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220 Athens Way, Suite 410 | Nashville, Tennessee 37228 | Telephone 615-255-9300 | Facsimile 615-255-9345 | [www.ensafe.com](http://www.ensafe.com)

August 31, 2012

Mr. Jim Ozment  
Tennessee Department of Transportation  
Dept. Environmental Planning and Permits  
505 Deaderick Street, Suite 900  
Nashville, TN 37243-0334

Re: Asbestos Inspection Report  
Shelby County; SR-14 Bridge over Loosahatchie River  
Bridge #: 79SR0140037 (LM 26.90)  
TDOT Project # 79024-4298-04, PIN 116134.00  
TDOT Contract: E1647; Work Order: 06

Dear Mr. Ozment:

Enclosed is the asbestos inspection report for the above-referenced bridge. A total of 60 samples were obtained during the inspection. Asbestos was detected in the wrap around the drain pipes that penetrate the decking. There were 124 drains located, but based on the condition of the drains, it was not possible to determine if the entire drain pipe is wrapped in this material or if it is only the portions that extend below the bridge deck. Most likely it is the entire drain.

In its current condition this ACM was determined to be non-friable, that is, it could not be pulverized using hand pressure alone. Accordingly, it is classified under EPA NESHAP rules (40 CFR 61) as a Category II non-friable ACM in its current condition. Depending upon the type of bridge maintenance required, there could be potential for the material to become pulverized and thereby become friable, at that time it would be considered a "Regulated Asbestos-Containing Material" (RACM).

OSHA would consider the abatement of RACM to be a Class II activity, which would require trained workers and a competent person to oversee the work (an asbestos supervisor). Additionally, State of Tennessee asbestos accreditation requirements (TCA 1200-01-20) mandate that such work be performed by an accredited firm (contractor) using accredited abatement workers and supervisors.

If you should have any questions, please call me at 615-255-9300.

Sincerely,

EnSafe Inc.

*Tammy Keim Williams*

By: Tammy Keim Williams  
*Project Manager*

Enclosure



## TENNESSEE DEPARTMENT OF TRANSPORTATION ASBESTOS INSPECTION REPORT

Bridge over Loosahatchie River  
Bridge No. 79SR0140037 (LM 26.90)  
State Route 14  
Bartlett, Shelby County



Prepared by:



**ENSAFE INC.**

220 Athens Way, Suite 410  
Nashville, Tennessee 37228

August 31, 2012

EnSafe Project Number: 0888812717

Corey Coleman (Signature)

Tennessee Asbestos Inspector Accreditation No:A-I-48788-18528

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## 1.0 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 by EnSafe Inc. in accordance with the State of Tennessee, Department of Transportation Environmental Division, Social and Cultural Resources Office, Hazardous Materials Section requirements.

### 1.1 TDOT BRIDGE IDENTIFICATION

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

TDOT PE Number: 79024-4298-04  
TDOT PIN Number: 116134.00  
Bridge Inventory Number: 79SR0140037  
State Route (SR) Number: SR-14  
Log Mile (LM) Number: 26.90

### 1.2 GENERAL DESCRIPTION

The bridge, located on SR-14 at LM 26.90, is an 18-span 736-foot bridge over Loosahatchie River, in Bartlett, Shelby County, Tennessee. Figure – 1 shows the general location of the bridge.

## 2.0 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 1% asbestos by calibrated visual area estimation by 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.

### 2.1 PERSONNEL AND DATE(S) OF INSPECTION

The sampling and field activities were performed on August 23, 2012, by Corey Coleman and Robert Bailey, Accredited State of Tennessee Asbestos Inspectors. A copy of the inspectors' and EnSafe's current accreditation from the State of Tennessee is included in Appendix A.

## **2.2 VISUAL SURVEY**

EnSafe's survey began with a walk-through and visual survey of the structures located on the property. The visual survey consisted of:

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

## **2.3 ACCESS TO BRIDGE COMPONENTS**

Individual bridge components were accessed by the following methods:

### **2.3.1 Top of Bridge Deck**

The bridge deck was covered with asphalt and therefore not sampled. Traffic control was not required for the inspection of the top of the bridge deck. Samples (labeled as 37HA-8A through 37HA-8C) of the concrete sidewalk were obtained using hammers and chisels. The caulking from the sidewalk (labeled as 37HA-10A through 37HA-10C) was also sampled.

### **2.3.2 Underside of Bridge Deck**

The underside of the bridge deck was accessed by foot and samples obtained either on foot or by use of a ladder. The majority of the deck was physically assessable with a ladder. Samples were obtained using hammers and chisels. Samples 37HA-3A through 37HA-3C were obtained from the bridge deck portion that extends over the river. Samples 37HA-2A through 37HA-2C were obtained from the underside of the north and south bridge deck approach.

### **2.3.3 Bridge Beams**

The bridge beams were accessed by foot and by ladder. Beam samples were obtained using hammers and chisels (37HA-1A through 37HA-1C). Samples obtained from the diaphragms above the bent caps are labeled as 37HA-17A through 37HA-17C. Samples obtained from the felt between the bent caps and the beams are labeled 37HA-20A through 37HA-20C.

### **2.3.4 Bridge Piers/Bents and Supports**

The bridge piers and bents were accessed on foot and using ladders. The bridge support components consisted of piers, columns, support (platforms) and caps. Samples 37HA-9A through 37HA-9C were obtained from the concrete piers of the bridge. Samples 37HA-11A through 37HA-11C were obtained from the thin bent caps. Samples 37HA-14A through 37HA-14C were obtained from the thick bent caps. Samples 37HA-15A through 37HA-15C were obtained from the thin columns. Samples 37HA-16A through 37HA-16C were obtained from the larger columns. Samples 37HA18A through 37HA18C were obtained a concrete platform observed on the south approach.

