# TENNESSEE DEPARTMENT OF TRANSPORTATION
# ASBESTOS INSPECTION REPORT

I-24 Silliman Evans Bridge over Cumberland River
Bridge ID Number 19I00240120
Davidson County, Tennessee


Prepared by:

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

May 2, 2014
KSWA Project Number: 100-14-0021

Daryl Corlew
Tennessee Asbestos Inspector Accreditation [A-I-78606-34727]

## TABLE OF CONTENTS

# 1.0 INTRODUCTION

This report presents the findings of an inspection for asbestos-containing materials completed on the bridge identified in Section 1.1. The inspection was completed in accordance with the State of Tennessee, Department of Transportation Environmental Division, 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: 19010-4164-04
TDOT PIN Number: 119964.00
Bridge Inventory Number: 19I00240020
State Route Number: I-24
Log Mile Number: 15.42

## 1.2 GENERAL DESCRIPTION

The I-24 Silliman Evans Westbound Bridge is a concrete structure over the Cumberland River in Davidson County, Tennessee. The bridge consists of three main spans and 37 approach spans. The existing bridge measures at 2362 feet in length and consists of asphalt, concrete, and steel components. **Figure – 1** shows the general location of the bridge.

# 2.0 INSPECTION

The identification of asbestos-containing materials (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 one percent asbestos by calibrated visual area estimation (CVAE) using Polarized Light Microscopy (PLM).

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

## 2.1 PERSONNEL AND DATE(S) OF INSPECTION

The sampling and field activities were performed on April 16, 17, 22, 23, and 29, 2014 by Daryl Corlew. Mr. Corlew is an accredited State of Tennessee Asbestos Inspectors. A copy of Mr. Corlew's current accreditation from the State of Tennessee is included in **Appendix A**.

## 2.2 VISUAL SURVEY

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

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

**Table-1** lists the homogeneous areas identified during our visual survey.

## 2.3 ACCESS TO BRIDGE COMPONENTS

Individual bridge components were accessed by the following methods. Traffic control and a reach-all truck provided by TDOT were utilized in the bridge survey.

### 2.3.1 Top of Bridge Deck, Drain Material, Expansion Joints, and Bridge Decking

The asphalt bridge deck, drain material, and expansion joints were accessed and sampled from the top and shoulders of the bridge. The concrete bridge decking was accessed and sample from beneath the bridge along the sides.

### 2.3.2 Underside of Bridge Deck

The underside of the steel bridge deck was accessed from beneath the bridge from the ground and from the reach-all truck. No samples were taken from the bridge deck from underneath the bridge due to the steel construction material of the deck.

### 2.3.3 Bridge Beams

The steel bridge beams were accessed from beneath the bridge from the ground and from the reach-all truck. No samples were taken from the bridge beams due to the steel construction material of the beams.

### 2.3.4 Bridge Piers/Bents and Supports

The concrete and steel bridge supports were accessed and sampled from beneath the bridge from the ground and from the reach-all truck. No steel samples were taken from the bridge piers due to the steel material.

### 2.3.5 Guardrails

The concrete guardrails were accessed and sampled from the top of the bridge.

### 2.3.6 Abutments, Abutment Slopes, and Wing Walls

The concrete bridge abutments, abutment slopes, and wing walls were accessed and sampled from beneath the bridge.

**Table – 1: Bridge Component Descriptions**

| Homogeneous Area | Description | No. Of Samples |
|---|---|---|
| A | Concrete North Abutment | 3 |
| B | Concrete Piers | 7 |
| C | Concrete Southwest Abutment | 3 |
| D | Concrete Southeast Abutment | 3 |
| E | Concrete Southwest Abutment Slope | 3 |
| F | Concrete Wing Walls | 3 |
| G | Asphalt Overlay | 7 |
| H | Concrete Guardrail | 7 |
| I | Concrete Inner Piers | 3 |
| J | Expansion Joint | 3 |
| K | Drain Material | 3 |
| L | Concrete Decking | 4 |
| M | Concrete Piers | 4 |

# 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. 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 one percent 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 have been point counted by the laboratory for confirmation.

## 3.2 LABORATORY NAME AND ACCREDITATION

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

**Table – 2: Analytical Laboratory**

| | |
|---|---|
| **Laboratory** | EMSL Analytical, Inc. |
| **NVLAP Number** | 102104-0 |

# 4.0 REGULATORY OVERVIEW

## 4.1 NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS

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

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

### 4.1.1 Definitions

Significant definitions related to regulation of asbestos under NESHAPS include:

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

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

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

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

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

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

# 5.0 RESULTS

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

## 5.1 RESULTS OF ASBESTOS BULK SAMPLE ANALYSIS

Fifty-three samples were obtained from the I-24 Silliman Evans Bridge over the Cumberland River. 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 2.2.

Building material homogeneous areas sampled included: concrete abutments, concrete abutment slopes, concrete inner and outer piers, concrete wing walls, asphalt overlay, drain material, concrete guardrails, and concrete decking. Photographs of the subject Davidson County Bridge are presented in **Appendix B**. Photo 3 shows the approximate area from which the concrete decking samples were collected. The analytical results of all the samples collected from the property, along with the chain-of-custody records, are included in **Appendix C**.

