



**TENNESSEE DEPARTMENT OF TRANSPORTATION  
ASBESTOS INSPECTION REPORT**

**I-40 Bridges (EB & WB) over SR-29, LM 9.96  
Roane County  
TDOT Project No. 73100-4116-04  
PIN 118499.00**



Prepared by:



AMEC Environment & Infrastructure, Inc.  
3800 Ezell Road, Suite 100  
Nashville, Tennessee 37211

August 16, 2013  
AMEC Project No. 164613031

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Tennessee Asbestos Management Planner  
Accreditation No: A-MP-46068-22956

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Tennessee Asbestos Inspector  
Accreditation No: A-I-50566-21094



## TABLE OF CONTENTS

	<u>Page</u>
<b>1.0</b> INTRODUCTION.....	3
<b>1.1</b> TDOT Bridge Identification .....	3
<b>1.2</b> General Description.....	3
<b>2.0</b> INSPECTION .....	3
<b>2.1</b> Personnel and Date(s) of Inspection .....	4
<b>2.2</b> Visual Survey .....	4
<b>2.3</b> Access to Bridge Components .....	5
2.3.1 Top of Bridge Deck.....	5
2.3.2 Underside of Bridge Deck.....	5
2.3.3 Bridge Beams .....	5
2.3.4 Bridge Piers/Bents and Supports.....	5
2.3.5 Side Rails .....	6
2.3.6 Abutments.....	6
<b>3.0</b> ANALYTICAL PROCEDURES .....	6
<b>3.1</b> Asbestos Analysis Procedures .....	6
<b>3.2</b> Laboratory Name and Accreditation .....	6
<b>4.0</b> REGULATORY OVERVIEW .....	7
<b>4.1</b> National Emission Standards for Hazardous Air Pollutants .....	7
4.1.1 Definitions.....	7
<b>5.0</b> RESULTS.....	8
<b>5.1</b> Results of Asbestos Bulk Sample Analysis .....	8
<b>6.0</b> QUALIFICATIONS .....	9

### Tables

Table 1 – Analytical Laboratory

Table 2 – Positive Bulk Asbestos Sample Results

### Figures

Figure 1: Bridge Profile (Depicting Sample Locations)

### Appendices

Appendix A: Asbestos Inspection Accreditations

Appendix B: Photographs

Appendix C: Asbestos Sample Laboratory Analysis Data



## **1.0 INTRODUCTION**

This report presents the findings of an inspection for asbestos containing materials (ACM) completed on the bridges identified in Section 1.1. The inspection was completed by AMEC Environment & Infrastructure, 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 bridges are identified in the TDOT Project System/Bridge Management System as:

TDOT PE Number: 73100-4116-04

TDOT PIN Number: 118499.00

Bridge Inventory Numbers: 73I00400009 (EB), (73-I0040-9.96R);  
73I00400010 (WB), (73-I0040-9.96L)

State Route (SR) Number: I-40

Log Mile (LM) Number: LM 9.96

### **1.2 General Description**

Bridges 73I00400009 (EB), (73-I0040-9.96R) and 73I00400010 (WB), (73-I0040-9.96L) are similar two-lane bridges located in Roane County on I-40 at mile post 9.96. The bridges include four spans for a total structure length of 195 feet, with a width of 44.5 feet. The bridges were constructed in 1969 and do not appear to have been modified structurally. The bridges appear to be box beam construction, with the beams bearing on rubber bearing pads on beam seats. The deck surface is asphalt. The barrier walls, deck overhang, and visible substructure have surface texture on the concrete.

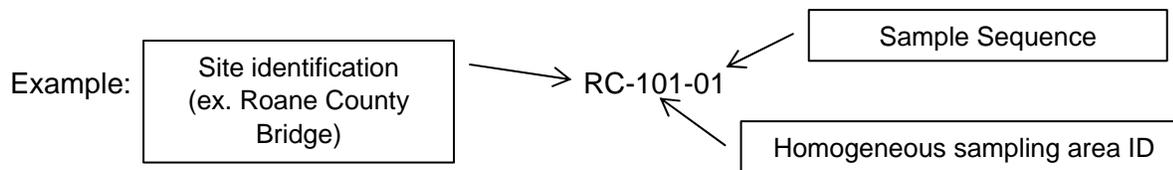
## **2.0 INSPECTION**

The identification of ACM is performed by collecting bulk samples of suspect materials and having those samples analyzed by a laboratory. Asbestos-containing materials (ACM) are those materials found to contain greater than 1% asbestos 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 areas (HAs) are identified, bulk samples of suspect materials are obtained at the discretion of our inspectors, based on site conditions and past experience.

For asbestos samples collected during the survey, a unique identification that identifies the homogeneous sampling area and unique sampling number for each sample collected. Samples with the 100 series samples are from Westbound Bridge 73I00400010 (WB), (73-I0040-9.96L),

and the 200 series samples are from the Eastbound Bridge 73I00400009 (EB), (73-I0040-9.96R).



Samples were collected by carefully removing small portions of the suspect material with a clean, sharp knife or other hand tool suitable for the material being sampled. Each sample was placed in a labeled plastic container immediately after collection. Sample containers were then placed in a large re-sealable plastic bag for transportation to the laboratory. The sampling instrument was wiped with a clean moist cloth to decontaminate the tool and minimize the potential release of asbestos fibers or cross-contamination of subsequent samples. Data pertinent to each sample (e.g., date, sample number, material description, and material category) was recorded on a field data sheet.

The survey was limited to an evaluation and confirmation of the presence and approximate quantity of accessible asbestos-containing materials for the bridge. The survey did not include assessments for other regulated building materials such as lead paint and did not include destructive sampling to identify the potential presence of concealed ACMs.

## 2.1 Personnel and Date(s) of Inspection

The sampling and field activities were performed on August 1, 2013, by James K. Hampel, P.E. and Bradley K. Glisson, CHMM, accredited State of Tennessee Asbestos Inspectors. A copy of the inspector's accreditation and AMEC's current accreditation from the State of Tennessee is included in **Appendix A**.

Prior to mobilization, traffic control and access were coordinated with the appropriate district supervisor and regional bridge engineer, respectively.

## 2.2 Visual Survey

AMEC's survey began with a walk-through and visual survey of the structure at this site. 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



## 2.3 Access to Bridge Components

Individual bridge components were accessed as described in the following subsections. AMEC collected bulk sample of suspect materials in a random method with a focus on materials appearing homogeneous with like color and composition. Metal, fiberglass, and wood materials are not considered as suspect ACM and were not sampled.

A total of 41 samples from 13 HAs from the Westbound Bridge and 39 samples from 12 HAs from the Eastbound Bridge were collected and submitted for laboratory analysis. **Figure 1** is a side view or profile of the bridge with the representative sample locations noted. Photographs of the bridges and various sampling locations are presented in **Appendix B**, and laboratory analytical data sheets are included in **Appendix C**.

### 2.3.1 Top of Bridge Deck

The bridge deck was traversed on foot with the local TDOT Maintenance Division providing a safe work zone with traffic control during the inspection and sampling. The bridge deck surface material was asphalt. The concrete deck was sampled at the deck overhang (HA-203). Samples of the pavement stripe materials (HA-104, HA-205) were collected. The surface of the overhand outside the barrier wall had a surface texture or concrete coating (HA-102). Samples of the epoxy used to secure the reflectors to the asphalt surface were also collected (HA-105)

### 2.3.2 Underside of Bridge Deck

The underside of the bridge deck was accessible by foot at the abutments and by Reach-all truck from the roadway below (HA-108, HA-210). The concrete on the underside of the deck did not have a surface texture or coating except at the overhangs (HA-107 & HA-207).

