree Creek Road (SR 1114) to Squirrel Creek Road (SR 1121). Improvements are needed to match this portion of the road's new designation as State Bicycle Route 11 (the "Mountain Route"), designated in NCDOT's 2013 WalkBikeNC plan. State Bicycle Route 11 travels along US 19E/NC 194 from Mitchell County to Watauga County.
- **US 221 (Linville Falls Highway), R-2596:** From Burke County to the Blue Ridge Parkway. The full highway TIP project boundaries in Avery County are from Burke County to NC 194 (Three Mile Rd),but the portion of US 221 (Linville Falls Highway) from the Blue Ridge Parkway to NC 194 (Three Mile Road) is already addressed by the High Country Regional Bike Plan. Improvement to existing facilities is also needed to match the re-routed designation of State Bicycle Route 2 (the "Mountains to Sea" route), a re-routed designation in NCDOT's 2013 WalkBikeNC plan.
- US 321, R-5016: From Watauga County to Tennessee
- NC 181 (Jonas Ridge Highway), AVER0003-B: From Burke County to US 221 (Linville Falls Highway)
- NC 194 (Three Mile Road), R-2520: From US 19E to Mullin Hill Road (SR 1106). The full highway TIP project boundaries in Avery County are from Mitchell County to US 221 (Linville Falls Hwy), but the US 19E portion from Mitchell County to NC 194 (Three Mile Road) and NC 194 (Three Mile Road) portion from Mullin Hill Road (SR 1106) to US 221 (Linville Falls Highway) are both already addressed by High Country Regional Bike Plan. Improvement to existing facilities is also needed to match the re-routed designation of State Bicycle Route 2 (the "Mountains to Sea" route), a re-routed designation in NCDOT's 2013 WalkBikeNC plan.
- Beech Mountain Road (SR 1308/SR 1310/SR 1316)/Flat Springs Road (SR 1316), AVER0004-B: From NC 194 (Banner Elk Highway) to US 321. The portion of the project from NC 194 (Banner Elk Highway) to Flat Springs Road (SR 1316)/Buckeye Road (SR 1312/SR 1314) overlaps with AVER 0014-H.
- Geter Oaks Street (SR 1378)/Davis Street (SR 1303)/Old Mill Road (SR 1303)/Elk River Road (SR 1305), AVER0005-B: From US 19E to Elk River Falls

⁴⁵ To view the NCDOT WalkBikeNC plan, visit: <u>http://www.ncdot.gov/bikeped/planning/walkbikenc/</u>.
- Old Toe River Road (SR 1157), AVER0019-H: From US 19E to Old Public Road in Newland
- Pineola Baptist Church Road (SR 1505)/ Goose Hollow Road (SR 1501)/ Richard Childress Road (SR 1501)/ Old NC 181 (SR 1544), AVER0006-B: From US 221 (Linville Falls Highway) to NC 181

PEDESTRIAN

The 2009 Banner Elk Pedestrian Plan⁴⁶, 2010 Beech Mountain Streetscape Plan⁴⁷, and the 2010 Crossnore Bicycle and Pedestrian Plan⁴⁸ were utilized to identify deficient pedestrian facilities. These pedestrian facilities are shown on the pedestrian map of Figure 1 as sidewalks and off-road facilities. In addition to what was identified in the above pedestrian plans, the following pedestrian facilities were recommended to improve connectivity and mobility for pedestrians in Avery County (note that description only provided if identified in development of CTP and not already recommended by pre-existing plan):

New Sidewalk Facilities:

- NC 181 (Linville Street), AVER0001-P: From Shady Street to Beech Street this sidewalk would connect the commercial areas west of Shady Street to Newland Elementary School
- NC 184 (Tynecastle Highway), R-2811: From NC 105 to Banner Creek Road (SR 1341)
- Beech Street, AVER0002-P: From NC 181 (Linville Street) to town park off Beech Street this sidewalk would provide a connection from AVER0001-P and the Newland Elementary School to the park and ultimately the Newland Riverwalk
- Chambers Street, AVER0003-P: From Winters Street to Maple Street (SR 1170)
- Johnson Lane, AVER0004-P: From Crossnore Drive to off road path proposed in "Project 1" of Crossnore Bicycle and Pedestrian Plan (Project 1 in the Crossnore plan connects the Sales Store and Weaving Room).
- Maple Street (SR 1170), AVER0005-P: From Parlier Street to Chambers Street
- Winters Street, AVER0006-P: From Parlier Street to Chambers Street

Improvement to Existing Facilities:

- NC 181 (Linville Street), AVER0007-P: From Asa Street to Shady Street (Newland Elementary School off of Shady Street)
- Maple Street (SR 1170), AVER0008-P: From US 19E to Parlier Street

⁴⁶ Contact the NCDOT Bicycle and Pedestrian Division to get a copy of this study (reference Appendix A for contact information).

⁴⁷ Contact the High Country RPO to get a copy of this plan (reference Appendix A for contact information).

⁴⁸ Contact the High Country RPO to get a copy of this plan (reference Appendix A for contact information).

- Montezuma Street (SR 1342), AVER0009-P:From NC 194 to Avery County Courthouse, which is near the intersection of Montezuma Street (SR 1342) and Elk Street (SR 1342)
- Winters Street, AVER0010-P: From US 19E to Parlier Street (Elk Park Town Hall off of Winters Street)

New Off Road Facilities:

- NC 184 (Beech Mountain Parkway), AVER0011-P: On the west side of NC 184 (Beech Mountain Parkway), from the existing pedestrian facilities just south of Christie Way to Watauga County and ultimately connecting to the Beech Mountain Ski Resort and the ending point of the off road trail proposed in the Watauga County CTP⁴⁹ and identified as Phase III in the Beech Mountain Streetscape Plan. This proposed route is in addition to the proposed off road facility on the east side of NC 184 (Beech Mountain Parkway), which is identified in the 2010 Beech Mountain Streetscape Plan as Phase II of the plan. The Beech Mountain town planner identified this proposed route as "Phase III Alternative" and "Phase II Town Property," which have not yet been added to the Beech Mountain Streetscape Plan.
- Hemlock Lane, AVER0012-P: From the proposed Dellinger Road pedestrian route in the 2010 Crossnore Bicycle and Pedestrian Plan (Project 8) to the proposed Well Site Trail (Project 10) and Pool Site Connection (Project 6) pedestrian routes.
- **Middle Street, AVER0013-P:** From the proposed Well Site Trail in the 2010 Crossnore Bicycle and Pedestrian Plan (Project 10) to Maple Street (SR 1143), parallel to Middle Street.
- Walt Clark Road (SR 1149), AVER0014-P: From Crossnore Town Park to Crossnore Drive (SR 1143). This proposal slightly adjusts recommendation number four in the 2010 Crossnore Bicycle and Pedestrian Plan, which proposes a trail from the Crossnore Town Park to the parking lot of the Crossnore Fellowship Presbyterian Church. Instead of building a path that ends at a church's parking lot, the CTP proposes building the trail from Crossnore Town Park to Crossnore Drive (SR 1143) while avoiding impacts to the church. Adding the small amount of additional distance from the church to Crossnore Drive (SR 1143) would provide a complete connection from Downtown Crossnore (via the proposed pedestrian facilities along Crossnore Drive) to Crossnore Elementary School.

⁴⁹ The Watauga CTP can be viewed at: <u>https://connect.ncdot.gov/projects/planning/Pages/CTP-</u> <u>Details.aspx?study_id=Watauga%20County</u>.

С) Ш U Z Ш

This page intentionally left blank.

Appendix A Resources and Contacts

Local Planning Organization

High Country Rural Planning Organization(www.regiond.org/TRANSPORT.html)Contact the RPO for information on long-range multi-modal planning services.468 New Market BlvdBoone, NC 28607(828) 265-5434

North Carolina Department of Transportation

Customer Service Office

Contact information for other units within the NCDOT that are not listed in this appendix is available by calling the Customer Service Office or by visiting the NCDOT directory:

1-877-DOT-4YOU (1-877-368-4968)

http://www.ncdot.gov/contact/

Secretary of Transportation	(http://www.ncdot.org/about/le	adership/secretary.html)
1501 Mail Service Center	Raleigh, NC 27699-1501	(919) 707-2800
Board of Transportation	(http://www.	and a and a baut/baard/
Duaru ur manspunatium	(<i>TIUP.// VV VV</i> V	.ncuol.gov/about/board/)

Highway Division 11
801 Statesville Rd(https://apps.dot.state.nc.us/dot/directory/authenticated/ToC.aspx)North Wilkesboro, NC 28659(336) 903-9101

Contact the Highway Division with questions concerning NCDOT activities within each Division and for information on Small Urban Funds.

<u>Transportation Planning</u> <u>Branch (TPB)</u>	Information on long-range multi-modal planning services. 1554 Mail Service Center Raleigh, NC 27699 (919) 707-0900
Strategic Planning Office	Information concerning prioritization of transportation projects. 1501 Mail Service Center Raleigh, NC 27699 (919) 707-4740
Project Development & Environmental Analysis (PDEA)	Information on environmental studies for projects that are included in the TIP. 1548 Mail Service Center Raleigh, NC 27699 (919) 707-6000
<u>State Asset Management</u> <u>Unit</u>	Information regarding the status for unpaved roads to be paved, additions and deletions of roads to the State maintained system and the Industrial Access Funds program. 1535 Mail Service Center Raleigh, NC 27699 (919) 707-2500

Contact the following NCDOT divisions and units¹ for:

¹ Unit websites are hyperlinked and can also be accessed at <u>https://connect.ncdot.gov/Pages/default.aspx</u>.

Program Development	Information concerning Roadway Official Corridor Maps, Feasibility Studies and the Transportation Improvement Program (TIP).
<u>Branch</u>	1542 Mail Service Center Raleigh, NC 27699 (919) 707-4610
Public Transportation	Information on public transit systems.
Division	1550 Mail Service Center Raleigh, NC 27699 (919) 707-4670
	Rail information throughout the state.
<u>Rail Division</u>	1553 Mail Service Center Raleigh, NC 27699 (919) 707-4700
Division of Bicycle and	Bicycle and pedestrian transportation information throughout the state.
<u>Pedestrian</u> <u>Transportation</u>	1552 Mail Service Center Raleigh, NC 27699 (919) 707-2600
Structures Management	Information on bridge management throughout the state.
<u>Unit</u>	1581 Mail Service Center Raleigh, NC 27699 (919) 707-6400
Roadway Desian Unit	Information regarding design plans and proposals for road and bridge projects throughout the state.
<u> </u>	1582 Mail Service Center Raleigh, NC 27699 (919) 707-6200
Transportation Mobility	Information regarding crash data throughout the state.
and Safety Division	1561 Mail Service Center Raleigh, NC 27699 (919) 773-2800
	Information on feasibility studies completed throughout the state.
Feasibility Studies Unit	1534 Mail Service Center Raleigh, NC 27699 (919) 707-4620

Other State Government Offices

Department of Commerce – Division of Community Assistance

Contact the Department of Commerce for resources and services to help realize economic prosperity, plan for new growth and address community needs.

http://www.nccommerce.com/cd

² The Feasibility Studies Unit does not have a unit website but contact information can be found at: <u>https://apps.dot.state.nc.us/dot/directory/authenticated/UnitPage.aspx?id=4921</u>

Appendix B Comprehensive Transportation Plan Definitions

This appendix contains descriptive information and definitions for the designations depicted on the CTP maps shown in Figure 1.

Highway Map

The "<u>NCDOT Facility Type – Control of Access Definitions</u>" document provides a visual depiction of facility types for the following CTP classification.

Facility Type Definitions

Freeways

- Functional purpose high mobility, high volume, high speed
- Posted speed 55 mph or greater
- Cross section minimum four lanes with continuous median
- Multi-modal elements High Occupancy Vehicles (HOV)/High Occupancy Transit (HOT) lanes, busways, truck lanes, park-and-ride facilities at/near interchanges, adjacent shared use paths (separate from roadway and outside ROW)
- Type of access control full control of access
- Access management interchange spacing (urban one mile; non-urban three miles); at interchanges on the intersecting roadway, full control of access for 1,000ft or for 350ft plus 650ft island or median; use of frontage roads, rear service roads
- Intersecting facilities interchange or grade separation (no signals or at-grade intersections)
- Driveways not allowed

✤ Expressways

- Functional purpose high mobility, high volume, medium-high speed
- Posted speed 45 to 60 mph
- Cross section minimum four lanes with median
- Multi-modal elements HOV lanes, busways, very wide paved shoulders (rural), shared use paths (separate from roadway but within ROW)
- Type of access control limited or partial control of access;
- Access management minimum interchange/intersection spacing 2,000ft; median breaks only at intersections with minor roadways or to permit U-turns; use of frontage roads, rear service roads; driveways limited in location and number; use of acceleration/deceleration or right turning lanes
- Intersecting facilities interchange; at-grade intersection for minor roadways; right-in/right-out and/or left-over or grade separation (no signalization for through traffic)
- Driveways right-in/right-out only; direct driveway access via service roads or other alternate connections

✤ Boulevards

- Functional purpose moderate mobility; moderate access, moderate volume, medium speed
- Posted speed 30 to 55 mph
- Cross section two or more lanes with median (median breaks allowed for Uturns per current NCDOT *Driveway Manual*
- Multi-modal elements bus stops, bike lanes (urban) or wide paved shoulders (rural), sidewalks (urban - local government option)
- Type of access control limited control of access, partial control of access, or no control of access
- Access management two lane facilities may have medians with crossovers, medians with turning pockets or turning lanes; use of acceleration/deceleration or right turning lanes is optional; for abutting properties, use of shared driveways, internal out parcel access and cross-connectivity between adjacent properties is strongly encouraged
- Intersecting facilities at grade intersections and driveways; interchanges at special locations with high volumes
- Driveways primarily right-in/right-out, some right-in/right-out in combination with median leftovers; major driveways may be full movement when access is not possible using an alternate roadway

Other Major Thoroughfares

- Functional purpose balanced mobility and access, moderate volume, low to medium speed
- Posted speed 25 to 55 mph
- Cross section four or more lanes without median (US and NC routes may have less than four lanes)
- Multi-modal elements bus stops, bike lanes/wide outer lane (urban) or wide paved shoulder (rural), sidewalks (urban)
- Type of access control no control of access
- Access management continuous left turn lanes; for abutting properties, use of shared driveways, internal out parcel access and cross-connectivity between adjacent properties is strongly encouraged
- Intersecting facilities intersections and driveways
- Driveways full movement on two lane roadway with center turn lane as permitted by the current NCDOT *Driveway Manual*

Minor Thoroughfares

- Functional purpose balanced mobility and access, moderate volume, low to medium speed
- Posted speed 25 to 55 mph
- Cross section ultimately three lanes (no more than one lane per direction) or less without median
- Multi-modal elements bus stops, bike lanes/wide outer lane (urban) or wide paved shoulder (rural), sidewalks (urban)
- ROW no control of access

- Access management continuous left turn lanes; for abutting properties, use of shared driveways, internal out parcel access and cross-connectivity between adjacent properties is strongly encouraged
- Intersecting facilities intersections and driveways
- Driveways full movement on two lane with center turn lane as permitted by the current NCDOT *Driveway Manual*

Other Highway Map Definitions

- Existing Roadway facilities that are not recommended to be improved.
- Needs Improvement Roadway facilities that need to be improved for capacity, safety, operations, or system continuity. The improvement to the facility may be widening, increasing the level of access control along the facility, operational strategies (including but not limited to traffic control and enforcement, incident and emergency management, and deployment of Intelligent Transportation Systems (ITS) technologies), or a combination of improvements and strategies. "Needs improvement" does not refer to the maintenance needs of existing facilities or the replacement or rehab of structures.
- **Recommended** Roadway facilities on new location that are needed in the future.
- Interchange Through movement on intersecting roads is separated by a structure. Turning movement area accommodated by on/off ramps and loops.
- Grade Separation Through movement on intersecting roads is separated by a structure. There is no direct access between the facilities.
- Full Control of Access Connections to a facility provided only via ramps at interchanges. No private driveway connections allowed.
- Limited Control of Access Connections to a facility provided only via ramps at interchanges (major crossings) and at-grade intersections (minor crossings and service roads). No private driveway connections allowed.
- Partial Control of Access Connections to a facility provided via ramps at interchanges, at-grade intersections, and private driveways. Private driveway connections shall be defined as a maximum of one connection per parcel. One connection is defined as one ingress and one egress point. These may be combined to form a two-way driveway (most common) or separated to allow for better traffic flow through the parcel. The use of shared or consolidated connections is highly encouraged.
- ✤ No Control of Access Connections to a facility provided via ramps at interchanges, at-grade intersections, and private driveways.

Public Transportation and Rail Map

- Bus Routes The primary fixed route bus system for the area. Does not include demand response systems.
- Fixed Guideway Any transit service that uses exclusive or controlled rights-of-way or rails, entirely or in part. The term includes heavy rail, commuter rail, light rail,

monorail, trolleybus, aerial tramway, included plane, cable car, automated guideway transit, and ferryboats.

- Operational Strategies Plans geared toward the non-single occupant vehicle. This includes but is not limited to HOV lanes or express bus service.
- Rail Corridor Locations of railroad tracks that are either active or inactive tracks. These tracks were used for either freight or passenger service.
 - Active rail service is currently provided in the corridor; may include freight and/or passenger service
 - Inactive right of way exists; however, there is no service currently provided; tracks may or may not exist
 - Recommended It is desirable for future rail to be considered to serve an area.
- High Speed Rail Corridor Corridor designated by the U.S. Department of Transportation as a potential high speed rail corridor.
 - Existing Corridor where higher-speed rail service (over 79 mph) is provided or a corridor that is officially designated by FRA to run higher speed trains in the future. There is currently one federally designated high-speed rail corridor in North Carolina - The Southeast High Speed Rail Corridor.
 - Recommended Proposed corridor for higher speed rail service.
- **Rail Stop** A railroad station or stop along the railroad tracks.
- Multimodal Connector A location where more than one mode of transportation meet such as where light rail and a bus route come together in one location. (NOTE- intermodal refers to two or more modes that transfer the same cargo unitlike 40' shipping container from ship to train or truck); multimodal is the transfer of people/cargo between two or more modes and in NC is used in public transit settings i.e. Charlotte Multimodal Station)
- Park and Ride Lot A strategically located parking lot that provides commuters connections to transit or carpools.
- Existing Grade Separation Locations where existing rail facilities are physically separated from existing highways or other transportation facilities. These may be bridges, culverts, or other structures.
- Proposed Grade Separation Locations where rail facilities are recommended to be physically separated from existing or recommended highways or other transportation facilities. These may be bridges, culverts, or other structures.

Bicycle Map

- On Road-Existing Conditions for bicycling on the highway facility are adequate to safely accommodate cyclists.
- On Road-Needs Improvement At the systems level, it is desirable for an existing highway facility to accommodate bicycle transportation; however, highway improvements are necessary to create safe travel conditions for the cyclists.

- On Road-Recommended At the systems level, it is desirable for a recommended highway facility to accommodate bicycle transportation. The highway should be designed and built to safely accommodate cyclists.
- Off Road-Existing A facility that accommodates only bicycle transportation and is physically separated from a highway facility either within the right-of-way or within an independent right-of-way.
- Off Road-Needs Improvement A facility that accommodates only bicycle transportation and is physically separated from a highway facility either within the right-of-way or within an independent right-of-way that will not adequately serve future bicycle needs. Improvements may include but are not limited to, widening, paving (not re-paving or other maintenance activities), and improved horizontal or vertical alignment.
- Off Road-Recommended A facility needed to accommodate only bicycle transportation and is physically separated from a highway facility either within the right-of-way or within an independent right-of-way.
- Multi-use Path-Existing An existing facility physically separated from motor vehicle traffic that is either within the highway right-of-way or on an independent right-of-way that serves bicycle and pedestrian traffic. Sidewalks should not be designated as a multi-use path.
- Multi-use Path-Needs Improvement An existing facility physically separated from motor vehicle traffic that is either within the highway right-of-way or on an independent right-of-way that serves bicycle and pedestrian traffic that will not adequately serve future needs. Improvements may include but are not limited to, widening, paving (not re-paving or other maintenance activities), and improved horizontal or vertical alignment. Sidewalks should not be designated as a multi-use path.
- Multi-use Path-Recommended A facility physically separated from motor vehicle traffic that is either within the highway right-of-way or on an independent right-of-way that is needed to serve bicycle and pedestrian traffic. Sidewalks should not be designated as a multi-use path.
- Existing Grade Separation Locations where existing "Off Road" facilities and "Multi-use Paths" are physically separated from existing highways, railroads, or other transportation facilities. These may be bridges, culverts, or other structures.
- Proposed Grade Separation Locations where "Off Road" facilities and "Multi-use Paths" are recommended to be physically separated from existing or recommended highways, railroads, or other transportation facilities. These may be bridges, culverts, or other structures.

Pedestrian Map

- Sidewalk-Existing Paved paths (including but not limited to concrete, asphalt, brick, stone, or wood) on both sides of a highway facility and within the highway right-of-way that are adequate to safely accommodate pedestrian traffic.
- Sidewalk-Needs Improvement Improvements are needed to provide paved paths on both sides of a highway facility. The highway facility may or may not need improvements. Improvements do not include re-paving or other maintenance activities but may include: filling in gaps, widening sidewalks, or meeting ADA (Americans with Disabilities Act) requirements.
- Sidewalk-Recommended At the systems level, it is desirable for a recommended highway facility to accommodate pedestrian transportation or to add sidewalks on an existing facility where no sidewalks currently exist. The highway should be designed and built to safely accommodate pedestrian traffic.
- Off Road-Existing A facility that accommodates only pedestrian traffic and is physically separated from a highway facility usually within an independent right-ofway.
- Off Road-Needs Improvement A facility that accommodates only pedestrian traffic and is physically separated from a highway facility usually within an independent right-of-way that will not adequately serve future pedestrian needs. Improvements may include but are not limited to, widening, paving (not re-paving or other maintenance activities), improved horizontal or vertical alignment, and meeting ADA requirements.
- Off Road-Recommended A facility needed to accommodate only pedestrian traffic and is physically separated from a highway facility usually within an independent right-of-way.
- Multi-use Path-Existing An existing facility physically separated from motor vehicle traffic that is either within the highway right-of-way or on an independent right-of-way that serves bicycle and pedestrian traffic. Sidewalks should not be designated as a multi-use path.
- Multi-use Path-Needs Improvement An existing facility physically separated from motor vehicle traffic that is either within the highway right-of-way or on an independent right-of-way that serves bicycle and pedestrian traffic that will not adequately serve future needs. Improvements may include but are not limited to, widening, paving (not re-paving or other maintenance activities), and improved horizontal or vertical alignment. Sidewalks should not be designated as a multi-use path.
- Multi-use Path-Recommended A facility physically separated from motor vehicle traffic that is either within the highway right-of-way or on an independent right-of-way that is needed to serve bicycle and pedestrian traffic. Sidewalks should not be designated as a multi-use path.

- Existing Grade Separation Locations where existing "Off Road" facilities and "Multi-use Paths" are physically separated from existing highways, railroads, or other transportation facilities. These may be bridges, culverts, or other structures.
- Proposed Grade Separation Locations where "Off Road" facilities and "Multi-use Paths" are recommended to be physically separated from existing or recommended highways, railroads, or other transportation facilities. These may be bridges, culverts, or other structures.

This page intentionally left blank.

