

McLeansville Road Grade Separation over NCRR Railroad

McLeansville, Guilford County, NC
STIP Project No. P-5204

ENVIRONMENTAL ASSESSMENT

Submitted Pursuant to the National Environmental Policy Act
42 USC 4332(2)(c)

US Department of Transportation
Federal Railroad Administration

and

North Carolina Department of Transportation
Rail Division



3/28/2013
Date

A handwritten signature in black ink that reads "Marc L. Hamel".

Marc L. Hamel
Environmental Programs Manager
North Carolina Department of Transportation
Rail Division

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Document Prepared By:
Atkins

3/28/13

Date

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Jill Gurak, PE, AICP
NEPA Project Manager



Document Prepared For:
North Carolina Department of Transportation, Rail Division

3/28/2013

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Rail Environmental Planning Engineer
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Rail Division

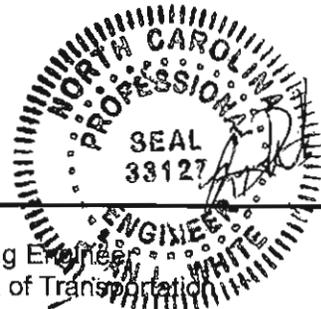


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EXECUTIVE SUMMARY

BACKGROUND

The Piedmont Improvement Program (PIP) is an initiative by the North Carolina Department of Transportation (NCDOT), the Norfolk Southern Railway (NS) and the North Carolina Railroad (NCR) to improve passenger and freight railroad operations along the NCR Piedmont Corridor from Raleigh to Charlotte. The NCR Piedmont Corridor consists of the Greensboro to Charlotte portion of the NS Mainline from Washington, DC and Atlanta, and the Greensboro to Raleigh portion of the NCR H-line.

The PIP primarily consists of railroad capacity projects and crossing safety projects that will facilitate the introduction of up to six daily round trip (12 daily) passenger trains along the Raleigh to Charlotte Piedmont Corridor. The proposed McLeansville Road Grade Separation Project (Project) is a component of the PIP.

PROJECT PURPOSE

The purpose of the Project is to improve vehicular mobility and safety and the efficiency of train traffic in the area around the McLeansville Road at-grade crossing of the NCR in Guilford County, North Carolina.

This Project also will facilitate and support future increased passenger rail service for the NCR Piedmont Corridor. NCDOT proposes to add six daily round trips to the NCR Piedmont Corridor between Raleigh and Charlotte.

PROPOSED ACTION

The NCDOT Rail Division proposes to improve vehicular mobility, vehicular and train safety, and the efficiency of train traffic in the area around the McLeansville Road crossing of the NCR/NS track in Guilford County, North Carolina through the following actions:

- Replace the at-grade rail crossing at McLeansville Road with a grade-separated crossing, increasing safety by eliminating train-vehicle conflicts and reducing train horn noise. This also will improve mobility for vehicles by removing the need to stop for passing trains and trains parked on the rail siding.
- Improve the train operations at a rail siding by allowing trains to use the full length of the siding for storage and passing, which is currently segmented by the McLeansville Road crossing and two other crossings.
- Close two other at-grade rail crossings: a public crossing at Carmon Road to the east and the Bullard and Black private crossing located between the McLeansville Road and Carmon Road railroad crossings for safety reasons. These closures also will reduce train horn noise.
- As a consequence of constructing a grade separation at McLeansville Road, realign Bethel Church Road to reconnect to McLeansville Road farther south due to grade and sight distance considerations. In addition, construct a short extension of Hines Andrews Road to reconnect to the realigned Bethel Church Road.
- Provide a new service road access from Hines Andrews Road to the two residences that are currently accessed from Frieden Church Road via the Bullard and Black private railroad crossing.

The proposed action is included in the NCDOT *2012-2018 State Transportation Improvement Program* (STIP) as project number P-5204. Funding for the Project is anticipated to come from the American Recovery and Reinvestment Act (ARRA).

NEED FOR PROJECT

As discussed in more detail in **Section 1.5**, the primary needs for the proposed Project are summarized below.

The McLeansville Road, Carmon Road, and the Bullard and Black private at-grade crossings cross both a main line track and a siding track. Trains waiting on the siding have the potential to block these at-grade crossings while other trains pass on the main line; or train crews must disconnect the train cars stored on the siding into two sections, with one section on either side of the road crossings. Both of these options result in undesirable operating conditions for both trains and vehicular traffic.

At present, traffic along McLeansville Road and Carmon Road traveling through the at-grade railroad crossing must stop for passing trains and trains parked on the siding tracks. Typically, six passenger trains per day and 5-10 freight trains per day cross McLeansville Road. In addition, sometimes trains on the siding track can block the crossing for up to an hour. These operations contribute to vehicular delays and have a negative effect on traffic flow.

Providing a grade separation for the at-grade McLeansville Road crossing and closing the Carmon Road and the Bullard and Black private crossings will eliminate the potential for vehicle/train collisions, which will improve safety for both road and rail traffic.

ALTERNATIVES CONSIDERED

Chapter 2.0 discusses all alternatives considered for the proposed action. Detailed study alternatives include the No-Build Alternative and two Build Alternatives (Build Alternative A and Build Alternative B) with three service road options. Build Alternative A with Service Road 1b is NCDOT's Preferred Alternative. These alternatives are described below.

No-Build Alternative. The analysis of the No-Build Alternative is required under the National Environmental Policy Act (NEPA) and serves as a benchmark against which the impacts of other alternatives can be compared. The No-Build Alternative would not make any improvements to the existing at-grade crossings, except for regular maintenance. The No-Build Alternative will not meet the Project's purpose and need to reduce the potential for vehicle/train collisions, or improve efficiency for trains or vehicles.

Build Alternatives. The Build Alternatives (Build Alternative A and Build Alternative B) will provide a grade-separated bridge over the railroad tracks at McLeansville Road, and will close the Carmon Road at-grade railroad crossing and the Bullard and Black private at-grade railroad crossing. Build Alternative A will construct the grade separation directly to the west of the existing McLeansville Road at-grade crossing. Build Alternative B will construct the grade separation directly to the east of the existing McLeansville Road at-grade crossing.

Each alternative also provides a service road to access the properties that currently use the Bullard and Black private crossing. There are three options for this service road, Service Road 1a, Service Road 1b, and Service Road 2. Each service road provides access to the Bullard and Black crossing properties via Hines Andrews Road.

Preferred Alternative. Each Build Alternative, combined with each of the service road options, was compared to identify the Preferred Alternative, as discussed in detail in **Section 2.5**.

Based on the information available to date, including this EA, NCDOT's Preferred Alternative is Alternative A with Service Road 1b, shown in **Figure ES-1**.

Build Alternative A is preferred over Build Alternative B because alternatives that use Build Alternative A are less expensive, have one less residential relocation, fewer stream impacts, and less area of riparian buffer impacts.

Service Road 1b is preferred over the other two service road options. Although it is in the middle in terms of cost, Service Road 1b avoids bisecting properties, while the other two service roads bisect a property. In addition, Service Road 2 impacts a small storage building and may impact a wetland area.

Alternatives Eliminated from Consideration. A range of alternatives was considered for this Project, with some eliminated from further consideration when NCDOT determined they will not meet the purpose and need for the Project and/or were not reasonable due to cost, impacts, or community disruption. These alternatives included: 1) closing all at-grade crossings in the Project study area, 2) building a grade-separated crossing of McLeansville Road farther west, and 3) building a grade-separated crossing of McLeansville Road farther east.

NCDOT also considered closing the Frieden Church Road at-grade railroad crossing west of McLeansville Road; however, NCDOT decided to not include closing this railroad crossing as part of the proposed Project because it would result in just one outlet for all land uses west of McLeansville Road and north of the railroad tracks; via the McLeansville Road/Frieden Church Road intersection.

SUMMARY OF IMPACTS

This section summarizes the estimated direct and indirect impacts to the human, physical, cultural, and natural environments from the No-Build and Preferred Alternative and identifies proposed mitigation for the Preferred Alternative.

NO-BUILD ALTERNATIVE

The No-Build Alternative will incur neither right-of-way acquisition nor construction costs. There will be no short-term disruptions along existing roadway and railroad during construction. There will be no impacts to streams, wetlands, or other natural and cultural resources, nor any residential or business relocations.

However, the No-Build Alternative will not meet the Project's purpose and need. The No-Build Alternative will not improve safety, efficiency, or mobility for train and vehicular traffic in the Project study area.

PREFERRED ALTERNATIVE

The Federal Railroad Administration (FRA) publication, *FRA Procedures for Considering Environmental Impacts* (Federal Register Volume 64, No. 101, May 26, 1999), provides a list of potential environmental impact areas that should be considered in the environmental assessment process. All areas have been addressed in this Environmental Assessment in **Chapters 1 through 4**. Impacts for the Preferred Alternative are summarized in **Table ES-1** in the order they appear in this EA, along with a listing of the sections where they are described in more detail,

including proposed mitigation, if applicable. The estimated cost for construction, right of way, and utilities relocation for the Preferred Alternative is approximately \$7 million, which is the second least expensive of the alternatives studied in detail.

Table ES-1. Summary of Impacts from the Preferred Alternative

Impact Area	EA Chapter 4 Sections Containing More Detail	Summary of Impact	Proposed Mitigation
Consistency with Land Use and Transportation Local Plans	4.1.1	No Impact. The Preferred Alternative is consistent with area land use and transportation plans.	Not applicable.
Relocations	4.1.2	Minor Impact. The Preferred Alternative will require three (3) residential relocations and one (1) business relocation.	NCDOT will use three programs to minimize the inconvenience of relocation: Relocation Assistance, Relocation Moving Payments, and Relocation Replacement Housing Payments or Rent Supplement. These programs are in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970. Comparable replacement housing is available in the Project area for displaced homeowners and tenants.
Communities and Neighborhoods	4.1.3	Minor Positive Effect and Minor Impact. Existing communities and neighborhoods will not be divided internally or from one another by physical or psychological barriers as a result of the Preferred Alternative. The grade separation and the wider paved shoulders to be constructed on McLeansville Road will provide improved access between the residences south of the railroad tracks and the McLeansville Service Core area north of the railroad tracks. The preferred alternative will also result in minor access changes for some properties along Bethel Church Road and the Bullard and Black private railroad crossing	Not applicable.
Environmental Justice	4.1.4	No Impact. The Preferred Alternative will not result in disproportionately high and adverse effects to any low-income or minority populations because there are no concentrations of minority or low-income populations in the Project study area.	Not applicable.

Table ES-1. Summary of Impacts from the Preferred Alternative

Impact Area	EA Chapter 4 Sections Containing More Detail	Summary of Impact	Proposed Mitigation
Community Services	4.1.5	<p>Minor Impact. There will be a minor direct property impact to the McLeansville Fire Station frontage along Frieden Church Road.</p> <p>The Preferred Alternative will result in indirect impacts to fire/EMS response services and school transportation with the loss of access across the railroad tracks due to the closure of the Carmon Road at-grade railroad crossing. However, the grade-separated crossing at McLeansville Road will provide improved access at this location since it will be a reliable crossing of the railroad tracks that is always open.</p> <p>The closing of the Carmon Road at-grade railroad crossing will require Guilford County Schools to implement minor rerouting of school buses making stops on Carmon Road and Knox Road. Currently there are three school buses with stops in the area.</p>	Not applicable.
Public Health	4.1.5 4.2.6	<p>No Impact. No impacts to public health are anticipated during construction of the Preferred Alternative. The project is not expected to have impacts to hazardous material sites.</p>	Not applicable.
Public Safety	4.1.5	<p>Positive Effect. There will be a public safety benefit with grade-separating McLeansville Road and closing the Carmon Road and Bullard and Black at-grade crossings, eliminating the possibility of train/auto collisions at these locations.</p>	Not applicable.
Recreational Opportunities	4.1.5	<p>No Impact. There are no public or private recreational facilities in the Project study area. The grade separation and the wider paved shoulders to be constructed on McLeansville Road will provide improved pedestrian/bicycle access between the residences south of the railroad tracks and the McLeansville Service Core area north of the railroad tracks.</p>	Not applicable.

Table ES-1. Summary of Impacts from the Preferred Alternative

Impact Area	EA Chapter 4 Sections Containing More Detail	Summary of Impact	Proposed Mitigation
Possible Barriers to the Elderly and Handicapped	4.1.3 4.1.5	No Impact. Construction of the Preferred Alternative is not anticipated to result in barriers to the elderly and handicapped populations.	Not applicable.
Section 4(f) and Section 6(f) Resources	4.1.5	No impact. There are no Section 4(f) or Section 6(f) resources in the Preferred Alternative study area.	Not applicable.
Economic Effects and Energy Use	4.1.6	Minor Positive Effect and Minor Impact. The Project study area does not contain mineral resources or quarries or energy resource activities. The Project will not result in any major economic gains or losses in the area. However, the Preferred Alternative will displace one business, which may have a minor temporary economic impact in the area until the business is reestablished. The Project also will support construction jobs temporarily during construction. The Preferred Alternative will result in a temporary increase in energy use during the construction phase. However, completion of the crossing closures will result in more efficient train operations as trains using the siding will not have to uncouple to allow vehicles to pass through. The grade separation will improve vehicle operations and eliminate the need for vehicles to idle while waiting for trains to pass through the at-grade crossings.	Not applicable.
Noise and Vibration	4.2.1	No Impact. The Preferred Alternative will decrease train horn noise due to the removal of the at-grade crossings at McLeansville Road, Carmon Road, and private Bullard and Black. No vibration impacts are anticipated due to the Preferred Alternative.	Not applicable.
Air Quality	4.2.2	No Impact. No air quality impacts are anticipated due to the Preferred Alternative.	Not applicable.

Table ES-1. Summary of Impacts from the Preferred Alternative

Impact Area	EA Chapter 4 Sections Containing More Detail	Summary of Impact	Proposed Mitigation
Farmland	4.2.3	Minor Impact. The Preferred Alternative will impact 11.6 acres of prime and statewide important farmland soils. However, there will be no significant impact on protected farmland soil as defined under the Farmland Protection Policy Act.	Not applicable.
Utilities	4.2.4	Minor Impact. The Preferred Alternative is anticipated to require relocation of electrical power lines, sewer lines, and water lines.	NCDOT will coordinate with all utility providers during final design and construction to prevent damage to utility systems and to minimize disruption and degradation of utility service to local customers.
Aesthetics and Design Quality	4.2.5	Minor Impact. Minor changes in the visual landscape will occur as a result of the Project.	It is NCDOT policy to replace or compensate for landscaping impacted by Project construction.
Hazardous Waste and Construction Waste Disposal	4.2.6	Minor Impact. The Preferred Alternative requires right of way from the front of the McLeansville Fire Station and the Lynn's Furniture Gallery property. Both sites are anticipated to have a low potential for geoenvironmental impacts.	The NCDOT Geoenvironmental Unit will complete further assessments prior to right of way acquisition, as necessary.
Flood Hazards and Floodplain Management	4.2.7	No Impact. There are no floodplains or floodways in the Project study area.	Not applicable.
Historic Architectural and Archaeological Resources	4.3	No Impact. There are no significant historic architectural or archaeological resources within the Preferred Alternative study area, as confirmed by the State Historic Preservation Officer.	Not applicable.
Ecological Systems (Biotic Communities and Wildlife)	4.4.1	Minor Impact. Permanent impacts will occur to 6.6 acres of mesic mixed hardwood forest and 13.0 acres of maintained/disturbed areas for the Preferred Alternative. Temporary impacts to downstream habitat may occur from increased sediment during construction.	Temporary impacts to downstream habitat will be minimized by the implementation of stringent erosion-control measures.

Table ES-1. Summary of Impacts from the Preferred Alternative

Impact Area	EA Chapter 4 Sections Containing More Detail	Summary of Impact	Proposed Mitigation
Water Quality	4.4.2	Minor Impact. Project activities such as clearing and grubbing, riparian canopy removal, in-water construction, fertilizer and pesticide use for revegetation, redirection of surficial groundwater flows could impact surface water resources in the absence of appropriate Best Management Practices (BMPs).	Prior to construction, an erosion and sedimentation control plan will be developed in accordance to NCDENR regulations and NCDOT <i>Best Management Practices for the Protection of Surface Waters</i> .
Jurisdictional Resources (wetlands, streams, and ponds) and Jordan Lake Riparian Buffer Rules	4.4.3	Minor Impact. The Preferred Alternative will impact approximately 0.05 acre of wetlands, due to the realignment of Bethel Church Road. There will be a total of 355 linear feet of stream impacts to two streams: 148 linear feet for an intermittent stream and approximately 207 linear feet of a perennial stream. Approximately .02 acres of pond will be impacted. The Preferred Alternative will impact approximately 1.08 acres of Jordan Lake Riparian Buffers around two streams and a pond. Road crossings that impact greater than 150 lf or one-third acre of riparian buffer are allowable with mitigation.	NCDOT will apply for a USACE Nationwide 14 Permit for impacts to jurisdictional areas. Compensatory mitigation through the NCDENR Ecosystem Enhancement Program may be required for this Project. For impacts to riparian buffers, the NCDWQ will issue a mitigation determination that specifies the required area and location of mitigation. Mitigation may be met by payment of a compensatory mitigation fee to the Riparian Buffer Restoration Fund, donation of real property or of an interest in real property, or restoration or enhancement of a non-forested riparian buffer.
Protected Species	4.4.4	No Impact. The Preferred Alternative will not impact any Federally-protected species.	Not applicable.
Indirect and Cumulative Effects	4.5	Minor Impact. Minor indirect impacts to water quality may occur due to stormwater runoff. Also, vehicular travelers will experience longer commute times due to the crossing closure at Carmon Road. There are no cumulative effects anticipated due to this Project.	Indirect effects to water quality that may occur from the Project due to stormwater runoff will be minimized through implementation of NCDOT's <i>Best Management Practices for the Protection of Surface Waters</i> and conformance to the Jordan Lake Buffer Rules.

Table ES-1. Summary of Impacts from the Preferred Alternative

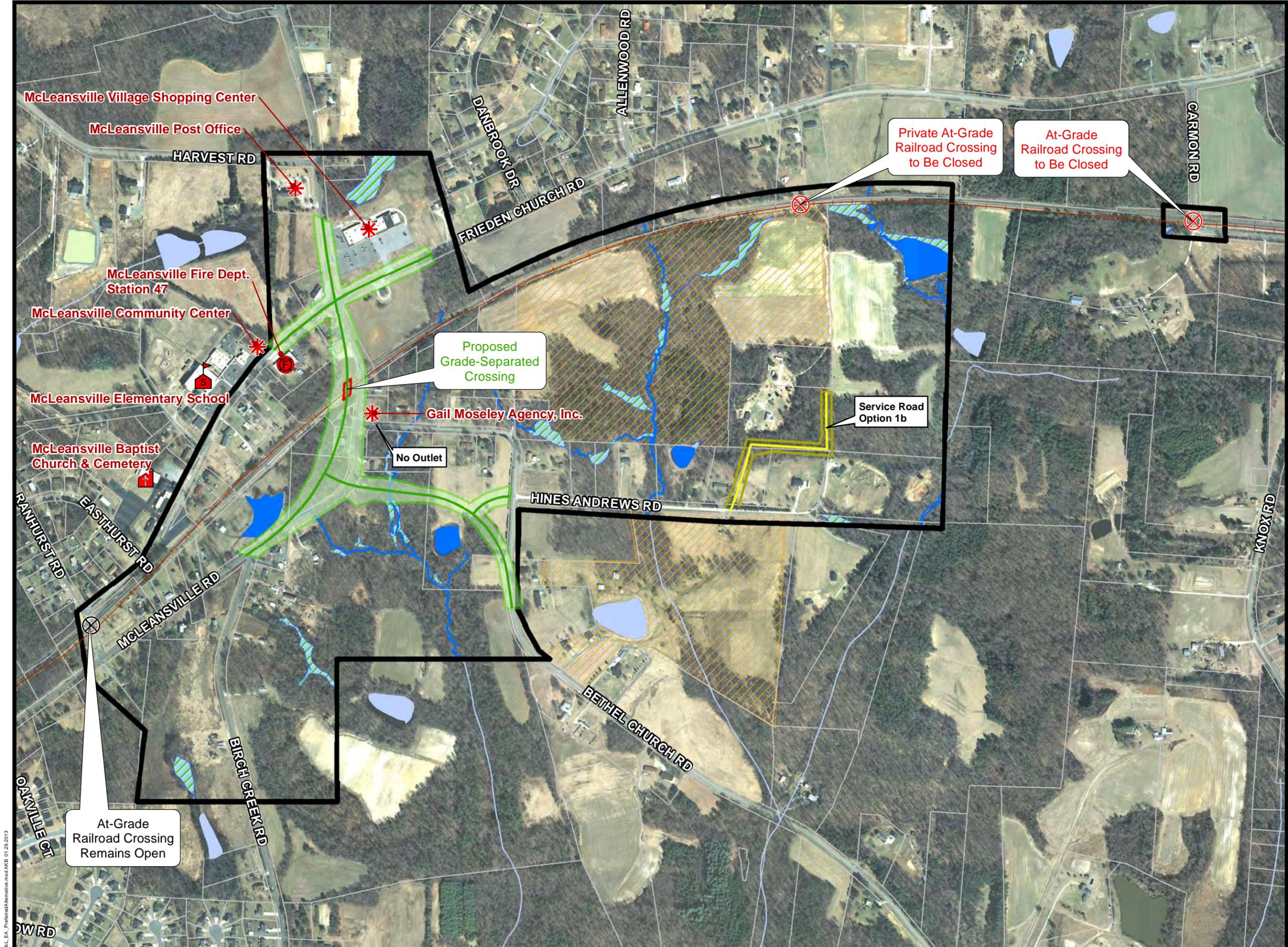
Impact Area	EA Chapter 4 Sections Containing More Detail	Summary of Impact	Proposed Mitigation
Construction Impacts	4.6	<p>Minor Impact. Temporary impacts could occur to air quality, noise, waste generation, maintenance of traffic, water quality, and wildlife.</p>	<p>The contractor will be responsible for controlling dust at the project site and at areas affected by the construction.</p> <p>Earth removal, grading, hauling, paving, and pile driving activities will generate noise. Where practicable, NCDOT will limit construction activities to weekday daytime hours in the vicinity of residences.</p> <p>Waste generated during construction will be properly disposed of in accordance with State and local regulations.</p> <p>Maintenance of traffic and sequencing of construction will be planned and scheduled so as to minimize traffic delays within the Project area. NCDOT will coordinate with Guilford County Schools regarding bus routes.</p> <p>Water quality impacts will be minimized by utilizing Best Management Practices and standard NCDOT procedures during construction.</p> <p>Impacts to wildlife will be minimized as much as possible by restricting land clearing and construction operations within the project’s right of way. NCDOT will encourage the contractor to locate off-site staging and stockpiling to disrupt the least amount of natural habitat area.</p>

ENVIRONMENTAL COMMITMENTS

During the National Environmental Policy Act (NEPA) process, commitments are made to avoid, minimize, or mitigate Project impacts. Commitments result from public comment or through the requirements of, or agreements with, environmental resource and regulatory agencies.

NCDOT will comply with applicable Federal and state requirements and regulations, such as; Section 404 Individual Permit Conditions, Nationwide Permit Conditions, Regional Conditions, and State Consistency Conditions; North Carolina Department of Transportation (NCDOT) *Guidelines for Best Management Practices for the Protection of Surface Waters*, General Certification Conditions, and Section 401 Conditions of Certification; and the Endangered Species Act. Other special project commitments have been agreed to by the NCDOT, as follows.

- During construction activities, NCDOT will coordinate with Guilford County Schools regarding bus routes.



Legend

- Project Study Area
- Proposed Alt A Centerline
- Proposed Alt A Bridge
- Proposed Alt A Right of Way
- Notable Features
- Church
- Fire Station
- School
- Railroad
- Delineated Streams
- Delineated Wetlands
- Delineated Open Water
- Streams
- Ponds
- Voluntary Agricultural District
- Parcels
- Existing At-Grade Railroad Crossing to be Closed
- At-Grade Railroad Crossing Remains Open

Source: Guilford County, NCONemap
 Aerial Photo: ArcGIS Image Service
 2010 - Orthoimagery
 Map Printed January 2013

0 300 600
 Feet

SOUTH CAROLINA DEPARTMENT OF TRANSPORTATION
RAIL DIVISION

STIP Project No. P-5204
 Guilford County, NC

**McLEANSVILLE ROAD SR-2819
 GRADE SEPARATION**

**PREFERRED
 ALTERNATIVE**

FIGURE ES-1

McL_EA_PrefereedAlternative.mxd AKB 01/29/2013

1.0 PURPOSE AND NEED

1.1 INTRODUCTION AND PROJECT HISTORY

Introduction. The NCDOT Rail Division, in conjunction with the FRA, proposes to construct a grade separation carrying McLeansville Road (SR 2819) over the NCRR. This Project is identified as Project P-5204 in the North Carolina STIP. The Project is located in McLeansville in Guilford County, as shown in **Figure 1-1**.

The PIP is an initiative by the NCDOT, NS, and the NCRR to improve passenger and freight railroad operations along the NCRR Piedmont Corridor from Raleigh to Charlotte. The NCRR Piedmont Corridor consists of the Greensboro to Charlotte portion of the NS Mainline from Washington, DC and Atlanta, and the Greensboro to Raleigh portion of the NCRR H-line. The PIP primarily consists of railroad capacity projects and crossing safety projects that will facilitate the introduction of up to six daily round trip (12 daily) passenger trains along the Raleigh to Charlotte Piedmont Corridor. The proposed McLeansville Road Grade Separation Project is a component of the PIP.

The proposed Project is along the Preferred Alternative for the Southeast High Speed Rail (SEHSR) corridor determined by the FRA in the Record of Decision (ROD) for the Tier I SEHSR Environmental Impact Statement (EIS). This corridor connects the northeastern states and Washington, D.C. through Richmond, Virginia to Raleigh and Charlotte, N.C. to Atlanta, GA. In Atlanta, the SEHSR extends southeast to Savannah, GA and Jacksonville, FL; and the Gulf Coast High Speed Rail corridor. For the southern portion of the SEHSR, NCDOT is preparing individual project-level NEPA documents, including this EA. FRA and NCDOT have determined that the individual projects each have independent utility; that is, each project will provide tangible benefits to existing freight and passenger rail service even if no additional investments are made for high-speed service. Regardless of future high-speed rail development, the proposed Projects would provide benefits to schedule reliability, train speeds, and overall rail capacity and safety. The respective NEPA documents provide more details on the independent utility of each project.

Previous Project History. NCDOT previously studied a potential grade separation of the Carmon Road (SR 2755) at-grade railroad crossing STIP Project Y-4800 located to the east of the McLeansville Road at-grade railroad crossing. In February 2010, NCDOT prepared an EA using Federal Highway Administration (FHWA) funds. Three of the four build alternatives evaluated in the Carmon Road EA were proposed bridges near the existing Carmon Road crossing. The fourth alternative was an extension of Carmon Road to Bethel Church Road (SR 2930) (near McLeansville Road) and closure of the Carmon Road at-grade crossing. This fourth alternative was identified as the Preferred Alternative. Comments from the US Environmental Protection Agency (USEPA) requested additional studies of the Carmon Road extension concept to minimize wetland and stream impacts.

In January 2010, the FRA awarded NCDOT a cooperative agreement through the American Recovery and Reinvestment Act (ARRA) and the FRA was designated as the lead Federal agency. Work began on modifying the EA to conform to FRA standards. At the same time, work began on a fifth alternative (Alternative 5) that minimized impacts to wetlands and streams along the Carmon Road extension concept. A Citizens Informational Workshop was held on March 31, 2011 to introduce Alternative 5 and present updates to the other four alternatives included in the EA.

Based on comments received at the March 2011 workshop and input from local transportation planning agencies, NCDOT began studying a potential grade separation at McLeansville Road and

stopped work on the Carmon Road EA. The McLeansville Road grade separation project (STIP Project P-5204) replaces the previous studies conducted for the Carmon Road project (STIP Project Y-4800).

1.2 PROJECT PURPOSE

The purpose of the Project is to improve vehicular mobility and safety and the efficiency of train traffic in the area around the McLeansville Road at-grade crossing of the NCRR in Guilford County, North Carolina.

This Project also facilitates and supports future increased passenger rail service for the NCRR Piedmont Corridor. NCDOT proposes to add six daily round trips to the NCRR Piedmont Corridor between Raleigh and Charlotte.

1.3 PROPOSED ACTION

The NCDOT Rail Division proposes to improve vehicular mobility, vehicular and train safety and the efficiency of train traffic in the area around the McLeansville Road crossing of the NCRR/NS track in Guilford County, North Carolina through the following actions:

- Replace the at-grade rail crossing at McLeansville Road with a grade-separated crossing, increasing safety by eliminating train-vehicle conflicts and reducing train horn noise. This also will improve mobility for vehicles by removing the need to stop for passing trains and trains parked on the rail siding.
- Improve the train operations at a rail siding by allowing trains to use the full length of the siding for storage and passing, which is currently segmented by the McLeansville Road crossing and two other crossings.
- Close two other at-grade rail crossings: a public crossing at Carmon Road to the east and the Bullard and Black private crossing located between the McLeansville Road and Carmon Road railroad crossings for safety reasons. These closures also will reduce train horn noise.
- As a consequence of constructing a grade separation at McLeansville Road, realign Bethel Church Road to reconnect to McLeansville Road farther south due to grade and sight distance considerations. In addition, construct a short extension of Hines Andrews Road to reconnect to the realigned Bethel Church Road.
- Provide a new service road access from Hines Andrews Road to the two residences that are currently accessed from Frieden Church Road via the Bullard and Black private railroad crossing.

The proposed action is included in the NCDOT 2012-2018 STIP as project number P-5204. Funding for the Project is anticipated to come from the American Recovery and Reinvestment Act.

1.4 PROJECT SETTING

Figure 1-1 shows the general Project vicinity and **Figure 1-2** shows the Project study area. The proposed Project is located in eastern Guilford County near the unincorporated area known as McLeansville. Incorporated towns near the Project study area include Greensboro to the west and Sedalia to the southeast, both of which are located in Guilford County.

The Project study area is located just east of the Greensboro city limits. The Project study area extends approximately ½ mile west from the existing McLeansville Road at-grade railroad crossing

to include the Frieden Church Road (SR 2746) at-grade railroad crossing. To the north, the boundary extends along McLeansville Road to Harvest Road and includes properties adjacent to McLeansville Road. The Project study area extends to the east along the NCRR tracks to include the Bullard and Black private at-grade railroad crossing, located approximately ½ mile east of the McLeansville Road crossing. The southern boundary of the Project study area includes Hines Andrews Road and segments of Bethel Church Road and Birch Creek Road. A separate portion of the Project study area includes the area immediately surrounding the Carmon Road (SR 2755) at-grade railroad crossing, located approximately one mile east of the McLeansville Road crossing.

Elevations within the Project study area range from a high of approximately 760 feet National Geodetic Vertical Datum (NGVD) at the northern end of the Project study area to a low of approximately 700 feet NGVD within the stream channels of unnamed tributaries within the Project study area. The approximate elevations of the existing railroad crossings are 750 feet NGVD for the Carmon Road crossing, 742 feet for the Bullard and Black private crossing, 745 feet NGVD for the McLeansville Road crossing, and 740 feet NGVD for the Frieden Church Road crossing.

Land uses within and adjacent to the Project study area generally consist of rural residential development, wooded areas, and farmland, with a community services area located in the vicinity of the McLeansville Road intersection with Frieden Church Road. This crossroads area currently includes a shopping center, elementary school, community center, church, and fire station. There are two Voluntary Agricultural Districts in or near the study area. Newer medium-density residential subdivisions are located just southwest of the Project study area between Birch Creek Road and McLeansville Road. Land uses around the Carmon Road at-grade railroad crossing consist of farmland, rural residences, and wooded areas.

1.5 NEED FOR PROJECT

1.5.1 IMPROVE EFFICIENCY FOR TRAIN TRAFFIC

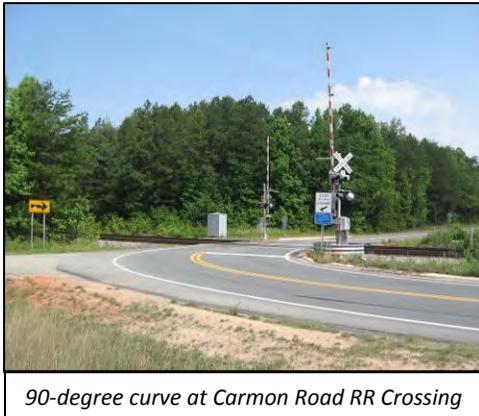
Currently, the crossing on McLeansville Road at the NCRR tracks is located near the western end of the two-mile long McLeansville rail siding, which also intersects the at-grade Carmon Road crossing to the east and the Bullard and Black private crossing between the McLeansville Road and Carmon Road crossings. The siding is a section of track parallel to the main line, allowing one train to pass another. Trains waiting on the siding have the potential to block these at-grade crossings while other trains pass on the main line; or train crews must disconnect the train cars stored on the siding into two sections, with one section on either side of the road crossings. Both of these options result in undesirable operating conditions for both trains and vehicular traffic. When trains block the crossings, vehicular traffic is delayed on McLeansville Road and Carmon Road. Trains can sit on the siding for up to one hour waiting for another train to pass. Dividing the train into two sections, with one section on either side of the road crossings, and then reconnecting them, is time consuming for the train operators.



Through track and siding track at
McLeansville Rd

1.5.2 IMPROVE RAIL AND ROAD SAFETY

Currently, the crossings of the NCRR tracks on McLeansville Road, Carmon Road, and the Bullard and Black private crossing are all at-grade intersections and have the potential for collisions between vehicular traffic and freight and passenger trains. Providing a grade separation for the McLeansville Road crossing and closing the crossings at Carmon Road and the Bullard and Black private crossing will eliminate the potential for vehicle/train collisions, which will improve safety for both road and rail traffic.



90-degree curve at Carmon Road RR Crossing

In addition, there is a 90-degree curve on Carmon Road at the railroad crossing. This substandard horizontal alignment is a safety concern for vehicular traffic due to the unexpected nature of such a sharp curve. The speed limit on Carmon Road is 45 miles per hour (mph), but the 90-degree curve is signed at 10 mph. Vehicles must slow down significantly to navigate this curve safely. The curve also causes sight problems as drivers have to look backward to see if trains are approaching. Closing the Carmon Road at-grade crossing will eliminate the need for drivers to navigate the 90-degree curve and improve safety along the roadway. From 2007 to 2012, there have been six crashes

recorded at the Carmon Road railroad crossing.

1.5.3 IMPROVE TRAFFIC FLOW FOR ROAD TRAFFIC

At present, traffic along McLeansville Road passing through the at-grade crossing with the railroad tracks must stop for passing trains and trains parked on the passing siding tracks. Typically, six passenger trains per day and 5-10 freight trains per day cross McLeansville Road. In addition, sometimes trains on the passing siding can block the crossing for up to an hour. These operations contribute to vehicular delays and have a negative effect on traffic flow. Grade separating the McLeansville Road intersection with the railroad eliminates the need for vehicles to stop and wait for passing trains.

1.6 RAIL AND ROADWAY CHARACTERISTICS

1.6.1 EXISTING RAIL NETWORK

The NCRR is a 317 mile long rail corridor that extends from Charlotte through Greensboro and Raleigh to the State Port at Morehead City. NS is the leasing freight operator of the railroad and has exclusive rights to the track as freight operator. Although NS does not own the railroad tracks or the right of way, NS is responsible for maintaining the track and signal infrastructure in order to ensure a safe rail transportation system.

The rail corridor crosses the state and connects with corridors that serve interstate trips. The rail corridor in the Project study area contains one through track and one rail siding track adjacent to the south side of the through track. The rail siding track is approximately two miles long and extends from approximately 1,200 feet west of the McLeansville Road at-grade railroad crossing to approximately 4,000 feet east of the Carmon Road at-grade railroad crossing.

1.6.2 REGIONAL RAIL SERVICE

Existing Service. Typically, 11-16 trains pass through the Project study area during each 24-hour period. Six of the trains are passenger trains and 5-10 are freight trains.

Currently, six daily Amtrak operated passenger trains pass through the Project study area. Four (two round-trip) Raleigh to Charlotte *Piedmont* trains and two (one round-trip) Charlotte to New York *Carolinian* trains pass through the Project area.

Freight trains consist of three types: through trains, local trains, and unit trains. Through trains carry freight long distances, and these types of freight trains pass through the Project study area. Local trains serve industries located adjacent to the rail line while unit trains carry one material such as grain or coal. Local trains and unit trains may also pass through the Project study area.

Southeast High-Speed Rail. The NCRR rail line through the Project study area is part of the preferred study corridor for the SEHSR project (www.sehsr.org). The SEHSR project will provide passenger rail service between Washington, DC and Charlotte at speeds of 90-110 mph. Service eventually may extend to South Carolina, Georgia, and Florida. The SEHSR corridor connects to the Northeast Corridor via Washington, DC to Philadelphia, New York, and Boston.

The SEHSR corridor is one of eleven nationally designated high speed rail corridors in the United States. In October 2002, North Carolina, Virginia, the FHWA, and the FRA completed the required Tier I of a two-tiered environmental study for the Washington, DC to Charlotte portion of the SEHSR. The SEHSR Tier I EIS and Record of Decision can be viewed at www.fra.dot.gov/rpd/freight/1611.shtml.

Virginia and North Carolina are now proceeding with the next phase (Tier II) of the corridor study, which provides a detailed analysis of the impacts, including track location, station arrangement and detailed design. For the portion of the SEHSR corridor from Charlotte to Raleigh, rather than a single large document, NCDOT is preparing smaller Tier II environmental studies for specific segments of the route where track work would be needed. The goal to begin high speed rail passenger service from Washington, DC to Charlotte is 2018-2022¹.

1.6.3 EXISTING ROAD NETWORK

I-40/I-85 is located approximately 5 miles south of the Project study area (**Figure 1-1**). I-40 is North Carolina's major east-west link connecting Asheville, Winston-Salem, Greensboro, Burlington, Chapel Hill, Durham, Raleigh, and Wilmington. I-85 is a major north-south link through North Carolina that passes through major cities such as Charlotte, Greensboro, and Durham.

US 70 (Burlington Road) is a major two-lane east-west thoroughfare located approximately 1.5 miles south of the Project study area that connects Greensboro to the west with Burlington to the east. US 70 continues east to Raleigh and points east. The posted speed limit is 55 miles per hour (mph).

McLeansville Road is a two-lane minor north-south thoroughfare that runs from US 29 approximately five miles north of the Project study area to US 70 approximately 1.5 miles south of the Project study area. The posted speed limit along McLeansville Road is 35 mph in the vicinity of the rail crossing, and 45 mph away from the crossing area. The at-grade crossing of McLeansville

¹ SEHSR Web site: www.sehsr.org/history.html

Road with the NCRF railroad crosses two tracks (a mainline track and a siding track), and includes two standard gates.

Bethel Church Road is a two-lane minor east-west thoroughfare that begins at McLeansville Road within the Project study area and extends east to Gibsonville. Bethel Church Road is used by a number of Guilford County school buses serving Eastern Guilford Middle School and Eastern Guilford High School located on Bethel Church Road east of Knox Road. Bethel Church Road has a posted speed limit of 45 mph.

Frieden Church Road is a two-lane minor thoroughfare that runs in a east/west direction from McLeansville Road at the western end of the Project study area to NC 61 about six miles east of the Project study area (**Figure 1-2**). Frieden Church Road has a posted speed limit of 35 mph in the vicinity of the rail crossing. The at-grade crossing with the NCRF railroad crosses one through track, and includes two standard gates and traffic channelization devices on the south side of the crossing.



Frieden Church Rd railroad crossing

Carmon Road is a two-lane minor thoroughfare that begins at a T-intersection with Frieden Church Road just north of the Carmon Road at-grade rail crossing. Carmon Road makes a 90 degree turn just south of the rail crossing and runs east to Gibsonville (**Figure 1-2**). The speed limit along Carmon Road is 45 mph, except along the 90-degree curve at the railroad crossing, which is signed at 10 mph. The at-grade crossing of Carmon Road with the NCRF railroad crosses two tracks (a mainline track and a siding track), and includes two standard gates.

Hines Andrews Road is a two-lane local dead-end road that extends approximately ¼ mile east from Bethel Church Road and provides access to several homes.

Two homes between Hines Andrews Road and the NCRF railroad track are accessed via an unpaved driveway and private crossing that connects these properties with Frieden Church Road. The private crossing, known as the Bullard and Black crossing, has no gates or signs.

1.6.4 COMMUTING PATTERNS

The Project study area consists primarily of low-density residential development and agricultural fields, along with some institutional and commercial/institutional development in the McLeansville center. The Project study area is located between the cities of Greensboro to the west and Burlington to the east. Due to the rural nature of the Project study area, the general commuting pattern consists of people commuting out of the area in the morning to go to work, and into the area in the evening to return home.

Commuting patterns in the Project study area generally follow McLeansville Road, Birch Creek Road, and Knox Road, all of which provide connections to US 70 and I-40/85 south of the Project study area. On US 70 and I-40/85, commuters can travel west to Greensboro or east to Gibsonville and Burlington. During the Citizens Informational Workshop held April 24, 2012, some attendees stated they commuted to Gibsonville via Carmon Road. However, in general, commuters travel south out of the Project study area in the morning and travel north into the Project study area in the evening.

Table 1-1 shows the commuting patterns by means of transportation to work from the American Community Survey (2006-2010, 5-Year Estimates) (the latest available data). As shown in **Table 1-1**, Census Block Groups (BG) that contain the Project study area had a higher percentage of people driving alone to work when compared to the State and County. The percentage of people carpooling was 4-8 percent, and the percentage using public transportation was zero. These patterns are consistent with the low-density development of the study area.

TABLE 1-1. Means of Transportation to Work

Transportation Means	North Carolina (%)	Guilford County (%)	CT 153 BG 1 (%)	CT 153 BG 2 (%)
Drove Alone	83.8	85.8	93.0	92.5
Carpooled	11.9	9.5	4.0	7.5
Public Transportation (excluding taxicab)	1.1	1.6	0	0
Taxicab, motorcycle, bicycle, walked, or other means:	0.1	0.3	3.0	0

Source: American Community Survey 5-Year Estimates (2006-2010), Table C08134 "Means of Transportation to Work by Travel Time to Work"

1.7 MODAL INTERRELATIONSHIPS

1.7.1 LOCAL PUBLIC TRANSPORTATION SERVICE

Currently, there is no local rail transit service or daily bus service offered in the area. However, through a coordinated effort, the Greensboro Transit Authority (GTA), High Point Transit System (Hi Tran), and PART have developed a program called PT Links. This program is exclusively for individuals without access to public transit residing outside of the Greensboro and High Point city limits. PT Links provides a transportation service from a Guilford County resident's home to GTA, Hi Tran, or PART bus stops where the rider can then utilize the services of these public transit systems².

1.7.2 AIRPORTS

The closest airport to the Project study area, the Piedmont Triad International Airport (PTIA), is located approximately 20 miles west of the Project. In 2009, sixteen air carriers with 60 daily departures offered service from PTIA, as well as five freight carriers³.

1.8 TRANSPORTATION AND LAND USE PLANS

1.8.1 STATE TRANSPORTATION IMPROVEMENT PROGRAM

The NCDOT 2012-2018 STIP includes one rail project (Y-4800) and one urban roadway project in eastern Guilford County in the general Project area. These projects are listed in **Table 1-2**. As part of Project Y-4800, an update to the 2004 East Guilford County Traffic Separation Study is underway.

