

**Proposed Improvements to W. Catawba Avenue (SR 5544)  
from Sam Furr Road (NC 73) to Jetton Road (SR 2151)  
Mecklenburg County, North Carolina**

WBS No. 34462.1.1

STIP No. R-2555B

**ADMINISTRATIVE ACTION**

**STATE ENVIRONMENTAL ASSESSMENT/  
FINDING OF NO SIGNIFICANT IMPACT**

**NORTH CAROLINA DEPARTMENT OF TRANSPORTATION**

submitted pursuant to North Carolina State Environmental Policy Act



Approved:

2.22.17

Date

A handwritten signature in blue ink, appearing to read "B. Yamamoto", is written over a horizontal line.

Brian Yamamoto, P.E.  
Project Development and Environmental Analysis Unit  
North Carolina Department of Transportation



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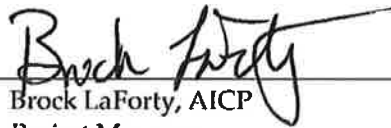
**STATE ENVIRONMENTAL ASSESSMENT/  
FINDING OF NO SIGNIFICANT IMPACT**

**February 2017**

**Documentation Prepared by: WSP | Parsons Brinckerhoff**

2-21-17

Date



Brock LaForty, AICP  
Project Manager

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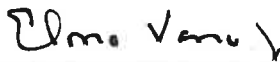
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Project Development Engineer NCDOT

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Date



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Project Development Group Supervisor







## PROJECT COMMITMENTS

W. Catawba Avenue (SR 5544)  
From Sam Furr Road (NC 73) to Jetton Road (SR 2151)  
Mecklenburg County  
WBS No. 34462.1.1  
STIP Project Number R-2555B

The following special commitments have been agreed to by NCDOT

### NCDOT Division 10

- Construction authorization will not be requested until ESA compliance is satisfied for the northern long-eared bat.



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# **INTRODUCTION**

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## **What is the purpose of an Environmental Assessment?**

This State Environmental Assessment (SEA) is an important milestone in the project planning process. The objective of this EA is to provide the public and decision-makers with the appropriate and relevant information to make an informed decision on which transportation improvement alternative to select for implementation. This process is intended to provide all interested parties with the opportunity to contribute to the decision-making process.

This EA has been prepared to comply with the North Carolina State Environmental Policy Act (SEPA), which requires that a detailed analysis be prepared for any project that meets all of the following three criteria:

- A planned expenditure greater than \$10 million provided by the state of North Carolina for a single project or land-disturbing activity equal to or greater than 10 acres of public lands resulting in substantial permanent changes in the natural cover or topography of those lands or waters;
- An action by a state agency;
- Has a potential detrimental effect upon natural resources, public health and safety, natural beauty, or historic or cultural elements of the state's common inheritance.

The North Carolina Department of Transportation is evaluating proposed transportation improvements along W. Catawba Avenue in Cornelius. No federal funds are planned to be expended on this project.

## **What does this SEA include?**

The table of contents presents the overall organization of this SEA and can direct you to the appropriate page numbers in various chapters and sections in the document. Key findings are presented in the summary section. A discussion of findings is presented in five major chapters:

- **Chapter 1 - Purpose of and Need for the Project** describes the transportation improvement needs in the project area and identifies related project objectives.
- **Chapter 2 - Alternatives** describes the characteristics of the alternatives being considered for implementation. This chapter also summarizes other alternatives considered and the reasons why they were not selected for detailed study.
- **Chapter 3 - Description of the Proposed Improvements** describes the existing conditions and the proposed improvements as well as proposed schedules and project costs.

- **Chapter 4 – The Environment: What’s There Now and Potential Project Effects** describes the existing and forecast future environmental conditions, as well as potential short- and long-term beneficial and adverse effects (if any) of the detailed study alternatives on these conditions.
- **Chapter 5 – Comments and Coordination** provides a summary of public and agency involvement during the project development process.
- **Chapters 6 and 7** provide a summary of impact and a basis for the Finding of No Significant Impact.



## **SUMMARY**

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### **Type of Action**

#### ***What type of federal action is this document?***

This is a State Environmental Assessment.

### **Project Purpose/Description of Action**

#### ***What do we propose to build and where?***

R-2555B will be developed in the northern part of Mecklenburg County in the towns of Huntersville and Cornelius. The project proposes to widen W. Catawba Avenue from NC 73 (Sam Furr Road) to Jetton Road for approximately 2.75 miles. Approximately one tenth of a mile of the project's southern extent will be in the Town of Huntersville, with the remaining portion in the Town of Cornelius (see Figure 1).

The proposed project is included in the *Current NCDOT STIP* (State Transportation Improvement Program and programmed as R-2555B (June 2015). Section B is the second section of improvements to W. Catawba Avenue. R-2555A was completed in 2009. The R-2555B project is shown in the STIP as having right-of-way date of 2018 and construction in 2020.

The proposed improvements include changing the existing two lane, undivided roadway to a four-lane, center median divided roadway with left turn lanes in the median and at certain intersections. Additional improvements will include sidewalks, bicycle lanes, a multi-use path, and curb and gutter drainage.

### **Needs Addressed By the Project**

The purpose of widening W. Catawba Avenue is to improve traffic capacity for motorists, pedestrians and cyclists in the project area. Without improvements, service on W. Catawba Ave. from Sam Furr Road to Jetton Road will continue to degrade because of inadequate lane capacity, turning movement conflicts, incomplete sidewalks, and a lack of crosswalks and bicycle accommodations.

### **Alternatives Considered**

A No-Build alternative and two Build Alternatives were considered for this project. These are discussed below.

#### ***No Build Alternative***

The No-Build alternative is a "no-action" alternative that assumes the project segment of W. Catawba Avenue will continue to be utilized as an "other principal arterial" roadway in its current manner.

## ***Build Alternatives***

Two Build Alternatives were considered: a symmetrical widening option and an asymmetrical “best-fit” option.

The symmetrical widening alternative would widen W. Catawba Avenue along its existing alignment between Sam Furr Road and Jetton Road. This alternative includes symmetrical modifications to the profile of the roadway. Improvements include adding one lane in each direction; dedicated turn lanes; a grass center median; curb and gutter, sidewalks; bike lanes and a multi-use path.

The Best-Fit Widening Alternative begins and ends at the same points and has the same improvements as the symmetrical widening but would include widening W. Catawba Avenue asymmetrically to improve curves and to avoid or minimize impacts to environmentally sensitive areas.

## **NCDOT Recommended Alternative**

The NCDOT has chosen the Best-Fit Widening as the recommended alternative

## **Summary of Environmental Effects**

The project is expected to have a minor impact on the environment, as shown in the table below.

<b>IMPACT CATEGORY</b>	<b>RECOMMENDED ALTERNATIVE</b>
<b>Natural Resources Impacts</b>	
Federal Listed Species Habitat	No
100-Year Flood Plain and Floodway Crossings (number)	0
Wetlands (number / acres)	0
Stream Crossings (number / linear feet)	0
Water Supply Critical Areas	0
<b>Human Environment Impacts</b>	
Residential Relocations (units)	0
Business Relocations (units)	4
Low Income/Minority Populations	No
Schools (number)	0
Historic Sites/Districts (number)	0
Traffic Noise Impacts (number of receptors)	48
Air Quality	** Attainment Area
Parks and Recreation Area (acres)	0
<b>Physical Environment Impacts</b>	
Farmland (acres)	0
Underground Storage Tanks (number of potential sites)	2

## Permits Required

No Section 404 permits are required for this project because there are no streams or wetlands in the project area.

## Coordination with Public & Other Agencies

Federal, state, and local agencies were consulted during the preparation of this State EA.

- U.S. Army Corps of Engineers
- U.S. Fish and Wildlife Service
- N.C. Department of Cultural Resources – State Historic Preservation Office
- N.C. Department of Environment and Natural Resources - Division of Wildlife Resources
- N.C. Department of Environment and Natural Resources – Natural Heritage Program
- N.C. Wildlife Resources Commission
- Charlotte – Mecklenburg County Schools
- Charlotte – Mecklenburg Regional Planning Organization
- Town of Cornelius
- Town of Huntersville

## Contact information

The following person may be contacted for additional information regarding this environmental document:

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## **Chapter 1: What is the Purpose of and Need for the Project?**

The statement of purpose and need explains why improvements to the transportation system in the project area should be considered and implemented.

### **General Project Description**

#### *What do we propose to build and where?*

The North Carolina Department of Transportation is evaluating improvements to W. Catawba Avenue (SR 5544) from Sam Furr Road (NC 73) to Jetton Road (SR 2151). State Transportation Improvement Project (STIP) R-2555B will widen W. Catawba Avenue, currently a minor arterial, from two to four lanes and will include dedicated turn lanes, a 23-foot grass center median, sidewalk on the west, curb and gutter, bike lanes on both sides, and a multi-use path on the east side. The total length of the project is approximately 2.75 miles. Figure 1 shows the project area.

The proposed project is included in the draft *2016-2025 NCDOT State Transportation Improvement Program (STIP)* updated June 2015 and in the Charlotte Regional Transportation Planning Organization's (CRPTO) fiscally constrained Metropolitan Transportation Plan 2040, which was adopted by NCDOT in April 2014.

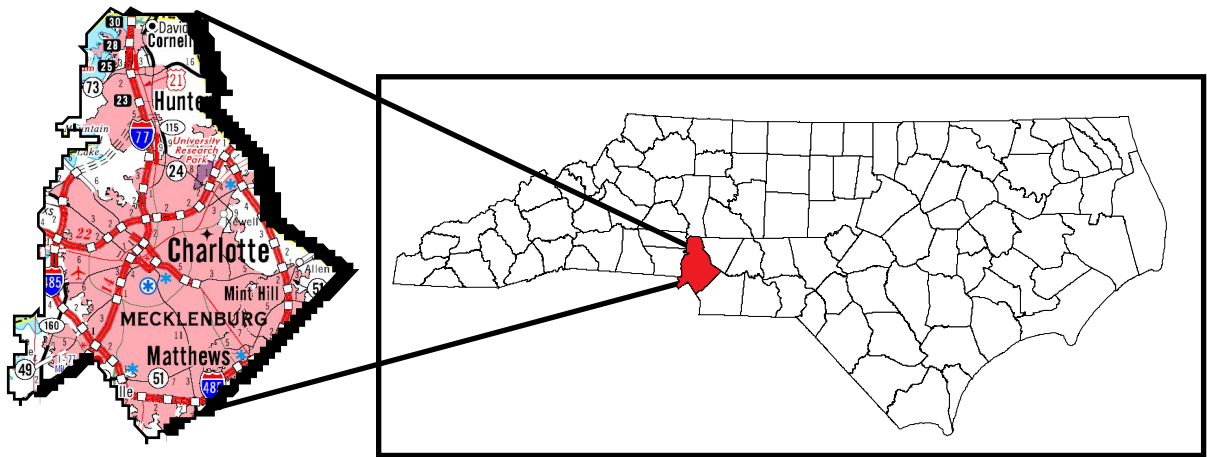
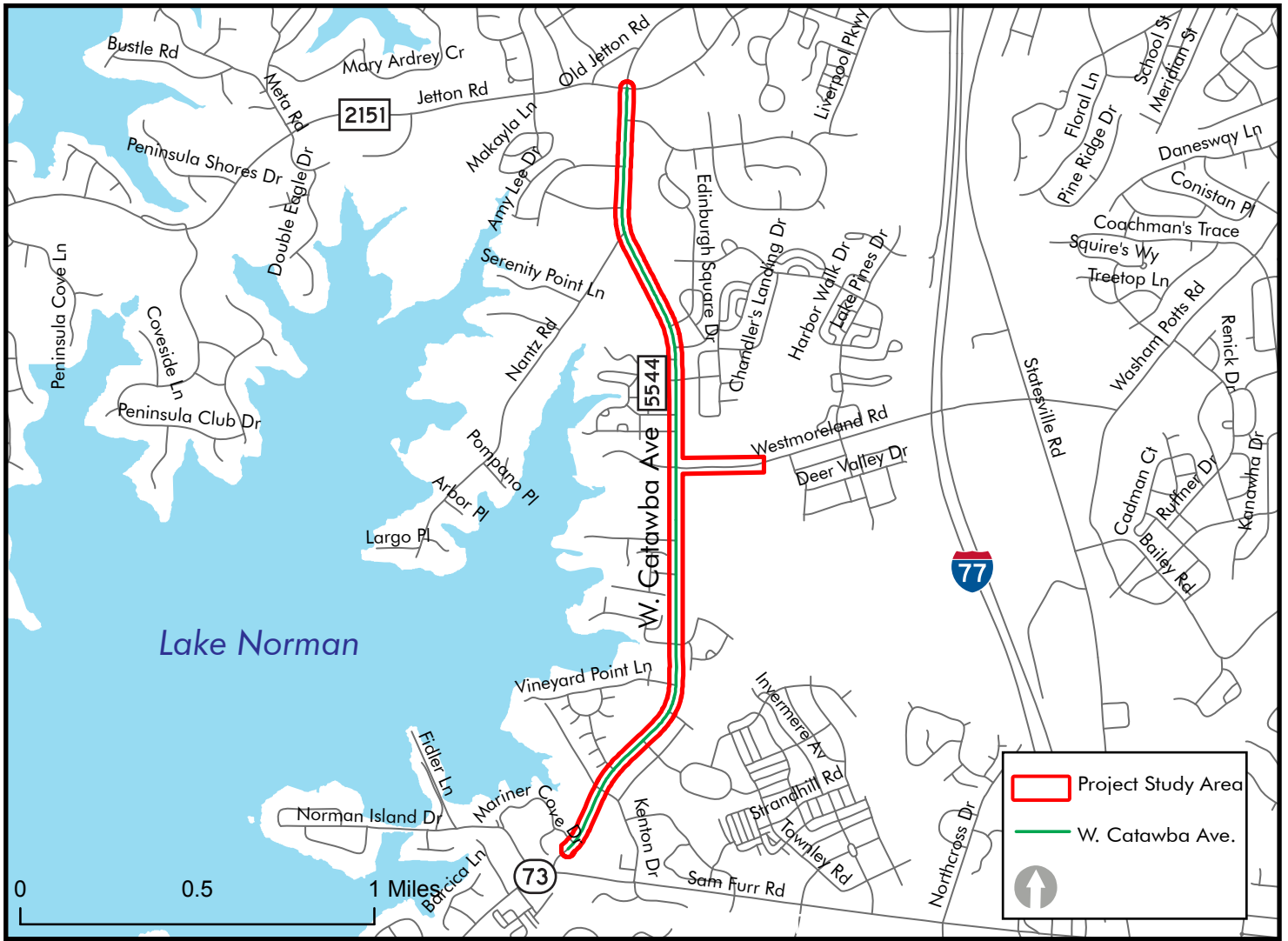
The project currently has right-of-way acquisition scheduled for State Fiscal Year 2018 and construction for State Fiscal Year 2020.