Appendix C CTP Inventory and Recommendations

Assumptions/ Notes:

- Local ID: This Local ID is the same as the one used for the Prioritization Project Submittal Tool. If a TIP project number exists it is listed as the ID. Otherwise, the following system is used to create a code for each recommended improvement: the first 4 letters of the county name is combined with a 4 digit unique numerical code followed by '-H' for highway, '-T' for public transportation, '-R' for rail, '-B' for bicycle, '-M' for multi-use paths, or '-P' for pedestrian modes. If a different code is used along a route it indicates separate projects will probably be requested. Also, upper case alphabetic characters (i.e. 'A', 'B', or 'C') are included after the numeric portion of the code if it is anticipated that project segmentation or phasing will be recommended.
- Jurisdiction: Jurisdictions listed are based on municipal limits, county boundaries, and MPO Metropolitan Planning Area Boundaries (MAB), as applicable.
- Existing Cross-Section: Listed under 'Total Width (ft)' is the approximate width of the roadway from edge of pavement to edge of pavement and under 'Lane Width (ft)' is the approximate width of a single lane based on centerline/ edge line markings. Listed under 'Lanes' is the total number of lanes, with 'D' if the facility is divided, and 'OW' if it is a one-way facility.
- Existing ROW: The estimated existing right-of-way is based on NCDOT's Roadway Characteristics database. These right-of-way amounts are approximate and may vary.
- Existing and Proposed Capacity: The estimated capacities are given in vehicles per day (vpd) based on LOS D for existing facilities and LOS C for new facilities. These capacity estimates were developed based on the 2000 Highway Capacity Manual using the Transportation Planning Branch's LOS D Standards for Systems Level Planning, as documented in Chapter 1.
- Existing and Proposed Volumes, given in vehicles per day (vpd), are estimates only based on a systems-level analysis. The '2040 Volume E+C' is an estimate of the volume in 2040 with only existing plus committed projects assumed to be in place, where committed is defined as projects programmed for construction in the 2012 2018 Transportation Improvement Program (TIP). The '2040 Volume with CTP' is an estimate of the volume in 2040 with all proposed CTP improvements assumed to be in place. The '2040 Volume with CTP' is shown in bold if it exceeds the proposed capacity, indicating an unmet need. For additional information about the assumptions and techniques used to develop the AADT volume estimates, refer to Chapter 1.
- Proposed Cross-section: The CTP recommended cross-sections are listed by code; for depiction of the cross-section, refer to Appendix D. An entry of 'ADQ' indicates the existing facility is adequate and there are no improvements recommended for the given mode as part of the CTP.

- CTP Classification: The CTP classification is listed, as shown on the adopted CTP Maps (see Figure 1). Abbreviations are F= freeway, E= expressway, B= boulevard, Maj= other major thoroughfare, Min= minor thoroughfare.
- Tier: Tiers are defined as part of the North Carolina Multimodal Investment Network (NCMIN). Abbreviations are Sta= statewide tier, Reg= regional tier, Sub= subregional tier.
- Proposals for Other Modes: If there is an improvement recommended for another mode of transportation that relates to the given recommendation, it is indicated by an alphabetic code (H= highway, T= public transportation, R= rail, B= bicycle, P= pedestrian, and M= multi-use path).

Table 5 - CTP INVENTORY AND RECOMMENDATIONS

							HIG	HW	AY											
		Sec	tion					20 ⁻	12 Exis	ting Sy	stem			2040 Pr	oposed Sy	stem				
Local ID	Facility	From	То	Jurisdiction	Dist. (mi)	Total Width (ft)	# Lanes	Lane Width (ft)	ROW (ft)	Speed Limit (mph)	Existing Capacity (vpd	2012 Volume	2040 Volume E+C	2040 Volume with CTP	Proposed Capacity (vpd)	Cross- Section	ROW (ft)	CTP Classifi- cation	Tier	Proposals for Other Modes
R-2520	US 19 E	Mitchell County	Frontier Pines Ln/Mayland Dr (SR 1196)	Avery County	<0.1	32	2	12	160	55	12100	6,000	7,300	7,300	44,500	4A	180	В	Sta	В
R-2520	US 19E	Frontier Pines Ln/Mayland Dr (SR 1196)	Bent Rd (SR 1103)	Avery County	1.3	32	2	12	60- 160	55	12100	6,000	7300	7300	44,500	4A	180	В	Sta	В
R-2520	US 19E	Bent Rd (SR 1103)	Mullin Hill Rd (SR 1106)	Avery County	0.8	48	4	11	60- 110	45	29300	4,600	5600	5600	44500	4A	180	В	Sta	В
R-2520	US 19E	Mullin Hill Rd (SR 1106)	A location 0.3 miles north of Mullin Hill Rd (SR 1106)	Avery County	0.3	48	4	11	60-70	45	29300	1,900	2300	2300	44500	4A	180	В	Sta	В
R-2520	US 19E	A location 0.3 miles north of Mullin Hill Rd (SR 1106)	NC 194 (Three Mile Road)	Avery County	1	24	2	12	60- 150	55	10200	1,900	2300	2300	44500	4A	180	В	Sta	В
AVER0007-H	US 19E	NC 194 (Three Mile Road)	A location 2.6 miles north of NC 194 (Three Mile Road)	Avery County	2.6	24	2	12	60- 100	55	10200	1,800	2200	2200	12100	2A	60	Maj	Reg	В
AVER0007-H	US 19E	A location 2.6 miles north of NC 194 (Three Mile Road)	A location 0.4 miles south of Big Plumtree Creek Rd (SR 1114)	Avery County	2.2	20	2	10	50- 110	55	8800	1,700	2100	2100	12100	2A	60	Maj	Reg	В
AVER0007-H	US 19E	A location 0.4 miles south of Big Plumtree Creek Rd (SR 1114)	Big Plumtree Creek Rd (SR 1114)	Avery County	0.4	20	2	10	50- 110	35	8800	1,700	2100	2100	11600	2A	60	Maj	Reg	В
	US 19E	Big Plumtree Creek Rd (SR 1114)	Squirrel Creek Rd (SR 1121)	Avery County	4.5	20	2	10	60	55	8800	800	1000	1000	8800	ADQ	60	Мај	Reg	В

							HIG	HW	٩Y											
		Sec	tion					20 ⁻	12 Exis	ting Sy	stem			2040 Pr	oposed Sy	vstem				
Local ID	Facility	From	То	Jurisdiction	Dist. (mi)	Total Width (ft)	# Lanes	Lane Width (ft)	ROW (ft)	Speed Limit (mph)	Existing Capacity (vpd	2012 Volume	2040 Volume E+C	2040 Volume with CTP	Proposed Capacity (vpd)	Cross- Section	ROW (ft)	CTP Classifi- cation	Tier	Proposals for Other Modes
AVER0008-H	US 19E	Squirrel Creek Rd (SR 1121)	A location 0.3 miles south of Old Toe River Rd (SR 1157)	Avery County	2.5	20	2	10	60	55	8800	1,200	1500	1500	12100	2A	60	Maj	Reg	В
AVER0008-H	US 19E	A location 0.3 miles south of Old Toe River Rd (SR 1157)	Old Toe River Rd (SR 1157)	Avery County	0.3	24	2	12	60	25	8800	1,200	1500	1500	11000	2A	60	Maj	Reg	В
AVER0008-H	US 19E	Old Toe River Rd (SR 1157)	Tucker Hollow Rd (SR 1168)	Avery County	2.5	24	2	12	60	55	10200	1,500	1800	1800	12100	2A	60	Мај	Reg	В
AVER0008-H	US 19E	Tucker Hollow Rd (SR 1168)	NC 194 (Elk Park Hwy)	Avery County	1.3	24	2	12	40-80	35	11600	2,900	3800	3800	11600	2A	60	Мај	Reg	В
	US 19E/NC 194 ¹	NC 194 (Elk Park Hwy)	NC 194 (Banner Elk Hwy/Elk Park Hwy)	Avery County	0.4	20	2	10	60	45	12100	6,100	7400	7400	12100	ADQ	60	Мај	Reg	В
	US 19E ¹	NC 194 (Banner Elk Hwy/Elk Park Hwy)	Elk Park Town Limits (Eastern Limits)	Avery County	0.2	20	2	10	60	45	12100	6,900	8400	8400	12100	ADQ	60	Maj	Reg	В
	US 19E	Elk Park Town Limits (Eastern Limits)	Elk Park Town Limits (Western Limits)	Elk Park	1	28	2	12	100	35	10800	6,700	8100	8100	10800	ADQ	100	Maj	Reg	В
	US 19E	Elk Park Town Limits (Western Limits)	Tennessee State Line	Avery County	0.9	32	2	12	60- 100	55	12100	5,100	6200	6200	12100	ADQ	60- 100	Maj	Reg	В
R-2596	US 221 (Linville Falls Hwy)	Burke County	Blue Ridge Parkway	Avery County	0.5	23	2	11	60	35	11200	2,500	3,000	3,000	37,400	4A	180	В	Sta	В
R-2596	US 221 (Linville Falls Hwy)	Blue Ridge Parkway	NC 194 (Three Mile Road)	Avery County	1.3	23	2	11	60	55	12100	2,800	3,700	3,700	44,500	4A	180	В	Sta	В
R-2595	US 221/NC 194 (Linville Falls Hwy)	NC 194 (Three Mile Road)	A location 0.6 miles south of Stamey Branch Rd (SR 1114)	Avery County	1	23	2	11	60	55	12100	4,800	6,300	6,300	44,500	4A	180	В	Sta	В
R-2595	US 221/NC 194 (Linville Falls Hwy) ¹	A location 0.6 miles south of Stamey Branch Rd (SR 1114)	Stamey Branch Rd (SR 1114)	Avery County	0.6	22	2	11	60	45	12100	4,800	6,300	6,300	42,900	4A	180	В	Sta	В

							HIG	HW	AY											
		Sec	tion					201	12 Exis	ting Sy	stem			2040 Pr	oposed Sy	stem				1
Local ID	Facility	From	То	Jurisdiction	Dist. (mi)	Total Width (ft)	# Lanes	Lane Width (ft)	ROW (ft)	Speed Limit (mph)	Existing Capacity (vpd	2012 Volume	2040 Volume E+C	2040 Volume with CTP	Proposed Capacity (vpd)	Cross- Section	ROW (ft)	CTP Classifi- cation	Tier	Proposals for Other Modes
R-2595	US 221/NC 194 (Linville Falls Hwy) ¹	Stamey Branch Rd (SR 1114)	Crossnore Town Limits	Avery County	1.7	22	2	11	60	45	12100	5,000	6,600	6,600	42,900	4A	180	В	Sta	В
R-2595	US 221/NC 194 (Linville Falls Hwy)	Crossnore Town Limits (Western Limits)	Crossnore Town Limits (Eastern Limits)	Crossnore	0.5	22	2	11	60	35	11200	5,200	6,900	6,900	37,400	4A	180	В	Sta	В
R-2595	US 221/NC 194 (Linville Falls Hwy)	Crossnore Town Limits (Eastern Limits)	Crossnore Drive (SR 1143)	Avery County	0.2	22	2	11	60	35	11200	5,200	6,900	6,900	37,400	4A	180	В	Sta	В
R-2595	US 221/NC 194 (Linville Falls Hwy)	Crossnore Drive (SR 1143)	Tennant Rd (SR 1524)	Avery County	0.1	22	2	11	60	35	11200	7,400	9,800	9,800	37,400	4A	180	В	Sta	В
R-2595	US 221/NC 194 (Linville Falls Hwy) ¹	Tennant Rd (SR 1524)	NC 194 (Millers Gap Hwy)	Avery County	0.9	22	2	11	60	45	12100	7,400	9,800	9,800	42,900	4A	180	В	Sta	В
R-2595	US 221 (Linville Falls Hwy) ¹	NC 194 (Millers Gap Hwy)	NC 181 (Jonas Ridge Hwy)	Avery County	1.5	22	2	11	100	45	12100	5,300	7,000	7,000	42,900	4A	180	В	Sta	В
R-2595	US 221/NC 181 (Linville Falls Hwy) ¹	NC 181 (Jonas Ridge Hwy)	A location 0.9 miles north of NC 181 (Jonas Ridge Hwy)	Avery County	0.9	22	2	11	90	45	12100	5,700	6,900	6,900	42,900	4A	180	В	Sta	В
R-2595	US 221/NC 181 (Linville Falls Hwy)	A location 0.9 miles north of NC 181 (Jonas Ridge Hwy)	Linville Ave (SR 1545)	Avery County	0.9	22	2	11	90- 200	55	12100	5,700	6,900	6,900	44,500	4A	180	В	Sta	В
R-2595	US 221/NC 181 (Linville Falls Hwy)	Linville Ave (SR 1545)	US 221/NC 181 (Newland Hwy/Mitchell Ave)	Avery County	1.1	24	2	12	100- 200	55	12100	5,600	6,800	6,800	44,500	4A	180	В	Sta	В
AVER0003-H	US 221 (Mitchell Ave)	US 221/NC 181 (Linville Falls Hwy)	A location 0.2 miles east of US 221/NC 181 (Linville Falls Hwy)	Avery County	0.2	24	2	12	60- 100	55	12100	9,900	12,000	12,000	44,500	4A	180	В	Sta	В
AVER0003-H	US 221 (Mitchell Ave)	A location 0.2 miles east of US 221/NC 181 (Linville Falls Hwy)	NC 105/Linville Ave	Avery County	0.5	24	2	12	60- 100	35	11600	9,900	12,000	12,000	37,400	4A	180	В	Sta	В

							HIG	HW	AY											
		Sec	tion					20 ⁻	12 Exis	sting Sy	stem			2040 Pr	oposed Sy	stem				
Local ID	Facility	From	То	Jurisdiction	Dist. (mi)	Total Width (ft)	# Lanes	Lane Width (ft)	ROW (ft)	Speed Limit (mph)	Existing Capacity (vpd	2012 Volume	2040 Volume E+C	2040 Volume with CTP	Proposed Capacity (vpd)	Cross- Section	ROW (ft)	CTP Classifi- cation	Tier	Proposals for Other Modes
AVER0009-H	US 221 (Blowing Rock Hwy)	NC 105/Linville Ave	Grandfather Mountain Entrance	Avery County	2.2	18	2	9	60- 100	55	6300	1,200	1,500	1,500	12,100	2A	60	Мај	Reg	В
AVER0009-H	US 221 (Blowing Rock Hwy)	Grandfather Mountain Entrance	Blue Ridge Parkway	Avery County	1	18	2	9	60	55	6300	800	1,000	1,000	12,100	2A	60	Maj	Reg	В
AVER0009-H	US 221 (Blowing Rock Hwy)	Blue Ridge Parkway	Caldwell County	Avery County	5.2	18	2	9	60	55	6300	300	300	300	12,100	2A	60	Maj	Reg	В
R-5016	US 321	Tennessee	Buckeye Rd (SR 1314)	Avery County	2.4	22	2	11	100	55	12100	900	1,100	1,100	58,800	4A	180	E	Sta	В
R-5016	US 321	Buckeye Rd (SR 1314)	Watauga County	Avery County	<0.1	22	2	11	100	55	12100	1,000	1,200	1,200	58,800	4A	180	Е	Sta	В
R-2566	NC 105	US 221 (Mitchell Ave)	A location 0.1 miles west of NC 184 (Tynecastle Hwy)	Avery County	3.9	24	2	12	60- 100	55	12100	9,400	11400	11400	44500	4A	180	В	Sta	В
R-2566	NC 105 ¹	A location 0.1 miles west of NC 184 (Tynecastle Hwy)	NC 184 (Tynecastle Hwy)	Avery County	0.1	24	2	12	100	45	12100	9,500	11500	11500	42900	4A	180	В	Sta	В
R-2566	NC 105 ¹	NC 184 (Tynecastle Hwy)	A location 0.4 miles east of NC 184 (Tynecastle Hwy)	Avery County	0.4	24	2	12	100	45	12100	9,700	11800	11800	42900	4A	180	В	Sta	В
R-2566	NC 105	A location 0.4 miles east of NC 184 (Tynecastle Hwy)	A location 0.5 miles west of Watauga County Line	Avery County	0.7	30	2	12	100	55	12100	9,700	11800	11800	44500	4A	180	В	Sta	В
R-2566	NC 105 ²	A location 0.5 miles west of Watauga County Line	Watauga County	Avery County	0.5	36	3	12	100	55	18200	9,700	11800	11800	44500	4A	180	В	Sta	В
	NC 181 (Linville St)	NC 194 (Pineola St)	Newland Town Limits	Newland	0.6	48	4	12	60- 120	35	23500	7,900	10400	10400	23500	ADQ	60- 120	Мај	Reg	ВР (1)

							HIG	HW	٩Y											
		Sec	tion					20 ′	12 Exis	ting Sy	stem			2040 Pr	oposed Sy	vstem				
Local ID	Facility	From	То	Jurisdiction	Dist. (mi)	Total Width (ft)	# Lanes	Lane Width (ft)	ROW (ft)	Speed Limit (mph)	Existing Capacity (vpd	2012 Volume	2040 Volume E+C	2040 Volume with CTP	Proposed Capacity (vpd)	Cross- Section	ROW (ft)	CTP Classifi- cation	Tier	Proposals for Other Modes
	NC 181 (Newland Hwy)	Newland Town Limits	A location 0.1 miles west of Wes Brewer Rd (SR 1346)	Avery County	0.2	48	4	12	100- 120	45	29300	7,900	10400	10400	29300	ADQ	100- 120	Мај	Reg	В
	NC 181 (Newland Hwy) ¹	A location 0.1 miles west of Wes Brewer Rd (SR 1346) ³	Avery County High School Rd (SR 1370)	Avery County	0.3	24	2	12	100	45	12100	7,800	9800	9800	14600	ADQ	100	Мај	Reg	В
	NC 181 (Newland Hwy) ¹	Avery County High School Rd (SR 1370)	A location 0.2 miles east of Avery County High School Rd (SR 1370)	Avery County	0.2	24	2	12	100	45	12100	7,600	9,200	9,200	14,600	ADQ	100	Maj	Reg	В
	NC 181 (Newland Hwy)	A location 0.2 miles east of Avery County High School Rd (SR 1370)	US 221/NC 181 (Linville Falls Hwy)	Avery County	2.1	24	2	12	60- 100	55	12100	7,600	9,200	9,200	12,100	ADQ	60- 100	Maj	Reg	В
	NC 181/US 221 (Linville Falls Hwy)	NC 181 (Newland Hwy)	NC 181 (Jonas Ridge Hwy)							Concurr	ent with U	S 221/NO	C 181 (Lir	ville Falls	Hwy)					
	NC 181 (Jonas Ridge Hwy) ¹	US 221 /NC 181 (Linville Falls Hwy)	A location 0.5 miles south of US 221/NC 181 (Linville Falls Hwy)	Avery County	0.5	24	2	12	100- 130	45	12100	3,400	4,100	4,100	12,100	ADQ	100- 130	Maj	Reg	В
	NC 181 (Jonas Ridge Hwy)	A location 0.5 miles south of US 221/NC 181 (Linville Falls Hwy)	Blue Ridge Parkway	Avery County	1.3	24	2	12	100- 130	55	12100	3,400	4,100	4,100	12,100	ADQ	100- 130	Maj	Reg	В
	NC 181 (Jonas Ridge Hwy)	Blue Ridge Parkway	Burke County	Avery County	0.6	24	2	12	130	55	12100	2,600	3,200	3,200	12,100	ADQ	130	Maj	Reg	В
R-2811 ⁴	NC 184 (Tynecastle Hwy)	NC 105	Castle Rock Drive	Avery County	0.8	22	2	11	60- 100	45	14100	9,700	12,800	12,800	41,400	4G	110	В	Reg	ΒP

							HIG	HW	AY											
		Sec	tion					201	12 Exis	sting Sy	stem			2040 Pr	oposed Sy	stem				
Local ID	Facility	From	То	Jurisdiction	Dist. (mi)	Total Width (ft)	# Lanes	Lane Width (ft)	ROW (ft)	Speed Limit (mph)	Existing Capacity (vpd	2012 Volume	2040 Volume E+C	2040 Volume with CTP	Proposed Capacity (vpd)	Cross- Section	ROW (ft)	CTP Classifi- cation	Tier	Proposals for Other Modes
R-2811 ⁴	NC 184 (Tynecastle Hwy)	Castle Rock Drive	Arnett Rd (SR 1338)	Avery County	0.7	22	2	11	100	35	11200	9,700	12,800	12,800	41,400	4G	110	В	Reg	ΒP
R-2811 ⁴	NC 184 (Tynecastle Hwy)	Arnett Rd (SR 1338)	Banner Creek Rd (SR 1341)	Avery County	1.2	22	2	11	60- 100	35	11200	9,700	12,800	12,800	41,400	4G	110	В	Reg	ВΡ
	NC 184 (Tynecastle Hwy)	Banner Creek Rd (SR 1341)	Dobbins Rd (SR 1337)/Banner Elk Town Limits	Avery County	0.5	22	2	11	60	35	11200	9,700	12,800	9,800	11,200	ADQ	60	Maj	Reg	B P (2)
	NC 184 (Shawneehaw Ave)	Dobbins Rd (SR 1337)/Banner Elk Town Limits	Hickory Nut Gap Rd (SR 1342)	Banner Elk	0.5	22	2	11	60	25	10600	9,700	12,800	9,800	10,600	ADQ	60	Maj	Reg	B P (2)
	NC 184 (Shawneehaw Ave))	Hickory Nut Gap Rd (SR 1342)	NC 194 (Main St)	Banner Elk	0.5	22	2	11	60	25	10600	8,200	10,800	7,800	10,600	ADQ	60	Maj	Reg	ΒP
	NC 184/NC 194 (Main St)	NC 184 (Shawneehaw Ave))	NC 184 (Beech Mountain Pkwy)	Banner Elk	0.4	22	2	11	60	25	10600	8,000	10,600	7,600	10,600	ADQ	60	Maj	Reg	В
AVER0010-H	NC 184 (Beech Mountain Pkwy)	NC 194 (Main St)	Banner Elk Town Limits	Banner Elk	0.7	20	2	10	60	35	8200	1,800	2,400	2,400	10,700	2A	60	Мај	Reg	ΒP
AVER0010-H	NC 184 (Beech Mountain Pkwy)	Banner Elk Town Limits	Elderberry Ridge	Avery County	2.3	20	2	10	60	55	8200	1,800	2,400	2,400	9,600	2A	60	Maj	Reg	В
	NC 184 (Beech Mountain Pkwy)	Elderberry Ridge	Beech Mountain Town Limits	Avery County	0.1	20	2	10	60	55	8200	1,800	2,400	2,400	8,200	ADQ	60	Мај	Reg	В
	NC 184 (Beech Mountain Pkwy)	Beech Mountain Town Limits	Watauga County Line	Beech Mountain	0.4	22	2	11	60	25	10600	1,800	2,400	2,400	10,600	ADQ	60	Maj	Reg	P (2)
AVER0001-H	NC 184 New Facility	NC 184 (Tynecastle Hwy) at Banner Creek Rd (SR 1341)	Hickory Nut Gap Rd (SR 1342)	Avery County & Banner Elk	1	-	-	-	-	-	-	_	-	3,000	12,700	2A	60	Maj	Reg	В
AVER0001-H	NC 184 New Facility	Hickory Nut Gap Rd (SR 1342)	NC 194 at Elkview Pl	Avery County & Banner Elk	0.8	-	-	-	-	-	-	-	-	3,000	12,700	2A	60	Мај	Reg	В
R-2520	NC 194 (Three Mile Road)	US 19E	Mullin Hill Rd (SR 1106)	Avery County	0.9	20	2	10	50	55	8800	600	800	800	44500	4A	180	В	Sta	В
R-2520	NC 194 (Three Mile Road)	Mullin Hill Rd (SR 1106)	Old Three Mile Rd western loop end (SR 1111)	Avery County	1.9	20	2	10	50	55	8800	3,300	4,000	4,000	44500	4A	180	В	Sta	В

