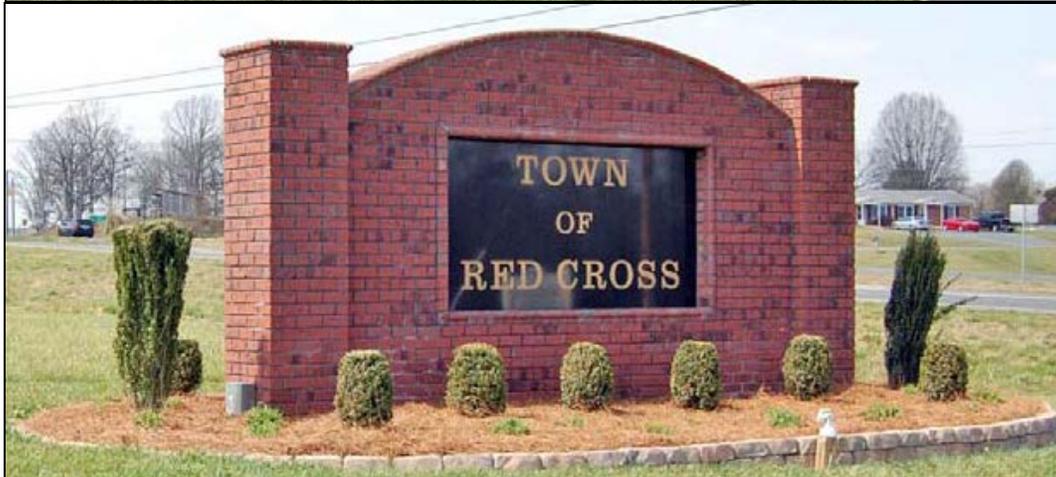




2016 Locust and Red Cross Comprehensive Transportation Plan



2016 Locust and Red Cross Comprehensive Transportation Plan

Prepared by: Reuben Crummy, Project Engineer
Jamal Alavi, PE, Branch Manager
Transportation Planning Branch
N.C. Department of Transportation

In Cooperation with: Stanly County
City of Locust
Town of Red Cross
Rocky River Rural Planning Organization

Published: November 2016



A handwritten signature in black ink, appearing to read "Jamal Alavi", written over a horizontal line.

Jamal Alavi, PE, Manager
Transportation Planning Branch

Table of Contents

Executive Summaryi

Chapter 1: Analysis of the Existing and Future Transportation System

1.1 Analysis Methodology and Data Requirements1-1

 a) Roadway System Analysis1-1

 i. Traffic Crash Assessment1-3

 ii. Bridge Deficiency Assessment1-4

 b) Public Transportation and Rail1-11

 i. Public Transportation1-11

 ii. Rail1-12

 c) Bicycles and Pedestrians1-12

 d) Land Use1-13

1.2 Consideration of the Natural and Human Environment1-14

1.3 Public Involvement1-16

Chapter 2: Recommendations

2.1 Implementation2-1

2.2 Problem Statements2-2

 a) Highway2-3

 b) Public Transportation and Rail2-10

 c) Bicycle2-11

 d) Pedestrian2-11

Appendices

Appendix A: Resources and ContactsA-1

Appendix B: Comprehensive Transportation Plan DefinitionsB-1

Appendix C: CTP Inventory and RecommendationsC-1

Appendix D: Typical Cross-SectionsD-1

Appendix E: Level of Service DefinitionsE-1

Appendix F: Bridge Deficiency AssessmentF-1

Appendix G: Socio-Economic Data Forecasting MethodologyG-1

Appendix H: Public InvolvementH-1

List of Figures

Figure 1: Comprehensive Transportation Planiii

Figure 2: 2013 Volumes and Capacity Deficiencies1-5

Figure 3: 2040 Volumes and Capacity Deficiencies	1-7
Figure 4: High Frequency Crash Locations	1-9
Figure 5: Environmental Features	1-17
Figure 6: Typical Cross Sections	D-2
Figure 7: Level of Service Illustrations	E-2
Figure 8: Future Land Development Plans	G-3

List of Tables

Table 1: Environmental Features	1-15
Table 2: CTP Inventory and Recommendations	C-3
Table 3: Population Data.....	G-2
Table 4: Employment Data.....	G-2

Executive Summary

In March of 2013, the Transportation Planning Branch of the North Carolina Department of Transportation (NCDOT), the City of Locust, the Town of Red Cross, and Stanly County initiated a study to cooperatively develop the Locust and Red Cross Comprehensive Transportation Plan (CTP), which includes Locust, Red Cross, and Stanly County. This is a long range multi-modal transportation plan that covers transportation needs through 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 2016. 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 Stanly County, Locust, Red Cross, and NCDOT. Refer to Chapter 2 for information on the implementation process.

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

- **NC 24-27:** The CTP recommends upgrading NC 24-27 four lane boulevard from 264 feet west of Providence Street to Stanly Parkway with bicycle accommodations from Meadow Creek Church Road (SR 1200) to Renee Ford Road (SR 1140).
- **Proposed Stanly Parkway:** The CTP recommends constructing a two lane minor thoroughfare with 12 foot lanes on new location from the existing Stanly Parkway to NC 200. The existing section of Stanly Parkway is recommended to be widened to a two lane minor thoroughfare with 12 foot lanes. Bicycle and pedestrian accommodations are recommended along the entire project.

Locust and Red Cross

Comprehensive Transportation Plan Stanly County

Plan date: January 21, 2016

- Sheet 1 **Adoption Sheet**
- Sheet 2 **Highway Map**
- Sheet 3 **Public Transportation and Rail Map**
- Sheet 4 **Bicycle Map**
- Sheet 5 **Pedestrian Map**

Legend

-  Schools
-  Roads
-  Railroads
-  Rivers and Streams
-  Water Bodies
-  Municipal Boundary
-  Planning Boundary
-  County Boundary

0 0.25 0.5 0.75 1 Miles



Sheet 1 of 5

Base map date: June 2014

Refer to CTP document for more details

Adopted by:

City of Locust
Date: June 9, 2016

Town of Red Cross
Date: May 9, 2016

*Please See
Cabarrus-Rowan MPO
Stanly County CTP*
Date: July 11, 2016

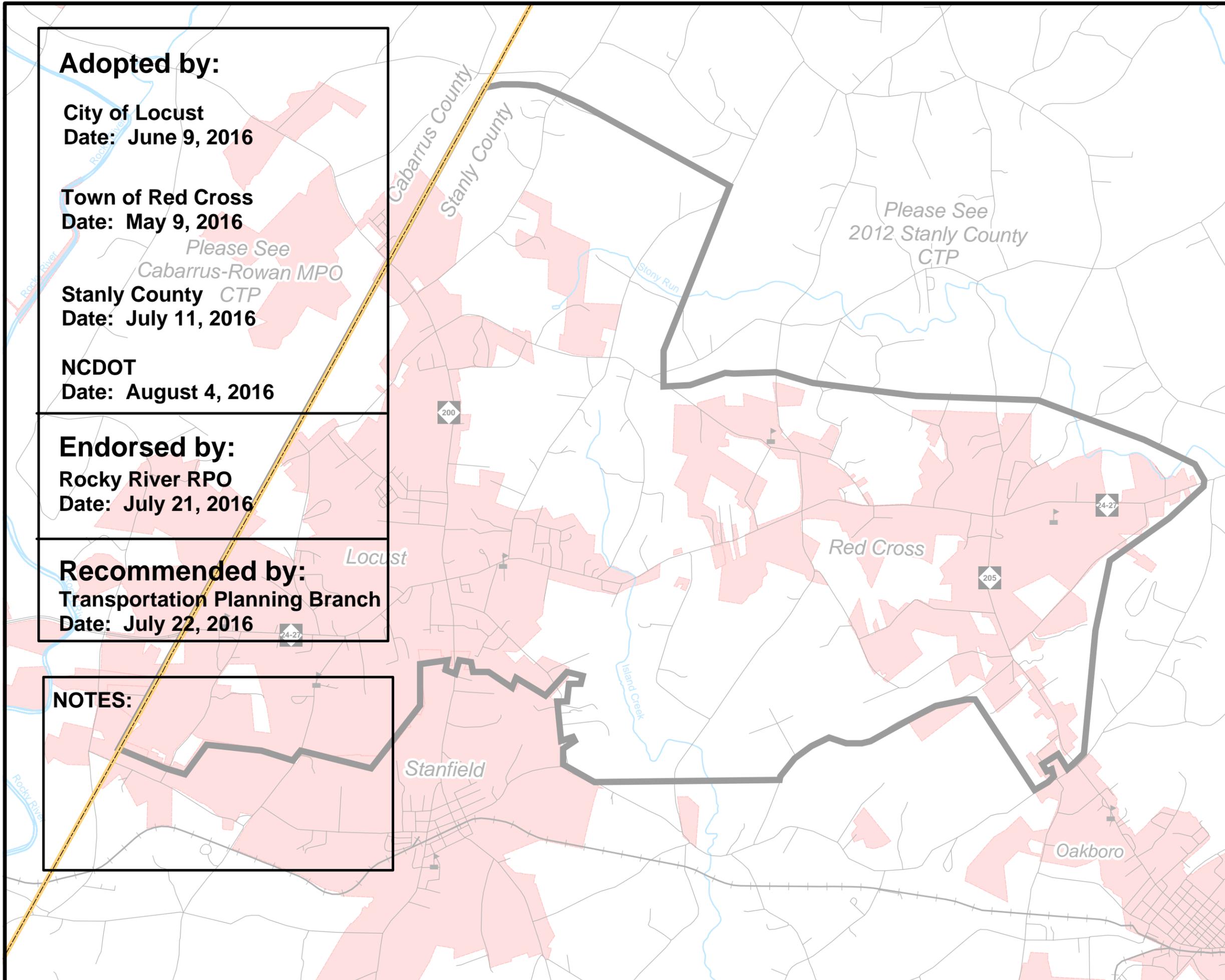
NCDOT
Date: August 4, 2016

Endorsed by:

Rocky River RPO
Date: July 21, 2016

Recommended by:
Transportation Planning Branch
Date: July 22, 2016

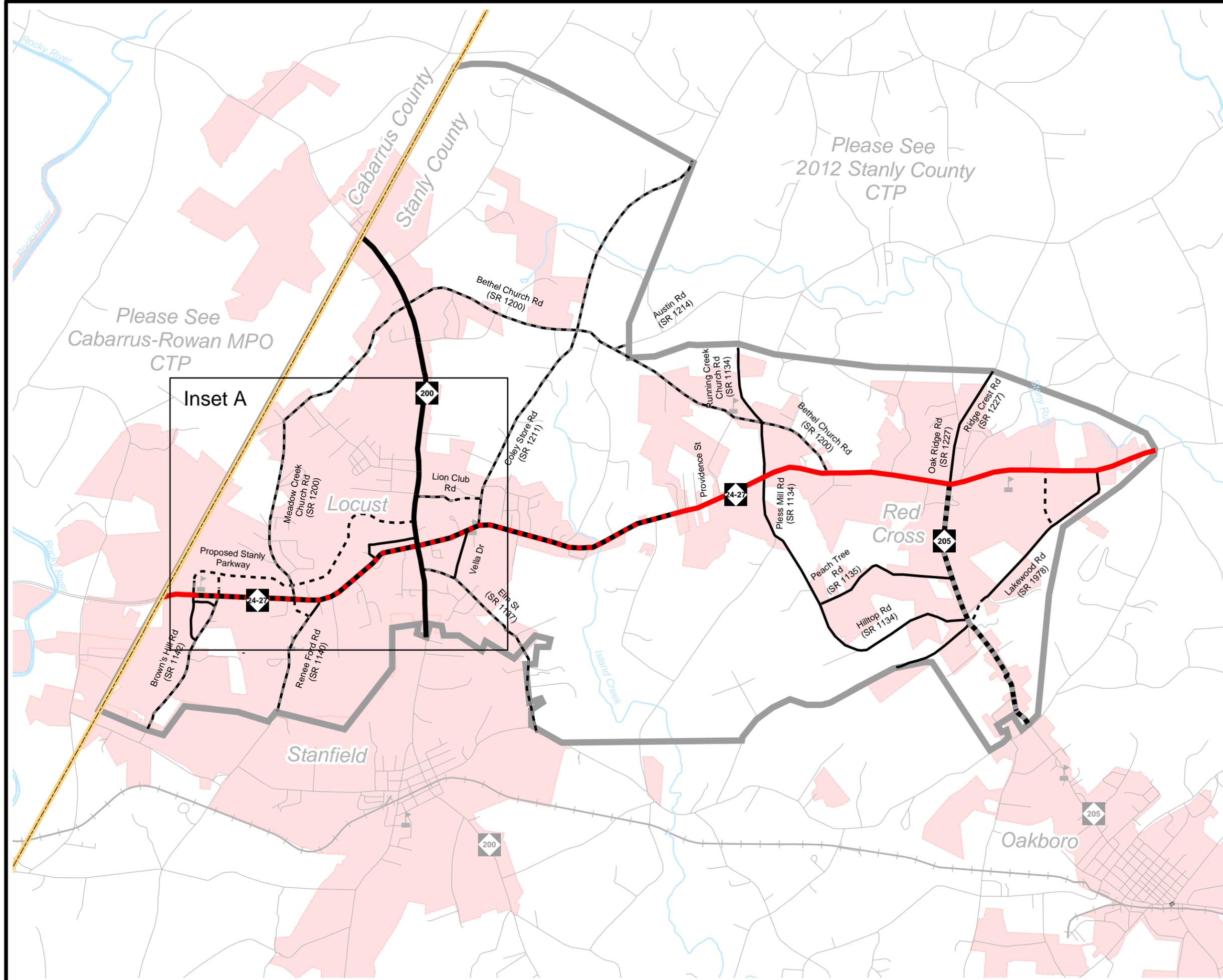
NOTES:



Highway Map Locust and Red Cross

Comprehensive Transportation Plan

Plan date: January 21, 2016



- Freeways**
 - Existing
 - - - Needs Improvement
 - . . . Recommended
- Expressways**
 - Existing
 - - - Needs Improvement
 - . . . Recommended
- Boulevards**
 - Existing
 - - - Needs Improvement
 - . . . Recommended
- Other Major Thoroughfares**
 - Existing
 - - - Needs Improvement
 - . . . Recommended
- Minor Thoroughfares**
 - Existing
 - - - Needs Improvement
 - . . . Recommended

- Existing Interchange
- Proposed Interchange
- Interchange Needs Improvement
- Existing Grade Separation
- Proposed Grade Separation

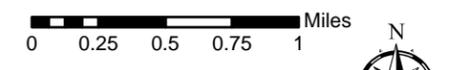


Figure 1 - Sheet 2 of 5

Base map date: June 2014
Refer to CTP document for more details

Highway Map Inset A Locust and Red Cross

Comprehensive Transportation Plan Stanly County

Plan date: January 21, 2016

- Freeways**
- Existing
 - Needs Improvement
 - Recommended
- Expressways**
- Existing
 - Needs Improvement
 - Recommended
- Boulevards**
- Existing
 - Needs Improvement
 - Recommended
- Other Major Thoroughfares**
- Existing
 - Needs Improvement
 - Recommended
- Minor Thoroughfares**
- Existing
 - Needs Improvement
 - Recommended

- Existing Interchange
- Proposed Interchange
- Interchange Needs Improvement
- Existing Grade Separation
- Proposed Grade Separation