### **Need for Project**

#### *Why do we need the project?*

The proposed project is needed because transportation deficiencies currently exist along W. Catawba Avenue in the project study area. A highway facility is deficient when it is unable to safely and efficiently satisfy travel demands because of the amount of traffic using the facility, the width to carry the traffic, and/or safety concerns.

The 2013 Annual Average Daily Traffic (AADT) volumes on W. Catawba Avenue in the project area range between 19,700 vehicles per day (vpd) north of Sam Furr Road (NC 73) and 26,300 vehicles per day near Jetton Road (SR 2151). West Catawba Avenue operates at unacceptable levels of service at many of the intersections in the project area. By the year 2035, traffic volumes in the project area are predicted to range between 23,200 vpd north of Sam Furr Road and 31,000 vpd near Jetton Road (SR 2151). More intersections on W. Catawba Avenue would operate at unacceptable levels of service without any improvements. With the increasing traffic volumes and without any improvements, the level of service on W. Catawba Avenue in the project area is expected to be unacceptable.



**Figure**

**1**

**Vicinity Map**

Proposed Improvements to W. Catawba Avenue (SR 5544) from Sam Furr Road (SR 73) to Jetton Road (SR 2151), Cornelius, Mecklenburg County, North Carolina

WBS No. 34462.1.1  
STIP No. R-2555B



## **Purpose of Project**

### *What purpose will the project serve?*

The purpose of the project is to improve traffic flow (how many cars are able to pass through an area in a given time interval) and reduce travel delay (the additional travel time experienced by a driver due to circumstances that slow down traffic) on existing W. Catawba Avenue between Sam Furr Road and Jetton Road so that a minimum Level of Service D – a moderate wait time – is maintained through the 2035 design year.

## **“No Build” Alternative Consequences**

### *What happens if the project is not built?*

If the project is not built, W. Catawba Avenue will experience congestion with many main road movements and a number of intersection movements operating at LOS F. This will cause considerable travel time delay for drivers.

## **Chapter 2: Alternatives**

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Several alternatives were reviewed for the project to identify an alternative that would satisfy the project's purpose and need while minimizing impacts to the human and natural environments. This chapter summarizes the study alternatives that were considered as well as the ones selected for detailed study.

### **Alternatives to the Proposed Action**

*What alternatives are considered in this environmental assessment?*

#### Alternative Modes of Transportation

Mass transit (buses and trains), bicycle and pedestrian accommodations are examples of alternative modes of transportation that may help reduce highway congestion and delay. The project area is currently served by the Charlotte Area Transit Service (CATS). Route 97 operates along W. Catawba Avenue and along adjoining Sam Furr Road and crosses I-77. The proposed project includes construction of sidewalks and bike lanes to accommodate pedestrians and bicycle traffic. While providing accommodations for alternative modes of transportation will allow increased pedestrian and cyclist use, this alone will not address the need for other improvements to accommodate the forecast motorized vehicle volumes in the design year 2035. Therefore, this alternative is not recommended.

#### Transportation Systems Management

Transportation Systems Management (TSM) improvement options involve increasing the available capacity of the roadway within the existing right-of-way with minimum capital expenditures and without reconstructing or adding additional through lanes to the existing road. Addition of turn lanes, striping, signing, signalization, and minor road realignments are examples of TSM physical improvements. Examples of TSM operational improvements include traffic law enforcement, speed restrictions and signal timing changes. TSM improvements have been incorporated in the proposed project but they alone will not reduce congestion and delay enough to prevent unacceptable traffic operations in the 2035 design year.

#### No Build Alternative

The No-Build Alternative is a "no-action" alternative to establish a baseline for comparing the effects associated with the Build Alternative. The No Build Alternative would provide routine road repairs and maintenance to existing W. Catawba Avenue. The No Build Alternative assumes inclusion of other projects listed in NCDOT's 2016-2025 STIP. This alternative would not provide any substantial improvements to W. Catawba Avenue and would not improve traffic flow or reduce travel time delay. Therefore, the No Build Alternative is not recommended.

### Build Alternatives

Two Build alternatives were considered, Symmetrical Widening and a Best Fit widening. Alternatives that provide widening only on one side or widening equally on both sides (symmetrical widening) do not fully consider the impacts to resources that may be located on both sides of the existing roadway, nor do they necessarily consider the full range of possible geometric improvements that could be made. The "Best Fit" alternative allows the design engineers an opportunity to minimize the impacts to the human and natural environments by shifting the widening to improve the existing road alignment, minimize impacts, and allow traffic to remain on W. Catawba Avenue and the roads that intersect W. Catawba Avenue during project construction.

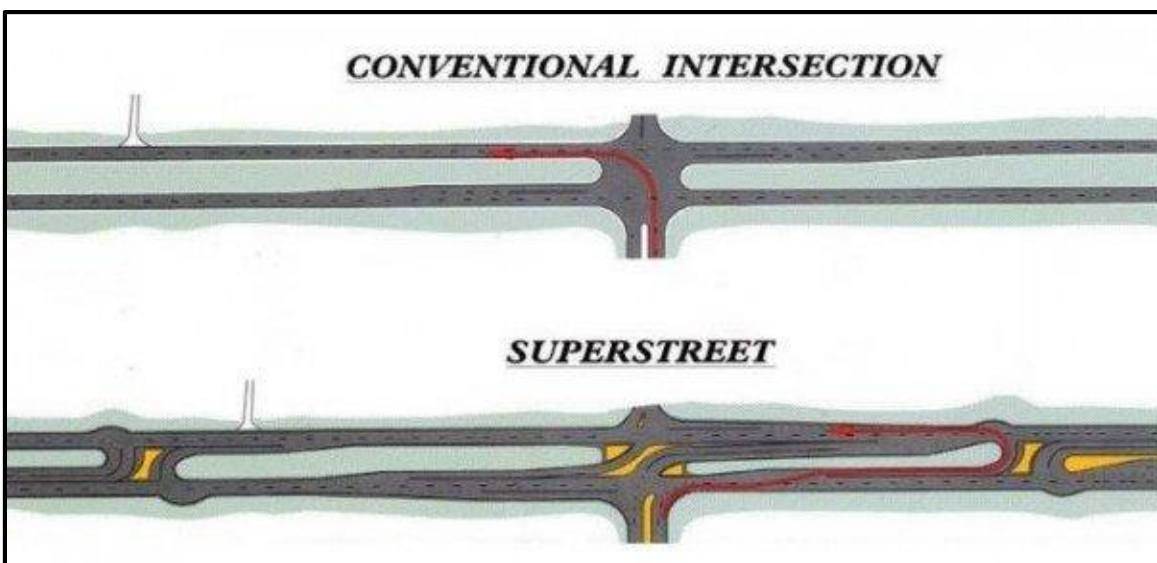
Both Build alternatives would meet the purpose and need for the project by providing additional traffic capacity and reducing delay. The Best-Fit Widening alternative was retained for detailed study because of its reduced environmental impact.

### **NCDOT Recommended Alternative – "Best Fit" Widening Alternative**

A "Best Fit" Widening Build alignment alternative was studied in detail for the project. This alternative will widen W. Catawba Avenue at locations that "best fit" the current road location and surrounding land uses. The NCDOT chose the Best Fit Alternative as its recommended Alternative. The design also incorporates superstreet intersections, as explained below.

### Superstreet Design

A "superstreet" has intersections in which the minor cross-street traffic is prohibited from going straight through or left at a divided highway intersection. The minor cross street traffic must turn right but can then access a U-Turn located in the median to proceed in the desired direction. Prohibiting straight and left turn movements from the cross streets reduces the number of traffic signal phases required to move traffic through





the intersection, allowing for longer green times on the major roadway thus reducing congestion caused by signals.

In addition, there are fewer threats to crossing pedestrians because the traffic flow is simplified and the potential conflicts with turning vehicles are reduced. The island provides refuge for pedestrian as they cross the roadway. Pedestrians have to cross fewer lanes at a time since they are able to get a refuge in the median. Pedestrians use a two-stage crossing. (They wait in the center median) Most of the time, the travel time is shorter, as the cycle lengths for the signals is much less (usually about half) so the net time of waiting/crossing is quicker. In the worst case scenario, the wait time will be essentially the same as a traditional intersection.

A review of a superstreet design along the W. Catawba Avenue corridor between Sam Furr Road and Jetton Road concluded that the facility is anticipated to operate acceptably in the 2035 design year with a superstreet configuration. The superstreet analysis can be viewed in the project file.

## **Chapter 3: Description of the Proposed Improvements**

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The project is designed to improve traffic flow and reduce travel delay on existing W. Catawba Avenue on the approximately 2.75-mile section between Sam Furr Road and Jetton Road. This chapter provides an overview of the proposed project's principal features as well as other features that are necessary to support the proposed improvements.

### **Project Principal Features**

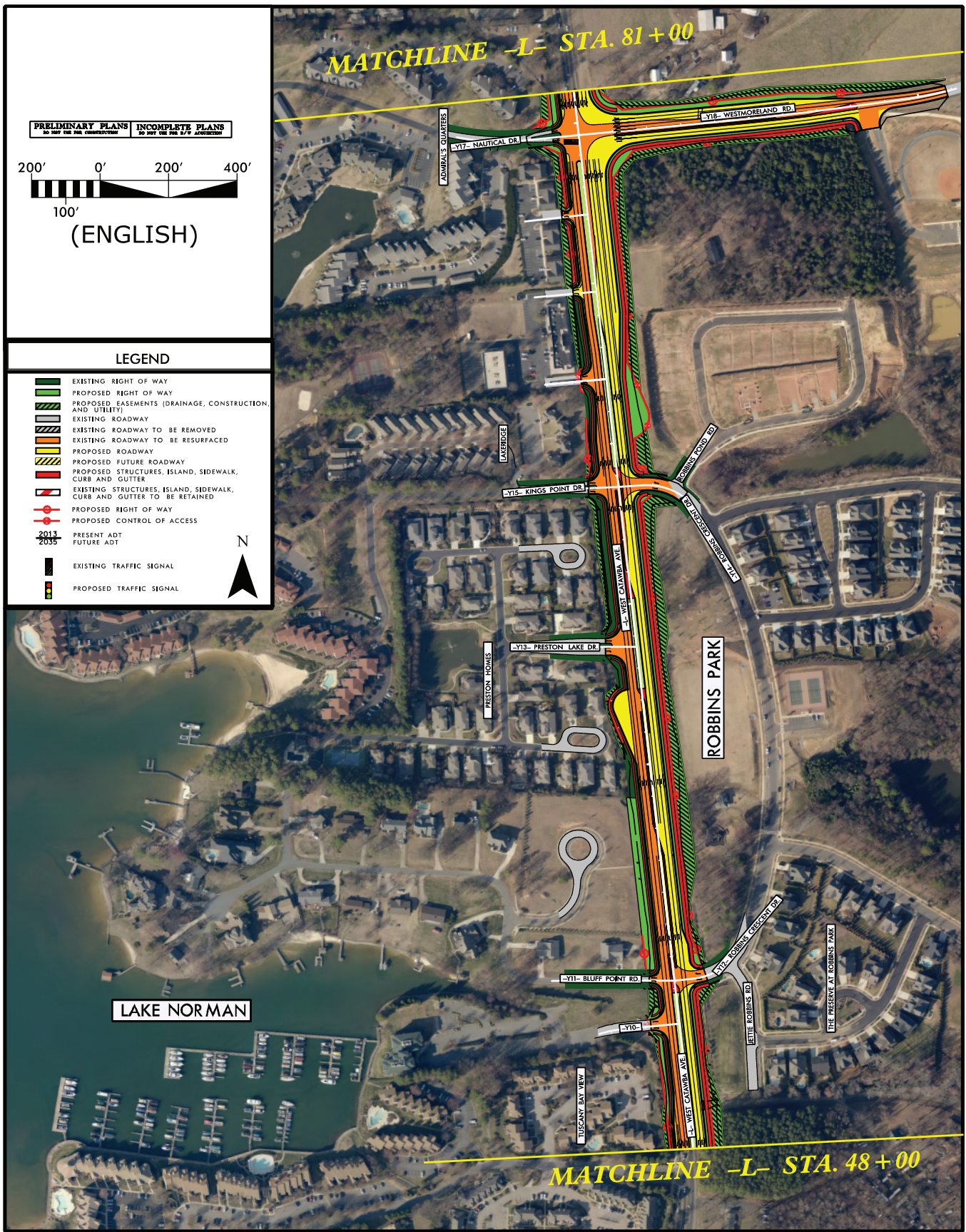
#### *What are the principal features of the project?*

The basic construction elements for the project are listed below. These are shown on Figures 2A – 2D and Figure 3:

- Adding a northbound and southbound through travel lane on W. Catawba Avenue;
- Adding dual right turn lanes and dual left turn lanes on W. Catawba Avenue and Westmoreland Road;
- Adding sidewalk on west side of W. Catawba Avenue to accommodate pedestrians;
- Adding bicycle lanes on W. Catawba Avenue to accommodate cyclists;
- Adding a multi-use trail on east side of W. Catawba Avenue;
- Adding a raised median on W. Catawba Avenue;
- Adding directional crossovers with median U-turns on W. Catawba Avenue; and
- Adding a traffic signal on W. Catawba Avenue at Nantz Road.







