



**TENNESSEE DEPARTMENT OF TRANSPORTATION
ASBESTOS INSPECTION REPORT
SR-140 Bridge over Mill Creek, LM 23.03 (40S81720003)
Henry County
TDOT Project No. 40030-4208-04, PIN 117914.00**



Prepared by:



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

September 5, 2014
AMEC Project No. 180914002

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

TDOT PE Number: 40030-4208-04
TDOT PIN Number: 117914.00
Bridge Inventory Number: 40S81720003 (40-140-23.03)
State Route (SR) Number: SR-140
Log Mile (LM) Number: LM 23.03

1.2 General Description

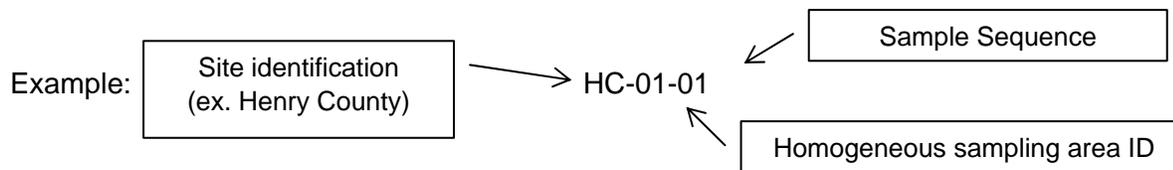
Bridge 40S81720003 (40-140-23.03) is a two-lane bridge located on SR-140 at Log Mile 23.03. The bridge is a five span structure with a total length of 143 feet. The substructure consists of two concrete abutments and four concrete pile bents. The bridge superstructure is cast in place concrete deck with deepened beam sections supported at the abutments and bent. Beams bear directly on the beam seats. The bridge has a concrete guard rail atop a concrete curb. The bridge was constructed in 1957. The bridge has been resurfaced with asphalt.

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 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 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 July 30, 2014, by James K. Hampel, P.E., accredited State of Tennessee Asbestos Inspector/Management Planner, assisted by Josh Hatchett a trained asbestos inspector. A copy of the lead inspector's accreditation and AMEC's current accreditation from the State of Tennessee are included in **Appendix A**.

No assistance was required from TDOT for mobilization, traffic control and access to this bridge.

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 30 samples, from nine (9) HAs, were collected on July 30, 2014 and submitted for laboratory analysis. **Figure 1** is a side view or profile of the bridge with representative sample locations noted. Typical photographs of the bridge and various sampling locations are presented in **Appendix B**, and Chain-of-Custody forms and laboratory analytical data sheets are included in **Appendix C**.

2.3.1 Top of Bridge Deck

The bridge deck was traversed on foot for the inspection and sampling after traffic control signage was installed on each end of the work zone. The bridge deck surface material was asphaltic concrete over a cast in place concrete deck. The deck appeared to be homogeneous, and was assumed similar to the concrete of the underside of the bridge deck and was not sampled. Samples of the yellow and white (HA-01) pavement stripes were collected. Scuppers through the deck were sampled as HA-05.

2.3.2 Underside of Bridge Deck

The underside of the bridge deck was readily accessible at the abutments and piers. The underside concrete deck (HA-06 & HA-08) appeared to be homogenous with the support beams. No patches were noted in the underside concrete decking. Protruding from the underside of the deck were Transite scuppers (HA-05) in a row on each side of the bridge. Efflorescence on the underside of the deck was extensive and was sampled as HA-07.

2.3.3 Bridge Piers and Supports

The concrete piles, bents (pile caps), and beams were accessible without assistance and appeared to be homogenous. Samples (HA-06 & HA-08) were collected from the piles, caps, and support beams. No bearing pads were observed.

2.3.4 Side Rails and Curb

Concrete side railing and curbs extend along both sides of the bridges. The components were accessed by foot from the top of the bridge. The concrete of the side rails, posts, and the curb were considered homogenous and sampled (HA-02). A building felt material from the joint of the posts and rails was sampled as (HA-03). Several concrete rail posts were split revealing fibrous expansion board in the void at the end of each rail (HA-04).



2.3.5 Abutments

The abutments on both ends of the bridges were accessed by foot. The abutment concrete was included in (HA-08). Sand cement riprap bags were present at the base of the abutment and sampled as HA-09.

