

# Asbestos & Lead Paint Survey Report

S-46-103 Bridge over Fishing Creek  
York County, South Carolina  
Bridge No. 4670010300100



September 4, 2013  
Terracon Project No. 73138128

**ASBESTOS DETECTED:** **NO**

**LEAD PAINT DETECTED:** **YES**

Prepared for:  
SCDOT  
Columbia, South Carolina

Prepared by:  
Terracon Consultants, Inc.  
Columbia, South Carolina

Offices Nationwide  
Employee-Owned

Established in 1965  
terracon.com

# Terracon

Geotechnical   ■   Environmental   ■   Construction Materials   ■   Facilities



September 4, 2013

Mr. Tim Hunter  
SCDOT  
955 Park Street  
Columbia, South Carolina 29202

Re: ***Asbestos & Lead Paint Survey Report***  
S-46-103 Bridge over Fishing Creek  
Bridge No. 4670010300100  
York County, South Carolina  
Project No. 73138128

Dear Mr. Hunter:

**Terracon Consultants, Inc. (Terracon)** is pleased to present the results of the asbestos and lead paint survey performed on August 19, 2013, at the S-46-103 Bridge over Fishing Creek located in York County, South Carolina. We understand that this survey was requested due to the planned replacement of the structure.

Asbestos-containing materials (ACM) were not detected in the samples collected from the bridge. Additionally, lead was identified in painted structure.

Terracon appreciates the opportunity to provide environmental consulting services for the SCDOT. If you should have any questions regarding this report, please contact the undersigned at (803) 741-9000.

Sincerely,  
**Terracon Consultants, Inc.**

Kayla McCaskill  
Environmental Scientist  
SC Asbestos Building Inspector No. BI-01166

Norman E. Partin, Jr., CHMM  
Department Manager



Terracon Consultants, Inc. 521 Clemson Road Columbia, South Carolina 29229

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Geotechnical



Environmental



Construction Materials



Facilities

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**S-46-103 BRIDGE OVER FISHING CREEK**  
**YORK COUNTY, SOUTH CAROLINA**  
**Project No. 73138128**

## **1.0 INTRODUCTION**

**Terracon Consultants, Inc. (Terracon)** conducted an asbestos and lead paint survey of building materials at the S-46-103 Bridge (No. 4670010300100) over Fishing Creek located in York County, South Carolina. The asbestos survey was conducted on August 19, 2013, by a South Carolina Department of Health and Environmental Control (SCDHEC) licensed building inspector in general accordance with our Proposal No. P73130253, dated September 4, 2013. Structure components were surveyed and homogeneous areas of suspect asbestos-containing materials (ACM) were visually identified and documented. Although reasonable effort was made to survey accessible suspect materials, additional suspect but un-sampled materials could be located in walls, in voids or in other concealed areas. Suspect ACM was sampled in general accordance with the sampling protocols outlined in EPA Regulation 40 CFR 763 (Asbestos Hazard Emergency Response Act, AHERA). Samples were delivered to an accredited laboratory for analysis by (PLM).

### **1.1. Project Objective**

We understand the asbestos survey was requested due to the planned demolition and replacement of the bridge. EPA regulation 40 CFR 61, Subpart M, National Emission Standards for Hazardous Air Pollutants (NESHAP), prohibits the release of asbestos fibers to the atmosphere during renovation/demolition activities. NESHAP requires that potentially regulated ACM be identified, classified and quantified prior to planned disturbances or renovation activities.

The objective of the lead paint evaluation was to identify lead containing paint on the structure that may require special handling and disposal considerations upon demolition of the structure. SCDHEC regulates solid waste disposal under Regulation 61-107.19. Testing was performed to meet specific State disposal requirements and does not comply with all parts of the Occupational Health and Safety Administrations (OSHA) lead regulations. Testing to comply with OSHA regulations are not covered in our scope of work since it is the responsibility of the contractor to protect its employees.

Paint samples were collected from visible and accessible structures and submitted to an Environmental Laboratory Accreditation Program (ELAP) approved laboratory for analysis of lead.

## **2.0 STRUCTURE DESCRIPTION**

The bridge deck of the structure consists of concrete spans. The bridge structure has concrete guardrails. The bridge deck is supported by concrete pier caps, which are located on wood or concrete piers. The bridge structure is approximately 196 feet long, 27 feet wide, and 17 feet tall.