**Figure**  
**2B**

**Proposed Improvements**  
Proposed Improvements to W. Catawba Avenue (SR 5544) from Sam Furr Road (SR 73) to Jetton Road (SR 2151), Cornelius, Mecklenburg County, North Carolina

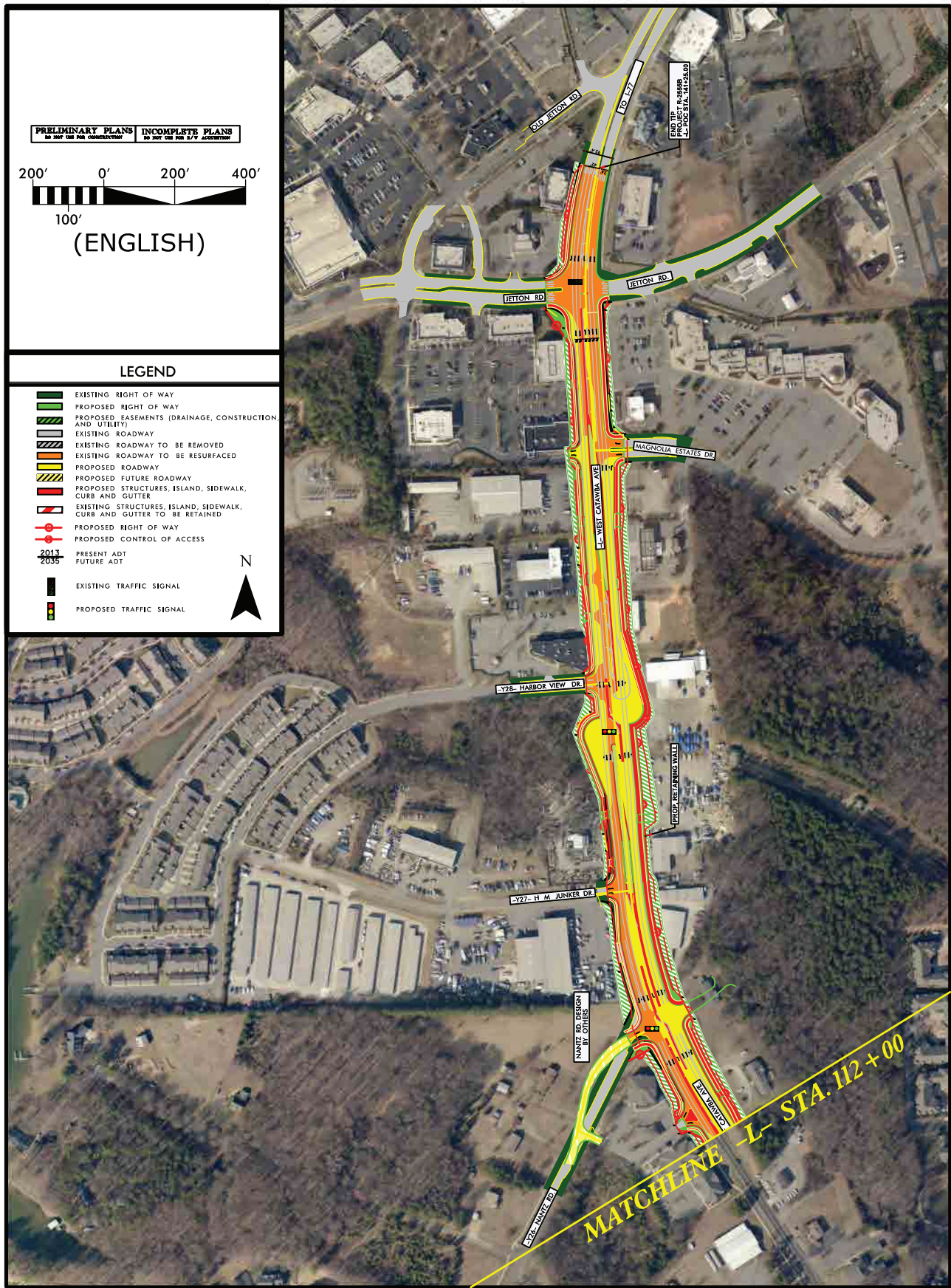
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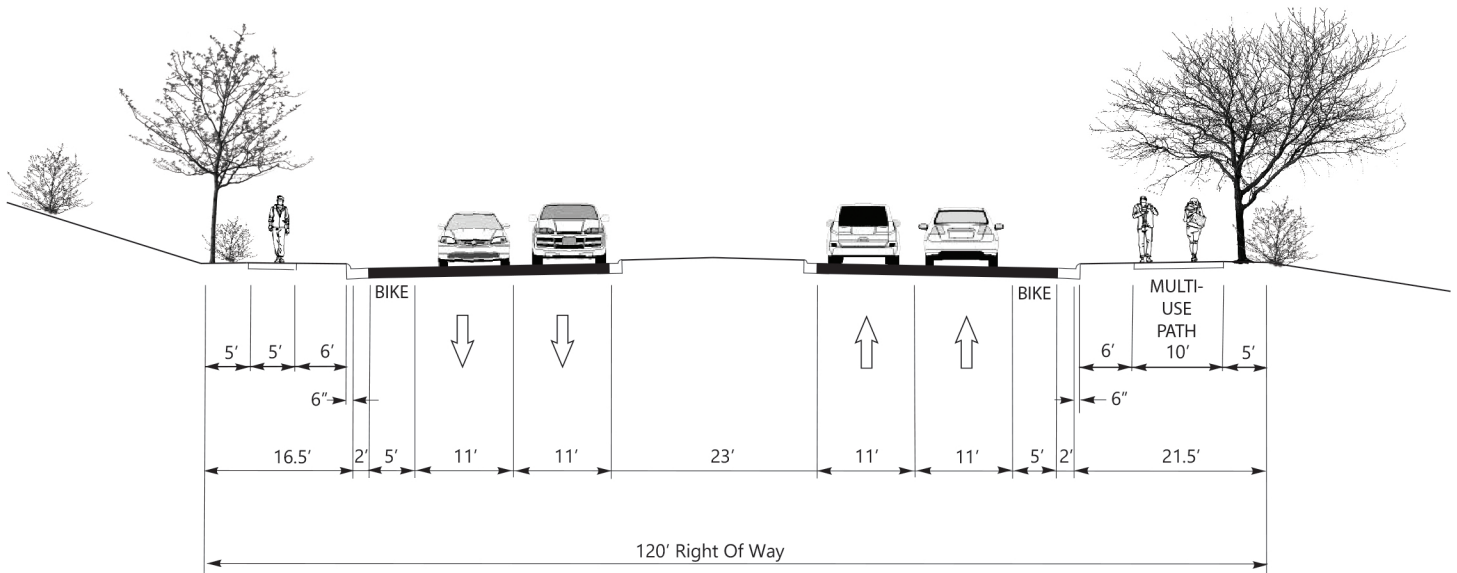
**Figure**  
**2D**

**Proposed Improvements**  
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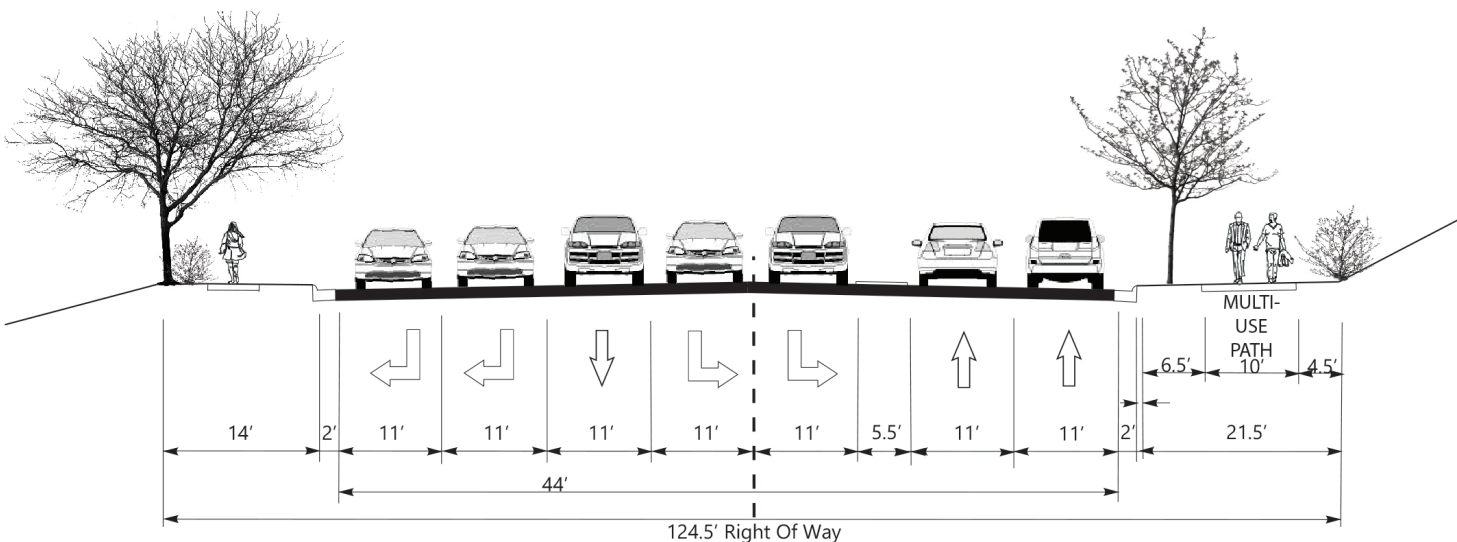
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# W. Catawba Avenue Cross Section



# Westmoreland Road Cross Section



Figure

3

## Cross Sections

Proposed Improvements to W. Catawba Avenue (SR 5544) from Sam Furr Road (SR 73) to Jetton Road (SR 2151), Cornelius, Mecklenburg County, North Carolina

WBS No. 34462.1.1

STIP No. R-2555B



## **Operational Benefits**

### *What operational benefits will the project provide?*

Improved levels of service (discussed in Chapter 2) will allow traffic to flow more freely at an acceptable level of service D or better. According to information for the five-year period between June 1, 2011 and May 31, 2016, there were 222 reported crashes with no fatalities and 67 non-fatal injury crashes. The most prevalent crash pattern in the project area is rear-end crashes, with approximately 55 percent of all crashes being in this category, an absolute total of 123. Angle and left turn collisions each make up just over 12 percent of all crashes. The additional through travel lanes and turn lanes at key intersections should allow traffic to shift out of the through lanes for left turns, thus improving the driver's ability to avoid rear-end type crashes. The additional through lanes will also provide an opportunity for movement when cars are stopped or slowed for right turns if there are no exclusive right turn lanes. Constructing new right turn lanes at various locations will reduce the likelihood of crashes at intersections.

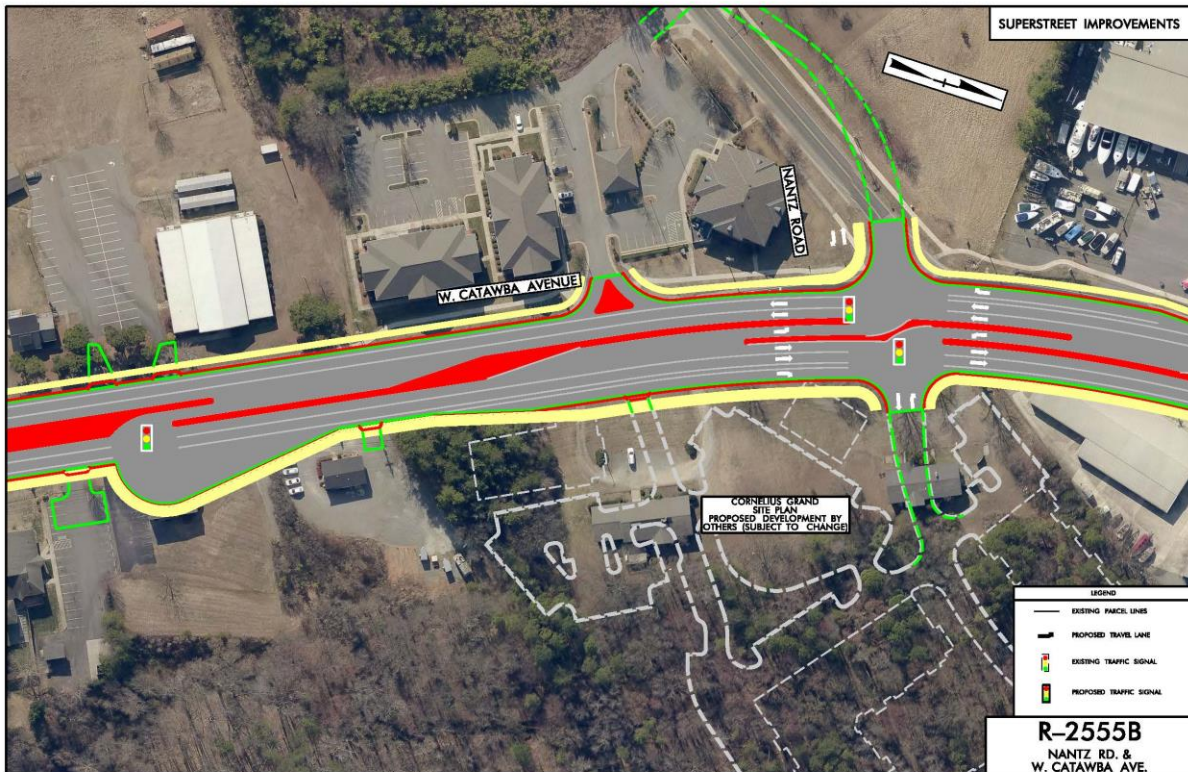
## **Roadway Typical Cross Section and Project Improvements**

### *What are the existing conditions and what roadway and intersection improvements will be made by the project?*

Existing W. Catawba Avenue is primarily a two-lane curb and gutter roadway with shoulders but has wider rights-of-way near and at intersections. The right-of-way ranges from 50 to 100 feet. A four-lane roadway with a raised median, bike lanes on both sides, sidewalk on west side, and a multi-use trail on the east side are proposed for W. Catawba Avenue. The proposed typical section is shown below.



At Jetton Road, an additional left turn lane will be added on northbound and southbound W. Catawba Avenue. Nantz Road will be converted to a superstreet style intersection and a traffic signal will be installed.



Unsignalized median U-turns will occur at the following locations:

- Northbound W. Catawba Avenue near Dunmore Drive;
- Northbound W. Catawba Avenue just south of Preston Lake Drive;
- Northbound W. Catawba Avenue, approximately 500 feet north of Edinburgh Square Drive;
- Southbound W. Catawba Avenue immediately south of Harbor View Drive.
- Southbound W. Catawba Avenue just south of Waterview Drive;

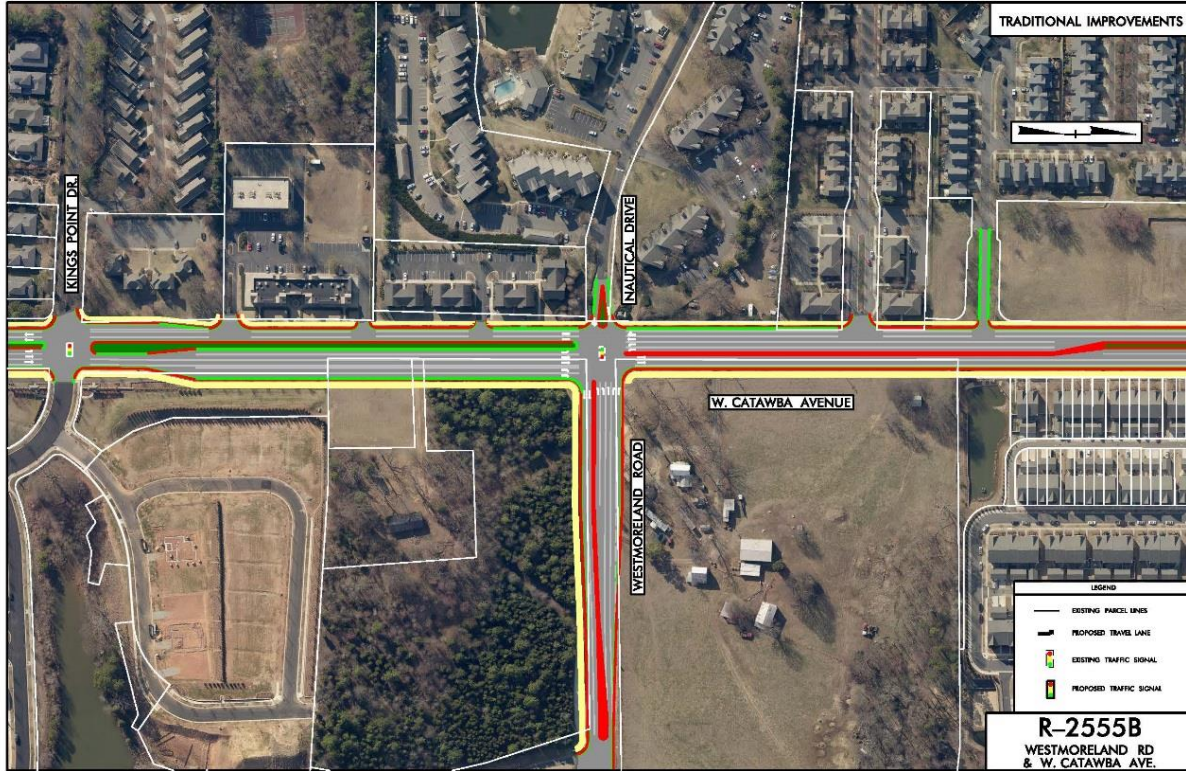
Signalized median U-turns will occur at the following locations:

- Southbound W. Catawba Avenue, approximately 700 feet south of Nantz Road
- Northbound W. Catawba Avenue immediately south of Harbor View Drive.