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 below in Table 1:

Table 1: Analytical Laboratory

Laboratory	AMEC Atlanta
NVLAP Number	101066-0

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 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 30 samples from nine (9) HAs were collected from the bridge. 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
HC-05-01	Transite Scupper Pipes	Misc/ NF	Through Deck Drains	30% Chrysotile 2% Crocidolite

Based on the sample results, the Transite scupper piping material was determined to be asbestos-containing material. The duplicate samples of this material were not analyzed per the “Positive Stop” protocol. 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.



**Figure 1: Bridge Profile
(Depicting Sample Locations)**

NOT SHOWN

HC-09



NOTES:

- 1) Sample locations illustrated are generalized
- 2) Some duplicate samples not shown for clarity
- 3) Bulk samples were collected 7/30/2014



CLIENT: **TDOT - TENNESSEE DEPARTMENT OF TRANSPORTATION**
 TDOT PE NO. 140030-4208-04, PIN 117914.00

AMEC Environment & Infrastructure, Inc.
 3800 Ezell Road, Suite 100 Nashville, Tennessee 37211
 Phone: 615-333-0630 Fax: 615-781-0655



DRAWN BY: EBI
 CHECKED BY: JKH
 REVIEWED BY: BKG
 SCALE: NOT TO SCALE

PROJECT: Asbestos Survey
 Bridge 40S81720003 (40-SR140-2303)
 SR-140 Bridge over Mill Creek, LM 23.03
 Henry County, Tennessee

TITLE: **FIGURE 1
 BRIDGE PROFILES
 DEPICTING SAMPLE LOCATIONS**

8/15/2014
 PROJECT NO: 180914002
 SHEET NO: 1 OF 1



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-948-35509	May 27, 2014	June 30, 2015



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

This 27th Day of May 2014

Division of Solid Waste Management
Toxic Substance Program

CN-1324 (Rev 6/13)

RDA-3020

THE STATE OF TENNESSEE

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

45228-18834



Date: 09/30/2013

Re-Accreditation

James K. Hampel

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

Discipline	Accreditation	Expiration
Management Planner	A-MP-48068-29536	Sep-30-2014
Project Designer	A-PD-48068-29536	Sep-30-2014

Asbestos Accreditation



APPENDIX B

Photographs

AMEC Environment & Infrastructure, Inc.
Photographic Record

Client: TDOT

Project Number: 180914002

Site Name: SR-140 Bridge over Mill Creek, LM 23.03

Site Location: Henry County

Photographer:
Hampel/Hatchett

Date: 07-30-2014

Direction:
East

Comments:
P-1 – Bridge approach
from West

Bridge # 40S81720003
(40-SR140-23.03)



Photographer:
Hampel/Hatchett

Date: 07-30-2014

Direction:
Northeast

Comments:
P-2 Profile of bridge
from downstream.
Bridge is a five span
structure. Bridge was
constructed in 1957.



AMEC Environment & Infrastructure, Inc.
Photographic Record

Client: TDOT

Project Number: 180914002

Site Name: SR-140 Bridge over Mill Creek, LM 23.03

Site Location: Henry County

Photographer:
Hampel/Hatchett

Date: 07-30-2014

Direction:
East

Comments:
P-3 – Bridge is cast in place concrete structure with integral deck and beams. Beams are supported by pile caps at bents. No bearing pads were observed.



Photographer:
Hampel/Hatchett

Date: 07-30-2014

Direction:
NA, Close-up

Comments:
P-4- View of bridge railing. Ends of rails are wrapped with builders felt (HA-03) to allow rails to slip in post. Felt was not asbestos. Bridge surface is not coated.



AMEC Environment & Infrastructure, Inc.
Photographic Record

Client: TDOT

Project Number: 180914002

Site Name: SR-140 Bridge over Mill Creek, LM 23.03

Site Location: Henry County

Photographer:
Hampel/Hatchett

Date: 07-30-2014

Direction:
NA, Close-up

Comments:
P-5 – Deck has an asphalt wearing surface. Samples were collected of white and yellow pavement stripes (HA-01). Neither striping material was asbestos.