Of the various material sampled, the textures of the inner and outer concrete piers, southeast and southwest concrete abutments, southeast concrete wing wall, and concrete decking were found to be asbestos-containing. Although no samples of the texture covering the outside of the guardrails were collected, it is assumed that these textures are asbestos-containing due to appearing similar to other positive samples. Samples with detections of ACM were also analyzed using the 400 point count procedure. **Table – 3** summarizes the various sampled materials which were found to contain asbestos as well as point counting results. Photographs of the different homogeneous areas sampled that tested positive for containing asbestos are presented in **Appendix B.**

**Table – 3: Materials Containing Asbestos**

| Sample No. | HA/Material Description | Location (Bridge Component) | Approx. Qty. | Friable (Y/N) | Asbestos Type and Content |
|---|---|---|---|---|---|
| E-SE-4* | Concrete Piers | North | All Piers | No | 1.75% Chrysotile |
| E-SE-5** | Concrete Piers | North | All Piers | No | First Positive Stop |
| E-SE-6** | Concrete Piers | North Middle | All Piers | No | First Positive Stop |
| E-SE-7** | Concrete Piers | North Middle | All Piers | No | First Positive Stop |
| E-SE-8** | Concrete Piers | South SW | All Piers | No | First Positive Stop |
| E-SE-9** | Concrete Piers | South SE | All Piers | No | First Positive Stop |
| E-SE-10** | Concrete Piers | South | All Piers | No | First Positive Stop |
| E-SE-12-Texture* | Concrete Abutment | SW | Southwest Abutment | No | 1.25% Chrysotile |
| E-SE-13-Texture** | Concrete Abutment | SW | Southwest Abutment | No | First Positive Stop |
| E-SE-14* | Concrete Abutment | SE | Southeast Abutment | No | 2.25% Chrysotile |
| E-SE-15** | Concrete Abutment | SE | Southeast Abutment | No | First Positive Stop |
| E-SE-16** | Concrete Abutment | SE | Southeast Abutment | No | First Positive Stop |
| E-SE-20-Texture* | Concrete Wing Wall | SE | Southeast Abutment Wing Wall | No | 3.25% Chrysotile |
| E-SE-21** | Concrete Wing Wall | SE | Southeast Abutment Wing Wall | No | First Positive Stop |
| E-SE-22** | Concrete Wing Wall | SE | Southeast Abutment Wing Wall | No | First Positive Stop |
| E-SE-37-Texture* | Concrete Piers | North over River | All Piers | No | 2.25% Chrysotile |
| E-SE-38-Texture** | Concrete Piers | Middle over River | All Piers | No | First Positive Stop |
| E-SE-39-Texture** | Concrete Piers | South over River | All Piers | No | First Positive Stop |
| E-SE-46-Texture* | Concrete Decking | NW | Concrete Decking | No | 3.00% Chrysotile |
| E-SE-47-Texture* | Concrete Decking | NE | Concrete Decking | No | 2.50% Chrysotile |
| E-SE-52-Bag 2-Texture | Concrete Piers | SW | Concrete Piers | No | 2% Chrysotile |
| E-SE-53-Bag 1*** | Concrete Piers | SE | Concrete Piers | No | 2% Chrysotile |
| E-SE-53-Bag 2-Texture | Concrete Piers | SE | Concrete Piers | No | 2% Chrysotile |

***Sample was Point Counted for confirmation**

****Sample was not analyzed. Assumed to be asbestos-containing using "First Positive Stop" (FPS) method**

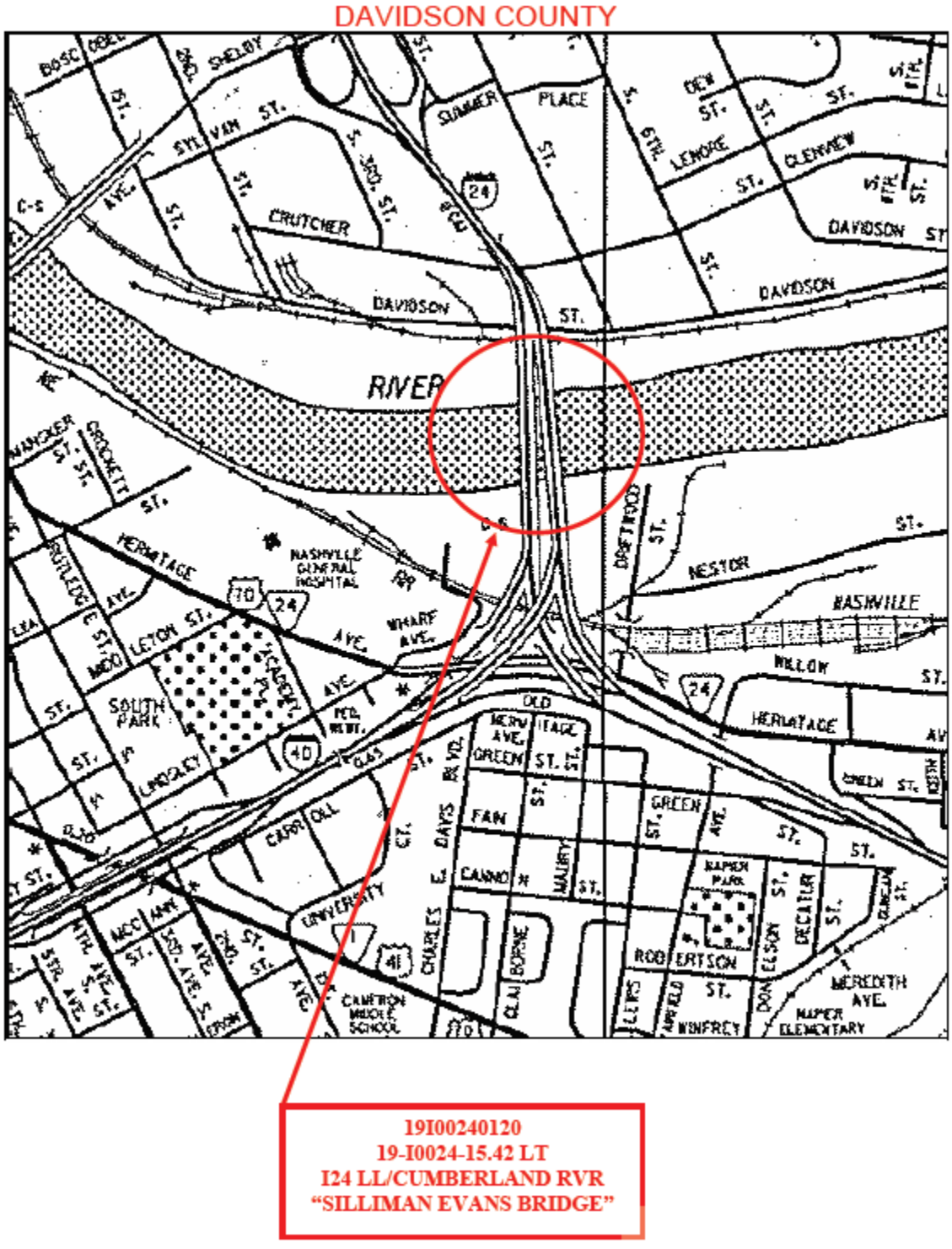
*****Sample was confirmed by lab to be a mixture of concrete and texture. The lab could not effectively separate the sample between texture and concrete**