The following locations will have left turns without median U-turns and bulbouts:

- Southbound W. Catawba Avenue at Westmoreland Lake Drive;
- Northbound W. Catawba Avenue at Kings Point Drive

In addition to the two through travel lanes in each direction, improvements will be made to various intersections along the corridor. Specifically, at Westmoreland Road, dual right and left turn lanes will be added on eastbound Westmoreland and dual right turn lanes on northbound W. Catawba Avenue.



### Traffic Signals

*Which intersections are controlled by traffic signals and stop signs now, and what is proposed with this project?*

Currently, there are traffic signals on W. Catawba Avenue at Sam Furr Road (NC 73), Westmoreland Road and Jetton Road. These signals will be retained when the improvements are made to W. Catawba Avenue. An additional signal is proposed at Nantz Road.

### Speed Limit

*What speed limit will be posted along W. Catawba Avenue?*

The existing speed limit on W. Catawba Avenue in the project area ranges from 35 mph to 40 mph. A 40 mph design speed is proposed for the project, with a likely posted speed limit of 35 mph.



## Traffic Operations

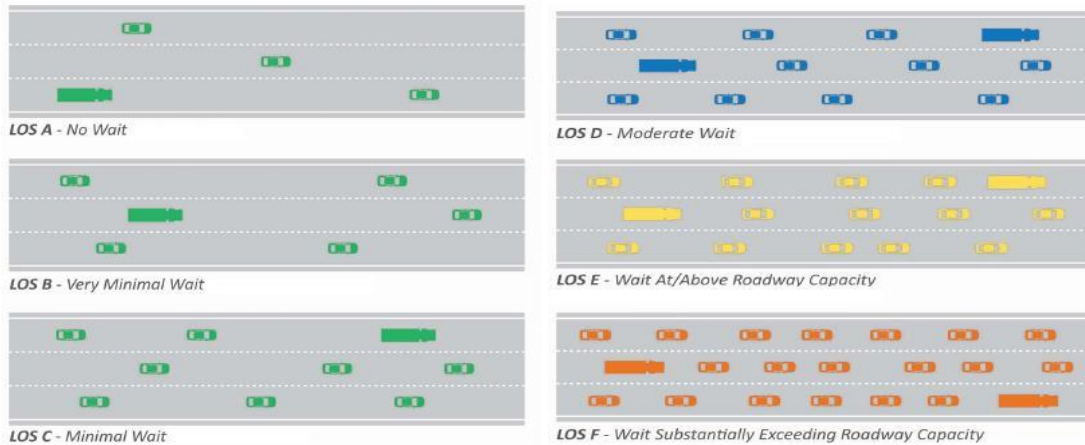
### *What is traffic like now along the project, and what will happen in the future?*

Currently, 43 school bus trips are made on W. Catawba Avenue, within the project area. These trips occur in two primary blocks; 6:45 – 9:00AM and 2:15 – 5:00PM.

2013 Annual Average Daily Traffic (AADT) volumes in the project area were estimated to be between 19,700 and 26,400 vehicles per day (vpd). Traffic projections show that traffic volumes are expected to increase to between 23,200 and 31,000 vehicles per day by 2035.

A capacity analysis was prepared using 2035 design year traffic volume projections to determine the levels of service along W. Catawba Avenue and its intersecting roads in the project area. Using the projected traffic volumes, W. Catawba Avenue operates in the range of LOS A to LOS F for the No Build scenario for the 2035 design year. The majority of the LOS F operations occur at Sam Furr Road, Westmoreland Road, and Magnolia Estates Drive. In order to improve these levels of service and meet future 2035 traffic demands, the project proposes to widen the existing road to four lanes with a median. The proposed improvements include upgrading the existing intersections with additional left turn lanes and right turn lanes as needed. The improvements also include directional crossovers with median U-turns. With the proposed widening and upgraded intersections, W. Catawba Avenue LOS E and LOS F operations would occur at fewer locations than with the 2035 No Build condition.

### Level of Service Highway Illustration



The relationship of travel demand compared to the roadway capacity determines the level of service (LOS) of a roadway. Six levels are used, ranging from "A" to "F". For roadways, LOS "A" indicates no congestion while LOS "F" represents more traffic demand than road capacity and extreme delays. LOS D indicates the capacity of a roadway at which the public begins to express dissatisfaction.

## **Pedestrian and Bicycle Accommodations**

### *What improvements will be made for pedestrians and cyclists?*

Currently, sidewalks are located on the west side of W. Catawba Avenue and are discontinuous along the east side of W. Catawba Avenue in the project area. An intermittent bicycle/pedestrian path is on the east side of W. Catawba Avenue. This project will provide sidewalks along the east side of W. Catawba Avenue for the entire length of the project. In accordance with NCDOT Pedestrian policy, NCDOT will bear the full cost to replace any existing sidewalks that will be torn out by the project. Five-foot bicycle lanes will also be constructed on both sides of W. Catawba Avenue and a 10-foot multi-use trail will be constructed along the east side of W. Catawba Avenue as part of the project. A cost-share agreement will be developed between the Town of Cornelius and NCDOT for bicycle and pedestrian amenities beyond replacing existing sidewalks. The location of pedestrian signals and crosswalks will be determined with the Town during final design.

## **Bridges and Drainage Structures**

### *What bridge and drainage structure improvements will be made?*

There are no existing bridges or culverts in the project area.

## **Landscaping**

### *Will landscaping be included in this project?*

Disturbed areas along the project will be reseeded with grass. Any additional landscaping will be determined during final design.

## **Utilities**

### *How will utilities be affected by the project?*

Current utilities along W. Catawba Avenue include telephone, power, gas, cable television, water and sewer. The utilities along the project will be relocated prior to the roadway construction.

## **Right of Way and Access Control**

### *How much right of way will be needed and will access be affected?*

The existing right of way along W. Catawba Avenue ranges from 50 to 100 feet through the project area. Approximately 120 feet of right of way plus easements will be required to accommodate the proposed improvements. Currently, access is not controlled along W. Catawba Avenue. A median will be constructed as part of the proposed improvements. Unsignalized leftovers and directional crossovers with median U-turns will be constructed at the following locations:

- Southbound W. Catawba Avenue just south of Waterview Drive;
- Northbound W. Catawba Avenue near Dunmore Drive;
- Southbound W. Catawba Avenue near Dunmore Drive;
- Southbound W. Catawba Avenue at Robbins Crescent Drive;
- Northbound W. Catawba Avenue just south of Preston Lake Drive;
- Northbound W. Catawba Avenue at Kings Point Drive;
- Southbound W. Catawba Avenue at Westmoreland Lake Drive;
- Northbound and Southbound W. Catawba Avenue immediately south of Harbor View Drive.

## **Project Schedule and Cost**

### *What is the current project schedule?*

The current schedule shown in the 2016-2025 STIP shows right of way acquisition beginning in 2018 and construction beginning in 2020. The project is expected to take two to three years to build since traffic will remain on existing W. Catawba Avenue or newly built portions of the project during construction.

### *How much will the project cost?*

The total cost of the proposed improvements included in the 2016-2025 STIP is \$29,100,000 which includes \$15,000,000 for right of way acquisition, \$10,600,000 for construction, and \$3,500,000 for utilities. The latest estimated total project cost is \$34,911,978 which includes \$18,030,000 for right of way acquisition, \$10,700,000 for construction, and \$6,181,978 for utilities.

## **Travel during Construction**

### *How will the road construction affect travel?*

Traffic will remain on existing W. Catawba Avenue or newly built portions of the project during construction. Temporary detours for short durations may be necessary to tie in to construction on side streets.

## **Chapter 4: The Environment: What's There Now and Potential Project Effects**

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This chapter provides an overview of the natural and human environmental features within the proposed project study area. It also discusses how resources and people may be affected by the project.

The study area lies in the central piedmont physiographic region of North Carolina. Topography in the project vicinity is comprised of very gently rolling hills with more level areas near Lake Norman. Elevations in the study area range from 770 to 843 ft. above sea level. Land use in the project vicinity consists primarily of residential development and commercial development, with a few undeveloped forested areas primarily along stream corridors.

### **NATURAL RESOURCES**

A copy of the full technical report entitled *Natural Resources Technical Report* (June 2012) and a *Protected Species Update* memorandum (May 2016) can be found in the project file.

#### *Water Resources*

##### *What water resources are found in the project area?*

Water resources in the study area are very limited, and consist of one small pond, which will not be affected by the project. There are no streams or wetlands in the project study area.

##### *Is the project located in a river basin that has regulated buffer rules?*

The buffer protection rule 15A NCAC 2B .0243 requires maintaining and protecting existing 50-foot wide vegetated riparian (shoreline) areas along the Catawba River below Lake James and along the mainstem lake shorelines from, and including, Lake James to the North Carolina portion of Lake Wylie. Within this 50 feet of buffer, the first 30 feet closest to the water, referred to as Zone 1, is to remain undisturbed with the exception of certain activities. The outer 20 feet, referred to as Zone 2, must be vegetated, but certain additional uses are allowed. Specific activities are identified in the rule as “exempt”, “allowable”, “allowable with mitigation” or “prohibited.” Any proposed activities not included in the table of uses are considered “prohibited”. The buffer mitigation rule 15A NCAC 2B .0244 provides details for activities that are “allowable with mitigation”.

Lake Norman is subject to the Catawba buffer rules; however, the 50-foot buffer zone is outside of the project area.

***What permits will be necessary to construct the proposed project?***

Since there are no streams or wetlands within the study area, a Nationwide Permit (NWP) will not be required. Since the project does not encroach upon the buffer zone of Lake Norman, a 401 Buffer Certification will not be required. The USACE and NCDWQ hold the final discretion as to what permit will be required to authorize project construction.

***Rare and Protected Species***

***What is the Endangered Species Act?***

A 1973 federal law, amended in 1978 and 1982, was enacted to protect species threatened with extinction. The US Fish and Wildlife Service and National Oceanic and Atmospheric Administration (NOAA) Fisheries decide whether to list species as threatened or endangered. Federal agencies must avoid jeopardy to and aid in the recovery of listed species.

***Are there any rare and protected species in the project area?***

As of April 2, 2015, the United States Fish and Wildlife (USFWS) lists five federally protected species for Mecklenburg County: Carolina heelsplitter, northern long-eared bat, Michaux's sumac, Schweinitz's sunflower and Smooth coneflower (see Table 1). Habitat for Michaux's sumac, Schweinitz's sunflower and Smooth coneflower exists within the maintained roadsides, clearings and forest edges within the project area. A walking visual survey of all areas of potential habitat was conducted by NCDOT biologists on September 27, 2011, October 2, 2013 and October 21, 2015. No individuals of any of the species were identified during the survey. Suitable habitat does not exist for Carolina heelsplitter. Therefore, the project will not affect any of these protected species.

A survey request has been submitted to the NCDOT Biological Surveys Group for the northern long-eared bat. Once a survey is complete, a biological conclusion will be rendered. It is anticipated that the 4(d) requirements will be satisfied for this species. Construction authorization will not be requested until ESA compliance is satisfied for the northern long-eared bat.)

**Table 1 – Federally Protected Species Listed for Mecklenburg County**

Scientific Name	Common Name	Federal Status	Habitat Present	Biological Conclusion
<i>Lasmigona decorata</i>	Carolina heelsplitter	E	No	No Effect
<i>Myotis septentrionalis</i>	Northern long-eared bat	T	Unknown	No Effect
<i>Rhus michauxii</i>	Michaux’s sumac	E	Yes	No Effect
<i>Helianthus schweinitzii</i>	Schweinitz’s sunflower	E	Yes	No Effect
<i>Echinacea laevigata</i>	Smooth coneflower	E	Yes	No Effect

E – Endangered

T – Threatened

***What is the Bald and Golden Eagle Protection Act?***

In 2007, the bald eagle was declared recovered and removed (delisted) from the federal list of threatened and endangered wildlife. After delisting, the Bald and Golden Eagle Protection Act, enacted in 1940 and amended, again became the primary law protecting bald and golden eagles. This law makes it illegal to harass, disturb or kill an eagle, its eggs or its nest.

Habitat for the bald eagle primarily consists of mature forest in proximity to large bodies of open water for foraging. Large dominant trees are utilized for nesting sites, typically within 1.0 mile of open water. Despite the proximity to Lake Norman, suitable nesting habitat for bald eagle does not exist within the project study area. A survey of the project study area as well as 660 feet outside the project study area on all sides was conducted on September 27, 2011. No nests were observed within, or within 660 feet of, the project study area. A check of the NHP database on June 7, 2012 showed no occurrences of bald eagle within 1.0 mile of the project study area, with the nearest occurrence being over 5 miles away.

Due to the lack of nesting habitat, known occurrences, and minimal impact anticipated for this project, it has been determined that this project will not affect this species.

***What are Invasive Species?***

Three species from the NCDOT Invasive Exotic Plant List for North Carolina were found to occur in the study area. The species identified were Chinese privet (Threat), Japanese honeysuckle (Moderate Threat) and Bradford pear (Watch List). NCDOT will manage invasive plant species as appropriate.

***Soils***

***Why is it important to know what type of soils are in the project area, and are there any soil types in the project area that warrant special construction methods?***



Existing soils are the foundation of a roadway project – projects are constructed by adding material on top of the existing soil or by removing some of the existing soil. Knowing information about the existing soil conditions allows scientists, planners and engineers to make determinations about the suitability of the soil for construction. Design elements and special construction methods can then be used to build a stable roadway project. Based on experience with Piedmont soils on previous construction projects in the area, some of the existing soil may need to be removed and replaced with different soil to provide stability for paving and embankment construction along the roadway and in the ditches.

## **CULTURAL RESOURCES**

### *What is GS 121-12(a)?*

This project is subject to NCGS 121-12(a) which directs the head of any state agency having direct or indirect jurisdiction over a proposed state or state-assisted undertaking or the head of any state department, board, commission or independent agency having authority to build, construct, operate, license, authorize, assist or approve any state or state-assisted undertaking, shall, prior to the approval for the undertaking, take into account the effect of the undertaking on any property listed in the National Register of Historic Places established pursuant to Public Law 89-665, 16 USC 470. Where, in the judgment of the Historical Commission, an undertaking will have an effect on any listed property, the head of the appropriate state agency shall afford the Commission a reasonable opportunity to comment with regard to such undertaking.