² Guilford County Web site: www.co.guilford.nc.us/downloads/transp/PT%20Links%20Flier.pdf

³ PTIA website: www.flyfrompti.com/wp-content/uploads/2010/05/airport_fast_facts-3.pdf

TABLE 1-2. Transportation Improvement Projects Near the Project Study Area

TIP Project Number	Description	Status
Passenger Rail Projects		
Y-4800	Traffic separation study implementation and closures statewide.	In progress.
Urban Projects		
U-2581B	US 70 from SR 2828 (Willowlake Road) to SR 3056 (Rock Creek Dairy Road) - Widen to multi-lanes, some relocation (5.2 miles)	Planning and Design in progress, with construction beginning in 2021

Source: NCDOT’s 2012-2018 Transportation Improvement Program

1.8.2 LOCAL TRANSPORTATION PLANS AND LAND USE PLANS

Comprehensive Transportation Plan (CTP) and Long Range Transportation Plan (LRTP).

The Greensboro Urban Area Metropolitan Planning Organization (GUAMPO) *Comprehensive Transportation Plan (CTP)* (June 11, 2010) is the official guide to providing a transportation system for the future of the region, which includes the City of Greensboro, much of the unincorporated areas of Guilford County and the towns of Oak Ridge, Pleasant Garden, Sedalia, Stokesdale, Summerfield, Burlington, Gibsonville, and Whitsett. The *GUAMPO 2035 Long Range Transportation Plan* (adopted January 28, 2009 and remaining in effect through March 2013) is the fiscally constrained portion of the CTP.

The currently adopted CTP and LRTP identify two roadway projects in the McLeansville area. One is the extension of Carmon Road/Knox Road west to connect to McLeansville Road and the other is the railroad grade separation of Carmon Road/Knox Road. The CTP also includes a recommendation for a grade separation of the existing railroad crossing at McLeansville Road that is not included in the LRTP.

Since adoption of these plans, the recommendations of GUAMPO have changed. According to discussions with GUAMPO staff, GUAMPO intends to amend their LRTP to add the McLeansville Road grade separation project and remove the Carmon Road/Knox Road grade separation and extension projects from the list of projects to be implemented by 2035. The draft update to the 2035 LRTP includes these changes⁴.

The Bicycle element of the GUAMPO CTP rates bicycle facilities on Frieden Church Road and McLeansville Road as “Needs Improvement”. The pedestrian element of the GUAMPO CTP recommends sidewalk improvements on McLeansville Road, Frieden Church Road, Birch Creek Road, Bethel Church Road and Carmon Road. No existing sidewalks were observed on these roads during site visits.

Bicycle, Pedestrian, and Greenway Master Plan. The Project study area lies within the eastern boundary of the *Greensboro Urban Area Bicycle, Pedestrian & Greenway Master Plan*. The Plan was prepared by GUAMPO and adopted by the Transportation Advisory Committee (TAC) on October 11, 2006 and by the Guilford County Board of Commissioners on June 7, 2007. Map 4-3 of the plan shows recommended on-road bicycle facilities and indicates that McLeansville Road, Frieden Church

⁴ City of Greensboro Web site: <http://www.greensboro-nc.gov/index.aspx?page=3480>

Road, Carmon Road, and Knox Road in and around the Project study area are recommended for paved shoulders to accommodate bicycles. The 2035 LRTP (Map 6-3) and the draft 2035 LRTP update (Map 6-1) also identify these roadways for recommended bicycle improvements in the form of paved shoulders.

Northeast Guilford Area Plan. The *Northeast Guilford Area Plan* (October 16, 2008), which is a land use plan, has identified the area centered on the intersection of McLeansville Road and Frieden Church Road as the McLeansville Service Core. This service core area is within the Project study area. According to the area plan, this service core area is meant to define community identity by encouraging a mix of office, commercial institutional, and light industrial uses. The area plan also recommends establishing walkways to encourage pedestrian movement within the core center.

1.9 NO-BUILD VEHICULAR TRAFFIC OPERATIONS

Vehicular traffic operations for 2012 and 2035 without the Project are discussed in the following sections.

1.9.1 TRAFFIC VOLUMES

In July 2012, NCDOT provided traffic forecasts for Year 2012 and Year 2035 Average Annual Daily Traffic (AADT) volumes for the existing roadway network. **Appendix A** includes the forecast diagrams of the AADT for study area roadways. AADT volumes for some of the primary study area roadways are provided in **Table 1-3**.

The highest traffic volumes in 2012 and 2035 are on McLeansville Road. As shown in the table, existing AADT traffic volumes under the No-Build condition are expected to increase approximately 50-100 percent from 2012 to 2035, but in both years are relatively low (typical of a rural area). Volumes and impacts anticipated under the future Build Condition scenario are presented in **Section 2.4**

TABLE 1-3. Comparison of Existing (Year 2012) and No-Build (Year 2035) Traffic Volumes

Roadway/Segment	Existing 2012 AADT Volumes	No-Build 2035 AADT Volumes	Increase in AADT Volume (%)
McLeansville Road			
West of Birch Creek Rd	3,400	6,900	103 %
Birch Creek Rd to Bethel Church Rd	4,300	6,800	58 %
Bethel Church Rd to Frieden Church Rd (across RR)	5,500	7,900	44 %
North of Frieden Church Rd	4,700	7,100	51 %
Frieden Church Road			
West of McLeansville Rd (near elem. school)	700	1,000	43 %
East of McLeansville Rd	2,100	4,200	100 %
West of Carmon Rd	1,800	3,400	89 %
Bethel Church Road			
McLeansville Rd to Knox Rd	2,000	3,300	65 %
East of Knox Rd	2,700	5,200	93 %

TABLE 1-3. Comparison of Existing (Year 2012) and No-Build (Year 2035) Traffic Volumes

Roadway/Segment	Existing 2012 AADT Volumes	No-Build 2035 AADT Volumes	Increase in AADT Volume (%)
Knox Road			
South of Bethel Church Rd	4,100	7,800	90 %
Bethel Church Rd to Carmon Rd	800	1,300	63 %
Carmon Road			
Knox Rd to Frieden Church Rd (across RR)	700	1,300	86 %

AAADT – Annual Average Daily Traffic volumes
 Source: NCDOT, July 2012.

1.9.2 ROADWAY LEVEL OF SERVICE

A traffic operations analysis was performed to assess how the studied intersections are currently operating and how they would operate in the year 2035 if no improvements were made to the Project area intersections (Atkins, 2012). The traffic operations results are shown in **Table 1-4**. All intersections in the study area are stop-controlled.

The existing conditions operations analysis indicates that all intersections currently operate at an acceptable Level of Service (LOS D or better) during both the AM and PM peak hours.

In 2035, one of the eight analyzed intersections is projected to operate with an unacceptable LOS for both the AM and PM peak hours. McLeansville Road at Frieden Church Road (north of railroad tracks) is projected to operate with an unacceptable LOS for both the AM and PM peak hours. The intersection currently operates with a LOS C in both the AM and PM peak hours. With no improvements, the intersection is projected to degrade to a LOS F in the AM peak hour and LOS E in the PM peak hour.

TABLE 1-4. Existing and Future No-Build Level of Service and Average Delay Per Vehicle

Intersection Roadway 1	Intersection Roadway 2	Year 2012 - Existing		Year 2035 – No Build Scenario	
		AM LOS and Delay (sec)	PM LOS and Delay (sec)	AM LOS and Delay (sec)	PM LOS and Delay (sec)
McLeansville Road	Frieden Church Road (south of railroad tracks)	B (11)	A (9)	C (17)	B (11)
	Birch Creek Road	A (10)	B (11)	C (17)	C (16)
	Bethel Church Road	B (13)	B (13)	C (24)	C (23)
	Frieden Church Road (north of railroad tracks)	C (20)	C (16)	F (224)	E (41)
Knox Road	Bethel Church Road (south intersection)	B (13)	B (12)	D (31)	C (24)
	Bethel Church Road (north intersection)	B (12)	B (12)	D (26)	D (33)
	Carmon Road	A (9)	A (9)	A (9)	A (9)
Carmon Road	Frieden Church Road	A (10)	A (10)	B (11)	B (11)

Source: Traffic Operations Technical Memorandum, Atkins, 2012.

Note: For stop-controlled intersections, LOS and corresponding delay represents the characteristics of the worst performing stop-controlled movement.

LOS – Level of Service. Level of service is measured from A to F, with A being the best operating conditions and F the worst.

Delay – rounded to the nearest second

1.10 CRASH DATA AND SAFETY

The proposed Project will promote safer traffic operations by closing two existing at-grade railroad crossings (one public crossing and one private crossing) and separating vehicular traffic from train traffic at a grade-separated crossing at McLeansville Road.

Crash data for intersections within the Project study area for the years November 2007 through November 2012 were provided by the NCDOT Traffic Safety Unit. The crash data is summarized in **Table 1-5**. As shown in the table, there are no locations where there have been a substantially high number of crashes during the 5-year analysis period. The location with the most crashes is the Carmon Road railroad crossing. At this location, these crashes involved collisions with inanimate objects during nighttime and/or wet conditions. It is likely this is due to the 90-degree curve in Carmon Road at the railroad crossing.

At any location where streets intersect railroad tracks, there is the potential for motorists to be killed or injured. Trains cannot swerve to miss a vehicle and it takes great distances to stop. Motorists involved in railroad crossing collisions often are killed due to the difference in size between road vehicles and locomotives. However, larger motor vehicles, such as tractor trailers, can also cause damage or derailment to trains. Derailment of a passenger train can cause serious injury or death, not only for the motorist, but for train passengers. The proposed grade separation and crossing closures would protect both rail passengers and motorists.

TABLE 1-5. Intersection Crash Data Summary (2007-2012)

Intersection	Total Crashes	Crash Type			
		Fatal	Non-Fatal Injury	Night	Wet
Frieden Church Road at McLeansville Road (South of Railroad)	1	0	0	0	0
Frieden Church Road at McLeansville Road (North of Railroad)	2	0	1	0	0
Carmon Road at Frieden Church Road	4	0	2	1	1
Birch Creek Road at McLeansville Road	2	0	1	1	0
Bethel Church Road at McLeansville Road	1	0	1	0	0
Knox Road at Carmon Road	0	0	0	0	0
Frieden Church Road Railroad Crossing	0	0	0	0	0
McLeansville Road Railroad Crossing	0	0	0	0	0
Carmon Road Railroad Crossing	6	0	0	3	3

Source: NCDOT Traffic Safety Unit. Crash data from 2007-2012

The proposed Project will have an additional safety benefit of preventing collisions that could cause hazardous materials spills. Freight trains and tractor-trailer trucks often pull cars carrying chemicals and other hazardous materials that can pose a health and safety hazard to the local community if released. A collision with a large motor vehicle could cause derailment of a freight train and spilling of hazardous materials. By eliminating the at-grade crossings, the potential for such incidents is eliminated.

NCDOT expects that grade separating the McLeansville Road intersection and closing the at-grade railroad crossings at Carmon Road and the Bullard and Black driveway will reduce the potential for collisions within the Project study area. Also, this reduced collision potential will become more important as this area continues developing and traffic volumes increase.

2.0 ALTERNATIVES

This chapter discusses alternatives considered for the proposed Project. Detailed study alternatives include the No-Build Alternative and two Build Alternatives (Build Alternative A and Build Alternative B). Alternatives considered but eliminated from further study also are described. NCDOT assessed each alternative with respect to its ability to meet the Project's purpose and need.

2.1 NO-BUILD ALTERNATIVE

The No-Build Alternative will make no improvements to the existing at-grade crossings of Frieden Church Road, McLeansville Road, or Carmon Road, with the exception of regular maintenance of the railroad tracks and roadway. No improvements or maintenance will occur at the Bullard and Black private at-grade railroad crossing, except as required for railroad operations. Railroad maintenance could include safety inspections and maintenance of track ballast, railroad ties, and timber. Regular roadway maintenance could include patching, resurfacing, regrading shoulders, and maintaining ditches.

The No-Build Alternative will not meet the Project's purpose and need. The No-Build Alternative will not reduce the potential for vehicle/train collisions, nor will it improve efficiency for trains or vehicles. As discussed previously, the existing NCRR at-grade intersections and the presence of the railroad siding through the McLeansville Road and Carmon Road intersections in the Project study area are a safety concern due to the potential for vehicle/train collisions, and they also affect vehicular and train operations. These at-grade railroad crossings contribute to vehicular traffic delays as a result of vehicles waiting for crossing trains and trains on the siding. Trains waiting in the siding for extended periods of time must be separated into two sections, with one section on either side of the road crossings, increasing delay for train operations.

The analysis of No-Build Alternative is required under NEPA and serves as a benchmark against which the impacts of other alternatives can be compared.

2.2 BUILD ALTERNATIVES

Both Build Alternatives described below (Build Alternative A and Build Alternative B) will close the Carmon Road at-grade railroad crossing and the Bullard and Black private at-grade railroad crossing and will provide a grade-separated bridge over the railroad tracks at McLeansville Road. These three railroad crossings are located where there is both a mainline track and a siding track.

Closing the Frieden Church Road at-grade railroad crossing west of McLeansville Road also was considered and originally presented to the public as part of the build alternatives at a Local Officials Meeting and a Citizens Informational Workshop held on April 24, 2012 (See Section 5.2.1 for a detailed description). Based on input received, NCDOT decided to not include closing this railroad crossing as part of the proposed Project. Closing this crossing will result in just one outlet for all land uses west of McLeansville Road and north of the railroad tracks; via the McLeansville Road/Frieden Church Road intersection. These land uses include the McLeansville Fire Station, the McLeansville Elementary School, the McLeansville community center, the McLeansville Baptist Church, and approximately 42 residences.

2.2.1 BUILD ALTERNATIVE A

Figure 2-1 shows Build Alternative A on an aerial photograph. **Appendix B** includes the functional design plans. Build Alternative A closes the public Carmon Road at-grade railroad

crossing and the Bullard and Black private at-grade railroad crossing. A grade-separated bridge over the railroad tracks will be provided at McLeansville Road.

This alternative realigns McLeansville Road to construct the grade separation over the railroad tracks approximately 120 feet west of the existing at-grade crossing. The total length of the McLeansville Road realignment is approximately 2,400 feet. The intersection of McLeansville Road and Frieden Church Road will be designed so that a traffic signal could be installed in the future (see discussion in **Section 2.4.2**). The new roadway segment will have two 12-foot travel lanes and an 8-foot shoulder with four feet of the shoulder paved. The paved shoulder is consistent with the *Greensboro Urban Area Bicycle, Pedestrian & Greenway Master Plan* and the 2035 LRTP, which recommends paved shoulders on McLeansville Road to accommodate bicycles. The design speed is 50 miles per hour (mph), with a planned posted speed of 45 mph.

The bridge over the railroad tracks will accommodate the two existing tracks (the mainline track and the siding track) plus provide room for the potential future construction of two additional mainline tracks to the north of the existing tracks. The bridge will be approximately 135 feet long.

Existing Bethel Church Road will be realigned near McLeansville Road to relocate the Bethel Church Road/McLeansville Road intersection farther south. The existing location is too near the new bridge. The new Bethel Church Road/McLeansville Road intersection is approximately 350 south of the existing intersection. The north end of existing Bethel Church Road will be cul-de-saced. The Bethel Church Road realignment is approximately 1,600 feet long. Realigned Bethel Church Road crosses an unnamed stream that runs north-south through the Project area. NCDOT chose the stream crossing location to minimize impacts to the stream and adjacent wetlands.

The realigned segment of Bethel Church Road will be a 2-lane roadway with 12-foot lanes and an 8-foot shoulder with two feet of the shoulder paved. Existing Bethel Church Road also is a 2-lane roadway, but has no paved shoulder. The design speed is 40 miles per hour (mph), with a planned posted speed of 35 mph.

Existing Hines Andrews Road will be extended a short distance, approximately 350 feet, to tie into the new Bethel Church Road. The extension will have two 12-foot travel lanes and an 8-foot unpaved shoulder.

For the two properties that currently use the Bullard and Black private at-grade railroad crossing, a new service road will be constructed to connect the properties to Hines Andrews Road. There are three options for this service road, as shown in **Figure 2-1**. These options are subject to change during final design based on coordination with affected property owners.

Service Road Option 1a begins where state maintenance ends on Hines Andrews Road. It extends north between parcel #0117696 (5527 Hines Andrews Road) and parcel #0117690 (5535 Hines Andrews Road). The service road then passes through the center of the southernmost property it is providing access for (parcel #0117710 – 5600 Frieden Church Road), and ending where the existing driveway crosses into the next property to the north (parcel #011764 – 5616 Frieden Church Road). This service road bisects parcel #0117710, separating the residence from their free-standing garage structure.

Service Road Option 1b begins where state maintenance ends on Hines Andrews Road. It extends north between parcels #0117696 and #0117609 on the same alignment as Service Road Option 1a. At the southern boundary of parcel #0117696, the road turns eastward and travels around the southern and western boundaries of the property to end at the southeast corner of parcel #0117764.

Service Road Option 2 begins where state maintenance ends on Hines Andrews Road. This service road extends east along existing Hines Andrews Road to the driveway at parcel #0117607 (5537 Hines Andrews Road). The service road then bumps up to the north slightly to avoid a wetland. However, this also impacts a small storage building on parcel #0117607. The service road continues east to the edge of the cleared field on parcel #0117607, then turns northward then westward along the edge of the forested area, bisecting the property before turning northward again along the eastern boundary of parcel #0117760 to end at the southeast corner of parcel #0117764.

2.2.2 BUILD ALTERNATIVE B

Figure 2-2 shows Build Alternative B on an aerial photograph. **Appendix B** includes the functional design plans. Similar to Build Alternative A, Build Alternative B closes the public Carmon Road at-grade railroad crossing and the Bullard and Black private at-grade railroad crossing. A grade-separated bridge over the railroad tracks will be provided at McLeansville Road.

This alternative realigns McLeansville Road to construct the grade separation over the railroad tracks approximately 90 feet east of the existing at-grade crossing. The total length of the McLeansville Road realignment is approximately 2,450 feet. The intersection of McLeansville Road and Frieden Church Road will be designed so that a traffic signal could be installed in the future (see discussion in **Section 2.4.2**). The new roadway segment will have two 12-foot travel lanes and an 8-foot shoulder with four feet of the shoulder paved. The paved shoulder is consistent with the *Greensboro Urban Area Bicycle, Pedestrian & Greenway Master Plan* and the 2035 LRTP, which recommends paved shoulders on McLeansville Road to accommodate bicycles. The design speed is 50 miles per hour (mph), with a planned posted speed of 45 mph.

The bridge over the railroad tracks will accommodate the two existing tracks (the mainline track and the siding track) plus provide room for the potential future construction of two additional mainline tracks to the north of the existing tracks. The bridge will be approximately 110 feet long.

Existing Bethel Church Road will be realigned near McLeansville Road to relocate the Bethel Church Road/McLeansville Road intersection farther south. The existing location is too near the new bridge. The new Bethel Church Road/McLeansville Road intersection is approximately 250 south of the existing intersection. The north end of existing Bethel Church Road will be cul-de-saced. The Bethel Church Road realignment is approximately 1,400 feet long. Realigned Bethel Church Road crosses an unnamed stream that runs north-south through the Project area. The stream crossing location was chosen to minimize impacts to the stream and adjacent wetlands.

The realigned segment of Bethel Church Road will be a 2-lane roadway with 12-foot lanes and an 8-foot shoulder with two feet of the shoulder paved. Existing Bethel Church Road also is a 2-lane roadway, but has no paved shoulder. The design speed is 40 miles per hour (mph), with a planned posted speed of 35 mph.

Existing Hines Andrews Road will be extended a short distance, approximately 350 feet, to tie into the new Bethel Church Road. The extension will have two 12-foot travel lanes and an 8-foot unpaved shoulder.

For the two properties that currently use the Bullard and Black private at-grade railroad crossing, a new service road will be constructed to connect the properties to Hines Andrews Road. There are three options for this service road, as shown in **Figure 2-2**. These options are the same as those for Build Alternative A.

2.2.3 BUILD ALTERNATIVE COST ESTIMATES

The estimated costs for construction, right of way, and utilities for each build alternative and service road option and build alternative/service road combination are presented in **Table 2-1**. Cost estimates are based on the preliminary engineering designs included in **Appendix B** and are in current year 2013 dollars.

TABLE 2-1. Build Alternative Cost Estimates

Alternative	Construction Cost	Right-of-Way Cost	Utility Cost	TOTAL COST
Build Alternative A	\$5,007,500	\$1,369,900	\$164,000	\$6,541,400
Build Alternative B	\$5,558,000	\$1,217,500	\$164,000	\$6,939,500
Service Road 1a	\$267,900	\$186,400	--	\$454,300
Service Road 1b	\$434,400	\$91,400	--	\$525,800
Service Road 2	\$718,200	\$148,300	--	\$866,500
Build Alt A + Service Rd 1a	\$5,275,400	\$1,556,300	\$164,000	\$6,995,700
Build Alt A + Service Rd 1b	\$5,441,900	\$1,461,300	\$164,000	\$7,067,200
Build Alt A + Service Rd 2	\$5,725,700	\$1,518,200	\$164,000	\$7,407,900
Build Alt B + Service Rd 1a	\$5,825,900	\$1,403,900	\$164,000	\$7,393,800
Build Alt B + Service Rd 1b	\$5,992,400	\$1,308,900	\$164,000	\$7,465,300
Build Alt B + Service Rd 2	\$6,276,200	\$1,365,800	\$164,000	\$7,806,000

2.3 ALTERNATIVES ELIMINATED FROM CONSIDERATION

A range of alternatives was considered for this Project, with some eliminated from further consideration when NCDOT determined they will not meet the purpose and need for the Project and/or were not reasonable due to cost, impacts, or community disruption. These alternatives are described below, along with explanations of why they were eliminated from further consideration.

2.3.1 CLOSE ALL AT-GRADE CROSSINGS IN PROJECT STUDY AREA

Under this alternative, the public at-grade railroad crossings at Frieden Church Road, McLeansville Road, and Carmon Road will be closed, as will the Bullard and Black private crossing. Although this alternative will improve safety, efficiency and mobility for train operations, it will not meet the other primary element of the Project's purpose and need, which is to also improve safety, efficiency and mobility for vehicular operations.

McLeansville Road is an important minor thoroughfare providing north-south travel in the Project study area and it connects US 29 to the north with US 70 to the south. It also provides access to the McLeansville Elementary School, the McLeansville Fire Station, and the community services node centered on the McLeansville Road intersection with Frieden Church Road. The McLeansville Fire Station will not be able to reach the portion of its service area south of the railroad tracks. The nearest crossing to the east is Colony Road, approximately 1.6 miles away. There is no nearby crossing to the west that provides direct north-south travel. Travel will be longer in distance and time for motorists, emergency responders, and school buses in the Project study area.

2.3.2 BUILD A GRADE-SEPARATED CROSSING FARTHER WEST OR EAST OF EXISTING MCLEANSVILLE ROAD

Alternatives that realign a grade separation for McLeansville Road farther to the east or west compared to Build Alternatives A and B were considered but eliminated due to greater impacts.

Alternative alignments for the grade separation farther east of existing McLeansville Road than Alternative B will impact the shopping center in the northeast quadrant of the McLeansville Road/Frieden Church Road intersection and the wetland north of the shopping center. This alternative will have more impacts to streams and more relocations of homes along Bethel Church Road. Its longer length will result in greater construction costs, and possibly higher right of way costs.

Alternative alignments for the grade separation farther west of existing McLeansville Road than Alternative A will impact the McLeansville Fire Station on Frieden Church Road and the pond just north of the intersection of McLeansville Road and Birch Creek Road. It also will cross the railroad tracks at a greater skew angle, thereby increasing the length and construction cost of the grade separation bridge over the railroad tracks.

2.4 TRAFFIC OPERATIONS ANALYSIS

2.4.1 TRAFFIC VOLUMES

NCDOT provided traffic forecasts for Year 2012 and Year 2035 for the build condition roadway network (NCDOT, July 2012). **Appendix A** includes the forecast maps.

Traffic volumes for study area roadway segments are presented in **Table 2-2**. The highest traffic volumes in 2035 under the Build Alternatives are on McLeansville Road, as they are under the No-Build Alternative. McLeansville Road and Bethel Church Road will experience higher traffic volumes under the 2035 Build Condition compared to the 2035 No-Build Alternative as traffic patterns change due to the closure of the Carmon Road at-grade railroad crossing. Traffic on Frieden Church Road east of McLeansville Road will decrease under the Build Alternatives because some vehicles were using this segment to get to the Carmon Road railroad crossing, which will be closed under the Build Alternatives.

TABLE 2-2. Future Build Condition (Year 2035) Traffic Volumes

Roadway/Segment	Existing 2012 AADT Volumes	No-Build 2035 AADT Volumes	Build 2035 AADT Volumes
McLeansville Road			
West of Birch Creek Rd	3,400	6,900	6,900
Birch Creek Rd to Bethel Church Rd	4,300	6,800	6,800
Bethel Church Rd to Frieden Church Rd (across RR)	5,500	7,900	9,000
North of Frieden Church Rd	4,700	7,100	7,100
Frieden Church Road			
West of McLeansville Rd (near elementary school)	700	1,000	1,000
East of McLeansville Rd	2,100	4,200	3,100
West of Carmon Rd	1,800	3,400	2,300
Bethel Church Road			
McLeansville Rd to Knox Rd	2,000	3,300	4,400
East of Knox Rd	2,700	5,200	5,200
Knox Road			
South of Bethel Church Rd	4,100	7,800	7,800
Between the two Bethel Church Rd intersections	3,300	6,300	7,400
Bethel Church Rd to Carmon Rd	800	1,300	2,400
Carmon Road			
Knox Rd to Frieden Church Rd (across RR)	700	1,300	(closed)

AADT – Annual Average Daily Traffic volumes

Source: NCDOT, July 2012.

2.4.2 LEVEL OF SERVICE

A future year 2035 traffic operations analysis was performed for the Build Alternatives to estimate how Project area intersections will operate with the recommended improvements (Atkins, 2012).

For the Build Alternatives, intersection analysis results showing the level of service (LOS) and corresponding delay based on year 2035 traffic are summarized in **Table 2-3**.

The following intersections are projected to operate at an acceptable LOS during both AM and PM peak hours under the Build Alternatives as stop-sign controlled intersections without any improvements: McLeansville Road at Frieden Church Road (south of railroad tracks), Birch Creek Road, and Bethel Church Road, and Knox Road at Carmon Road.

McLeansville Road at Frieden Church Road (north of railroad tracks) is projected to operate with an unacceptable LOS in 2035 for both the AM and PM peak hours without any improvements. A signal and exclusive left-turn bays on all approaches will provide acceptable operations. A stop-controlled intersection with exclusive left-turn bays on all approaches is proposed as part of the current Project, which will provide acceptable traffic operations until year 2035. The intersection will be designed so that a traffic signal could be installed when needed.

TABLE 2-3. Existing and Future Build Levels of Service and Average Delays Per Vehicle

Intersection Roadway	Intersection Roadway	Year 2035 – No Build Scenario		Year 2035 – Build Scenario	
		AM LOS and Delay (sec)	PM LOS and Delay (sec)	AM LOS and Delay (sec)	PM LOS and Delay (sec)
McLeansville Road	Frieden Church Road (south of railroad tracks)	C (17)	B (11)	C (16)	B (11)
	Birch Creek Road	C (17)	C (16)	C (16)	C (16)
	Bethel Church Road	C (24)	C (23)	D (34)	D (30)
	Frieden Church Road (north of railroad tracks)	F (224) (stop sign)	E (41) (stop sign)	B (13) (signalized)	A (10) (signalized)
Knox Road	Bethel Church Road (south intersection)	D (31)	C (24)	F (95)	E (43)
	Bethel Church Road (north intersection)	D (26)	D (33)	D (28)	F (89)
	Carmon Road	A (9)	A (9)	A (9)	A (9)
Carmon Road	Frieden Church Road	B (11)	B (11)	closed	Closed

Source: Traffic Operations Technical Memorandum, Atkins, 2012.

Note: For stop-controlled intersections, LOS and corresponding delay represents the characteristics of the worst performing stop-controlled movement.

LOS – Level of Service. Level of service is measured from A to F, with A being the best operating conditions and F the worst.

Delay – rounded to the nearest second

Knox Road at Bethel Church Road (south) and Knox Road at Bethel Church Road (north) are projected to operate in 2035 with an unacceptable LOS during at least one of the peak hours. However, no improvements are recommended to these intersections as part of this Project. These intersections will not experience unacceptable levels of service until very close to the planning horizon of 2035 for the Project (2034 for the south intersection and 2031 for the north intersection). A recommendation to improve these intersections to create a single four-leg intersection is included in the Greensboro Urban Area Comprehensive Transportation Plan (CTP) (June 11, 2010) as a separate future project.

2.5 PREFERRED ALTERNATIVE

Based on the information available to date, including this EA, Alternative A with Service Road 1b is NCDOT’s Preferred Alternative. It should be noted this is not a final decision. After the EA comment period ends, FRA and NCDOT will either decide to prepare an EIS or will identify a Selected Alternative and prepare a Finding of No Significant Impact (FONSI). FRA and NCDOT will consider agency and public comments on this EA and at the public hearing and input from local transportation planning agencies and state and Federal environmental resource and regulatory agencies.

A comparison of the impacts of Build Alternative A and Build Alternative B with each of the service road options is presented in **Table 2-4**. The resources in the table are organized in the order they are presented in this EA, not in order of importance. Floodplains and cultural resources are not included in the table because these resources are not present in the Project study area. Construction impacts and indirect and cumulative effects are the same for any alternative and would not be significant, and therefore they are also not listed in the table.

TABLE 2-4. Comparison of Build Alternative Impacts

Resource	Build Alternative A with			Build Alternative B with		
	Service Road 1a	Service Road 1b	Service Road 2	Service Road 1a	Service Road 1b	Service Road 2
Total Cost (2013 dollars)	\$6,995,700	\$7,067,200	\$7,407,900	\$7,393,800	\$7,465,300	\$7,806,000
HUMAN ENVIRONMENT						
Transportation & Land Use Plans	Consistent	Consistent	Consistent	Consistent	Consistent	Consistent
Relocations - Residential	3	3	3	4	4	4
Relocations – Business	1	1	1	1	1	1
Communities and Neighborhoods	No adverse impact					
Environmental Justice	No adverse impact					
Community Services and Public Health and Safety	Improved safety at crossings					
	Minor impacts to fire response and school bus routes	Minor impacts to fire response and school bus routes	Minor impacts to fire response and school bus routes	Minor impacts to fire response and school bus routes	Minor impacts to fire response and school bus routes	Minor impacts to fire response and school bus routes
Economic Effects and Energy Use	Minor positive effect					
PHYSICAL ENVIRONMENT						
Noise and Vibration	No adverse impact					
Air Quality	No adverse impact					
Prime and Important Farmland Soils (acres in right of way)	10.8	11.6	12.7	10.0	10.8	11.9
Utilities	No adverse impact					
Visual and Aesthetic Resources	No adverse impact					
Hazardous Materials	2 sites with low potential for impact					
NATURAL ENVIRONMENT						
Mesic Mixed Hardwood Forest (acres in right of way)	5.3	6.6	7.4	5.0	6.3	7.1
Water Quality	No adverse impact					
Wetlands (acres) ¹	0.05	0.05	0.08	0.05	0.05	0.08
Ponds (acres) ¹	0.02	0.02	0.02	0.01	0.01	0.01
Streams (linear feet) ¹	356	356	356	432	432	432
Riparian Buffers (acres) ¹	1.08	1.08	1.08	1.25	1.25	1.25
Protected Species	No Effect					

1. Impacts based on preliminary construction limits plus 25 feet.

Build Alternative A with Service Road Option 1b is the Preferred Alternative, for the reasons described below. For many resources, there are no adverse effects or the same effects for all the alternatives (**Table 2-4**). These were not differentiators in identifying the Preferred Alternative.

NCDOT prefers Build Alternative A over Build Alternative B because alternatives that use Build Alternative A are less expensive, have one less residential relocation, fewer stream impacts, and less area of riparian buffer impacts.

Service Road 1b is preferred over the other two service road options. Although it is in the middle in terms of cost, Service Road 1b avoids bisecting properties, while the other two service roads would bisect a property. In addition, Service Road 1a separates the residence on parcel #0117710 from the free-standing garage on the property. Service Road 2 impacts a small storage building on parcel #011760 and may impact a wetland area at the end of Hines Andrews Road. Service Road 2 is also the longest and most expensive. The service road design may change during final design, based on coordination with the affected property owners.

3.0 AFFECTED ENVIRONMENT

The existing conditions within the Project study area related to the human, physical, cultural, and natural environments are described in this chapter of the EA. The potential impacts of the Project to these resources are discussed in **Chapter 4 - Environmental Consequences**.

3.1 HUMAN ENVIRONMENT

This section provides information on the following existing aspects of the human environment: land use, demographics (population characteristics, housing, and economic characteristics), community facilities and services, parklands and Section 4(f)/6(f) resources. The sections below are based on the *Community Impact Assessment* prepared for the project and incorporated by reference (Atkins, November 2012).

3.1.1 LAND USE

3.1.1.1 Existing Land Use and Zoning

The proposed Project is located in the unincorporated community of McLeansville in eastern Guilford County. The City of Greensboro is located to the west, with the downtown approximately 10 miles to the west. The Project study area falls within the planning jurisdiction of Guilford County. Land use surrounding the Project study area in all directions consists of a mix of low density residential, office/commercial/ industrial, retail/commercial development, and farmed land.

The Development Ordinance of Guilford County⁵ was last adopted on March 12, 2012 with the purpose to “promote the health, safety, morals, and general welfare of the residents of Guilford County through the [zoning] regulations of the Ordinance”. The Development Ordinance is the implementing mechanism for the *Guilford County Comprehensive Plan* (2006). As such, zoning for the Project study area is regulated by the Development Ordinance.

Zoning designations within the Project study area are consistent with the existing land uses. Most of the Project study area is zoned AG-Agricultural, followed by RS-30-Residential (1.3 units/acre) and RS-40-Residential (1 unit/acre). The non-residential areas surrounding the McLeansville Road/Frieden Church Road intersection are zoned SC-Shopping Center, HB-Highway Business (the fire station and other individual commercial lots), and PI-Public and Institutional (the church and elementary school). The insurance business on the northeast corner of the McLeansville Road/Bethel Church Road intersection is zoned LO-Limited Office.

3.1.1.2 Residential Neighborhoods

Residential neighborhoods are located to the north and south of the Project study area. To the north near the Frieden Church Road railroad crossing, there is a neighborhood of approximately 38 homes along Ranhurst Road, Easthurst Road, and Cornerhouse Road. These homes were built in the 1960s and 1970s. There is also a neighborhood of approximately 45 homes built in the 1970s northeast of the McLeansville Road/Frieden Church Road intersection, on Danbrook Road, Allenwood Road, and Cedar Creek Drive.

⁵ Municode Web site: <http://library.municode.com/index.aspx?clientId=14294>

Since 2000, two residential subdivisions have been constructed south of the Project study area, which has substantially increased the population of the area. These new developments are described below:

- Birch Creek Ridge is located immediately south-southwest of the Project study area and is accessed from McLeansville Road and Birch Creek Road. It is comprised of approximately 215 single family homes.
- Grey Stone is located directly south of the Birch Creek Ridge neighborhood and includes approximately 75 existing single family homes and 60 townhomes. There is a large amount of land available in the development for future home construction.



Grey Stone Subdivision

These developments have been annexed into the City of Greensboro municipal limits.

3.1.1.3 Future Land Use Plans

Land use in the Project area is guided by the *Northeast Area Plan* (Guilford County Planning Department, Approved October 16, 2008). Future land use is planned to be consistent with existing land uses, and consist of a combination of mixed use property, agriculture, and single family residential land uses.

The *Northeast Area Plan* identifies the area centered on the intersection of McLeansville Road and Frieden Church Road as the McLeansville Service Core. According to the area plan, this service core area is meant to define community identity by encouraging a mix of office, commercial, institutional, and light industrial uses. The area plan also recommends establishing walkways to encourage pedestrian movement within the core center and into the surrounding residential areas.

The *Northeast Area Plan* recognizes that in order for the McLeansville Service Core to accomplish this goal, a public sewer pumping station will be needed to pump sewage to the Osborne Treatment Plant. This sewer service is necessary for existing and future development. The *Northeast Area Plan* also recommends that any future commercial uses be compatible with the existing mix of commercial and residential uses in the area of the proposed Service Core.

3.1.2 DEMOGRAPHICS

US 2010 Census data was used to characterize the existing human environment conditions in the Project study area. The Project study area includes portions of two Census Block Groups. Together, these two block groups form the Demographic Study Area. As shown on **Figure 3-1**, the Demographic Study Area is much larger than the Project study area, and consists of Census Tract (CT) Block Groups (BG); CT 153 BG 1 and CT 153 BG 2, both of which are located in Guilford County.

3.1.2.1 Population Characteristics

Population Growth. The population of Guilford County grew by 16.0 percent between 2000 and 2010 (from 421,048 people to 488,406 people), which is slightly lower than the statewide increase of 18.5 percent.

From 2010 to 2030, Guilford County is projected to grow about 30.9 percent; from 488,406 people to 639,256 people⁶.

According to the 2000 US Census, the population of the Demographic Study Area was 3,354 in 2000. The population for the same area in 2010 was 4,764. This represents a 42 percent increase in population since 2000, which is much higher than the county and state growth rates. This is primarily due to the construction of the Birch Creek Ridge and Grey Stone subdivisions since 2000.

Racial Composition. As shown in **Table 3-1**, the diversity of the Demographic Study Area in 2010 was comparable to that of the state, with the white population being the largest racial group. The Demographic Study Area is less diverse than Guilford County, with lower percentages of African Americans and Hispanics when compared to the county.

TABLE 3-1. Racial Characteristics – 2010 Census

Race/Ethnicity	North Carolina (%)	Guilford County (%)	CT 153 BG1 (%)	CT 153 BG2 (%)	Demographic Study Area (%)
TOTAL POPULATION	9,535,483	488,406	2,804	1,960	4,764
White	6,531,806 (69)	278,525 (57)	2,006 (72)	1,357 (69)	3,363 (71)
Black or African American	2,050,129 (22)	158,899 (33)	688 (25)	510 (26)	1,198 (25)
American Indian and Alaska Native	123,961 (1)	2,594 (<1)	18 (<1)	10 (<1)	28 (< 1)
Asian	209,781 (2)	19,176 (4)	41 (2)	26 (1)	67 (1)
Native Hawaiian / Pacific	9,535 (<1)	235 (<1)	0 (0)	0 (0)	0 (0)
Hispanic or Latino**	800,981 (8)	34,826 (7)	57 (2)	76 (4)	133 (3)

Source: US Census Bureau (2010).

** Hispanic or Latino is an ethnic category and can include persons of any race; therefore, the Hispanic or Latino numbers and percentages are presented exclusive of race.

Age Distribution According to the 2010 US Census, there are no concentrations of children (under age 18) or elderly (over age 65) in the Demographic Study Area. Generally, compared to Guilford County and the state, the Census Tract Block Groups within the Project study area have a somewhat lower percentage of children and young adults (age 18-24) and slightly higher percentage of people age 25-64.

3.1.2.2 Housing

Based on the 2010 US Census, home ownership is prevalent in the Demographic Study Area. Homeownership for the Demographic Study Area was much higher (82 percent for CT 153 BG 1 and 77 percent for CT 153 BG 2) than Guilford County (55 percent) and the State (58 percent). The higher percentage of homeowners in the Demographic Study Area is a result of the prevalence of single-family homes in the area, including several subdivisions constructed between 2000 and 2010 as identified in **Section 3.1.1.2**.

⁶ Office of State Budget and Management Web site: www.osbm.state.nc.us

3.1.2.3 Economic Characteristics

Unemployment and Income. According to the US Bureau of Labor Statistics, as of October 2012, the unemployment rate for Guilford County (9.1 percent) was slightly higher than that of the state as a whole (8.8 percent).

Data on income is presented in **Table 3-2** from the 2006-2010 American Community Survey 5-year estimates. Median family income and median household incomes were compared to Guilford County and the State. The median family and household incomes for CT 153 BG2 and CT 153 BG1 are higher than that of the county and the state. As shown in **Table 3-2**, the percentage of persons below poverty in the Demographic Study Area (for 2006-2010) was much lower than both the state and county.

TABLE 3-2. Income Characteristics

Area	Median Family Income	Median Household Income	Persons Below Poverty (%)
North Carolina	\$56,153	\$45,570	15.5
Guilford County	\$59,367	\$45,676	15.9
Demographic Study Area	--	--	3.1
CT 153 BG1	\$74,327	\$61,474	2.5
CT 153 BG2	\$63,667	\$56,618	4.1

Source: US Census Bureau, American Community Survey 5-year Estimates (2006-2010), Tables B19113, B19013, C17002.

Top Industries in Guilford County. According to the NC Department of Commerce⁷, in 2011 the *Health Care and Social Assistance* sector (12.6 percent of employees) was the largest employment sector in Guilford County. *Manufacturing* (12.0 percent) and *Retail Trade* (10.6 percent) were the next largest employment sectors with *Administrative and Waste Services* (8.9 percent) and *Accommodation and Food Services* (8.6 percent) following. There are no large-scale employers in the Project study area or immediate vicinity.

Businesses in the Project Area. The McLeansville Service Core area includes a shopping center in the northeast quadrant of the McLeansville Road/Frieden Church Road intersection. Businesses located in the center include: an upholstery service, a billiard parlor, a real estate office, a primary care facility, dentist, barber shop, and a currently vacant space formerly occupied by a grocery store. In the northwest quadrant of the intersection is Crossroads Treasures at 5335 Frieden Church Road, an antique/variety store, which was formerly a furniture store, and prior to that an auto service center.

One business, a Nationwide Insurance office, is located at the intersection of McLeansville Road and Bethel Church Road south of the railroad tracks. The owner of this agency indicated they serve many people in the community and provide other services such as notary service and assistance to elderly.

3.1.3 COMMUNITY FACILITIES AND SERVICES

Community facilities and services within the Project study area are discussed below and shown in **Figure 1-2**. There are no libraries or hospitals in the Project study area.

3.1.3.1 Schools, Churches, and Community Centers

Schools. McLeansville Elementary School is located in the Project study area at 5315 Frieden Church Road. The school has a current enrollment of approximately 418 students in grades Pre-K

⁷ NC Dept. of Commerce Web site: <http://accessnc.commerce.state.nc.us/docs/countyProfile/NC/37081.pdf>

through fifth.⁸ A bond from 2008 provided funding for expansion at the school that included the addition of a small classroom and expanded the media center. This expansion was complete as of August 2012.

The Project study area is also served by Eastern Middle School located at 435 Peeden Drive in Gibsonville and Eastern High School located at 415 Peeden Drive in Gibsonville.

According to Guilford County School System, Bethel Church Road and the McLeansville Road railroad crossing are used by numerous Guilford County School System school buses. At least 36 buses make one or two trips per day over the railroad crossing for a total of approximately 60 school bus trips daily using this crossing.

Churches. McLeansville Baptist Church and Cemetery are located at 5205 Frieden Church Road on the north side of the road. This relatively large church is on a 6-acre parcel and includes 166 parking spaces.

Community Center. The McLeansville Community Center is located at 5323 Frieden Church Road, across from the McLeansville Fire Station. This building, constructed in 1960, is owned by McLeansville Community Build and is rented out for meetings and events.

3.1.3.2 Emergency Services

No police facilities are located in the Project study area. The Project study area is located within District 2 of the Guilford County Sheriff's office. The district office is located at 6307-B Burlington Road, Stoney Creek, NC.