## **3.0 ASBESTOS SURVEY**

The asbestos survey was conducted by Ms. Kayla McCaskill; SCDHEC licensed Asbestos Building Inspector (License No. BI-01166, exp. 08/06/14). The survey was conducted on August 19, 2013, in general accordance with the sampling protocols established by EPA Regulation 40 CFR 763, AHERA and the SCDHEC R61-86.1. A summary of survey activities is provided below.

### **3.1 Regulatory Overview**

The asbestos NESHAP (40 CFR Part 61, Subpart M) regulates asbestos fiber emissions and asbestos waste disposal practices. It also requires the identification and classification of existing building materials prior to demolition or renovation activity. Under NESHAP, asbestos-containing materials are classified as either friable, Category I non-friable or Category II non-friable ACM. Friable materials are those that, when dry, may be crumbled, pulverized or reduced to powder by hand pressure. Category I non friable ACM includes packing materials, gaskets, resilient floor coverings and asphalt roofing products containing more than 1 percent (%) asbestos. Category II non-friable ACM are non-friable materials other than Category I materials that contain more than 1% asbestos.

Friable ACM, Category I and Category II non-friable ACM which is in poor condition and has become friable or which will be subjected to drilling, sanding, grinding, cutting or abrading and which could be crushed or pulverized during anticipated demolition activities are considered regulated ACM (RACM). RACM must be removed prior to renovation or demolition activities.

In the state of South Carolina, asbestos activities are regulated by the SCDHEC under the SCDHEC Regulation 61-86.1 Standards of Performance for Asbestos. The SCDHEC require that any asbestos-related activity conducted in a public building be performed by personnel licensed by the SCDHEC. The owner or operator must provide the SCDHEC with written notification of planned removal activities at least 10 working days prior to the commencement of asbestos abatement activities. Asbestos abatement must be performed by SCDHEC-licensed asbestos abatement contractors in accordance with a Project Design prepared by a SCDHEC-licensed Asbestos Consultant. Third-party air monitoring must be conducted during the abatement activities.

The Occupational Safety and Health Administration (OSHA) Asbestos Standard for Construction Industry (29 CFR 1926.1101) regulates workplace exposure to asbestos. The OSHA standard requires that employee exposure to airborne asbestos fibers be maintained below 0.1 asbestos fibers per cubic centimeter of air (0.1 f/cc). The OSHA standard classifies construction and maintenance activities, which could disturb ACM, and specifies work practices and precautions which employers must follow when engaging in each class of regulated work.

### **3.2 Visual Assessment**

Our survey activities began with visual observation of the structure to identify apparent homogeneous areas of suspect ACM. A homogeneous area consists of building materials, which appear similar throughout in terms of color, texture and date of application. Building materials which were not identified as concrete, glass, wood, masonry, metal or rubber were considered suspect ACM.

### **3.3 Physical Assessment**

A physical assessment of each homogeneous area of suspect ACM was conducted to assess the friability and condition of the materials. A friable material is defined by the EPA as a material, which can be crumbled, pulverized or reduced to powder by hand pressure when dry. Friability was assessed by physically touching suspect materials.

### **3.4 Sample Collection**

Based on the results of the visual sampling, bulk samples of suspect ACM were collected in general accordance with AHERA sample collection protocols. Random samples of suspect materials were collected in each homogeneous area. Bulk samples were collected using wet methods as applicable to reduce the potential for fiber release. Samples were placed in sealable containers and labeled with unique sample numbers using an indelible marker.

Six (6) bulk samples were collected from areas of suspect ACM on the bridge. The bulk samples were collected from the following materials:

- Tar friction barrier-Thick
- Tar friction barrier-Thin

A summary of the suspect ACM samples collected during the survey is presented in Table 1 in Appendix A.

### **3.5 Sample Analysis**

Bulk samples were submitted under chain of custody to Scientific Analytical Institute, Inc. (SAI), of Greensboro, North Carolina for analysis by polarized light microscopy (PLM) with dispersion

staining techniques per EPA methodology (600/R-93/116). The percentage of asbestos, where applicable, was determined by microscopical visual estimation. SAI is accredited under the National Voluntary Laboratory Accreditation Program NVLAP (#200664).