### **2.3.5 Side Rails**

There were concrete side rails extending the length of both sides of the bridge. Three samples were obtained of the side rails (37HA-6A through 37HA-6C) and of the rail posts (37HA-7A through 37HA-7C) of the parapet by using hammers and chisels.

### **2.3.6 Abutments**

The abutments on both sides of the bridge were accessed on foot. The abutment appeared to consist of a back wall and footer. Samples were obtained using hammers and chisels. Samples 37HA-4A through 37HA-4C were obtained from the back walls. Samples 37HA-19A through 37HA-19C were obtained from the footers. Samples 37HA-5A through 37HA-5C were obtained from the abutment wing walls.

### **2.3.7 Bridge Drainage**

Drainage from the bridge is through piping cored through the bridge deck on the northwest side. Some of this piping was straight and some was angled. The angled drains were observed in the portion of the bridge deck that extends over the river, while the straight drains were observed in the north and south approach. The piping appeared to be metal and was coated with a hard wrapping. The wrap on the straight drain pipes was sampled as 37HA-12A through 37HA-12C and the wrap on the angled drain pipes was sampled as 37HA-13A through 37HA-13C.

## **3.0 ANALYTICAL PROCEDURES**

### **3.1 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.

In most instances, samples from each HA are analyzed on a “first positive stop” basis. “First positive stop” means that if one sample from a HA of material is found to contain greater than 1% asbestos, the remaining samples from that HA are not analyzed and the material is assumed to contain asbestos. In addition, 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.

### **3.2 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 under the National Voluntary Laboratory Accreditation Program (NVLAP). The name and accreditation number of the analytical laboratory that analyzed the samples for this inspection is indicated in Table - 1:

**Table – 1: Analytical Laboratory**

<b>Laboratory</b>	Scientific Analytical Institute
<b>NVLAP Number</b>	200664-0

## 4.0 REGULATORY OVERVIEW

### 4.1 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.

#### 4.1.1 Definitions

Significant definitions related to regulation of asbestos under NESHAPS 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, Polarized Light Microscopy (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, Polarized Light Microscopy (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 polarized light microscopy (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.

## 5.0 RESULTS

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

### 5.1 RESULTS OF ASBESTOS BULK SAMPLE ANALYSIS

A total of 60 samples were obtained from the bridge. Multiple samples of each HA were collected in accordance with State of Tennessee, Department of Transportation Environmental Division, Social and Cultural Resources Office, Hazardous Materials Section requirements and delivered to the laboratory for visual observation and microscopic analysis. The samples were selected based on HAs of suspect materials, as described in Section 2.2.

Table – 2 below summarizes the various sampled materials which were found to contain greater than 1% asbestos minerals. Figure – 2 delineates the locations of ACM-containing samples. Photographs of the different HAs sampled that were found to be asbestos-containing are presented in Appendix B, and the analytical result of all the samples collected from the property, along with the chain-of-custody records, are included in Appendix C.

**Table – 2: Materials Containing Greater than 1% Asbestos**

Sample No.	HA/Material Description	Location (Bridge Component)	Approx Qty.	Friable (Y/N)	Type Asbestos and Content
<b>1213990PLM_34-37HA-12A</b>	HA-12 Straight Pipe Wrap	Between Beams and Bent Caps	84 LF	N	15% Chrysotile 5% Crocidolite
<b>1213990PLM_35-37HA-12B *</b>	HA-12 Straight Pipe Wrap	Between Beams and Bent Caps	84 LF	N	assumed 15% Chrysotile and 5% Crocidolite-Not analyzed
<b>1213990PLM_36-37HA-12C *</b>	HA-12 Straight Pipe Wrap	Between Beams and Bent Caps	84 LF	N	assumed 15% Chrysotile and 5% Crocidolite-Not analyzed
<b>1213990PLM_36-01HA-13A</b>	HA-12 Angled Pipe Wrap	Drainage Pipes	40 LF	N	15% Chrysotile
<b>1213990PLM_37-01HA-13B *</b>	HA-12 Angled Pipe Wrap	Drainage Pipes	40 LF	N	assumed 15% Chrysotile -not analyzed
<b>1213990PLM_36-01HA-13C *</b>	HA-12 Angled Pipe Wrap	Drainage Pipes	40 LF	N	assumed 15% Chrysotile -not analyzed

\* Sample not analyzed. Assumed to be asbestos-containing using “First Positive Stop” method.

HA Homogeneous Area

LF Linear Feet

SF Square Feet

CF Cubic Feet

## 6.0 QUALIFICATIONS

The information presented herein is based on information obtained during the site visit(s) and from previous experience. If additional information becomes available which might impact our conclusions or recommendations, EnSafe 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