McLeansville Fire Rescue provides fire and rescue services to the citizens of McLeansville and surrounding Guilford County. They operate three stations, including one in the Project study area. Station #47 is located at 5326 Frieden Church Road (**Figure 1-2**). Guilford County Emergency Medical Service (EMS) Medic 4 also is based at this fire station. The other two stations operated by McLeansville Fire Rescue are Station #37 at 625 Knox Road in Gibsonville, about three miles southwest of the project; and Station #27 at 3719 High Rock Road in Gibsonville, about four miles to the northeast of the project.

Additional medical services for minor medical concerns are provided by Fuller Primary Care located in the shopping center at 5405 Frieden Church Road.

3.1.3.3 Post Office

The McLeansville Post Office is located at 5711 McLeansville Road in the southwest corner of the McLeansville Road intersection with Harvest Road. This is in the northern end of the Project study area.

3.1.4 PARKLANDS AND SECTION 4(F) AND SECTION 6(F) RESOURCES

No public parks or public recreational facilities are located within the Project study area. Review of the *Guilford County Comprehensive Plan (October 2006)* and the *Northeast Area Plan Update (October 2008)* revealed that the Project study area is not targeted for a future park site.

There are no Section 4(f) or Section 6(f) resources within or in the immediate vicinity of the Project study area. Definitions of these resources are provided below.

⁸ [Guilford County Schools Web site: www.gcsnc.com/education/components/scrapbook/default.php?sectiondetailid=97755](http://www.gcsnc.com/education/components/scrapbook/default.php?sectiondetailid=97755)

Background on Section 4(f) and Section 6(f) Resources. Section 4(f) and Section 6(f) resources are afforded special protections from Federal actions. The names “Section 4(f) resources” and “Section 6(f) resources” are derived from the laws which establish these protections.

The Department of Transportation Act of 1966 (49 USC Section 303) regulates the use and taking of Section 4(f) resources for Federally-funded transportation projects. Section 4(f) resources include publicly-owned parks, recreation areas, and wildlife and waterfowl refuges as well as significant historic sites under public or private ownership.

The Land and Water Conservation Fund Act of 1965 established funding to provide matching cooperative agreement assistance to states and local governments for the planning, acquisition, and development of outdoor public recreation sites and facilities. Section 6(f) of the Act prohibits the conversion of property acquired or developed with these cooperative agreements to a non-recreational purpose without the approval of the Department of the Interior’s National Park Service (NPS). Section 6(f) also requires that any applicable land converted to non-recreational uses be replaced with land of equal or greater value, location, and usefulness⁹.

3.2 PHYSICAL ENVIRONMENT

This section discusses existing conditions related to noise and vibration, air quality, farmland, utilities, visual resources, hazardous materials, mineral and energy resources, and floodplains.

3.2.1 NOISE AND VIBRATION

This section summarizes the *Noise and Vibration Impact Assessment for the Grade Separation of NC Railroad at McLeansville Road* prepared for the Project (Atkins, January 2013). This report is incorporated by reference.

Noise is defined as unwanted sound, and can come from man-made sources or natural sources. Noise can interrupt human activities and can result in annoyance, especially in residential areas. Changes in noise levels occur in the context of the existing noise environment. This means that what may be noisy in a relatively quiet environment, may go unnoticed in a louder environment.

For vibration, the vibration of the transit structure caused by a train excites the adjacent ground, creating vibration waves that propagate through the various soil and rock strata to the foundations of nearby buildings. The vibration propagates from the foundation throughout the remainder of the building structure. The rumble noise that usually accompanies the building vibration is perceptible only inside buildings. Ground-borne vibration is almost never annoying to people who are outdoors (*Transit Noise and Vibration Impact Assessment Manual*, FTA, 2006). Vibration velocity levels are commonly described in decibels by the notation “VdB”, to reduce confusion with the sound decibel notation “dB.”

3.2.1.1 Regulatory Overview

Noise Impact Criteria. The Federal Railroad Administration (FRA) relies upon the Federal Transit Administration (FTA) *Transit Noise and Vibration Impact Assessment Manual* (2006) for assessing improvements to conventional passenger rail lines and stationary rail facilities and horn noise assessment. Determination of noise impacts for this Project is based on the guidelines

⁹ NPS Web site: www.nps.gov/lwcf/

described in the FTA guidance manual *Transit Noise and Vibration Impact Assessment* (FTA Report FTA-VA-90-1003-06, May 2006).

The FTA noise impact criteria shown in **Exhibit 1** are for projects that involve changes to a transit or rail system (rather than a new system where one previously did not exist). Examples of changes include a new type of vehicle, modifications of track alignments within existing corridors, or changes in facilities that dominate existing noise levels (*Transit Noise and Vibration Impact Assessment*, FTA, 2006). It is important to note that the criteria specify a comparison of future project noise with existing noise and not with projections of future "no-build" noise exposure (i.e. without the project). The measure of impact relates to noise exposure increase, and not the absolute value of the noise.

There are two levels of impact included in the FTA criteria.

Descriptions of these two levels of impact are provided below:

Moderate Impact:

Moderate impacts allow a noise exposure increase of up to 10 dBA if the existing noise exposure is 42 dBA or less, but only a 1 dBA increase when the existing exposure is 70 dBA.

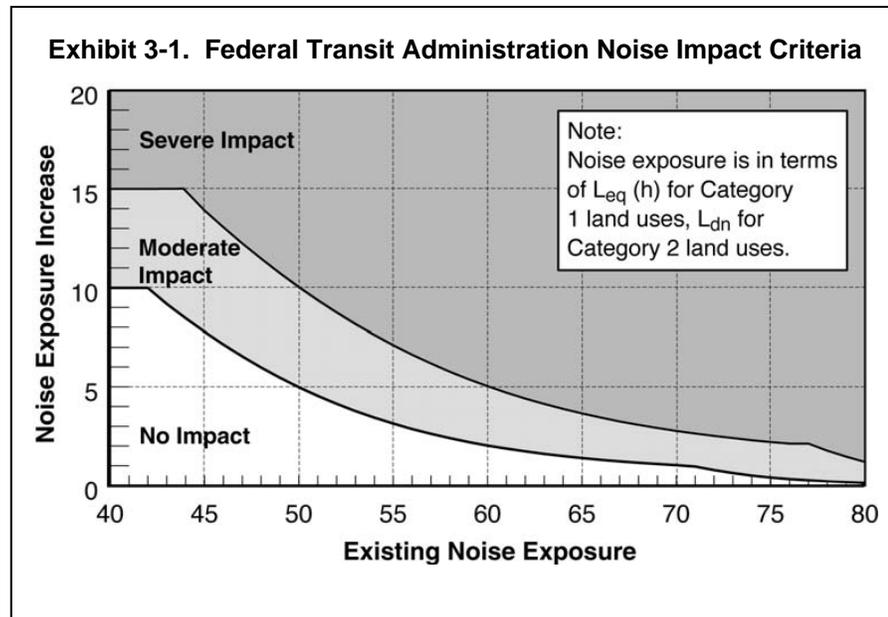
Severe Impact:

Severe noise impacts represent the most compelling need for mitigation. Similar to Moderate impacts, Severe impacts vary according to the existing noise level as well as the projected noise level, but is determined by a higher, more significant percentage of people highly annoyed by project noise.

The noise impact criteria and descriptors depend on land use, designated Category 1, 2 or 3. Category 1 includes uses where quiet is an essential element in their intended purpose, such as indoor concert halls or outdoor concert pavilions or National Historic Landmarks where outdoor interpretation routinely takes place. There are no Category 1 uses in the Project study area.

Category 2 includes residences and buildings where people sleep. For residential land use, the noise criteria are to be applied outside the building locations at noise-sensitive areas with frequent human use including outdoor patios, decks, pools, and play areas. If none, the criteria should be applied near building doors and windows. The primary land uses in the Project study area are Category 2 (residences). The criteria are assessed as a 24-hour average noise level in A-weighted decibels (dBA Ldn). The Ldn noise descriptor is a 24-hour average with noise events between 10 pm and 7 am increased by 10 decibels to account for greater nighttime sensitivity to noise.

Category 3 includes institutional land uses with primarily daytime and evening use, including churches, schools, and community centers, which are all present in the Project area. The criteria are assessed as hourly average noise levels in A-weighted decibels (dBA Leq).



Vibration Impact Criteria. Because of the relatively rare occurrence of annoyance due to ground-borne vibration and noise, there has been only limited sponsored research of human response to building vibration and structure-borne noise. No specific impact criteria exist for vibration from freight railroads. The impact thresholds for passenger rail systems are used due to lack of other standards (*Transit Noise and Vibration Impact Assessment*, FTA, 2006).

The criteria for environmental impact from ground-borne vibration and noise are based on the maximum root-mean-square (rms) vibration levels for repeated events of the same source. The FTA ground-borne vibration impact criteria account for variations in project types as well as the frequency of events. When there will be many fewer events each day, as is typical for commuter rail projects, it should take higher vibration levels to evoke the same community response. This is accounted for in the criteria by distinguishing between projects with frequent, occasional, and infrequent events. The ground-borne vibration impact criterion for infrequent events (fewer than 30 vibration events of the same type per day) is 80 VdB for Category 2 land uses and 83 VdB for Category 3 uses (vibration velocity level re. 1 micro-inch/second) (*Transit Noise and Vibration Impact Assessment*, FTA, 2006).

3.2.1.2 Noise and Vibration Analysis Methodology

Noise Analysis Methodology. The FRA's CREATE[®] spreadsheet was used to estimate noise from existing and future freight rail traffic, passenger rail traffic, and vehicular traffic. Category 2 and Category 3 receptors included in the noise analysis are shown in **Figure 3-2**. The Category 2 receptors include 22 residences near the proposed improvements. Category 3 receptors include the McLeansville Baptist Church, McLeansville Elementary School, and McLeansville Community Center.

The CREATE spreadsheet is a supplemental freight rail analysis spreadsheet tool developed for the Chicago Rail Efficiency And Transportation Efficiency (CREATE) Program using the FTA procedures.¹⁰ Developed by Harris, Miller, Miller Hanson (HMMH), the CREATE[®] spreadsheet model allows for input of up to eight different noise sources and noise-sensitive receptor data to calculate hourly average (Leq) and 24-hour day-night average (Ldn) noise levels. All assumptions input to the CREATE model are described in the project's *Noise and Vibration Impact Assessment* (Atkins, December 2012).

Vibration Analysis Methodology. The vibration screening procedure from the *Transit Noise and Vibration Impact Assessment* manual (FTA, 2006) was applied as a first step to determine if there was any potential for vibration impacts. The screening procedure identifies distances from the railroad tracks where potential vibration impacts could occur for various types of projects. For commuter rail projects, the screening distances are 200 feet for Category 2 uses and 120 feet for Category 3 uses (Table 9-2 in *Transit Noise and Vibration Impact Assessment*). If there are any vibration-sensitive land uses within the screening distances, there is the potential for vibration impact, and a General Vibration Assessment should be done as part of the environmental analysis.

Based on the screening distances noted above, within the area of proposed improvements for the Build Alternatives, there are four Category 2 land uses (residences) within 200 feet of the railroad tracks. Therefore, a General Vibration Assessment was conducted in accordance with the procedure described in the FTA's *Transit Noise and Vibration Impact Assessment* manual.

The General Vibration Assessment uses generalized data to develop a curve of vibration level as a function of distance from the track for different rail/transit vehicles. The vibration levels at specific

¹⁰ FRA Web site: www.fra.dot.gov/Pages/167.shtml

buildings are estimated by reading values from the curve and applying adjustments to account for factors such as track support system, vehicle speed, type of building, and track and wheel condition. The generalized ground surface vibration curves from the FTA's *Transit Noise and Vibration Impact Assessment* manual are included in the *Noise and Vibration Impact Assessment for the Grade Separation of NC Railroad at McLeansville Road* prepared for the Project. The topmost curve for "locomotive powered passenger or freight" was applied for the proposed Project.

3.2.1.3 Existing Noise Environment

Existing transportation-related noise sources in the Project study area include train traffic on the existing railroad tracks and horn noise from trains as they pass through the at-grade crossings at Carmon Road, the Bullard and Black private crossing, McLeansville Road, and Frieden Church Road. It is estimated that existing train traffic includes 6 passenger trains per day traveling at 55 mph and 7 freight trains per day traveling at 50 mph. The passenger trains include two locomotives and five rail cars. The freight trains include two locomotives, with trains about 5,000 feet long.

Vehicular traffic (automobiles and trucks) on the main roadways in the area also generate noise. This includes traffic on Frieden Church Road, McLeansville Road, and Bethel Church Road. Existing traffic information was provided by NCDOT (NCDOT, July 2012).

Estimated existing noise levels for each modeled receptor are shown in **Table 4-2**, along with the predicted future noise levels and impact assessment discussed in **Section 4.2.1**. Generally, the residences closest to the existing railroad track experience the highest existing noise levels, approximately 69-70 dBA Ldn. Residences along Frieden Church Road farther from the railroad tracks experience approximately 61-62 dBA Ldn. The school and community center are at approximately 53-54 dBA Leq. Residences along McLeansville Road experience existing noise levels of approximately 62-65 dBA Ldn, and residences along Bethel Church Road experience approximately 58-61 dBA Ldn.

In addition, train horns sound as trains pass through the area, as noted above. Train horns produce an average of about 104 dB at 100 feet while they pass by. Currently in the Project study area, train horn blowing extends from approximately ¼ mile east of the Carmon Road railroad crossing to approximately ¼ mile west of the Frieden Church Road crossing. Approximately 13 train horn events occur daily (6 passenger trains and 7 freight trains).

3.2.2 AIR QUALITY

3.2.2.1 National Ambient Air Quality Standards

The Federal Clean Air Act of 1970 (CAA), as amended (42 USC 750(c)), was enacted for the purposes of protecting and enhancing the quality of the nation's air resources to benefit public health, welfare, and productivity. The USEPA has established primary and secondary National Ambient Air Quality Standards (NAAQS) for six criteria air pollutants: carbon monoxide (CO), nitrogen dioxide (NO₂), sulfur dioxide (SO₂), ozone (O₃), particulate matter, and lead.

Table 3-3 lists National Ambient Air Quality Standards (NAAQS). The primary standards are set at a limit intended to "protect the public health with an adequate margin of safety," and the secondary standards are set at a limit intended to "protect the public welfare from known or anticipated adverse effects (effects to aesthetics, crops, architecture, etc.)" (Federal Clean Air Act 1990: Section 109).

The Project is located in Guilford County, which currently is in attainment of all the NAAQS. However, on April 30, 2004, USEPA designated and classified areas for the 1997 8-hour ozone NAAQS, and published the final Phase 1 Rule for implementation of the 1997 8-hour ozone NAAQS (Phase 1 Rule). Counties in and around the Triad Area (also known as the Greensboro-Winston Salem-High Point Area, which includes Davidson, Forsyth, Guildford, and a portion of Davie counties) were designated as nonattainment with a deferred effective date as part of the Early Action Compact (EAC) program.

On February 6, 2008, USEPA proposed that thirteen nonattainment areas with deferred effective dates, including the Triad Area, be designated attainment for the 1997 8-hour ozone NAAQS. Effective April 15, 2008, the Greensboro-Winston Salem-High Point EAC Area was designated as attainment for the 1997 8-hour ozone NAAQS.

TABLE 3-3. National Ambient Air Quality Standards

Pollutant	Primary Standards		Secondary Standards
	Level	Averaging Time	
Carbon Monoxide	9 ppm	8-hour	None
	35 ppm	1-hour	
Lead	0.15 $\mu\text{g}/\text{m}^3$ ⁽¹⁾	Rolling 3-month Average	Same as Primary
Nitrogen Dioxide	53 ppb ⁽²⁾	Annual Mean	Same as Primary
	100 ppb	1-hour	None
Particulate Matter (PM ₁₀)	150 $\mu\text{g}/\text{m}^3$	24-hour	Same as Primary
Particulate Matter (PM _{2.5})	15 $\mu\text{g}/\text{m}^3$	Annual Mean	Same as Primary
	35 $\mu\text{g}/\text{m}^3$	24-hour	Same as Primary
Ozone	0.075 ppm ⁽³⁾	8-hour	Same as Primary
Sulfur Dioxide	75 ppb ⁽⁴⁾	1-hour	0.5 ppm for 3-hour averaging time

Source: USEPA Web site: www.epa.gov/air/criteria.html, accessed December 7, 2012.

ppm = parts per million. ppb = parts per billion

Notes:

- (1) Final rule signed October 15, 2008. The 1978 lead standard (1.5 $\mu\text{g}/\text{m}^3$ as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.
- (2) The official level of the annual NO₂ standard is 0.053 ppm, equal to 53 ppb, which is shown here for the purpose of clearer comparison to the 1-hour standard.
- (3) Final rule signed March 12, 2008. The 1997 ozone standard (0.08 ppm, annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years) and related implementation rules remain in place. In 1997, USEPA revoked the 1-hour ozone standard (0.12 ppm, not to be exceeded more than once per year) in all areas, although some areas have continued obligations under that standard ("anti-backsliding"). The 1-hour ozone standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above 0.12 ppm is less than or equal to 1.
- (4) Final rule signed June 2, 2010. The 1971 annual and 24-hour SO₂ standards were revoked in that same rulemaking. However, these standards remain in effect until one year after an area is designated for the 2010 standard, except in areas designated nonattainment for the 1971 standards, where the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standard are approved.

In accordance with Section 110(a)(1) of the CAA and the Phase 1 Rule, North Carolina was required to submit a 10-year maintenance plan for the portion of the Greensboro-Winston Salem-High Point EAC Area that comprised the Triad Area (as a former 1-hour ozone maintenance area) within three years of the effective date (*i.e.*, April 15, 2011) of the Area being designated attainment for the 1997

8-hour ozone NAAQS. On January 25, 2012, USEPA approved the maintenance plan for the Triad Area (Federal Register, Vol. 77, No. 16, page 3611).

The purpose of the maintenance plan is to ensure continued attainment and maintenance of the 1997 8-hour ozone NAAQS until 2018 for this attainment area. In order to demonstrate maintenance in the Triad Area, North Carolina developed comprehensive inventories of volatile organic compounds (VOC) and nitrogen oxides (NO_x) emissions from area, point, on-road mobile, non-road mobile (including aircraft, locomotive and marine), and manmade emission sources.

As included in the maintenance plan, the Triad Area is projected to steadily decrease its total VOC and NO_x emissions from the base year of 2007 to the maintenance year of 2018. This VOC and NO_x emission decrease demonstrates continued attainment/maintenance of the 1997 8-hour ozone NAAQS for ten years from 2008 (the year the Triad Area was effectively designated attainment for the 1997 8-hour ozone NAAQS) as required by the CAA and Phase 1 Rule. NO_x and VOC emissions are expected to decrease approximately 47 and 9 percent, respectively, from the attainment base year to 2018.

3.2.2.2 General Conformity

The Clean Air Act requires Federal agencies to ensure that their actions conform to the applicable State Implementation Plan (SIP), which is the document that describes how a State will maintain or achieve compliance with the NAAQS. In North Carolina, the North Carolina Department of Environment and Natural Resources, Division of Air Quality (DAQ) develops the SIP.

Projects funded or approved by the Federal Highway Administration (FHWA) or Federal Transit Administration (FTA) must meet transportation conformity criteria (40 CFR 51, Subpart T and 40 CFR 93). Other Federal actions, including FRA actions, must meet general conformity requirements (40 CFR 51, Subpart W). Since the proposed Project is anticipated to receive funding from FRA, general conformity is described below.

A general conformity determination is required for each criteria pollutant or precursor where the total of direct and indirect emissions of the criteria pollutant or precursor in a nonattainment or maintenance area caused by a Federal action would equal or exceed any of the specified rates. For ozone maintenance areas outside ozone transport regions, the emissions limits are 100 tons per year of ozone and ozone precursors, including nitrogen oxides, sulfur dioxide, and volatile organic compounds (40 CFR 51.853).

A Federal agency must demonstrate that a proposed action would not cause or contribute to any new violations of the NAAQS, would not interfere with provisions in the SIP, would not increase the frequency or severity of existing violations, or would not delay timely attainment of any standard. The Federal agency must provide documentation that the total of direct and indirect emissions from such future actions would be below the emission rates for a conformity determination that are established in 40 CFR 51.853 (described above).

3.2.2.3 Diesel Locomotive Emissions Standards

Emissions from diesel locomotives are regulated by the USEPA. Below is an excerpt from their Web site describing anticipated reductions in emissions from diesel locomotives:

Although locomotive engines being produced today must meet relatively modest emission requirements set in 1997, they continue to emit large amounts of nitrogen oxides and particulate matter (PM), both of which contribute to serious public health problems.

In May 2004, as part of the Clean Air Nonroad Diesel Rule, EPA finalized new requirements for nonroad diesel fuel that will decrease the allowable levels of sulfur in fuel used in locomotives by 99 percent. These fuel improvements will create immediate and significant environmental and public health benefits by reducing PM from existing engines.

In March 2008, EPA finalized a three part program that will dramatically reduce emissions from diesel locomotives of all types -- line-haul, switch, and passenger rail. The rule will cut PM [particulate] emissions from these engines by as much as 90 percent and NOx [nitrogen oxide] emissions by as much as 80 percent when fully implemented.

This final rule sets new emission standards for existing locomotives when they are remanufactured--to take effect as soon as certified systems are available, as early as 2008. The rule also sets Tier 3 emission standards for newly-built locomotives, provisions for clean switch locomotives, and idle reduction requirements for new and remanufactured locomotives. Finally, the rule establishes long-term, Tier 4, standards for newly-built engines based on the application of high-efficiency catalytic after treatment technology, beginning in 2015.¹¹

3.2.3 FARMLAND

3.2.3.1 Farmland Soils

The Farmland Protection Policy Act (FPPA) of 1981 (7 CFR Part 658) requires all Federal agencies to consider the impact of their activities on prime, unique, statewide and locally important farmland soils, as defined by the US Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS) (Public Law 97-98, Subtitle 1, Section 1540). The NRCS, in cooperation with State and local agencies, maintains a listing of *Prime and Statewide Important Farmland of North Carolina* soils¹².

Prime Farmland is defined as soils best suited for producing food, feed, fiber, forage, and oil seed crops. Land already in or committed to urban development or water storage is not included.

Unique Farmland is defined for production of specific high-value food or fiber crops.

State and Locally Important Farmland is defined by the appropriate State or local government agency as soils important in the agriculture of an individual county.

According to the *Guilford County Soil Survey*, the Project study area contains ten soil series.¹³ As shown in **Table 3-4**, seven of these soil series are prime or statewide important farmland soils. **Figure 3-3** shows the farmland soils in the project vicinity. Prime Farmland soils comprise the majority of the study area and the immediate surroundings.

3.2.3.2 Existing Agriculture

Existing agricultural activity in the study area and immediate surroundings primarily consists of alfalfa, or hay, and pasture land.

¹¹ USEPA Web site: www.epa.gov/otaq/locomotives.htm#il

¹² NRCS Web site: <http://soildatamart.nrcs.usda.gov>

¹³ USDA Web site: http://soils.usda.gov/survey/online_surveys/north_carolina/NC081/text.pdf

According to the *2020 Guilford County Farmland Protection Plan* (June 2011), Guilford County implemented a Voluntary Agricultural District (VAD) ordinance in 2000 (Guilford County Code Chapter 15 Article III). The ordinance offers benefits to landowners in exchange for a voluntary commitment to restrict development on their land for a 10-year period. Two districts are located in and near the Project study area and are shown on **Figure 3-3**.

TABLE 3-4. Soils in the Project Study Area

Soil Series	Mapping Symbol	Drainage Class	Hydric Status	Farmland Designation
Appling sandy loam, 2 to 6% slopes	ApB	well drained	Nonhydric	Prime
Appling sandy loam, 6 to 10% slopes	ApC	well drained	Nonhydric	Statewide Important
Chewacla sandy loam, 0 to 2% slopes	ChA	frequently flooded	Hydric*	--
Enon fine sandy loam, 2 to 6% slopes	EnB	well drained	Hydric*	Prime
Enon fine sandy loam, 6 to 10% slopes	EnC	well drained	Nonhydric	Statewide Important
Helena-Sedgefield sandy loams, 0 to 6% slopes	HhB	frequently flooded	Hydric*	Prime
Iredell fine sandy loam, 0 to 4% slopes	IrB	well drained	Nonhydric	Statewide Important
Vance sandy loam, 2 to 6% slopes	VaB	well drained	Nonhydric	Prime
Wehadkee silt loam	WhA	frequently flooded	Hydric*	--
Wilkes sandy loam, 15 to 45% slopes	WkE	well drained	Nonhydric	--

Source: *Guilford County Soil Survey and Prime and Statewide Important Farmland of North Carolina (NRCS)*
 * Soil is primarily non-hydric, but contains hydric inclusions. Hydric soils experience regular water saturation, flooding or ponding.

3.2.4 UTILITIES

Utilities within the Project study area are listed in **Table 3-5**. Utilities include, gas, electric, cable, and water/sewer providers. The Project study area is along the edge of the City of Greensboro's Water and Sewer Service Area and is primarily designated as Service Area A and Service Area B, which means there is no service at this time, but service could be provided in the future¹⁴. Water and sewer are provided in the areas that are within the City of Greensboro city limits and in the McLeansville center. Where public water and sewer are not available, properties are served by private wells and septic systems.

A Piedmont Natural Gas line and easement runs under Bethel Church Road south of the Project study area near 5730 and 5748 Bethel Church Road.

¹⁴ City of Greensboro Web site: www.greensboro-nc.gov/index.aspx?page=2220

TABLE 3-5. Utility Providers

Utility	Provider
Electricity	Duke Energy Corporation
Water / Sewer	City of Greensboro Water and Sewer Services
Natural Gas	Piedmont Natural Gas
Telephone	Time Warner Cable
	Verizon Wireless
	AT&T
Fiber Optics and Cable	Time Warner Cable

Source: Greensboro Chamber of Commerce Web site:

<http://www.greensboro.org/lifeingreensboro/newcomerinfo.php>

City of Greensboro Web site: <http://www.greensboro-nc.gov/index.aspx?page=2220>

3.2.5 VISUAL RESOURCES

The landscape in the proposed grade separation area is rural in nature and generally consists of low density residential development and open fields, with low density commercial development near the McLeansville Road intersection with Frieden Church Road north of the railroad tracks.

No unique scenic vistas or visually sensitive resources have been identified in the study area. However, there is an attractive view from McLeansville Road of the pond located near the intersection with Birch Creek Road, as shown in the photograph.



Source: Google Maps. Looking north at pond near the McLeansville Road/Birch Creek Road intersection.

3.2.6 HAZARDOUS MATERIALS

Hazardous material sites may include, but are not limited to, active and abandoned underground storage tank (UST) sites, hazardous waste sites, regulated landfills and unregulated dumpsites. The NCDOT Geoenvironmental Unit conducted a hazardous material evaluation (GeoEnvironmental Report for Planning for P-5204, NCDOT, September 26, 2012) to identify properties within the Project study area that are, or may be, contaminated with hazardous materials and therefore would result in increased project costs and future liability if acquired by the NCDOT.

The evaluation included a search of appropriate environmental agencies' databases for recorded hazardous materials sites and a field reconnaissance conducted on September 25, 2012.

Based on the evaluation, two possible UST facilities were identified within the Project study area. These are located at the Lynn's Furniture Gallery (now Crossroad Treasures) and the McLeansville Fire Station.

Lynn's Furniture Gallery is located at 5335 Frieden Church Road, which is the northwest corner of the McLeansville Road/Frieden Church Road intersection north of the railroad tracks. This property used to be the McLeansville Auto Service facility and there are records that four tanks were removed

from this parcel in 1997. The McLeansville Fire Chief verified the UST removals and indicated the tank bed was located off the east corner of the structure. There are no monitoring wells on site and the property does not appear on the Ground Water Incident database maintained by the NC Department of Environment and Natural Resources Division of Water Quality (NCDWQ) Groundwater Section.

The McLeansville Fire Station is located at 5326 Frieden Church Road, which is west of the McLeansville Road/Frieden Church Road intersection on the south side of Frieden Church Road. Two USTs were removed from this parcel in 1991. One heating oil tank remains on the property. The former tank bed is located at the rear of the fire station building. In addition, an inactive air sparge system (a remediation technique that injects air into contaminated groundwater) and monitoring wells are located south of the building. The McLeansville Fire Chief stated that the remediation system has been inactive for several years. The property does not appear on the Ground Water Incident database.

3.2.7 MINERAL AND ENERGY RESOURCES

The Project study area does not contain mineral resources or quarries. There are no energy resource activities such as oil wells or mines in the Project study area.

3.2.8 FLOODPLAINS

A floodplain is a lowland area adjacent to lakes, streams, and rivers that is covered by water during a flood. The rapid rise in the water level inundates the flat, low-lying areas near the water body for extended periods of time.

Based on Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRMS), there are no designated floodplains or floodways within the Project study area.

3.3 CULTURAL RESOURCES

Archaeological and historic architectural resources are protected by a variety of laws and their implementing regulations. The most notable of these are the National Historic Preservation Act (NHPA) of 1966, as amended in 2001; the Archaeological and Historic Preservation Act of 1974; and the Archaeological Resources Protection Act (ARPA) of 1979. Treatment of archaeological and architectural resources for Federal projects is also guided by Advisory Council on Historic Preservation regulations, Protection of Historic Properties (36 CFR 800).

Archaeological and architectural resources were identified according to the requirements of 36 CFR 800 and Section 106 of the NHPA, along with the environmental assessment process, to ensure full consideration of all possible impacts associated with the project.

The North Carolina Department of Cultural Resources State Historic Preservation Office (HPO) was consulted regarding archaeological and historic architectural resources in the Project study area. The HPO reviewed the Project and determined no historic resources (including archaeological resources) will be affected by the proposed Project. Written verification was received from the HPO by letter dated May 31, 2012, included **Appendix C**.

3.4 NATURAL ENVIRONMENT

This section describes the existing conditions of the natural environment within the Project area, including biotic communities and wildlife, water resources, water quality, Waters of the United

States (wetlands and streams), riparian buffer rules, and protected species. All field work was conducted in July 2007, April 2008, June 2009, May 2010, August 2010, December 2011, and July 2012. The information in this section is summarized from the project's *Natural Resources Technical Report*, (Atkins, July 2012), which is incorporated by reference.

3.4.1 BIOTIC COMMUNITIES AND WILDLIFE

3.4.1.1 Terrestrial Communities

Two terrestrial communities are in the study area: maintained/disturbed and Mesic Mixed Hardwood forest. These communities and the wildlife expected or observed are shown in **Figure 3-4** and described below.

Maintained/Disturbed. The majority of the Project study area consists of maintained/disturbed land including residential and commercial lots, streets, and utility rights of way. Vegetation is either planted or opportunistic and is generally maintained on a frequent or sporadic schedule. Canopy species, if present, include sweetgum, loblolly pine, tree of heaven, mimosa, and red maple. Shrubs include saplings of canopy trees, with ornamental species planted in landscaped areas. Vines include English ivy, Chinese wisteria, and Japanese honeysuckle in areas where maintenance is not intensive. Various planted grasses such as fescue occupy the herb layer with ornamental species and opportunistic species such as sericea lespedeza, ragweed, Queen Anne's lace, and pokeweed.

Mesic Mixed Hardwood Forest. Schafale and Weakley's classification (Classification of Natural Communities of North Carolina, 1990) describes this terrestrial community as occurring on lower slopes, ravines, and well-drained stream bottoms on acidic soils. In the Project study area, it primarily occurs along stream corridors. Canopy trees are uneven-aged, as is typical for this community. Canopy species are dominated by tulip poplar, American beech, red maple, American elm, northern red oak, loblolly pine, and sweetgum. Subcanopy and shrub species include dogwood, Chinese privet, autumn olive, ironwood, and red maple. Vines include poison ivy, Japanese honeysuckle, and greenbrier. The herb layer is sparse, but scattered Christmas fern and Nepalese browntop may occur.

Wildlife. Terrestrial communities in the Project study area are mainly comprised of highly disturbed habitats, with small pockets (from a few acres to 50 acres) of forested habitat adjoining the corridor. Habitat for small or disturbance-adapted species exists in grassy or wooded areas. Those species that were actually observed include mammals (white-tailed deer, gray squirrel, and raccoon), birds (Carolina chickadee, brown thrasher, downy woodpecker, mourning dove, American crow, blue jay, American goldfinch, Carolina wren, white throated sparrow, ruby-crowned kinglet, turkey vulture, red-shouldered hawk), and an amphibian (wood frog).

Other mammals that can find food and cover in the Project study area include eastern cottontail, southeastern shrew, and Virginia opossum. Other birds that might be found in the open lands and small wooded patches of the Project study area include northern cardinal, tufted titmouse, house finch, and white-breasted nuthatch. Reptiles and other amphibians that may inhabit the Project study area include rat snake, northern cricket frog, Fowler's toad, eastern fence lizard, two-lined salamander, gray treefrog, and eastern musk turtle.

3.4.1.2 Aquatic Communities

Aquatic communities in the study area consist of both perennial and intermittent piedmont streams. These streams are often channelized and/or inundated with sediment from adjacent runoff, offering less than optimal habitat for many species. However, perennial streams in the Project study area

could support various mussels, northern water snake, bluehead chub, spottail shiner, yellow bullhead, margined madtom, eastern mosquitofish, redbreast sunfish, and tessellated darter. Perennial and intermittent streams may provide habitat for crayfish and benthic macroinvertebrates.

3.4.1.3 Invasive Species

Eight species from the NCDOT Invasive Exotic Plant List for North Carolina were found to occur in the Project study area: tree of heaven, Chinese privet, and sericea lespedeza (all listed as Severe Threat); mimosa, autumn olive, English ivy, Japanese honeysuckle, and Chinese wisteria (all listed as Threat).

3.4.2 WATER RESOURCES

Water resources in the Project study area are part of the Cape Fear River basin [US Geological Survey (USGS) Hydrologic Unit 03030002] and the Big Alamance Creek watershed. The Big Alamance Creek watershed is part of the larger Jordan Lake water supply watershed.

Eleven streams and five ponds are within the Project study area. The location of each of these water resources is shown in **Figure 3-5**. The physical characteristics of these streams and ponds are provided in **Table 3-6**. The ponds consist of artificially excavated pits that are sustained by stormwater runoff and high groundwater levels.

TABLE 3-6. Streams and Ponds

Stream Name	Map ID*	Best Usage Classification	Perennial/ Intermittent	Bankful Width (ft)	Water Depth (in)	Channel Substrate	Velocity	Clarity
UT to Little Alamance Creek	SA	WS-IV NSW	Intermittent	2	7	Sand, Silt	Slow	Turbid
UT to Little Alamance Creek	SB	WS-IV NSW	Perennial	2-4	3	Sand, Silt	Slow	Slightly Turbid
UT to Little Alamance Creek	SD	WS-IV NSW	Intermittent	3	4	Sand, Silt	Slow	Turbid
UT to Little Alamance Creek	SE	WS-IV NSW	Intermittent	2.5	2	Sand, Silt	Slow	Turbid
UT to Little Alamance Creek	SF, PA	WS-IV NSW	Intermittent	3.5	6	Sand, Silt	Slow	Turbid
UT to Little Alamance Creek	SG, PB	WS-IV NSW	Intermittent	1.5	3	Sand, Silt	Slow	Turbid
UT to Little Alamance Creek	SH	WS-IV NSW	Intermittent	2	7	Sand, Silt	Slow	Turbid
UT to Little Alamance Creek	SI	WS-IV NSW	Perennial	2-5	7	Sand, Silt	Slow	Turbid
UT to Little Alamance Creek	SJ	WS-IV NSW	Intermittent	1.5	5	Sand, Silt	Slow	Turbid
UT to Little Alamance Creek	SK, PD, PE	WS-IV NSW	Perennial	4	8	Sand, Silt	Moderate	Turbid
UT to Little Alamance Creek	SL	WS-IV NSW	Intermittent	3	6	Sand, Silt	Slow	Turbid

Source: *Natural Resources Technical Report*, Atkins, July 2012

* Streams are denoted with a Map ID beginning with "S". Ponds begin with "P".

Note: Pond PC (0.35 acre) is not listed above because it does not have a direct connection to a jurisdictional stream within the study area.

No Outstanding Resource Waters (ORW), designated anadromous fish waters, or Primary Nursery Areas (PNA) are present within one mile downstream of the Project study area. There are no designated High Quality Waters (HQW) or natural or undeveloped water supply watersheds (WS-I or WS-II) within one mile downstream of the Project study area.

There are no benthic monitoring stations within one mile of the Project study area, but there is one fish monitoring station. The fish monitoring site is located approximately 0.8 miles northwest of the study area on South Buffalo Creek. The monitoring sight currently has a rating of Poor, last dated April 07, 1998.

3.4.3 WATER QUALITY

The North Carolina Division of Water Quality (NCDWQ) has assembled a list of impaired water bodies according to the Clean Water Act (CWA) Section 303(d) and 40 CFR 130.7. The list is a comprehensive public accounting of all impaired water bodies. An impaired water body is one that does not meet water quality standards including designated uses, numeric and narrative criteria, and anti-degradation requirements defined in 40 CFR 131. No water bodies occurring within the Project study area are listed on the Final 2012 303(d) list.¹⁵

Classifications are assigned to waters of the State of North Carolina based on the existing or contemplated Best Usage of various streams or segments of streams in the basin. All waters within the Project study area have a Best Usage Classification of **WS-IV-Nutrient Sensitive Waters (NSW)**.

Class **WS-IV** waters are freshwaters used as sources of water supply for drinking, culinary, or food processing purposes in moderately to highly developed watersheds where a higher water supply classification (WS-I, II, or III) is not feasible. These waters are also protected for Class C uses. Class C waters are protected for secondary recreation, fishing, and aquatic life, including propagation and survival, and wildlife. Secondary recreation includes wading, boating, other uses not involving human body contact with water, and activities involving human body contact with water where such activities take place on an infrequent, unorganized, or incidental basis.¹⁶

The designation **NSW** refers to waters needing additional management due to their excessive growth of vegetation resulting from nutrient enrichment.

3.4.4 JURISDICTIONAL ISSUES

This section discusses wetlands and streams, riparian buffer rules, and protected wildlife and plant species.

3.4.4.1 Wetlands and Streams

Background Information. Section 404 of the CWA prohibits discharges of dredged or fill material into "Waters of the United States," except in accordance with a permit. The term Waters of the United States has broad meaning and incorporates both wetlands and surface waters. The USACE is responsible for issuing permits and enforcing permitting requirements under Section 404 of the CWA. The USEPA issues the regulations, known as Section 404(b)(1) Guidelines that the USACE must follow when issuing Section 404 permits. USEPA also participates in the permitting process.

¹⁵ NCDENR Web site: <http://portal.ncdenr.org/web/wq/ps/mtu/assessment>

¹⁶ NCDENR Web site: <http://portal.ncdenr.org/web/wq/ps/csu/classifications#classes>

The USACE regulatory program is defined in 33 CFR 321-330. In addition, Executive Order 11990 requires that new construction in wetlands be avoided to the extent possible, and that all practical measures be taken to minimize or mitigate impacts to wetlands.

Water bodies such as rivers, streams, lakes, and ponds are subject to jurisdictional consideration under the Section 404 Program. By regulation, wetlands also are considered Waters of the United States. Wetlands are described as:

“Those areas that are inundated or saturated by groundwater at a frequency and duration sufficient to support, and that under normal circumstances, do support a prevalence of vegetation typically adapted for life in saturated conditions. Wetlands generally include swamps, marshes, bogs, and similar areas” (33 CFR 328.3(b)).

The USACE requires the presence of three parameters (hydrophytic vegetation, hydric soils, and evidence of hydrology) in support of jurisdictional determinations.

Surveys. Jurisdictional areas within the Project study area were delineated and located using Global Positioning System (GPS) technology. Field work was conducted in July 2007, April 2008, June 2009, May 2010, August 2010, and December 2011. Verification of the delineation was completed by USACE and NCDWQ representatives on May 8, 2012.

The streams and wetlands determined to be jurisdictional by the USACE and NCDWQ representatives are listed in the following sections and depicted on **Figure 3-5**.

Streams in the Project Study Area. Eleven jurisdictional streams were identified in the study area, as described in **Table 3-7**. The locations of these streams are shown on **Figure 3-5**. All jurisdictional streams in the study area have been designated as warm water streams for the purposes of stream mitigation.

Wetlands in the Project Study Area. Twenty-one jurisdictional wetlands were identified within the study area (**Figure 3-5**). All wetlands within the study area are riparian wetlands adjacent to or abutting jurisdictional streams and have a NC Wetland Assessment Method (NCWAM) classification of Headwater Forest. Wetland classification and quality rating data are presented in **Table 3-7**. All wetlands in the study area are within the Cape Fear River basin (USGS Hydrologic Unit 03030002). All wetlands are located within the Mesic Mixed Hardwood Forest community.

TABLE 3-7: Jurisdictional Wetlands

Wetland	Wetland Area (acres)	NCDWQ Rating	Wetland	Wetland Area (acres)	NCDWQ Rating
WA	1.10	47	WL	0.37	44
WB	0.01	41	WM	0.45	43
WC	0.01	47	WN	0.20	40
WD	0.13	34	WO	0.06	39
WE	0.31	54	WP	0.04	47
WF	0.06	28	WQ	0.93	58
WG	0.06	28	WR	0.01	29
WH	0.50	35	WS	0.20	35
WI	0.40	35	WT	0.05	42
WJ	0.83	52	WU	0.05	40
WK	0.18	47			

Source: *Natural Resources Technical Report*, Atkins, July 2012.

3.4.4.2 Riparian Buffer Rules

A riparian buffer is a vegetated area bordering a body of water, such as a stream, lake, or pond. There are state riparian buffer protection programs in several river basins, including the Jordan Lake Watershed. The Big Alamance Creek watershed is a part of the Jordan Lake Watershed. As shown on **Figure 3-5**, most of the Project study area is within the northern boundary of the Big Alamance Creek watershed.

In the Jordan Lake Watershed, a 50-foot buffer applies to: intermittent streams, perennial streams, lakes, ponds and reservoirs that are depicted on at least one of the following maps: the most recent printed version of the soil survey map prepared by the Natural Resources Conservation Service, the 1:24,000 scale quadrangle topographic map prepared by the US Geologic Survey, or a map approved by the Geographic Information Coordinating Council and by the NC Environmental Management Commission.¹⁷

Figure 3-5 shows the streams in the Project study area subject to the Jordan Lake Buffer Rules. In addition to the 50-foot protected riparian buffer, diffuse flow is required before stormwater runoff enters the buffer area from any new ditch or manmade conveyance.

3.4.4.3 Protected Species

Federal Regulations. Designated plants and animals are protected under the Federal Endangered Species Act (ESA). Bald and golden eagles are protected under the Federal Bald and Golden Eagle Protection Act. These acts are described below.

Endangered Species Act

The ESA requires Federal agencies to ensure that their actions are not likely to jeopardize the continued existence of endangered or threatened species, including the destruction or adverse modification of critical habitat. Any activity permitted, funded, or conducted by a Federal agency determined to affect a listed species or designated critical habitat requires a consultation with the US Fish and Wildlife Service (USFWS) under the ESA.

Critical habitat is a term used in the ESA to describe a specific geographic area(s) that is essential for the conservation of a threatened or endangered species and that may require special management and protection. Endangered species are those species in danger of extinction throughout all or a significant portion of their range. Threatened species are those likely to become endangered in the foreseeable future.

The USFWS determines whether a species should be Federally-listed as Endangered or Threatened. Species in the process of being listed are designated as Proposed Endangered or Proposed Threatened, and these species also are protected. Species the USFWS is considering for listing, but which are not yet listed or proposed for listing, are Candidate species.