Per the SCDHEC Regulation 61-86.1 Standards of Performance for Asbestos Projects, negative results for non-friable organically bound (NOB) materials such as flooring and roofing shall be verified with at least one transmission electron microscopy TEM analysis.

Six (6) samples of NOB materials tested negative for asbestos by PLM analysis and thus were analyzed by TEM analysis:

- Tar friction barrier-Thin
- Tar friction barrier-Thick

### **3.6 Finding and Recommendations**

Based on the results of laboratory analyses, no asbestos was detected in the friction barrier samples collected from the bridge. These results were confirmed by TEM analysis. Asbestos laboratory analytical reports are included in Appendix B.

## **4.0 LEAD-CONTAINING PAINT SURVEY**

### **4.1 Regulatory Overview**

Lead is regulated by the EPA, SCDHEC and OSHA. The EPA and SCDHEC regulate lead use, removal, and disposal, and OSHA regulates lead exposure to workers. The EPA defines LBP as paint, varnish, stain, or other applied coating that contains lead equal to or greater than 1.0 mg/cm<sup>2</sup>, 5,000 mg/kg, or 0.5% by dry weight as determined by laboratory analysis. The SCDHEC regulations 61-107.19 require that painted demolition debris with a lead concentration greater than 0.06% by weight be disposed in a permitted Class II landfill. For the purpose of the OSHA lead standard, lead includes metallic lead, all inorganic lead compounds, and organic lead soaps. The complete OSHA standard for compliance can be found on OSHA's website ([www.osha.gov](http://www.osha.gov)). A synopsis of the OSHA regulations (29 CFR 1926.62) and the applicability are as follows:

The OSHA *Lead Standard for Construction* (29 CFR 1926.62) applies to all construction work where an employee may be occupationally exposed to lead. All work related to construction, alteration, or repair (including painting and decorating) is included. The lead-in-construction standard applies to any detectable concentration of lead in paint, as even small concentrations of lead can result in unacceptable employee exposures depending upon on the method of removal and other workplace conditions. Under this standard, construction includes, but is not limited to, the following:



- Demolition or salvage of structures where lead or materials containing lead are present
- Removal or encapsulation of materials containing lead
- New construction, alteration, repair, or renovation of structures, substrates, or portions containing lead, or materials containing lead
- Installation of products containing lead
- Lead contamination/emergency clean-up
- Transportation, disposal, storage, or containment of lead or materials containing lead on the site or location at which construction activities are performed
- Maintenance operations associated with construction activities described above

## **4.2 Sampling and Analytical Protocol**

Ms. McCaskill of Terracon conducted the lead paint sampling on August 19, 2013. The paint sampling was conducted by collecting paint a chip sample from painted bridge surfaces likely to contain lead. The paint sample was collected down to the surface substrate so as to include any underlying paint systems in the analysis. The random paint chip sample was selected based on current paint schemes and may not be inclusive of old paint systems covered with existing painted systems. The paint chip sample was submitted to an ELAP approved laboratory for analysis of lead by NIOSH Method 7082M (atomic absorption).

## **4.3 Sample Collection**

One (1) paint sample was collected from exterior painted surfaces on the structure. The paint and substrate sampled is included below:

- Orange decking brackets

## **4.4 Findings and Recommendations**

Laboratory analysis detected lead concentrations greater than 0.06% by weight. SCDHEC regulations require that lead painted demolition debris be disposed in a permitted Class II landfill. Landfills should be contacted to determine their specific disposal requirements. Metal components painted with lead-based paint may be recycled however the recycler should be contacted to determine their specific requirements. Additionally, the provisions in the OSHA Standard for Lead (29 CFR 1926.62) should be followed by contractor personnel conducting work activity during the demolition. A summary of the lead paint laboratory results is presented in Table 2 in Appendix A. The analytical report is included in Appendix B.



## **5.0 GENERAL COMMENTS**

This survey was conducted in a manner consistent with the level of care and skill ordinarily exercised by members of the profession currently practicing under similar conditions in the same locale. The results, findings, conclusions and recommendations expressed in this report are based on conditions observed during our survey of the structure. The information contained in this report is relevant to the date on which this survey was performed, and should not be relied upon to represent conditions at a later date.