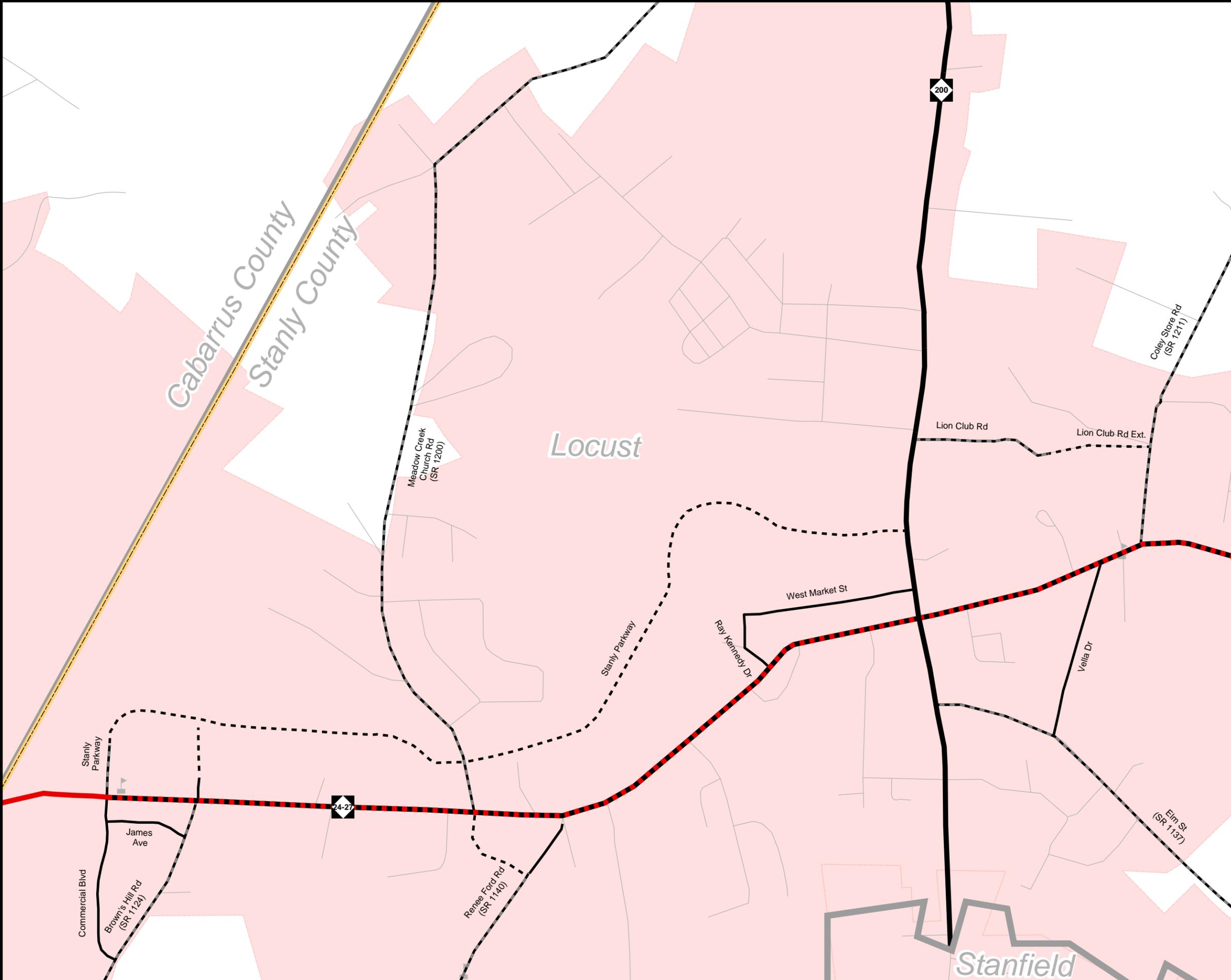


Sheet 2A of 5



Base map date: June 2014

Refer to CTP document for more details



Public Transportation and Rail Map

Locust and Red Cross

Comprehensive Transportation Plan

Plan date: January 21, 2016

- Bus Routes**
- Existing
 - Needs Improvement
 - Recommended

- Fixed Guideway**
- Existing
 - Needs Improvement
 - Recommended

- Operational Strategies**
- Existing
 - Needs Improvement
 - Recommended

- Rail Corridor**
- Active
 - Inactive
 - Recommended

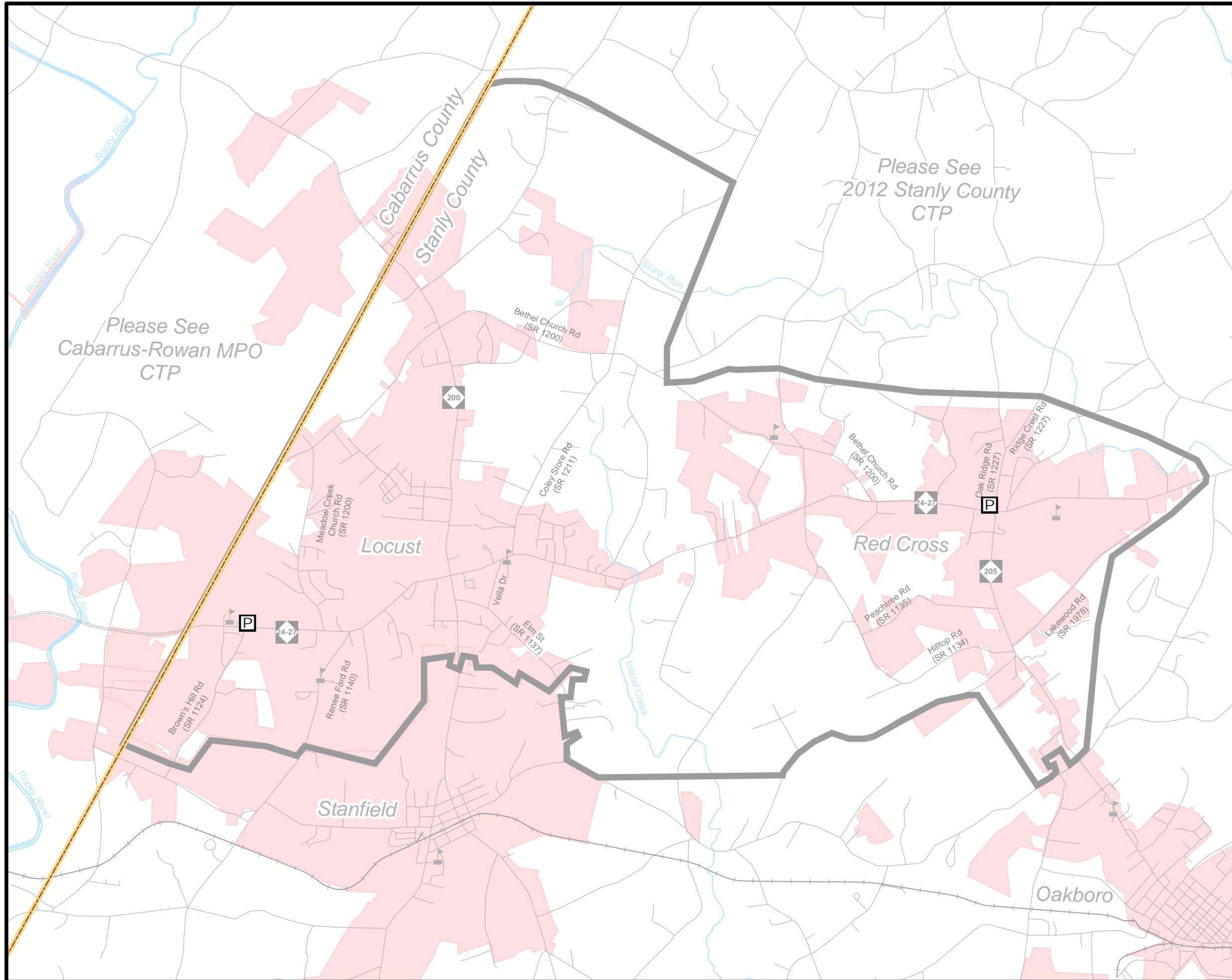
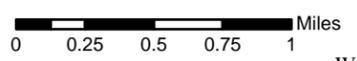
- High Speed Rail Corridor**
- Existing
 - Recommended

- Rail Stops**
- Existing
 - Recommended

- Intermodal Connector**
- Existing
 - Recommended

- Park and Ride Lot**
- Existing
 - Recommended

- Grade Separation**
- Existing Grade Separation
 - Proposed Grade Separation

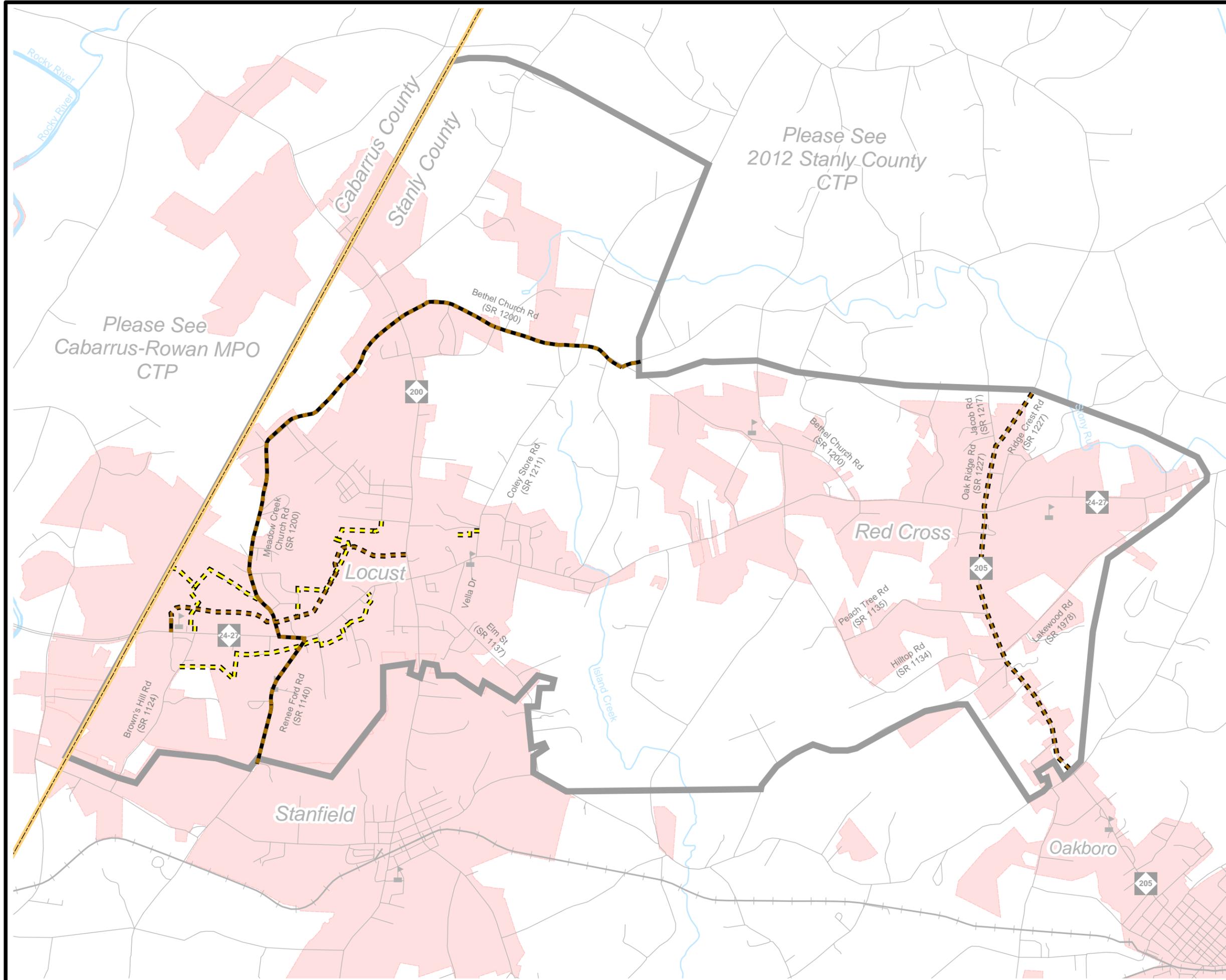
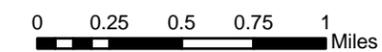


Locust and Red Cross

Comprehensive Transportation Plan Stanly County

Plan date: January 21, 2016

- On-road**
 - Existing
 - Needs Improvement
 - Recommended
- Off-road**
 - Existing
 - Needs Improvement
 - Recommended
- Multi-Use Paths**
 - Existing
 - Needs Improvement
 - Recommended
- Existing Grade Separation
- Proposed Grade Separation



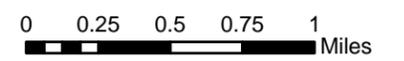
Pedestrian Map

Locust and Red Cross

Comprehensive Transportation Plan Stanly County

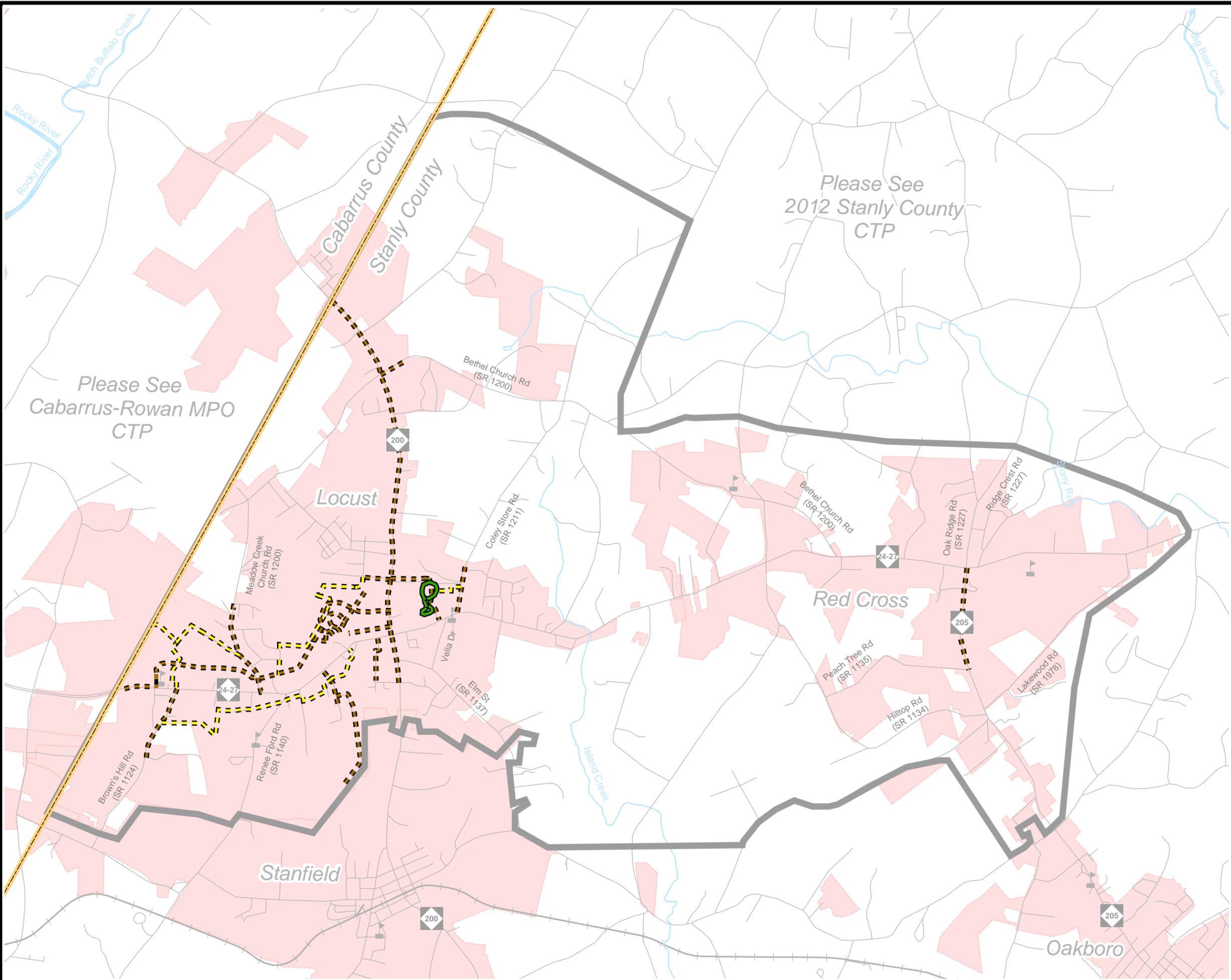
Plan date: January 21, 2016

- Sidewalks**
 - Existing
 - Needs Improvement
 - Recommended
- Off-road**
 - Existing
 - Needs Improvement
 - Recommended
- Multi-Use Paths**
 - Existing
 - Needs Improvement
 - Recommended
- Existing Grade Separation
- Proposed Grade Separation



Sheet 5 of 5

Base map date: June 2014
Refer to CTP document for more details



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 Transportation Corridors (STC)¹ adopted by the Board of Transportation on March 4, 2015.

¹ For more information on the STC, go to:
<https://connect.ncdot.gov/projects/planning/Pages/NCTransportationNetwork.aspx>

The STC identify a network of critical multimodal transportation corridors considered the backbone of the state's transportation system. These 25 corridors move most of our freight and people, link critical centers of economic activity to international air and sea ports, and support interstate commerce. They must operate well to help North Carolina attract new businesses, grow jobs and catalyze economic development.

The primary purpose of the STC is to provide North Carolina with a network of high-priority, multimodal transportation corridors and facilities that connect statewide and regional activity centers to enhance economic development, promote highly-reliable, efficient mobility and connectivity, and support good decision-making. The primary goal to support this purpose is to create a greater consensus towards the development of a genuine vision for each corridor that establishes the statewide or regional importance of facilities and the need for maintaining high capacity and travel speed. During the development of CTPs, the STC network should be cross-referenced to ensure plan consistency. Incorporating the statewide and regional mobility goals set forth in the STC network should be done in a manner that fits with the character and vision for the community or county. If this cannot be achieved through the use of existing facilities, an alternative solution should be sought.

In the development of this plan, travel demand was projected from 2013 to 2040 using a travel demand model. Travel demand models are developed to replicate travel patterns on the existing transportation system as well as to estimate travel patterns for 2040. In addition, local land use plans and growth expectations were used to develop future growth rates and patterns. The established future growth rates were endorsed by the Stanly County Commissioners on November 15, 2015 as a part of the annual update for the Metrolina Regional Model (MRM). 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 volumes in **Figure 3** are 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 2016 – 2025 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;

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

- ❖ Typical users of the road, such as commuters, recreational travelers, and truck traffic;
- ❖ 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 Locust and Red Cross CTP occurred between January 1, 2007 and December 31, 2011. During this period, a total of four intersections and eight 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. Currently, there are no deficient bridges identified on roads evaluated as part of the CTP. As deficient bridges are replaced, every consideration should be given to proposed CTP recommendation and cross section associated with the recommendation. Refer to **Appendix F** for more detailed bridge deficiency information.

Figure 2
2013 Volumes
and Capacity
Deficiencies

Locust
and
Red Cross

Comprehensive
Transportation Plan

Legend

- Near Capacity
- Over Capacity
- XX,XXX 2013 Volumes (AADT)
- XX,XXX 2013 Capacity
- Schools
- Study Roads
- Roads
- Railroads
- Rivers and Streams
- Water Bodies
- Municipal Boundary
- Planning Boundary
- County Boundary

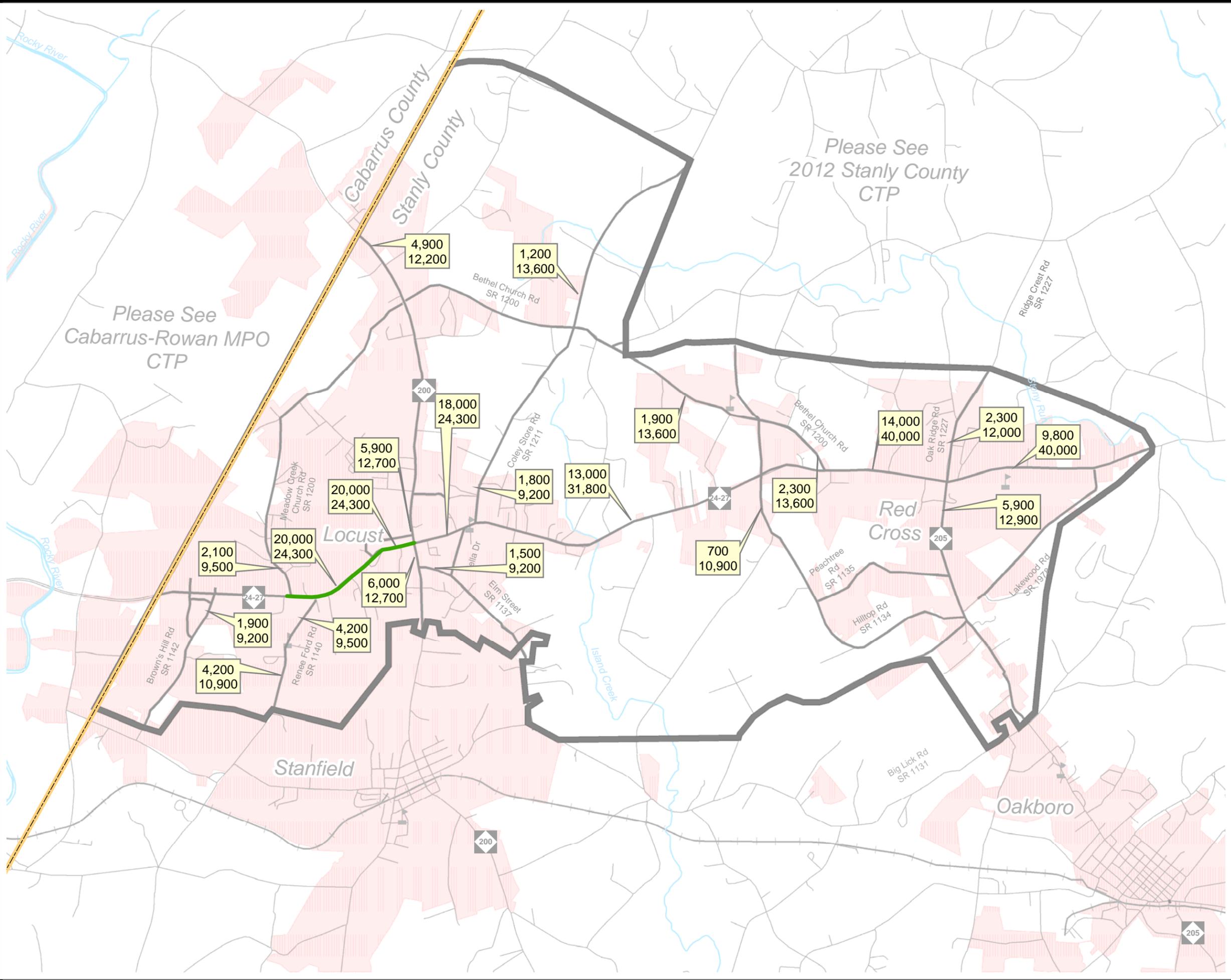


FIGURE 4 Locust and Red Cross Comprehensive Transportation Plan HIGH FREQUENCY CRASH LOCATIONS

