



TENNESSEE DEPARTMENT OF TRANSPORTATION

ASBESTOS INSPECTION REPORT

Bridge No.: 19I00240107
TERMINI: I-24 From I-65 to I-40
PIN: 131713.00



Prepared by:



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September 21, 2022

KSWA Project Number: 100-22-0052

A handwritten signature in black ink, appearing to read "William Vanderslice".

William Vanderslice

Tennessee Asbestos Inspector Accreditation: A-I-79963-122280

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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 in accordance with the State of Tennessee, Department of Transportation Environmental Division, Hazardous Materials Section requirements.

1.1 TDOT BRIDGE IDENTIFICATION

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

Bridge Inventory Number: 19I00240107
Termini: I-24 From I-65 to I-40
TDOT PIN Number: 131713.00
Const: 19I024-M3-010
Log Mile: 13.79

1.2 GENERAL DESCRIPTION

Bridge No. 19I00240107 I-24 over North 1st Street LM 13.79 (19-I0024-13.79), is a seven-lane, 379-foot, four-span bridge constructed of steel I-beams with a concrete deck and asphalt wearing surface. The bridge was constructed in 1961 and widened and rehabilitated in 1986. KSWA's field personnel did not observe any drains on the subject Davidson County bridge. KSWA's field personnel observed twelve (12) lights underneath the bridge as well as two metal utility conduits on the subject Davidson County bridge. KSWA's field personnel also observed one utility junction box on the top of the subject Davidson County bridge on the southeastern side. These utility components were not sampled due to the assumption they are active electrical utilities. However, internal components (i.e., wiring, insulation, etc.) may be suspect asbestos containing materials. The general location of the bridge is shown in **Figure – 1**. Photographs of the subject Davidson County bridge are presented in **Appendix A**. The analytical results of all the samples collected from the bridge and the chain-of-custody records are included in **Appendix B**.

2.0 INSPECTION

The identification of ACM was performed by collecting bulk samples of suspect materials and having those samples analyzed by a laboratory. ACM are those materials found to contain greater than 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

KSWA personnel Mr. Will Vanderslice and Mr. Tanner Hess performed the initial sampling and field activities on August 9, 2022. Mr. Vanderslice and Mrs. Danielle Merritt performed a second round of sampling with the help of traffic control on the top of the bridge on September 13, 2022. Mr. Will Vanderslice is an accredited State of Tennessee Asbestos Inspector. A copy of Mr. Vanderslice's current accreditation from the State of Tennessee is included in **Appendix C**. Field activities were conducted under a Health and Safety Plan (**Appendix D**) and an Activity Hazard Analysis (**Appendix E**) prepared prior to mobilizing to the site.

2.2 VISUAL SURVEY

The KSWA field crew began with a visual survey of the bridge. The visual survey consisted of:

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

The homogeneous areas identified during the visual survey are listed in **Table – 1**. The general locations of the identified homogeneous areas are shown in **Figure – 2** and **Figure – 3**.

Individual bridge components were accessed by the following methods.

2.2.1 Concrete Bents – Homogeneous Area A

The Concrete Bents were accessed and sampled from beneath the bridge.

2.2.2 Abutment Slopes – Homogeneous Area B

The Abutment Slopes were accessed and sampled from beneath the bridge.

2.2.3 Concrete Wall – Homogeneous Area C

The Concrete Wall was accessed and sampled from beneath the bridge.

2.2.4 Textured Bent Paint – Homogeneous Area D

The Textured Bent Paint was accessed and sampled from beneath the bridge.

2.2.5 Concrete Decking – Homogeneous Area E

The Concrete Decking was accessed and sampled from beneath the bridge.

2.2.6 Abutment Slope Patching – Homogeneous Area F

The Abutment Slope Patching was accessed and sampled from beneath the bridge.

2.2.7 Addition Concrete Bents – Homogeneous Area G

The Addition Concrete Bents were accessed and sampled from beneath the bridge.

2.2.8 Concrete Guardrails – Homogeneous Area H

The Concrete Guardrails were accessed and sampled from the top and shoulders of the bridge.

2.2.9 Concrete Abutment – Homogenous Area I

The Concrete Abutment was accessed and sampled from beneath the bridge.

2.2.10 Joint South – Homogenous Area J

The joint (padding) south was accessed and sampled from the top and shoulders of the bridge.

2.2.11 Joint Middle – Homogenous Area K

The joint (padding) middle was accessed and sampled from the top and shoulders of the bridge.

2.2.12 Joint North – Homogenous Area L

The joint (padding) north was accessed and sampled from the top and shoulders of the bridge.

