

Quality Assurance Review

Project Information

Route: State Route (SR) 436
Termini: Reedy Creek Road Bridge over Reedy Creek, LM 0.68 (IA)
County: Carroll
PIN: 128113.01
Preparer: Brittany Hyder

Certification

By signing below, you certify that this document has been reviewed for compliance with all applicable environmental laws, regulations and procedures. The document has been evaluated for quality, accuracy, and completeness, and that all source material has been verified, compiled and included in the attachments and technical appendices.

Reviewer: Joe Santangelo **Signature:** Joseph D. Santangelo Digitally signed by Joseph D. Santangelo
Date: 2018.10.08 10:19:14 -05'00'
Title: Environmental Supervisor **Comment:** Revisions required

Reviewer: Brittany Hyder **Signature:** Brittany Hyder Digitally signed by Brittany Hyder
Date: 2018.10.08 11:29:48 -05'00'
Title: Environmental Studies Specialist-Advanced **Comment:** Revisions completed

Reviewer: Enter Reviewer Name **Signature:**
Title: Enter Reviewer Title **Comment:** Enter Comment

Reviewer: Enter Reviewer Name **Signature:**
Title: Enter Reviewer Title **Comment:** Enter Comment

Reviewer: Enter Reviewer Name **Signature:**
Title: Enter Reviewer Title **Comment:** Enter Comment

Programmatic Categorical Exclusion

State Route (SR) 436

Reedy Creek Road Bridge over Reedy Creek, LM 0.68

Unincorporated (northeast of McLemoresville)

Carroll County

PIN 128113.01

Submitted Pursuant to the National Environmental Policy Act of 1969, 42 U.S.C. 4332(2)

Environmental Commitments

Owner	Commitment
Ecology EDEC002	TDOT has committed to seasonal tree removal on the project. The USFWS has given TDOT a finding of "Not Likely to Adversely Affect" for the Indiana bat and Northern long-eared bat, provided that tree cutting on this project is done between October 15 and March 31.
Ecology EDEC001	In accordance with the MOA Between USFWS, FHWA, and TDOT Addressing Cliff Swallow and Barn Swallow Nesting Sites, 9/30/2015, cliff swallow and barn swallow nests, eggs, or birds (young and adults) will not be disturbed between April 15 and July 31. From August 1 to April 14, nests can be removed or destroyed, and measures implemented to prevent future nest building at the site (e.g., closing off area using netting).

Project Information

General Information

Route: State Route (SR) 436
Termini: Reedy Creek Road Bridge over Reedy Creek, LM 0.68
Municipality: Unincorporated (northeast of McLemoresville)
County: Carroll
PIN: 128113.01
Plans: Transportation Investment Report (TIR)
Date of Plans: 03/22/2018

Project Funding

Planning Area: Northwest Tennessee Rural Planning Organization (RPO)
STIP/TIP: 1799001 - Surface Transportation Block Grant Program (STBGP) Grouping

Funding Source	Preliminary Engineering	Right-of-Way	Construction
Federal	BR-STP-436(5)	BR-STP-436(5)	BR-STP-436(5)
State	09035-0220-94	09035-2220-94	09035-3220-94

Project Location

Reedy Creek Road Bridge over Reedy Creek at LM 0.68 Carroll County, Tennessee PIN 128113.01



Project Overview

Introduction

The Tennessee Department of Transportation (TDOT), in cooperation with the Federal Highway Administration (FHWA), proposes to replace the SR-436 bridge crossing Reedy Creek in Carroll County, Tennessee.

Background

Every two years, TDOT performs a comprehensive inspection and subsequent evaluation of all public bridges across the state in order to determine the status of their working condition and operating limits to ensure that they are in accordance with the Federal Highway Administration (FHWA) National Bridge Inspection Standards (NBIS). These inspections are recorded and published in the National Bridge Inventory (NBI) Tennessee Inventory and Appraisal Report. One of the components of this evaluation is the designation of a sufficiency rating. A sufficiency rating is calculated for each individual bridge that is used to carry vehicular traffic. Ratings are measured on a scale of 0 to 100. A rating of 100 corresponds to a bridge that qualifies as an "entirely sufficient bridge," while a rating of 0 denotes a bridge that is "entirely deficient." Bridges that receive a sufficiency rating of less than 80.0 are eligible for rehabilitation; bridges that earn a rating below 50.0 are eligible for replacement. Another component of the NBI are the condition ratings. Condition ratings are used to describe the existing, in-place bridge as compared to the as-built condition. The physical condition of the deck, superstructure, and substructure components of a bridge are evaluated for a condition rating. Condition ratings are assigned codes ranging from 0-9, with 0 being failed condition and 9 being excellent condition.

According to the NBI, Bridge Inspection Report dated 10/02/2017 (located in the Technical Appendices), the SR-436 bridge over Reedy Creek at LM 0.68 received a sufficiency rating of 47.1, which qualifies the bridge for replacement. The deck and substructure received a condition rating of five or "fair condition," denoting that all the primary structural elements are sound but may have minor section loss, cracking, spalling, or scour. The substructure received a condition rating of four or "poor condition," denoting that this element has advanced section loss, deterioration, spalling or scour. The stream channel and channel protection elements received a condition rating of six or "satisfactory condition," denoting that all the structural elements show some minor deterioration.

This project was initiated and developed under project identification number (PIN) 124139.00. Since then, the PIN has changed to 128113.01. The environmental documentation and technical studies reflect the initial project number 124139.00. Correspondence addressing this change is located in the Technical Appendices.

This project requires 1.13 acres of right-of-way (ROW) acquisition which exceeds the thresholds listed in Section IV(A)(1)(b)(i) of the 2018 Programmatic Agreement between FHWA and TDOT, prompting FHWA coordination/ approval. However, following consultation with FHWA, it was determined that due to the limited amount of ROW required and nature of the project, this project could be documented as a Programmatic Categorical Exclusion (PCE). Correspondence with FHWA is located in the Technical Appendices.

Project Development

Need

The proposed project is needed to address insufficient structural elements of the SR-436 bridge over Reedy Creek as indicated by the assigned condition ratings and overall sufficiency rating of 47.1.

Purpose

The purpose of the proposed project is to improve the structural integrity of the SR-436 bridge over Reedy Creek by replacing the existing structure.

Range of Alternatives

Other than the selected design, were any alternative build designs developed for this project?

No

No-Build

In the development of design solutions that address the needs outlined above and achieve the purpose of the project, TDOT evaluated the potential consequences should the project not be implemented. This option, known as the No-Build alternative, assumed the continuation of current conditions and set the baseline from which the impacts of the selected design were compared.

The No-Build Alternative was not selected as it does not meet the purpose and need of the project.

Public Involvement

Has there been any public involvement for the project?

No

Project Design

Existing Conditions and Layout

Based on the TIR dated 03/22/2018 located in the Technical Appendices, the existing four-span concrete bridge crossing Reedy Creek was constructed in 1960. The structure has an out-to-out width of 22 feet and an overall length of just under 90 feet with 9.33 feet of vertical clearance. This section of SR-436 is classified as a Rural Major Collector and the bridge carries two nine-foot travel lanes (one in each direction).

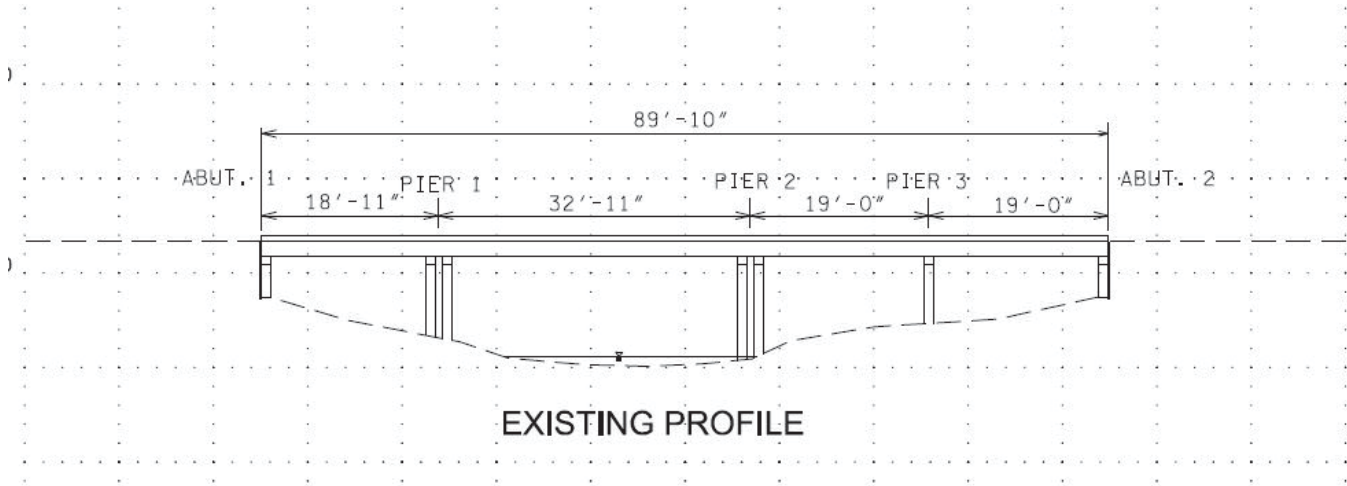


Figure 1. Existing Profile (TIR dated 03/22/2018).

Proposed Project Description

According to the TIR, the proposed alignment for the replacement structure will shift approximately ten feet to the west and the grade will be raised approximately 2.5 feet to maintain the existing vertical clearance. The proposed structure will maintain a 90 degree skew with the river channel and will be a single span, pre-stressed concrete box beam structure with a total vertical clearance of 9.33 feet and a length of 90 feet. The new structure will consist of two, 11-foot travel lanes and an out-to-out width of 29.5 feet. The project limits will extend 500 feet to the north and south of the structure to accommodate the alignment shift and raise the grade.

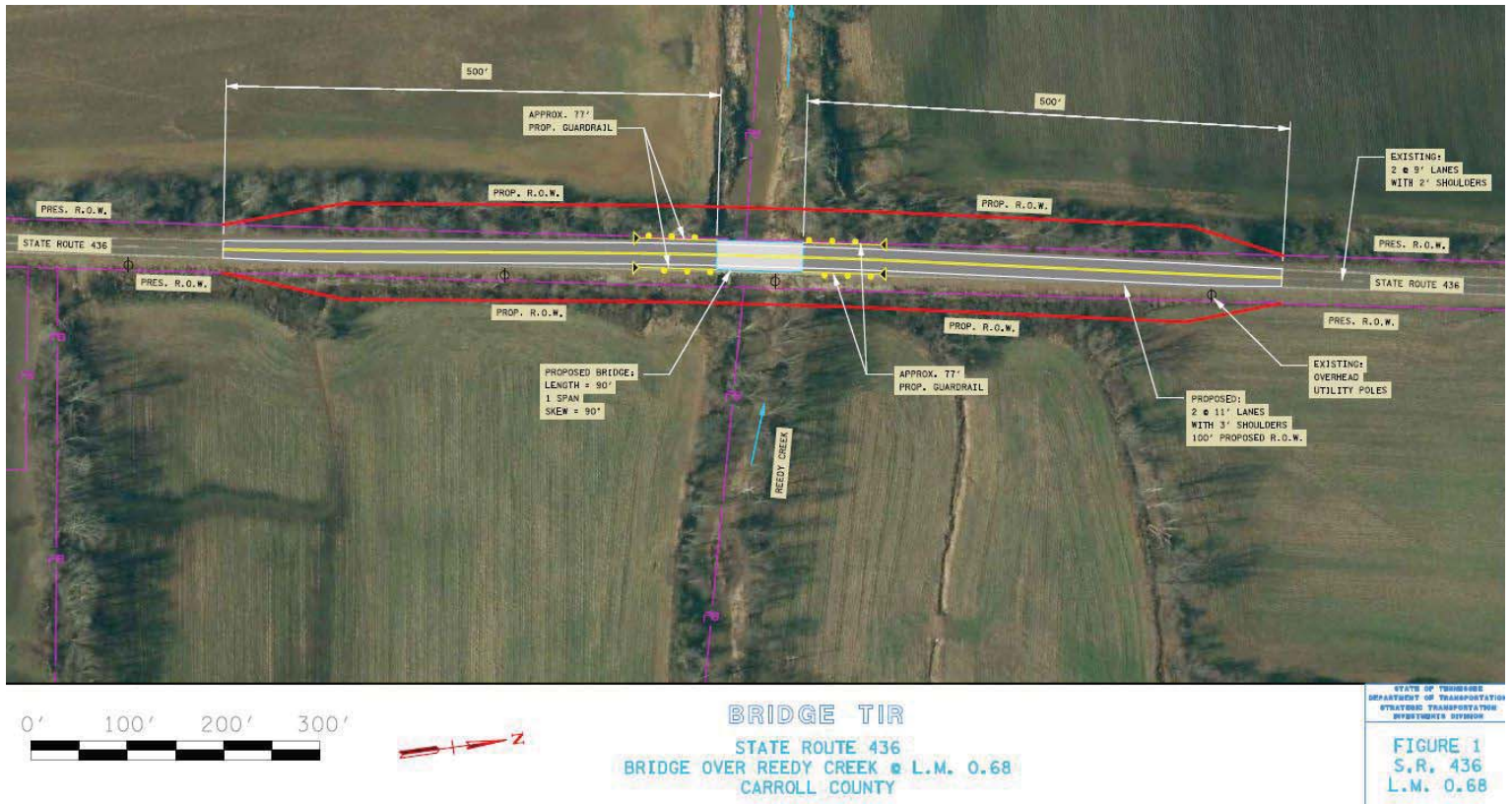


Figure 2. Aerial View of the Proposed Project Area (TIR dated 03/22/2018).

Proposed Typical Section

This section of SR-436 is classified as a Rural Major Collector; in accordance with TDOT design standards,

Rural Major Collector roads require a minimum roadway width of 22 feet with shoulder widths of three feet. Therefore, the typical section of the proposed structure will consist of two, 11- foot travel lanes with shoulder widths of three feet and concrete parapets.

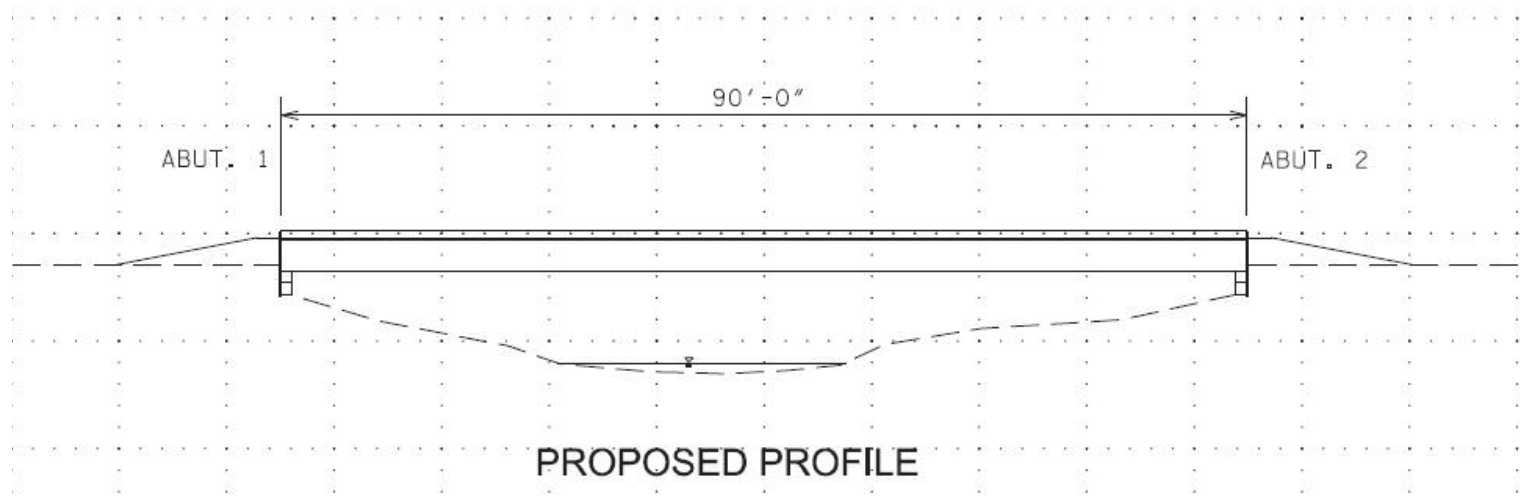


Figure 3. Proposed Profile (TIR dated 03/22/2018).

Right-of-Way

Does this project require the acquisition of right-of-way or easements?

Yes

Right-of-Way Acquisition Table					
Permanent Acquisition			Temporary Acquisition		
R.O.W Acquisition	Drainage Easements	Total	Slope Easements	Construction Easements	Total
1.13	0	1.13	0	0	0

*Measured in acres

The TIR dated 03/22/2018 states, "It is estimated that four tracts of land will be affected resulting in 1.13 acres of estimated ROW. It is also estimated that overhead utilities will need to be relocated."

Displacements and Relocations

Will this project result in residential, business or non-profit displacements and relocations?

No

Changes in Access Control

Will changes in access control impact the functional utility of any adjacent parcels?

No

Traffic and Access Disruption

At this time, are traffic control measures and temporary access information available?

Yes

Will this project involve traffic control measures that may result in major traffic disruptions?

No

Traffic Control along the project corridor will take place in two phases utilizing advanced signing, temporary signalization, and a temporary attenuator. During Phase I, construction will take place in the existing southbound lane and to the left of the existing structure. During this phase, all traffic will be diverted to the existing northbound lane utilizing a temporary signal and attenuator. During Phase II, construction will take place in the existing northbound shoulder and lane and in a portion of the southbound lane. All traffic will be diverted to the left shoulder and the newly constructed section of the southbound lane utilizing a temporary signal and attenuator.

Environmental Studies

Water Resources

Are there any water resources, wetlands or natural habitat located within the project area?

Yes

Labels	Type *	Function	Quality	Impacts **		
				Permanent	Temporary	Total
Wetlands						
						0.0 ac.
						0.0 ac.
						0.0 ac.
						0.0 ac.
						0.0 ac.
Total						0.0 ac.

Labels	Type *	Function	Quality	Impacts **		
				Permanent	Temporary	Total
Streams						
STR-1	Perennial		Unassessed	0 ft		0 ft
STR-2	Intermittent		Unassessed	0 ft		0 ft
WWC-1	WWC		Unassessed	0 ft		0 ft
WWC-2	WWC		Unassessed	0 ft		0 ft
						0 ft
Total						0 ft

* Identification of features has not been reviewed by regulatory agencies and determinations of stream type could possibly be changed.

** Estimated impacts are considered "Preliminary" and will not be completely accurate until the time of Permit Application

Mitigation of impacts to streams or any other fluvial systems will be accomplished through the avoidance and minimization of potential impacts during the design process. Permanent stream alterations such as relocations, impoundments or channel modification will be mitigated on-site to the extent possible in order to return the channel to its most probable natural state. Impacts that cannot be mitigated on-site will be subject to a compensatory mitigation plan that may include restoration of a comparable resource or application of an in-lieu fee program.

Protected Species

Are the Grouped Programmatic No Effect Activities (GPNEA) Consultation between TDOT, USFWS, and FWHA (2017) and TDEC-DNA (2015) MOA applicable to this project?

No

Rare Species Dataviewer:

The TDEC Rare Species Dataviewer was reviewed on 08/23/2016.

Rare Species List			
Species Name	Status	Species Potential within Right-of-Way	Accommodations
<i>Ceratophyllum echinatum</i>	State	Low Potential: Not observed during visit	BMPs

According to the Environmental Boundaries Report (EBR) dated 09/16/2016, "Cliff swallow and barn swallow nests, eggs, or birds (young and adults) will not be disturbed between April 15 and July 31. From August 1 to April 14, nests can be removed or destroyed, and measures implemented to prevent future nest building at the site (e.g., closing off area using netting). A review of the TDEC Natural Heritage Database on 08/23/2016 indicate records of Prickly Hornwort (*Ceratophyllum echinatum*) within a four mile radius of the bridge project. During the site visit, this species was not observed in the study area."

U.S. Fish and Wildlife Service (USFWS):

Coordination with the USFWS was completed on 10/04/2016.

Correspondence from the USFWS dated 10/04/2016 states, "Transportation-related activities not anticipated to result in adverse effects to the federally endangered Indiana bat (*Myotis sodalis*) or the threatened northern long-eared bat (NLEB) (*Myotis septentrionalis*) include all wintertime forested clearing within 100 feet of roadway surface or railroad ballast that does not remove known roosts or documented foraging/travel corridors and is no closer than one-half mile from the entrance of a documented hibernaculum. Because TDOT commits to implement appropriate avoidance and minimization measures, the project is eligible to be placed under the consultation herein referenced with determinations of 'not likely to adversely affect' for the Indiana bat and NLEB.

We are unaware of any federally listed or proposed species that would be impacted by this project. Therefore, based on the best information available at this time, we believe that the requirements of section 7 of the Endangered Species Act (Act) of 1973, as amended, are fulfilled for all species that currently receive protection under the Act. Obligations under the Act must be reconsidered if (1) new information reveals impacts of the proposed action that may affect listed species or critical habitat in a manner not previously considered, (2) the proposed action is subsequently modified to include activities which were no considered during this consultation, or (3) new species are listed or critical habitat designated that might be affected by the proposed action."

Tennessee Wildlife Resources Agency (TWRA):

Coordination with TWRA was completed on 08/25/2016.

Correspondence from the TWRA dated 08/25/2016 states, "The Tennessee Wildlife Resources Agency has reviewed your request regarding the SR-436 Bridge Repair over Reedy Creek Project in Carroll County, Tennessee. Your letter to the Agency requested comments regarding potential impacts to endangered species, wetlands, and other areas of concern we may think pertinent to this proposed project.

It is our understanding from what was sent that this project is not expected to impact any state- listed species that are Deemed-in-Need-of-Management, Threatened, or Endangered.

Based upon these understandings, the TWRA does request that all applicable TDEC and US EPA approved Erosion Prevention/Silt Control measures, Best Management Practices, and in-stream work be scheduled, implemented, monitored, and maintained. The TWRA requests that any major changes to the plans, construction methodology, or

right-of-way will immediately void this comment and require another review to the changes. The TWRA requests that this comment is put on the construction plans for all to review. "

Floodplain Management

Flood Zone: Zone A - No Base Flood Elevations Determined

Portions of this project are located in or near a FEMA defined floodplain however there is no detailed study. The project is located on Flood Insurance Rate Maps in Carroll County, Panel 150 of 475, Map # 47017C0150C. The design of the roadway system will be consistent with the Memorandum of Understanding (MOU) between FHWA and FEMA and with the floodplain management criteria set forth in the National Flood Insurance Regulations of Title 44 of the Code of Federal Regulations (CFR). It will be consistent with the requirements of floodplain management guidelines for implementing Executive Order 11988 and FHWA guidelines 23 CFR 650A. A portion of the FEMA FIRM is included in attachments.

Air Quality

Transportation Conformity:

Correspondence from the TDOT Air and Noise Section dated 04/05/2018 states, "This project is in Carroll County which is in attainment for all regulated criteria pollutants. Therefore, conformity does not apply to this project."

Mobile Source Air Toxics (MSAT):

In the same 04/05/2018 response it was determined that, "This project qualifies as a categorical exclusion under 23 CFR [U.S. Code of Federal Regulations] 771.117 and does not require an MSATs evaluation per FHWA's 'Interim Guidance Update on Air Toxic Analysis in NEPA [National Environmental Policy Act] Documents' dated October 2016."

Noise

In accordance with FHWA requirements and TDOT's Noise Policy this project is determined to be **Type III**

No significant noise impacts are anticipated for this project and a noise study is not needed.

Farmland

Is this project exempt from the provisions of the Farmland Protection Policy Act (FPPA)? **Yes**

FPPA Exemption: Small Acreage (3 acres or less for an existing bridge or interchange).

Section 4(f)

Does this project involve the use of property protected by Section 4(f) (49 USC 303)? **No**

Section 6(f)

Does this project involve the use of property assisted by the L&WCF?

No

Cultural Resources

Does the Interstate Highway exemption or MOU between TDOT and the SHPO (2015) apply?

No

Are NRHP listed or eligible cultural resources within the project Area of Potential Effect (APE)?

No

Historic/Architectural Concurrence:

Concurrence from the TN State Historic Preservation Office (TN-SHPO) was received on 06/12/2018.

Correspondence from the TN-SHPO dated 06/12/2018 states, "Considering the information provided, we concur that no architectural resources eligible for listing in the National Register of Historic Places will be affected by this undertaking. If project plans are changed or archaeological remains are discovered during project construction, please contact this office to determine what further action, if any, will be necessary to comply with Section 106 of the National Historic Preservation Act."

Archaeology Concurrence:

Concurrence from the TN State Historic Preservation Office (TN-SHPO) was received on 07/20/2018.

Correspondence from the TN-SHPO dated 07/20/2018 states, "Considering the information provided, we find that no archaeological resources eligible for listing in the National Register of Historic Places will be affected by this undertaking. If project plans are changed or archaeological remains are discovered during project construction, please contact this office to determine what further action, if any, will be necessary to comply with Section 106 of the National Historic Preservation Act."

Native American Consultation

Does this project require Native American consultation?

Yes

Native American Consultation was requested on 04/19/2018.

Native American Consultation					
Sent	Response		Sent	Response	
<input type="checkbox"/>	<input type="checkbox"/>	Absentee Shawnee Tribe of Oklahoma	<input type="checkbox"/>	<input type="checkbox"/>	Muscogee (Creek) Nation
<input type="checkbox"/>	<input type="checkbox"/>	Cherokee Nation	<input type="checkbox"/>	<input type="checkbox"/>	Poarch Band of Creek Indians
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Chickasaw Nation	<input type="checkbox"/>	<input type="checkbox"/>	Quapaw Tribe of Oklahoma
<input type="checkbox"/>	<input type="checkbox"/>	Choctaw Nation of Oklahoma	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Shawnee Tribe
<input type="checkbox"/>	<input type="checkbox"/>	Eastern Band of Cherokee Indians	<input type="checkbox"/>	<input type="checkbox"/>	Thlopthlocco Tribal Town
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Eastern Shawnee Tribe of Oklahoma	<input checked="" type="checkbox"/>	<input type="checkbox"/>	United Keetoowah Band of Cherokee Indians
<input type="checkbox"/>	<input type="checkbox"/>	Kialegee Tribal Town	<input type="checkbox"/>	<input type="checkbox"/>	Other

Chickasaw Nation:

The response was received on 08/31/2018.

Correspondence from the Chickasaw Nation's Department of Culture and Humanities dated 08/31/2018 states, "The Chickasaw Nation supports the proposed undertakings and is presently unaware of any specific historic properties, including those of traditional religious and cultural significance, in the project area."

Correspondence from the TDOT Native American Coordination Section dated 09/28/2018 states, "NAC was sent to all federally recognized, interested tribes on April 19, 2018 and August 21, 2018. The Chickasaw Nation requested to be a consulting party. A final report was sent to the tribe. No other tribes have responded."

Environmental Justice

Are there any disproportionately high or adverse effects on low-income or minority populations?

No

The proposed project does not have the potential to cause disproportionately high or adverse effects on low-income or minority populations.

Hazardous Materials

Does the project involve any asbestos containing materials?

No

Does the project involve any other hazardous material sites?

No

Correspondence from the TDOT Hazardous Materials Section dated 04/05/2018 states, "Based on the Transportation Investment Report dated 23 March 2018, no known hazardous materials sites appear to affect this project as it is currently planned and no additional hazardous material studies are recommended at this time. The asbestos survey on bridge number 09S82330001 has been completed under PIN 043917.01 and no asbestos was detected; the project commitment was submitted to PPRM but is not shown in this TIR.

Reedy Creek has not been assessed by TDEC DWR.

In the event hazardous substances/wastes are encountered within the right-of-way, their disposition shall be subject to all applicable regulations, including the applicable sections of the Federal Resource Conservation and Recovery Act, as amended; and the Comprehensive Environmental Response, Compensation, and Liability Act, as amended; and the Tennessee Hazardous Waste Management Act of 1983, as amended. Databases reviewed include: Google Earth imagery, EPA National Priorities List, EPA EnviroMapper, TDEC Registered UST database, TDEC Division of Water Resources Public Data Viewer, TDOT IBIS, and others as necessary.

An Asbestos Containing Material (ACM) survey was conducted on Bridge No. 09S82330001, SR-436 over Reedy Creek, LM 0.68 (09-SR436-00.68). No ACM was detected. No special accommodations for demolition and waste disposal are anticipated for these structures and the material can be deposited in a C&D landfill. Prior to the demolition or rehabilitation of any structure (bridge or building), the contractor is required to submit the National Emission Standards for Hazardous Air Pollutants standard 10-day notice of demolition to the TDEC Division of Air Pollution Control (per TDOT Standard Specifications for Road and Bridge Construction (January 1, 2015) Sections 107.08 D and 202.03)."

Bicycle and Pedestrian

Does this project include accommodations for bicycles and pedestrians?

No

Policy Exception: Other factors where there is a demonstrated absence of need or prudence.

Correspondence from the TDOT Multimodal Transportation Resources Division dated 04/10/2018, "This project does not accommodate bicyclists or pedestrians but is exempt from multi-modal accommodations. As a bridge replacement project in a rural area on a facility with no existing accommodations, there is a demonstrated absence of prudence."

Environmental Commitments

Does this project involve any environmental commitments?

Yes

Additional Environmental Issues

Are there any additional environmental concerns involved with this project?

No

Conclusion

Review Determination

Determination: Programmatic Categorical Exclusion

This federal-aid highway project qualifies for a Categorical Exclusion under 23 C.F.R 771.117(d) and does not exceed the thresholds listed in Section IV(A)(1)(b) of the 2016 Programmatic Agreement between the Federal Highway Administration, Tennessee Division and the Tennessee Department of Transportation. The Department has determined that the specific conditions and criteria for these CEs are satisfied and that significant environmental impacts will not result from this action. This project is therefore designated as a Programmatic Categorical Exclusion and does not require Administration approval.

Reference Material

All source material used in support of the information and conclusions presented in this document are included in the attachments and technical appendices. The attachments are located at the end of the environmental document and include information on funding, agency concurrence, applicable agency agreements, and special commitment support. The technical appendices are compiled as a separate document and include the project plans, technical reviews, reports and any other additional information.

Preparer Certification

By signing below, you certify that this document has been prepared in compliance with all applicable environmental laws, regulations and procedures. You can attest to the document's quality, accuracy, and completeness, and that all source material has been compiled and included in the attachments and technical appendices.

**Brittany
Hyder**

Digitally signed by Brittany
Hyder
Date: 2018.10.08 11:26:35
-05'00'

Document Preparer

Document Approval

By signing below, you officially concur that this document is in compliance with all applicable environmental laws, regulations and procedures. You have reviewed and verified the document's quality, accuracy, and completeness and that all source material has been compiled and included in the attachments and technical appendices.

**Brittany
Hyder**

Digitally signed by Brittany
Hyder
Date: 2018.10.08 11:26:56
-05'00'

Tennessee Department of Transportation

Attachments

Acronyms

AADT	Annual Average Daily Traffic	NRCS	Natural Resources Conservation Service
ADA	Americans with Disabilities Act	NRHP	National Register of Historic Places
APE	Area of Potential Effect	PCE	Programmatic Categorical Exclusion
BMP	Best Management Practice	PIN	Project Identification Number
CAA	Clean Air Act	PM	Particulate Matter
CE	Categorical Exclusion	PND	Pond
CEQ	Council on Environmental Quality	RCRA	Resource Conservation and Recovery Act
CFR	Code of Federal Regulations	ROW	Right-of-Way
CMAQ	Congestion Mitigation and Air Quality	ROD	Record of Decision
DEIS	Draft Environmental Impact Statement	RPO	Rural Planning Organization
FEMA	Federal Emergency Management Agency	SIP	State Implementation Plan
FONSI	Finding of No Significant Impact	SNK	Sinkhole
EA	Environmental Assessment	SR	State Route
EIS	Environmental Impact Statement	STIP	State Transportation Improvement Program
EJ	Environmental Justice	STR	Stream
EPA	Environmental Protection Agency	TDEC	TN Department of Environment and Conservation
EPH	Ephemeral Stream	TDOT	Tennessee Department of Transportation
FHWA	Federal Highway Administration	TIP	Transportation Improvement Program
FIRM	Flood Insurance Rate Map	SHPO	State Historic Preservation Office
FPPA	Farmland Protection Policy Act	TPO	Transportation Planning Organization
GHG	Greenhouse Gas	TVA	Tennessee Valley Authority
GIS	Geographic Information System	TWRA	Tennessee Wildlife Resources Agency
IAC	Interagency Consultation	USDOT	U.S. Department of Transportation
LWCF	Land and Water Conservation Fund	USACE	U.S. Army Corps of Engineers
LOS	Level of Service	USFWS	U.S. Fish and Wildlife Service
MOA	Memorandum of Agreement	UST	Underground Storage Tank
MOU	Memorandum of Understanding	VMT	Vehicle Miles Traveled
MPO	Metropolitan Planning Organization	VPD	Vehicles Per Day
MSAT	Mobile Source Air Toxics	WWC	Wet Weather Conveyance
NEPA	National Environmental Policy Act		

State Transportation Improvement Program

STIP Project List

STIP # 1799001 **TDOT PIN #** **LENGTH IN MILES** **LEAD AGENCY** TDOT

COUNTY STATEWIDE - RURAL **TOTAL PROJECT COST** \$426,000,000

ROUTE

TERMINI SURFACE TRANSPORTATION BLOCK GRANT PROGRAM (STBGP) - GROUPING

PROJECT DESCRIPTION SEE APPENDIX STATE GROUPING DESCRIPTION FOR A COMPREHENSIVE LISTING OF ACTIVITIES INCLUDED BUT NOT LIMITED FOR ELIGIBILITY

REMARKS



COUNTY MAP

FY	PHASE	FUNDING	TOTAL FUNDS	FED FUNDS	STATE FUNDS	LOCAL FUNDS
2017	PE, ROW, CONST	STBG	106,500,000	85,200,000	21,300,000	
2018	PE, ROW, CONST	STBG	106,500,000	85,200,000	21,300,000	
2019	PE, ROW, CONST	STBG	106,500,000	85,200,000	21,300,000	
2020	PE, ROW, CONST	STBG	106,500,000	85,200,000	21,300,000	



VICINITY MAP

ALL SCHEDULES SUBJECT TO AVAILABILITY OF FUNDS

Grouping Category	Function of Grouping Activities	Allowable Work Types
<p>Surface Transportation Block Grant Program (STBG) Grouping</p> <p>STIP# 1799001</p>	<p>Projects and programs for the preservation and improvement of the conditions and performance of Federal-aid highways and public roads, including:</p> <ul style="list-style-type: none"> • Rehabilitation, resurfacing, restoration, preservation, and operational improvements on Federal-aid highways and designated routes of the Appalachian Development Highway System (ADHS) and local access roads under 40 USC 14501, • Traffic operations on Federal-aid highways, • Bridge and tunnel improvements on public roads, • Safety improvements on public roads, • Environmental mitigation • Scenic and historic highway programs, • Landscaping and scenic beautification, 	<p>Activities previously authorized under the Surface Transportation Program (STP):</p> <ul style="list-style-type: none"> • Minor rehabilitation, pavement resurfacing, preventative maintenance, restoration, and pavement preservation treatments to extend the service life of highway infrastructure, including pavement markings and improvements to roadside hardware or sight distance • Highway improvement work including slide repair, rock fall mitigation, drainage repairs, or other preventative work necessary to maintain or extend the service life of the existing infrastructure in a good operational condition • Minor operational and safety improvements to intersections and interchanges such as adding turn lanes, addressing existing geometric deficiencies, and extending on/off ramps • Capital and operating costs for intelligent transportation systems (ITS) and traffic monitoring, management, and control facilities and programs: <ul style="list-style-type: none"> ○ Infrastructure-based intelligent transportation systems (ITS) capital improvements ○ Traffic Management Center (TMC) operations and utilities ○ Freeway service patrols ○ Traveler information • Bridge and tunnel construction (no additional travel lanes), replacement, rehabilitation, preservation, protection, inspection, evaluation, and inspector training and inspection and evaluation of other infrastructure assets, such as signs, walls, and drainage structures • Development and implementation of a State Asset Management Plan including data collection, maintenance and integration, software costs, and equipment costs that support the development of performance-based management systems for infrastructure • Rail-highway grade crossing improvements • Highway safety improvements: <ul style="list-style-type: none"> ○ Installation of new or improvement of existing guardrail ○ Installation of traffic signs and signals/lights ○ Spot safety improvements • Sidewalk improvements • Pedestrian and/or bicycle facilities • Traffic calming and traffic diversion improvements • Transportation Alternatives as defined by 23 USC 213(B), 23 USC, 101(A)(29), and Section 1122 of MAP-21 • Noise walls • Wetland and/or stream mitigation • Environmental restoration and pollution abatement • Control of noxious weeds and establishment of native species <p>Activities previously authorized under the Transportation Enhancement Program:</p>

Appendices

<p>Surface Transportation Block Grant Program (STBG) Grouping</p> <p>(continued)</p> <p>STIP# 1799001</p>	<ul style="list-style-type: none"> ● Historic preservation, ● On- and off-road pedestrian and bicycle facilities, ● Infrastructure projects for improving non-driver access to public transportation and enhanced mobility, ● Community improvement activities, ● Recreational Trail Program projects, ● Safe Routes to School (SRTS) projects, ● Transportation Enhancement projects, ● Transportation Alternatives projects, ● Projects for the creation, rehabilitation, and maintenance of multi-use recreational trails. 	<ul style="list-style-type: none"> ○ Pedestrian and bicycle facilities, safety, and educational activities ○ Acquisition of scenic easements and scenic or historic sites ○ Scenic or historic highway programs ○ Landscaping and other scenic beautification activities ○ Historic preservation ○ Rehabilitation and operation of historic transportation buildings, structures, or facilities ○ Preservation of abandoned railway corridors ○ Inventory, control, and removal of outdoor advertising ○ Archaeological planning and research ○ Environmental mitigation to address water pollution due to highway runoff or reduce vehicle-caused wildlife mortality while maintaining habitat connectivity ○ Establishment of transportation museums ○ Activities under the Tennessee Roadscapes grant program, including landscaping, irrigation, benches, trash cans, paths and signage <p>Activities previously authorized under the Safe Routes to School Program (SRTS):</p> <ul style="list-style-type: none"> ● Sidewalk improvements ● Traffic calming and speed reduction improvements ● Pedestrian and bicycle crossing improvements ● On-street bicycle facilities ● Off-street bicycle and pedestrian facilities ● Secure bicycle parking facilities ● Traffic diversion improvements approximately within 2 miles of a school location ● Non-infrastructure related activities: <ul style="list-style-type: none"> ○ Public awareness campaigns and outreach to press and community leaders ○ Traffic education and enforcement in the vicinity of schools <ul style="list-style-type: none"> ▪ Student sessions on bicycle and pedestrian safety, health, and environment ▪ Funding for training, volunteers, and managers of safe routes to school program <p>Activities previously authorized under the Transportation Alternatives Program (TAP):</p> <ul style="list-style-type: none"> ● Construction, planning, and design of on-road and off-road trail facilities for pedestrians, bicyclists, and other non-motorized forms of transportation, including: <ul style="list-style-type: none"> ○ Sidewalk improvements ○ Bicycle infrastructure ○ Pedestrian and bicycle signals ○ Traffic calming techniques ○ Lighting and other safety-related infrastructure
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Appendices

<p>Surface Transportation Block Grant Program (STBG) Grouping (continued)</p> <p>STIP# 1799001</p>	<ul style="list-style-type: none"> ● Projects for the planning, design or construction of boulevards and other roadways largely in the right-of-way of former Interstate System routes or other divided highways. 	<ul style="list-style-type: none"> ○ Transportation projects to achieve compliance with the Americans with Disabilities Act of 1990 ● Construction, planning, and design of infrastructure-related projects and systems that will provide safe routes for non-drivers, including children, older adults, and individuals with disabilities to access daily needs ● Conversion and use of abandoned railroad corridors for trails for pedestrians, bicyclists, or other non-motorized transportation users ● Construction of turnouts, overlooks, and viewing areas ● Community improvement activities, which include but are not limited to: <ul style="list-style-type: none"> ○ Inventory, control, or removal of outdoor advertising ○ Historic preservation and rehabilitation of historic transportation facilities ○ Vegetation management in transportation rights-of-way to improve roadwaysafety, prevent invasive species, and provide erosion control ○ Archaeological activities relating to impacts from implementation of atransportation project eligible under Title 23 of the USC ● Any environmental mitigation activity, including pollution prevention and pollution abatement activities and mitigation to: <ul style="list-style-type: none"> ○ Address stormwater management, control, and water pollution prevention or abatement related to highway construction or due to highway runoff ○ Reduce vehicle-caused wildlife mortality or to restore and maintain connectivity among terrestrial or aquatic habitats ● Recreational Trails Program activities under 23 USC 206 ● SRTS Program infrastructure-related projects, non-infrastructure-related activities (such as pedestrian and bicycle safety and educational activities advanced under the SRTS program), and SRTS Coordinator positions. ● Planning, designing, or constructing boulevards and other roadways largely in the right-of-way of former Interstate System routes or other divided highways <p>Activities previously authorized under the Recreational Trails Program (RTP):</p> <ul style="list-style-type: none"> ● Maintenance and restoration of existing recreational trails ● Development and rehabilitation of trailside and trailhead facilities and trail linkages for recreational trails ● Purchase and lease of recreational trail construction and maintenance equipment ● Construction of new recreational trails ● Acquisition of easements and fee simple title to property for recreational trails or recreational trail corridors ● Assessment of trail conditions for accessibility and maintenance ● Development and dissemination of publications and operation of educational programs to promote safety and environmental protection ● Payment of costs to the State incurred in administering the program
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United States Department of the Interior

FISH AND WILDLIFE SERVICE

Tennessee ES Office
446 Neal Street
Cookeville, Tennessee 38501



October 4, 2016

Mr. Greg Harris
Tennessee Department of Transportation
Environmental Planning and Permits
James K. Polk Building, Suite 900
505 Deaderick Street
Nashville, Tennessee 37243-0334

Subject: FWS# 16-I-0876. Proposed State Route 436 Bridge repair over Reedy Creek; PIN# 124139.00, P.E. 09035-3220-94, Carroll County, Tennessee.

Dear Mr. Harris:

Thank you for your email correspondence dated September 16, 2016, regarding repair the State Route 436 Bridge over Reedy Creek in Carroll County, Tennessee. The Tennessee Department of Transportation (TDOT) has determined that the project is eligible to be placed under the Range-wide Programmatic Informal Consultation between the Federal Highway Administration, Federal Railroad Administration, Federal Transit Administration, and the U.S. Fish and Wildlife Service (Service), and has provided the required Project Submittal Form. Personnel of the Service have reviewed the subject proposal and offer the following comments.

Transportation-related activities not anticipated to result in adverse effects to the federally endangered Indiana bat (*Myotis sodalis*) or the threatened northern long-eared bat (NLEB) (*Myotis septentrionalis*) include all wintertime forested clearing within 100 feet of roadway surface or railroad ballast that does not remove known roosts or documented foraging/travel corridors and is no closer than one-half mile from the entrance of a documented hibernaculum. Because TDOT commits to implement appropriate avoidance and minimization measures, the project is eligible to be placed under the consultation herein referenced with determinations of "not likely to adversely affect" for the Indiana bat and NLEB.

We are unaware of any federally listed or proposed species that would be impacted by this project. Therefore, based on the best information available at this time, we believe that the requirements of section 7 of the Endangered Species Act (Act) of 1973, as amended, are fulfilled for all species that currently receive protection under the Act. Obligations under the Act must be reconsidered if (1) new information reveals impacts of the proposed action that may affect listed species or critical habitat in a manner not previously considered, (2) the proposed action is

subsequently modified to include activities which were not considered during this consultation, or (3) new species are listed or critical habitat designated that might be affected by the proposed action.

If you have any questions regarding our comments, please contact John Griffith of my staff at 931/525-4995 or by email at john_griffith@fws.gov.

Sincerely,

A handwritten signature in blue ink that reads "Mary E. Jennings". The signature is written in a cursive style with a large, looped "M" and "J".

Mary E. Jennings
Field Supervisor



TENNESSEE WILDLIFE RESOURCES AGENCY

ELLINGTON AGRICULTURAL CENTER
P. O. BOX 40747
NASHVILLE, TENNESSEE 37204

August 25, 2016

Greg Harris
Tennessee Department of Transportation
Environmental Division
Suite 900, James K. Polk Building
505 Deaderick Street
Nashville, TN 37243-1402

Subject: Carroll County; SR-436 Bridge Repair Project over Reedy Creek; P.E. 09035-3220-94,
PIN 124139.00

Dear Mr. Harris:

The Tennessee Wildlife Resources Agency has reviewed your request regarding the SR-436 Bridge Repair over Reedy Creek Project in Carroll County, Tennessee. Your letter to the Agency requested comments regarding potential impacts to endangered species, wetlands, and other areas of concern we may think pertinent to this proposed project.

It is our understanding from what was sent that this project is not expected to impact any state-listed species that are Deemed-in-Need-of-Management, Threatened, or Endangered.

Based upon these understandings, the TWRA does request that all applicable TDEC and US EPA approved Erosion Prevention/Silt Control measures, Best Management Practices, and in-stream work be scheduled, implemented, monitored, and maintained. The TWRA requests that any major changes to the plans, construction methodology, or right-of-way will immediately void this comment and require another review to the changes. The TWRA requests that this comment is put on the construction plans for all to review.

Thank you for the opportunity to review and comment on this proposed project. If you have any further questions, please contact me at 731-293-9776 or Ed.Harsson@tn.gov.

The State of Tennessee

IS AN EQUAL OPPORTUNITY, EQUAL ACCESS, AFFIRMATIVE ACTION EMPLOYER.

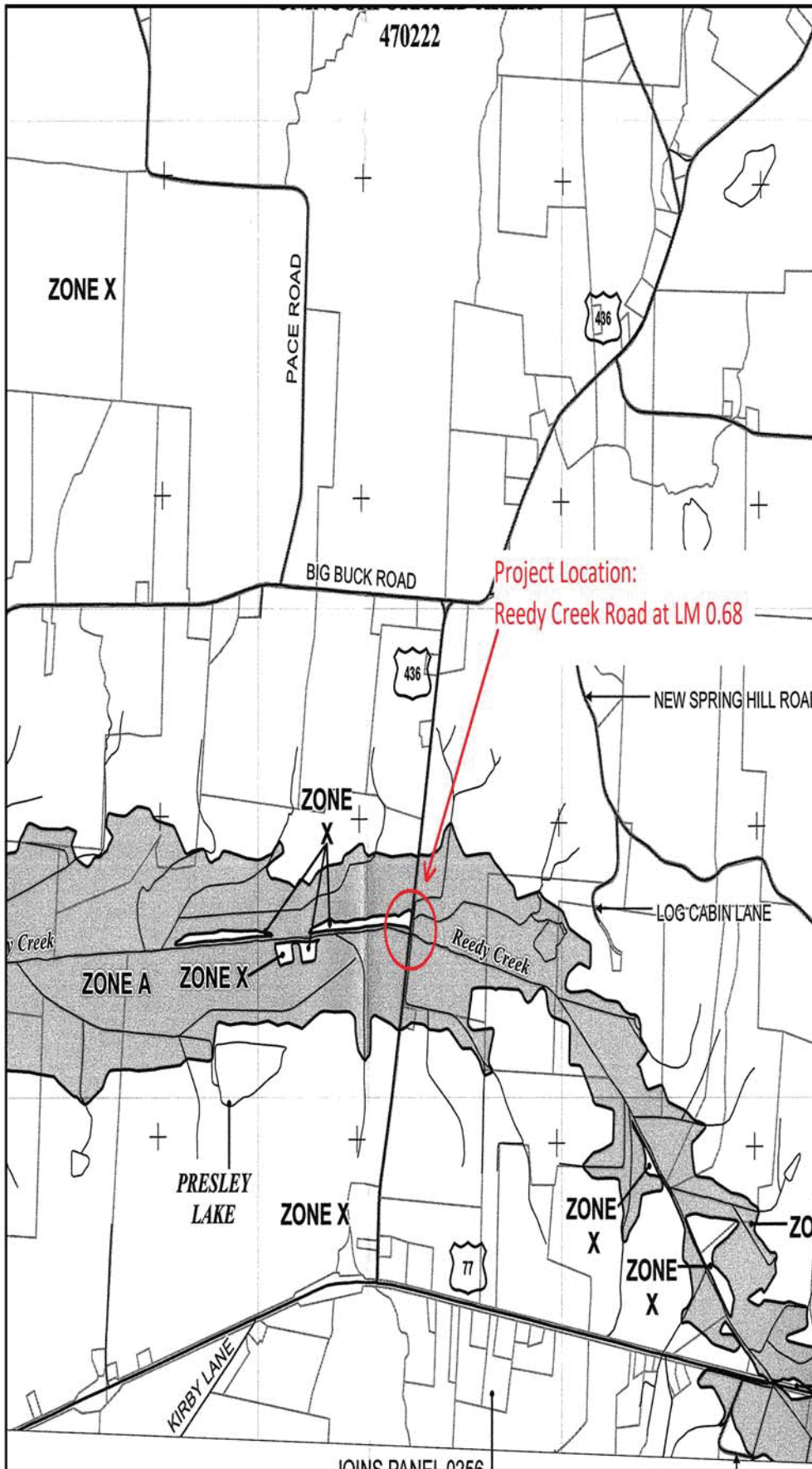
Best regards,

A handwritten signature in blue ink that reads "Ed Harsson". The signature is written in a cursive style with a large, stylized "E" and "H".


Ed Harsson
Wildlife Biologist
Federal Highway Admin. and TN DOT Liaison
731-293-9776
Ed.Harsson@tn.gov

CC: Rob Todd, TWRA NEPA Coordinator
Alan Peterson, TWRA Region 1 Manager
Allen Pyburn, TWRA Region 1 Habitat Biologist
John Griffith, USFWS
Stephanie Ann Williams, TDEC

Floodplain Map



Insurance Program at 1-800-650-0020.



MAP SCALE 1" = 2000'

NFP

PANEL 0150C

FIRM
FLOOD INSURANCE RATE MAP


CARROLL COUNTY
TENNESSEE
AND INCORPORATED AREAS

PANEL 150 OF 475
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
CARROLL COUNTY	470222	0150	C
MCKENZIE, CITY OF	470223	0150	C
MCLEMMORESVILLE, TOWN OF	470427	0150	C
TREZEVAULT, TOWN OF	470243	0150	C

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.



MAP NUMBER
47017C0150C
EFFECTIVE DATE
MARCH 18, 2008

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov



TENNESSEE HISTORICAL COMMISSION
STATE HISTORIC PRESERVATION OFFICE
2941 LEBANON PIKE
NASHVILLE, TENNESSEE 37243-0442
OFFICE: (615) 532-1550
www.tnhistoricalcommission.org

June 12, 2018

Ms. Katherine Looney
Tennessee Department of Transportation
505 Deaderick St
Suite 900
Nashville, TN 37243-1402

RE: FHWA / Federal Highway Administration, Replacement of the SR 436 Bridge over Reedy Creek, Log Mile 0.68/ PIN 124139.00, , Carroll County, TN

Dear Ms. Looney:

In response to your request, we have reviewed the architectural survey report and accompanying documentation submitted by you regarding the above-referenced undertaking. Our review of and comment on your proposed undertaking are among the requirements of Section 106 of the National Historic Preservation Act. This Act requires federal agencies or applicants for federal assistance to consult with the appropriate State Historic Preservation Office before they carry out their proposed undertakings. The Advisory Council on Historic Preservation has codified procedures for carrying out Section 106 review in 36 CFR 800 (Federal Register, December 12, 2000, 77698-77739).

Considering the information provided, we concur that no architectural resources eligible for listing in the National Register of Historic Places will be affected by this undertaking. If project plans are changed or archaeological remains are discovered during project construction, please contact this office to determine what further action, if any, will be necessary to comply with Section 106 of the National Historic Preservation Act. Questions or comments may be directed to Casey Lee (615 253-3163).

Your cooperation is appreciated.

Sincerely,

A handwritten signature in cursive script that reads "E. Patrick McIntyre, Jr.".

E. Patrick McIntyre
Executive Director and
State Historic Preservation Officer

EPM/cjl

State Historic Preservation Office Coordination- Archaeology



TENNESSEE HISTORICAL COMMISSION
STATE HISTORIC PRESERVATION OFFICE
2941 LEBANON PIKE
NASHVILLE, TENNESSEE 37243-0442
OFFICE: (615) 532-1550
www.tnhistoricalcommission.org

July 20, 2018

Mr. Phillip R. Hodge
Tennessee Department of Transportation
Suite 900, James K. Polk Building
505 Deaderick Street
Nashville, TN 37243-1402

RE: FHWA / Federal Highway Administration, Bridge Replacement, SR-436 over Reedy Creek,
Carroll County, TN

Dear Mr. Hodge:

In response to your request, we have reviewed the archaeological report of investigations and accompanying documentation submitted by you regarding the above-referenced undertaking. Our review of and comment on your proposed undertaking are among the requirements of Section 106 of the National Historic Preservation Act. This Act requires federal agencies or applicants for federal assistance to consult with the appropriate State Historic Preservation Office before they carry out their proposed undertakings. The Advisory Council on Historic Preservation has codified procedures for carrying out Section 106 review in 36 CFR 800 (Federal Register, December 12, 2000, 77698-77739).