Photographer:
Hampel/Hatchett

Date: 07-30-2014

Direction:
NA, Close-up

Comments:
P-6- Concrete above deck sampled from the railing and posts on top of the bridge (HA-02). Concrete did not test positive for asbestos.



AMEC Environment & Infrastructure, Inc.
Photographic Record

Client: TDOT

Project Number: 180914002

Site Name: SR-140 Bridge over Mill Creek, LM 23.03

Site Location: Henry County

Photographer:
Hampel/Hatchett

Date: 07-30-2014

Direction:
NA, Close-up

Comments:
P-7 – Black expansion board material (HA-04). This sample collected from void between post and end of rail. No expansion material tested positive for asbestos.



Photographer:
Hampel/Hatchett

Date: 07-30-2014

Direction:
NA, Close-up

Comments:
P-8 – Sample of asbestos Transite scuppers (HA-05). Scuppers are visible from both top and bottom of the deck. A row of 21 scuppers runs the length of the deck on both sides.



AMEC Environment & Infrastructure, Inc.
Photographic Record

Client: TDOT

Project Number: 180914002

Site Name: SR-140 Bridge over Mill Creek, LM 23.03

Site Location: Henry County

Photographer:
Hampel/Hatchett

Date: 07-30-2014

Direction:
West

Comments:
P-9 No expansion material or bearing pads were under diaphragms or beams at piers. Concrete samples (HA-08) did not contain asbestos.



Photographer:
Hampel/Hatchett

Date: 07-30-2014

Direction:
NA, Close-up

Comments:
P-10 – Sand/cement riprap (HA-09) at Abutment 1. Samples from sand/cement riprap did not contain asbestos.



AMEC Environment & Infrastructure, Inc.
Photographic Record

Client: TDOT

Project Number: 180914002

Site Name: SR-140 Bridge over Mill Creek, LM 23.03

Site Location: Henry County

Photographer:
Hampel/Hatchett

Date: 07-30-2014

Direction:
South (Upstream)

Comments:
P-11 View of
efflorescence along
bridge beam.
Efflorescence samples
(HA-07) did not contain
asbestos.



Photographer:
Hampel/Hatchett

Date: 07-30-2014

Direction:
NA, Close-up

Comments:
P-12 – Concrete pile
supporting concrete
bent cap. Concrete
samples (HA-08) did
not contain asbestos.





APPENDIX C

Asbestos Sample Laboratory Analysis Data

PLM REPORT SUMMARY

AMEC E&I, Inc.
2677 Buford Hwy
Atlanta, GA 30324 (404) 873-4761

NVLAP Lab Code 101066-0
TDH License No. 300433

Client :	Tennessee Department of Transportation	AMEC Job No. : 180914002-01
Project :	Henry County, SR-140 over Mill Creek	Report Date : 8/5/2014
Client Project No.:	40030-4208-04	Sample Date : 7/30/2014
Identification :	Asbestos, Bulk Sample Analysis	
Test Method :	Polarized Light Microscopy / Dispersion Staining (PLM/DS) EPA Method 600/R-93/116 / EPA 600/M4-82-020	

Page 1 of 6

On 8/ 4/2014, thirty (30) bulk material samples were submitted by James Hampel for asbestos analysis by PLM/DS.

Lab Sample No.	Sample Description / Location	Asbestos Content
237416	White Road Striping Deck Overhang, Span 1 HC-01-01 HA01	None Detected-Road Striping
237417	Yellow Road Striping Deck Overhang, Span 2 HC-01-02 HA01	None Detected-Road Striping
237418	White Road Striping Bent 1Cap HC-01-03 HA01	None Detected-Road Striping
237419	Concrete Rail Post, Span 1 HC-02-01 HA02	None Detected-Concrete
237420	Concrete Rail, Span 1 HC-02-02 HA02	None Detected-Concrete
237421	Concrete Rail Post, Span 3 HC-02-03 HA02	None Detected-Concrete

These samples were analyzed by layers. The first percentage is the overall asbestos content for the sample. Specific layer or component asbestos content is indicated when relevant. The EPA considers a material to be asbestos containing only if it contains more than one percent asbestos by Calibrated Visual Area Estimation (CVAE). EPA regulations also state that Regulated Asbestos Containing Materials (RACM) -- materials which are friable or may become friable -- be further analyzed by point counting when the results indicate less than ten percent asbestos by CVAE. Our laboratory utilizes CVAE on a routine basis and does not include point counting unless specifically requested. These reports may not be reproduced except in full. Any unauthorized use or distribution of these reports shall be at the client's and recipient's sole risk and without liability to AMEC E&I, Inc.