**SHELBY COUNTY**

**79-SR014-2690**  
Federal ID: 79SR0140037  
Road Name:  
Crossing: LOOSAHATCHIE RIVER  
OVR/UND PASS:  
Road Name 2:

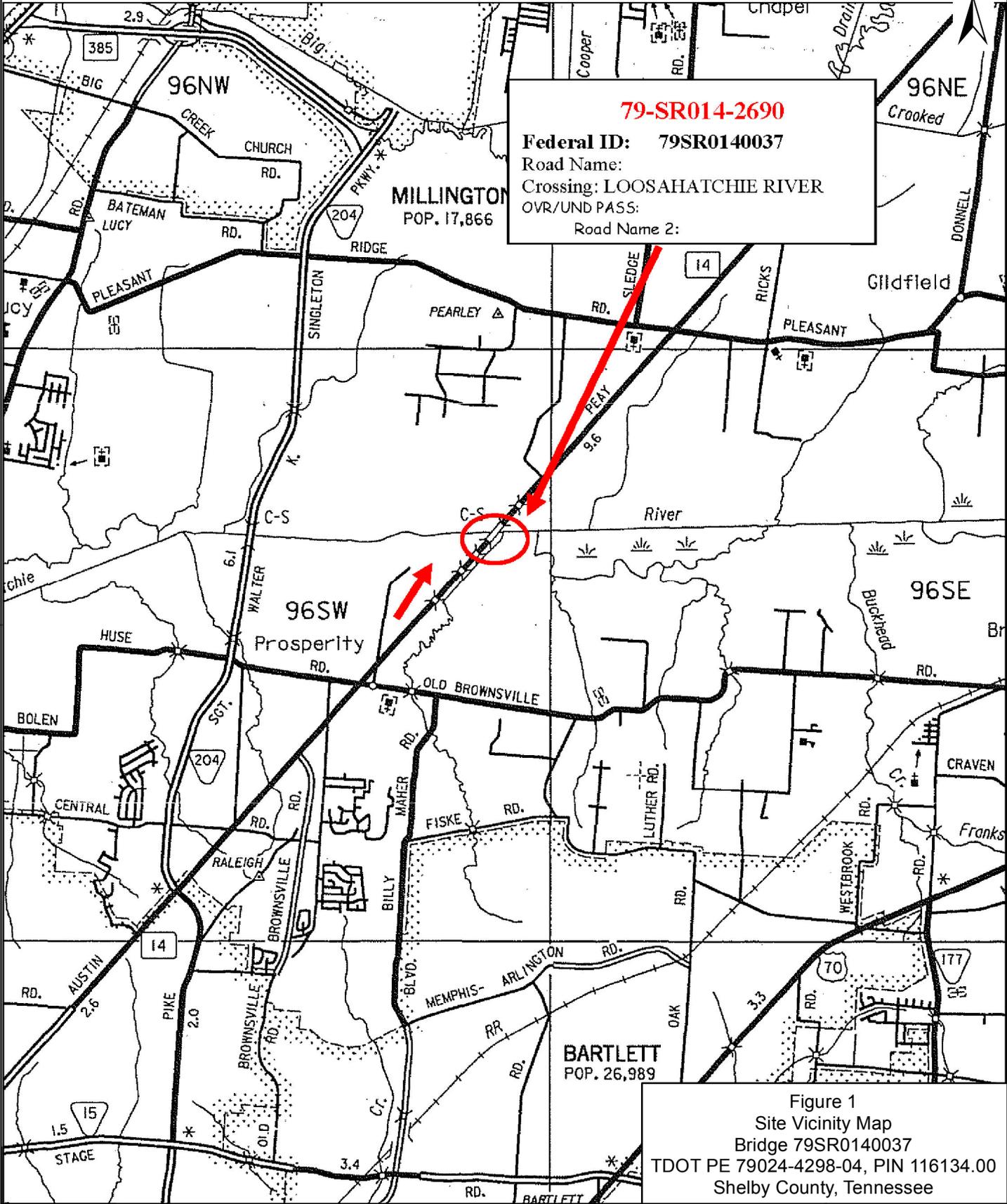
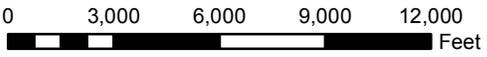


Figure 1  
Site Vicinity Map  
Bridge 79SR0140037  
TDOT PE 79024-4298-04, PIN 116134.00  
Shelby County, Tennessee



Approximate Scale

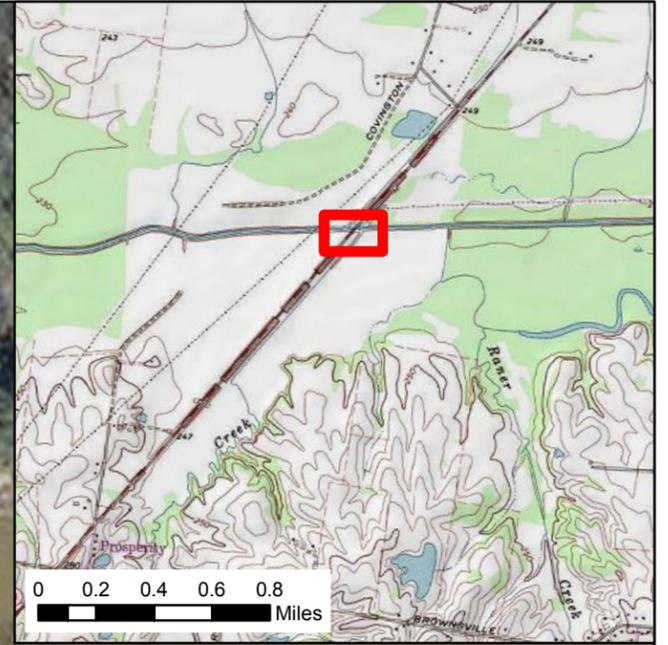
Source: Obtained from TDOT Bridge Inspection Reports; Used with permission from TDOT

REQUESTED BY: T. Keim  
DRAWN BY: N. Rinehart  
DATE: 8/14/2012  
PROJECT NO: 0888812717



X:\TDOT\Bridge Sampling\SiteLocation\_79SR0140037.mxd

## **Figure – 2: Asbestos-Containing Pipe Wrap Sample Locations**



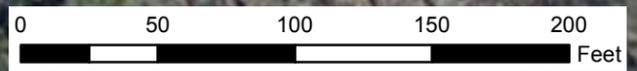
● 37HA-13A  
 ● 37HA-13B  
 ● 37HA-13C

● 37HA-12C  
 ● 37HA-12B  
 ● 37HA-12A

**Legend**

● Sampled Drain Pipe Wrap Location. Approximately eighty four 4-inch diameter straight drains total, with an estimated 84 linear feet of ACM for all 84 drains.