2.2.13 Deck Patching – Homogenous Area M

The Deck Patching was accessed and sampled from the top and shoulders of the bridge.

2.3 BRIDGE DRAINAGE SYSTEM

KSWA personnel did not observe any drains on the subject Davidson County bridge.

2.4 UTILITY CONDUITS

KSWA's field personnel observed twelve (12) lights underneath the bridge as well as two metal utility conduits on the subject Davidson County bridge. KSWA's field personnel also observed one utility junction box on the top of the subject Davidson County bridge on the southeastern side. These utility components were not sampled due to the assumption they are active electrical utilities. However, internal components (i.e., wiring, insulation, etc.) may be suspect asbestos containing materials.

3.0 ANALYTICAL PROCEDURES

3.1 ASBESTOS ANALYSIS PROCEDURES

The laboratory analyzed the bulk samples collected from the subject bridge using PLM coupled with dispersion staining. PLM is used as an analytical method to identify the specific asbestos minerals by their unique optical properties. The optical properties are a result of the chemical composition, physical atomic structure, and visual morphology specific to that mineral. PLM is the recommended method of analysis for asbestos identification in bulk samples specified in the Environmental Protection Agency Toxic Substances Control Act (EPA TSCA 40 CFR Part 763, Subpart E, Appendix E, Section 1).

Materials that contain multiple layers or have associated mastic or adhesive backing are separated and analyzed as multiple samples. Standard procedure for samples that are reported to contain 1% or less asbestos minerals is to complete a quantitative point count analysis by the laboratory for confirmation.

3.2 LABORATORY NAME AND ACCREDITATION

The laboratory conducting the analysis of the bulk samples collected during this inspection, EMSL Analytical, Inc., has received accreditation from the National Institute of Standards and Technology (NIST), No. 102104-0, under the National Voluntary Laboratory Accreditation Program (NVLAP).

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 M) require 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 nonfriable ACM that has become friable.
- Category I nonfriable ACM that will be or has been subject to sanding, grinding, cutting, or abrading.
- Category II nonfriable 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 include:

Friable asbestos-containing material ACM is defined by the National Emissions Standard for Asbestos (Subpart M, 40 CFR Part 61) under NESHAP as “any material containing more than 1 percent asbestos as determined using the method specified in Appendix E, Subpart E, 40 CFR Part 763, Section 1, Polarizing Light Microscopy, that, when dry, can be crumbled, pulverized, or reduced to powder by hand pressure” (40 CFR §61.141).

Nonfriable ACM is defined as “any materials containing more than 1 percent asbestos as determined using the method specified in Appendix E, Subpart E, 40 CFR Part 763, Section 1, Polarizing Light Microscopy, that, when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure” (40 CFR §61.141). The National Emission Standard for Asbestos (Subpart M, 40 CFR Part 61) also defines two categories of nonfriable ACM, Category I and Category II nonfriable ACM, which are described as follows:

Category I nonfriable ACM is defined as any “asbestos-containing packings, gaskets, resilient floor covering, and asphalt roofing products containing more than 1 percent asbestos as determined using the method specified in Appendix E, Subpart E, 40 CFR Part 763, Section 1, Polarizing Light Microscopy” (40 CFR §61.141).

Category II nonfriable ACM is defined as “any material, excluding Category I nonfriable ACM, containing more than 1 percent asbestos as determined using the methods specified in Appendix E, Subpart E, 40 CFR Part 763, Section 1, Polarizing Light Microscopy, that, when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure” (40 CFR §61.141).

Regulated Asbestos-Containing Material (RACM) is defined as any “(a) Friable asbestos material, (b) Category I nonfriable ACM that has become friable, (c) Category I nonfriable ACM that will be or has been subjected to sanding, grinding, cutting, or abrading, or (d) Category II nonfriable 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” (40 CFR §61.141).

Friable materials are defined as those that 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 KSWA field crew collected thirty-nine (39) samples from the I-24 bridge over North 1st Street. The field crew collected multiple samples of each homogeneous area in accordance with State of Tennessee, Department of Transportation Environmental Division, Hazardous Materials Section requirements and delivered these samples to the laboratory for visual observation and microscopic analysis. The samples were selected based on the identified homogeneous areas of suspect materials, as described in Section 2.2. Building material homogeneous areas sampled included: concrete bents, abutment slopes, concrete wall, textured bent paint, concrete decking, abutment slope patching, addition concrete bents, concrete guardrails, concrete abutment, joint south, joint middle, joint north, and deck patching.