Bald and Golden Eagle Protection Act

The bald eagle was adopted as a national symbol in 1782. During the next century and a half, the bald eagle was heavily hunted. This led Congress to pass the Bald Eagle Protection Act in 1940 to prevent the species from becoming extinct. The Bald Eagle Protection Act prohibits the “take, possession, sale, or purchase” of the bald eagle as well as the “offer to sell, purchase, export, or

¹⁷NC DENR Web site: http://portal.ncdenr.org/c/document_library/get_file?uuid=fd6c684b-2c8e-4617-a890-551ad77cd680&groupId=235275

import” the bald eagle “at any time or in any manner (16 USC 668-668d).” In 1962, Congress adopted the Bald and Golden Eagle Protection Act to protect golden eagles, which also strengthened protection of bald eagle since they were often killed by people mistaking them for golden eagles.¹⁸

Since the bald eagle was declared recovered and removed from the Federal List of Threatened and Endangered Species in July 2007, the Bald and Golden Eagle Protection Act becomes the primary law protecting bald eagles.

Protected Species in Guilford County. As of September 22, 2010, the USFWS lists one Federally-protected species for Guilford County, the small-whorled pogonia (*Isotria medeoloides*). This plant species is listed as Threatened. There are no Candidate species listed for Guilford County.

A review of NC Natural Heritage Program (NCCHP) records, updated May 2012, indicates no known small-whorled pogonia occurrence within 1.0 mile of the study area.

In North Carolina, this perennial orchid is typically found in open, dry deciduous woods and is often associated with white pine and rhododendron. The species may also be found on dry, rocky, wooded slopes; moist slopes; ravines lacking stream channels; or slope bases near braided channels of vernal streams. The orchid, often limited by shade, requires small light gaps or canopy breaks, and typically grows under canopies that are relatively open or near features like logging roads or streams that create long-persisting breaks in the forest canopy.

The study area contains approximately 31 acres of suitable habitat for small whorled pogonia. Detailed surveys for small-whorled pogonia were performed on July 2, 2012. All areas of suitable habitat were systematically walked and visually surveyed. No typical co-occurring species such as white pine, rhododendron, or Indian cucumber root were seen. No occurrences of small-whorled pogonia were found.

Bald Eagles. 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.

A desktop-GIS assessment of the Project study area, as well as the area within a 1.13-mile radius (1.0 mile plus 660 feet) of the project limits, was performed on December 7, 2011, using 2010 color aerials. The assessment revealed no potential bald eagle foraging or nesting habitat, and no bald eagle nests or bald eagle individuals were observed during field studies. There are no large bodies of water present within the required distance for evaluating bald eagle habitat.

Additionally, a review of the NCNHP database on July 2, 2012 revealed no known occurrences of this species within 1.0 mile of the Project study area. The closest known occurrence is approximately 11 miles to the west of the study area.

¹⁸USFWS Web site: www.fws.gov/migratorybirds/baldeagle.htm

4.0 ENVIRONMENTAL CONSEQUENCES

This section includes the estimated direct and indirect impacts to the human, physical, cultural and natural environments for the No-Build and Build Alternatives. The Preferred Alternative is Build Alternative A with Service Road 1b, as discussed in **Section 2.5**. However, all build alternatives are discussed in this chapter.

4.1 HUMAN ENVIRONMENT

4.1.1 LAND USE AND TRANSPORTATION PLANNING

No-Build Alternative. There would be no impact to land use or zoning under the No-Build Alternative. Existing land use would not change, and current patterns of development that are consistent with zoning regulations likely would continue under this alternative.

The No-Build Alternative is not consistent with the adopted Greensboro Urban Area Metropolitan Planning Organization's (GUAMPO) *2035 Long Range Transportation Plan* (LRTP) or the draft 2035 LRTP update currently in progress.

Build Alternatives. All of the build alternatives with the service roads, including the Preferred Alternative, are consistent with area land use and transportation plans.

Implementation of any of the Build Alternatives and service roads would not conflict with the planning guidelines outlined in the *Northeast Guilford Area Plan* and other plans described in **Section 1.8.2**, and would be consistent with zoning designations for the Project study area.

The new section of McLeansville Road will have a wide paved shoulder. The paved shoulder is consistent with the *Greensboro Urban Area Bicycle, Pedestrian & Greenway Master Plan* and the 2035 LRTP and draft 2035 LRTP update, which recommend paved shoulders on McLeansville Road to accommodate bicycles.

The proposed action is included in the NCDOT 2012-2018 STIP as project number P-5204. The GUAMPO *Comprehensive Transportation Plan* (CTP) includes a recommendation for a grade separation of the existing railroad crossing at McLeansville Road that is not included in the currently adopted 2035 LRTP. GUAMPO intends to amend their 2035 LRTP to add the McLeansville Road grade separation project and remove the Carmon Road/Knox Road grade separation and extension projects from the list of projects to be implemented by 2035. The draft 2035 LRTP update includes these recommendations¹⁹.

4.1.2 RELOCATIONS AND ACQUISITIONS

Public Law 91-646, the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended, commonly called the Uniform Relocation Act, is the primary law for acquisition and relocation activities on Federal or Federally-assisted projects such as the McLeansville Road Grade Separation Project. The law provides uniform policy and procedures for the acquisition of real property by all agencies that receive financial assistance for any program or project of the United States Government. If Federal funds are used in any phase of the program or project, the Uniform Relocation Act applies.

¹⁹ City of Greensboro Web site: www.greensboro-nc.gov/index.aspx?page=3480

The NCDOT Right of Way Branch is responsible for acquisition of land and right of way for the construction and improvements of all roads and highways that are part of the State Highway System.

No-Build Alternative. Since there would be no construction activities under the No-Build Alternative, there will be no property relocations or acquisition impacts.

Build Alternatives

Relocation Impacts. Potential residential and business relocation impacts for each Build Alternative are presented in **Table 4-1**. The detailed *Relocation Reports* prepared by NCDOT are included in **Appendix C**.

TABLE 4-1. Residential and Business Relocations

Resource	Build Alternative A	Build Alternative B	Service Road 1a	Service Road 1b	Service Road 2
Residential Relocations	3	4	--	--	--
Business Relocations	1	1	--	--	--
Total Relocations	4	5	--	--	--

Source: STIP P-5204 Relocation Reports (NCDOT, January 10, 2013).

None of the build alternatives or service road options will displace farms or non-profit organizations. The Relocation Reports note that some of the relocations under any of the Build Alternatives likely include elderly residents.

Build Alternative A (the Preferred Alternative) will relocate three residences and one business (U-Haul truck rental company at southwest corner of McLeansville Road/Frieden Church Road intersection north of railroad tracks). One of the residential relocations is due to loss of access.

Build Alternative B will relocate four residences and one business (Nationwide Insurance – the Mosely Agency). Two of the four residential relocations for Alternative B are due to loss of access.

Other properties could be considered relocations if it is determined during final design that proposed Project construction will disrupt well and/or septic systems without suitable replacement. A well on the McLeansville Fire Station property is within the proposed right of way for both Build Alternative A (Preferred Alternative) and Build Alternative B. The well is located near existing McLeansville Road near the eastern end of the fire station property. It is anticipated that this well can either be avoided or relocated on the property.

The build alternatives also will require right of way from parcels that will not involve relocations, as shown in the preliminary designs in **Appendix C**. Right of way will be refined for the Preferred Alternative during final design and will be minimized to the extent practicable.

Relocation Assistance. According to the *Relocation Reports*, there is comparable replacement housing in the area for displaced homeowners and tenants (**Appendix C**).

The NCDOT relocation and right-of-way acquisition policies ensure that comparable replacement housing is available for relocatees prior to construction of state and/or Federally-assisted projects. Furthermore, NCDOT will use three programs to minimize the inconvenience of relocation: Relocation Assistance, Relocation Moving Payments, and Relocation Replacement Housing Payments or Rent Supplement.

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 (Public Law 91-646) and the North Carolina Relocation Assistance Act (NCGS 133-5 through 133-18).

More information on right of way acquisition and relocation is available in the following two NCDOT brochures: *Relocation Assistance* and *Answers to the Questions Most Often Asked About Right of Way Acquisitions*, which can be found at

- www.ncdot.gov/download/construction/roadbuilt/RelocationBooklet_07.pdf
- www.ncdot.gov/download/construction/roadbuilt/rightofway_acquisition_brochure.pdf

4.1.3 COMMUNITIES AND NEIGHBORHOODS

Effects on communities and neighborhoods can include the physical taking of land, homes, and businesses (**Section 4.1.2**); the construction of physical or psychological barriers that can result from new transportation facilities that divide or isolate a section of the community; changes in access or travel patterns within a community; or physical intrusions such as noise, dust, or visual impacts that can negatively affect a community.

No-Build Alternative. Under the No-Build Alternative, residents and travelers through the area will continue to experience delays at the at-grade crossings of McLeansville Road and Carmon Road when the crossings are blocked during train passage and during use of the railroad siding. Train traffic is expected to increase in the future, so the frequency of delays at the at-grade crossings also will increase.

Build Alternatives. Community benefits associated with all the Build Alternatives, including the Preferred Alternative, include improved safety and operations for both vehicles and trains.

Potential impacts to neighborhoods and communities were considered in the identification of the Build Alternatives. Closing the Frieden Church Road at-grade railroad crossing west of McLeansville Road also was considered and originally presented to the public as part of the build alternatives at a Local Officials Meeting and a Citizens Informational Workshop held on April 24, 2012. Based on input received, it was decided to not include closing this railroad crossing as part of the proposed Project due to community impacts. Closing this crossing will result in all land uses west of McLeansville Road and north of the railroad tracks having only one outlet, via the McLeansville Road/Frieden Church Road intersection. These land uses include the McLeansville Fire Station, the McLeansville Elementary School, the McLeansville community center, the McLeansville Baptist Church, and approximately 42 residences.

Build Alternatives A and B (with any service road) will displace 4 to 5 homes and businesses in the area of the McLeansville Road grade separation improvements, as discussed in **Section 4.1.2**. However, existing communities and neighborhoods will not be divided internally or from one another by physical or psychological barriers as a result of any of the build alternatives. The grade separation of McLeansville Road and the wider paved shoulders that will be constructed on McLeansville Road will improve access between the residences south of the railroad tracks and the McLeansville Service Core area north of the railroad tracks.

Access changes also will occur for the homes along the north end of Bethel Church Road and for the properties currently accessed via the Bullard and Black private railroad crossing. The realignment of Bethel Church Road to the south under either Build Alternative A or Build Alternative B will place these homes on a cul-de-sac connected to the realigned Bethel Church Road. The resulting travel pattern will not be substantially longer than current travel patterns. The properties

accessed via the Bullard and Black private crossing will be provided with new access via a service road connected to Hines Andrews Road.

4.1.4 ENVIRONMENTAL JUSTICE

Executive Order 12898, issued in February 1994, requires Federal programs or programs receiving Federal funding to address issues of environmental justice. “Environmental Justice” refers to a range of issues related to human health and the environment relevant to minority and low-income populations.

In April 1997, the USDOT issued the *USDOT Order on Environmental Justice to Address Environmental Justice in Minority Populations and Low-Income Populations* (USDOT Order 5610.2) to summarize and expand upon the requirements of Executive Order 12898 on environmental justice.²⁰ According to DOT Order 5680.1, a disproportionately high and adverse effect on minority and low-income population is an adverse effect that “(1) is predominantly borne by a minority 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 non-minority population and/or low-income population.”

Minority and low-income groups are often located in areas already experiencing the effects of multiple development projects resulting in social and/or environmental degradation. These areas are likely to be adversely affected by existing industrial, commercial, or transportation facilities. Impacts that occur in these areas are likely to be considered more severe than the same impacts that occur in areas not already subject to these conditions.

Based upon a review of Census data and the *Relocation Reports*, and a project site visit, there are no concentrations of minority or low-income populations in the Project study area.

No-Build Alternative. The No-Build Alternative would not impact any populations, including Environmental Justice populations.

Build Alternatives. Although the build alternatives result in residential and business relocations, none of the project alternatives, including the Preferred Alternative, result in disproportionately high and adverse effects to any Environmental Justice populations.

4.1.5 COMMUNITY SERVICES AND PUBLIC HEALTH AND SAFETY

No-Build Alternative. Under the No-Build Alternative, McLeansville Fire and Rescue vehicles and Guilford County Schools buses will continue to experience delays at the McLeansville Road and Carmon Road-at-grade crossings when trains pass through the area and when trains are using the railroad siding, and train traffic is expected to increase in the future. In addition, safety benefits associated with a grade-separated crossing at McLeansville Road will not be realized.

Build Alternatives. There will be no direct property impacts to community facilities under any of the build alternatives and service road options, including the Preferred Alternative. However, Alternative B (with any service road option) will relocate the Nationwide Insurance Agency located at the northeast corner of McLeansville Road and Bethel Church Road. The owner of the agency indicated they serve many people in the community, including elderly clients, and provide other services such as notary services. As discussed in **Section 4.1.2**, NCDOT will provide assistance to relocatees, including assistance in finding another location to re-establish the business.

²⁰ FHWA Web site: www.fhwa.dot.gov/environment/ejustice/dot_ord.htm

Indirect impacts to fire response services and school transportation will occur with the closure of the Carmon Road at-grade railroad crossing under any of the build alternatives, including the Preferred Alternative. Closing of the Carmon Road at-grade railroad crossing may have a minor effect on response times from the McLeansville Fire Department to some properties in the Carmon Road area. However, the grade-separated crossing at McLeansville Road will provide a reliable crossing of the railroad tracks that is always open. Both the Carmon Road and McLeansville Road at-grade crossings are sometimes blocked by train traffic operating on the railroad siding.

According to Guilford County Schools, the closing of the Carmon Road at-grade railroad crossing will require rerouting of buses making stops on Carmon Road and Knox Road. Currently there are three buses with stops in the area. The buses will need to detour to Colony Road, which is approximately a 4.5-mile detour. This is not a significant impact.

Overall, all of the project alternatives, including the Preferred Alternative, will benefit public safety by creating a grade-separated crossing at McLeansville Road and closing the Carmon Road at-grade crossing and the 90-degree curve at the crossing, eliminating the possibility of train/auto collisions at these locations.

4.1.6 ECONOMIC EFFECTS AND ENERGY USE

No-Build Alternative. No construction activities would occur under the No-Build Alternative. No substantial economic effects will occur due to the No-Build Alternative, as jobs will not be created or lost. Some additional energy use could occur from greater fuel consumption for vehicles queued at the existing at-grade crossing when trains are stopped on the rail siding, and for trains on the rail siding that must decouple to provide access across the tracks for vehicular traffic. However, the difference in vehicular and train fuel consumption between the No-Build Alternative and the Build Alternatives are expected to be minor.

Build Alternatives. The project will not result in any major economic gains or losses in the area. However, each Build Alternative will displace one business, which may have a minor temporary economic impact in the area until the business is reestablished. The project also will support construction jobs temporarily during construction.

Construction activities also will temporarily increase energy use during construction. However, the elimination of the at-grade crossings will improve travel times and operations for freight and passenger trains passing through the corridor. Trains waiting on the rail siding will not have to be uncoupled to allow vehicles on the roadway to pass through. This improvement in travel times will provide a slight benefit to rail operations and the regional economy and energy use through time savings and reduced fuel costs.

4.2 PHYSICAL ENVIRONMENT

4.2.1 NOISE AND VIBRATION

This section is a summary of the technical report; *Noise and Vibration Impact Assessment for the Grade Separation of NC Railroad at McLeansville Road* (Atkins, January 2013). This report is incorporated by reference. Construction noise is discussed in **Section 4.6**.

No-Build Alternative. Under the No-Build Alternative, receptors in the Project area will experience a minor increase in noise levels from the general increase in vehicular traffic volumes on area roadways. Passenger train traffic likely will not increase under the No Build Alternative, nor will the train speeds increase. Train horn noise will continue to occur at the at-grade crossings

at Carmon Road and McLeansville Road and the Bullard and Black private crossing with similar frequency and duration as they do today. Since neither Alternative A nor Alternative B is predicted to result in noise impacts in accordance with FRA/FTA criteria, then impacts also are not expected to occur under the No Build Alternative. There would be no notable change to the noise or vibration environment resulting from the No-Build Alternative, and the No-Build Alternative will not create new noise or vibration impacts.

Build Alternatives. The noise and vibration analyses for the Build Alternatives were performed in accordance with FTA's guidance manual, *Transit Noise and Vibration Impact Assessment* (FTA, 2006) using the criteria and procedures described in **Section 3.2.1**.

Noise. **Table 4-2** presents the results of the operational noise analysis. There are no receptors projected to be impacted by noise from either Alternative A or Alternative B, or the service road options, based on the FRA criteria described in **Section 3.2.1**.

As anticipated, existing and future estimated noise levels are highest for those receptors nearest the rail alignment, which include the residences on the south side of Frieden Church Road and the north side of McLeansville Road (**Figure 3-2**).

For most receptors, the estimated change in noise levels is 0-1 decibel. The community center on Frieden Church Road is estimated to have the greatest change in noise levels (2-3 decibels) because the noise at this location is dominated by vehicular traffic on Frieden Church Road, which is predicted to double from 2012 to 2035. This increase in vehicular traffic is predicted to occur with or without the project. The predicted increase will not be a noise impact based on the FTA criteria.

In some locations along existing Bethel Church Road, noise levels are predicted to decrease slightly (1-2 decibels) under Alternative A and Alternative B. This is because Bethel Church Road is proposed to be realigned farther from these residences, and the residences will then be on a cul-de-sac street.

The CREATE model does not include input for train horns. Train horns produce an average of about 104 dB at 100 feet. Because the McLeansville Road, Carmon Road, and Bullard and Black private at-grade crossings in the Project area will be removed, trains will not need to use horns at these crossings, although train horns will still need to sound for the existing Frieden Church Road at-grade railroad crossing west of McLeansville Road at a slightly greater frequency due to the anticipated increase in passenger train traffic. However, overall, train horn noise in the Project area will be reduced in the future with either alternative due to a reduction of three crossings where horns otherwise will be needed.

Vibration. Based upon the General Vibration Assessment conducted in accordance with the procedures in the *Transit Noise and Vibration Impact Assessment* manual, the impact distance for residences is approximately 80-85 feet from the center of the railroad tracks. The closest residence (5604 McLeansville Road) is approximately 100 feet from the center of the railroad track. Therefore, no vibration impacts are anticipated from Build Alternative A or Build Alternative B with any of the service road options.

TABLE 4-2. Noise Impact Assessment Results

Location	Land Use	Land Use Category	Existing Noise Level*	Build Alternative A			Build Alternative B		
				Future Noise Level*	Change from Existing Noise Level	Impact? (Yes/No)	Future Noise Level*	Change from Existing Noise Level	Impact? (Yes/No)
5203 Frieden Church Rd	Church	3	60	61	1	No	61	1	No
5213 Frieden Church Rd	Residence	2	62	62	0	No	62	0	No
5315 Frieden Church Rd	School	3	53	54	1	No	54	1	No
5323 Frieden Church Rd	Community Ctr	3	54	57	3	No	56	2	No
5210 Frieden Church Rd	Residence	2	69	69	0	No	69	0	No
5212 Frieden Church Rd	Residence	2	67	67	0	No	67	0	No
5304 Frieden Church Rd	Residence	2	64	65	1	No	65	1	No
5314 Frieden Church Rd	Residence	2	62	63	1	No	62	0	No
5316 Frieden Church Rd	Residence	2	62	62	0	No	62	0	No
5318 Frieden Church Rd	Residence	2	62	62	0	No	62	0	No
5320 Frieden Church Rd	Residence	2	61	62	1	No	61	0	No
5419 McLeansville Rd	Residence	2	65	66	1	No	66	1	No
5525 McLeansville Rd	Residence	2	64	Taken	--	--	64	0	No
5601 McLeansville Rd	Residence	2	70	Taken	--	--	70	0	No
101 Birch Creek Rd	Residence	2	64	64	0	No	64	0	No
5510 McLeansville Rd	Residence	2	64	62	-2	No	63	-1	No
5522 McLeansville Rd	Residence	2	63	62	-1	No	Taken	--	--
5604 McLeansville Rd	Residence	2	71	71	0	No	Taken	--	--
5603 Bethel Church Rd	Residence	2	63	63	0	No	64	1	No
5609 Bethel Church Rd	Residence	2	61	60	-1	No	60	-1	No
5613 Bethel Church Rd	Residence	2	59	58	-1	No	58	-1	No
5606 Bethel Church Rd	Residence	2	60	59	-1	No	60	0	No
5612 Bethel Church Rd	Residence	2	58	57	-1	No	58	0	No
5614 Bethel Church Rd	Residence	2	59	57	-2	No	57	-2	No
5619 Bethel Church Rd	Residence	2	59	59	0	No	59	0	No

*Noise levels are in dBA Ldn for Category 2 Receptors and dBA Leq for Category 3 receptors.

4.2.2 AIR QUALITY

The project is located in Guilford County, which is designated as an attainment area for all criteria pollutants with National Ambient Air Quality Standards, with a maintenance plan effective through 2018 for the 8-hour ozone NAAQS (Section 3.2.2.1).

As discussed in Section 3.2.2.3, the USEPA adopted in March 2008 a three part program to dramatically reduce emissions from diesel locomotives of all types. The rule will cut particulate matter (PM) emissions from these engines by as much as 90 percent and nitrogen oxides (NOx) emissions by as much as 80 percent when fully implemented.

No-Build Alternative. The No-Build Alternative is not anticipated to create any adverse effects on the air quality of the area.

Preferred Alternative. No air quality impacts are anticipated from either Build Alternative with any of the service road options. Air quality effects associated with construction activities are discussed in Section 4.6.

Guilford County is designated as an attainment area for all criteria pollutants, so a general conformity determination is not required (Section 3.2.2.2). Note that the Triad area’s 8-hour ozone NAAQS maintenance plan, effective through 2018, does not make the area a specifically-designated maintenance area for classification of attainment status.

4.2.3 FARMLAND

No-Build Alternative. There are no construction activities under the No-Build Alternative, and therefore no impacts to farmland.

Build Alternatives.

Prime and Important Farmland Soils and the Farmland Protection Policy Act. Table 4-3 lists the acreages of prime and statewide important soils within the right of way of the Build Alternatives and the three service road options. The Preferred Alternative (Build Alternative A with Service Road 1b) will impact 11.2 acres of prime and statewide important farmland, with the range of all alternatives being 10.0 acres (Build Alternative B with Service Road 1a) to 12.7 acres (Build Alternative A with Service Road 2).

TABLE 4-3. Impacts to Prime and Important Farmland Soil

Alternative	Total Acres in Right of Way	Prime Farmland Soils (acres)*	Statewide Important Farmland Soils (acres)*	Total for Both Prime and Important Farmland Soils	
				Total acres in Right of Way*	%
Build Alternative A	17.5	6.5	3.0	9.5	54
Build Alternative B	17.6	5.7	3.0	8.7	49
Service Road 1a	1.3	1.3	0.0	1.3	100
Service Road 1b	2.1	2.1	0.0	2.1	100
Service Road 2	3.9	3.0	0.2	3.2	82

Source: USDA, Natural Resources Conservation Service

* Acres of prime and statewide important soils already in urban development (such as existing roadway right of way) were not included in the totals. Totals listed for Build Alternatives A and B do not include the areas for the service roads. Any service road option can be constructed with either Build Alternative.

In accordance with the FPPA and FHWA's *Guidelines for Implementing the Final Rule of the Farmland Protection Policy Act for Highway Projects*, a "Farmland Conversion Impact Rating for Corridor Type Projects" form was prepared and is included in the *P-5204 Guilford County Community Impact Assessment* (Atkins, November 2012), incorporated by reference.

The ratings on the NRCS forms are comprised of two parts. The Land Evaluation Criterion Value, prepared by the NRCS, represents the relative value of the farmland to be converted on a scale from 0 to 100 points. The Corridor Assessment, which is rated on a scale of 0 to 160 points, evaluates farmland soils based upon its use in relation to the other land uses and resources in the immediate area. This part is prepared by the lead State agency for the project. The two ratings are added together for a possible total rating of 260 points. Sites receiving a total score of 160 points or more are given increasingly higher levels of consideration for protection (7 CFR 658.4).

Both proposed Build Alternatives (with any of the service road options) received a Corridor Assessment score of 43 points out of 160 total points. There will be no significant impact on protected farmland soil because even if the relative value of the farmland to be converted receives a score of 100 points from NRCS, the total rating will be a maximum of 143, which is below the 160-point threshold for consideration of protection. No further coordination regarding farmland soils is required.

Local Agricultural Programs and Agricultural Activity. As discussed in **Section 3.2.3.2** and shown in **Figure 3-3**, there are two parcels in the Project study area that are Voluntary Agricultural Districts (VADs). These VADs, and other active agricultural areas, were considered during the development of the Build Alternatives and service road options, and impacts minimized where practicable.

Neither Build Alternative A nor Build Alternative B impacts VADs. Service Road Options 1a and 1b also will not impact any VAD property. Therefore, the Preferred Alternative (Build Alternative A with Service Road 1b) will not impact any VAD property.

Service Road Option 2 requires a narrow strip of right of way (approximately 8 feet wide) from the northern edge of the VAD that is located south of Hines Andrews Road. Converting this small area to right of way will not impact the agricultural functions of the parcel. This parcel is not an enhanced VAD, so the public hearing requirements included in the Guilford County VAD ordinance (Guilford County Code Chapter 15 Article III, Section 15-68) do not apply.

4.2.4 UTILITIES

No-Build Alternative. There will be no impact to existing utilities under the No-Build Alternative.

Build Alternatives. Construction of any of the project alternative could impact utilities. As noted in **Section 3.2.4**, the Project area is served by Duke Energy, the City of Greensboro Water Resources, Guilford Gas Company, Piedmont Natural Gas, Time Warner Cable, AT&T, and Verizon Wireless. NCDOT anticipates that the build alternatives with any of the service roads will require relocation of electrical power lines, sewer lines, and water lines.

A Piedmont Natural Gas line and easement runs under Bethel Church Road south of the Project study area near 5730 and 5748 Bethel Church Road. Based on the preliminary designs for Alternative A and Alternative B, neither impacts this gas line.

NCDOT will coordinate with all utility providers during final design and construction to prevent damage to utility systems and to minimize disruption and degradation of utility service to local customers.

4.2.5 VISUAL AND AESTHETIC RESOURCES

No-Build Alternative. Under the No-Build Alternative, there will be no change to, and therefore no impact to, the visual or aesthetic environments.

Build Alternatives. The project will construct a grade-separated bridge over the NCRR railroad tracks at McLeansville Road, and changes in the visual landscape will occur. The visibility of the proposed improvements depends on the location of the viewer. However, the inclusion of treatments such as coloring of structural elements, buffer areas, and landscaped screening into a project design can obscure views and minimize impacts of transportation features.

Although there are no prominent scenic vistas or visual resources that will be affected by the Build Alternatives and Service Roads, and no substantial adverse visual effects are anticipated to result from the project, it is the policy of the NCDOT to include aesthetic features and landscaping in its roadway designs when practicable and cost effective. Such features may include:

- Integrating landscaping into the project design to promote visual continuity of the highway and to blend it into the natural landscape as much as possible.
- Minimizing the loss of vegetation, especially during construction when equipment and material access, storage, and staging are required.
- Design project features, if reasonable and feasible, to be compatible with the surrounding natural environment features and development.

4.2.6 HAZARDOUS MATERIALS

No-Build Alternative. There will be no construction activities under the No-Build Alternative and therefore no impacts from hazardous material sites will occur.

Build Alternatives. Based on an evaluation of the Project area (*GeoEnvironmental Report for Planning for P-5204*, NCDOT, September 26, 2012), two possible UST facilities are within the Project study area. These are located at the Lynn's Furniture Gallery (now Crossroad Treasures) at 5335 Frieden Church Road (the northwest corner of the McLeansville Road/Frieden Church Road intersection), and the McLeansville Fire Station. These are described in more detail in **Section 3.2.6**.

Both Build Alternative A and Build Alternative B require right of way from the front of the McLeansville Fire Station and the Lynn's Furniture Gallery property. Both sites are anticipated to have a low potential for geoenvironmental impacts, and therefore, significant impacts from hazardous materials are not anticipated for the Preferred Alternative (Build Alternative A with Service Road 1b), nor the other Build Alternatives and Service Roads. The NCDOT Geotechnical Engineering Unit will provide additional assessments on each of these properties, as necessary, before right-of-way acquisition.

4.2.7 FLOODPLAINS

There are no floodplains or floodways in the Project study area, and therefore there will be no encroachments into the 100-year floodplain as a result of the project.

4.3 CULTURAL RESOURCES

The HPO reviewed the project and determined no historic resources (including archaeological resources) on or eligible for listing on the National Register of Historic Places (NRHP) will be affected by the project. As such, there will be no impacts to cultural resources. Written verification was received from the HPO by letter dated May 31, 2012, included **Appendix D**.

4.4 NATURAL ENVIRONMENT

4.4.1 BIOTIC COMMUNITIES AND WILDLIFE

No-Build Alternative. The No-Build Alternative will not involve any construction activities and will not impact terrestrial or aquatic natural communities or wildlife.

Build Alternatives. Project activities are expected to result in permanent impacts to natural communities. Permanent impacts to terrestrial communities are considered to be those impacts that occur within the proposed roadway's right-of-way limits. **Table 4-4** lists the impacts to terrestrial biotic communities. The Build Alternatives (without the service roads) impact similar acreages of maintained/disturbed lands and mesic mixed hardwood forest, with most impacts being to maintained/disturbed land. Of the service roads, Service Road Option 2 impacts the most mesic mixed hardwood forest.

In total, the Preferred Alternative (Build Alternative A with Service Road 1b) will impact 13.0 acres of maintained/disturbed land and 6.3 acres of mesic mixed hardwood forest. The range of impacts to maintained/disturbed land is 13.0 acres (Preferred Alternative) to 14.4 acres (Build Alternative B with Service Road 2). The range of impacts to mesic mixed hardwood forest is 5.0 acres (Build Alternative B with Service Road 1a) to 7.4 acres (Build Alternative A with Service Road 2).

TABLE 4-4. Impacts to Terrestrial Biotic Communities

Resource	Build Alternative A	Build Alternative B	Service Road 1a	Service Road 1b	Service Road 2
Maintained/ Disturbed Land (acres)	12.6	13.0	0.9	0.4	1.4
Mesic Mixed Hardwood Forest (acres)	4.9	4.6	0.4	1.7	2.5
Total Acres in Right of Way	17.5	17.6	1.3	2.1	3.9

No significant habitat fragmentation is expected as a result of project activities since potential improvements will be restricted to disturbed/maintained areas and adjacent forested areas. While the proposed roadway realignments bisect some existing habitat, this habitat has been previously disturbed due to development and farming activities. Construction noise and associated disturbances are anticipated to have short-term impacts on birds and migratory wildlife movement patterns. Many local species are expected to move back in to the project vicinity once construction is complete.

NCDOT anticipates that potential impacts to aquatic habitat in the Project area and downstream aquatic communities would be minimal. Short-term impacts associated with turbidity and suspended sediments may affect benthic populations. Temporary impacts to downstream habitat from increased sediment during construction will be minimized by the implementation of stringent erosion-control measures as discussed in **Section 4.5.2**.

4.4.2 WATER QUALITY

No-Build Alternative. The No-Build Alternative will not involve any construction activities, and therefore will not impact water quality.

Build Alternatives. Potential impacts to water resources in the Project study area may result from activities associated with construction of any of the project alternatives, including the Preferred Alternatives. Impacts could include clearing and grubbing on streambanks, riparian canopy removal, in-stream construction, fertilizers and pesticides used in revegetation, and pavement/culvert installation. Uncontrolled erosion and sedimentation can potentially destroy aquatic algae, eliminate benthic (bottom-dwelling) macroinvertebrate habitat, eradicate fish spawning habitat, and remove food resources for many stream species. Construction impacts to water quality may not be restricted to the communities in which the construction activity occurs, but also may affect downstream communities. Long-term impacts on water quality also are possible due to particulates, heavy metals, organic matter, pesticides, herbicides, nutrients, and bacteria that are often found in roadway runoff.

Implementation of stringent erosion and sedimentation control measures and BMPs will minimize impacts to water quality. In accordance with the *North Carolina Sedimentation Pollution Control Act of 1973* (GS Chapter 113A, Art. 4), as amended, and NC Administrative Code Title 15A, Chapter 4 (Sedimentation Control), an erosion and sedimentation control plan must be prepared for land-disturbing activities that cover one or more acres to protect against runoff from a ten-year storm.

Prior to construction, an erosion and sedimentation plan will be developed for the Preferred Alternative in accordance with the NCDENR Division of Land Resources publication *Erosion and Sediment Control Planning and Design* (revised March 2009) (NC Division of Land Resources Web site: <http://portal.ncdenr.org/web/lr/publications#espubs>) and the NCDOT's *Best Management Practices for the Protection of Surface Waters*.

The NCDOT also has *Standard Specifications for Roads and Structures* (January 2012)²¹ that require proper handling and use of construction materials. The contractor will be responsible for taking every reasonable precaution throughout construction of the project to prevent pollution of any body of water. The contractor also will be responsible for preventing soil erosion and stream siltation.

4.4.3 JURISDICTIONAL TOPICS

This section includes discussion of impacts to Waters of the United States (streams, wetland, and ponds) and the Jordan Lake Buffer Rules.

No-Build Alternative. The No-Build Alternative will not impact any jurisdictional resources since there will be no construction activities associated with this alternative.

Build Alternatives. Impacts to jurisdictional resources are described in the following sections.

Wetlands, Streams, and Ponds. The Project study area contains jurisdictional streams, ponds, and wetlands. Impacts are shown in **Figure 4-1** for Build Alternative A and **Figure 4-2** for Build Alternative B.

²¹ NCDOT Web site: <https://connect.ncdot.gov/resources/Specifications/Pages/Specifications-and-Special-Provisions.aspx>

Table 4-5 presents the streams, wetlands, and ponds estimated to be impacted by each Build Alternative and Service Road. The impacts were calculated using the proposed construction limits plus a 25-foot buffer around those limits to account for the level of detail included in the preliminary design.

As shown in **Table 4-5**, both Build Alternative A and Build Alternative B will impact the same amount of wetlands, approximately 0.05 acre, due to the realignment of Bethel Church Road. The realignment of Bethel Church Road was located to minimize impacts to the wetlands along Stream SB (see **Figure 3-3**). Service Road Option 2 may impact up to 0.03 acres of Wetland WS. Wetland WS is located within the 25-foot buffer applied to the construction limits of the service road, and may be able to be avoided during final design.

Likewise, Pond PA impacts from both Alternative A and Alternative B are located within the 25-foot buffer applied to the construction limits of the alternative, and may be able to be avoided during final design.

TABLE 4-5. Impacts to Waters of the United States

Resource ¹	Build Alternative A	Build Alternative B	Service Road 1a	Service Road 1b	Service Road 2
Wetlands (acres)					
WD	0.01	0.01	--	--	--
WE	0.04	0.04	--	--	--
WS	--	--	--	--	0.03 ²
Ponds (acres)					
PA	0.02 ²	0.01 ²	--	--	--
Streams (lin ft)					
SF (Intermittent)	148	225	--	--	--
SB (Perennial)	207	207	--	--	--
TOTALS					
Total Wetlands (acres)	0.05	0.05	--	--	0.03
Total Ponds (acres)	0.02	0.01	--	--	--
Total Streams (lin ft)	355	432	--	--	--

1. Impacts based on preliminary design construction limits plus a 25 foot buffer.

2. Impacts are within the 25-foot buffer only.

There are no stream impacts associated with any of the service road options. Stream impacts will occur at two locations under Build Alternative A and Build Alternative B; Stream SF and Stream SB. Overall, Build Alternative B will impact a greater length of stream impact than Build Alternative A (432 linear ft [lin ft] compared to 355 lin ft). Impacts to Stream SF could not be avoided by either build alternative, since this stream is located adjacent to existing McLeansville Road. The impacts to Stream SF (intermittent) are 148 lin ft under Build Alternative A and 225 lin ft under Build Alternative B. The location of the Stream SB crossing is the same for both Build Alternative A and Build Alternative B, and is due to the realignment of Bethel Church Road. The realignment of Bethel Church Road cannot avoid crossing Stream SB, but the location was selected to minimize impacts. The impacts will be approximately 207 lin ft under either build alternative.

Waters of the United States - Mitigation and Permits. If jurisdictional impacts can continue to be limited in size, consideration will be given to the use of Nationwide Permit (NWP) No. 14 (Linear Transportation Projects). The use of NWP No. 14 is limited to crossings that each result in a filled area of no more than 0.5 acre of waters of the United States or 300 linear feet of perennial, intermittent or ephemeral stream. Since each crossing can be considered a “single and complete” project, it is possible to have multiple nationwide permits along the entire project, assuming that the combined adverse effects are minimal. The USACE may exert discretionary authority and require an Individual Permit if avoidance and minimization have not been adequately addressed, or if appropriate mitigation is inadequate.

Section 401 of CWA requires each state to certify that state water quality standards will not be violated for activities which 1) involve issuance of a Federal permit or license or 2) require discharges to “waters of the United States.” The USACE cannot issue a Section 404 permit until a 401 Certification is issued. Therefore, NCDOT must apply to NCDWQ for Section 401 certification as part of the permit process. Each “single and complete” project will require notification to NCDWQ for general certification.

Compensatory mitigation is not normally considered until anticipated impacts to waters of the United States have been avoided and minimized to the maximum extent possible. It is recognized that “no net loss of wetlands” functions and values may not be achieved in each and every permit action. In accordance with 15A NCAC 2H .0506(h), NCDWQ may require compensatory mitigation for projects with greater than or equal to 1.0 acre of impacts to jurisdictional wetlands or greater than or equal to 150 linear feet of total perennial stream impacts.

Furthermore, in accordance with their regulations (see 67 FR 2020, 2092; January 15, 2002,) the USACE requires compensatory mitigation when necessary to ensure that adverse effects to the aquatic environment are minimal. The size and type of the proposed Project impact and the function and value of the impacted aquatic resource are factors considered in determining acceptability of appropriate and practicable compensatory mitigation.

Compensatory actions often include restoration, preservation and enhancement, and creation of waters of the United States. Such actions should be undertaken first in areas adjacent to or contiguous to the discharge site. An off-site mitigation program based on in-lieu fee payments made to the NCDENR Ecosystem Enhancement Program (EEP) was established by the *Memorandum of Agreement Among the North Carolina Department of Environment and Natural Resources, the North Carolina Department of Transportation, and the US Army Corps of Engineers, Wilmington District* (January 22, 2003). Coordination with the USACE and NCDWQ will determine if payment of an in-lieu fee is an available option for off-site mitigation, if required.

Jordan Lake Riparian Buffer Rules. As discussed in **Section 3.4.4.2**, development activities within the Project study area, including roadway crossings, are subject to the Jordan Lake Buffer Rules (15A NCAC 02B.0267). Impacts to riparian buffers are shown in **Figure 4-1** for Alternative A and **Figure 4-2** for Alternative B. The 50-foot buffers are divided into a 30-foot Zone 1 nearest the water resource, and a 20-foot Zone 2 beyond Zone 1, where different uses are allowed. Zone 1 is more restrictive.

None of the service road options will impact riparian buffers. Build Alternatives A and B will impact riparian buffers around Stream SB, Stream SF, and Pond PA, as listed in **Table 4-6**. Build Alternative A (as well as the Preferred Alternative) will impact approximately 1.08 acres of riparian buffer and Build Alternative B will impact approximately 1.25 acres of riparian buffer. Impact calculations will be updated during final design.

Road crossings that impact greater than 40 lin ft, but equal to or less than 150 lin ft or one-third acre of riparian buffer are allowable without mitigation. Road crossings that impact greater than 150 lin ft or one-third acre of riparian buffer are allowable with mitigation. Based on the preliminary design, the impacts under Build Alternative A and Build Alternative B will require mitigation. A determination of ‘no practical alternatives’ is required from the NCDWQ, and approval of mitigation (15A NCAC 02B.0244).

TABLE 4-6. Impacts to Riparian Buffers

Buffer Area ¹	Build Alternative A	Build Alternative B	Service Road 1a	Service Road 1b	Service Road 2
Zone 1 (acres)	0.62	0.74	--	--	--
Zone 2 (acres)	0.46	0.51	--	--	--
Total Zone 1 + Zone 2 (acres)	1.08	1.25	--	--	--

1. Impacts based on preliminary design construction limits plus a 25 foot buffer expanding the construction limits.

The required area of mitigation shall be determined by the NCDWQ by applying a multiplier of 3.0 to impacts in Zone 1 of the riparian buffer and a multiplier of 1.5 to impacts in Zone 2. Mitigation shall be in the same subwatershed; the same distance from, or closer to, Jordan Lake as the proposed impact; and as close to the location of the impact as feasible. The NCDWQ will issue a mitigation determination that specifies the required area and location of mitigation (15A NCAC 02B.0244).

Mitigation may be met by payment of a compensatory mitigation fee to the Riparian Buffer Restoration Fund, donation of real property or of an interest in real property, or restoration or enhancement of a non-forested riparian buffer (15A NCAC 02B.0268).

4.4.4 PROTECTED SPECIES

Information in this section is summarized from the project’s *Natural Resources Technical Report* (Atkins, July 2012), incorporated by reference.

No-Build Alternative. The No-Build Alternative will not impact protected species.

Build Alternatives. None of the build alternatives or service roads, including the Preferred Alternative, will impact Federally-protected species, as described below.

Small-Whorled Pogonia. The Biological Conclusion for small-whorled pogonia (*Isotria medeoloides*) is No Effect for both Build Alternative A and Build Alternative B with any of the service road options.

Detailed surveys for small-whorled pogonia in the Project study area were performed on July 02, 2012. No occurrences of small whorled pogonia were found. A review of NCNHP records, updated May 2012, indicates no known small whorled pogonia occurrence within 1.0 mile of the study area

Bald Eagle. Due to the lack of habitat, known occurrences, and minimal impact anticipated for this Project, as discussed in **Section 3.4.4.3**, it has been determined that the project build alternatives and service road options will have no effect on the bald eagle.

4.5 INDIRECT AND CUMULATIVE EFFECTS

The Council of Environmental Quality's (CEQ) regulations implementing NEPA divide environmental impacts into three categories: direct impacts, indirect (or secondary) impacts, and cumulative effects. CEQ regulations require all three types of impacts be addressed in NEPA documents. Indirect and cumulative effects of the Build Alternatives have been considered along with the direct effects as required under the CEQ regulations (40 CFR 1508.25).

Indirect effects are effects that are caused by the proposed action but are later in time or farther removed by distance. Indirect effects may include growth-inducing changes in the pattern of land use population density or growth rate, and related effects on air, water, natural systems, or the human environment.

Cumulative effects are the incremental effects of the action when added to other past, present, and reasonably foreseeable future actions. Assessment of potential effects consisted of a review of other actions that have affected, or that could affect, the same environmental resources that may be affected by the project. For example, wetlands can often experience multiple individual impacts from many projects over time, that when summed, result in cumulative effects.

4.5.1 ANALYSIS METHODOLOGY

The general approach to evaluating indirect and cumulative effects is defined by the *ICI Guidance* (NCDOT, November 2001), the CEQ (*Considering Cumulative Effects Under NEPA*, 1997), National Cooperative Highway Research Program Reports 403 and 466 (2001 and 2002, respectively), state/Federal regulations, and past case law. This qualitative analysis was undertaken in five steps based on the NCDOT *ICI Guidance*, including:

- Definition of Indirect and Cumulative Effects (ICE) Study Areas (Step 1)
- Identification of the ICE Study Area's Direction and Goals (Step 2)
- Inventory of Notable Features (Step 3)
- Identification of Impact-Causing Activities (Step 4)
- Identification and Analysis of Potential Indirect and Cumulative Effects (Step 5)

4.5.2 ANALYSIS STUDY AREAS

Both a geographic study area and a timeframe for study were identified. The geographic boundary for the ICE analysis was determined by a series of overlay maps. NCDOT determined that overlays of the traffic area of influence, developed land, and US Census Block Groups were the primary factors in delineating a relevant geographic boundary for the ICE analysis. Because the proposed Project is primarily meant to address vehicular mobility and safety and the efficiency of train traffic in the area around the McLeansville Road, surrounding roadways were determined to be the primary boundaries for analysis of ICE. The ICE Study Area is presented in **Figure 4-3**. The ICE Study Area is bounded by McLeansville Road to the west, Bethel Church Road to the south, Knox Road to the east, and Frieden Church Road to the north.