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Page 2 of 6

On 8/ 4/2014, thirty (30) bulk material samples were submitted by James Hampel for asbestos analysis by PLM/DS.

Lab Sample No.	Sample Description / Location	Asbestos Content
237422	Concrete Rail, Span 3 HC-02-04 HA02	None Detected-Concrete
237423	Builders Felt Span 1 HC-03-01 HA03	None Detected-Builders Felt
237424	Builders Felt Span 2 HC-03-02 HA03	None Detected-Builders Felt
237425	Builders Felt Span 3 HC-03-03 HA03	None Detected-Builders Felt
237426	Fibrous Expansion Board Rail Post, Span 1 HC-04-01 HA04	None Detected-Expansion Material
237427	Fibrous Expansion Board Rail Post, Span 3 HC-04-02 HA04	None Detected-Expansion Material

These samples were analyzed by layers. The first percentage is the overall asbestos content for the sample. Specific layer or component asbestos content is indicated when relevant. The EPA considers a material to be asbestos containing only if it contains more than one percent asbestos by Calibrated Visual Area Estimation (CVAE). EPA regulations also state that Regulated Asbestos Containing Materials (RACM) -- materials which are friable or may become friable -- be further analyzed by point counting when the results indicate less than ten percent asbestos by CVAE. Our laboratory utilizes CVAE on a routine basis and does not include point counting unless specifically requested. These reports may not be reproduced except in full. Any unauthorized use or distribution of these reports shall be at the client's and recipient's sole risk and without liability to AMEC E&I, Inc.

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On 8/ 4/2014, thirty (30) bulk material samples were submitted by James Hampel for asbestos analysis by PLM/DS.

Lab Sample No.	Sample Description / Location	Asbestos Content
237428	Fibrous Expansion Board Rail Post, Span 4 HC-04-03 HA04	None Detected-Expansion Material
237429	Scupper Span 3, North HC-05-01 HA05	30% Chrysotile-Scupper 2% Crocidolite-Scupper
237430	Scupper Span 3, South HC-05-02 HA05	Not Analyzed-Scupper
237431	Scupper Span 2, South HC-05-03 HA05	Not Analyzed-Scupper
237432	Scupper Span 1, South Below HC-05-04 HA05	Not Analyzed-Scupper
237433	Concrete Deck Overhang, Span 1 HC-06-01 HA06	None Detected-Concrete

These samples were analyzed by layers. The first percentage is the overall asbestos content for the sample. Specific layer or component asbestos content is indicated when relevant. The EPA considers a material to be asbestos containing only if it contains more than one percent asbestos by Calibrated Visual Area Estimation (CVAE). EPA regulations also state that Regulated Asbestos Containing Materials (RACM) -- materials which are friable or may become friable -- be further analyzed by point counting when the results indicate less than ten percent asbestos by CVAE. Our laboratory utilizes CVAE on a routine basis and does not include point counting unless specifically requested. These reports may not be reproduced except in full. Any unauthorized use or distribution of these reports shall be at the client's and recipient's sole risk and without liability to AMEC E&I, Inc.

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Page 4 of 6

On 8/ 4/2014, thirty (30) bulk material samples were submitted by James Hampel for asbestos analysis by PLM/DS.

Lab Sample No.	Sample Description / Location	Asbestos Content
237434	Concrete Deck, Span 2 HC-06-02 HA06	None Detected-Concrete
237435	Concrete Beam, Span 2 HC-06-03 HA06	None Detected-Concrete
237436	Efflorescence Span 1 HC-07-01 HA07	None Detected-Efflorescence
237437	Efflorescence Span 2 HC-07-02 HA07	None Detected-Efflorescence
237438	Concrete Bent Cap 1 HC-08-01 HA08	None Detected-Concrete
237439	Concrete Bent Cap 2 HC-08-02 HA08	None Detected-Concrete

These samples were analyzed by layers. The first percentage is the overall asbestos content for the sample. Specific layer or component asbestos content is indicated when relevant. The EPA considers a material to be asbestos containing only if it contains more than one percent asbestos by Calibrated Visual Area Estimation (CVAE). EPA regulations also state that Regulated Asbestos Containing Materials (RACM) -- materials which are friable or may become friable -- be further analyzed by point counting when the results indicate less than ten percent asbestos by CVAE. Our laboratory utilizes CVAE on a routine basis and does not include point counting unless specifically requested. These reports may not be reproduced except in full. Any unauthorized use or distribution of these reports shall be at the client's and recipient's sole risk and without liability to AMEC E&I, Inc.