KSWA requested the lab to identify and separate coatings on select samples to represent coatings applied to components. KSWA did not request that the lab separate layers for samples of materials without coatings or those with coatings represented by other samples. Samples with multiple layers were analyzed separately from their respective homogeneous area resulting in a total of fifty-six (56) analyzed samples. The samples analyzed for separate layers included: concrete bents, concrete wall, concrete decking, addition concrete bents, concrete guardrails, and concrete abutment.

Asbestos was not detected in the materials sampled from the I-24 bridge over North 1st Street.

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.

TABLE

Table – 1: Bridge Component Descriptions

Homogeneous Area	Description	Sample Numbers
A	Concrete Bents	241-01A, 241-02A, 241-03A
B	Abutment Slopes	241-04B, 241-05B, 241-06B
C	Concrete Wall	241-07C, 241-08C, 241-09C
D	Textured Bent Paint	241-10D, 241-11D, 241-12D
E	Concrete Decking	241-13E, 241-14E, 241-15E
F	Abutment Slope Patching	241-16F, 241-17F, 241-18F
G	Addition Concrete Bents	241-19G, 241-20G, 241-21G
H	Concrete Guardrails	241-22H, 241-23H, 241-24H
I	Concrete Abutment	241-25I, 241-26I, 241-27I
J	Joint South	241-28J, 241-29J, 241-30J
K	Joint Middle	241-31K, 241-32K, 241-33K
L	Joint North	241-34L, 241-35L, 241-36L
M	Deck Patching	241-37M, 241-38M, 241-39M

FIGURES



Homogeneous Areas:

- A - Concrete Bents
- B - Abutment Slopes
- C - Concrete Wall
- D - Textured Bent Paint
- E - Concrete Decking
- F - Abutment Slope Patching
- G - Addition Concrete Bents
- I - Concrete Abutment



*Homogeneous area locations are generalized and do not represent actual sample locations.

FIG. NO. 2

19I00240107 BRIDGE PROFILE HOMOGENEOUS AREAS (BOTTOM)



TERMINI:

I-24 From I-65 to I-40

COUNTY: Davidson	INSPECTOR: William Vanderslice	ANALYTICAL LABORATORY: EMSL Kernersville, NC	DATES SAMPLED: 08/09/2022
SCALE: NTS	TDOT Const: 19I024-M3-010	FIN: 131713.00	Source: FIELD PHOTOGRAPHS
			KSWA PROJ. NO. 100-22-0052





Homogeneous Areas:

- H - Concrete Guardrails
- J - Joint South
- K - Joint Middle
- L - Joint North
- M - Deck Patching



*Homogeneous area locations are generalized and do not represent actual sample locations.

FIG. NO. 3

19I00240107 BRIDGE PROFILE HOMOGENEOUS AREAS (TOP)



TERMINI:

I-24 From I-65 to I-40



COUNTY: Davidson	INSPECTOR: William Vanderslice	ANALYTICAL LABORATORY: EMSL Kernersville, NC	DATES SAMPLED: 08/09/2022 & 9/13/2022
SCALE: NTS	TDOT Const: 19I024-M3-010	PIN: 131713.00	Source: FIELD PHOTOGRAPHS
			KSWA PROJ.NO. 100-22-0052

APPENDIX A: PHOTOGRAPHS

Homogeneous areas that tested positive for asbestos are captioned in red.