● Sampled Drain Pipe Wrap Location. Approximately forty 4-inch diameter angled drains total, with an estimated 40 linear feet of ACM for all 40 drains.



**Figure 2**  
 Asbestos-Containing Pipe Wrap  
 Sample Locations  
 Bridge 79SR0140037  
 TDOT PE 79024-4298-04, PIN 116134.00  
 Shelby County, Tennessee

Requested By: T. Keim	 1-800-588-7962 WWW.ENSAFE.COM
Drawn By: N. Rinehart	
Date: 8/30/2012	
Project: 0888812717	

X:\TDOT\Bridges\Sampling\SiteMap\_79SR0140037.mxd

## **APPENDIX A: ASBESTOS INSPECTION ACCREDITATIONS**



# THE STATE OF TENNESSEE

Department of Environment and Conservation

Solid & Hazardous Waste Management

Toxic Substances Program

401 Church Street 5th Floor L&C Tower Nashville TN 37243

By virtue of the authority vested in me, I hereby accredit:

## EnSafe

5724 Summer Trees Dr. Memphis TN, 38134

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-214-13112	August 01, 2011	August 31, 2012

Given under my hand and the Seal of the State of Tennessee in Nashville,

This 7th Day of September 2011

Mike Appie, Director  
Division of Solid Waste Management



CN-1324

RDA-1320

**THE STATE OF TENNESSEE**  
Department of Environment and Conservation Toxic Substances Program



**Corey A. Coleman**

DOB	Sex	HGT	WGT
30-Nov-1976	M	5' 11"	250

Discipline	Accreditation	Expiration
Inspector	A-148788-18528	Jan-31-2013

*Individual*

*Re-Accreditation*

Date Issued: 3/27/2012

**Asbestos Accreditation**

**THE STATE OF TENNESSEE**  
Department of Environment and Conservation Toxic Substances Program



**Robert R Bailey**

DOB	Sex	HGT	WGT
22-Jun-1981	M	5' 10"	155

<b>Discipline</b>	<b>Accreditation</b>	<b>Expiration</b>
Inspector	A-I-72565-20354	Mar-31-2013

*Individual*    *Initial*

Date Issued: 3/23/2012

**Asbestos Accreditation**

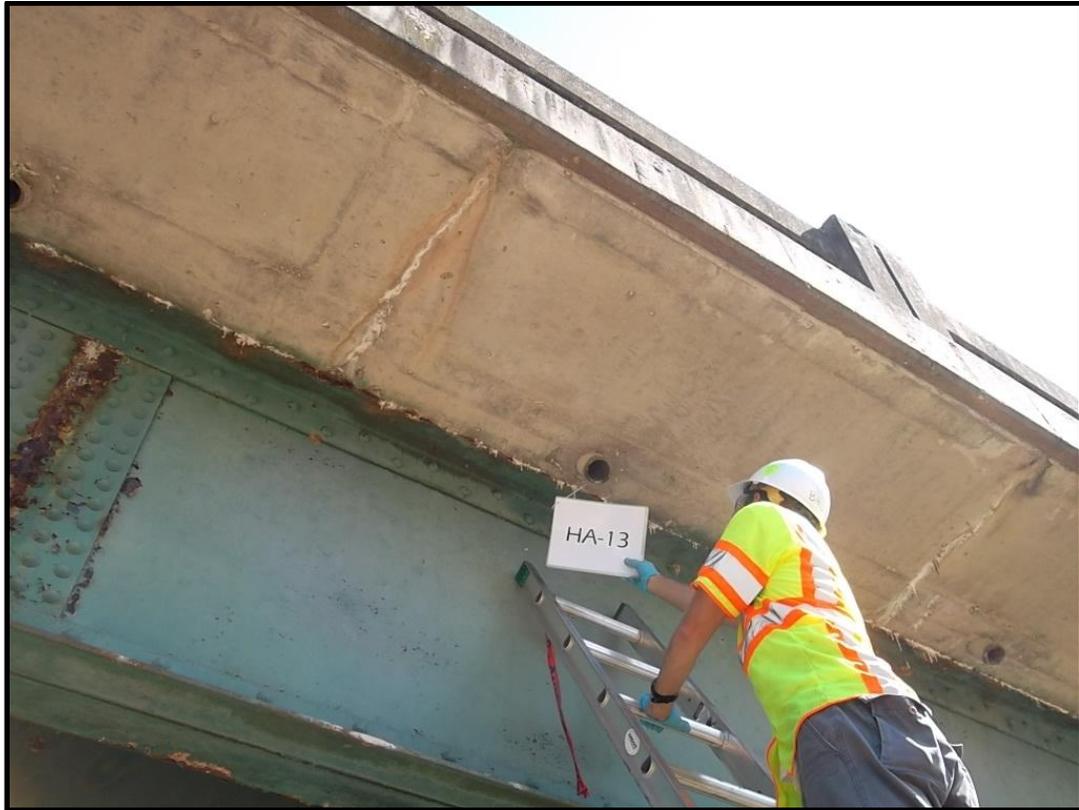
## **APPENDIX B: PHOTOGRAPHS**



Photo 1: Bridge Identification photograph.



Photo 2: Asbestos-containing sample of wrapping located around the straight drain pipes.