Considering the information provided, we find that no archaeological resources eligible for listing in the National Register of Historic Places will be affected by this undertaking. If project plans are changed or archaeological remains are discovered during project construction, please contact this office to determine what further action, if any, will be necessary to comply with Section 106 of the National Historic Preservation Act. Complete and/or updated Tennessee Site Survey Forms should be submitted to the Tennessee Division of Archaeology for all sites recorded and/or revisited during the current investigation. Questions or comments may be directed to Jennifer Barnett (615) 687-4780.

Your cooperation is appreciated.

Sincerely,

E. Patrick McIntyre, Jr.
Executive Director and
State Historic Preservation Officer

EPM/jmb

Project Commitments



Counties: **Route:** **PIN:**
Termini:
POA: **Public Involvement Level:** **Turn In Date:**

Filter Criteria

Division Section: **Search:**

Commitment ID	Commitment Type	Source Division (Section)	Commitment Description
EDHZ001	Environment	Environmental Division, Hazardous Materials	Asbestos survey
EDEC001	Environment	Environmental Division, Ecology	In accordance with MOA

Message from webpage [X]

In accordance with the MOA Between USFWS, FHWA, and TDOT Addressing Cliff Swallow and Barn Swallow Nesting Sites, 9/30/2015, cliff swallow and barn swallow nests, eggs, or birds (young and adults) will not be disturbed between April 15 and July 31. From August 1 to April 14, nests can be removed or destroyed, and measures implemented to prevent future nest building at the site (e.g., closing off area using netting)./In accordance with the MOA Between USFWS, FHWA, and TDOT Addressing Cliff Swallow and Barn Swallow Nesting Sites, 9/30/2015, cliff swallow and barn swallow nests, eggs, or birds (young and adults) will not be disturbed between April 15 and July 31. From August 1 to April 14, nests can be removed or destroyed, and measures implemented to prevent future nest building at the site (e.g., closing off area using netting).

Commitment Details

Commitment Description:

Commitment History Remark:
Station/Location:
GPS: **Commitment To:** **Long Term Maintenance Commitment:**
Consideration Made On: **Commitment Created By:** **Commitment Created On:**
Commitment Made Active: **Commitment Completed:**

Project Commitments



Counties: **Route:** **PIN:**

Termini:

POA: **Public Involvement Level:**

Filter Criteria
 Division Section: **Search:**

Commitment ID	Commitment Type	Source Division (Section)	Cl
EDHZ001	Environment	Environmental Division, Hazardous Materials	Asbest
EDEC001	Environment	Environmental Division, Ecology	In acco
EDEC002	Environment	Environmental Division, Ecology	TDOT h

Message from webpage

TDOT has committed to seasonal tree removal on this project. The USFWS has given TDOT a finding of "Not Likely to Adversely Affect" for the Indiana bat and Northern long-eared bat, provided that tree cutting on this project is done between October 15 and March 31./TDOT has committed to seasonal tree removal on this project. The USFWS has given TDOT a finding of "Not Likely to Adversely Affect" for the Indiana bat and Northern long-eared bat, provided that tree cutting on this project is done between October 15 and March 31.

Commitment Details

Commitment Description:

Commitment History Remark:

Station/Location:

GPS: **Commitment To:** **Long Term Maintenance Commitment:**

Consideration Made On: **Commitment Created By:** **Commitment Created On:**

Commitment Made Active: **Commitment Completed:**

Technical Appendices

Programmatic Categorical Exclusion

State Route (SR) 436

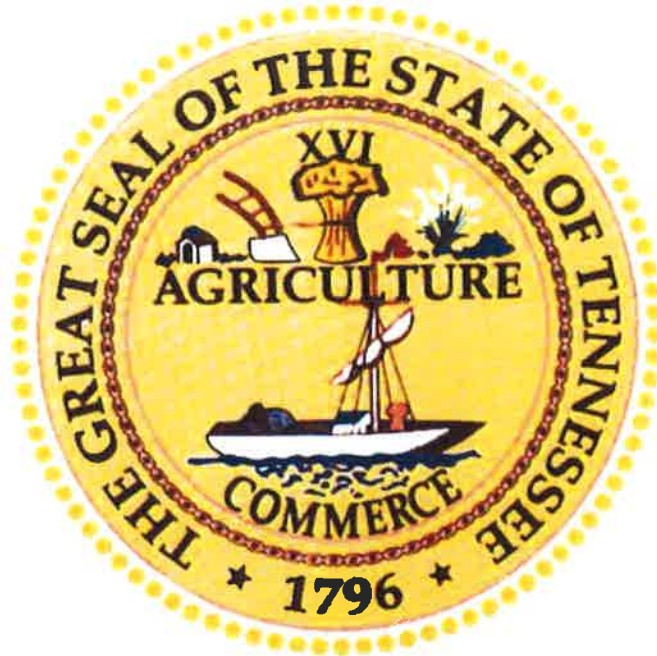
Reedy Creek Road Bridge over Reedy Creek, LM 0.68

Carroll County

PIN 124139.00

Project Development

TENNESSEE
DEPARTMENT OF TRANSPORTATION



TRANSPORTATION INVESTMENT REPORT

IMPROVE Act

State Route 436
Bridge over Reedy Creek, Log Mile 0.68
Carroll County
PIN 124139.00

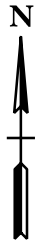
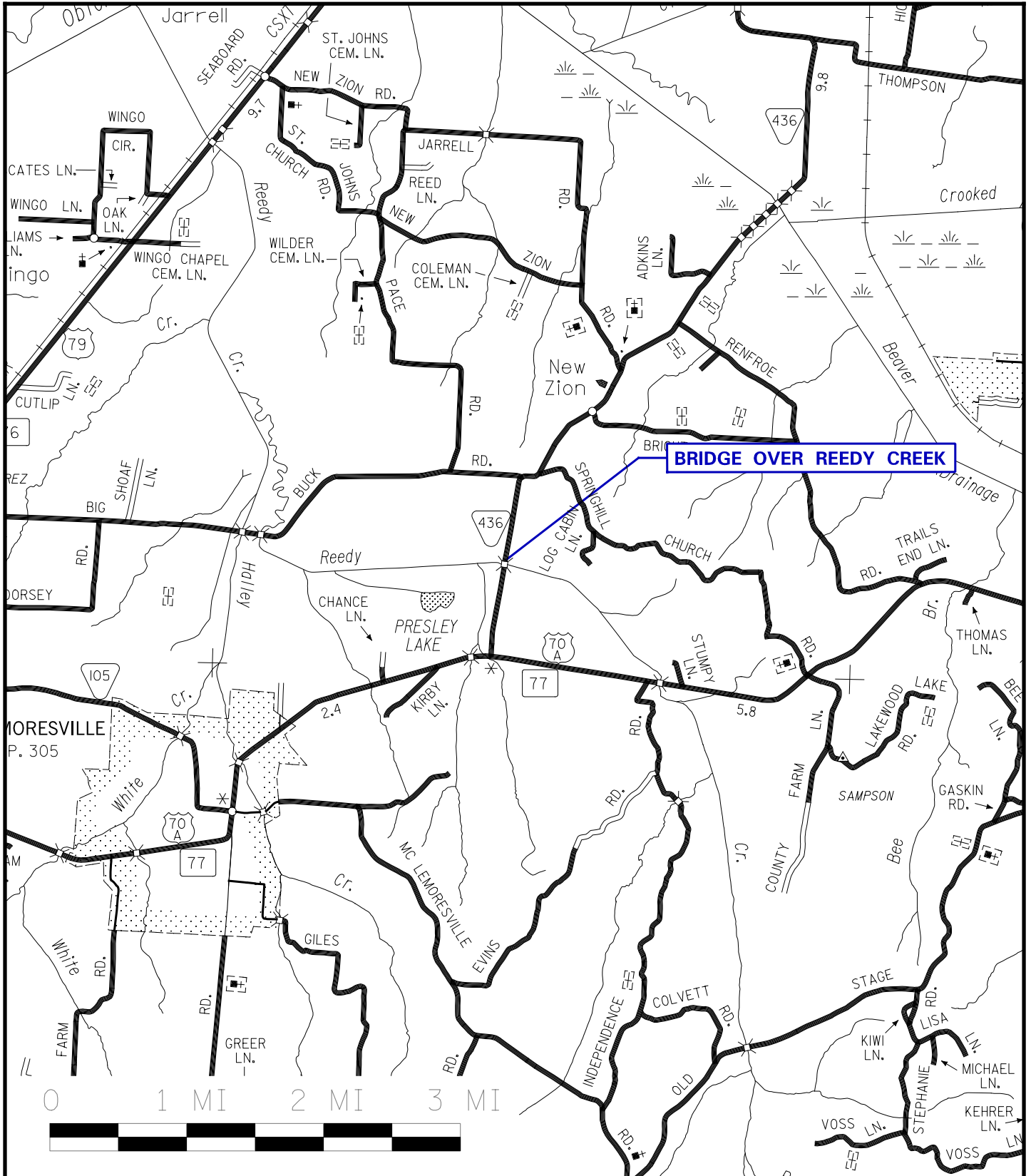
PREPARED BY ALFRED BENESCH & COMPANY
for the
Strategic Transportation Investments Division

Approved by Tobias [Signature] Date _____
Chief of Environment and Planning

Approved by Paul D. Dejean [Signature] Date 3/23/18
Deputy Commissioner and Chief Engineer

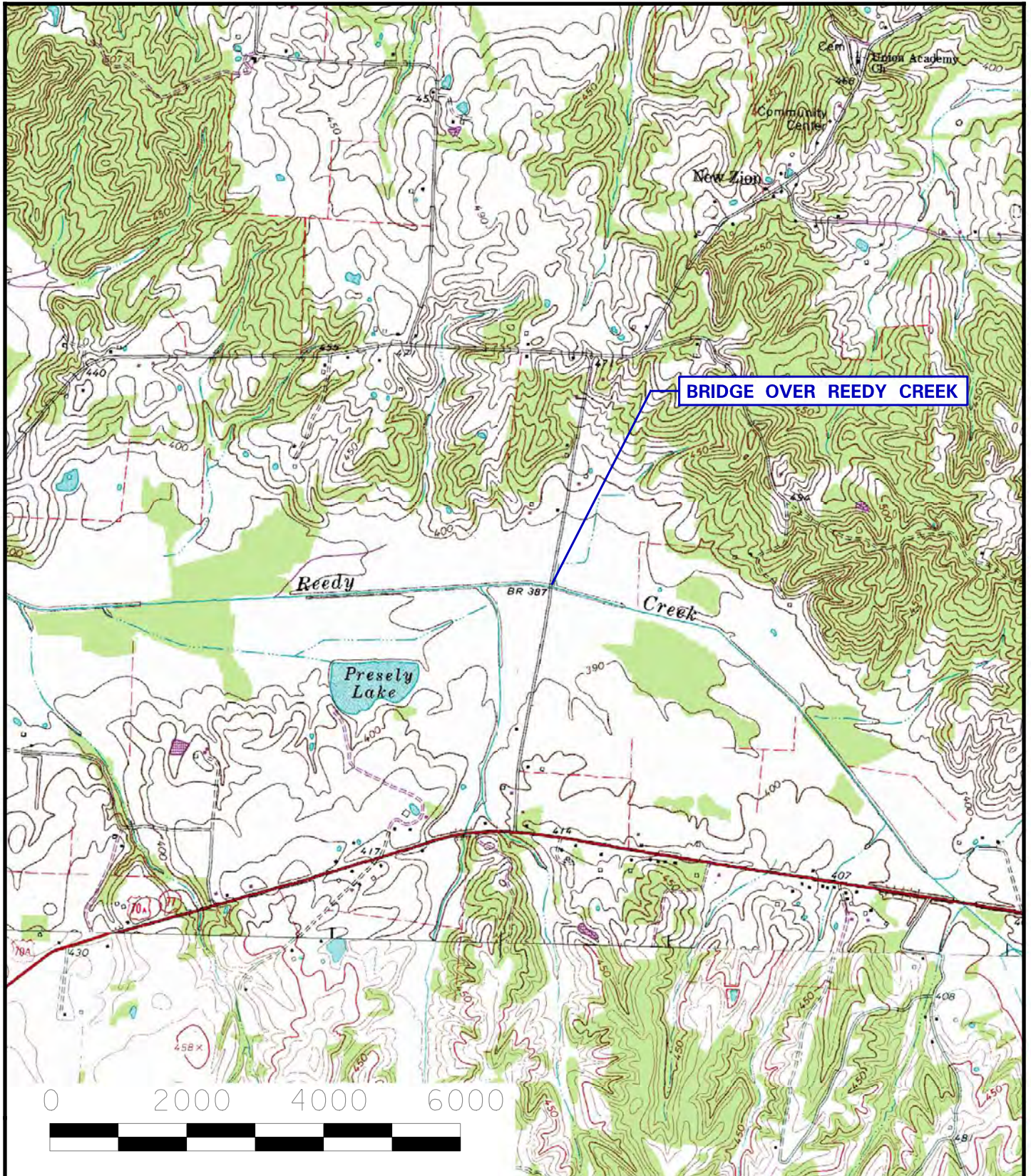
Approved by:	Signature	DATE
TRANSPORTATION DIRECTOR STRATEGIC TRANSPORTATION INVESTMENTS DIVISION	[Signature]	3-13-18
ENGINEERING DIRECTOR DESIGN DIVISION	Jartha J. Cavaness	3/22/18
ENGINEERING DIRECTOR STRUCTURES DIVISION	[Signature]	3/21/18

This document is covered by 23 USC § 409 and its production pursuant to fulfilling public planning requirements does not waive the provisions of § 409.



AREA MAP
 BRIDGE TIR
 STATE ROUTE 436 (REEDY CREEK ROAD)
 BRIDGE OVER REEDY CREEK (LM 0.68)
 CARROLL COUNTY





TOPOGRAPHIC MAP
BRIDGE TIR
STATE ROUTE 436 (REEDY CREEK ROAD)
BRIDGE OVER REEDY CREEK (LM 0.68)
CARROLL COUNTY





BRIDGE OVER REEDY CREEK



LOCATION MAP
BRIDGE TIR
STATE ROUTE 436 (REEDY CREEK ROAD)
BRIDGE OVER REEDY CREEK (LM 0.68)
CARROLL COUNTY





STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
STRATEGIC TRANSPORTATION INVESTMENTS DIVISION
SUITE 1000, JAMES K. POLK BUILDING
505 DEADERICK STREET
NASHVILLE, TN 37243
(615) 741-2208

JOHN C. SCHROER
COMMISSIONER

BILL HASLAM
GOVERNOR

MEMORANDUM

TO: Steve Allen, Transportation Director
Strategic Transportation Investments Division

FROM: Zane Pannell, Transportation Project Specialist
Strategic Transportation Investments Division

DATE: March 21, 2018

SUBJECT: TIR Field Review (IMPROVE Act
State Route 436, Bridge over Reedy Creek
Bridge ID: 09S82330001
Log Mile 0.68
Carroll County
PIN: 124139.00

A field review was held for the above-mentioned project on January 24, 2018

The existing structure, built in 1960, is a four span concrete bridge crossing Reedy Creek. The structure has an out-to-out width of 22 feet. The overall structure length is 90 feet with approximately 9.33 feet of vertical clearance. The sufficiency rating for this structure is 47.1 based on the Bridge Inspection Report from October 2, 2017.

The discharges for the drainage basin were determined using StreamStats Version 3.0. which used a drainage area of 26.1 square miles. The 10-year discharge rate (Q10) was 4,480 cubic feet per second (cfs), Q50 was 6,300 cfs, and Q100 was 7,050 cfs.

The proposed alignment for the replacement structure will shift approximately ten (10) feet to the west and the grade will be raised approximately 2.5 feet to maintain the existing vertical clearance. The proposed structure will maintain the 90-degree skew with the river channel. There is a 45 mph posted speed limit on State Route 436 so the design speed will be 50 MPH. The proposed structure will be a single span pre-stressed concrete box beam structure with a total vertical clearance of 9.33 feet and a length of 90 feet. It is estimated that four (4) tracts of land

will be affected resulting in 1.13 acres of estimated ROW. It is also estimated that overhead utilities will need to be relocated.

The route has a base year 2022 AADT of 380 and a design year 2042 AADT of 450. The existing structure and roadway approaches have 2 travel lanes 9 feet wide each. The route is classified as a Rural Major Collector and Standard Drawing RD01-TS-2 was used for design considerations. Table I, used for Rural Collectors, gave a minimum roadway width of 22 feet with shoulder widths of 3 feet. Therefore, the typical section on the proposed structure will consist of 2 travel lanes 11 feet wide with shoulder widths of 3 feet and concrete parapets for a total out-to-out width of 29.25 feet on the structure. The project will extend 500 feet from the structure to the north and to the south in order to accommodate the alignment shift, raise the grade and for the proposed one lane signal to maintain traffic during construction.

Per TDOT Headquarters Construction Division, this bridge is recommended as a Design-Build project.

The cost for the estimated required approach work, estimated replacement, and estimated preliminary engineering for this bridge replacement is approximately \$2,016,000.

ZP

cc: File

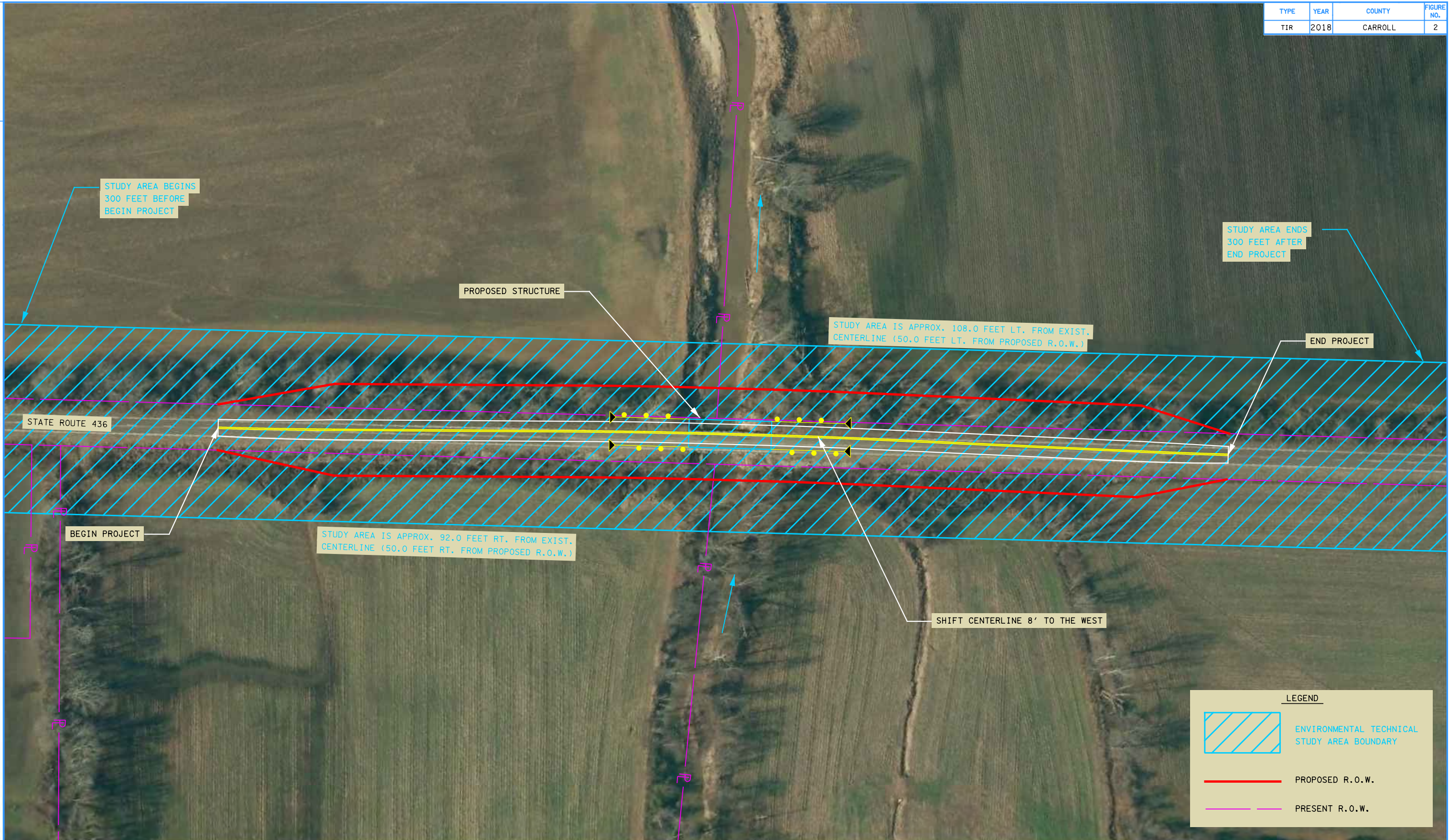
TYPE	YEAR	COUNTY	FIGURE NO.
TIR	2018	CARROLL	1






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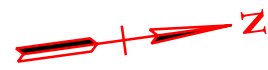


BRIDGE TIR
STATE ROUTE 436
BRIDGE OVER REEDY CREEK @ L.M. 0.68
CARROLL COUNTY



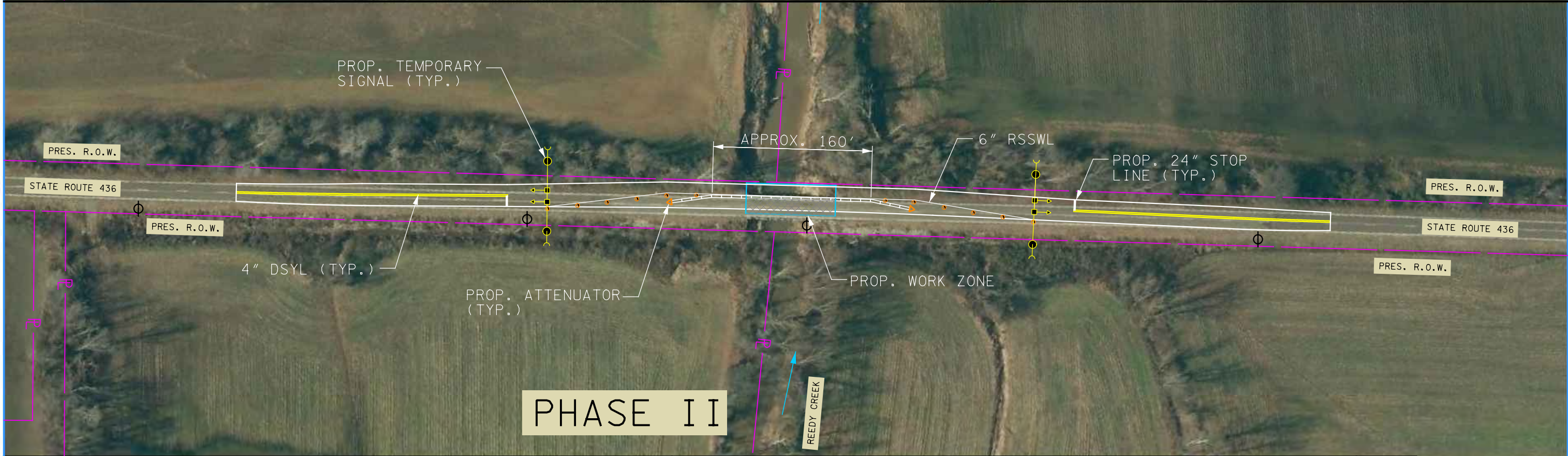
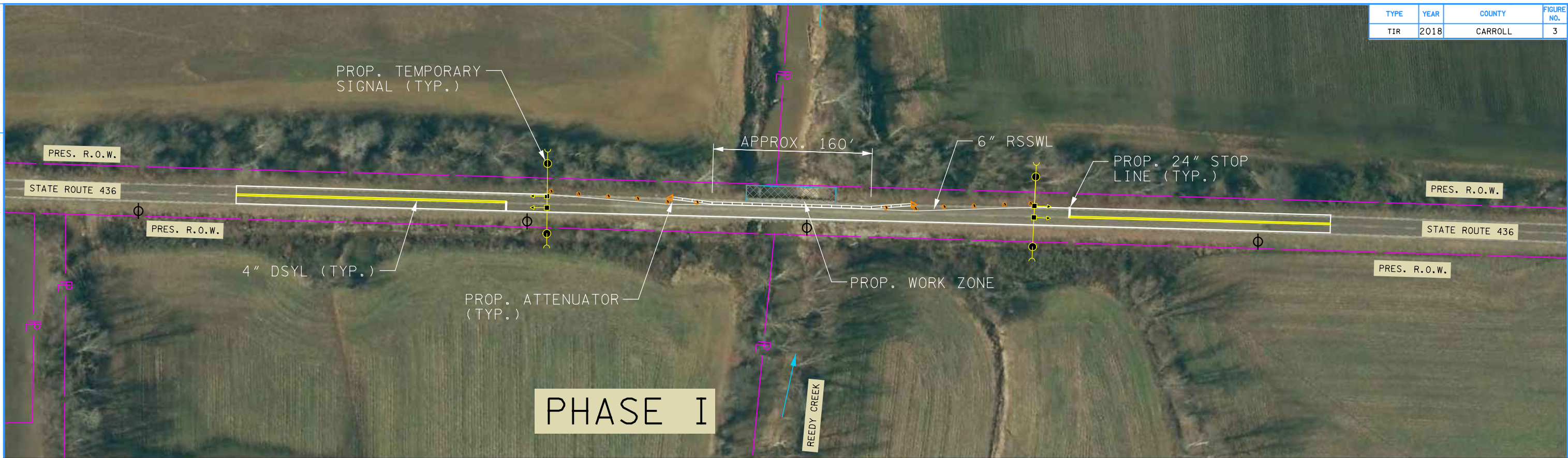
LEGEND

-  ENVIRONMENTAL TECHNICAL STUDY AREA BOUNDARY
-  PROPOSED R.O.W.
-  PRESENT R.O.W.



ENVIRONMENTAL TECHNICAL STUDY AREA

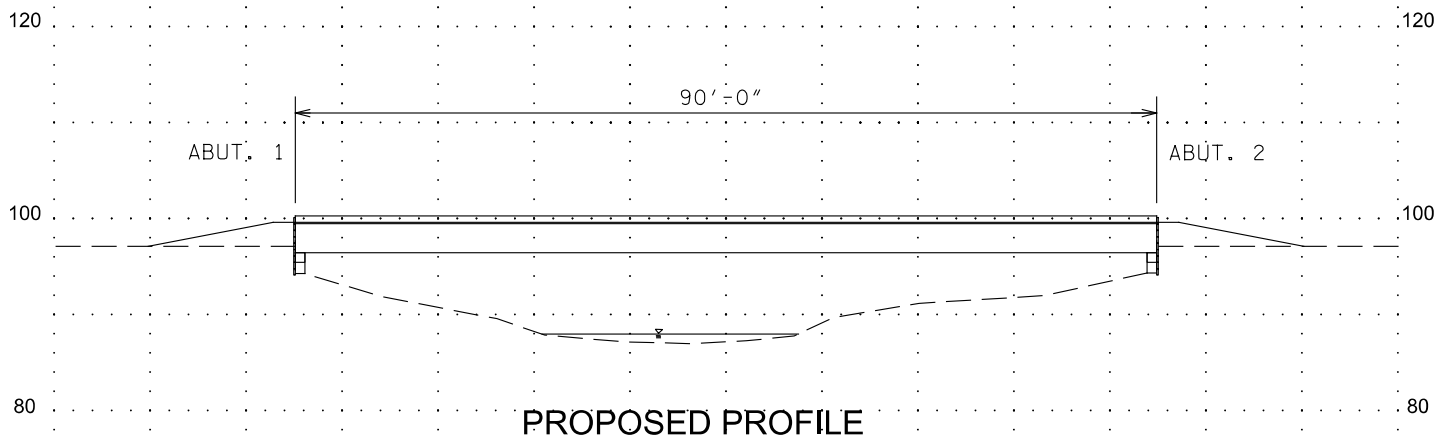
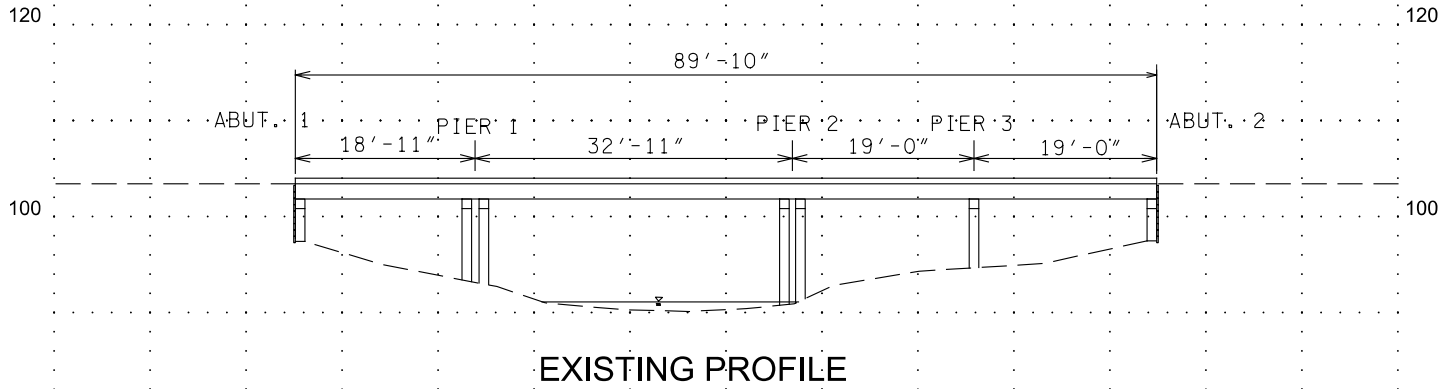
STATE ROUTE 436
 BRIDGE OVER REEDY CREEK @ L.M. 0.68
 CARROLL COUNTY



BRIDGE TIR
STATE ROUTE 436
BRIDGE OVER REEDY CREEK @ L.M. 0.68
CARROLL COUNTY

SEE STANDARD DRAWING T-WZ-32
 FOR ADDITIONAL DETAILS.

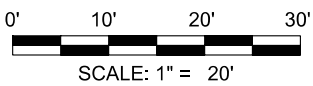
3/7/2018 9:46:48 AM Y:\nashville\16070005\1607023.00\1607023.96\DCN\1607023.96-TrafficControlLayout.sht



RAISE PROPOSED GRADE
APPROXIMATELY 2.50'

-60 -40 -20 0 20 40 60

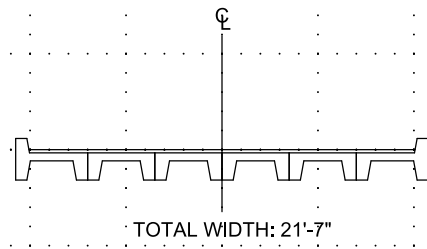
ELEVATIONS: ASSUMED



PROPOSED PROFILE
STATE ROUTE 436 CARROLL COUNTY
BRIDGE OVER REEDY CREEK L.M. 0.70
BRIDGE ID: 09S8233001

110 110

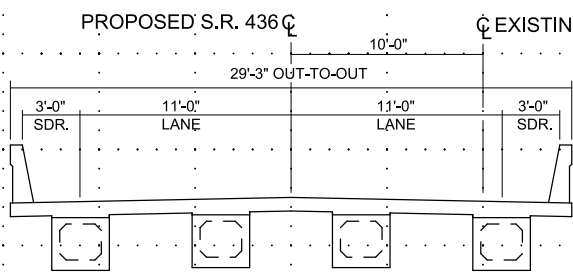
EXISTING STRUCTURE



100 100

90 90

PROPOSED STRUCTURE



110 110

100 100

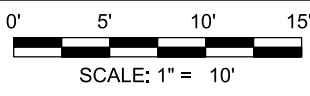
90 90

TRAFFIC WILL BE MAINTAINED
WITH 10'-0" SHIFT AND
1-LANE SIGNAL.

PROPOSED GRADE TO
BE RAISED APPROXIMATELY
2.50'

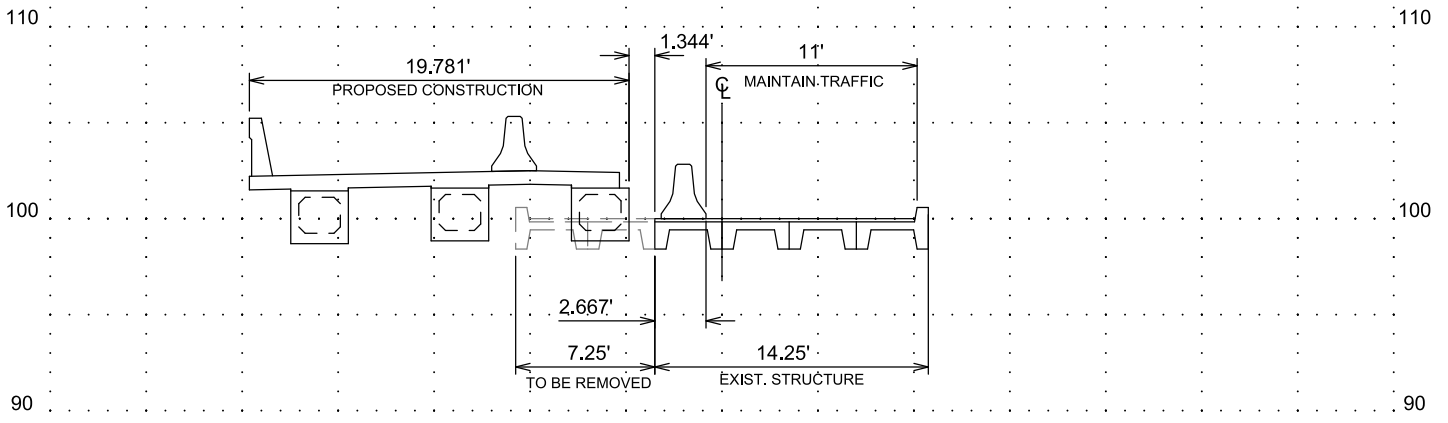
-30 -20 -10 0 10 20 30

ELEVATIONS: ASSUMED

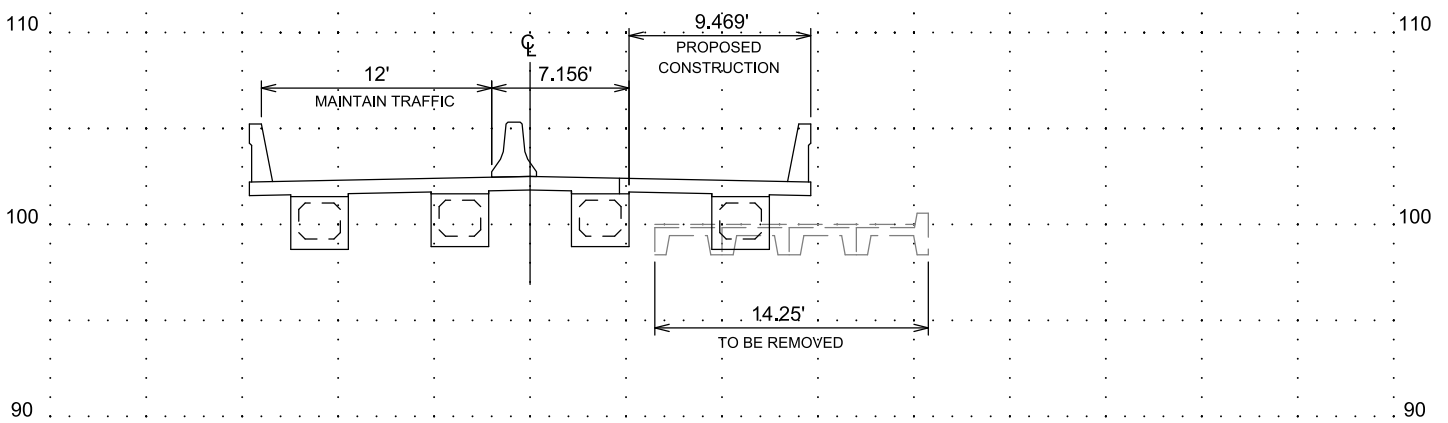


PROPOSED TYPICAL SECTION
STATE ROUTE 436 CARROLL COUNTY
BRIDGE OVER REEDY CREEK L.M. 0.70
BRIDGE ID: 09S8233001

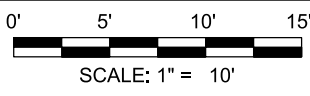
PHASE ONE



PHASE TWO



ELEVATIONS: ASSUMED



STAGE CONSTRUCTION DETAIL
STATE ROUTE 436 CARROLL COUNTY
BRIDGE OVER REEDY CREEK L.M. 0.70
BRIDGE ID: 09S8233001

COST ESTIMATE SUMMARY

Route: State Route 436
Description: Bridge over Reedy Creek
County: Carroll
Length: 0.21 Miles
Date: March 9, 2018



DESCRIPTION	LOCAL	STATE	FEDERAL	TOTAL
	0%	0%	0%	
Construction Items				
Pavement Removal	\$0	\$0	\$0	\$0
Asphalt Paving	\$0	\$0	\$0	\$223,100
Concrete Pavement	\$0	\$0	\$0	\$0
Drainage	\$0	\$0	\$0	\$29,400
Appurtenances	\$0	\$0	\$0	\$0
Structures	\$0	\$0	\$0	\$368,000
Fencing	\$0	\$0	\$0	\$0
Signalization	\$0	\$0	\$0	\$20,000
Railroad Crossing or Separation	\$0	\$0	\$0	\$0
Earthwork	\$0	\$0	\$0	\$428,200
Clearing and Grubbing	\$0	\$0	\$0	\$0
Seeding & Sodding	\$0	\$0	\$0	\$11,500
Rip-Rap or Slope Protection	\$0	\$0	\$0	\$27,400
Guardrail	\$0	\$0	\$0	\$53,500
Signing	\$0	\$0	\$0	\$1,200
Pavement Markings	\$0	\$0	\$0	\$4,600
Maintenance of Traffic	\$0	\$0	\$0	\$71,000
Mobilization (5%)	\$0	\$0	\$0	\$61,900
Other Items = 10%	\$0	\$0	\$0	\$130,000
Const. Contingency = 15%	\$0	\$0	\$0	\$159,300
Construction Estimate	\$0	\$0	\$0	\$1,589,100
Interchanges & Unique Intersections				
Roundabouts	\$0	\$0	\$0	\$0
Interchanges	\$0	\$0	\$0	\$0
Right-of-Way & Utilities				
	LOCAL	STATE	FEDERAL	TOTAL
	0%	0%	0%	
Right-of-Way	\$0	\$0	\$0	\$12,500
Utilities	\$0	\$0	\$0	\$78,800
Preliminary & Construction Engineering and Inspection				
Prelim. Eng. 10%	\$0	\$0	\$0	\$168,000
Const. Eng. & Inspec. 10%	\$0	\$0	\$0	\$168,000
Total Project Cost	\$0	\$0	\$0	\$ 2,016,000

PAY ITEM SUMMARY

TDOT PAY ITEM	TDOT DESCRIPTION	UNIT	TOOL QUANTITIES	ADDITIONAL QUANTITIES	TOOL QUANTITIES + ADDITIONAL QUANTITIES	Statewide UNIT COST	TOTAL COST
Pavement Removal							
PAVEMENT REMOVAL TOTAL (ROUNDED)						\$	-
Asphalt Roads							
303-01	Mineral Aggregate, Type A Base, Grading D	TON	3158		3158	\$ 31.77	\$ 100,323.92
307-02.01	Asphalt Concrete Mix (PG70-22) (BPMB-HM) Grading A	TON	383		383	\$ 100.78	\$ 38,593.78
307-02.02	Asphalt Cement (PG70-22)(BPMB-HM) Grading A-S	TON	9		9	\$ 727.09	\$ 6,537.07
307-02.03	Aggregate (BPMB-HM) Grading A-S Mix	TON	291		291	\$ 73.98	\$ 21,507.05
307-02.08	Asphalt Concrete Mix (PG70-22) (BPMB-HM) Grading B-M2	TON	251		251	\$ 113.28	\$ 28,416.12
402-01	Bituminous Material For Prime Coat (PC)	TON	4		4	\$ 711.17	\$ 2,783.48
402-02	Aggregate For Cover Material (PC)	TON	14		14	\$ 65.60	\$ 926.74
403-01	Bituminous Material For Tack Coat (TC)	TON	2		2	\$ 780.21	\$ 1,574.56
411-01.07	ACS (PG64-22) GR "E"	TON	49		49	\$ 112.41	\$ 5,487.19
411-02.10	ACS Mix(PG70-22) Grading D	TON	147		147	\$ 115.13	\$ 16,932.29
PAVING TOTAL (ROUNDED)						\$	223,100
Concrete Roads							
CONCRETE RAMPS AND ROADWAYS TOTAL (ROUNDED)						\$	-
Drainage							
607-05.02	24" Concrete Pipe Culvert (Class III)	LF	130		130	\$ 85.20	\$ 11,057.75
611-07.01	Class A Concrete (Pipe Endwalls)	CY	7		7	\$ 1,047.48	\$ 6,948.15
611-07.02	Steel Bar Reinforcement (Pipe Endwalls)	LB	630	3000	3630	\$ 2.30	\$ 1,450.90
710.02	Aggregate Underdrains (with pipe)	LF	1816		1816	\$ 5.46	\$ 9,917.11
DRAINAGE TOTAL (ROUNDED)						\$	29,400
Appurtenances							
ROADWAY AND PAVEMENT APPURTENANCES TOTAL (ROUNDED)						\$	-
Earthwork & Mineral							
105-01	Construction Stakes, Lines, and Grades	LS	1		1	\$ 112,407.96	\$ 112,407.96
203-01	Road & Drainage Excavation (Unclassified)	CY	9028		9028	\$ 16.73	\$ 151,024.12
203-02.02	Borrow Excavation (Graded Solid Rock)	CY	3000	3000	6000	\$ 32.25	\$ 96,764.91
203-03	Borrow Excavation (Unclassified)	CY	7523	-3000	4523	\$ 15.02	\$ 67,941.35
EARTHWORK & MINERAL TOTAL (ROUNDED)						\$	428,200
Structures							
N/A	Removal of Bridge	SF	1942		1942	\$ 20.00	\$ 38,844.00
N/A	New Bridge (Concrete Girder)	SF	2633		2633	\$ 125.00	\$ 329,062.50
STRUCTURES TOTAL (ROUNDED)						\$	368,000
Interchanges and Unique Intersections							
INTERCHANGES AND UNIQUE INTERSECTIONS TOTAL (ROUNDED)						\$	-
Lighting & Signalization							
730-40	Temporary Traffic Signal System	EA	1		1	\$ 20,000.00	\$ 20,000.00
LIGHTING & SIGNALIZATION TOTAL (ROUNDED)						\$	20,000
Guardrail							
705-01.01	Guardrail at Bridge Ends	LF	100		100	\$ 73.64	\$ 7,364.49
705-02.02	Single Guardrail (Type 2)	LF	598		598.224	\$ 18.77	\$ 11,225.71
705-04.07	Tan Energy Absg Term (NCHRP, 350, TL3)	EA	5	-1	4	\$ 2,352.59	\$ 9,410.38
705-04.09	Earth Pad for Type 38 GR End Treatment	EA	5	-1	4	\$ 1,294.80	\$ 5,179.21
705-08.51	Portable Impact Attenuator NCHRP 350, TL3	EA	4		4	\$ 5,076.58	\$ 20,306.31
GUARDRAIL TOTAL (ROUNDED)						\$	53,500
Seeding and Sodding							
801-01	Seeding (With Mulch)	UNIT	95		95	\$ 76.61	\$ 7,290.76
801-01.07	Temporary Seeding (With Mulch)	UNIT	71		71	\$ 29.79	\$ 2,126.59
801-02	Seeding (Without Mulch)	UNIT	71		71	\$ 28.15	\$ 2,009.20
SODDING TOTAL (ROUNDED)						\$	11,500
Maintenance of Traffic							
N/A	Traffic Control	LS	1		1		\$ 46,676.00
712-02.02	Interconnected Portable Barrier Rail	LF	54	450	504	\$ 31.95	\$ 16,112.73
712-04.01	Flexible Drums (Channellizing)	EA	24		24	\$ 25.83	\$ 619.99
712-06	Signs (Construction)	SF	250		250	\$ 7.55	\$ 1,887.83
712-09.01	Removable Pavement Marking Line	LF	2500		2500	\$ 2.09	\$ 5,233.48
712-09.04	Removable Pavement Marking (Stop Line)	LF	24		24	\$ 18.67	\$ 448.17
MAINTENANCE OF TRAFFIC TOTAL (ROUNDED)						\$	71,000
Signs							
Not Listed	Signs (Construction)	LS	1		1	\$ -	\$ 1,200
SIGNING TOTAL (ROUNDED)						\$	1,200
Pavement Markings							
716-13.06	Spray Thermo P.M. (40 mil 4")	LM	1.6		1.6	\$ 2,881.01	\$ 4,510.50
PAVEMENT MARKINGS TOTAL (ROUNDED)						\$	4,600
Fencing							
FENCE TOTAL (ROUNDED)						\$	-
Rip-Rap							
709-05.05	Machined Rip-Rap (Class A-3)	TON		500	500	\$ 34.74	\$ 17,369.37
709-05.08	Machined Rip-Rap (Class B)	TON		200	200	\$ 33.70	\$ 6,739.51
709-05.09	Machined Rip-Rap (Class C)	TON		100	100	\$ 32.78	\$ 3,277.72
RIP-RAP & SLOPE PROTECTION TOTAL (ROUNDED)						\$	27,400.00
Clearing and Grubbing							
CLEAR AND GRUBBING TOTAL (ROUNDED)						\$	-
Railroad At-Grade Crossing							
RAILROAD CROSSING OR SEPARATION TOTAL (ROUNDED)						\$	-
Utilities							
N/A	Overhead Distribution	LM	0.21		0.21	\$ 375,000	\$ 78,750
UTILITIES TOTAL (ROUNDED)						\$	78,800.00
Right-of-Way							
N/A	Right-of-Way	LS	1		1	\$ 12,484.85	\$ 12,484.85
RIGHT-OF-WAY TOTAL (ROUNDED)						\$	12,500.00

BRIDGE TIR

Carroll County
State Route 436

LOCATION			
Bridge #:	09S82330001	Feature Crossed:	Reedy Creek
Road Name:	State Route 436	Log mile:	0.68
Route ID:	SR436	System:	05-STP Rural, State
City:		Functional Class:	Rural Major Collector
County:	Carroll	State Project Number	09035-0220-94
PIN:	124139.00		

ROADWAY		
	Existing	Proposed (Preliminary Design Estimate)
Design Standard		RD01-TS-2 / 2011 Green Book
Route Characteristics		
AADT:	380	450
AADT Year:	2022	2042
Terrain:	Rolling	Rolling
No. Lanes:	2	2
Speed(Posted):	45	45
Speed (Design):		50
Approach Character.		
Lane Width (ft):	9	11
Shoulder Width (ft):	2	3
ROW Width (ft):	50	As Required
ROW Tracts Affected		4
ROW Required (acre)		1.13
Cross Section Width (ft):	18 / 22 / 50	22 / 28 / As Req'd
Approach Length (ft):		500
Alignment:	Tangent	Tangent
Grade:		Raise Grade approximately 2.5'
Surface Material:	Asphalt/Concrete	Asphalt
Sidewalks (R/L):	No	No
App. Lower Than Structure	No	Yes
Utilities (list)	OH: Power, Telephone	
Utilities to be Relocated		3 Power Poles
Comments	<p>TDOT Environmental indicated that there is at least one other stream running along SR-436.</p>	<p>Potential stream relocation of roadside stream.</p>

BRIDGE TIR

Carroll County
State Route 436

STRUCTURE				
	Existing		Proposed (Preliminary Design Estimate)	
Bridge Characteristics				
Year Built	1960			
Load Limit	40 tons			
Sufficiency Rating	47.1			
Skew	90		90	
Structure Type	Box Beam		Concrete Box Beam	
Structures in Channel	No		No	
Length (ft)	90		90	
No. Spans (App./Main)	3	1	0	1
Width (curb to curb) (ft)	20		28	
Width (o to o) (ft)	22		29.25	
Sidewalks on Structure	No		No	
Vert. Clearance (ft)	11.8		11.8	
Superstructure Depth (in)	19		45	
Girder Depth (in)	12		33	
Finish Grade-Low Girder (in)	7		12	
High Water Marks	5'-6' Above Pool			
Bridge Rail Type	Concrete		Concrete Parapet (STD-1-1SS)	
Bridge Rail Height (ft)	GR-28"		3	
Indication Overtopping	No			
Local Scour	Around Piers Repaired			
Obstructions	Around Piers Repaired			
Other Structures	N/A		N/A	
Comments	Rehab work was completed in October 2017 on some of the timber piles of the existing structure.		Raise grade approximately 2.5'	

BRIDGE TIR

Carroll County
State Route 436

FLOW RATES (from USGS StreamStats Program Version 3)

Drainage Area (sq. miles)	26.1 sq. miles
10 Year Discharge Rate (Q10) cfs	4480 cfs
50 Year Discharge Rate (Q50) cfs	6300 cfs
100 Year Discharge Rate (Q100) cfs	7050 cfs

CHANNEL

Depth (ft)	6
Width of Normal Flow (ft)	27
Depth of Normal Flow (ft)	1
Skew of Channel with Roadway	90
Type of Material in Stream Bed	Silt, Large Rocks
Type of Vegetation on Banks	Brush, Small Trees
Are Channel Banks Stable	Yes
Signs of Stream Aggradation	Yes, Silt/Sand Deposits
Signs of Stream Degradation	No
Drift or Drift Potential	No
Comments	

FLOODPLAIN

Skew Same as Channel	Yes
Symmetrical About Channel	Yes
Approx. Floor Elevations	N/A
Type of Vegetation in Floodplain	Farmland, Cult. Field
Any Buildings in Floodplain	No
Flood Information From Locals	N/A
Comments	Large Ditches/Channels in all four quadrants.

MAINTENANCE OF TRAFFIC

Method of Maintaining Traffic	stage construct
Description	Stage Construct with One Lane Signal & Shift alignment approximately 8' to the west
Comments	

**TENNESSEE DEPARTMENT OF TRANSPORTATION
STRATEGIC TRANSPORTATION INVESTMENTS DIVISION**

PROJECT NO.: 09035-0220-94 ROUTE: S.R. 436
 COUNTY: CARROLL CITY: _____
 PROJECT PIN NUMBER: 124139.00
 PROJECT DESCRIPTION: BRIDGE OVER REEDY CREEK (L.M. 0.68)


DIVISION REQUESTING:


MAINTENANCE PAVEMENT DESIGN
 S.T.I.D. STRUCTURES
 PROG. DEVELOPMENT & ADM. SURVEY & ROADWAY DESIGN
 PUBLIC TRANS. & AERO. TRAFFIC SIGNAL DESIGN
 OTHER _____
 YEAR PROJECT PROGRAMMED FOR CONSTRUCTION: _____
 PROJECTED LETTING DATE: _____

TRAFFIC ASSIGNMENT:

BASE YEAR		DESIGN YEAR					DESIGN ROADWAY % TRUCKS		DESIGN AVERAGE DAILY LOADS	
AADT	YEAR	AADT	DHV	%	YEAR	DIR.DIST.	DHV	AADT	FLEX	RIGID
380	2022	450	68	15	2042	65-35	3	5	13	18

REQUESTED BY: NAME MICHAEL GILBERT DATE 2/28/18
 DIVISION S.T.I.D.
 ADDRESS 505 DEADERICK STREET
NASHVILLE, TN. 37243

REVIEWED BY: TONY ARMSTRONG  DATE 2.28.18
 TRANSPORTATION MANAGER I
 SUITE 1000, JAMES K. POLK BUILDING

APPROVED BY: JIM WATERS  DATE 3/1/18
 ASSISTANT DIRECTOR
 SUITE 1000, JAMES K. POLK BUILDING

COMMENTS:

THIS TRAFFIC IS BASED ON 2017 CYCLE COUNTS. THE DESIGN YEAR TRAFFIC IS BASED ON GROWTH RATE FROM THE ADAM COMPUTER PROGRAM.

DHV'S ARE NOT REQUIRED FOR SIDE ROADS LESS THAN 1000 AADT.