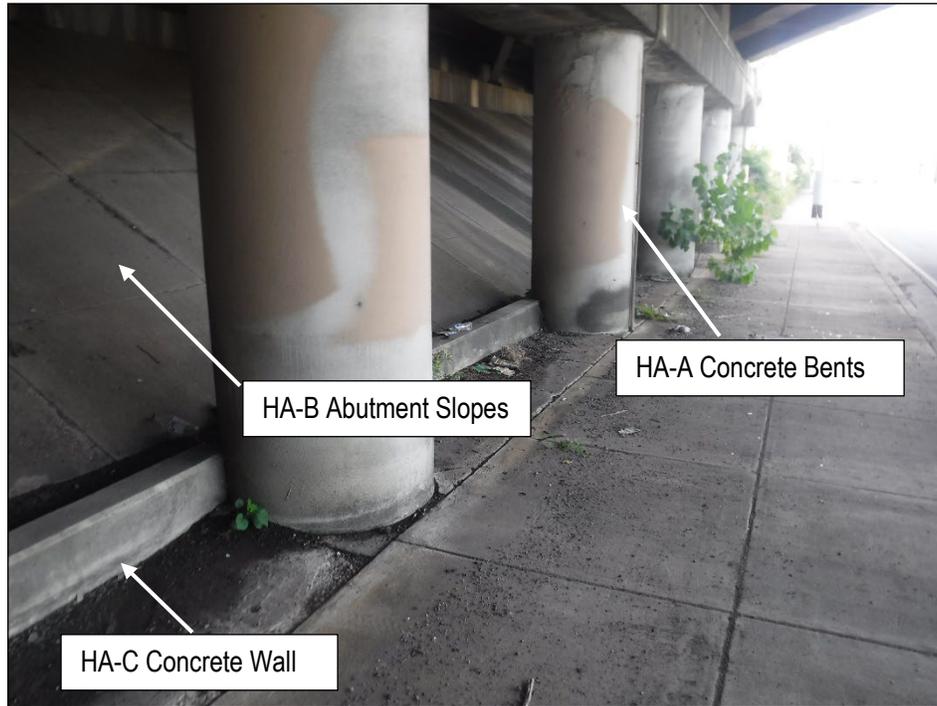


Photo 1: View of HA-A, HA-B, and HA-C on the I-24 bridge over North 1st Street.



Photo 2: View of HA-D on the I-24 bridge over North 1st Street.

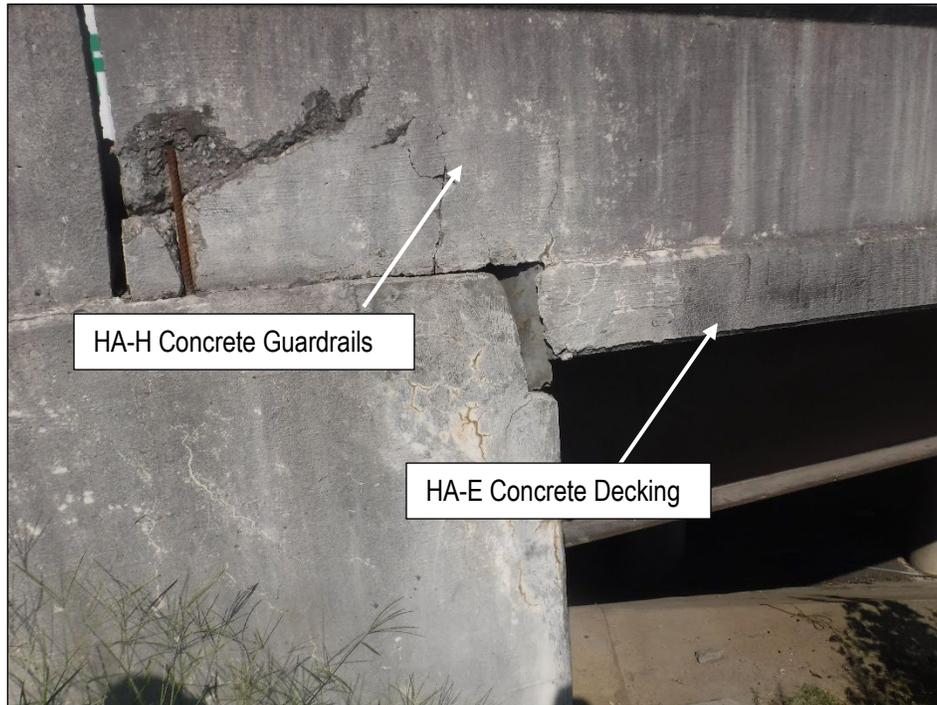


Photo 3: View of HA-E and HA-H on the I-24 bridge over North 1st Street.



Photo 4: View of HA-F on the I-24 bridge over North 1st Street.



Photo 5: View of HA-G on the I-24 bridge over North 1st Street.