### *Are there any historic architectural and archaeological resources located within the project area?*

Based on a review by the NCDOT architectural historian, it was determined that no architectural survey is required. The review found no properties listed on the National Register within the study area. As a state funded project with no requisite federal permitting, an architectural survey is not required under G.S. 121-12(a).

Consultation with the NC Historic Preservation Office (HPO) revealed that no known archaeological sites are located within the proposed project area. The HPO also believes it is unlikely that any archaeological resources, which may be eligible for inclusion in the National Register of Historic Places, will be affected by the project construction. The HPO recommended that no further archaeological investigation be conducted in connection with this project (see Appendix B).

## **FARMLAND**

### ***What is the Farmland Protection Policy Act, and will the project impact any farmland?***

The Farmland Protection Policy Act requires all federal agencies or their representatives to consider the impact of land acquisition and construction projects on prime and important farmland soils. North Carolina Executive Order Number 96 requires all state agencies to consider the impact of land acquisition and construction projects on prime farmland soils, as designated by the US Natural Resources Conservation Service (NRCS). Land planned or zoned for urban development is not subject to the same level of preservation afforded other rural, agricultural areas.

There are no farmland soils eligible for protection under the US Farmland Protection Policy Act [FPPA] that may be notably impacted by the project. The project is located in a well-developed, urbanized area. There are currently no agricultural operations in the study area. Mecklenburg County does not contain any Voluntary Agricultural Districts or Enhanced Voluntary Agricultural Districts.

## **NEIGHBORHOODS AND COMMUNITIES**

### ***What are some characteristics of the neighborhoods and communities in the project area?***

The project area is located within the towns of Cornelius and Huntersville. This area's population is growing at an annual rate of 6.4 percent, which is a faster rate than Mecklenburg County's annual growth rate of 2.8 percent.

Land uses surrounding the project consists of residential, retail, and office uses. Residential uses consists of both single-family subdivisions and multi-family complexes. Much of the retail and office spaces line W. Catawba Avenue, with access to residential areas via roads adjoining W. Catawba Avenue. While there are many subdivisions and communities in the project area, they often stand alone and are not connected to one another. Their primary connecting roadway is W. Catawba Avenue.

Lake Norman is located approximately a quarter mile due west of the project area and is the largest manmade lake in the state. It is also a State Park, provides hydroelectric power, serves the regional nuclear plant and provides potable water to several counties. Many of the businesses along W. Catawba Avenue are associated with recreational activities along Lake Norman. Four private marinas and the Ramsey Creek Park boat launch are accessed from W. Catawba Avenue.

### ***How will the project affect the neighborhoods and communities?***

The proposed project will have minor effects on communities and neighborhoods within the project area, and most of the project's effects will be beneficial. Congestion will be

reduced in the area, and bicycle and pedestrian travel will be enhanced. Access to neighborhoods and businesses within the project corridor will be altered with the addition of a median.

Construction will pose minor inconveniences because of localized travel delays, changes in some business access, possible parking reductions and traffic re-routing. Some travelers may choose alternate routes to avoid construction activity. Delays will have a short time frame and be localized and will not affect social interaction or the economic vitality within the neighborhoods and communities.

## **Relocations of Residences and Businesses**

### ***Will the project require relocations of residences and businesses?***

The proposed project will require the relocation of four businesses and no homes (see Appendix D. Suitable business sites are available in the area for relocation. The “Best-Fit” widening alternative and asymmetrical widening allowed the opportunity to minimize the impacts to the human environment by shifting the alignment as necessary to accommodate the proposed improvements.

### ***Is there relocation assistance for people whose homes and businesses are displaced?***

The relocation program for the proposed action will be conducted in accordance with the Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended (Public Law 91-646), and/or the North Carolina Relocation Assistance Act (GS-133-5 through 133-18). The program is designed to provide assistance to displaced persons in relocating to a replacement site in which to live or do business. At least one relocation agent is assigned to each highway project for this purpose.

The relocation agent will determine the needs of displaced families, individuals, businesses, non-profit organizations, and farm operations for relocation assistance advisory services without regard to race, color, religion, sex or national origin. The NCDOT will schedule its work to allow ample time, prior to displacement, for negotiations and possession of replacement housing which meets decent, safe, and sanitary standards.

### **Non-Residential Displacees:**

Displaced Businesses, Farms, and Non-Profit Organizations are eligible for the following relocation assistance:

- Relocation Moving Expenses
- Reestablishment Reimbursement up to the maximum Federal amount
- Searching expenses up to the maximum Federal amount

- Business Fixed Payment up to the Federal maximum (in lieu of the items above)
- Advisory Services

No relocation payment received will be considered as income for the purposes of the Internal Revenue Code of 1954 or for the purposes of determining eligibility or the extent of eligibility of any person for assistance under Social Security Act or any federal law. These relocation benefits are only available to persons lawfully present in the United States.

## **Environmental Justice**

### *What is Title VI and Environmental Justice?*

Title VI of the Civil Rights Act of 1964 protects individuals from discrimination on the grounds of race, age, color, religion, disability, sex, and national origin. In accordance with Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority and Low-Income Populations" federal agencies are mandated to identify and address any disproportionately high and adverse effects on minority and/or low-income populations. The Order also directs federal agencies to provide minority and low income communities access to public information and meaningful public participation. The three environmental justice (EJ) principles are:

1. to ensure the full and fair participation of all potentially affected communities in the transportation decision-making process;
2. to avoid, minimize or mitigate disproportionately high and adverse human health or environmental effects, including social and economic effects, on minority or low income populations; and
3. to fully evaluate the benefits and burdens of transportation programs, policies, and activities, upon low-income and minority populations.

A disproportionately high and adverse effect on minority and low-income populations means an adverse effect that:

1. Is predominately borne by a minority population and/or a low-income population; or
2. Will be suffered by the minority population and/or low-income population and is appreciably more severe or greater in magnitude than the adverse effect that will be suffered by the nonminority population and/or non-low income population.

***Would concentrations of low-income or minority populations suffer disproportionately adverse human health or environmental effects?***

Census data does not indicate a notable presence of populations meeting the criteria for Environmental Justice within the project area nor were minority or low income communities identified during the site visit.

No notably adverse community impacts are anticipated with this project and no Environmental Justice populations appear to be affected; thus, impacts to minority and low income populations do not appear to be disproportionately high and adverse. Benefits and burdens resulting from the project are anticipated to be equitably distributed throughout the community, and no denial of benefit is expected.

## **Bicycle and Pedestrian Facilities**

### *Are there bicycle and pedestrian facilities currently in the area?*

Sidewalks are located on the entire west side of W. Catawba Avenue in the project area but they are discontinuous along the east side of W. Catawba Avenue and exist mostly in front of newer subdivisions. An intermittent bicycle-pedestrian path is on the east side of W. Catawba Avenue.

### *How will the project impact bicyclists and pedestrians?*

Minor and temporary construction phase pedestrian impacts will occur as the result of removing the existing sidewalk on the west side of W. Catawba Avenue. The sidewalk will be replaced as the project construction progresses. The addition of the continuous multi-use path will be beneficial to users upon completion. In addition, the superstreet design will reduce potential conflicts with turning vehicles and simplify traffic flow, improving travel for pedestrians.

## **Recreational Facilities**

### *What recreational facilities are located near the project area?*

The Westmoreland Athletic Complex located near the project but outside the study area. It is accessed from Westmoreland Drive and is a regional facility used mainly for tournament sports. Robbins Park, a nearby facility, fronts Catawba Avenue and has direct access from it to serve local residents and more informal uses. Other recreational resources near the project area include the boat rental facilities along Lake Norman and boat launch facilities in Ramsey Creek Park. These all have direct access from W. Catawba Avenue. Four private marinas (Mariner Villas Marina, Waterstreet Seaport, Morningstar Marina and Harborside Marina) are also accessed from W. Catawba Avenue.

### *How will the project impact the recreational facilities?*

These recreational facilities will be affected primarily by temporary construction impacts. In addition, the construction of a median will affect how users access the

businesses. Robbins Park has a sidewalk along Robbins Crescent Drive with a multi-use path near W. Catawba Avenue. Completion of the multi-use path along the east side of the corridor should enhance bicycle and pedestrian access while expanding the park's recreational opportunities.

## **ECONOMIC EFFECTS**

### *How will the project impact the economy in the area?*

There may be some economic benefit during construction of the project due to increased local construction-related employment and increased revenue for businesses providing services to construction crews. The majority of the businesses along the corridor are 'destination' businesses and not 'convenience' businesses dependent on drive-by traffic and therefore will not experience any notable impacts either during construction or post-construction. On the other hand, businesses in the vicinity of the corridor could temporarily experience minor decreases in revenue resulting from construction traffic or decreased access caused by construction activities. Additionally, some businesses and/or community facilities may need to be relocated due to the widening of the roadway. Housing and suitable business sites are available in the area for relocation. Excluding construction-related delays, the project should not alter business operations, and the upgraded facility should improve the flow of goods.

## **LAND USE**

### *Is the proposed project compatible with local plans?*

The project is compatible with local plans. The project area has experienced an increase in residential and commercial growth in the last decade, and continues to grow as evidenced by numerous planned residential and commercial development projects. Local transportation plans have identified W. Catawba Avenue as a priority improvement area.

### *Existing and Future Land Use*

The project area is a mix of large residential subdivisions, commercial centers, and businesses that support the many recreational activities on Lake Norman. Discussions with local planners and a review of local plans show a number of recently built and planned developments. The area has experienced a notable 6.4 percent annual growth rate, compared to an annual growth rate of just under three percent for Mecklenburg County. This growth rate combined with the number of planned developments suggest that this growth will occur independent of the proposed project.

## **FLOOD HAZARD EVALUATION**

*Is the project located in a flood hazard zone, and what effect will the project have on the floodplains?*

The Federal Emergency Management Administration (FEMA), in cooperation with federal, state, and local governments, developed floodway boundaries and Flood Insurance Rate Maps. Mecklenburg County is a participant in the National Flood Insurance Program administered by FEMA. The proposed project is not located in a flood hazard zone.

## **TRAFFIC NOISE ANALYSIS**

A Traffic Noise Analysis Report (TNA report) was prepared in accordance with Title 23 Code of Federal Regulations (CFR), Part 772, Procedures for Abatement of Highway Traffic Noise and Construction Noise, the FHWA Highway Traffic Noise Analysis and Abatement Guidance (December 2010), the NCDOT Traffic Noise Abatement Policy (July 2011), and the NCDOT Traffic Noise Analysis and Abatement Manual (July 2011). A copy of the full report is available in the project file. The TNA report was revised to comply with the updated NCDOT Traffic Noise Policy (October 2016).

### *What is noise?*

Noise is basically defined as unwanted sound that is emitted from many sources, including airplanes, factories, railroads, power plants, and highway vehicles. Highway noise, or traffic noise, is usually a composite of noises from engine exhaust, drive train, and tire contact with the roadway. The magnitude of noise is usually described by its sound pressure, and expressed in dimensionless units of decibels (dB). In traffic noise analyses, decibels are filtered with an 'A-weighted' scale (dBA) that adjusts sound frequencies to emphasize frequencies at which human hearing is sensitive and to minimize frequencies at which human hearing is less sensitive. Common examples of everyday noise levels, in dBA, are listed in Table 2, which indicates that most individuals in urbanized areas are exposed to fairly high noise levels from many sources as they go about their daily activities. The commonly accepted limits of detectable human hearing sound magnitudes is between the threshold of hearing at 0 decibels and the threshold of pain at 140 decibels.

### *How are noise impacts estimated?*

The Federal Highway Administration (FHWA) developed Noise Abatement Criteria (NAC) and procedures to be used in highway planning and design in Title 23 Code of Federal Regulations, Part 772 (23 CFR 772). The NAC establishes threshold noise levels for seven categories of land use types and activity criteria noise levels at which noise is considered to have a detrimental impact on each category, as presented in Table 3. The NCDOT has also established a Traffic Noise Abatement Policy to provide equitable and uniform methods for considering noise reduction measures when traffic noise impacts are predicted for a project. The NCDOT Policy adopts the FHWA NAC and further

establishes a “Substantial Increase Noise Impact Criteria”, which compares the existing noise level at a specific location with the predicted future increase in noise levels at the same location. Per NCDOT Policy, if predicted future noise levels are 10 decibels or more above the existing noise level then the location is considered to experience a substantial increase in future noise levels. When traffic noise levels for the Design Year of a highway project are predicted to be 1 dBA below the NAC activity criteria or higher, or when they represent a substantial increase per the NCDOT criteria, they are considered to cause a traffic noise “impact”.

**Table 2 – Common Noise Levels**

<b>Common Indoor and Outdoor Noise Levels</b>		
<b>Common Outdoor Noise Levels</b>	<b>Noise Level (dB(A))</b>	<b>Common Indoor Noise Levels</b>
	<b>110</b>	<b>Rock Band</b>
<b>Jet Flyover at 1,000 feet</b>	<b>100</b>	<b>Inside Subway Train (NY)</b>
<b>Gas Lawn Mower at 3 feet</b>		
<b>Diesel Truck at 50 feet</b>	<b>90</b>	<b>Food Blender at 3 feet</b>
<b>Noisy Urban Daytime</b>	<b>80</b>	<b>Garbage Disposal at 3 feet</b>
<b>Gas Lawn Mower at 100 feet</b>	<b>70</b>	<b>Vacuum Cleaner at 10 feet</b>
<b>Commercial Area</b>		<b>Normal Speech at 3 feet</b>
	<b>60</b>	
		<b>Large Business Office</b>
<b>Quiet Urban Daytime</b>	<b>50</b>	<b>Dishwasher Next Room</b>
<b>Quiet Urban Nighttime</b>	<b>40</b>	<b>Small Theater, Large Conference Room (Background)</b>
<b>Quiet Suburban Nighttime</b>		<b>Library</b>
	<b>30</b>	
<b>Quiet Rural Nighttime</b>		<b>Bedroom at Night, Concert Hall (Background)</b>
	<b>20</b>	
		<b>Broadcast and Recording Studio</b>
	<b>10</b>	
	<b>0</b>	<b>Threshold of Hearing</b>

Adapted from Guide on Evaluation and Attenuation of Traffic Noise, American Association of State Highway and Transportation Officials (AASHTO). 1974 (revised 1993).



**Table 3 – Noise Abatement Criteria**

Hourly Equivalent A-Weighted Sound Level (decibels (dB(A)))			
Activity Category	Activity Criteria $L_{eq(h)}^2$	Evaluation Location	Activity Description
A	57	Exterior	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B <sup>3</sup>	67	Exterior	Residential
C <sup>3</sup>	67	Exterior	Active sport areas, amphitheaters, auditoriums, campgrounds, cemeteries, daycare centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreation areas, Section4(f) sites, schools, television studios, trails, and trail crossings
D	52	Interior	Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools, and television studios
E <sup>3</sup>	72	Exterior	Hotels, motels, offices, restaurants/bars, and other developed lands, properties or activities not included in A-D or F
F	--	--	Agriculture, airports, bus yards, emergency services, industrial, logging maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (water resources, water treatment, electrical), and warehousing
G	--	--	Undeveloped lands that are not permitted

Traffic noise impacts are determined by using the current Traffic Noise Model (TNM®) approved by the FHWA and by following procedures detailed in 23 CFR 772, the NCDOT Traffic Noise Abatement Policy and the NCDOT Traffic Noise Analysis and Abatement Manual. When traffic noise impacts are predicted for any land use, an examination and evaluation of alternative noise abatement measures must be considered for reducing or eliminating these impacts. Temporary and localized noise impacts will likely occur as a result of project construction activities. Construction noise control measures will be incorporated into the project plans and specifications.