January 1, 2007 to
December 31, 2011

Crash Intersections

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

Crash Sections

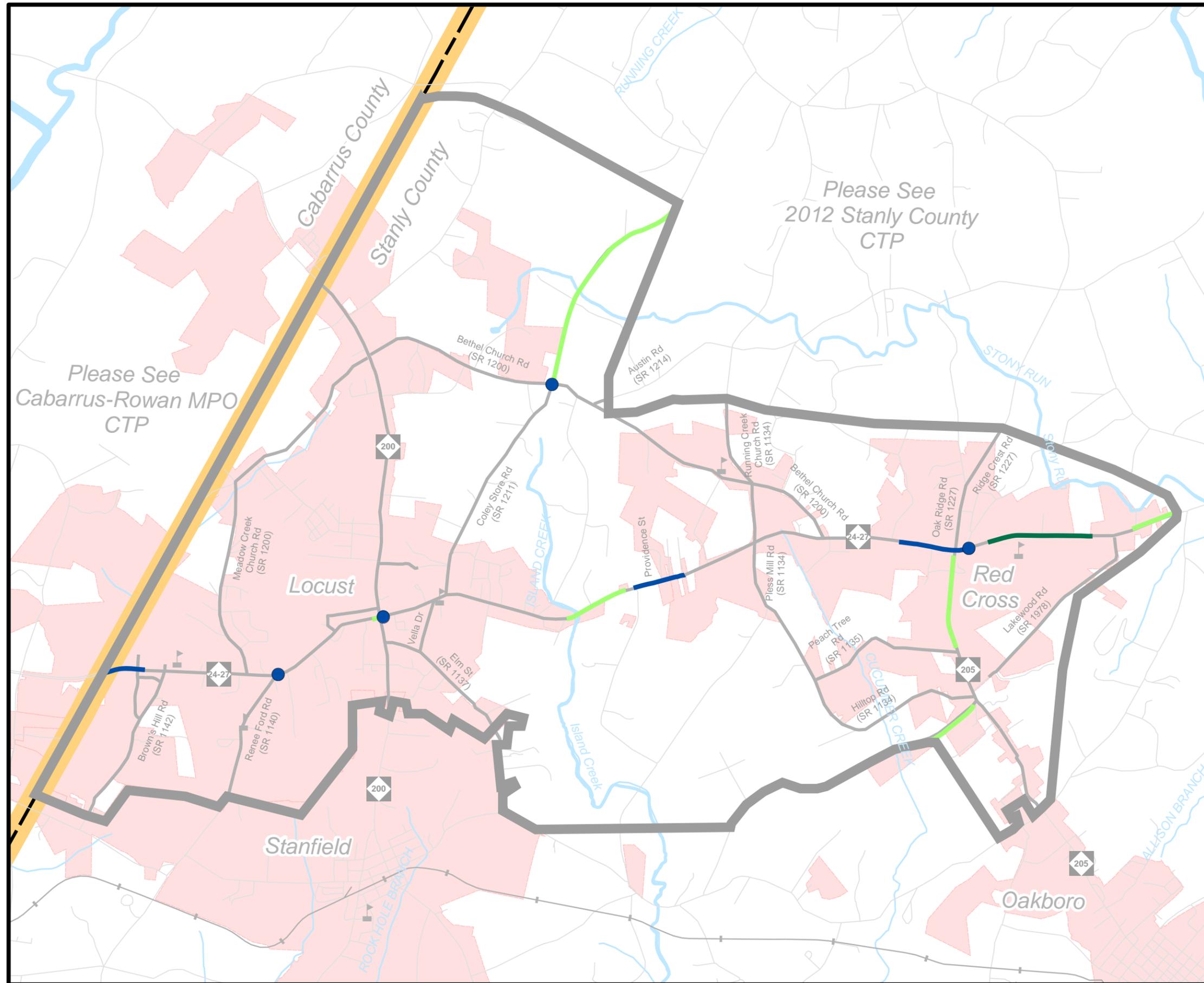
- 50 and above
- 40 to 49
- 30 to 39
- 20 to 29
- 10 to 19
- 4 to 9

- Study Roads
- Roads
- Schools
- Ferry
- Airports
- Railroads
- Rivers and Streams
- Water Bodies
- Municipal Boundaries
- County Boundary

0 0.5 1 2 3 Miles



Base map date: June 2014



Please See
2012 Stanly County
CTP

Please See
Cabarrus-Rowan MPO
CTP

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 urban-community 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 and to Amtrak passenger stations 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.

An inventory of existing and planned fixed public transportation routes for the planning area is presented on Sheet 3 of **Figure 1**. There are no existing fixed public transportation routes within the Locust and Red Cross planning area. Stanly County Umbrella of Services Association (SCUSA) provides community transportation services responsive to the current and changing needs of Stanly County residents. Services are provided utilizing vans and buses through subscription and demand response routes. Vehicles are available to better serve the disabled population. All recommendations for public transportation were coordinated with the local governments and the Public

Transportation Division of NCDOT. Refer to **Appendix A** for contact information for the Public Transportation Division.

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 no existing or planned rail facilities within the planning area. All recommendations for rail were coordinated with the local governments and the Rail Division of NCDOT. Refer to **Appendix A** for contact information for the 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 2010 Stanly County Carolina Thread Trail Master Plan³ and the 2012 Locust Pedestrian Plan were utilized in the development of these elements of the CTP. 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 2014 City of Locust Land Use Plan⁴ and the 2015 Town of Red Cross Land Use Plan⁵ (refer to **Appendix G**) were used to meet this requirement.

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 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.

³ To view the 2010 Stanly County Carolina Thread Trail Master Plan, go to: <http://www.carolinathreadtrail.org/wp-content/uploads/2011/02/StanlyCoAdoptedCTTPlan.pdf>

⁴ To view the 2014 Locust Land Use Plan, go to: <https://locustnc.com/land-use-plan/>.

⁵ To view the 2015 Red Cross Land Development Plan, go to: http://townofredcross.com/wp-content/uploads/2016/03/RedCross_LandDevelopmentPlan.pdf

- ❖ 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.
- ❖ Mixed Use: 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.

Existing commercial land uses in Locust are mainly along NC 24-27, NC 200, and NC 205. Industrial areas are located southwest of Locust. There are several tracts of government owned institutional and open space land uses throughout the city of Locust. Locust also has within its municipal boundaries the Stanly Community College campus in the CBD with a mixture of residential and vacant land surrounding it. The majority of the rural parts of Red Cross are residential, farmland, woodland, and a few business areas along NC 24-27 and east of NC 205.

The highest projected population growth rates in Stanly County are in the urbanized areas in the western part of the county. For employment, the highest projected increases are to the south and west of Locust and along the CBD. Most of the areas with larger employment growth projections are near NC 24-27 and NC 200.

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 Act⁶ (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.

⁶ For more information on NEPA, go to: <https://ceq.doe.gov/>.

A full listing of environmental features that are typically examined as a part of a CTP study is shown in the following tables. Environmental features occurring within the Locust and Red Cross planning area are shown in **Figure 5** and are shown in bold text in **Table 1**.

Table 1 – Environmental Features

-
- | | |
|--|--|
| <ul style="list-style-type: none"> • 24k Hydro Lines • 303D Streams • Airport Boundaries • Anadromous Fish Spawning Areas • APNEP - Submerged Aquatic Vegetation • Beach and Waterfront Access • Benthic Habitat • Bicycle Routes • Boating Access • Churches and Cemeteries • Colleges and Universities (Points) • Conservation Tax Credit Properties • Critical Habitat for Threatened and Endangered Species • Emergency Operation Centers • Fish Nursery Areas • Hazard Substance Disposal Sites (points & polygons) • Hazardous Waste Facilities • High Quality Waters and Outstanding Resource Water Management • Historic Resources – National Register and Determined Eligible (points and polygons) • Hospitals | <ul style="list-style-type: none"> • Hydrography - 1:24,000-scale (polygons) • Landscape Habitat Indicator Guilds (LHIGs)Managed Areas • National Wetlands Inventory (polygons) • Natural Heritage Element Occurrences • NC-CREWS: N.C. Coastal Region Evaluation of Wetland Significance • NCDOT Maintained Mitigation Sites • Railroads (1:24,000) • Recreation Projects - Land and Water Conservation Fund • Regional Trails • Sanitary Sewer Systems - Treatment Plants • Schools (Public & Non-Public) • Significant Natural Heritage Areas • State Natural and Scenic Rivers • State Parks • Target Local Watersheds - EEP • Trout Streams (DWQ) • Trout Waters WRC (arcs & polygons) • Unique Wetlands • Water Distribution Systems – Tanks & Treatment Plants • 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 Locust, Red Cross, and the Stanly County Board of Commissioners in March 2013 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 Locust and Red Cross CTP Steering Committee, which included a representative from each municipality, county staff, the Rocky River RPO and others. 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.

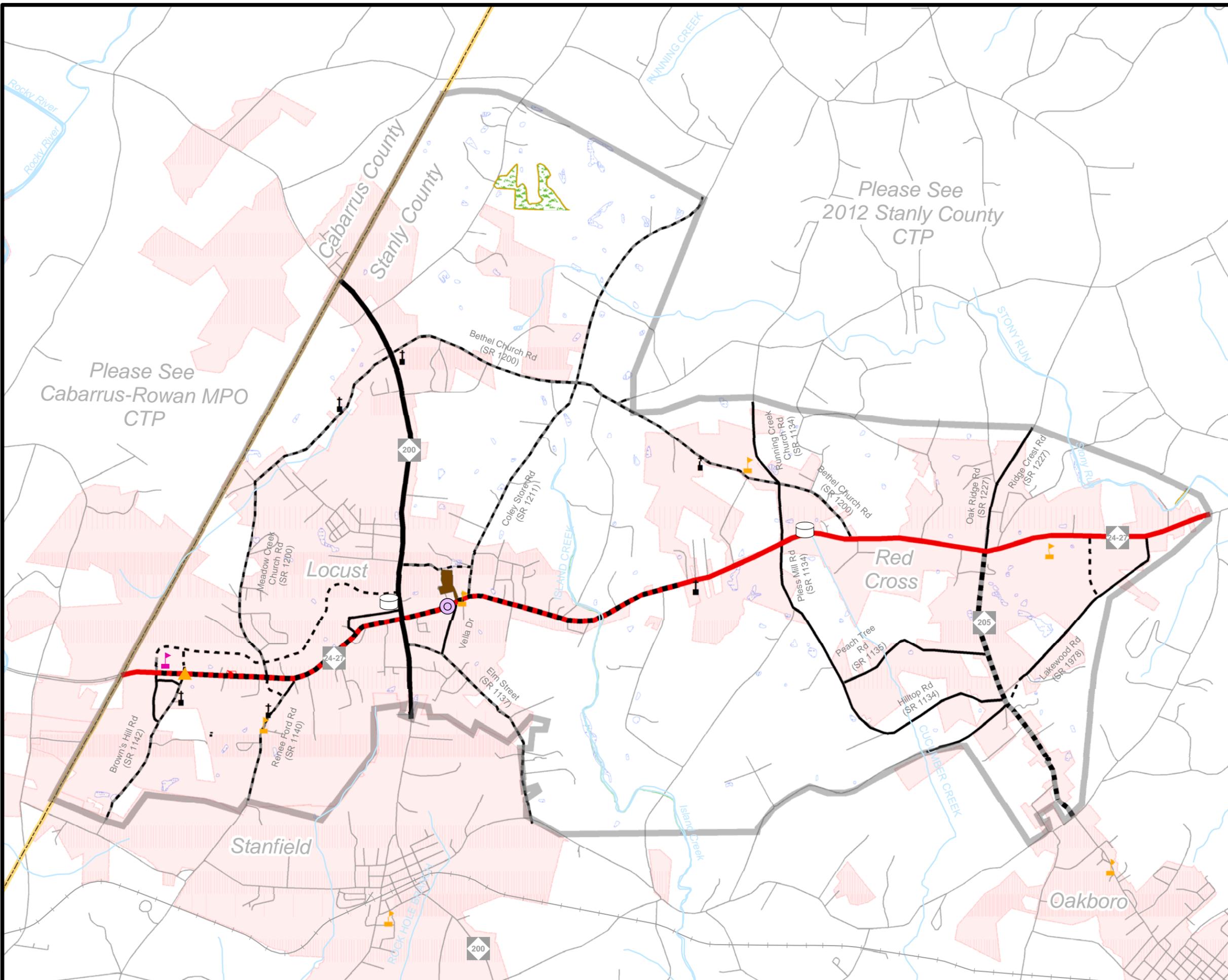
The public involvement process included holding two public drop-in sessions in the Locust and Red Cross area to present the proposed CTP to the public and solicit comments. The first meeting was held on February 25, 2016 at the Red Cross Town Hall; the second meeting was held on February 25, 2016 at Locust City Hall. Each session was publicized in the local newspaper and was held from 1:00 pm – 3:00 pm and 4:30 pm – 6:30 pm, respectively. Five comment forms were submitted during the sessions held on February 25, 2016.

There were three public hearings held for the CTP. One was held during the Red Cross Town Council meeting on May 9, 2016, one during the Locust City Council meeting on June 9, 2016, and one during the Stanly County Board of Commissioners meeting on July 11, 2016. The purpose of these meetings was to discuss the plan recommendations and to solicit further input from the public. The CTP was adopted during these meetings.

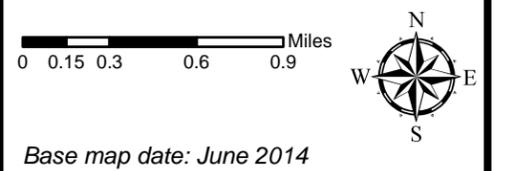
The Rocky River RPO endorsed the CTP on July 21, 2016. The North Carolina Department of Transportation mutually adopted the Locust and Red Cross CTP on August 4, 2016.

**Figure 5
Environmental
Features
Map**

**Locust
and
Red Cross
Comprehensive
Transportation Plan**



- Legend**
- Colleges and Universities
 - Schools
 - Churches and Cemeteries
 - Hazardous Substance Disposal Sites
 - Water Distribution Tanks
 - Water Pumping Stations
 - Natural Heritage Element Occurrence
 - Land & Water Conservation Funds
 - National Wetland Inventory
 - NCDOT Maintained Mitigation Sites
 - Significant Natural Heritage Areas
 - Planning Boundary
 - County Boundary
 - Municipal Boundaries
 - Roads
 - 24K Hydro Lines



Base map date: June 2014

Please See
Cabarrus-Rowan MPO
CTP

Please See
2012 Stanly County
CTP

Locust

Red
Cross

Stanfield

Oakboro

Cabarrus County
Stanly County

2. Recommendations

This chapter presents recommendations for each mode of transportation in the 2015 Locust & Red Cross 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. For information on other projects within Stanly County, refer to the 2012 Stanly County CTP, the 2013 Albemarle, Badin, and New London CTP and the 2010 Norwood CTP reports¹.

NCDOT adopted a "Complete Streets²" 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 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

¹ To view these plans, go to: <https://connect.ncdot.gov/projects/planning/Pages/Comprehensive-Transportation-Plans.aspx>.

² For more information on Complete Streets, go to: <http://www.completestreetsnc.org/>

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 Rocky River 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 represents 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 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.

2.2 Problem Statements

Problem statements describe the transportation system deficiencies identified during the CTP process and recommend improvements to alleviate the deficiencies. 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.

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

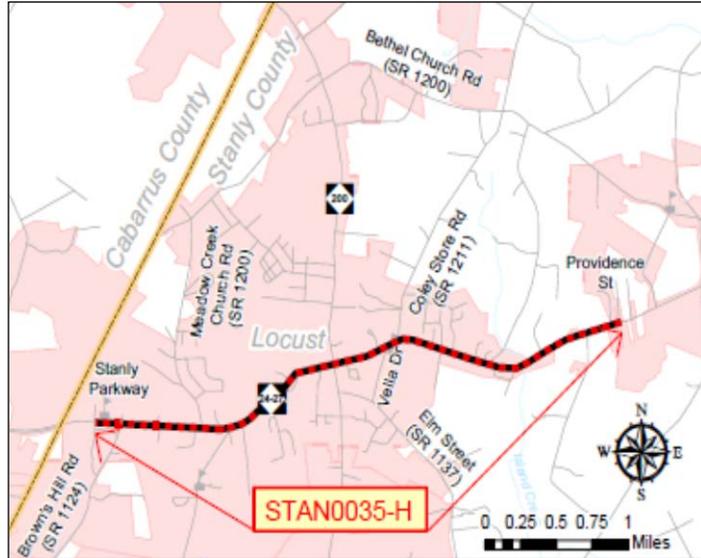
HIGHWAY

NC 24-27 Proposed improvements from 264 feet west of Providence Street to Stanly Parkway

**Local ID: STAN0035-H
Last Updated: 9/15/16**

Identified Problem

NC 24-27 is projected to be near or over capacity by 2040 from Coley Store Road (SR 1211) to Stanly Parkway. Improvements are needed to accommodate the projected traffic volumes and to maintain mobility through the Locust downtown area such that a minimum of Level of Service (LOS) D can be achieved.



Justification of Need

NC 24-27 is the only major east-west corridor through Stanly County, connecting Locust, Red Cross and Albemarle with the rural areas in the county and the greater Charlotte area. The facility is a vital artery for moving people and goods into and out of the county. NC 24-27 serves local traffic, long-distance trips, and connects regional activity centers.

NC 24-27 currently has mix of cross-sections and will be near or over capacity by 2040 as detailed below:

Section (From – To)	Lanes	2013 AADT ¹	2040 AADT	2013 Capacity ²
Cabarrus County to Stanly Parkway	4 – 12 foot lanes (divided facility)	16,000	22,000	35,100
Stanly Parkway to 264 feet west of Providence Street	5 – 12 foot lanes (undivided with a center turn lane)	13,000 to 20,000	17,800 to 27,500	24,300 to 31,800
264 feet west of Providence Street to the eastern planning boundary 0.4 miles west of Liberty Hill Church Road (SR 1115)	4 – 12 foot lanes (divided facility)	9,800 to 14,000	15,000 to 18,800	40,000 to 40,500

¹ Annual Average Daily Traffic (AADT) given in vehicles per day (vpd)

² Existing capacity based on a Level of Service (LOS D)

Community Vision and Problem History

The western portion of Stanly County is the fastest growing urban area. The Locust/Red Cross urban area is geographically well situated for growth with its proximity to the Charlotte metropolitan region and access to three major highways: NC 24-27, NC 200, and NC 205. It is the center of activity for the western portion of the county. Both Locust and Red Cross would like to preserve and promote the quality of life and economic vitality of their existing and future downtown areas.

This deficiency was also identified in the 2013 Stanly County CTP, in which Locust and Red Cross decided not to adopt the CTP for their jurisdictions, therefore were excluded from the county CTP.

CTP Project Proposal

Project Description and Overview

The CTP project proposal (STAN0035-H) is to upgrade NC 24-27 to a four lane boulevard from 264 feet west of Providence Street to Stanly Parkway with bicycle accommodations from Meadow Creek Church Road (SR 1200) to Renee Ford Road (SR 1140).