The timeframe for ICE analysis is from 1970 to 2035. This timeframe is based on the approximate median date of construction of structures within the ICE Study Area (1970) and the planning horizon for the long-range transportation plan (2035).

4.5.3 STUDY AREA DIRECTION AND GOALS

As discussed in **Section 3.1.1.3**, land use in this area is guided by the *Guilford County Northeast Area Plan* (updated October 16, 2008). The majority of the ICE study area is designated as a Rural District where maintaining and enhancing the rural character of the area is important to the residents. The community's goal for the western end of the ICE study area around the intersection of McLeansville Road and Frieden Church Road (McLeansville Service Core) is a mix of office, commercial, institutional, and light industrial uses.

4.5.4 INVENTORY OF NOTABLE FEATURES

Not all impacts "accumulate". That is, similar impacts from multiple projects do not always combine to create greater impacts. However, some resources may experience minimal change from independent impacts but when impacts are summed cumulatively from multiple projects, the resources may experience impacts over time. For example, visual impacts within the geographic boundary could potentially accumulate due to several individual actions that reduce viewsheds or impact the aesthetic environment

Examples of resources that do not accumulate impacts include hazardous materials or displacements; these resources experience only one direct impact. If the proposed Project will not result in a direct or indirect impact to a certain resource, then it will not contribute to cumulative effects to that resource.

Notable features were identified using environmental information prepared for the various sections of this Environmental Assessment, as well as scoping comments received for the project. Notable features include farmland, natural communities, wetland and stream resources, visual resources, and the transportation system. Features in the ICE study area have not changed notably since 1970. Limited housing construction along Knox Road, Bethel Church Road, McLeansville Road, and Frieden Church Road has been consistent in intensity and type with previously constructed homes. However, there is a new residential subdivision annexed into the City of Greensboro located along Birch Creek Road directly to the west.

Wetlands and streams in the Project study area are described in **Section 3.4.2** and **Section 3.4.4**. In the broader ICE Study Area, there are no major named streams, although there are unnamed perennial and intermittent tributaries throughout the ICE Study Area, as there are in the Project study area. Wetlands are expected to be scattered throughout the ICE Study Area as they are in the Project study area since the ICE Study Area has topography similar to the smaller Project study area. The visual landscape of the area has not changed substantially since the 1970s. The generally agricultural viewshed has remained and the study area's presence within the Rural District will ensure that rural and low intensity development will be present in the future.

4.5.5 IMPACT CAUSING ACTIVITIES

There are no major roadway, railway, or land development projects currently planned or under construction within the Project study area or ICE area.

4.5.6 ANALYSIS OF INDIRECT EFFECTS

The proposed Project is primarily designed to improve vehicular mobility and safety and the efficiency of train operations in the area around the McLeansville Road at-grade crossing of the NCRR. The proposed improvements will not cause indirect impacts to the following resources within the study area: land use, housing, community resources, parklands, archaeological or historic

resources, air quality, noise, visual and aesthetic resources, or hazardous materials. Potential indirect impacts to natural resources, travel times, and economics are discussed below.

Natural Resources. Indirect effects to water quality that may occur from the project due to stormwater runoff will be minimized through implementation of NCDOT's *Best Management Practices for the Protection of Surface Waters* and conformance to the Jordan Lake Buffer Rules.

Travel Times. Local traffic patterns will change under the Build Alternatives. These changes in travel patterns have the potential to cause secondary impacts to travel times for local residents, school buses, and emergency vehicles. Vehicles traveling north on Knox Road or west on Carmon Road to access Frieden Church Road will experience longer travel times with the closure of the Carmon Road rail crossing, as will vehicles making the reverse trip. However, the impact of this change in travel patterns is not significant because delays currently occur when trains are stopped at the railroad siding near Carmon Road for extended periods of time.

Economics. Regionally, improvements to efficiency of train operations will occur due to the removal of the Carmon Road crossing and the grade separation of the McLeansville Road crossing. Trains will no longer be faced with delays from the uncoupling of trains at the siding near Carmon Road and McLeansville Road in order to let vehicles pass. This reduction in delays will provide an overall benefit to the regional economy through improved efficiency.

4.5.7 ANALYSIS OF CUMULATIVE EFFECTS

Cumulative effects occur when there is an additive relationship between various projects in relation to the resources being analyzed. Previous projects in the ICE Study Area have been limited to residential development on large lots that are consistent with zoning and existing land use and minor roadway improvements that facilitate local transportation. Since there are no past or future reasonably foreseeable projects that will lead to cumulative effects within the ICE Study Area, no local cumulative effects are anticipated.

From a regional perspective, since 2001 when the NCDOT Rail Division began work on various track and signal improvements, travel time by rail between Raleigh and Charlotte has been reduced. The McLeansville Road Grade Separation and associated project elements, together with others planned and programmed along the corridor as part of the PIP and the SEHSR, will result in regional cumulative benefits; including schedule reliability, increased train speeds, and overall rail capacity and safety. The PIP and SEHSR projects will improve operational efficiencies for freight and passenger rail service between the two largest economic centers in North Carolina, Charlotte and Raleigh. The PIP projects, which consist of railroad capacity projects and crossing safety projects, will facilitate up to six daily round trip passenger trains along the Raleigh to Charlotte Piedmont Corridor and the additional capacity will allow freight trains to operate more efficiently. These projects also will have cumulative safety benefits by lowering the possibility of vehicle/train collisions and cumulative noise benefits by reducing train horn noise along the rail corridor.

4.6 CONSTRUCTION IMPACTS

No-Build Alternative. No construction activities and therefore no construction-related impacts will occur under the No-Build Alternative.

Build Alternatives. The construction activities associated with the proposed Project may cause temporary adverse impacts to the local environment. These impacts, generally short-term in nature, can be controlled, minimized, or mitigated through conformance with Best Management Practices

(BMPs) and standard NCDOT procedures. Impacts will be the same for the Preferred Alternative and the other build alternatives with any service road option.

Short-term impacts to adjacent land uses during construction will occur due to the movement of workers and material through the area and construction activities. Construction noise and dust, as well as temporary disruption of traffic flow on local roads, may also affect residences and businesses in the vicinity of the project. Coordination between NCDOT and area landowners and local businesses regarding construction scheduling and access to the construction site will minimize any such disruptions.

Potential construction-related impacts are briefly summarized below.

Air Quality. Temporary degradation of air quality in the Project area will result from the construction of the project. Initial clearing and grubbing will produce dust and exhaust emissions. The contractor will be responsible for controlling dust at the project site and at areas affected by the construction, including haul access roads, disposal site, borrowed material sources, and production sites. Dust control measures may include the following activities:

- Minimizing exposed earth surface
- Temporary and permanent seeding and mulching
- Watering working and haul areas during dry periods
- Covering, shielding, or stabilizing material stockpiles
- Using covered haul trucks

Emissions from construction equipment are regulated by Federal standards. During construction of the proposed Project, all materials resulting from clearing and grubbing, demolition or other operations will be removed from the project site, burned or otherwise disposed of by the contractor. Any burning will be accomplished in accordance with applicable laws, local ordinances and regulations of the North Carolina SIP for air quality in compliance with 15A NCAC 02D.1903. For construction in Guilford County, open burning, if allowed, will require a permit in accordance with the County Code of Guilford Ordinances Section 15.5-2.

Construction Noise. The predominant construction activities associated with this Project are expected to be earth removal, hauling, grading, and paving. Temporary and localized construction noise impacts will likely occur as a result of these activities. During daytime hours, the predicted effects of these impacts will be temporary speech interference for passers-by and those individuals living or working near the project. During evening and nighttime hours, steady-state construction noise emissions such as from paving operations will be audible, and may cause impacts to activities such as sleep. Sporadic evening and nighttime construction equipment noise emissions such as from backup alarms, lift gate closures (“slamming” of dump truck gates), etc., will be perceived as distinctly louder than the steady-state acoustic environment.

While discrete construction noise level prediction is difficult for a particular receiver or group of receivers, it can be assessed in a general capacity with respect to distance from known or likely project activities. For this Project, earth removal, grading, hauling, pile driving, and paving is anticipated to occur in the near vicinity of noise-sensitive receptors, including residences along McLeansville Road, Bethel Church Road, and Hines Andrews Road.

Although construction noise impact mitigation should not place an undue burden upon the financial cost of the project or the project construction schedule, NCDOT recommends that:

- Earth removal, grading, hauling, paving, and pile driving activities in the vicinity of residences should be limited to weekday daytime hours.
- If meeting the project schedule requires that earth removal, grading, hauling and / or paving must occur during evening, nighttime and/or weekend hours in the vicinity of residential neighborhoods, the Contractor shall notify NCDOT as soon as possible. In such instance(s), reasonable attempts shall be made to notify affected property owners and/or residents and, where feasible, to make appropriate arrangements to minimize predicted construction noise impacts.

For additional information on construction noise, please refer to the FHWA Construction Noise Handbook (FHWA-HEP-06-015) and the Roadway Construction Noise Model (RCNM), available online at: http://www.fhwa.dot.gov/environment/noise/cnstr_ns.htm.

Water Quality. Impacts to water resources in the Project study area may result from activities associated with project construction. Activities that will result in impacts are clearing and grubbing on stream banks, riparian canopy removal, in-stream construction, fertilizers and pesticides used in revegetation, and pavement/culvert installation. The following impacts to surface water resources could result from the construction activities mentioned above.

- Increased sedimentation and siltation downstream of the railroad bed and increased erosion in the Project study area.
- Alteration of stream discharge due to silt loading and changes in surface and groundwater drainage patterns.
- Changes in light incidence and water clarity due to increased sedimentation and vegetation removal.
- Changes in and destabilization of water temperature due to vegetation removal.
- Alteration of water levels and flows due to interruptions and/or additions to surface and ground water flow from construction.
- Increased nutrient loading during construction via runoff from exposed areas.
- Increased concentrations of toxic compounds in roadway runoff.
- Increased potential for release of toxic compounds such as fuel and oil from construction equipment and other vehicles.

Temporary construction impacts due to erosion and sedimentation will be minimized through implementation of a stringent erosion-control schedule and the use of BMPs. The contractor will follow contract specifications pertaining to erosion control measures as outlined in 23 CFR 650 Subpart B and Article 107-13 entitled Control of Erosion, Siltation, and Pollution (NCDOT, Specifications for Roads and Structures). These measures include the use of dikes, berms, silt basins, and other containment measures to control runoff; elimination of construction staging areas in floodplains and adjacent to waterways; re-seeding of herbaceous cover on disturbed sites; management of chemicals (herbicides, pesticides, de-icing compounds) with potential negative impacts on water quality; and avoidance of direct discharges into streams by catch basins and roadside vegetation. With implementation of required BMPs, long-term impacts to adjacent reaches resulting from construction are expected to be negligible.

Wildlife. Construction, staging, and stockpiling operations may result in the temporary disruption of the resident wildlife population. The clearing of habitats, human activity, and noise from construction operations may result in the displacement of mobile wildlife. Non-mobile species will be lost as habitat is converted to construction areas.

Impacts to biotic communities will be minimized as much as possible by restricting land clearing and construction operations within the project's right-of-way. NCDOT will encourage the contractor to locate off-site staging and stockpiling to disrupt the least amount of natural habitat area. These areas will be revegetated once construction activities are complete, thus replacing habitat for some species.

Construction Waste. All construction waste material generated during clearing, grubbing, and other construction phases will be removed from the project site and burned or disposed of by the contractor in accordance with State and local regulations. Litter and other general trash will be collected and properly disposed of.

Utilities. The project may require some adjustments, relocations, or modifications to existing utilities. Any disruption to utility service during construction will be minimized by phased adjustment to the utility line. All modifications, adjustments, or relocations will be coordinated with the affected utility company.

Maintenance of Traffic. Maintenance of traffic and sequencing of construction will be planned and scheduled so as to minimize traffic delays within the Project area. NCDOT will coordinate with Guilford County Schools regarding bus routes. Maintenance and protection of traffic in conjunction with construction activities associated with the project will be prepared in accordance with the latest edition of the *Manual of Uniform Traffic Control Devices* and roadway standards of NCDOT. Signs will be used as appropriate to provide notice of road closures and other pertinent information to the traveling public. Advance notice through the local news media will be made to alert the public of traffic restrictions and construction related activities.

Truck traffic in the Project area will increase during construction. If access to construction staging areas and the construction site requires temporary access roadways, a traffic plan would be developed during the final engineering design phase that defines designated truck routes and parking areas for construction vehicles.

4.7 SUMMARY OF IMPACTS FROM THE PREFERRED ALTERNATIVE

Impacts and mitigation (if applicable) for the Preferred Alternative are summarized in **Table 4-7**. Impacts are listed in the same order as in this EA and cover all topics included in the Federal Railroad Administration (FRA) publication, *FRA Procedures for Considering Environmental Impacts* (Federal Register Volume 64, No. 101, May 26, 1999). The table also lists the EA sections where more detail is provided for each impact area. A comparison of impacts from all the Build Alternatives (with all the service road options) is included in **Section 2.5 – Preferred Alternative**.

TABLE 4-7. Summary of Impacts from the Preferred Alternative

Impact Area	EA Chapter 4 Sections Containing More Detail	Summary of Impact	Proposed Mitigation
Consistency with Land Use and Transportation Local Plans	4.1.1	No Impact. The Preferred Alternative is consistent with area land use and transportation plans.	Not applicable.
Relocations	4.1.2	Minor Impact. The Preferred Alternative will require three (3) residential relocations and one (1) business relocation.	NCDOT will use three programs to minimize the inconvenience of relocation: Relocation Assistance, Relocation Moving Payments, and Relocation Replacement Housing Payments or Rent Supplement. These programs are in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970. Comparable replacement housing is available in the Project area for displaced homeowners and tenants.
Communities and Neighborhoods	4.1.3	Minor Positive Effect and Minor Impact. Existing communities and neighborhoods will not be divided internally or from one another by physical or psychological barriers as a result of the Preferred Alternative. The grade separation and the wider paved shoulders to be constructed on McLeansville Road will provide improved access between the residences south of the railroad tracks and the McLeansville Service Core area north of the railroad tracks. The preferred alternative will also result in minor access changes for some properties along Bethel Church Road and the Bullard and Black private railroad crossing	Not applicable.
Environmental Justice	4.1.4	No Impact. The Preferred Alternative will not result in disproportionately high and adverse effects to any low-income or minority populations because there are no concentrations of minority or low-income populations in the Project study area.	Not applicable.
Community Services	4.1.5	Minor Impact. There will be a minor direct property impact to the McLeansville Fire Station frontage along Frieden Church Road. The Preferred Alternative will result in indirect impacts to fire/EMS response services and school transportation with the loss of access across the railroad tracks due to the closure of the Carmon Road at-grade	Not applicable.

TABLE 4-7. Summary of Impacts from the Preferred Alternative

Impact Area	EA Chapter 4 Sections Containing More Detail	Summary of Impact	Proposed Mitigation
		<p>railroad crossing. However, the grade-separated crossing at McLeansville Road will provide improved access at this location since it will be a reliable crossing of the railroad tracks that is always open.</p> <p>The closing of the Carmon Road at-grade railroad crossing will require Guilford County Schools to implement minor rerouting of school buses making stops on Carmon Road and Knox Road. Currently there are three school buses with stops in the area.</p>	
Public Health	4.1.5 4.2.6	<p>No Impact. No impacts to public health are anticipated during construction of the Preferred Alternative. The Project is not expected to have impacts to hazardous material sites, wetlands, area streams, or waterways.</p>	Not applicable.
Public Safety	4.1.5	<p>Positive Effect. There will be a public safety benefit with a grade-separating McLeansville Road and closing the Carmon Road at-grade crossing, eliminating the possibility of train/auto collisions at these locations.</p>	Not applicable.
Recreational Opportunities	4.1.5	<p>No Impact. There are no public or private recreational facilities in the Project study area. The grade separation and the wider paved shoulders to be constructed on McLeansville Road will provide improved pedestrian/bicycle access between the residences south of the railroad tracks and the McLeansville Service Core area north of the railroad tracks.</p>	Not applicable.
Possible Barriers to the Elderly and Handicapped	4.1.3 4.1.5	<p>No Impact. Construction of the Preferred Alternative is not anticipated to result in barriers to the elderly and handicapped populations.</p>	Not applicable.
Section 4(f) and Section 6(f) Resources	4.1.5	<p>No impact. There are no Section 4(f) or Section 6(f) resources in the Preferred Alternative study area.</p>	Not applicable.
Economic Effects and Energy Use	4.1.6	<p>Minor Positive Effect and Minor Impact.</p> <p>The Project study area does not contain mineral resources or quarries or energy resource activities.</p> <p>The project will not result in any major economic gains or losses in the area. However, the Preferred Alternative will displace one business, which may have a</p>	Not applicable.

TABLE 4-7. Summary of Impacts from the Preferred Alternative

Impact Area	EA Chapter 4 Sections Containing More Detail	Summary of Impact	Proposed Mitigation
		<p>minor temporary economic impact in the area until the business is reestablished. The project also will support construction jobs temporarily during construction.</p> <p>The Preferred Alternative will result in a temporary increase in energy use during the construction phase. However, completion of the crossing closures will result in more efficient train operations as trains using the siding will not have to uncouple to allow vehicles to pass through. The grade separation will result in improved vehicle operations and eliminate the need for vehicles to idle while waiting for trains to pass through the at-grade crossings.</p>	
Noise and Vibration	4.2.1	<p>No Impact. The Preferred Alternative will result in a decrease in train horn noise due to the removal of the at-grade crossings at McLeansville Road, Carmon Road, and private Bullard and Black driveway. No vibration impacts are anticipated due to the Preferred Alternative.</p>	Not applicable.
Air Quality	4.2.2	<p>No Impact. No air quality impacts are anticipated due to the Preferred Alternative.</p>	Not applicable.
Farmland	4.2.3	<p>Minor Impact. The Preferred Alternative will impact 11.6 acres of prime and statewide important farmland. However, There will be no significant impact on protected farmland soil under the Farmland Protection Policy Act.</p>	Not applicable.
Utilities	4.2.4	<p>Minor Impact. The Preferred Alternative is anticipated to require relocation of electrical power lines, sewer lines, and water lines.</p>	<p>NCDOT will coordinate with all utility providers during final design and construction to prevent damage to utility systems and to minimize disruption and degradation of utility service to local customers.</p>
Aesthetics and Design Quality	4.2.5	<p>Minor Impact. Minor changes in the visual landscape will occur as a result of the project.</p>	<p>It is NCDOT policy to replace or compensate for landscaping impacted by project construction.</p>
Hazardous Waste and Construction Waste Disposal	4.2.6	<p>Minor Impact. The Preferred Alternative will require right of way from the front of the McLeansville Fire Station and the Lynn’s Furniture Gallery property. Both sites are anticipated to have a low potential for geoenvironmental impacts.</p>	<p>The NCDOT Geoenvironmental Unit will complete further assessments prior to right of way acquisition, as necessary.</p>

TABLE 4-7. Summary of Impacts from the Preferred Alternative

Impact Area	EA Chapter 4 Sections Containing More Detail	Summary of Impact	Proposed Mitigation
Flood Hazards and Floodplain Management	4.2.7	No Impact. There are no floodplains or floodways in the Project study area.	Not applicable.
Historic Architectural and Archaeological Resources	4.3	No Impact. There are no significant historic architectural or archaeological resources within the Preferred Alternative study area, as confirmed by the State Historic Preservation Officer.	Not applicable.
Ecological Systems (Biotic Communities and Wildlife)	4.4.1	Minor Impact. Permanent impacts will occur to 6.6 acres of mesic mixed hardwood forest and 13.0 acres of maintained/disturbed areas for the Preferred Alternative.	Not applicable.
Water Quality	4.4.2	Minor Impact. Project activities such as clearing and grubbing, riparian canopy removal, in-water construction, fertilizer and pesticide use for revegetation, redirection of surficial groundwater flows could impact surface water resources in the absence of appropriate Best Management Practices (BMPs).	Prior to construction, an erosion and sedimentation control plan will be developed in accordance to NCDENR regulations and NCDOT <i>Best Management Practices for the Protection of Surface Waters</i> .
Jurisdictional Resources (wetlands, streams, and ponds) and Jordan Lake Riparian Buffer Rules	4.4.3	Minor Impact. The Preferred Alternative will impact approximately 0.05 acre of wetlands, due to the realignment of Bethel Church Road. There will be a total of 355 linear feet of stream impacts to two streams: 148 linear feet for an intermittent stream and approximately 207 linear feet of a perennial stream. Approximately .02 acres of pond will be impacted. The Preferred Alternative would impact approximately 1.08 acres of Jordan Lake Riparian Buffers around two streams and a pond. Road crossings that impact greater than 150 lf or one-third acre of riparian buffer are allowable with mitigation.	NCDOT will apply for a USACE Nationwide 14 Permit for impacts to jurisdictional areas. Also, compensatory mitigation through the NCDENR Ecosystem Enhancement Program may be required for this Project.
Protected Species	4.4.4	No Impact. The Preferred Alternative will not impact any Federally-protected species.	Not applicable.
Indirect and Cumulative Effects	4.5	Minor Impact. Minor indirect impacts to water quality may occur due to stormwater runoff. Also, vehicular travelers will experience longer commute times due to the crossing closures at Carmon Road. There are no cumulative effects anticipated due to this Project.	Indirect effects to water quality that may occur from the project due to stormwater runoff will be minimized through implementation of NCDOT's <i>Best Management Practices for the Protection of Surface Waters</i> and conformance to the Jordan Lake Buffer Rules.

TABLE 4-7. Summary of Impacts from the Preferred Alternative

Impact Area	EA Chapter 4 Sections Containing More Detail	Summary of Impact	Proposed Mitigation
Construction Impacts	4.6	<p>Minor Impact. Temporary impacts could occur to air quality, noise, waste generation, maintenance of traffic, water quality, and wildlife.</p>	<p>The contractor will be responsible for controlling dust at the project site and at areas affected by the construction.</p> <p>Earth removal, grading, hauling, paving, and pile driving activities will generate noise. Where practicable, NCDOT will limit construction activities to weekday daytime hours in the vicinity of residences.</p> <p>Waste generated during construction will be properly disposed of in accordance with State and local regulations.</p> <p>Maintenance of traffic and sequencing of construction will be planned and scheduled so as to minimize traffic delays within the Project area.</p> <p>Water quality impacts will be minimized by utilizing Best Management Practices and standard NCDOT procedures during construction.</p> <p>Impacts to willdife will be minimized as much as possible by restricting land clearing and construction operations within the project’s right-of-way. NCDOT will encourage the contractor to locate off-site staging and stockpiling to disrupt the least amount of natural habitat area.</p>

Environmental Commitments. During the National Environmental Policy Act (NEPA) process, commitments are made to avoid, minimize, or mitigate project impacts. Commitments result from public comment or through the requirements of, or agreements with, environmental resource and regulatory agencies.

NCDOT will comply with applicable Federal and state requirements and regulations, such as; Section 404 Individual Permit Conditions, Nationwide Permit Conditions, Regional Conditions, and State Consistency Conditions; North Carolina Department of Transportation (NCDOT) *Guidelines for Best Management Practices for the Protection of Surface Waters*, General Certification Conditions, and Section 401 Conditions of Certification; and the Endangered Species Act. Other special project commitments have been agreed to by the NCDOT, as follows.

- During construction activities, NCDOT will coordinate with Guilford County Schools regarding bus routes.

5.0 AGENCY COORDINATION AND PUBLIC INVOLVEMENT

Public and agency involvement and input have been encouraged throughout the development of the project. Government agencies and officials and interested citizens were informed of the progress of the project through mailings and meetings. Coordination and input received related to the McLeansville Road grade separation project are summarized below. Also included in **Section 5.3** is a summary of previous public and agency coordination related to the Carmon Road grade separation project (Project Y-4800) that was replaced by the McLeansville Road grade separation project.

5.1 AGENCY COORDINATION

In the process of preparing this Environmental Assessment, Federal, state, and local agencies were contacted to provide information about the proposed Project, to identify issues of concern, and obtain information about environmental resources within the Project study area.

In November 2011, each agency received a scoping letter introducing the project, listing the specific project elements proposed to be included in the Build Alternatives, and requesting that they identify any concerns. A map of the study area was enclosed with each letter. Agencies responding to the scoping letter are marked with an asterisk below, and their letters are included in **Appendix D**. Agencies and organizations listed also will be provided the opportunity to review and comment on this Environmental Assessment.

<p>FEDERAL AGENCIES Federal Highway Administration US Army Corps of Engineers *US Fish and Wildlife Division US Environmental Protection Agency US Forest Service Federal Railroad Administration</p>	<p>NCDOT UNITS NCDOT Board of Transportation NCDOT Division 7 NCDOT Rail Division <ul style="list-style-type: none"> ▪ Operations and Facilities Branch ▪ Engineering and Safety Branch NCDOT Office of Civil Rights NCDOT Project Development and Environmental Analysis Branch <ul style="list-style-type: none"> ▪ Human Environment Section </p>
<p>STATE AGENCIES *NC Environmental Review Clearinghouse *NC Historic Preservation Office NC Wildlife Resources Commission *NCDENR – Dept of Agriculture NC DENR - Division of Air Quality NC DENR - Division of Forest Resources *NC DENR - Division of Water Quality NC DENR - Land Quality Section NC DENR - Natural Heritage Program</p>	<p>LOCAL AGENCIES City of Greensboro, Planning Department City of Greensboro, Manager/Planning Director Greensboro City Council Guilford County, Planning Department Guilford County, Board Commissioners *Guilford County Schools Town of Sedalia, Mayor</p>
<p>REGIONAL AGENCIES Greensboro Urban Area Metropolitan Planning Association</p>	<p>OTHER INTERESTED PARTIES North Carolina Rail Road Company Norfolk Southern Corporation Amtrak McLeansville Fire Department</p>

5.2 PUBLIC INVOLVEMENT

A Public Involvement Plan (PIP) summarizing the NCDOT public involvement program for the McLeansville Road Grade Separation project was prepared (*Public Involvement Plan*, Atkins, December 2011). The PIP is incorporated by reference into this EA.

The objectives for public involvement included soliciting input on the project from the public and government officials, considering this input in the alternatives development and analysis, and receiving comment on the various alternatives throughout the project development process.

5.2.1 CITIZENS INFORMATIONAL WORKSHOP

One Citizens Informational Workshop (CIW) was held to present the public with information about the project. The workshop was held on Tuesday, April 24, 2012 from 5:00-7:00 pm at the McLeansville Fire Department located at 5326 Frieden Church Road. At this CIW, NCDOT presented the purpose and need for the project and maps showing alternative roadway alignments for the new bridge construction. A summary of the workshop and the Local Officials Meeting is provided in the document; *Summary – Local Officials Meeting and Citizens Informational Workshop #1 McLeansville Road Grade Separation Project* (Atkins, July 2012), incorporated by reference. Information about the workshop is provided below.

5.2.2 MEETING ADVERTISEMENTS

The NCDOT published a press release on April 9, 2012. A public notice of the workshop was mailed via postcard on April 11, 2012. The mailing list included property owners and parcel addresses in the study area. The list also included an expanded area around the study area and those who had previously requested to be on the mailing list for the Carmon Road grade separation project (which was replaced with the McLeansville Road project). The mailing list contained 757 people and was compiled from Guilford County tax parcel data.

An advertisement about the workshop was published in the following local newspapers:

- Que Pasa - April 5, April 12, April 19
- Greensboro Times - April 2012 Edition
- Greensboro News & Record – April 4, April 11, April 18, and April 22
- Carolina Peacemaker – April 5, April 12, and April 19

5.2.3 WORKSHOP DISPLAYS AND FORMAT

The Citizens Informational Workshop #1 was held as an open-house. Attendees were encouraged to view the project displays, and to discuss the project one-on-one with NCDOT representatives. Maps of the two preliminary alternatives and a project vicinity map were displayed in the meeting room.



5.2.3.1 Attendance and Comment Summary

A total of 116 citizens signed in at the workshop. Most attendees were from McLeansville (80 attendees), followed by Gibsonville (20 attendees) and Greensboro (6 attendees). There were two citizens each from Burlington, Elon and Lillington and one citizen each from Concord, Pleasant Garden, Whitsett, and Winston-Salem.

Sixteen comment forms were submitted at the workshop. The comment period remained open until May 24, 2012, and twelve additional comments were received after the workshop.

In summary, it appeared that the majority of the people attending the Citizens Informational Workshop supported the project. Of those providing written comments, 17 citizens supported the project and 11 opposed the project.

The citizens who oppose the project were concerned with effects on school bus trips, added travel distance for their personal trips, increased emergency response times, increased traffic volumes, impacts to the Nationwide Insurance office at the corner of McLeansville Road and Bethel Church Road, and impacts to farmland.

Citizens who support the project were equally divided between Alternative A and Alternative B. Those who expressed general support for the project, but did not specify a preference for either alternative, were counted as supporting both Alternative A and Alternative B.

There was little to no apparent opposition to closing the Frieden Church Road railroad crossing after the bridge at McLeansville Road was open to traffic. One commenter expressed concern about adequate access to McLeansville Elementary School if the crossing was closed. Another expressed concern about emergency response times. In subsequent communication with NCDOT, the McLeansville Fire Station expressed concern about their response times in relation to closing the Frieden Church Road railroad crossing and the Carmon Road railroad crossing. This was a factor in deciding to not include closing the Frieden Church Road at-grade crossing as part of the proposed Project (**Section 2.2**).

Several citizens, including some who live on Frieden Church Road near Carmon Road, expressed opposition to closing the Carmon Road railroad crossing, and were concerned about increased travel distance for their trips and EMS response if the Carmon Road crossing was closed.

No specific comments were received regarding the closing of the Bullard and Black private railroad crossing or any of the service roads proposed to connect the properties landlocked by the private crossing closure. However, one of the owners of one of the landlocked properties did sign in at the workshop.

5.2.4 LOCAL OFFICIALS MEETING

A Local Officials Meeting for the project was held prior to the CIW from 3:30-4:30 pm on April 24, 2012. An email was sent to local public officials and staff on April 10, 2012. Attachments to the email included the invitation letter, a copy of the Public Notice for the Citizens Informational Workshop, and a copy of the postcard mailed to local residents announcing the workshop.

The Local Officials Meeting was held as an open house. One local official representing the Greensboro MPO attended the meeting, and he stayed for the Citizens Informational Workshop to assist in answering attendee's questions.

5.3 PREVIOUS PUBLIC INVOLVEMENT AND AGENCY COORDINATION FOR THE CARMON ROAD GRADE SEPARATION PROJECT

Prior to the studies beginning for the McLeansville Road Grade Separation Project, there was a study of a potential grade separation at Carmon Road (STIP Project Y-4800). The history of grade separation studies in the Project study area is discussed in **Section 1.1**. As part of the previous studies for Project Y-4800, agency coordination and public involvement activities were conducted. These are summarized below.

5.3.1 PREVIOUS AGENCY COORDINATION

In July 2007, NCDOT initiated coordination with the same agencies as listed in **Section 5.1**. At this point agencies were introduced to the project, reviewed preliminary alternatives and offered an opportunity to attend the August 16, 2007 public workshop. In November 2008 each agency received a scoping letter reviewing the project, listing the specific project elements proposed to be included in the Recommended Alternative, and requesting that they identify any concerns.

A Local Officials Meeting was held just prior to the May 2008 Citizens Informational Workshop described in **Section 5.3.2**. Local officials present at the meeting included representatives from Guilford County Commission, Guilford County Planning Department, and the Greensboro Department of Transportation/Metropolitan Planning Organization.

5.3.2 PREVIOUS PUBLIC INVOLVEMENT

Two Citizens Informational Workshops (CIWs) took place for the Carmon Road grade separation project.

The first CIW was held on August 16, 2007 at the McLeansville Elementary School. At this CIW, NCDOT presented the purpose and need for the project and three preliminary design alternatives. Approximately 27 citizens attended the workshop. General sentiments expressed by participants led to the development of a fourth alternative (Alternative 4) which avoided improvements to the Carmon Road crossing altogether by extending Carmon Road westward to tie into McLeansville Road. Several comments were made that the crossing on McLeansville Road needed to be grade-separated before the Carmon Road crossing.

The second CIW was held on May 19, 2008 at Eastern Guilford Middle School. Approximately 20 citizens attended this CIW. In addition to the three preliminary design alternatives for the Carmon Road railroad grade separation presented at the August 2007 CIW, the fourth alternative, which included the extension of Carmon Road, was presented.

6.0 REFERENCES AND SUPPORTING DOCUMENTATION

6.1 REFERENCES

Council on Environmental Quality

Considering Cumulative Effects Under NEPA, 1997.

Federal Highway Administration

Guidelines for Implementing the Final Rule of the Farmland Protection Policy Act for Highway Projects.

Federal Railroad Administration

Southeast High Speed Rail Tier I Environmental Impact Statement. Record of Decision in 2002.
Web site: www.sehsr.org

Guidance on Assessing Noise and Vibration Impacts, Web page: <http://www.fra.dot.gov/Page/P0216>

Chicago Rail Efficiency and Transportation Efficiency (CREATE) Railroad Noise Model User Guide, February 2006.

Federal Transit Administration

Transit Noise and Vibration Impact Assessment, May 2006.

Greensboro, City of

Web page: www.greensboro-nc.gov/index.aspx?page=2220

Greensboro Urban Area Metropolitan Planning Organizations

2035 Long Range Transportation Plan. January 2009.

Draft Update to the 2035 Long Range Transportation Plan. Prepared by Greensboro Urban Area Metropolitan Planning Organization. January 2012.

Greensboro Urban Area Bicycle, Pedestrian, and Greenway Master Plan. October 2006.

Guilford County

Guilford County Comprehensive Plan. October 2006.

Guilford County Farmland Protection Plan. June 2011.

Guilford County On-Line GIS. Web site: <http://gisdv.co.guilford.nc.us/guilfordsl/>

Guilford County Municipal Code. Web site: <http://library.municode.com/index.aspx?clientId=14294>

Guilford County Transportation and Mobility Services Flyer. Web site:
www.co.guilford.nc.us/downloads/transp/PT%20Links%20Flier.pdf

Northeast Guilford Area Plan. October 2008.

Guilford County Schools

Web site: www.gcsnc.com

Piedmont Triad International Airport

PTIA Web site: www.flyfrompti.com/wp-content/uploads/2010/05/airport_fast_facts-3.pdf

National Park Service

Land and Water Conservation Fund Web page: www.nps.gov/lwcf/

Natural Resource Conservation Service

Soils Data Mart Web page: <http://soildatamart.nrcs.usda.gov>

Guilford County Soil Survey Web page:

http://soils.usda.gov/survey/online_surveys/north_carolina/NC081/text.pdf

North Carolina State Data Center

Web site: www.osbm.state.nc.us

North Carolina Department of Commerce

Guilford County Profile: <http://accessnc.commerce.state.nc.us/docs/countyProfile/NC/37081.pdf>

NC Division of Water Quality (NCDWQ)

2012 303d list NCDWQ Web page: <http://portal.ncdenr.org/web/wq/ps/mtu/assessment>

Water Classifications Web page: <http://portal.ncdenr.org/web/wq/ps/csu/classifications#classes>

Jordan Lake Buffer Rules Web page:

http://portal.ncdenr.org/c/document_library/get_file?uuid=fd6c684b-2c8e-4617-a890-551ad77cd680&groupId=235275

North Carolina Department of Transportation

2012-2018 State Transportation Improvement Program

Relocation Assistance. Web site:

www.ncdot.gov/download/construction/roadbuilt/RelocationBooklet_07.pdf

Answers to the Questions Most Often Asked About Right of Way Acquisitions. Web site:

www.ncdot.gov/download/construction/roadbuilt/rightofway_acquisition_brochure.pdf

Assessing Indirect and Cumulative Effects of Transportation Projects in North Carolina, November 2001.

Best Management Practices for Protection of Surface Waters

Standard Specifications for Roads and Structures, January 2012. NCDOT Web site:

<https://connect.ncdot.gov/resources/Specifications/Pages/Specifications-and-Special-Provisions.aspx>

North Carolina Department of Transportation - Rail Division

Main Web page: www.bytrain.org/track

Schafale and Weakley

Classification of Natural Communities of North Carolina, 1990

US Department of Transportation

Executive Order 12898 on Environmental Justice to Address Justice in Minority Populations and Low-Income Populations (USDOT Order 5610.2)

US Environmental Protection Agency

Greenbook Web page: www.epa.gov/oar/oagps/greenbk

Locomotives Web page: www.epa.gov/otag/locomotives.htm#il

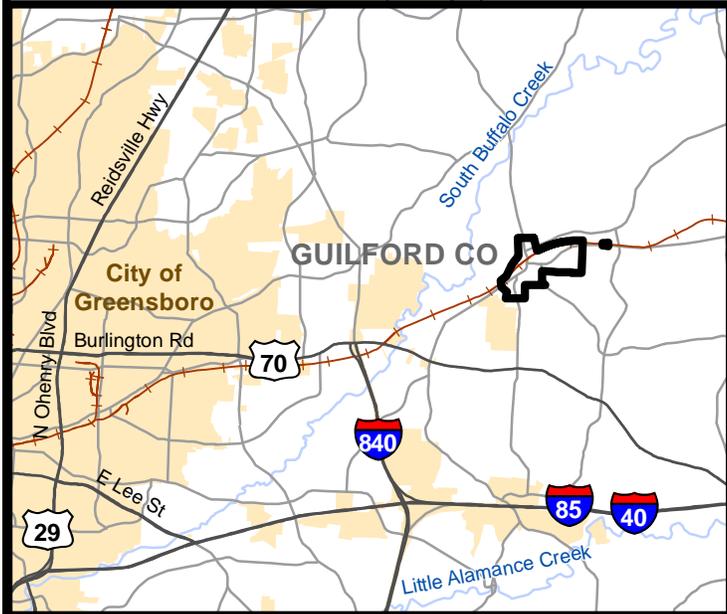
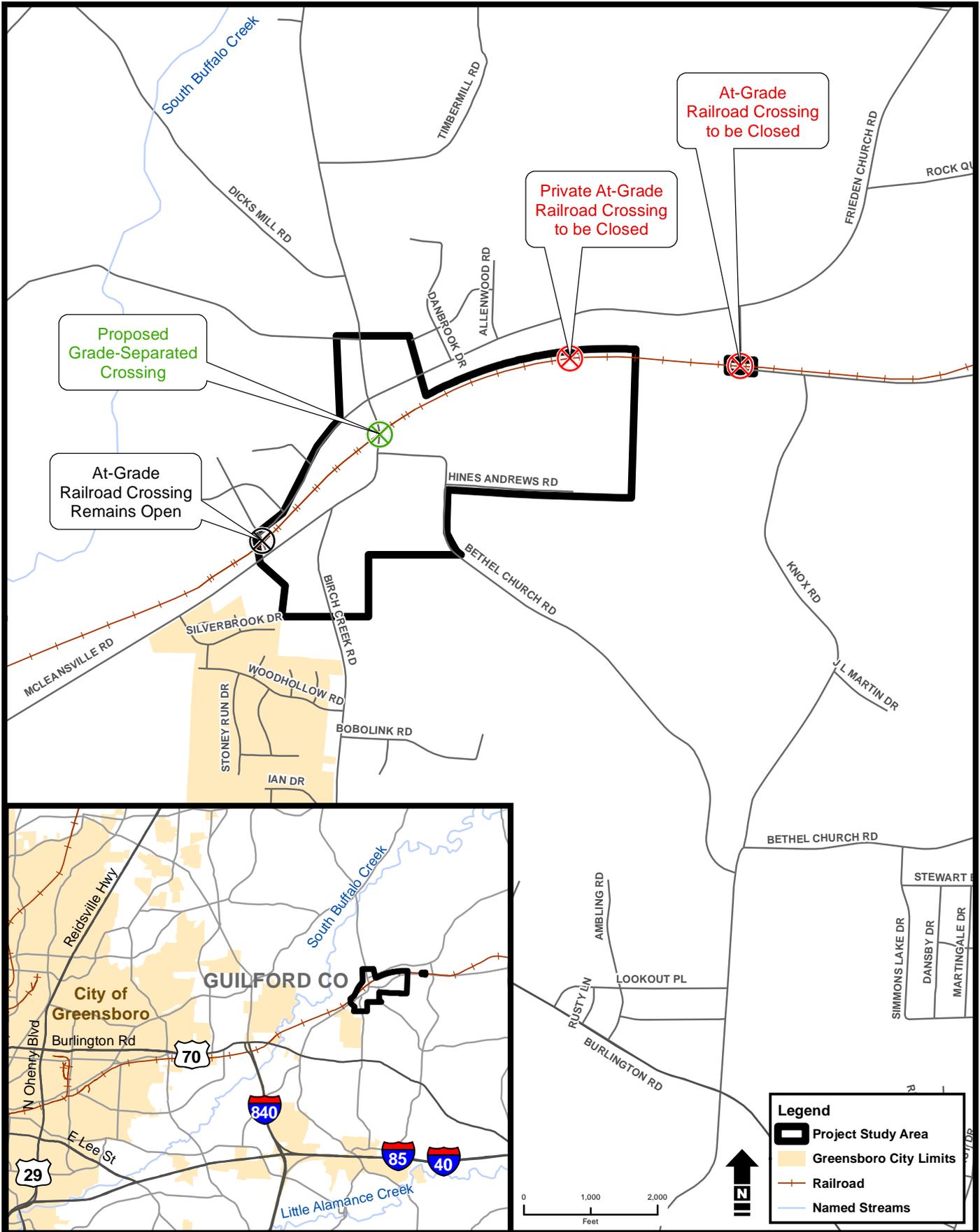
US Fish and Wildlife Service (USFWS)

Migratory Birds Web site: <http://www.fws.gov/migratorybirds/baldeagle.htm>

6.2 SUPPORTING DOCUMENTATION

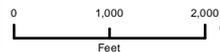
The supporting project documentation listed below are technical memoranda and reports incorporated by reference into the EA. These are available for review from NCDOT upon request to Mr. Ryan White, NCDOT Rail Division at rlwhite@ncdot.gov, or 919-707-4717.