A copy of the full technical report entitled Traffic Noise Analysis can be viewed in the project file.

***What are the predicted noise impacts for the project?***

A total of 491 traffic noise receptors were included in the traffic noise analysis for the proposed project. At each receptor, noise levels associated with the Existing, No-Build, and Build conditions were evaluated using FHWA’s TNM®, Version 2.5.

The noise analysis found that:

- Thirty Two (32) traffic noise impacts are expected for the 2013 existing condition, 40 traffic noise impacts are expected for the 2035 No Build condition, and 48 traffic noise impacts are expected for the 2035 Build condition. All impacts are at Category B, C, or E locations.
- Future Build condition traffic noise levels are predicted to approach or exceed the FHWA NAC at 48 receptor sites. Noise is predicted to approach or exceed Noise Abatement Criteria (NAC) at 44 Category B (residential) noise-sensitive sites, three Category C (park) sites, and one Category E (office) site for the Build 2035 condition.
- Build noise levels are not predicted to meet the NCDOT definition of a “substantial increase” above existing noise levels at any location.
- The higher number of traffic noise impacts for the Build condition relative to the Existing or No-Build condition is due to the increase in future traffic volumes and proposed widening of Catawba Avenue and Westmoreland Road. In addition, three properties would be taken by the project in the Build scenario due to location within the proposed right of way.

**Table 4 – Traffic Noise Impact Summary**

Analysis Scenario	Number of Impacts Due to approaching or Exceeding FHWA NAC <sup>1</sup>							Impacts Due to Substantial Noise Level Increase <sup>2</sup>	Impacts Due to Both Criteria <sup>3</sup>	Total Traffic Noise Impacts
	Activity Category									
	A	B	C	D	E	F	G			
2013 Existing	0	32	0	0	0	0	0	0	0	32
2035 No-Build	0	35	3	0	2	0	0	0	0	40
2035 Build	0	44	3	0	1	0	0	0	0	48

### ***Will noise barriers be used to reduce noise impacts?***

Noise abatement measures were considered for all receptors that were predicted to approach or exceed the NAC for the Build 2035 condition in accordance with NCDOT's Traffic Noise Abatement Policy. At several of the impacted sites, a noise barrier was determined not to be feasible due to the adverse impact a noise barrier would have on property access.

Two noise barriers were identified as feasible and reasonable and are recommended for further consideration during final design. The potential effects of construction noise on nearby residences were reviewed. The report includes recommendations to minimize noise by limiting certain construction activities to daytime hours and to use appropriate temporary noise abatement measures to mitigate noise as needed during construction activities.

The results of the traffic noise analysis indicate that noise barriers are warranted for the Catawba Avenue Improvements project (R-2555B). Based on TNM modeling, two noise barriers were identified as preliminarily feasible and reasonable and are recommended for further consideration during final design. The final decision on the installation of noise abatement measures shall be made upon completion of the project design, the public involvement process, concurrence with the NCDOT Policy, and FHWA approval.

## **AIR QUALITY ANALYSIS**

### ***What is air quality?***

Air pollution originates from various sources. Emissions from industry and internal combustion engines are the most prevalent sources. The impact resulting from highway construction ranges from intensifying existing air pollution problems to improving the ambient air quality. Changing traffic patterns are a primary concern when determining the impact of a new highway facility or the improvement of an existing highway facility. Motor vehicles emit carbon monoxide (CO), nitrogen oxide (NO), hydrocarbons (HC), particulate matter, sulfur dioxide (SO<sub>2</sub>), and lead (Pb) (listed in order of decreasing emission rate).

### ***What is the Clean Air Act?***

The Federal Clean Air Act of 1970 established the National Ambient Air Quality Standards (NAAQS). These were established in order to protect public health, safety, and welfare from known or anticipated effects of air pollutants. The NAAQS contain criteria for SO<sub>2</sub>, particulate matter (PM<sub>10</sub>, 10-micron and smaller, PM<sub>2.5</sub>, 2.5-micron and smaller), CO, nitrogen dioxide (NO<sub>2</sub>), ozone (O<sub>3</sub>), and lead (Pb).

The primary pollutants from motor vehicles are unburned HC, NO<sub>x</sub>, CO, and particulates. HC and NO<sub>x</sub> can combine in a complex series of reactions catalyzed by

sunlight to produce photochemical oxidants such as O<sub>3</sub> and NO<sub>2</sub>. Because these reactions take place over a period of several hours, maximum concentrations of photochemical oxidants are often found far downwind of the precursor sources. These pollutants are regional problems.

A project-level air quality analysis was prepared for this project. A copy of the unabridged version of the full technical report entitled Air Quality Analysis, Proposed Improvements to W. Catawba Avenue (SR 5544) from Sam Furr Road (SR 73) to Jetton Road (SR 2151), Mecklenburg County dated April 2016 can be viewed at the Project Development & Environmental Analysis Unit, Century Center Building A, 1000 Birch Ridge Drive, Raleigh.

### ***What are Mobile Source Air Toxics (MSATs) - how do they relate to the project?***

Controlling air toxic emissions became a national priority with the passage of the Clean Air Act Amendments (CAAA) of 1990, whereby Congress mandated that the U.S. Environmental Protection Agency (EPA) regulate 188 air toxics, also known as hazardous air pollutants. The

EPA assessed this expansive list in its rule on the Control of Hazardous Air Pollutants from Mobile Sources (Federal Register, Vol. 72, No. 37, page 8430, February 26, 2007), and identified a group of 93 compounds emitted from mobile sources that are listed in their Integrated Risk Information System (IRIS) (<https://www.epa.gov/iris>). In addition, EPA identified nine compounds with significant contributions from mobile sources that are among the national and regional-scale cancer risk drivers from their 2011 National Air Toxics Assessment (NATA) (<https://www.epa.gov/national-air-toxics-assessment>). These are 1,3-butadiene, acetaldehyde, acrolein, benzene, diesel particulate matter (diesel PM), ethylbenzene, formaldehyde, naphthalene, and polycyclic organic matter. While FHWA considers these the priority MSAT, the list is subject to change and may be adjusted in consideration of future EPA rules.

According to EPA, the latest model MOVES2014 is a major revision to MOVES2010 and improves upon it in many respects. MOVES2014 includes new data, new emissions standards, and new functional improvements and features. It incorporates substantial new data for emissions, fleet, and activity developed since the release of MOVES2010. These new emissions data are for light- and heavy- duty vehicles, exhaust and evaporative emissions, and fuel effects. MOVES2014 also adds updated vehicle sales, population, age distribution, and vehicle miles travelled (VMT) data.

MOVES2014 incorporates the effects of three new Federal emissions standard rules not included in MOVES2010. These new standards are all expected to impact MSAT emissions and include Tier 3 emissions and fuel standards starting in 2017 (79 FR 60344), heavy-duty greenhouse gas regulations that phase in during model years 2014-2018 (79 FR 60344), and the second phase of light duty greenhouse gas regulations that phase in during model years 2017-2025 (79 FR 60344). Since the release of MOVES2014, EPA has released MOVES2014a. In the November 2015 MOVES2014a Questions and Answers

Guide (<https://www.epa.gov/moves/moves2014a-latest-version-motor-vehicle-emission-simulator-moves>), EPA states that for on-road emissions, MOVES2014a adds new options requested by users for the input of local VMT, includes minor updates to the default fuel tables, and corrects an error in MOVES2014 brake wear emissions. The change in brake wear emissions results in small decreases in PM emissions, while emissions for other criteria pollutants remain essentially the same as MOVES2014.

Using EPA's MOVES2014a model, FHWA estimates that even if VMT increases by 45 percent from 2010 to 2050 as forecast, a combined reduction of 91 percent in the total annual emissions for the priority MSAT is projected for the same time period.

Diesel PM is the dominant component of MSAT emissions, making up 50 to 70 percent of all priority MSAT pollutants by mass, depending on calendar year. Users of MOVES2014a will notice some differences in emissions compared with MOVES2010b. MOVES2014a is based on updated data on some emissions and pollutant processes compared to MOVES2010b, and also reflects the latest Federal emissions standards in place at the time of its release. In addition, MOVES2014a emissions forecasts are based on lower VMT projections than MOVES2010b, consistent with recent trends suggesting reduced nationwide VMT growth compared to historical trends.

MSAT analyses are intended to capture the net change in emissions within an affected environment, defined as the transportation network affected by the project. The affected environment for MSATs may be different than the affected environment defined in the NEPA document for other environmental effects, such as noise or wetlands. Analyzing MSATs only within a geographically-defined "study area" will not capture the emissions effects of changes in traffic on roadways outside of that area, which is particularly important where the project creates an alternative route or diverts traffic from one roadway class to another. At the other extreme, analyzing a metropolitan area's entire roadway network will result in emissions estimates for many roadway links not affected by the project, diluting the results of the analysis.

In FHWA's view, information is incomplete or unavailable to credibly predict the project-specific health impacts due to changes in MSAT emissions associated with a proposed set of highway alternatives. The outcome of such an assessment, adverse or not, would be influenced more by the uncertainty introduced into the process through assumption and speculation rather than any genuine insight into the actual health impacts directly attributable to MSAT exposure associated with a proposed action.

The EPA is responsible for protecting the public health and welfare from any known or anticipated effect of an air pollutant. They are the lead authority for administering the Clean Air Act and its amendments and have specific statutory obligations with respect to hazardous air pollutants and MSAT. The EPA is in the continual process of assessing human health effects, exposures, and risks posed by air pollutants. They maintain the Integrated Risk Information System (IRIS), which is "a compilation of electronic reports on specific substances found in the environment and their potential to cause human

health effects” (EPA, <https://www.epa.gov/iris/>). Each report contains assessments of non-cancerous and cancerous effects for individual compounds and quantitative estimates of risk levels from lifetime oral and inhalation exposures with uncertainty spanning perhaps an order of magnitude.

Other organizations are also active in the research and analyses of the human health effects of MSAT, including the Health Effects Institute (HEI). A number of HEI studies are summarized in Appendix D of FHWA’s Updated Interim Guidance on Mobile Source Air Toxic Analysis in NEPA Documents. Among the adverse health effects linked to MSAT compounds at high exposures are: cancer in humans in occupational settings; cancer in animals; and irritation to the respiratory tract, including the exacerbation of asthma. Less obvious is the adverse human health effects of MSAT compounds at current environmental concentrations (HEI Special Report 16, <https://www.healtheffects.org/publication/mobile-source-air-toxics-critical-review-literature-exposure-and-health-effects>) or in the future as vehicle emissions substantially decrease.

The methodologies for forecasting health impacts include emissions modeling; dispersion modeling; exposure modeling; and then final determination of health impacts – each step in the process building on the model predictions obtained in the previous step. All are encumbered by technical shortcomings or uncertain science that prevents a more complete differentiation of the MSAT health impacts among a set of project alternatives. These difficulties are magnified for lifetime (i.e., 70 year) assessments, particularly because unsupportable assumptions would have to be made regarding changes in travel patterns and vehicle technology (which affects emissions rates) over that time frame, since such information is unavailable.

It is particularly difficult to reliably forecast 70-year lifetime MSAT concentrations and exposure near roadways; to determine the portion of time that people are actually exposed at a specific location; and to establish the extent attributable to a proposed action, especially given that some of the information needed is unavailable.

There are considerable uncertainties associated with the existing estimates of toxicity of the various MSAT, because of factors such as low-dose extrapolation and translation of occupational exposure data to the general population, a concern expressed by HEI (Special Report 16, <https://www.healtheffects.org/publication/mobile-source-air-toxics-critical-review-literature-exposure-and-health-effects>). As a result, there is no national consensus on air dose-response values assumed to protect the public health and welfare for MSAT compounds, and in particular for diesel PM. The EPA states that with respect to diesel engine exhaust, “[t]he absence of adequate data to develop a sufficiently confident dose-response relationship from the epidemiologic studies has prevented the estimation of inhalation carcinogenic risk (<https://www.epa.gov/iris/>).”

There is also the lack of a national consensus on an acceptable level of risk. The current context is the process used by the EPA as provided by the Clean Air Act to determine

whether more stringent controls are required in order to provide an ample margin of safety to protect public health or to prevent an adverse environmental effect for industrial sources subject to the maximum achievable control technology standards, such as benzene emissions from refineries. The decision framework is a two-step process. The first step requires EPA to determine an “acceptable” level of risk due to emissions from a source, which is generally no greater than approximately 100 in a million. Additional factors are considered in the second step, the goal of which is to maximize the number of people with risks less than 1 in a million due to emissions from a source. The results of this statutory two-step process do not guarantee that cancer risks from exposure to air toxics are less than 1 in a million; in some cases, the residual risk determination could result in maximum individual cancer risks that are as high as approximately 100 in a million. In a June 2008 decision, the U.S. Court of Appeals for the District of Columbia Circuit upheld EPA’s approach to addressing risk in its two-step decision framework. Information is incomplete or unavailable to establish that even the largest of highway projects would result in levels of risk greater than deemed acceptable

([https://www.cadc.uscourts.gov/internet/opinions.nsf/284E23FFE079CD59852578000050C9DA/\\$file/07-1053-1120274.pdf](https://www.cadc.uscourts.gov/internet/opinions.nsf/284E23FFE079CD59852578000050C9DA/$file/07-1053-1120274.pdf)).

Because of the limitations in the methodologies for forecasting health impacts described, any predicted difference in health impacts between alternatives is likely to be much smaller than the uncertainties associated with predicting the impacts. Consequently, the results of such assessments would not be useful to decision makers, who would need to weigh this information against project benefits, such as reducing traffic congestion, accident rates, and fatalities plus improved access for emergency response, that are better suited for quantitative analysis.

Under the Build Alternative, there may be localized areas where VMT would increase, and other areas where VMT would decrease. Therefore, it is possible that localized increases and decreases in MSAT emissions may occur. The localized increases in MSAT emissions would likely be most pronounced in the more residential areas of the project along Catawba Avenue between Nantz Road and Copley Drive. However, even if these increases do occur, they too will be substantially reduced in the future due to implementation of EPA's vehicle and fuel regulations.

In sum, under the Build Alternative in the design year it is expected there would be reduced MSAT emissions in the immediate area of the project, relative to the No-Build Alternative, due to EPA's MSAT reduction programs.