**Photo 3:** Asbestos-containing sample of wrapping located around the angled drain pipes.

## **APPENDIX C: ASBESTOS SAMPLE LABORATORY ANALYSIS DATA**



# Bulk Asbestos Analysis

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



**Customer:** EnSafe- Nashville  
220 Athens Way Suite 410  
Nashville, TN 37228-1303

**Attn:** Tammy Keim  
Corey Coleman

**Lab Order ID:** 1213990

**Analysis ID:** 1213990PLM

**Date Received:** 8/24/2012

**Date Reported:** 8/27/2012

**Project:** TDOT Shelby County Hwy 14 Bridge 37

Sample ID	Description	Asbestos	Fibrous Components	Non-Fibrous Components	Attributes
Lab Sample ID	Lab Notes				Treatment
37HA1A	CONCRETE FROM BRIDGE BEAMS	None Detected		100% Other	Brown Non Fibrous Heterogeneous
1213990PLM_1					Crushed
37HA1B	CONCRETE FROM BRIDGE BEAMS	None Detected	2% Cellulose	98% Other	Brown Non Fibrous Heterogeneous
1213990PLM_2					Crushed
37HA1C	CONCRETE FROM BRIDGE BEAMS	None Detected	2% Cellulose	98% Other	Brown Non Fibrous Heterogeneous
1213990PLM_3					Crushed
37HA2A	CONCRETE FROM BRIDGE DECK 1	None Detected		100% Other	White, Gray Non Fibrous Heterogeneous
1213990PLM_4					Crushed
37HA2B	CONCRETE FROM BRIDGE DECK 1	None Detected	2% Cellulose	98% Other	White, Gray Non Fibrous Heterogeneous
1213990PLM_5					Crushed
37HA2C	CONCRETE FROM BRIDGE DECK 1	None Detected		100% Other	White, Gray Non Fibrous Heterogeneous
1213990PLM_6					Crushed
37HA3A	CONCRETE FROM BRIDGE DECK 2	None Detected		100% Other	Gray Non Fibrous Heterogeneous
1213990PLM_7					Crushed
37HA3B	CONCRETE FROM BRIDGE DECK 2	None Detected		100% Other	White, Brown Non Fibrous Heterogeneous
1213990PLM_8					Crushed

Disclaimer: Due to the nature of the EPA 600 method, asbestos may not be detected in samples containing low levels of asbestos. We strongly recommend 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%.

Sharon Donald (60)

Analyst

Scientific Analytical Institute, Inc. 4604 Dundas Dr. Greensboro, NC 27407 (336) 292-3888

Nathaniel Durham, MS or Approved Signatory



# Bulk Asbestos Analysis

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



**Customer:** EnSafe- Nashville  
220 Athens Way Suite 410  
Nashville, TN 37228-1303

**Attn:** Tammy Keim  
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**Lab Order ID:** 1213990

**Analysis ID:** 1213990PLM

**Date Received:** 8/24/2012

**Date Reported:** 8/27/2012

**Project:** TDOT Shelby County Hwy 14 Bridge 37

Sample ID	Description	Asbestos	Fibrous Components	Non-Fibrous Components	Attributes
Lab Sample ID	Lab Notes				Treatment
37HA3C	CONCRETE FROM BRIDGE DECK 2	None Detected		100% Other	White, Gray Non Fibrous Heterogeneous
1213990PLM_9					Crushed
37HA4A	CONCRETE FROM ABUTMENT WALL	None Detected		100% Other	White, Gray Non Fibrous Heterogeneous
1213990PLM_10					Crushed
37HA4B	CONCRETE FROM ABUTMENT WALL	None Detected		100% Other	White, Gray Non Fibrous Heterogeneous
1213990PLM_11					Crushed
37HA4C	CONCRETE FROM ABUTMENT WALL	None Detected		100% Other	White, Gray Non Fibrous Heterogeneous
1213990PLM_12					Crushed
37HA5A	CONCRETE FROM ABUTMENT WINGS	None Detected		100% Other	White, Gray Non Fibrous Heterogeneous
1213990PLM_13					Crushed
37HA5B	CONCRETE FROM ABUTMENT WINGS	None Detected		100% Other	White, Gray Non Fibrous Heterogeneous
1213990PLM_14					Crushed
37HA5C	CONCRETE FROM ABUTMENT WINGS	None Detected		100% Other	White, Gray Non Fibrous Heterogeneous
1213990PLM_15					Crushed
37HA6A	CONCRETE FROM BRIDGE RAILS	None Detected		100% Other	Brown Non Fibrous Heterogeneous
1213990PLM_16					Crushed

Disclaimer: Due to the nature of the EPA 600 method, asbestos may not be detected in samples containing low levels of asbestos. We strongly recommend 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%.

Sharon Donald (60)

Analyst

Scientific Analytical Institute, Inc. 4604 Dundas Dr. Greensboro, NC 27407 (336) 292-3888

Nathaniel Durham, MS or Approved Signatory



# Bulk Asbestos Analysis

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



**Customer:** EnSafe- Nashville  
220 Athens Way Suite 410  
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Sample ID	Description	Asbestos	Fibrous Components	Non-Fibrous Components	Attributes
Lab Sample ID	Lab Notes				Treatment
37HA6B	CONCRETE FROM BRIDGE RAILS	None Detected		100% Other	Gray, Brown Non Fibrous Heterogeneous
1213990PLM_17					Crushed
37HA6C	CONCRETE FROM BRIDGE RAILS	None Detected		100% Other	White, Gray Non Fibrous Heterogeneous
1213990PLM_18					Crushed
37HA7A	CONCRETE FROM RAIL POSTS	None Detected		100% Other	Gray, Brown Non Fibrous Heterogeneous
1213990PLM_19					Crushed
37HA7B	CONCRETE FROM RAIL POSTS	None Detected		100% Other	Gray, Brown Non Fibrous Heterogeneous
1213990PLM_20					Crushed
37HA7C	CONCRETE FROM RAIL POSTS	None Detected		100% Other	Gray, Brown Non Fibrous Heterogeneous
1213990PLM_21					Crushed
37HA8A	CONCRETE FROM SIDEWALK	None Detected		100% Other	White, Gray Non Fibrous Heterogeneous
1213990PLM_22					Crushed
37HA8B	CONCRETE FROM SIDEWALK	None Detected		100% Other	White, Gray Non Fibrous Heterogeneous
1213990PLM_23					Crushed
37HA8C	CONCRETE FROM SIDEWALK	None Detected		100% Other	White, Gray Non Fibrous Heterogeneous
1213990PLM_24					Crushed