## 6.0 QUALIFICATIONS

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

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

# Figure – 1: Site Vicinity Map



# APPENDIX A:
# ASBESTOS INSPECTION PERSONNEL ACCREDITATIONS

# THE STATE OF TENNESSEE

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

Date Issued: 2/24/2

Initial

## Daryl J Corlew

| DOB | Sex | HGT | WGT |
|---|---|---|---|
| 12-May-1988 | M | 5' 11" | 180 |

| Discipline | Accreditation | Expiration |
|---|---|---|
| Inspector | A-I-78606-34727 | Feb-28-2015 |
| Project Monitor | A-PM-78606-27982 | Apr-30-2014 |

**Asbestos Accreditation**

# APPENDIX B:
# PHOTOGRAPHS


**Photo 1:** View of the I-24 Bridge over Cumberland River in Davidson County, Tennessee.


**Photo 2:** View of the I-24 Bridge over Cumberland River in Davidson County, Tennessee from below.


**Photo 3:** View of the Asbestos-Containing Southwest Abutment on the Westbound I-24 Bridge over the Cumberland River


**Photo 4:** View of the Asbestos-Containing Southeast Abutment on the Westbound I-24 Bridge over the Cumberland River


**Photo 5:** View of the Asbestos-Containing Wing Wall on the Southeast Abutment on the Westbound I-24 Bridge over the Cumberland River


**Photo 6:** View of the Asbestos-Containing Inner Bridge Piers supporting the Westbound I-24 Bridge over the Cumberland River


**Photo 7:** View of the Asbestos-Containing Outer Piers supporting the Westbound I-24 Bridge over the Cumberland River


**Photo 8:** View of the Asbestos-Containing Bridge Deck from beneath on the I-24 Bridge over the Cumberland River

# APPENDIX C:
# ASBESTOS SAMPLE LABORATORY ANALYSIS DATA

OrderID: 021402106

EMSL Analytical, Inc.
706 Gralin Street

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

EMSL ANALYTICAL, INC.
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# Asbestos Bulk Building Material Chain of Custody

**EMSL Order Number** (*Lab Use Only*): 21064

| | |
|---|---|
| **Company :** K.S. Ware and Associates | **EMSL-Bill to:** ☑ Same ☐ Different<br>If Bill to is Different note instructions in Comments**<br>*Third Party Billing requires written authorization from third party* |
| **Street:** 54 Lindsley Ave | |
| **City:** Nashville **State/Province:** TN | **Zip/Postal Code:** 37210 **Country:** United States |
| **Report To (Name):** Daryl Corlew | **Telephone #:** 615-255-9702 |
| **Email Address:** dcorlew@kswarellc.com | **Fax #:** 615-256-5873 **Purchase Order:** |
| **Project Name/Number:** Silliman Evans - East 100-14-0021 | **Please Provide Results:** ☐ Fax ☑ Email ☐ Mail |
| **U.S. State Samples Taken:** TN | **CT Samples:** ☐ Commercial/Taxable ☐ Residential/Tax Exempt |

**Turnaround Time (TAT) Options* – Please Check**

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

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

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

■ **Check For Positive Stop – Clearly Identify Homogenous Group** **Date Sampled:** April 17, 2014

**Samplers Name:** Daryl Corlew **Samplers Signature:** Daryl Corlew

| Sample # | HA # | Sample Location | Material Description |
|---|---|---|---|
| E-SE-1 | A | North | Concrete Abutment |
| E-SE-2 | A | North | " " |
| E-SE-3 | A | North | " " |
| E-SE-4 | B | North | Concrete Piers |
| E-SE-5 | B | North | " " |
| E-SE-6 | B | North Middle | " " |
| E-SE-7 | B | North Middle | " " |
| E-SE-8 | B | South SW | " " |
| E-SE-9 | B | South SE | " " |
| E-SE-10 | B | South | " " |

**Client Sample # (s):** - **Total # of Samples:**

**Relinquished (Client):** **Date:** **Time:**

**Received (Lab):** SF **Date:** 4-22-14 **Time:** 10:25

**Comments/Special Instructions:**
E-SE KSWA project Number 100-14-0021, TAT 24 hrs

1Z245 3AR 13945 7072

OrderID: 021402106

EMSL Analytical, Inc.
706 Gralin Street

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

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# Asbestos Bulk Building Material Chain of Custody

**EMSL Order Number** *(Lab Use Only)*: 21064

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

| Sample # | HA # | Sample Location | Material Description |
|---|---|---|---|
| E-SE-11 | C | SW | Concrete Abutment |
| E-SE-12 | C | SW | " " |
| E-SE-13 | C | SW | " " |
| E-SE-14 | D | SE | Concrete Abutment |
| E-SE-15 | D | SE | " " |
| E-SE-16 | D | SE | " " |
| E-SE-17 | E | SW | Concrete Abutment Slope |
| E-SE-18 | E | SW | " " |
| E-SE-19 | E | SW | " " |
| E-SE-20 | F | SE | Concrete Wing Wall |
| E-SE-21 | F | SE | " " |
| E-SE-22 | F | SE | " " |
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***Comments/Special Instructions:**
E-SE KSWA project Number 100-14-0021, TAT 24 hrs

Page 2 of 2 pages

OrderID: 021402106

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706 Gralin Street

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# Asbestos Bulk Building Material Chain of Custody