							HIG	HW	AY											
		Sec	tion					20 ⁻	12 Exis	sting Sy	stem			2040 Pr	oposed Sy	vstem				
Local ID	Facility	From	То	Jurisdiction	Dist. (mi)	Total Width (ft)	# Lanes	Lane Width (ft)	ROW (ft)	Speed Limit (mph)	Existing Capacity (vpd	2012 Volume	2040 Volume E+C	2040 Volume with CTP	Proposed Capacity (vpd)	Cross- Section	ROW (ft)	CTP Classifi- cation	Tier	Proposals for Other Modes
2000.12		Old Three Mile Rd	US 221/NC 194		()				()	(p)	(,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,				(,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	0000.011	()			
R-2520	Mile Road)	western loop end (SR 1111)	(Linville Falls Hwy)	Avery County	1.4	20	2	10	50	55	8200	3,500	4,300	4,300	44500	4A	180	В	Sta	В
	NC 194/US 221 (Linville Falls Hwy)	NC 194 (Three Mile Road)	NC 194 (Millers Gap Hwy)							Concurr	ent with U	S 221/N	C 194 (Lir	ville Falls	Hwy)					
	NC 194 (Millers Gap Hwy)	US 221/NC 194 (Linville Falls Hwy)	Avery County High School Rd (SR 1500)	Avery County	2.2	22	2	11	60- 100	55	12100	4,800	6,300	6,300	12,100	ADQ	60- 100	Мај	Reg	В
	NC 194 (Millers Gap Hwy) ¹	Avery County High School Rd (SR 1500)	Spanish Oak Rd (SR 1153)	Avery County	0.3	22	2	11	100	45	12100	6,000	7,900	7,900	12,100	ADQ	100	Maj	Reg	В
	NC 194 (Millers Gap Hwy) ¹	Spanish Oak Rd (SR 1153)	Newland Town Limits	Avery County	0.8	22	2	11	60- 100	45	12100	7,600	10,000	10,000	12,100	ADQ	60- 100	Мај	Reg	В
	NC 194 (Pineola St)	Newland Town Limits	Old Cranberry St	Newland	0.3	22	2	11	80- 100	35	11200	7,600	10,000	10,000	11,200	ADQ	80- 100	Maj	Reg	В
	NC 194 (Pineola St)	Old Cranberry St	NC 181 (Linville St/Titi St)	Newland	0.2	24	2	12	80- 100	25	11000	8,000	10,600	3,600	11,000	ADQ	80- 100	Maj	Reg	В
	NC 194 (Pineola St)	NC 181 (Linville St/Titi St)	Montezuma St/Old Toe River Rd (SR 1342/SR 1157)	Newland	0.2	36	2	12	80	25	11000	11,000	14,500	7,500	11,000	ADQ	80	Мај	Reg	
	NC 194 (Cranberry St)	Montezuma St/Old Toe River Rd (SR 1342/SR 1157)	Old Public Rd	Newland	0.3	24	2	12	50	25	11000	8,900	11,800	4,800	11,000	ADQ	50	Мај	Reg	B (3)
AVER0004-H	NC 194 (Cranberry St/Elk Park Hwy)	Old Public Rd	Barney Rd (SR 1344)	Newland	1.2	22	2	11	60	35	11200	8,900	11,800	11,800	11,200	ADQ	60	Maj	Reg	В
	NC 194 (Elk Park Hwy)	Barney Rd (SR 1344)	Blevins Creek Rd (SR 1361) (Southern end of loop)	Avery County	1.5	22	2	11	60- 110	45	12300	7,200	9,500	9,500	12,300	ADQ	60- 110	Maj	Reg	В
	NC 194 (Elk Park Hwy) ⁵	Blevins Creek Rd (SR 1361) (Southern end of loop)	US 19E	Avery County	2.5	38	3	12	60- 160	55	18200	5,500	7,300	7,300	18,200	ADQ	60- 160	Мај	Reg	В

							HIG	HW	AY											
		Sec	tion					20 ⁻	12 Exis	ting Sy	stem			2040 Pr	oposed Sy	stem				
Local ID	Facility	From	То	Jurisdiction	Dist. (mi)	Total Width (ft)	# Lanes	Lane Width (ft)	ROW (ft)	Speed Limit (mph)	Existing Capacity (vpd	2012 Volume	2040 Volume E+C	2040 Volume with CTP	Proposed Capacity (vpd)	Cross- Section	ROW (ft)	CTP Classifi- cation	Tier	Proposals for Other Modes
	NC 194/US 19E	US 19E	NC 194 (Banner Elk Hwy/Elk Park Hwy)								Concurre	ent with L	IS 19E/N	C 194			-			
AVER0012-H	NC 194 (Banner Elk Hwy/Elk Park Hwy)	US 19E	Beech Mountain Rd (SR 1308)	Avery County	2.1	18	2	9	50-60	55	6300	3,000	3,600	3,600	9,600	2A	50-60	Maj	Reg	В
AVER0012-H	NC 194 (Banner Elk Hwy/Elk Park Hwy)	Beech Mountain Rd (SR 1308)	Banner Elk Town Limits	Avery County	3.9	18	2	9	60	55	6300	3,100	4,100	4,100	9,600	2A	60	Maj	Reg	В
AVER0012-H	NC 194 (Main St)	Banner Elk Town Limits	NC 184 (Beech Mountain Pkwy)	Banner Elk	0.6	18	2	9	60	35	6300	3,400	4,500	4,500	9,600	2A	60	Мај	Reg	ВΡ
	NC 194/NC 184 (Main St)	NC 184 (Beech Mountain Pkwy)	NC 184 (Shawneehaw Ave))		-					Cor	ncurrent w	ith NC 18	84/NC 19	4 (Main St	:)					
	NC 194 (Main St)	NC 184 (Shawneehaw Ave))	A location 0.1 miles east of NC 184 (Shawneehaw Ave)	Banner Elk	0.1	22	2	11	60	25	10600	3,600	4,800	4,800	10,600	ADQ	60	Maj	Reg	В
	NC 194 (Main St)	A location 0.1 miles east of NC 184 (Shawneehaw Ave)	Banner Elk Town Limits	Banner Elk	0.7	18	2	9	60	35	9600	3,600	4,800	4,800	9,600	ADQ	60	Maj	Reg	B P (1)
AVER0011-H	NC 194 (Balm Hwy)	Banner Elk Town Limits	Gualtney Rd (SR 1335)	Avery County	0.8	18	2	9	60	35	9600	1,700	2,200	2,200	10,700	2A	60	Maj	Reg	В
AVER0011-H	NC 194 (Balm Hwy)	Gualtney Rd (SR 1335)	Watauga County Line	Avery County	0.5	18	2	9	60	35	9600	700	900	900	10,700	2A	60	Мај	Reg	В
AVER0002-H	NC 194 Alternate	NC 194 at Old Cranberry St	Old Toe River Rd (SR 1157) at Old Public Rd	Newland	0.5	-	-	-	-	-	-	-	-	7,000	12,700	2A	60	Мај	Reg	В
AVER0002-H	NC 194 Alternate	Old Toe River Rd (SR 1157) at Old Public Rd	NC 194 at Old Public Rd	Newland	0.2	-	-	-	-	-	-	-	-	7,000	12,700	2A	60	Мај	Reg	В
AVER0005-H	Arnett Rd (SR 1338) ⁶	NC 184 (Tynecastle Hwy)	Terminus of gravel portion of roadway	Avery County	0.75	16	2	8	60	55	4000	-	-	-	4,000	ADQ	60	Min	Sub	

							HIG	HW	AY											
		Sec	tion					20	12 Exis	sting Sy	stem			2040 Pr	oposed Sy	vstem				
Local ID	Facility	From	То	Jurisdiction	Dist. (mi)	Total Width (ft)	# Lanes	Lane Width (ft)	ROW (ft)	Speed Limit (mph)	Existing Capacity (vpd	2012 Volume	2040 Volume E+C	2040 Volume with CTP	Proposed Capacity (vpd)	Cross- Section	ROW (ft)	CTP Classifi- cation	Tier	Proposals for Other Modes
AVER0013-H	Avery County High School Rd (SR 1500)	NC 194 (Millers Gap Hwy)	Old Montezuma Rd (SR 1500)	Avery County	0.3	20	2	10	60- 100	35	9500	2,800	3,700	3,700	10,200	2B	60- 100	Min	Sub	
AVER0013-H	Avery County High School Rd (SR 1370)	Old Montezuma Rd (SR 1500)	NC 181 (Newland Hwy)	Avery County	0.6	20	2	10	60- 100	35	9500	2,800	3,700	3,700	10,200	2B	60- 100	Min	Sub	
AVER0014-H	Beech Mountain Rd (SR 1308)	NC 194 (Banner Elk Hwy/Elk Park Hwy)	Sam Eller Rd (SR 1310)	Avery County	3.3	16	2	8	60	55	6200	600	700	700	9,600	2A	60	Min	Sub	В
AVER0014-H	Beech Mountain Rd (SR 1310)	Sam Eller Rd (SR 1310)	Dark Ridge Rd (SR 1310)	Avery County	1.6	18	2	9	50-60	55	6200	600	700	700	9,600	2A	60	Min	Sub	В
AVER0014-H	Beech Mountain Rd (SR 1316)	Dark Ridge Rd (SR 1310)	Old Beech Mountain Rd (SR 1319)	Avery County	0.8	16	2	8	50-70	55	6200	600	700	700	9,600	2A	60	Min	Sub	В
AVER0014-H	Beech Mountain Rd (SR 1316)	Old Beech Mountain Rd (SR 1319)	Flat Springs Rd (SR 1316)/ Buckeye Rd (SR 1312)	Avery County	0.8	16	2	8	50-70	55	6200	200	300	300	9,600	2A	60	Min	Sub	В
AVER0016-H	Big Plumtree Creek Rd (SR 1114) ⁷	US 19E	Lick Log Rd (SR 1121)	Avery County	0.3	14	2	7	60	55	8100	1,100	1,300	1,300	12,100	2A	60	Min	Sub	В
AVER0014-H	Buckeye Rd (SR	Flat Springs Rd	Buckeye Creek	Avery County	0.3	17	2	8	30-	55	6200	200	300	300	9.600	2B	60	Min	Sub	
AVER0014-H	1312) Buckeye Rd (SR 1312)	Buckeye Creek Rd (SR 1312)	Russ Norris Rd (SR 1312) (SR 1314)	Avery County	3.1	17	2	8	30- 100	55	6200	600	700	700	9,600	2B	60	Min	Sub	
AVER0014-H	Buckeye Rd (SR 1314)	Russ Norris Rd (SR 1314)	US 321	Avery County	0.6	17	2	8	90- 100	55	6200	600	700	700	9,600	2B	60	Min	Sub	
	Buelove Creak	Matauna Oau t	Decel Maxim	Deset		40													<u> </u>	
AVER0006-H	Rd (SR 1312) ⁶	Vvatauga County Line	Town Limits	Beech Mountain	2.2	16- 24	2	8	60-70	25	4000	-	-	-	9,600	2B	60	Min	Sub	
AVER0006-H	Buckeye Creek Rd (SR 1312) ⁶	Beech Mountain Town Limits	Buckeye Rd (SR 1312)	Avery County	0.1	16- 24	2	8	60-70	55	4000	-	-	-	9,600	2B	60	Min	Sub	

HIGHWAY																				
		Sec	tion					20	12 Exis	ting Sy	stem			2040 Pr	oposed Sy	stem				
Local ID	Facility	From	То	Jurisdiction	Dist. (mi)	Total Width (ft)	#Lanes	Lane Width (ft)	ROW (ft)	Speed Limit (mph)	Existing Capacity (vpd	2012 Volume	2040 Volume E+C	2040 Volume with CTP	Proposed Capacity (vpd)	Cross- Section	ROW (ft)	CTP Classifi- cation	Tier	Proposals for Other Modes
	Crossnore Drive (SR 1143)	US 221/NC 194 (Linville Falls Hwy)	Crossnore Town Limits	Avery County	0.2	18	2	9	60	25	7400	1,500	2,000	2,000	7,400	ADQ	60	Min	Sub	P (2)
	Crossnore Drive (SR 1143)	Crossnore Town Limits	Dellinger Rd (SR 1148)	Crossnore	0.4	18	2	9	60	25	7400	1,500	2,000	2,000	7,400	ADQ	60	Min	Sub	P (1) (2)
	Crossnore Drive (SR 1143)	Dellinger Rd (SR 1148)	Crossnore Town Limits	Crossnore	0.4	16	2	8	60	25	7400	1,000	1,200	1,200	7,400	ADQ	60	Min	Sub	P (1)
AVER0015-H	Hickory Nut Gap Rd (SR 1342)	Newland Town Limits	Banner Elk Town Limits	Avery County	7	18	2	9	60	35	9200	1,700	2,100	2,100	10,200	2A	60	Min	Sub	В
AVER0015-H	Hickory Nut Gap Rd (SR 1342)	Banner Elk Town Limits	NC 184 (Shawneehaw Ave))	Banner Elk	0.4	18	2	9	60	25	9000	1,900	2,500	2,500	10,000	2A	60	Min	Sub	В
AVER0016-H	Lick Log Rd (SR 1121)	Big Plumtree Creek Rd (SR 1114)	Squirrel Creek Rd (SR 1121/SR 1138)	Avery County	2.2	16	2	8	60	35	8100	900	1,100	1,100	12,100	2A	60	Min	Sub	В
	Montezuma St/Elk St (SR 1342)	NC 194 (Pineola St/Cranberry St)	Avery County Courthouse	Newland	0.1	50	2	12	80	25	10000	1,500	2,000	2,000	10,000	ADQ	80	Min	Sub	Р
	Montezuma St/Elk St (SR 1342)	Avery County Courthouse	Newland Town Limits	Newland	0.6	18	2	9	50-70	25	9000	1,500	2,000	2,000	9,000	ADQ	50-70	Min	Sub	B (3)
AVER0017-H	Mount Pleasant Rd (SR 1143)	Crossnore Town Limits	Trim Branch Rd (SR 1154)	Avery County	1.4	18	2	9	60	55	7400	300	400	400	9,600	2B	60	Min	Sub	
AVER0017-H	Mount Pleasant Rd (SR 1117)	Trim Branch Rd (SR 1154)	Spanish Oak Rd/Squirrel Creek Rd (SR 1117/SR 1138)	Avery County	1.2	18	2	9	60	55	7400	300	400	400	9,600	2B	60	Min	Sub	
AVER0018-H	Mullin Hill Rd (SR 1106)	US 19E	NC 194 (Three Mile Rd)	Avery County	1.2	20	2	10	60	55	8800	2,700	3,300	3,300	12,100	2A	60	Min	Sub	В
AVER0019-H	Old Toe River Rd (SR 1157) ⁶	US 19E	A location 1.2 miles east of US 19E	Avery County	1.2	14	2	7	50-60	55	4000	600	700	700	12,100	2A	60	Min	Sub	В

							HIG	HW	AY											
		Sec	tion					20	12 Exis	ting Sy	stem			2040 Pr	oposed Sy	stem				
Local ID	Facility	From	То	Jurisdiction	Dist. (mi)	Total Width (ft)	#Lanes	Lane Width (ft)	ROW (ft)	Speed Limit (mph)	Existing Capacity (vpd	2012 Volume	2040 Volume E+C	2040 Volume with CTP	Proposed Capacity (vpd)	Cross- Section	ROW (ft)	CTP Classifi- cation	Tier	Proposals for Other Modes
AVER0019-H	Old Toe River Rd (SR 1157)	A location 1.2 miles east of US 19E	Cow Camp Rd (SR 1117)	Avery County	2.8	20	2	10	50-60	55	11700	600	700	700	12,100	2A	60	Min	Sub	В
AVER0019-H	Old Toe River Rd (SR 1157)	Cow Camp Rd (SR 1117)	Newland Town Limits	Avery County	0.4	20	2	10	50-60	55	11700	900	1,200	1,200	12,100	2A	60	Min	Sub	В
AVER0019-H	Old Toe River Rd (SR 1157)	Newland Town Limits	Old Public Rd	Newland	0.1	20	2	10	60-80	35	9500	900	1,200	1,200	9,500	2A	60	Min	Sub	В
	Old Toe River Rd (SR 1157)	Old Public Rd	NC 194 (Pineola St/Cranberry St)	Newland	0.3	20	2	10	60-80	35	9500	900	1,200	1,200	9,500	ADQ	60-80	Min	Sub	
	Skiview Rd (SR	Watauga County	End of SR 1374	Seven Devils	0.3	20	2	10	20-30	35	8200	_	-	-	8,200	ADQ	20-30	Min	Sub	
	1374)°	Line																		
AVER0021-H	Squirrel Creek Rd (SR 1121)	US 19E	Lick Log Rd (SR 1121)	Avery County	0.5	18	2	9	60	55	7400	1,000	1,200	1,200	10,200	2A	60	Min	Sub	В
AVER0021-H	Squirrel Creek Rd (SR 1138)	Lick Log Rd (SR 1121)	Little Plumtree Creek Rd (SR 1119)	Avery County	2.7	18	2	9	60	55	7400	1,000	1,200	1,200	10,200	2B	60	Min	Sub	
AVER0021-H	Squirrel Creek Rd (SR 1138)	Little Plumtree Creek Rd (SR 1119)	Mount Pleasant Rd (SR 1117)	Avery County	0.5	18	2	9	60	55	7400	1,400	1,700	1,700	10,200	2B	60	Min	Sub	
						1	1	1			1	1		1		I		I	1	
AVER0020-H	Spanish Oak Rd (SR 1117)	Mount Pleasant Rd (SR 1117)	Cow Camp Rd (SR 1117)	Avery County	0.3	18	2	9	60	55	7400	1,400	1,700	1,700	10,200	2B	60	Min	Sub	
AVER0020-H	Spanish Oak Rd (SR 1153)	Cow Camp Rd (SR 1117)	Trim Branch Rd (SR 1154)	Avery County	0.3	18	2	9	60	55	7400	1,400	1,700	1,700	10,200	2B	60	Min	Sub	
AVER0020-H	Spanish Oak Rd (SR 1153)	Trim Branch Rd (SR 1154)	NC 194 (Millers Gap Hwy)	Avery County	2	18	2	9	60	55	7400	2,200	2,900	2,900	10,200	2B	60	Min	Sub	

Footnotes:

Rural Two-Lane Highway (55 mph) LOS D table used to calculate capacity even though the road segment has a 45 mph speed limit. Road segment capacity better defined by Rural Two-Lane Highway table than Major Thoroughfare LOS D table.

²This portion of NC 105 currently has 2 westbound lanes and 1 eastbound lane.

³2012 and 2040 AADT values used for this stretch of NC 181 (Newland Hwy) were determined by using values half way between the two nearest traffic counting stations.

⁴Pre-existing TIP project R-2811 has boundaries from NC 105 to Hickory Nut Gap Road (SR 1342). This CTP proposes making the northern project boundary Banner Creek Road (SR 1341) instead of Hickory Nut Gap Road (SR 1342). Reference R-2811 in chapter 2 for more details.

⁵This portion of NC 194 (Elk Park Highway) is a 3 lane facility that has 2 southbound lanes and 1 northbound lane.

⁶This portion of road uses a low estimated capacity based on its status as being unpaved.

	HIGHWAY																			
		Section				2012 Existing System 2040 Proposed System														
Local ID	Facility	From	То	Jurisdiction	Dist. (mi)	Total Width (ft)	# Lanes	Lane Width (ft)	ROW (ft)	Speed Limit (mph)	Existing Capacity (vpd	2012 Volume	2040 Volume E+C	2040 Volume with CTP	Proposed Capacity (vpd)	Cross- Section	ROW (ft)	CTP Classifi- cation	Tier	Proposals for Other Modes

⁷For Big Plumtree Creek Rd (SR 1114), used a lower LOS D capacity than the usual 55 mph rural two-lane facility due to its narrow lane width. ⁸Skiview Rd (SR 1374) is Seven Devils Rd (SR 1151) in Watauga County.

Notes:

- (1) Pedestrian proposal overlaps only part of this road segment.
- (2) Proposed off road trail runs near/parallel to road for a portion of road segment (does not include existing off road trails)
 (3) Bicycle proposal is from the High Country Regional Bike Plan and overlaps only part of this road segment.