- | | |
|-----------------|--|
| 2012, July | Natural Resources Technical Report for Grade Separation of Norfolk Southern/NC Railroad at McLeansville Road, Guilford County, North Carolina, TIP P-5204. Prepared by Atkins. |
| 2012, July | Summary of Local Officials Meeting and Citizens Informational Workshop #1 for McLeansville Road Grade Separation Over the NC Railroad/Norfolk Southern Track, McLeansville, Guilford County, NC – TIP Project Number P-5204. Prepared by Atkins. |
| 2012, September | GeoEnvironmental Report for Planning for McLeansville Road (SR-2819) Grade Separation. Prepared by NCDOT GeoEnvironmental Section Geotechnical Engineering Unit, September 26. |
| 2012, November | Traffic Operations Technical Memorandum for Grate Separation of Norfolk Southern/NC Railroad at McLeansville Road – STIP Number P-5204. Prepared by Atkins. |
| 2013, January | STIP #P-5204 Guilford County Community Impact Assessment. Prepared by Atkins. |
| 2013, January | Noise and Vibration Impact Assessment for Grade Separation of NC Railroad at McLeansville Road – STIP Number P-5204. Prepared by Atkins. |
| 2013, January | Relocation Reports for P-5204. Prepared by NCDOT Division 7 Right of Way. |



Legend

- Project Study Area
- Greensboro City Limits
- Railroad
- Named Streams



McLEA_ProjectVicinity.mxd 01_10_2013 AKB



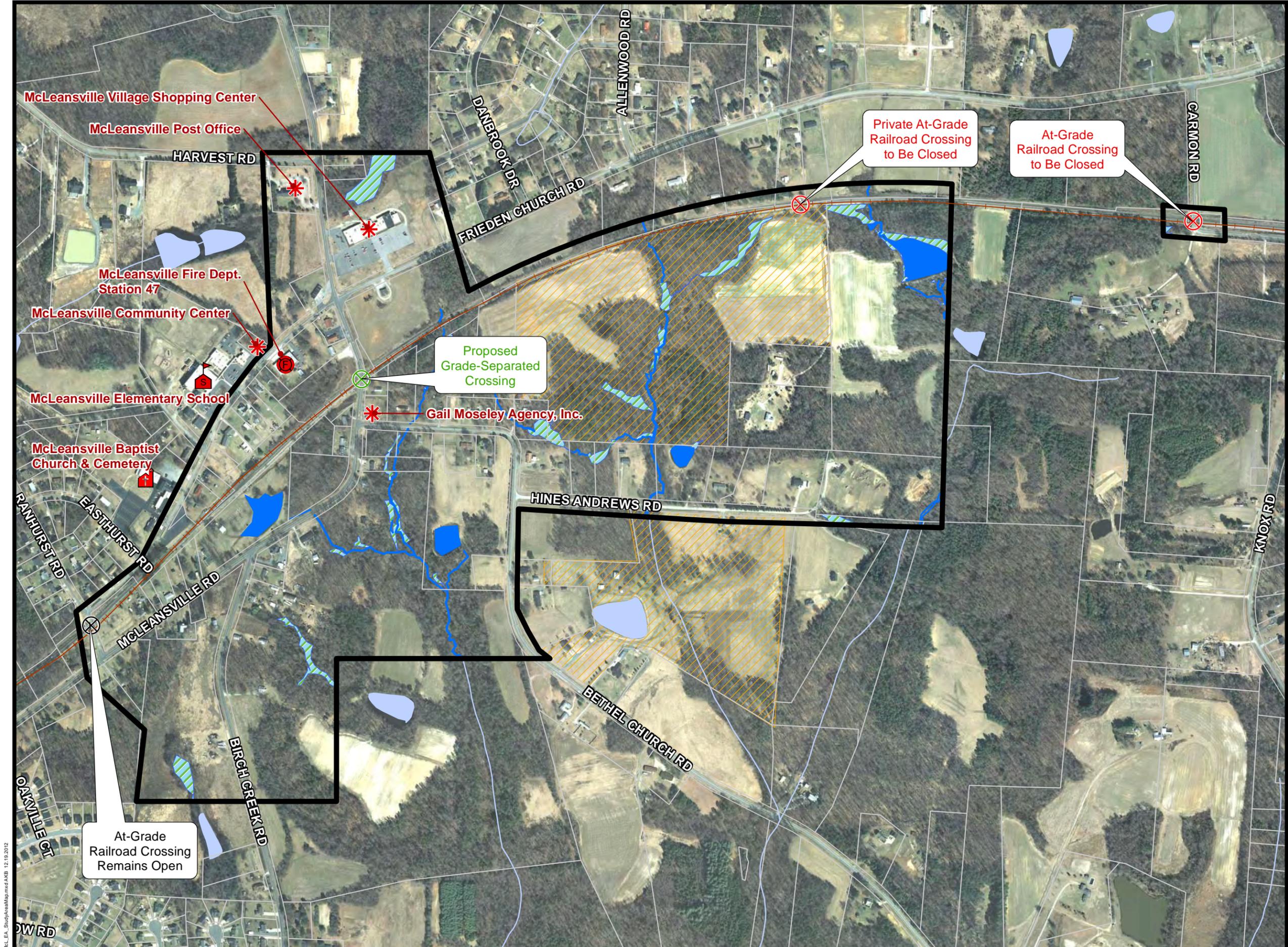
STIP Project No. P-5204
Guilford County, NC

McLEANSVILLE ROAD SR-2819
GRADE SEPARATION

PROJECT VICINITY MAP

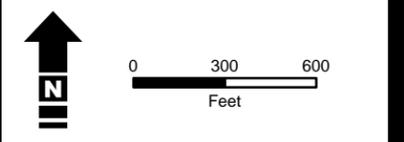
Source: Guilford County, NCOneMap
Map Printed January 2013

Figure 1-1



- Legend**
- Notable Features
 - Church
 - Fire Station
 - School
 - Project Study Area
 - Existing At-Grade Railroad Crossing to be Closed
 - Existing At-Grade Railroad Crossing to be Grade Separated
 - At-Grade Railroad Crossing Remains Open
 - Railroad
 - Delineated Streams
 - Delineated Wetlands
 - Delineated Open Water
 - Streams
 - Ponds
 - Voluntary Agricultural District
 - Parcels

Source: Guilford County, NCONemap
 Aerial Photo: ArcGIS Image Service
 2010 - Orthoimagery
 Map Printed January 2013



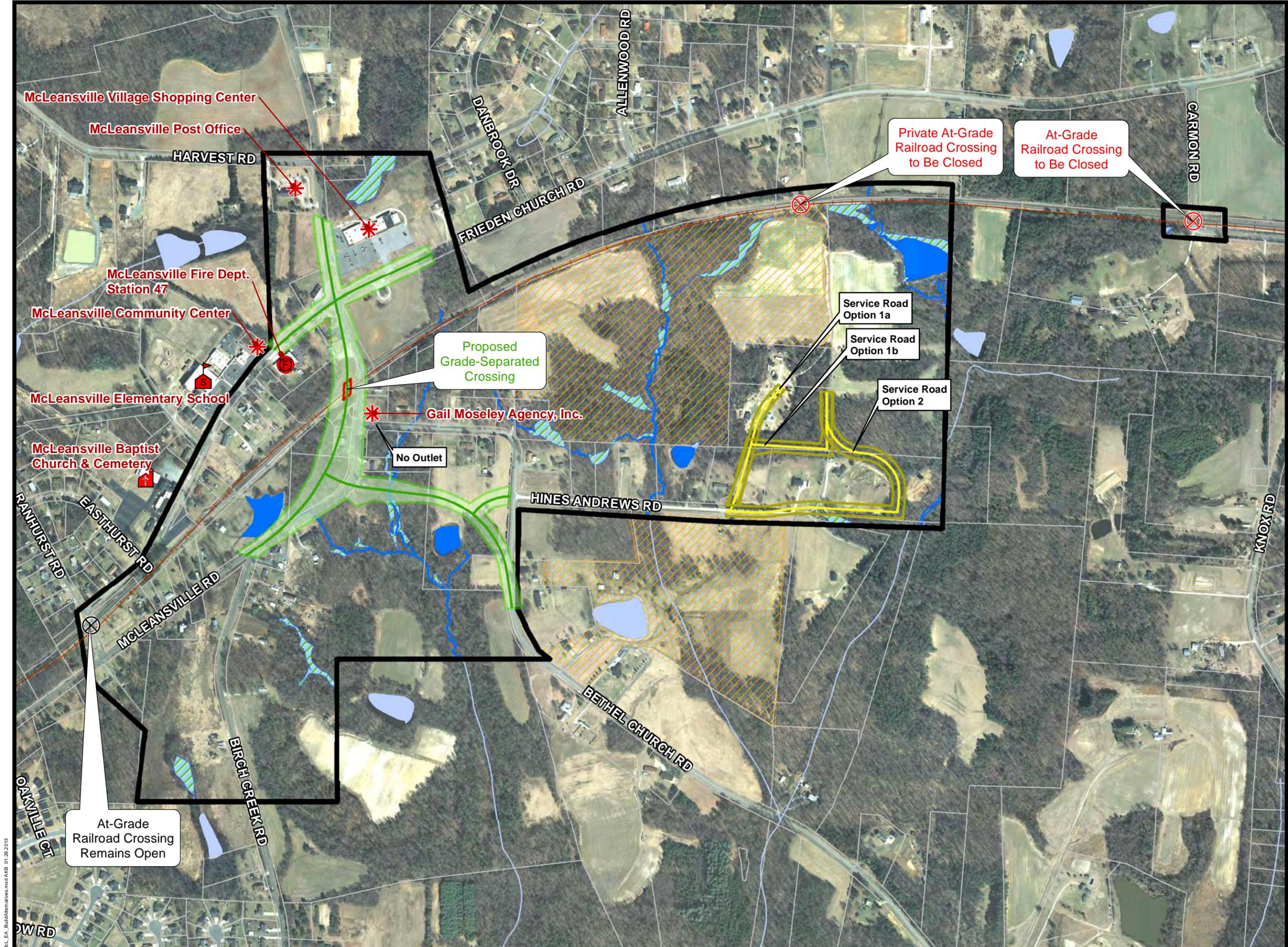
STIP Project No. P-5204
 Guilford County, NC

**MCLEANSVILLE ROAD SR-2819
 GRADE SEPARATION**

STUDY AREA MAP

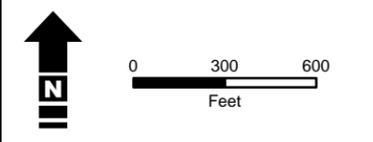
FIGURE 1-2

McL_EA_StudyAreaMap.mxd AKB 12-18-2012



- Legend**
- Project Study Area
 - Proposed Alt A Centerline
 - Proposed Alt A Bridge
 - Proposed Alt A Right of Way
 - Notable Features
 - Church
 - Fire Station
 - School
 - Railroad
 - Delineated Streams
 - Delineated Wetlands
 - Delineated Open Water
 - Streams
 - Ponds
 - Voluntary Agricultural District
 - Parcels
 - Existing At-Grade Railroad Crossing to be Closed
 - At-Grade Railroad Crossing Remains Open

Source: Guilford County, NCONemap
 Aerial Photo: ArcGIS Image Service
 2010 - Orthoimagery
 Map Printed January 2013



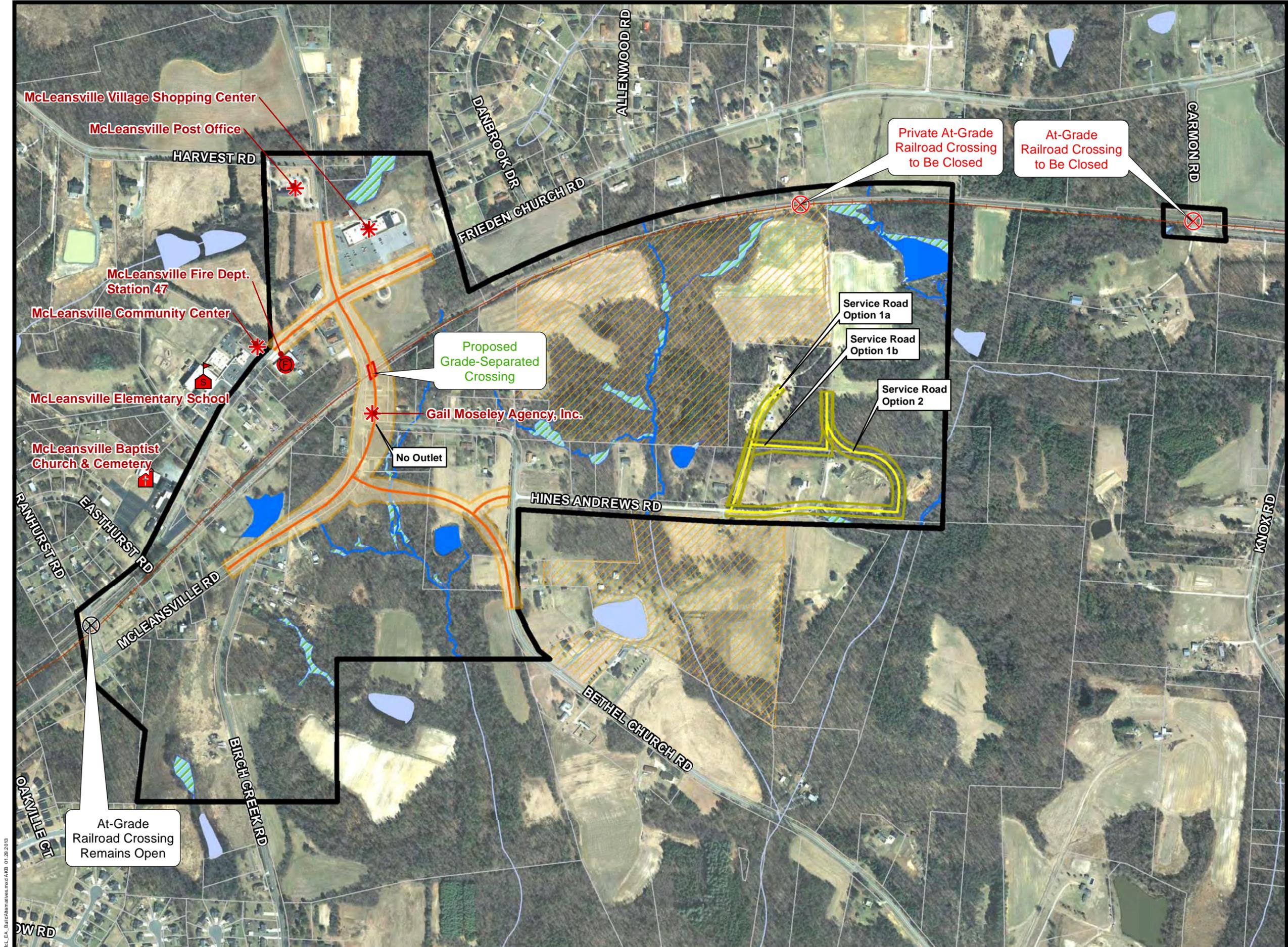
STIP Project No. P-5204
 Guilford County, NC

**McLEANSVILLE ROAD SR-2819
 GRADE SEPARATION**

**BUILD
 ALTERNATIVE A**

FIGURE 2-1

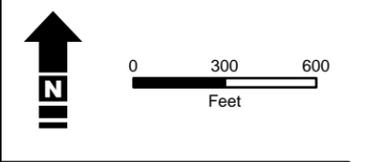
McL_EA_BuildAlternatives.mxd AKB 01/29/2013



Legend

- Project Study Area
- Proposed Alt B Centerline
- Proposed Alt B Bridge
- Proposed Alt B Right of Way
- Notable Features
- Church
- Fire Station
- School
- Railroad
- Delineated Streams
- Delineated Wetlands
- Delineated Open Water
- Streams
- Ponds
- Voluntary Agricultural District
- Parcels
- Existing At-Grade Railroad Crossing to be Closed
- At-Grade Railroad Crossing Remains Open

Source: Guilford County, NCONemap
 Aerial Photo: ArcGIS Image Service
 2010 - Orthoimagery
 Map Printed January 2013



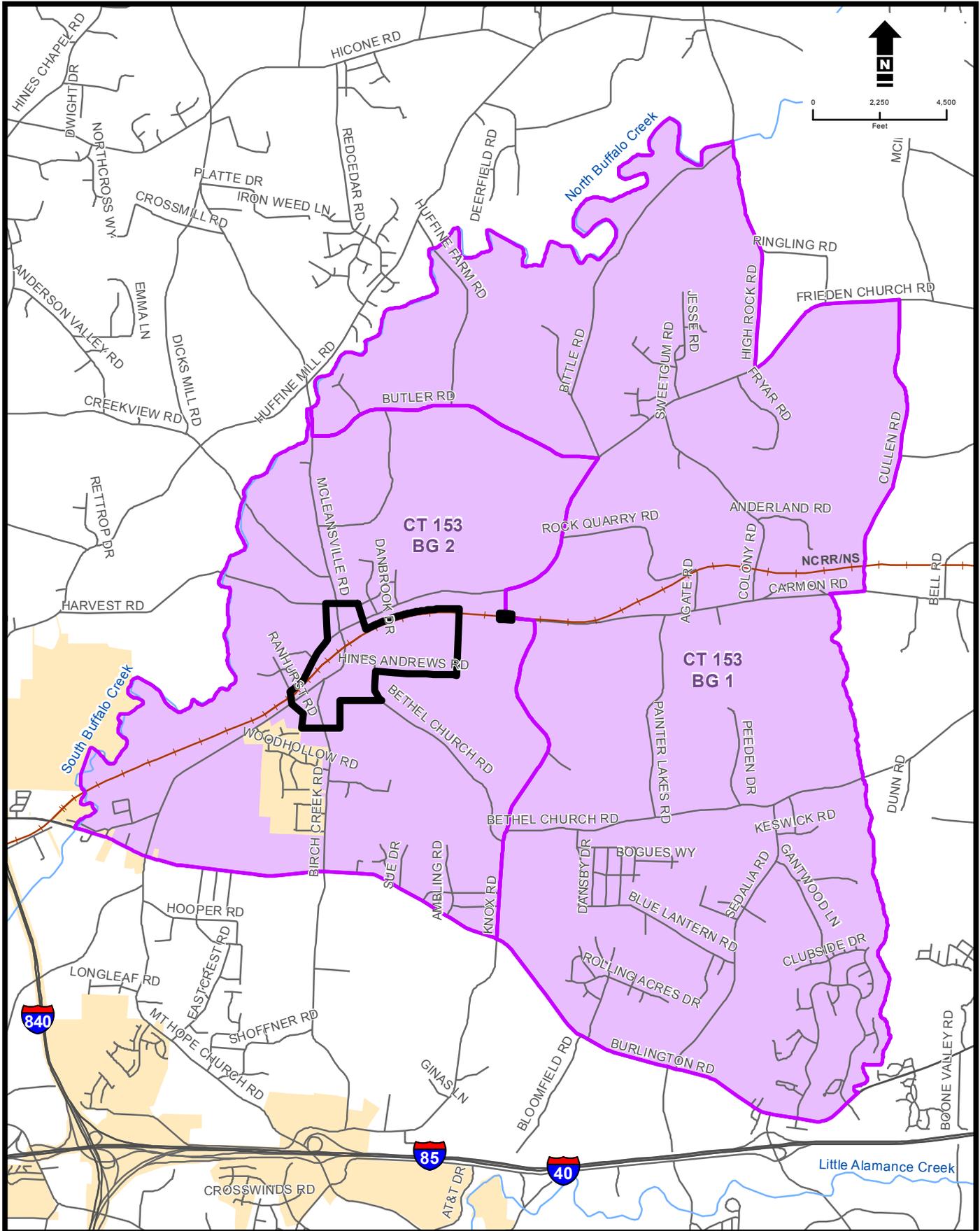
STIP Project No. P-5204
 Guilford County, NC

**McLEANSVILLE ROAD SR-2819
 GRADE SEPARATION**

**BUILD
 ALTERNATIVE B**

FIGURE 2-2

McL_EA_BuildAlternatives.mxd AKB 01/29/2013



McLeansville_DSA.mxd 12/19/12 JNL



STIP Project No. P-5204
Guilford County, NC

Legend

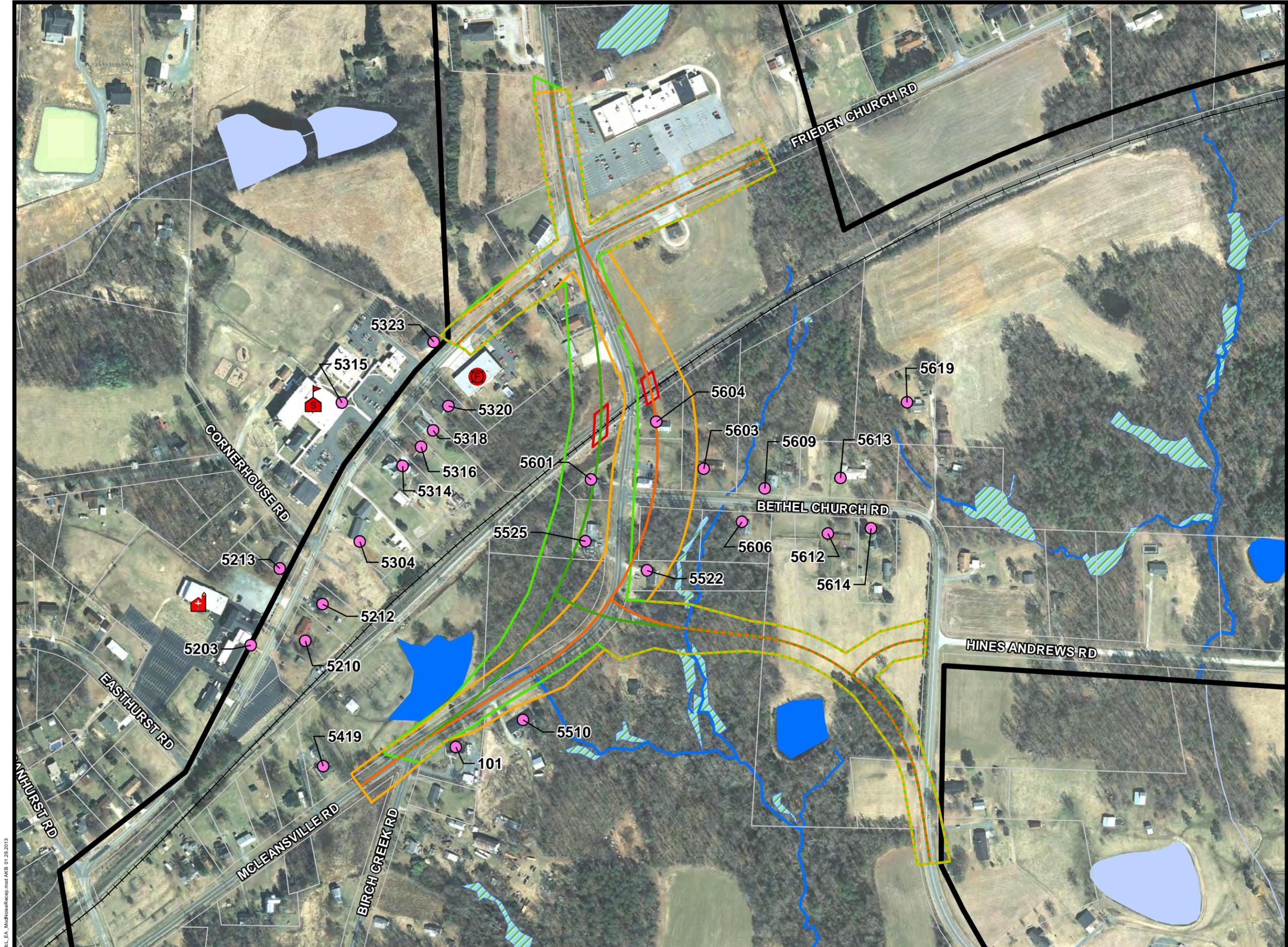
- Demographic Study Area*
- Project Study Area
- Greensboro City Limits
- Railroad
- Streams
- * CT = Census Tract
BG = Block Group

McLEANSVILLE ROAD SR-2819
GRADE SEPARATION

DEMOGRAPHIC STUDY AREA

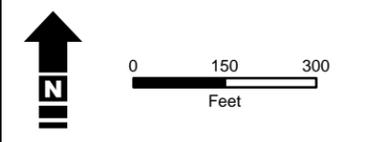
Source: Guilford County
Map Printed December 2012

Figure 3-1



- Legend**
- Modeled Noise Sensitive Receptors
 - Proposed Alt A Centerline
 - Proposed Alt B Centerline
 - Proposed Alt A Bridge
 - Proposed Alt B Bridge
 - Proposed Alt A Right of Way
 - Proposed Alt B Right of Way
 - ⛪ Church
 - Ⓜ Fire Station
 - 🏫 School
 - Project Study Area
 - +— Railroad
 - Delineated Streams
 - Delineated Wetlands
 - Delineated Open Water
 - Streams
 - Ponds
 - Parcels

Source: Guilford County, NCONemap
 Aerial Photo: ArcGIS Image Service
 2010 - Orthoimagery
 Map Printed January 2013



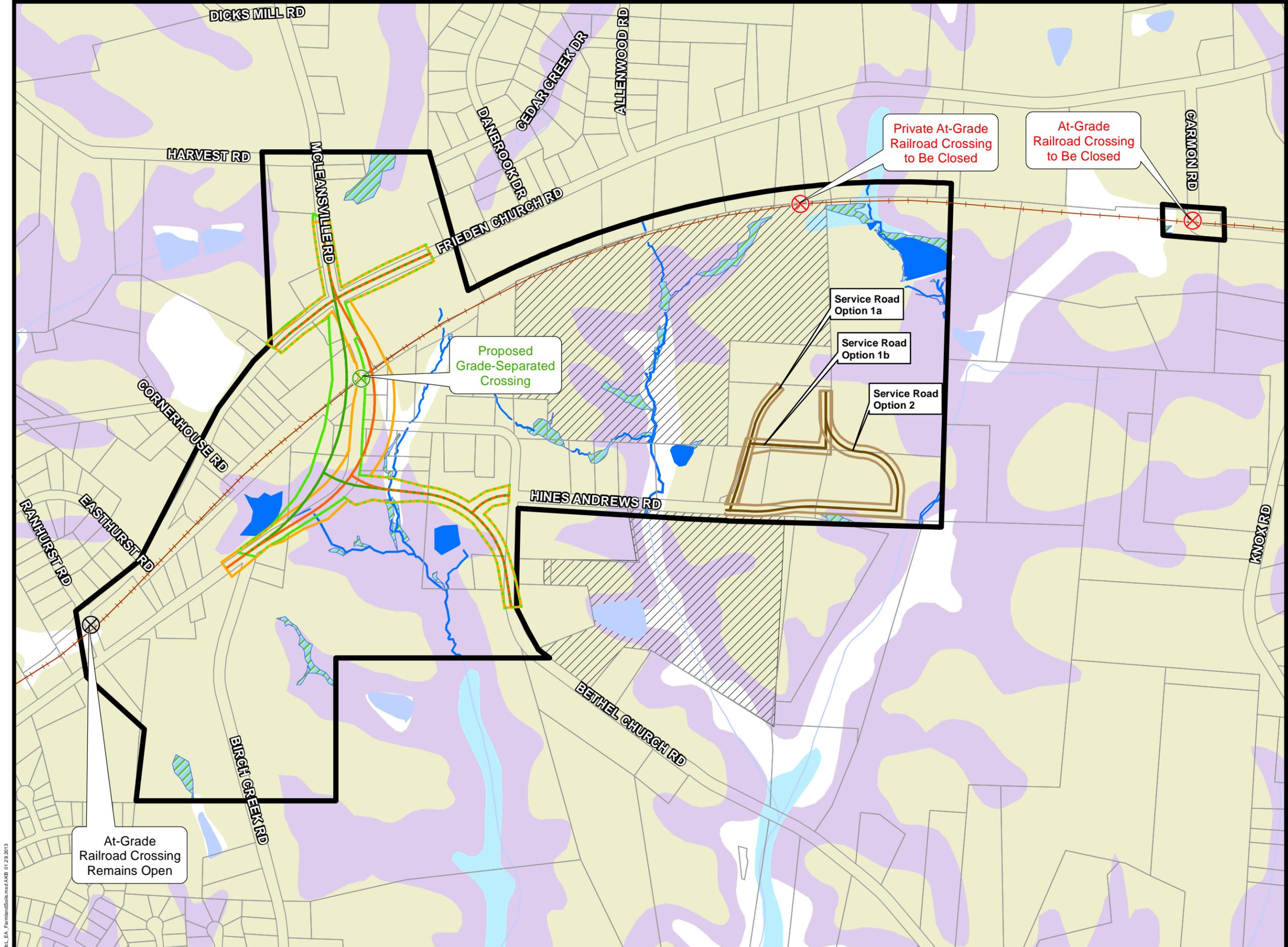
STIP Project No. P-5204
 Guilford County, NC

**McLEANSVILLE ROAD SR-2819
 GRADE SEPARATION**

**MODELED NOISE
 SENSITIVE
 RECEPTORS**

FIGURE 3-2

McL_EA_MoNoiseRecep.mxd AKB 01.29.2013



Legend

Farmland Soils

- Prime Farmland
- Statewide Importance
- Prime if Drained

Voluntary Agricultural District

Project Study Area

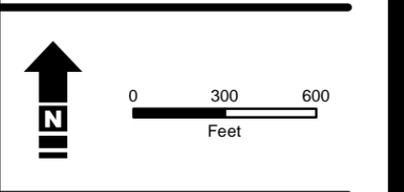
- Proposed Alt A Centerline
- Proposed Alt B Centerline
- Proposed Alt A Right of Way
- Proposed Alt B Right of Way
- Delineated Streams
- Delineated Wetlands
- Delineated Open Water
- Railroad
- Streams
- Ponds
- Parcels

Existing At-Grade Railroad Crossing to be Closed

Existing At-Grade Railroad Crossing to be Grade Separated

At-Grade Railroad Crossing Remains Open

Source: Guilford County GIS, NCDOT, USDA Natural Resources Conservation
Map Printed January 2013



SOUTH CAROLINA DEPARTMENT OF TRANSPORTATION
RAIL DIVISION

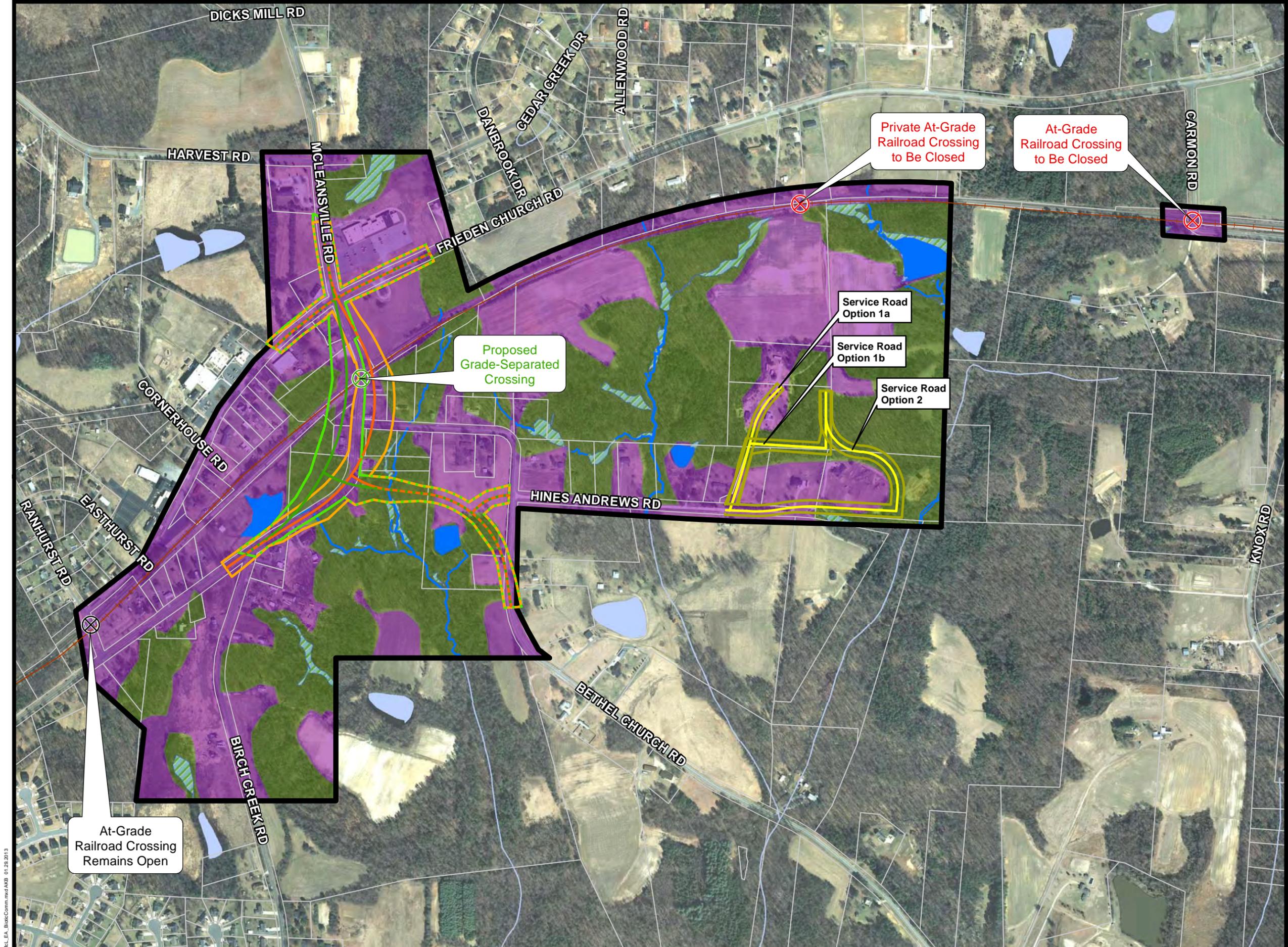
STIP Project No. P-5204
Guilford County, NC

**McLEANSVILLE ROAD SR-2819
GRADE SEPARATION**

**PRIME FARMLAND
SOILS and VOLUNTARY
AGRICULTURAL
DISTRICTS**

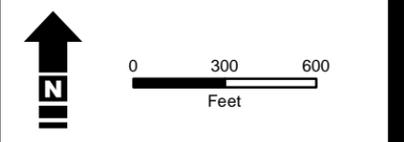
Figure 3-3

McL_EA_FarmlandSoils.mxd AKB 01.29.2013



- Legend**
- Project Study Area
 - Maintained Disturbed
 - Mesic Mixed Hardwood
 - Proposed Alt B Centerline
 - Proposed Alt A Centerline
 - Proposed Alt B Right of Way
 - Proposed Alt A Right of Way
 - Delineated Streams
 - Delineated Wetlands
 - Delineated Open Water
 - Railroad
 - Streams
 - Ponds
 - Parcels
 - Existing At-Grade Railroad Crossing to be Closed
 - Existing At-Grade Railroad Crossing to be Grade Separated
 - At-Grade Railroad Crossing Remains Open

Source: Guilford County GIS, NCDOT; Aerial: NCONemap 2010 Orthimagery; Map Printed January 2013



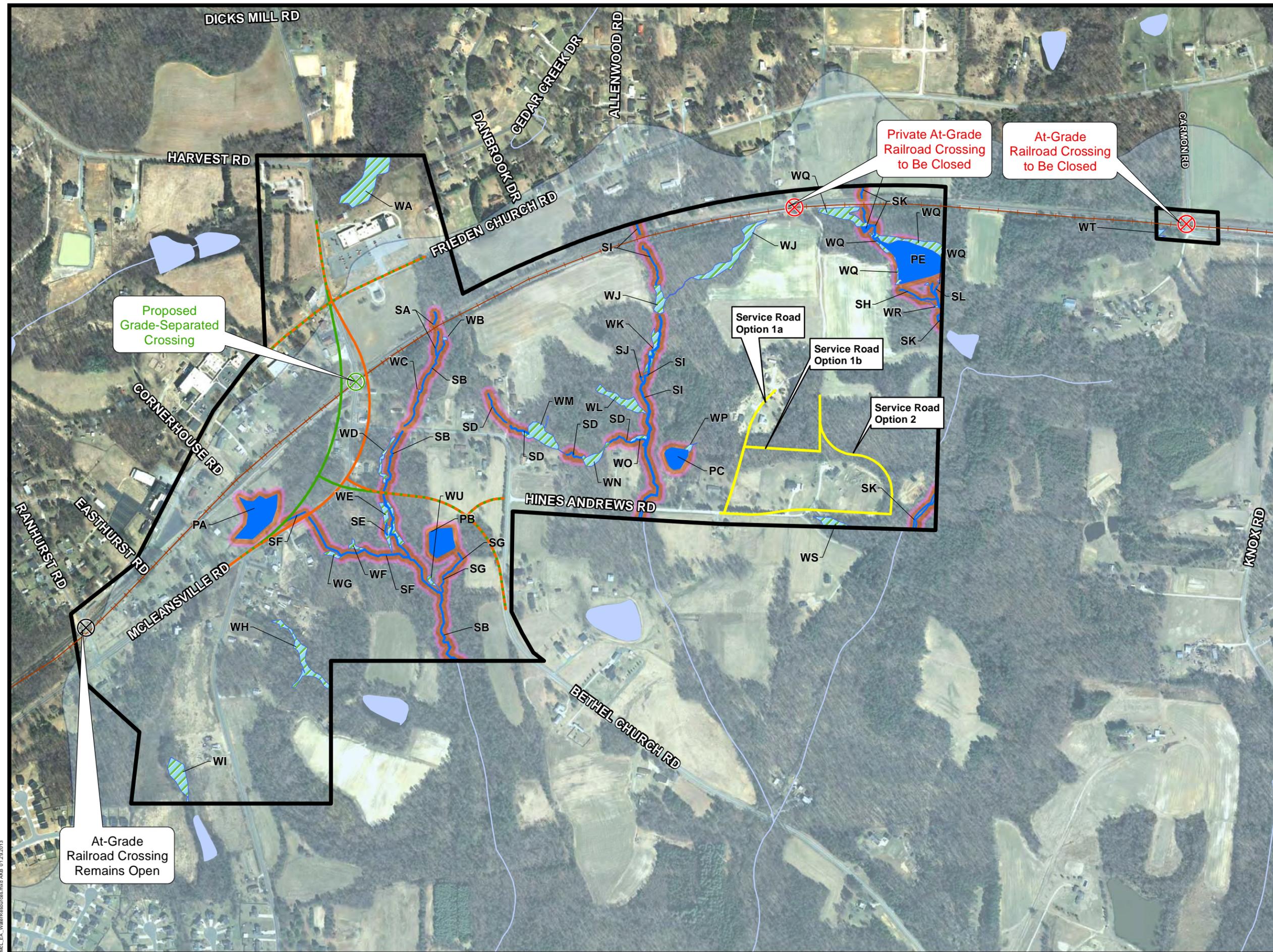
STIP Project No. P-5204
Guilford County, NC

**McLEANSVILLE ROAD SR-2819
GRADE SEPARATION**

**BIOTIC
COMMUNITIES**

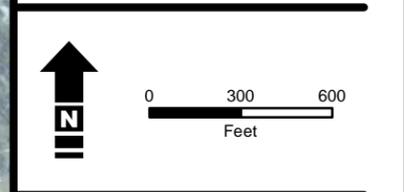
Figure 3-4

McL_EA_BioticComm.mxd ANB 01/28/2013



- Legend**
- Project Study Area
 - Delineated Streams (S_)
 - Delineated Wetlands (W_)
 - Proposed Alt B Centerline
 - Proposed Alt A Centerline
 - Delineated Open Water (P_)
 - Zone 1 - 30 Foot Jordan Watershed Buffer
 - Zone 2 - 20 Foot Jordan Buffer
 - Big Alamance Creek Watershed
 - Railroad
 - Streams
 - Ponds
 - Existing At-Grade Railroad Crossing to be Closed
 - Existing At-Grade Railroad Crossing to be Grade Separated
 - At-Grade Railroad Crossing Remains Open

Source: Guilford County GIS, NCDOT; Aerial: NCOonemap 2010 Orthoimagery; Map Printed January 2013



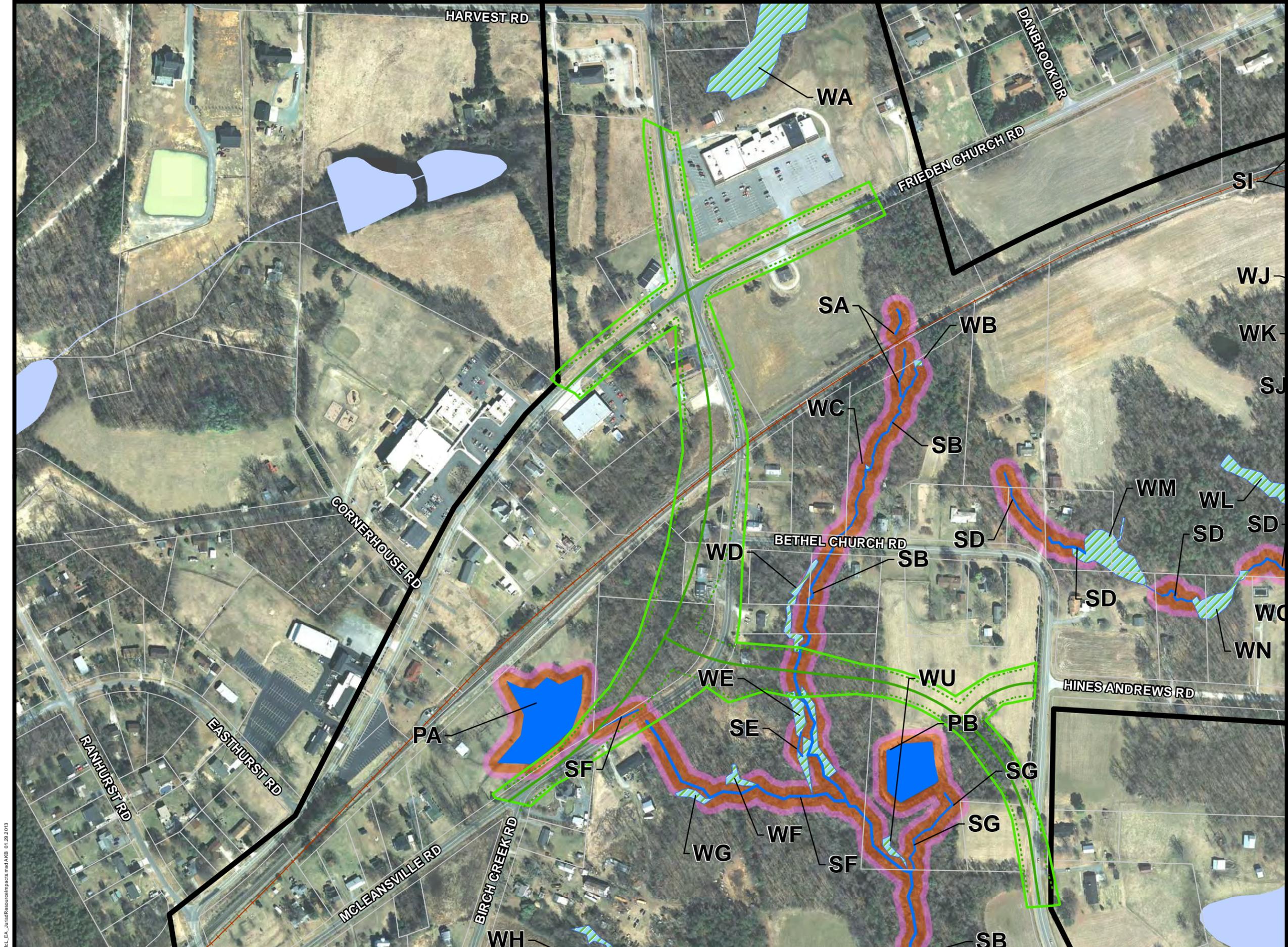
STIP Project No. P-5204
Guilford County, NC

**McLEANSVILLE ROAD SR-2819
GRADE SEPARATION**

**WATER
RESOURCES**

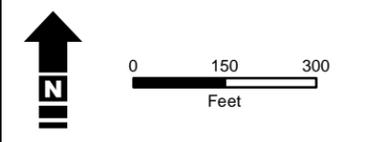
Figure 3-5

McL_EA_WaterResources.mxd AKB 01/28/2013



- Legend**
- Project Study Area
 - Delineated Streams (S_)
 - Delineated Wetlands (W_)
 - Delineated Open Water (P_)
 - Zone 1 - 30 Foot Jordan Watershed Buffer
 - Zone 2 - 20 Foot Jordan Watershed Buffer
 - Proposed Alt A Centerline
 - Proposed Alt A Slope Stakes
 - Proposed Alt A Right of Way
 - Railroad
 - Streams
 - Ponds