Natural & Human Environmental Context

Based on a planning level environmental assessment using available GIS data, the proposed project crosses Island Creek, which is also identified as a natural heritage element occurrence area. There is a hazardous substance disposal site located at Brown's Hill Road (SR 1142); a water pumping station located west of Vella Drive; a land and water conservation fund area near Park Drive; and a NCDOT maintained mitigation site east of Jenkins Street. Additionally, Stanly Community College (at Stanly Parkway) and Locust Elementary School (at Park Drive) are both located adjacent to the proposed project.

Relationship to Land Use Plans

Current land use along the proposed project varies between commercial, residential, institutional/public use, parks and open space as identified in the 2014 Locust Land Use Plan⁴. NC 24-27 is predominantly a commercial corridor, encompassing institutional/public use, Stanly Community College, Locust Elementary School, two parks, several churches, low and medium density residential use east of the municipal boundary, and a center city planning district along and in the vicinity of NC 200. For future land use, there are plans to develop several high density residential areas, one between Belle Street and Locust Avenue, another along Church Street, and an additional high density residential area within the center city planning district between NC 200, Smith Street, and Jefferson/Mt. Vernon Drive. There are also plans for mixed-use development within the center city planning district, along NC 200, and north and south of NC 24-27.

⁴To view the 2014 Locust Land Use Plan, go to: <https://locustnc.com/land-use-plan/>.

The 2015 Red Cross Land Development Plan⁵ depicts a majority agricultural use in the western portion with some low density residential north of NC 24-27. More over to the center and eastern sections along the corridor, there is residential, commercial and industrial mixed use (West Stanly High School) along with some low density residential use. In the future development plan, the land use along the existing facility is predominantly agricultural, residential mixed-use and commercial mixed-use to the west of NC 205. East of NC 205, there are plans for a future town center and a recreational center. Further east, there continues to be industrial mixed-use south of NC 24-27 and north of NC 24-27, commercial mixed-use, residential mixed-use, and low density residential use.

The existing 2010 Stanly County Land Use Plan⁶ displays woodlands and residential use, and the long range plan (revision 2) shows sustainability areas and the potential for a change in the Extra-Territorial Jurisdiction (ETJ) in the Locust and Red Cross municipal boundaries.

Linkages to Other Plans and Proposed Project History

In 2008, NC 24-27 was widened from Brown's Hill Road (SR 1142) in Locust to 1.5 miles east of Newsome Road (SR 1222) outside the Red Cross town limits from a two lane to a five lane facility and a four lane divided facility in Red Cross to accommodate the increased traffic along this corridor. Upgrading the existing NC 24-27 to a boulevard would allow the entire system of roadways to operate more efficiently through the western portion of the county.

Multi-modal Considerations

Bicycle accommodations are recommended on NC 24-27 from Meadow Creek Church Road (SR 1200) to Renee Ford Road (SR 1140).

Public/ Stakeholder Involvement

The CTP vision, goals and objectives were developed as part of the public involvement process to help identify how the people within the area would like to develop the transportation system. Based on the CTP vision, goals and objectives developed for the CTP, there is a strong desire to preserve the community and rural character, keep businesses in downtown areas, and the preservation of existing buildings and neighborhoods. Out of the many comments made by the public about NC 24-27, the most frequent issues were:

- Speeding
 - Excessive and/or dangerous
 - Control or enforce it
 - The speed limit is too low and needs to be raised
 - In front of the high and elementary schools

⁵ To view the 2015 Red Cross Land Development Plan, go to:

http://townofredcross.com/wp-content/uploads/2016/03/RedCross_LandDevelopmentPlan.pdf

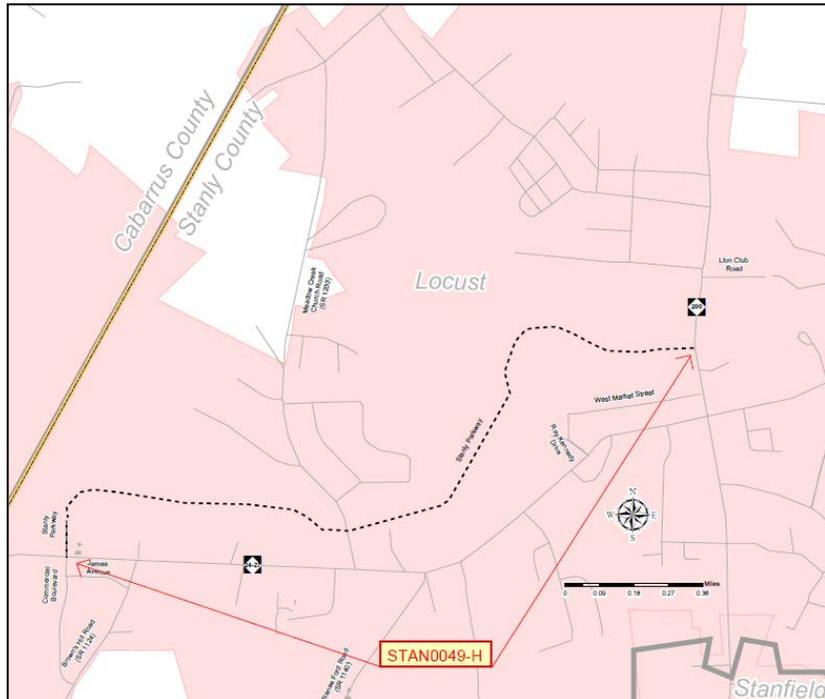
⁶ To view the 2010 Stanly County Land Use Plan, go to: <http://www.stanlycountync.gov/planning-zoning/>.

- Traffic
 - Excessive traffic at West Stanly High School
 - Congestion at the beginning and ending of the school day
 - Intersection of NC 24/27 and NC 205 in the Town of Red Cross
 - Intersection of NC 24/27 and Bethel Church Road (SR 1200)

- Preserve homes and businesses along NC 24/27
 - Access
 - School bus safety

Identified Problem

NC 24-27 is currently the only east-west facility within the planning area and is projected to be over capacity by 2040 from Stanly Parkway to NC 200. Improvements are needed to accommodate the projected traffic volumes and to maintain mobility through the Locust downtown area such that a minimum of Level of Service (LOS) D can be achieved.



Justification of Need

NC 24-27 is the only major east-west corridor through Stanly County, connecting Locust, Red Cross and Albemarle with the rural areas in the county and the greater Charlotte area. The facility is a vital artery for moving people and goods into and out of the county. NC 24-27 serves local traffic, long-distance trips, and connects regional activity centers.

NC 24-27, from the existing Stanly Parkway to NC 200, is currently a five lane facility with 12 foot lanes. The 2013 Annual Average Daily Traffic volume is anticipated to increase in range from 13,000 to 20,000 vehicles per day (vpd) to 17,000 to 26,200 vpd in 2040, compared to a Level of Service (LOS) D capacity of 24,300 to 31,800 vpd.

The CTP project proposal (STAN0035-H) recommends upgrading NC 24-27 to a four lane boulevard with a proposed capacity of 35,100 to 40,500 vpd. Even with the recommended improvements to this section of NC 24-27, the 2040 traffic volume estimates will be near capacity and additional improvements will be needed.

Community Vision and Problem History

The western portion of Stanly County is the fastest growing urban area. The Locust/Red Cross urban area is geographically well situated for growth with its proximity to the Charlotte metropolitan region and access to three major highways: NC 24-27, NC 200, and NC 205. It is the center of activity for the western portion of the county. Both Locust and Red Cross desire to preserve and promote the quality of life and economic vitality within their jurisdictions. This deficiency has not been identified on any previous transportation plan.

CTP Project Proposal

Project Description and Overview

The CTP project proposal (STAN0049-H) is to construct a two lane minor thoroughfare with 12 foot lanes on new location from the existing Stanly Parkway to NC 200. The existing section of Stanly Parkway is recommended to be widened to a two lane minor thoroughfare with 12 foot lanes. Bicycle and pedestrian accommodations are recommended along the entire project.

The proposed project will provide alternative access to the downtown area without having to utilize NC 24-27, and allow for improved efficiency and mobility in moving people and goods into and out of the Locust area. An alternate route will also assist in reducing congestion on NC 24-27.

Natural & Human Environmental Context

Based on a planning level environmental assessment using available GIS data, there is a hazardous substance disposal site located at Brown's Hill Road (SR 1142) and Stanly Community College is located adjacent to the proposed project at the existing Stanly Parkway and NC 24-27.

Relationship to Land Use Plans

Current land use along the proposed project varies between commercial, residential, institutional/public use, parks and open space, as identified in the 2014 Locust Land Use Plan⁷. The proposed corridor encompasses commercial use, institutional/public use, such as, Stanly Community College, two parks, several churches, high and medium density residential use, and a center city planning district along and near the NC 200 vicinity.

For future land use, there are plans to develop several high density residential areas, center city mixed-use, and mixed use plans with in the Center City Planning District along NC 200, north NC 24-27 and the downtown area.

Linkages to Other Plans and Proposed Project History

The proposed project has not been identified on any previous transportation plan.

Multi-modal Considerations

There are recommendations for bicycle and pedestrian accommodations along the proposed project from NC 200 to NC 24/ 27.

Public/ Stakeholder Involvement

No significant issues associated with this project were identified during the public/stakeholder involvement process.

⁷ To view the 2014 Locust Land Use Plan, go to: <https://locustnc.com/land-use-plan/>.

Other Improvements

The following projects are recommended to improve connectivity and mobility throughout the planning area.

- **Brown's Hill Road (SR 1124), Local ID STAN0037-H:** Extension of Brown's Hill Road (SR 1124) to the proposed Stanly Parkway as a two lane minor thoroughfare with twelve foot lanes and two foot paved shoulders. A park and ride lot is also proposed at the Brown's Hill Road (SR 1124)/NC 24-27 intersection in Locust.
- **Lakewood Road (SR 1978), Local ID STAN0043-H:** It is recommended that Lakewood Road (SR 1978) be realigned to connect to a proposed roundabout that is recommended to be constructed at the intersection of NC 205/Hatley-Burris Road (SR 1131)/Hilltop Road (SR 1134) to remove the offset intersection.
- **Lion Club Road, Local ID STAN0044-H:** It is recommended that Lion Club Road be extended to Coley Store Road (SR 1211) to improve connectivity and mobility to the Locust Elementary School campus. It is recommended to be constructed as a minor thoroughfare with two twelve foot lanes and two foot paved shoulders.
- **Meadow Creek Church Road (SR 1200), Local ID STAN0039-H:** It is recommended that Meadow Creek Church Road (SR 1200) be extended as a two lane minor thoroughfare with 12 foot lanes to Renee Ford Road (SR 1140) and provide a four-legged intersection with NC 24-27.
- **Proposed Connector from NC 24-27 to Lakewood Road (SR 1978), Local ID STAN0050-H:** It is recommended that a new minor thoroughfare with two twelve foot lanes and two foot paved shoulders be constructed east of West Stanly High School to allow for an alternate entrance/exit into the school. The proposed connector will improve access, connectivity and mobility to the school campus area.
- **Proposed Roundabout at NC 205/Hatley-Burris Road/Hilltop Road/Lakewood Road, Local ID STAN0041-H:** It is recommended that a roundabout be constructed at Lakewood Road, the intersection of NC 205/Hatley-Burris Road (SR 1131)/Hilltop Road (SR 1134)/Lakewood Road (SR 1978) to remove the offset intersection and improve efficiency and mobility.
- **Proposed Roundabout at NC 200/Meadow Creek Church Road, Local ID STAN0042-H:** It is recommended that a roundabout be constructed at Meadow Creek Church Road (SR 1200)/NC 200 intersection to improve traffic flow, efficiency, and mobility.
- **Proposed Roundabout at Bethel Church Road (SR 1200)/Running Creek Church Road (SR 1134), Local ID STAN0051-H:** It is recommended that a roundabout be constructed at Bethel Church Road (SR 1200)/Running Creek Church Road (SR 1134) intersection to improve traffic flow, efficiency, and mobility.

Minor Widening Improvements

The following routes are not expected to exceed capacity, but were identified as candidates for upgrading to NCDOT design standards. All facilities listed are recommended to have a minimum of 12 foot lanes with paved shoulders in order to improve mobility, safety and/or to accommodate bicycles. Additionally, some facilities may require improvements to the vertical and/or horizontal alignment. Implementation of the proposed projects should be coordinated through NCDOT's Highway Division 10 office (reference **Appendix A** for contact information).

- **NC 205, Local ID: STAN0012-H** – From NC 24-27 to the southern planning boundary at Liberty Hill Church Road (SR 1115)
- **Austin Road (SR 1214), Local ID: STAN0017-H** – From Bethel Church Road (SR 1200) to the northern planning boundary 0.08 miles northeast of Bethel Church Road (SR 1200)
- **Bethel Church Road (SR 1200), Local ID: STAN0036-H** – From NC 200 to NC 24-27
- **Brown's Hill Road (SR 1124), Local ID: STAN0037-H** – From NC 24-27 to the southern planning boundary 0.15 miles north of Nance Road (SR 1143)
- **Coley Store Road (SR 1211), Local ID: STAN0019-H** – From NC 24-27 to the northern planning boundary approximately 1.0 mile north of Hinson Farm Lane
- **Elm Street (SR 1137), Local ID: STAN0040-H** – From NC 200 to the southern planning boundary at Big Lick Road (SR 1130)
- **Lion Club Road, Local ID: STAN0044-H** - From NC 200 to end of road
- **Meadow Creek Church Road (SR 1200), Local ID: STAN0045-H** – From NC 24-27 to NC 200. Bicycle accommodations are recommended along the entire facility.
- **Renee Ford Road (SR 1140), Local ID: STAN0028-H** – From NC 200 to the southern planning boundary 0.35 miles south of Brentwood Drive

PUBLIC TRANSPORTATION & RAIL

A public transportation and rail assessment was completed during the development of the CTP. There are currently no existing or planned fixed route public transportation or rail services in the planning area. However, there are two proposed park and ride lots located at:

- **Brown's Hill Road (SR 1124) and NC 24-27** intersection in Locust, Local ID: STAN0006-T
- **Oak Ridge Road (SR 1227) and NC 24-27** intersection in Red Cross, Local ID: STAN0007-T

BICYCLE

During the development of the CTP, the 2011 Uwharrie/Central Park Regional Bicycle Plan Map and the 2012 Locust Pedestrian Plan were used to identify bicycle facilities within planning area. These facilities were incorporated into the CTP and are shown on the Bicycle Map of **Figure 1**. Additionally, the following routes were identified for improvements to accommodate bicycles.

- **NC 205, Local ID: STAN0002-B** – From the southern planning boundary at Liberty Hill Church Road (SR 1115) to NC 24-27 in Red Cross
- **Oak Ridge Road/Ridge Crest Road (SR 1227), Local ID-STAN0001-B** – From NC 24-27 in Red Cross to the northern planning boundary 0.46 miles north of Jacob Road (SR 1217)
- **Proposed Stanly Parkway, Local ID: STAN0049-H** – From NC 200 to NC 24-27

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.

PEDESTRIAN

The 2010 Stanly County Carolina Thread Trail Master Plan and the 2012 Locust Pedestrian Plan were used identify recommended pedestrian facilities throughout the planning area. These features are shown on the Pedestrian Map of **Figure 1**. In addition, the following sidewalk was recommended during the development of the CTP:

- **NC 205, Local ID: STAN0001-P** – From NC 24-27 in Red Cross to Peach Tree Road (SR 1135)
- **Proposed Stanly Parkway, Local ID: STAN0049-H** – From NC 200 to NC 24-27

APPENDICES

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

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>

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 "[NCDOT Facility Type –Control of Access Definitions](#)" 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 U-turns 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 unit-like 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-of-way.
- ❖ **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.

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 local municipal data and NCDOT GIS data. 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 2016 - 2025 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 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).

CTP INVENTORY AND RECOMMENDATIONS

HIGHWAY																				
Local ID	Facility	Section		Jurisdiction	Dist. (mi)	2013 Existing System							2040 Proposed System					CTP Classification	Tier	Proposals for Other Modes
		From	To			Total Width (ft)	Lanes	Lane Width (ft)	ROW (ft)	Speed Limit (mph)	Existing Capacity (vpd)	2013 Volume	2040 Volume E+C	2040 Volume with CTP	Proposed Capacity (vpd)	Cross-Section	ROW (ft)			
	NC 24-27	Cabarrus County	Commercial Boulevard	Locust	0.4	48	4D	12	200	45	35,100	16,000	21,800	21,800	35,100	ADQ	200	B	Reg	P
STAN0035-H	NC 24-27	Commercial Boulevard	Tucker Street	Locust	0.6	60	5	12	200	35	24,300	20,000	26,200	24,300	35,100	4F	200	B	Reg	
STAN0035-H	NC 24-27	Tucker Street	Kings Drive	Locust	2.2	60	5	12	200	45	26,800	18,000	23,400	21,500	35,100	4F	200	B	Reg	B
STAN0035-H	NC 24-27	Kings Drive	Jacks Road	Locust	0.5	60	5	12	200	55	28,400	13,000	17,800	17,800	35,100	4F	200	B	Reg	
STAN0035-H	NC 24-27	Jacks Road	Providence Street	Locust/Stanly County/Red Cross	0.3	60	5	12	200	45/55	27,600/31,800	13,000	17,800	17,800	40,500	4F	200	B	Reg	
	NC 24-27	Providence Street	Eastern Planning Area	Red Cross	3.5	48	4D	12	200	55	40,000	14,000/9,800	18,800	18,800	40,000	ADQ	200	B	Reg	
	NC 200	Cabarrus County	Danita Drive	Locust	1.8	24	2	12	100	45	12,200	4900	8,300	8,300	12,200	ADQ	100	Maj	Reg	P
	NC 200	Danita Drive	Smith Street	Locust	0.3	24	2	12	100	35	11,100	4300	8,800	8,800	11,100	ADQ	100	Maj	Reg	P
	NC 200	Smith Street	NC 24-27	Locust	0.4	36	3	12	100	35	12,700	5900	9,600	9,600	12,700	ADQ	100	Maj	Reg	P
	NC 200	NC 24-27	East Sunset Drive	Locust	0.3	36	3	12	100	35	12,700	6000	8,400	8,400	12,700	ADQ	100	Maj	Reg	P
	NC 200	East Sunset Drive	Locust City Limits	Locust	0.2	24	2	12	100	35	11,100	6000	8,500	8,500	11,100	ADQ	100	Maj	Reg	P
	NC 200	Locust City Limits	Seven Oaks Road	Locust	0.3	24	2	12	60	45	12,200	5800	7,800	7,800	12,200	ADQ	60	Maj	Reg	
STAN0012-H	NC 205	NC 24-27	Lakewood Road (SR 1978)	Red Cross	1.0	24	2	12	60	55	12,900	5,900	7,500	7,500	12,900	2E	60	Maj	Reg	B, P
STAN0012-H	NC 205	Lakewood Road (SR 1978)	Liberty Hill Church Road (SR 1115)	Red Cross	1.0	24	2	12	60	45	12,200	6,100	7,800	7,800	12,200	2A	60	Maj	Reg	B
STAN0017-H	Austin Road (SR 1214)	Bethel Church Road (SR 1200)	Northern Planning Area	Stanly County	0.1	18	2	9	60	55	13,600	900	1,100	1,100	14,600	2E	60	Min	Sub	B
STAN0036-H	Bethel Church Road (SR 1200)	NC 200	Coley Store Road (SR 1211)	Locust	1.2	20	2	10	60	45	10,900	2,600	4,400	4,400	11,300	2E	60	Min	Sub	B
STAN0036-H	Bethel Church Road (SR 1200)	Coley Store Road (SR 1211)	Austin Road (SR 1214)	Stanly County	0.3	20	2	10	60	55	14,100	1,900	2,800	2,800	14,600	2E	60	Min	Sub	B
STAN0036-H	Bethel Church Road (SR 1200)	Austin Road (SR 1214)	Red Cross Town Limits	Stanly County	0.4	20	2	10	60	55	14,100	1,900	3,400	3,400	15,100	2A	60	Min	Sub	
STAN0036-H	Bethel Church Road (SR 1200)	Red Cross Town Limits	NC 24-27	Red Cross	1.9	20	2	10	60	55	12,000	2,300	3,000	3,000	12,900	2A	60	Min	Sub	