NOTE: FOR BRIDGE REPLACEMENT PROJECTS, ADLs ARE NOT REQUIRED FOR ADTs OF 1000 OR LESS AND PERCENTAGE OF TRUCKS OF 7% OR LESS
 SEE ATTACHMENTS FOR TURNING MOVEMENTS AND/OR OTHER DETAILS

**TENNESSEE DEPARTMENT OF TRANSPORTATION
STRATEGIC TRANSPORTATION INVESTMENTS DIVISION**

PROJECT NO.: 09035-0220-94 ROUTE NO.: S.R. 436
 COUNTY: CARROLL CITY:
 PROJECT DESCRIPTION: BRIDGE OVER REEDY CREEK @ (L.M. 0.68)

FAP Rural

Pavement Structural Design

Calculation of Equivalent Daily 18 Kip Single Axle Loads

Type Vehicle	ADT (No. Counted)	Flexible		Rigid	
		18-kip Factor	ADL	18-kip Factor	ADL
Pass. cars and motorcycles (1-2)	277	0.001	0	0.001	0
Pick-up, Panel, Van (3)	117	0.005	1	0.004	0
Buses (4)	0	0.300	0	0.300	0
Sing. Unit	2-axle, 6-tire (5)	0.240	1	0.310	2
	3-axle or more (6-7)	1.700	14	2.300	18
Comb.	4-axle (8)	1.110	4	1.500	6
	5-axle or more (9-13)	1.320	5	2.200	9
Totals (2032 AADT)	415		25		35

Suggested Percentages of Trucks in Design Lane

5,000 or less ADT 95%
 5,000 - 10,000 ADT 90%
 10,000 - 15,000 ADT 85%
 15,000 - 20,000 ADT 80%
 20,000 - 30,000 ADT 75%
 30,000 - 40,000 ADT 70%
 40,000 Plus 60%

No. of Lanes: 2

% Trucks in Design Lane: 100%

ADL in Design Lane:

FLEX: 0.5 X 1.00 X 25.4 = 13

RIGID: 0.5 X 1.00 X 35.5 = 18

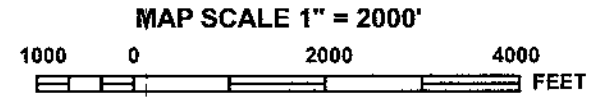
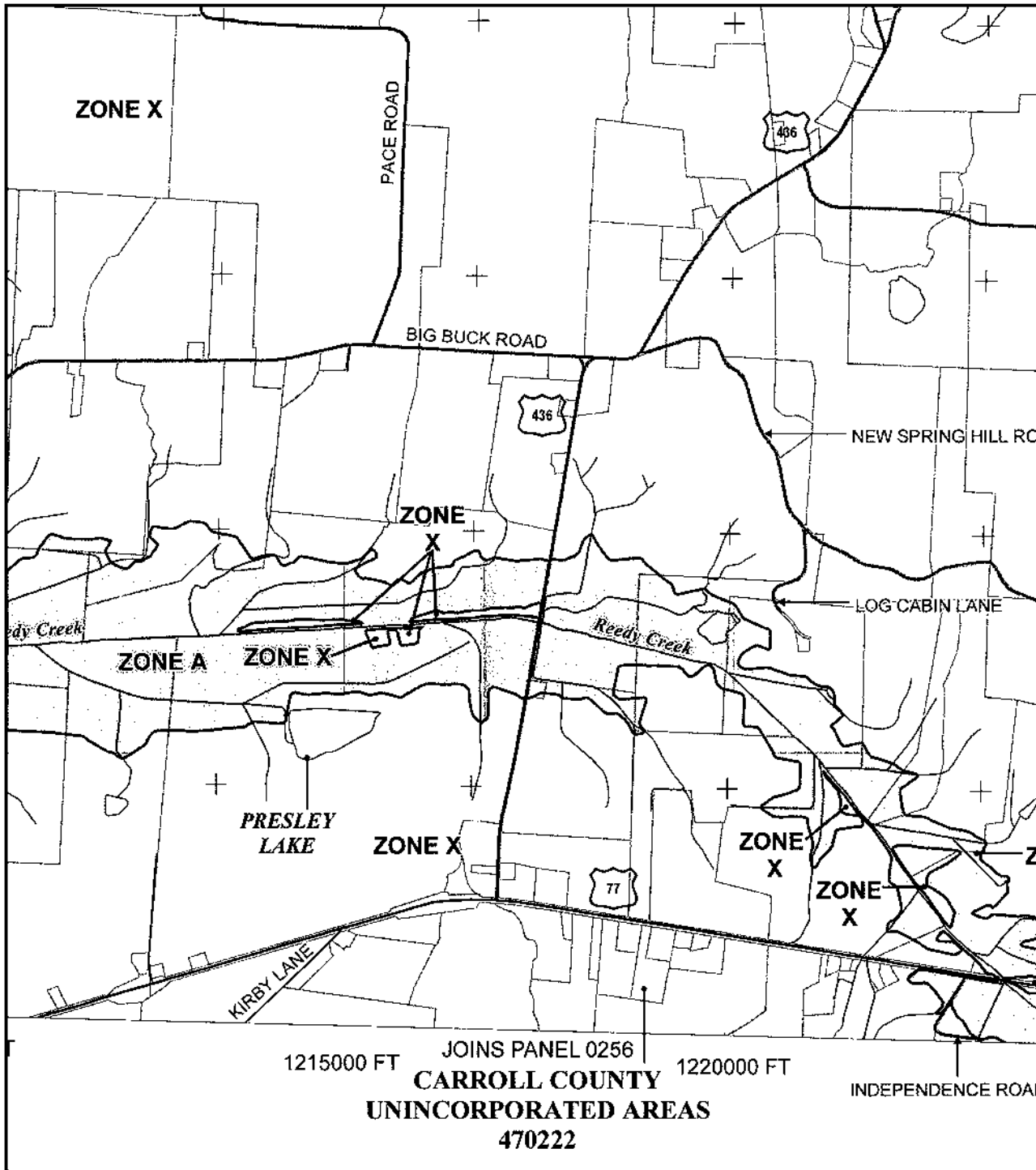
ADL Calculations By: RANDY BOGUSKIE
 Reviewed By: *Tony Armstrong*
 [REV. 7/1/14]

Date: 2/28/2018

Date: 2.28.18



CARROLL COUNTY
S.R. 436 @ L.M. 0.68



NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0150C

FIRM
FLOOD INSURANCE RATE MAP
CARROLL COUNTY
TENNESSEE
AND INCORPORATED AREAS

PANEL 150 OF 475
 (SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
CARROLL COUNTY	470222	0150	C
MCKENZIE, CITY OF	470023	0150	C
MCLEMORESVILLE, TOWN OF	470427	0150	C
TREZEVANT, TOWN OF	470243	0150	C

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.



MAP NUMBER
47017C0150C
EFFECTIVE DATE
MARCH 18, 2008

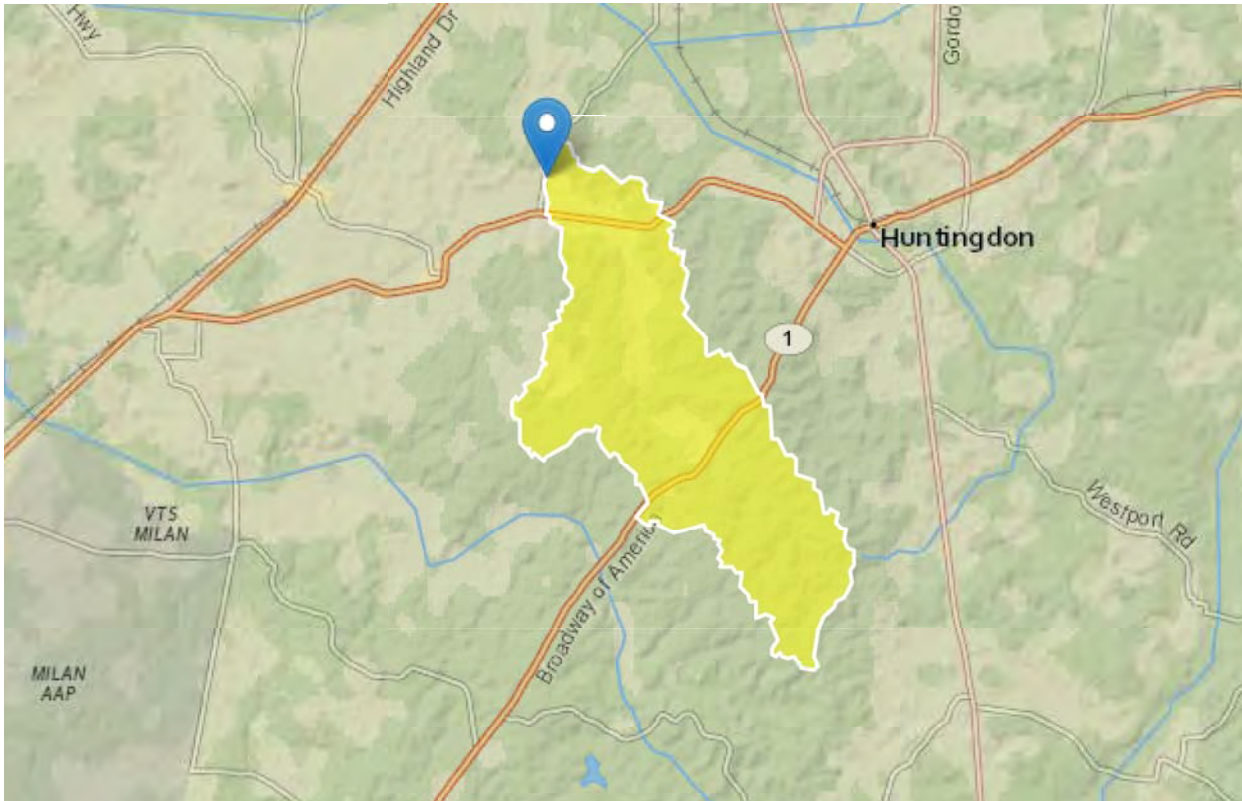
Federal Emergency Management Agency

1215000 FT JOINS PANEL 0256 1220000 FT
CARROLL COUNTY
UNINCORPORATED AREAS
470222

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

SR 436 Over Reedy

Region ID: TN
Workspace ID: TN20180102201441459000
Clicked Point (Latitude, Longitude): 36.01436, -88.53959
Time: 2018-01-02 14:14:55 -0600



Bridge 09S82330001

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
CONTPA	Area that contributes flow to a point on a stream	26.1	square miles
DRNAREA	Area that drains to a point on a stream	26.14	square miles
RECESS	Number of days required for streamflow to recede one order of magnitude when hydrograph is plotted on logarithmic scale	350	days per log cycle
PERMGTE2IN	Percent of area underlain by soils with permeability greater than or equal to 2 inches per hour	81.736	percent
CLIMFAC2YR	Two-year climate factor from Lichy and Karlinger (1990)	2.362	dimensionless
SOILPERM	Average Soil Permeability	2.06	inches per hour

Peak-Flow Statistics Parameters [DAOnly Area 4]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
CONTDA	Contributing Drainage Area	26.1	square miles	0.76	2308

Peak-Flow Statistics Flow Report [DAOnly Area 4]

PII: Prediction Interval-Lower, PIu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	PII	PIu	SE	SEp	Equiv. Yrs.
2 Year Peak Flood	2430	ft ³ /s	1310	4520	38.7	38.7	1.8
5 Year Peak Flood	3660	ft ³ /s	2010	6660	37.2	37.2	2.4
10 Year Peak Flood	4480	ft ³ /s	2440	8230	38	38	3.1
25 Year Peak Flood	5530	ft ³ /s	2910	10500	40.1	40.1	3.8
50 Year Peak Flood	6300	ft ³ /s	3220	12300	42.2	42.2	4.2
100 Year Peak Flood	7050	ft ³ /s	3470	14300	44.7	44.7	4.4
500 Year Peak Flood	8860	ft ³ /s	3980	19700	51.1	51.1	4.7

Peak-Flow Statistics Citations

Law, G.S., and Tasker G.D., 2003, Flood-Frequency Prediction Methods for Unregulated Streams of Tennessee, 2000: U.S. Geological Survey Water-Resources Investigations Report 03-4176, 79p. (<http://pubs.usgs.gov/wri/wri034176/>)

Low-Flow Statistics Parameters [Low Flow West Region 2009 5159]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	26.14	square miles	2	2405
RECESS	Recession Index	350	days per log cycle	32	350
PERMGTE2IN	Percent permeability gte 2 in per hr	81.736	percent	2	98

Low-Flow Statistics Flow Report [Low Flow West Region 2009 5159]

PII: Prediction Interval-Lower, PIu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	SEp
7 Day 10 Year Low Flow	6.01	ft ³ /s	123
30 Day 5 Year Low Flow	7.08	ft ³ /s	93.5

Low-Flow Statistics Citations

Law, G.S., Tasker, G.D., and Ladd, D.E., 2009, Streamflow-characteristic estimation methods for unregulated streams of Tennessee: U.S. Geological Survey Scientific Investigations Report 2009-5159, 212 p., 1 pl. (<http://pubs.usgs.gov/sir/2009/5159/>)

Annual Flow Statistics Parameters [Low Flow West Region 2009 5159]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	26.14	square miles	2	2405
RECESS	Recession Index	350	days per log cycle	32	350
CLIMFAC2YR	Tennessee Climate Factor 2 Year	2.362	dimensionless	2.307	2.455
PERMGTE2IN	Percent permeability gte 2 in per hr	81.736	percent	2	98

Annual Flow Statistics Flow Report [Low Flow West Region 2009 5159]

PII: Prediction Interval-Lower, PIu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	SEp
Mean Annual Flow	38.1	ft ³ /s	13.1

Annual Flow Statistics Citations

Law, G.S., Tasker, G.D., and Ladd, D.E., 2009, Streamflow-characteristic estimation methods for unregulated streams of Tennessee: U.S. Geological Survey Scientific Investigations Report 2009-5159, 212 p., 1 pl. (<http://pubs.usgs.gov/sir/2009/5159/>)

Seasonal Flow Statistics Parameters [Low Flow West Region 2009 5159]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	26.14	square miles	2	2405
RECESS	Recession Index	350	days per log cycle	32	350
PERMGTE2IN	Percent permeability gte 2 in per hr	81.736	percent	2	98

Seasonal Flow Statistics Flow Report [Low Flow West Region 2009 5159]

PII: Prediction Interval-Lower, PIu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	SEp
Summer Mean Flow	18.9	ft ³ /s	38.3

Seasonal Flow Statistics Citations

Law, G.S., Tasker, G.D., and Ladd, D.E., 2009, Streamflow-characteristic estimation methods for unregulated streams of Tennessee: U.S. Geological Survey Scientific Investigations Report 2009-5159, 212 p., 1 pl. (<http://pubs.usgs.gov/sir/2009/5159/>)

Flow-Duration Statistics Parameters [Low Flow West Region 2009 5159]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	26.14	square miles	2	2405
RECESS	Recession Index	350	days per log cycle	32	350
PERMGTE2IN	Percent permeability gte 2 in per hr	81.736	percent	2	98
CLIMFAC2YR	Tennessee Climate Factor 2 Year	2.362	dimensionless	2.307	2.455
SOILPERM	Average Soil Permeability	2.06	inches per hour	0.97	2.44

Flow-Duration Statistics Flow Report [Low Flow West Region 2009 5159]

PIl: Prediction Interval-Lower, PIu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	SEp
99.5 Percent Duration	5.55	ft ³ /s	122
99 Percent Duration	5.91	ft ³ /s	105
98 Percent Duration	6.29	ft ³ /s	96.4
95 Percent Duration	7.31	ft ³ /s	90.5
90 Percent Duration	8.25	ft ³ /s	85.8
80 Percent Duration	10.1	ft ³ /s	79.6
70 Percent Duration	12.1	ft ³ /s	75
60 Percent Duration	12.1	ft ³ /s	69.2
50 Percent Duration	16.8	ft ³ /s	57
40 Percent Duration	19	ft ³ /s	46.9
30 Percent Duration	27.8	ft ³ /s	36.6
20 Percent Duration	41.7	ft ³ /s	27.4
10 Percent Duration	84.6	ft ³ /s	17.7

Flow-Duration Statistics Citations

Law, G.S., Tasker, G.D., and Ladd, D.E., 2009, Streamflow-characteristic estimation methods for unregulated streams of Tennessee: U.S. Geological Survey Scientific Investigations Report 2009-5159, 212 p., 1 pl. (<http://pubs.usgs.gov/sir/2009/5159/>)

BRIDGE TIRCarroll County
State Route 436

SITE VISIT ATTENDEES			DATE: 3/17/2016
Name	Organization	Phone	Email
Brian Gaffney	Benesch	615-370-6079	bgaffney@benesch.com
Bob Baird	Benesch	615-370-6079	rbaird@benesch.com
Zane Pannell	TDOT STID	865-806-4319	zane.pannell@tn.gov
Konner Spradlin	TDOT STID	615-253-2432	konner.spradlin@tn.gov
Amy Rauch	TDOT STID	615-253-2432	amy.rauch@tn.gov
Gina Golightly	TDOT Reg 4 Design	731-935-0324	gina.golightly@tn.gov
Larry Brasher	TDOT Reg 4 Design	731-935-0144	larry.brasher@tn.gov
Dustin Tucker	TDOT Reg 4 Ecol	731-935-0101	dustin.tucker@tn.gov
Shawna Smith	TDOT Reg 4 Const	731-352-5327	shawna.b.smith@tn.gov
James Boyd	TDOT Reg 4 Survey	731-935-0138	james.boyd@tn.gov
Robert Hope	TDOT Reg 4 Survey	731-935-0241	robert.hope@tn.gov
Steven Collins	TDOT Reg 4 Util	731-935-0112	steven.a.collins@tn.gov

CHECK LIST OF DETERMINANTS FOR LOCATION STUDY

If any of the following facilities or ESE categories are located within the project area or corridor, place an "x" in the blank opposite the item. Where more than one alternate is to be considered, place its letter designation in the blank.

1. Agricultural land usage		X
2. Airport (existing or proposed)		
3. Commercial area, shopping center		
4. Floodplains		X
5. Forested land		
6. Historical, cultural, or natural landmark		
7. Industrial park, factory		
8. Institutional usages		
a. School or other educational institution		
b. Church or other religious institution (Cemetery)		
c. Hospital or other medical facility		
d. Public building, e.g., fire station		
e. Defense installation		
9. Recreation usages		
a. Park or recreational area		
b. Game preserve or wildlife area		
10. Residential establishment		X
11. Urban area, town, city, or community		X
12. Waterway, lake, pond, river, stream, spring		X
Permit required:	Coast Guard	
	Section 404	X
	TVA Section 26a review	
	NPDES	X
	Aquatic Resource Alteration	X
13. Other		
14. Location coordinated with local officials		
15. Railroad crossings		
16. Hazardous materials site		

Transportation Investment Report for Bridge ID: 09S82330001
Carroll County
State Route 436, Reedy Creek



Photo 1: Bridge Number



Photo 2: Bridge Load Rating



Photo 3: Southbound Bridge Approach



Photo 4: Northbound Bridge Approach

Transportation Investment Report for Bridge ID: 09S82330001
Carroll County
State Route 436, Reedy Creek



Photo 5: View Looking North From Bridge



Photo 6: View Looking South From Bridge



Photo 7: View Looking Upstream



Photo 8: View Looking Downstream



Photo 9: Upstream Profile View Of Bridge



Photo 10: North Abutment Of Bridge

CARROLL COUNTY

09-SR436-0068

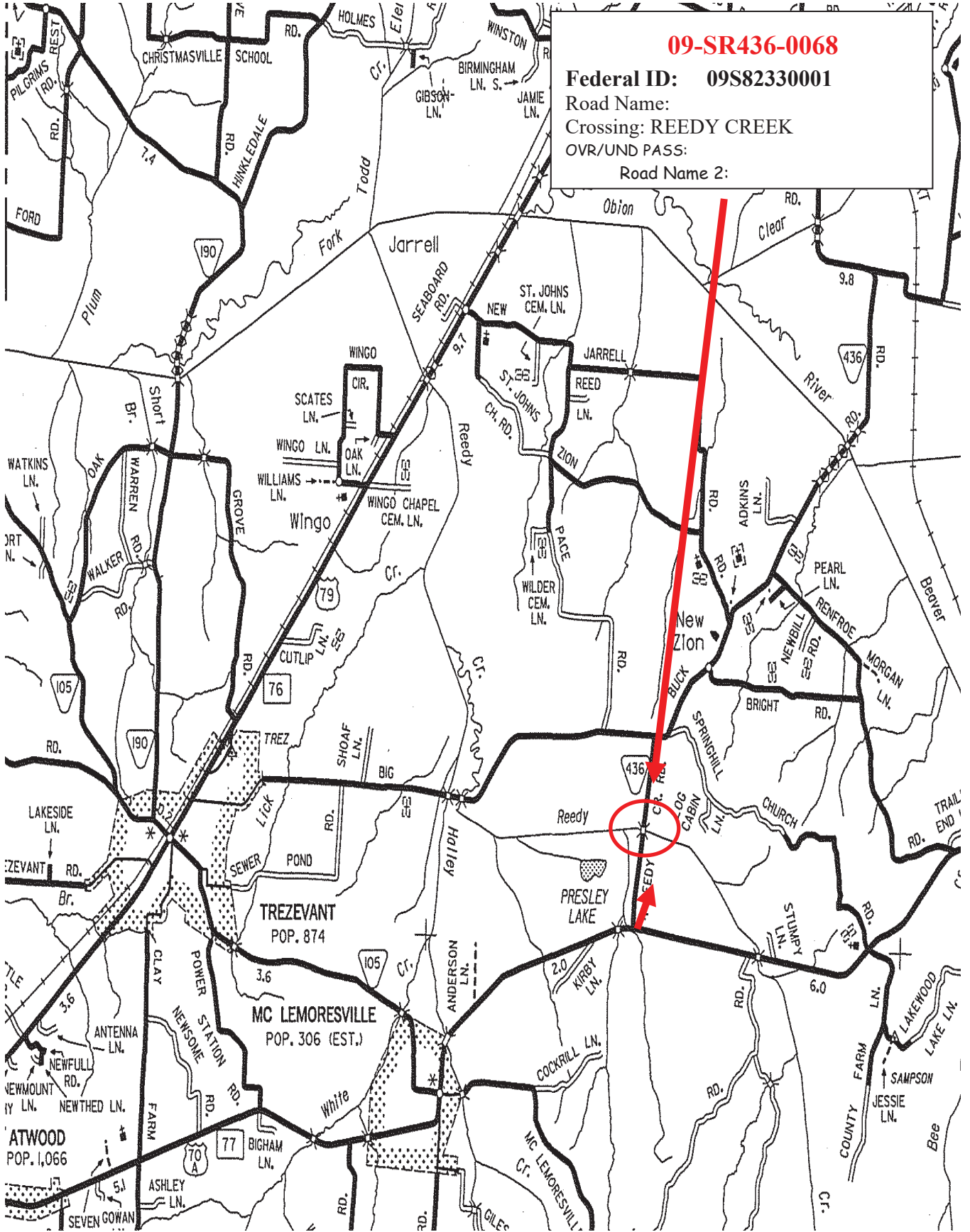
Federal ID: 09S82330001

Road Name:

Crossing: REEDY CREEK

OVR/UND PASS:

Road Name 2:



BRIDGE MAINTENANCE RECOMMENDATIONS

10-02-17



Tennessee Department of Transportation

COUNTY: CARROLL
 LOCATION: 9-SR436-00.68-
 CO. SEQ.: 1 SPEC. CASE: 0

CROSSING: REEDY CREEK
 FED. BRIDGE NO.: 09S82330001
 MAINT. DIST.: 9

REPAIR LIST NO.: 3
 DATE ADDED: 03/12/2012
 REVISED: 10/02/2017

FACILITY CARRIED:	FAS 436	NUMBER OF MAIN SPANS:	1
HIGHWAY SYSTEM:	05-STP RURAL, STATE	NUMBER OF APPROACH SPANS:	3
BRIDGE WIDTH (CURB TO CURB):	20 FT 4 IN	BRIDGE LENGTH (FT):	90
BRIDGE WIDTH (OUT TO OUT):	21 FT 7 IN	MAXIMUM SPAN LENGTH (FT):	33
APPROACH ROADWAY (W/SHOULDERS):	27 FT 10 IN	SKEW ANGLE (DEGREES):	90
MAINTAINED BY:	STATE HIGHWAY AGENCY		
MAIN SPAN MATERIAL:	PRESTRESSED CONCRETE		
MAIN SPAN DESIGN TYPE:	BOX BEAM OR GIRDERS - MULTIPLE		
APPROACH SPAN MATERIAL:	CONCRETE		
APPROACH SPAN DESIGN TYPE:	SLAB		
INSPECTION DATE:	10/02/2017	GENERAL CONDITION:	POOR
EVALUATION DATE:	12/03/2015	STRUCTURALLY DEFICIENT:	YES
PPRM PIN NUMBER:		SUFFICIENCY RATING:	47.1
H TRUCK RATING @ INV.:	15 TONS		

No.	RECOMMENDATIONS	REPAIR DATE	REPAIRED BY
1.	REPAIR OR REPLACE PILE "C" AT BENT NO.1A		

SUGGESTED ROUTINE MAINTENANCE AND COMMENTS
REPAIR OR REPLACE PRECAST CONCRETE CHANNEL SLAB "F" IN SPAN NO.1
REPAIR BREASTWALL AT ABUTMENT NO.2
CUT AND REMOVE VEGETATION FROM CHANNEL
APPROACH GUARDRAILS ARE NON-EXISTENT
BRIDGERAILS ARE SUBSTANDARD

GENERAL COMMENTS:



STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

Bridge Condition Coding Form

10-02-17
Revised 10/03/2017

Bridge Number:
(Includes Item 5A)

Feature Intersected:

Evaluation Status:

County:

Route:

Special Case:

County Sequence:

Log Mile:

CODE ONLY THOSE VALUES WHICH HAVE CHANGED

ITEM #	DESCRIPTION	VALUE	CONDITION CODING GUIDELINES (Values for Coding Items 58, 59, 60 and 62)
90	LAST INSPECTION DATE	<input type="text" value="10/02/2017"/>	N NOT APPLICABLE 9 EXCELLENT CONDITION 8 VERY GOOD CONDITION - NO PROBLEMS NOTED. 7 GOOD CONDITION - SOME MINOR PROBLEMS. 6 SATISFACTORY CONDITION - MINOR DETERIORATION OF STRUCTURAL ELEMENTS. 5 FAIR CONDITION - ALL PRIMARY STRUCTURAL ELEMENTS ARE SOUND BUT MAY HAVE MINOR SECTION LOSS, CRACKING, SPALLING OR SCOUR. 4 POOR CONDITION - ADVANCED SECTION LOSS, DETERIORATION, SPALLING OR SCOUR. 3 SERIOUS CONDITION - LOSS OF SECTION, DETERIORATION, SPALLING OR SCOUR HAVE SERIOUSLY AFFECTED PRIMARY STRUCTURAL COMPONENTS. LOCAL FAILURES ARE POSSIBLE. FATIGUE CRACKS IN STEEL OR SHEAR CRACKS IN CONCRETE MAY BE PRESENT. 2 CRITICAL CONDITION - ADVANCED DETERIORATION OF PRIMARY STRUCTURAL ELEMENTS. FATIGUE CRACKS IN STEEL OR SHEAR CRACKS IN CONCRETE MAY BE PRESENT OR SCOUR MAY HAVE REMOVED SUBSTRUCTURE SUPPORT. UNLESS CLOSELY MONITORED IT MAY BE NECESSARY TO CLOSE THE BRIDGE UNTIL CORRECTIVE ACTION IS TAKEN. 1 "IMMINENT" FAILURE CONDITION - MAJOR DETERIORATION OR SECTION LOSS PRESENT IN CRITICAL STRUCTURAL COMPONENTS OR OBVIOUS VERTICAL OR HORIZONTAL MOVEMENT AFFECTING STRUCTURAL STABILITY. BRIDGE IS CLOSED TO TRAFFIC BUT CORRECTIVE ACTION MAY PUT IT BACK IN LIGHT SERVICE. 0 FAILED CONDITION - OUT OF SERVICE AND BEYOND CORRECTIVE ACTION.
	EARLIEST DATE OF NEXT REGULAR INSPECTION	<input type="text" value="08/03/2019"/>	
		<input type="text" value="/ /"/>	
10	MINIMUM V.C. OVER DECK (ROADWAY + SHOULDERS)	99 FT. 99 IN.	
520	MINIMUM V.C. OVER DECK (EXCLUDES SHOULDERS)	99 FT. 99 IN.	
36	TRAFFIC SAFETY FEATURES		
	Br. Rail	0	
	Trans.	0	
	Appr. Rail	0	
	Terminal	0	
	SPEED LIMIT	45	
		<input type="text" value=""/>	
41	STRC OPEN/CLOSED/POSTED	P	
	A K P	<input type="text" value=""/>	
58	DECK	5	
59	SUPERSTRUCTURE	5	
60	SUBSTRUCTURE	4	
61	CHANL/CHANL PROTECTION	6	
62	CULVERT AND RETAIN WALL	N	
71	WATERWAY ADEQUACY	6	
72	APPROACH RDWY ALIGNMENT	8	
521	OVERALL CONDITION	<input type="text" value="POOR"/>	
16	LATITUDE	N 36° .8600'	
17	LONGITUDE	W 88° 32.4583'	
		<input type="text" value=""/>	
		<input type="text" value=""/>	
		<input type="text" value=""/>	

TEAM LEADER SIGNATURE

REVIEW DATE

Bridge Loc. No: 09-SR436-00.68 Date: 10-02-17



BRIDGE NUMBER



LOOKING AHEAD ON ROUTE

Bridge Loc. No: 09-SR436-00.68 Date: 10-02-17



UP STREAM



VIEW ACROSS TOP OF DECK

Bridge Loc. No: 09-SR436-00.68 Date: 10-02-17



DOWN STREAM



LOOKING BACK ON ROUTE

Bridge Loc. No: 09-SR436-00.68 Date: 10-02-17



ABUTMENT 2



BENT 1 REAR SIDE

Bridge Loc. No: 09-SR436-00.68 Date: 10-02-17



BENT 2 FRONT SIDE



RIGHT SIDE ELEVATION

Bridge Loc. No: 09-SR436-00.68 Date: 10-02-17



SPAN 2 BOTTOM DECK



LEFT SIDE ELEVATION

Bridge Loc. No: 09-SR436-00.68 Date: 10-02-17



ABUTMENT 2 BREAST WALL



BOTTOM DECK REST OF SPANS

Bridge Loc. No: 09-SR436-00.68 Date: 10-02-17



SPAN 1 SLAB "F"



ABUTMENT 1

Bridge Loc. No: 09-SR436-00.68 Date: 10-02-17



BENT 1 A PILE "C"



BENT 1 A PILE "C"



APPROACH 1 WEIGHT LIMIT



APPROACH 2 WEIGHT LIMIT

10-02-17

BRIDGE INSPECTION REPORT

Form BIR 3.0
(Rev. 9-22-98)
DT-0069

Field Report No.: 24 Date: 10/2/17
Previous Report No.: 23 Date: 11/23/15
Co. Seq 01 Plans: YES (X) NO ()

Bridge No. 09S82330001 Bridge Location No. 09 - SR436 - 0068
Eleven-Digit No. Co. Route Log Mile OVER/UNDER PASS

REEDY CREEK
Road Name Feature Intersected CITY
Year Constructed 1960 County Carroll Maint. Dist: 47 Maint. Resp: 02
Year Widened _____ Year Rehabilitated _____

Structure Name (If Named) _____
FEATURES
Wearing Surface Concrete () Timber () Asphalt (X) Depth 1 1/2" (in.)
Flared Width Yes () No (X) Median Width Open () None (X) Closed ()
Navigational Control Yes () No (X) Bridge Skew 90 ° LT () RT ()
Structure Type (Main Span) CONCRETE BOX BEAM & P. C. C. S.
Structure Type (Appr. Spans) _____
No. Main Spans 4 No. Approach Spans _____
Maximum Span Length 33.0 (**. * ft.)
Total Length 91.0 (**. * ft.)

INSPECTORS
1. Jones TL
2. Aiken, norton
3. Conway
4. Thomas
5. B Jones
6. HAYNES
7. _____
8. _____

WIDTHS (*. * ft.)
Deck Out-to-Out 22.0
Roadway Curb/Curb 21.0
Roadway Rail/Rail _____
Sidewalk Rt. _____ Lt. _____
*Approach Roadway 18.0
*(Does Not Include Shoulders)
Approach Shoulder Rt. 3.0
Lt. 3.0

CLEARANCES
Min. Vertical Clearance over Deck _____ (ft.-in.)
Min. Vertical Under Clearance _____ (ft.-in.)
Min. Lateral Under Clearance Rt. _____ (*. * ft.)
Min. Lateral Under Clearance Lt. _____ (*. * ft.)
FRACTURE CRITICAL: _____
(If Yes, Include BIR 3.9)
NBIS Bridge Length (<25 ft.) _____ (ft.-in.)

UNDERWATER INSPECTION

To Be Performed By: _____ Date _____
DOT FIELD TEAM () CONTRACT DIVERS () NONE REQUIRED (X)

Change in Structural Condition: Yes () No (X) Major Repairs Made: Yes () No (X)

COMMENTS:

Leonard Jones

Digitally signed by Leonard Jones
DN: cn=Leonard Jones, o=TDOT,
ou=Bridge Inspection,
email=leonard.jones@tn.gov, c=US
Date: 2017.10.03 12:08:43 -05'00'

LATITUDE: N36 ° 0.8600 '
LONGITUDE: W88 ° 32.4583 '
G.P.S. Location

BRIDGE RATING: () () (X) ()
GOOD FAIR POOR CRITICAL

Supervising Bridge Inspector: L Jones

Form BIR 3.1
(Rev. 9-22-98)
DT-0080

Bridge Location No. 09 - SR436 - 0068
Co. Route Log Mile

Date 10/2/17

PERFORMANCE EVALUATION

Time of Day Inspected 9:15 AM Weather Conditions Partly cloudy 64°
Vehicles Observed NO RAMP TRAFFIC

LIVE LOAD BEHAVIOR

Substructure	YES	NO	Comments
Horiz./ Vert. Defl.	()	(X)	
Vibration	()	(X)	
Superstructure			
Horiz./ Vert. Defl.	()	(X)	
Vibration	()	(X)	

APPROACH

	Rating	Comments
Alignment	G <u>(G)</u> F P C	
Slab	G F P C	N/A
Joints	G F P C	N/A
Pavement	G <u>(F)</u> P C	Fine to 1/8" cracks & light softening in minor spalling
Embankment	G <u>(F)</u> P C	
Drains	G F P C	N/A

TRAFFIC SAFETY FEATURES

	Rating	STANDARD/ SUB-STANDARD	Comments
Bridgerailing	G <u>(F)</u> P C	() (X)	
Transitions	G F P C	() ()	N/A
Guardrail	G F P C	() ()	
Guardrail Terminal	G F P C	() ()	

SIGNING

	YES	NO	NEEDED	Weight Limit Posted
Paddleboards	(X)	()	()	YES (X) NO ()
Vertical Clearance (<14'-6")	()	(X)	()	Gross..... <u>40</u> Tons
NARROW ()	()	(X)	()	2 Axle..... <u>40</u> Tons
ONE LANE BRIDGE ()	()	(X)	()	3 or more Axles.. _____ Tons

Other Signs or Plaques: _____

Comments Regarding any Problems with Signing: _____

DECK

	Rating	Comments
Wearing Surface	G <u>F</u> P C	
Deck - Structural Condition	G F <u>P</u> C	See slabs
Curbs	<u>G</u> F P C	
Median	G F P C	
Sidewalks	G F P C	
Parapet	G <u>F</u> P C	
Railing	G F P C	
Paint	G F P C	
Drains	<u>G</u> F P C	
Lighting Standards	G F P C	
Utilities	G F P C	
Joint Leakage	G F P C	
Expansion Joints	G F P C	

SUPERSTRUCTURE

Bearing Devices	G F P C	
Beams <i>CBB</i>	<u>G</u> F P C	
Girders	G F P C	
PCCS	G F <u>P</u> C	SPAN # 1 "F" Spall TO Steel (24D)
BOLTS (PCCS)	<u>G</u> F P C	
Floor Beams	G F P C	
Stringers	G F P C	
Diaphragms	G F P C	
Bracing	G F P C	
Trusses - General	G F P C	
Portals	G F P C	
Bracing	G F P C	
Paint	G F P C	
Alignment of Members	<u>G</u> F P C	

TEXTURE COAT

Condition Rating	G F P C	Fading	G F P C
Overall Appearance	G <u>F</u> P C	Needs Spot Painting	YES () / NO ()
Staining Rating	G F P C	Needs Repainting	YES <u>()</u> / NO ()
Comments			Scaling Rating G F P C
RECOMMENDATIONS:			CLEAN SEAL JOINTS ()
			CLEAN DRAINS ()

SUBSTRUCTURE

PILES TO BE
REPLACED

ABUTMENTS

	Rating	Comments	PILE(S)	ABUTMENT
Caps	G <u>F</u> P C			
Breastwall	G F <u>P</u> C	<u>Abut # 2</u>		<u>(167)</u>
Wings	G <u>F</u> P C			
Backwall	G F P C			
Plumb	<u>G</u> F P C			
Footing	G F P C			
Piles	G <u>F</u> P C			
Embankment	<u>G</u> F P C			
Bearing <u>veg</u>	G F <u>P</u> C	<u>Heavy in General</u>		<u>(204)</u>
Slope Paving	G F P C			
Rip Rap	<u>G</u> F P C			
Earthquake Devices	G F P C			

PIERS

	Rating	Comments	PILE(S)	PIER
Caps	G F P C			
Columns	G F P C			
Plumb	G F P C	<u>X/A</u>		
Footings	G F P C			
Piles	G F P C			
Bearing	G F P C			
Web	G F P C			
Earthquake Devices	G F P C			

BENTS

	Rating	Comments	PILE(S)	BENT
Caps	G <u>F</u> P C			
Columns	G F P C			
Plumb	<u>G</u> F P C			
Footings <u>conc casing</u>	<u>G</u> F P C			
Piles	G F <u>P</u> C	<u>Pile "C" Bent # 1A</u>		<u>(141)</u> ¹
Bearing	G F P C			
Bracing	G <u>F</u> P C			
Earthquake Devices	G F P C			

Piles Need Replacement: NO () YES (X)

(141) ¹

CUT VEGETATION NO () YES (X)

(204)

CLEAR DRIFT NO (X) YES ()

RECOMMENDATIONS:

STREAM CHANNEL DATA AND CONDITIONS

Stream Crossing: REEDY CREEK

- I. 1. Type of bed material? CLAY, SILT & SAND
- 2. Has channel shifted? YES () NO (X) NOT APPARENT ()
- 3. Condition of rip-rap? G (F) P C Est. % failed _____ % N/A ()
- 4. Overall condition of channel? G (F) P C
- 5. Item 61 - Code values 0 thru 9 according to the recording and coding guide currently in effect: 6
- 6. Underwater diver inspection recommended? YES () NO (X)
If yes, why? _____

- II. Channel and bank stability conditions: (check if applicable)
- 1. Steep bank conditions: - Failures upstream () Failures downstream ()
- 2. Moderate bank erosion (X)
- 3. Bank vegetation: a. low growth (X) b. large timber (X) c. clear banks ()
d. dead trees upstream (X) e. dead trees downstream (X)
- 4. Sediment or gravel accumulation: YES () NO (X) UNKNOWN ()
- 5. Channel altered or straightened: YES () NO (X) UNKNOWN ()
- 6. Stable conditions: a. live growth (X) b. bedrock ()
c. boulders () d. flat slopes (<=2:1) ()

- III. Waterway adequacy and debris characteristics: (check if applicable)
- 1. Bridge deck elevations:
 - a. level with approach roadway. (X)
 - b. higher than approach roadway. ()
 - c. roadway approach >= 2 ft. above natural ground line. . (X)
- 2. Abutment encroaches into channel. ()
- 3. Large scour (blowhole) under bridge. ()
- 4. Indications that flood waters overtop bridge:
NO (X) YES () OCCASIONALLY () FREQUENTLY () UNKNOWN ()
- 5. Debris characteristics:
 - a. debris/drift present. YES () NO (X)
 - b. debris/drift likely to accumulate YES (X) NO ()
 - c. dead trees upstream (X) dead trees downstream (X)

IV. Comments: _____

SPECIAL INSPECTION DATA - FOR REASONS OTHER THAN FC OR SCOUR

- I. Does this bridge need a special inspection? YES () NO (X)
- II. Reason for special inspection: _____

Inspection Team's Summary
Bridge Location No. 09 - SR436 - 00.68
Inspection Date 10 - 02 - 17
Bridge Rating POOR

THIS IS A 4 SPAN P.C.C.S. & CONCRETE BOX BEAM BRIDGE
SUBSTRUCTURE IS TIMBER
SAFETY FEATURES ARE METAL GUARD RAILS, PADDLE BOARDS &
WEIGHT LIMIT SIGNS
APPROACH ASPHALT HAS FINE TO 1/8" CRACKS, LIGHT SETTLING &
SPALLING
P.C.C.S. HAS HAIRLINE TO 1/8" CRACKING & SPALL TO STEEL
SPAN # 1 SLAB "F" HAS SPALL TO STEEL
BOX BEAMS HAVE NO PROBLEMS
SUBSTRUCTURE HAS LIGHT TO MEDIUM WEATHERING & SCATTERED
DECAY
BENT # 1 A PILE "C" HAS HEAVY DECAY
ABUTMENT # 2 BREAST WALL HAS HEAVY DECAY
APPROACH # 1 WEIGHT LIMIT SIGNS ARE 40 TON

VEGETATION IS HEAVY WITH TREE GROWTH

NO ISSUES WITH SCOUR

SHAYNE HAYES

INSPECTOR

CROSS SECTION: YES (X) NO () BRM: YES () NO (X)

N/C

S Jones
10/21/17
11/c

10-02-17

GROUND ELEVATIONS

FEDERAL NUMBER ----- 09S82330001
BRIDGE NO. ----- 9-436-0.68 DATE : 9/13/2000
CROSSING ----- REEDY CREEK N/C 6/19/08
NUMBER OF PIERS ----- 3
LOCATION OF PIERS ----- 19, 52, 71
BENCH MARK ELEV. ---- 105.93
BENCH MARK LOC. --- TOP CAP RT. SIDE A-1
WATER ELEVATION -----

INSPECTORS
~~SCOTT'S CREW~~
Blanken Ship Crew

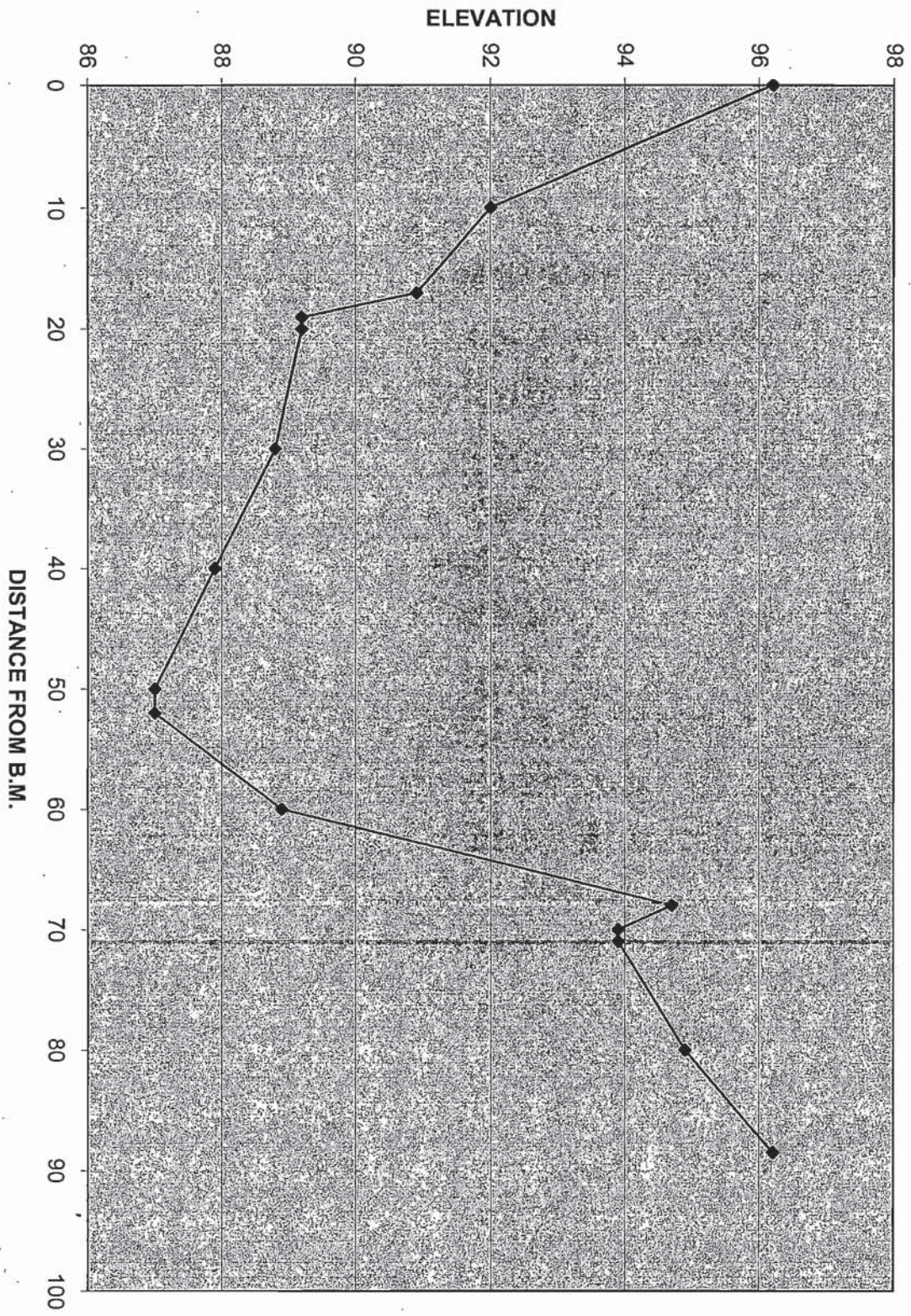
DISTANCE OF 0.00 = TOP OF BANK APPROACH 1 SIDE

DISTANCE AND ELEVATIONS ARE IN STANDARD MEASUREMENT

UPSTREAM GROUND ELEVATION @ EDGE OF BRIDGE

9/13/2000	
Distance from B.M.	Elevation
0	96.2
10	92
17	90.9
19	89.2
20	89.2
30	88.8
40	87.9
50	87
52	87
60	88.9
68	94.7
70	93.9
71	93.9
80	94.9
88.5	96.2

10-02-17



09S82330001 UPSTREAM D.L.

—◆— 9/13/2000

N/C 6/19/08

10-02-17

BRIDGE NO. -----

9-436-0.68

DATE :

9/13/2000

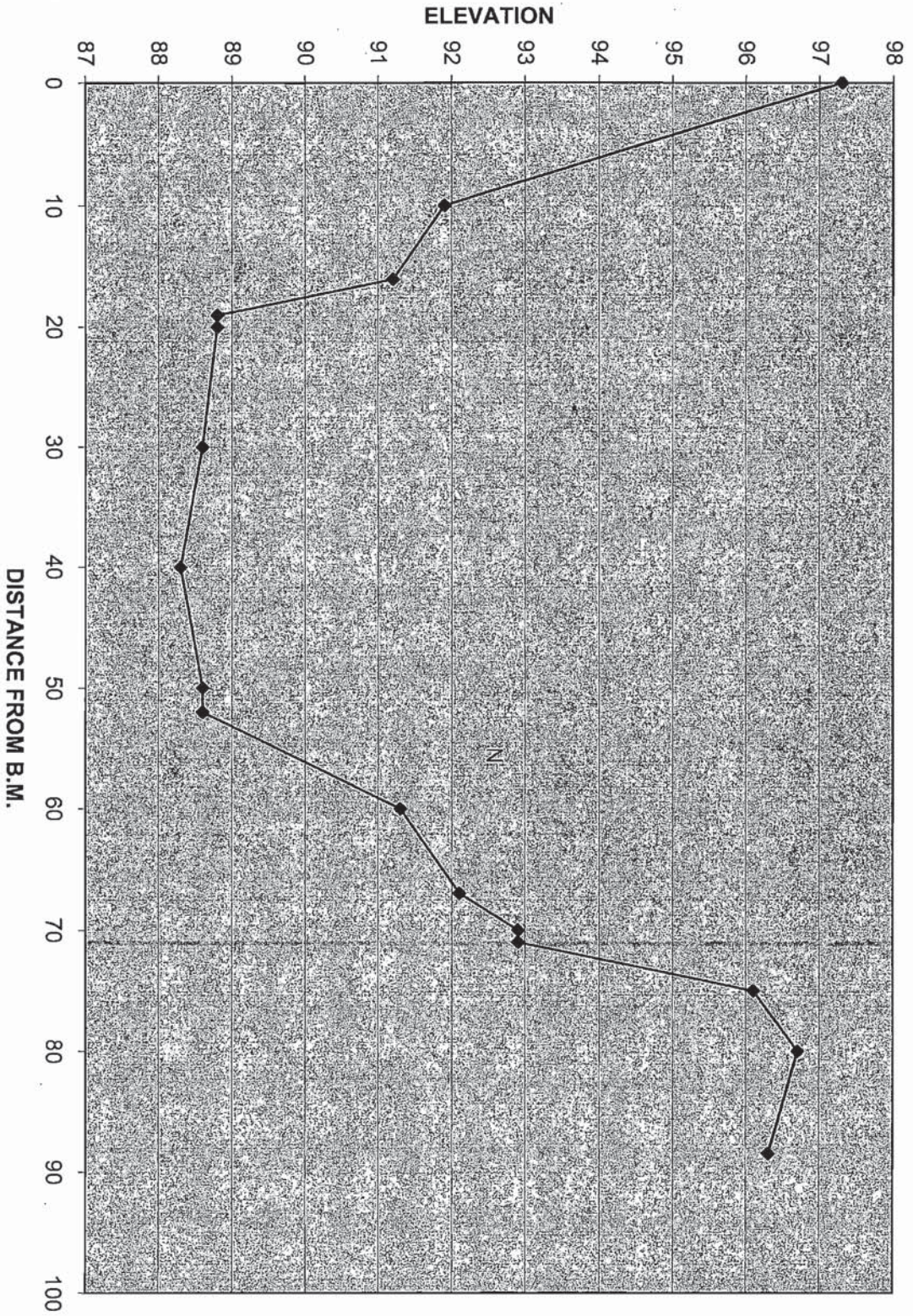
DOWNSTREAM GROUND ELEVATION @ EDGE OF BRIDGE

9/13/2000

Distance from B.M.	Elevation
0	97.3
10	91.9
16	91.2
19	88.8
20	88.8
30	88.6
40	88.3
50	88.6
52	88.6
60	91.3
67	92.1
70	92.9
71	92.9
75	96.1
80	96.7
88.5	96.3

10-02-17

09S82330001 DOWNSTREAM D.L.