### 2.3.3 Bridge Beams

The bridge beams were concrete Box Beams with concrete diaphragms that appear to be cast together (HA-108, HA-210). Beam ends rest on rubber Bearing Pads (HA-106, HA-206). The outside beams were coated with concrete texture similar to (HA-107 & HA-207). An expansion board was observed and sampled between the beam ends and the abutments (HA-110 & HA-209), and between the diaphragms over the bents (HA-112 & HA-208). Weathering of the materials gave them different appearance, so they were included in different HAs.

### 2.3.4 Bridge Piers/Bents and Supports

The bridge piers were accessible by the Reach-all truck from below. Concrete samples were collected, and identified as (HA-109 and HA-211). Bridge piers have a surface texture or coating included in (HA-107 & HA-207). An expansion Board material between the bent and the guard rail on SR-29 was sampled (HA-111).



### **2.3.5 Side Rails**

Concrete bridge barrier walls extend along both sides of each bridge and were part of (HA-113 and HA-203). The barrier walls were coated with a sprayed on finish. The finish was sampled and identified as (HA-102 and HA-201). Between the barrier wall and the end or wingwall was a fiber expansion board (HA-101 and HA-204). Joints in the barrier walls were sealed with a variety of materials: Asphalt Joint Sealant (HA-202), and a Gray, rubbery joint sealant (HA-103 and HA-212).

### **2.3.6 Abutments**

The abutments on both ends of the bridge were accessed by foot. The abutments were concrete and had a paved concrete slopes. Samples were included in the above HAs.

## **3.0 ANALYTICAL PROCEDURES**

### **3.1 Asbestos Analysis Procedures**

The bulk samples are analyzed in the laboratory using Polarized Light Microscopy (PLM) coupled with dispersion staining (EPA Method 600/R-93/116). 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 homogeneous area are analyzed on a "first positive stop" basis. "First positive stop" means that if one sample from a homogeneous area of material is found to contain greater than 1% asbestos, the remaining samples from that homogeneous area 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 are generally 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 (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 is indicated on the following page in Table 1:



**Table 1: Analytical Laboratory**

<b>Laboratory</b>	<b>EMSL Analytical, Inc.</b>
<b>NVLAP Number</b>	<b>101048-1</b>

## 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 NESHAP regulations 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 section.

### 5.1 Results of Asbestos Bulk Sample Analysis

A total of 80 samples were obtained from the two bridges (41 from EB and 39 from WB). Multiple samples of each homogeneous area 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 homogeneous areas of suspect materials, as described in Section 2.3. Samples collected from the bridge with regulated asbestos are included in Table 2 below.

**Table 2: Positive Bulk Asbestos Sample Results**

Sample Number	Description	Type	Sample Location	Percent Asbestos
RC-202-01	Black Asphalt Joint Sealant Material	Misc/ NF	Wingwall, Abutments Eastbound Bridge	2% Chrysotile

Only one material was determined to be asbestos-containing material based on the analytical results. Samples of a black asphalt based sealant were collected at the tapered barrier end walls at the abutments of the Eastbound Bridge. This material was not observed on the other bridge, but if a similar material is observed it should either be sampled or assumed asbestos-containing material. The analytical results of all the samples collected from the property, along with the chain-of-custody records, are included in **Appendix C**.



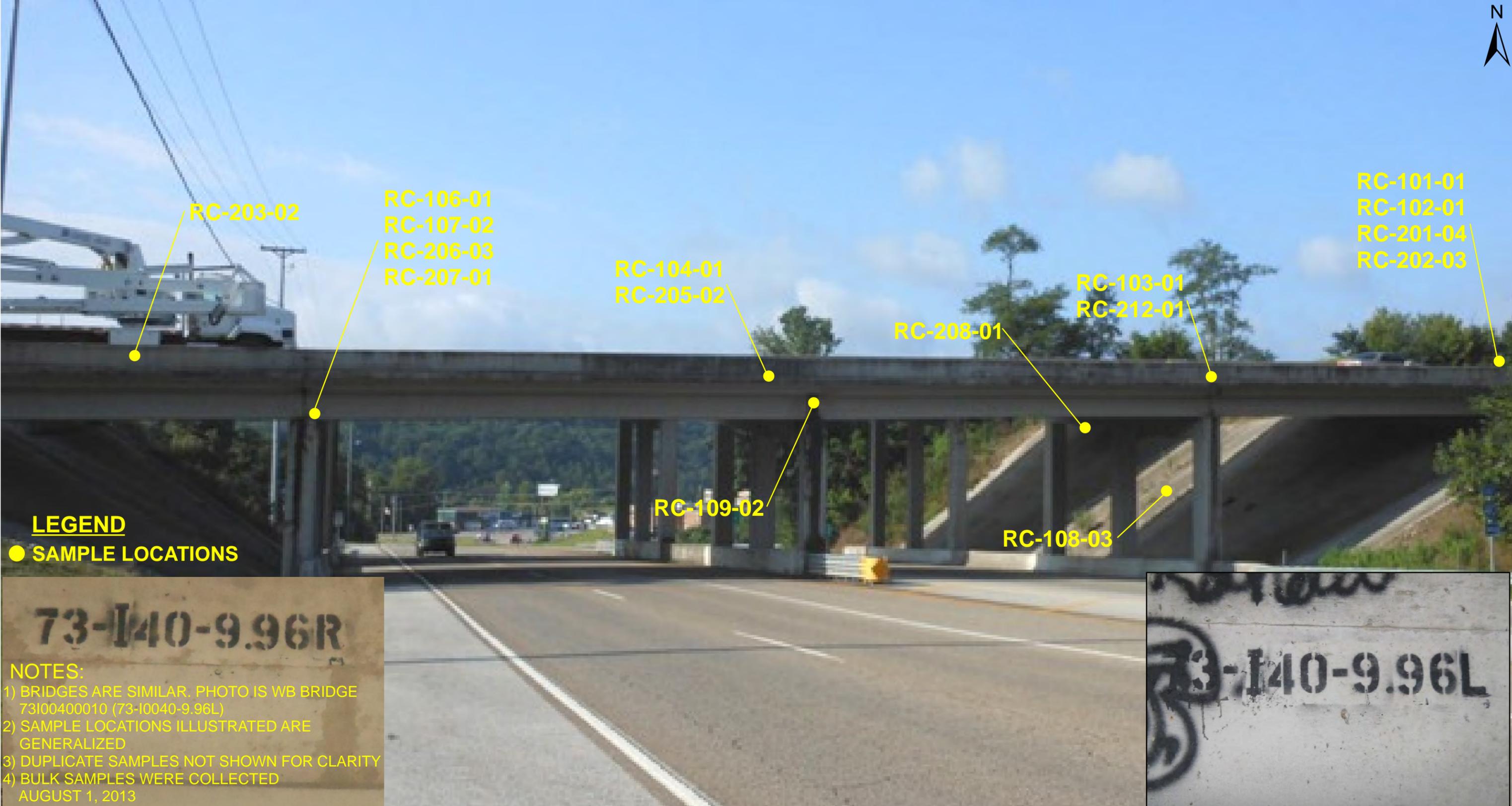
## **6.0 QUALIFICATIONS**

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, AMEC 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.