HIGHWAY

Local ID	Facility	Section		Jurisdiction	Dist. (mi)	2013 Existing System							2040 Proposed System					CTP Classification	Tier	Proposals for Other Modes
		From	To			Total Width (ft)	Lanes	Lane Width (ft)	ROW (ft)	Speed Limit (mph)	Existing Capacity (vpd)	2013 Volume	2040 Volume E+C	2040 Volume with CTP	Proposed Capacity (vpd)	Cross-Section	ROW (ft)			
STAN0037-H	Brown's Hill Road (SR 1142) Extension	Proposed Stanly Parkway	NC 24-27	Locust	0.2	-	-	-	-	-	-	-	1,000	1,000	10,200	2A	60	Min	Sub	P
STAN0037-H	Brown's Hill Road (SR 1142)	NC 24-27	Locust City Limits	Locust	0.3	18	2	9	60	35	9,200	1,900	2,800	2,800	10,200	2A	60	Min	Sub	P
STAN0037-H	Brown's Hill Road (SR 1142)	Locust City Limits	Stanfield Town Limits	Locust	0.9	18	2	9	60	55	11,600	1,900	4,700	4,700	12,900	2A	60	Min	Sub	
STAN0037-H	Brown's Hill Road (SR 1142)	Stanfield Town Limits	Nance Road (SR 1143)	Stanfield	0.6	18	2	9	60	35	9,200	1,900	4,700	4,700	10,200	2A	60	Min	Sub	
STAN0019-H	Coley's Store Road (SR 1211)	NC 24-27	Locust City Limits	Locust	0.4	18	2	9	60	35	9,200	1,800	2,400	2,400	10,200	2A	60	Min	Sub	P
STAN0019-H	Coley's Store Road (SR 1211)	Locust City Limits	Bethel Church Road (SR 1200)	Stanly County	1.3	18	2	9	60	45	13,100	1,200	2,400	2,400	14,600	2A	60	Min	Sub	
STAN0019-H	Coley's Store Road (SR 1211)	Bethel Church Road (SR 1200)	Locust City Limits	Stanly County	1.6	18	2	9	60	45	13,100	1,200	1,600	1,600	14,600	2A	60	Min	Sub	
STAN0019-H	Coley's Store Road (SR 1211)	Locust City Limits	Northern Planning Area	Stanly County	0.6	18	2	9	60	55	13,600	1,200	1,600	1,600	15,100	2A	60	Min	Sub	
	Commercial Boulevard	NC 24-27	Brown's Hill Road (SR 1142)	Locust	0.4	24	2	12	60	15	8,700	1,200	1,900	1,900	8,700	ADQ	60	Min	Sub	
STAN0040-H	Elm Street (SR 1137)	NC 200	Locust City Limits	Locust	0.6	18	2	9	-	35	9,200	1,500	1,800	1,800	10,200	2A	70	Min	Sub	
STAN0040-H	Elm Street (SR 1137)	Locust City Limits	Big Lick Road (SR 1130)	Locust	1.0	18	2	9	-	55	11,600	1,300	1,800	1,800	12,900	2A	70	Min	Sub	
	Hatley-Burris Road (SR 1131)	NC 205	Big Lick Road (SR 1130)	Red Cross	2.5	20	2	10	60	55	12,000	600	2,500	2,500	12,000	ADQ	60	Min	Sub	
	Hilltop Road (SR 1134)	Pless Mill Road (SR 1136)	Peach Tree Road (SR 1135)	Red Cross	0.6	20	2	10	-	45	10,900	300	1,700	1,700	10,900	ADQ	-	Min	Sub	
	Hilltop Road (SR 1134)	Peach Tree Road (SR 1135)	NC 205	Red Cross	1.4	20	2	10	-	45	10,900	300	1,700	1,700	10,900	ADQ	-	Min	Sub	
	James Avenue	Commercial Boulevard	Brown's Hill Road (SR 1142)	Locust	0.2	32	2	16	60	15	8,700	-	-	-	8,700	ADQ	ADQ	Min	Sub	

HIGHWAY

Local ID	Facility	Section		Jurisdiction	Dist. (mi)	2013 Existing System							2040 Proposed System					CTP Classification	Tier	Proposals for Other Modes
		From	To			Total Width (ft)	Lanes	Lane Width (ft)	ROW (ft)	Speed Limit (mph)	Existing Capacity (vpd)	2013 Volume	2040 Volume E+C	2040 Volume with CTP	Proposed Capacity (vpd)	Cross-Section	ROW (ft)			
	Lakewood Road (SR 1978)	NC 24-27	Lakewood Road (SR 1978) Realignment	Red Cross	1.2	20	2	10	60	45	10,900	300	1,900	1,900	10,900	ADQ	ADQ	Min	Sub	
STAN0043-H	Lakewood Road (SR 1978) realignment	Lakewood Road (SR 1978) Realignment	NC 205	Red Cross	0.3	-	-	-	-	-	-	-	500	500	10,900	2A	60	Min	Sub	
STAN0044-H	Lion Club Road	NC 200	Lion Club Road Extension	Locust	0.3	18	2	9	70	25	9,000	-	1,200	1,200	10,000	2A	60	Min	Sub	P
STAN0044-H	Lion Club Road Extension	Lion Club Road	Coley Store Road (SR 1211)	Locust	0.1	-	-	-	-	-	-	-	3,000	3,000	10,000	2A	60	Min	Sub	
STAN0045-H	Meadow Creek Church Road (SR 1200)	NC 200	NC 24-27	Locust	2.5	20	2	10	60	35	9,500	2,100	1,100	1,100	11,100	2E	60	Min	Sub	B, P
STAN0039-H	Meadow Creek Church Road (SR 1200) Extension	Meadow Creek Church Road (SR 1200)	Renee Ford Road (SR 1140)	Locust	0.2	-	-	-	-	-	-	-	500	500	11,100	2E	60	Min	Sub	B
	Oak Ridge Road (SR 1227)	NC 24-27	Ridge Crest Road (SR 1227)	Red Cross	0.5	20	2	10	60	35	9,500	2,300	3,700	3,700	9,500	ADQ	ADQ	Min	Sub	B, P
	Peach Tree Road (SR 1135)	NC 205	Hilltop Road (SR 1134)	Red Cross	1.1	20	2	10	n/a	45	10,900	300	700	700	10,900	ADQ	ADQ	Min	Sub	
	Pless Mill Road (SR 1136)	NC 24-27	Hilltop Road (SR 1134)	Red Cross	0.5	16	2	8	60	55	10,900	700	1,000	1,000	10,900	ADQ	ADQ	Min	Sub	
	Ray Kennedy Drive	NC 24-27	West Market Street	Locust	0.3	24	2	12	60	15	9,000	200	500	500	9,000	ADQ	ADQ	Min	Sub	
STAN0028-H	Renee Ford Road (SR 1140)	NC 24-27	Southern Planning Area	Locust	1.0	20	2	10	60	45	10,900	4,200	7,500	7,500	12,500	2E	60	Min	Sub	B
	Ridge Crest Road (SR 1227)	Oak Ridge Road (SR 1227)	Northern Planning Area	Red Cross	0.5	16	2	8	60	45	10,200	1,300	2,000	2,000	10,200	ADQ	ADQ	Min	Sub	B

HIGHWAY																				
Local ID	Facility	Section		Jurisdiction	Dist. (mi)	2013 Existing System							2040 Proposed System					CTP Classification	Tier	Proposals for Other Modes
		From	To			Total Width (ft)	Lanes	Lane Width (ft)	ROW (ft)	Speed Limit (mph)	Existing Capacity (vpd)	2013 Volume	2040 Volume E+C	2040 Volume with CTP	Proposed Capacity (vpd)	Cross-Section	ROW (ft)			
	Running Creek Church Road (SR 1134)	NC 24-27	Bethel Church Road (SR 1200)	Red Cross	0.4	18	2	9	60	35	9,200	400	700	700	9,200	ADQ	ADQ	Min	Sub	
	Running Creek Church Road (SR 1134)	Bethel Church Road (SR 1200)	Northern Planning Area	Red Cross	0.4	18	2	9	60	35	9,200	500	800	800	9,200	ADQ	ADQ	Min	Sub	
STAN0049-H	Stanly Parkway (existing)	NC 24-27	Stanly Parkway Extension	Locust	0.1	24	2	12	-	15	-	-	1,600	1,600	12,200	2E	70	Min	Sub	B, P
STAN0049-H	Stanly Parkway	Stanly Parkway Extension	N. Brown's Hill Road (SR 1142)	Locust	0.2	-	-	-	-	-	-	-	1,600	1,600	12,200	2E	70	Min	Sub	B, P
STAN0049-H	Stanly Parkway	N. Brown's Hill Road (SR 1142)	Meadow Creek Church Road (SR 1200)	Locust	0.6	-	-	-	-	-	-	-	1,900	1,900	12,200	2E	70	Min	Sub	B, P
STAN0049-H	Stanly Parkway	Meadow Creek Church Road (SR 1200)	NC 200	Locust	1.2	-	-	-	-	-	-	-	1,500	1,500	12,200	2E	70	Min	Sub	B, P
	Vella Drive	NC 24-27	Elm Street (SR 1137)	Locust	0.4	18	2	9	-	35	9,200	-	700	700	9,200	ADQ	ADQ	Min	Sub	
	West Market Street	Ray Kennedy Drive	NC 200	Locust	0.4	24	2	12	45	25/15	9,000/10,000	-	500	500	9,000/10,000	ADQ	ADQ	Min	Sub	
STAN0050-H	Proposed Connector	NC 24-27	Lakewood Road (SR 1978)	Red Cross	0.6	-	-	-	-	-	-	-	900	900	10,900	2E	70	Min	Sub	

BICYCLE AND PEDESTRIAN ¹

BICYCLE								
Local ID	Facility/ Route	Section (From - To)	Distance (mi)	Existing System		Proposed System		Other Modes
				Cross-Section		Type	Cross-Section	
				(ft)	lanes			
STAN0001-B	Oak Ridge Road/Ridge Crest Road (SR 1227)	NC 24-27 to 0.46 miles north of Jacob Road (SR 1217)	0.9	20	2	Bicycle	2C*	
STAN0002-B	NC 205	Liberty Hill Church Road (SR 1115) to NC 24-27 in Red Cross	2.0	24	2	Bicycle	2E	H, P
STAN0049-H	Stanly Parkway	NC 200 to Stanly Parkway existing	2.0	-	-	Bicycle	2E	H, P
STAN0049-H	Stanly Parkway (existing)	Proposed Stanly Parkway to NC 24-27	0.9	24	2	Bicycle	2E	H, P

PEDESTRIAN								
Local ID	Facility/ Route	Section (From - To)	Distance (mi)	Existing System		Proposed System		Other Modes
				Type	Side of Street	Type	Side of Street	
STAN0001-P	NC 205	NC 24-27 to Peach Tree Road (SR 1135)	0.6	-	-	Sidewalk	Both	H, B
STAN0049-H	Stanly Parkway	NC 200 to Stanly Parkway existing	2.0	-	-	Sidewalk	Both	H, B
STAN0049-H	Stanly Parkway existing	Proposed Stanly Parkway to NC 24-27	0.9	-	-	Sidewalk	Both	H, B

¹ Only major routes and proposals are shown here. For further documentation of bicycle and pedestrian facilities and proposals, refer to the *2011 Uwharrie/Central Park Regional Bicycle Plan Map*, the *2012 Locust Pedestrian Plan*, and the *2010 Stanly County Carolina Thread Trail Master Plan*.

* Share the road

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 SPOTOnline (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: <http://www.ncdot.gov/strategictransportationinvestments/>.

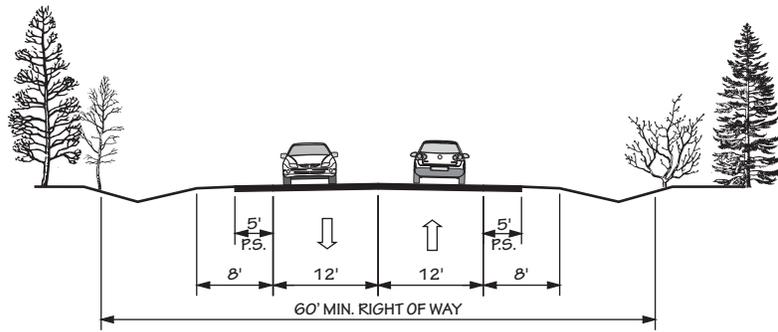
² For more information on prioritization, go to: <https://connect.ncdot.gov/projects/planning/Pages/StrategicPrioritization.aspx>.

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

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

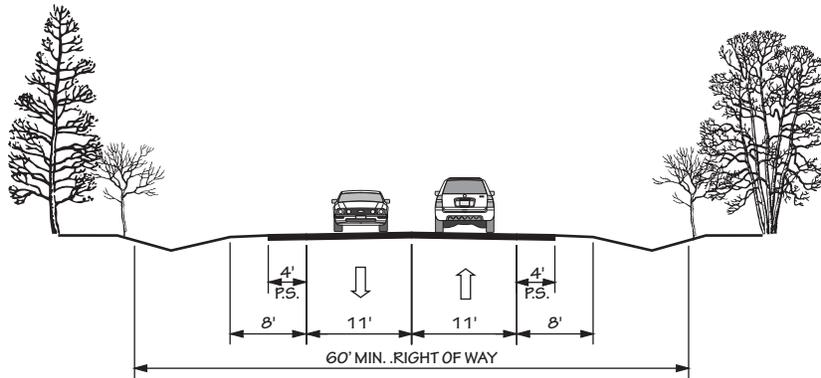
FIGURE 6 "TYPICAL" HIGHWAY CROSS SECTIONS

2A



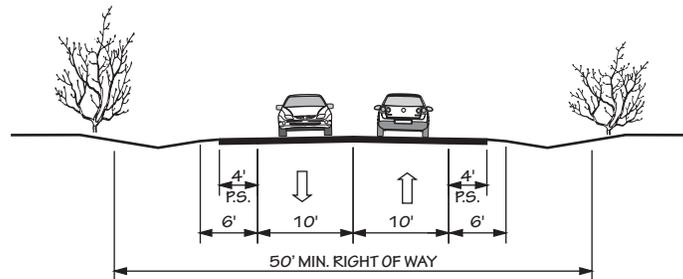
2 LANE UNDIVIDED WITH PAVED SHOULDERS
POSTED SPEED 55 MPH

2B



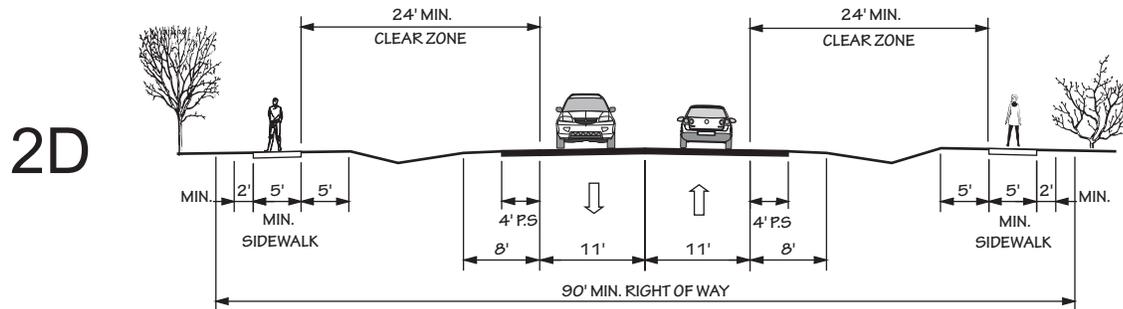
2 LANES UNDIVIDED
POSTED SPEED 45 MPH OR LESS