**EMSL Order Number** (*Lab Use Only*): 2174

| | |
|---|---|
| **Company:** K.S. Ware and Associates | **EMSL-Bill to:** ☑ Same ☐ Different<br>If Bill to is Different note instructions in Comments**<br>*Third Party Billing requires written authorization from third party* |
| **Street:** 54 Lindsley Ave | |
| **City:** Nashville **State/Province:** TN | **Zip/Postal Code:** 37210 **Country:** United States |
| **Report To (Name):** Daryl Corlew | **Telephone #:** 615-255-9702 |
| **Email Address:** dcorlew@kswarellc.com | **Fax #:** 615-256-5873 **Purchase Order:** |
| **Project Name/Number:** 100-14-0021 | **Please Provide Results:** ☐ Fax ☑ Email ☐ Mail |
| **U.S. State Samples Taken:** TN | **CT Samples:** ☐ Commercial/Taxable ☐ Residential/Tax Exempt |

**Turnaround Time (TAT) Options* – Please Check**

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

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

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

■ **Check For Positive Stop – Clearly Identify Homogenous Group** **Date Sampled:** 4/22/2014 and 4/23/2014

**Samplers Name:** Daryl Corlew **Samplers Signature:**

| Sample # | HA # | Sample Location | Material Description |
|---|---|---|---|
| E-SE-23 | G | North | Asphalt Overlay |
| E-SE-24 | G | North Middle | " " |
| E-SE-25 | G | Middle | " " |
| E-SE-26 | G | South Middle | " " |
| E-SE-27 | G | South | " " |
| E-SE-28 | G | Southwest | " " |
| E-SE-29 | G | Southeast | " " |
| E-SE-30 | H | Northwest | Concrete Guardrail |
| E-SE-31 | H | Northeast | " " |
| E-SE-32 | H | Middle west | " " |

**Client Sample # (s):** E-SE-23 G - E-SE-45 K **Total # of Samples:** 23

**Relinquished (Client):** Daryl Corlew **Date:** 4/23/14 **Time:** 11:00 am

**Received (Lab):** NS **Date:** 4/24/14 **Time:** 10:45

**Comments/Special Instructions:**
East Silliman Evans Bridge - 24 hr TAT

UPS 1Z2453AR1391954491

Page 1 of 2 pages

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Kernersville, NC 27284
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**EMSL Order Number** (*Lab Use Only*): 2176

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

| Sample # | HA # | Sample Location | Material Description |
|---|---|---|---|
| E-SE-33 | H | Middle east | Concrete Guardrail |
| E-SE-34 | H | Southwest | " " |
| E-SE-35 | H | South middle | " " |
| E-SE-36 | H | Southeast | " " |
| E-SE-37 | I | North over river | Concrete Pier |
| E-SE-38 | I | Middle over river | " " |
| E-SE-39 | I | South over river | " " |
| E-SE-40 | J | North | Expansion Joint |
| E-SE-41 | J | Middle | " " |
| E-SE-42 | J | South | " " |
| E-SE-43 | K | Northeast | Drain Material |
| E-SE-44 | K | Middle east | " " |
| E-SE-45 | K | Southeast | " " |
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***Comments/Special Instructions:**
East Silliman Evans Bridge - 24 hr TAT

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OrderID: 021402106

EMSL Analytical, Inc.
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Kernersville, NC 27284
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# Asbestos Bulk Building Material Chain of Custody

**EMSL Order Number** (*Lab Use Only*): 2279

| | |
|---|---|
| **Company :** K.S. Ware and Associates | **EMSL-Bill to:** ☑ Same ☐ Different<br>If Bill to is Different note instructions in Comments**<br>*Third Party Billing requires written authorization from third party* |
| **Street:** 54 Lindsley Ave | |
| **City:** Nashville **State/Province:** TN | **Zip/Postal Code:** 37210 **Country:** United States |
| **Report To (Name):** Daryl Corlew | **Telephone #:** 615-255-9702 |
| **Email Address:** dcorlew@kswarellc.com | **Fax #:** 615-256-5873 **Purchase Order:** |
| **Project Name/Number:** 100-14-0021 SE-EAST | **Please Provide Results:** ☐ Fax ☑ Email ☐ Mail |
| **U.S. State Samples Taken:** TN | **CT Samples:** ☐ Commercial/Taxable ☐ Residential/Tax Exempt |

**Turnaround Time (TAT) Options* – Please Check**

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

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

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

☐ **Check For Positive Stop – Clearly Identify Homogenous Group** **Date Sampled:** 4/29/2014

**Samplers Name:** Darly Corlew **Samplers Signature:** Daryl Corlew

| Sample # | HA # | Sample Location | Material Description |
|---|---|---|---|
| E-SE-46 | L | NW | Concrete Decking |
| E-SE-47 | L | NE | " " |
| E-SE-48 | L | SW | " " |
| E-SE-49 | L | SE | " " |
| E-SE-50 | M | NW | Concrete Piers |
| E-SE-51 | M | NE | " " |
| E-SE-52 | M | SW | " " |
| E-SE-53 | M | SE | " " |
| | | | |
| | | | |

**Client Sample # (s):** ~~E~~E-SE-46 - E-SE-53 **Total # of Samples:** 8

**Relinquished (Client):** Daryl Corlew **Date:** 4/29/14 **Time:** 10:15 am

**Received (Lab):** SFletcher **Date:** 4.30.14 **Time:** 10:20

**Comments/Special Instructions:**

UPS 1Z 245 3AR 01 9189 2302

**EMSL Analytical, Inc.**
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|---|---|
| EMSL Order: | 021402106 |
| CustomerID: | KSWA77 |
| CustomerPO: | |
| ProjectID: | |

Attn: **Daryl Corlew**
**K.S. Ware LLC**
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|---|---|
| Phone: | (615) 742-7476 |
| Fax: | (615) 256-5873 |
| Received: | 04/22/14 10:25 AM |
| Analysis Date: | 4/23/2014 |
| Collected: | |