9/13/2000

N/C 6/19/08

10-02-17

BRIDGE NO. -----

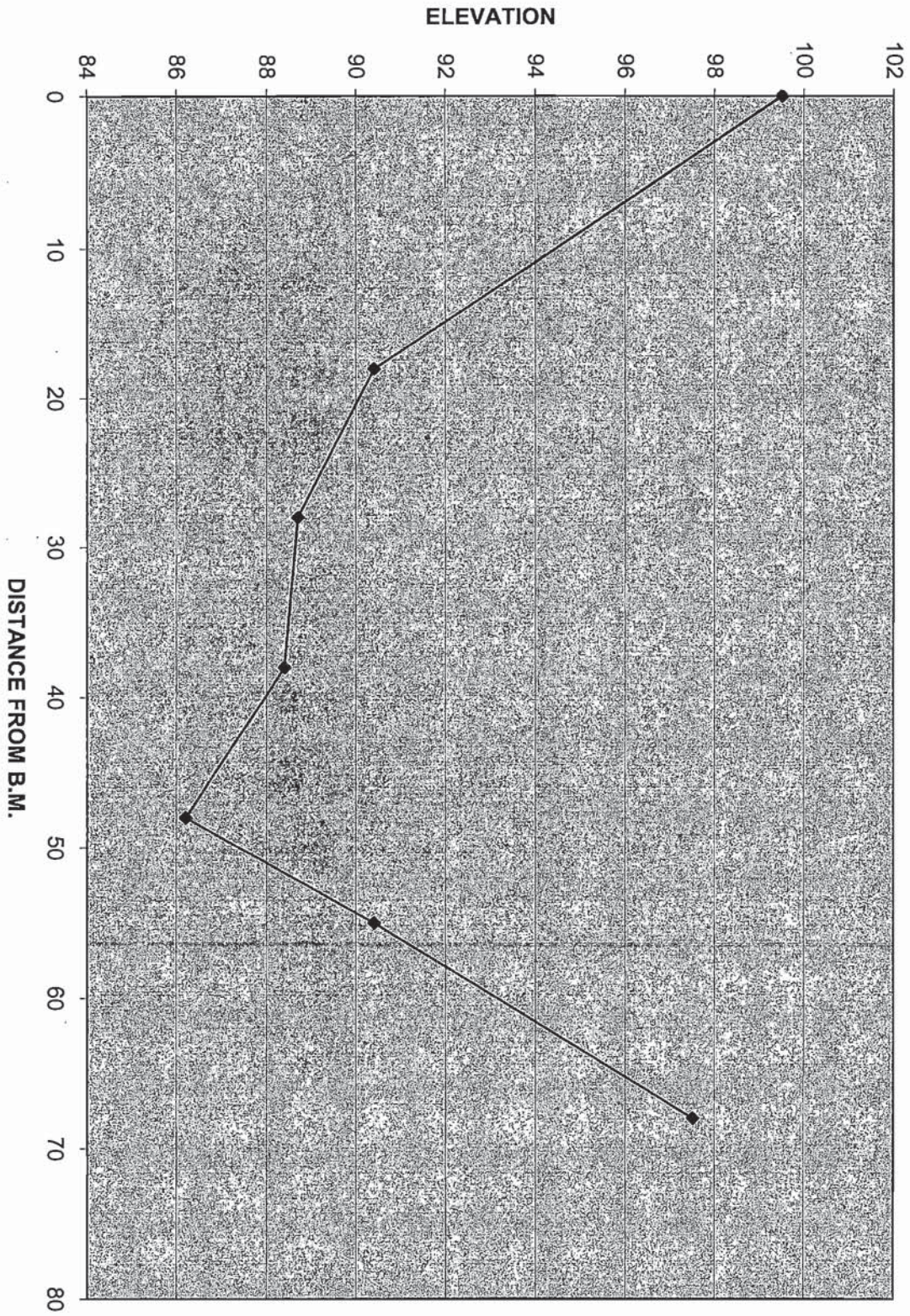
9-436-0.68

DATE :

9/13/2000

100' UPSTREAM, STREAMBED ELEVATIONS BANK TO BANK

9/13/2000	
Distance from B.M.	Elevation
0	99.5
18	90.4
28	88.7
38	88.4
48	86.2
55	90.4
68	97.5



09S82330001 UPSTREAM 100'

—◆— 9/13/2000

n/c06/19/08

10-02-17

BRIDGE NO. -----

9-436-0.68

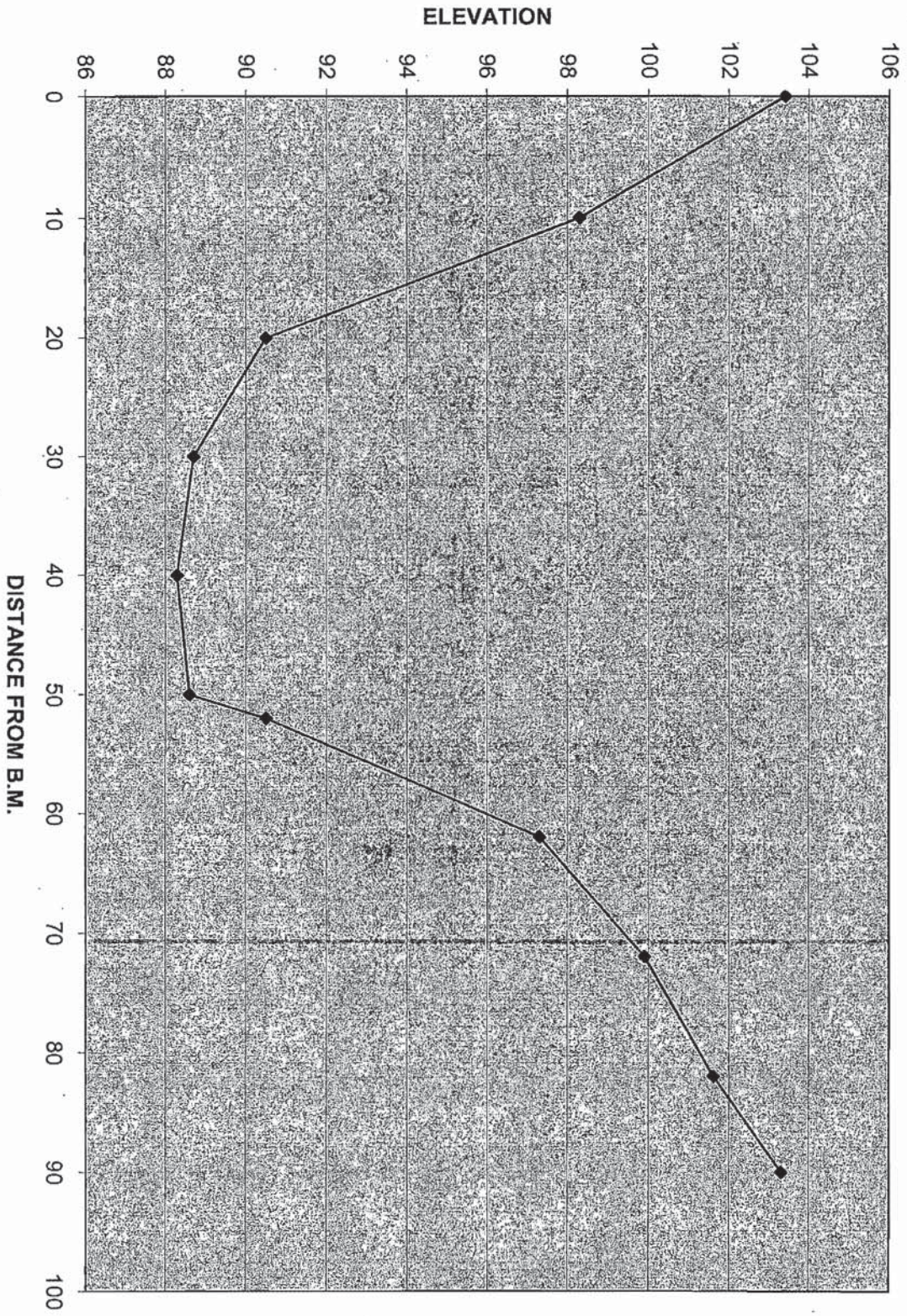
DATE :

9/13/2000

100' DOWNSTREAM, STREAMBED ELEVATIONS BANK TO BANK

9/13/2000	
Distance from B.M.	Elevation
0	103.4
10	98.3
20	90.5
30	88.7
40	88.3
50	88.6
52	90.5
62	97.3
72	99.9
82	101.6
90	103.3

10-02-17



◆ 9/13/2000

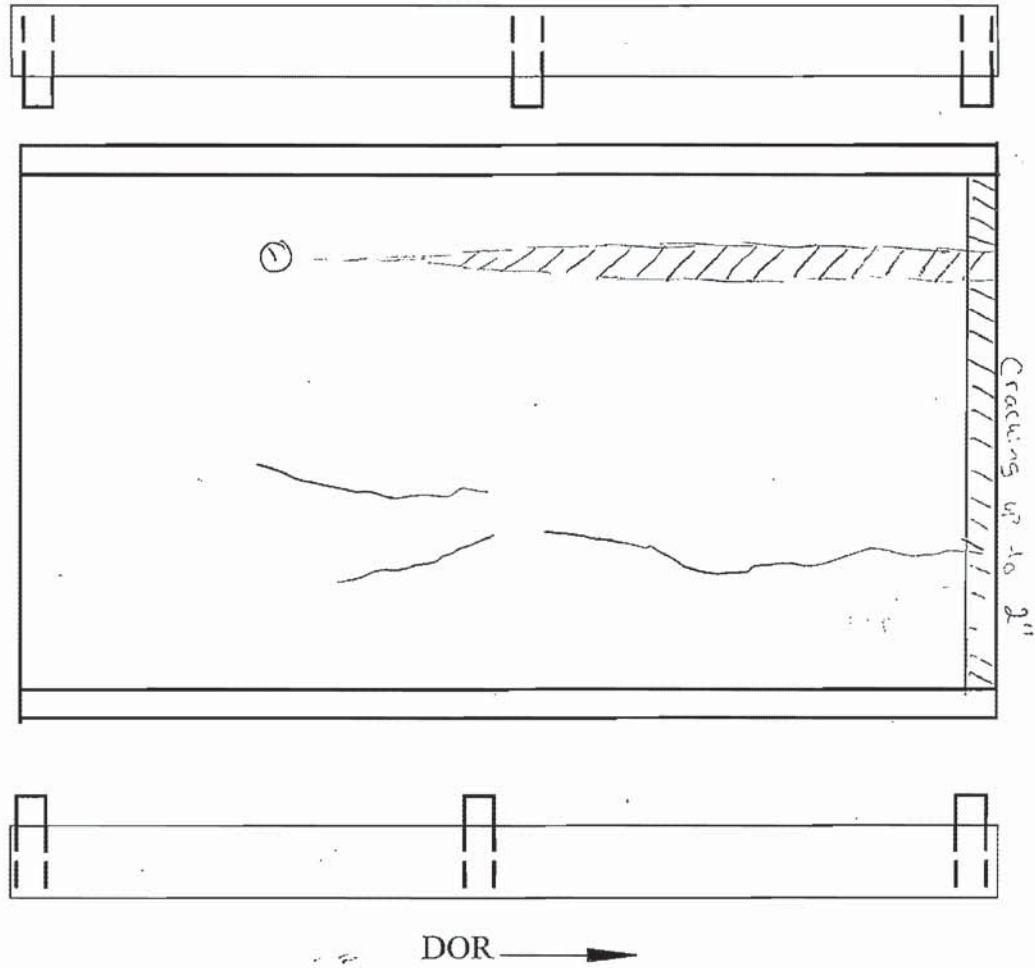
n/c06/19/08

10-02-17

Bridge No. 09 SR436 0.68

Skew 90 RT.

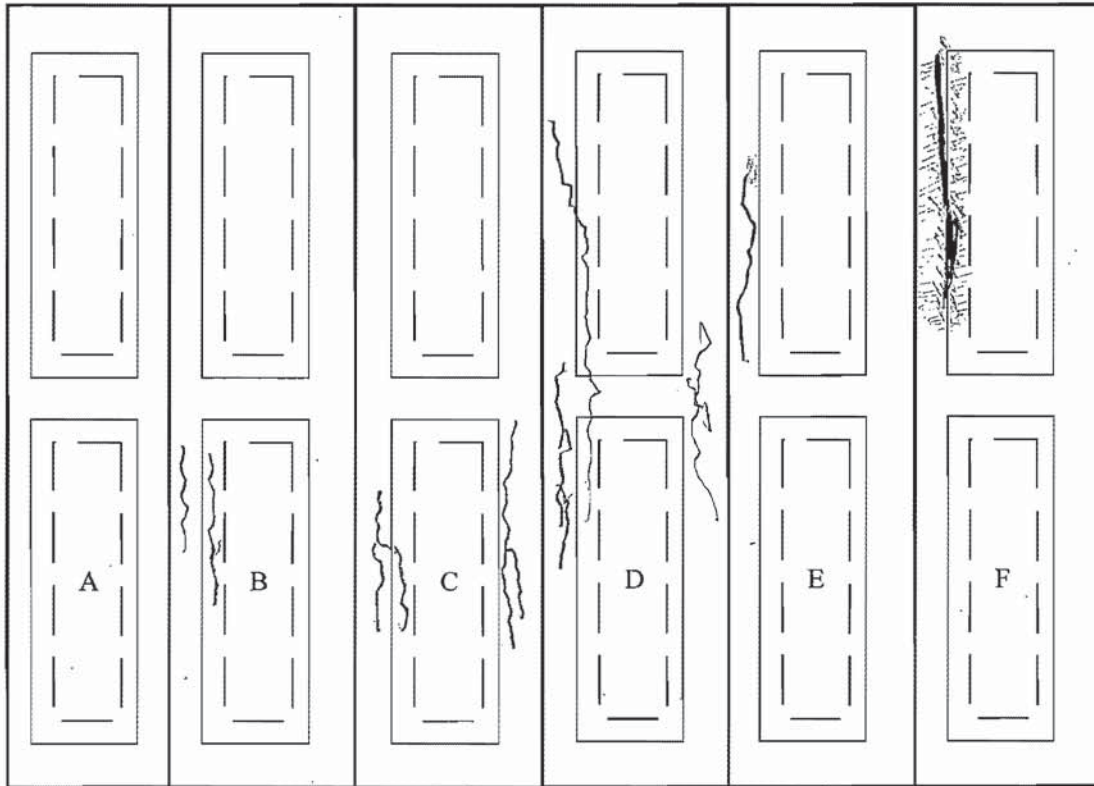
SPAN. NO. 1



ELEMENT	RATING	COMMENT
TOP DECK	G \hat{F} P C	Spalling between slabs ① 10' L X 4" W X 6" Depth 1/8" cracks - 1/2" / ②
CURBS	G F P C	
RAIL & POST	G F P C	
PAINT	G F P C	
DRAINS	G F P C	
JOINT	G F P C	N/A
	G F P C	

09 SR436 0.68 90
 Bridge No. Co. Route Log Mile R/L Skew

SPAN. NO. ___ / ___

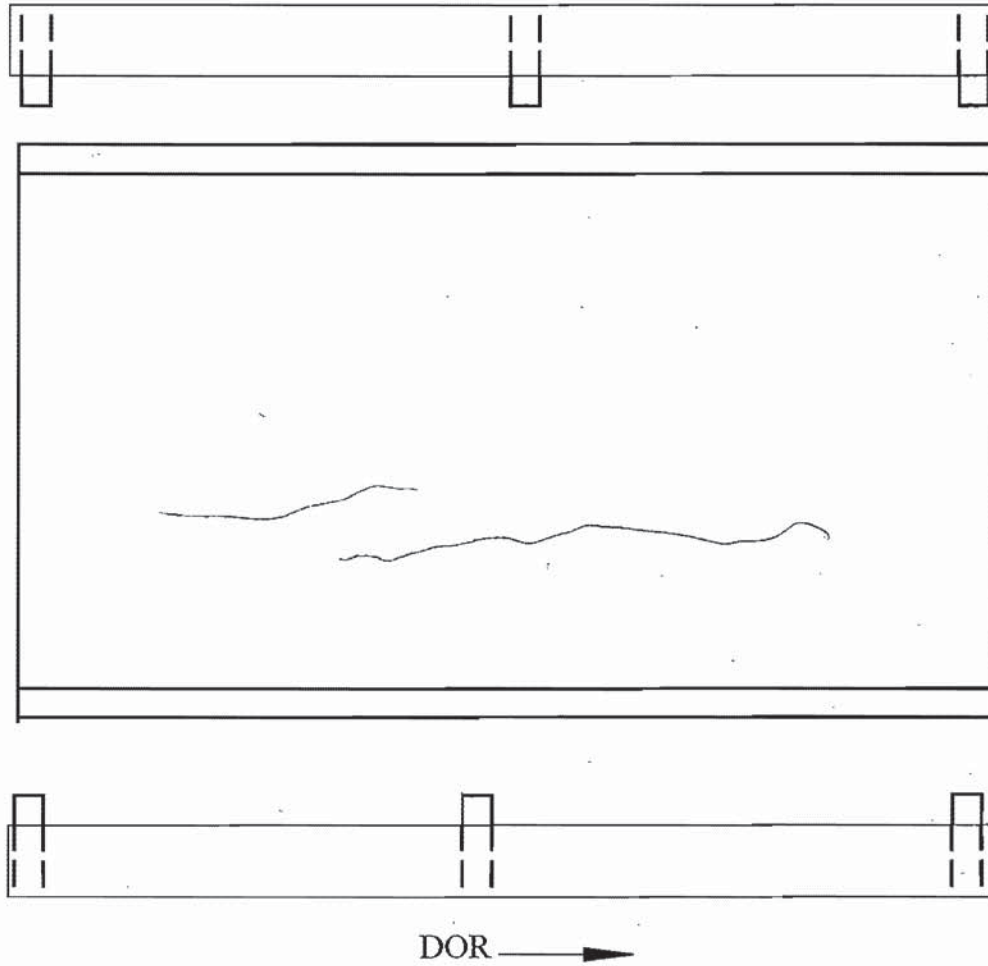


ELEMENT	RATING	COMMENT
SLABS A	G F P C	
B	G F P C	Hairline crack
C	G F P C	1/16" cracking
D	G F P C	1/8" cracking
E	G F P C	1/8" cracking
F	G F P C	Spill to steel
	G F P C	
	G F P C	
BOLTS	G F P C	
	G F P C	

Bridge No. 09 SR436 0.68

Skew 90 RT.

SPAN. NO. 2



ELEMENT	RATING	COMMENT
TOP DECK	G (F) P C	Cracks up to 1/16"
CURBS	G F P C	
RAIL & POST	G F P C	
PAINT	G F P C	
DRAINS	G F P C	None
JOINT	G F P C	N/V
	G F P C	

10-02-17

48 436 D.68
 Bridge No. Co. Route Log Mile R/L Skew

SPAN. NO. 2

A	B	C	D	E	F	G
---	---	---	---	---	---	---



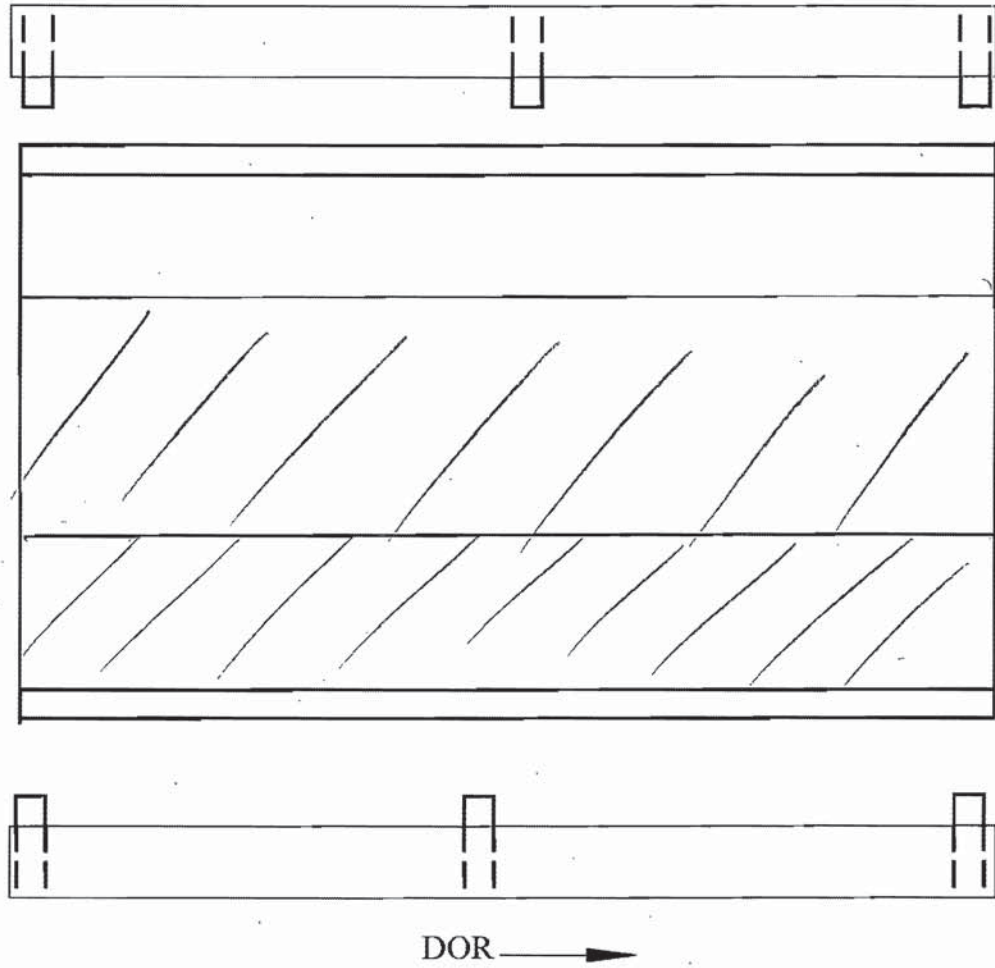
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ELEMENT	RATING	COMMENT
BOX BEAM A	G F P C	
B	G F P C	
C	G F P C	
D	G F P C	
E	G F P C	
F	G F P C	
G	G F P C	
	G F P C	
	G F P C	
	G F P C	

10-02-17

Bridge No. 09 SR436 0.68 Skew 90 RT.

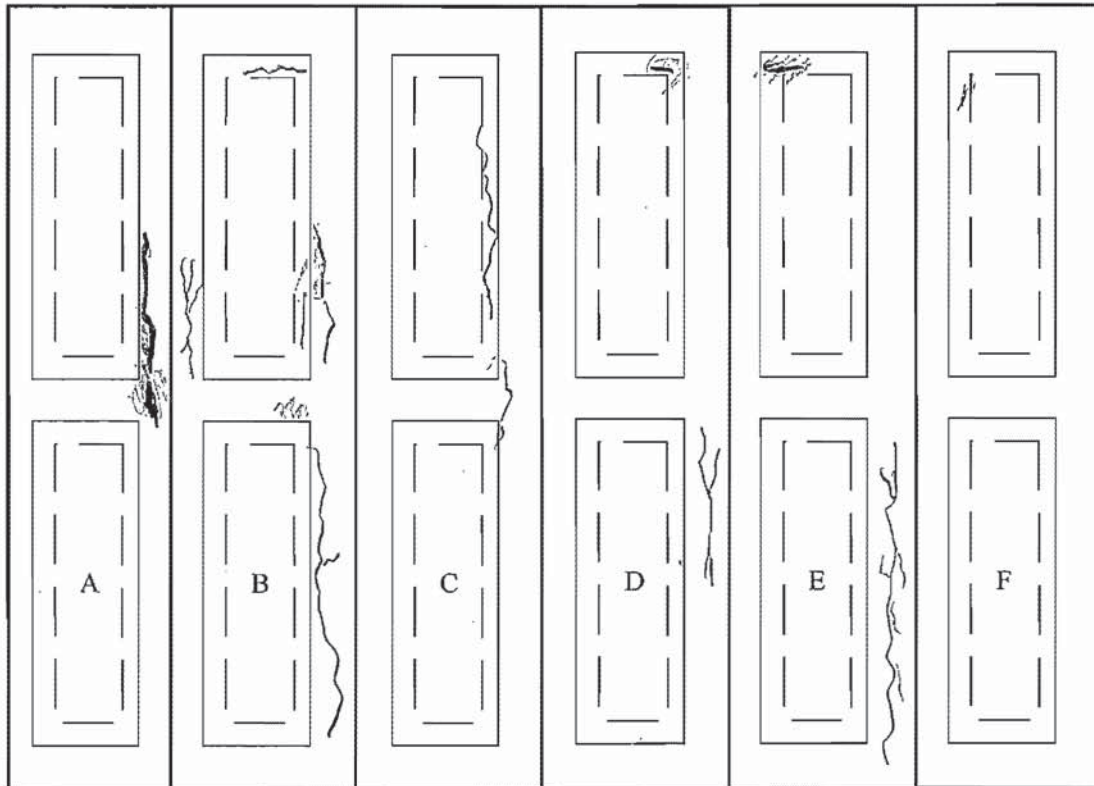
SPAN. NO. 3



ELEMENT	RATING	COMMENT
TOP DECK	G (F) P C	Uneven patch work
CURBS	(G) F P C	
RAIL & POST	G (F) P C	Bent Post on Right side
PAINT	G F P C	
DRAINS	(G) F P C	
JOINT	G F P C	N/V
	G F P C	

09 SR436 0.68 90
 Bridge No. Co. Route Log Mile R/L Skew

SPAN. NO. 3

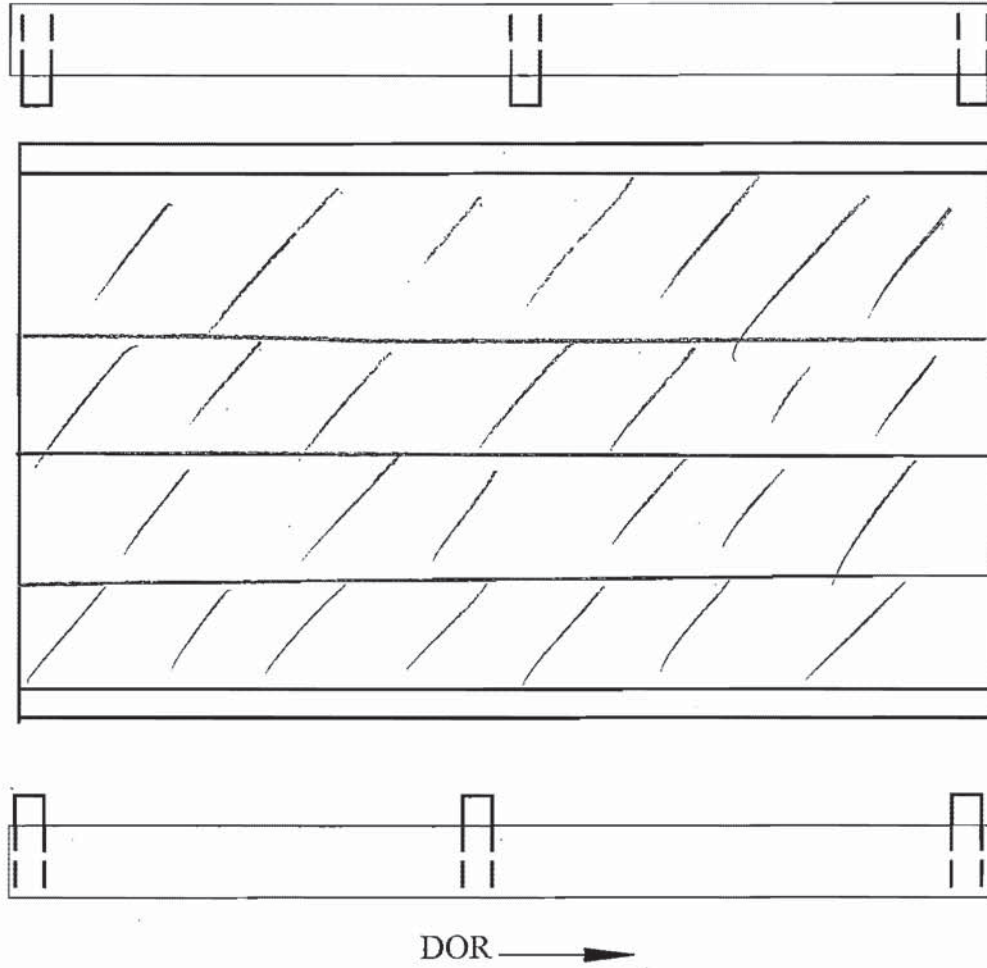


ELEMENT	RATING	COMMENT
SLABS A	G ⊕ P C	1/8" cracking, spalling to steel
B	G ⊕ P C	1/16" cracking, spalling
C	G ⊕ P C	1/16" cracking
D	G ⊕ P C	1/16" cracking
E	G ⊕ P C	1/16" cracking, spalling to steel
F	⊕ G F P C	Hairline crack
	G F P C	
	G F P C	
BOLTS	⊕ G F P C	
	G F P C	

10-02-17

Bridge No. 09 SR436 0.68 Skew 90 RT.

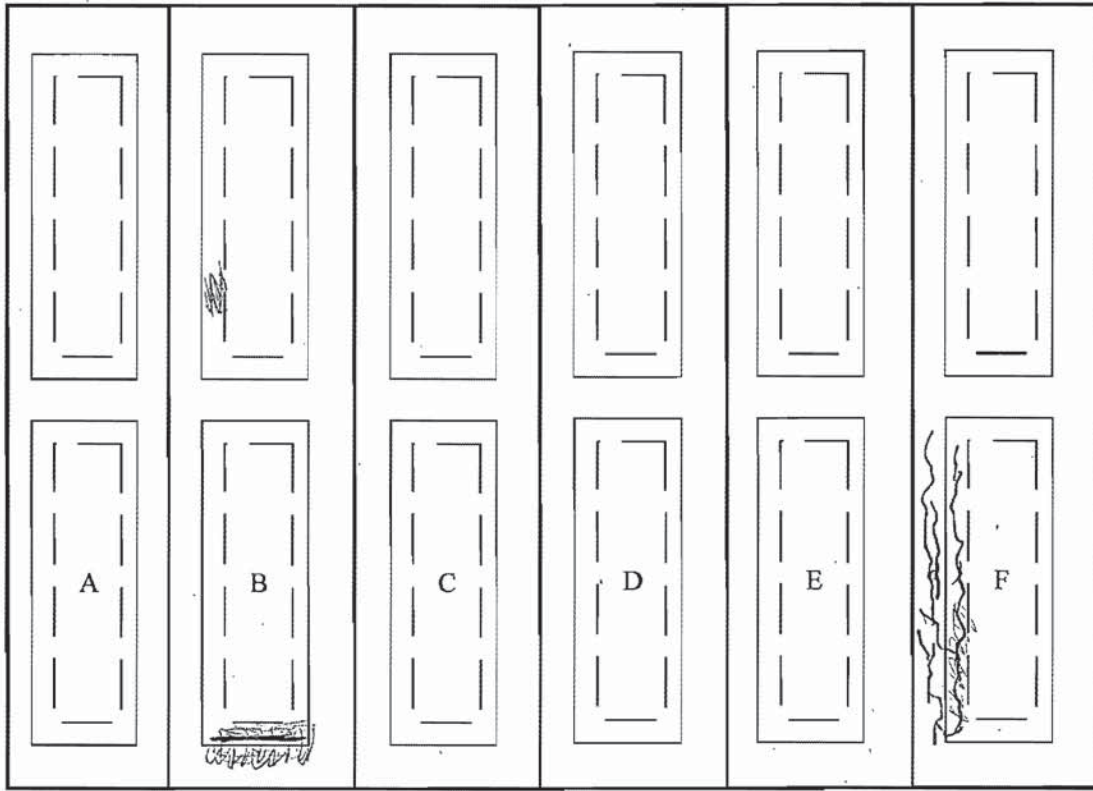
SPAN. NO. 4



ELEMENT	RATING	COMMENT
TOP DECK	GⓇ P C	Uneven patch work
CURBS	GⓇ F P C	
RAIL & POST	GⓇ P C	Bent post on right side
PAINT	G F P C	
DRAINS	GⓇ F P C	
JOINT	G F P C	N/A
	G F P C	

09 SR436 0.68 90
 Bridge No. Co. Route Log Mile R/L Skew

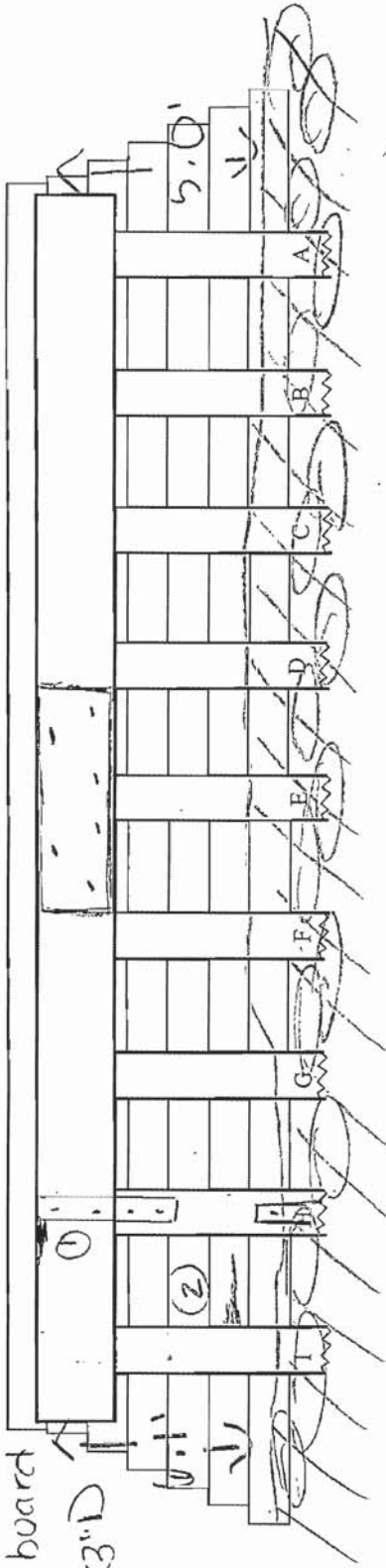
SPAN: NO. 4



ELEMENT	RATING	COMMENT
SLABS A	G F P C	
B	G F P C	Spall to steel
C	G F P C	
D	G F P C	
E	G F P C	
F	G F P C	1/8" cracking
	G F P C	
	G F P C	
BOLTS	G F P C	
	G F P C	

① Decayed circles
7" WX Z "HX Z" D

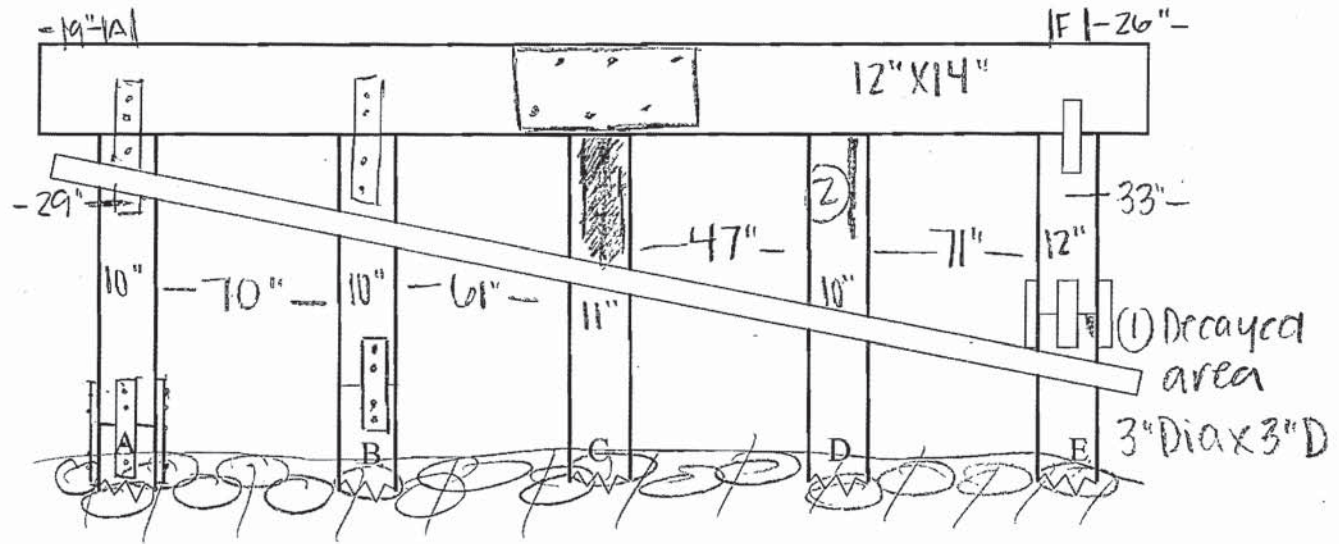
② Decayed board
28" WX Z "HX 3" D



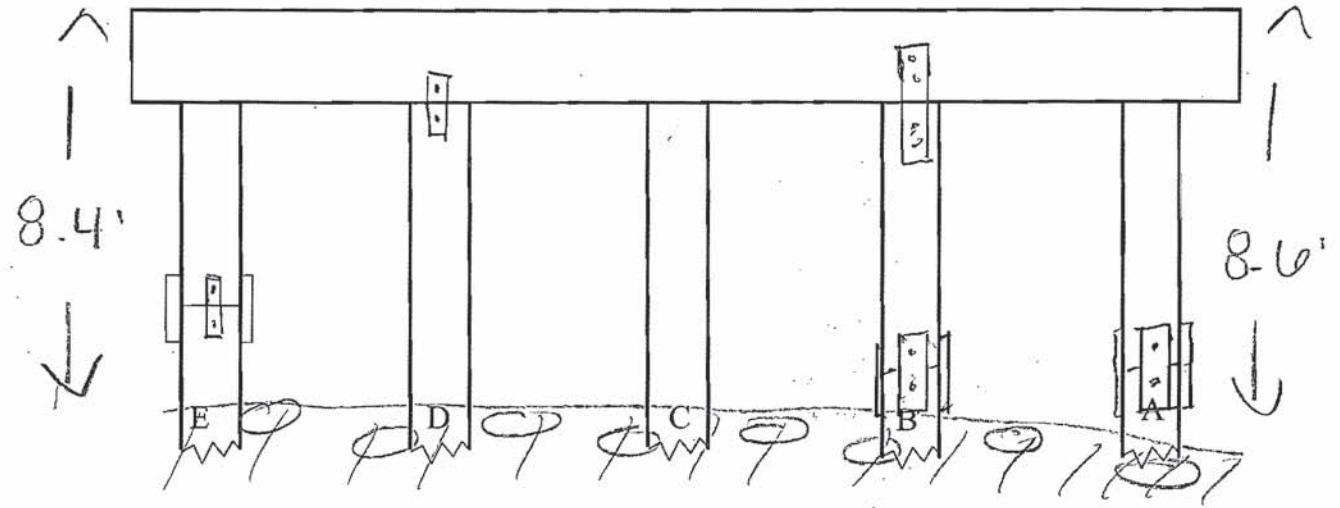
LOOKING BACK

ELEMENT	RATING	COMMENT
CAP	G F P C	①, Light weathering Light to med. weathering
WINGS	G F P C	
PILES A - I	G F P C	②, Light to med. weathering tree growth
	G F P C	
	G F P C	
	G F P C	
	G F P C	
BREASTWALL	G F P C	
EMB.	G F P C	
VEG.	G F P C	
RIP - RAP	G F P C	
	G F P C	

3 splintered
 8" H x 2" W x 3" D



FRONT VIEW



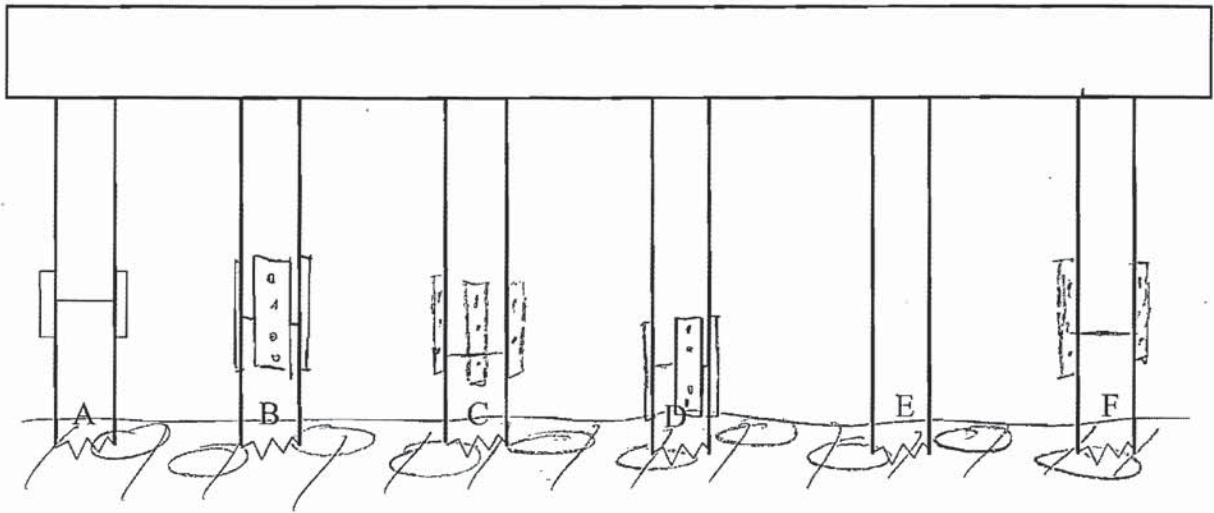
REAR VIEW

ELEMENT	RATING	COMMENT
CAP	G(F) P C	Light to med. weathering
PILES A	G(F) P C	" "
B	G(F) P C	
C	G F (P) C	Heavy decay 4' H x upto 90%
D	G(F) P C	(2)
E	G(F) P C	(1)
RIP - RAP	G F P C	
BRACING	G(F) P C	med. weathering

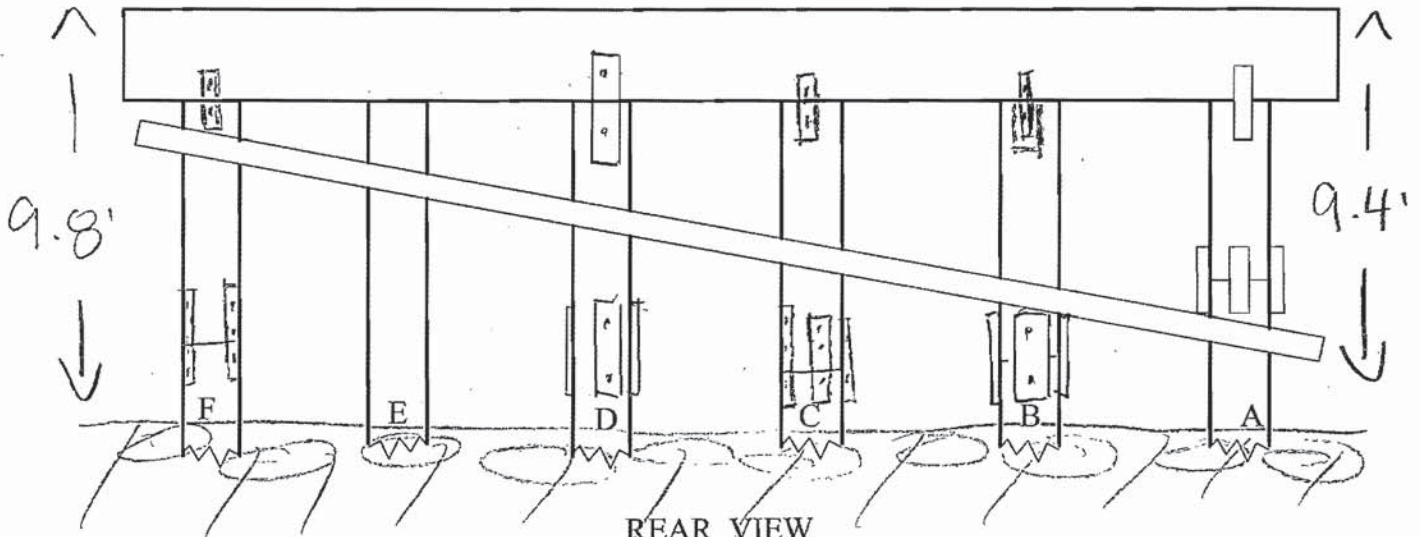
10-02-17

09 -- SR436 -- 0.68
 Bridge No. Co. Route Log Mile

BENT. NO. 1 - B

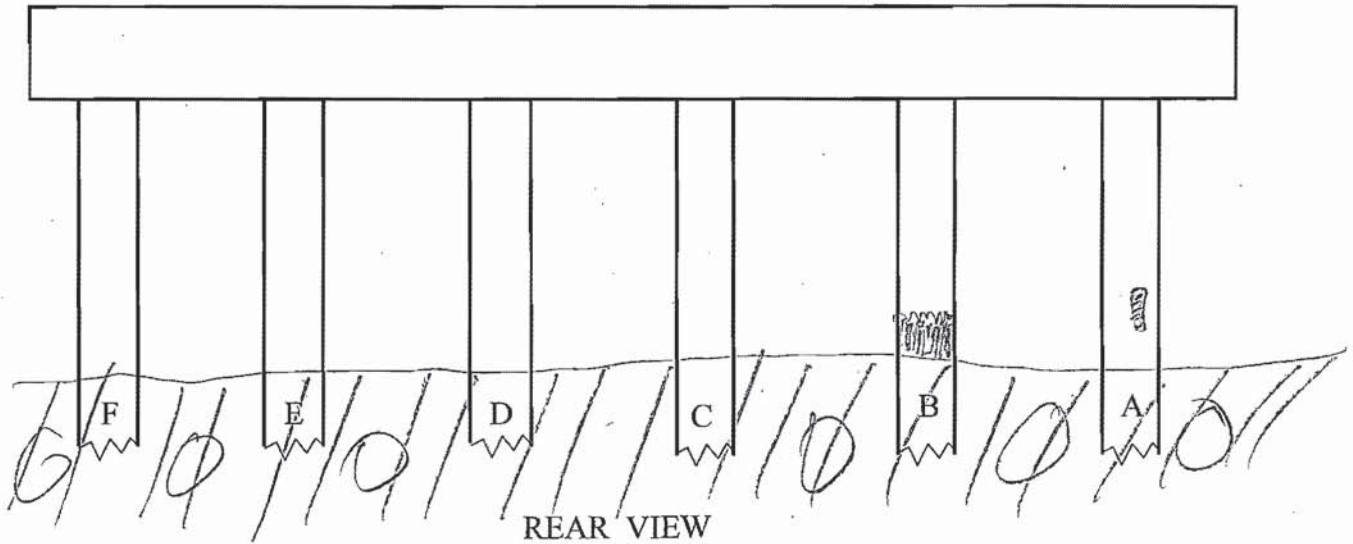
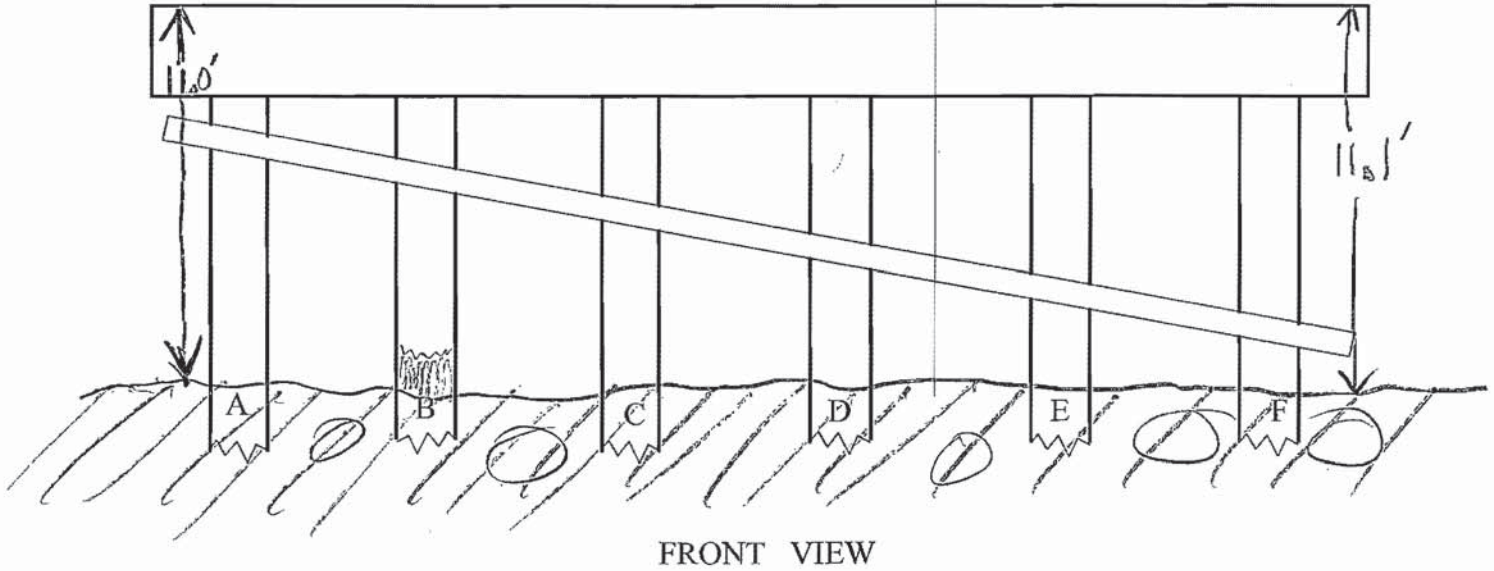


FRONT VIEW

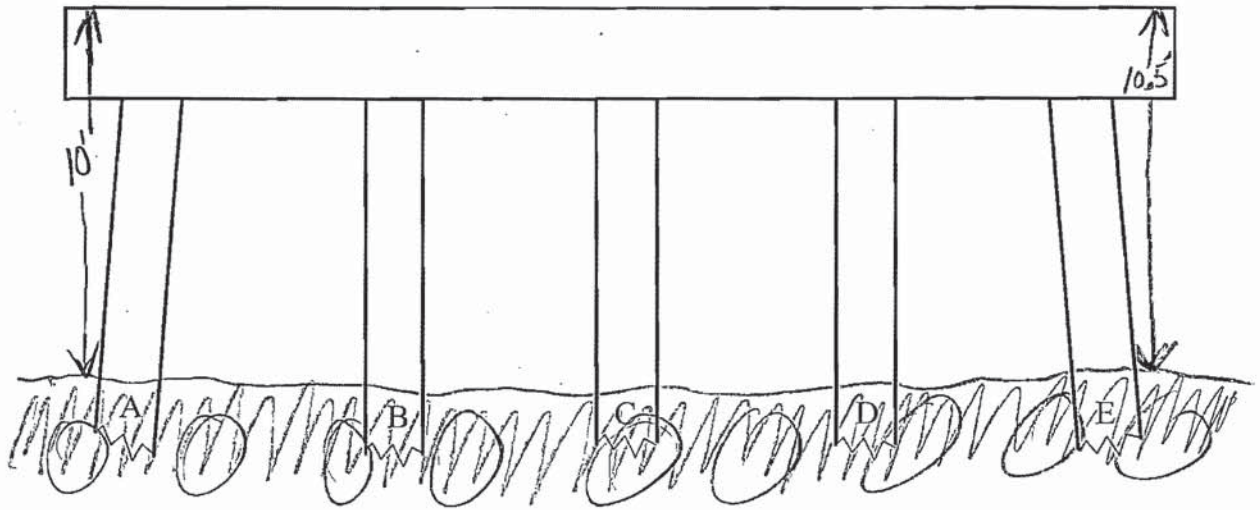


REAR VIEW

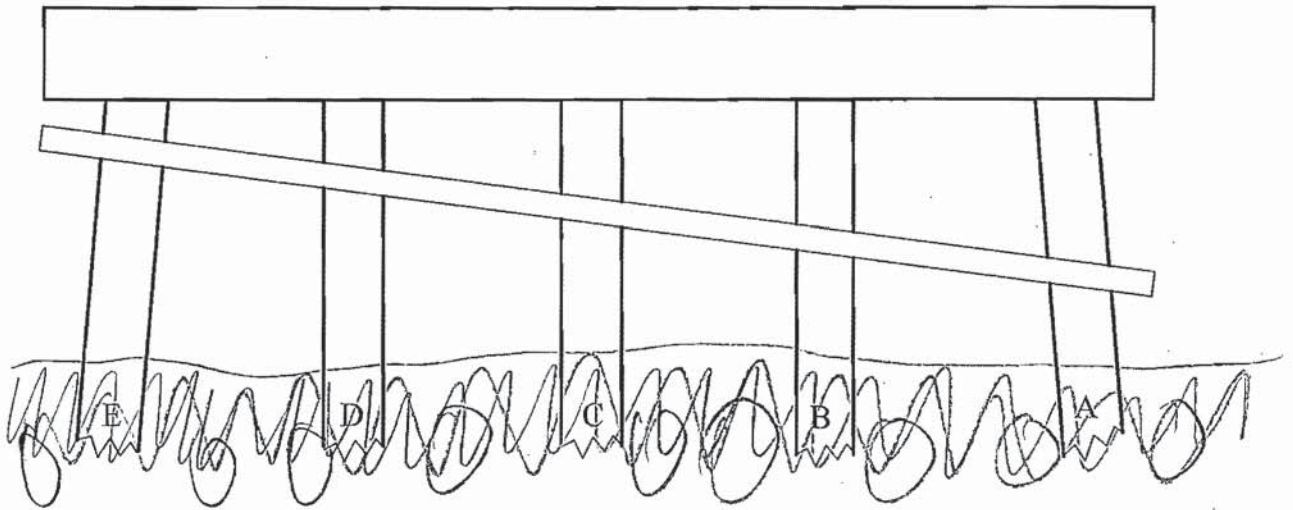
ELEMENT	RATING	COMMENT
CAP	G (F) P C	Light to med. weathering
PILES A	G (F) P C	" "
B	G F P C	↓
C	G F P C	
D	G F P C	
E	G F P C	
F	G (F) P C	
RIP - RAP	(G) F P C	
BRACING	G (F) P C	" "



ELEMENT	RATING	COMMENT
CAP	G Ⓟ P C	medium weathering
PILES A	G Ⓟ P C	decayed area 18" H x 1" W x 1" D
B	G Ⓟ P C	decayed area 2' H x 1 1/2" D around whole base of pile
C	G Ⓟ P C	medium weathering
D	G Ⓟ P C	light weathering
E	G Ⓟ P C	
F	G Ⓟ P C	
RIP - RAP	Ⓞ G Ⓟ P C	
BRACING	Ⓞ G Ⓟ P C	