Vehicles are a major contributor to decreased air quality because they emit a variety of pollutants into the air. Changing traffic patterns are a primary concern when determining the impact of a new highway facility or the improvement of an existing highway facility. New highways or the widening of existing highways increase localized levels of vehicle emissions, but these increases could be offset due to increases in speeds from reductions in congestion and because vehicle emissions will decrease in

areas where traffic shifts to the new roadway. Significant progress has been made in reducing criteria pollutant emissions from motor vehicles and improving air quality, even as vehicle travel has increased rapidly.

The proposed project is located in Mecklenburg County, which is in a maintenance area for O3 and an attainment area for all other NAAQS. The project is included in the Charlotte Regional Transportation Planning Organization (CRTPO) 2040 Metropolitan Transportation Plan (MTP) and the 2016-2025 Transportation Improvement Program (TIP), and as such conforms to the intent of the State Implementation Plan (SIP).

This project is not anticipated to create any adverse effects on the air quality of this maintenance area. This evaluation completes the assessment requirements for air quality of the 1990 Clean Air Act Amendments and the NEPA process. No additional reports are necessary.

## **HAZARDOUS MATERIAL**

*What are hazardous materials, and will potentially hazardous materials sites cause impacts to the proposed project?*

Hazardous materials are any materials that have a harmful effect on humans or the natural environment. Examples of potentially hazardous materials and waste sites include service stations, regulated landfills, unregulated dumpsites, salvage yards, industrial sites, and aboveground and underground storage tanks.

Based on field reconnaissance surveys and database review of the project area, two possible sites presently or formerly containing petroleum underground storage tanks (UST's) were identified within the project limits. One hazardous waste site and one landfill were identified within the project limits. Preliminary site assessments will be conducted for all potentially contaminated sites within the proposed right of way prior to right of way acquisition.

Coordination and cost impacts for cleaning up these sites, if necessary, are expected to be minimal. Discovery of additional sites not recorded by regulatory agencies and not reasonably discernable during the project reconnaissance may occur. The NCDOT GeoEnvironmental Section should be notified immediately after discovery of such sites so their potential impact(s) may be assessed.



## **Chapter 5: COMMENTS AND COORDINATION**

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### **CITIZENS INFORMATIONAL WORKSHOP**

#### *How has the public been or will be involved with this project?*

An initial public meeting was held on April 10, 2014. A vicinity map and a typical section rendering were presented to the public. Eighty seven people attended the open-house style public meeting between 4pm to 7pm. Ninety-six comments were received during the public comment period. Comments can be categorized as follows:

- Access Concerns (left turns, U-turns)
- Concerns about Speed Limit
- Pedestrian / Bicycle Concerns
- Noise Concerns
- Median Size
- Business / Property Impacts

A second public meeting was held on Tuesday, June 21, 2016 from 4 –7 p.m. at the Cornelius Town Hall. This was an open-house style format for the public to drop in at any time. The purpose of the meeting was to provide a forum for the public to review proposed improvements to West Catawba Avenue and receive feedback from the public. One hundred and thirty-eight people signed in for this meeting. Attendees received a fact sheet upon arrival and could view the public meeting map showing proposed improvements. A rendering of the cross section that correlated with the design was also on display. Project staff were available at the map displays to discuss the improvements and answer questions. The comment period was open until July, 5, 2016. Comments could be submitted via mail, email, or through the project webpage. Over 80 comments were received during the comment period. Comments can be categorized as follows:

- Requesting Left Turns
- U-turn Concerns
- Safety / Noise
- Speed Limit
- Magnolia Estates Drive
- Support of Proposed Project
- Location of Utilities
- Median Size
- Pedestrian / Bicycle Concerns
- Business / Property Concerns



All materials from the meeting are available at:  
<https://www.ncdot.gov/projects/catawbaavenue/>.

*How have government agencies been or will be involved with this project?*

NCDOT has coordinated with appropriate local, state, and federal agencies throughout this project study. Appropriate coordination will continue throughout the design and construction phases of the project. Comments were requested from the agencies listed below. An asterisk indicates a response was received (copies of responses are included in Appendix A). Specific project-related comments or concerns were addressed within this environmental document.

- United States Army Corps of Engineers (USACE)
- United States Fish and Wildlife Source (USFWS)
- North Carolina Wildlife Resources Commission (NCWRC)
- State Historic Preservation Office (SHPO)
- DWR
- MPO
- Federal Energy Regulation Commission (FERC) #

#The project is within a five mile radius of the Duke Energy Company's McGuire Nuclear power plant.

## Chapter 6: Conclusion

### *What effects does the proposed project have on the environment?*

Table 5 – Summary of Environmental Effects presents a summary of the proposed project’s environmental effects:

**Table 5 – Summary of Environmental Effects**

IMPACT CATEGORY	RECOMMENDED ALTERNATIVE
<b>Natural Resources Impacts</b>	
Federal Listed Species Habitat	No
100-Year Flood Plain and Floodway Crossings (number)	0
Wetlands (number / acres)	0
Stream Crossings (number / linear feet)	0
Water Supply Critical Areas	0
<b>Human Environment Impacts</b>	
Residential Relocations (units)	0
Business Relocations (units)	4
Low Income/Minority Populations	No
Schools (number)	0
Historic Sites/Districts (number)	0
Traffic Noise Impacts (number of receptors)	48
Air Quality	** Attainment Area
<b>Physical Environment Impacts</b>	
Farmland (acres)	0
Underground Storage Tanks (number of potential sites)	2

\*\* Attainment Area is a geographic area that meets or has pollutant levels below the National Ambient Air Quality Standards (NAAQS).

### *What are the next steps in the project development process?*

The current schedule shown in the 2016-2025 STIP includes purchasing property for the roadway right of way in 2018 and starting construction in 2020. The project is expected to take two to three years to build since traffic will remain on existing W. Catawba Avenue or travel on newly built portions of the project during construction.

## **Chapter 7: Basis for Finding of No Significant Impact**

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Based upon a study of the proposed project documented in this assessment and upon comments received from state agencies, local agencies, and the public, it is the finding of the North Carolina Department of Transportation that this project will not have a significant adverse impact upon the human or natural environment. The proposed project is consistent with local plans and will not disrupt communities. Per this evaluation, a Finding of No Significant Impact is applicable for this project. Therefore, no further environmental analysis will be required.

## **APPENDICES**

**Appendix A Comments Received from State and Local Agencies**

**Appendix B Relocation Report**



**Appendix A Comments from Federal, State, and Local Agencies**







April 25, 2014

Elmo Vance, Jr.  
NCDOT Project Development  
& Environmental Analysis Unit  
1548 Mail Service Center  
Raleigh, NC 27699-1548

Mr. Brock LaForty  
Parsons Brinkerhoff  
121 West Trade Street, Suite 1950  
Charlotte, NC 28202

**MAYOR**

CHUCK TRAVIS

**MAYOR PRO-TEM**

WOODY WASHAM

**COMMISSIONERS**

JOHN BRADFORD, III  
JIM DUKE  
DAVID GILROY  
THURMAN ROSS, JR.

**TOWN MANAGER**

ANTHONY ROBERTS

**RE: STIP Project R-2555B – West Catawba Avenue Widening**

Dear Mr. Vance and Mr. LaForty,

The Town of Cornelius is pleased to collaborate with NCDOT on the West Catawba Avenue, Phase II widening project (STIP# R-2555B). We believe that this project is critical for our citizens, and that it will also meet NCDOT's mobility, safety, aesthetic, and economic development goals for roadway projects. It is our goal to work with NCDOT to design and build this new corridor using the "Complete Streets" guidelines adopted in 2012 to accommodate for all modes of travel, including pedestrians, bicycles and bus transit. At this time, we would like to provide you with the following feedback and comments as we begin project initiation and the public feedback process:

1. **Cross-Section Details** – We have been planning for the overall right-of-way width for this corridor to be 120-foot or more depending on width necessary for burying utilities, and we have been in the process of requiring right-of-way dedications over time on both sides. The following cross-section should be considered within the 120-128+ foot right-of-way.

a) **Sidewalk/Multi-Use Zone: 5-ft on west side, 10-ft multi-use path on east side = 15 feet**

According to the Town's Pedestrian Master Plan, the multi-use path is a critical part of this project as it will serve as a major connection between our park system, the County's park system on Lake Norman, and connectivity between Village Center and Neighborhood Mixed Use developments, which will consist of walkable commercial and office developments along with higher density residential uses.

b) **Green Zone (planting strips): 6-10 feet on both sides = 12-20 feet**

The green zone should be wide enough to provide shade trees for an attractive public realm, an adequate buffer, street lights, and underground utilities. 6-10 feet is typical for an urban/suburban-style boulevard according to the Complete Streets guidelines. The town wants to ensure that the planting strip is wide enough to be able to place street trees so that they don't encroach within the required clear zone, and so there is also no significant conflicts between the trees root system and the underground utilities. If above ground utility lines are still in place in some locations, they will most likely have to be behind the street



trees, and it is important to select a tree species that does not require significant pruning around utility lines that may cause damage to the tree.

c) **Curb & Gutter: 2.5-ft on both sides = 5 feet**

Drainage grates should be designed with diagonal gaps to minimize conflicts with bicycles

d) **Bicycle Zone (bike lanes): 6-ft on both sides = 12 feet**

In addition to the multi-use path, bike lanes provide a separate facility for road bikers, a buffer between the green zone and the street, and additional space for bus stops.

e) **Vehicle Zone: 11-ft lane widths \* 4 lanes = 44 feet**

According to the guidelines, vehicular lanes are typically ranged between 10 and 12 feet. We believe that 11-feet is appropriate.

f) **Access Zone/Median = 22 feet**

The median should be landscaped, and also contain room for left overs and turn lanes at intersections

g) **Shoulders – 5 feet + on each side behind sidewalk = 10+ feet**

It is preferable to maintain a larger green zone for both utilities and street trees and have the sidewalks located at the edge of the right-of-way, however shoulders behind the sidewalks could also be considered for underground utilities and street lighting. Additional right-of-way and/or easements may be required for burying utilities

2. **Signal, Intersection and Signage Recommendations** – Pedestrian crosswalks with crossing signals should be included at all signalized intersections, as well as other locations so that they are evenly distributed. They should be provided at all four sides of the intersection and contain stamped, decorative crosswalks for high visibility. The Town recognizes that some of these aesthetic elements are considered betterments, and we welcome the opportunity to plan and discuss these further with NCDOT. The Town would also like to see decorative black posts for signage in lieu of standard u-channel posts. Signals should be evenly spaced and not too close together. Likewise, the spacing of leftovers, roundabouts, and other creative solutions should be explored, and where roundabouts are considered, they need to be designed to handle boat trailer traffic. We recommend the following intersection solutions (see attached map for details)

- |   |  |
|---|--|
| a) Jetton Road – Existing Signal, must include the ability for U-turns. | e) Nantz Road (plus future Magnolia Village Center connector) – There is a significant amount of boat trailer traffic at this intersection. A roundabout or signal is appropriate here, and the intersection must be improved to incorporate safe road geometry. |
| b) Magnolia Estates Drive – Left over, allow for U-turns                | f) Rosalyn Glen Connector – Left over, allow for U-turns   |
| c) Harbor View Drive – Left over, allow for U-turns                     | g) Edinburgh Square Drive – Restricted (right in/right out)  |
| d) HM Junker Drive – Restricted (right in/right out)                    |  |



- h) Westmoreland Lake Drive – Left over, allow for U-turns
- i) Silver Quay Drive – Restricted (right in/right out)
- j) Harborside Drive – Signal or Roundabout
- k) Ramsey Cove Drive – Restricted (right in/right out)
- l) Village Harbor Drive and future connector road – Left over, allow for U-turns
- m) Westmoreland Road – Existing Signal, include U-turns
- n) Kings Point Dr/Robbins Crescent Drive – Roundabout
- o) Preston Lake Drive – Left over, allow for U-turns
- p) Bluff Point Road/Robbins Crescent Drive – Signal or Roundabout
- q) Vineyard Point Lane – Left over, allow for U-turns
- r) Copely Drive – Restricted (right in/right out)
- s) Dunmore Drive – Roundabout or Left over, allow for U-turns
- t) Montrachet Lane – Restricted (right in/right out)
- u) Waterview Drive/Kenton Drive – Signal or Roundabout
- v) Mariner Cove Drive – Left over, allow for U-turns
- w) Sam Furr – Existing Signal, include U-turns

3. **Underground Utilities** – The Town is considering a formal request for underground utilities as part of this project or as a future project. We request that NCDOT plan for the option of providing underground utilities, which could be accommodated within the right-of-way or easements within the green zone or shoulders. The Town requests that NCDOT provide us with cost estimates for underground utilities so we can discuss internally the costs and benefits prior to making this a formal request. Please provide the cost estimate for the entire length of the project, and separate estimates for the section from Jetton Road to Westmoreland Road and from Westmoreland Road to Sam Furr Road (Highway 73). In addition, please itemize what NCDOT's credit would be for aerial utility relocation for each of these estimates. The Town would like to be notified by NCDOT as to when we must formally decide to bury utilities.

4. **Connectivity** – Also on the map, we've labeled connectivity recommendations (red lines) that may be implemented by NCDOT, the Town or private development that will facilitate traffic moving to safer, controlled intersections along West Catawba. The map also shows existing or proposed connections in blue as follows:

- a) Magnolia Estates Drive to Nantz Road – This will most likely happen as part of the proposed Magnolia Village Center proposed development
- b) Harbor View Drive to Nantz Road – This connection is being proposed as part of the Courtyards project currently under review
- c) Harborside Drive to Silver Quay – If a signal or roundabout works here, this will bring the residents of Silver Quay to this signal
- d) Alexander Property connections – The Alexander Property is one of the last remaining undeveloped pieces of land along the corridor, and future connectivity options should be considered.





- e) Mesa Range Dr to Half Moon Lane – although one of these streets is public and the other private, connectivity within this area is crucial
- f) Quiet Lake Drive to Sedona Way – same as above
- g) Robbins Ridge Road to Pennington Drive – This connection between Birkdale and Robbins is critical and further justifies a signal at one of the Robbins Crescent intersections
- h) Vineyard Point Lane to Waterview Drive – connects all the multi-family along Vineyard Point to a proposed signal at Kenton Place

**5. Other General Comments** – We also have the following general comments to add at this time:

- a) The Town encourages a wide median with as much planting area as possible within the median in lieu of hardscape
- b) The Town intends to install black decorative street lights
- c) The Town requests to have black mast arm traffic signals at intersections in lieu of hanging utility lines.
- d) The Town encourages NCDOT to provide as much landscaping as possible in the green zone
- e) The Town requests that NCDOT replace all existing sidewalk and multi-purpose paths, or provide a credit for the Town to complete this work.

We believe these recommendations will enhance the corridor and truly make this a project both the Town and NCDOT can be proud of. Please let me know if you have any further questions.

Sincerely,

Anthony Roberts  
Town Manager

CC: Town Board Members  
Andrew Grant – Assistant Town Manager  
Wayne Herron – Planning Director  
Tyler Beardsley – Project Manager  
Ricky Overcash – Public Works Superintendent  
Jason Pauling – Senior Planner  
Stuart Basham, PE – CRTPO



MAYOR

CHUCK TRAVIS

December 4, 2014

MAYOR PRO-TEM

WOODY WASHAM

COMMISSIONERS

JOHN BRADFORD, III

JIM DUKE

DAVID GILROY

THURMAN ROSS, JR.