Project: **Silliman Evans East 100-14-0021**

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

| | | | Non-Asbestos | | | | Asbestos | |
|---|---|---|---|---|---|---|---|---|
| **Sample** | **Description** | **Appearance** | **%** | **Fibrous** | **%** | **Non-Fibrous** | **%** | **Type** |
| E-SE-1<br>*021402106-0001* | Concrete Abutment | Gray/Tan<br>Non-Fibrous<br>Homogeneous | 1% | Cellulose | 10%<br>89% | Quartz<br>Non-fibrous (other) | | **None Detected** |
| E-SE-2<br>*021402106-0002* | Concrete Abutment | Gray/Tan<br>Non-Fibrous<br>Homogeneous | 1% | Cellulose | 10%<br>89% | Quartz<br>Non-fibrous (other) | | **None Detected** |
| E-SE-3<br>*021402106-0003* | Concrete Abutment | Gray/Tan<br>Non-Fibrous<br>Heterogeneous | | | 10%<br>90% | Quartz<br>Non-fibrous (other) | | **None Detected** |
| E-SE-4<br>*021402106-0004* | Concrete Piers | Gray/Beige<br>Non-Fibrous<br>Homogeneous | <1%<br><1% | Cellulose<br>Fibrous (other) | 97% | Non-fibrous (other) | **3%** | **Chrysotile** |
| E-SE-5<br>*021402106-0005* | Concrete Piers | | | | | | | **Stop Positive (Not Analyzed)** |
| E-SE-6<br>*021402106-0006* | Concrete Piers | | | | | | | **Stop Positive (Not Analyzed)** |
| E-SE-7<br>*021402106-0007* | Concrete Piers | | | | | | | **Stop Positive (Not Analyzed)** |
| E-SE-8<br>*021402106-0008* | Concrete Piers | | | | | | | **Stop Positive (Not Analyzed)** |
| E-SE-9<br>*021402106-0009* | Concrete Piers | | | | | | | **Stop Positive (Not Analyzed)** |

Analyst(s)

*James Cole (3)*
*Nicole Shutts (11)*

Stephen Bennett, Laboratory Manager
or other approved signatory



Initial report from 04/23/2014 07:47:23

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| Received: | 04/22/14 10:25 AM |
| Analysis Date: | 4/23/2014 |
| Collected: | |

Project: **Silliman Evans East 100-14-0021**

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

| | | | Non-Asbestos | | | | Asbestos | |
|---|---|---|---|---|---|---|---|---|
| **Sample** | **Description** | **Appearance** | **%** | **Fibrous** | **%** | **Non-Fibrous** | **%** | **Type** |
| E-SE-10<br>*021402106-0010* | Concrete Piers | | | | | | | **Stop Positive (Not Analyzed)** |
| E-SE-11<br>*021402106-0011* | Concrete Abutment | Gray/Tan<br>Non-Fibrous<br>Homogeneous | <1% | Cellulose | 5%<br>95% | Quartz<br>Non-fibrous (other) | | **None Detected** |
| E-SE-12-Texture<br>*021402106-0012* | Concrete Abutment | Gray/Beige<br>Non-Fibrous<br>Homogeneous | <1%<br><1% | Cellulose<br>Fibrous (other) | 97% | Non-fibrous (other) | **3%** | **Chrysotile** |
| E-SE-12-Concrete<br>*021402106-0012A* | Concrete Abutment | Gray/Tan<br>Non-Fibrous<br>Homogeneous | <1% | Cellulose | 10%<br>90% | Quartz<br>Non-fibrous (other) | | **None Detected** |
| E-SE-13-Texture<br>*021402106-0013* | Concrete Abutment | | | | | | | **Stop Positive (Not Analyzed)** |
| E-SE-13-Concrete<br>*021402106-0013A* | Concrete Abutment | Gray/Tan<br>Non-Fibrous<br>Heterogeneous | | | 10%<br>90% | Quartz<br>Non-fibrous (other) | | **None Detected** |
| E-SE-14<br>*021402106-0014* | Concrete Abutment | Gray/Beige<br>Non-Fibrous<br>Homogeneous | <1%<br><1% | Cellulose<br>Fibrous (other) | 97% | Non-fibrous (other) | **3%** | **Chrysotile** |
| E-SE-15<br>*021402106-0015* | Concrete Abutment | | | | | | | **Stop Positive (Not Analyzed)** |
| E-SE-16<br>*021402106-0016* | Concrete Abutment | | | | | | | **Stop Positive (Not Analyzed)** |

Analyst(s)

*James Cole (3)*
*Nicole Shutts (11)*

Stephen Bennett, Laboratory Manager
or other approved signatory



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Received: 04/22/14 10:25 AM
Analysis Date: 4/23/2014
Collected:

Project: **Silliman Evans East 100-14-0021**

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

| | | | Non-Asbestos | | Asbestos |
|---|---|---|---|---|---|
| **Sample** | **Description** | **Appearance** | **% Fibrous** | **% Non-Fibrous** | **% Type** |
| E-SE-17<br>*021402106-0017* | Concrete Abutment Slope | Gray/Tan<br>Non-Fibrous<br>Homogeneous | | 5% Quartz<br>95% Non-fibrous (other) | **None Detected** |
| E-SE-18<br>*021402106-0018* | Concrete Abutment Slope | Gray/Tan<br>Non-Fibrous<br>Homogeneous | <1% Cellulose | 10% Quartz<br>90% Non-fibrous (other) | **None Detected** |
| E-SE-19<br>*021402106-0019* | Concrete Abutment Slope | Gray/Tan<br>Non-Fibrous<br>Heterogeneous | | 10% Quartz<br>90% Non-fibrous (other) | **None Detected** |
| E-SE-20-Texture<br>*021402106-0020* | Concrete Wing Wall | Gray/Beige<br>Non-Fibrous<br>Homogeneous | <1% Cellulose<br><1% Fibrous (other) | 97% Non-fibrous (other) | **3% Chrysotile** |
| E-SE-20-Concrete<br>*021402106-0020A* | Concrete Wing Wall | Gray/Tan<br>Non-Fibrous<br>Homogeneous | <1% Cellulose | 10% Quartz<br>90% Non-fibrous (other) | **None Detected** |
| E-SE-21<br>*021402106-0021* | Concrete Wing Wall | Only Texture Present | | | **Stop Positive (Not Analyzed)** |
| E-SE-22<br>*021402106-0022* | Concrete Wing Wall | Only Texture Present. | | | **Stop Positive (Not Analyzed)** |