**Figures**  
**Bridge Profiles**  
**(Depicting Sample Locations)**



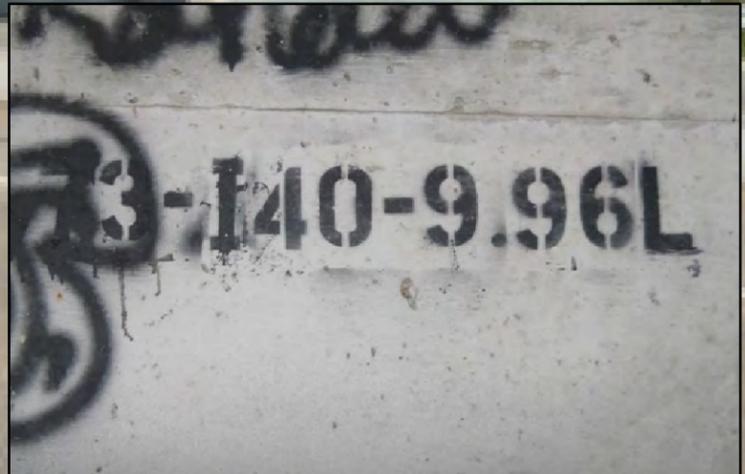
**LEGEND**

● **SAMPLE LOCATIONS**

**73-I40-9.96R**

**NOTES:**

- 1) BRIDGES ARE SIMILAR. PHOTO IS WB BRIDGE 73I00400010 (73-I0040-9.96L)
- 2) SAMPLE LOCATIONS ILLUSTRATED ARE GENERALIZED
- 3) DUPLICATE SAMPLES NOT SHOWN FOR CLARITY
- 4) BULK SAMPLES WERE COLLECTED AUGUST 1, 2013



	CLIENT:	TDOT - TENNESSEE DEPARTMENT OF TRANSPORTATION	DRAWN BY:	JBL	PROJECT:	Asbestos Survey I-40 Bridges (EB & WB) over SR-29, LM 11.15 Bridge Nos. 73I00400009 (73-I0040-9.96R), 73I00400010 (73-I0040-9.96L), Roane County, Tennessee	8/12/2013	
		TDOT PE NO. 73100-4116-04, PIN 118499.00	CHECKED BY:	JKH		PROJECT NO:	164613031	
	AMEC Environment & Infrastructure, Inc.		REVIEWED BY:	BKG	TITLE:	FIGURE 1 BRIDGE PROFILE DEPICTING SAMPLE LOCATIONS	SHEET NO:	1 OF 1
	3800 Ezell Road, Suite 100 Nashville, Tennessee 37211 Phone: 615-333-0630 Fax: 615-781-0655		SCALE:	NOT TO SCALE				



## **APPENDIX A**

### **Asbestos Inspection Accreditations**



## 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:**

### **AMEC Environment & Infrastructure, Inc.**

3800 Ezell Road, Suite 100 Nashville TN, 37211

**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-948-27926	June 01, 2013	June 30, 2014

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

This **16th** Day of **July 2013**



Division of Solid Waste Management  
Toxic Substance Program

CN-1324 (Rev 6/13)

RDA-3020

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



**James K. Hampel**

DOB: 10-Jun-1949    Sex: M    HGT: 6'0"    WGT: 270

Discipline	Accreditation	Expiration
Management Planner	A-MP-48088-22956	Sep-30-2013
Project Designer	A-PD-48088-22956	Sep-30-2013

Individual

Initial

Date Issued: 10/10/2012

**Asbestos Accreditation**

**THE STATE OF TENNESSEE**

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

00873-17882



**Bradley K. Glisson**

DOB	Sex	HGT	WGT
31-May-1977	M	6' 5"	190

Discipline	Accreditation	Expiration
Inspector	A-150566-28063	Jun-30-2014

Date issued: 7/16/2013

Re-Accreditation

**Asbestos Accreditation**

is hereby Accredited pursuant to Rule 1200-01-20 Asbestos Accreditation Requirements to perform Asbestos Activities associated with the Discipline(s) listed on the front of this card. A false statement pertaining to accreditation(s) is subject to the penalties of perjury.

Date Issued: 7/16/2013

Note: In order for this Tennessee issued accreditation to remain valid through the expiration date, the individual must maintain current applicable accredited asbestos refresher training course(s)

THIS CARD IS NOT TO BE USED FOR ANY OTHER IDENTIFICATION PURPOSES. IF FOUND, RETURN TO:  
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

ON-1324

(Rev 6/13)

RDA-3029



## **APPENDIX B**

### **Photographs**

AMEC Environment & Infrastructure, Inc.  
Photographic Record

Client: TDOT

Project Number: 164613031

Site Name: I-40 EB/WB over SR-29, LM-9.96

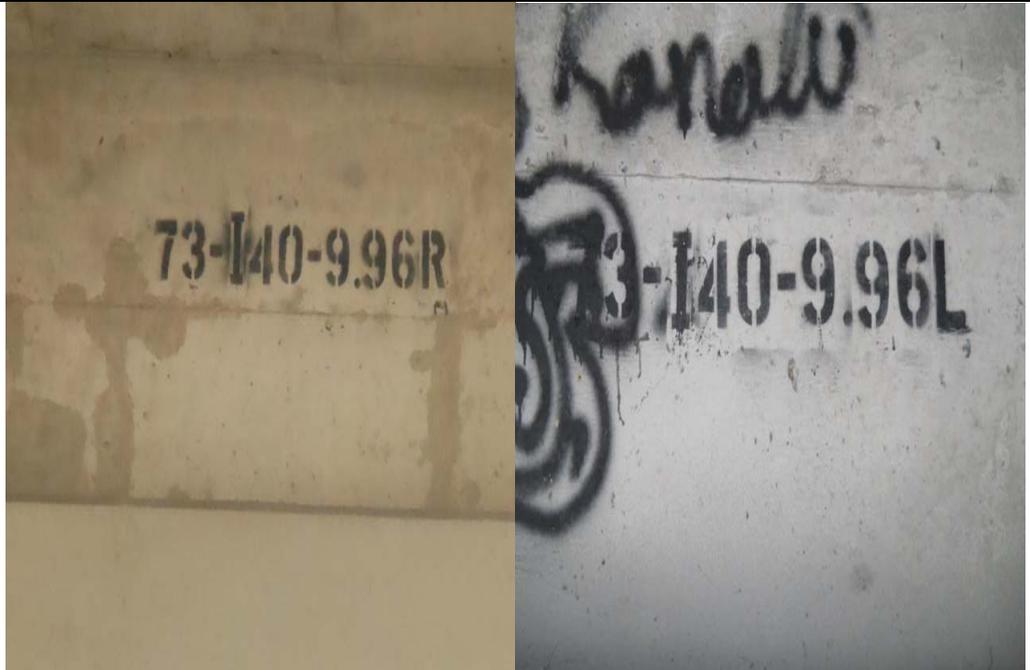
Site Location: Roane County

Photographer:  
J. Hampel, B. Glisson

Date: 8/1/2013

Direction:  
NA

Comments:  
P-1 – Bridge Identification  
Numbers:  
East Bound 73-I40-9.96R  
West Bound 73-I40-9.96L



Photographer:  
J. Hampel

Date: 8/1/2013

Direction:  
South

Comments:  
P-2 – Profile of west bound  
lane in foreground of  
Photograph. Construction of  
Bridges is typical in both  
directions. Second bridge  
columns (east bound bridge)  
are visible.