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Client :	Tennessee Department of Transportation	AMEC Job No. : 180914002-01
Project :	Henry County, SR-140 over Mill Creek	Report Date : 8/5/2014
Client Project No.:	40030-4208-04	Sample Date : 7/30/2014
Identification :	Asbestos, Bulk Sample Analysis	
Test Method :	Polarized Light Microscopy / Dispersion Staining (PLM/DS) EPA Method 600/R-93/116 / EPA 600/M4-82-020	

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On 8/4/2014, thirty (30) bulk material samples were submitted by James Hampel for asbestos analysis by PLM/DS.

Lab Sample No.	Sample Description / Location	Asbestos Content
237440	Concrete Pile, Bent 2 HC-08-03 HA08	None Detected-Concrete
237441	Concrete Wingwall, Abutment 1 HC-08-04 HA08	None Detected-Concrete
237442	Concrete Abutment 1, Face HC-08-05 HA08	None Detected-Concrete
237443	Concrete Underside Deck, Span 2 HC-08-06 HA08	None Detected-Concrete
237444	Sand/Cement Riprap bags Abutment 1 HC-09-01 HA09	None Detected-Sand/Cement
237445	Sand/Cement Riprap bags Abutment 1 HC-09-02 HA09	None Detected-Sand/Cement

These samples were analyzed by layers. The first percentage is the overall asbestos content for the sample. Specific layer or component asbestos content is indicated when relevant. The EPA considers a material to be asbestos containing only if it contains more than one percent asbestos by Calibrated Visual Area Estimation (CVAE). EPA regulations also state that Regulated Asbestos Containing Materials (RACM) -- materials which are friable or may become friable -- be further analyzed by point counting when the results indicate less than ten percent asbestos by CVAE. Our laboratory utilizes CVAE on a routine basis and does not include point counting unless specifically requested. These reports may not be reproduced except in full. Any unauthorized use or distribution of these reports shall be at the client's and recipient's sole risk and without liability to AMEC E&I, Inc.

PLM REPORT SUMMARY

AMEC E&I, Inc.
2677 Buford Hwy
Atlanta, GA 30324 (404) 873-4761

NVLAP Lab Code 101066-0
TDH License No. 300433

Client : Tennessee Department of Transportation AMEC Job No. : 180914002-01
Project : Henry County, SR-140 over Mill Creek Report Date : 8/5/2014
Client Project No.: 40030-4208-04 Sample Date : 7/30/2014
Identification : Asbestos, Bulk Sample Analysis
Test Method : Polarized Light Microscopy / Dispersion Staining (PLM/DS)
EPA Method 600/R-93/116 / EPA 600/M4-82-020

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STATEMENT OF LABORATORY ACCREDITATION

These samples were analyzed at the Atlanta Branch of AMEC E&I, Inc. in the Asbestos Laboratory at 2677 Buford Hwy, Atlanta, GA, 30324. The laboratory holds accreditation from the National Institute of Standards and Technology (formerly National Bureau of Standards) under the National Voluntary Laboratory Accreditation Program (NVLAP). This laboratory also is licensed and authorized to perform as an Asbestos Laboratory in the State of Texas within the purview of Texas Occupations Code, chapter 1954, so long as this license is not suspended or revoked and is renewed according to the rules adopted by the Texas Board of Health.

The samples were analyzed by polarized light microscopy in general accordance with the procedures described in the Method for the Determination of Asbestos in Bulk Building Materials, EPA/600/R-93/116. The results of each bulk sample analysis relate only to the material tested. This report shall not be used to claim product endorsement by NVLAP or any agency of the U.S. Government.