BICYCLE AND PEDESTRIAN¹

		BICYCLE						
				Existir	ng System	Propose	d System	
			Distance	Cros	s-Section			Other
Local ID	Facility/ Route	Section (From - To)	(mi)	(ft)	lanes	Туре	Cross-Section	Modes
AVER0001-B	US 19E	Winters St to Tennessee	2.1	10-12	2	On Road	2A or 2C	
AVER0002-B	US 19E	Big Plumtree Creek Rd (SR 1114) to Squirrel Creek Rd (SR 1121)	4.5	20	2	On Road	2C	
R-2596	US 221 (Linville Falls Highway)	Burke County to the Blue Ridge Parkway	Concu	rrent wi	h US 221 () Highw	Linville Falls Hig ay Table	jhway) - See	Н
R-5016	US 321	Tennessee to Watauga County	Co	oncurrer	t with US 3	21 - See Highwa	ay Table	Н
AVER0003-B	NC 181 (Jonas Ridge Highway)	Burke County to US 221/NC 181 (Linville Falls Highway)	2.4	24	2	On Road	2A	
R-2811 ²	NC 184 (Tynecastle Highway)	NC 105 to Banner Creek Road (SR 1341)	Concurrent with NC 184 (Tynecastle Highway) - See Highway Table					
AVER0001-H	NC 184 New Facility	NC 184 (Tynecastle Hwy) at Banner Creek Rd (SR 1341) to NC 194 at Elkview Pl	Concurrent with NC 184 New Facility - See Highway Table					
R-2520	NC 194 (Three Mile Road)	US 19E to Mullin Hill Rd (SR 1106)	Concurrent with NC 194 (Three Mile Road) - See Highway Table					Н
AVER0002-H	NC 194 Alternate	NC 194 at Old Cranberry St to NC 194 at Old Public Rd	Concurrent with NC 194 Alternate - See Highway Table					Н
AVER0004-B	Beech Mountain Road (SR 1308/SR 1310/SR 1316)	NC 194 (Banner Elk Hwy) to Flat Springs Road (SR 1316)	Concu	urrent wi	th Beech M 1310/S	lountain Road (S SR 1316)	SR 1308/SR	Н
AVER0004-B	Flat Springs Road (SR 1316)	Beech Mountain Road (SR 1316) to US 321	5.5	16-20	2	On Road	2C	
AVER0005-B	Geter Oaks Street (SR 1378)/Davis Street (SR 1303)/Old Mill Road (SR 1303)/Elk River Road (SR 1305)	US 19E to Elk River Falls	4.4	16-18	2	On Road	2C	
AVER0019-H	Old Toe River Road (SR 1157)	US 19E to Old Public Road	Concu	irrent wi	th Old Toe I Highw	River Road (SR ay Table	1157) - See	Н
AVER0006-B	Pineola Baptist Church Road (SR 1505)/Goose Hollow Road (SR 1501)/Richard Childress Road (SR 1501)/Old NC 181 (SR 1544)	US 221 (Linville Falls Highway) to NC 181	3.2	16-20	2	On Road	2C	

		PEDESTRIAN						
				Existir	ng System	Propose	d System	Other
Local ID	Facility/ Route	Section (From - To)	Distance (mi)	Туре	Side of Street	Туре	Side of Street	Modes
AVER0007-P	NC 181 (Linville Street)	Asa Street to Shady Street (in Newland)	0.2	Sidew alk	North	Sidewalk	Both	В
AVER0001-P	NC 181 (Linville Street)	Shady Street to Beech Street (in Newland)	0.3	-	-	Sidewalk	Both	В
AVER0011-P	NC 184 (Beech Mountain Parkway)	The existing pedestrian facilities just south of Christie Way to Watauga County, parallel to NC 184 (Beech Mountain Parkway) (in Beech Mountain)	0.2	-	-	Off Road	-	В
R-2811 ²	NC 184 (Tynecastle Highway)	NC 105 to Banner Creek Road (SR 1341)	Concurrent with NC 184 (Tynecastle Highway) - See Highway Table					
AVER0002-P	Beech Street	NC 181 (Linville Street) to town park off Beech Street (in Newland)	0.3	-	-	Sidewalk	Both	
AVER0003-P	Chambers Street	Winters Street to Maple Street (SR 1170) (in Elk Park)	0.1	-	-	Sidewalk	Both	
AVER0012-P	Hemlock Lane (Parallel to)	Dellinger Road to the proposed Well Site Trail in the Crossnore Bicycle & Pedestrian Plan (in Crossnore)	0.1	-	-	Off Road	-	
AVER0004-P	Johnson Lane	Crossnore Drive to off road path proposed in "Project 1" of Crossnore Bicycle & Pedestrian Plan (in Crossnore)	0.1	-	-	Sidewalk	Both ³	
AVER0005-P	Maple Street (SR 1170)	Parlier Street to Chambers Street (in Elk Park)	0.1	-	-	Sidewalk	Both	
AVER0008-P	Maple Street (SR 1170)	US 19E to Parlier Street (in Elk Park)	0.1	Sidew alk	West	Sidewalk	Both	
AVER0013-P	Middle Street (Parallel to)	The proposed Well Site Trail in the Crossnore Bicycle & Pedestrian Plan to Maple Street (SR 1143) (in Crossnore)	0.1	-	-	Off Road	-	
AVER0009-P	Montezuma Street (SR 1342) ⁴	NC 194 to Avery County Courthouse (in Newland)	0.1	Sidew alk	Both	Sidewalk	Both	
AVER0014-P	Walt Clark Road (SR 1149)	Crossnore Town Park to Crossnore Drive	0.2	-	-	Off Road	-	

		PEDESTRIAN						
				Existir	ng System	Propose	Other	
			Distance		Side of			
Local ID	Facility/ Route	Section (From - To)	(mi)	Туре	Street	Туре	Side of Street	Modes
AVER0006-P	Winters Street	Parlier Street to Chambers Street (in Elk Park)	0.1	-	-	Sidewalk	Both	
AVER0010-P	Winters Street	US 19E to Parlier Street (in Elk Park)	0.1	Sidew alk	East	Sidewalk	Both	

Footnotes:

¹ Only major routes and proposals are shown here. For further documentation of bicycle and pedestrian facilities and proposals, refer to the 2014 High Country Regional Bike Plan, the 2010 Crossnore Bicycle & Pedestrian Plan, and the 2009 Banner Elk Pedestrian Plan. ²Pre-existing TIP project R-2811 has boundaries from NC 105 to Hickory Nut Gap Road (SR 1342). This CTP proposes making the northern project

boundary Banner Creek Road (SR 1341) instead of Hickory Nut Gap Road (SR 1342). Reference R-2811 in chapter 2 for more details.

^oSince narrow right-of-way available, flexible to build proposed sidewalk on just one side of the road (at the discretion as to how the Town of Crossnore wants to approach this project)

⁴Montezuma Street (SR 1342) currently has concrete sidewalks for part of the road and paved asphalt for the other part. Proposal is to have concrete sidewalks on both sides of the entire road segment.

This page intentionally left blank.

Appendix D Typical Cross Sections

Cross section requirements for roadways vary according to the capacity and level of service to be provided. Universal standards in the design of roadways are not practical. Each roadway section must be individually analyzed and its cross section determined based on the volume and type of projected traffic, existing capacity, desired level of service, and available right-of-way. These cross sections are typical for facilities on new location and where right-of-way constraints are not critical. For widening projects and urban projects with limited right-of-way, special cross sections should be developed that meet the needs of the project.

The comprehensive planning and design "typical" highway cross sections, as depicted on the following pages, were updated on May 5, 2014 in response to the Strategic Transportation Investments¹ (STI) law (House Bill 817) and are also consistent with SPOTOn!ine (used for project prioritization²), NCDOT's GIS-based web application for providing automated, near real-time prioritization scores and project costs. This guidance establishes design elements that emphasize safety, mobility, complete streets³, and accessibility for multiple modes of travel. These "typical" highway cross sections should be used as guidelines for comprehensive transportation planning, project planning and project design activities. The specific and final cross section details and right of way limits for projects will be established through the preparation of the National Environmental Policy Act⁴ (NEPA) documentation and through final design preparation.

On all existing and proposed roadways delineated on the CTP, adequate right-of-way should be protected or acquired for the recommended cross sections. In addition to cross section and right-of-way recommendations for improvements, Appendix C may recommend ultimate needed right-of-way for the following situations:

- roadways which may require widening after the current planning period,
- roadways which are borderline adequate and accelerated traffic growth could render them deficient,
- roadways where an urban curb and gutter cross section may be locally desirable because of urban development or redevelopment, and
- roadways which may need to accommodate an additional transportation mode.

¹ For more information on STI, go to: <u>http://www.ncdot.gov/strategictransportationinvestments/</u>.

² For more information on prioritization, go to: <u>https://connect.ncdot.gov/projects/planning/Pages/StrategicPrioritization.aspx</u>.

³ For more information on Complete Streets, go to: <u>http://www.completestreetsnc.org/</u>.

⁴ For more information on NEPA, go to: <u>http://ceq.hss.doe.gov/</u>.

FIGURE 7 "TYPICAL" HIGHWAY CROSS SECTIONS



2A

2B

2C

2 LANE UNDIVIDED WITH PAVED SHOULDERS POSTED SPEED 55 MPH



2 LANES UNDIVIDED POSTED SPEED 45 MPH OR LESS



2 LANE UNDIVIDED WITH PAVED SHOULDERS POSTED SPEED 25 - 35 MPH

"TYPICAL" HIGHWAY CROSS SECTIONS



2 LANE UNDIVIDED WITH PAVED SHOULDERS AND SIDEWALKS POSTED SPEED 25-45 MPH



2 LANE UNDIVIDED WITH CURB & GUTTER, BIKE LANES, AND SIDEWALKS POSTED SPEED 25-45 MPH



2 LANE UNDIVIDED WITH PAVED SHOULDERS AND SIDEWALKS IN CAMA COUNTIES POSTED SPEED 25-45 MPH







2 LANE DIVIDED (23' RAISED MEDIAN) WITH CURB & GUTTER AND SIDEWALKS POSTED SPEED 25-45 MPH


2 LANE DIVIDED (23' RAISED MEDIAN) WITH CURB & GUTTER, BIKE LANES, AND SIDEWALKS POSTED SPEED 25-45 MPH



2 LANE DIVIDED (17'-6" RAISED MEDIAN) WITH CURB & GUTTER AND SIDEWALKS POSTED SPEED 25-45 MPH



2 LANE DIVIDED (17'-6" RAISED MEDIAN) WITH CURB & GUTTER, BIKE LANES, AND SIDEWALKS POSTED SPEED 25-45 MPH



2 LANE WITH TWO WAY LEFT TURN LANE, AND PAVED SHOULDERS POSTED SPEED 25-55 MPH



2 LANE WITH TWO WAY LEFT TURN LANE, CURB & GUTTER, AND SIDEWALKS POSTED SPEED 25-45 MPH



2 LANE WITH TWO WAY LEFT TURN LANE, CURB & GUTTER, BIKE LANES, AND SIDEWALKS POSTED SPEED 25-45 MPH



4 LANE DIVIDED (46' DEPRESSED MEDIAN) WITH PAVED SHOULDERS POSTED SPEED 45-70 MPH



4 LANE DIVIDED (23' RAISED MEDIAN) WITH PAVED SHOULDERS AND SIDEWALKS POSTED SPEED 35-55 MPH



4 LANE DIVIDED (23' RAISED MEDIAN) WITH CURB & GUTTER, WIDE OUTSIDE LANES, AND SIDEWALKS POSTED SPEED 35-45 MPH



4F

5' 4'-6' 5' 6 4'-6' IJ Ũ Î ÎÌ MIN MIN. MIN. MIN. SIDEWALK SIDEWALK 12' 14' 12 10' 10' 17'-6" MEDIAN 14 MIN. MIN. 100' MIN. RIGHT OF WAY 4 LANE DIVIDED (17'-6" RAISED MEDIAN) WITH CURB & GUTTER,

WIDE OUTSIDE LANES AND SIDEWALKS

POSTED SPEED 35-45 MPH



4 LANE WITH TWO WAY LEFT TURN LANE, CURB & GUTTER, AND SIDEWALKS POSTED SPEED 35-45 MPH





6 LANE FREEWAY (27' MEDIAN WITH JERSEY BARRIER) WITH PAVED SHOULDERS AND 2 LANE ONE-WAY SERVICE ROADS EACH SIDE



6 LANE FREEWAY (4 GENERAL PURPOSE LANES, 2 MANAGED LANES, AND 27' MEDIAN WITH JERSEY BARRIER) WITH PAVED SHOULDERS POSTED SPEED 55-70 MPH

6D





MULTI - USE PATH ADJACENT TO RIGHT OF WAY OR SEPARATE PATHWAY



ΜΒ



This page intentionally left blank.

Appendix E Level of Service Definitions

The relationship of travel demand compared to the roadway capacity determines the level of service (LOS) of a roadway. Six levels of service identify the range of possible conditions. Designations range from LOS A, which represents the best operating conditions, to LOS F, which represents the worst operating conditions.

Design requirements for roadways vary according to the desired capacity and level of service. LOS D indicates "practical capacity" of a roadway, or the capacity at which the public begins to express dissatisfaction. Recommended improvements and overall design of the transportation plan were based upon achieving a minimum LOS D on existing facilities and a LOS C on new facilities. The six levels of service are described below and illustrated in Figure 8.

- LOS A: Describes free-flow operations. Free Flow Speed (FFS) prevails and vehicles are almost completely unimpeded in their ability to maneuver within the traffic stream. The effects of incidents or point breakdowns are easily absorbed.
- LOS B: Represents reasonably free-flow operations, and FFS is maintained. The ability to maneuver within the traffic stream is only slightly restricted, and the general level of physical and psychological comfort provided to drivers is still high. The effects of minor incidents and point breakdowns are still easily absorbed.
- LOS C: Provides for flow with speeds near the FFS. Freedom to maneuver within the traffic stream is noticeably restricted, and lane changes require more care and vigilance on the part of the driver. Minor incidents may still be absorbed, but the local deterioration in service quality will be significant. Queues may be expected to form behind any significant blockages.
- LOS D: The level at which speeds begin to decline with increasing flows, with density increasing more quickly. Freedom to maneuver within the traffic stream is seriously limited and drivers experience reduced physical and psychological comfort levels. Even minor incidents can be expected to create queuing, because the traffic stream has little space to absorb disruptions.
- LOS E: Describes operation at capacity. Operations at this level are highly volatile because there are virtually no usable gaps within the traffic stream, leaving little room to maneuver within the traffic stream. Any disruption to the traffic stream, such as vehicles entering from a ramp or a vehicle changing lanes, can establish a disruption wave that propagates throughout the upstream traffic flow. At capacity, the traffic stream has no ability to dissipate even the most minor disruption, and any incident can be expected to produce a serious breakdown and substantial queuing. The physical and psychological comfort afforded to drivers is poor.
- LOS F: Describes breakdown, or unstable flow. Such conditions exist within queues forming behind bottlenecks.





LOS A

LOS B



LOS C

LOS D



LOS E

LOS F

Source: 2010 Highway Capacity Manual, Exhibit 11-4

Appendix F Bridge Deficiency Assessment

The Transportation Improvement Program (TIP) development process for bridge projects involves consideration of several evaluation methods in order to prioritize needed improvements. A sufficiency index is used to determine whether a bridge is sufficient to remain in service, or to what extent it is deficient. The index is a percentage in which 100 percent represents an entirely sufficient bridge and zero represents an entirely insufficient or deficient bridge. Factors evaluated in calculating the index are listed below.

- structural adequacy and safety
- serviceability and functional obsolescence
- essentiality for public use
- type of structure
- traffic safety features

The NCDOT Structures Management Unit inspects all bridges in North Carolina at least once every two years. A sufficiency rating for each bridge is calculated and establishes the eligibility and priority for replacement. Bridges having the highest priority are replaced as federal and state funds become available.

A bridge is considered deficient if it is either structurally deficient (SD) or functionally obsolete (FO). Structurally deficient means there are elements of the bridge that need to be monitored and/or repaired. The fact that a bridge is "structurally deficient" does not imply that it is likely to collapse or that it is unsafe. It means the bridge must be monitored, inspected and repaired/replaced at an appropriate time to maintain its structural integrity. A functionally obsolete bridge is one that was built to standards that are not used today. These bridges are not automatically rated as structurally deficient, nor are they inherently unsafe. Functionally obsolete bridges are those that do not have adequate lane widths, shoulder widths, or vertical clearances to serve current traffic demand or to meet the current geometric standards, or those that may be occasionally flooded.

A bridge must be classified as deficient in order to qualify for federal replacement funds. Additionally, the sufficiency rating must be less than 50% to qualify for replacement or less than 80% to qualify for rehabilitation under federal funding. Deficient bridges located on roads evaluated as a part of the CTP are listed in Table 6. For more details on deficient bridges within the planning area, contact the Structures Management Unit using the information in Appendix A.

Table 6 - Deficient Bridges

Bridge Number	Facility	Feature	Condition	Local ID
2	US 321	Beech Creek	SD	R-5016
11	Blue Ridge Parkway	US 221 (Linville Falls Highway)	FO	R-2596
19	Hickory Nut Gap Road (SR 1342)	Elk River	SD	AVER0015-H
27	US 221 (Linville Falls Highway)	Linville River	SD & FO	R-2595
37	Blue Ridge Parkway	US 221 (Blowing Rock Highway)	FO	AVER0009-H
48	US 19E	Horse Creek	SD	AVER0008-H
60	Mount Pleasant Road (SR 1143)	Trim Branch	FO	AVER0017-H
66	Old Toe River Road (SR 1157)	White Oak Creek	FO	AVER0019-H
165	US 221/NC 181	Linville River	FO	R-2595

FO – Functionally Obsolete SD – Structurally Deficient

Appendix G Socio-Economic Data Forecasting Methodology

In the development of the Avery County CTP, existing and anticipated deficiencies were determined through an analysis of the transportation system looking at both current and future travel patterns. The Avery County CTP Steering Committee worked with NCDOT to estimate population growth and areas of expected higher employment growth to determine the potential impacts on the future transportation system. This data was endorsed by the government boards identified in the table below.

Date	Meeting	Adopted (Yes/No)			
April 7, 2014	Elk Park Board of Aldermen	Yes			
April 8, 2014	Beech Mountain Town Council	Yes			
April 8, 2014	Seven Devils Town Council	Yes			
April 14, 2014	Banner Elk Town Council	Yes			
April 15, 2014	Sugar Mountain Village Council	Yes			
May 13, 2014	Crossnore Board of Aldermen	Yes			
May 13, 2014	Newland Board of Commissioners	Yes			
September 2, 2014	Avery County Commissioners	Yes			

Table 7 – Population/Employment Data Adoption Meetings

Below is a description of the methodology used in the analysis.

Population

Population trends were estimated by calculating the compound average annual growth rate (CAAGR) for the previous 30 years of census data (1980 – 2010) and using that historical CAAGR value to project into the future. From 1980 to 2010, Avery County grew by an approximate 0.7% CAAGR, which was on par with, if not slightly better than, many of its neighboring counties. It was this 0.7% rate that was used to project population from 2010 to the base year (2012) and the future year (2040). The years 1980 to 2010 were selected to calculate the growth rate to use because the rate took into account both a high population growth period (1990-2000) and low growth periods (1980-1990 & 2000-2010).

lable	e 8 – Cens	us Popula	tion
			%

	1980 Census	1990 Census	2000 Census	2010 Census	% CAAGR* (1980 - 2010)	2012 Estimate (0.7% CAAGR*)	2012 Estimate (OSBM**)
Avery County	14,409	14,867	17,167	17,797	0.7%	18,047	17,764

	Year				
	2012	2020	2030	2040	
OSBM**	17,764	17,562	17,255	16,996	
0.4% Growth*	17,940	18,522	19,276	20,061	
0.7% Growth*	18,047	19,083	20,461	21,940	
0.9% Growth*	18,119	19,465	21,290	23,285	

Table 9 – Future Population Projection Scenarios

*Compound Average Annual Growth Rate

**Office of State Budget & Management

(http://www.osbm.state.nc.us/ncosbm/facts_and_figures/socioeconomic_data/population _estimates/county_projections.shtm, Last Accessed 8/2/13)

Note that the colors in Table 9 correspond with the line colors in Figure 9



Figure 9 – Future Population Projection Scenarios

Year

County	1970 Census	1980 Census	1990 Census	2000 Census	2010 Census	% CAAGR (1970 - 2010)	% CAAGR (1980 - 2010)	% CAAGR (1990 - 2010)	% CAAGR (2000 - 2010)
Avery	12,655	14,409	14,867	17,167	17,797	0.86%	0.71%	0.90%	0.36%
Burke	60,364	72,504	75,740	89,148	90,912	1.03%	0.76%	0.92%	0.20%
Caldwell	56,699	67,746	70,709	77,415	83,029	0.96%	0.68%	0.81%	0.70%
McDowell	30,648	35,135	35,681	42,134	44,996	0.96%	0.83%	1.17%	0.66%
Mitchell	13,447	14,428	14,433	15,687	15,579	0.37%	0.26%	0.38%	-0.07%
Watauga	23,404	31,666	36,952	42,695	51,079	1.97%	1.61%	1.63%	1.81%
Ashe	19,571	22,325	22,209	24,384	27,281	0.83%	0.67%	1.03%	1.13%
Alleghany	8,134	9,587	9,590	10,677	11,155	0.79%	0.51%	0.76%	0.44%
Wilkes	49,524	58,657	59,393	65,632	69,340	0.84%	0.56%	0.78%	0.55%
Yancey	12,629	14,934	15,419	17,774	17,818	0.86%	0.59%	0.73%	0.02%
					Average:	0.95%	0.72%	0.91%	0.58%

 Table 10 – County Population Growth Comparison

Average (minus Watauga): 0.83% 0.62% 0.83% 0.44%

High Growth Areas

The CTP Steering Committee identified areas in Avery County that would experience population and employment growth rates higher than the county average. These higher growth rate areas were given a 1% compound annual average growth rate value. Traffic counts were projected by a 1% rate if in a high growth area and 0.7% if anywhere else in the county. Areas of expected higher population, employment, and traffic growth are:

- NC 184 between NC 105 and NC 194 because of the many tourist/secondary resident destinations and Lees-McRae College nearby
- The areas within and nearby the Towns of Newland and Banner Elk because of the availability of water and sewer services
- NC 194 from Three Mile Road to Southern Newland (including Crossnore) because of current development trends
- The area southwest of Beech Mountain because of the potential for development around the Eagles Nest Lodges area
- NC 194 between Elk Park and Newland because of the potential for development/redevelopment of golf course project area.

	1990	2000	2010	Average
BEA*	6,215	7,995	7,347	
% of Pop.	42%	47%	41%	43%
ESC**	6,904	7,617	7,200	
% of Pop.	46%	44%	40%	44%

Table 11 – Employment Data

*Bureau of Economic Analysis (http://www.bea.gov/regional/index.htm, Last Accessed 8/5/13)

**NC Employment Security Commission

(http://esesc23.esc.state.nc.us/d4/LausSelection.aspx, Last Accessed 8/5/13)

Year	2012	2040	Compound Annual Growth Rate
Population	18,000	22,000	0.7%
Employment	7,600	9,900	
Employment/Population	42%	45%	-

Table 12 – Population/Employment Summary

Summary:

- Base Year = 2012 & Future Year = 2040
- 2012 & 2040 population values based on the 0.7% compound average annual growth rate from the 1980 to 2010 census
- 2012 employment value is 42% of the total projected population and was determined by the CTP Steering Committee to be the mid-way value between the 2010 employment/population ratio of 40% and the 1980-2010 average employment/population ratio of 45%
- 2040 projected employment value is 45% of the total projected population
- The 45% employment/population ratio is reasonable given historical employment/population ratios for Avery County and the ratio used by Watauga County during their CTP process

Future Land Use

The CTP Steering Committee identified factors in Avery County that will strongly influence the potential for future growth:

- Areas near incorporated towns/already developed areas
- Smaller & more affordable tracts of land that are easier to buy (summer homes and other development built on tracts of land smaller than 10 acres is the main type of development to occur in Avery County)
- Density of Development

- Accessibility to public utilities (water, sewer, electricity)
- Topography/slope of the land
- Watershed Areas

Figure 10 - Avery County Future Land Use Map



Adjustment of Traffic Volumes on portion of NC 184:

For any route that was identified as having a volume to capacity ratio greater than or equal to 50% in 2040, a check was completed on the 2012 Annual Average Daily Traffic (AADT) data for those routes to confirm the reasonableness of the data. The purpose of this analysis was to ensure that an outlier in the 2012 AADT data did not project 2040 volumes to be lower or higher than what they should have been when compared to the recent historical AADT (2009 – 2012). The years 2009 - 2012 were used because the goal was to have a value that was representative of driving patterns after the recession began in 2008 (did not use 2008 since the recession did not fully kick in until after halfway through 2008).

When completing this check, NC 184 (Tynecastle Highway/Shawneehaw Avenue) from NC 105 to NC 184/NC 194 (Main Street) was identified as having 2012 AADT values that were noticeably lower than the 2009-2012 historical AADT collected at locations along that route. A proposal to adjust the 2012 AADT values along this stretch of NC 184 was presented to the CTP Steering Committee at the May 7, 2014 meeting, which the Steering Committee agreed to.

The 2012 AADT values were adjusted because they seemed unusually low given the range in AADT values from 2009 - 2012 (especially given the contrast to the 2011 AADT values that were unusually high over the same time period). After comparing the average AADT value from 2009 - 2012 to the median AADT value from 2009 - 2012, the median value was selected because it best represented the driving patterns from 2009 - 2012 without being skewed too high or too low by the high values from 2011 or the low values from 2012.

Appendix H Public Involvement

This appendix documents the public involvement process and includes a listing of CTP Steering Committee members, the goals and objectives survey results, and public meetings held throughout the development of the CTP.