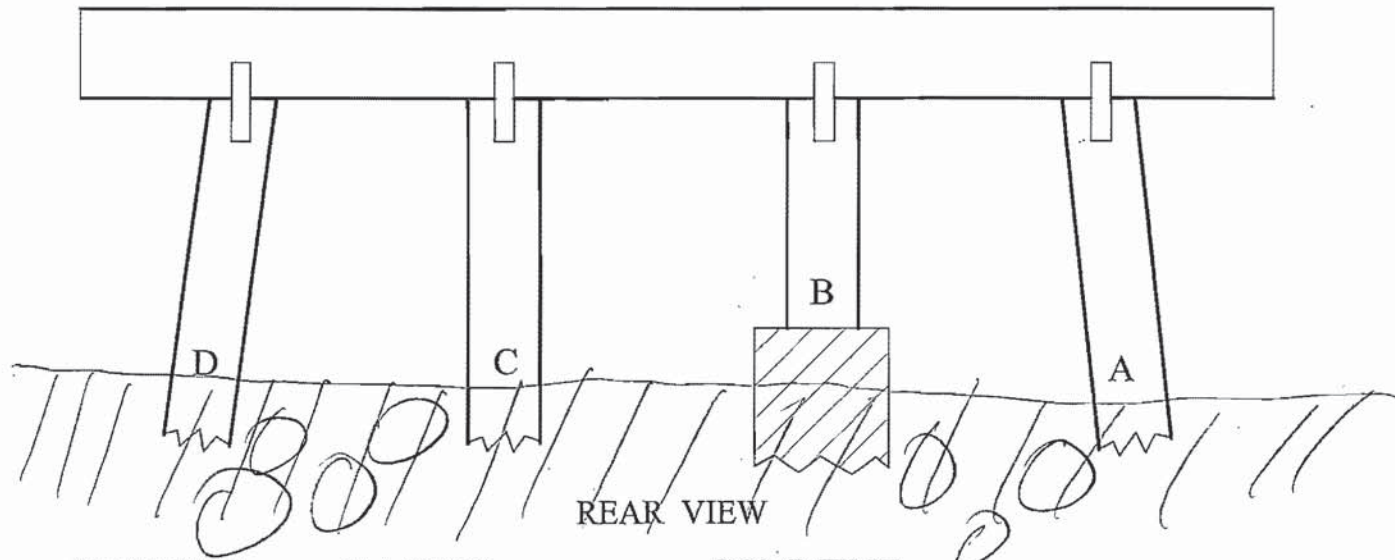
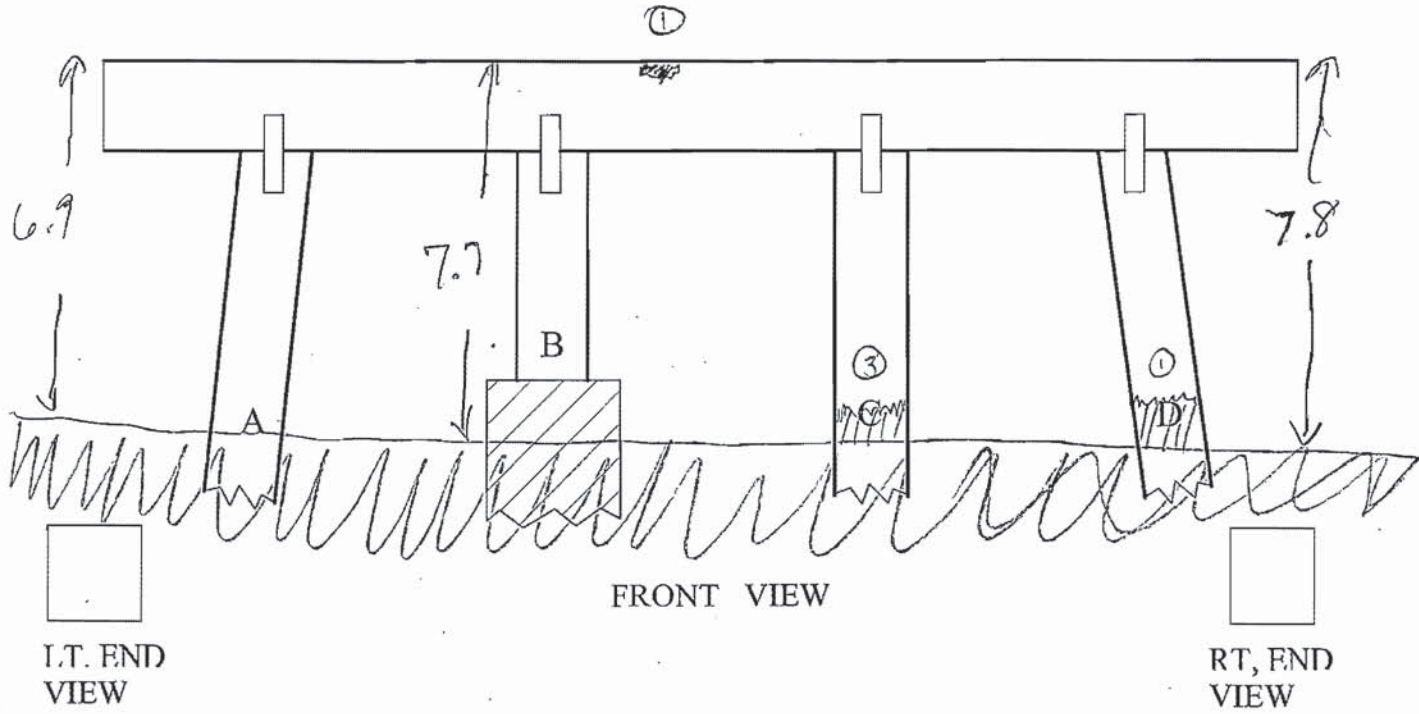


FRONT VIEW

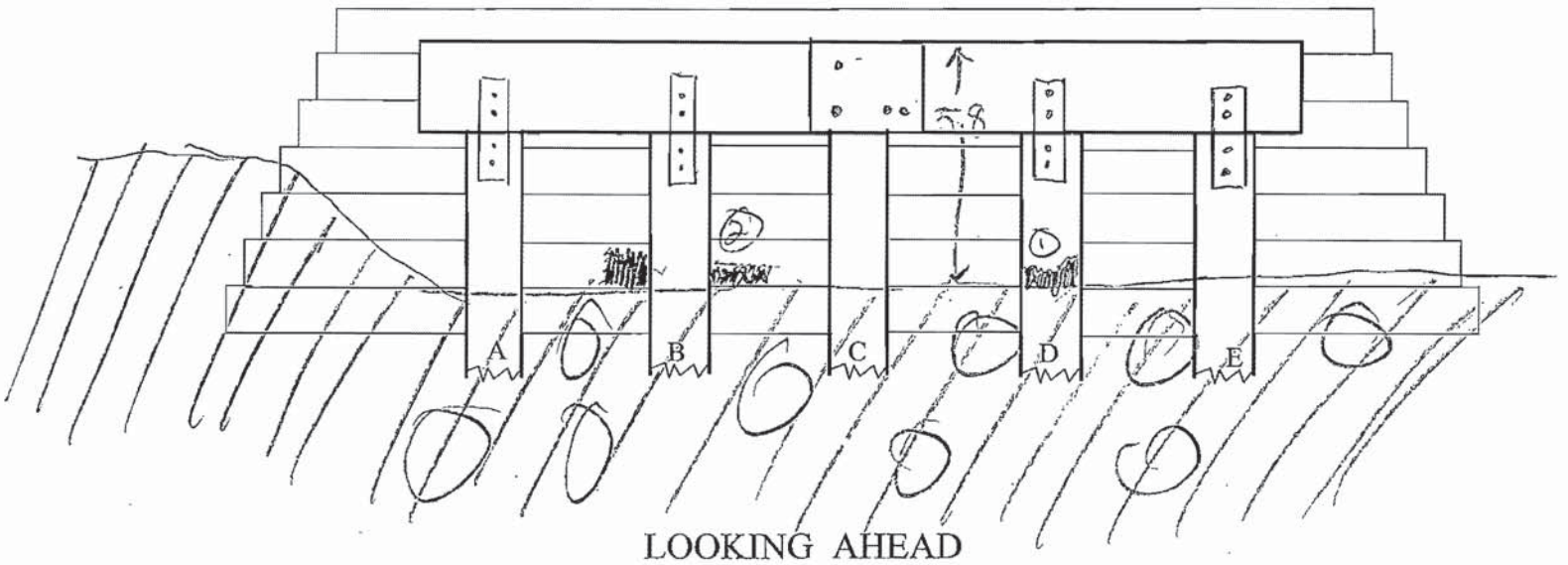


REAR VIEW

ELEMENT	RATING	COMMENT
CAP	G (F) P C	medium weathering ↓
PILES A	G (F) P C	
B	G (F) P C	
C	G (F) P C	
D	G (F) P C	
E	G (F) P C	
RIP - RAP	G F P C	
BRACING	G F P C	



ELEMENT	RATING	COMMENT
CAP	G Ⓕ P C	① decayed area 3" w X 2" H X 1" D light weathering
PILES A	G Ⓕ P C	medium weathering
B	G Ⓕ P C	light weathering
C	G Ⓕ P C	③ decayed area 6" H around half of pile 1/2" D
D	G Ⓕ P C	② decayed area up to 1/2" around base of pile up to 1' H
Very CONC. CASING	G F Ⓕ C	heavy growth
	Ⓔ G F P C	
	G F P C	



ELEMENT	RATING	COMMENT
CAP	G (F) P C	light weathering
WINGS	G (F) P C	Medium weathering
PILES A	G (F) P C	↓
B	G (F) P C	medium weathering
C	G (F) P C	↓
D	G (F) P C	① Decayed area 1" Ø around pile up to 8" H
E	G (F) P C	medium weathering
BREASTWALL	G (F) P C	② decayed area 7' W X 2' H X 2" D
EMB.	G (F) P C	
VEG.	G (F) P C	heavy growth
RIP-RAP	G (F) P C	
	G F P C	
	G F P C	

From: Fottrell, Gary (FHWA) [mailto:Gary.Fottrell@dot.gov]
Sent: Wednesday, October 3, 2018 3:00 PM
To: Joseph Santangelo
Cc: Sharon Sanders; Tammy Sellers; Susannah Kniazewycz
Subject: RE: SR-436 Bridge Replacement over Reedy Creek in Carroll County

***** This is an EXTERNAL email. Please exercise caution. DO NOT open attachments or click links from unknown senders or unexpected email - STS-Security. *****

Hi Joe, since the acreage being acquired is only a little over 1 acre, please process this document as a PCE.

Thanks,

Gary Fottrell
Environmental Program Engineer
FHWA – TN Division
404 BNA Drive
Building 200, Suite 508
Nashville, TN 37217
615-781-5766

From: Joseph Santangelo [mailto:Joseph.Santangelo@tn.gov]
Sent: Wednesday, October 3, 2018 2:54 PM
To: Fottrell, Gary (FHWA) <Gary.Fottrell@dot.gov>
Cc: Sharon Sanders <Sharon.Sanders@tn.gov>

Subject: SR-436 Bridge Replacement over Reedy Creek in Carroll County

Hi Gary,

We have a bridge replacement project in Carroll County (SR-436 over Reedy Creek) that we are currently producing an Environmental document for based on the attached planning document. Page 5 of the attached planning document states, "It is estimated that four (4) tracts of land will be affected resulting in 1.13 acres of estimated ROW. It is also estimated that overhead utilities will need to be relocated." Also see Figures 1 & 2 (pages 7 & 8) for proposed ROW lines.

All Technical groups have cleared the project with the two following Project Commitments:

HazMat

- Asbestos survey completed under an earlier project, no asbestos detected. See project commitments under PIN 043917.01

Ecology

- In accordance with the MOA Between USFWS, FHWA, and TDOT Addressing Cliff Swallow and Barn Swallow Nesting Sites, 9/30/2015, cliff swallow and barn swallow nests, eggs, or birds (young and adults) will not be disturbed between April 15 and July 31. From August 1 to April 14, nests can be removed or destroyed, and measures implemented to prevent future nest building at the site (e.g., closing off area using netting).

Please advise as to whether TDOT can process the Environmental Document as a PCE or if it will require FHWA coordination/approval.

Post Script: This project PIN has changed from 124139.00 to 128113.01.

Thank you,



Joe Santangelo | Environmental Supervisor
Environmental Division – NEPA Section
James K. Polk Building, 9th Floor
505 Deaderick Street
Nashville, TN 37243
p. 615-253-1454
Joseph.Santangelo@tn.gov

From: [Joseph Santangelo](#)
To: [Abby Harris](#); [Brittany Hyder](#); [Crystal Alfaro](#)
Cc: [Sharon Sanders](#)
Subject: Design-Build Bridge Projects
Date: Wednesday, October 3, 2018 1:10:37 PM
Attachments: [image001.png](#)
Importance: High

All,

The PINs have recently changed for all of these projects. Please see below and update your tracking reports and project files accordingly.

If you have projects that have been approved under the old PIN, I'm awaiting guidance on how to proceed...

Brittany – 124139.00 – New PIN: 128113.01

Crystal – 124285.00 – New PIN: 128113.02

Abby – 124505.00 – New PIN: 128113.03

Abby – 124503.00 – New PIN: 128113.04

Abby – 124637.00 – New PIN: 128113.05

Crystal – 124712.00 – New PIN: 128113.06

Thank you,



Joe Santangelo | Environmental Supervisor
Environmental Division – NEPA Section
James K. Polk Building, 9th Floor
505 Deaderick Street
Nashville, TN 37243
p. 615-253-1454
Joseph.Santangelo@tn.gov

Ecology

Environmental Studies Request

Project Information

Route: State Route 436 (SR-436)
Termini: Reedy Creek Road Bridge over Reedy Creek, LM 0.68
County: Carroll
PIN: 124139.00


Request

Request Type: Initial Environmental Study
Project Plans: Planning Report
Date of Plans: 3/23/2018
Location: Email Attachment

Certification

Requestor: Brittany Hyder
Title: TESS-Ad

Signature: Brittany
Hyder

 Digitally signed by
Brittany Hyder
Date: 2018.04.04
15:29:49 -05'00'

Environmental Study

Technical Section

Section: Ecology

Study Results

Based on the planning report dated 3/23/18, the environmental boundaries report dated 9/16/16 is valid for this project. Please contact me if you have additional questions or need additional information.

Commitments

Did the study of this project result in any environmental commitments?

Yes

TDOT has committed to seasonal tree removal on this project. The USFWS has given TDOT a finding of "Not Likely to Adversely Affect" for the Indiana bat and Northern long-eared bat, provided that tree cutting on this project is done between October 15 and March 31.

Additional Information

Is there any additional information or material included with this study?

Yes

Type: Environmental Boundaries Report (EBR)

Location: FileNet

Certification

Responder: Greg Harris

Title: TESS-Advanced

Signature:

Greg Harris

Digitally signed by Greg Harris
DN: cn=Greg Harris, o=Tennessee
Department of Transportation,
ou=Ecology Section,
email=greg.harris@tn.gov, c=US
Date: 2018.04.06 09:19:11 -05'00'



**STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION**

ENVIRONMENTAL DIVISION
SUITE 900, JAMES K. POLK BUILDING
505 DEADERICK STREET
NASHVILLE, TENNESSEE 37243-1402
(615) 741-3655

JOHN C. SCHROER
COMMISSIONER

BILL HASLAM
GOVERNOR

MEMORANDUM

To: Mike Lawson
Structures Division

From: Greg Harris
Environmental Division

Date: 9/16/2016

Subject: Environmental Boundaries Study: Carroll County; SR-436 Bridge Repairs over Reedy Creek; PIN 124139.00; P.E. 09035-3220-94

An ecological evaluation of the subject project has been conducted with the following results:

SPRINGS/STREAMS

Two (2) streams were identified within the project limits.

WET WEATHER CONVEYANCES/UPLAND DRAINAGE FEATURES

Two (2) wet weather conveyance was identified within the project limits.

WETLANDS

No wetlands were identified within the project limits.

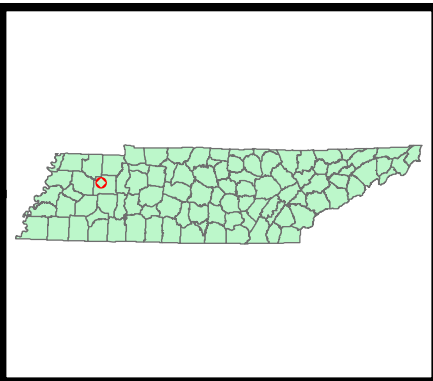
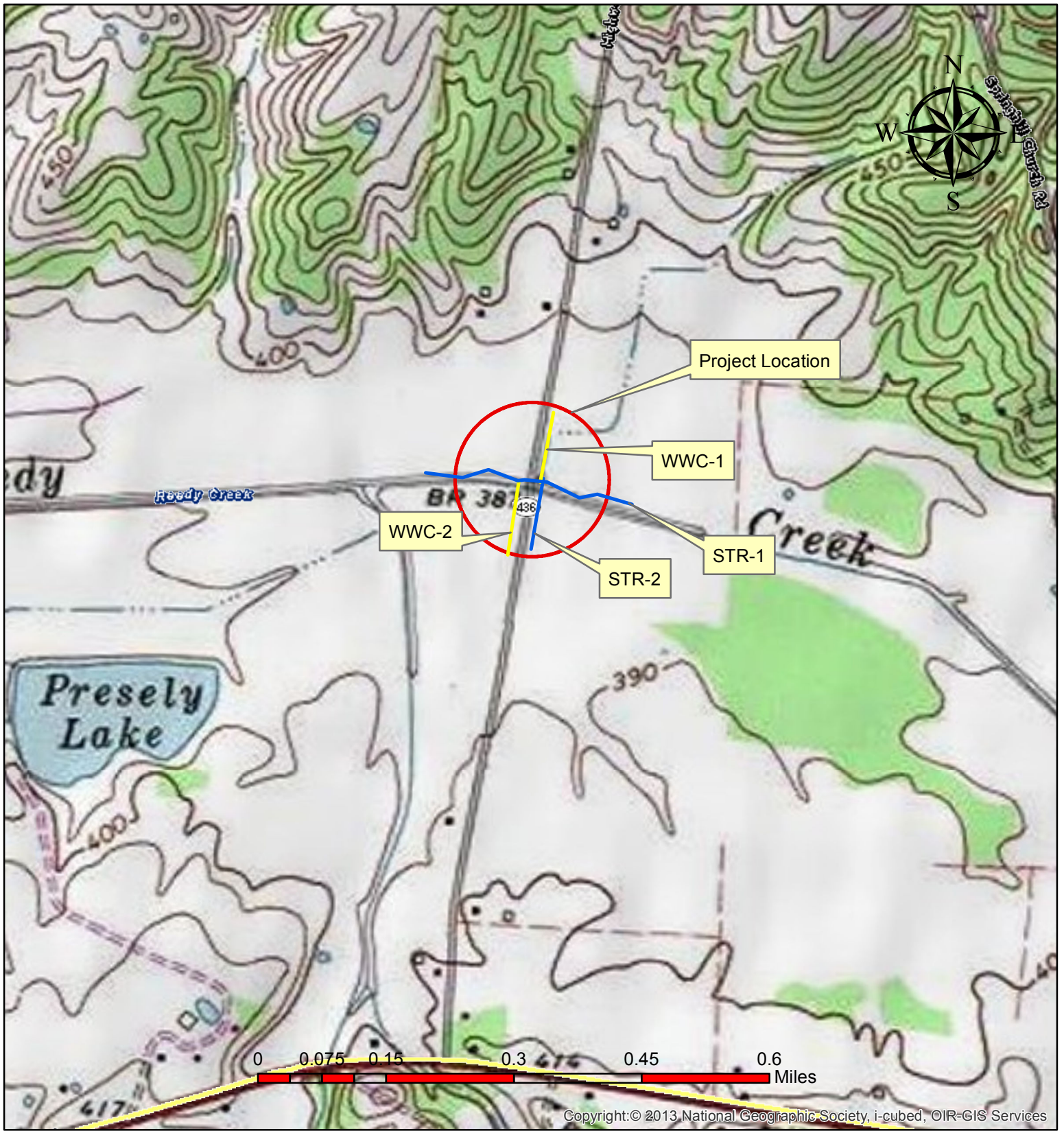
PROTECTED SPECIES

Cliff swallow and barn swallow nests, eggs, or birds (young and adults) will not be disturbed between April 15 and July 31. From August 1 to April 14, nests can be removed or destroyed, and measures implemented to prevent future nest building at the site (e.g., closing off area using netting). A review of the TDEC Natural Heritage Database on 8/23/2016 indicate records of Prickly Hornwort within a four mile radius of the bridge project. During the site visit, this species was not observed in the study area.

TDOT has committed to seasonal tree removal on this project. The USFWS has given TDOT a finding of "Not Likely to Adversely Affect" for the Indiana bat and Northern long-eared bat, provided that tree cutting on this project is done between October 15 and March 31.

Your assistance is appreciated. If you have any questions or comments, please contact Greg Harris in the Environmental Division at 615-253-1241 or greg.harris@tn.gov.

xc: Jennifer Lloyd w/ attachments
Brian Egli w/ attachments
Freddy Miller w/ attachments
John Hewitt w/ attachments
Project File
R4.EnvTechOffice@tn.gov

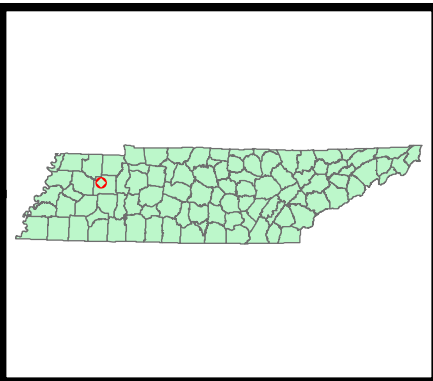
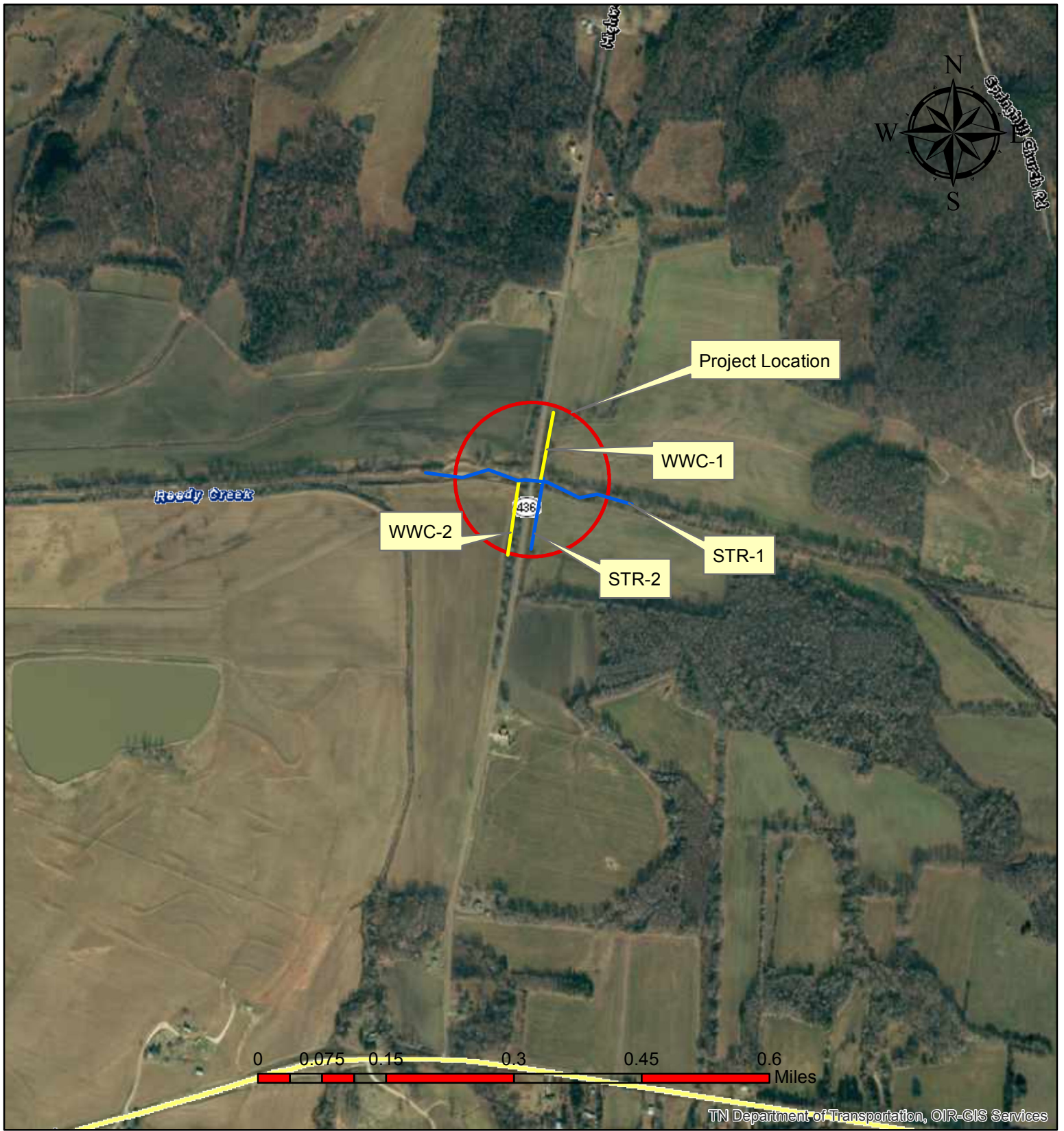


Carroll County

SR-436 Bridge Repair Project over Reedy Creek

P.E. 09035-3220-94
 PIN 124139.00



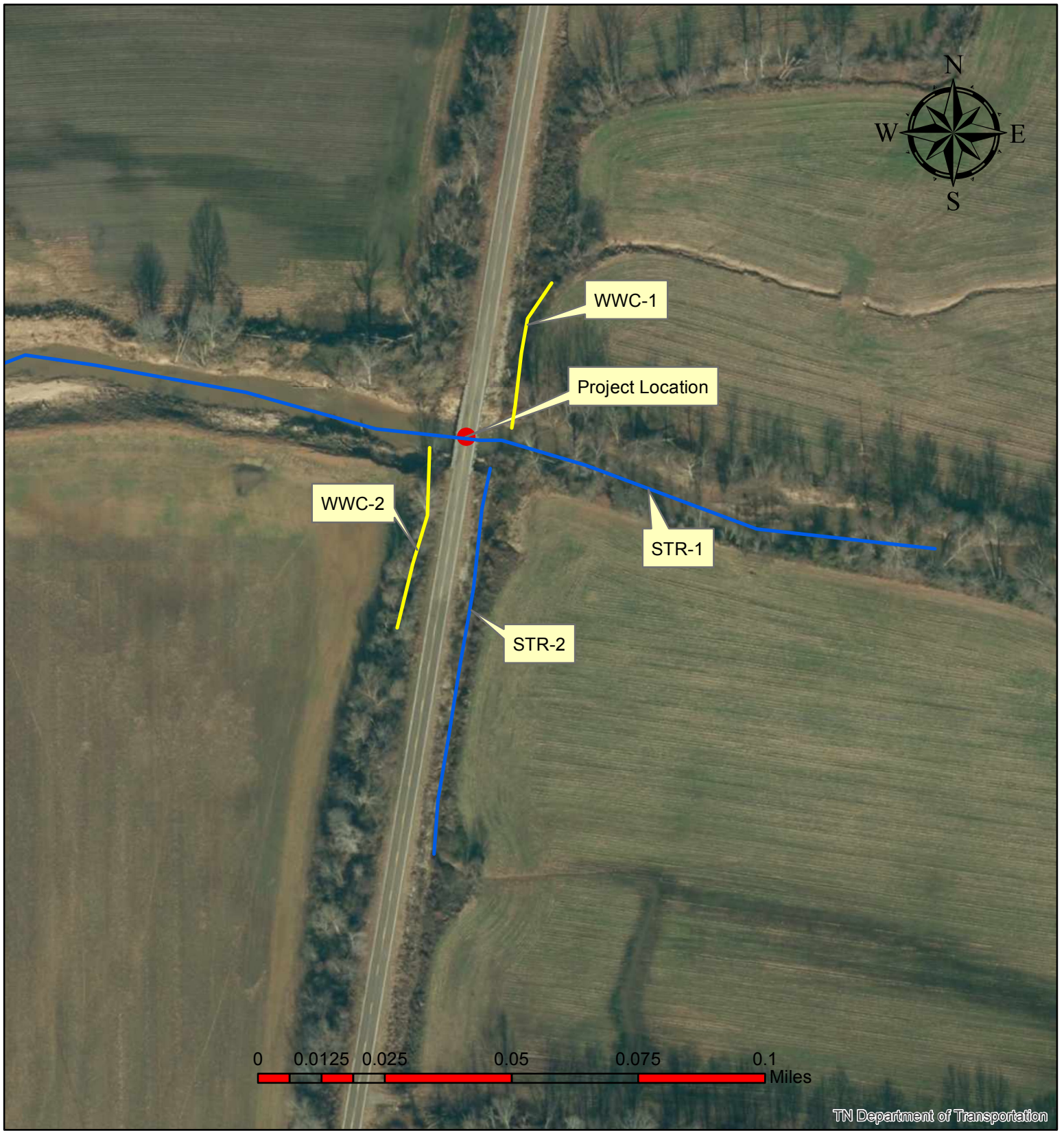


Carroll County

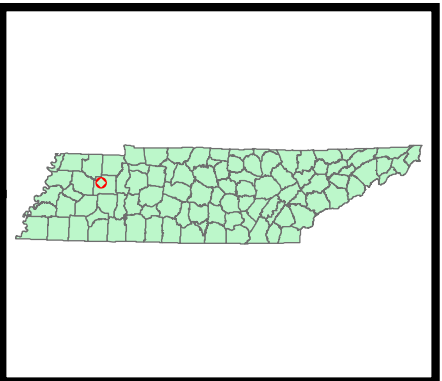
SR-436 Bridge Repair Project over Reedy Creek

**P.E. 09035-3220-94
PIN 124139.00**





TN Department of Transportation



Carroll County

SR-436 Bridge Repair Project over Reedy Creek

Features Map

8/23/2016

P.E. 09035-3220-94

PIN 124139.00



Ecology Field Data Sheet: Water Resources

Project:		SR-436 Bridge Repair project over Reedy Creek					
Biologist:	Greg Harris	Affiliation:	TDOT	Date:	8/17/16		
1-Station: from plans	STR-1						
2-Map label and name	Reedy Creek						
3-Latitude/Longitude	36.0414330/-88.539559						
4-Potential impact	Stormwater pollution from construction activities						
5-Feature description:							
-channel identification	<input checked="" type="checkbox"/> perennial stream	<input type="checkbox"/> intermittent stream	<input type="checkbox"/> ephemeral stream	<input type="checkbox"/> wwc			
-HD score (if applicable)							
-OHWM indicators	bed & banks <input type="checkbox"/>	deposition <input type="checkbox"/>	presence of litter / debris <input type="checkbox"/>	scour <input type="checkbox"/>	veg absent, bent, matted <input type="checkbox"/>		
	change in plant community <input type="checkbox"/>	destruction of terrestrial veg <input type="checkbox"/>	multiple observed flow events <input type="checkbox"/>	sediment sorting <input type="checkbox"/>	water staining <input type="checkbox"/>		
	change in soil character <input type="checkbox"/>	leaf litter disturbed absent <input type="checkbox"/>	natural line impressed on bank <input type="checkbox"/>	shelving <input type="checkbox"/>	wracking <input type="checkbox"/>		
-sinuosity	<input type="checkbox"/> absent	<input checked="" type="checkbox"/> weak	<input type="checkbox"/> moderate	<input type="checkbox"/> strong			
-channel bottom width	30'		-top of bank width		40'		
- avg. gradient of stream (%)							
-bank height and slope ratio	LDB - 10'			RDB - 10'			
-water flow	<input type="checkbox"/> fast	<input type="checkbox"/> moderate	<input type="checkbox"/> slow	<input checked="" type="checkbox"/> isolated pools	<input type="checkbox"/> none		
-water depth (riffles / pools)	0.5'		water width (riffles / pools)		25'		
-bank stability: LDB, RDB	LDB: Stable <input type="checkbox"/>	Eroding <input checked="" type="checkbox"/>	Undercutting <input checked="" type="checkbox"/>	Sloughing <input type="checkbox"/>	Exposed Roots <input type="checkbox"/>		
	RDB: Stable <input type="checkbox"/>	Eroding <input checked="" type="checkbox"/>	Undercutting <input checked="" type="checkbox"/>	Sloughing <input type="checkbox"/>	Exposed Roots <input type="checkbox"/>		
-dominant riparian species: ------(LDB /RDB)-----	LDB: sycamore, boxelder, grassy vegetation						
	RDB: sycamore, boxelder, grassy vegetation						
-habitat assessment score	80						
	epifaunal substrate	11	channel alteration	9			
	pool substrate	3	frequency of re-ox zones	7			
	pool variability	4	bank stability	LDB	5	RDB	5
	sediment deposition	12	bank vegetative protection	LDB	4	RDB	4
	channel flow status	14	riparian veg zone width	LDB	1	RDB	1
-benthos	Assumed						
-fish	yes						
-algae or other aquatic life	yes						
6-photo numbers	1-2						
7-rainfall information	Rain in previous 24 hours						
8-HUC -12 Code & Name	080102030604 Reedy Creek						
9-Confirmed by:							
10-Assessed	yes <input type="checkbox"/>	no <input checked="" type="checkbox"/>					
11-ETW	yes <input type="checkbox"/>	no <input checked="" type="checkbox"/>					
12-303 (d) List	yes <input type="checkbox"/>	siltation <input type="checkbox"/>	habitat:	<input type="checkbox"/>	other:	<input type="checkbox"/>	
	no <input checked="" type="checkbox"/>						
13-Notes							

Ecology Field Data Sheet: Water Resources

Project:		SR-436 Bridge Repair project over Reedy Creek					
Biologist:	Greg Harris	Affiliation:	TDOT	Date:	8/17/16		
1-Station: from plans	STR-2						
2-Map label and name	UNT Reedy Creek						
3-Latitude/Longitude	36.0414330/-88.539559						
4-Potential impact	Stormwater pollution from construction activities						
5-Feature description:							
-channel identification	<input checked="" type="checkbox"/> perennial stream	<input type="checkbox"/> intermittent stream	<input type="checkbox"/> ephemeral stream	<input type="checkbox"/> wwc			
-HD score (if applicable)							
-OHWM indicators	bed & banks <input type="checkbox"/>	deposition <input type="checkbox"/>	presence of litter / debris <input type="checkbox"/>	scour <input type="checkbox"/>	veg absent, bent, matted <input type="checkbox"/>		
	change in plant community <input type="checkbox"/>	destruction of terrestrial veg <input type="checkbox"/>	multiple observed flow events <input type="checkbox"/>	sediment sorting <input type="checkbox"/>	water staining <input type="checkbox"/>		
	change in soil character <input type="checkbox"/>	leaf litter disturbed absent <input type="checkbox"/>	natural line impressed on bank <input type="checkbox"/>	shelving <input type="checkbox"/>	wracking <input type="checkbox"/>		
-sinuosity	<input type="checkbox"/> absent	<input checked="" type="checkbox"/> weak	<input type="checkbox"/> moderate	<input type="checkbox"/> strong			
-channel bottom width	6'		-top of bank width		10'		
- avg. gradient of stream (%)							
-bank height and slope ratio	LDB - 6'			RDB - 4'			
-water flow	<input type="checkbox"/> fast	<input checked="" type="checkbox"/> moderate	<input type="checkbox"/> slow	<input type="checkbox"/> isolated pools	<input type="checkbox"/> none		
-water depth (riffles / pools)	0.25'		water width (riffles / pools)		4'		
-bank stability: LDB, RDB	LDB: Stable <input type="checkbox"/>	Eroding <input checked="" type="checkbox"/>	Undercutting <input checked="" type="checkbox"/>	Sloughing <input type="checkbox"/>	Exposed Roots <input type="checkbox"/>		
	RDB: Stable <input type="checkbox"/>	Eroding <input checked="" type="checkbox"/>	Undercutting <input checked="" type="checkbox"/>	Sloughing <input type="checkbox"/>	Exposed Roots <input type="checkbox"/>		
-dominant riparian species: ------(LDB /RDB)-----	LDB: sycamore, boxelder, grassy vegetation						
	RDB: sycamore, boxelder, grassy vegetation						
-habitat assessment score	84						
	epifaunal substrate	16	channel alteration	8			
	pool substrate	13	frequency of re-ox zones	1			
	pool variability	1	bank stability	LDB	5	RDB 5	
	sediment deposition	12	bank vegetative protection	LDB	4	RDB 4	
	channel flow status	13	riparian veg zone width	LDB	1	RDB 1	
-benthos	Assumed						
-fish	none observed						
-algae or other aquatic life	yes						
6-photo numbers	3						
7-rainfall information	Rain in previous 24 hours						
8-HUC -12 Code & Name	080102030604 Reedy Creek						
9-Confirmed by:							
10-Assessed	yes <input type="checkbox"/>	no <input checked="" type="checkbox"/>					
11-ETW	yes <input type="checkbox"/>	no <input checked="" type="checkbox"/>					
12-303 (d) List	yes <input type="checkbox"/>	siltation <input type="checkbox"/>	habitat: <input type="checkbox"/>	other: <input type="checkbox"/>			
	no <input checked="" type="checkbox"/>						
13-Notes							

Ecology Field Data Sheet: Water Resources

Project:		SR-436 Bridge Repair project over Reedy Creek					
Biologist:	Greg Harris	Affiliation:	TDOT	Date:	8/17/16		
1-Station: from plans							
2-Map label and name	WWC-1						
3-Latitude/Longitude	36.0414330/-88.539559						
4-Potential impact	Bridge Replacement						
5-Feature description:							
-channel identification	perennial stream	intermittent stream	ephemeral stream	WWC			
-HD score (if applicable)	N/A						
-OHWM indicators	bed & banks <input type="checkbox"/>	deposition <input type="checkbox"/>	presence of litter / debris <input type="checkbox"/>	scour <input type="checkbox"/>	veg absent, bent, matted <input type="checkbox"/>		
	change in plant community <input type="checkbox"/>	destruction of terrestrial veg <input type="checkbox"/>	multiple observed flow events <input type="checkbox"/>	sediment sorting <input type="checkbox"/>	water staining <input type="checkbox"/>		
	change in soil character <input type="checkbox"/>	leaf litter disturbed absent <input type="checkbox"/>	natural line impressed on bank <input type="checkbox"/>	shelving <input type="checkbox"/>	wracking <input type="checkbox"/>		
-sinuosity	absent <input checked="" type="checkbox"/>	weak <input type="checkbox"/>	moderate <input type="checkbox"/>	strong <input type="checkbox"/>			
-channel bottom width	6'		-top of bank width		10'		
- avg. gradient of stream (%)							
-bank height and slope ratio	LDB - 6'			RDB - 4'			
-water flow	fast <input type="checkbox"/>	moderate <input type="checkbox"/>	slow <input type="checkbox"/>	isolated pools <input type="checkbox"/>	none <input checked="" type="checkbox"/>		
-water depth (riffles / pools)	water width (riffles / pools)						
-bank stability: LDB, RDB	LDB: Stable <input type="checkbox"/>	Eroding <input checked="" type="checkbox"/>	Undercutting <input checked="" type="checkbox"/>	Sloughing <input type="checkbox"/>	Exposed Roots <input type="checkbox"/>		
	RDB: Stable <input type="checkbox"/>	Eroding <input checked="" type="checkbox"/>	Undercutting <input checked="" type="checkbox"/>	Sloughing <input type="checkbox"/>	Exposed Roots <input type="checkbox"/>		
-dominant riparian species: ------(LDB /RDB)-----	LDB: grassy vegetation. kudzu						
	RDB: grassy vegetation. kudzu						
-habitat assessment score	0						
	epifaunal substrate		channel alteration				
	pool substrate		frequency of re-ox zones				
	pool variability		bank stability		LDB	RDB	
	sediment deposition		bank vegetative protection		LDB	RDB	
	channel flow status		riparian veg zone width		LDB	RDB	
-benthos	none observed						
-fish	none observed						
-algae or other aquatic life	none observed						
6-photo numbers	4						
7-rainfall information	Rain in previous 24 hours						
8-HUC -12 Code & Name	080102030604 Reedy Creek						
9-Confirmed by:	Not Required						
10-Assessed	yes <input type="checkbox"/>	no <input checked="" type="checkbox"/>					
11-ETW	yes <input type="checkbox"/>	no <input checked="" type="checkbox"/>					
12-303 (d) List	yes <input type="checkbox"/>	siltation <input type="checkbox"/>	habitat:	<input type="checkbox"/>	other:	<input type="checkbox"/>	
	no <input checked="" type="checkbox"/>						
13-Notes							

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.4

County: Carroll	Named Waterbody: WWC-1	Date/Time: 8/17/16 1500
Assessors/Affiliation: Greg Harris/TDOT	Project ID: PIN 124139.00	
Site Name/Description: WWC-1		
Site Location: Southwest side of bridge		
USGS quad:	HUC (12 digit): 080102030604	Lat/Long: 36.014330/-88.539559
Previous Rainfall (7-days) : Yes		
Precipitation this Season vs. Normal : very wet wet average dry drought unknown		
Source of recent & seasonal precip data :		
Watershed Size :	Photos: Yes	Number : 4
Soil Type(s) / Geology :		
Surrounding Land Use : Agricultural-Row Crops		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : Severe Moderate Slight Absent		

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	✓	WWC
2. Defined bed and bank absent, dominated by upland vegetation / grass		WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions		WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall		WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase		Stream
6. Presence of fish (except <i>Gambusia</i>)		Stream
7. Presence of naturally occurring ground water table connection		Stream
8. Flowing water in channel and 7 days since last precipitation in local watershed		Stream
9. Evidence watercourse has been used as a supply of drinking water		Stream

NOTE : If any Primary Indicators 1-9 = "Yes", then STOP; absent directly contradictory evidence, determination is complete.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.4*

Overall Hydrologic Determination = WWC

Secondary Indicator Score (if applicable) = 0

Justification / Notes :

Dry ditch that is dominated by kudzu

Ecology Field Data Sheet: Water Resources

Project:		SR-436 Bridge Repair project over Reedy Creek					
Biologist:	Greg Harris	Affiliation:	TDOT	Date:	8/17/16		
1-Station: from plans							
2-Map label and name	WWC-2						
3-Latitude/Longitude	36.0414330/-88.539559						
4-Potential impact	Bridge Replacement						
5-Feature description:							
-channel identification	perennial stream	intermittent stream	ephemeral stream	WWC			
-HD score (if applicable)	N/A						
-OHWM indicators	bed & banks <input type="checkbox"/>	deposition <input type="checkbox"/>	presence of litter / debris <input type="checkbox"/>	scour <input type="checkbox"/>	veg absent, bent, matted <input type="checkbox"/>		
	change in plant community <input type="checkbox"/>	destruction of terrestrial veg <input type="checkbox"/>	multiple observed flow events <input type="checkbox"/>	sediment sorting <input type="checkbox"/>	water staining <input type="checkbox"/>		
	change in soil character <input type="checkbox"/>	leaf litter disturbed absent <input type="checkbox"/>	natural line impressed on bank <input type="checkbox"/>	shelving <input type="checkbox"/>	wracking <input type="checkbox"/>		
-sinuosity	absent <input checked="" type="checkbox"/>	weak <input type="checkbox"/>	moderate <input type="checkbox"/>	strong <input type="checkbox"/>			
-channel bottom width	4'		-top of bank width		6'		
- avg. gradient of stream (%)							
-bank height and slope ratio	LDB - 6'			RDB - 4'			
-water flow	fast <input type="checkbox"/>	moderate <input type="checkbox"/>	slow <input type="checkbox"/>	isolated pools <input type="checkbox"/>	none <input checked="" type="checkbox"/>		
-water depth (riffles / pools)	water width (riffles / pools)						
-bank stability: LDB, RDB	LDB: Stable <input type="checkbox"/>	Eroding <input checked="" type="checkbox"/>	Undercutting <input checked="" type="checkbox"/>	Sloughing <input type="checkbox"/>	Exposed Roots <input type="checkbox"/>		
	RDB: Stable <input type="checkbox"/>	Eroding <input checked="" type="checkbox"/>	Undercutting <input checked="" type="checkbox"/>	Sloughing <input type="checkbox"/>	Exposed Roots <input type="checkbox"/>		
-dominant riparian species: ------(LDB /RDB)-----	LDB: grassy vegetation. kudzu						
	RDB: grassy vegetation. kudzu						
-habitat assessment score	0						
	epifaunal substrate		channel alteration				
	pool substrate		frequency of re-ox zones				
	pool variability		bank stability		LDB	RDB	
	sediment deposition		bank vegetative protection		LDB	RDB	
	channel flow status		riparian veg zone width		LDB	RDB	
-benthos	none observed						
-fish	none observed						
-algae or other aquatic life	none observed						
6-photo numbers	5						
7-rainfall information	Rain in previous 24 hours						
8-HUC -12 Code & Name	080102030604 Reedy Creek						
9-Confirmed by:	Not Required						
10-Assessed	yes <input type="checkbox"/>	no <input checked="" type="checkbox"/>					
11-ETW	yes <input type="checkbox"/>	no <input checked="" type="checkbox"/>					
12-303 (d) List	yes <input type="checkbox"/>	siltation <input type="checkbox"/>	habitat:	<input type="checkbox"/>	other:	<input type="checkbox"/>	
	no <input checked="" type="checkbox"/>						
13-Notes							

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.4

County: Carroll	Named Waterbody: WWC-2	Date/Time: 8/17/16 1515
Assessors/Affiliation: Greg Harris/TDOT		Project ID: PIN 124139.00
Site Name/Description: WWC-2		
Site Location: Northeast side of bridge		
USGS quad:	HUC (12 digit): 080102030604	Lat/Long: 36.014330/-88.539559
Previous Rainfall (7-days) : Yes		
Precipitation this Season vs. Normal : very wet wet average dry drought unknown		
Source of recent & seasonal precip data :		
Watershed Size :	Photos: Yes	Number : 5
Soil Type(s) / Geology :		
Surrounding Land Use : Agricultural-Row Crops		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) :		
Severe	Moderate	Slight Absent

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	✓	WWC
2. Defined bed and bank absent, dominated by upland vegetation / grass		WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions		WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall		WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase		Stream
6. Presence of fish (except <i>Gambusia</i>)		Stream
7. Presence of naturally occurring ground water table connection		Stream
8. Flowing water in channel and 7 days since last precipitation in local watershed		Stream
9. Evidence watercourse has been used as a supply of drinking water		Stream

NOTE : If any Primary Indicators 1-9 = "Yes", then STOP; absent directly contradictory evidence, determination is complete.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.4*

Overall Hydrologic Determination = WWC

Secondary Indicator Score (if applicable) = 0

Justification / Notes :

Dry ditch that is dominated by kudzu

Labels	Type *	Function	Quality	Impacts **		
				Permanent	Temporary	Total
Wetlands						
						0.0 ac.
						0.0 ac.
						0.0 ac.
						0.0 ac.
						0.0 ac.
					Total	0.0 ac.

Labels	Type *	Function	Quality	Impacts **		
				Permanent	Temporary	Total
Streams						
STR-1	Perennial		Unassessed	0 ft		0 ft
STR-2	Intermittent		Unassessed	0 ft		0 ft
WWC-1	WWC		Unassessed	0 ft		0 ft
WWC-2	WWC		Unassessed	0 ft		0 ft
						0 ft
					Total	0 ft

* Identification of features has not been reviewed by regulatory agencies and determinations of stream type could possibly be changed.

** Estimated impacts are considered "Preliminary" and will not be completely accurate until the time of Permit Application



Photo 1. STR-1/ Reedy Creek – Looking downstream



Photo 2. STR-1/ Reedy Creek – Looking upstream



Photo 3. STR-2/ UNT to Reedy Creek looking upstream



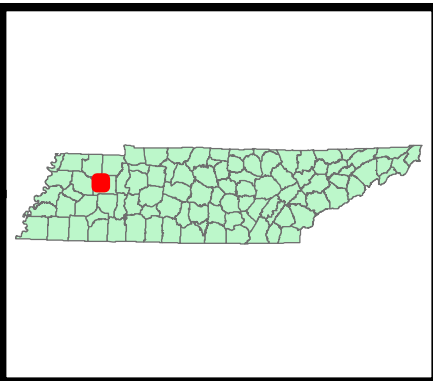
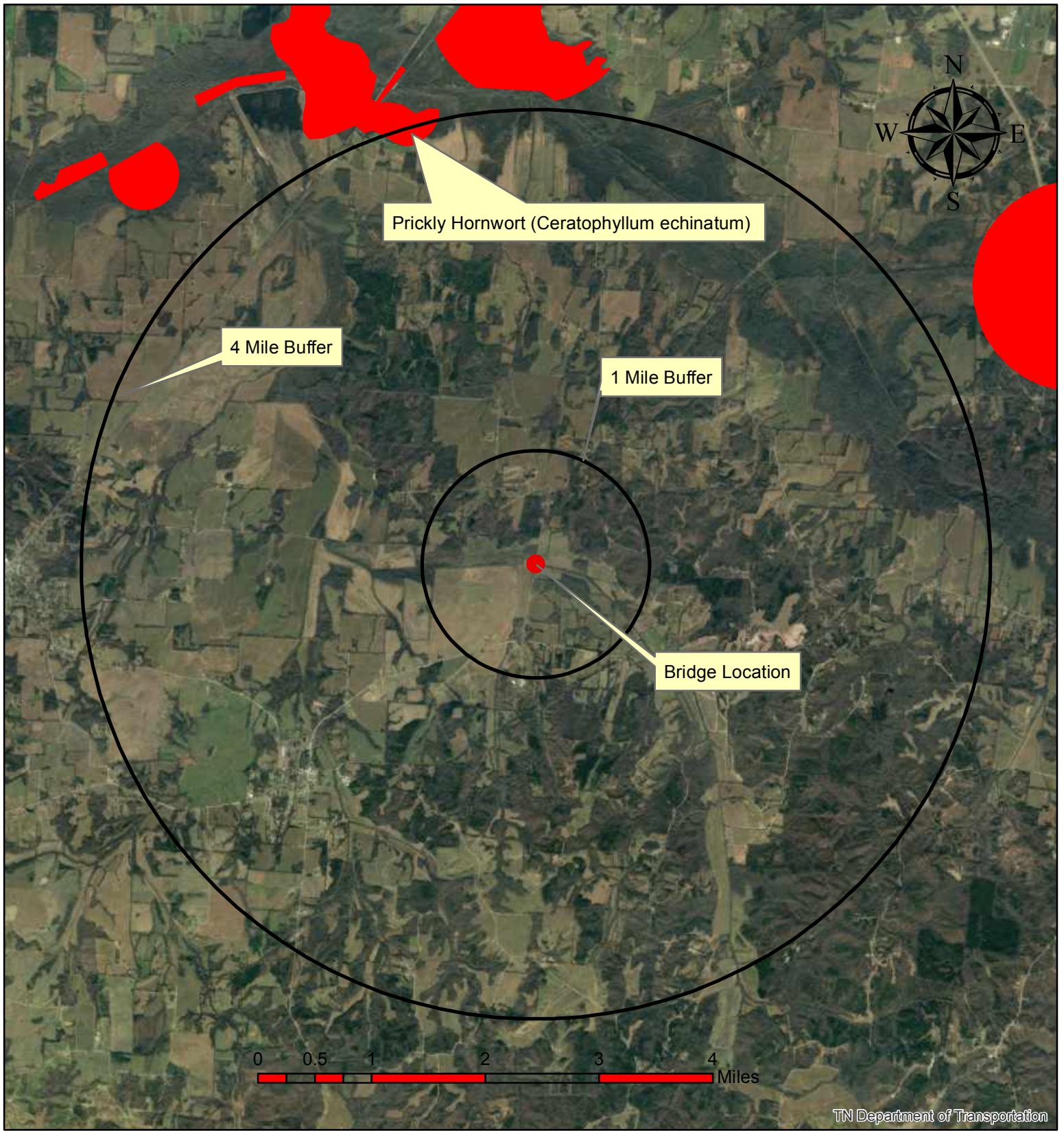
Photo 4. WWC-1/Looking up drainage

Photo Summary: 8.17.2016

Project Description: Carroll County; SR-436 Bridge Repair over Reedy Creek / PIN 124139.00, P.E. 09035-3220-94



Photo 5. WWC-2/ Looking up drainage way



Carroll County

**SR-436 Bridge Repair Project over Reedy Creek
Species Map
8/23/2016**

**P.E. 09035-3220-94
PIN 124139.00**





TENNESSEE WILDLIFE RESOURCES AGENCY

ELLINGTON AGRICULTURAL CENTER
P. O. BOX 40747
NASHVILLE, TENNESSEE 37204

August 25, 2016

Greg Harris
Tennessee Department of Transportation
Environmental Division
Suite 900, James K. Polk Building
505 Deaderick Street
Nashville, TN 37243-1402

Subject: Carroll County; SR-436 Bridge Repair Project over Reedy Creek; P.E. 09035-3220-94,
PIN 124139.00

Dear Mr. Harris:

The Tennessee Wildlife Resources Agency has reviewed your request regarding the SR-436 Bridge Repair over Reedy Creek Project in Carroll County, Tennessee. Your letter to the Agency requested comments regarding potential impacts to endangered species, wetlands, and other areas of concern we may think pertinent to this proposed project.