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Sharon Donald (60)

Analyst

Nathaniel Durham, MS or Approved Signatory



# Bulk Asbestos Analysis

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



**Customer:** EnSafe- Nashville  
220 Athens Way Suite 410  
Nashville, TN 37228-1303

**Attn:** Tammy Keim  
Corey Coleman

**Lab Order ID:** 1213990

**Analysis ID:** 1213990PLM

**Date Received:** 8/24/2012

**Date Reported:** 8/27/2012

**Project:** TDOT Shelby County Hwy 14 Bridge 37

Sample ID	Description	Asbestos	Fibrous Components	Non-Fibrous Components	Attributes
Lab Sample ID	Lab Notes				Treatment
37HA9A	CONCRETE FROM PIER	None Detected		100% Other	White, Gray Non Fibrous Heterogeneous
1213990PLM_25					Crushed
37HA9B	CONCRETE FROM PIER	None Detected		100% Other	White, Gray Non Fibrous Heterogeneous
1213990PLM_26					Crushed
37HA9C	CONCRETE FROM PIER	None Detected		100% Other	White, Gray Non Fibrous Heterogeneous
1213990PLM_27					Crushed
37HA10A	CAULK FROM SIDEWALK	None Detected		100% Other	Gray Non Fibrous Homogeneous
1213990PLM_28					Ashed
37HA10B	CAULK FROM SIDEWALK	None Detected		100% Other	Gray Non Fibrous Homogeneous
1213990PLM_29					Ashed
37HA10C	CAULK FROM SIDEWALK	None Detected		100% Other	Gray Non Fibrous Homogeneous
1213990PLM_30					Ashed
37HA11A	CONCRETE FROM BENT CAP 1 (THIN)	None Detected		100% Other	White, Gray Non Fibrous Heterogeneous
1213990PLM_31					Crushed
37HA11B	CONCRETE FROM BENT CAP 1 (THIN)	None Detected		100% Other	White, Gray Non Fibrous Heterogeneous
1213990PLM_32					Crushed

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Sharon Donald (60)

Analyst

Scientific Analytical Institute, Inc. 4604 Dundas Dr. Greensboro, NC 27407 (336) 292-3888

Nathaniel Durham, MS or Approved Signatory



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



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**Project:** TDOT Shelby County Hwy 14 Bridge 37

Sample ID	Description	Asbestos	Fibrous Components	Non-Fibrous Components	Attributes
Lab Sample ID	Lab Notes				Treatment
37HA11C	CONCRETE FROM BENT CAP 1 (THIN)	None Detected		100% Other	White, Gray Non Fibrous Heterogeneous
1213990PLM_33					Crushed
37HA12A	WRAP ON DRAIN PIPE (STRAIGHT)	15% Chrysotile 5% Crocidolite		80% Other	White, Gray Fibrous Heterogeneous
1213990PLM_34					Crushed
37HA12B	WRAP ON DRAIN PIPE (STRAIGHT)	Not Analyzed			
1213990PLM_35					
37HA12C	WRAP ON DRAIN PIPE (STRAIGHT)	Not Analyzed			
1213990PLM_36					
37HA13A	WRAP ON DRAIN PIPE (ANGLED)	15% Chrysotile		85% Other	White, Gray Fibrous Heterogeneous
1213990PLM_37					Crushed
37HA13B	WRAP ON DRAIN PIPE (ANGLED)	Not Analyzed			
1213990PLM_38					
37HA13C	WRAP ON DRAIN PIPE (ANGLED)	Not Analyzed			
1213990PLM_39					
37HA14A	CONCRETE FROM BENT CAP 2 (THICK)	None Detected		100% Other	White, Gray Non Fibrous Heterogeneous
1213990PLM_40					Crushed

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# Bulk Asbestos Analysis

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



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**Attn:** Tammy Keim  
Corey Coleman

**Lab Order ID:** 1213990

**Analysis ID:** 1213990PLM

**Date Received:** 8/24/2012

**Date Reported:** 8/27/2012

**Project:** TDOT Shelby County Hwy 14 Bridge 37

Sample ID	Description	Asbestos	Fibrous Components	Non-Fibrous Components	Attributes
Lab Sample ID	Lab Notes				Treatment
37HA14B	CONCRETE FROM BENT CAP 2 (THICK)	None Detected		100% Other	White, Gray Non Fibrous Heterogeneous
1213990PLM_41					Crushed
37HA14C	CONCRETE FROM BENT CAP 2 (THICK)	None Detected		100% Other	White, Gray Non Fibrous Heterogeneous
1213990PLM_42					Crushed
37HA15A	CONCRETE FROM COLUMN 1 (THIN POSTS)	None Detected		100% Other	Gray Non Fibrous Heterogeneous
1213990PLM_43					Crushed
37HA15B	CONCRETE FROM COLUMN 1 (THIN POSTS)	None Detected		100% Other	Gray Non Fibrous Heterogeneous
1213990PLM_44					Crushed
37HA15C	CONCRETE FROM COLUMN 1 (THIN POSTS)	None Detected		100% Other	Gray Non Fibrous Heterogeneous
1213990PLM_45					Crushed
37HA16A	CONCRETE FROM COLUMN 2 (LARGE POSTS)	None Detected		100% Other	Gray Non Fibrous Heterogeneous
1213990PLM_46					Crushed
37HA16B	CONCRETE FROM COLUMN 2 (LARGE POSTS)	None Detected		100% Other	Gray Non Fibrous Heterogeneous
1213990PLM_47					Crushed
37HA16C	CONCRETE FROM COLUMN 2 (LARGE POSTS)	None Detected		100% Other	Gray Non Fibrous Heterogeneous
1213990PLM_48					Crushed