This report has been prepared on behalf of and exclusively for use by SCDOT for specific application to their project as discussed.

This report is not a bidding document. Contractors or consultants reviewing this report must draw their own conclusions regarding further investigation or remediation deemed necessary. Terracon does not warrant the work of regulatory agencies, laboratories or other third parties supplying information, which may have been used in the preparation of this report. No warranty, express or implied is made.

**APPENDIX A**  
**TABLE**

**TABLE 1 - Asbestos Sample Summary**  
**S-103 Bridge over Fishing Creek**  
**York County, South Carolina**  
**Project No. 73138128**

HA	Approx. Quantity (ft <sup>2</sup> )	Sample Number	Description	Sample Location	Lab Result	Category	Condition
1	950	1.1	Tar Friction Barrier - Thick	Between decking and caps	NAD - PLM NAD - TEM	Misc	NF, Good
		1.2	Tar Friction Barrier - Thick	Between decking and caps	NAD	Misc	NF, Good
		1.3	Tar Friction Barrier - Thick	Between decking and caps	NAD	Misc	NF, Good
2	150	2.1	Thin - Tar Friction Barrier - Thin	Between piers and caps	NAD - PLM NAD - TEM	Misc	NF, Good
		2.2	Thin - Tar Friction Barrier - Thin	Between piers and caps	NAD	Misc	NF, Good
		2.3	Thin - Tar Friction Barrier - Thin	Between piers and caps	NAD	Misc	NF, Good

**Notes**

Due to planned demolition all materials have a high potential for disturbance

HA Homogeneous Area

NAD No asbestos detected

PLM Polarized Light Microscopy

TEM Transmission Electron Microscopy

Misc Miscellaneous Material

F Friable

NF Non-Friable

**TABLE 2 - Lead Paint Sample Summary**  
**S-46-103 Bridge over Fishing Creek**  
**York County, South Carolina**  
**Project No. 73138128**

<b>Sample Number</b>	<b>Description</b>	<b>Location</b>	<b>Lab Result</b>
<b>LP-1</b>	<b>Orange</b>	<b>Decking Brackets</b>	<b>12%</b>

Note:

Results in boldface indicate concentration above the SCDHEC regulatory limit (0.06%)

**APPENDIX B**  
**LABORATORY REPORTS**



# Bulk Asbestos Analysis

By Polarized Light Microscopy  
EPA Method: 600/R-93/116 and 600/M4-82-020



**Customer:** Terracon  
521 Clemson Rd.  
Columbia SC 29229

**Attn:** Kayla McCaskill

**Lab Order ID:** 1315507

**Analysis ID:** 1315507\_PLM

**Date Received:** 8/21/2013

**Date Reported:** 8/26/2013

**Project:** Bridge over Fishing Creek

Sample ID	Description	Asbestos	Fibrous Components	Non-Fibrous Components	Attributes
Lab Sample ID	Lab Notes				Treatment
1.1	Thick tar friction barrier	None Detected	20% Cellulose	80% Other	Black Non Fibrous Heterogeneous
1315507PLM_1					Dissolved
1.2	Thick tar friction barrier	None Detected	20% Cellulose	80% Other	Black Non Fibrous Heterogeneous
1315507PLM_2					Dissolved
1.3	Thick tar friction barrier	None Detected	20% Cellulose	80% Other	Black Non Fibrous Heterogeneous
1315507PLM_3					Dissolved
2.1	Thin tar friction barrier	None Detected	70% Cellulose	30% Other	Black Non Fibrous Heterogeneous
1315507PLM_4					Dissolved
2.2	Thin tar friction barrier	None Detected	70% Cellulose	30% Other	Black Non Fibrous Heterogeneous
1315507PLM_5					Dissolved
2.3	Thin tar friction barrier	None Detected	70% Cellulose	30% Other	Black Non Fibrous Heterogeneous
1315507PLM_6					Dissolved

Disclaimer: Due to the nature of the EPA 600 method, asbestos may not be detected in samples containing low levels of asbestos. We strongly recommended that analysis of floor tiles, vermiculite, and/or heterogeneous soil samples be conducted by TEM for confirmation of "None Detected" by PLM. This report relates only to the samples tested and may not be reproduced, except in full, without the written approval of SAI. This report may not be used by the client to claim product endorsement by NVLAP or any other agency of the U.S. government. Estimated MDL is 0.1%.