Analyst(s)
*James Cole (3)*
*Nicole Shutts (11)*

Stephen Bennett, Laboratory Manager
or other approved signatory



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| Collected: | |

Project: **100-14-0021**

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

| | | | Non-Asbestos | | | | Asbestos |
|---|---|---|---|---|---|---|---|
| **Sample** | **Description** | **Appearance** | **% Fibrous** | | **% Non-Fibrous** | | **% Type** |
| E-SE-23<br>*021402176-0001* | Asphalt Overlay | Brown/Gray/Black<br>Non-Fibrous<br>Homogeneous | <1% | Cellulose | 10%<br>90% | Quartz<br>Non-fibrous (other) | **None Detected** |
| E-SE-24<br>*021402176-0002* | Asphalt Overlay | Brown/Gray/Black<br>Non-Fibrous<br>Homogeneous | <1% | Cellulose | 10%<br>90% | Quartz<br>Non-fibrous (other) | **None Detected** |
| E-SE-25<br>*021402176-0003* | Asphalt Overlay | Gray/Black<br>Non-Fibrous<br>Homogeneous | | | 10%<br>90% | Quartz<br>Non-fibrous (other) | **None Detected** |
| E-SE-26<br>*021402176-0004* | Asphalt Overlay | Brown/Black<br>Non-Fibrous<br>Homogeneous | <1% | Cellulose | 10%<br>90% | Quartz<br>Non-fibrous (other) | **None Detected** |
| E-SE-27<br>*021402176-0005* | Asphalt Overlay | Gray/Tan<br>Non-Fibrous<br>Homogeneous | <1% | Cellulose | 5%<br>95% | Quartz<br>Non-fibrous (other) | **None Detected** |
| E-SE-28<br>*021402176-0006* | Asphalt Overlay | Brown/Gray/Black/<br>Rust<br>Non-Fibrous<br>Homogeneous | <1% | Cellulose | 10%<br>90% | Quartz<br>Non-fibrous (other) | **None Detected** |
| E-SE-29<br>*021402176-0007* | Asphalt Overlay | Brown/Gray/Black<br>Non-Fibrous<br>Heterogeneous | | | 3%<br>97% | Quartz<br>Non-fibrous (other) | **None Detected** |
| E-SE-30-Texture<br>*021402176-0008* | Concrete Gaurdrail | White<br>Non-Fibrous<br>Homogeneous | <1% | Cellulose | 100% | Non-fibrous (other) | **None Detected** |

Analyst(s)

*Nicole Shutts (22)*
*Scott Combs (9)*

Stephen Bennett, Laboratory Manager
or other approved signatory



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| Analysis Date: | 4/24/2014 |
| Collected: | |

Project: **100-14-0021**

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

| | | | Non-Asbestos | | | Asbestos |
|---|---|---|---|---|---|---|
| **Sample** | **Description** | **Appearance** | **% Fibrous** | | **% Non-Fibrous** | **% Type** |
| E-SE-30-Concrete<br>*021402176-0008A* | Concrete Gaurdrail | Gray/Tan<br>Non-Fibrous<br>Homogeneous | | | 5% Quartz<br>95% Non-fibrous (other) | **None Detected** |
| E-SE-31-Texture<br>*021402176-0009* | Concrete Gaurdrail | White<br>Non-Fibrous<br>Homogeneous | <1% | Cellulose | 100% Non-fibrous (other) | **None Detected** |
| E-SE-31-Concrete<br>*021402176-0009A* | Concrete Gaurdrail | Tan<br>Non-Fibrous<br>Homogeneous | <1% | Cellulose | 5% Quartz<br>95% Non-fibrous (other) | **None Detected** |
| E-SE-32-Texture<br>*021402176-0010* | Concrete Gaurdrail | White<br>Non-Fibrous<br>Homogeneous | <1% | Cellulose | 100% Non-fibrous (other) | **None Detected** |
| E-SE-32-Concrete<br>*021402176-0010A* | Concrete Gaurdrail | Gray/Tan<br>Non-Fibrous<br>Homogeneous | | | 10% Quartz<br>90% Non-fibrous (other) | **None Detected** |
| E-SE-33-Texture<br>*021402176-0011* | Concrete Gaurdrail | White<br>Non-Fibrous<br>Homogeneous | <1% | Cellulose | 100% Non-fibrous (other) | **None Detected** |
| E-SE-33-Concrete<br>*021402176-0011A* | Concrete Gaurdrail | Tan<br>Non-Fibrous<br>Homogeneous | <1% | Cellulose | 10% Quartz<br>90% Non-fibrous (other) | **None Detected** |
| E-SE-34-Texture<br>*021402176-0012* | Concrete Gaurdrail | White<br>Non-Fibrous<br>Homogeneous | | | 100% Non-fibrous (other) | **None Detected** |

Analyst(s)

*Nicole Shutts (22)*
*Scott Combs (9)*

Stephen Bennett, Laboratory Manager
or other approved signatory



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| CustomerID: | KSWA77 |
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| Phone: | (615) 742-7476 |
| Fax: | (615) 256-5873 |
| Received: | 04/24/14 10:45 AM |
| Analysis Date: | 4/24/2014 |
| Collected: | |