List of CTP Steering Committee Members

At the start of a CTP study, a committee is formed that is comprised of individuals who represent the various needs, issues and populations of the community. These representatives are responsible for capturing the transportation needs of the community relative to all modes of transportation and for guiding the development of the CTP. A listing of Steering Committee members for the Avery County CTP is given below.

- Ann Baker, Crossnore Representative
- Tommy Burleson, Avery County Inspections & Planning Director
- Rachel Deal, Crossnore Representative
- Ed Evans, Seven Devils Town Manager
- Bret Gardella, Avery County Economic Development Director
- David Hooper, Seven Devils Town Council Member
- Glenn Johnson, Avery County Commissioner
- David Lane, Sugar Mountain Village Manager
- Dean Ledbetter, Division 11 Planning Engineer
- Rick Owen, Beech Mountain Mayor & Banner Elk Town Manager
- Jes Scott, Beech Mountain Planner/Zoning Administrator
- Debbie Smith, Avery County Transportation Director
- Robert Wiseman, Avery County Manager

CTP Vision, Goals, Objectives and MOEs

The CTP vision, goals and objectives are developed as part of the public involvement process and help identify how the people within an area would like to develop the transportation system (all modes). The CTP committee develops the draft vision, goals and objectives which are further refined with input from citizens via the CTP Goals & Objectives (G&O) survey. These products become the official guide for the CTP being developed.

The vision statement, goals and objectives reflect what is important for the area and defines any local preferences concerning the transportation system and community assets. The vision statement is the framework for the area's strategic planning. Goals and objectives document how the area plans to fulfill its vision. The goals break down the vision statement into themes, while the objectives document how the area plans to make progress towards achieving each goal. MOEs are established to enable the area to track the progress of each objective.

Vision:

Avery County is committed to an efficient transportation system that supports economic development, improves mobility, is safe, reduces congestion, protects the environment, provides mode choices, and preserves Avery County's quality of life.

<u>Goals:</u>

- To provide an efficient and well-connected transportation network
- To provide citizens and visitors of Avery County mode choices for their transportation needs
- To support economic development in Avery County
- To improve traffic safety for motorists, bicyclists, and pedestrians
- To improve the citizens' and visitors' mobility in Avery County and the surrounding area
- To preserve Avery County's quality of life
- To protect the natural and human environment

Objectives:

- To create a more efficient road network that is not dependent on back road short cuts
- To provide for bicycle facilities that connect the municipalities of Avery County
- To address traffic deficiencies that hinder the flow of commerce
- All future projects should consider inclusion of bike lanes or paved shoulders where feasible
- To alleviate congestion and safety issues created by tractor trailers and school buses on roadways
- To address traffic deficiencies that hinder emergency response time and mobility to medical facilities
- To ease regional mobility for citizens and visitors by improving travel conditions along key arterials
- To protect the rugged nature/small town feel of the region
- To connect local residential areas, commercial areas, and schools with sidewalks and multi-use paths
- To provide a continuous and interconnected system of sidewalks in and around each municipality
- To provide key regional facilities multiple modes of access
- To accentuate the character of the county by developing aesthetically appealing "gateway" entrances to the county at the locations listed below. Attractive

signage, foliage, or other items could be used to establish these locations as "gateway" entrances into the county.

- a. US 19E at the Mitchell County line
- b. US 19E at the Tennessee state line
- c. US 221 at the Burke County line
- d. NC 105 at the Watauga County line
- e. NC 181 at the Burke County line
- To preserve the environment, natural beauty, and water quality at the following locations while allowing the flexibility to widen or improve the road if need be:
 - a. US 221(from Linville Falls to NC 181)
 - b. US 19E (between the southern split with NC 194 and Old Toe River Rd)
 - c. NC 194 (between Elk Park and Banner Elk)
 - d. NC 181 to Pineola
 - e. US 221 to the Blue Ridge Parkway
- To strongly consider alternate off road paths along the 5 "environmental corridors" mentioned above as a means to preserve the environment and enhance the natural beauty along these corridors (particularly along corridors next to rivers like the North Toe, Linville, and Elk rivers)

Goals and Objectives Survey

A G&O survey is a public involvement technique used to help identify an area's perception of transportation-related issues, identify concerns that should be addressed during the development of a CTP, and to help develop a vision for the community. The G&O survey is most appropriately implemented at the beginning of the transportation planning study. In addition to determining up front what is important to the citizens of the planning area, initiating the G&O survey early in the planning process allows the survey to serve as an introduction to the transportation planning process. The survey usually includes a brief introduction explaining what a transportation plan is and how the area can benefit from having one. The survey also includes a wide variety of guestions that is tailored to each area as appropriate. A summary of the Avery County G & O survey is given below.

Answer Options	Response Percent	Response Count
28604 - Seven Devils	5.3%	4
28604 - Banner Elk	32.9%	25
28605	0.0%	0
28611	0.0%	0
28616	3.9%	3
28622	10.5%	8
28646	6.6%	5
28657	25.0%	19
28604 - Beech Mountain	5.3%	4
28604 - Sugar Mountain	3.9%	3
28662	3.9%	3
28679	0.0%	0
28692	0.0%	0
28705	0.0%	0
28752	0.0%	0
28777	2.6%	2
Other or you live outside Avery County		6
	answered question	76

1. Please provide the zip code of your local residence in Avery County.

6

2

skipped question

Answer Options	Response Percent	Response Count
Resident (Full Time)	86.3%	69
Resident (Part Time)	8.8%	7
Student	2.5%	2
Visitor	2.5%	2
	answered guestion	80

2. Which would you describe yourself as?

skipped question

Answer Options	Response Percent	Response Count
Less than 1 month per year	3.8%	3
1 to 3 months per year	1.3%	1
3 to 6 months per year	5.1%	4
6 to 9 months per year	2.5%	2
9 to 12 months per year	3.8%	3
I am a fulltime resident	83.5%	66
	answered question	79

3. On average, how many months do you spend in Avery County each year?

answered question 79 skipped question 3

4. On a normal day, approximately how much of your travel takes place within Avery County?

Answer Options	Response Percent	Response Count
Very Little	3.7%	3
25%	6.2%	5
50%	6.2%	5
75%	30.9%	25
100%	53.1%	43
	an anna d'an a attair	04

answered question 81 skipped question 1

5. Please select the destination of your typical daily commute (work, school, or shopping). (check only one)

Answer Options	Response Percent	Response Count
Town of Banner Elk	24.7%	20
Town of Beech Mountain	3.7%	3
Town of Boone	4.9%	4
Town of Crossnore	1.2%	1
Town of Elk Park	4.9%	4
Town of Newland	25.9%	21
Town of Seven Devils	1.2%	1
Town of Sugar Mountain	1.2%	1
Linville	3.7%	3
Rural Avery County	12.3%	10
Watauga County	1.2%	1
Caldwell County	0.0%	0
Burke County	0.0%	0
McDowell County	0.0%	0
Mitchell County	4.9%	4
Tennessee	1.2%	1
Unemployed / Does not apply	6.2%	5
Other	2.5%	2
	answered question	81

skipped question

6. How do you typically commute in Avery County?

Answer Options	Response Percent	Response Count
Bicycle	2.5%	2
Bus	0.0%	0
Car	97.5%	79
Carpool	0.0%	0
Walk	0.0%	0
	answered question	81

answered question

skipped question

7. Approximately how far is your daily commute in Avery County?

Answer Options	Less than Five	Six to Ten	Eleven to Fifteen	Sixteen to Twenty	More than Twenty	Response Count
Miles	18	16	13	10	11	68
Minutes	6	11	12	11	16	56

answered question 77

1

skipped question 5

8. Please rate each of the transportation system goals from 1-Not Important to 5-Very Important.

Answer Options	1-Not Important	2-Less Important	3- Neutral	4- Important	5-Very Important	Response Count
Service to Elderly and Disabled	4	4	11	20	41	80
Consistent Travel Times	6	4	10	36	22	78
Reduced Congestion	7	6	13	28	23	77
Transportation Mode Choice (Walking, Biking)	11	11	30	12	15	79
Expand Public Transit Options	13	12	15	26	12	78
Economic Growth	1	0	14	26	38	79
Expand Tractor-Trailer Access	13	17	23	20	6	79
Environmental Protection	3	2	21	25	25	76
Community and Cultural Preservation	2	1	17	27	32	79
Regional Connectivity (Out-of-County)	3	4	18	34	17	76
Other						11
answered question				81		

answered question

skipped question

9. Of the choices in the previous question (number 8), which is the single Most Important to you, and single Least Important to you?

Most Important	
Answer Options	Choose One of each
Service of Elderly and Disabled Needs	12
Consistent Travel Times	4
Reduce Congestion	9
Expand Public Transit	4
Economic Growth	20
Community and Cultural Preservation	9
Environmental Protection	4
Transportation Mode Choice (Walking and Biking)	8
Regional Connectivity	4
Response Count	74

Least Important		
Answer Options	Choose One of each	
Service of Elderly and Disabled Needs	2	
Consistent Travel Times	9	
Reduce Congestion	12	
Expand Public Transit	13	
Economic Growth	2	
Community and Cultural Preservation	3	
Environmental Protection	6	
Transportation Mode Choice (Walking and Biking)	18	
Regional Connectivity	6	
Response Count	71	

Question

Totals 74

8

answered question

skipped question

Answer Options	Response Percent	Response Count
US 19E - Spruce Paine to NC 194 (Ingalls)	20.3%	15
US 19E - NC 194 (Ingalls) to Cranberry	8.1%	6
US 19E - Cranberry to Tennessee	20.3%	15
US 221 - Linville to Blowing Rock	4.1%	3
US 221 - Linville to Linville Falls	9.5%	7
NC 105 - Linville to Watauga County	47.3%	35
NC 181 - Linville to Newland	33.8%	25
NC 181 - US 221 to Burke County	9.5%	7
NC 184 - NC 105 to Banner Elk	50.0%	37
NC 184 - Banner Elk to Beech Mountain	14.9%	11
NC 194 - US 19E (Ingalls) to US 221	8.1%	6
NC 194 - US 221 to Newland	25.7%	19
NC 194 - Newland to Cranberry	21.6%	16
NC 194 - Cranberry to Banner Elk	20.3%	15
NC 194 - Banner Elk to Valle Crucis	9.5%	7
Other		12
	answered question	74
	skipped question	8

10. What routes in Avery County do you most commonly use?

11. The trade-off between building major roadway facilities (such as a four lane highway) and their impacts on things like the environment, farmland, mountain characteristics, and community cohesion, are often difficult to balance. The case for a four lane road into Avery County has been made for economic reasons. Do you feel the potential benefits of a four-lane facility through Avery County outweighs the potential impacts of such a facility?

Answer Options	Response Percent	Response Count
Yes	50.6%	40
No	49.4%	39
Additional Comments		17
	answered question	79
	skipped question	3

skipped question

12. When traveling in your area, do you find that you often have to go out of your way to get to your destination because the most direct route is too congested? If yes, please list specific locations of problems and alternate routes taken. (The explanations provided for the 13 "Yes" responses were consolidated by primary reason for congestion and summarized below.)

Answer Options	Response Percent	Response Count
No	84.0%	68
Yes - Special Event Traffic	3.7%	3
Yes - NC 184 Seasonal Traffic	3.7%	3
Yes - NC 105	2.4%	2
Yes - Other	6.2%	5
ans	swered question	81
S	kipped question	1

13. What are the key transportation challenges you face in Avery County?

Answers Most Frequently Received (Free response answers were consolidated by the primary transportation challenge identified in the response and summarized below)	Response Percent	Response Count
Dangerous driving conditions for both cars and bicyclists sharing narrow roads	21.2%	11
Bad Weather/Ice/Snow/Fog	15.4%	8
Poor Road Maintenance/Potholes	15.4%	8
Other	15.4%	8
None	7.7%	4
Narrow Roadways	5.8%	3
Lack of Public Transportation	5.8%	3
Slow Drivers	5.8%	3
Seasonal & Special Event Congestion	3.8%	2
Medical Transportation	1.9%	1
Safe Passing Zones/Ability to see division of lanes at night & when raining	1.9%	1
answ	vered auestion	52

answered question 30 skipped question

14. What destinations in Avery County are difficult to access?

Answers Most Frequently Received (Free response answers were consolidated by the primary transportation challenge identified in the response and summarized below)	Response Percent	Response Count
Areas along rural back roads	4.5%	2
Banner Elk	11.4%	5
Beech Mountain	9.1%	4
Elk River Falls	4.5%	2
NC 105	4.5%	2
None	20.5%	9
Other	40.9%	18
Unpaved Mountain Roads	4.5%	2
ansv	vered auestion	44

answered question skipped question

Response Percent	Response Count
44.6%	33
8.1%	6
6.8%	5
5.4%	4
5.4%	4
4.1%	3
2.7%	2
2.7%	2
2.7%	2
2.7%	2
14.9%	11
	Response Percent 44.6% 8.1% 6.8% 5.4% 5.4% 2.7% 2.7% 2.7% 2.7% 2.7% 2.7% 2.7% 2.7% 2.7% 2.7%

15. Are there areas where you would like to see sidewalks constructed or improved?

answered question 74 skipped question 8

16. Are there locations you would like to see served (or better served) by public transit? (Bus, vanpool, etc.)

Answer Responses (Some free response answer provided, though not consolidated here)	rs Response Percent	Response Count
No	66.7%	48
Yes (please specify)	33.3%	24
	answered question	72

skipped question 10

17. Would you support widening existing roads to help accommodate the use of bicycles?

Answer Responses (Some free response answers provided, though not consolidated here)	Response Percent	Response Count
No	41.8%	33
Yes	58.2%	46
	answered question	79

answered question

skipped question

Answer Options	Response Percent	Response Count
Widen existing roads	60.3%	47
Add turn lanes at specific intersections	59.0%	46
Improve pavement and bridges	62.8%	49
Provide or increase bus service	16.7%	13
Build new roadways	14.1%	11
Add on-road bike lanes	44.9%	35
Expand sidewalks	25.6%	20
Access controls including, limited driveways and right-in right-out only facilities	6.4%	5
Greenways and off-road paths	39.7%	31
Park-and-Ride lots	15.4%	12
Provide better information to drivers	23.1%	18
Improving intersection design, traffic signals, and creating roundabouts (traffic circles)	25.6%	20
Other	14.1%	11
	78	
	skipped question	4

18. To address the traffic problems in the area, which improvements should be considered? (Check all that apply)

19. Should we be spending more or less money on the following?

Answer Options	1-Much Less	2- Less	3- Same	4- More	5- Much More	Response Count
Maintaining existing residential roads/streets	0	2	22	30	22	76
Building new major roads	18	14	18	15	9	74
Maintaining major streets, roads, and highways	0	0	15	36	25	76
Paving unpaved roads	3	8	27	15	22	75
Creating or expanding bus service	24	11	20	14	5	74
Expanding carpooling or vanpooling programs	20	16	24	11	1	72
Building new sidewalks	12	12	20	23	7	74
Building new bike lanes	22	5	13	21	16	77
Building new greenways	13	7	26	12	16	74
Providing streetlights	6	6	29	24	9	74
Providing signage	5	4	25	30	8	72
Other						3

answered question

skipped question

78

20. How did you find out about the survey?

Answers Received (Free response answers were consolidated and summarized below)	Response Percent	Response Count
Internet	40.0%	34
E-mail	18.8%	16
Word of Mouth	15.3%	13
Social Media	10.6%	9
Town Hall	10.6%	9
Newspaper	2.4%	2
Planning Department	2.4%	2
total responses (multiple answers per response)		85
	72	

answered question 72 skipped question 10

21. Any other comments or suggestions you would like to share with us?

Answers Received (Free response answers were consolidated and summarized below)	Response Count
Better Improve & Maintain Existing Roads	7
Better Complete Streets/Bike Lanes	2
Other	12
answered question	21
skipped guestion	61

Public Meetings

Brief summaries of public meetings held within the planning area are given below.

Meeting with Crossnore Citizens

On April 1, 2014, the High Country Rural Planning Organization (RPO) and NCDOT met with several Crossnore citizens (and people who live in the Three Mile area) to discuss transportation related concerns in Crossnore. At the meeting, it was emphasized by the Crossnore citizens how important it is that any and all human and environmental impacts from the widening of US 221 (Linville Falls Highway) and NC 194 (Three Mile Road) be minimized as much as possible (this was later re-emphasized by some of the same citizens at public involvement meetings on July 22, 2014 and July 24, 2014). In particular, the Crossnore Presbyterian Church, which is a nationally registered historic site in close proximity to US 221 (Linville Falls Highway), was mentioned as having great importance to the community and that no impacts should occur to the church or its property. Additionally, one citizen who lives in close proximity to NC 194 (Three Mile Road) were referenced on the environmental map provided in the Avery CTP and that a more detailed analysis on impacts to churches and cemeteries near NC 194 (Three Mile Road) needs to be completed before widening the roadway. Local citizens that live

along both the US 221 and NC 194 corridors believe that maintaining these roads as two lane facilities is the best option to maintain the scenic, natural heritage of the region.

Public Workshop # 1

A public drop-in session was held at Riverside Elementary School in southwest Avery County on July 22, 2014 from 4:30 PM – 6:30 PM. The purpose of this session was to present the proposed Comprehensive Transportation Plan to the public and solicit comments. This drop-in session did not have a significant turn out, but one citizen who stopped by expressed her concerns that widening US 221 (Linville Falls Highway) and NC 194 (Three Mile Road) would destroy the scenic and natural heritage of the area.

Public Workshop # 2

A public drop-in session was held at the Avery County Senior Center in Newland on July 24, 2014 from 4:30 PM – 6:30 PM. The purpose of this session was to present the proposed Comprehensive Transportation Plan to the public and solicit comments. At this session approximately a dozen citizens showed up, several who had attended the April 1st Crossnore meeting. After this session, eight written comments were received that expressed opposition to widening US 221 or widening two lane roads to four lanes in general. The CTP Steering Committee considered these comments at their next meeting and revised the draft CTP language for the widening projects that will impact US 221 and NC 194 (TIP projects R-2520, R-2595, and R-2596). It is now recommended in the problem statements for the three TIP projects mentioned that the projects be re-assessed after the new North Carolina Transportation Network (NCTN) is finalized. R-2520, R-2595, and R-2596 should have considerations for facilities that impose fewer human and natural impacts since there are no capacity issues along US 221 and NC 194 (Three Mile Road).

Public Workshop # 3

A public drop-in session was held at Banner Elk town hall on July 29, 2014 from 4:30 PM – 6:30 PM. The purpose of this session was to present the proposed Comprehensive Transportation Plan to the public and solicit comments. At this session approximately a dozen citizens showed up. After this session, one written comment was received that stated that more lanes are not always a better option when considering alternatives. The CTP Steering Committee considered this comment at their next meeting.

Adoption Meetings

The Avery County CTP was presented at two Avery County Commissioner meetings and several town council meetings. The purposes of these meetings were to discuss the plan recommendations, solicit further input from the public, and to seek adoption of the CTP. Table 13 below provides an overview of these meetings.

		0
Date	Meeting	Adopted (Yes/No)
September 15, 2014	Avery County Commissioners	No
October 6, 2014	Avery County Commissioners	Yes
October 6, 2014	Elk Park Board of Aldermen	Yes
October 7, 2014	Newland Board of Commissioners	Yes
October 13, 2014	Banner Elk Town Council	Yes
October 14, 2014	Beech Mountain Town Council	Yes
October 14, 2014	Crossnore Board of Aldermen	No
October 28, 2014	Sugar Mountain Village Council	Yes
November 12, 2014	Seven Devils Town Council	Yes
December 9, 2014	Crossnore Board of Aldermen	Yes
December 17, 2014	High Country RPO TAC	Yes
January 8, 2015	NCDOT Board of Transportation	Yes

Table 13 – Avery County CTP Adoption Meetings

Appendix I Alternatives & Scenarios Studied

This appendix includes documentation for alternatives and scenarios that were considered, including ones not shown on the adopted CTP. This appendix details why the proposed alternative shown on the CTP was selected, why other reasonable alternatives studied were not selected, and why some alternatives were considered unreasonable and recommended for elimination from further study. If an alternative was not selected but considered reasonable, then it could be considered further in future studies.

AVER0001-H, New Facility west of Banner Elk:

CTP Project Proposal

Alternative 4 begins around the NC 184 (Tynecastle Highway)-Banner Creek Road (SR 1341) intersection, travels northwest to connect with Elkview Place, and terminates at the NC 194 (Banner Elk Highway)-Elkview Place intersection.

There were no issues identified with Alternative 4 that made it an unreasonable solution. Alternative 4 (reference Figure 11) was selected for inclusion in the CTP as the CTP project proposal. This alternative was selected because it meets the transportation need of relieving future congestion on NC 184/NC 194 (Main Street) by providing an alternative route for through traffic around Banner Elk. It is the same route that was previously recommended in both the 1985 Banner Elk Thoroughfare Plan and the 2003 Banner Elk and Beech Mountain Thoroughfare Plan (2003 plan not adopted by Banner Elk). It has less major impacts to the human and natural environment than the other alternatives considered (particularly less impacts to Lees-McRae College) and it satisfies Banner Elk's request to avoid impacts to Downtown Banner Elk, particularly NC 184 (Shawneehaw Avenue) north of Dobbins Road (SR 1337) and anywhere along NC 184/NC 194 (Main Street). This route does come within close proximity to the Elk River Airport, a sanitary sewer system treatment and discharge plant, and Grandfather Home for Children.

There are three key destinations that traffic passing through Banner Elk are destined towards or will be destined towards in the future: Tennessee, Beech Mountain, and the future Eagles Nest Lodge development. This alternative provides a means for through traffic with destinations of Tennessee and of the proposed Eagles Nest Lodge development (just west of Banner Elk) to make it to their destination without contributing to congestion in Banner Elk. Alternative 7 would better provide an alternative means of travel for drivers headed to Beech Mountain, but Alternative 4 is further away from development in Lees-McRae College and less likely to have significant impacts to the college than Alternative 7.

Also, while not evaluated or proposed in this CTP, a two lane connector route was proposed along Old Turnpike Road between NC 184 (Beech Mountain Parkway) and the

intersection of the new NC 184 alternate facility and NC 194 (Main Street) in the 1985 Banner Elk Thoroughfare Plan (NC 184 Alternate Facility titled "Western Bypass" in 1985 Banner Elk Thoroughfare Plan). Future plans may find it worth evaluating this potential addition to the route to better satisfy traffic headed to Beech Mountain.

Sharp elevation changes along all routes considered may potentially lead to high cut and fill costs and impacts to the natural scenery of the area. Part of these sharp elevation changes include the crossing of the Elk River with hills on either side of the river (Alternative 1 is the only alternative that does not cross the Elk River).

Other Alternatives Studied

Alternative 2 starts at a point near the NC 184 (Shawneehaw Avenue)-Hickory Nut Gap Road (SR 1342) intersection before crossing Mill Pond, follows Mill Pond Road to a point south of the NC 184/NC 194 (Main Street)-NC 184 (Beech Mountain Parkway) intersection, and then turns north to terminate at the NC 184/NC 194 (Main Street)-NC 184 (Beech Mountain Parkway) intersection.