AMEC Environment & Infrastructure, Inc.  
Photographic Record

Client: TDOT

Project Number: 164613031

Site Name: I-40 EB/WB over SR-29, LM-9.96

Site Location: Roane County

Photographer:  
J. Hampel

Date: 8/1/2013

Direction:  
NA

**Comments:**  
P-3 – Barrier walls are coated with a concrete coating or surfacing. Surfacing on this bridge was not an asbestos-containing material.



Photographer:  
J. Hampel

Date: 8/1/2013

Direction:  
NA

**Comments:**  
P-4- Samples white striping materials were collected for analysis. Striping material samples did not contain asbestos.



AMEC Environment & Infrastructure, Inc.  
Photographic Record

Client: TDOT

Project Number: 164613031

Site Name: I-40 EB/WB over SR-29, LM-9.96

Site Location: Roane County

Photographer:  
J. Hampel

Date: 8/1/2013

Direction:  
NA

Comments:  
P-5 – Black Expansion Board material was sampled from the barrier walls, and was determined not to contain asbestos by analysis.



Photographer:  
J. Hampel

Date: 8/1/2013

Direction:  
NA

Comments:  
P-6 – Joints in the barrier walls were filled with either a gray rubbery caulk or a black asphalt joint sealant. Black sealer was observed and sampled on the east bound bridge. Samples of the black sealant contained 2% Chrysotile Asbestos



AMEC Environment & Infrastructure, Inc.  
Photographic Record

Client: TDOT

Project Number: 164613031

Site Name: I-40 EB/WB over SR-29, LM-9.96

Site Location: Roane County

Photographer:  
J. Hampel

Date: 8/1-2013

Direction:  
Northwesterly

Comments:  
P-7 – Gray epoxy glues were used to secure reflectors to the deck. Samples of the epoxy were analyzed at the laboratory and determined not to contain asbestos.



Photographer:  
J. Hampel

Date: 8/1-2013

Direction:  
East

Comments:  
P-8 – The structures are concrete box beams, bents, parapets, abutments, and paved slopes.



AMEC Environment & Infrastructure, Inc.  
Photographic Record

Client: TDOT

Project Number: 164613031

Site Name: I-40 EB/WB over SR-29, LM-9.96

Site Location: Roane County

Photographer:  
B. Glisson

Date: 8/1/2013

Direction:  
West

Comments:  
P-9 – View of box beams and bents. Expansion material hanging down from diaphragms was sampled and determined to be similar to the expansion board identified above (arrow)



Photographer:  
B. Glisson

Date: 8/1/2013

Direction:  
NA

Comments:  
P-10 – Close-up of bearing pad under beam on abutment was typical. Bearing pads were non-asbestos material.



AMEC Environment & Infrastructure, Inc.  
Photographic Record

Client: TDOT

Project Number: 164613031

Site Name: I-40 EB/WB over SR-29, LM-9.96

Site Location: Roane County

Photographer:  
J. Hampel

Date: 8/1/2013

Direction:  
East

Comments:  
P-11 – End of EB wingwall  
was knocked over exposing  
expansion material, concrete  
and surfacing. All three  
samples were non-asbestos



Photographer:  
B. Glisson

Date: 8/1/2013

Direction:  
NA

Comments:  
P-12 – Concrete columns  
were sampled at damaged  
areas. No concrete tested  
positive for asbestos.





## **APPENDIX C**

### **Asbestos Sample Laboratory Analysis Data**



# EMSL Analytical, Inc

2205 Corporate Plaza Parkway SE, Suite 200, Smyrna, GA 30080

Phone/Fax: (770) 956-9150 / (770) 956-9181

<http://www.emsl.com>

[atlantalab@emsl.com](mailto:atlantalab@emsl.com)

EMSL Order:	071304022
CustomerID:	OGDE60
CustomerPO:	C012901516
ProjectID:	

Attn: <b>JIM HAMPEL</b> <b>AMEC E&amp;I, Inc.</b> <b>3800 Ezell Road</b> <b>Suite 100</b> <b>Nashville, TN 37211</b>	Phone: (615) 333-0630 Fax: (615) 781-0655 Received: 08/05/13 9:50 AM Analysis Date: 8/7/2013 Collected: 8/1/2013
Project: 164613031	

## 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-201-01 071304022-0001	Barrier Wall @ Abut 1 - Bridge Concrete Coating	Various Non-Fibrous Heterogeneous	<1% Cellulose	100% Non-fibrous (other)	None Detected
HA: 201					
RC-201-02 071304022-0002	Barrier Wall P-1- P2 - Bridge Concrete Coating	Various Non-Fibrous Heterogeneous		100% Non-fibrous (other)	None Detected
HA: 201					
RC-201-03 071304022-0003	Barrier Wall Center Br. - Bridge Concrete Coating	Various Non-Fibrous Heterogeneous		100% Non-fibrous (other)	None Detected
HA: 201					
RC-201-04 071304022-0004	Barrier Wall Abut 2 - Bridge Concrete Coating	Various Non-Fibrous Heterogeneous		100% Non-fibrous (other)	None Detected
HA: 201					
RC-202-01 071304022-0005	Abut 1 Wingwall(L) - Joint Sealant-Asphalt	Black Non-Fibrous Homogeneous		98% Non-fibrous (other)	2% Chrysotile
HA: 202					
RC-202-02 071304022-0006	Abut 1 Wingwall - Joint Sealant- Asphalt				Stop Positive (Not Analyzed)
HA: 202					
RC-202-03 071304022-0007	Abut 2 Wingwall - Joint Sealant- Asphalt				Stop Positive (Not Analyzed)
HA: 202					

Analyst(s)  
 Anthony Sanaie (25)                      Victoria Panariello (10)  
 Lauren Kerber (2)

  
 Victoria Panariello, Asbestos Lab 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 Smyrna, GA NVLAP Lab Code 101048-1

Initial report from 08/07/2013 14:46:55



# EMSL Analytical, Inc

2205 Corporate Plaza Parkway SE, Suite 200, Smyrna, GA 30080

Phone/Fax: (770) 956-9150 / (770) 956-9181

<http://www.emsl.com>

[atlantab@emsl.com](mailto:atlantab@emsl.com)

EMSL Order:	071304022
CustomerID:	OGDE60
CustomerPO:	C012901516
ProjectID:	

Attn: <b>JIM HAMPEL</b> <b>AMEC E&amp;I, Inc.</b> <b>3800 Ezell Road</b> <b>Suite 100</b> <b>Nashville, TN 37211</b>	Phone: (615) 333-0630 Fax: (615) 781-0655 Received: 08/05/13 9:50 AM Analysis Date: 8/7/2013 Collected: 8/1/2013
Project: 164613031	