It is our understanding from what was sent that this project is not expected to impact any state-listed species that are Deemed-in-Need-of-Management, Threatened, or Endangered.

Based upon these understandings, the TWRA does request that all applicable TDEC and US EPA approved Erosion Prevention/Silt Control measures, Best Management Practices, and in-stream work be scheduled, implemented, monitored, and maintained. The TWRA requests that any major changes to the plans, construction methodology, or right-of-way will immediately void this comment and require another review to the changes. The TWRA requests that this comment is put on the construction plans for all to review.

Thank you for the opportunity to review and comment on this proposed project. If you have any further questions, please contact me at 731-293-9776 or Ed.Harsson@tn.gov .

The State of Tennessee

IS AN EQUAL OPPORTUNITY, EQUAL ACCESS, AFFIRMATIVE ACTION EMPLOYER

Best regards,

A handwritten signature in blue ink that reads "Ed Harsson". The signature is written in a cursive style with a large, stylized "E" and "H".

Ed Harsson
Wildlife Biologist
Federal Highway Admin. and TN DOT Liaison
731-293-9776
Ed.Harsson@tn.gov

CC: Rob Todd, TWRA NEPA Coordinator
Alan Peterson, TWRA Region 1 Manager
Allen Pyburn, TWRA Region 1 Habitat Biologist
John Griffith, USFWS
Stephanie Ann Williams, TDEC



United States Department of the Interior

FISH AND WILDLIFE SERVICE
Tennessee ES Office
446 Neal Street
Cookeville, Tennessee 38501



October 4, 2016

Mr. Greg Harris
Tennessee Department of Transportation
Environmental Planning and Permits
James K. Polk Building, Suite 900
505 Deaderick Street
Nashville, Tennessee 37243-0334

Subject: FWS# 16-I-0876. Proposed State Route 436 Bridge repair over Reedy Creek; PIN# 124139.00, P.E. 09035-3220-94, Carroll County, Tennessee.

Dear Mr. Harris:

Thank you for your email correspondence dated September 16, 2016, regarding repair the State Route 436 Bridge over Reedy Creek in Carroll County, Tennessee. The Tennessee Department of Transportation (TDOT) has determined that the project is eligible to be placed under the Range-wide Programmatic Informal Consultation between the Federal Highway Administration, Federal Railroad Administration, Federal Transit Administration, and the U.S. Fish and Wildlife Service (Service), and has provided the required Project Submittal Form. Personnel of the Service have reviewed the subject proposal and offer the following comments.

Transportation-related activities not anticipated to result in adverse effects to the federally endangered Indiana bat (*Myotis sodalis*) or the threatened northern long-eared bat (NLEB) (*Myotis septentrionalis*) include all wintertime forested clearing within 100 feet of roadway surface or railroad ballast that does not remove known roosts or documented foraging/travel corridors and is no closer than one-half mile from the entrance of a documented hibernaculum. Because TDOT commits to implement appropriate avoidance and minimization measures, the project is eligible to be placed under the consultation herein referenced with determinations of “not likely to adversely affect” for the Indiana bat and NLEB.

We are unaware of any federally listed or proposed species that would be impacted by this project. Therefore, based on the best information available at this time, we believe that the requirements of section 7 of the Endangered Species Act (Act) of 1973, as amended, are fulfilled for all species that currently receive protection under the Act. Obligations under the Act must be reconsidered if (1) new information reveals impacts of the proposed action that may affect listed species or critical habitat in a manner not previously considered, (2) the proposed action is

subsequently modified to include activities which were not considered during this consultation, or (3) new species are listed or critical habitat designated that might be affected by the proposed action.

If you have any questions regarding our comments, please contact John Griffith of my staff at 931/525-4995 or by email at john_griffith@fws.gov.

Sincerely,

A handwritten signature in blue ink that reads "Mary E. Jennings". The signature is written in a cursive, flowing style.

Mary E. Jennings
Field Supervisor

Air and Noise

Environmental Studies Request

Project Information

Route: State Route 436 (SR-436)
Termini: Reedy Creek Road Bridge over Reedy Creek, LM 0.68
County: Carroll
PIN: 124139.00


Request

Request Type: Initial Environmental Study
Project Plans: Planning Report
Date of Plans: 3/23/2018
Location: Email Attachment

Certification

Requestor: Brittany Hyder
Title: TESS-Ad

Signature: Brittany
Hyder

 Digitally signed by
Brittany Hyder
Date: 2018.04.04
15:29:49 -05'00'

Environmental Study

Technical Section

Section: Air and Noise

Study Results

AIR QUALITY

Transportation Conformity

This project is in Carroll County which is in attainment for all regulated criteria pollutants. Therefore, conformity does not apply to this project.

Mobile Source Air Toxics (MSATs)

This project qualifies as a categorical exclusion under 23 CFR 771.117 and does not require an MSATs evaluation per FHWA's "Interim Guidance Update on Air Toxic Analysis in NEPA Documents" dated October 2016.

NOISE

This project is Type III in accordance with the FHWA noise regulation in 23 CFR 772 and TDOT's noise policy; therefore, a noise study is not needed.

Commitments

Did the study of this project result in any environmental commitments?

(Yes/No)

Additional Information

Is there any additional information or material included with this study?

(Yes/No)

Certification

Responder: Darlene D Reiter

Title: TDOT Environmental Division Consultant

Signature: Darlene D
Reiter

Digitally signed by
Darlene D Reiter
Date: 2018.04.05
12:40:42 -05'00'

Section 4(f)

Section 6(f)

Cultural Resources

Environmental Studies

Historic Preservation

Environmental Studies Request

Project Information

Route: State Route 436 (SR-436)
Termini: Reedy Creek Road Bridge over Reedy Creek, LM 0.68
County: Carroll
PIN: 124139.00


Request

Request Type: Initial Environmental Study
Project Plans: Planning Report
Date of Plans: 3/23/2018
Location: Email Attachment

Certification

Requestor: Brittany Hyder
Title: TESS-Ad

Signature: Brittany
Hyder

 Digitally signed by
Brittany Hyder
Date: 2018.04.04
15:29:49 -05'00'

Environmental Study

Technical Section

Section: Historic Preservation

Study Results

In a letter dated 6/12/2018, the TN-SHPO concurred that no architectural resources eligible for listing in the National Register of Historic Places will be affected by this undertaking.

Commitments

Did the study of this project result in any environmental commitments?

No

Additional Information

Is there any additional information or material included with this study?

Yes

Type: Historical-Architectural Report & SHPO Letter

Location: FileNet

Certification

Responder: Laura van Opstal

Title: TESS-AD, Historic Preservation

Signature: Laura van
Opstal

Digitally signed by Laura
van Opstal
Date: 2018.06.15
11:21:15 -05'00'



**STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION**

BUREAU OF ENVIRONMENT & PLANNING

SUITE 700, JAMES K. POLK BUILDING
505 DEADERICK STREET
NASHVILLE, TENNESSEE 37243-1402
(615) 741-5376

JOHN C. SCHROER
COMMISSIONER

BILL HASLAM
GOVERNOR

June 6, 2018

Mr. E. Patrick McIntyre, Jr.
Executive Director & State Historic Preservation Officer
Tennessee Historical Commission
2941 Lebanon Road
Nashville, TN 37214

SUBJECT: Historic/Architectural Assessment for the Proposed Replacement of the State Route 436 Bridge over Reedy Creek, Log Mile 0.68, in Carroll County, PIN 124139.00

Dear Mr. McIntyre,

Enclosed is the Historic/Architectural Assessment for the above-referenced project. It is the opinion of TDOT that there are no historic resources within the Area of Potential Effect of the proposed project. On behalf of the Federal Highway Administration, we request your review of this report pursuant to regulations contained within 36 CFR 800. An archaeological assessment is being prepared separately.

We look forward to your comments. Thank you for your help in this matter.

Sincerely,

Katherine Looney

TDOT Environmental Supervisor, Historic Preservation

Enclosure

BRIDGE REPLACEMENT PROJECT: CARROLL COUNTY

State Route 436 Bridge over Reedy Creek, Log Mile 0.68
PIN 124139.00

PROJECT DESCRIPTION

The Tennessee Department of Transportation (TDOT), with funding made available through the Federal Highway Administration (FHWA), is proposing to remove and replace the State Route 436 (SR-436) bridge over Reedy Creek in Carroll County, Tennessee. The project proposes to replace the existing bridge with a new structure on an alignment shifted approximately ten feet to the west, with a slightly higher grade to maintain the existing vertical clearance. The bridge replacement project will require approximately 1.13 acres of new right-of-way (ROW) acquisition.

The existing bridge is a four-span concrete structure 90 feet long and 22 feet wide. The proposed replacement structure is a single-span pre-stressed concrete box beam bridge 90 feet long and 29.2 feet wide. The replacement bridge will maintain the two travel lanes with shoulders. The project includes transition work along SR-436 to accommodate the realignment and to taper the paved shoulders into the existing roadway north and south of the bridge.

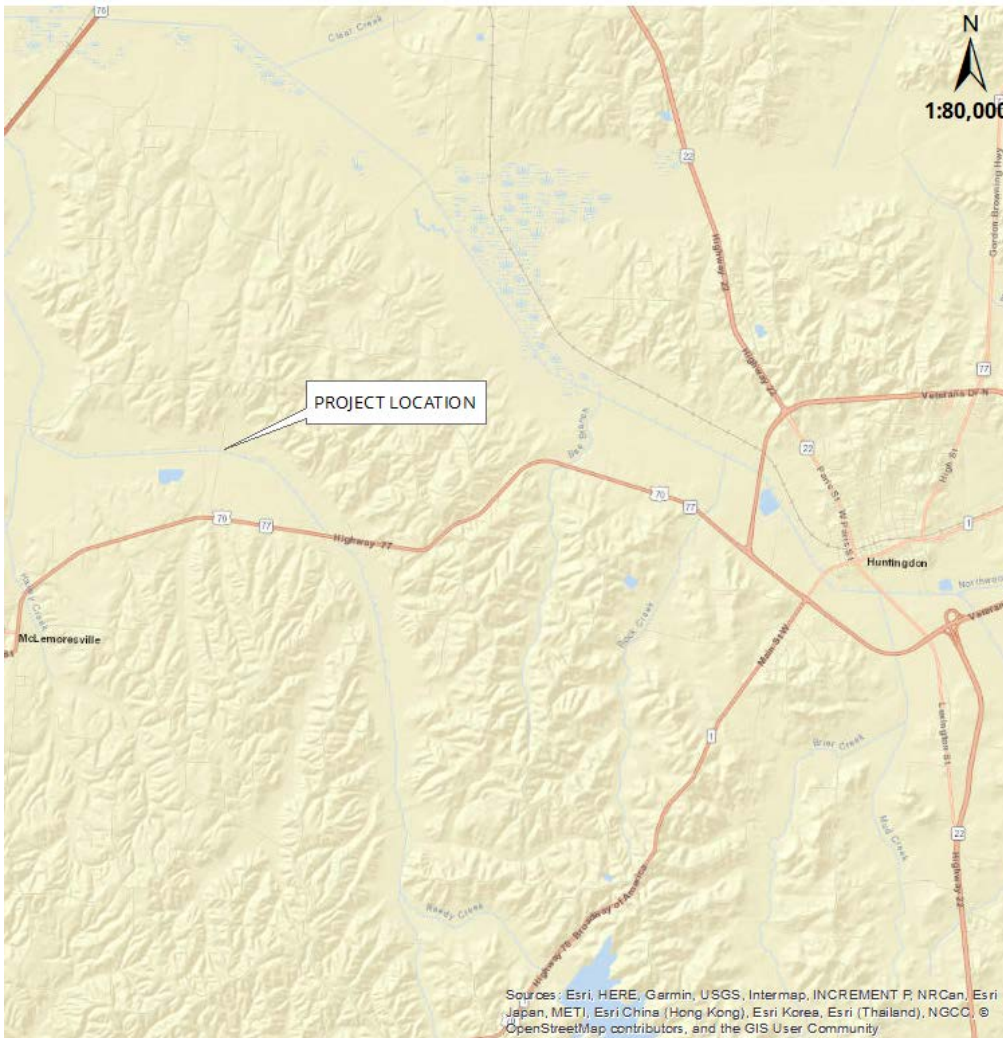


Figure 1: Project location map.

PUBLIC AND TRIBAL PARTICIPATION

TDOT will write to four Native American tribes or representatives asking each for information regarding the project and if they would like to participate in the Section 106 review process as a consulting party. The tribes with historic interest in Carroll County are:

The Chickasaw Nation
Eastern Shawnee Tribe of Oklahoma

Shawnee Tribe
United Keetoowah Band of Cherokee Indians

TDOT invited the Carroll County Mayor to be a consulting party in the Section 106 process via letter dated April 23, 2018. To date, TDOT has not received any response regarding historic resources.

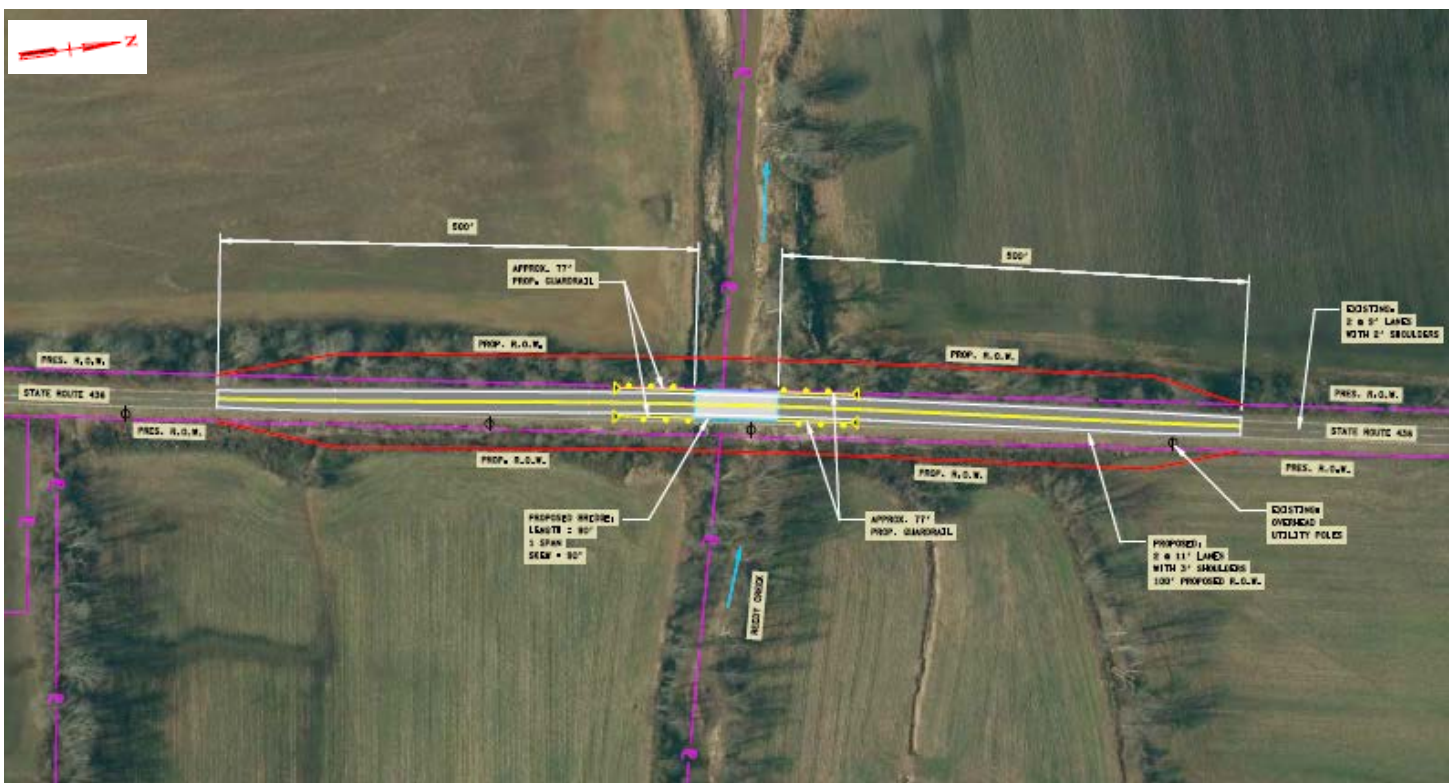


Figure 2: Functional layout for proposed bridge replacement, aerial view. Proposed ROW lines are for planning purposes.

ARCHITECTURAL/HISTORICAL SURVEY

In compliance with Section 106 of the National Historic Preservation Act of 1966, as amended, TDOT staff historians reviewed the Area of Potential Effect (APE) for this project. An archaeological assessment is being prepared separately. A TDOT historian checked the survey records of the Tennessee State Historic Preservation Office (TN-SHPO) to determine if any previous architectural surveys had identified historic properties in the area. There are no previously surveyed properties within the APE of the proposed project (Figure 3).

LIT/RECORDS SEARCH: 4/12/2018—Laura van Opstal

FIELD STUDY: 5/23/2018—Laura van Opstal & Katherine Looney

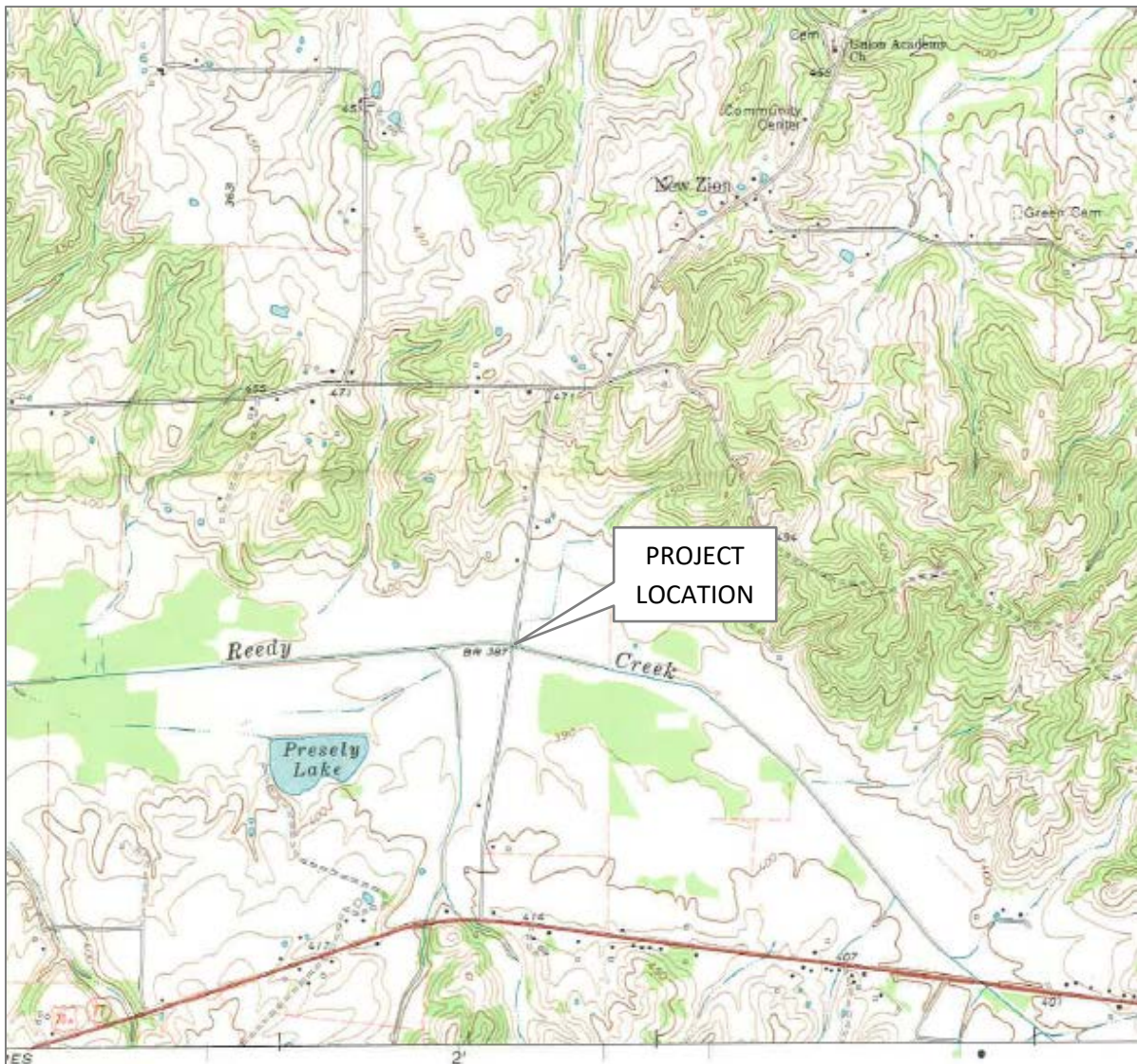


Figure 3: TN-SHPO survey map. USGS topographic quadrangle Trezevant East 444SE. There are no previously surveyed properties within the APE of the proposed project. Roads driven by TDOT historians during the field survey are highlighted in yellow.

TDOT historians field reviewed the APE for the proposed project in compliance with 36 CFR 800 regulations. The purpose of this survey was to identify any resources either included in or eligible for inclusion in the National Register of Historic Places (eligibility criteria are set forth in 36 CFR 60.4). The survey area included land needed for additional ROW as well as areas that might possibly be affected by changes in air quality, noise levels, setting, and land use. The area surrounding the bridge is rural and mostly agricultural fields.

The field survey did not identify any buildings within the APE. The existing bridge was built in 1939, and is a four-span concrete structure. The bridge has had repairs and replacement of components over time since its construction. The bridge is not currently listed in the National Register of Historic Places and neither the 2000 *University of Tennessee Evaluation of Pre-1950 Bridges* nor the 2008 *Tennessee's Survey Report for Historic Highway Bridges* determined it eligible for listing.

Therefore, it is the opinion of TDOT that there are no properties listed in or eligible for listing in the National Register of Historic Places within the proposed project's APE.



View north along SR-436 toward the bridge.

CONCLUSION

The Tennessee Department of Transportation, with funding made available through the Federal Highway Administration (FHWA), is proposing the replacement of the SR-436 bridge over Reedy Creek in Carroll County.

In compliance with 36 CFR 800, TDOT historians surveyed the proposed project APE for historic resources. No National Register listed or eligible properties exist in the project area, and no historic resources were identified by the survey. It is the opinion of TDOT that there are no historic resources in the project area. Additionally, the lack of historic resources indicates that Section 4(f) does not apply.



TENNESSEE HISTORICAL COMMISSION
STATE HISTORIC PRESERVATION OFFICE
2941 LEBANON PIKE
NASHVILLE, TENNESSEE 37243-0442
OFFICE: (615) 532-1550
www.tnhistoricalcommission.org

June 12, 2018

Ms. Katherine Looney
Tennessee Department of Transportation
505 Deaderick St
Suite 900
Nashville, TN 37243-1402

RE: FHWA / Federal Highway Administration, Replacement of the SR 436 Bridge over Reedy Creek, Log Mile 0.68/ PIN 124139.00, , Carroll County, TN

Dear Ms. Looney:

In response to your request, we have reviewed the architectural survey report and accompanying documentation submitted by you regarding the above-referenced undertaking. Our review of and comment on your proposed undertaking are among the requirements of Section 106 of the National Historic Preservation Act. This Act requires federal agencies or applicants for federal assistance to consult with the appropriate State Historic Preservation Office before they carry out their proposed undertakings. The Advisory Council on Historic Preservation has codified procedures for carrying out Section 106 review in 36 CFR 800 (Federal Register, December 12, 2000, 77698-77739).

Considering the information provided, we concur that no architectural resources eligible for listing in the National Register of Historic Places will be affected by this undertaking. If project plans are changed or archaeological remains are discovered during project construction, please contact this office to determine what further action, if any, will be necessary to comply with Section 106 of the National Historic Preservation Act. Questions or comments may be directed to Casey Lee (615 253-3163).

Your cooperation is appreciated.

Sincerely,

E. Patrick McIntyre
Executive Director and
State Historic Preservation Officer

EPM/cjl

Environmental Studies

Archaeology

Environmental Studies Request

Project Information

Route: State Route 436 (SR-436)
Termini: Reedy Creek Road Bridge over Reedy Creek, LM 0.68
County: Carroll
PIN: 124139.00


Request

Request Type: Initial Environmental Study
Project Plans: Planning Report
Date of Plans: 3/23/2018
Location: Email Attachment

Certification

Requestor: Brittany Hyder
Title: TESS-Ad

Signature: Brittany
Hyder

 Digitally signed by
Brittany Hyder
Date: 2018.04.04
15:29:49 -05'00'

Environmental Study

Technical Section

Section: Archaeology

Study Results

In a letter dated July 20, 2018, the TN SHPO concurred that there are no archaeological resources eligible for listing on the National Register of Historic Places that will be affected by this project.

Commitments

Did the study of this project result in any environmental commitments?

No

Additional Information

Is there any additional information or material included with this study?

Yes

Type: SHPO letter

Location: Email Attachment

Certification

Responder: Sarah Kate McKinney

Title: TESS Archaeology

Signature: Sarah Kate McKinney
Digitally signed by Sarah Kate McKinney
Date: 2018.09.28 09:41:18 -05'00'



PANAMERICAN CONSULTANTS, INC.

**PHASE I ARCHAEOLOGICAL ASSESSMENT
FOR THE REPLACEMENT OF THE
STATE ROUTE 436/REEDY CREEK ROAD BRIDGE
OVER REEDY CREEK,
CARROLL COUNTY, TENNESSEE**



PREPARED FOR:



TENNESSEE DEPARTMENT OF TRANSPORTATION
505 DEADERICK STREET, SUITE 900
NASHVILLE, TENNESSEE 37243

PREPARED BY:



PANAMERICAN CONSULTANTS, INC.
91 TILLMAN STREET
MEMPHIS, TENNESSEE 38111

DRAFT NEGATIVE FINDINGS REPORT | JULY 2018

Cover Image: Southwestern quadrant of the Area of Potential Effects; view north (DCSN0695).

DRAFT NEGATIVE FINDINGS REPORT

**PHASE I ARCHAEOLOGICAL ASSESSMENT
FOR THE REPLACEMENT OF THE
STATE ROUTE 436/REEDY CREEK ROAD BRIDGE
OVER REEDY CREEK,
CARROLL COUNTY, TENNESSEE**

Lead Agency:
Federal Highway Administration

Prepared for:
**Tennessee Department of Transportation
Environmental Division, Archaeology Section
505 Deaderick Street, Suite 900
Nashville, Tennessee 37243**

**Agreement E1913, Work Order No. 009
TDOT Region IV
PIN 124139.00
Project No. 09035-0220-94
Tennessee Division of Archaeology Permit No. 000994**

Prepared by:
C. Andrew Buchner and Andrew Saatkamp

**Panamerican Consultants, Inc.
91 Tillman Street
Memphis, Tennessee 38111
Panamerican Project No. 38086**



**C. Andrew Buchner, RPA
Principal Investigator**

JULY 2018

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MANAGEMENT SUMMARY

At the request of the State of Tennessee Department of Transportation, Panamerican Consultants, Inc. performed a Phase I archaeological assessment for the Area of Potential Effects for the replacement of the State Route 436/Reedy Creek Road Bridge over Reedy Creek at Log Mile 0.68 in Carroll County as Work Order No. 009 under Agreement E1913 (TDOT PIN 124139.00; Project No. 09035-0220-94). The Area of Potential Effects for the present assessment is defined as the extent of the proposed Environmental Technical Study Area, Right Of Way, and all easements as shown on project plans, as well as potentially undisturbed areas within the existing Right Of Way. The project area extended 300 ft. north and south of the beginning and end of the project, and thus encloses an area that is larger than the present and proposed Right Of Way for the project. A standard literature and records search revealed that no previously recorded archaeological site is located within the 7.35-ac. (0.0115-mi.²) Area of Potential Effects. A two-person crew conducted the fieldwork on 21 and 22 June 2018. The undeveloped portions of the project area principally consisted of cultivated fields that offered good to excellent surface visibility, and as a result visual inspection was primary site detection method employed. The pedestrian (visual) transects were spaced at 15-m intervals. To supplement the visual survey, 16 judgmentally placed shovel tests were excavated; all were sterile.

The archaeological assessment produced negative findings. As there is no National Register of Historic Places listed, eligible, or potentially significant archaeological resource within the Area of Potential Effects, no further archaeological work is recommended.

ACKNOWLEDGEMENTS

Panamerican Consultants, Inc. appreciates the opportunity to have provided the State of Tennessee Department of Transportation with these archaeological services. Tennessee Department of Transportation Archaeologist S. Kate McKinney was our point of contact and provided technical support throughout the course of the assessment.

Ms. Paige Silcox, Site Files Curator at the Tennessee Division of Archaeology, assisted during the literature and records search for the assessment.

Panamerican Consultants, Inc. personnel who contributed to the project include the following. Andrew Saatkamp, RPA directed the fieldwork, and Phillip Geary served as the Archaeological Technician. Anna Hinnenkamp-Faulk edited the report. Kate Gilow provided administrative support during all phases of the project.

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I. INTRODUCTION

At the request of the State of Tennessee Department of Transportation (TDOT), Panamerican Consultants, Inc. (Panamerican) performed a Phase I archaeological assessment of the Area of Potential Effects (APE) for the replacement of the State Route 436 (SR-436)/Reedy Creek Road Bridge over Reedy Creek at Log Mile (LM) 0.68 in Carroll County as Work Order No. 009 under Agreement E1913 (TDOT PIN 124139.00; Project No. 09035-0220-94). Fieldwork for the assessment was conducted on 21 and 22 June 2018 under the direction of Andrew Saatkamp, Register of Professional Archaeologists (RPA), with Phillip Geary serving as Archaeological Technician. All work completed during the assessment conformed to the stipulations set forth by the Tennessee Division of Archaeology (TDOA) Archaeological Permit No. 000994 issued on 7 June 2018 (*Appendix A: Archaeological Permit*) and the TDOT *Scope of Work (SOW) for Phase I Archaeological Assessments* FY 2017–2018.

DESCRIPTION OF THE UNDERTAKING

The proposed undertaking involves the replacement of the existing SR-436/Reedy Creek Road Bridge over Reedy Creek at LM 0.68 (Pannell 2018). The existing bridge was constructed in 1939, and is a four-span concrete bridge with an overall length of 90 ft. The proposed replacement bridge is a single-span, pre-stressed, concrete box beam with a length of 90 ft. that will maintain the existing 90° skew to the creek channel. The proposed alignment for the replacement structure will shift 10 ft. to the west. The project will extend 500 ft. from the existing structure to the north and 500 ft. to the south to accommodate the alignment shift, raise the grade 2.5 ft., and for the proposed one-lane signal to maintain traffic during construction. It is estimated that four tracts of land will be affected resulting in 1.13 ac. of new Right Of Way (ROW) being acquired (Pannell 2018).

AREA OF POTENTIAL EFFECTS

The APE for the SR-436/Reedy Creek Road Bridge over Reedy Creek lies within TDOT Region IV, and is found in northwestern Carroll County, approximately 4 km northeast of the community of McLemoresville. The bridge APE can be identified on the Trezevant East, TN (444SE) 7.5-min. quad (Figure 1-01).

The APE for the present assessment is defined as the extent of the proposed Environmental Technical Study Area (ETSA), ROW, and all easements as shown on project plans, as well as potentially undisturbed areas within the existing ROW. The APE is a 1600-x-200-ft. (487-x-61-m/7.35-ac./0.0115-mi.²) area that extends 300 ft. north and 300 ft. south of the beginning and end of the project (Figure 1-02). The APE encloses an area that is larger than the present and proposed ROW for the project.

The setting is the floodplain of Reedy Creek, and terrain is level with the elevation being just less than 390 ft. above mean sea level (amsl). Higher terrace terrain over 450 ft. amsl in elevation is found to the north and south of the Reedy Creek floodplain. The cover within the undeveloped portion of the APE consists principally of agricultural fields.

DISPOSITION OF PROJECT-RELATED MATERIALS

All project-related materials (records, etc.) generated by the present assessment are being temporarily housed at Panamerican's laboratory in Memphis, Tennessee. These materials will be transferred to TDOT at a future date in accordance with the stipulations set forth in the TDOA Archaeological Permit issued for this assessment (No. 000994; Appendix A).

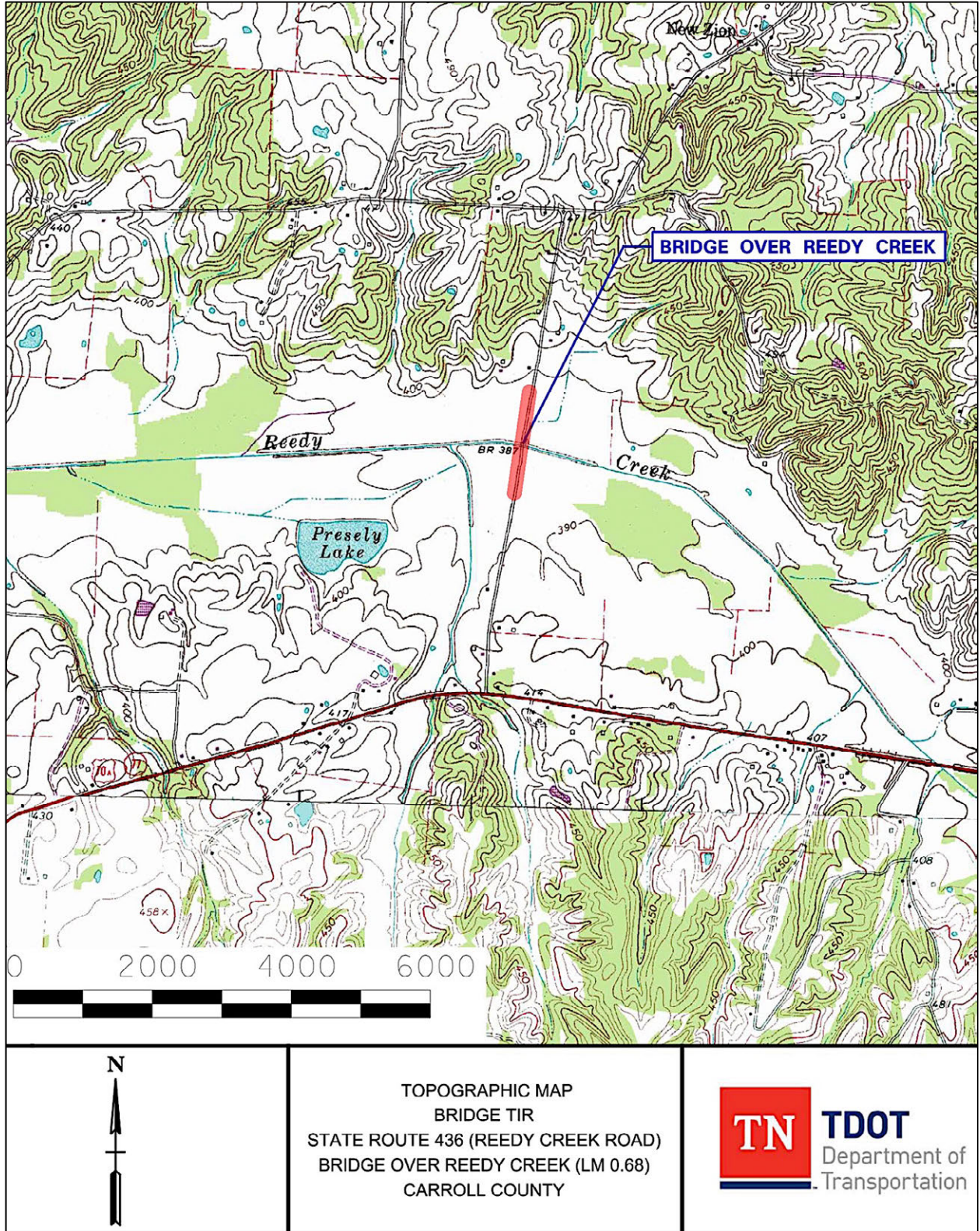


Figure 1-01. Quad map locator for the State Route 436/Reedy Creek Road Bridge Area of Potential Effects (base map: U.S. Geological Survey Trezevant East, TN [444SE] 7.5-min. quad).

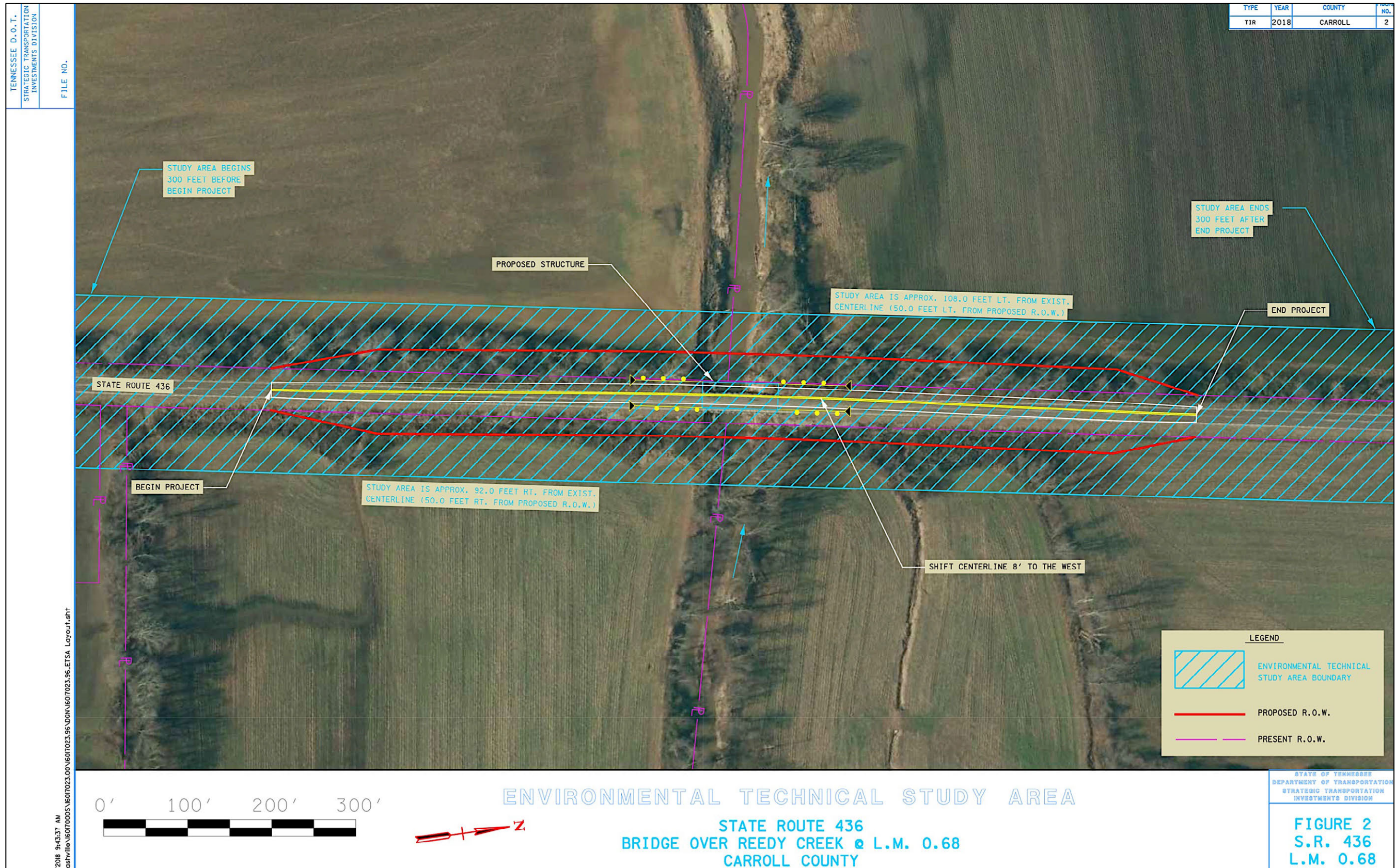


Figure 1-02. State Route 436/Reedy Creek Road Bridge Area of Potential Effects (image courtesy: Tennessee Department of Transportation).

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II. ENVIRONMENTAL SETTING

PHYSIOGRAPHY

All of Carroll County is located within the West Tennessee Plain physiographic province. Stearns (1975:4) characterizes this province as an area of gently rolling terrain that is underlain by a thick (up to 65-ft.) blanket of loess.

A more recent ecoregion map places Carroll County within the Southeastern Plains, one of eight a Level III ecoregions in Tennessee (Griffith et al. 2004; Figure 2-01). In Tennessee, the Southeastern Plains and Hills is sub-divided into five Level IV ecoregions, and Carroll County is located within the Southeastern Plains and Hills (65e). At 4,590 mi.² it is the largest Level IV ecoregion within the Southeastern Plains. The topography here is characterized by dissected irregular plains, some low hills with broad tops, and fairly wide stream bottoms with broad, level to undulating terraces. The elevations range 400–650 ft. amsl, and local relief ranges 100–200 ft. amsl.

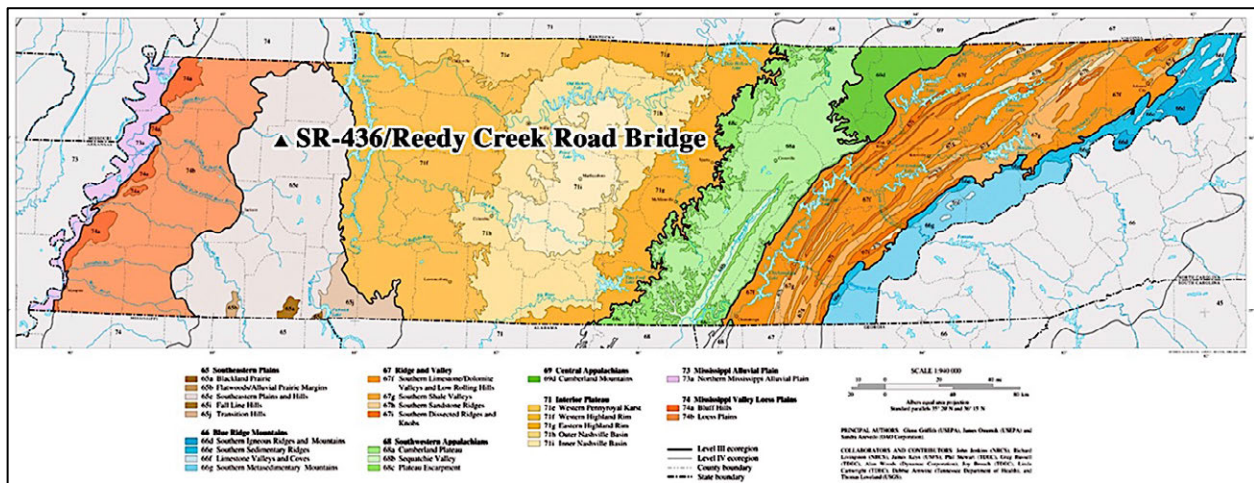


Figure 2-01. The State Route 436/Reedy Creek Road Bridge location shown on an ecoregions map of Tennessee (after Griffith et al. 2004).

GEOLOGY

The surface geology at the APE is mapped as the Claiborne and Wilcox Formations (Tcw) (Hardeman 1966:West Sheet). The Claiborne and Wilcox formations are Tertiary aged and consist of irregularly bedded sand, locally interbedded with lenses, and beds of gray to white clay, silty clay, lignitic clay, and lignite.

DRAINAGE

Reedy Creek is a tributary of the South Fork of the Obion River, and the mouth of Reedy Creek is located approximately 7.5 km northwest (linear) of the APE. The South Fork of the Obion River watershed covers 1,157 mi.² and includes portions of Carroll, Gibson, Henderson, Henry, Obion, and Weakley counties (Tennessee Department of Environment and Conservation 2008).

SOILS

The floodplain of Reedy Creek, and most of the other significant drainages within Carroll County, is mapped as the Waverly-Falaya-Collins soil association (Moore et al. 1984:General Soil Map). This soil association consists of level, poorly drained to moderately well drained soils on floodplains (Moore et al. 1984:5). About 70 percent of this has been cleared and is used for crops and pasture.

More specifically, Moore et al. (1984:Sheet 23) maps two soil types within the APE, and their distribution is roughly even (50/50). Falaya silt loam, occasionally flooded (Fa) is a Capability Class IIw soil that has high natural fertility and is strongly acidic (Moore et al. 1984:11). Typically, the surface layer is dark grayish brown, very friable silt loam to 7 in., and the substratum is brown silt loam with gray and brown mottles to 18 in. Falaya series soils formed in loess washed from uplands.

Waverly silt loam, occasionally flooded (Wo) is a Capability Class of IIIw soil that is low in natural fertility and is strongly acidic (Moore et al. 1984:23). Typically, the surface layer is dark grayish brown, very friable silt loam to 7 in., and the substratum is gray silt loam, mottled with yellow and brown to 60 in. Moore et al. (1984:23) note that some areas of Falaya soils were included with this soil type in mapping. Waverly series soils formed in thick alluvial deposits primarily from loess.

Because soils are indicators of past environments, soil types and/or phases can be used to predict a given tract's potential for containing archaeological deposits. The Natural Resources Conservation Service's "Capability Unit/Class" classification is a measure of the limitations of each soil type that can restrict its use. These Capability Unit/Class can be used by archeologists as indicators of the potential that a given soil type has for containing an archaeological deposit, because soils with few limitations are more likely to yield evidence of human occupation than soils with moderate or severe limitations.

Since the APE is composed of 50 percent Capability Class II soils and 50 percent Capability Class III soils, it is considered to have moderate to low archaeological probability.

FLORAL COMMUNITIES

Carroll County is part of the Mississippi Embayment Section of the Western Mesophytic Forest Region as described by Braun (1964:157) and the Tulip-Oak Forest as described by Shelford (1974:35). Oak and Oak-Hickory floral communities predominate in this region along stream and river terraces, with swamp forest species predominating along low-lying floodplain areas.

Floral species within the Oak and Oak-Hickory communities include white oak (*Quercus alba*), southern red oak (*Quercus falcata*), hickory (*Carya* sp.), and tuliptree (*Liriodendron tulipifera*) at higher elevations, with beech (*Fagus grandifolia*), sugar maple (*Acer saccharum*), and bald cypress (*Taxodium distichum*) occurring at only very low elevations, such as those immediately abutting local drainages. Undergrowth in these communities is characteristically sparse, with dogwood (*Cornus florida*), winged elm (*Ulmus alata*), persimmon (*Diospyros virginiana*), sassafras (*Sassafras albidium*), mulberry (*Morus* sp.), white ash (*Fraxinus americana*), and holly (*Ilex* sp.) accounting for the majority of species (Braun 1964:157). In particular, mast-producing species such as the various oaks and hickories would have represented an important subsistence resource for humans occupying this region.

Within the South Fork Obion River basin there is one designated State Natural Area: Big Cypress Tree (Tennessee Department of Environment and Conservation 2008). Big Cypress Tree is a 270 ac. natural area in Weakley County consisting of bottomland hardwood and bald

cypress forest that occurs along the old river meanders and the channelized Middle Fork of the Obion River. This forest is comprised of bald cypress, river birch, sweet gum, sycamore, overcup oak, water oak, willow oak, and cherrybark oak. The bottomland hardwood forest that occurs at higher locations includes green ash, swamp chestnut oak, red maple, and slippery elm with some white oak.

PALEOENVIRONMENT

Paleoenvironmental conditions were substantially different in the late Pleistocene through the middle Holocene. During the Late Wisconsin full-glacial interval (18,000 years before present [YBP]), the Central Mississippi River Valley was covered by boreal forest communities and a Spruce-Willow Forest was on the valley train surfaces that were fed by glacial meltwater from the Ohio River. Post-glacial warming caused jack pine population to collapse about 14,000 YBP, but the area east of Crowley's Ridge remained a Spruce-Willow Forest. By 12,000 YBP, warming temperatures led to an expansion of Oak-Hickory Forest on abandoned braided stream terraces and the Spruce-Willow Forest became more restricted as the active channel of the Ohio River shifted east. By 10,000 YBP, "the vegetation had become temperate to warm temperate in character" (Delcourt et al. 1999:25). At 8,000 YBP, the effects of a warm and dry interval referred to as the Hypsithermal begin to be seen in the pollen record. Regionally, the Hypsithermal was most strongly felt around 6,000 YBP, and the arid conditions continued until after 4,000 YBP (Delcourt et al. 1999). Modern floristic regions developed between 4,000 and 3,000 YBP, with a return to wetter conditions.

MODERN CLIMATE

Under the Köppen climate classification the present (i.e., late Holocene) climate of West Tennessee is considered humid-subtropical (Cfa), and characterized by hot and humid summers, and mild winters. Carroll County is located within the U.S. Department of Agriculture (USDA) plant hardiness Zone 6b (average annual extreme minimum temperatures of -5° to 0°). The growing season in Carroll County is long, averaging 198 days above 32° five years in ten (Moore et al. 1984:Table 3).

Based on climate data collected in Huntingdon from 1962-1979, January is on average the coldest month in Carroll County with average daily minimum and maximum temperatures of 23.4° and 44.7° (Moore et al. 1984:Table 1). July is on average the warmest month with average daily minimum and maximum temperatures of 66.5° and 89.5°.

Precipitation in Carroll County averages approximately 54.63 in. per annum (Moore et al. 1984:Table 1). The wettest period is March, April and May when 5.17–5.60 in. of precipitation fall monthly. The driest month on average is October when 3.14 in. of precipitation falls (Moore et al. 1984:Table 1). Frontal systems associated with areas of low pressure provide the area with the majority of its rainfall. During summer months, convection clouds caused by high temperatures and humidity levels provide rainfall frequently during the afternoon hours.

III. CULTURAL BACKGROUND

PREHISTORIC SEQUENCE

PALEOINDIAN PERIOD

Paleoindian occupations represent the first well-accepted occurrence of humans in the Western Hemisphere. These populations are generally thought of as highly adaptive, mobile hunter-gatherers whose recent ancestors were Upper Paleolithic Siberians who migrated across the present Bering Strait during the Late Pleistocene, when sea levels were ca. 60 m lower. During the Late Glacial era, when initial human colonization of the Southeast is postulated (ca. 10,000–8000 B.C.), climatic changes followed the receding of the continental ice sheets, and there was a widespread extinction of megafauna. The environment at this time is usually interpreted to have been spruce and/or pine-dominated boreal forest (Saucier 1978). By 1,000 years prior to the fluted point occupations, the environment had changed to deciduous forest (Delcourt et al. 1980). Research on Paleoindian diagnostics (Anderson et al. 1990) indicates that the period may be subdivided into Early (9500–9000 B.C.), Middle (9000–8500 B.C.), and Late (8500–8000 B.C.) stages, based on changes in hafted biface morphology.

DALTON PERIOD

The Dalton period is considered transitional between the Paleoindian and Archaic traditions. The key distinguishing feature of the material culture is the unfluted, serrated Dalton point, but the Dalton tool kit includes a number of other diagnostic special-function tools and a woodworking adz (Morse and Morse 1983, 1996). Goodyear (1982) suggests that Dalton represents a distinct temporal horizon dating to 8500–7900 B.C. While technologically similar to Paleoindian, Dalton assemblages suggest an adaptive pattern more akin to later Archaic cultures. One of the most important game species from this time to the contact era seems to have been the white-tailed deer (Morse and Morse 1983:71). During the Dalton period the Mississippi River meander system was established in the lower valley and was working northward, but a braided stream regime still existed. Dalton components are better represented in northwestern Tennessee than are the preceding Early and Middle Paleoindian diagnostics, although much is yet to be learned about this temporal period (Mainfort 1996:80).

ARCHAIC PERIOD

The Archaic is usually thought of in terms of three subperiods: Early (ca. 8000–5000 B.C.); Middle (5000–3000 B.C.); and Late (3000–1500 B.C.). Temporal divisions of the Archaic are primarily based on the occurrence of distinctive projectile points. Throughout Archaic times a hunter-gatherer lifeway appears to have continued, and it was focused on essentially the same flora and fauna as represented in the natural environment today. The Archaic is perceived as a time of regional “settling in,” when an efficient utilization of the environment was keyed to highly cyclical, repetitive seasonal activities continued by indigenous groups over thousands of years (Caldwell 1958). Some seasonal movement to exploit niches was probably required, but Archaic populations, compared to Paleoindian, are generally portrayed as being attached to localities, river valleys, or regions.