2C

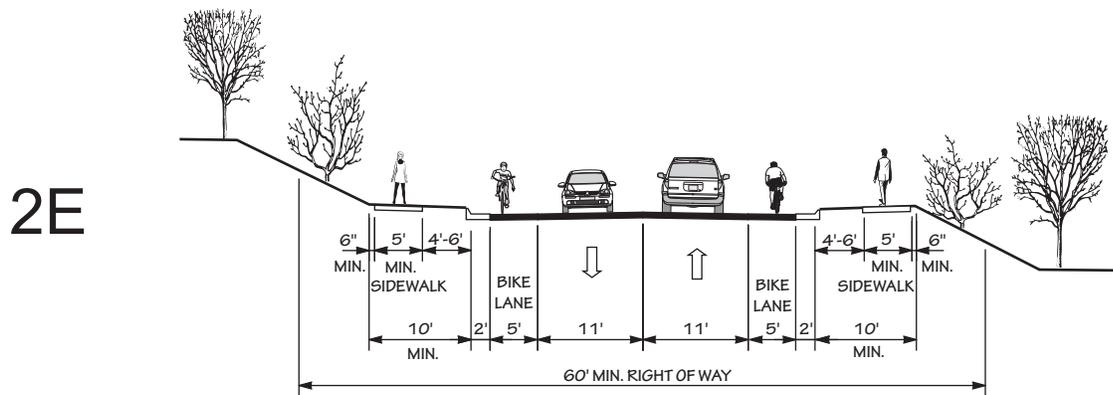


2 LANE UNDIVIDED WITH PAVED SHOULDERS
POSTED SPEED 25 - 35 MPH

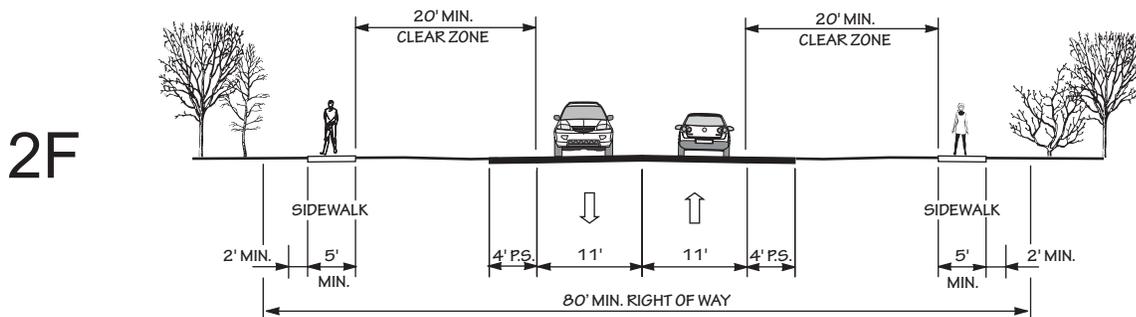
"TYPICAL" HIGHWAY CROSS SECTIONS



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

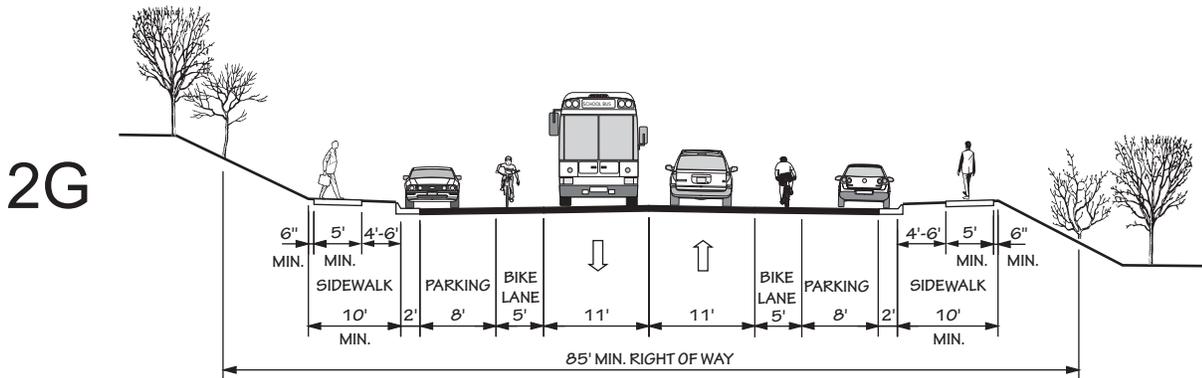


2 LANE UNDIVIDED WITH CURB & GUTTER, BIKE LANES, AND SIDEWALKS
POSTED SPEED 25-45 MPH

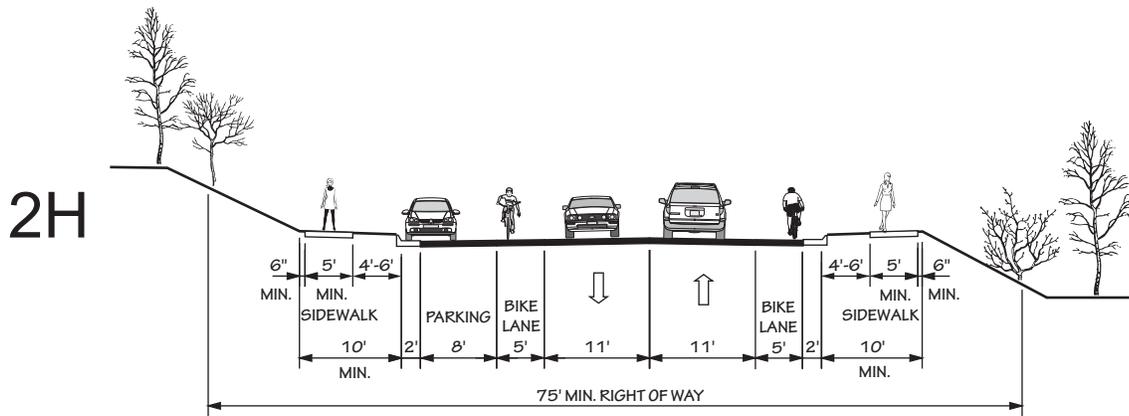


2 LANE UNDIVIDED WITH PAVED SHOULDERS AND SIDEWALKS
IN CAMA COUNTIES
POSTED SPEED 25-45 MPH

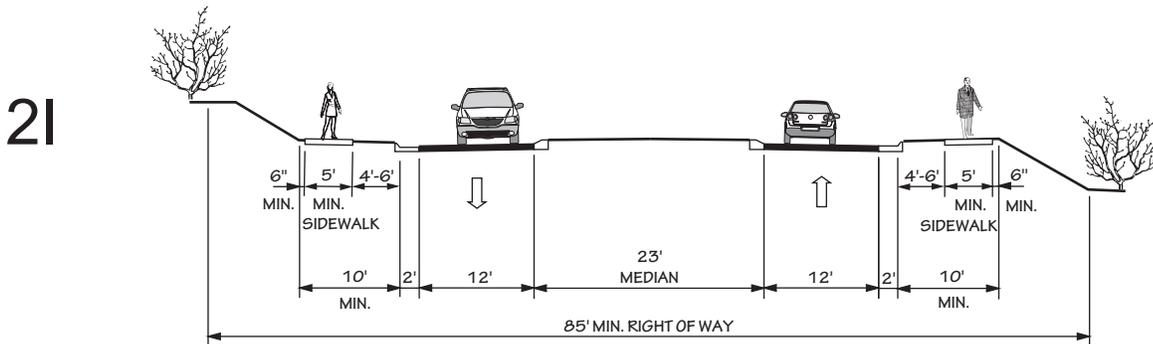
"TYPICAL" HIGHWAY CROSS SECTIONS



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



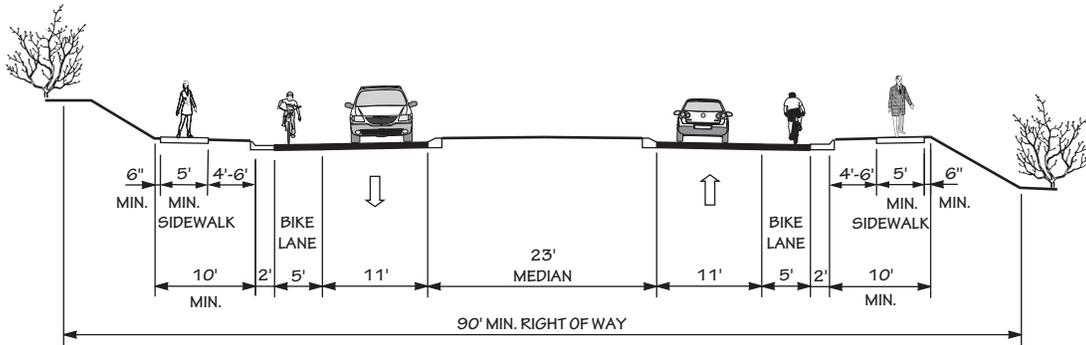
2 LANE UNDIVIDED WITH CURB & GUTTER, PARKING ONE SIDE,
BIKE LANES, AND SIDEWALKS
POSTED SPEED 25-45 MPH



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

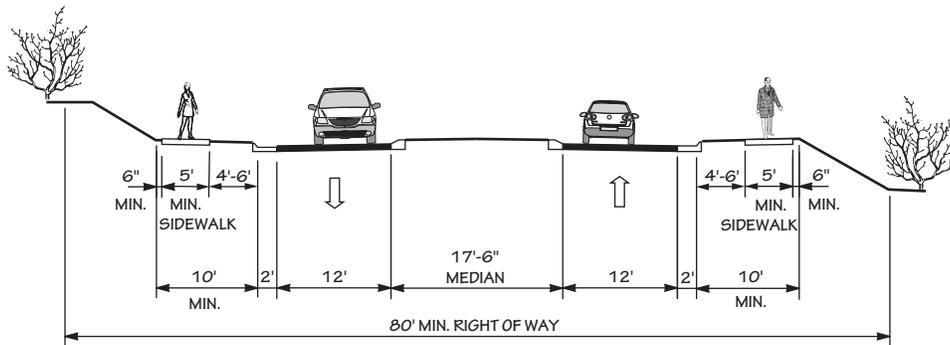
"TYPICAL" HIGHWAY CROSS SECTIONS

2J



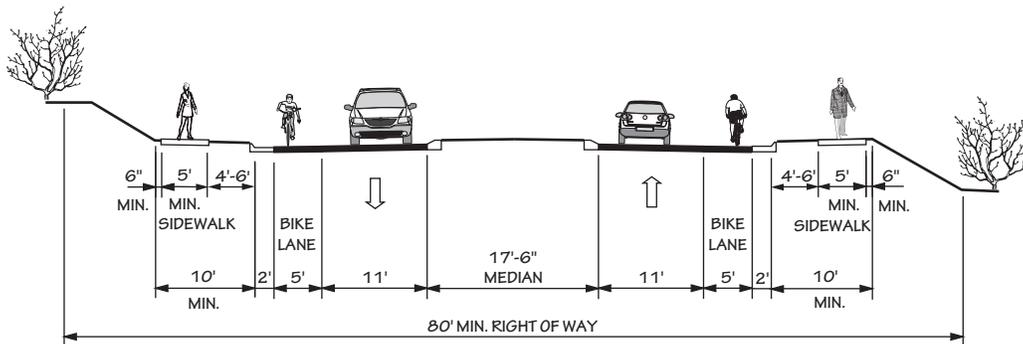
2 LANE DIVIDED (23' RAISED MEDIAN) WITH CURB & GUTTER, BIKE LANES, AND SIDEWALKS
POSTED SPEED 25-45 MPH

2K



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

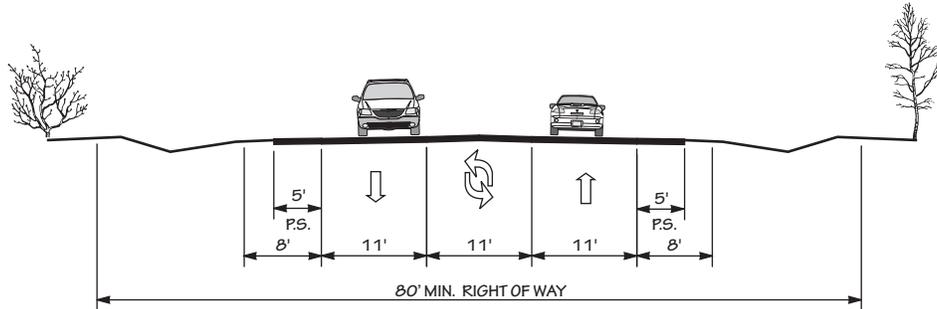
2L



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

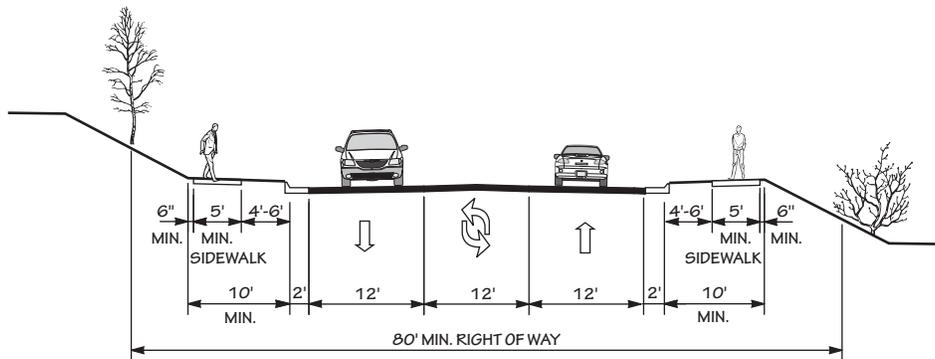
"TYPICAL" HIGHWAY CROSS SECTIONS

3A



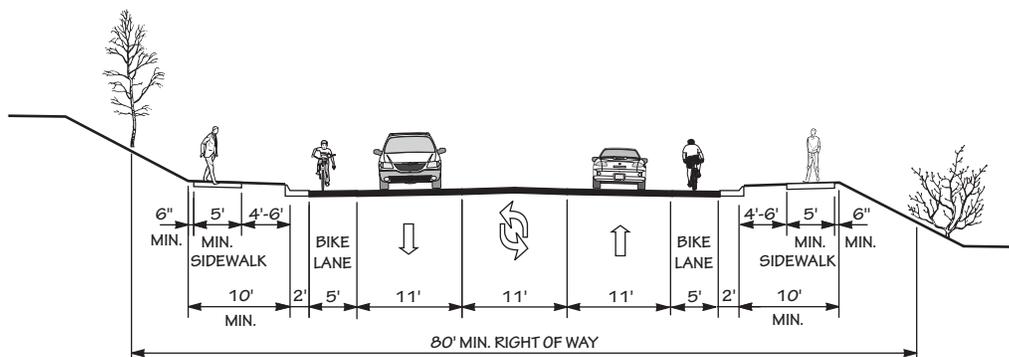
2 LANE WITH TWO WAY LEFT TURN LANE, AND PAVED SHOULDERS
POSTED SPEED 25-55 MPH

3B



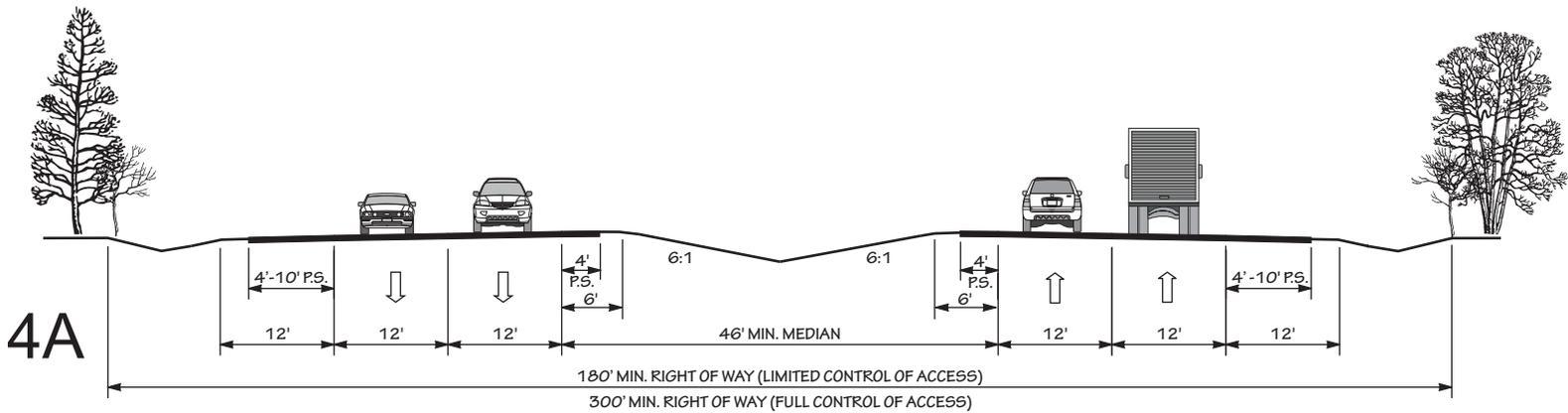
2 LANE WITH TWO WAY LEFT TURN LANE, CURB & GUTTER,
AND SIDEWALKS
POSTED SPEED 25-45 MPH