## 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-212-01 071304022-0008	Barrier Wall Over P1 - Joint Sealant-Rubbery	Gray Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
			HA: 212		
RC-212-02 071304022-0009	Barrier Wall Over Center Pier - Joint Sealant-Rubbery	Gray Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
			HA: 212		
RC-203-01 071304022-0010	Barrier Wall @ Wing - Concrete	Various Non-Fibrous Heterogeneous		100% Non-fibrous (other)	None Detected
			HA: 203		
RC-203-02 071304022-0011	Wingwall (Pieces) Abut 1 - Concrete	Various Non-Fibrous Heterogeneous		100% Non-fibrous (other)	None Detected
			HA: 203		
RC-203-03 071304022-0012	Wingwall Abut 2 - Concrete	Various Non-Fibrous Heterogeneous		100% Non-fibrous (other)	None Detected
			HA: 203		
RC-203-04 071304022-0013	Deck @ Wing Abut 2 - Concrete	Various Non-Fibrous Heterogeneous		100% Non-fibrous (other)	None Detected
			HA: 203 Result includes a small amount of inseparable attached material		
RC-204-01 071304022-0014	Wingwall/Barrier - Asphalt Fiberboard Exp. JT	Various Fibrous Heterogeneous	80% Cellulose	20% Non-fibrous (other)	None Detected
			HA: 204		

Analyst(s)

Anthony Sanaie (25)

Victoria Panariello (10)

Lauren Kerber (2)

Victoria Panariello, Asbestos Lab Manager  
or other approved signatory

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Samples analyzed by EMSL Analytical, Inc Smyrna, GA NVLAP Lab Code 101048-1

Initial report from 08/07/2013 14:46:55



# EMSL Analytical, Inc

2205 Corporate Plaza Parkway SE, Suite 200, Smyrna, GA 30080

Phone/Fax: (770) 956-9150 / (770) 956-9181

<http://www.emsl.com>

[atlantalab@emsl.com](mailto:atlantalab@emsl.com)

EMSL Order:	071304022
CustomerID:	OGDE60
CustomerPO:	C012901516
ProjectID:	

Attn: <b>JIM HAMPEL</b> <b>AMEC E&amp;I, Inc.</b> <b>3800 Ezell Road</b> <b>Suite 100</b> <b>Nashville, TN 37211</b>	Phone: (615) 333-0630 Fax: (615) 781-0655 Received: 08/05/13 9:50 AM Analysis Date: 8/7/2013 Collected: 8/1/2013
Project: 164613031	

## 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-204-02 071304022-0015	Wingwall/Barrier - Asphalt Fiberboard Exp. JT	Various Fibrous Homogeneous	80% Cellulose	20% Non-fibrous (other)	None Detected
			HA: 204		
RC-205-01 071304022-0016	Abut 1 - Pavement Striping	Various Non-Fibrous Heterogeneous		100% Non-fibrous (other)	None Detected
			HA: 205		
RC-205-02 071304022-0017	Mid PT Bridge - Pavement Striping	Various Non-Fibrous Heterogeneous		100% Non-fibrous (other)	None Detected
			HA: 205		
RC-205-03 071304022-0018	Abut 2 - Pavement Striping	Various Non-Fibrous Heterogeneous		100% Non-fibrous (other)	None Detected
			HA: 205		
RC-206-01 071304022-0019	Under Beam NW - Rubber Bearing Pad	Various Non-Fibrous Heterogeneous		100% Non-fibrous (other)	None Detected
			HA: 206		
RC-206-02 071304022-0020	Under Beam SW - Rubber Bearing Pad	Various Non-Fibrous Heterogeneous		100% Non-fibrous (other)	None Detected
			HA: 206		
RC-206-03 071304022-0021	Under Beam NE - Rubber Bearing Pad	Black Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
			HA: 206		

Analyst(s)  
 Anthony Sanaie (25)      Victoria Panariello (10)  
 Lauren Kerber (2)

  
 Victoria Panariello, Asbestos Lab Manager  
 or other approved signatory

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EMSL Order:	071304022
CustomerID:	OGDE60
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ProjectID:	

Attn: <b>JIM HAMPEL</b> <b>AMEC E&amp;I, Inc.</b> <b>3800 Ezell Road</b> <b>Suite 100</b> <b>Nashville, TN 37211</b>	Phone: (615) 333-0630 Fax: (615) 781-0655 Received: 08/05/13 9:50 AM Analysis Date: 8/7/2013 Collected: 8/1/2013
Project: 164613031	

## 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-207-01 071304022-0022	Span 1 - Gray Concrete Surfacing	Gray Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
HA: 207					
RC-207-02 071304022-0023	West Diaphragm - Gray Concrete Surfacing	Gray Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
HA: 207					
RC-207-03 071304022-0024	Span 4 - Gray Concrete Surfacing	Gray Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
HA: 207					
RC-208-01 071304022-0025	BTW Span 1 & 2 - Black Asphaltic Fiberboard	Black Fibrous Heterogeneous	2% Cellulose	98% Non-fibrous (other)	None Detected
HA: 208					
RC-208-02 071304022-0026	BTW Span 1 & 2 - Black Asphaltic Fiberboard	Black Non-Fibrous Heterogeneous	2% Cellulose	98% Non-fibrous (other)	None Detected
HA: 208					
RC-208-03 071304022-0027	BTW Span 1 & 2 - Black Asphaltic Fiberboard	Black Non-Fibrous Homogeneous	2% Cellulose	98% Non-fibrous (other)	None Detected
HA: 208					
RC-209-01 071304022-0028	BTW Abut & End Span - Black Asphaltic Exp. Board	Brown Fibrous Homogeneous	80% Cellulose	20% Non-fibrous (other)	None Detected
HA: 209					

Analyst(s)  
 Anthony Sanaie (25)                      Victoria Panariello (10)  
 Lauren Kerber (2)

  
 Victoria Panariello, Asbestos Lab Manager  
 or other approved signatory

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 Samples analyzed by EMSL Analytical, Inc Smyrna, GA NVLAP Lab Code 101048-1

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EMSL Order:	071304022
CustomerID:	OGDE60
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ProjectID:	

Attn: <b>JIM HAMPEL</b> <b>AMEC E&amp;I, Inc.</b> <b>3800 Ezell Road</b> <b>Suite 100</b> <b>Nashville, TN 37211</b>	Phone: (615) 333-0630 Fax: (615) 781-0655 Received: 08/05/13 9:50 AM Analysis Date: 8/7/2013 Collected: 8/1/2013
Project: 164613031	

## 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-209-02 071304022-0029	BTW Abut & End Span - Black Asphaltic Exp. Board	Various Non-Fibrous Heterogeneous	80% Cellulose	20% Non-fibrous (other)	None Detected
HA: 209 Result includes a small amount of inseparable attached material					
RC-209-03 071304022-0030	BTW Abut & End Span - Black Asphaltic Exp. Board	Various Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
HA: 209					
RC-210-01 071304022-0031	Abutment # 1 Deck - Concrete	Various Non-Fibrous Heterogeneous	<1% Cellulose	100% Non-fibrous (other)	None Detected
HA: 210					
RC-210-02 071304022-0032	W Abutment - Concrete	Various Non-Fibrous Heterogeneous	<1% Cellulose	100% Non-fibrous (other)	None Detected
HA: 210					
RC-210-03 071304022-0033	W Diaphragm - Concrete	Various Non-Fibrous Heterogeneous	<1% Cellulose	100% Non-fibrous (other)	None Detected
HA: 210					
RC-210-04 071304022-0034	Desk Span 4 - Concrete	Various Non-Fibrous Heterogeneous	<1% Cellulose	100% Non-fibrous (other)	None Detected
HA: 210					

Analyst(s)  
 Anthony Sanaie (25)                      Victoria Panariello (10)  
 Lauren Kerber (2)

  
 Victoria Panariello, Asbestos Lab Manager  
 or other approved signatory

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 Samples analyzed by EMSL Analytical, Inc Smyrna, GA NVLAP Lab Code 101048-1