Bart Huber (6)

Analyst

Approved Signatory



# Bulk Asbestos Analysis by Transmission Electron Microscopy

Semi-Quantitative  
Chatfield SOP 1988-02 Rev. 1

**Client:** Terracon  
521 Clemson Rd.  
Columbia, SC 29229

**Attn:** Kayla McCaskill

**Lab Order ID:** 1315739

**Analysis ID:** 1315739\_TBS

**Date Received:** 8/26/2013

**Project:** Bridge Over Fishing Creek

**Date Reported:** 8/30/2013

Sample ID	Description	Organic (Wt. %)	Acid Sol. (Wt. %)	Asbestos (Wt. %)	LCL-UCL (Wt. %)
Lab Sample ID	Lab Notes				
1.1	Thick tar fnction barrier	83%	-%	None Detected	
1315739TBS_1					
2.1	Thick tar fnction barrier	98%	-%	None Detected	
1315739TBS_2					

Matt Thomas (2)

Analyst

Approved Signatory



Lab Use Only  
Lab Order ID: 1315507  
Client Code: \_\_\_\_\_

Company Contact Information	
Company: Terracon	Contact: Kayla McCaskill
Address: 521 Clemson Rd. Columbia, S.C. 29229	Phone <input checked="" type="checkbox"/> : 803-212-0061
	Fax <input type="checkbox"/> :
	Email <input checked="" type="checkbox"/> : klmccaskill@terracon.com

Billing/Invoice Information		Turn Around Times	
Company: Terracon		90 Min. <input type="checkbox"/>	48 Hours <input type="checkbox"/>
Contact: Kayla McCaskill		3 Hours <input type="checkbox"/>	72 Hours <input type="checkbox"/>
Address: 521 Clemson Rd.		6 Hours <input type="checkbox"/>	96 Hours <input checked="" type="checkbox"/>
Columbia, S.C. 29229		12 Hours <input type="checkbox"/>	120 Hours <input type="checkbox"/>
Klmccaskill@terracon.com		24 Hours <input type="checkbox"/>	144 Hours <input type="checkbox"/>

PO Number: 73138128	
Project Name/Number: Bridge over Fishing Creek	

<b>Asbestos Test Types</b>	
PLM EPA 600/R-93/116 (PLM)	<input checked="" type="checkbox"/>
Positive stop <input type="checkbox"/>	
PLM Point Count 400 (PT4)	<input type="checkbox"/>
PLM Point Count 1000 (PTM)	<input type="checkbox"/>
PCM NIOSH 7400-A Rules (PCM)	<input type="checkbox"/>
B Rules (PCB) <input type="checkbox"/> TWA (PTA) <input type="checkbox"/>	
TEM AHERA (AHE)	<input type="checkbox"/>
TEM Level II (LII)	<input type="checkbox"/>
TEM NIOSH 7402 (TNI)	<input type="checkbox"/>
TEM Bulk Qualitative (TBL)	<input type="checkbox"/>
TEM Bulk Chatfield (TBS)	<input checked="" type="checkbox"/>
TEM Bulk Quantitative (TBQ)	<input type="checkbox"/>
TEM Wipe ASTM D6480-05	<input type="checkbox"/>
TEM Microvac ASTM D5755-02	<input type="checkbox"/>
TEM Water EPA 100.2 (TW1)	<input type="checkbox"/>
Other: _____	<input type="checkbox"/>

Sample ID #		Volume/Area	Comments
1.1	Thick Tar Friction Barrier		TEM if necessary
1.2			
1.3			
2.1	Thin Tar Friction Barrier		TEM if necessary
2.2			
2.3			

Accepted ☒

Rejected ☐

Relinquished by	Date/Time	Received by	Date/Time
Ralph [Signature]	8-19-13/19.00	[Signature]	8-21-13



# Analysis for Lead Concentration in Paint Chips

by Flame Atomic Absorption Spectroscopy  
EPA SW-846 3rd Ed. Method No. 3050B/Method No. 7420