Source: Guilford County GIS, NCDOT; Aerial: NCOonemap 2010 Orthoimagery; Map Printed January 2013



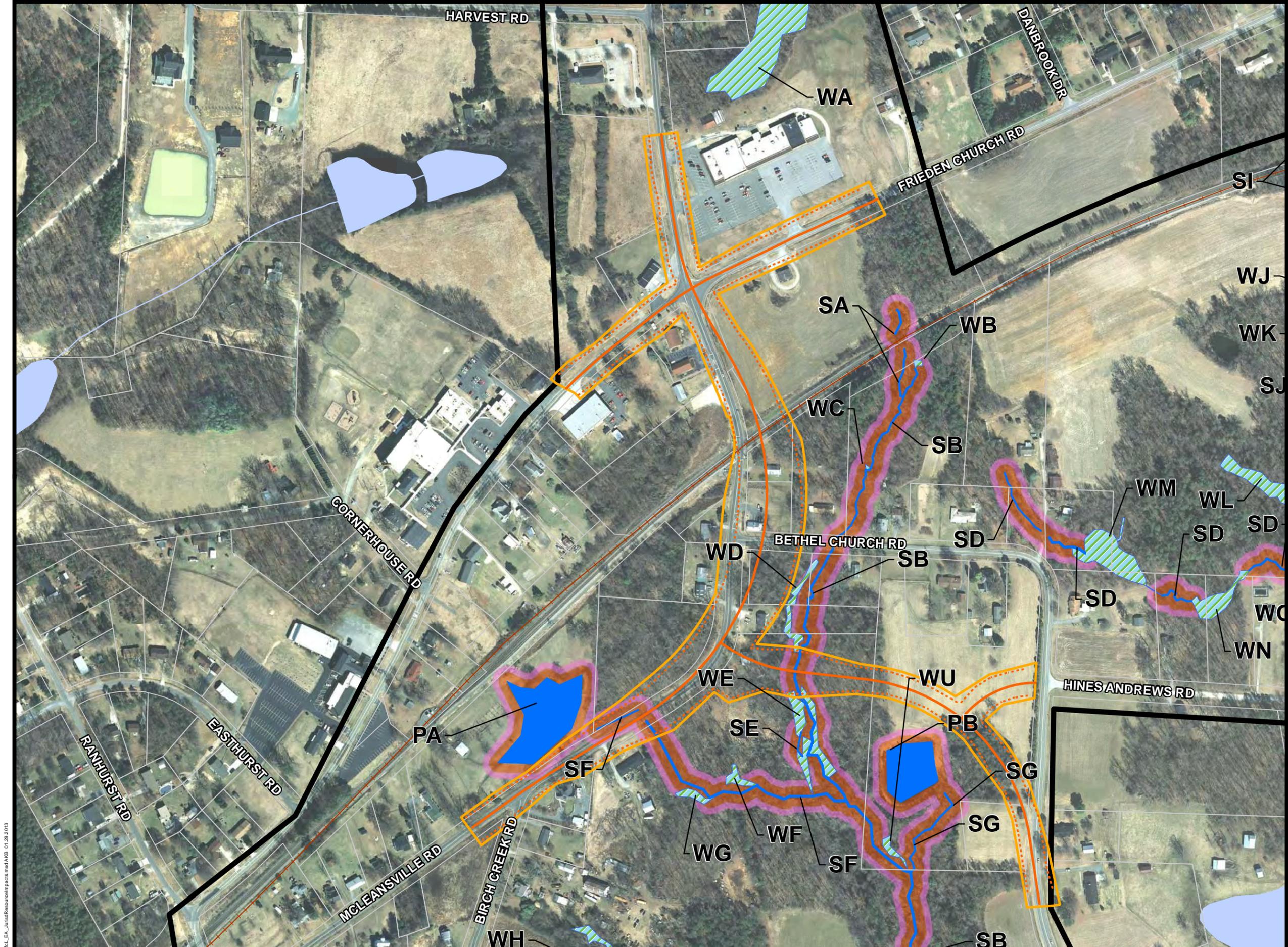
STIP Project No. P-5204
Guilford County, NC

McLEANSVILLE ROAD SR-2819
GRADE SEPARATION

**ALTERNATIVE A
JURISDICTIONAL
RESOURCE IMPACTS**

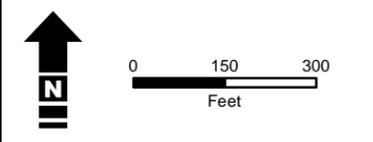
Figure 4-1

McL_EA_JurisdictionalImpacts.mxd AKB 01/28/2013



- Legend**
- Project Study Area
 - Delineated Streams (S_)
 - Delineated Wetlands (W_)
 - Delineated Open Water (P_)
 - Zone 1 - 30 Foot Jordan Watershed Buffer
 - Zone 2 - 20 Foot Jordan Watershed Buffer
 - Proposed Alt B Centerline
 - Proposed Alt B Slope Stakes
 - Proposed Alt B Right of Way
 - Railroad
 - Streams
 - Ponds

Source: Guilford County GIS, NCDOT; Aerial: NCOonemap 2010 Orthoimagery; Map Printed January 2013



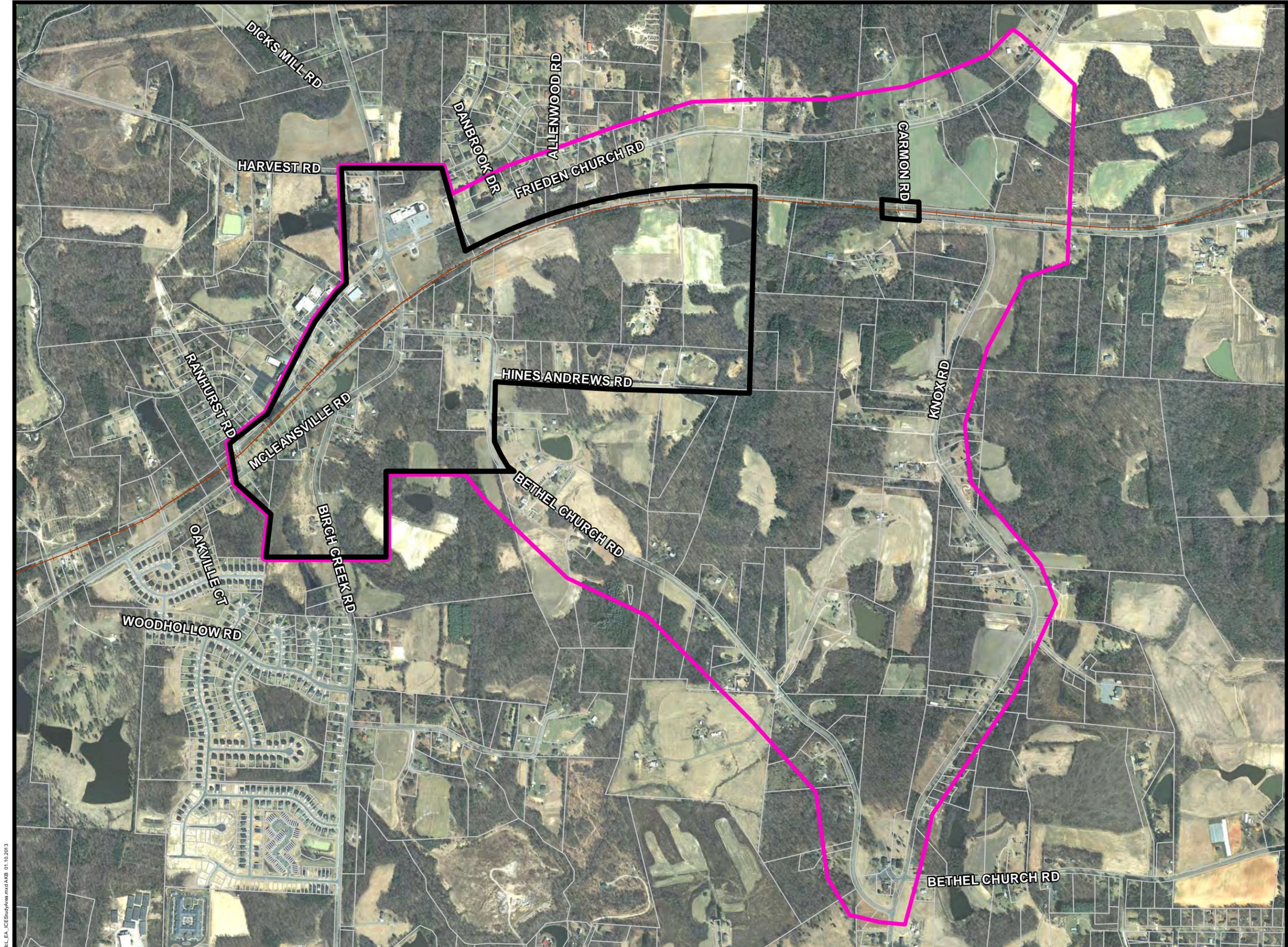
STIP Project No. P-5204
Guilford County, NC

McLEANSVILLE ROAD SR-2819
GRADE SEPARATION

**ALTERNATIVE B
JURISDICTIONAL
RESOURCE IMPACTS**

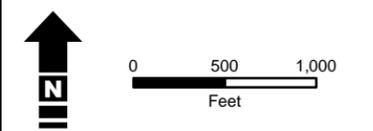
Figure 4-2

McL_EA_JurisdictionalImpacts.mxd AKB 01/28/2013



- Legend**
- Geographic Boundary for Indirect and Cumulative Effects Analysis
 - Project Study Area
 - Railroad
 - Parcels

Source: Guilford County, NCONemap
 Aerial Photo: ArcGIS Image Service
 2010 - Orthoimagery
 Map Printed January 2013



STIP Project No. P-5204
 Guilford County, NC

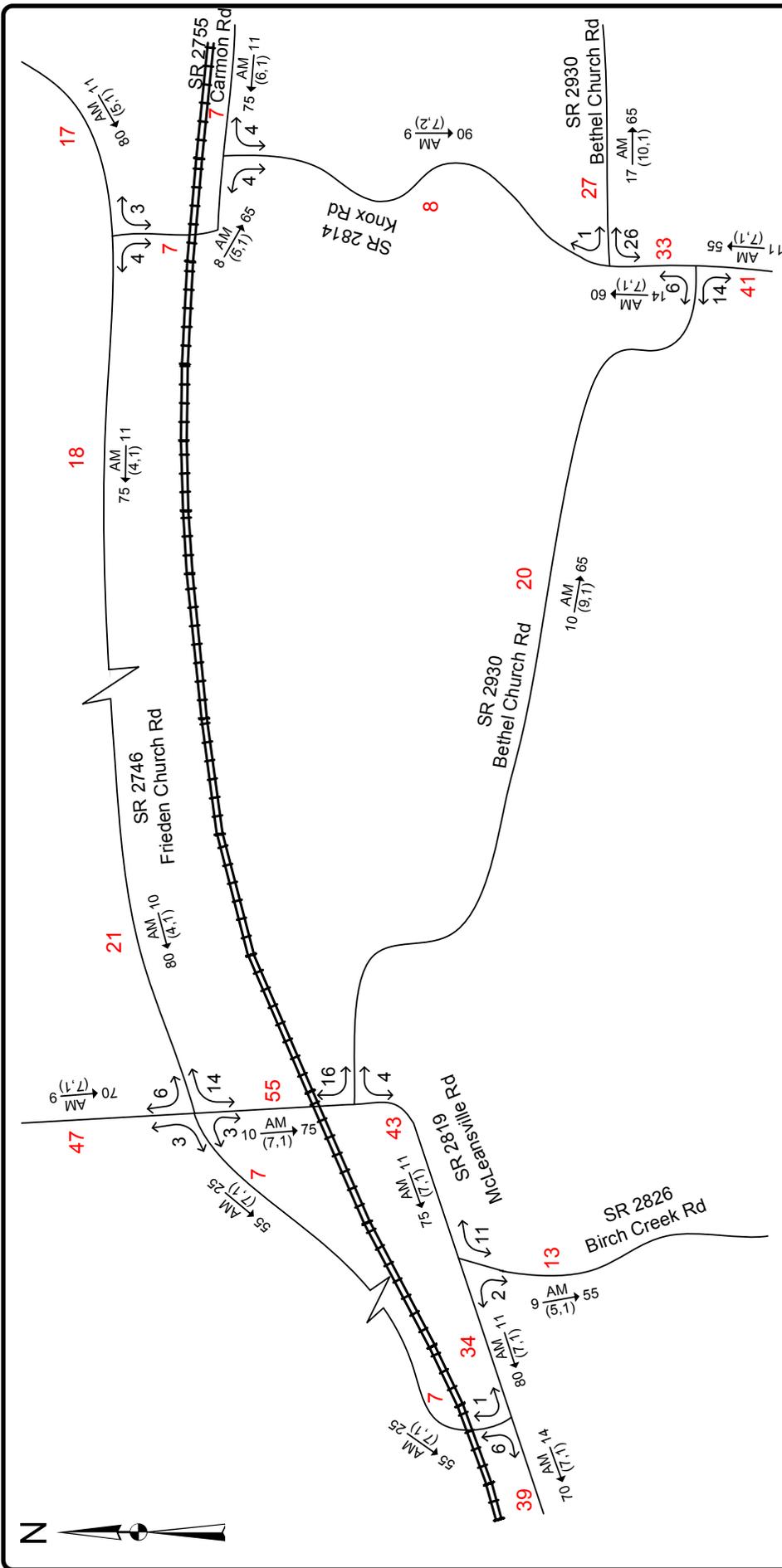
**MCLEANSVILLE ROAD SR-2819
 GRADE SEPARATION**

**INDIRECT AND
 CUMULATIVE EFFECTS
 STUDY AREA**

FIGURE 4-3

APPENDIX A

TRAFFIC FORECASTS



ALTERNATIVE 1 - NO BUILD	
SHEET 1 OF 4	
TIP: P-5204	WBS: 52400.1.STR01T1A
COUNTY: Guilford	DIVISION: 7
DATE: 07-11-2012	
PREPARED BY: Bryan D. Johnson	
LOCATION: McLeansville, NC	
PROJECT: Grade separation of SR 2819 and railway; closers of SR 2746 and SR 2755	

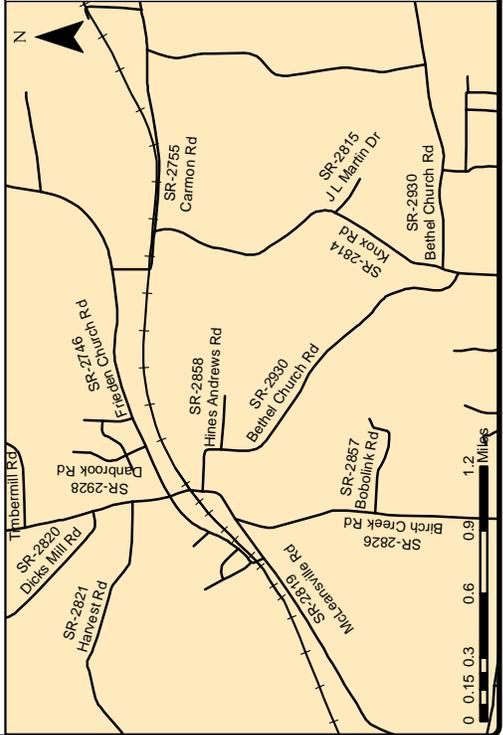
2012

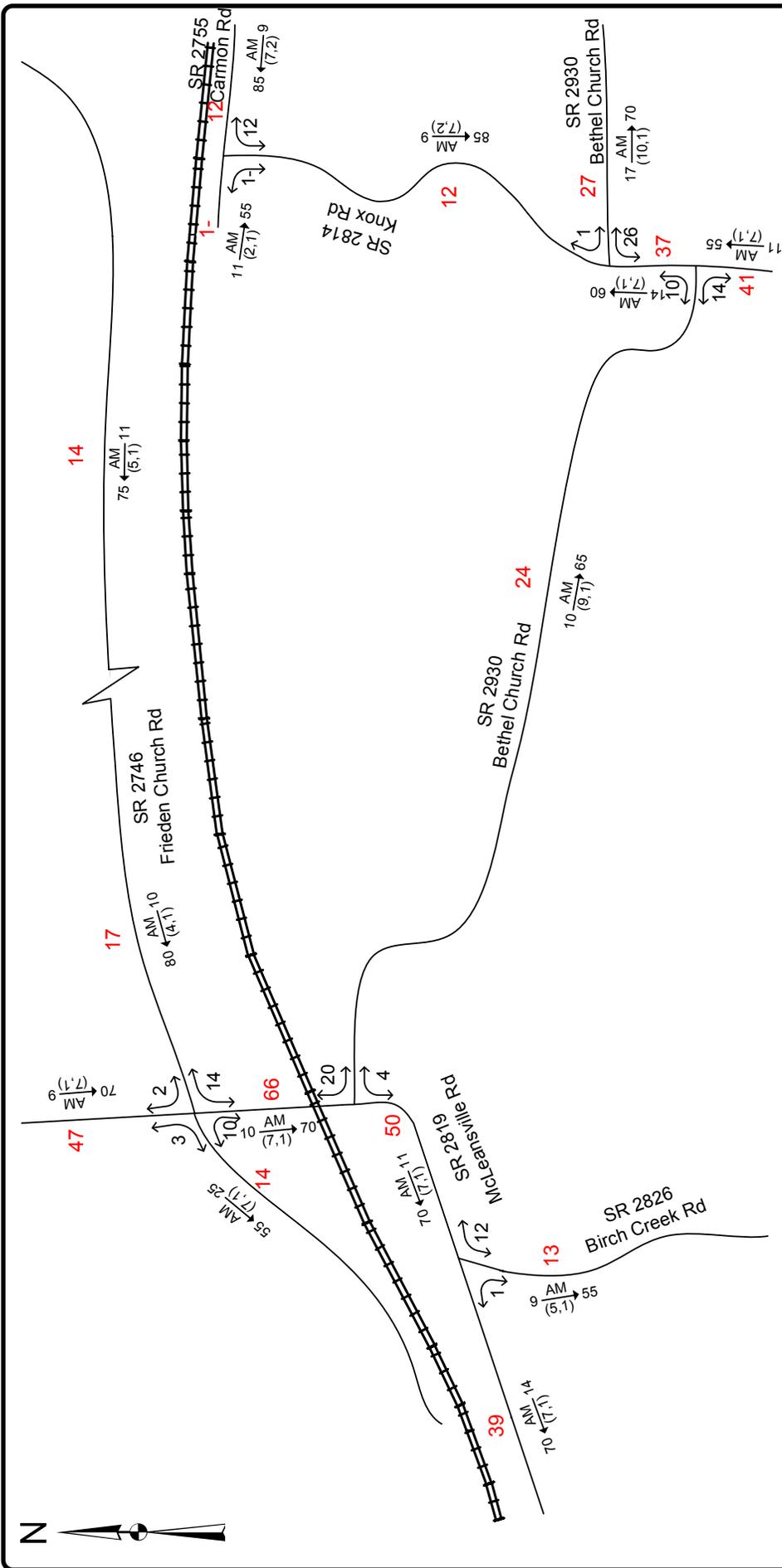
AVERAGE ANNUAL DAILY TRAFFIC

LEGEND

- #### No. of Vehicles Per Day in 100s
- 1- Less than 50 vpd
- X Movement Prohibited
- K Design Hour Factor (%)
- PM PM Peak Period
- D Peak Hour Directional Split (%)
- Indicates Direction of D
- (d, t) Duals, TT-STs (%)

K PM → D
(d, t)





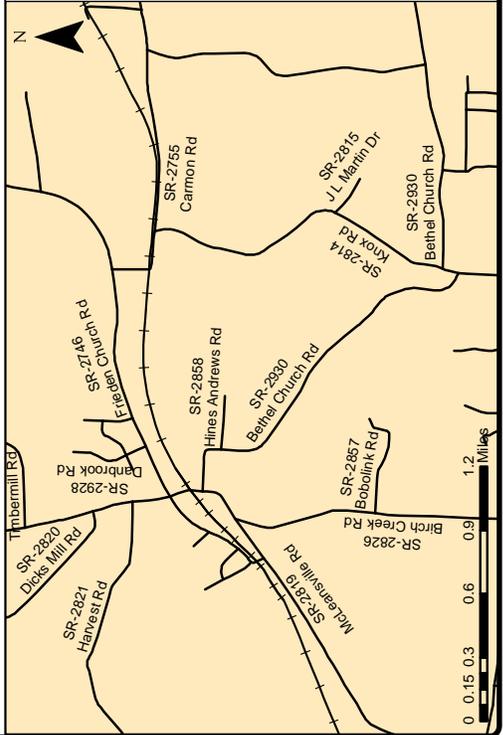
ALTERNATIVE 2 – BUILD	
SHEET 3 OF 4	
TIP: P-5204	WBS: 52400.1.STR01T1A
COUNTY: Guilford	DIVISION: 7
DATE: 07-11-2012	
PREPARED BY: Bryan D. Johnson	
LOCATION: McLeansville, NC	
PROJECT: Grade separation of SR 2819 and railway; closers of SR 2746 and SR 2755	

2012

AVERAGE ANNUAL DAILY TRAFFIC

No. of Vehicles Per Day in 100s
1- Less than 50 vpd
X Movement Prohibited
K Design Hour Factor (%)
PM PM Peak Period
D Peak Hour Directional Split (%)
→ Indicates Direction of D
(d, t) Duals, TT-STs (%)

K \xrightarrow{PM} D
(d, t)



APPENDIX B

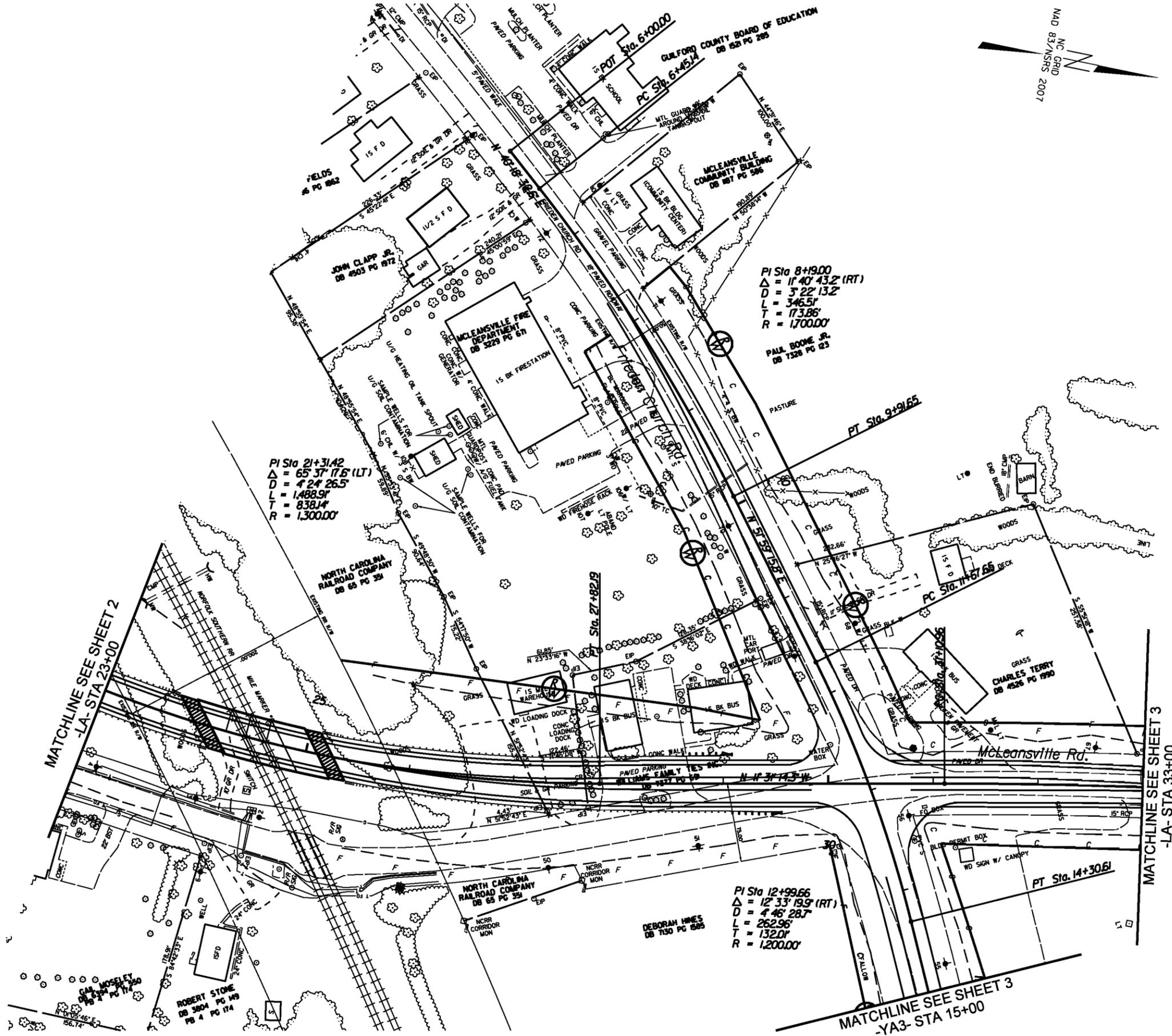
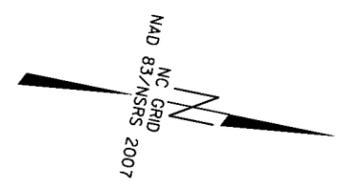
BUILD ALTERNATIVES PRELIMINARY DESIGNS

ORGANIZATION OF APPENDIX B

- B1. Alternative A**
- B2. Alternative B**
- B3. Service Road 1a**
- B4. Service Road 1b**
- B5. Service Road 2**

**APPENDIX B1
ALTERNATIVE A**

PROJECT REFERENCE NO.	SHEET NO.
	2
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR A/C ACQUISITION PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



REVISIONS

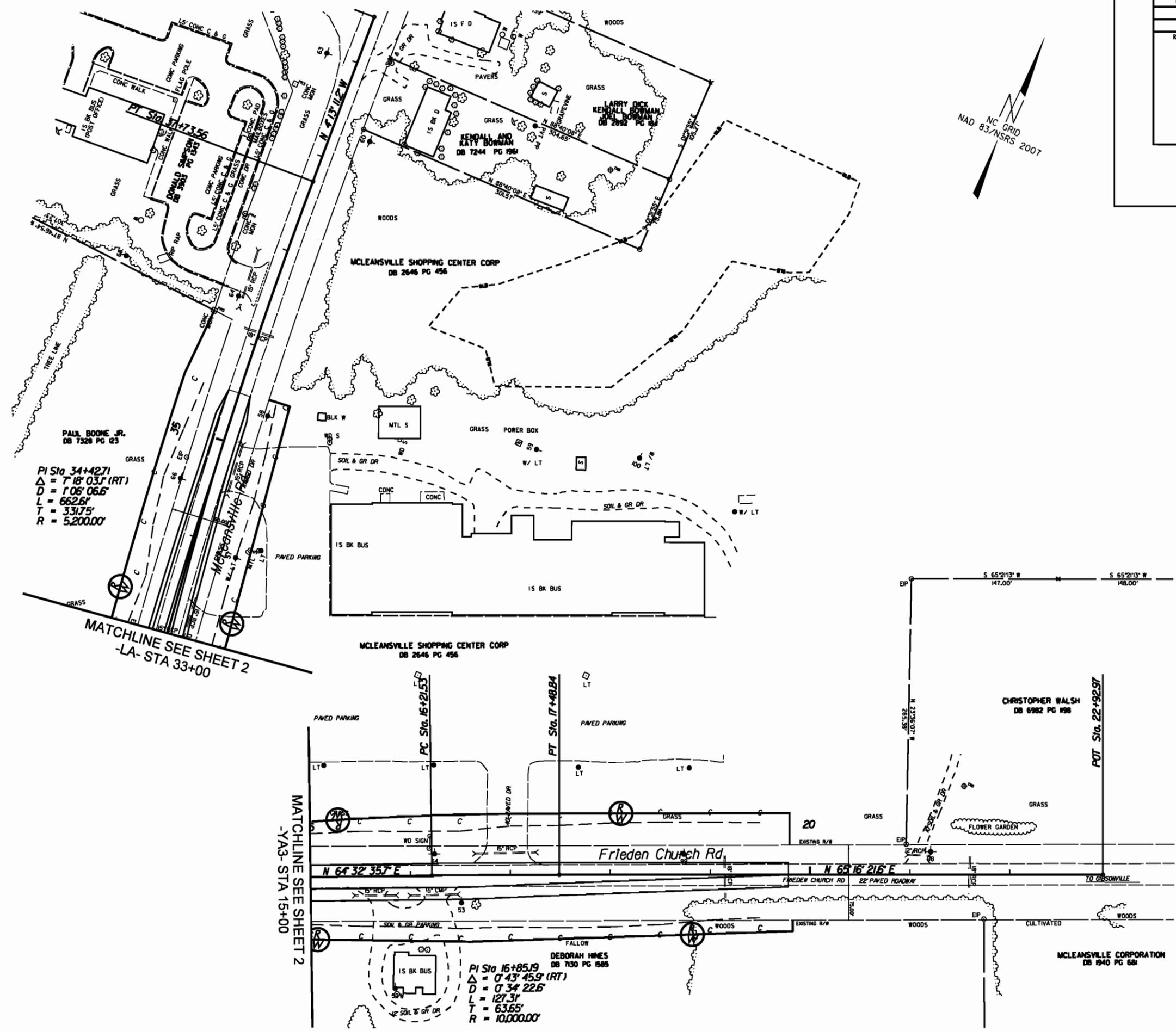
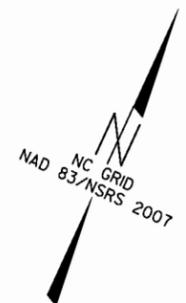
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 251141

MATCHLINE SEE SHEET 2
 -LA- STA 23+00

MATCHLINE SEE SHEET 3
 -LA- STA 33+00

MATCHLINE SEE SHEET 3
 -YA3- STA 15+00

PROJECT REFERENCE NO.	SHEET NO.
	2
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR A/C ACQUISITION PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



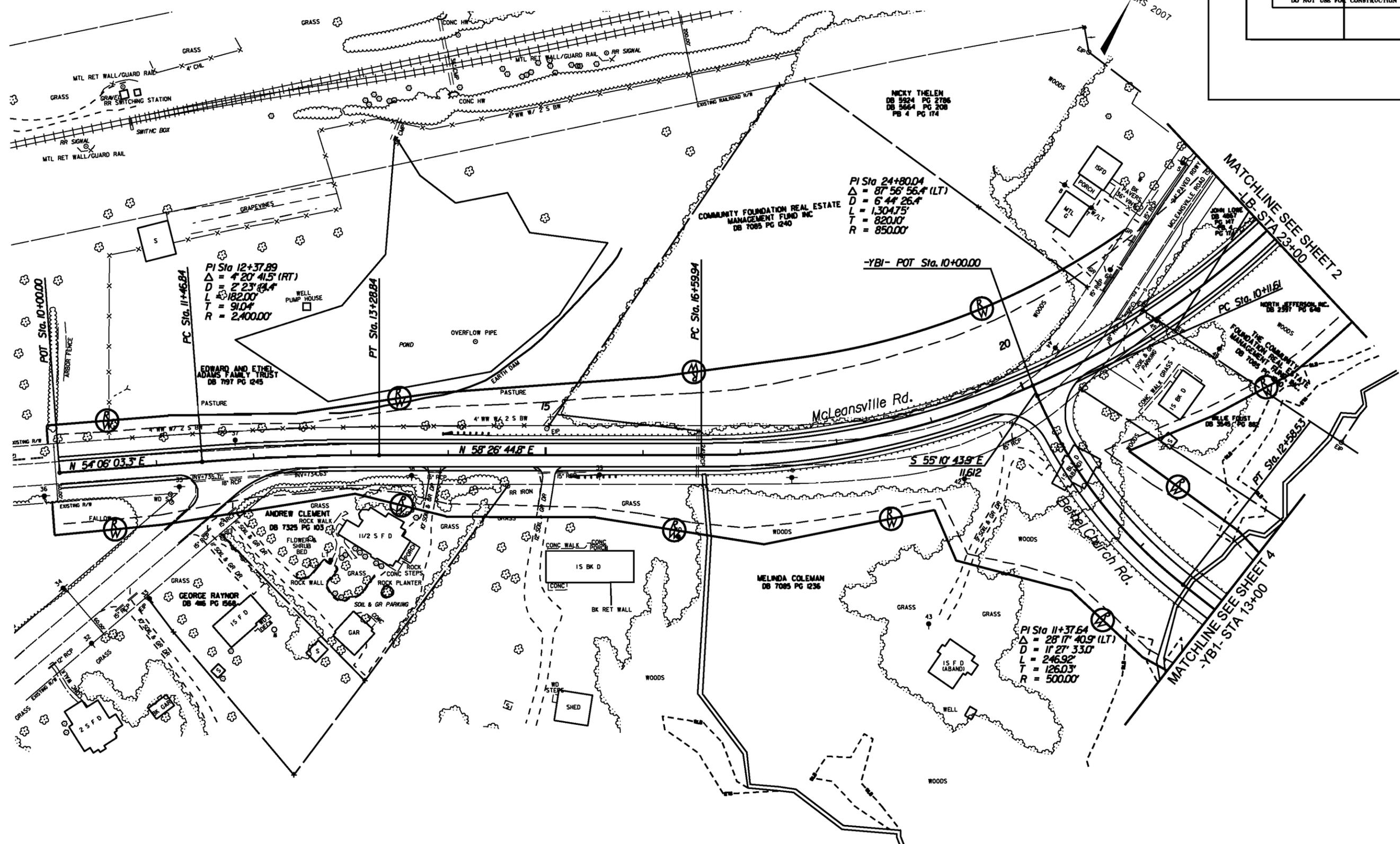
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**APPENDIX B2
ALTERNATIVE B**

PROJECT REFERENCE NO.	SHEET NO.
	7
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR A/C ACQUISITION PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



REVISIONS

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PI Sta 12+37.89
 $\Delta = 4' 20'' 41.5''$ (RT)
 $D = 2' 23'' 8.4''$
 $L = 182.00'$
 $T = 91.04'$
 $R = 2,400.00'$

PI Sta 24+80.04
 $\Delta = 87' 56'' 56.4''$ (LT)
 $D = 6' 44'' 26.4''$
 $L = 1,304.75'$
 $T = 820.10'$
 $R = 850.00'$

PI Sta 11+37.64
 $\Delta = 28' 17'' 40.9''$ (LT)
 $D = 1' 27'' 33.0''$
 $L = 246.92'$
 $T = 126.03'$
 $R = 500.00'$

N 54° 06' 03.3" E

N 58° 26' 44.8" E

S 55° 10' 43.9" E

MATCHLINE SEE SHEET 4
 -YB1- STA 13+00

MATCHLINE SEE SHEET 2
 -YB- STA 23+00

McLeansville Rd.

Barkel Church Rd.

POT Sta. 10+00.00

-YB1- POT Sta. 10+00.00

PC Sta. 11+46.84

PT Sta. 13+28.84

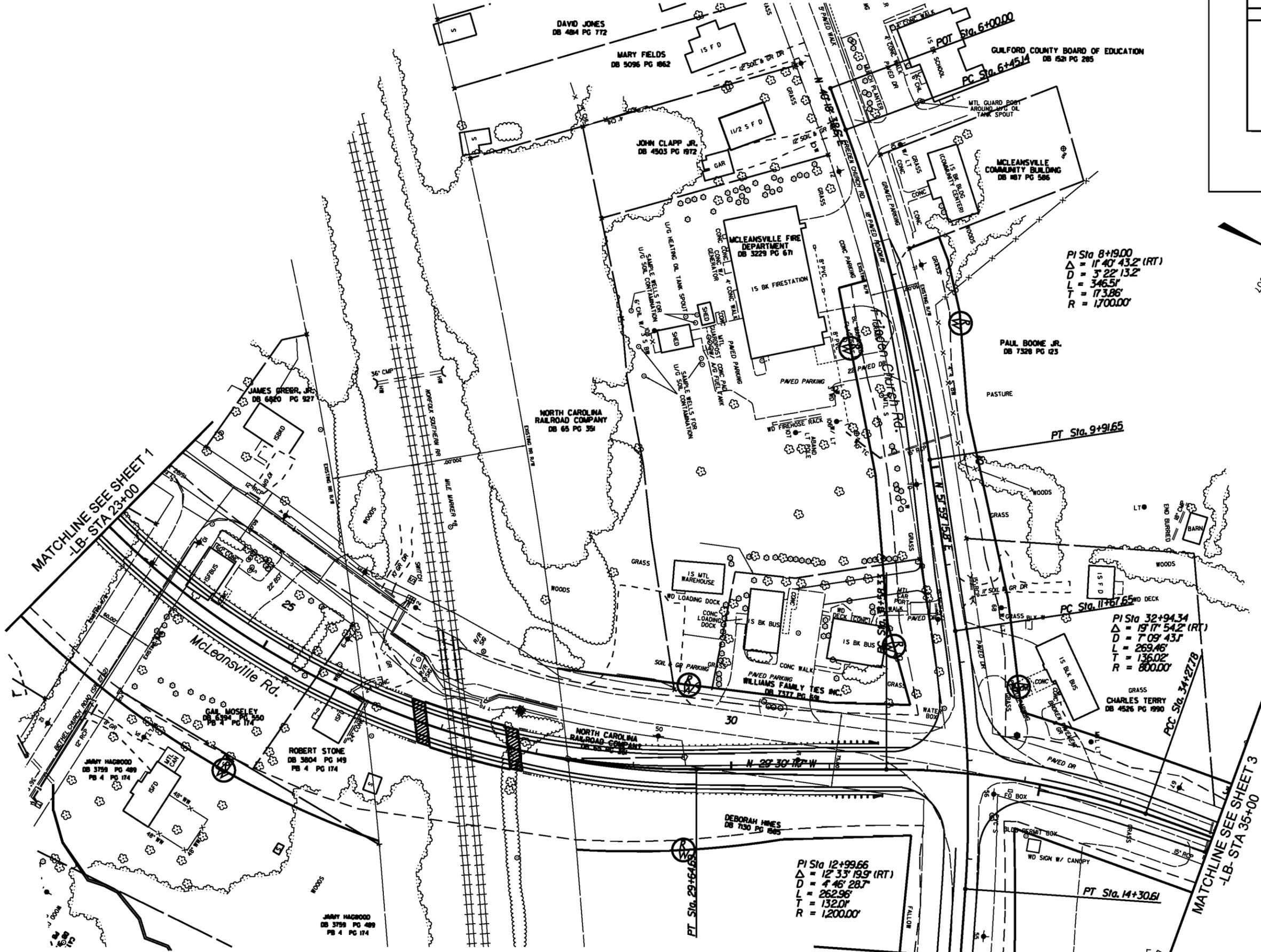
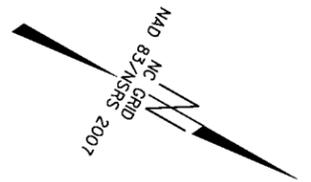
PC Sta. 16+59.94

PC Sta. 10+11.61

PT Sta. 12+28.53

EXISTING R/W

PROJECT REFERENCE NO.	SHEET NO.
	2
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR A/CQUISITION PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



PI Sta 8+19.00
 $\Delta = 11' 40' 43.2''$ (RT)
 $D = 3' 22' 13.2''$
 $L = 346.51'$
 $T = 173.86'$
 $R = 1700.00'$

PI Sta 32+94.34
 $\Delta = 19' 17' 54.2''$ (RT)
 $D = 7' 09' 43.1''$
 $L = 269.46'$
 $T = 136.02'$
 $R = 800.00'$

PI Sta 12+99.66
 $\Delta = 12' 33' 19.9''$ (RT)
 $D = 4' 46' 28.7''$
 $L = 262.96'$
 $T = 132.01'$
 $R = 1200.00'$

MATCHLINE SEE SHEET 1
 -LB- STA 23+00

MATCHLINE SEE SHEET 3
 -LB- STA 35+00

MATCHLINE SEE SHEET 3
 -YB3- STA 15+00

REVISIONS

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PROJECT REFERENCE NO.	SHEET NO.
	4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR ACQUISITION PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

NC GRID
NAD 83/NSRS 2007

MATCHLINE SEE SHEET 1
-YB1- STA 13+00

Bethel Church Rd.

S 83° 28' 24.8" E
242.913

PC Sta. 15+01.44 15

PI Sta. 19+60.98
 $\Delta = 74^\circ 53' 48.4" (RT)$
 $D = 9^\circ 32' 57.5"$
 $L = 784.32'$
 $T = 459.54'$
 $R = 600.00'$

Bethel Church Rd.