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# Bulk Asbestos Analysis

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



**Customer:** EnSafe- Nashville  
220 Athens Way Suite 410  
Nashville, TN 37228-1303

**Attn:** Tammy Keim  
Corey Coleman

**Lab Order ID:** 1213990

**Analysis ID:** 1213990PLM

**Date Received:** 8/24/2012

**Date Reported:** 8/27/2012

**Project:** TDOT Shelby County Hwy 14 Bridge 37

Sample ID	Description	Asbestos	Fibrous Components	Non-Fibrous Components	Attributes
Lab Sample ID	Lab Notes				Treatment
37HA17A	CONCRETE FROM DIAPRHAGM (ABOVE BENT CAP)	None Detected		100% Other	Gray Non Fibrous Heterogeneous
1213990PLM_49					Crushed
37HA17B	CONCRETE FROM DIAPRHAGM (ABOVE BENT CAP)	None Detected		100% Other	Gray Non Fibrous Heterogeneous
1213990PLM_50					Crushed
37HA17C	CONCRETE FROM DIAPRHAGM (ABOVE BENT CAP)	None Detected		100% Other	Gray Non Fibrous Heterogeneous
1213990PLM_51					Crushed
37HA18A	CONCRETE PLATFORM	None Detected		100% Other	Gray Non Fibrous Heterogeneous
1213990PLM_52					Crushed
37HA18B	CONCRETE PLATFORM	None Detected		100% Other	Gray Non Fibrous Heterogeneous
1213990PLM_53					Crushed
37HA18C	CONCRETE PLATFORM	None Detected		100% Other	Gray Non Fibrous Heterogeneous
1213990PLM_54					Crushed
37HA19A	CONCRETE FROM ABUTMENT	None Detected		100% Other	Gray Non Fibrous Heterogeneous
1213990PLM_55					Crushed
37HA19B	CONCRETE FROM ABUTMENT	None Detected		100% Other	Gray Non Fibrous Heterogeneous
1213990PLM_56					Crushed

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# Bulk Asbestos Analysis

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



**Customer:** EnSafe- Nashville  
220 Athens Way Suite 410  
Nashville, TN 37228-1303

**Attn:** Tammy Keim  
Corey Coleman

**Lab Order ID:** 1213990

**Analysis ID:** 1213990PLM

**Date Received:** 8/24/2012

**Date Reported:** 8/27/2012

**Project:** TDOT Shelby County Hwy 14 Bridge 37

Sample ID	Description	Asbestos	Fibrous Components	Non-Fibrous Components	Attributes
Lab Sample ID	Lab Notes				Treatment
37HA19C	CONCRETE FROM ABUTMENT	None Detected		100% Other	Gray Non Fibrous Heterogeneous
1213990PLM_57					Crushed
37HA20A	FELT B/T BENT CAP 1 AND BEAMS	None Detected		100% Other	Black, Gray Non Fibrous Heterogeneous
1213990PLM_58					Crushed
37HA20B	FELT B/T BENT CAP 1 AND BEAMS	None Detected		100% Other	Black, Gray Non Fibrous Heterogeneous
1213990PLM_59					Crushed
37HA20C	FELT B/T BENT CAP 1 AND BEAMS	None Detected		100% Other	Black, Gray Non Fibrous Heterogeneous
1213990PLM_60					Crushed

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1213990

**CHAIN OF CUSTODY AND ANALYTICAL REQUEST RECORD**

COC No. CAC082312

Page 1 of 3



Project Name: TDOT Shelby County Hwy 14 Bridge 37

PO No. 13412

Project No. 0888812717 Phase 02 Task

Site Location: Shelby County, TN

Lab Name SAI

EnSafe Inc. 800-588-7962

Sampler/Site Phone#

**Sample Analysis Requested** (Fill in the number of containers for each test)

Sampler: Corey Coleman/Robert Bailey

Send Results To: Tammy Keim; Corey Coleman Email: tkeim@ensafe.com; ccoleman@ensafe.com

Data Shipping Address:

Sample ID (sys_samp_code)	Location ID (sys_loc_code)	Date (mm/dd/yy)	Time (Military) (hhmm)	Matrix Code <b>(1)</b>	Sample Type <b>(2)</b>	Field Filtered (Y/N)	Total No. of Containers	PLM											Remarks
SEE ATTACHED SPREADSHEET				SN	N	N		X											

Turnaround Time(specify): Final \_\_\_\_ days Email (if applicable) \_24hrs\_\_\_\_ days Email Results(check): Yes  No \_\_\_\_ Deliverable (check): Level 2 \_\_\_\_ Level 3 \_\_\_\_ Level 4 \_\_\_\_ TX TRRP-13 \_\_\_\_

**Field Comments:** Analyze all layers, if found to be more than one. **Lab Comments:** **Sample Shipment and Delivery Details**

**PLM pointcount @ less than 1%. Positive stop for each homogeneous area. Need r** Number of coolers in shipment:

Relinquished by (signature)	Date	Time	Received by (signature)	Date	Time	Samples Iced?(check) Yes ____ No <input checked="" type="checkbox"/>
1 <i>Corey Coleman</i>	8/23/12	1850	1			Method of Shipment: FEDEX
2			2			Airbill No:
3			3			Date Shipped: 8/23/12