**Customer:** Terracon  
521 Clemson Rd.  
Columbia SC 29229

**Attn:** Kayla McCaskill

**Lab Order ID:** 1315506

**Analysis ID:** 1315506\_PBP

**Date Received:** 8/21/2013

**Date Reported:** 8/27/2013

**Project:** Bridge over Fishing Creek

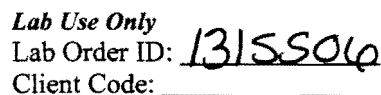
Sample ID	Description	Mass (g)	Analytical Sensitivity (% by weight)	Concentration (% by weight)
Lab Sample ID	Lab Notes			
LP-1	Orange metal brackets	0.0716	0.019%	12%
1315506PBP_1				

The quality control samples run with the samples in this report have passed all AIHA required specifications unless otherwise noted. This report relates only to the samples tested and may not be reproduced, except in full, without the written approval of SAI. This report may not be used by the client to claim product endorsement by AIHA or any other agency of the U.S. government. (R.L. = 0.01 wt.%)

Melissa Sharps (1)

**Analyst**

**Laboratory Director**

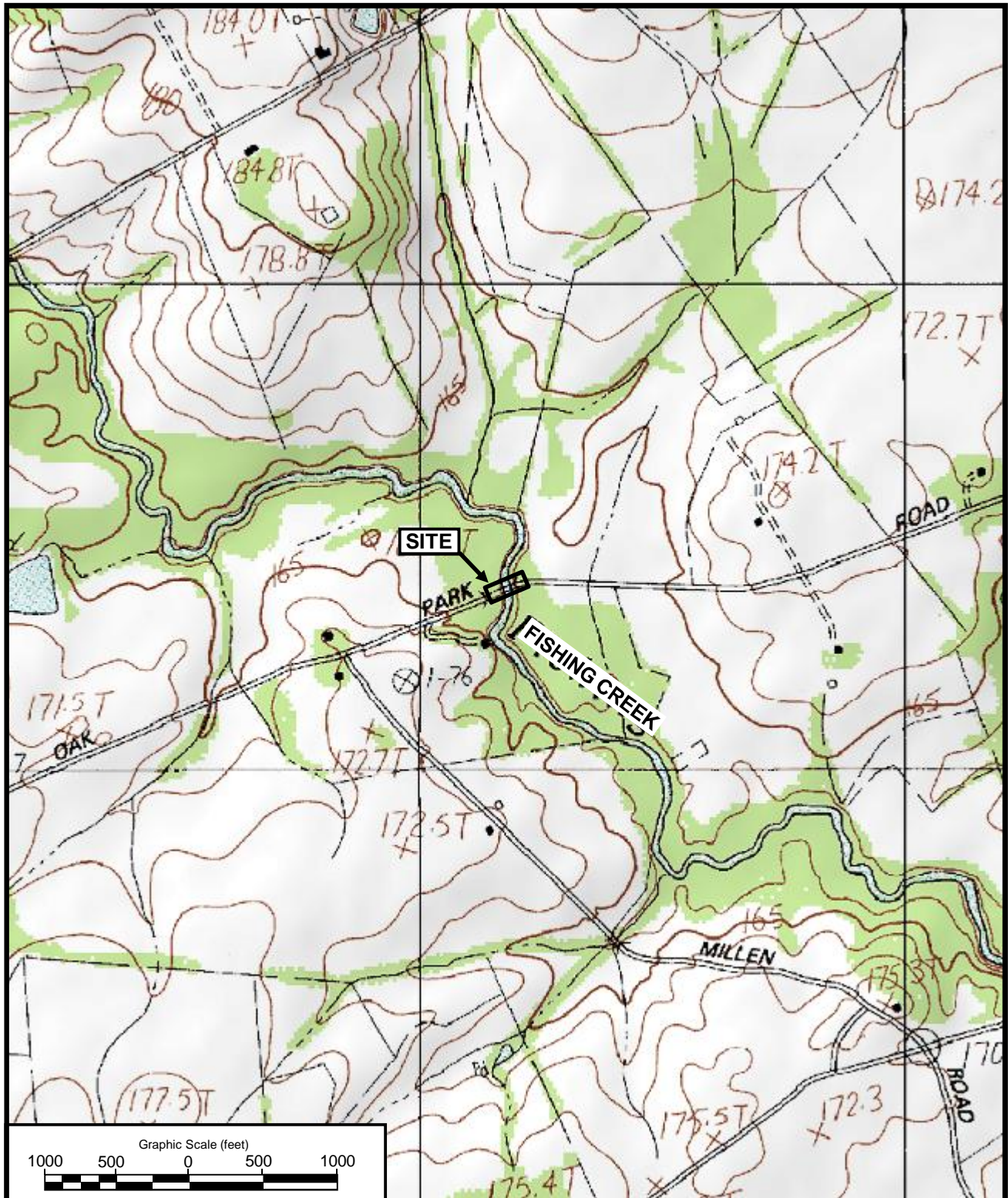


Turn Around Times			
3 Hours	<input type="checkbox"/>	72 Hours	<input type="checkbox"/>
6 Hours	<input type="checkbox"/>	96 Hours	<input checked="" type="checkbox"/>
12 Hours	<input type="checkbox"/>	120 Hours	<input type="checkbox"/>
24 Hours	<input type="checkbox"/>	144+ Hours	<input type="checkbox"/>
48 Hours	<input type="checkbox"/>		

Accepted	Rejected
<input checked="" type="checkbox"/>	<input type="checkbox"/>