Initial report from 08/07/2013 14:46:55



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EMSL Order:	071304022
CustomerID:	OGDE60
CustomerPO:	C012901516
ProjectID:	

Attn: **JIM HAMPEL**  
**AMEC E&I, Inc.**  
**3800 Ezell Road**  
**Suite 100**  
**Nashville, TN 37211**

Phone: (615) 333-0630  
 Fax: (615) 781-0655  
 Received: 08/05/13 9:50 AM  
 Analysis Date: 8/7/2013  
 Collected: 8/1/2013

Project: 164613031

## 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-210-05 071304022-0035	E Abut - Concrete	Various Non-Fibrous Homogeneous	<1% Cellulose	100% Non-fibrous (other)	None Detected
			HA: 210		
RC-210-06 071304022-0036	E Diaphragm - Concrete	Various Non-Fibrous Homogeneous	<1% Cellulose	100% Non-fibrous (other)	None Detected
			HA: 210		
RC-211-01 071304022-0037	Bent # 1 - Concrete	Various Non-Fibrous Heterogeneous		100% Non-fibrous (other)	None Detected
			HA: 211		
RC-211-02 071304022-0038	Bent # 2 - Concrete	Various Non-Fibrous Heterogeneous		100% Non-fibrous (other)	None Detected
			HA: 211		
RC-211-03 071304022-0039	Bent # 3 - Concrete	Gray Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
			HA: 211		

Analyst(s) \_\_\_\_\_

Anthony Sanaie (25)

Victoria Panariello (10)

Lauren Kerber (2)

Victoria Panariello, Asbestos Lab Manager  
or other approved signatory

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 Samples analyzed by EMSL Analytical, Inc Smyrna, GA NVLAP Lab Code 101048-1

Initial report from 08/07/2013 14:46:55



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LABORATORY • PRODUCTS • TRAINING

## Asbestos Bulk Building Material Chain of Custody

EMSL Order Number (Lab Use Only):

071304022

EMSL ANALYTICAL, INC.  
200 ROUTE 130 NORTH  
CINNAMINSON, NJ 08077  
PHONE: (800) 220-3675  
FAX: (856) 786-5974

Company: <b>AMEC E&amp;I</b>		EMSL-Bill to: <input checked="" type="checkbox"/> Same <input type="checkbox"/> Different If Bill to is Different note instructions in Comments**	
Street: <b>3800 EZELL ROAD</b>		Third Party Billing requires written authorization from third party	
City: <b>NASHVILLE</b>	State/Province: <b>TN</b>	Zip/Postal Code: <b>37211</b>	Country: <b>USA</b>
Report To (Name): <b>JIM HAMPEL</b>		Telephone #: <b>615.333.0630</b>	
Email Address: <b>james.hampel@amec.com</b>		Fax #: <b>615.781.0655</b>	Purchase Order <b>CO12901516</b>
Project Name/Number: <b>104613031</b>		Please Provide Results: <input type="checkbox"/> Fax <input checked="" type="checkbox"/> Email	
U.S. State Samples Taken: <b>TN</b>		CT Samples: <input type="checkbox"/> Commercial/Taxable <input type="checkbox"/> Residential/Tax Exempt	
<b>Turnaround Time (TAT) Options* - Please Check</b>			
<input type="checkbox"/> 3 Hour	<input type="checkbox"/> 6 Hour	<input type="checkbox"/> 24 Hour	<input type="checkbox"/> 48 Hour
<input checked="" type="checkbox"/> 72 Hour	<input type="checkbox"/> 96 Hour	<input type="checkbox"/> 1 Week	<input type="checkbox"/> 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.			
<b>PLM - Bulk (reporting limit)</b>		<b>TEM - Bulk</b>	
<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)		<b>Other</b>	
<input type="checkbox"/> OSHA ID-191 Modified		<input type="checkbox"/>	
<input type="checkbox"/> Standard Addition Method			
<input checked="" type="checkbox"/> Check For Positive Stop - Clearly Identify Homogenous Group		Date Sampled: <b>8/1/2013</b>	
Samplers Name: <b>JIM HAMPEL</b>		Samplers Signature: <i>James Hampel</i>	
Sample #	HA #	Sample Location	Material Description
<b>RC 201.01</b>	<b>201</b>	<b>BARRIER WALL @ ABOT 1</b>	<b>BRIDGE CONCRETE CONTING</b>
<b>RC 201.02</b>		<b>BARRIER WALL - P.1 → P.2</b>	↓
<b>201.03</b>		<b>BARRIER WALL CENTER P.2</b>	↓
<b>201.04</b>		<b>BARRIER WALL ABOT 2</b>	↓
<b>RC 202.01</b>	<b>202</b>	<b>ABOT 1 WINGWALL (L)</b>	<b>JOINT SEALANT - ASPHALT</b>
<b>202.02</b>		<b>ABOT 1 WINGWALL</b>	↓
<b>202.03</b>		<b>ABOT 2 WINGWALL</b>	↓
<b>RC 212.01</b>	<b>212</b>	<b>BARRIER WALL OVER P.1</b>	<b>JOINT SEALANT - RUBBER</b>
<b>RC 212.02</b>		<b>BARRIER WALL OVER CENTER P.2</b>	<b>JOINT SEALANT - RUBBER</b>
Client Sample # (s): <b>RC 201.01</b>		<b>- RC 212.02</b>	Total # of Samples: <b>39</b>
Relinquished (Client):		Date:	Time:
Received (Lab): <i>[Signature]</i>		Date: <b>8/1/13</b>	Time: <b>0950 FP</b>
Comments/Special Instructions:			



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## Asbestos Bulk Building Material Chain of Custody

EMSL Order Number (Lab Use Only):

071304022

EMSL ANALYTICAL, INC.  
200 ROUTE 130 NORTH  
CINNAMINSON, NJ 08077

PHONE: (800) 220-3675

FAX: (856) 786-5974

Additional Pages of the Chain of Custody are only necessary if needed for additional sample information

Sample #	HA #	Sample Location	Material Description
RC 203.01	203	BARRIER WALL @ WING	CONCRETE
203.02	↓	WINGWALL (PIECES) ABUT 1	↓
203.03	↓	WINGWALL ABUT 2	↓
203.04	↓	DECK @ WING ABUT 2	↓
RC 204.01	204	WINGWALL / BARRIER	ASPHALT FIBERGLASS EXPT.
204.02	↓	WINGWALL / BARRIER	↓
RC 205.01	205	ABUT 1	PAVEMENT Striping
205.02	↓	MID PT BRIDGE	↓
205.03	↓	ABUT 2	↓
RC 206.01	206	ONDEL BEAM NW	Rubber bearing PAD
206.02	↓	↓ SW	↓
206.03	↓	↓ NE	↓
RC 207.01	207	SPAN 1	GRAY Concrete SURFACING
207.02	↓	WEST DIAPHRAGM	↓
207.03	↓	SPAN 4	↓
RC 208.01	208	BTW SPANS 1 & 2 (TYP)	BLACK ASPHALTIC Fiberboard
208.02	↓	↓	↓
208.03	↓	↓	↓
RC 209.01	209	BTW ABUT & END SPAN	BLACK ASPHALTIC EXP BOARD
209.02	↓	↓	↓
209.03	↓	↓	↓
*Comments/Special Instructions:			