There were no issues identified with Alternative 2 that made it an unreasonable solution. This alternative may be considered in future studies. The benefits of Alternative 2 would be that it is the shortest route considered (approximately 0.75 miles), the majority of the route would take advantage of the existing Mill Pond Road, and it would connect to NC 194 (Banner Elk Highway) at its intersection with NC 184 (Beech Mountain Parkway). However, the route's close proximity to Mill Pond/Elk River (including a dam), the May Wildlife Rehabilitation Center and Lees-McRae College are all primary concerns for this route. Mill Pond Road is the route used for a sanitary sewer treatment and discharge plant. Also, Banner Elk does not want to widen NC 184 (Shawneehaw Avenue) north of Dobbins Road (SR 1337) to connect to Alternative 2's intersection with NC 184 near Hickory Nut Gap Road (SR 1342) since that would cause some impacts to occur in Banner Elk town limits.

Alternative 3 is the same as Alternative 2, except that it follows Mill Pond Rd almost the full length of the road to right before the sanitary sewer treatment and discharge plant before turning north to follow Elkview Place to the NC 194 (Banner Elk Highway)-Elkview Place intersection.

There were no issues identified with Alternative 3 that made it an unreasonable solution. This alternative may be considered in future studies. Alternative 3 (like Alternative 2) has the benefits of being a short route and the majority of the route uses the existing Mill Pond Road. However, the route's close proximity to Mill Pond/Elk River (including a dam), the May Wildlife Rehabilitation Center, the Elk River Airport, and a sanitary sewer system treatment and discharge plant are primary concerns for this route. Mill Pond Road is the road used for the sanitary sewer treatment and discharge plant mentioned above. Also, Banner Elk does not want to widen NC 184 (Shawneehaw Avenue) north of Dobbins Road (SR 1337) to connect to Alternative 3's intersection with NC 184 near Hickory Nut Gap Road (SR 1342) since that would cause some impacts to occur in Banner Elk town limits.
Alternative 5 runs west from a point along NC 184 (Shawneehaw Avenue) south of Hickory Nut Gap Road (SR 1342) to a location near Hickory Nut Gap Road (SR 1342) where it turns northwest to follow the same path as Alternative 4 before terminating at the NC 194 (Banner Elk Highway)-Elkview Place intersection.

There were no issues identified with Alternative 5 that made it an unreasonable solution. This alternative may be considered in future studies. Alternative 5 would provide a similar and shorter route than the selected Alternative 4. Concerns for Alternative 5 would be to ensure that the route minimizes impacts to a nearby historic resource property, property owned by Lees-McRae College (including the athletic facilities), the Grandfather Home for Children, the Elk River Airport, and a sanitary sewer system treatment and discharge plant. Also, Banner Elk does not want to widen NC 184 (Shawneehaw Avenue) north of Dobbins Road (SR 1337) to connect to Alternative 5's intersection with NC 184 south of Hickory Nut Gap Road (SR 1342) since that would cause some impacts to occur in Banner Elk town limits.

Alternative 6 starts at the same location as Alternative 5 and travels west to the same point near Hickory Nut Gap Road (SR 1342) as Alternative 5 before turning north to end at the NC 184/NC 194 (Main Street)-NC 184 (Beech Mountain Parkway) intersection.

There were no issues identified with Alternative 6 that made it an unreasonable solution. This alternative may be considered in future studies. Concerns for Alternative 6 would be to ensure that the route minimizes impacts to a nearby historic resource property, the Lees-McRae College (including the athletic facilities), and the Grandfather Home for Children. Also, Banner Elk does not want to widen NC 184 (Shawneehaw Avenue) north of Dobbins Road (SR 1337) to connect to Alternative 5's intersection with NC 184 south of Hickory Nut Gap Road (SR 1342) since that would cause some impacts to occur in Banner Elk town limits.

Alternative 7 originates around the NC 184 (Tynecastle Highway)-Banner Creek Road (SR 1341) intersection and follows the same path as Alternative 4, running northwest. However, it separates from the Alternative 4 path around Hickory Nut Gap Road (SR 1342) by turning north to follow the same path as Alternative 6 and terminate at the NC 184/NC 194 (Main Street)-NC 184 (Beech Mountain Parkway) intersection.

There were no issues identified with Alternative 7 that made it an unreasonable solution. This alternative may be considered in future studies. Alternative 7 is similar to Alternative 4 and has the advantage of transporting vehicles to the Main Street-Beech Mountain Parkway intersection (a better route for through traffic with a destination of Beech Mountain). Impacts to Lees-McRae College and the Grandfather Home for Children are a concern. Alternative 4 was selected over Alternative 7 because Alternative 7 would likely have more impacts to Lees-McRae College.

<u>Unreasonable¹ Solutions/Alternatives</u>

Alternative 1 runs from Dobbins Road (SR 1337) to a point along NC 194 (Main Street), east of NC 184 (Shawneehaw Avenue).

Alternative 1 was determined to be an unreasonable solution during the CTP process because it would fail to meet the transportation need of taking Tennessee, Eagles Nest Lodge, and Beech Mountain through trips off of NC 184/NC 194 (Main Street). Drivers coming from NC 184 (Tynecastle Highway) would likely not use a facility that takes them further east, and even if they did use this facility, it would not alleviate projected future congestion on NC 184/NC 194 because these through trips would still have to travel through Banner Elk. Connecting a potential Alternative 1 to a new facility that came down from Beech Mountain was considered, but this scenario would still require Eagles Nest Lodge and Tennessee bound through traffic to drive through NC 184/NC 194 (Main Street). Also, Alternative 1 was the least preferred alternative among Banner Elk officials during CTP development.

¹ A proposed project is determined to be unreasonable if it:

⁻Fails to meet the community's vision,

⁻Fails to address the transportation deficiency, OR

⁻Has an unacceptable level of impacts to the human or natural environment



Legend

Alternative 1 Alternative 2 Alternative 3 Alternative 4

Alternative 5

Alternative 6

Alternative 7

— Network Roads

County Boundary

Schools

+ Airport

Roads

Rivers and Streams
Lees-McRae College
Municipal Boundary
Conservation Land



0

Banner Elk New Facility Alternatives Map (AVER0001-H)

Avery County

Comprehensive Transportation Plan

Figure 11

Base map date: October 26, 2012

AVER0002-H, NC 194 Alternate Facility:

CTP Project Proposal

Alternative 3 begins at the NC 194-Old Cranberry Street intersection, follows Old Cranberry Street, loops around the west side of Newland, crosses Old Toe River Road (SR 1157), and follows Old Public Road to connect with NC 194 at the NC 194-Old Public Road intersection.

There were no issues identified with Alternative 3 that made it an unreasonable solution. Alternative 3 (reference Figure 12) was selected for inclusion in the CTP as the CTP project proposal. This alternative was selected because it meets the transportation need of relieving congestion on NC 194 by providing an alternative route for through traffic around Newland, is similar to the route that was recommended in the 2002 Supplement to the 1994 Newland Thoroughfare Plan (not adopted by Newland), has less major impacts to the natural environment than the other alternatives considered, and its short route distance and use of pre-existing roadways minimizes the construction costs. Concerns for this alternative are that it crosses the North Toe River, is in close proximity to a cemetery, a water distribution treatment plant, a water well, and a water distribution tank. This alternative is likely to have more impacts to the human environment than the other alternatives studied.

Other Alternatives Studied

Alternative 2 originates at a point along NC 181 south of Beech Street, connects to NC 194, then loops around the west side of Newland, crosses Old Toe River Road (SR 1157), and then intersects NC 194 just south of the southern loop of Summer Haven Street.

There were no issues identified with Alternative 2 that made it an unreasonable solution. This alternative may be considered in future studies. Alternative 2 was the recommended route in the 2002 Supplement to the 1994 Newland Thoroughfare Plan (though never adopted by Newland). Concerns for this alternative are the crossing of the North Toe River and close proximity to a cemetery, apartment complex, a water distribution treatment plant, water well, and water distribution tank. Also, this alternative may potentially have higher cut and fill costs and more impacts to the natural scenery of the area than Alternative 3.

Alternative 3 Extension was an extension of the selected Alternative 3 from the NC 194-Old Cranberry Street intersection to NC 181 south of Beech Street.

There were no issues identified with Alternative 3 Extension that made it an unreasonable solution. This alternative may be considered in future studies. This route was considered as a part of the selected Alternative 3, but not selected because it would not meet a transportation need. This extension route would be an alternative facility for NC 181 in Newland. However, NC 181 in Newland is not projected to be over capacity in the future.

Unreasonable Solutions/Alternatives

Alternative 1 starts at a point on NC 194 (Millers Gap Highway) south of Spanish Oak Road (SR 1153), runs north around Avery County High School, crosses NC 181 (Newland Highway), and then loops around the east side of Newland before terminating near the NC 194-Vale Road (SR 1159) intersection at the north end of town.

Alternative 1 was determined to be an unreasonable solution during the CTP process due to its anticipated high construction costs due to sharp elevation changes. In 1999, the NCDOT Roadway Design Unit determined that Alternative 1 was not feasible due to its low projected traffic volumes and high construction costs. As a result, the 2002 Supplement to the 1994 Newland Thoroughfare Plan (not adopted by Newland) sought to find another alternative route to the west side of town that was feasible. Alternative 1 would cross the North Toe River.



Appendix J 2013 Seasonal Traffic Counts

In 2013, during the development of the CTP, the NCDOT Traffic Survey Group collected traffic data 5 times at 29 locations to analyze the seasonal nature of traffic in Avery County. The months that counts were collected were February, April, June, August, and October. The locations of these counts are shown in the table and map below.

COUNT STATION NUMBER	GENERAL LOCATION	ROUTE	LOCATION
26	Altamont	US 221	S of NC 194
24	Altamont	US 221/NC 194	N of Stamey Branch Rd
1541	Banner Elk	Hickory Nut Gap Rd (SR 1342)	W of NC 184
47	Banner Elk	NC 184	S of NC 194/Main St
59	Banner Elk	NC 184 (Beech Mountain Pkwy)	N of Valley Haven Baptist Church
32	Banner Elk	NC 184-194/Main St	W of NC 184/Shawneehaw Ave
33	Banner Elk	NC 194	E of Park Ave
21	Crossnore	US 221	E of Millers Gap Hwy
28	Elk Park	NC 194	E of US 19 E
36	Elk Park	NC 194	E of Blevins Creek Rd (West End)
5	Elk Park	US 19 E	E of Davis St
7	Elk Park	US 19 E	N of Cranberry Middle School
6	Elk Park	US 19 E/NC 194	S of NC 194
13	Ingalls	US 19 E	S of Three Mile Rd
18	Linville	US 221	E of NC 105
53	Linville	US 221	E of NC 181
60	Linville	US 221/NC 181	N of Linville Avenue
27	Linville Falls	US 221	S of Blue Ridge Pkwy
1510	Newland	Avery High School Rd (SR 1370)	S of NC 181
3401	Newland	NC 181	E of NC 194
38	Newland	NC 194	N of NC 181
39	Newland	NC 194	N of Old Cranberry Rd
1511	Newland	Spanish Oak Rd (SR 1153)	W of NC 194
55	Pineola	NC 181	S of US 221
56	Pineola	NC 181	S of Blue Ridge Pkwy
14	Spruce Pine	US 19 E	N of Mayland Community College
57	Sugar Mountain	NC 105	E of NC 184
58	Sugar Mountain	NC 105	W of NC 184
1529	Three Mile	Mullin Hill Rd (SR 1106)	S of NC 194

Table 14 – 2013 Seasonal Count Locations



Figure 13 – 2013 Seasonal Count Locations

The five sets of data were collected in the form of vehicle axle pair counts that were then used by the NCDOT Traffic Survey Group to calculate an official Annual Average Daily Traffic (AADT) value for the year 2013. However, to better understand the seasonal nature of traffic in Avery County, the monthly raw axle pair count data was converted to average monthly vehicle count data during the development of the CTP and compared to AADT¹. It should be emphasized that the AADT is the official traffic data collected for these roads in the year 2013 and that the average monthly vehicle counts are strictly being used to highlight the seasonal fluctuations of traffic at these locations. Also, the monthly vehicle counts are based on a small sample size of 4 to 7 days of counts per month, whereas the AADT is based on looking at the 5 months of counts, in addition to previous years' AADT to ensure reasonableness to historical AADT trends.

Tables 15 through 19, below, provide the monthly axle pair data collected and the average monthly vehicle count values that the axle pair data was converted to. Table 20 summarizes the 2013 monthly vehicle counts for all locations, provides projected 2040 monthly counts, and explains the methodology used to calculate the 2040 monthly counts. Table 21 provides a comparison of the traffic volumes and capacities of each location that seasonal data was collected for. The comparison is between 2012 AADT, 2013 monthly vehicle counts, 2013 AADT, 2040 AADT (projected from 2012 AADT), 2040 monthly vehicle counts, and 2040 AADT (projected from 2013 AADT). Only 5 traffic count stations (stations 38, 47, 53, 57, 58) are projected to have a month where traffic would be projected to be over capacity in 2040. Those locations are:

- NC 194 north of NC 181 (in Newland) AVER0002-H
- NC 184 south of NC 194 (in Banner Elk) AVER0001-H
- US 221 east of NC 181 (in Linville) AVER0003-H
- NC 105 north of NC 184 (near Sugar Mountain/Grandfather Village) R-2566
- NC 105 south of NC 184 (near Sugar Mountain/Grandfather Village) R-2566

Those 5 count stations provided seasonal data that was relevant to 4 highway transportation projects proposed in this CTP and were referenced in the appropriate problem statements in Chapter 2. An in depth analysis of the NC 105 seasonal traffic counts can be found on page J-11 and in figures 14 and 15.

¹ This data conversion was completed by Matt Quesenberry of the Transportation Planning Branch. The formula for this conversion can be found at the bottom of the monthly vehicle count tables provided below.

013		t			Та	ble 15 - F	ebruary	2013 Dai	ly Raw Co	unts (Axl	e Pairs p(er Day)		Total Average
te	Day	Station	Route ID	Location	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Total Average	Factor	Venicie count (Minus Seasonal Factor)
9	N	5	US 19E	E OF SR 1170	6,298	6,127		6,505	6,172	6,494	6,428	6,337	66	6,300
9	N	9	US 19E/NC 194	S OF SR 1323		Count unu	usually hi	igh compai	red to oth	er months		I	95	ı
6	×	7	US 19E	S OF NC 194	2,237	2,657		2,776	2,661	2,281	1,928	2,423	66	2,400
7	ТН	13	US 19E	S OF SR 1198	1,831	1,820	2,073		1,814	1,849	1,735	1,854	86	1,800
7	ТН	14	US 19E	W OF SR 1196	5,725	7,115	7,710		6,693	6,114	4,890	6,375	67	6,200
7	ТН	18	US 221	E OF NC 105	878	647	734	559	850	976	706	764	66	800
2	ТН	21	US 221	E OF SR 1524		Count uni	usually lc	ow compar	red to oth€	er months		I	26	
2	Η	24	US 221/NC 194	N OF SR 1114	4,554	4,759	4,991	4,826	5,477	5,404	4,322	4,905	98	4,800
7	ТН	26	US 221	S OF NC 194	2,976	2,401	2,429		2,411	2,879	2,734	2,638	96	2,500
7	Ħ	27	US 221	S OF SR 1100	2,765	2,122	2,106	2,251	2,669	3,251	2,586	2,536	96	2,400
9	Μ	28	NC 194	N OF US 19E	3,063	2,859		3,049	2,914	3,095	2,921	2,984	95	2,800
6	Μ	32	NC 184-194	W OF NC 184	5,630	5,706		5,911	5,822	6,854	6,719	6,107	66	6,000
9	Ν	33	NC 194	E OF NC 184	2,587	3,334		3,219	3,079	3,412	3,174	3,134	66	3,100
9	Μ	36	NC 194	E OF SR 1361				5,155	3,840	5,016	4,295	4,577	95	4,300
9	Ν	38	NC 194	N OF NC 181	12,829	11,990		10,452	18,822	16,456	14,588	14,190	66	14,000
9	M	39	NC 194	N OF SR 1156				7,581	7,626	7,120	5,133	6,865	66	6,800
9	Μ	47	NC 184	S OF NC 194	6,195	6,500		6,612	6,157	7,716	7,577	6,793	66	6,700
7	ТН	53	US 221	E OF NC 181	7,346	8,175	8,473	7,978	9,525	9,377	7,216	8,299	97	8,000
7	TH	55	NC 181	S OF US 221	3,077	2,685	2,719	2,556	3,232	3,553	2,793	2,945	96	2,800
7	TH	56	NC 181	S OF SR 1521	2,541	2,049	2,099	2,036	2,550	2,937	2,422	2,376	98	2,300
5	N	57	NC 105	N OF NC 184	19,565	18,804		8,602	11,040	12,355	11,280	13,608	98	13,300
7	ТН	58	NC 105	S OF NC 184	7,424	7,637	7,909	7,949	8,083	9,435	7,479	7,988	98	7,800
9	≥	59	NC 184	E OF SR 1363	2,704	1,756		2,035	1,964	2,892	3,793	2,524	66	2,500
7	ТН	60	US 221/NC 181	N OF SR 1545	4,590	4,080	4,184	4,020	4,987	5,489	4,353	4,529	96	4,300
6	Μ	1510	SR 1370	S OF NC 181	1,549	2,739		2,176	2,310	2,471	1,117	2,060	66	2,000
6	Ν	1511	SR 1153	W OF NC 194	1,741	1,994		2,042	2,221	1,856	1,489	1,891	66	1,900
7	ТН	1529	SR 1106	S OF NC 194	2,382	2,736	2,977		2,521	2,714	2,107	2,573	66	2,500
6	N	1541	SR 1342	W OF NC 184	1,249	1,796		1,731	1,703	1,656	1,280	1,569	66	1,600
9	N	3401	NC 181	E OF NC 194		Count uni	usually lc	ow compar	red to oth€	er months		I	66	ı
					(T				00/	1				

Total Average Vehicle Count (Minus Seasonal Factor) = (Total Axle Pair Average) * (Axle Factor/100) No Seasonal Factor calculated since value is not official AADT (not average for the year)

Ч 4

2013					Tal	ole 16 - A	pril 201	3 Daily Ra	aw Count	s (Axle Pa	iirs per D	ay)		Total Average
CTU2	Install	Count	Route ID	location								Totol	Axle	Vehicle Count
Date	Day	Station			Sun	Mon	Tue	Wed	Thu	Fri	Sat	Average	Factor	(Minus Seasonal Factor)
4/17	N	5	US 19 E	E OF SR 1170	6,587	6,787		6,797	7,039	6,969	6,221	6,733	66	6,700
4/11	ТН	9	US 19 E/NC 194	S OF SR 1323	6,235	6,508	6,083		6,964	7,091	5,995	6,479	95	6,200
4/11	ТН	7	US 19 E	S OF NC 194	2,607	3,052	3,061		3,000	2,722	2,201	2,774	66	2,700
4/11	ТН	13	US 19 E	S OF SR 1198	2,128	2,074	2,117		2,023	2,086	1,866	2,049	98	2,000
4/11	ТН	14	US 19 E	W OF SR 1196	6,601	7,617	7,326		7,298	6,457	4,929	6,705	26	6,500
4/10	N	18	US 221	E OF NC 105	1,850	730		1,075	874	974	1,784	1,215	66	1,200
4/17	Μ	21	US 221	E OF SR 1524	4,098			4,782	4,796	4,910	4,666	4,650	26	4,500
4/11	ТН	24	US 221/NC 194	N OF SR 1114	5,031	5,210	5,175		5,375	5,401	4,127	5,053	86	5,000
4/11	ТН	26	US 221	S OF NC 194	3,112	2,604	2,731		2,840	3,180	2,766	2,872	96	2,800
4/11	ТН	27	US 221	S OF SR 1100	2,882	2,332	2,510		2,639	2,967	2,642	2,662	96	2,600
4/11	ТН	28	NC 194	E OF US 19 E	2,830	3,081	3,245		3,168	3,024	2,572	2,987	95	2,800
4/11	ТН	32	NC 184-194	W OF NC 184	4,544	5,872	6,152		6,087	6,018	4,880	5,592	66	5,500
4/11	ТН	33	NC 194	E OF NC 184	2,681	3,596	3,760		3,613	3,659	2,923	3,372	66	3,300
4/11	ТН	36	NC 194	E OF SR 1361	5,169	5,769	5,864		5,981	6,004	4,711	5,583	95	5,300
4/10	N	38	NC 194	N OF NC 181	18,571	11,251		11,206	11,326	11,234	17,510	13,516	66	13,400
4/10	N	39	NC 194	N OF SR 1156	6,305	7,660		7,781	7,841	8,069	5,647	7,217	66	7,100
4/11	ТН	47	NC 184	S OF NC 194	5,100	6,564	7,029		6,749	6,768	5,339	6,258	66	6,200
4/10	N	53	US 221	E OF NC 181	7,585	9,008		9,341	9,160	9,393	6,888	8,563	97	8,300
4/10	N	55	NC 181	S OF US 221	3,251	2,916		3,245	3,301	3,742	3,077	3,255	96	3,100
4/10	N	56	NC 181	S OF SR 1521	2,860	2,412		2,498	2,424	2,868	2,318	2,563	98	2,500
4/10	N	57	NC105	N OF NC 184	18,530	19,008		9,913	9,729	10,304	18,605	14,348	98	14,100
4/10	×	58	NC 105	S OF NC 184	7,578	8,275		8,837	8,829	9,021	7,074	8,269	98	8,100
4/11	ТН	59	NC 184	E OF SR 1363	1,223	1,640	1,643		1,607	1,540	1,291	1,491	99	1,500
4/10	N	60	US 221/NC 181	N OFSR 1545	4,546	4,572		5,002	4,866	5,176	4,093	4,709	96	4,500
4/10	Ν	1510	SR 1370	S OF NC 181	1,764	2,746		2,671	2,895	2,191	1,152	2,237	66	2,200
4/10	≥	1511	SR 1153	W OF NC 194	1,850	2,050		2,135	2,150	2,093	1,609	1,981	66	2,000
4/11	ТН	1529	SR 1106	S OF NC 194	2,260	2,971	2,843		2,620	2,729	2,010	2,572	99	2,500
4/11	TΗ	1541	SR 1342	W OF NC 184	1,291	1,816	2,018		2,001	1,971	1,737	1,806	66	1,800
4/10	N	3401	NC 181	E OF NC 194	5,098	7,416		7,308	7,505	7,099	4,184	6,435	99	6,400
Total 4	Average	y Vehicle	Count (Minus Se	asonal Factor)	= (Total A	vyle Pair /	Average	* (Δxle	Eactor/10	100				

Total Average Vehicle Count (Minus Seasonal Factor) = (Total Axle Pair Average) * (Axle Factor/100) No Seasonal Factor calculated since value is not official AADT (not average for the year)