3C

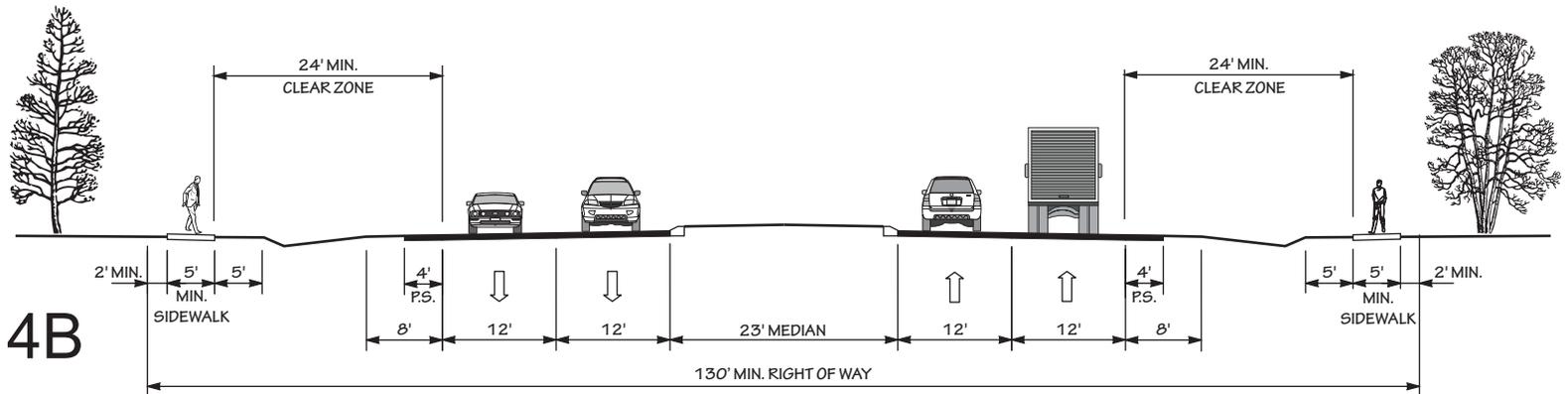


2 LANE WITH TWO WAY LEFT TURN LANE, CURB & GUTTER,
BIKE LANES, AND SIDEWALKS
POSTED SPEED 25-45 MPH

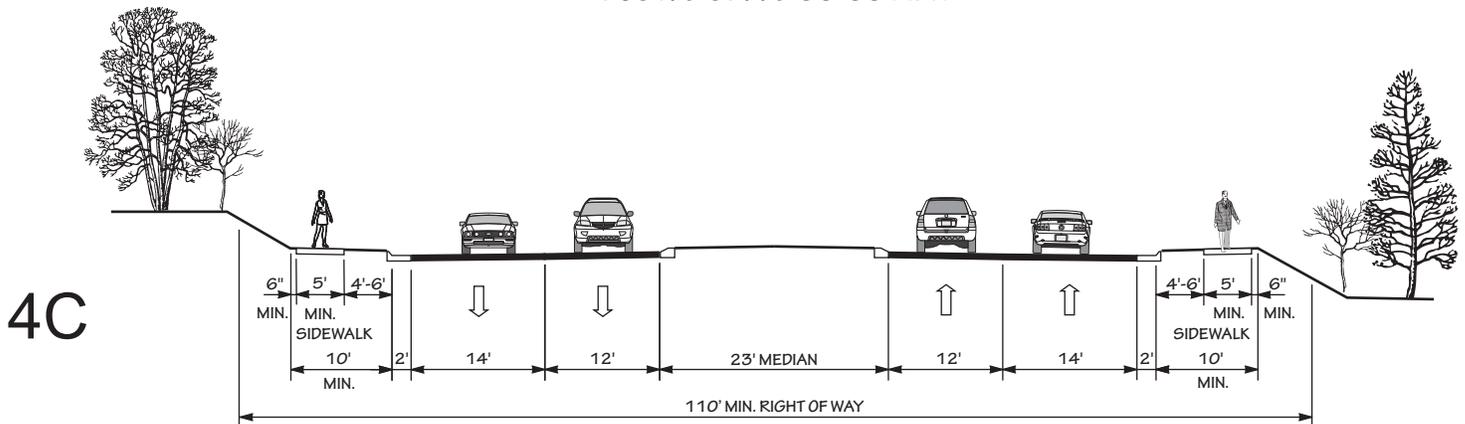
"TYPICAL" HIGHWAY CROSS SECTIONS



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

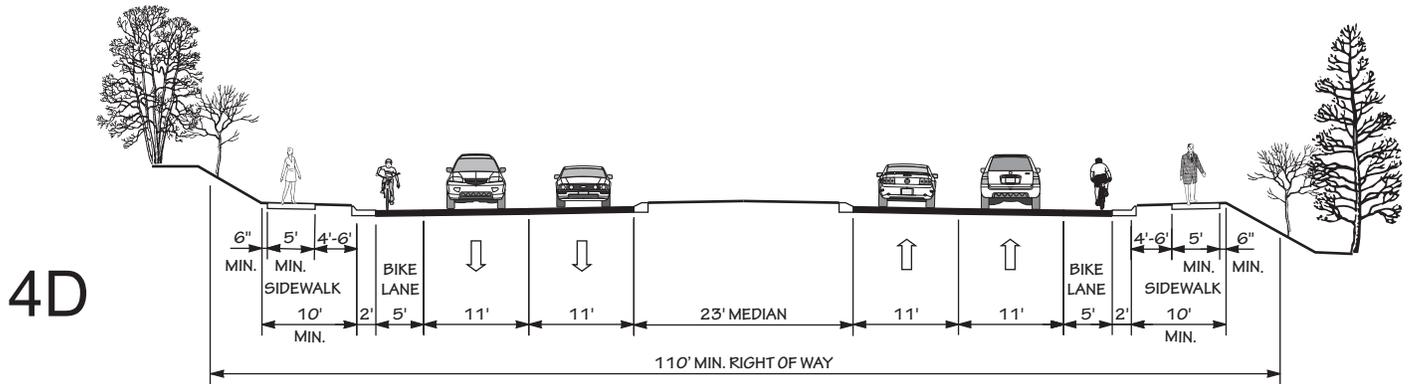


4 LANE DIVIDED (23' RAISED MEDIAN) WITH PAVED SHOULDERS
AND SIDEWALKS
POSTED SPEED 35-55 MPH

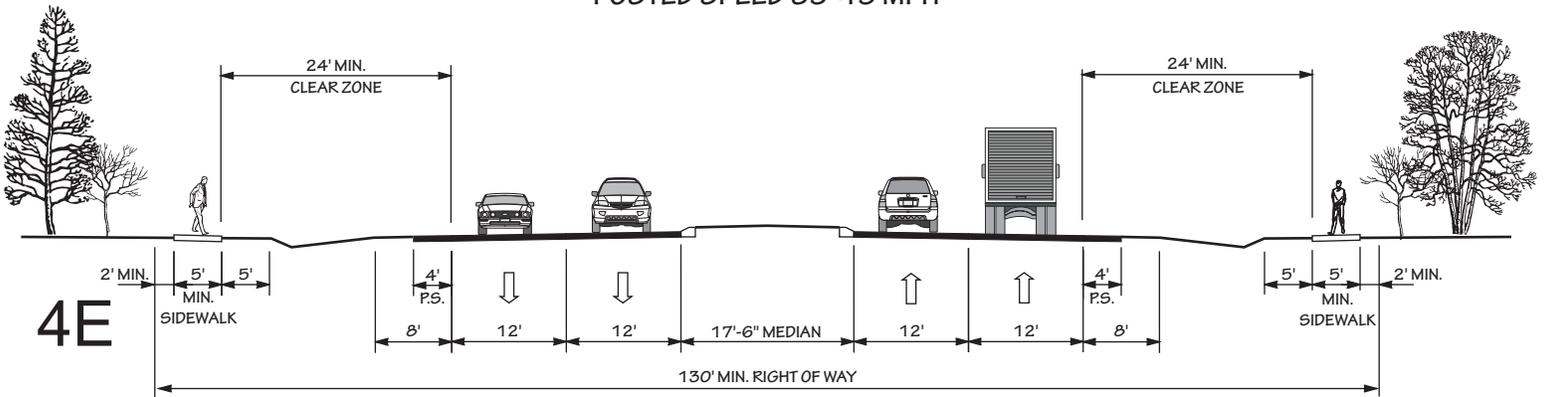


4 LANE DIVIDED (23' RAISED MEDIAN) WITH CURB & GUTTER,
WIDE OUTSIDE LANES, AND SIDEWALKS
POSTED SPEED 35-45 MPH

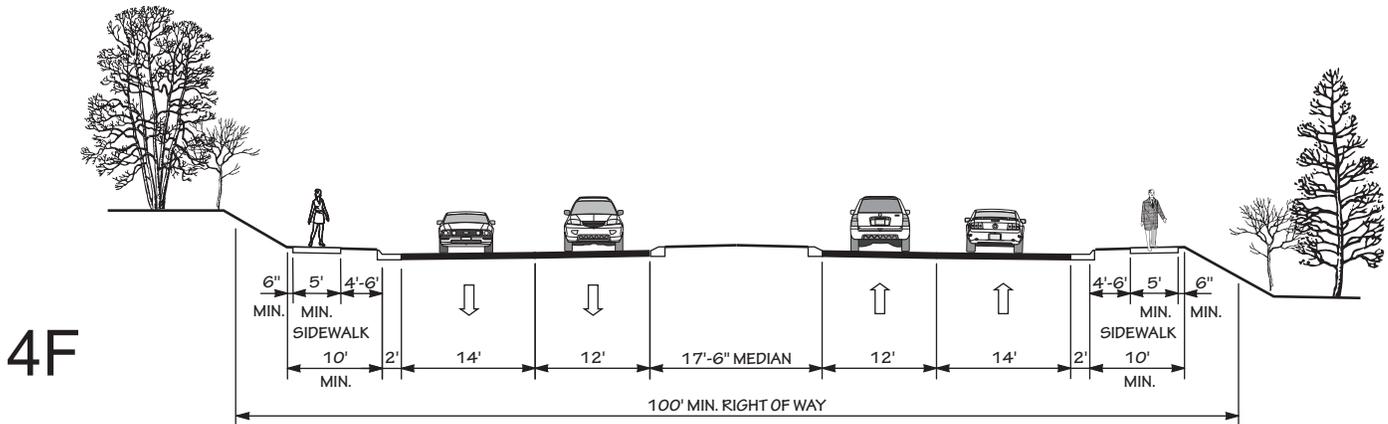
"TYPICAL" HIGHWAY CROSS SECTIONS



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

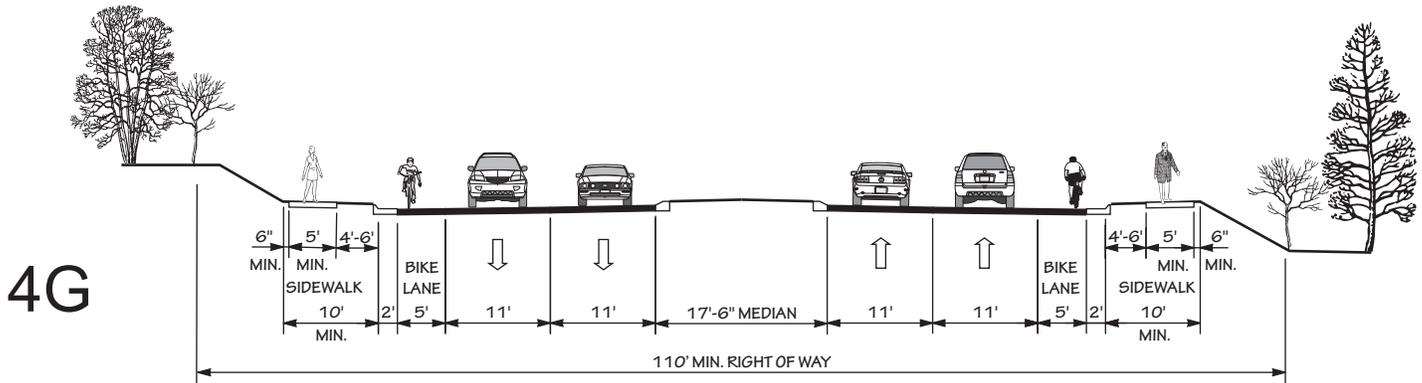


4 LANE DIVIDED (17'-6" RAISED MEDIAN) WITH PAVED SHOULDERS AND SIDEWALKS
 POSTED SPEED 35-55 MPH

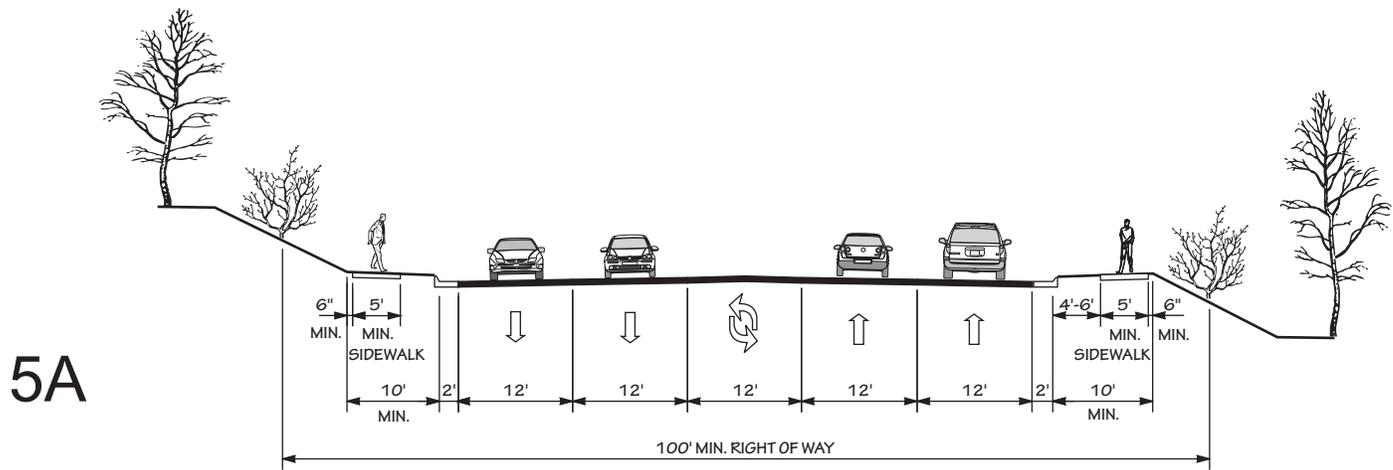


4 LANE DIVIDED (17'-6" RAISED MEDIAN) WITH CURB & GUTTER, WIDE OUTSIDE LANES AND SIDEWALKS
 POSTED SPEED 35-45 MPH

"TYPICAL" HIGHWAY CROSS SECTIONS

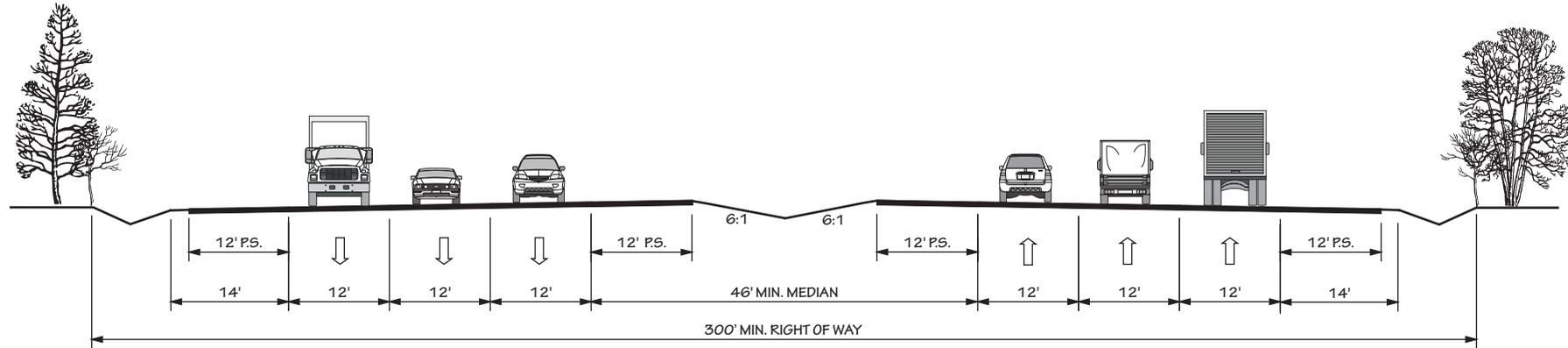


4 LANE DIVIDED (17'-6" RAISED MEDIAN) WITH CURB & GUTTER, BIKE LANES, AND SIDEWALKS
POSTED SPEED 35-45 MPH

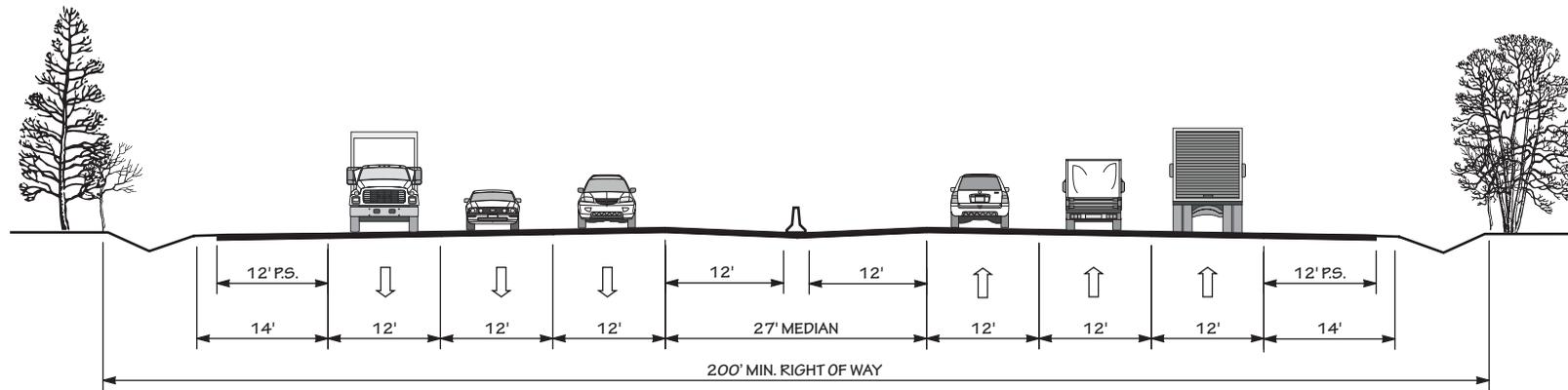


4 LANE WITH TWO WAY LEFT TURN LANE, CURB & GUTTER, AND SIDEWALKS
POSTED SPEED 35-45 MPH

"TYPICAL" HIGHWAY CROSS SECTIONS

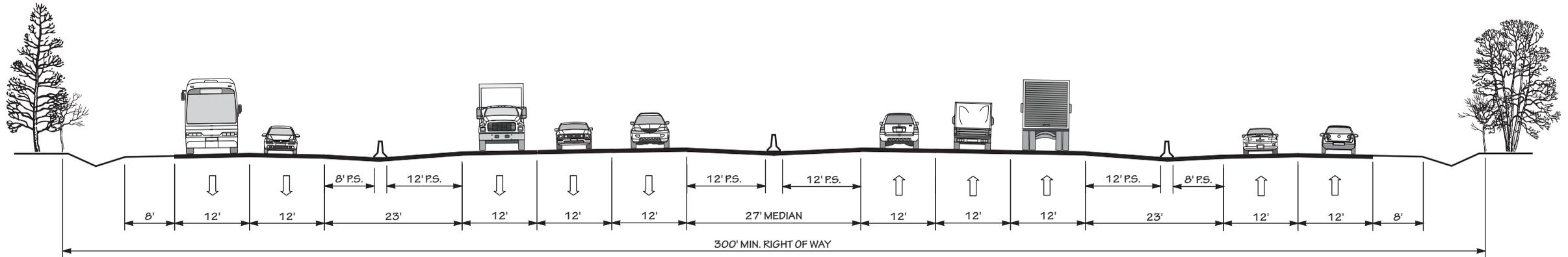


6A 6 LANE DIVIDED (46' DEPRESSED MEDIAN) WITH PAVED SHOULDERS
POSTED SPEED 45-70 MPH



6B 6 LANE DIVIDED (27' MEDIAN WITH JERSEY BARRIER)
WITH PAVED SHOULDERS
POSTED SPEED 55-70 MPH

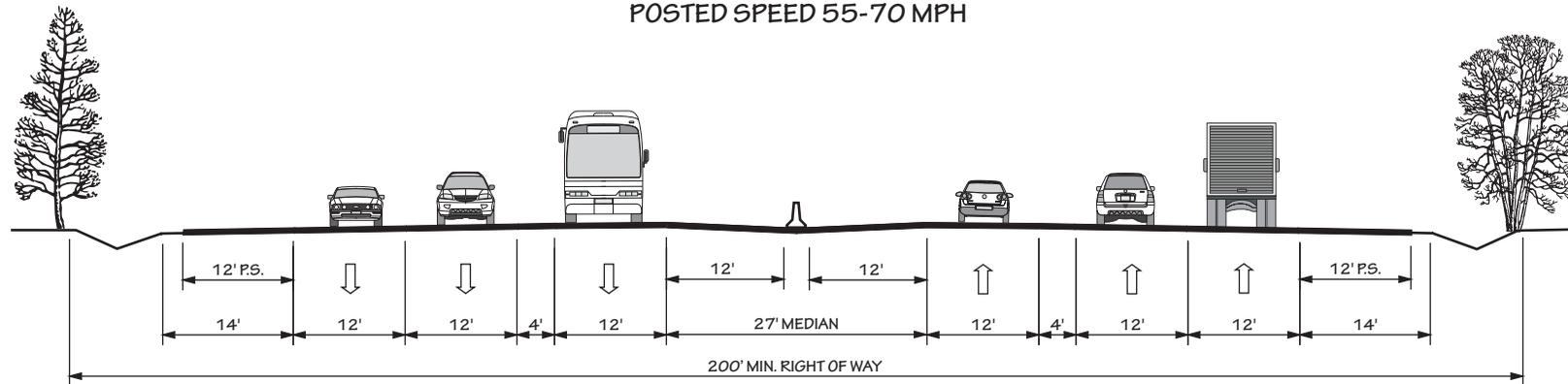
"TYPICAL" HIGHWAY CROSS SECTIONS



6C

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

POSTED SPEED 55-70 MPH

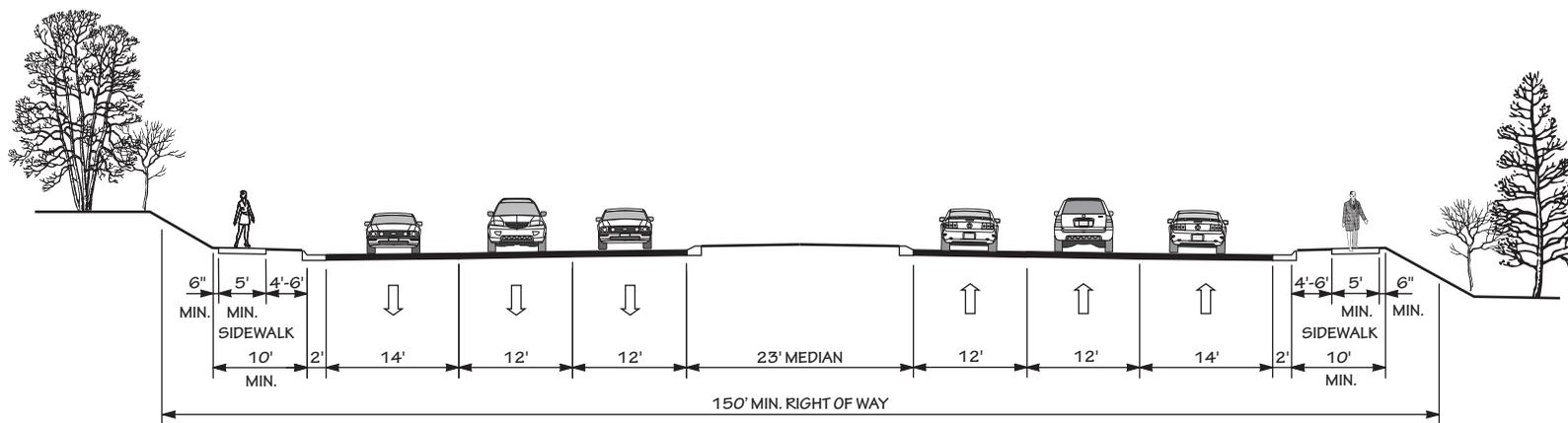


6D

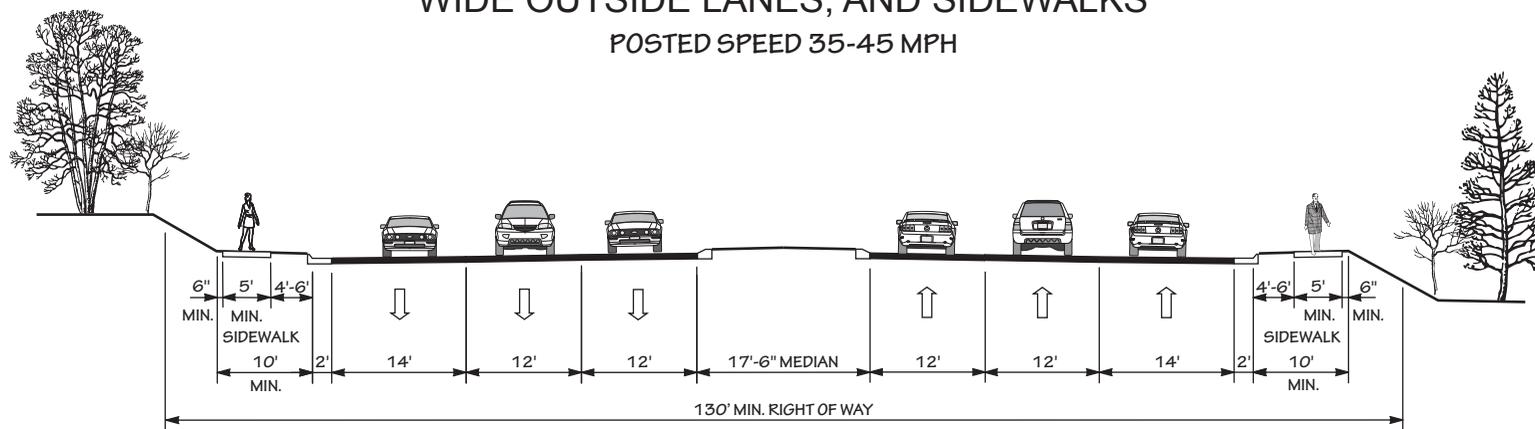
6 LANE FREEWAY (4 GENERAL PURPOSE LANES, 2 MANAGED LANES, AND 27' MEDIAN WITH JERSEY BARRIER) WITH PAVED SHOULDERS

POSTED SPEED 55-70 MPH

"TYPICAL" HIGHWAY CROSS SECTIONS

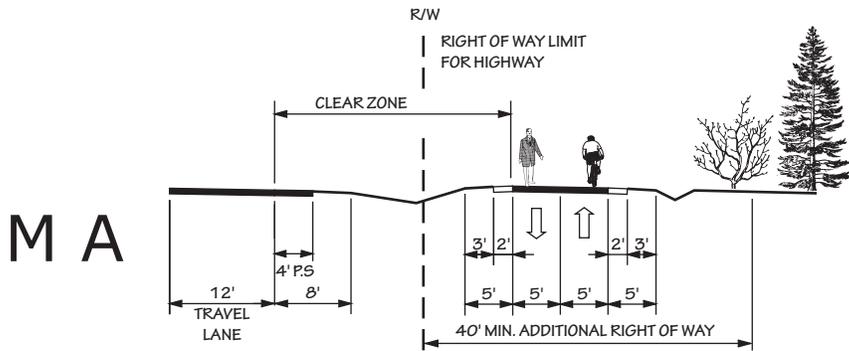


6E 6 LANE DIVIDED (23' RAISED MEDIAN) WITH CURB & GUTTER,
WIDE OUTSIDE LANES, AND SIDEWALKS
POSTED SPEED 35-45 MPH

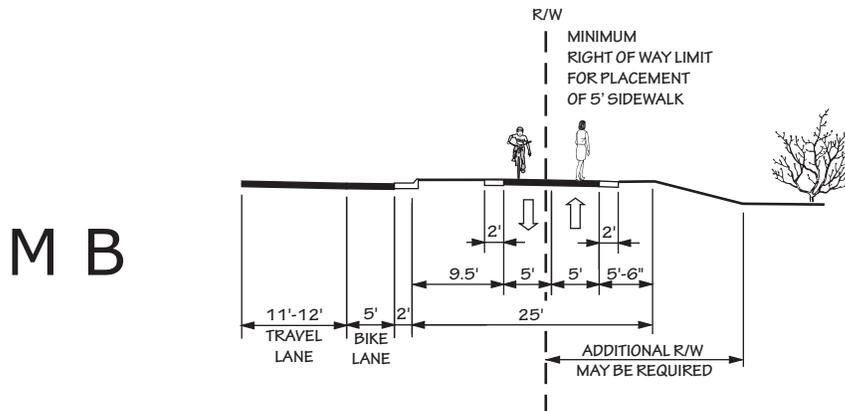


6F 6 LANE DIVIDED (17'-6" RAISED MEDIAN) WITH CURB & GUTTER,
WIDE OUTSIDE LANES, AND SIDEWALKS
POSTED SPEED 35-45 MPH

"TYPICAL" HIGHWAY CROSS SECTIONS



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



MULTI - USE PATH ADJACENT TO CURB AND GUTTER

Appendix E

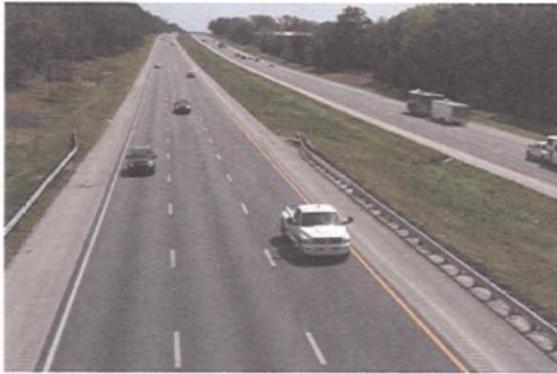
Level of Service Definitions

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 7**.

- ❖ **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.

Figure 7 - Level of Service Illustrations



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. There were no deficient bridges identified on roads evaluated as a part of the CTP. For more details on bridges within the planning area, contact the Structures Management Unit using the information in **Appendix A**.

Appendix G

Socio-Economic Data Forecasting Methodology

In the development of the Locust and Red Cross CTP, existing and anticipated deficiencies were determined through an analysis of the transportation system looking at both current and future travel patterns. Travel demand was projected from 2013 to 2040 using the Metrolina Regional Model (MRM15v1.0). Travel demand models are developed to replicate travel patterns on the existing transportation system as well as to estimate travel patterns for 2040. Additionally, travel demand models require a broad range of socio-economic input data such as population and employment. These inputs are available from sources like the U.S. Census Bureau for the year 2013, but data for 2040 is also required.

The CTP Steering Committee worked with NCDOT to estimate population growth, economic development potential, and land use trends to determine the potential impacts on the future transportation system in 2040. In addition, local land use plans and growth expectations were used to further refine future growth rates and patterns. For this CTP, the 2014 Locust Future Land Use Plan, the 2010 Stanly County Land Use Plan, and the 2015 Red Cross Land Use Plan were used and are illustrated in **Figure 8** respectively. This data was endorsed by the Stanly County Commissioners on November 15, 2015 as a part of the annual update for the Metrolina Regional Model (MRM).

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

Population

Population trends for the study area were estimated using available data from the Metrolina Regional Model (MRM15v1.0). The MRM data is updated annually by Rocky River Rural Planning Organization (RRRPO) staff. The 2015 MRM data was updated and adopted by the RRRPO at its November 2015 Technical Advisory Committee meeting. **Table 3** shows current and projected population through the year 2040.

Table 3 – Population Data*

Year	Population – Stanly County
2010	60,585
2013	61,467
2014	61,467
2015	62,036
2020	63,392
2025	66,737
2030	70,000
2035	74,349
2040	78,602

** Data from the Metrolina Regional Model (MRM15v1.0).*

Employment

Future employment conditions within Stanly County were adopted as a part of the 2015 annual update for the MRM. Employment totals shown in **Table 4** were based on InfoUSA data and growth rates that came from the MRM. Countywide employment totals were based on MRM calculations.

Table 4 – Employment Data

Year	2010	2013	2014	2015	2020	2025	2030	2040
Stanly County	25,106	28,938	27,363	26,526	27,700	29,159	30,396	33,806

** Estimated by Metrolina Regional Model (MRM15v1.0).*

Figure 8 – Land Development Plan

Appendix H Public Involvement

This appendix documents the public involvement process and includes a listing of 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 Locust and Red Cross CTP is given below.

- ❖ Andy Lucas, Stanly County Manager
- ❖ Michael Sandy, Stanly County Planning Director
- ❖ Dicky Hatley, Red Cross Town Council Member
- ❖ Jerry Jordan, Red Cross Town Council Member
- ❖ Larry Smith, Mayor, Town of Red Cross
- ❖ Lou Eubanks, Red Cross Town Council Member
- ❖ Scott Efird, Locust Planning Director
- ❖ Tim Fesperman, Locust City Manager
- ❖ Robert Harvey, Stanfield Town Administrator
- ❖ Dana Stoogenke, Rocky River Rural Planning Organization (RRRPO)
- ❖ Louis Mitchell, NCDOT – Division Engineer, Highway Division 10
- ❖ Marc Morgan, NCDOT – Deputy District Engineer, Highway Division 10
- ❖ Stuart Basham, NCDOT – Division Planning Engineer, Highway Division 10

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, objectives, and MOEs 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 Statement

Produce and maintain a Comprehensive Transportation Plan to preserve and promote the quality of life and economic vitality of the City of Locust and Town of Red Cross. This will be accomplished by providing an accessible, integrated, efficient, safe, and environmentally responsible multi-modal transportation system.

Objectives

1. Preserve, protect, and enhance the natural and human environment.
2. Improve the safety, connectivity, and mobility of the transportation system, for people and freight, for all modes of transportation in and through the region.
3. Maintain and enhance the quality and performance of the transportation system in the Locust and Red Cross area through efficient congestion management and operations techniques in coordination and corporation with jurisdictions.
4. Promote and enhance connectivity and mobility throughout Locust and Red Cross and the surrounding region and metropolitan areas.
5. Encourage preservation of existing community character, scenic views and rural character.
6. Provide an adequate transportation network and infrastructure for the agricultural, commercial and manufacture industries.

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 questions that is tailored to each area as appropriate. A summary of the Locust and Red Cross CTP G & O survey is given below.