Project: **100-14-0021**

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

| | | | Non-Asbestos | | | | Asbestos | |
|---|---|---|---|---|---|---|---|---|
| **Sample** | **Description** | **Appearance** | **%** | **Fibrous** | **%** | **Non-Fibrous** | **%** | **Type** |
| E-SE-34-Concrete<br>*021402176-0012A* | Concrete Gaurdrail | Gray/Tan<br>Non-Fibrous<br>Homogeneous | <1% | Cellulose | 10%<br>90% | Quartz<br>Non-fibrous (other) | | **None Detected** |
| E-SE-35-Texture<br>*021402176-0013* | Concrete Gaurdrail | White/Beige/Grayish<br>Non-Fibrous<br>Homogeneous | <1% | Cellulose | 100% | Non-fibrous (other) | | **None Detected** |
| E-SE-35-Concrete<br>*021402176-0013A* | Concrete Gaurdrail | Gray/Tan<br>Non-Fibrous<br>Heterogeneous | | | 5%<br>95% | Quartz<br>Non-fibrous (other) | | **None Detected** |
| E-SE-36-Texture<br>*021402176-0014* | Concrete Gaurdrail | White/Grayish<br>Non-Fibrous<br>Homogeneous | <1% | Cellulose | 100% | Non-fibrous (other) | | **None Detected** |
| E-SE-36-Concrete<br>*021402176-0014A* | Concrete Gaurdrail | Gray/Tan<br>Non-Fibrous<br>Heterogeneous | | | 5%<br>95% | Quartz<br>Non-fibrous (other) | | **None Detected** |
| E-SE-37-Texture<br>*021402176-0015* | Concrete Pier | Gray/Beige<br>Non-Fibrous<br>Homogeneous | <1% | Cellulose | 97% | Non-fibrous (other) | **3%** | **Chrysotile** |
| E-SE-37-Concrete<br>*021402176-0015A* | Concrete Pier | Gray/Tan<br>Non-Fibrous<br>Homogeneous | <1% | Cellulose | 5%<br>95% | Quartz<br>Non-fibrous (other) | | **None Detected** |
| E-SE-38-Texture<br>*021402176-0016* | Concrete Pier | | | | | | | **Stop Positive (Not Analyzed)** |

Analyst(s)

*Nicole Shutts (22)*
*Scott Combs (9)*

Stephen Bennett, Laboratory Manager
or other approved signatory



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| Analysis Date: | 4/24/2014 |
| Collected: | |

Project: **100-14-0021**

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

| | | | Non-Asbestos | | | Asbestos |
|---|---|---|---|---|---|---|
| **Sample** | **Description** | **Appearance** | **% Fibrous** | | **% Non-Fibrous** | **% Type** |
| E-SE-38-Concrete<br>*021402176-0016A* | Concrete Pier | Gray/Tan<br>Non-Fibrous<br>Homogeneous | | | 10% Quartz<br>90% Non-fibrous (other) | **None Detected** |
| E-SE-39-Texture<br>*021402176-0017* | Concrete Pier | | | | | **Stop Positive (Not Analyzed)** |
| E-SE-39-Concrete<br>*021402176-0017A* | Concrete Pier | Gray/Tan<br>Non-Fibrous<br>Heterogeneous | | | 10% Quartz<br>90% Non-fibrous (other) | **None Detected** |
| E-SE-40<br>*021402176-0018* | Expansion Joint | Black<br>Non-Fibrous<br>Homogeneous | | | 100% Non-fibrous (other) | **None Detected** |
| E-SE-41<br>*021402176-0019* | Expansion Joint | Black<br>Non-Fibrous<br>Homogeneous | | | 100% Non-fibrous (other) | **None Detected** |
| E-SE-42<br>*021402176-0020* | Expansion Joint | Gray/Black<br>Non-Fibrous<br>Heterogeneous | <1% Cellulose | | 100% Non-fibrous (other) | **None Detected** |
| E-SE-43<br>*021402176-0021* | Drain Material | Brown/Gray/Black<br>Fibrous<br>Heterogeneous | 1% Cellulose<br>20% Synthetic | | 79% Non-fibrous (other) | **None Detected** |
| E-SE-44<br>*021402176-0022* | Drain Material | Gray/Black<br>Fibrous<br>Heterogeneous | 20% Synthetic<br><1% Cellulose | | 80% Non-fibrous (other) | **None Detected** |

Analyst(s)

*Nicole Shutts (22)*
*Scott Combs (9)*

Stephen Bennett, Laboratory Manager
or other approved signatory



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| Collected: | |

Project: **100-14-0021**

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

| | | | Non-Asbestos | | | | Asbestos |
|---|---|---|---|---|---|---|---|
| **Sample** | **Description** | **Appearance** | **% Fibrous** | | **% Non-Fibrous** | | **% Type** |
| E-SE-45 | Drain Material | Brown/Gray/Black | 8% | Synthetic | 92% | Non-fibrous (other) | **None Detected** |
| *021402176-0023* | | Fibrous Heterogeneous | <1% | Cellulose | | | |

Analyst(s)

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*Scott Combs (9)*

Stephen Bennett, Laboratory Manager
or other approved signatory



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| ProjectID: | |

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| Collected: | |

Project: **100-14-0021 SE-East**

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

| | | | Non-Asbestos | | | Asbestos | |
|---|---|---|---|---|---|---|---|
| **Sample** | **Description** | **Appearance** | **%** | **Fibrous** | **% Non-Fibrous** | **%** | **Type** |
| E-SE-46-Texture<br>*021402279-0001* | Concrete Decking | Gray/Beige<br>Non-Fibrous<br>Homogeneous | | | 10% Ca Carbonate<br>87% Non-fibrous (other) | **3%** | **Chrysotile** |
| E-SE-46-Concrete<br>*021402279-0001A* | Concrete Decking | Gray/Tan<br>Non-Fibrous<br>Homogeneous | <1% | Cellulose | 10% Quartz<br>90% Non-fibrous (other) | | **None Detected** |
| E-SE-47-Texture<br>*021402279-0002* | Concrete Decking | Gray/Beige<br>Non-Fibrous<br>Homogeneous | | | 10% Ca Carbonate<br>87% Non-fibrous (other) | **3%** | **Chrysotile** |
| E-SE-47-Concrete<br>*021402279-0002A* | Concrete Decking | Gray/Tan<br>Non-Fibrous<br>Homogeneous | <1% | Cellulose | 10% Quartz<br>90% Non-fibrous (other) | | **None Detected** |
| E-SE-48<br>*021402279-0003* | Concrete Decking | | | | | | **Not Submitted** |
| E-SE-49<br>*021402279-0004* | Concrete Decking | | | | | | **Not Submitted** |
| E-SE-50<br>*021402279-0005* | Concrete Piers | Gray/Tan/Beige<br>Non-Fibrous<br>Homogeneous | 1% | Cellulose | 10% Quartz<br>5% Ca Carbonate<br>84% Non-fibrous (other) | **<1%** | **Chrysotile** |
| E-SE-51<br>*021402279-0006* | Concrete Piers | Gray/Tan/Beige<br>Non-Fibrous<br>Homogeneous | <1% | Cellulose | 10% Quartz<br>5% Ca Carbonate<br>85% Non-fibrous (other) | **<1%** | **Chrysotile** |