2013					Ta	ble 17 - J	une 2013	Daily Ra	w Counts	s (Axle Pai	irs per Da	() (Yi		Total Average
	Install	Count	Route ID	l ocation								Totol	Axle	Vehicle Count
Date	Day	Station	ואסמנב וה	FOCATION	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Average	Factor	(Minus Seasonal
2												Aveiage		Factor)
6/4	TU	5	US 19-E	E OF SR 1170	7,458	7,283	7,603	7,501	8,300	8,527	7,658	7,761	66	7,700
6/4	TU	9	US 19-E / NC 194	S OF SR 1323	6,487	6,675	7,116	7,100	7,600	7,877	6,835	7,099	56	6,700
6/4	TU	7	US 19-E	S OF NC 194	2,426	2,642	3,133	3,315	3,143	2,825	2,446	2,847	66	2,800
6/4	TU	13	US 19-E	S OF SR 1198	2,261	2,112	2,210	2,304	2,194	2,253	2,149	2,212	86	2,200
6/4	TU	14	US 19-E	W OF SR 1196	6,383	2,093	7,124	7,278	6,807	6,446	5,327	6,637	26	6,400
6/5	M	18	US 221	E OF NC 105	1,644	1,276	1,678	1,282	1,161	1,205	2,071	1,474	66	1,500
6/5	Ν	21	US 221	E OF SR 1524	5,233	5,253	5,529	5,554	5,521	5,939	4,875	5,415	26	5,300
6/4	TU	24	US 221 / NC 194	N OF SR 1114	5,338	5,361	5,546	5,481	5,627	5,650	4,708	5,387	86	5,300
6/4	TU	26	US 221	S OF NC 194	3,578	2,932	3,094	3,008	3,193	3,421	3,313	3,220	96	3,100
6/4	TU	27	US 221	S OF SR 1100	3,399	2,774	2,915	2,754	2,974	3,261	3,216	3,042	96	2,900
6/4	TU	28	NC 194	E OF US 19-E	3,163	3,359	3,633	3,573	3,704	3,606	3,327	3,481	95	3,300
6/4	TU	32	NC 184-194	W OF NC 184	5,861	7,227	7,279	7,237	7,835	7,304	6,354	7,014	66	6,900
6/4	TU	33	NC 194	E OF NC 184	3,204	4,566	4,484	4,380	4,278	4,475	3,940	4,190	66	4,100
6/4	TU	36	NC 194	E OF SR 1361	5,502	5,846	6,343	6,112	6,523	6,697	5,428	6,064	95	5,800
6/11	TU	38	NC 194	N OF NC 181	19,179	19,612	11,775	11,788	11,608	11,135	12,322	13,917	66	13,800
6/5	M	39	NC 194	N OF SR 1156	6,507	7,740	8,005	8,358	8,504	8,845	5,777	7,677	66	7,600
6/4	TU	47	NC 184	S OF NC 194	6,619	8,265	8,539	8,252	8,349	8,389	7,388	7,972	66	7,900
6/5	M	53	US 221	E OF NC 181	9,357	10,984	11,362	10,770	11,194	11,340	8,892	10,557	67	10,200
6/5	M	55	NC 181	S OF US 221	3,807	3,584	3,895	3,653	3,621	4,413	3,694	3,810	96	3,700
6/5	M	56	NC 181	S OF SR 1521	2,952	2,581	2,821	2,653	2,613	3,145	2,826	2,799	98	2,700
6/5	M	57	NC 105	N OF NC 184	10,135	11,195	11,560	11,155	11,599	12,133	10,826	11,229	98	11,000
6/5	M	58	NC 105	S OF NC 184	9,186	10,527	11,196	10,439	10,718	10,937	9,319	10,332	98	10,100
6/4	TU	59	NC 184	E OF SR 1363	2,190	2,736	2,600	2,622	2,565	2,732	2,492	2,562	66	2,500
6/5	M	60	US 221 / NC 181	N OF SR 1545	5,593	5,653	6,157	5,577	5,793	5,946	5,216	5,705	96	5,500
6/5	M	1510	SR 1370	S OF NC 181	1,816	2,422	2,310	2,980	2,880	3,201	1,315	2,418	66	2,400
6/5	M	1511	SR 1153	W OF NC 194	1,739	2,080	2,160	2,194	2,267	2,428	1,844	2,102	66	2,100
6/4	TU	1529	SR 1106	S OF NC 194	2,553	2,777	2,882	2,848	2,831	2,753	2,170	2,688	66	2,700
6/4	TU	1541	SR 1342	W OF NC 184	1,545	1,796	1,987	1,828	1,628	1,744	1,569	1,728	66	1,700
6/5	M	3401	NC 181	E OF NC 194	5,793	8,040	8,251	7,925	8,391	7,961	4,919	7,326	66	7,300
		0 -1-:			Total Ard		1 * 1		100 1/ 1					

Total Average Vehicle Count (Minus Seasonal Factor) = (Total Axle Pair Average) * (Axle Factor/100) No Seasonal Factor calculated since value is not official AADT (not average for the year)

2013					Tab	le 18 - Au	Igust 2013	3 Daily Ra	aw Count	s (Axle Pa	iirs per D	ay)		Total Average
Inctall	Install	Count	Route ID	l ocation								Totol	Axle	Vehicle Count
Date	Day	Station		FOCATION	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Average	Factor	(Minus Seasonal
														ractory
8/6	τu	S	US 19 E	E OF SR 1170	6,888	7,029	6,932	7,003	7,573	7,828	7,105	7,194	66	7,100
8/6	TU	9	US 19 E / NC 194	S OF SR 1323	5,512	5,757	5,684	5,815	6,197	6,397	5,626	5,855	95	5,600
8/6	TU	7	US 19 E	S OF NC 194	2,532	2,486	2,495	2,694	2,607	2,678	2,371	2,552	66	2,500
8/6	TU	13	US 19 E	S OF SR 1198	2,378	2,127	2,361	2,231	2,312	2,433	2,104	2,278	86	2,200
8/6	TU	14	US 19 E	W OF SR 1196	6,735	7,359	6,700	6,611	6,984	6,472	5,401	6,609	26	6,400
8/7	N	18	US 221	E OF NC 105	2,120	1,546	1,552	1,259	1,688	1,862	2,240	1,752	66	1,700
8/7	N	21	US 221	E OF SR 1524	2,535	5,482	5,781	5,346	5,854	5,970	5,349	5,617	67	5,400
8/6	TU	24	US 221 / NC 194	N OF SR 1114	5,951		5,694	5,467	6,057	6,170	5,495	5,806	98	5,700
8/6	TU	26	US 221	S OF NC194	3,798	3,441	3,404	3,301	3,748	4,046	3,724	3,637	96	3,500
8/6	TU	27	US 221	S OF SR 1100	3,683	3,371	3,320	3,079	3,555	4,000	3,766	3,539	96	3,400
8/6	TU	28	NC 194	N OF US 19 E	3,536	3,747	3,715	3,758	4,035	3,718	3,327	3,691	95	3,500
8/6	TU	32	NC 184 - 194	W OF NC 184	7,139	8,190		8,048	9,138	8,597	7,466	8,096	66	8,000
8/6	τU	33	NC 194	E OF NC 184	3,933	4,867	4,757	4,555	5,360	5,045	4,160	4,668	66	4,600
•	•	36	NC 194	E OF SR 1361		Not cou	nted due t	o road rep	oair consti	ruction		ı	ı	I
8/7	N	38	NC 194	N OF NC 181	8,812	11,082	11,103	10,562	11,084	11,178	7,981	10,257	66	10,200
8/7	N	39	NC 194	N OF SR 1156	6,699	7,864	7,843	7,417	7,652	8,353	6,057	7,412	66	7,300
8/6	TU	47	NC 184	S OF NC 194	8,202	9,380	9,852	9,527	10,240	9,990	8,719	9,416	66	9,300
8/7	N	53	US 221	E OF NC 181	9,979	11,333	11,542	11,139	11,803	11,583	9,280	10,951	97	10,600
8/7	N	55	NC 181	S OF US 221	4,110	3,919	3,906	3,689	4,084	4,367	4,130	4,029	96	3,900
8/7	N	56	NC 181	S OF SR 1521	3,225	2,844	2,755	2,632	2,933	3,171	3,088	2,950	98	2,900
8/7	N	57	NC 105	N OF NC 184	11,949	12,569	12,685	12,878	13,314	13,700	12,250	12,764	98	12,500
8/7	N	58	NC 105	S OF NC 184	10,299	11,139	11,372	10,985	11,816	11,829	9,974	11,059	98	10,800
8/6	TU	59	NC 184	E OF SR 1363	2,760	2,982	3,311	3,163	3,372	3,362	2,994	3,135	66	3,100
8/7	≥	60	US 221/NC 181	N OF SR 1545	6,014	6,040	6,218	5,992	6,363	6,598	5,650	6,125	96	5,900
8/7	N	1510	SR 1370	S OF NC 181	1,520	2,344	2,770	2,307	2,363	1,973	1,587	2,123	66	2,100
8/7	N	1511	SR 1153	W OF NC 194	2,220	2,311	2,300	2,322	2,226	2,326	1,812	2,217	66	2,200
8/6	TU	1529	SR 1106	S OF NC 194	2,766	3,117	2,670	2,564	2,822	2,707	2,391	2,720	66	2,700
8/6	TU	1541	SR 1342	W OF NC 184	1,693	1,906	1,940	1,788	2,046	1,872	1,715	1,851	66	1,800
8/7	3	3401	NC 181	E OF NC 194	5,581	7,809	7,890	7,580	8,054	8,029	5,098	7,149	66	7,100
Total A	Verage	Vehicle	Count (Minus Sea	isonal Factor) =	: (Total A	xle Pair A	verage) *	(Axle Fac	ctor/100)					

Note the second factor calculated since value is not official AADT (not average for the year) No Seasonal Factor calculated since value is not official AADT (not average for the year)

Modelia Rote (1) Location Sunt Face (1)	~					Ta	ble 19 - 0	ctober 20:	13 Daily F	aw Count	ts (Axle Pa	irs per Da	y)	- - V	I otal Average
10 5 ULG 9E E OFSR 1170 6.935 6.940 6.378 7.020 7.300 7.300 W 7 US 19E/NC 394 SOFR 1323 6.074 6.377 6.037 5.056 6.035 6.336 9.9 7.300 W 13 US 19E SOFR 1323 6.074 5.373 5.375 5.365 5.315 5.76 6.015 9.8 7.300 W 13 US 19E SOFR 1326 6.303 7.13 7.335 5.464 9.655 5.365 5.016 9.95 5.000 W 13 US 19E SOFR 1302 2.513 1.015 5.946 6.015 5.936 5.916 9.95 5.000 W 13 US 192 S.915 5.916 6.015 5.936 5.916 9.95 5.900 W 13 US 191 S.917 S.916 5.913 5.916 9.95 5.910 9.910 5.900 W 24 US 219		Jay	Station	Route ID	Location	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Total Average	Axle Factor	Venicie Count (Minus Seasonal Factor)
W 6 US19E/NC194 SOFK1323 6074 6,373 2654 6,136 6,373 2664 6,576 6,313 7,378 9,39 6,303 2,300 W 13 US19E SOFK1343 2,437 2,934 2,335 3,037 3,055 2,434 2,589 9 2,000 W 14 US19E KOFK1196 5,315 1,155 1,155 1,355 5,315 5,316 5,317 5,348 5,348 9 6,400 M 13 US211 KOFK1341 5,540 5,311 5,545 5,343 5,423 5,436 5,349 9 5,300 W 27 US211 KOFK1341 5,540 5,317 5,345 5,343 5,343 5,373 5,430 9 5,300 W 27 US211 SOFK1341 3,540 3,373 5,430 9 5,300 9 5,300 W 27 US211 KOFK144 3,540<		ти	5	US 19 E	E OF SR 1170	6,935	6,919	6,857	7,102	7,738	7,931	6,499	7,140	66	7,100
W 7 US19E SOFKU19A Z.433 Z.954 Z.055 Z.448 Z.968 G.99 Z.800 W 133 US19E SOFK1198 Z.033 Z.011 Z.133 Z.137 Z.055 Z.147 Z.185 Z.147 Z.955 Z.147 Z.955 Z.147 Z.956 Z.900 Z.900 Z.900 Z.900 Z.900 Z.900 <thz.900< th=""> Z.900 Z.900 Z.900 Z.900 Z.901 Z.901 Z.901 Z.901 Z.901 Z.901 Z.901 Z.900 <thz.90< th=""> <thz.90< th=""></thz.90<></thz.90<></thz.900<>		N	6	US 19 E/NC 194	S OF SR 1323	6,074	6,377		6,378	6,614	6,576	6,015	6,339	95	6,000
W 13 U519E SOFSR1198 Z103 Z011 Z123 Z144 Z058 Z143 Z144 Z058 Z143 Z144 Z058 Z144 Z058 Z144 Z058 Z141 Z015 Z014 Z015 Z014 Z015 Z014 Z015 Z014 Z015 Z014 Z015 Z014 Z015 Z015 Z014 Z015 Z016 Z015 Z015 Z016 Z015 Z016 Z015 Z015 Z016 Z015 Z015 <thz015< th=""> <thz015< th=""> Z016 <thz< td=""><td></td><td>N</td><td>7</td><td>US 19 E</td><td>S OF NC 194</td><td>2,437</td><td>2,954</td><td></td><td>3,057</td><td>3,075</td><td>2,865</td><td>2,340</td><td>2,788</td><td>66</td><td>2,800</td></thz<></thz015<></thz015<>		N	7	US 19 E	S OF NC 194	2,437	2,954		3,057	3,075	2,865	2,340	2,788	66	2,800
W 14 US19E WOFK1196 6,395 7,171 7,536 6,133 5,156 5,175 1,157 1,058 5,476 5,375 5,478 5,486 5,363 5,478 5,486 5,367 5,300 5,300 W 26 US221 SOFNC194 NOFNC134 5,307 3,367 3,437 3,40 3,600 3,303 3,510 3,500 3,373 3,510 3,500 3,373 3,510 3,500 3,373 3,510 3,700 <td></td> <td>N</td> <td>13</td> <td>US 19 E</td> <td>S OF SR 1198</td> <td>2,103</td> <td>2,091</td> <td></td> <td>2,180</td> <td>2,284</td> <td>2,205</td> <td>2,148</td> <td>2,169</td> <td>86</td> <td>2,100</td>		N	13	US 19 E	S OF SR 1198	2,103	2,091		2,180	2,284	2,205	2,148	2,169	86	2,100
1H 18 US 221 E OF NG 105 2,513 1,402 5,504 6,103 5,543 5,474 9<7 5,000 1H 21 US 221/MC 19 OF SR 1524 5,540 5,011 5,147 5,33 5,430 5,433 5,403 5,433 5,410 5,433 5,410 5,433 5,410 5,433 <td< td=""><td></td><td>Ν</td><td>14</td><td>US 19 E</td><td>W OF SR 1196</td><td>6,395</td><td>7,177</td><td></td><td>7,513</td><td>7,358</td><td>6,153</td><td>5,154</td><td>6,625</td><td>26</td><td>6,400</td></td<>		Ν	14	US 19 E	W OF SR 1196	6,395	7,177		7,513	7,358	6,153	5,154	6,625	26	6,400
TH 21 US 221 E GF SR 152.4 5,5.00 5,3.01 5,1.05 5,3.00 5,3.00 </td <td></td> <td>ТН</td> <td>18</td> <td>US 221</td> <td>E OF NC 105</td> <td>2,515</td> <td>1,155</td> <td>1,402</td> <td></td> <td>1,608</td> <td>1,744</td> <td>3,484</td> <td>1,985</td> <td>66</td> <td>2,000</td>		ТН	18	US 221	E OF NC 105	2,515	1,155	1,402		1,608	1,744	3,484	1,985	66	2,000
TU 24 US221/NC194 NOFSR1114 5,306 5,387 5,435 6,456 5,387 5,30 <td></td> <td>ТН</td> <td>21</td> <td>US 221</td> <td>E OF SR 1524</td> <td>5,540</td> <td>5,031</td> <td>5,147</td> <td></td> <td>5,504</td> <td>6,037</td> <td>5,585</td> <td>5,474</td> <td>67</td> <td>5,300</td>		ТН	21	US 221	E OF SR 1524	5,540	5,031	5,147		5,504	6,037	5,585	5,474	67	5,300
W Zeb US 221 Sofe NC 134 3,903 3,050 3,473 3,476 3,400 W Z7 US 221.1 S OF SK 1100 3,994 3,093 3,451 3,656 3,66 3,6 3,400 W Z8 NC 1944 E OF US 1316 3,174 3,546 7,321 6,736 5,667 3,500 95 3,500 95 3,500 95 3,500 95 3,500 95 3,500 95 3,500 95 3,500 95 3,500 95 3,500 95 5,000 3,500 95 3,700 95 5,11 7,072 8,010 97 3,000 95 5,11 7,072 8,010 97 7,000 97 3,000 95 5,11 7,000 97 3,000 95 5,11 7,000 97 9,000 97 9,000 96 7,000 97 9,000 97 96 7,000 97 96 7,000 97		ΤU	24	US 221/NC 194	N OF SR 1114	5,296	5,387	5,432	5,457	5,435	6,156	4,550	5,388	86	5,300
W Z7 US Z1 S OFSR 1100 3.995 Z,956 3.100 4,701 4,767 5,616 6 3,500 W Z8 NC194 E OFUS19E 3,174 3,364 3,365 3,306 95 3,100 W 32 NC1944 E OFUS19E 3,174 3,364 7,213 7,351 6,076 6,936 95 3,100 W 33 NC1944 E OFNC184 5,560 7,120 5,713 7,351 6,936 95 5,700 W 33 NC1944 E OFNC1841 18,352 15,545 5,719 5,770 4,965 5,349 95 5,700 W 33 NC1944 FOFNC181 18,352 15,545 5,713 7,970 4,965 5,730 95 5,700 W 34 NC184 S 7,571 7,952 5,93 95 1,500 W 35 NC184 S 7,321 1,912 1,123		M	26	US 221	S OF NC 194	3,904	3,005		3,150	3,428	3,943	3,977	3,568	96	3,400
W 28 NC 194 E OF UG 19E 3,174 3,364 3,483 3,436 3,306 5,300		M	27	US 221	S OF SR 1100	3,999	2,956		3,099	3,364	4,010	4,267	3,616	96	3,500
W 32 NC 184 - 194 WOFNC 184 6,266 7,170 6,936 6,936 6,936 6,936 6,936 6,936 6,936 6,936 6,936 6,936 6,936 6,930 6,930 W 33 NC 194 E OFNC 184 3,753 5,660 7,71 3,732 95 5,710 W 36 NC 194 E OFNC 184 18,352 10,571 11,303 5,719 5,739 5,719 95 5,700 W 38 NC 194 NOFNC 181 18,352 10,571 11,303 5,719 5,738 5,711 7,99 95 5,700 W 47 NC 194 NOFNC 181 19,572 19,73 17,81 17,816 13,233 99 7,700 W 47 NC 184 J 7,79 1,793 14,72 14,73 97 15,000 W 47 NC 184 J 7,79 1,493 1,712 17,81 1,750 99		N	28	NC 194	E OF US 19 E	3,174	3,364		3,483	3,459	3,234	3,086	3,300	95	3,100
W 33 NC 194 E OF NC 184 3,758 5,60 3,751 3,768 3,722 5,934 5,510 W 36 NC 194 E OF SR 1361 5,062 5,460 5,319 5,770 5,534 95 5,100 TH 38 NC 194 NOF NG 181 18,322 10,671 11,303 5,770 5,546 5,346 95 5,100 TH 38 NC 194 NOF SR 1156 6,124 7,759 8,127 7,575 7,549 99 7,000 TH 53 US 2211 19,027 19,78 6,124 7,757 8,349 99 7,000 TH 55 US 2115 6,124 7,79 8,127 7,575 7,542 99 7,500 TH 55 US 211 5,121 19,027 19,73 3,373 3,373 3,373 3,376 8,17 7,54 96 7,500 TH 55 NC 181 SOF SOF		N	32	NC 184 - 194	W OFNC 184	6,260	7,170		6,946	7,213	7,351	6,674	6,936	66	6,900
W 36 NC 194 EOF R1361 5,062 5,460 7,33 5,770 5,577 6,534 5,5,10 5,100 TH 38 NC 194 NO FN C181 18,532 10,671 11,303 5,111 7,085 5,349 55 7,000 TH 39 NC 194 NO FS R1156 6,124 7,753 8,127 7,543 5,111 7,089 99 7,000 W 47 NC 184 SO FNC 194 6,848 7,343 10,132 10,132 17,01 7,549 97 7,500 W 55 NC 184 SO FNC 184 5,973 3,779 8,178 7,577 7,549 97 7,500 TH 55 NC 184 SO FNC 184 19,027 3,373 3,373 3,793 3,793 3,716 7,577 7,549 97 15,000 TH 55 NC 184 1,972 3,337 3,373 3,724 10,423 3,716 7,576 7,501		M	33	NC 194	E OF NC 184	3,278	3,660		3,751	3,768	4,068	3,808	3,722	66	3,700
H 38 NC 194 NOF NC 181 18,332 10,611 17,816 13,233 99 13,200 H 39 NC 194 NOF SR 1156 6,124 7,759 8,127 7,578 5,111 7,089 99 7,000 W 47 NC 184 S OFNC 194 6,848 7,349 7,790 8,178 7,579 7,549 99 7,000 W 47 NC 184 S OFNC 194 6,848 7,349 7,790 8,178 7,579 7,549 97 7,500 TH 55 NC 181 S OFNC 181 19,027 3,337 3,337 3,337 3,337 3,337 3,337 3,349 3,793 3,791 8,797 7,943 7,943 7,500 7		N	36	NC 194	E OF SR 1361	5,062	5,460		5,319	5,709	5,577	4,965	5,349	95	5,100
H39NC 194NO FSR 1156 $6,124$ $7,759$ $8,127$ $7,676$ $7,738$ $5,111$ $7,089$ 99 $7,000$ W47NC 184S 0F NC 194 $6,848$ $7,349$ $9,7$ $7,573$ $7,579$ $7,549$ 99 $7,500$ TH53US 221E 0F NC 181 $19,027$ $19,783$ $19,737$ $7,978$ $7,973$ $7,549$ 97 $7,500$ TH55NC 181S 0F US 221 $3,337$ $3,337$ $3,337$ $3,337$ $3,337$ $3,337$ $3,797$ $4,042$ $3,764$ 97 $7,900$ TH55NC 181S 0F SR 1521 $3,342$ $2,565$ $2,542$ $2,732$ $3,737$ $4,042$ $3,764$ 97 $3,600$ TH56NC 105NOF NC 184 $1,055$ $3,372$ $2,564$ $2,542$ $7,12$ $2,383$ $3,409$ $3,017$ 97 $3,600$ TH57NC 105NOF NC 184 $1,055$ $1,0,123$ $1,0,124$ $1,0,124$ $1,0,124$ $9,71$ $9,72$ $9,920$ TH58NC 105S 0F NC 184 $1,0,506$ $1,0,23$ $2,149$ $2,149$ $2,142$ $2,142$ $2,142$ $2,142$ $2,142$ $2,142$ $2,142$ $2,142$ $2,142$ $2,142$ $2,123$ $2,123$ $2,124$ $2,124$ $2,142$ $2,124$ $2,124$ $2,124$ $2,124$ $2,124$ $2,124$ $2,124$ $2,124$ $2,124$ $2,124$ $2,124$ $2,1201$ $2,1201$ <td></td> <td>ТН</td> <td>38</td> <td>NC 194</td> <td>N OF NC 181</td> <td>18,352</td> <td>10,671</td> <td>11,303</td> <td></td> <td>10,846</td> <td>10,712</td> <td>17,816</td> <td>13,283</td> <td>66</td> <td>13,200</td>		ТН	38	NC 194	N OF NC 181	18,352	10,671	11,303		10,846	10,712	17,816	13,283	66	13,200
W47NC 184S OF NC 194 $6,848$ $7,349$ $7,533$ $7,790$ $8,178$ $7,577$ $7,549$ 99 $7,500$ TH53US 221E OF NC 18119,02719,78919,475710,18310,59619,40716,4139715,900TH55NC 181S OF US 2213,3333,3773,3303,3773,3303,773,5974,0224,0423,764963,600TH56NC 181S OF NC 18411,05510,10310,360711,27013,21413,04211,507983,010TH57NC 105N OF NC 18411,05510,10310,360711,27013,21413,04211,5079811,300TH58NC 105S OF NC 18411,05510,10310,36072,8873,3583,4093,0179811,300TH58NC 105S OF NC 18411,05510,10310,36072,8873,71415,0129915,500W59NC 18419,9295,7142,2232,3432,5242,5242,5432,649992,500W56NC 184NOF NC 18413,7325,7442,3265,7442,3242,9232,5433,0195,7169811,300TH1510SR 11370S OF NC 1841,3732,5432,7432,4311,4402,202992,500T		ТН	39	NC 194	N OF SR 1156	6,124	7,759	8,127		7,676	7,738	5,111	7,089	66	7,000
TH53US 221E OF NC 18119,02719,78919,47510,18310,59619,40716,4139715,900TH55NC 181S OF US 2213,8333,3773,3303,773,3303,773,3363,7974,0223,764963,600TH55NC 181S OF SR 15213,3422,5652,542N11,27013,21413,0423,1779811,300TH55NC 105N OF NC 18411,05510,10310,36011,27013,21413,04211,5079811,300TH58NC 105S OF NC 18411,05510,10310,22119,22719,22819,2269915,2169811,300W59NC 105S OF NC 18418,89919,22719,2282,6242,8403,01915,2169811,300W59NC 18419,80919,22719,22819,2282,6242,8403,0192,569992,500TH60US 221/NC 181N OF SR 13632,4192,1492,1492,1492,1492,1492,1709811,300TH1510S R 1370S OF NC 1811,3792,4192,1492,1492,1492,1492,1992,500TH1510S R 1370S OF NC 1811,3792,3232,3232,3232,9232,9232,1332,120992,100TH1511S R		≥	47	NC 184	S OF NC 194	6,848	7,349		7,553	7,790	8,178	7,577	7,549	66	7,500
TH 55 NC 181 SOF US 221 3,833 3,377 3,330 3,797 4,022 3,764 96 3,600 TH 56 NC 181 S OF SR 1521 3,342 2,565 2,542 7 3,588 3,409 3,017 98 3,000 TH 57 NC 105 N OF NC 184 1,055 10,103 10,360 11,270 13,214 13,042 15,507 98 3,000 TH 58 NC 105 S OF NC 184 1,055 19,227 19,228 1,1,270 13,042 15,507 98 11,300 TH 58 NC 105 S OF NC 184 18,899 19,227 19,228 2,624 2,840 3,012 98 15,900 TH 58 NC 105 S OF NC 184 18,899 19,227 19,228 2,624 2,840 3,012 98 15,900 TH 60 S NC 184 L573 5,233 5,224 2,840 5,717 96 5,		ΤH	53	US 221	E OF NC 181	19,027	19,789	19,475		10,183	10,596	19,407	16,413	97	15,900
TH 56 NC 181 S OF S R 1521 3,342 2,565 2,542 2,887 3,358 3,409 3,017 98 3,000 TH 57 NC 105 N OF NC 184 11,055 10,103 10,360 11,270 13,214 13,042 11,507 98 3,000 TH 58 NC 105 S OF NC 184 18,899 19,227 19,228 17,270 13,214 13,042 11,507 98 11,300 W 59 NC 105 S OF NC 184 18,899 19,227 19,228 2,524 2,524 2,564 98 1,509 15,510 98 15,900 TH 60 US 221/NC 181 N OF SR 1363 2,419 2,149 2,149 2,574 5,774 6,049 5,717 96 5,500 TH 610 S 1310 S OF NC 181 1,373 2,323 2,393 2,574 5,713 2,610 7,73 96 7,700 TH 1510 S 1110		TH	55	NC 181	S OF US 221	3,833	3,377	3,330		3,797	4,202	4,042	3,764	96	3,600
TH 57 NC 105 N OF NC 184 11,055 10,103 10,360 11,270 13,214 13,042 11,507 98 11,300 TH 58 NC 105 S OF NC 184 18,899 19,227 19,228 2,363 2,624 2,840 3,019 2,569 99 2,500 W 59 NC 105 S OF NC 184 18,899 19,227 19,233 2,624 2,840 3,019 2,569 99 2,500 TH 60 US 221/NC 181 N OF SR 1545 5,729 5,274 2,363 2,624 2,840 3,019 2,569 99 2,500 TH 1510 S R 1370 S OF NC 184 1,379 2,379 2,361 2,91 2,413 2,717 99 2,700 TH 1511 S R 1370 S OF NC 194 1,972 2,338 2,913 2,019 2,710 99 2,100 TH 1511 S R 1153 W OF NC 194 1,972 2,323 2,		TH	56	NC 181	S OF SR 1521	3,342	2,565	2,542		2,887	3,358	3,409	3,017	98	3,000
TH 58 NC 105 S OF NC 184 18,899 19,227 19,228 9,891 10,141 19,909 16,216 98 15,900 W 59 NC 184 E OF SR 1363 2,419 2,149 2,363 2,624 2,840 3,019 2,569 99 2,500 TH 60 US 221/NC 181 N OF SR 1345 5,729 5,739 2,363 2,564 6,193 6,193 6,049 5,717 96 5,500 TH 1510 SR 1370 S OF NC 181 1,379 2,379 2,323 2,363 2,013 1,440 2,202 99 2,500 TH 1511 SR 1153 W OF NC 194 1,972 2,323 2,393 2,913 2,019 1,763 2,110 99 2,100 W 1550 SR 1106 S OF NC 194 1,972 2,833 2,920 2,93 2,113 2,113 2,113 2,113 2,113 2,110 99 2,100 W		ΤH	57	NC 105	N OF NC 184	11,055	10,103	10,360		11,270	13,214	13,042	11,507	98	11,300
W 59 NC 184 EOF SR 1363 2,419 2,149 2,363 2,624 2,840 3,019 2,569 99 2,500 TH 60 US 221/NC 181 N OF SR 1545 5,729 5,233 5,274 7 6,193 6,049 5,717 96 5,500 TH 1510 SR 1370 S OF NC 181 1,379 2,379 2,379 2,560 7 2,431 1,440 2,202 99 2,200 TH 1511 SR 1153 W OF NC 194 1,972 2,333 2,398 7 2,921 2,431 1,440 2,202 99 2,100 W 1551 SR 1153 W OF NC 194 1,972 2,338 2,913 2,019 1,763 2,110 99 2,100 W 1529 SR 1342 W OF NC 184 1,572 2,013 2,019 1,763 2,110 99 2,100 TU 1541 SR 1342 W OF NC 184 1,572 2,019 1,7		ΤH	58	NC 105	S OF NC 184	18,899	19,227	19,228		9,891	10,141	19,909	16,216	98	15,900
TH 60 US 221/NC 181 N OF SR 1545 5,729 5,233 5,274 5,764 6,193 6,049 5,717 96 5,500 TH 1510 SR 1370 S OF NC 181 1,379 2,379 2,660 2,921 2,431 1,440 2,202 99 2,200 TH 1511 SR 1153 W OF NC 194 1,972 2,323 2,398 2,183 2,019 1,763 2,110 99 2,100 W 1529 SR 1106 S OF NC 194 1,972 2,323 2,398 2,920 2,632 2,113 99 2,100 W 1529 SR 1106 S OF NC 194 1,572 2,830 2,920 2,632 2,158 2,649 99 2,600 TU 1541 SR 1342 W OF NC 184 1,572 2,013 2,729 2,729 2,710 7,930 7,930 7,930 7,930 7,930 7,949 99 1,900 TU 3401 NC 181		≥	59	NC 184	E OF SR 1363	2,419	2,149		2,363	2,624	2,840	3,019	2,569	66	2,500
TH 1510 SR 1370 S OF NC 181 1,379 2,379 2,660 2,921 2,431 1,440 2,202 99 2,200 TH 1511 SR 1153 W OF NC 194 1,972 2,323 2,398 2,183 2,019 1,763 2,110 99 2,100 W 1529 SR 1106 S OF NC 194 2,519 2,832 2,930 2,920 2,632 2,110 99 2,100 W 1529 SR 1106 S OF NC 194 2,519 2,832 2,920 2,632 2,158 2,649 99 2,600 TU 1541 SR 1342 W OF NC 184 1,572 2,013 2,129 1,928 1,943 99 1,900 TH 3401 NC 181 E OF NC 194 5,056 7,116 7,533 7,360 6,934 4,700 6,450 6,400		Ŧ	60	US 221/NC 181	N OF SR 1545	5,729	5,293	5,274		5,764	6,193	6,049	5,717	96	5,500
TH 1511 SR 1153 W OF NC 194 1,972 2,333 2,398 2,183 2,019 1,763 2,110 99 2,100 W 1529 SR 1106 S OF NC 194 2,519 2,832 2,830 2,920 2,632 2,158 2,649 99 2,600 TU 1541 SR 1342 W OF NC 184 1,572 2,013 2,246 2,457 2,129 1,928 1,943 99 1,900 TH 3401 NC 181 E OF NC 194 5,056 7,116 7,533 7,360 6,934 4,700 6,450 99 6,400		Η	1510	SR 1370	S OF NC 181	1,379	2,379	2,660		2,921	2,431	1,440	2,202	66	2,200
W 1529 SR 1106 S OF NC 194 2,519 2,832 2,830 2,920 2,632 2,158 2,649 99 2,600 TU 1541 SR 1342 W OF NC 184 1,572 2,013 2,246 2,457 2,129 1,928 1,943 99 1,900 TH 3401 NC 181 E OF NC 194 5,056 7,116 7,533 7,360 6,934 4,700 6,450 99 6,400		ΤH	1511	SR 1153	W OF NC 194	1,972	2,323	2,398		2,183	2,019	1,763	2,110	66	2,100
TU 1541 SR 1342 W OF NC 184 1,572 2,013 2,246 2,457 2,129 1,928 1,943 99 1,900 TH 3401 NC 181 E OF NC 194 5,056 7,116 7,533 7,360 6,934 4,700 6,450 99 6,400		×	1529	SR 1106	S OF NC 194	2,519	2,832		2,830	2,920	2,632	2,158	2,649	66	2,600
TH 3401 NC 181 E OF NC 194 5,056 7,116 7,533 7,360 6,934 4,700 6,450 99 6,400		Τ	1541	SR 1342	W OF NC 184	1,572	2,013	2,246	2,457	2,129	1,928	1,255	1,943	66	1,900
		Η	3401	NC 181	E OF NC 194	5,056	7,116	7,533		7,360	6,934	4,700	6,450	66	6,400
									,						