(1) Matrix Code: AA=Air, AQ=Air Quality Control Matrix, DC=Drill Cuttings, GS=Soil Gas, LD=Drilling Fluid, LF=Free Product, LH=Liquid Waste, OIL=Oil, SB=Bentonite, SC=Cement, SE=Sediment, SF=Filter Sandpack, SL=Sludge, SN=Miscellaneous Solid/Building Materials, SO=Soil, SQ=Soil/Solid Quality Control Matrix, ST=Solid Waste, SW=Swab/Wipe, TA=Animal Tissue, TP=Plant Tissue, TQ=Tissue Quality Control Matrix, U=Unknown, WA=Aqueous Drill Cuttings, WE=Estuary, WG=Ground Water, WL=Leachate, WO=Ocean Water, WP=Drinking Water, WQ=Water Quality Control Matrix, WS=Surface Water, WW=Waste Water  
 (2) Sample Type: AB=Ambient Blank, EB=Equipment Blank, FB=Field Blank, FD=Field Duplicate Sample, FR=Field Replicate, MB=Material Blank, N=Normal Environmental Sample, RB=Material Rinse Blank, TB=Trip Blank  
 (3) Preservative added: HA=Hydrochloric Acid, NI=Nitric Acid, SH=Sodium Hydroxide, SA=Sulfuric Acid, AA=Ascorbic Acid, HX=Hexane, ME=Methanol, SB=sodium bisulfate, ST=Sodium Thiosulfate, If NO preservative added leave blank

Summary of Materials

1213990

Project: TDOT  
 Location: Shelby County Hwy 14 79SR0140037  
 Survey Date: 8/23/2012

Area	Sample ID	Description/ Location of Material	Volume	Comments
	37HA1A	CONCRETE FROM BRIDGE BEAMS		
	37HA1B	CONCRETE FROM BRIDGE BEAMS		
	37HA1C	CONCRETE FROM BRIDGE BEAMS		
	37HA2A	CONCRETE FROM BRIDGE DECK 1		
	37HA2B	CONCRETE FROM BRIDGE DECK 1		
	37HA2C	CONCRETE FROM BRIDGE DECK 1		
	37HA3A	CONCRETE FROM BRIDGE DECK 2		
	37HA3B	CONCRETE FROM BRIDGE DECK 2		
	37HA3C	CONCRETE FROM BRIDGE DECK 2		
	37HA4A	CONCRETE FROM ABUTMENT WALL		
	37HA4B	CONCRETE FROM ABUTMENT WALL		
	37HA4C	CONCRETE FROM ABUTMENT WALL		
	37HA5A	CONCRETE FROM ABUTMENT WINGS		
	37HA5B	CONCRETE FROM ABUTMENT WINGS		
	37HA5C	CONCRETE FROM ABUTMENT WINGS		
	37HA6A	CONCRETE FROM BRIDGE RAILS		
	37HA6B	CONCRETE FROM BRIDGE RAILS		
	37HA6C	CONCRETE FROM BRIDGE RAILS		
	37HA7A	CONCRETE FROM RAIL POSTS		
	37HA7B	CONCRETE FROM RAIL POSTS		
	37HA7C	CONCRETE FROM RAIL POSTS		
	37HA8A	CONCRETE FROM SIDEWALK		
	37HA8B	CONCRETE FROM SIDEWALK		
	37HA8C	CONCRETE FROM SIDEWALK		
	37HA9A	CONCRETE FROM PIER		
	37HA9B	CONCRETE FROM PIER		
	37HA9C	CONCRETE FROM PIER		
	37HA10A	CAULK FROM SIDEWALK		
	37HA10B	CAULK FROM SIDEWALK		
	37HA10C	CAULK FROM SIDEWALK		
	37HA11A	CONCRETE FROM BENT CAP 1 (THIN)		
	37HA11B	CONCRETE FROM BENT CAP 1 (THIN)		
	37HA11C	CONCRETE FROM BENT CAP 1 (THIN)		
	37HA12A	WRAP ON DRAIN PIPE (STRAIGHT)		
	37HA12B	WRAP ON DRAIN PIPE (STRAIGHT)		
	37HA12C	WRAP ON DRAIN PIPE (STRAIGHT)		
	37HA13A	WRAP ON DRAIN PIPE (ANGLED)		
	37HA13B	WRAP ON DRAIN PIPE (ANGLED)		
	37HA13C	WRAP ON DRAIN PIPE (ANGLED)		
	37HA14A	CONCRETE FROM BENT CAP 2 (THICK)		
	37HA14B	CONCRETE FROM BENT CAP 2 (THICK)		
	37HA14C	CONCRETE FROM BENT CAP 2 (THICK)		

1213770

37HA15A	CONCRETE FROM COLUMN 1 (THIN POSTS)		
37HA15B	CONCRETE FROM COLUMN 1 (THIN POSTS)		
37HA15C	CONCRETE FROM COLUMN 1 (THIN POSTS)		
37HA16A	CONCRETE FROM COLUMN 2 (LARGE POSTS)		
37HA16B	CONCRETE FROM COLUMN 2 (LARGE POSTS)		
37HA16C	CONCRETE FROM COLUMN 2 (LARGE POSTS)		
37HA17A	CONCRETE FROM DIAPHRAGM (ABOVE BENT CAP)		
37HA17B	CONCRETE FROM DIAPHRAGM (ABOVE BENT CAP)		
37HA17C	CONCRETE FROM DIAPHRAGM (ABOVE BENT CAP)		
37HA18A	CONCRETE PLATFORM		
37HA18B	CONCRETE PLATFORM		
37HA18C	CONCRETE PLATFORM		
37HA19A	CONCRETE FROM ABUTMENT		
37HA19B	CONCRETE FROM ABUTMENT		
37HA19C	CONCRETE FROM ABUTMENT		
37HA20A	FELT B/T BENT CAP 1 AND BEAMS		
37HA20B	FELT B/T BENT CAP 1 AND BEAMS		
37HA20C	FELT B/T BENT CAP 1 AND BEAMS		