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Project: 164613031	

## 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-101-01 071304020-0001	E.Wingwall Abutment 1 - Asphalt Fiberboard Expansion	Black Fibrous Homogeneous	80% Cellulose	20% Non-fibrous (other)	None Detected
HA: 101					
RC-101-02 071304020-0002	E.Wingwall Abutment 1 - Asphalt Fiberboard Expansion	Black Fibrous Homogeneous	80% Cellulose	20% Non-fibrous (other)	None Detected
HA: 101					
RC-101-03 071304020-0003	Barrier Wall @ West Wing - Asphalt Fiberboard Expansion	Black Fibrous Homogeneous	80% Cellulose	20% Non-fibrous (other)	None Detected
HA: 101					
RC-102-01 071304020-0004	E.Wingwall @ Abutment - Concrete Coating	Various Non-Fibrous Heterogeneous		100% Non-fibrous (other)	None Detected
HA: 102					
RC-102-02 071304020-0005	Barrier Wall P1-P2 - Concrete Coating	Various Non-Fibrous Heterogeneous		100% Non-fibrous (other)	None Detected
HA: 102					
RC-102-03 071304020-0006	Overhang Center Bridge - Concrete Coating	Various Non-Fibrous Heterogeneous		100% Non-fibrous (other)	None Detected
HA: 102					

Analyst(s)  
 \_\_\_\_\_  
 Anthony Sanaie (27)  
 Lauren Kerber (14)

  
 Victoria Panariello, Asbestos Lab Manager  
 or other approved signatory

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Initial report from 08/07/2013 09:58:33



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Project: 164613031	

## 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-102-04 071304020-0007	Barrier Wall West End - Concrete Coating	Various Non-Fibrous Heterogeneous		100% Non-fibrous (other)	None Detected
HA: 102					
RC-103-01 071304020-0008	Bent 1 Barrier Wall - Gray Joint Sealant-Rubbery	Various Non-Fibrous Heterogeneous		100% Non-fibrous (other)	None Detected
HA: 103 Result includes a small amount of inseparable attached material					
RC-103-02 071304020-0009	Center Bridge Barrier Wall - Gray Joint Sealant-Rubbery	Gray Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
HA: 103					
RC-104-01 071304020-0010	Abut 1 - Roadway Striping	White Non-Fibrous Heterogeneous		100% Non-fibrous (other)	None Detected
HA: 104					
RC-104-02 071304020-0011	Mid Span - Roadway Striping	Various Non-Fibrous Heterogeneous		100% Non-fibrous (other)	None Detected
HA: 104					
RC-104-03 071304020-0012	Abut 2 - Roadway Striping	White Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
HA: 104					

Analyst(s)  
 Anthony Sanaie (27)  
 Lauren Kerber (14)

  
 Victoria Panariello, Asbestos Lab Manager  
 or other approved signatory

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 Samples analyzed by EMSL Analytical, Inc Smyrna, GA NVLAP Lab Code 101048-1

Initial report from 08/07/2013 09:58:33



# EMSL Analytical, Inc

2205 Corporate Plaza Parkway SE, Suite 200, Smyrna, GA 30080

Phone/Fax: (770) 956-9150 / (770) 956-9181

<http://www.emsl.com>

[atlantab@emsl.com](mailto:atlantab@emsl.com)

EMSL Order:	071304020
CustomerID:	OGDE60
CustomerPO:	C012901516
ProjectID:	

Attn: <b>JIM HAMPEL</b> <b>AMEC E&amp;I, Inc.</b> <b>3800 Ezell Road</b> <b>Suite 100</b> <b>Nashville, TN 37211</b>	Phone: (615) 333-0630 Fax: (615) 781-0655 Received: 08/05/13 9:50 AM Analysis Date: 8/7/2013 Collected: 8/1/2013
Project: 164613031	

## 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-105-01 071304020-0013	Reflector P1-P2 - Gray Epoxy Glue	Various Non-Fibrous Heterogeneous		100% Non-fibrous (other)	None Detected
			HA: 105 Result includes a small amount of inseparable attached material		
RC-105-02 071304020-0014	Reflector P2-P3 - Gray Epoxy Glue	Various Non-Fibrous Heterogeneous		100% Non-fibrous (other)	None Detected
			HA: 105 Result includes a small amount of inseparable attached material		
RC-106-01 071304020-0015	NE Corner - Rubber Bearing Pad	Various Non-Fibrous Heterogeneous		100% Non-fibrous (other)	None Detected
			HA: 106		
RC-106-02 071304020-0016	SE Corner - Rubber Bearing Pad	Various Non-Fibrous Heterogeneous		100% Non-fibrous (other)	None Detected
			HA: 106		
RC-106-03 071304020-0017	SW Corner - Rubber Bearing Pad	Various Non-Fibrous Heterogeneous		100% Non-fibrous (other)	None Detected
			HA: 106		
RC-107-01 071304020-0018	Abut 1 & Wing - Gray Surfacing	Gray Non-Fibrous Homogeneous	<1% Cellulose	100% Non-fibrous (other)	None Detected
			HA: 107		

Analyst(s)  
 Anthony Sanaie (27)  
 Lauren Kerber (14)

  
 Victoria Panariello, Asbestos Lab Manager  
 or other approved signatory

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Attn: <b>JIM HAMPEL</b> <b>AMEC E&amp;I, Inc.</b> <b>3800 Ezell Road</b> <b>Suite 100</b> <b>Nashville, TN 37211</b>	Phone: (615) 333-0630 Fax: (615) 781-0655 Received: 08/05/13 9:50 AM Analysis Date: 8/7/2013 Collected: 8/1/2013
Project: 164613031	

## 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-107-02 071304020-0019	Outside Beam 4 - Gray Surfacing	Gray Non-Fibrous Homogeneous	<1% Cellulose	100% Non-fibrous (other)	None Detected
HA: 107					
RC-107-03 071304020-0020	Outside Beam 1 - Gray Surfacing	Gray Non-Fibrous Homogeneous	<1% Cellulose	100% Non-fibrous (other)	None Detected
HA: 107					
RC-108-01 071304020-0021	Deck & Beam 4 - Concrete	Various Non-Fibrous Heterogeneous		100% Non-fibrous (other)	None Detected
HA: 108					
RC-108-02 071304020-0022	Enst Abutment - Concrete	Various Non-Fibrous Heterogeneous		100% Non-fibrous (other)	None Detected
HA: 108					
RC-108-03 071304020-0023	Slope - Concrete	Various Non-Fibrous Heterogeneous		100% Non-fibrous (other)	None Detected
HA: 108					
RC-108-04 071304020-0024	Slope - Concrete	Various Non-Fibrous Heterogeneous		100% Non-fibrous (other)	None Detected
HA: 108					
RC-108-05 071304020-0025	West Abutment - Concrete	Various Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
HA: 108					

Analyst(s)  
 Anthony Sanaie (27)  
 Lauren Kerber (14)