Comparison
Count
Seasonal
Monthly
- 2013
Fable 20

Count			2013	Total A	verage V	'ehicle C	ount	2013 Official		2040	Total A	verage V	ehicle C	ount	2040
Station	אסמנב ומ	FOCALION	Feb	Apr	Jun	Aug	Oct	AADT		Feb	Apr	Jun	Aug	Oct	AADT**
5	US 19-E	E OF SR 1170	6,300	6,700	7,700	7,100	7,100	7,000	0.7%	7,600	8,000	9,300	8,600	8,500	8,500
9	US 19-E / NC 194	S OF SR 1323	I	6,200	6,700	5,600	6,000	6,200	0.7%	I	7,400	8,100	6,700	7,300	7,500
7	US 19-E	S OF NC 194	2,400	2,700	2,800	2,500	2,800	2,500	1.0%	3,100	3,600	3,700	3,300	3,600	3,300
13	US 19-E	S OF SR 1198	1,800	2,000	2,200	2,200	2,100	2,100	0.7%	2,200	2,400	2,600	2,700	2,600	2,500
14	US 19-E	W OF SR 1196	6,200	6,500	6,400	6,400	6,400	6,300	0.7%	7,500	7,900	7,800	7,700	7,800	7,600
18	US 221	E OF NC 105	800	1,200	1,500	1,700	2,000	1,300	0.7%	006	1,500	1,800	2,100	2,400	1,600
21	US 221	E OF SR 1524	ı	4,500	5,300	5,400	5,300	5,100	1.0%	ı	5,900	6,900	7,100	6,900	6,700
24	US 221 / NC 194	N OF SR 1114	4,800	5,000	5,300	5,700	5,300	5,000	1.0%	6,300	6,500	6,900	7,400	6,900	6,500
26	US 221	S OF NC 194	2,500	2,800	3,100	3,500	3,400	2,900	1.0%	3,300	3,600	4,000	4,600	4,500	3,800
27	US 221	S OF SR 1100	2,400	2,600	2,900	3,400	3,500	2,700	0.7%	2,900	3,100	3,500	4,100	4,200	3,300
28	NC 194	E OF US 19-E	2,800	2,800	3,300	3,500	3,100	3,100	0.7%	3,400	3,400	4,000	4,200	3,800	3,700
32	NC 184-194	W OF NC 184	6,000	5,500	6,900	8,000	6,900	6,900	1.0%	7,900	7,200	9,100	10,500	9,000	9,000
33	NC 194	E OF NC 184	3,100	3,300	4,100	4,600	3,700	4,300	1.0%	4,100	4,400	5,400	6,000	4,800	5,600
36	NC 194	E OF SR 1361	4,300	5,300	5,800	ı	5,100	5,500	1.0%	5,700	6,900	7,500		6,600	7,200
38	NC 194	N OF NC 181	14,000	13,400	13,800	10,200	13,200	11,000	1.0%	18,400	17,500	18,000	13,300	17,200	14,400
39	NC 194	N OF SR 1156	6,800	7,100	7,600	7,300	7,000	7,500	1.0%	8,900	9,300	9,900	9,600	9,200	9,800
47	NC 184	S OF NC 194	6,700	6,200	7,900	9,300	7,500	8,000	1.0%	8,800	8,100	10,300	12,200	9,800	10,500
53	US 221	E OF NC 181	8,000	8,300	10,200	10,600	15,900	10,000	0.7%	9,700	10,000	12,400	12,800	19,200	12,100
55	NC 181	S OF US 221	2,800	3,100	3,700	3,900	3,600	3,500	0.7%	3,400	3,800	4,400	4,700	4,400	4,200
56	NC 181	S OF SR 1521	2,300	2,500	2,700	2,900	3,000	2,500	0.7%	2,800	3,000	3,300	3,500	3,600	3,000
57	NC 105	N OF NC 184	13,300	14,100	11,000	12,500	11,300	11,000	0.7%	16,100	17,000	13,300	15,100	13,600	13,300
58	NC 105	S OF NC 184	7,800	8,100	10,100	10,800	15,900	10,000	0.7%	9,500	9,800	12,200	13,100	19,200	12,100
59	NC 184	E OF SR 1363	2,500	1,500	2,500	3,100	2,500	2,600	1.0%	3,300	1,900	3,300	4,100	3,300	3,400
60	US 221 / NC 181	N OF SR 1545	4,300	4,500	5,500	5,900	5,500	5,400	0.7%	5,200	5,500	6,600	7,100	6,600	6,500
1510	SR 1370	S OF NC 181	2,000	2,200	2,400	2,100	2,200	I	1.0%	2,700	2,900	3,100	2,800	2,900	ı
1511	SR 1153	W OF NC 194	1,900	2,000	2,100	2,200	2,100	ı	1.0%	2,400	2,600	2,700	2,900	2,700	ı
1529	SR 1106	S OF NC 194	2,500	2,500	2,700	2,700	2,600	2,700	0.7%	3,100	3,100	3,200	3,300	3,200	3,300
1541	SR 1342	W OF NC 184	1,600	1,800	1,700	1,800	1,900	1,900	1.0%	2,000	2,300	2,200	2,400	2,500	2,500
3401	NC 181	E OF NC 194	ı	6,400	7,300	7,100	6,400	7,800	1.0%	ı	8,300	9,500	9,300	8,400	10,200
2010 TC	- tail Vobicle Count -	12012 Constant		d can I V V V	or Voor										

2040 Total Vehicle Count = (2013 Count)*((1+CAGR)^Number Years) *If dash shown in table, then count considered questionable or just not provided

**2040 AADT projected off of 2013 AADT for comparison by using same formula for 2040 Total Vehicle Count

9-J

Count Capacities
y Seasonal
Month
1 - 2013
able 2

Road	Capacity	10,800	12,100	11,600	10,200	12,100	6,300	12,100	12,100	12,100	11,200	6,300	10,600	9,600	18,200	11,000	11,000	10,600	11,600	12,100	12,100	12100	12100	8,200	12,100	9,500	7,400	8,800	9,200	23,500	atio < 80%)	ty >= 80%)	
2040	AADT**	I	ı	I	ı	ı	ı	ı	I	ı	ı	ı	Near	ı	I	Over	Near	Near	Over	ı	ı	Over	Over	I	I	N/A	N/A	ı	ı	1	oacity Ra	e/Capaci	
ounts	Oct	ı	ı	I	I	I	I	ı	I	I	-	·	Near	ı	I	Over	Near	Near	Over	I	I	Over	Over	I	I	ı	I	I	·	ı	me/Cap	√olum€	
nicle Co	Aug	Near	·	ı	ı	ı	I	ı	ı	ı	I	-	Near	ī	N/A	Over	Near	Over	Over	ı	I	Over	Over	I	ı	ı	I	ı		ı	(Volui	acity (
hly Vel	Jun	Near	ı	ı	ı	ı	1	ı	ı	ı	1	ı	Near	ı	ı	Over	Near	Near	Over	ı	ı	Over	Over	ı	ı	ı	ı	ı	ı	ı	:y Issue	ear Cap	
Mont	Apr	ı	ı	I	ı	I	I	ı	ı	ı	I	·	ı	ı	I	Over	Near	I	Near	ı	I	Over	Near	I	ı	ı	ı	ı	·	ı	Capacit	ar = Ne	
2040	Feb	ı	N/A	I	I	ļ	I	N/A	i	I	I	ı	I	i	I	Over	Near	Near	Near	ı	I	Over	I	ı	ı	ı	ı	ı	ı	N/A	1 = No (Ne	
2040	AADT*	ı	·	I	ı	ı	ı	·	ı	ı	ı	·	Over	ī	I	Over	Near	Over	Over	·	ı	Near	Near	I	ı		T	•	·	ı	Dash		
2013	AADT	I	I	ı	I	I	ı	I	I	I	ı	ı	I	I	ı	Over	I		Near	ı		Near	Near	ı	I	N/A	N/A	ı	ı				
unts	Oct	,	ı	ı	ı	ı	ı	ı	ı	ı	ı	ı	ı	ı	ı	Over		ı	Over	ı	ı	Near	Over	ı	I	ı	I	ı	ı	ı			
nicle Co	Aug	ı	ı	I	ı	ı	ı	ı	ı	ı	ı	ı	ı	ı	N/A	Near	ı	Near	Near			Over	Near		ı	·	ı		ı	ı			
hly Veh	Jun	ı	ı	I	I	I	-	ı	I	I	-	-	ı	I	I	Over	ı	-	Near		-	Near	Near	-	ı		·	•	-	ı			
Mont	Apr	ı	ı	I	I	I	I	ı	I	I	-	ı	ı	I	I	Over		1	I	I	1	Over	1	I	I	ı	I	ı	ı	ı			
2013	Feb	ı	N/A	I	I	I	I	N/A	I	I	I	ı	ı	I	I	Over	ı	I	ı	ı	I	Over	I	ı	ı	ı	ı	ı	ı	N/A			
2012	AADT	ı	ı	I	ı	ı	I	ı	I	ı	ı	ı	ı	I	I	Over	ı	1	Near	1	1	Near	1	1	ı	•	·	ı	·	1			
l oction	FOCALION	E OF SR 1170	S OF SR 1323	S OF NC 194	S OF SR 1198	W OF SR 1196	E OF NC 105	E OF SR 1524	N OF SR 1114	S OF NC 194	S OF SR 1100	E OF US 19-E	W OF NC 184	E OF NC 184	E OF SR 1361	N OF NC 181	N OF SR 1156	S OF NC 194	E OF NC 181	S OF US 221	S OF SR 1521	N OF NC 184	S OF NC 184	E OF SR 1363	N OF SR 1545	S OF NC 181	W OF NC 194	S OF NC 194	W OF NC 184	E OF NC 194	2012 AADT	n 2013 AADT	
		US 19-E	US 19-E / NC 194	US 19-E	US 19-E	US 19-E	US 221	US 221	US 221 / NC 194	US 221	US 221	NC 194	NC 184-194	NC 194	NC 194	NC 194	NC 194	NC 184	US 221	NC 181	NC 181	NC 105	NC 105	NC 184	US 221 / NC 181	SR 1370	SR 1153	SR 1106	SR 1342	NC 181	ADT projected from	AADT projected fron	•
Count	Station	ъ	9	2	13	14	18	21	24	26	27	28	32	33	36	38	39	47	53	55	56	57	58	65	60	1510	1511	1529	1541	3401	*2040 A	**2040 /	

During the development of the CTP, the Avery County Steering Committee was concerned that recent AADT on NC 105 was not accurately portraying high levels of traffic congestion on the route from Watauga County to US 221. NC 105 is the primary connection to the county for tourists traveling to and from US 421 and the concern to the Avery County Steering Committee was that AADT values did not match up with anecdotal accounts of traffic during peak summer, fall leaf looking, or winter ski seasons. Therefore, the following tables and maps are provided to compare AADT to average monthly vehicle counts on NC 105.

Table 22 and Figure 14 compare 2013 AADT² to 2013 monthly seasonal counts while the Table 23 and Figure 15 show projected 2040 AADT compared to projected 2040 monthly seasonal counts (a conservative³ 0.7% compounded annual growth rate was used for this projection). According to the tables and maps, NC 105 from Watauga County to NC 184 will be over capacity for the 5 of 5 seasonal counts projected to 2040, in addition to 2013 AADT projected to 2040.

-	10			nontiny /		int Oupu	onnes	
Count			NC 105	Monthly 2	013 Count	s - Capacity	y Status	2013 AADT -
Station	Route ID	Location	Feb	Apr	Jun	Aug	Oct	Capacity Status
57	NC 105	N OF NC 184	Over	Over	Near	Over	Near	Near
58	NC 105	S OF NC 184	-	-	Near	Near	Over	Near

 Table 22 – NC 105 Monthly 2013 Count Capacities

Table 23	- NC 105 Monthly 2040 Count Capacities	
	NC 105 Monthly 2040 Counts - Capacity Status	20

Count Station	Route ID	Location	NC 105 Monthly 2040 Counts - Capacity Status					2040 AADT -
			Feb	Apr	Jun	Aug	Oct	Capacity Status
57	NC 105	N OF NC 184	Over	Over	Over	Over	Over	Over
58	NC 105	S OF NC 184	-	Near	Over	Over	Over	Partially Over/Under

Notes for Both Tables:

LOS D Capacity of 12,100 vehicles per day used Over Capacity - Volume/Capacity Ratio >= 100% Near Capacity - Volume/Capacity Ratio >= 80% Dash = No Capacity Issue (Volume/Capacity Ratio < 80%)

² CTP V/C maps are based on 2012 AADT. 2013 AADT was not provided until near the end of the CTP process and was used in this appendix as a comparison to seasonal count data and in the R-2566 problem statement as supporting data to highlight the need for widening on NC 105.

³ The phrase "conservative" is relative to the 1% growth rates used on some other roads in Avery County.

This page intentionally left blank.