Analyst(s)
*Kristie Elliott (3)*
*Nicole Shutts (9)*

Stephen Bennett, Laboratory Manager
or other approved signatory



Initial report from 04/30/2014 13:35:09

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|---|---|
| EMSL Order: | 021402279 |
| CustomerID: | KSWA77 |
| CustomerPO: | |
| ProjectID: | |

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**K.S. Ware LLC**
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| Analysis Date: | 4/30/2014 |
| Collected: | |

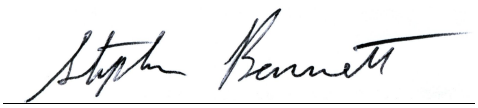
Project: **100-14-0021 SE-East**

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

| | | | Non-Asbestos | | | Asbestos | |
|---|---|---|---|---|---|---|---|
| **Sample** | **Description** | **Appearance** | **% Fibrous** | | **% Non-Fibrous** | **%** | **Type** |
| E-SE-52-Bag 1<br>*021402279-0007* | Concrete Piers | Brown/Gray/Beige<br>Non-Fibrous<br>Homogeneous | <1% | Cellulose | 5% Quartz<br>10% Ca Carbonate<br>85% Non-fibrous (other) | **<1%** | **Chrysotile** |
| E-SE-52-Bag 2-Texture<br>*021402279-0007A* | Concrete Piers | Gray/Beige<br>Non-Fibrous<br>Homogeneous | | | 10% Ca Carbonate<br>88% Non-fibrous (other) | **2%** | **Chrysotile** |
| E-SE-52-Bag 2-Concrete<br>*021402279-0007B* | Concrete Piers | Gray/Tan<br>Non-Fibrous<br>Homogeneous | <1% | Cellulose | 10% Quartz<br>90% Non-fibrous (other) | | **None Detected** |
| E-SE-53-Bag 1<br>*021402279-0008* | Concrete Piers | Gray/Tan/White<br>Non-Fibrous<br>Homogeneous | | | 10% Ca Carbonate<br>88% Non-fibrous (other) | **2%** | **Chrysotile** |
| E-SE-53-Bag 2-Texture<br>*021402279-0008A* | Concrete Piers | Gray/White<br>Non-Fibrous<br>Homogeneous | | | 10% Ca Carbonate<br>88% Non-fibrous (other) | **2%** | **Chrysotile** |
| E-SE-53-Bag 2-Concrete<br>*021402279-0008B* | Concrete Piers | Gray/Tan<br>Non-Fibrous<br>Homogeneous | | | 10% Quartz<br>90% Non-fibrous (other) | | **None Detected** |

Analyst(s)

*Kristie Elliott (3)*
*Nicole Shutts (9)*



Stephen Bennett, Laboratory Manager
or other approved signatory



Initial report from 04/30/2014 13:35:09

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| Received: | 04/22/14 10:25 AM |
| Analysis Date: | 4/23/2014 |
| Collected: | |

Project: **Silliman Evans East 100-14-0021**

# Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy. Quantitation using 400 Point Count Procedure

| | | | Non-Asbestos | | Asbestos |
|---|---|---|---|---|---|
| **Sample** | **Description** | **Appearance** | **% Fibrous** | **% Non-Fibrous** | **% Type** |
| E-SE-4<br>*021402106-0004* | Concrete Piers | Gray/Beige<br>Non-Fibrous<br>Homogeneous | | 98.25% Non-fibrous (other) | **1.75% Chrysotile** |
| E-SE-12-Texture<br>*021402106-0012* | Concrete Abutment | Gray/Beige<br>Non-Fibrous<br>Homogeneous | | 98.75% Non-fibrous (other) | **1.25% Chrysotile** |
| E-SE-14<br>*021402106-0014* | Concrete Abutment | Gray/Beige<br>Non-Fibrous<br>Homogeneous | | 97.75% Non-fibrous (other) | **2.25% Chrysotile** |
| E-SE-20-Texture<br>*021402106-0020* | Concrete Wing Wall | Gray/Beige<br>Non-Fibrous<br>Homogeneous | | 96.75% Non-fibrous (other) | **3.25% Chrysotile** |

Analyst(s)

*Nicole Shutts (4)*

Stephen Bennett, Laboratory Manager
or other approved signatory



Initial report from 04/23/2014 13:51:01

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| Received: | 04/24/14 10:45 AM |
| Analysis Date: | 4/25/2014 |
| Collected: | |

Project: **100-14-0021**

# Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy. Quantitation using 400 Point Count Procedure

| | | | Non-Asbestos | | Asbestos |
|---|---|---|---|---|---|
| **Sample** | **Description** | **Appearance** | **% Fibrous** | **% Non-Fibrous** | **% Type** |
| E-SE-37-Texture<br>*021402176-0015* | Concrete Pier | Gray/Beige<br>Non-Fibrous<br>Homogeneous | | 97.75% Non-fibrous (other) | **2.25% Chrysotile** |

Analyst(s)

*Nicole Shutts (1)*

Stephen Bennett, Laboratory Manager
or other approved signatory



Initial report from 04/25/2014 13:48:38

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| Analysis Date: | 5/1/2014 |
| Collected: | |

Project: **100-14-0021 SE-East**

# Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy. Quantitation using 400 Point Count Procedure

| | | | Non-Asbestos | | Asbestos |
|---|---|---|---|---|---|
| **Sample** | **Description** | **Appearance** | **% Fibrous** | **% Non-Fibrous** | **% Type** |
| E-SE-46-Texture<br>*021402279-0001* | Concrete Decking | Gray/Beige<br>Non-Fibrous<br>Homogeneous | | 97.00% Non-fibrous (other) | **3.00% Chrysotile** |
| E-SE-47-Texture<br>*021402279-0002* | Concrete Decking | Gray/Beige<br>Non-Fibrous<br>Homogeneous | | 97.50% Non-fibrous (other) | **2.50% Chrysotile** |

Analyst(s)

*Nicole Shutts (2)*

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Initial report from 05/01/2014 15:23:10