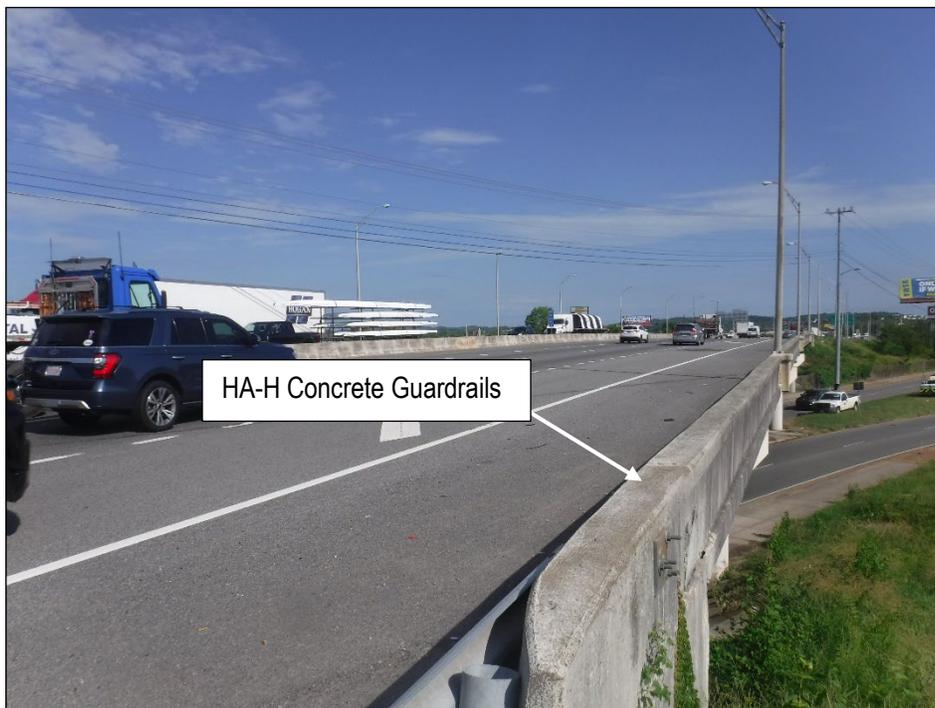


Photo 6: View of HA-H on the I-24 bridge over North 1st Street.



Photo 7: View of HA-I on the I-24 bridge over North 1st Street.



Photo 8: View of HA-J on the I-24 bridge over North 1st Street.



Photo 7: View of HA-K on the I-24 bridge over North 1st Street.



Photo 8: View of HA-L on the I-24 bridge over North 1st Street.

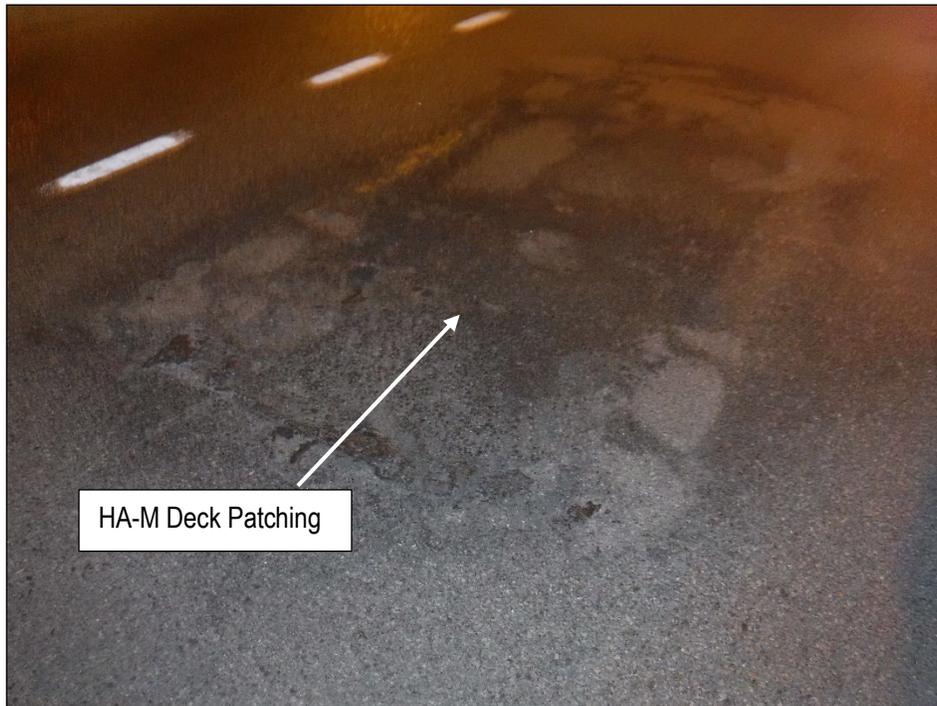


Photo 7: View of HA-M on the I-24 bridge over North 1st Street.



Photo 8: View of one of the lights and utility conduit on the I-24 bridge over North 1st Street.



Photo 7: View of the utility box on the I-24 bridge over North 1st Street.



Photo 8: View of the bridge number on the I-24 bridge over North 1st Street.