WOODLAND PERIOD

During the Woodland period, intensification in horticultural methods, construction of earthworks, elaboration of artistic expression, and burial rituals are all thought to be related to the reorganization of social structure. For at least part of the year, a sedentary group was needed to plant, tend, and harvest crops. Sedentism and communal labor efforts promoted territorial circumscription. This period was also characterized by increased variety and use of ceramics. Ceramic types and varieties thus are a primary consideration in interpreting settlement patterns

and chronological progression of the Woodland period. Considerable archaeological attention has been focused on these ceramic cultures, and a number of phases and phase sequences have been proposed. However, the reader should be aware that these phase assignments are highly problematic and have received strong criticism in the recent past (Mainfort 1994).

MISSISSIPPIAN PERIOD

Hallmarks of the Mississippian period include population increase, intensive floodplain settlement, greater emphasis on agricultural activity, earthwork construction on celestial alignments, inter-regional exchange of exotic items, shell-tempered ceramics, and possibly bow warfare. These factors and the development of a distinctive elite iconography are associated with the rise of conscripted, complex sociopolitical systems, which we now refer to as chiefdoms. A complex mosaic of competing chiefdoms dominated the late prehistoric Southeast political landscape. These chiefdoms were documented by the Spanish explorers at the close of the Mississippian period, which is the final zenith of Native American cultural development.

PROTOHISTORIC PERIOD

This period is generally considered to have begun with the first appearance of European peoples in the Southeast. The De Soto expedition is thought to have crossed the Mississippi River near Walls, Mississippi, in June 1541, after following an upland trail from their 1540 winter camp with the proto-Chickasaw in northeast Mississippi (Dye 1993). Protohistoric sites in western Tennessee (A.D. 1541–1650) produce low frequencies of European trade goods (rarely Spanish, more typically French beads and brass) in association with Late Mississippian artifact types, including quantities of the ceramic type Campbell Appliqué (Mainfort 1996:179).

HISTORIC

HISTORIC ABORIGINAL PERIOD

Western Tennessee is noteworthy for its general absence of historic aboriginal tribes, but the region was claimed as a hunting ground by the Chickasaw, as well as by the Cherokee (Satz 1979:11).

COLONIAL ERA

In the waning sixteenth and seventeenth centuries, more or less continuous contact was established between European and aboriginal populations. Initial Spanish, French, and English settlements were all located on the coast. The English established Jamestown in 1607, and in 1609 King James I granted a charter to the London Company for a vast region that included present-day western Tennessee. The coastal Virginians armed the local Westo Indians, who proceeded to raid the Muscogee, or Creeks, who lacked firearms (Braund 1993:28). Such direct and indirect European-induced social disruptions, such as introduced disease (Ramenofsky 1987), would characterize the entire Colonial period and led to shifting allegiances as the European powers struggled for territory and profits in North America.

ANTEBELLUM PERIOD

The early nineteenth century is better understood and represented in the archaeological record in middle and eastern Tennessee, as this is where most settlements were located. During this time western Tennessee was rocked by a series of massive earthquakes known as the “New Madrid Earthquakes” (Fuller 1912). The town of New Madrid was destroyed, Reelfoot Lake was formed, and the aftershocks continued for months. After the War of 1812 ended (in 1815) and the British-Creek Confederacy was defeated, immigration increased in western Tennessee.

TRAIL OF TEARS

President Andrew Jackson signed the Indian Removal Act in 1830. Between 1831 and 1839, the U.S. Government moved Choctaw, Creek, Chickasaw, Seminole, and Cherokee Indians from eastern states to Oklahoma (Hanson and Moneyhon 1989:18). The routes traveled by the Cherokee during their 1838 removal become known as the “Trail of Tears” due to the hardships suffered during this forced journey. In the Cherokee language, the event is called *Nvnna-da-ultsun-yi*, which translates as “The Trail Where They Cried” (Satz 1979:93). During this exodus numerous routes were used by various groups, and Memphis was a staging areas for groups using overland and water routes.

CIVIL WAR AND RECONSTRUCTION

Following Lincoln’s election, the initial vote for secession failed, but after the war began Tennessee seceded. In 1861–1862, several skirmishes took place along the Mississippi during the Federal campaign to seize control of the river. New Madrid was captured by Confederate forces under General Pillow in 1861. Island No. 10 was fortified by the Confederates and was the scene of a battle in March 1862 (Bragg 1977:27).

TENANT PERIOD

The period from 1870 to 1950 is known as the “Tenant period” (Stewart-Abernathy and Watkins 1982), and is named for the sharecropping or tenant farm labor system that was a significant characteristic of southern U.S. agriculture after the Civil War. This decentralization of the old plantation system developed during Reconstruction as a means of stabilizing labor relations between former slaves and landowners. Prunty (1955) has interpreted tenancy as a post-bellum modification of the plantation system.

HISTORY OF CARROLL COUNTY

Carroll County was created by act of the Tennessee general Assembly on 7 November 1821. It was created from lands within the Western District following the Jackson Purchase of 1818. The economy of the county has been centered on agriculture for much of its history. In recent years, industry and service-related businesses have increased in economic importance, in part due to the transportation infrastructure servicing the county including both rail and interstate highway systems (McClure 1998).

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IV. LITERATURE AND RECORDS SEARCH

Laboratory Director, Karla Oesch, RPA conducted a standard cultural resources literature and records search for this assessment in advance of fieldwork at the TDOA facility in Nashville on 13 June 2018. Information regarding previous archaeological studies and previously recorded archaeological sites within a 1-mi. search radius of the APE was retrieved.

PREVIOUSLY RECORDED ARCHAEOLOGICAL SITES

Review of TDOA archival quadrangles and Geographic Information System (GIS) database indicated that there is no previously recorded archaeological site within APE. More generally, there are few sites recorded in the study vicinity, and the nearest previously recorded site (40CL206, a Woodland village recorded in 1972) is 5 km distant.

PREVIOUS ARCHAEOLOGICAL STUDIES

There has been no previous archaeological study at the APE, nor has there been any prior study within the 1-mi. radius.

Probably the best-known prior archaeological survey in the project vicinity was conducted between 1966 and 1975 by the Department of Archaeology, Memphis State University (now the University of Memphis; Smith 1979). This survey resulted in the identification of 29 sites along the South Fork Obion River.

CARTOGRAPHIC REVIEW

1832 TENNESSEE STATE MAP

The APE falls within the 12th Surveyors District on Matthew Rhea's 1832 Tennessee State Map (Figure 4-01). Reedy Creek is indicated on this map, and an east-west road linking Huntingdon and McLemoresville that possibly represents today's State Route 77 (SR-77) can be seen to the south. Another road is shown leading northeast from McLemoresville that crosses Reedy Creek, but it is too far east to be SR-436/Reedy Creek Road.

1888 ATLAS MAP OF TENNESSEE

The 1888 Rand, McNally, & Co.'s atlas "Map of Tennessee" does not illustrate roads, but does show railroads (Figure 4-02). McLemoresville and Reedy Creek can be seen to the southeast of the St. Louis & Nashville Railroad. This railroad was known as the Memphis, Clarksville & Louisville Railroad during the Civil War.

1967 TREZEVANT EAST QUADRANGLE MAP

The 1967 Trezevant East, TN 7.5-min. quad shows SR-436/Reedy Creek Road and bridge, but no other cultural feature within the APE (Figure 4-03). TDOT records indicate that this bridge was constructed in 1939 (Pannell 2018), so Reedy Creek Road must have been in place by then.

SURVEY EXPECTATIONS

There is a general absence of archaeological sites in the immediate vicinity of the APE; however, past work within the South Fork Obion River basin suggests that the local settlement pattern is focused in the higher terraces. Low-lying occasionally flooded settings, such as the APE, are not considered high-probability locations. Additionally, based on soil type (see *Chapter II. Environmental Setting*), the APE is considered to be a moderate- to low-probability setting.

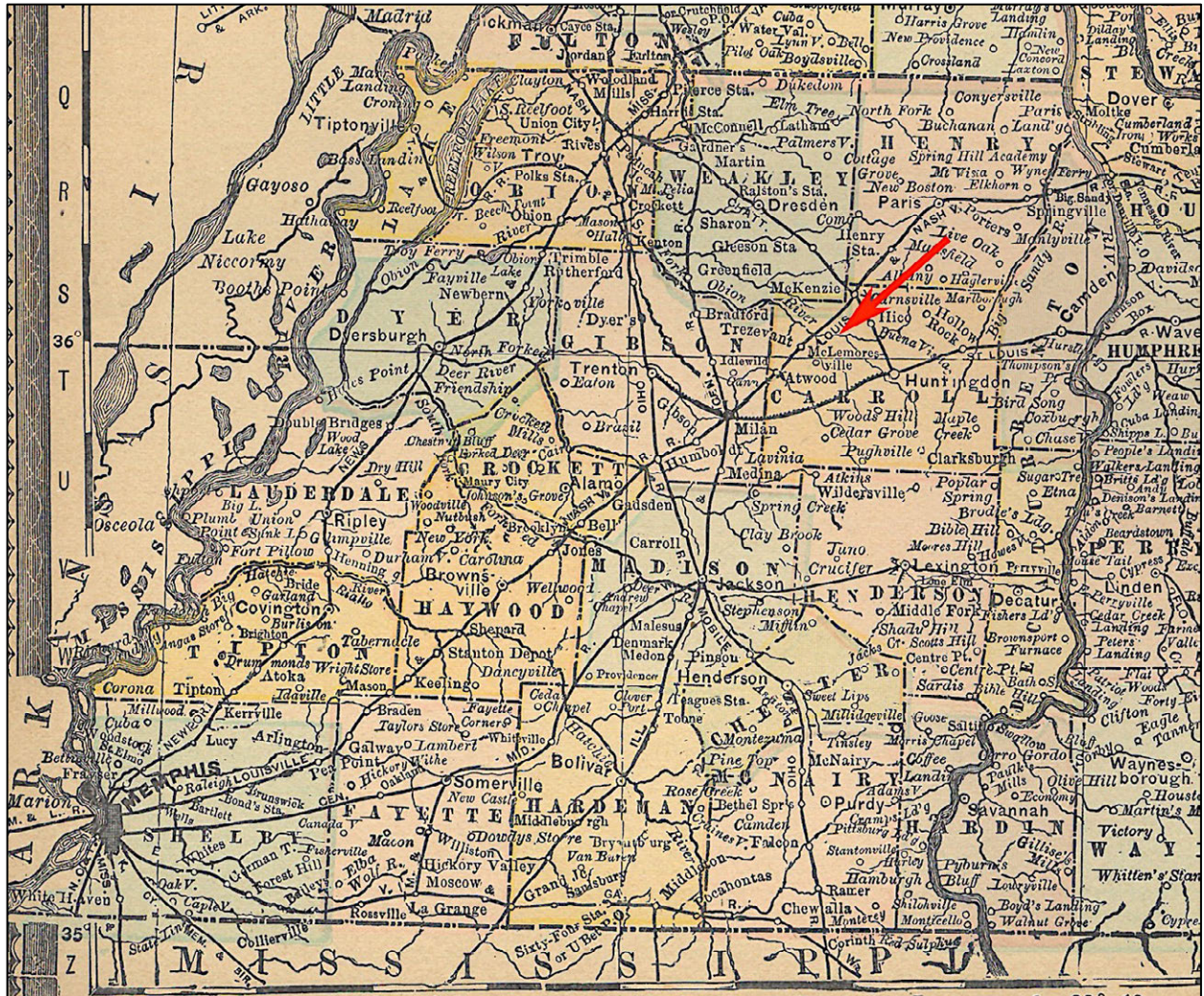


Figure 4-02. A portion 1888 Rand, McNally, & Co.'s atlas "Map of Tennessee" with the State Route 436/Reedy Creek Road Bridge Area of Potential Effects indicated (red arrow).

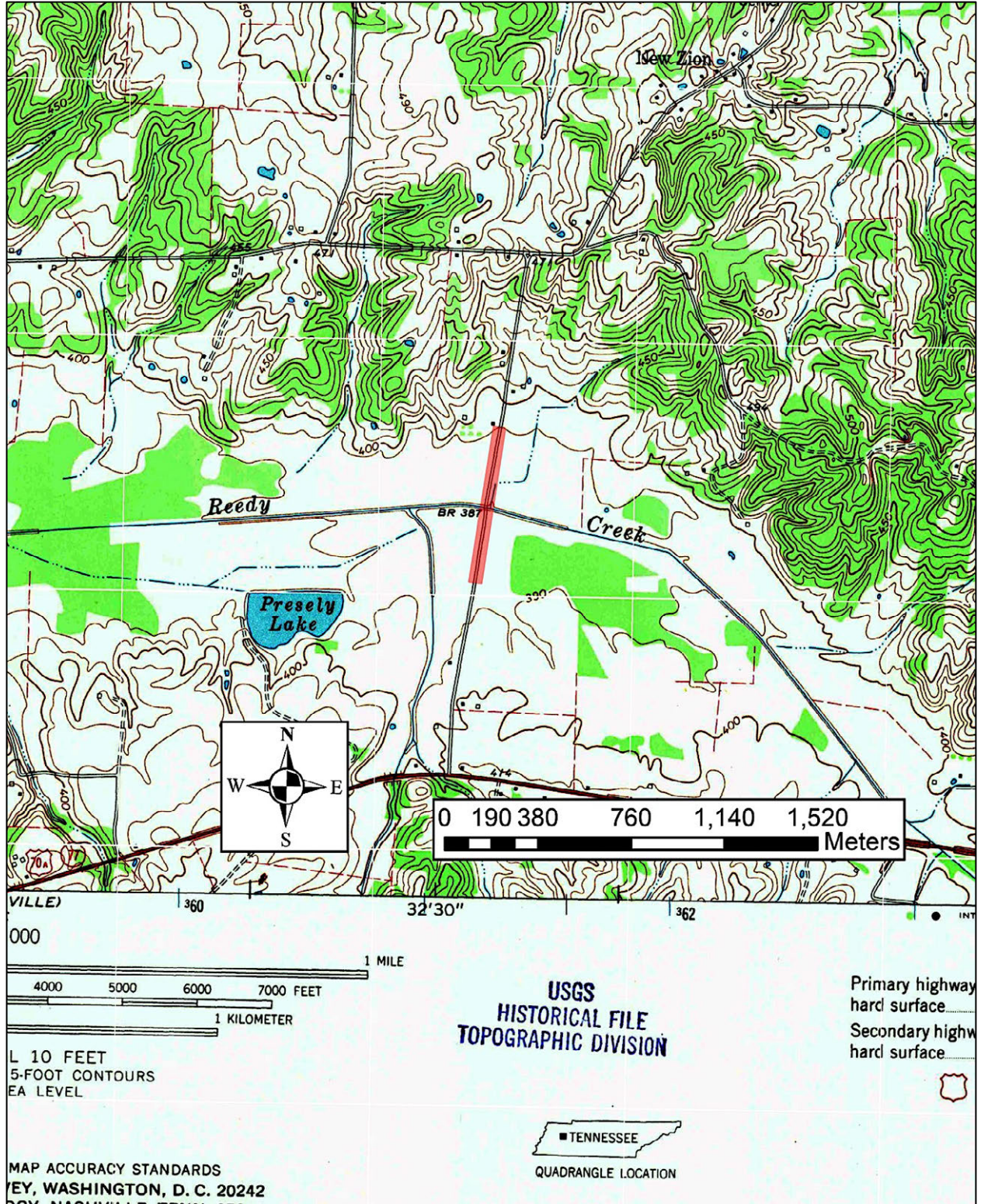


Figure 4-03. A portion of the 1967 Trezevant East, TN 7.5-min. quad with the State Route 436/Reedy Creek Road Bridge Area of Potential Effects indicated (red rectangle).

V. FIELD INVESTIGATIONS

METHODS

SITE DETECTION

The undeveloped portions of the APE principally consisted of cultivated fields that offered good to excellent surface visibility. As a result, visual inspection was the primary site detection method employed. The pedestrian (visual) transects were spaced at 15-m intervals. To supplement the visual survey, 16 judgmentally placed shovel tests were excavated; four in each quadrant of the APE.

Each shovel test consisted of a hole measuring approximately 30 cm². Excavation of shovel tests continued until sterile subsoil was encountered. All fill removed from shovel test excavations was passed through 0.25-in. hardware cloth to ensure consistent artifact recovery. Shovel test profiles were recorded on standardized forms. Profile descriptions included Munsell Soil Color Chart references and standard Natural Resources Conservation Service (NRCS) terminology to describe soil textural classes. Additional information recorded for each shovel test included the maximum depth of excavation, presence or absence of cultural material, and the nature of any recovered artifacts. All areas disturbed by excavations were restored (i.e., backfilled) as closely as possible to their original condition.

SITE SAMPLING/DELINEATION

No archaeological site was identified during the course of this assessment. Thus, a discussion of site sampling and/or delineation is not warranted here.

SURVEY INTENSITY

During the course of this assessment, 16 shovel tests were excavated at judgmentally placed locations (Figure 5-01; Table 5-01). All were negative for cultural material.

PHOTOGRAPHY SPECIFICATIONS

Digital images were taken in sufficient quantities to record the excavations, surface features, sites, and general conditions within the terrestrial survey area. The photographs were recorded in logs (by photographer). Cameras utilized included a Nikon Coolpix P510 set to 16-megapixel resolution. The photo logs and *.jpg images are part of the permanent project records, and are included with the curation material.

FIELD DOCUMENTATION

To ensure appropriate field data management, Panamerican employs a system the company developed for intensive surveys. Throughout the course of the fieldwork, the crew used specialized forms to individually record the shovel tests units. The status of each unit was assessed as positive (■), negative (□), or not excavated (Ø). In the case of the latter, which are referred to as “no-test” locations, the reason for not excavating the unit is provided on the forms. Unit soil profiles, sediment characteristics, and depths of artifact recovery, if any, were recorded on the forms during the fieldwork. At the end of each field day, this information is collected by the Field Director and reviewed for content. The project field documentation also included, but was not limited to, the following additional types of records: (1) daily field notes of key project personnel describing general findings and observations; (2) completion of various task oriented forms such as artifact bag lists and photo logs; and (3) various “in-house” paperwork, such as safety meetings notes and employee timesheets.

GLOBAL POSITIONING SYSTEM MAPPING

A Trimble GeoExplorer 7X sub-meter precision Global Positioning System (GPS) unit was employed for in-field mapping. Features mapped during the course of fieldwork included all shovel test positions. All field data were backed up daily to a laptop computer. The Tennessee State Plane (NAD83 feet) datum and coordinate system was used for GIS mapping products. GPS data are provided to TDOT in GIS format along with the draft version of this report.

RESULTS

Fieldwork for the assessment was conducted on 21 and 22 June 2108, by a two-person crew consisting of Field Director Saatkamp, RPA and Archaeological Technician Geary. The assessment resulted in negative findings; no archaeological site, artifact or deposit was encountered.

The boundary of the APE extended 92 ft. (28.04 m) east of the existing centerline, and 108 ft. (32.92 m) west of the existing centerline (see Figure 5-01). During the pedestrian (visual) survey, the two-person crew made two passes (one to the north and one to the south) spaced at 15-m intervals within each quadrant of the APE (starting at the ditch on the side of SR-436/Reedy Creek Road). This provided visual coverage out to 45 m from the centerline, which was beyond the APE boundary. As previously noted, surface visibility was good to excellent, as the soybean and corn crops within the undeveloped portions of the APE were young and low to the ground (Figures 5-02 and 5-03).

No artifact was detected, but a vegetated berm/levee on the western side of the road was observed (Figure 5-04). Presumably, it was constructed to control backwater flooding coming up Reedy Creek from the west.

In addition to the pedestrian (visual) survey, 16 shovel tests were excavated at judgmentally placed locations within the APE (four tests in each quadrant). All were negative (see Figure 5-01 and Table 5-01). The shovel test depths ranged 40–56 cm, and the average depth was 50.0 cm ± 3.72 cm. The plowzone (surface horizon) depth exhibited some variation, and ranged 10–30 cm across the APE. The recorded profiles generally exhibited more clay in the substratum than is typical of the published descriptions for the soil types mapped within the APE (Falaya silt loam, occasionally flooded and Waverly silt loam, occasionally flooded; see Chapter II); however, the gray and brown mottles in the substratum were apparent (Figure 5-05).

CONCLUSION

To conclude, the archaeological assessment for the SR-436/Reedy Creek Road Bridge replacement over Reedy Creek resulted in negative findings.

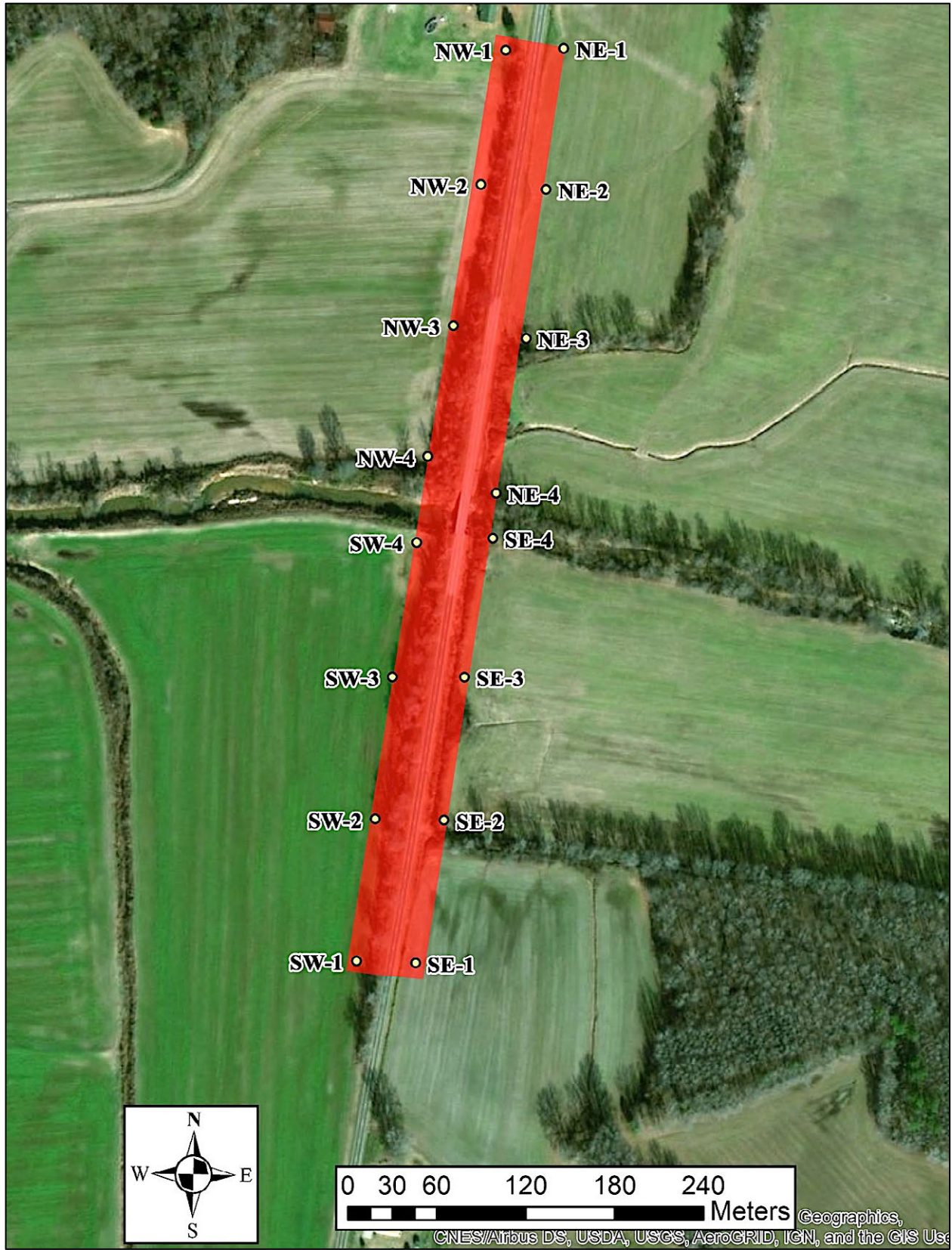


Figure 5-01. Aerial map showing the Area of Potential Effects limits (shaded red rectangle) and location of shovel tests (yellow dots).

Table 5-01. Shovel tests summary.

Quadrant	ST	R	Max Depth (cm)	Soil Description
SE	1	☐	56	0–10 cmbs, 10YR 5/3 clay loam; 10–56 cmbs, 7.5YR 4/6 loam
SE	2	☐	52	0–10 cmbs, 10YR 4/3 clay loam; 10–52 cmbs, 10YR 5/3 and 6/3 clay
SE	3	☐	40	0–20 cmbs, 10YR 4/3 clay loam; 20–40 cmbs, 10YR 7/2 clay (Figure 5-05)
SE	4	☐	50	0–10 cmbs, 10YR 4/3 clay loam; 10–50 cmbs, 10YR 7/2 clay
SW	1	☐	47	0–10 cmbs, 10YR 4/3 clay loam; 10–47 cmbs, 10RY 7/1 clay
SW	2	☐	45	0–17 cmbs, 10YR 4/3 clay loam; 17–24 cmbs, 10YR 5/4 and 6/3 clay; 24–45 cmbs, 10YR 7/2 and 4/6 clay
SW	3	☐	54	0–21 cmbs, 10YR 4/3 clay loam; 21–33 cmbs, 10YR 5/6 and 6/3 clay; 33–54 cmbs, 10YR 7/2 and 4/6 clay
SW	4	☐	53	0–16 cmbs, 10YR 4/3 clay loam; 16–27 cmbs, 7.5YR 5/6 clay loam; 27–53 cmbs, 10YR 7/2 and 4/6 clay
NE	1	☐	53	0–33 cmbs, 10YR 5/6 clay loam; 33–53 cmbs, 10YR 7/2 and 4/6 clay
NE	2	☐	50	0–30 cmbs, 10YR 5/6 silty clay loam; 30–50 cmbs, 10YR 3/3 clay
NE	3	☐	50	0–17 cmbs, 10YR 5/6 silty clay loam; 17–50 cmbs, 10YR 6/4 and 7/2 clay
NE	4	☐	50	0–23 cmbs, 10YR 5/6 silty clay loam; 23–50 cmbs, 10YR 6/4 and 7/2 clay
NW	1	☐	50	0–10 cmbs, 10YR 3/4 clay loam; 10–50 cmbs, 10YR 6/4 and 5/8
NW	2	☐	50	0–15 cmbs, 10YR 5/6 sandy clay loam; 15–50 cmbs, 10YR 6/6 sandy clay
NW	3	☐	50	0–28 cmbs, 10YR 5/6 sandy clay loam; 28–40 cmbs, 10YR 6/4 and 7/2 clay; 40–50 cmbs, 10YR 7/3 sandy clay
NW	4	☐	50	0–22 cmbs, 10YR 5/6 sandy clay loam; 22–50 cmbs, 10YR 6/4 and 7/2 clay

Key: Shovel Test Number= ST; Result=R; Positive=■; Negative=☐; No Test=Ø; and cm below surface=cmbs

CURATION

All records associated with this assessment are temporarily housed at Panamerican's Memphis laboratory and will be prepared for permanent curation according to guidelines set forth in 36 CFR 79. These items will be permanently curated with TDOT at the Nashville facility in accordance with the TDOA Archaeological Permit (No. 000994; Appendix A) issued for this assessment.



Figure 5-02. Southeastern quadrant of the Area of Potential Effects; view north (DSCN0686).



Figure 5-03. Southwestern quadrant of the Area of Potential Effects; view north (DCSN0695).



Figure 5-04. Berm in the southwestern quadrant; view east (DCSN0697).



Figure 5-05. Typical soil profile, southwestern quadrant Shovel Test 3; view south (DSCN0692).

VI. SUMMARY AND RECOMMENDATIONS

SUMMARY

At the request of TDOT, Panamerican performed a Phase I archaeological assessment of the APE for the replacement of the SR-436/Reedy Creek Road Bridge over Reedy Creek at LM 0.68 in Carroll County as Work Order No. 009 under Agreement E1913 (TDOT PIN 124139.00; Project No. 09035-0220-94). Fieldwork for the assessment was conducted on 21 and 22 June 2018 under the direction of Field Director Saatkamp, RPA, with Archaeological Technician Geary. All work completed during the assessment conformed to the stipulations set forth by the TDOA Archaeological Permit No. 000994 issued on 7 June 2018 (Appendix A) and the TDOT SOW (FY 2017–2018).

The APE lies within TDOT Region IV, and is found in northwestern Carroll County, approximately 4 km northeast of the community of McLemoresville. The APE can be identified on the Trezevant East, TN (444SE) 7.5-min. quad (see Figure 1-01). The APE for the present assessment is defined as the extent of the proposed ETSA, ROW, and all easements as shown on project plans, as well as potentially undisturbed areas within the existing ROW. The APE is a 1600-x-200-ft. (0.0115-mi.²) area that extends 300 ft. north and 300 ft. south of the beginning and end of the project (see Figure 1-02). The APE encloses an area that is larger than the present and proposed ROW for the project.

The setting is the floodplain of Reedy Creek, a tributary of the South Fork of the Obion River, and terrain is level with the elevation being just less than 390 ft. The soil types found within the APE include Falaya silt loam, occasionally flooded and Waverly silt loam, occasionally flooded; as a result, the APE is considered to have moderate to low archaeological probability.

Laboratory Director Oesch, RPA conducted a standard cultural resources literature and records search for this assessment in advance of fieldwork at the TDOA facility in Nashville on 13 June 2018. This revealed that there is no previously recorded archaeological site within or near the APE, and that there has been no prior investigation at or near the APE.

Fieldwork for the assessment was conducted on 21 and 22 June 2018 by a two-person crew. The undeveloped portions of the APE principally consisted of cultivated fields that offered good to excellent surface visibility (see Figures 5-02 and 5-03). As a result, visual inspection was the primary site detection method employed. The pedestrian (visual) transects were spaced at 15-m intervals. To supplement the visual survey, 16 judgmentally placed shovel tests were excavated; four in each quadrant of the APE (see Figure 5-01). The shovel tests were all negative, and the depths ranged 40–56 cm, and the average depth was 50.0 cm ± 3.72 cm (see Table 5-01).

To summarize, the archaeological assessment for the SR-436/Reedy Creek Road Bridge over Reedy Creek at LM 0.68 in Carroll County APE resulted in negative findings.

RECOMMENDATIONS

As there is no archaeological resource located within the APE, no further archaeological work is recommended.

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Tennessee Department of Environment and Conservation

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APPENDIX A: ARCHAEOLOGICAL PERMIT



STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
DIVISION OF ARCHAEOLOGY
Cole Building #3, 1216 Foster Avenue
NASHVILLE, TN 37243
(615) 741-1588 FAX (615) 741-7329

ARCHAEOLOGICAL PERMIT

NO. 000994

IN ACCORDANCE WITH THE PROVISIONS OF TENNESSEE CODE ANNOTATED SECTION 11-6-101 ET SEQ. PERMISSION IS HEREBY GRANTED TO:

C. ANDREW BUCHNER

REPRESENTING:

PANAMERICAN CONSULTANTS, INC.

FOR ARCHAEOLOGICAL INVESTIGATION ON THE FOLLOWING DESIGNATED STATE-OWNED OR CONTROLLED LANDS

PHASE I ARCHAEOLOGICAL SURVEY OF SR-436 REEDY CREEK BRIDGE OVER REEDY CREEK AT LOG MILE 0.68, CARROLL COUNTY

IN ACCORDANCE WITH THE APPLICATION FILED JUNE 7, 2018 IN THE OFFICE OF THE DIVISION OF ARCHAEOLOGY AND IN CONFORMITY WITH THE DATA SUBMITTED THEREIN WHICH IS CONSIDERED AS A PART OF THIS PERMIT.

ISSUED THIS 7TH DAY OF JUNE 2018

TO EXPIRE 7TH DAY OF OCTOBER 2018

ADDITIONAL TERMS TO PERMIT APPLICATION: ARTIFACTUAL REMAINS AND THE ORIGINAL PROJECT RECORDS WILL BE CURATED WITH THE TENNESSEE DIVISION OF ARCHAEOLOGY. THIS PERMIT IS SUBJECT TO PERIODIC REVIEW AND/OR CANCELLATION BY THE DIVISION OF ARCHAEOLOGY SHOULD CONDITIONS WARRANT SAME.


DIRECTOR/STATE ARCHAEOLOGIST


APPLICANT

CN-0939



TENNESSEE HISTORICAL COMMISSION
STATE HISTORIC PRESERVATION OFFICE
2941 LEBANON PIKE
NASHVILLE, TENNESSEE 37243-0442
OFFICE: (615) 532-1550
www.tnhistoricalcommission.org

July 20, 2018

Mr. Phillip R. Hodge
Tennessee Department of Transportation
Suite 900, James K. Polk Building
505 Deaderick Street
Nashville, TN 37243-1402

RE: FHWA / Federal Highway Administration, Bridge Replacement, SR-436 over Reedy Creek, Carroll County, TN

Dear Mr. Hodge:

In response to your request, we have reviewed the archaeological report of investigations and accompanying documentation submitted by you regarding the above-referenced undertaking. Our review of and comment on your proposed undertaking are among the requirements of Section 106 of the National Historic Preservation Act. This Act requires federal agencies or applicants for federal assistance to consult with the appropriate State Historic Preservation Office before they carry out their proposed undertakings. The Advisory Council on Historic Preservation has codified procedures for carrying out Section 106 review in 36 CFR 800 (Federal Register, December 12, 2000, 77698-77739).

Considering the information provided, we find that no archaeological resources eligible for listing in the National Register of Historic Places will be affected by this undertaking. If project plans are changed or archaeological remains are discovered during project construction, please contact this office to determine what further action, if any, will be necessary to comply with Section 106 of the National Historic Preservation Act. Complete and/or updated Tennessee Site Survey Forms should be submitted to the Tennessee Division of Archaeology for all sites recorded and/or revisited during the current investigation. Questions or comments may be directed to Jennifer Barnett (615) 687-4780.

Your cooperation is appreciated.

Sincerely,

E. Patrick McIntyre, Jr.
Executive Director and
State Historic Preservation Officer

EPM/jmb

Native American Consultation

Environmental Studies

Native American Coordination

Environmental Studies Request

Project Information

Route: State Route 436 (SR-436)
Termini: Reedy Creek Road Bridge over Reedy Creek, LM 0.68
County: Carroll
PIN: 124139.00

Request

Request Type: Initial Environmental Study
Project Plans: Planning Report
Date of Plans: 3/23/2018
Location: Email Attachment

Certification

Requestor: Brittany Hyder
Title: TESS-Ad

Signature: Brittany
Hyder

 Digitally signed by
Brittany Hyder
Date: 2018.04.04
15:29:49 -05'00'

Environmental Study

Technical Section

Section: Native American Coordination

Study Results

NAC was sent to all federally recognized, interested tribes on April 19, 2018 and August 21, 2018. The Chickasaw Nation requested to be a consulting party. A final report was sent to the tribe. No other tribes have responded.

Commitments

Did the study of this project result in any environmental commitments?

No

Additional Information

Is there any additional information or material included with this study?

Yes

Type: Native American Coordination

Location: Email Attachment

Certification

Responder: Sarah Kate McKinney

Title: TESS Archaeology

Signature: Sarah Kate McKinney
Digitally signed by Sarah Kate McKinney
Date: 2018.09.28 09:47:35 -05'00'



**STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION**

ENVIRONMENTAL DIVISION
SUITE 900, JAMES K. POLK BUILDING
505 DEADERICK STREET
NASHVILLE, TENNESSEE 37243-1402
(615) 741-3655

JOHN C. SCHROER
COMMISSIONER

BILL HASLAM
GOVERNOR

April 19, 2018

Mr. Brett Barnes
Cultural Preservation Director/ THPO
Eastern Shawnee Tribe of Oklahoma
70500 E. 128 Road, Wyandotte OK
74370

SUBJECT: Section 106 Initial Consultation for Proposed Bridge Replacement of State Route 436 Bridge over Reedy Creek in Carroll County, Tennessee (TDOT PIN 124139.00).

Dear Mr. Barnes,

The Tennessee Department of Transportation (TDOT), in coordination with the Federal Highway Administration (FHWA), is proposing to replace the State Route 436 bridge over Reedy Creek, log mile 0.68, in Carroll County, Tennessee (maps attached). The project proposes to shift the new bridge approximately 10 feet to the west. Approximately 1.13 acres of additional right-of-way is anticipated, and there will be ground disturbance within the area of potential effects (APE).

The National Historic Preservation Act (NHPA) recognizes that federally funded undertakings, like the subject project, can affect historic properties to which your tribe attaches religious, cultural, and historic significance. In accordance with 36 CFR 800 regulations implementing compliance with Section 106 of the NHPA, we are providing general project information so that you can determine if your tribe has an interest in the project area or nature of the work proposed and so you have an opportunity to bring to our attention any interests and concerns about the potential for impacts to properties of religious and cultural significance. In addition, do you wish to be a consulting party on the project? Early awareness of your concerns can serve to protect historic properties valued by your tribe.

If you act as a consulting party you will receive archaeological assessment reports and related documentation, be invited to attend project meetings with FHWA, TDOT, and the Tennessee State Historic Preservation Office (TN-SHPO), if any are held, and be asked to provide input throughout the process. If you choose to not act as a consulting party at this time, you can do so at a later date simply by notifying me.

Please respond to me via letter, telephone (615-741-0977), fax (615-741-1098), or E-mail (Phillip.Hodge@tn.gov). I respectfully request responses (email is preferred) to project reports and other materials within thirty (30) days of receipt if at all possible. Thank you for your assistance.

Sincerely,

Phillip R. Hodge
Archaeology Program Manager

Enclosure

cc Karen Brunso, The Chickasaw Nation
Tonya Tipton, Shawnee Tribe
Sheila Bird, United Keetoowah Band of Cherokee Indians

Carroll County, TN. PIN 124139.00

TDOT PIN 124139.00
Carroll County
USGS TOPO Trezevant East 444 SE



USGS Quad

Carroll County, TN. PIN 124139.00

**TDOT PIN 124139.00
Carroll County
USGS TOPO Trezevant East 444 SE**



Project Location: Aerial View

From: [Phillip Hodge](#)
To: [Sarah K. McKinney](#)
Subject: FW: Section 106 Coordination; State Route 436 Bridge Replacement over Reedy Creek, Carroll County, Tennessee PIN 124139.00
Date: Wednesday, August 22, 2018 4:15:00 PM
Attachments: [Carroll SR436 Bridge 124139.00 NAC Brunso.pdf](#)
[Carroll County, TN, SR-436 Bridge over Reedy Creek, Architectural-Histor....pdf](#)
[Carroll County TN SR-436 Bridge over Reedy Creek Archaeological Repor.....pdf](#)

FYI, and to file.

From: Fottrell, Gary (FHWA) [mailto:Gary.Fottrell@dot.gov]
Sent: Tuesday, August 21, 2018 7:21 AM
To: Chickasaw Nation (HPO@chickasaw.net)
Cc: Phillip Hodge
Subject: Section 106 Coordination; State Route 436 Bridge Replacement over Reedy Creek, Carroll County, Tennessee PIN 124139.00

***** This is an EXTERNAL email. Please exercise caution. DO NOT open attachments or click links from unknown senders or unexpected email - STS-Security. *****

Dear Ms. Brunso:

Please find attached information for a project proposed by the Tennessee Department of Transportation (TDOT):

- **State Route 436 Bridge Replacement over Reedy Creek, Carroll County, PIN 124139.00**

In accordance with Section 106 of the National Historic Preservation Act of 1966, as amended, and as promulgated in 36 CFR 800, we are providing general project information so that you can determine if your tribe has an interest in the project area or nature of the work proposed and so you have an opportunity to bring to our attention any interests and concerns about the potential for impacts to properties of religious and cultural significance. In addition, do you wish to be a consulting party on the project? If possible, we would appreciate your response via email by September 20th.

TDOT has attached a map of the project site with coordinates, architectural/historical and archaeological assessments, and SHPO letters. Thank you for your assistance on this project. If you have questions or need additional information, please feel free to call at any time.

Sincerely,

Gary Fottrell

Environmental Program Engineer
TN Division, Federal Highway Administration
404 BNA Drive, Suite 508
Nashville, TN 37217
Phone (615) 781-5766

August 31, 2018

Mr. Gary Fottrell
Environmental Program Engineer
Tennessee Division
Federal Highway Administration
404 BNA Drive, Suite 508
Nashville, TN 37217

Dear Mr. Fottrell:

Thank you for the letters of notification and cultural resource reports regarding the proposed projects, delineated in the attached table, in Tennessee. We accept the invitation to consult under Section 106 of the National Historic Preservation Act.

The Chickasaw Nation supports the proposed undertakings and is presently unaware of any specific historic properties, including those of traditional religious and cultural significance, in the project area. In the event the agency becomes aware of the need to enforce other statutes we request to be notified under ARPA, AIRFA, NEPA, NAGPRA, NHPA and Professional Standards.

Your efforts to preserve and protect significant historic properties are appreciated. If you have any questions, please contact Ms. Karen Brunso, tribal historic preservation officer, at (580) 272-1106, or at karen.brunso@chickasaw.net.

Sincerely,

Lisa John, Secretary
Department of Culture and Humanities

cc: Gary.Fottrell@dot.gov

Project Description	Location
PIN#124637.00 State Route 87 bridge over Overflow	Lauderdale County
PIN#124154.00 State Route 100 bridge over South Fork Forked Deer River	Chester County
Request #6413 Excess land on I-65	Williamson County
PIN#124505.00 State Route 1 bridge over Muddy Creek	Haywood County
PIN#124748.00 State Route 3 bridge over Overflow	Shelby County
Request #6406 Excess land in Crump	Hardin County
PIN#126713.00 Bike and Pedestrian Trail along Memphis-Arlington Road	Arlington, Shelby County
Request #6421 Excess land	Hardin County
PIN#124285.00 Bridge over unknown branch	Fayette County
PIN#124135.00 Bridge over Reedy Creek	Carroll County

Hazardous Materials

Environmental Studies Request

Project Information

Route: State Route 436 (SR-436)
Termini: Reedy Creek Road Bridge over Reedy Creek, LM 0.68
County: Carroll
PIN: 124139.00

Request

Request Type: Initial Environmental Study
Project Plans: Planning Report
Date of Plans: 3/23/2018
Location: Email Attachment

Certification

Requestor: Brittany Hyder
Title: TESS-Ad

Signature: Brittany
Hyder

 Digitally signed by
Brittany Hyder
Date: 2018.04.04
15:29:49 -05'00'

Environmental Study

Technical Section

Section: Hazardous Materials

Study Results

Based on the Transportation Investment Report dated 23 March 2018, no known hazardous materials sites appear to affect this project as it is currently planned and no additional hazardous material studies are recommended at this time. The asbestos survey on bridge number 09S82330001 has been completed under PIN 043917.01 and no asbestos was detected; the project commitment was submitted to PPRM but is not shown in this TIR.

Reedy Creek has not been assessed by TDEC DWR.

In the event hazardous substances/wastes are encountered within the right-of-way, their disposition shall be subject to all applicable regulations, including the applicable sections of the Federal Resource Conservation and Recovery Act, as amended; and the Comprehensive Environmental Response, Compensation, and Liability Act, as amended; and the Tennessee Hazardous Waste Management Act of 1983, as amended. Databases reviewed include: Google Earth imagery, EPA National Priorities List, EPA EnviroMapper, TDEC Registered UST database, TDEC Division of Water Resources Public Data Viewer, TDOT IBIS, and others as necessary.

Commitments

Did the study of this project result in any environmental commitments?

Yes

previously submitted, not shown in this TIR

An Asbestos Containing Material (ACM) survey was conducted on Bridge No. 09S82330001, SR-436 over Reedy Creek, LM 0.68 (09-SR436-00.68). No ACM was detected. No special accommodations for demolition and waste disposal are anticipated for these structures and the material can be deposited in a C&D landfill. Prior to the demolition or rehabilitation of any structure (bridge or building), the contractor is required to submit the National Emission Standards for Hazardous Air Pollutants standard 10-day notice of demolition to the TDEC Division of Air Pollution Control (per TDOT Standard Specifications for Road and Bridge Construction (January 1, 2015) Sections 107.08 D and 202.03).

Additional Information

Is there any additional information or material included with this study?

No

Certification

Responder: Kyle Kirschenmann

Signature:

Kyle Kirschenmann

Title: Environmental Program Manager, Hazardous Materials Section

Digitally signed by Kyle Kirschenmann
DN: cn=Kyle Kirschenmann, o=TDOT,
ou=Environmental Division,
email=kyle.kirschenmann@tn.gov,
c=US
Date: 2018.04.05 11:36:47 -04'00'



TENNESSEE DEPARTMENT OF TRANSPORTATION

ASBESTOS INSPECTION REPORT

SR-436 over Reedy Creek, Carroll County, Tennessee
Construction Number 09035-4218-04
PIN Number 043917.01
Bridge ID Number 09S82330001



Prepared by:



K. S. WARE & ASSOCIATES, L.L.C.

54 Lindsley Avenue
Nashville, Tennessee 37210

September 8, 2016
KSWA Project Number: 100-16-0042

A handwritten signature in blue ink that reads "Kollan Spradlin".

Kollan Spradlin
Tennessee Asbestos Inspector Accreditation A-I-96275-44129]

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2.0 INTRODUCTION

This report presents the findings of an inspection for asbestos-containing materials (ACM) completed on the bridge identified in Section 1.1. The inspection was completed in accordance with the State of Tennessee, Department of Transportation Environmental Division, Hazardous Materials Section requirements.

2.1 TDOT BRIDGE IDENTIFICATION

The bridge is identified in the TDOT Project System/Bridge Management System as:

TDOT Const Number 09035-4218-04
TDOT PIN Number: 043917.01
Bridge Inventory Number: 09S82330001
Termini: SR-436 over Reedy Creek
Log Mile Number: 0.68

2.2 GENERAL DESCRIPTION

The SR-436 Bridge over Reedy Creek is a 90-foot, 2-lane, single-span bridge with three approach spans constructed of pre-stressed concrete box beams with a concrete deck and asphalt wearing surface. The bridge was constructed in 1960 and is scheduled for repair. **Figure – 1** shows the general location of the bridge. Photographs of the subject Carroll County bridge are presented in **Appendix A**, and the analytical results of all the samples collected from the bridge, along with the chain-of-custody records, are included in **Appendix B**. No concrete coatings or lined deck drains were encountered on this bridge during field activities.

3.0 INSPECTION

The identification of ACM is performed by collecting bulk samples of suspect materials and having those samples analyzed by a laboratory. ACM are those materials found to contain greater than one percent asbestos by calibrated visual area estimation (CVAE) using Polarized Light Microscopy (PLM).

Bulk sampling is a procedure in which representative homogeneous sampling areas in a structure are identified and then sampled. A homogeneous sampling area is defined as an area that contains material of the same type (uniform in color and texture) and is applied during the same general time period. Once the homogeneous sampling areas are identified, bulk samples of suspect materials are obtained at the discretion of our inspectors, based on site conditions and past experience.

3.1 PERSONNEL AND DATE(S) OF INSPECTION

The sampling and field activities were performed on August 18, 2016 by KWSA representative Mr. Kollan Spradlin. Mr. Spradlin is an accredited State of Tennessee Asbestos Inspector. A copy of Mr. Spradlin's current accreditation from the State of Tennessee is included in **Appendix C**. Field activities were conducted under a Health and Safety Plan (**Appendix D**) and an Activity Hazard Analysis (**Appendix E**) prepared prior to mobilizing to the site.

3.2 VISUAL SURVEY

KSWA's survey began with a visual survey of the bridge. The visual survey consisted of:

- sketching the structure and/or verifying the plans provided
- locating and identifying homogeneous areas of suspect materials that may contain asbestos minerals
- determining applicable sampling locations

Table-1 lists the homogeneous areas identified during our visual survey. **Figure – 2** shows the general locations of the identified homogeneous areas.

Table – 1: Bridge Component Descriptions

Homogeneous Area	Description	Sample Numbers
A	Asphalt Overlay	RC-01, RC-02, RC-03
B	Concrete Deck/Curb	RC-04, RC-05, RC-06
C	Concrete Beams	RC-07, RC-08, RC-09
D	Asphalt Patching	RC-10, RC-11, RC-12
E	Concrete Footing	RC-13, RC-14, RC-15

3.3 ACCESS TO BRIDGE COMPONENTS

Individual bridge components were accessed by the following methods.

3.3.1 Asphalt Overlay – Homogeneous Area A

The asphalt overlay was accessed and sampled from the top and shoulders of the bridge.

3.3.2 Concrete Deck/Curb – Homogeneous Area B

The concrete deck/curb was accessed and sampled from the top and shoulders of the bridge.

3.3.3 Concrete Beams – Homogeneous Area C

The concrete beams were accessed and sampled from beneath the bridge.

3.3.4 Asphalt Patching – Homogeneous Area D

The asphalt patching was accessed and sampled from the top and shoulders of the bridge.

3.3.5 Concrete Footing – Homogeneous Area E

The concrete footing was accessed and sampled from beneath the bridge.

4.0 ANALYTICAL PROCEDURES

4.1 ASBESTOS ANALYSIS PROCEDURES

The bulk samples are analyzed in the laboratory using PLM coupled with dispersion staining. PLM is an analytical method for asbestos identification, which identifies the specific asbestos minerals by their unique optical properties. The optical properties are a result of the mineral's chemical composition, physical atomic structure, and visual morphology. This is the U.S. Environmental Protection Agency (EPA) recommended method of analysis for asbestos identification in bulk samples.

Samples which contain multiple layers, or that have associated mastic or adhesive backing, are analyzed as two or more separate samples. Samples that are identified to contain 1% or less asbestos minerals have been point counted by the laboratory for confirmation.

4.2 LABORATORY NAME AND ACCREDITATION

The bulk samples collected for this inspection were analyzed by a laboratory that has received accreditation from the National Institute of Standards and Technology (NIST) under the National Voluntary Laboratory Accreditation Program (NVLAP). The name and accreditation number of the analytical laboratory that analyzed the samples for this inspection are indicated in **Table - 2**:

Table – 2: Analytical Laboratory

Laboratory	EMSL Analytical, Inc.
NVLAP Number	102104-0

5.0 REGULATORY OVERVIEW

5.1 NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS

The EPA's National Emission Standards for Hazardous Air Pollutants (NESHAP) regulations (40 CFR 61, Subpart B) requires that all regulated asbestos-containing materials (RACM) be properly removed prior to any renovation or demolition activities that will disturb them. These regulations define RACM as:

- Friable ACM.
- Category I non-friable ACM that has become friable.
- Category I non-friable ACM that will be or has been subject to sanding, grinding, cutting, or abrading.
- Category II non-friable ACM that has a high probability of becoming, or has become crumbled, pulverized, or reduced to powder by the forces expected to act on the material in the course of demolition or renovation operations.

5.1.1 Definitions

Significant definitions related to regulation of asbestos under NESHAP include:

Friable asbestos-containing material ACM is defined by the Asbestos NESHAP, as any material containing more than one percent (1%) asbestos as determined using the method specified in Appendix A, Subpart F, 40 CFR Part 763, Section 1, PLM, that, when dry, can be crumbled, pulverized or reduced to powder by hand pressure. (Sec. 61.141)

Non-friable ACM is any material containing more than one percent (1%) asbestos as determined using the method specified in Appendix A, Subpart F, 40 CFR Part 763, Section 1, PLM, that, when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure. EPA also defines two categories of non-friable ACM, Category I and Category II non-friable ACM, which are described as follows:

Category I non-friable ACM is any asbestos-containing packing, gasket, resilient floor covering or asphalt roofing product which contains more than one percent (1%) asbestos as determined using PLM according to the method specified in Appendix A, Subpart F, 40 CFR Part 763. (Sec. 61.141)

Category II non-friable ACM is any material, excluding Category I non-friable ACM, containing more than one percent (1%) asbestos as determined using polarized light microscopy according to the methods specified in Appendix A, Subpart F, 40 CFR Part 763 that, when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure. (Sec. 61.141)

"Regulated Asbestos-Containing Material" (RACM) is (a) friable asbestos material, (b) Category I non-friable ACM that has become friable, (c) Category I non-friable ACM that will be or has been subjected to sanding, grinding, cutting or abrading, or (d) Category II non-friable ACM that has a high probability of becoming or has become crumbled, pulverized, or reduced to powder by the forces expected to act on the material in the course of demolition or renovation operations.

Friable materials are defined as those which can be crumbled, pulverized, or reduced to powder by hand pressure when dry. The NESHAP regulations also establish specific notification and control requirements for renovation and demolition work.

6.0 RESULTS

The results of the asbestos inspection are presented in the following sections.

6.1 RESULTS OF ASBESTOS BULK SAMPLE ANALYSIS

Fifteen (15) samples were collected from the SR-436 Bridge over Reedy Creek. Multiple samples of each homogeneous area were collected in accordance with State of Tennessee, Department of Transportation Environmental Division, Hazardous Materials Section requirements and delivered to the laboratory for visual observation and microscopic analysis. The samples were selected based on homogeneous areas of suspect materials, as described in Section 2.2. No concrete coatings were encountered during field activities. Deck drains were inspected during field activities, but were observed to be unlined holes through the asphalt wearing surface and concrete deck.