Specific questions concerning bulk sample results shall be directed to the PLM Laboratory Manager.

Analyst : James Findlay

PLM Laboratory Manager : Tom D. Morrison

Approved Signatory :



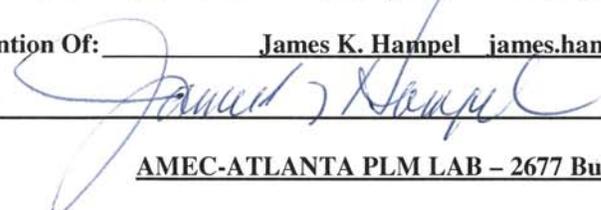


AMEC Environment & Infrastructure, Inc.
396 Plasters Avenue, Atlanta, GA 30324

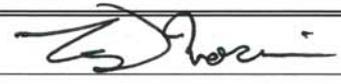
Page 1 of 2
Total # of Samples: 30

LAB# 237416-237445

Bulk Sample Chain of Custody

Project Name: TDOT Henry County, SR-140 over Mill Creek, LM 23.03 Date Collected: 07/30/2014
 Project No.: 180914002 Phase: 01 Task: **** Date Results Needed By: 08/07/2014
 Client: Tennessee Department of Transportation Pin No.: 117914.00 Client Project No.: 40030-4208-04
 Analyst's Department No.: 6141 Special Instructions For Analyst: First Positive Stop
 Need Results Transmitted As Follows: Verbal By Fax By E-Mail By Overnight Delivery
 Transmit Results To The Attention Of: James K. Hampel james.hampel@amec.com
 Sender's Signature: JKH  Date: 08/01/2014
 Samples Delivered to: AMEC-ATLANTA PLM LAB - 2677 Buford Hwy - Atlanta, GA 30324
 Samples Received at AMEC Lab by: _____ Date: _____

Note - unless otherwise requested in writing samples will be disposed of 90 days after the date of analysis.

Samples Received By:  Date: 08/04/14

Sample No.	HA No.	General Description of Material Sampled	Approximate Sample Location
HC-01-01	01	White Road Striping	Deck Overhang, Span 1
HC-01-02	01	Yellow Road Striping	Deck Overhang, Span 2
HC-01-03	01	White Road Striping	Bent 1 Cap
HC-02-01	02	Concrete	Rail Post, Span 1
HC-02-02	02	Concrete	Rail, Span 1
HC-02-03	02	Concrete	Rail Post, Span 3
HC-02-04	02	Concrete	Rail, Span 3
HC-03-01	03	Builders Felt	Span 1
HC-03-02	03	Builders Felt	Span 2
HC-03-03	03	Builders Felt	Span 3

(Use additional pages as necessary and securely attach to this sheet.)

TURN AROUND TIME

PLM 24 Hour PLM 48 Hour PLM 3-10 Day

PROJECT NUMBER 164614054

Sample No.	HA No.	General Description of Material Sampled	Approximate Sample Location
HC-04-01	04	Fibrous Expansion Board	Rail Post, Span 1
HC-04-02	04	Fibrous Expansion Board	Rail Post, Span 3
HC-04-03	04	Fibrous Expansion Board	Rail Post, Span 4
HC-05-01	05	Scupper	Span 3, North
HC-05-02	05	Scupper	Span 3, South
HC-05-03	05	Scupper	Span 2, South
HC-05-04	05	Scupper	Span 1, South Below
HC-06-01	06	Concrete	Deck Overhang, Span 1
HC-06-02	06	Concrete	Deck, Span 2
HC-06-03	06	Concrete	Beam, Span 2
HC-07-01	07	Efflorescence	Span 1
HC-07-02	07	Efflorescence	Span 2
HC-08-01	08	Concrete	Bent Cap 1
HC-08-02	08	Concrete	Bent Cap 2
HC-08-03	08	Concrete	Pile, Bent 2
HC-08-04	08	Concrete	Wingwall, Abutment 1
HC-08-05	08	Concrete	Abutment 1, Face
HC-08-06	08	Concrete	Underside Deck, Span 2
HC-09-01	09	Sand/Cement Riprap bags	Abutment 1
HC-09-02	09	Sand/Cement Riprap bags	Abutment 1

(Securely attach to page 1.)