Louis Mitchell and Scott Cole  
NCDOT Division 10  
130 S. Sutherland  
Monroe, NC 28112

TOWN MANAGER

ANTHONY ROBERTS

Dear Louis and Scott,

Thanks for NCDOT's work to progress the improvement of West Catawba Ave., Phase II. As you are aware, the environmental document for this project is being developed, and the Town has had many meetings related to this. It is our understanding that a hybrid version of a superstreet design is one of the designs that is being considered by NCDOT. As you can understand, the community has many concerns regarding the superstreet design. Also, the Town has a vision for this corridor, regardless of its ultimate design.

Recently, the Town Board discussed the improvement project, and developed the following principles that it would like to see implemented in the ultimate design. The Town acknowledges that NCDOT is still in its initial stages of design development; thus, the Town would like to review a further evolution of the designs to render more feedback to NCDOT. The Town asks that NCDOT considers the following principles and provide information relating to it:

- Traditional intersection design at the following intersections: Sam Furr Rd., Westmoreland Rd., Nantz Rd., and Jetton Rd
- The Town would like to understand what the incremental impacts are to the super-street traffic modeling projections if each of these four preceding intersections are (incrementally) converted to a traditional intersection
- Allow for long boat-trailer (up to a 67' trailer) and semi-truck traffic through either all or appropriately placed (depending on existing traffic patterns) intersections, U-turns, left-overs, and all median-breaks
- Appropriately placed U-turns, left-overs, and/or median-breaks to allow for efficient and convenient movement
- Adequate stacking/storage for U-turns, left-overs, and/or median-breaks
- Signalization at appropriate U-turns to allow for efficient and convenient movement
- As much landscaping as possible in the medians and roadside
- Safe and efficient pedestrian & bicycle traffic

At a November 18, 2014 stakeholder meeting, the following occurred:

- Bill Russell of the Lake Norman Chamber of Commerce and Mike Griffin of the Lake Norman Economic Development Corporation expressed concerns about a superstreet's impact to economic development. Therefore the Town requests that NCDOT provide information relating to how superstreets impact commerce and economic development (business, tourism, and economic development) in communities similar to Cornelius. There was mention of an ITRE study that analyzed some of these impacts; perhaps this study and others will provide the requested information.
- It was discussed that a side-by-side comparison/contrast of the traditional design and the hybrid superstreet design for the corridor would be very helpful to understand:
  - Property impacts
  - Opportunities for landscaping (i.e., locations of medians that are wide enough for landscaping, areas along the roadside for landscaping)
  - Locations and lengths of medians (i.e., where the roadway is physically divided)
  - Cross-sections (specifically, number of lanes to accommodate throughput and movement)
  - Locations of U-turn movements and/or left-overs
  - Locations of additional signalized intersections (i.e., will more signalized intersections be constructed with a traditional design?)
  - Pedestrian & bicycle traffic

At the November stakeholder meeting, it was discussed that NCDOT will hold a workshop(s) in approximately late January/early February with the Town Board to provide further information and designs, and to allow for dialogue to occur about the project. The Town requests that NCDOT address the above bullet points at the workshop(s).

If there are any questions, please feel free to contact either our Town Manager or Assistant Town Manager. Please contact Town staff to coordinate the workshop(s).

Thanks,



Charles L. Travis, III  
Mayor

cc: Elmo Vance, NCDOT PDEA  
Brett Canipe, NCDOT District 2 Engineer  
Brock La Forty, Parsons-Brinckerhoff  
Mike Griffin, Lake Norman Economic Development Corporation  
Bill Russell, Lake Norman Chamber of Commerce  
Anthony Roberts, Town of Cornelius  
Andrew Grant, Town of Cornelius  
Wayne Herron, Town of Cornelius





MAYOR

CHUCK TRAVIS

October 9, 2015

MAYOR PRO-TEM

WOODY WASHAM

COMMISSIONERS

JIM DUKE

DAVID GILROY

THURMAN ROSS, JR.

BRUCE TRIMBUR

TOWN MANAGER

ANTHONY ROBERTS

Mr. Elmo Vance  
NCDOT  
1548 Mail Service Center  
Raleigh, NC 27699

Mr. Scott Cole  
NCDOT – Division 10  
716 W. Main Street  
Albemarle, NC 28001

Dear Elmo & Scott:

Thanks for meeting with the Cornelius Town Board recently to discuss the plans for the future widening of West Catawba Avenue, Phase II. There are many details and specific design matters that must be resolved related to the plan (please see questions, comments, and requests that appear later in this letter). Relative to the general corridor design, the Town Board has had many conversations about the superstreet, traditional, and hybrid concepts. The Town Board would like to convey the following related to the general corridor design:

The Town Board is supportive of the following general corridor design elements:

- Conversion of the Hwy 73/West Catawba Avenue intersection to a superstreet intersection will be considered as a part of a future Hwy 73 widening project, but not as a part of the West Catawba Avenue, Phase II project. The West Catawba project would stop just north of this intersection.
- While improvements at the Jetton Road/West Catawba Avenue intersection are needed, the intersection shall remain a traditional intersection as part of the West Catawba Avenue, Phase II project. It is understood that NCDOT will continue to study this intersection in the future, and that it may return to the Town Board with suggestions for different intersection configurations.

- While improvements at the Westmoreland Road/West Catawba Avenue intersection are needed, the intersection shall remain a traditional intersection as part of the West Catawba Avenue, Phase II project. At the time that a conversion of this intersection to a superstreet (or other non-traditional intersection) is warranted, then the Town Board agrees that it should occur then. The future Westmoreland Interchange may or may not warrant this intersection's conversion, and any conversion should be carefully studied, considered, and discussed with the Town Board prior to an implementation decision being made.
- The Town Board acknowledges that the Nantz Road/West Catawba Avenue intersection will be converted into a superstreet intersection as part of the West Catawba Avenue, Phase II project.

The following are questions, comments, and requests related to the details and specific design matters of the plan that must be resolved:

1. Will there be an improved U-turn movement at the Jetton Road intersection for traffic looking to proceed south at the intersection? If not, the Town requests such.
2. It appears the 10' multi-use path is reduced to 5' in front of Publix. The 10' multi-use path should continue to the Jetton Road intersection, across Catawba Avenue via 10' crosswalk and 10' multi-use path to furthest north construction limit on Jetton Road.
3. What is the purpose of the U-turn/bulb out at the Dunkin Donut site? It only appears to serve three properties in allowing traffic to return in a north direction. While the plan shows the recently constructed parking for the Dunkin Donuts development, it does not show the recently constructed building. The proposed bulb out will impact approximately half of the building. This bulb-out should either be relocated or eliminated.
4. What about access to properties/business that abut the bulb-outs? Will there be driveway access from bulb-outs?
  - a) Dunkin Donut property
  - b) Junker property
  - c) Maid U Smile property



d) Howard Culbreth property

Please either allow driveway access from the bulb-outs or demonstrate how these properties will have West Catawba driveway access.

5. Currently, there is only one U-turn shown to have a signal (Ramsey Cove Drive across from Harborside). It was anticipated that all U-turns would have signals. Why are the remaining U-turns not signalized? If the remaining U-turns are to remain unsignalized, will it be safe for boat and truck traffic utilizing the U-turns at Nantz Road and Kings Point Drive? Will all traffic be able to find adequate breaks in oncoming traffic to perform the U-turn?
6. There are previously approved development plans for the properties at Harborside, The International Church and Group Three Holdings. What, if any, impact do these previously approved plans have on the location of the proposed bulb outs that are shown on these properties? Please provide an overlay of the bulb-outs on the approved development plans.
7. A bulb out is shown at Robbins Park. The bulb out is very close to the gaga pit, playground, picnic area, and impacts the playing field. Robbins Park is the most popular park in Town. Please move the U-turn/bulb out south of Robbins Crescent Drive to lessen the impact on the gaga pit and playing field.
8. The bulb out shown at Bluff Point will impact a future mixed use development. Please relocate the proposed bulb out.
9. Can the entire street cross section at Kenton Place be shifted to the west in order to avoid removing parking at Kenton Place?
10. Please provide details of all parking proposed to be eliminated throughout the corridor.
11. The proposed bulb out at south of Waterview is in a tough topographic location. Please consider shifting the cross section to the west.
12. Will NCDOT consider a raised cycle track in lieu of the standard bicycle lane?
13. Can you perform a U-turn movement at Westmoreland Lake Drive? The Town requests that U-turns are allowed at the location.

14. The Town requests left over movements at the following:
  - a) Robbins Park southern entrance
  - b) Kenton Place
  - c) Harborside Drive
15. In the event NCDOT acquires all or portions of any property, is there an opportunity to work with Cornelius PARC to investigate the possibility of small parks or open space along the corridor?
16. Need 10' x-walk connecting multi-use path on east side of West Catawba Avenue to Nantz Road. 10' multi-use path on Nantz Road needs to be installed to furthest west construction limits.
17. Need x-walks at Westmoreland Road.
18. Need X-walks at Kings Point Drive and Robbins Crescent Drive and Bluff Point and Robbins Crescent Drive across Catawba Avenue.
19. Please provide the utility burial cost estimates to the Town for this widening project. Please also provide the cost estimate for aerial to aerial utility relocation (i.e., the cost that NCDOT would be providing for this project).
20. The Town requests that the next public hearing is scheduled to occur after the preceding questions, comments, and requests are resolved.

We appreciate this opportunity and look forward to hearing from you soon.

Sincerely,

Charles L. Travis, III, Mayor  
Town of Cornelius

C: Brock Laforty, Parsons Brinckerhoff  
Andrew Grant, Assistant Town Manager  
Wayne Herron, Planning Director

## **Appendix B Relocation Report**





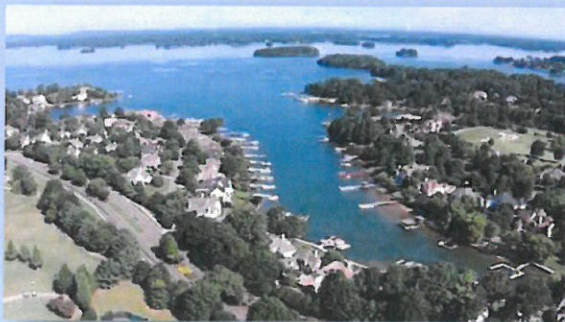


**PROFESSIONAL  
PROPERTY  
SERVICES, INC.**

A Cost Study & **EIS Relocation Report**

for

**The North Carolina Department of Transportation Right of Way Branch  
R-2555B, SR 544 (Catawba Ave.) Improvements in the Town of Cornelius,  
Mecklenburg County**



# EIS RELOCATION REPORT

North Carolina Department of Transportation  
RELOCATION ASSISTANCE PROGRAM

E.I.S.     CORRIDOR     DESIGN



WBS ELEMENT:	34462.1.1	COUNTY	Mecklenburg	
T.I.P. No.:	R-2555B			
DESCRIPTION OF PROJECT:	SR-544 (Catawba Ave.) Improvements			

ESTIMATED DISPLACED					INCOME LEVEL							
Type of Displacees	Owners	Tenants	Total	Minorities	0-15M	15-25M	25-35M	35-50M	50 UP			
Residential	0	0	0	0	0	0	0	0	0			
Businesses	4	0	4	0	VALUE OF DWELLING			DSS DWELLING AVAILABLE				
Farms	0	0	0	0	Owners		Tenants		For Sale      For Rent			
Non-Profit	0	0	0	0	0-20M	0	\$ 0-150	0	0-20M	0	\$ 0-150	0

ANSWER ALL QUESTIONS		
Yes	No	Explain all "YES" answers.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	1. Will special relocation services be necessary?
<input type="checkbox"/>	<input checked="" type="checkbox"/>	2. Will schools or churches be affected by displacement?
<input checked="" type="checkbox"/>	<input type="checkbox"/>	3. Will business services still be available after project?
<input checked="" type="checkbox"/>	<input type="checkbox"/>	4. Will any business be displaced? If so, indicate size, type, estimated number of employees, minorities, etc.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	5. Will relocation cause a housing shortage?
<input type="checkbox"/>	<input type="checkbox"/>	6. Source for available housing (list).
<input type="checkbox"/>	<input checked="" type="checkbox"/>	7. Will additional housing programs be needed?
<input type="checkbox"/>	<input checked="" type="checkbox"/>	8. Should Last Resort Housing be considered?
<input type="checkbox"/>	<input checked="" type="checkbox"/>	9. Are there large, disabled, elderly, etc. families?
<input type="checkbox"/>	<input checked="" type="checkbox"/>	10. Will public housing be needed for project?
<input type="checkbox"/>	<input checked="" type="checkbox"/>	11. Is public housing available?
<input type="checkbox"/>	<input checked="" type="checkbox"/>	12. Is it felt there will be adequate DSS housing available during relocation period?
<input type="checkbox"/>	<input checked="" type="checkbox"/>	13. Will there be a problem of housing within financial means?
<input checked="" type="checkbox"/>	<input type="checkbox"/>	14. Are suitable business sites available (list source).
<input type="checkbox"/>	<input type="checkbox"/>	15. Number months estimated to complete RELOCATION? <b>12 - 18 months</b>

REMARKS (Respond by Number)							
Please see attached addendum for Remarks							

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 Vivian B. Swanigan Right of Way Agent	Date	02/04/16		 Relocation Coordinator	Date	3/14/16
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## EIS RELOCATION REPORT ADDENDUM

WBS: 34462.1.1

COUNTY: MECKLENBURG

T.I.P.: R-2555B

DESCRIPTION OF PROJECT: SR-544 (CATAWBA AVE.) IMPROVEMENTS

3. Several businesses are impacted but there are adequate properties available to relocate.
4. Four (4) businesses are impacted:
  - Culbreth Howard Insurance Agency, Inc. – insurance agency that appears to have 6 to 8 employees
  - State Farm Insurance Office – insurance agency that appears to have 4 to 6 employees
  - Lake Norman Storage LLC – mini warehouse facility that appears to have 2 to 4 employees
  - Northcross Property Holdings, LLC – marine warehouse that appears to have 6 to 8 employees
14. Loopnet.com, Commercial real estate property listings (cimls.com), buildingsearch.com, individual real estate broker companies (Caldwell, Re-Max etc.)

### Note:

(1) It should be noted that the data provided in this report was collected via a windshield view of each property. Thus it was difficult to determine tenant occupied businesses, the number of employees, and the numbers of minorities as there were no interviews conducted.



**Culbreth Howard Insurance Agency Inc.** – The plans indicate an impact to a one story building with a basement that has been renovated and appears to be in good condition. It appears to have six to eight employees.





**LKN Holdings, LLC** – The plans indicate an impact to a one story residence that has been converted to a small office that appears to be in average condition. It appears to have four to six employees.



**Lake Norman Storage, LLC** – The plans indicate an impact to a mini warehouse in good condition. It appears to have two to four employees.





**Northcross Property Holdings, LLC** – The plans indicate an impact to a marine warehouse. The business appears to have six to eight employees.