Building material homogeneous areas sampled included: asphalt overlay, concrete deck/curb, concrete beams, asphalt patching, and concrete footing.

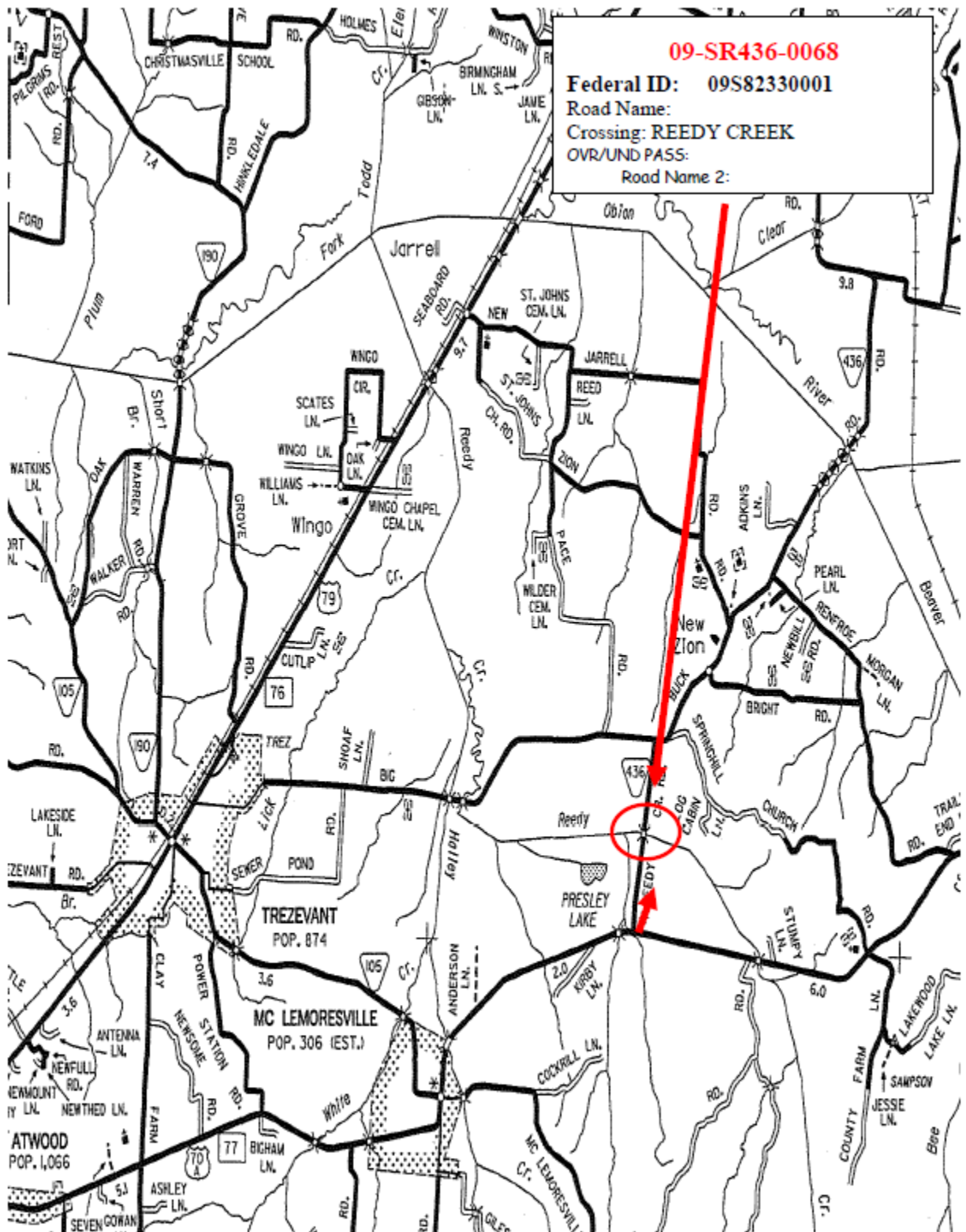
No asbestos was found to be present in any of the materials sampled from the bridge.

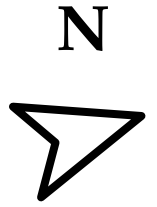
7.0 QUALIFICATIONS

The information presented herein is based on information obtained during the site visit and from previous experience. If additional information becomes available which might impact our conclusions or recommendations, K. S. Ware & Associates, L.L.C. requests the opportunity to review the information, reassess the potential concerns, and modify opinions, if warranted.

This report has been prepared on behalf of the Tennessee Department of Transportation. This document is not a Bid Document or a Contract Document. Use of this report or reliance upon information contained in this report by any other party implies an agreement by that party to the same terms and conditions under which service was provided. Furthermore, any party, other than our Client, relying on this document is cautioned that all conclusions made or decisions arrived at based on their review of this document are those solely of the third party, without warranty, guarantee or promise by the author. These findings are relevant to the dates of our services and should not be relied upon to represent conditions at substantially earlier or later dates.

Figure – 1: Site Vicinity Map Carroll County





Homogeneous Areas:
 A - Asphalt Overlay
 B - Concrete Deck/Curb
 C - Concrete Beams
 D - Asphalt Patching
 E - Concrete Footing

*Homogeneous area locations are generalized and do not represent actual sample locations.

FIG. NO. 2



BRIDGE PROFILE HOMOGENEOUS AREAS

TERMINI:

SR-436 over Reedy Creek

COUNTY: Carroll

INSPECTOR: Kollan Spradlin

ANALYTICAL LABORATORY: EMSL Kernersville, NC

DATES SAMPLED: 8/18/2016

SCALE: NTS

TDOT CONSTRUCTION NO: 09035-4218-04

PIN: 043917.01

Source: FIELD PHOTOGRAPHS

KSWA PROJ.NO. 100-16-0042



APPENDIX A: PHOTOGRAPHS



Photo 1: View of HA-A on SR-436 Bridge over Reedy Creek



Photo 2: View of HA-B on SR-436 Bridge over Reedy Creek



HA-B Concrete Deck/Curb

Photo 3: View of HA-B on SR-436 Bridge over Reedy Creek



HA-C Concrete Beams

Photo 4: View of HA-C on SR-436 Bridge over Reedy Creek



Photo 5: View of HA-D on SR-436 Bridge over Reedy Creek



Photo 6: View of HA-E on SR-436 Bridge over Reedy Creek



Photo 7: Bridge number on SR-436 Bridge over Reedy Creek



Photo 8: Unlined Deck Drain on SR-436 Bridge over Reedy Creek

APPENDIX B: ASBESTOS SAMPLE LABORATORY ANALYSIS DATA



EMSL Analytical, Inc.

706 Gralin Street Kernersville, NC 27284

Tel/Fax: (336) 992-1025 / (336) 992-4175

<http://www.EMSL.com> / greensborolab@emsl.com

EMSL Order: 021605535

Customer ID: KSWA77

Customer PO:

Project ID:

Attention: James Dye
K.S. Ware LLC
54 Lindsley Avenue
Nashville, TN 37210

Phone: (615) 255-9702

Fax: (615) 256-5873

Received Date: 08/23/2016 9:00 AM

Analysis Date: 08/25/2016

Collected Date: 08/18/2016

Project: 100-16-0042

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
RC-01 <small>021605535-0001</small>	Asphalt Overlay	Brown/Black Non-Fibrous Heterogeneous	<1% Cellulose	5% Quartz 95% Non-fibrous (Other)	None Detected
RC-02 <small>021605535-0002</small>	Asphalt Overlay	Brown/Black Non-Fibrous Heterogeneous	<1% Cellulose	10% Quartz 90% Non-fibrous (Other)	None Detected
RC-03 <small>021605535-0003</small>	Asphalt Overlay	Brown/Black Non-Fibrous Homogeneous	<1% Cellulose	10% Quartz 90% Non-fibrous (Other)	None Detected
RC-04 <small>021605535-0004</small>	Concrete Deck/Curb	Gray/Tan Non-Fibrous Heterogeneous	<1% Cellulose	40% Quartz 60% Non-fibrous (Other)	None Detected
RC-05 <small>021605535-0005</small>	Concrete Deck/Curb	Gray/Tan Non-Fibrous Heterogeneous		40% Quartz 60% Non-fibrous (Other)	None Detected
RC-06 <small>021605535-0006</small>	Concrete Deck/Curb	Gray/Beige Non-Fibrous Heterogeneous	<1% Cellulose	40% Quartz 60% Non-fibrous (Other)	None Detected
RC-07 <small>021605535-0007</small>	Concrete Beams	Gray/Tan/Beige Non-Fibrous Heterogeneous		15% Quartz 85% Non-fibrous (Other)	None Detected
RC-08 <small>021605535-0008</small>	Concrete Beams	Gray/Tan/Beige Non-Fibrous Heterogeneous		15% Quartz 85% Non-fibrous (Other)	None Detected
RC-09 <small>021605535-0009</small>	Concrete Beams	Gray/Tan Non-Fibrous Heterogeneous		20% Quartz 80% Non-fibrous (Other)	None Detected
RC-10 <small>021605535-0010</small>	Asphalt Patching	Brown/Black Non-Fibrous Heterogeneous	<1% Cellulose	10% Quartz 90% Non-fibrous (Other)	None Detected
RC-11 <small>021605535-0011</small>	Asphalt Patching	Brown/Black Non-Fibrous Heterogeneous	<1% Cellulose	10% Quartz 90% Non-fibrous (Other)	None Detected
RC-12 <small>021605535-0012</small>	Asphalt Patching	Black Non-Fibrous Homogeneous	<1% Cellulose	10% Quartz 90% Non-fibrous (Other)	None Detected
RC-13 <small>021605535-0013</small>	Concrete Footing	Gray/Tan/Black Non-Fibrous Heterogeneous	<1% Cellulose	30% Quartz 70% Non-fibrous (Other)	None Detected
RC-14 <small>021605535-0014</small>	Concrete Footing	Gray/Tan/Black Non-Fibrous Heterogeneous	<1% Cellulose	30% Quartz 70% Non-fibrous (Other)	None Detected
RC-15 <small>021605535-0015</small>	Concrete Footing	Gray/Tan Non-Fibrous Heterogeneous	<1% Cellulose	20% Quartz 80% Non-fibrous (Other)	None Detected

Initial report from: 08/25/2016 11:23:08



EMSL Analytical, Inc.

706 Gralin Street Kernersville, NC 27284

Tel/Fax: (336) 992-1025 / (336) 992-4175

<http://www.EMSL.com> / greensborolab@emsl.com

EMSL Order: 021605535

Customer ID: KSWA77

Customer PO:

Project ID:

Analyst(s)

Stephen Bennett (5)

Scott Combs (10)

Stephen Bennett, Laboratory Manager
or Other Approved Signatory

EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the federal government. Non-friable organically bound materials present a problem matrix and therefore EMSL recommends gravimetric reduction prior to analysis. Samples received in good condition unless otherwise noted. Estimated accuracy, precision and uncertainty data available upon request. Unless requested by the client, building materials manufactured with multiple layers (i.e. linoleum, wallboard, etc.) are reported as a single sample. Reporting limit is 1%

Samples analyzed by EMSL Analytical, Inc. Kernersville, NC NVLAP Lab Code 102104-0, CA ELAP 2689, Virginia 3333-000228, West Virginia LT000321

Initial report from: 08/25/2016 11:23:08



EMSL ANALYTICAL, INC.
LABORATORY-PRODUCTS-TRAINING

Asbestos Bulk Building Material Chain of Custody

EMSL Order Number (Lab Use Only):

5535

Kernersville, NC 27284
PHONE: (336) 992-1025
FAX: (336) 992-4175

Company: K.S. Ware & Associates, LLC		EMSL-Bill to: <input type="checkbox"/> Same <input checked="" type="checkbox"/> Different <small>If Bill to is Different note instructions in Comments**</small>	
Street: 54 Lindsley Avenue		<i>Third Party Billing requires written authorization from third party</i>	
City: Nashville	State/Province: TN	Zip/Postal Code: 37210	Country: US
Report To (Name): James Dye		Telephone #: 615-255-9702	
Email Address: jdye@kswarellc.com		Fax #: 615-256-5873	Purchase Order:
Project Name/Number: 100-16-0042		Please Provide Results: <input type="checkbox"/> Fax <input checked="" type="checkbox"/> Email <input type="checkbox"/> Mail	
U.S. State Samples Taken: TN		CT Samples: <input type="checkbox"/> Commercial/Taxable <input type="checkbox"/> Residential/Tax Exempt	

Turnaround Time (TAT) Options* - Please Check

3 Hour
 6 Hour
 24 Hour
 48 Hour
 72 Hour
 96 Hour
 1 Week
 2 Week

*For TEM Air 3 hr through 6 hr, please call ahead to schedule. *There is a premium charge for 3 Hour TEM AHERA or EPA Level II TAT. You will be asked to sign an authorization form for this service. Analysis completed in accordance with EMSL's Terms and Conditions located in the Analytical Price Guide.

PLM - Bulk (reporting limit)	TEM - Bulk
<input checked="" type="checkbox"/> PLM EPA 600/R-93/116 (<1%)	<input type="checkbox"/> TEM EPA NOB - EPA 600/R-93/116 Section 2.5.5.1
<input type="checkbox"/> PLM EPA NOB (<1%)	<input type="checkbox"/> NY ELAP Method 198.4 (TEM)
Point Count <input type="checkbox"/> 400 (<0.25%) <input type="checkbox"/> 1000 (<0.1%)	<input type="checkbox"/> Chatfield Protocol (semi-quantitative)
Point Count w/Gravimetric <input type="checkbox"/> 400 (<0.25%) <input type="checkbox"/> 1000 (<0.1%)	<input type="checkbox"/> TEM % by Mass - EPA 600/R-93/116 Section 2.5.5.2
<input type="checkbox"/> NIOSH 9002 (<1%)	<input type="checkbox"/> TEM Qualitative via Filtration Prep Technique
<input type="checkbox"/> NY ELAP Method 198.1 (friable in NY)	<input type="checkbox"/> TEM Qualitative via Drop Mount Prep Technique
<input type="checkbox"/> NY ELAP Method 198.6 NOB (non-friable-NY)	Other
<input type="checkbox"/> OSHA ID-191 Modified	<input type="checkbox"/>
<input type="checkbox"/> Standard Addition Method	

Check For Positive Stop - Clearly Identify Homogenous Group Date Sampled: 8/18/2016

Samplers Name: **Kollan Spradlin** Samplers Signature: *Kollan Spradlin*

Sample #	HA #	Sample Location	Material Description
RC-01	A	NW	Asphalt Overlay
RC-02	A	EM	Asphalt Overlay
RC-03	A	SW	Asphalt Overlay
RC-04	B	SE	Concrete Deck/Curb
RC-05	B	SW	Concrete Deck/Curb
RC-06	B	NE	Concrete Deck/Curb
RC-07	C	SW	Concrete Beams
RC-08	C	NE	Concrete Beams
RC-09	C	NW	Concrete Beams

Client Sample # (s):	RC-01A - RC-15E	Total # of Samples:	15
Relinquished (Client):	<i>Kollan Spradlin</i>	Date:	8/19/16
		Time:	11:00
Received (Lab):	<i>GA</i>	Date:	8-23-16
		Time:	9 AM
Comments/Special Instructions:			
<small>Bill To: K.S. Ware & Associates, LLC, 54 Lindsley Avenue, Nashville, TN, 37210, US Attention: Kollan Spradlin Phone: 615-255-9702 Email: cdewald@kswarellc.com AND kspradlin@kswarellc.com</small>			

WPS 172453AR0793300061

APPENDIX C: ASBESTOS ACCREDITATIONS



STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
Division of Solid Waste Management
Toxic Substances Program
William R. Snodgrass, TN Tower
312 Rosa L. Park Ave, 14th Floor
Nashville, Tennessee 37243 - 1535

Subject: Your application has been processed

Thank you for applying for asbestos accreditation with the State of Tennessee. Enclosed are the current applied for approved asbestos credential(s). Please review the enclosed document(s) for accuracy. In the event of an error, please contact me at 615-532-2757 or via e-mail at jessica.hendricks@tn.gov

Sincerely,

Jessica Hendricks
Administrative Assistant
Toxic Substances- Asbestos



NOTE: Our applications have been newly revised. They can be printed from our website under the heading "Asbestos Accreditation Applications" The website address is: http://www.tn.gov/environment/solid-waste/solid-waste_asbestos.shtml



THE STATE OF TENNESSEE

Department of Environment and Conservation Division of Solid Waste Management
Toxic Substances Program

William R. Snodgrass Tennessee Tower
312 Rosa L. Parks Avenue, 14th Floor Nashville TN 37243

By virtue of the authority vested by the Division of Solid Waste Management, the Company named below is hereby accredited to offer and/or conduct Asbestos activities pursuant to Rule 1200-01-20:

K. S. Ware and Associates, LLC

54 Lindsley Avenue Nashville TN, 37210

to conduct ASBESTOS ACTIVITIES in schools or public and commercial buildings in Tennessee.
This firm is responsible for compliance with the applicable requirements of Rule 1200-01-20.

Discipline	Type	Accreditation Number	Effective Date	Expiration Date
Accreditation	Re-Accreditation	A-F-620-45239	December 02, 2015	November 30, 2016



Given under the Seal of the State of Tennessee in Nashville.

This 8th Day of December 2015

Division of Solid Waste Management
Toxic Substance Program

CN-1324 (Rev 6/13)

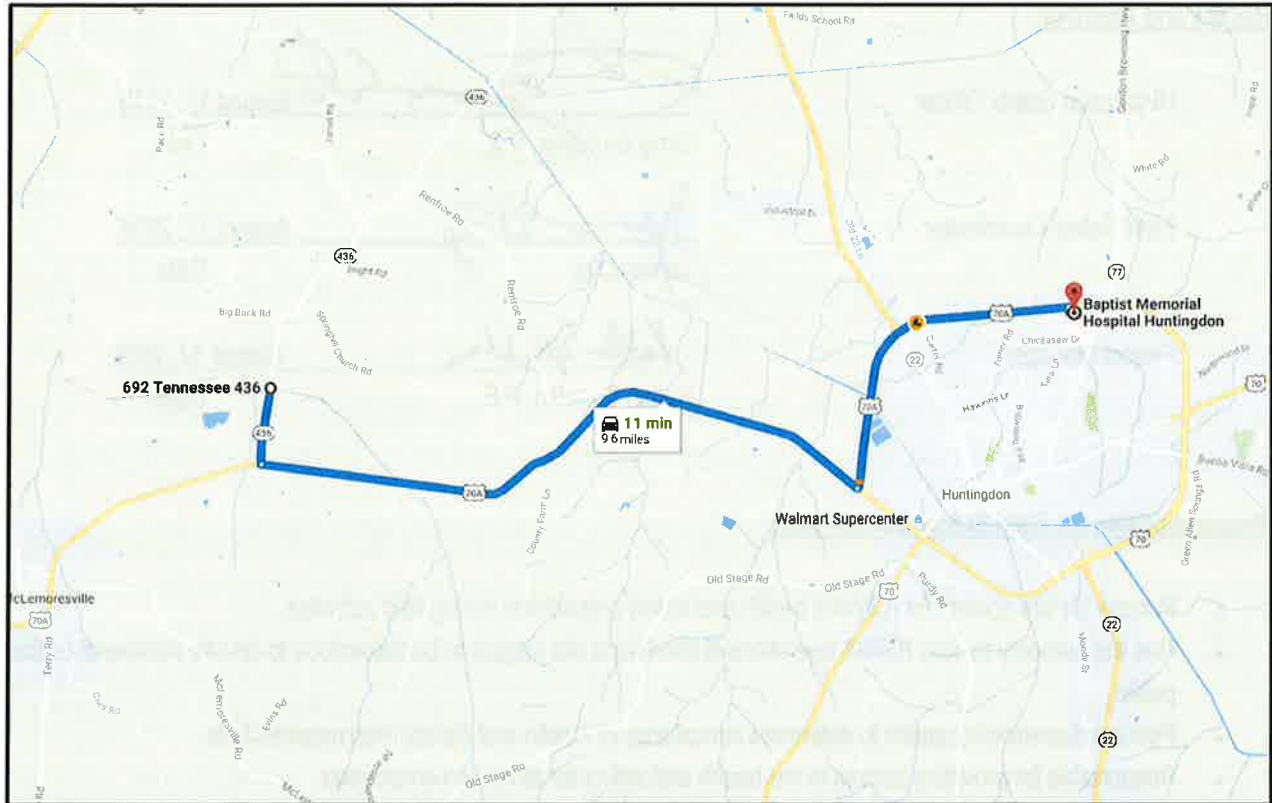
RDA-3020

APPENDIX D: HEALTH AND SAFETY PLAN

HEALTH AND SAFETY PLAN FOR ASBESTOS SURVEY SERVICES

K. S. WARE AND ASSOCIATES, L.L.C.

54 Lindsley Ave.
Nashville, Tennessee 37210



Directions to Hospital

Head South on TN-436 – 0.7 miles
Turn Left onto US 70A W – 5.8 miles
Turn left onto Veterans Dr N – 3.0 miles
Turn right onto R B Wilson Dr

Hospital Address

Baptist Memorial Hospital - Huntingdon
631 R B Wilson Dr
Huntingdon, TN 38344
(731) 986-4461

This facility has been verified as mappable by phone:

A handwritten signature in blue ink that reads "James Dye".

Project Number: 100-16-0042
Name: Termini: SR-436 over Reedy Creek, LM 0.68
Location: Carroll County, Tennessee
Client: Tennessee Department of Transportation
Client Contact : Kyle Kirschenmann
Phone No.: (615) 598-1522

KSWA Personnel Contact Information:

<u>Title</u>	<u>Name</u>	<u>Work</u>	<u>Mobile</u>
Project Manager	Kollan Spradlin	(615) 255-9702	(615) 429-5862
Health and Safety Officer	Greg Brubaker	(615) 255-9702	(615) 504-0370
Field Safety Coordinator	James Dye	(615) 255-9702	(615) 956-0361

Review and Approval:

Health and Safety Officer


August 17, 2016
Date

Greg Brubaker, P.E.

Field Safety Coordinator


August 17, 2016
Date

James Dye

Project Manager


August 17, 2016
Date

Kollan Spradlin, P.E.

Responsibilities for Field Safety Coordinator:

- Primary on-site contact for KSWA's health and safety procedures during field activities.
- Has the authority to stop KSWA operations if conditions are judged to be hazardous to on-site personnel or the public.
- Perform discretionary audits to determine compliance of Health and Safety Plan requirements.
- Responsible for providing access to the health and safety for all on-site employees.
- Responsible for instructing on-site personnel on the location of emergency communication equipment (i.e. phones and radios as necessary).
- Has no responsibility for health and safety procedures of any contractor, subcontractor, client personnel or others on the site.

Date of Plan Preparation

August 16, 2016

Dates of Planned Field Activities

August 2016

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1.0 PURPOSE

The purpose of this health and safety plan (HASP) is to provide standards for worker safety and protection during field activities conducted on a frequent or routine basis. The plan outlines standards and mandatory procedures relative to physical and chemical hazards encountered at sites, communication, training, worker health monitoring, decontamination procedures and levels of personal protection. Any questions concerning this information should be directed to the K.S. Ware and Associates, L.L.C. (KSWA) Project Manager identified on the cover of this Health and Safety Plan, at 615-255-9702.

2.0 APPLICABILITY

This plan is applicable to all personnel working at the above referenced site, where mandatory worker health and safety training is required by State or Federal agencies. It is intended for use at the above referenced site where information regarding potential site hazards is available in the form of background research, personal communication with past or present property owners or workers, previous sampling results, etc.

Available information should be provided to site workers as outlined in Section 5. A site specific hazard evaluation is included in Section 4.

Sampling of items that may contain asbestos containing material (ACM); and other routine field activities are activities for which this plan is applicable. Activities involving contact with unknown substances and activities on sites where little background information is available will require more extensive and specific HASP development.

This plan does not cover procedures for entry into confined spaces. Project-specific attachments should be prepared and appended to this Health and Safety Plan if those activities are planned. Work of this nature shall be performed in accordance with 29 CFR 1926.250 subpart P "Excavation, Trenching and Shoring", 29 CFR 1910.146 "Permit Required Confined Space Entry" and the KSWA "Employee Confined Space Entry Program".

3.0 SITE DESCRIPTION AND HISTORY

The project consists of performing an Asbestos Survey in Carroll County Tennessee on one bridge located on SR-436 over a Reedy Creek

- The SR-436 bridge over Reedy Creek is a 90-foot, two-lane, single-span bridge with three approach spans constructed of pre-stressed concrete box-beams with a concrete deck and an asphalt wearing surface. The bridge was constructed in 1960 and is scheduled for repair.

3.1 BRIDGE INSPECTION EQUIPMENT

KSWA will be on site to perform an asbestos survey on the Carroll County Bridge. Equipment to be used during the survey will include asbestos sample collection equipment.

3.2 WORK PRECAUTIONS

- No eating, drinking, using tobacco products, chewing gum, or putting hands in mouth while on the site.
- Wear the TDOT required roadway safety gear (hard hat, Class III reflective vest, boots) at all times while on the project site.
- Wear gloves at applicable times while at the work site.
- Wear protective eyewear at applicable times while at the work site.
- Wash all exposed skin areas with soap and water before departing from the site.
- Remove and change any non-impervious clothing that becomes contaminated during site activities.
- Do not go anywhere on the site other than where directed by the Field Safety Coordinator.
- Use safe and legal procedures for sample storage and shipment.

3.3 DISPOSAL RESTRICTIONS

Treat disposable items as ordinary refuse except when gross contamination is expected. In the event that refuse including disposable personnel protective equipment is suspected of being contaminated, the refuse will be collected and stored on site for future disposal.

4.0 HAZARD EVALUATION

4.1 PHYSICAL HAZARDS

4.1.1 Operational Hazards

Prior to commencement of field activities, the Field Safety Coordinator will conduct a site reconnaissance to identify any visible or operational hazards.

Additionally, because there is a possibility that asbestos may be present at the site, the appropriate Personal Protective Equipment (PPE) will be worn at all times that work is being performed.

4.1.2 Fall Hazards

Field activities can have the potential for fall hazards. Be aware of any uneven terrain, clear paths of debris and materials that may be a hazard. While on the bridges, be aware of slick surfaces and gaps while accessing the different components.

4.1.3 Heat Stress

Field activities in hot climates create a potential for heat stress. The warning symptoms of heat stress include fatigue; loss of strength; reduced accuracy; comprehension and retention; and reduced alertness and mental capacity. To prevent heat stress, personnel shall receive adequate water supplies and electrolyte replacement fluids, and maintain scheduled work/rest periods.

4.1.4 Tools and Equipment

Tools and equipment used by KSWA shall be inspected and maintained to be safe and adequate for their designated use. Housekeeping of the site shall be maintained as to prevent trip hazards.

4.1.5 Traffic Hazard

Traffic is not expected to be encountered on this project as the bridge is closed for repairs and protected by barriers.

4.1.6 Noise Hazard

Operation of equipment may present a noise hazard to workers. KSWA personnel will be provided with hearing protection to be utilized when noise levels are excessive.

Precautions: In order to reduce the health and safety risk to workers due to physical hazards at the project site, the following precautions will be observed:

1. ANSI Class III High Visibility clothing will be worn by personnel at all times on the project site.
2. Hard hats shall include high visibility reflective tape.
3. Protective eyewear will be worn by personnel in the work area when appropriate.
4. Hearing protection will be worn by personnel as deemed necessary by the Field Safety Coordinator (typically noised levels greater than 85 db).
5. Safety toed boots with non-conductive soles will be worn by personnel at all times on the project site.
6. Hand protection (leather gloves) will be worn by personnel when moving and/or lifting equipment as well as when using large hand tools (machetes, sledges, shovels, etc.).
7. All equipment and related support equipment and vehicles shall have a daily safety inspection (29 CFR 1926.550). The inspections shall include, but are not limited to: all hydraulic lines and fittings for wear and

damage, all cable systems and pull ropes for damage and proper installation, exhaust systems and drill controls, electrical lines for damage and/or contact with standing water, etc. Inspection schedules, the vehicle and equipment description, nomenclature, the license plate or ID number for the equipment, the findings of the inspections and the corrective action taken shall be maintained.

8. Before beginning each work shift, the area will be checked for site hazards including overhead lines, underground lines, above ground obstructions, tripping hazards, etc.
9. All vehicles will be fitted with a cab-top rotating or strobe light bar. Light bar is to be active when vehicle is on site.

4.1.7 Asbestos Containing Material

Collecting samples from bridge components may release asbestos fibers into the air. KSWA personnel will wear a respirator while sampling, and all sampling equipment will be properly decontaminated between sample collection and after field activities. KSWA personnel will limit exposure by adhering to this health and safety plan.

4.2 CHEMICAL HAZARDS

Chemical hazards are not anticipated at this site.

4.3 BIOLOGICAL HAZARDS

4.3.1 Stinging Insects

The most common stinging insects are bees, wasps, and ants. Few species of ants have medically important stings. While most bees possess a defensive sting, and will sting if grasped or crushed, only a few social species sting often enough, or have sufficiently venomous stings to be of medical significance. These include the honeybees and the bumblebees. Most fatalities from bee and wasp stings occur in hypersensitive individuals; death is most often induced by a single sting, and occurs most often within 1 hour after the sting. The victim is typically over 40 years of age and stung on the head or neck. Most deaths are caused by respiratory dysfunction with the second most common cause being anaphylaxis; arteriosclerosis may be a compounding factor. If stung, seek medical attention immediately.

5.0 COMMUNICATIONS AND TRAINING

Workers at State and Federally listed or recognized sites must be provided with adequate information and training to recognize and evaluate potential hazards. Training shall comply with applicable regulations including 29 CFR 1910.1200 "Hazard Communication Standard".

5.1 COMMUNICATION

The Field Safety Coordinator shall supply all on site personnel with readily available access to this Health and Safety Plan. This plan shall cover, at a minimum, the following topics:

- A. A brief description of the history of the location with regard to health and environmental hazards.
- B. A description of the activities to which the hazard evaluation summary is applicable.
- C. A description of any hazards which may be encountered, including:
 - 1. Physical Hazards - terrain, traffic, equipment, severe weather (heat stress and frostbite), electrical hazards, noise.
 - 2. Chemical Hazards - materials used and stored at the site, materials released at the site.
 - 3. Biological Hazards - insects, plants, animals, pathogens, and infectious materials.
- D. A description of the levels of protection selected for the operation.
- E. Equipment decontamination procedure if different from those specified herein.
- F. Summary of emergency contacts for use in the event of fire, explosion, medical emergency or other emergency, including the location of the nearest telephone and an address and phone number to provide to emergency personnel.
- G. A map showing the route to the nearest hospital.

Prior to any employee or subcontractor beginning work on the site, the Field Safety Coordinator shall brief all KSWA employees as well as subcontractors on the contents of this plan. Personnel will have the opportunity to review the plan, and ask questions about the planned work or hazards. Also; the Field Safety Coordinator will complete a brief site reconnaissance will be completed to familiarize the personnel with site conditions, boundaries, and physical hazards.

By KSWA voluntarily sharing this information with subcontractors and contractors, those firms are not relieved of the responsibility to provide their personnel with adequate and proper supervision, safety information, instruction, and equipment.

5.2 HEALTH AND SAFETY TRAINING

All personnel will be provided with approved health and safety training as outlined in 29 CFR 1910.120(e). Documentation for KSWA employees should also be maintained at a central location at the KSWA office.

5.3 RESPIRATOR USAGE TRAINING AND FIT TESTING

Prior to assignment to a site where respirator use may be required, employees will be provided with respirator training as outlined in 29 CFR 1910.134(e)(5). Respirator fit tests are to be conducted at 6 to 10 month intervals, or at any time when a condition that may change the fit of a respirator has occurred, such as change in weight, change in facial structure, extensive dental work, etc. All use of respirators shall comply with KSWA's written respiratory program.

6.0 SITE CONTROL - WORK ZONES

It is anticipated that conditions will not require special measures to achieve site security or restriction of normal site activities and access. The work areas include one 90-foot, 2-lane, single-span bridge with three approach spans constructed of concrete box-beams with a concrete deck and an asphalt wearing surface. The work will be performed along the side and underneath the bridge. Work zones will be identified with flashing lights, illuminated and non-illuminated signage, traffic spotter, etc.

7.0 PERSONAL PROTECTION

PPE and safety requirements must be appropriate to protect against the known or worst potential hazards on the site. Protective equipment should be selected based on the concentrations and possible routes of exposure to known or potential worst case substances. Level D PPE is described in Section 8. All KSWA engineering or assessment personnel engaged in work on site will be participants in the KSWA medical monitoring program described in Section 12, or a similar program.

KSWA anticipates that Level D protection and basic site safety measures will be sufficient at this project site. Any conditions warranting upgrading of the required level of protection to Level C, B, or A will be cause for all personnel to immediately leave the work site. The site will be re-evaluated and a new site Health and Safety Plan will be prepared which incorporates the additional site information.

8.0 LEVELS OF PROTECTION

This plan is not intended for use at sites where levels of protection above Level D is required. Levels D is described below.

8.1 LEVEL D

Level D is the basic work uniform for all site operations. Level D should be selected when performing environmental sampling involving dilute concentrations of contaminants on sites that have been characterized by previous analyses or research.

8.1.1 Personal Protective Equipment

The following equipment is necessary for Level D personal protection:

- Standard work clothing.
- Optional disposable chemical-resistant clothing appropriate for known or expected levels of contamination.
- Boots/Shoes - safety or chemical-resistant boots.
- Safety glasses or safety goggles.
- Gloves - disposable latex or nitrile.
- Optional moisture resistant outer gloves.
- Hardhat.

8.1.2 Criteria for Use of Level D

The following criteria indicate situations where Level D personal protection is adequate:

- No indication of airborne health hazards present.
- No gross indication, above background concentrations, on the photoionization detector and/or organic vapor analyzer.

Additionally, a half-face, full-face, or powered air purifying respirator will be used with appropriate particulate filter(s).

9.0 DECONTAMINATION PROCEDURES

9.1 PERSONNEL DECONTAMINATION

If Level D protection is used, any disposable inner gloves or protective clothing should be sealed in a plastic bag and disposed of properly. Moisture resistant outer gloves and outer boots should be scrubbed with a stiff brush in soapy water, then rinsed to remove possible residual contamination. Disposable equipment should be used whenever possible.

9.2 EQUIPMENT DECONTAMINATION

Proper decontamination of all equipment is necessary to avoid transferring contaminants from the site, thereby increasing potential for exposure of on site and off site personnel. The measures described below should be followed prior to leaving all sites, as applicable to the equipment being used. Any variations from the procedures described below for reasons of worker health or safety must be described by the Project Manager in the site-specific hazard summary.

These measures are separate from, and may not be substituted for, other decontamination procedures associated with proper sampling protocol.

- A. The equipment may be thoroughly rinsed with clean water or an appropriate cleaning solution and wiped dry with paper towels before leaving the work site. Alternatively, the equipment may be wrapped in absorbent material and/or stored in plastic bags sealed to prevent contact with workers, vehicles, etc.
- B. The rinse water from this operation will be allowed to percolate into the ground or as specified.

10.0 EMERGENCY PROCEDURES

10.1 INHALATION

If warning signals such as: dizziness, nausea, headache, shortness of breath, burning sensation in mouth, throat or lung or symptoms specific to hazard found at the site are apparent, the victim should leave the contaminated air space immediately. Have someone contact emergency services and obtain health and safety information about potential contaminants.

If unconscious, the victim should be pulled out of the contaminated area immediately if they do not have any injuries which would prohibit moving them (i.e. spinal injury). The rescuers should make sure that the area is safe to enter. If the area cannot be safely entered, attempt to ventilate this area. Do not attempt a rescue. Rescuers should make sure they are properly trained in First Aid and rescue and that they are wearing proper respiratory and protective equipment before attempting the rescue.

If the victim is no longer breathing, mouth-to-mouth resuscitation or some other form of artificial respiration should be administered by a person who is properly trained and certified in a location away from the contaminated area.

Medical attention should be obtained as soon as possible.

10.2 SKIN EXPOSURE

The skin should be washed with copious amounts of soap and water. If clothing is contaminated, it should be removed immediately and the skin washed thoroughly with running water. If a shower is available, it should be used immediately. Clothes should be removed while showering. This procedure may be life-saving as certain highly toxic chemicals are rapidly absorbed through the skin.

All contaminated parts of the body, including the hair, should be thoroughly decontaminated. It may be necessary to wash repeatedly.

10.3 INGESTION

A poison control center or emergency service should be contacted immediately to determine an appropriate course of action. If possible, have health and safety information on the poison available when you call for help. Vomiting should be induced except when the substance presents an aspiration hazard, such as from a petroleum product; or when the substance is a strong acid or base. To induce vomiting, a tablespoon of salt or powdered mustard in a glass of warm water, or syrup of ipecac from the First Aid Kit, can be taken as an emetic.

Drinking plenty of water and placing a finger down the throat may also be effective in inducing vomiting. The treatment should be repeated until vomit is clear.

Medical attention should be obtained immediately.

10.4 EYES

If a toxicant should get in the eyes, they should be washed with plenty of water. The eye itself should be held open, rotated, and flooded with water so that all surfaces are washed thoroughly. Washing should be continued for at least 15 minutes.

Medical attention should be obtained immediately.

10.5 EXPOSURE TO HEAT OR COLD

When working under severe weather conditions, personnel should be aware of the signs of heat stress, hypothermia and frostbite as well as the appropriate response actions.

Heat Stress - If a worker shows signs of heat stroke (dry, hot, red skin, high body temperature) or heat exhaustion (cool, moist, pale or red skin, dilated pupils, nausea, dizziness), the worker must be removed from the work area and cooled. Loosen clothing, elevate feet, and provide cool liquids. Heat stroke can be life threatening and requires rapid action.

Hypothermia - If a worker shows signs of hypothermia (shivering, impaired judgement, drowsiness, clumsiness) the worker must be removed from the work area and warmed gradually.

Frostbite - If a worker shows signs of frostbite (skin color changes to white or grayish-yellow then grayish-blue), the worker must be moved to a warm place. The affected area should be placed in warm (100-105°F) water. Do not rub or massage.

10.6 STINGS AND BITES

If still present, remove stinger with fingernail. Wash the the location of the sting with soap and water, cover with bandage and apply ice. If severe allergic reactions appear (hives, itching, rash, nausea, vomiting, dizziness, swelling) seek medical attention immediately.

10.7 PERSONAL INJURY

A first aid kit shall be readily available in case of an injury. Administer first aid and/or seek medical help, if necessary. Medical emergencies take precedence over decontamination procedures. A map showing the route to the nearest hospital is provided at the end of this Health and Safety Plan. In the event that a phone is not readily available on-site, it is the responsibility of the field safety coordinator to identify the location of the nearest phone and provide this information to all on site personnel.

10.8 SPILL OR RELEASE OF HAZARDOUS MATERIAL

Clean up, isolate or contain spill as appropriate. Contact emergency response personnel, project manager, and/or client company officials as appropriate.

10.9 POTENTIAL OR ACTUAL FIRE/EXPLOSION

If it is safe to do so, on site personnel may use available fire fighting equipment to control or extinguish the fire, and remove or isolate materials which may contribute to the fire. Contact the fire department project manager and/or client company officials as appropriate.

10.10 EVACUATION

In the event of an emergency that requires an evacuation of the site, verbal instruction will be given by the Field Safety Coordinator to evacuate the area. Personnel will immediately exit the site to the pre-designated upwind "clean" location. The Field Safety Coordinator will account for KSWA personnel, and will advise personnel of further instructions, if necessary. The Field Safety Coordinator will also advise responding off site emergency personnel, if necessary. Personnel shall not re-enter the site until the emergency conditions have been corrected and the Field Safety Coordinator has authorized re-entry.

11.0 MEDICAL MONITORING

All engineering and assessment personnel engaged in on site activities shall be participants in a medical monitoring program similar to the following. As participants in this program, these individuals will have had recent physical examinations.

The primary goal of this medical monitoring program is to provide evaluation and ongoing surveillance of the health status of employees potentially exposed to toxic substances as a result of their work-related activities. An active health monitoring program for those employees potentially at risk is an important tool in evaluating the effects of chronic low-level exposures or acute exposures related to operations at hazardous waste sites. The effects of low-level exposures may not become apparent until years after the initial exposure.

This medical monitoring program includes laboratory testing, personnel medical history evaluation, physical examination and other specific testing.

Each participant in this medical monitoring program undergoes a complete occupational history evaluation and baseline physical examination including the following parameters:

- Pulmonary Function Studies
- Complete Blood Count
- Chemical Blood Profile
- Urinalysis
- Chest X-Ray
- Electrocardiogram
- Specific parameters as necessary dependent upon exposure

Following the establishment of each participant's baseline values for the above parameters, an annual re-evaluation is conducted to monitor potential changes due to work with hazardous materials.

In addition to this annual re-examination, provisions are made for specific post-exposure examinations in the event of a suspected exposure during a particular field event.

The program shall meet or exceed the minimum requirements established in OSHA standard 20 CFR 1910.120.

12.0 PERSONNEL AUTHORIZATION

All personnel engaged in on site activities must read this Health and Safety Plan. By signing and dating this form, the listed individual acknowledges that he/she has read, understands and will comply with the requirements of this Health and Safety Plan.

Personnel Authorized to Enter Site

<u>Name</u>	<u>Signature</u>	<u>Date</u>
James Dye		8-18-16
Kellan Spredlin		8-18-16

13.0 FIELD SAFETY COORDINATOR'S SUMMARY

(To be completed by Field Safety Coordinator after completion of each phase of field work, and returned Project Manager.)

Project Summary

Project Name:	Carroll County SR-436 over Reedy Creek
Project Number:	100-16-0042
Activities Completed:	8-18-16 Sample collection
Date of Activities:	8-18-16

During the execution of the activities covered by this Health and Safety Plan, there were:

- a) No violations of the Safety Plan provisions and no obvious contamination of KSWA employees or subcontractors.
- b) The following incidents, violations of the Safety Plan provisions, or obvious contamination of KSWA personnel or subcontractors. (Give details of who, when, type of contamination, circumstances, first aid or medical assistance administered in the space below.)

Signature  Date 8-18-16
Field Safety Coordinator

APPENDIX E: ACTIVITY HAZARD ANALYSIS

ACTIVITY HAZARD ANALYSIS

Asbestos Survey
SR-436 over Reedy Creek, LM 0.68
Carroll County, Tennessee

Bridge Number: 09S82330001

KSWA Project Number: 100-16-0042

Prepared by:



K. S. WARE AND ASSOCIATES, L.L.C
54 Lindsley Avenue
Nashville, Tennessee 37210

August 16, 2016

ACTIVITY HAZARD ANALYSIS FOR ASBESTOS SURVEY

EM 385-1-1 Reference:

Hard hats and safety toe boots are mandatory. Eye and hearing protection are mandatory during sampling and as appropriate.

Principal Steps

1. Asbestos exposure

Potential Hazards

1. Inhalation, skin irritation

Action to Minimize Hazard

1. All personnel that will be present on the project must wear the proper PPE. Use all safety precautions to ensure that all state and federal guidelines are followed and to limit the exposure to asbestos. Asbestos samplers are to use a respirator when sampling.
2. Monitor all personnel for signs of fatigue, dizziness or other physical abnormalities. Personnel should wear clothing suited for the weather conditions and breaks will be given for intake of fluids, etc. Ensure that water or sports hydration fluid (Gatorade, Powerade) is available on site.
3. Field activities will encounter traffic on this project. Be aware of your surroundings, watch for traffic when performing in areas that have moving vehicles. Use a spotter or traffic control when sampling in the roadway or crossing the road. Maintain safe positioning. Use "Men Working" signs to delineate the work area and slow down drivers.
4. Prior to field activities, the Field Safety Coordinator should observe the terrain on site and monitor the conditions throughout the survey. Be aware of steep and/or rocky slopes. Also be aware of pot holes around the bridge.
5. Be aware of fallen or low hanging utility lines while on the ground level. Remain at least 10 feet from all utility lines with all equipment.
6. Be aware of animal habitat in and around the work area. Do not put hands into areas you cannot inspect for potential insect, mammal, and reptiles. Beware of waterborne snakes, colonies of stinging insects, and vector species that could transmit disease.
7. Operations that generate sound levels 85 dBA and above require hearing protection. Either muffs or plugs are acceptable. Heavy traffic can be a cause.
8. Wear gloves when there is exposure to potential hazards that could produce scrapes and cuts. Do not wear jewelry. Any jewelry can be dangerous. Handle sharp or pointed tools with extreme care. Be careful when using a hammer to not smash hand or fingers. Use the proper gloves for the job at hand.
9. Use the right tool or piece of equipment for the job. Use only tools in safe condition. Tools and equipment must be used properly and not abused. Take precautions to avoid injury by cutting tools by keeping them sheathed until use.

Principal Steps

Potential Hazards

Action to Minimize Hazard

10. Ladders

10. Fall from excessive height

10. Use caution and maintain three points of contact when climbing a ladder. Always have other site personnel support the ladder while in use. Maintain a safe distance from overhead utilities and obstructions. Always place the ladder on stable, even ground.

11. Waterways

11. Drowning, swept away

11. Be aware of the potential for a rise in water level or flash floods. Be aware of the flow of the current. Wear a floatation device if potential for drowning is present. Evaluate the potential use of a tie off line for personnel entering the waterway.

12. Severe Weather

12. Thunderstorms, lightning hazard

12. Cease work immediately and take cover in a vehicle or structure until lightning has ceased.

This Activity Hazard Analysis has been prepared by K.S. Ware and Associates.

The KSWA field safety coordinator for this project will be Mr. James Dye. Mr. Dye's health and safety training and certifications include:

- Completed OSHA 10 Hour Construction Safety Course
- Completed OSHA 40 Hour HAZWOPER Course

Multimodal

Environmental Studies Request

Project Information

Route: State Route 436 (SR-436)
Termini: Reedy Creek Road Bridge over Reedy Creek, LM 0.68
County: Carroll
PIN: 124139.00

Request

Request Type: Initial Environmental Study
Project Plans: Planning Report
Date of Plans: 3/23/2018
Location: Email Attachment

Certification

Requestor: Brittany Hyder
Title: TESS-Ad

Signature: Brittany
Hyder

 Digitally signed by
Brittany Hyder
Date: 2018.04.04
15:29:49 -05'00'

Environmental Study

Technical Section

Section: Multimodal

Study Results

This project does not accommodate bicyclists or pedestrians but is exempt from multi-modal accommodations. As a bridge replacement project in a rural area on a facility with no existing accommodations, there is a demonstrated absence of prudence.

Commitments

Did the study of this project result in any environmental commitments?

No

Additional Information

Is there any additional information or material included with this study?


No

Certification

Responder: Jessica Wilson

Title: Transportation Program Supervisor

Signature: Jessica
Wilson

 Digitally signed by Jessica Wilson
DN: cn=Jessica Wilson, o=TDOT,
ou, email=Jessica.L.Wilson@tn.gov,
c=US
Date: 2018.04.10 13:06:51 -05'00'



MULTIMODAL ACCESS POLICY

EFFECTIVE DATE:

July 31, 2015

AUTHORITY:

TCA 4-3-2303

If any portion of this policy conflicts with applicable state or federal laws or regulations, that portion shall be considered void. The remainder of this policy shall not be affected thereby and shall remain in full force and effect.

PURPOSE:

To create and implement a multimodal transportation policy that encourages safe access and mobility for users of all ages and abilities through the planning, design, construction, maintenance, and operation of new construction, reconstruction and retrofit transportation facilities that are federally or state funded. Users include, but are not limited to, motorists, transit-riders, freight-carriers, bicyclists and pedestrians.

APPLICATION:

The policy applies to Department of Transportation employees, consultants and contractors involved in the planning, design, construction, maintenance, and operation of state and federally funded projects, and local governments managing and maintaining transportation projects with funding through TDOT's Local Programs Development Office.

DEFINITIONS:

- Highway: A main road or thoroughfare, such as a street, boulevard, or parkway, available to the public for use for travel or transportation.
- Multimodal: For the purposes of this policy, multimodal is defined as the movement of people and goods on state and functionally-classified roadways. Users include, but are not limited to, motorists, transit-riders, freight-carriers, bicyclists and pedestrians, including those with disabilities.
- Reconstruction: Complete removal and replacement of the pavement structure or the addition of new continuous traffic lanes on an existing roadway.

- Retrofit: Changes to an existing highway within the general right-of-way, such as adding lanes, modifying horizontal and vertical alignments, structure rehabilitation, safety improvements, and maintenance.
- Roadway: The portion of a highway, including shoulders, that is available for vehicular, bicycle or pedestrian use.

POLICY:

The Department of Transportation recognizes the benefits of integrating multimodal facilities into the transportation system as a means to improve the mobility, access and safety of all users. The intent of this policy is to promote the inclusion of multimodal accommodations in all transportation planning and project development activities at the local, regional and statewide levels, and to develop a comprehensive, integrated, and connected multimodal transportation network. TDOT will collaborate with local government agencies and regional planning agencies through established transportation planning processes to ensure that multimodal accommodations are addressed throughout the planning, design, construction, maintenance, and operation of new construction, reconstruction and retrofit transportation facilities as outlined in TDOT's Multimodal Access Policy Implementation Plan.

TDOT is committed to the development of a transportation system that improves conditions for multimodal transportation users through the following actions:

1. Provisions for multimodal transportation shall be given full consideration in new construction, reconstruction and retrofit roadway projects through design features appropriate for the context and function of the transportation facility.
2. The planning, design and construction of new facilities shall give full consideration to likely future demand for multimodal facilities and not preclude the provision of future improvements. If all feasible roadway alternatives have been explored and suitable multimodal facilities cannot be provided within the existing or proposed right of way due to environmental constraints, an alternate route that provides continuity and enhances the safety and accessibility of multimodal travel should be considered.
3. Existing multimodal provisions on roadways shall not be made more difficult or impossible by roadway improvements or routine maintenance projects.
4. Intersections and interchanges shall be designed (where appropriate based on context) to accommodate the mobility of bicyclists and pedestrians to cross corridors as well as travel along them in a manner that is safe, accessible, and convenient.
5. While it is not the intent of resurfacing projects to expand existing facilities, opportunities to provide or enhance bicycle and pedestrian facilities shall be given full consideration during the program development stage of resurfacing projects.
6. Pedestrian facilities shall be designed and built to accommodate persons with disabilities in accordance with the access standards required by the Americans with Disabilities Act

(ADA). Sidewalks, shared use paths, street crossings (including over- and under-crossings) and other infrastructure shall be constructed so that all pedestrians, including those with disabilities, can travel independently.

7. Provisions for transit-riders, pedestrians, and bicyclists shall be included when closing roads, bridges or sidewalks for construction projects where pedestrian, bicycle, or transit traffic is documented or expected.

EXCEPTIONS:

It is TDOT's expectation that full consideration of multimodal access will be integrated in all appropriate new construction, reconstruction and retrofit infrastructure projects. However, there are conditions where it is generally inappropriate to provide multimodal facilities. Examples of these conditions include, but are not limited to:


1. Controlled access facilities where non-motorized users are prohibited from using the roadway. In this instance, a greater effort may be necessary to accommodate these users elsewhere within the same transportation corridor.
2. The cost of accommodations would be excessively disproportionate to the need and probable use. Excessively disproportionate is defined as exceeding twenty percent (20%) of the total cost of the project. The twenty percent figure should be used in an advisory rather than an absolute sense, especially in instances where the cost may be difficult to quantify. Compliance with ADA requirements may require greater than 20% of project cost to accommodate multimodal access. Costs associated with ADA requirements are NOT an exception.
3. Areas in which the population and employment densities or level of transit service around the facility, both existing and future, does not justify the incorporation of multimodal alternatives.
4. Inability to negotiate and enter into an agreement with a local government to assume the operational and maintenance responsibility of the facility.
5. Other factors where there is a demonstrated absence of need or prudence, or as requested by the Commissioner of the Department of Transportation.

Exceptions for not accommodating multimodal transportation users on State roadway projects in accordance with this policy shall be documented describing the basis and supporting data for the exception, and must be approved by TDOT's Chief Engineer and Chief of Environment and Planning or their designees.


DESIGN GUIDANCE:

The Department recognizes that a well-planned and designed transportation network is responsive to its context and meets the needs of its users. Therefore, facilities will be designed and constructed in accordance with current applicable laws and regulations, using best practices and guidance, including but not limited to the following: TDOT Standard Drawings and guidelines, American Association of State Highway and Transportation Officials (AASHTO) publications, Institute of Transportation Engineers (ITE) publications, the Manual on Uniform Traffic Control Devices (MUTCD), National Association of City Transportation Officials (NACTO) publications, the Public Rights-of-Ways Accessibility Guidelines (PROWAG), and the Americans with Disabilities Act Accessibility Guidelines (ADAAG).

Signed:



PAUL DEGGES
Chief Engineer/Deputy Commissioner



TOKS OMISHAKIN
Chief of Planning/Deputy Commissioner



JOHN SCHROER
Commissioner