1. The following three transportation goals were ranked as being the most important to you.

1. Community and Rural Character Preservation (Keeping businesses in downtown areas; preservation of existing buildings and neighborhoods; maintaining the rural character and landscape)
2. Increased Transportation Mode Choices (Additional opportunities to walk and bike to destinations)
3. Service of Special Needs (Better transportation services for low income, elderly, and disabled residents)

2. To alleviate traffic congestion, you ranked improvements for a road should be by:

1. Improving intersection design, better traffic signal timing, adding turn lanes, and creating roundabouts
2. Providing an alternative means of transportation (bus, train, bicycle, park-n-ride)
3. Building additional travel lanes
4. Controlling the frequency and locations of driveways and cross streets that access the road

3. Are you concerned with safety or crash problems at any specific locations?

Answer Choices	Responses
Yes	39.82% (88)
No	60.18% (133)
Total	221

4. 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?

Answer Choices	Responses
Yes	0.90% (2)
No	99.10% (219)
Total	221

5. Is truck traffic a problem in the area?

Answer Choices	Responses
Yes	6.33% (14)
No	93.67% (207)
Total	221

**6. What towns or destinations would you like to have access or improved?
(Please check all that apply.)**

Answer Choices	Responses
Charlotte	16.43% (34)
Monroe	71.98% (149)
Albemarle	11.59% (24)
Oakboro	86.47% (179)
Red Cross	5.31% (11)
Locust	7.25% (15)
Stanfield	32.37% (67)
Concord	40.58% (84)
Total Respondents	207

7. Please rank the following major roadways within the Locust and Red Cross planning area in the order by which they need to be improved:

Answer Choices	1	2	3	Total
NC 205	81.43% (171)	13.81% (29)	4.76% (10)	210
NC 24-27	5.10% (10)	2.04% (4)	92.86% (182)	196
NC 200	15.23% (30)	83.25% (164)	1.52% (3)	197

8. Identified secondary roadways that were listed as need improvement.

1. Lakewood Road (SR 1978)
2. Bethel Church Road (SR 1200)
3. Hilltop Road (SR 1134)
4. Hatley-Burris Road (SR 1115)
5. Ridgecrest Road (SR 1227)

9. Would you use the following transportation alternatives instead of your own personal vehicle if they were provided?

Answer Choices	Yes	No	Total
Sidewalks	91.89% (170)	8.11% (15)	185
Off-road trails or greenways for walking and biking	88.75% (142)	11.25% (18)	160
On-road bicycle facilities such as bike lanes and wide shoulders	89.61% (166)	13.09% (25)	191
Bus service to/from Albemarle	15.83% (19)	84.17% (101)	120
Bus service to/from Charlotte	12.50% (14)	87.50% (98)	112
Bus service to/from Locust	9.09% (10)	90.91% (100)	110
Bus service to/from Stanfield	2.75% (3)	97.25% (106)	109
Bus service to/from Oakboro	6.09% (7)	93.91% (108)	115
Bus service to/from Red Cross	3.60% (4)	96.40% (107)	111
Rail Service (throughout the County and to nearby urban areas)	10.81% (12)	89.19% (99)	111

10. What other transportation issues exist in the Locust and Red Cross urban area?

- 1. Excessive speed (17)**
- 2. Congestion (18)**
 - a. At West Stanly High School (9)
 - b. On NC 24-27 (6)
 - c. At Locust Elementary School (3)

3. Intersection improvements (6)

- a. Bethel Church Road/NC 24-27(3)
- b. Running Creek Church Road/NC 24-27
- c. NC 205/NC24-27
- d. NC 205/Lakewood Road/Hilltop Road/Hatley-Burris Road

11. What is your age?

Answer Choices	Responses
Under 18	0.46% (1)
18-24	4.11% (9)
25-34	16.89% (37)
35-44	24.20% (53)
45-64	21.92% (48)
65-74	21.00% (46)
Over 74	11.42% (25)
Total	219

12. How many people live in your household including yourself?

Answer Choices	Responses
1	12.44% (27)
2	43.78% (95)
3	19.35% (42)
4	17.51% (38)
5	3.69% (8)
6	0.92% (2)
7	2.30% (5)
8 or more	0.00% (0)
Total	217

13. Do you own a vehicle?

Answer Choices	Responses
Yes	99.09% (217)
No	0.91% (2)
Total	219

14. In what community of Stanly County do you live?

Answer Choices	Responses
Locust	3.18% (7)
Stanfield	1.36% (3)
Oakboro	2.73% (6)
Red Cross	91.36% (201)
Village of Misenheimer	0.00% (0)
Richfield	0.00% (0)
New London	0.00% (0)
Norwood	0.00% (0)
Albemarle	0.00% (0)
Badin	0.00% (0)
Aquadale	0.00% (0)
Porter	0.00% (0)
Lambert	0.45% (1)
Inside Stanly County	0.91% (2)
Outside Stanly County	0.00% (0)
Total	220

15. Where did you get this survey?

Answer Choices	Responses
Newspaper	0.00% (0)
Civic Group	1.83% (4)
Government Building	2.29% (5)
Church	9.63% (21)
School	0.00% (0)
Website Link	4.59% (10)
Other	81.65% (178)
Total	218

Public Meetings

A series of meetings took place in the month of February 2016, at each jurisdiction's council meeting, introducing the CTP process, showing existing and future deficiencies by mode of transportation, and detailed expectations of the final plan. Participants were given a brief questionnaire to solicit input into what they saw as needs in the area.

Public Workshop #1: Red Cross Town Hall

The first public drop-in session was held on February 25, 2016 from 1:30-3:30 pm. Three (3) people attended and all submitted comment forms. The main issues identified included:

- Traffic Light was suggested at Hatley-Burriss Road/NC 205 instead of the roundabout.
 - Roundabouts help address safety and congestion concerns at intersections. They are designed to enhance traffic flow efficiency, safety and minimize delay and cost for all users.
- Traffic circle: Where did the projects originate?
 - There are several roundabouts in Stanly County, two in the Albemarle area (Northeast Connector, very successful) and one in Norwood. The roundabouts for this study were requested by the local officials.
- Is terrorism a factor in developing the CTP?
 - Terrorism is implicitly factored in developing CTPs. Water and sewer plans are considered in the CTP process, but not included in the CTP documents.

- The County Hazard Mitigation Plan is considered in the CTP process.
- Emergency Management and evacuation is considered in CTPs where appropriate.
- Is the expressway for NC 24-27 no longer being considered?
 - Present and projected traffic volumes along the corridor do not warrant an expressway. NC 24-27 was not identified as a Strategic Transportation Corridor (STC), which replaced the Strategic Highway Corridor Vision Plan, and the previous “Expressway” designation is no longer required. The recommended “Boulevard” facility will adequately provide for the present and future traffic volumes as well as providing access for homes and businesses along the corridor.
- Is cost a factor when developing projects within the CTP?
 - Projects in the CTP are not financially constrained and are developed without consideration for cost. However, there is a committee working on enhancing some elements of the CTP process including a means of addressing cost in development of the CTP.

Public Workshop #2: Locust City Hall

The second public drop-in session was held on February 25, 2016 from 4:30-6:30 pm. Three (3) people attended and two (2) comment forms were submitted. The main issue identified included:

- There was a request to see the potential boulevard design of NC 24-27.
 - There are no functional designs at the CTP stage. However, NCDOT’s “Typical Cross Sections” offers options depicting the “Boulevard Scenario” recommended for NC 24-27. The Typical Cross Sections were provided.

Public Hearings

Public hearings were held at the following jurisdictions on the dates below:

- May 9, 2016 at 7:00 pm during the Red Cross Town Council Meeting in Oakboro, North Carolina.
- June 9, 2016 at 7:00 pm during the Locust City Council Meeting in Locust, North Carolina.
- July 11, 2016 at 7:00 pm during the Stanly County Board of Commissioners Meeting in Albemarle, North Carolina.

The purpose of the meetings was to discuss the plan recommendations and to solicit further input from the public. The CTP was adopted during these meetings. The Rocky River RPO endorsed the CTP on July 21, 2016.