## **APPENDIX C**

**Figure 1 – Site Location Map**  
**Figure 2 – Site Cross Section**



**USGS TOPOGRAPHIC QUADRANGLE MAP**  
ROCK HILL WEST, SOUTH CAROLINA

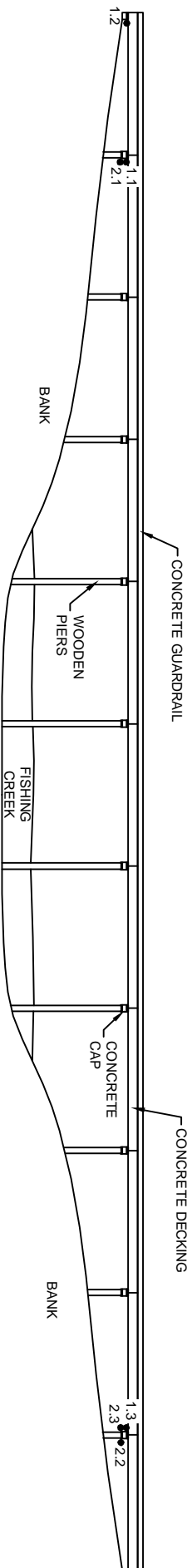
DATE: 1984  
SCALE: 1 INCH = 1000 FEET

PROJECT NO. 73138128



**SITE LOCATION MAP**  
BRIDGE OVER FISHING CREEK  
YORK COUNTY, SOUTH CAROLINA

**FIGURE 1: TOPOGRAPHIC MAP**



### EXPLANATION

- SAMPLE LOCATION

Project Mng:	NEP
Drawn By:	PTK
Checked By:	NEP
Approved By:	CRC

Project No:	73138128
Scale:	AS SHOWN
File No:	73138128
Date:	AUGUST 2013

**Terracon**  
Consulting Engineers and Scientists

521 CLEMSON ROAD  
PH. (803) 741-9900

COLUMBIA, SOUTH CAROLINA  
FAX. (803) 741-9900

SITE CROSS SECTION  
BRIDGE OVER FISHING CREEK  
SCDOT  
YORK COUNTY, SOUTH CAROLINA

FIG. No.

2

DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

**APPENDIX D**  
**PHOTOGRAPHS**





**Photo 1** View of bridge facing east.



**Photo 2** View of bridge facing west.





**Photo 3** View of thin friction barrier found between wooden piers and concrete caps and thick friction barrier found between the caps and the decking.



**Photo 4** View of painted orange decking brackets.

**APPENDIX E**  
**INSPECTOR CREDENTIALS**

**SCDHEC ISSUED**  
**Asbestos ID Card**

Kayla Mccaskill

Expires

05/10/14

AIR SAMPLER  
CONSULT BI

AS-00392 05/10/14  
BI-01166 08/06/14