PT Sta. 11+71.56

RALPH AND SUSAN COBB
 TRUSTEES OF SUSAN C. COBB
 REVOCABLE LIVING TRUST
 DB 6862 PG 262

PI Sta. 11+00.99
 $\Delta = 60^\circ 06' 36.8" (LT)$
 $D = 38^\circ 11' 49.9"$
 $L = 157.37'$
 $T = 86.80'$
 $R = 150.00'$

PC Sta. 10+14.20

N 63° 25' 28.0" E
141.95

-YA3- POT Sta. 10+90.00

STEVEN COBB
 DB 3056 PG 944

CLARA COBB REVOCABLE LIVING TRUST
 DB 5675 PG 1995

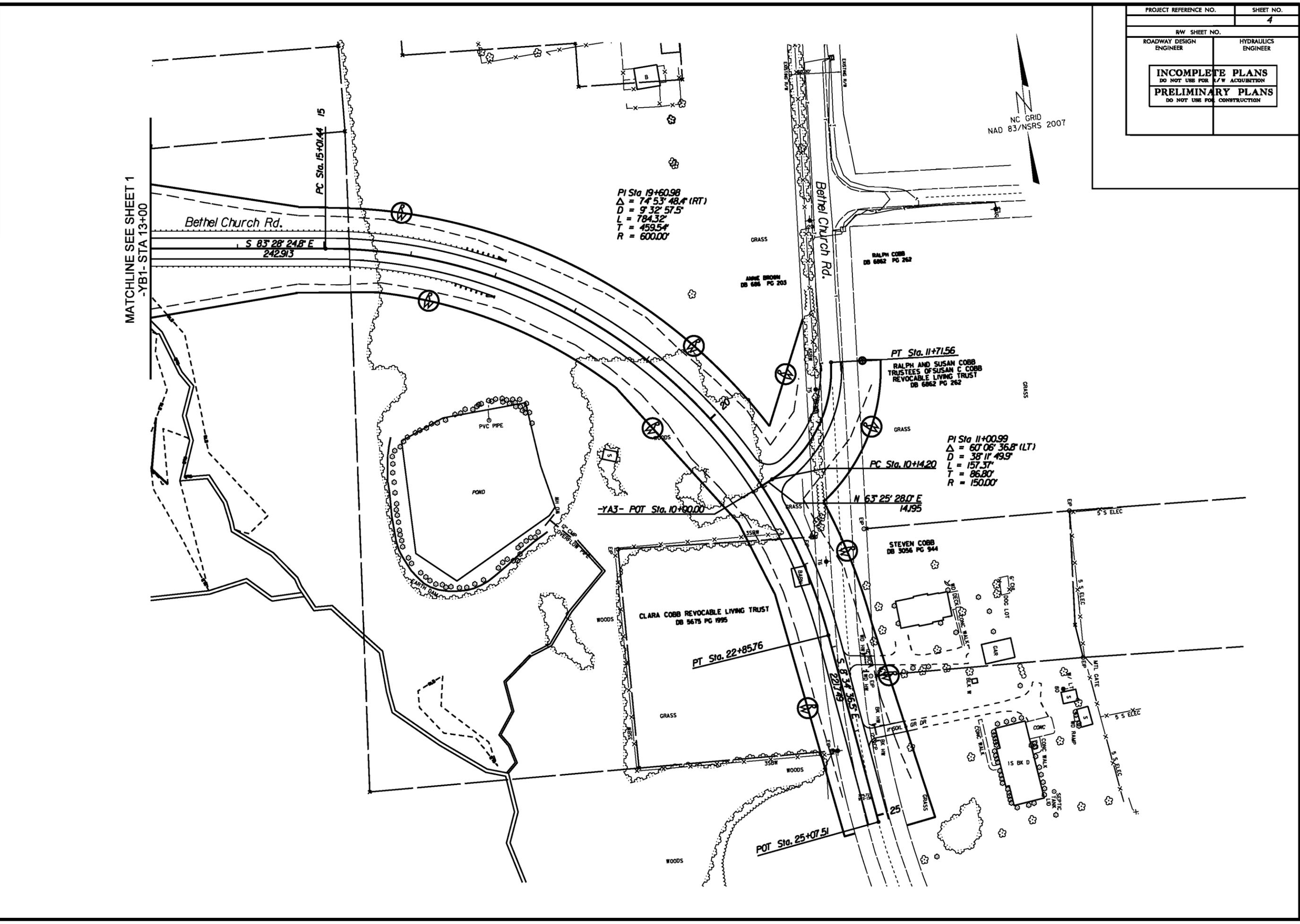
PT Sta. 22+85.76

POT Sta. 25+07.51

REVISIONS

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**APPENDIX B3
SERVICE ROAD 1A**

PROJECT REFERENCE NO.	SHEET NO.
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



REVISIONS

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**APPENDIX B4
SERVICE ROAD 1B**

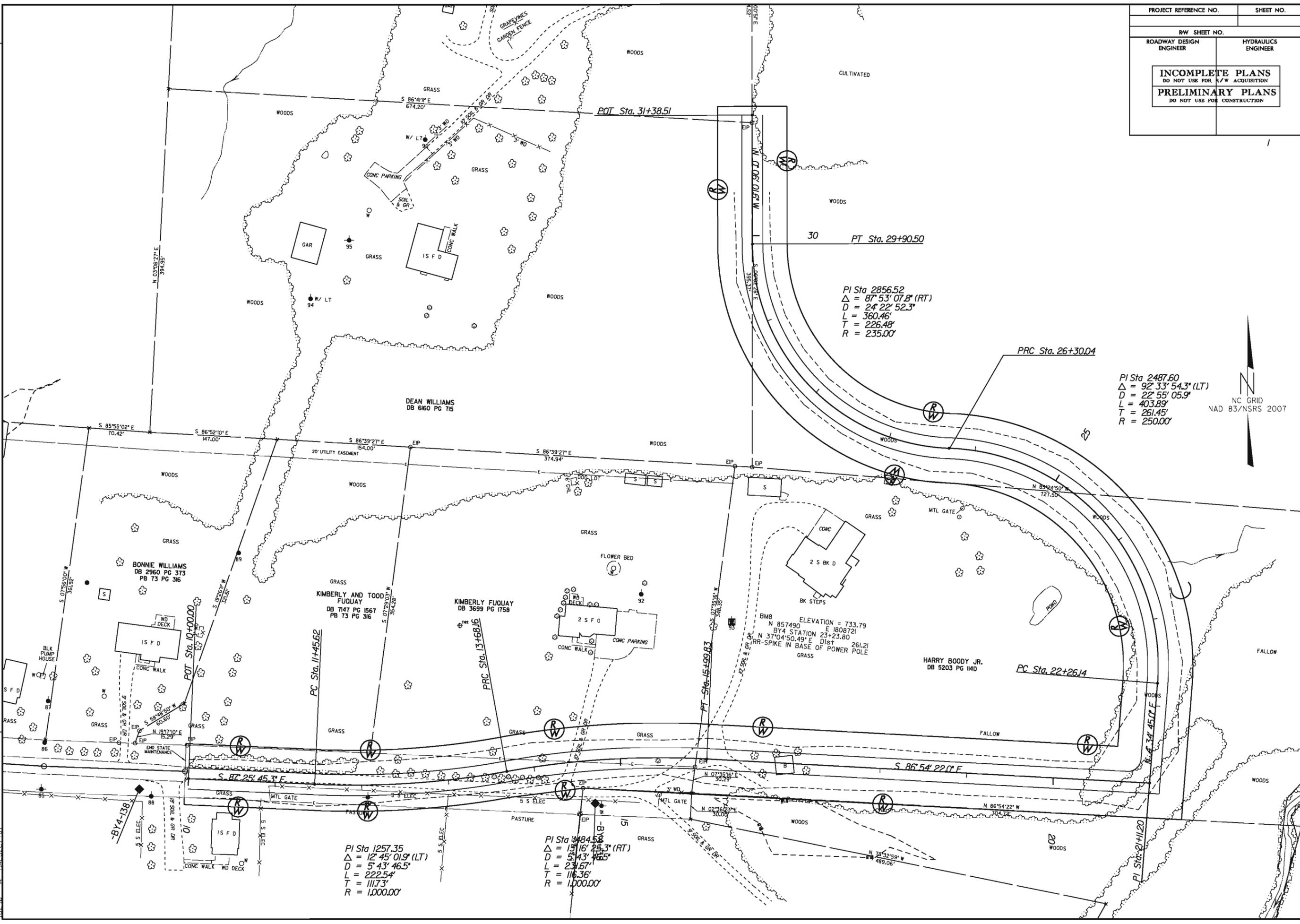
**APPENDIX B5
SERVICE ROAD 2**

PROJECT REFERENCE NO.	SHEET NO.
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

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PI Sta 1257.35
 Δ = 12° 45' 01.9" (LT)
 D = 5' 43" 46.5"
 L = 222.54'
 T = 111.73'
 R = 1,000.00'

PI Sta 1484.58
 Δ = 13° 16' 25.3" (RT)
 D = 5' 43" 46.5"
 L = 231.67'
 T = 116.36'
 R = 1,000.00'

PI Sta 2856.52
 Δ = 87° 53' 07.8" (RT)
 D = 24' 22" 52.3"
 L = 360.46'
 T = 226.48'
 R = 235.00'

PI Sta 2487.60
 Δ = 92° 33' 54.3" (LT)
 D = 22' 55" 05.9"
 L = 403.89'
 T = 261.45'
 R = 250.00'

NC GRID
 NAD 83/NSRS 2007

APPENDIX C
RELOCATION REPORTS

EIS RELOCATION REPORT

North Carolina Department of Transportation
RELOCATION ASSISTANCE PROGRAM

E.I.S. CORRIDOR DESIGN

WBS ELEMENT:	52400.1.STR02T2	COUNTY	Guilford	Alternate	A	of	Alternate
T.I.P. No.:	P-5204						
DESCRIPTION OF PROJECT:	Proposed Construction of a Grade Separation carrying SR 2819 (McLeansville Rd.) over the NC RR, Guilford County						

ESTIMATED DISPLACES					INCOME LEVEL					
Type of Displacees	Owners	Tenants	Total	Minorities	0-15M	15-25M	25-35M	35-50M	50 UP	
Residential	*3	0	3	0	0	0	1	2	0	
Businesses	1	0	1	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
					20-40M	0	150-250	0	20-40M	3
					40-70M	1	250-400	0	40-70M	43
					70-100M	1	400-600	0	70-100M	97
					100 UP	1	600 UP	0	100 UP	998
					TOTAL	3		0		1138
										214

ANSWER ALL QUESTIONS		
Yes	No	Explain all "YES" answers.
	X	1. Will special relocation services be necessary?
	X	2. Will schools or churches be affected by displacement?
X		3. Will business services still be available after project?
X		4. Will any business be displaced? If so, indicate size, type, estimated number of employees, minorities, etc.
	X	5. Will relocation cause a housing shortage?
	X	6. Source for available housing (list).
	X	7. Will additional housing programs be needed?
X		8. Should Last Resort Housing be considered?
X		9. Are there large, disabled, elderly, etc. families?
	X	10. Will public housing be needed for project?
X		11. Is public housing available?
X		12. Is it felt there will be adequate DSS housing available during relocation period?
	X	13. Will there be a problem of housing within financial means?
X		14. Are suitable business sites available (list source).
		15. Number months estimated to complete RELOCATION? 12-24

REMARKS (Respond by number)									
THIS REPORT IS BASED ON ACCESS PROVIDED TO PARCELS VIA LEAVING OLD ROADBED FOR MCLEANSVILLE ROAD NORTH OF NEW BEHTEL CHURCH ROAD AS A SERVICE ROAD/ DRIVEWAY AS A SERVICE ROAD/ DRIVEWAY PER ATKINS GLOBAL. Other properties could be considered relocatees if R/W is Determined to disrupt well/ septic systems without suitable Replacement. Fire Dept. is one such case. Well is in R/W.									

3. Business services still available in the area. Shopping center .50 miles from project will be unaffected.

4. U-Haul truck rental facility – rent U-hauls with 2 storage bays. 1500 sf brick office bldg. and 2000 sf brick warehouse with bays And office. 1 full time employee possibly at site or off site.

8. Supplements may fall into last resort due to elderly/ large Families and state of real estate market at the present.

9. Yes- see answer #8.

11. Greensboro Housing Authority

12. Greensboro has a healthy market for real estate that will Continue to increase and grow.

6. and 14. Greensboro News and Record, Brown Investment Property, MLS, Realtor.com

Vacant business site list; Triad Listing Book; Brantley Properties

***1 RESIDENTIAL RELOCATEE DUE TO LOSS OF ACCESS. 1 house appears abandoned and is not reflected in the relocatee total count.**

Heather Fulghum Division Right of Way Agent	01-09-13 Date	Relocation Coordinator	1/10/13 Date
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EIS RELOCATION REPORT

North Carolina Department of Transportation
RELOCATION ASSISTANCE PROGRAM

E.I.S. CORRIDOR DESIGN

WBS ELEMENT:	52400.1.STR02T2	COUNTY	Guilford	Alternate	B	of	Alternate
T.I.P. No.:	P-5204						
DESCRIPTION OF PROJECT:	Proposed Construction of a Grade Separation carrying SR 2819 (McLeansville Rd.) over the NC RR, Guilford County						

ESTIMATED DISPLACES					INCOME LEVEL					
Type of Displacees	Owners	Tenants	Total	Minorities	0-15M	15-25M	25-35M	35-50M	50 UP	
Residential	*4	0	4	0	0	0	1	3	0	
Businesses	1	0	1	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
					20-40M	0	150-250	0	20-40M	3
					40-70M	1	250-400	0	40-70M	43
					70-100M	2	400-600	0	70-100M	97
					100 UP	1	600 UP	0	100 UP	998
					TOTAL	4		0		1138
										214

ANSWER ALL QUESTIONS		
Yes	No	Explain all "YES" answers.
	X	1. Will special relocation services be necessary?
	X	2. Will schools or churches be affected by displacement?
X		3. Will business services still be available after project?
X		4. Will any business be displaced? If so, indicate size, type, estimated number of employees, minorities, etc.
	X	5. Will relocation cause a housing shortage?
	X	6. Source for available housing (list).
	X	7. Will additional housing programs be needed?
X		8. Should Last Resort Housing be considered?
X		9. Are there large, disabled, elderly, etc. families?
	X	10. Will public housing be needed for project?
X		11. Is public housing available?
X		12. Is it felt there will be adequate DSS housing available during relocation period?
	X	13. Will there be a problem of housing within financial means?
X		14. Are suitable business sites available (list source).
		15. Number months estimated to complete RELOCATION? 12-24

REMARKS (Respond by number)									
THIS REPORT IS BASED ON ACCESS PROVIDED TO PARCELS VIA LEAVING OLD ROADBED FOR BETHEL CHURCH ROAD EAST OF NEW MCCLEANSVILLE ROAD AS A SERVICE ROAD/ DRIVEWAY AS A SERVICE ROAD/ DRIVEWAY PER ATKINS GLOBAL. Other properties could be considered relocatees if R/W is Determined to disrupt well/ septic systems without suitable Replacement. Fire Dept.is one such situation. Well is in R/W.									

3. Business services still available in the area. Shopping center .50 miles from project will be unaffected.

4. Nationwide, The Moseley Agency – 1 FT, 1 PT employee; 1000 sf frame business. Customer service oriented business for Insurance services. Access is from McCleansville Rd.

8. Supplements may fall into last resort due to elderly/ large Families and state of real estate market at the present.

9. Yes- see answer #8.

11. Greensboro Housing Authority

12. Greensboro has a healthy market for real estate that will Continue to increase and grow.

6. and 14. MLS, Realtor.com, Greensboro News and Record, Brown Investment Property

Vacant business site list; Triad Listing Book; Brantley Properties

***2 RESIDENTIAL RELOCATEES DUE TO LOSS OF ACCESS; 2 residential dwellings affected appear to be abandoned and are not reflected in the relocatee total count.**

Heather Fulghum Division Right of Way Agent	01-09-13		Relocation Coordinator	1/10/13
Date			Date	

EIS RELOCATION REPORT

North Carolina Department of Transportation
RELOCATION ASSISTANCE PROGRAM

E.I.S. CORRIDOR DESIGN

WBS ELEMENT:	52400.1.STR02T2	COUNTY	Guilford	Alternate SRA of	Alternate
T.I.P. No.:	P-5204				
DESCRIPTION OF PROJECT:	Proposed Construction of a Grade Separation carrying SR 2819 (McLeansville Rd.) over the NC RR, Guilford County				

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	0	0	0	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
ANSWER ALL QUESTIONS					20-40M	0	150-250	0	20-40M	3
Yes	No	Explain all "YES" answers.			40-70M	0	250-400	0	40-70M	43
	X	1. Will special relocation services be necessary?			70-100M	0	400-600	0	70-100M	97
	X	2. Will schools or churches be affected by displacement?			100 UP	0	600 UP	0	100 UP	998
X		3. Will business services still be available after project?			TOTAL	0		0		1138
	X	4. Will any business be displaced? If so, indicate size, type, estimated number of employees, minorities, etc.			REMARKS (Respond by number)					
	X	5. Will relocation cause a housing shortage?			<p>Other properties could be considered relocatees if R/W is Determined to disrupt well/ septic systems without suitable Replacement.</p> <p>3. Business services still available in the area. Shopping center .50 miles from project will be unaffected.</p> <p>11. Greensboro Housing Authority</p> <p>12. Greensboro has a healthy market for real estate that will Continue to increase and grow.</p> <p>14. Greensboro News and Record, Brown Investment Property Vacant business site list; Triad Listing Book; Brantley Properties</p>					
	X	6. Source for available housing (list).								
	X	7. Will additional housing programs be needed?								
	X	8. Should Last Resort Housing be considered?								
	X	9. Are there large, disabled, elderly, etc. families?								
	X	10. Will public housing be needed for project?								
X		11. Is public housing available?								
X		12. Is it felt there will be adequate DSS housing housing available during relocation period?								
	X	13. Will there be a problem of housing within financial means?								
X		14. Are suitable business sites available (list source).								
		15. Number months estimated to complete RELOCATION? 0								

	01-30-13		2/7/13
Heather Fulghum Division Right of Way Agent	Date	Relocation Coordinator	Date

EIS RELOCATION REPORT

North Carolina Department of Transportation
RELOCATION ASSISTANCE PROGRAM

E.I.S. CORRIDOR DESIGN

WBS ELEMENT:	52400.1.STR02T2	COUNTY	Guilford	Alternate SRB of	Alternate
T.I.P. No.:	P-5204				
DESCRIPTION OF PROJECT:	Proposed Construction of a Grade Separation carrying SR 2819 (McLeansville Rd.) over the NC RR, Guilford County				

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	0	0	0	0	VALUE OF DWELLING		DSS DWELLING AVAILABLE		
Farms	0	0	0	0	Owners		For Sale		For Rent
Non-Profit	0	0	0	0	0-20M	\$ 0-150	0-20M	\$ 0-150	0
ANSWER ALL QUESTIONS					20-40M	150-250	20-40M	150-250	0
Yes	No	<i>Explain all "YES" answers.</i>			40-70M	250-400	40-70M	250-400	0
	X	1. Will special relocation services be necessary?			70-100M	400-600	70-100M	400-600	51
	X	2. Will schools or churches be affected by displacement?			100 UP	600 UP	100 UP	600 UP	163
X		3. Will business services still be available after project?			TOTAL	0	0	1138	214
	X	4. Will any business be displaced? If so, indicate size, type, estimated number of employees, minorities, etc.			REMARKS (Respond by number)				
	X	5. Will relocation cause a housing shortage?			<p>Other properties could be considered relocatees if R/W is Determined to disrupt well/ septic systems without suitable Replacement.</p> <p>3. Business services still available in the area. Shopping center .50 miles from project will be unaffected.</p> <p>11. Greensboro Housing Authority</p> <p>12. Greensboro has a healthy market for real estate that will Continue to increase and grow.</p> <p>14. Greensboro News and Record, Brown Investment Property Vacant business site list; Triad Listing Book; Brantley Properties</p>				
	X	6. Source for available housing (list).							
	X	7. Will additional housing programs be needed?							
	X	8. Should Last Resort Housing be considered?							
	X	9. Are there large, disabled, elderly, etc. families?							
	X	10. Will public housing be needed for project?							
X		11. Is public housing available?							
X		12. Is it felt there will be adequate DSS housing housing available during relocation period?							
	X	13. Will there be a problem of housing within financial means?							
X		14. Are suitable business sites available (list source).							
		15. Number months estimated to complete RELOCATION? 0							

Heather Fulghum Division Right of Way Agent	01-30-13 Date	Relocation Coordinator	2/7/13 Date
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EIS RELOCATION REPORT

**North Carolina Department of Transportation
RELOCATION ASSISTANCE PROGRAM**

E.I.S. CORRIDOR DESIGN

WBS ELEMENT:	52400.1.STR02T2	COUNTY	Guilford	Alternate SRC of	Alternate
T.I.P. No.:	P-5204				
DESCRIPTION OF PROJECT:	Proposed Construction of a Grade Separation carrying SR 2819 (McLeansville Rd.) over the NC RR, Guilford County				

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	0	0	0	0	VALUE OF DWELLING		DSS DWELLING AVAILABLE					
Farms	0	0	0	0	Owners		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					20-40M	0	150-250	0	20-40M	3	150-250	0
Yes	No	Explain all "YES" answers.			40-70M	0	250-400	0	40-70M	43	250-400	0
	X	1. Will special relocation services be necessary?			70-100M	0	400-600	0	70-100M	97	400-600	51
	X	2. Will schools or churches be affected by displacement?			100 UP	0	600 UP	0	100 UP	998	600 UP	163
X		3. Will business services still be available after project?			TOTAL	0		0		1138		214
	X	4. Will any business be displaced? If so, indicate size, type, estimated number of employees, minorities, etc.			REMARKS (Respond by number)							
	X	5. Will relocation cause a housing shortage?			<p>Other properties could be considered relocatees if R/W is Determined to disrupt well/ septic systems without suitable Replacement.</p> <p>3. Business services still available in the area. Shopping center .50 miles from project will be unaffected.</p> <p>11. Greensboro Housing Authority</p> <p>12. Greensboro has a healthy market for real estate that will Continue to increase and grow.</p> <p>14. Greensboro News and Record, Brown Investment Property Vacant business site list; Triad Listing Book; Brantley Properties</p>							
	X	6. Source for available housing (list).										
	X	7. Will additional housing programs be needed?										
	X	8. Should Last Resort Housing be considered?										
	X	9. Are there large, disabled, elderly, etc. families?										
	X	10. Will public housing be needed for project?										
X		11. Is public housing available?										
X		12. Is it felt there will be adequate DSS housing housing available during relocation period?										
	X	13. Will there be a problem of housing within financial means?										
X		14. Are suitable business sites available (list source).										
		15. Number months estimated to complete RELOCATION? 0										

<p style="text-align: right;"><i>Heather Fulghum</i> 01-30-13</p> <p style="text-align: right;">Heather Fulghum Date Division Right of Way Agent</p>		<p style="text-align: right;"><i>[Signature]</i> 2/7/13</p> <p style="text-align: right;">Relocation Coordinator Date</p>
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APPENDIX D

AGENCY COORDINATION

Federal Agencies

US Dept of the Interior – US Fish and Wildlife Services 12/8/2011

State Agencies

NC Department of Administration 01/11/2012

NC Department of Environment and Natural Resources 01/09/2012

NC Department of Environment and Natural Resources –
Division of Water Quality 12/19/2011

NC State Clearinghouse Department of Administration 01/06/2012

NC Department of Agriculture and Consumer Services 01/04/2012

NC Department of Cultural Resources -
State Historic Preservation Office 05/31/2012

Local Agencies

Guilford County Schools Facilities Planning 01/12/2012



United States Department of the Interior

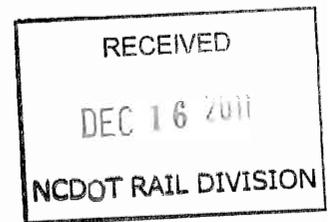
FISH AND WILDLIFE SERVICE

Raleigh Field Office

Post Office Box 33726

Raleigh, North Carolina 27636-3726

December 8, 2011



Ryan White, PE
North Carolina Department of Transportation Rail Division
Environmental and Planning Branch
1553 Mail Service Center
Raleigh, North Carolina 27699-1553

Dear Mr. White:

This letter is in response to your request for comments from the U.S. Fish and Wildlife Service (Service) on the potential environmental effects of the proposed grade separation between McLeansville Road (SR 2918) and the North Carolina Railroad in Guilford County, North Carolina (TIP No. P-5204). These comments provide information in accordance with provisions of the National Environmental Policy Act (42 U.S.C. 4332(2)(c)) and Section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531-1543).

The Service does not have any specific concerns for this project. We anticipate impacts to fish and wildlife resources to be minimal. We recommend the following general conservation measures to avoid or minimize impacts to fish and wildlife resources:

1. Wetland, forest and designated riparian buffer impacts should be avoided and minimized to the maximum extent practical. Highway projects should be aligned along or adjacent to existing roadways, utility corridors or other previously disturbed areas in order to minimize habitat loss and fragmentation;
2. If unavoidable wetland or stream impacts are proposed, a plan for compensatory mitigation to offset unavoidable impacts should be provided early in the planning process; and
3. "Best Management Practices (BMP) for Construction and Maintenance Activities" should be implemented.

Section 7(a)(2) of the Endangered Species Act requires that all federal action agencies (or their designated non-federal representatives), in consultation with the Service, insure that any action federally authorized, funded, or carried out by such agencies is not likely to jeopardize the continued existence of any federally threatened or endangered species. To assist you, a county-by-county list of federally protected species known to occur in North Carolina and information on their life histories and habitats can be found on our web page at <http://www.fws.gov/nc-es/es/countyfr.html>.

Although the North Carolina Natural Heritage Program (NCNHP) database does not indicate any known occurrences of listed species near the project vicinity, use of the NCNHP data should not be substituted for actual field surveys if suitable habitat occurs near the project site. The NCNHP database only indicates the presence of known occurrences of listed species and does not necessarily mean that such species are not present. It may simply mean that the area has not been surveyed. If suitable habitat occurs within the project vicinity for any listed species, surveys should be conducted to determine presence or absence of the species.

If you determine that the proposed action may affect (i.e. likely to adversely affect or not likely to adversely affect) a listed species, you should notify this office with your determination, the results of your surveys, survey methodologies and an analysis of the effects of the action on listed species, including consideration of direct, indirect and cumulative effects, before conducting any activities that might affect the species. If you determine that the proposed action will have no effect (i.e. no beneficial or adverse, direct or indirect effect) on listed species, then you are not required to contact our office for concurrence.

The Service appreciates the opportunity to comment on this project. If you have any questions regarding our response, please contact Mr. Gary Jordan at (919) 856-4520, ext. 32.

Sincerely,


for Pete Benjamin
Field Supervisor



North Carolina
Department of Administration

Beverly Eaves Perdue, Governor

Moses Carey, Jr., Secretary

January 11, 2012

Mr. Ryan White
NCDOT
Rail Division
1553 Mail Service Center
Raleigh, NC 27699-1553

Re: SCH File # 12-E-4220-0145; SCOPING; Start of Study for proposed Grade Separation between McLeansville Road (SR 2918) and North Carolina Railroad. TIP No. P-5204

Dear Mr. White:

The above referenced environmental impact information has been submitted to the State Clearinghouse under the provisions of the National Environmental Policy Act. According to G.S. 113A-10, when a state agency is required to prepare an environmental document under the provisions of federal law, the environmental document meets the provisions of the State Environmental Policy Act. Attached to this letter for your consideration are the comments made by agencies in the course of this review.

If any further environmental review documents are prepared for this project, they should be forwarded to this office for intergovernmental review.

Should you have any questions, please do not hesitate to call.

Sincerely,

A handwritten signature in black ink, appearing to read "W E H Creech".

William E. H. Creech

Attachments

cc: Region G

Mailing Address:
1301 Mail Service Center
Raleigh, NC 27699-1301

Telephone: (919)807-2425
Fax (919)733-9571
State Courier #51-01-00
e-mail state.clearinghouse@doa.nc.gov

Location Address:
116 West Jones Street
Raleigh, North Carolina



North Carolina Department of Environment and Natural Resources

Beverly Eaves Perdue
Governor

Dee Freeman
Secretary

MEMORANDUM

TO: Zeke Creech
State Clearinghouse

FROM: Melba McGee *jm*
Environmental Review

RE: 12-0145 Scoping – Grade Separation between McLeansville Road and NC
Railroad in Guildford County

DATE: January 9, 2012

The Department of Environment and Natural Resources has reviewed the proposed project. The attached comments are for the applicant's consideration. More specific comments will be provided during the environmental review process.

Thank you for the opportunity to comment.

Attachments



North Carolina Department of Environment and Natural Resources

Division of Water Quality
Coleen H. Sullins
Director

Beverly Eaves Perdue
Governor

Dee Freeman
Secretary

December 19, 2011

MEMORANDUM

To: Melba McGee, NCDENR Environmental Coordinator

From: Amy Euliss, NC Division of Water Quality, Winston Salem Regional Office

Subject: Scoping comments on proposed Grade Separation between McLeansville Road (SR 2918) and North Carolina Railroad in Guilford County, State Project No. 52400.1.STR02T2, TIP P-5204. State Clearinghouse Project No. 2012-0145.

Reference your correspondence dated November 30, 2011 in which you requested comments for the referenced project. Preliminary analysis of the project reveals the potential for multiple impacts to streams and jurisdictional wetlands in the project area. More specifically, impacts to:

Stream Name	River Basin	Stream Classification(s)	Stream Index Number	303(d) Listing
South Buffalo Creek and unnamed tributaries	Cap: Fear	C;NSW	16-11-14.2	Ammonia, Copper, Zinc, Impaired ecological and biological integrity
Little Alamance Creek and unnamed tributaries	Cap: Fear	WSIV;NSW	16-19-3-(0.5)	Not listed

Further investigations at a higher resolution should be undertaken to verify the presence of other streams and/or jurisdictional wetlands in the area. In the event that any jurisdictional areas are identified, the Division of Water Quality requests that NCDOT consider the following environmental issues for the proposed project:

Project Specific Comments:

1. Please verify if the Carmen Road project (Y-4800) has been completely replaced by this project. Your explanation in paragraph 4 is not clear. If Y-4800 is not being completely replaced by P-5204, why are they not being considered as a single and complete project?
2. South Buffalo Creek and Little Alamance Creek are class C; NSW waters of the State. NCDWQ is very concerned with sediment and erosion impacts that could result from this project. NCDWQ recommends that highly protective sediment and erosion control BMPs be implemented to reduce the risk of nutrient runoff to South Buffalo Creek. NCDWQ requests that road design plans provide treatment of the storm water runoff through best management practices as detailed in the most recent version of NCDWQ's *Stormwater Best Management Practices*.

North Carolina Division of Water Quality, Winston-Salem Regional Office
Location: 585 Waughtown St. Winston-Salem, North Carolina 27107
Phone: 336-771-5000 \ FAX: 336-771-4530 \ Customer Service: 1-877-623-6748
Internet: www.nowaterquality.org

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3. South Buffalo Creek are class C; 303(d) waters of the State. South Buffalo Creek is on the 303(d) list for impaired use for aquatic life due to ammonia, copper, zinc, and impaired biological integrity fish community. NCDWQ requests that road design plans provide treatment of the storm water runoff through best management practices as detailed in the most recent version of NCDWQ's *Stormwater Best Management Practices*.
4. This project is within the Jordan Lake Basin. Riparian buffer impacts shall be avoided and minimized to the greatest extent possible pursuant to 15A NCAC 2B .0267.

General Project Comments:

1. The environmental document shall provide a detailed and itemized presentation of the proposed impacts to wetlands and streams with corresponding mapping. If mitigation is necessary as required by 15A NCAC 2H.0506(h), it is preferable to present a conceptual (if not finalized) mitigation plan with the environmental documentation. Appropriate mitigation plans will be required prior to issuance of a 401 Water Quality Certification.
2. Environmental assessment alternatives shall consider design criteria that reduce the impacts to streams and wetlands from storm water runoff. These alternatives shall include road designs that allow for treatment of the storm water runoff through best management practices as detailed in the most recent version of NCDWQ *Stormwater Best Management Practices*, such as grassed swales, buffer areas, preformed scour holes, retention basins, etc.
3. After the selection of the preferred alternative and prior to an issuance of the 401 Water Quality Certification, NCDOT is respectfully reminded that they will need to demonstrate the avoidance and minimization of impacts to wetlands (and streams) to the maximum extent practical. In accordance with the Environmental Management Commission's Rules {15A NCAC 2H.0506(h)}, mitigation will be required for impacts of greater than 1 acre to wetlands. In the event that mitigation is required, the mitigation plan shall be designed to replace appropriate lost functions and values. The NC Ecosystem Enhancement Program may be available for use as wetland mitigation.
4. In accordance with the Environmental Management Commission's Rules {15A NCAC 2H.0506(h)}, mitigation will be required for impacts of greater than 150 linear feet to any single ~~perennial~~-stream. In the event that mitigation is required, the mitigation plan shall be designed to replace appropriate lost functions and values. The NC Ecosystem Enhancement Program may be available for use as stream mitigation.
5. NCDWQ is very concerned with sediment and erosion impacts that could result from this project. NCDOT shall address these concerns by describing the potential impacts that may occur to the aquatic environments and any mitigating factors that would reduce the impacts.
6. If a bridge is being replaced with a hydraulic conveyance other than another bridge, NCDWQ believes the use of a Nationwide Permit may be required. Please contact the US Army Corp of Engineers to determine the required permit(s).
7. If the old bridge is removed, no discharge of bridge material into surface waters is allowed unless otherwise authorized by the US ACOE. Strict adherence to the Corps of Engineers guidelines for bridge demolition will be a condition of the 401 Water Quality Certification.
8. Whenever possible, NCDWQ prefers spanning structures. Spanning structures usually do not require work within the stream or grubbing of the streambanks and do not require stream channel realignment. The horizontal and vertical clearances provided by bridges shall allow for human and

wildlife passage beneath the structure. Fish passage and navigation by canoeists and boaters shall not be blocked. Bridge supports (bents) shall not be placed in the stream when possible.

9. Bridge deck drains shall not discharge directly into the stream. Stormwater shall be directed across the bridge and pre-treated through site-appropriate means (grassed swales, pre-formed scour holes, vegetated buffers, etc.) before entering the stream. Please refer to the most current version of NCDWQ's *Stormwater Best Management Practices*.
10. If concrete is used during construction, a dry work area shall be maintained to prevent direct contact between curing concrete and stream water. Water that inadvertently contacts uncured concrete shall not be discharged to surface waters due to the potential for elevated pH and possible aquatic life and fish kills.
11. If temporary access roads or detours are constructed, the site shall be graded to its preconstruction contours and elevations. Disturbed areas shall be seeded or mulched to stabilize the soil and appropriate native woody species should be planted. When using temporary structures the area shall be cleared but not grubbed. Clearing the area with chain saws, mowers, bush-hogs, or other mechanized equipment and leaving the stumps and root mat intact allows the area to re-vegetate naturally and minimizes soil disturbance.
12. Placement of culverts and other structures in waters, streams, and wetlands shall be below the elevation of the streambed by one foot for all culverts with a diameter greater than 48 inches, and 20 percent of the culvert diameter for culverts having a diameter less than 48 inches, to allow low flow passage of water and aquatic life. Design and placement of culverts and other structures including temporary erosion control measures shall not be conducted in a manner that may result in disequilibrium of wetlands or streambeds or banks, adjacent to or upstream and down stream of the above structures. The applicant is required to provide evidence that the equilibrium is being maintained if requested in writing by NCDWQ. If this condition is unable to be met due to bedrock or other limiting features encountered during construction, please contact NCDWQ for guidance on how to proceed and to determine whether or not a permit modification will be required.
13. If multiple pipes or barrels are required, they shall be designed to mimic natural stream cross section as closely as possible including pipes or barrels at flood plain elevation, floodplain benches, and/or sills may be required where appropriate. Widening the stream channel shall be avoided. Stream channel widening at the inlet or outlet end of structures typically decreases water velocity causing sediment deposition that requires increased maintenance and disrupts aquatic life passage.
14. If foundation test borings are necessary; it should be noted in the document. Geotechnical work is approved under General 401 Certification Number 3624/Nationwide Permit No. 6 for Survey Activities.
15. Sediment and erosion control measures sufficient to protect water resources must be implemented and maintained in accordance with the most recent version of North Carolina Sediment and Erosion Control Planning and Design Manual and the most recent version of NCS000250.
16. All work in or adjacent to stream waters shall be conducted in a dry work area unless otherwise approved by NCDWQ. Approved BMP measures from the most current version of NCDOT Construction and Maintenance Activities manual such as sandbags, rock berms, cofferdams and other diversion structures should be used to prevent excavation in flowing water.

17. Sediment and erosion control measures shall not be placed in wetlands and streams.
18. Borrow/waste areas shall avoid wetlands to the maximum extent practical. Impacts to wetlands in borrow/waste areas could precipitate compensatory mitigation.
19. While the use of National Wetland Inventory (NWI) maps, NC Coastal Region Evaluation of Wetland Significance (NC-CREWS) maps and soil survey maps are useful tools, their inherent inaccuracies require that qualified personnel perform onsite wetland delineations prior to permit approval.
20. Heavy equipment shall be operated from the bank rather than in stream channels in order to minimize sedimentation and reduce the likelihood of introducing other pollutants into streams. This equipment shall be inspected daily and maintained to prevent contamination of surface waters from leaking fuels, lubricants, hydraulic fluids, or other toxic materials.
21. In most cases, NCDWQ prefers the replacement of the existing structure at the same location with road closure. If road closure is not feasible, a temporary detour should be designed and located to avoid wetland impacts, minimize the need for clearing and to avoid destabilizing stream banks. If the structure will be on a new alignment, the old structure shall be removed and the approach fills removed from the 100-year floodplain. Approach fills should be removed and restored to the natural ground elevation. The area shall be stabilized with grass and planted with native tree species. Tall fescue shall not be used in riparian areas.
22. Riprap shall not be placed in the active thalweg channel or placed in the streambed in a manner that precludes aquatic life passage. Bioengineering boulders or structures should be properly designed, sized and installed.

Thank you for requesting our input at this time. NCDOT is reminded that issuance of a 401 Water Quality Certification requires that appropriate measures be instituted to ensure that water quality standards are met and designated uses are not degraded or lost. If you have any questions or require additional information, please contact Amy Euliss at (336) 771-4959.

cc: Andy Williams, US Army Corps of Engineers, Raleigh Field Office
Chris Militscher, Environmental Protection Agency (electronic copy only)
Travis Wilson, NC Wildlife Resources Commission (electronic copy only)
Wetlands/401 Transportation Permitting Unit
File Copy

NORTH CAROLINA STATE CLEARINGHOUSE
DEPARTMENT OF ADMINISTRATION
INTERGOVERNMENTAL REVIEW

COUNTY: GUILFORD

F05: RAILROADS

STATE NUMBER: 12-E-4220-0145

DATE RECEIVED: 12/08/2011

AGENCY RESPONSE: 01/04/2012

REVIEW CLOSED: 01/09/2012

MS SUSAN DECATSYE
CLEARINGHOUSE COORDINATOR
DEPT OF AGRICULTURE
1001 MSC - AGRICULTURE BLDG
RALEIGH NC

REVIEW DISTRIBUTION

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PROJECT INFORMATION

APPLICANT: NCDOT
TYPE: National Environmental Policy Act
Scoping

DESC: Start of Study for proposed Grade Separation between McLeansville Road (SR 2918)
and North Carolina Railroad. TIP No. P-5204

The attached project has been submitted to the N. C. State Clearinghouse for
intergovernmental review. Please review and submit your response by the above
indicated date to 1301 Mail Service Center, Raleigh NC 27699-1301.

If additional review time is needed, please contact this office at (919)807-2425.



AS A RESULT OF THIS REVIEW THE FOLLOWING IS SUBMITTED: NO COMMENT COMMENTS ATTACHED

SIGNED BY: Susan Decatsye

DATE: 1/6/2012



Steven W. Troxler
Commissioner

North Carolina Department of Agriculture
and Consumer Services
Agricultural Services

Vernon N. Cox
Environmental Programs
Specialist

January 4, 2012

Ms. Sheila Green
State Clearinghouse
N.C. Department of Administration
1301 Mail Service Center
Raleigh, North Carolina 27699-1301



State #: 12-E-4220-0145
RE: Proposal for TIP No. P-5204

Dear Ms. Green:

Thank you for the opportunity to respond to the request for information regarding the potential environmental impacts of the proposed grade separation between McLeansville Road (SR 2918) and the NC Railroad, TIP Project P-5204. The project data sheet indicates that as many as four farms may be impacted by the proposed construction. The North Carolina Department of Agriculture and Consumer Services (NCDA&CS) is concerned about the conversion of North Carolina's farm and forest lands to other uses. Due to the importance of agricultural activities in the area, as well as the economy of the entire state, NCDA&CS strongly encourages the project planners to avoid conversion of agricultural land to other uses whenever possible. When avoidance is not possible, all reasonable efforts to minimize impacts to agricultural operations and agricultural land should be implemented.

In addition, it is noted that two voluntary Agriculture Districts are in the project area. NCDOT should contact the Guilford County Soil and Water Conservation District (SWCD) office as soon as possible to obtain information regarding potential impacts of the proposed project on adjacent agricultural activities, including potential impacts to any Voluntary Agriculture Districts in the project area. Contact information for the Guilford each office is given below.

Guilford County SWCD
3309 Burlington Road, Room 108
Greensboro, NC 27405-7405
(336) 375-5401 ext. 3
(336) 375-5042 (Fax)

Respectfully,

Vernon N. Cox
Environmental Programs Specialist



**North Carolina Department of Cultural Resources
State Historic Preservation Office**

Ramona M. Bartos, Administrator

Beverly Eaves Perdue, Governor
Linda A. Carlisle, Secretary
Jeffrey J. Crow, Deputy Secretary

Office of Archives and History
Division of Historical Resources
David Brook, Director

May 31, 2012

MEMORANDUM

TO: Ryan White
NCDOT Rail Division
Environmental and Planning Branch

FROM: Ramona M. Bartos *RMB for Ramona M. Bartos*

SUBJECT: McLeansville Road Grade Separation, P-5204, Guilford County, ER 11-2354

Thank you for your email of May 21, 2012, concerning the above project.

We have conducted a review of the proposed undertaking and are aware of no historic resources which would be affected by the project. Therefore, we have no comment on the undertaking as proposed.

The above comments are made pursuant to Section 106 of the National Historic Preservation Act and the Advisory Council on Historic Preservation's Regulations for Compliance with Section 106 codified at 36 CFR Part 800.

Thank you for your cooperation and consideration. If you have questions concerning the above comment, contact Renee Gledhill-Earley, environmental review coordinator, at 919-807-6579. In all future communication concerning this project, please cite the above referenced tracking number.

Gurak, Jill S

From: White, Ryan L [rlwhite@ncdot.gov]
Sent: Thursday, January 12, 2012 4:46 PM
To: Gurak, Jill S
Subject: P21(P-5204) McLeansville Grade Separation: NCDOT request for comments - Proposed Grade Separation betw McLeansville Rd & NC RR and Proposed closure of at-grade Frieden Ch Rd crossing

Importance: High

Effective Immediately, my phone number is now 919-707-4717

*Ryan L. White, P.E.
Rail Project Development Engineer
NCDOT Rail Division
Environmental and Planning Branch
919-707-4717
rlwhite@ncdot.gov*

From: Bell, Donna M (Planning) [mailto:belld2@gcsnc.com]
Sent: Thursday, January 12, 2012 1:23 PM
To: White, Ryan L
Cc: McSweeney, Beatrice; Harris, Jeff; Stacey, Curtis; Melton, Jr., Robert J
Subject: McLeansville ES - NCDOT request for comments - Proposed Grade Separation betw McLeansville Rd & NC RR and Proposed closure of at-grade Frieden Ch Rd crossing
Importance: High

Hello Ryan,

Thanks for the opportunity to review the plans for the proposed grade separation between McLeansville Rd (SR 2918) and the NCRR TIP Project P-5204, WBS Project Number 52400.1.STR02T2, McLeansville, Guilford County.

The GCS Transportation Department has reviewed the proposed railroad crossing and the buses that cross them, and also looked at the number of bus stops near the crossings. Our findings/comments are presented below:

Railroad Crossing at Frieden Church Rd (SR 2746)

The closing of the railroad crossing at Frieden Church Rd will not be an issue except for two buses that may have to detour .63 miles to get back to McLeansville Rd because of stops on Ranhurst Dr.

Railroad Crossing at Carmon Rd (SR 2755)

The closing of the railroad crossing at Carmon Rd will be an issue for buses making stops on Carmon Rd and Knox Rd. These buses will now have to detour to Colony Rd. which is a 4.5 mile detour. We have at least 3 buses with stops in the area.

Railroad Overpass Construction at McLeansville Rd and Bethel Church Rd

We have at least 36 buses making one or two trips a day at this railroad crossing. GCS Transportation staff counted 60 trips across this segment. This would be our biggest area of concern. If buses have to detour to the Friedens Church Rd Crossing, then it could add .57 miles to a bus route.

Concerns:

While NCDOT is working on adding the bridge and crossing at McLeansville Rd, will McLeansville Rd and Bethel Church Rd. be closed at that crossing?

If so, then GCS has a lot of Eastern Middle and High buses that use these streets to get to their schools. GCS will need a time frame for this project, if approved, so we can make plans for alternate routes.

GCS Transportation staff also spoke with Jill Gurak of Atkins. Ms. Gurak explained that the original goal of the project was to just close the crossing at Carmon Rd, but because of budget concerns this was postponed until now. The main goal of the project is to make a better crossing at Mcleansville Rd and Bethel Church Rd. She said that everything is still in the early stages and there will be many scenarios. She also told our staff that the timeline on closing the crossings could be adjusted depending on the needs of taxpayers and the school district.

According to Ms. Gurak, Carmon Rd may be closed first. NCDOT would then work on constructing a new bridge for McLeansville Rd and Bethel Church rd, but would leave the crossing at Friedens Church Rd open as a detour (.57miles) for Mcleansville Rd to Bethel Church Rd.

Another consideration for the GCS Transportation Department and for the traffic at this location would be to only close the crossing during the final days of construction and possibly during the summer months when school is not in session.

Also according to Ms. Gurak, nothing is set in stone at this point and NCDOT wants to be aware of anything it can do to help eliminate problems with the buses at these crossings.

If you have any questions regarding our comments, please let us know.

Thank you.
Donna Bell

GCS Facilities Planning
617 W Market Street
Greensboro NC 27410

336.370.3500 (Facilities Planning)
336.370.8920 (Transportation)

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