  
 Victoria Panariello, Asbestos Lab Manager  
 or other approved signatory

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Project: 164613031	

## 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-108-06 071304020-0026	Beam & Deck - Concrete	Gray Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
			HA: 108		
RC-109-01 071304020-0027	Bent 3 NE - Concrete	Various Non-Fibrous Heterogeneous		100% Non-fibrous (other)	None Detected
			HA: 109		
RC-109-02 071304020-0028	Bent 2 NE - Concrete	Gray Non-Fibrous Heterogeneous		100% Non-fibrous (other)	None Detected
			HA: 109		
RC-109-03 071304020-0029	Bent 3 SW - Concrete	Gray Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
			HA: 109		
RC-110-01 071304020-0030	BTW Diaphragm & Abut. - Black Asphaltic Board	Various Non-Fibrous Heterogeneous	2% Cellulose	98% Non-fibrous (other)	None Detected
			HA: 110		
RC-110-02 071304020-0031	BTW Diaphragm & Abut. - Black Asphaltic Board	Brown Fibrous Homogeneous	70% Cellulose	30% Non-fibrous (other)	None Detected
			HA: 110		
RC-110-03 071304020-0032	BTW Diaphragm & Abut. - Black Asphaltic Board	Brown Fibrous Homogeneous	20% Cellulose	80% Non-fibrous (other)	None Detected
			HA: 110		

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Project: 164613031	

## 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-111-01 071304020-0033	BTW Bent & Guardrail SR29 - Black Asphaltic Board	Brown Fibrous Homogeneous	80% Cellulose	20% Non-fibrous (other)	None Detected
HA: 111					
RC-111-02 071304020-0034	BTW Bent & Guardrail SR29 - Black Asphaltic Board	Brown Fibrous Homogeneous	80% Cellulose	20% Non-fibrous (other)	None Detected
HA: 111					
RC-111-03 071304020-0035	BTW Bent & Guardrail SR29 - Black Asphaltic Board	Brown Fibrous Homogeneous	80% Cellulose	20% Non-fibrous (other)	None Detected
HA: 111					
RC-112-01 071304020-0036	Between Spans 1 & 2 - Black Pad	Brown Fibrous Homogeneous	80% Cellulose	20% Non-fibrous (other)	None Detected
HA: 112					
RC-112-02 071304020-0037	Between Spans 1 & 2 - Black Pad	Brown Fibrous Homogeneous	80% Cellulose	20% Non-fibrous (other)	None Detected
HA: 112					
RC-112-03 071304020-0038	Between Spans 1 & 2 - Black Pad	Brown Fibrous Homogeneous	80% Cellulose	20% Non-fibrous (other)	None Detected
HA: 112					

Analyst(s)  
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 Victoria Panariello, Asbestos Lab Manager  
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Project: 164613031	

## 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-113-01 071304020-0039	Barrier Wall @ Abut 1 Wing - Concrete	Various Non-Fibrous Heterogeneous		100% Non-fibrous (other)	None Detected
HA: 113					
RC-113-02 071304020-0040	Barrier Wall @ Barrier Wall - Concrete	Various Non-Fibrous Heterogeneous		100% Non-fibrous (other)	None Detected
HA: 113					
RC-113-03 071304020-0041	Barrier Wall @ Abut 2 Wing - Concrete	Various Non-Fibrous Heterogeneous		100% Non-fibrous (other)	None Detected
HA: 113					

Analyst(s)  
 \_\_\_\_\_  
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 Lauren Kerber (14)

  
 Victoria Panariello, Asbestos Lab Manager  
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Initial report from 08/07/2013 09:58:33



# Asbestos Bulk Building Material Chain of Custody

EMSL ANALYTICAL, INC.  
200 ROUTE 130 NORTH  
CINNAMINSON, NJ 08077  
PHONE: (800) 220-3675  
FAX: (856) 786-5974

EMSL ANALYTICAL, INC.  
LABORATORY PRODUCTS TRAINING

EMSL Order Number (Lab Use Only):

071304020

Company: <b>AMEC E&amp;I</b>		EMSL-Bill to: <input checked="" type="checkbox"/> Same <input type="checkbox"/> Different <small>If Bill to is Different note instructions in Comments**</small>	
Street: <b>3800 EZELL ROAD</b>		Third Party Billing requires written authorization from third party	
City: <b>NASHVILLE</b>	State/Province: <b>TN</b>	Zip/Postal Code: <b>37211</b>	Country: <b>USA</b>
Report To (Name): <b>JIM HAMPEL</b>		Telephone #: <b>615-332-0630</b>	
Email Address: <b>james.hampel@amec.com</b>		Fax #: <b>615-781-0635</b>	Purchase Order: <b>012901510</b>
Project Name/Number: <b>164615031</b>		Please Provide Results: <input type="checkbox"/> Fax <input checked="" type="checkbox"/> Email	
U.S. State Samples Taken: <b>TN</b>		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.

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

Check For Positive Stop - Clearly Identify Homogenous Group      Date Sampled: **8/1/2013**

Samplers Name: **JIM HAMPEL**      Samplers Signature: *James Hampel*

Sample #	HA #	Sample Location	Material Description
<sup>RC</sup> 101.01	101	E. Wingwall Abutment 1	Asphalt Fiberboard Expansion
101.02		↓	↓
101.03		Barrier wall @ West Wing	↓
<sup>RC</sup> 102.01	102	E. Wingwall @ Abutment	Concrete Conting
102.02		Barrier wall P1-P2	↓
102.03		Overhang Center Bridge	↓
102.04		Barrier wall West End	↓
<sup>RC</sup> 103.01	103	BEAT 1 - Barrier wall	Grout Joint Sealant - Rubber
<sup>RC</sup> 103.02		Center Bridge - Barrier wall	↓

Client Sample # (s): **RC-101.01** - **RC-113.03**      Total # of Samples: **41**

Relinquished (Client): *James Hampel*      Date: **8/2/2013**      Time: **FEED X**

Received (Lab): *[Signature]*      Date: **8/1/13**      Time: **0950 FR**

Comments/Special Instructions:

ACCEPTED FOR ANALYSIS  
BY EMSL ANALYTICAL, INC.  
ATLANTA, GA



EMSL ANALYTICAL, INC.  
LABORATORY PRODUCTS TRAINING

## Asbestos Bulk Building Material Chain of Custody

EMSL Order Number (Lab Use Only):

071304020

EMSL ANALYTICAL, INC.  
200 ROUTE 130 NORTH  
CINNAMINSON, NJ 08077  
PHONE: (800) 220-3675  
FAX: (856) 786-5974

Additional Pages of the Chain of Custody are only necessary if needed for additional sample information

Sample #	HA #	Sample Location	Material Description
RC 104.01	104	ABUT 1	ROADWAY STRIPING
104.02	↓	MID SPALL	↓
104.03	↓	ABUT 2	↓
RC 105.01	105	REFLECTOR P1-P2	GREY EPOXY GROUT
RC 105.02	↓	REFLECTOR P2-P3	GREY EPOXY GROUT
RC 106.01	106	NE CORNER	RUBBER BEARING PAD
106.02	↓	SE CORNER	↓
106.03	↓	SW CORNER	↓
RC 107.01	107	ABUT 1 & WING	GRANITE SURFACING
107.02	↓	OUTSIDE BEAM 4	↓
107.03	↓	OUTSIDE BEAM 1	↓
RC 108.01	108	DECK & BEAM 4	CONCRETE
108.02	↓	EAST ABUTMENT	↓
108.03	↓	SLOPE	↓
108.04	↓	SLOPE	↓
108.05	↓	WEST ABUTMENT	↓
108.06	↓	BEAM & DECK	↓
RC 109.01	109	BENT 3 NE	CONCRETE
109.02	↓	BENT 2 NE	↓
109.03	↓	BENT 3 SW	↓
RC 110.01	110	BETW DIAPHRAGM & ABUT.	BLACK ASPHALTIC BOARD
110.02	↓	↓	↓
110.03	↓	↓	↓
*Comments/Special Instructions:			