**APPENDIX B:
ASBESTOS SAMPLE LABORATORY ANALYSIS DATA AND
CHAIN OF CUSTODY**



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EMSL Order: 022206015

Customer ID: KSWA77

Customer PO:

Project ID:

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Received Date: 08/15/2022 9:00 AM

Analysis Date: 08/16/2022 - 08/17/2022

Collected Date: 08/09/2022

Project: 100-22-0052

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
241-01-Coating <small>022206015-0001</small>	Concrete Bents	Tan/Beige Non-Fibrous Heterogeneous	<1% Cellulose	10% Ca Carbonate 90% Non-fibrous (Other)	None Detected
241-01-Concrete <small>022206015-0001A</small>	Concrete Bents	Brown/Gray/Tan Non-Fibrous Heterogeneous		45% Quartz 10% Ca Carbonate 45% Non-fibrous (Other)	None Detected
241-02-Coating <small>022206015-0002</small>	Concrete Bents	Tan/Beige Non-Fibrous Heterogeneous	<1% Cellulose	10% Ca Carbonate 90% Non-fibrous (Other)	None Detected
241-02-Concrete <small>022206015-0002A</small>	Concrete Bents	Brown/Gray/Tan Non-Fibrous Heterogeneous		45% Quartz 10% Ca Carbonate 45% Non-fibrous (Other)	None Detected
241-03-Coating <small>022206015-0003</small>	Concrete Bents	Brown/White Non-Fibrous Homogeneous		10% Ca Carbonate 90% Non-fibrous (Other)	None Detected
241-03-Concrete <small>022206015-0003A</small>	Concrete Bents	Gray Non-Fibrous Heterogeneous		40% Quartz 5% Ca Carbonate 55% Non-fibrous (Other)	None Detected
241-04 <small>022206015-0004</small>	Abutment Slopes	Brown/Gray/Tan Non-Fibrous Heterogeneous	<1% Cellulose	45% Quartz 10% Ca Carbonate 45% Non-fibrous (Other)	None Detected
241-05 <small>022206015-0005</small>	Abutment Slopes	Brown/Gray/Tan Non-Fibrous Heterogeneous	<1% Cellulose	45% Quartz 10% Ca Carbonate 45% Non-fibrous (Other)	None Detected
241-06 <small>022206015-0006</small>	Abutment Slopes	Gray Non-Fibrous Heterogeneous		35% Quartz 5% Ca Carbonate 60% Non-fibrous (Other)	None Detected
241-07-Coating <small>022206015-0007</small>	Concrete Wall	Gray/White Non-Fibrous Homogeneous	<1% Cellulose	5% Ca Carbonate 20% Perlite 75% Non-fibrous (Other)	None Detected
241-07-Concrete <small>022206015-0007A</small>	Concrete Wall	Brown/Gray/Tan Non-Fibrous Heterogeneous		45% Quartz 10% Ca Carbonate 45% Non-fibrous (Other)	None Detected
241-08-Coating <small>022206015-0008</small>	Concrete Wall	Gray/White/Beige Non-Fibrous Homogeneous	<1% Cellulose	5% Ca Carbonate 20% Perlite 75% Non-fibrous (Other)	None Detected
241-08-Concrete <small>022206015-0008A</small>	Concrete Wall	Brown/Gray/Tan Non-Fibrous Heterogeneous		45% Quartz 10% Ca Carbonate 45% Non-fibrous (Other)	None Detected
241-09-Coating <small>022206015-0009</small>	Concrete Wall	White Non-Fibrous Homogeneous	<1% Cellulose	10% Ca Carbonate 90% Non-fibrous (Other)	None Detected
241-09-Concrete <small>022206015-0009A</small>	Concrete Wall	Gray Non-Fibrous Heterogeneous		35% Quartz 5% Ca Carbonate 60% Non-fibrous (Other)	None Detected
241-10 <small>022206015-0010</small>	Textured Bent Paint	Tan/Beige Non-Fibrous Homogeneous	<1% Cellulose	3% Quartz 10% Ca Carbonate 10% Perlite 77% Non-fibrous (Other)	None Detected

Initial report from: 08/18/2022 08:38:38



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EMSL Order: 022206015
Customer ID: KSWA77
Customer PO:
Project ID:

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
241-11 <small>022206015-0011</small>	Textured Bent Paint	Tan/Beige Non-Fibrous Heterogeneous	<1% Cellulose	3% Quartz 10% Ca Carbonate 10% Perlite 77% Non-fibrous (Other)	None Detected
241-12 <small>022206015-0012</small>	Textured Bent Paint	Gray/Tan Non-Fibrous Homogeneous		10% Ca Carbonate 90% Non-fibrous (Other)	None Detected
241-13-Coating <small>022206015-0013</small>	Concrete Decking	White/Beige Non-Fibrous Homogeneous	<1% Cellulose	20% Ca Carbonate 80% Non-fibrous (Other)	None Detected
241-13-Concrete <small>022206015-0013A</small>	Concrete Decking	Gray/Tan/Black Non-Fibrous Heterogeneous	<1% Cellulose	45% Quartz 10% Ca Carbonate 45% Non-fibrous (Other)	None Detected
241-14-Coating <small>022206015-0014</small>	Concrete Decking	White/Beige Non-Fibrous Homogeneous	<1% Cellulose	20% Ca Carbonate 80% Non-fibrous (Other)	None Detected
241-14-Concrete <small>022206015-0014A</small>	Concrete Decking	Gray/Tan/Black Non-Fibrous Heterogeneous	<1% Cellulose	45% Quartz 10% Ca Carbonate 45% Non-fibrous (Other)	None Detected
241-15-Coating <small>022206015-0015</small>	Concrete Decking	White Non-Fibrous Homogeneous		10% Ca Carbonate 90% Non-fibrous (Other)	None Detected
241-15-Concrete <small>022206015-0015A</small>	Concrete Decking	Gray Non-Fibrous Heterogeneous		30% Quartz 5% Ca Carbonate 65% Non-fibrous (Other)	None Detected
241-16 <small>022206015-0016</small>	Abutment Slope Patching	Brown/Gray/Tan Non-Fibrous Heterogeneous	<1% Cellulose	45% Quartz 10% Ca Carbonate 45% Non-fibrous (Other)	None Detected
241-17 <small>022206015-0017</small>	Abutment Slope Patching	Brown/Gray/Tan Non-Fibrous Heterogeneous	<1% Cellulose	45% Quartz 10% Ca Carbonate 45% Non-fibrous (Other)	None Detected
241-18 <small>022206015-0018</small>	Abutment Slope Patching	Gray Non-Fibrous Heterogeneous		30% Quartz 10% Ca Carbonate 60% Non-fibrous (Other)	None Detected
241-19-Coating <small>022206015-0019</small>	Addition Concrete Bents	White/Beige Non-Fibrous Homogeneous	<1% Cellulose	20% Ca Carbonate 10% Perlite 70% Non-fibrous (Other)	None Detected
241-19-Concrete <small>022206015-0019A</small>	Addition Concrete Bents	Brown/Gray/Tan Non-Fibrous Heterogeneous		45% Quartz 10% Ca Carbonate 45% Non-fibrous (Other)	None Detected
241-20-Coating <small>022206015-0020</small>	Addition Concrete Bents	White/Beige Non-Fibrous Homogeneous	<1% Cellulose	20% Ca Carbonate 10% Perlite 70% Non-fibrous (Other)	None Detected
241-20-Concrete <small>022206015-0020A</small>	Addition Concrete Bents	Brown/Gray/Tan Non-Fibrous Heterogeneous		45% Quartz 10% Ca Carbonate 45% Non-fibrous (Other)	None Detected
241-21-Coating <small>022206015-0021</small>	Addition Concrete Bents	Tan/White Non-Fibrous Homogeneous		10% Ca Carbonate 90% Non-fibrous (Other)	None Detected
241-21-Concrete <small>022206015-0021A</small>	Addition Concrete Bents	Gray Non-Fibrous Heterogeneous		30% Quartz 5% Ca Carbonate 65% Non-fibrous (Other)	None Detected
241-22-Coating <small>022206015-0022</small>	Concrte Guardrails	White/Beige Non-Fibrous Homogeneous	<1% Cellulose	20% Ca Carbonate 10% Perlite 70% Non-fibrous (Other)	None Detected

Initial report from: 08/18/2022 08:38:38



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EMSL Order: 022206015
Customer ID: KSWA77
Customer PO:
Project ID:

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
241-22-Concrete <i>022206015-0022A</i>	Concrete Guardrails	Brown/Gray/Tan Non-Fibrous Heterogeneous		45% Quartz 10% Ca Carbonate 45% Non-fibrous (Other)	None Detected
241-23-Coating <i>022206015-0023</i>	Concrete Guardrails	White/Beige Non-Fibrous Homogeneous	<1% Cellulose	20% Ca Carbonate 10% Perlite 70% Non-fibrous (Other)	None Detected
241-23-Concrete <i>022206015-0023A</i>	Concrete Guardrails	Brown/Gray/Tan Non-Fibrous Heterogeneous		45% Quartz 10% Ca Carbonate 45% Non-fibrous (Other)	None Detected
241-24-Coating <i>022206015-0024</i>	Concrete Guardrails	Tan/White Non-Fibrous Homogeneous		10% Ca Carbonate 90% Non-fibrous (Other)	None Detected
241-24-Concrete <i>022206015-0024A</i>	Concrete Guardrails	Gray Non-Fibrous Heterogeneous		35% Quartz 5% Ca Carbonate 60% Non-fibrous (Other)	None Detected
241-25-Coating <i>022206015-0025</i>	Concrete Abutment	White/Beige Non-Fibrous Heterogeneous	<1% Cellulose	20% Ca Carbonate 10% Perlite 70% Non-fibrous (Other)	None Detected
241-25-Concrete <i>022206015-0025A</i>	Concrete Abutment	Brown/Gray/Tan Non-Fibrous Heterogeneous		45% Quartz 10% Ca Carbonate 45% Non-fibrous (Other)	None Detected
241-26 <i>022206015-0026</i> <i>No Coating Present.</i>	Concrete Abutment	Brown/Gray/Tan Non-Fibrous Homogeneous	<1% Cellulose	45% Quartz 10% Ca Carbonate 45% Non-fibrous (Other)	None Detected
241-27-Coating <i>022206015-0027</i>	Concrete Abutment	Gray Non-Fibrous Heterogeneous		10% Ca Carbonate 90% Non-fibrous (Other)	None Detected
241-27-Concrete <i>022206015-0027A</i>	Concrete Abutment	Gray Non-Fibrous Heterogeneous		40% Quartz 5% Ca Carbonate 55% Non-fibrous (Other)	None Detected

Analyst(s) _____

Cameron Evans (15)

Scott Combs (29)

Stephen Bennett, Laboratory Manager
or Other Approved Signatory

EMSL maintains liability limited to cost of analysis. Interpretation and use of test results are the responsibility of the client. This report relates only to the samples reported above, 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. The report reflects the samples as received. Results are generated from the field sampling data (sampling volumes and areas, locations, etc.) provided by the client on the Chain of Custody. Samples are within quality control criteria and met method specifications unless otherwise noted. The above analyses were performed in general compliance with Appendix E to Subpart E of 40 CFR (previously EPA 600/M4-82-020 "Interim Method") but augmented with procedures outlined in the 1993 ("final") version of the method. 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. Unless requested by the client, building materials manufactured with multiple layers (i.e. linoleum, wallboard, etc.) are reported as a single sample. Estimation of uncertainty is available on request.

Samples analyzed by EMSL Analytical, Inc. Kernersville, NC NVLAP Lab Code 102104-0, Virginia 3333-000228, West Virginia LT000321

Initial report from: 08/18/2022 08:38:38



EMSL ANALYTICAL, INC.
LABORATORY PRODUCTS TRAINING

Asbestos Bulk Building Materials - Chain of Custody

EMSL Analytical, Inc.
706 Gralin Street

EMSL Order Number / Lab Use Only

62015

Kernersville, NC 27284
PHONE (336) 992-1025
EMAIL greensborolab@emsl.com

Customer Information	Customer ID:	Billing ID:
	Company Name: K.S. Ware LLC	Company Name: K.S. Ware LLC
	Contact Name: Will Vanderslice	Billing Contact: Will Vanderslice
	Street Address: 52 Lindsley Avenue, Suite 101	Street Address: 52 Lindsley Avenue, Suite 101
	City, State, Zip: Nashville TN 37214 Country: US	City, State, Zip: Nashville TN Country: US
	Phone: 615-742-7476	Phone: 615-742-7476
Email(s) for Report: wvanderslice@kswarellc.com	Email(s) for Invoice:	

Project Information

Project Name/No: 100-22-0052 Purchase Order:

EMSL LIMS Project ID: (if applicable, EMSL will provide) US State where samples collected: TN State of Connecticut (CT) must select project location:
 Commercial (Taxable) Residential (Non-Taxable)

Sampled By Name: William Vanderslice Sampled By Signature: *[Signature]* Date Sampled: 8/9/22 No. of Samples in Shipment: 27

Turn-Around-Time (TAT)

3 Hour 6 Hour 24 Hour 32 Hour 48 Hour 72 Hour 96 Hour 1 Week 2 Week

Please call ahead for large projects and/or turnaround times 6 Hours or Less. *32 Hour TAT available for select tests only; samples must be submitted by 11:30am.

Test Selection

PLM - Bulk (reporting limit)

PLM EPA 600/R-93/116 (<1%)
 PLM EPA NOB (<1%)
 POINT COUNT
 400 (<0.25%) 1,000 (<0.1%)
 POINT COUNT w/ GRAVIMETRIC
 400 (<0.25%) 1,000 (<0.1%)
 NIOSH 9002 (<1%)
 NYS 198.1 (Friable - NY)
 NYS 198.6 NOB (Non-Friable - NY)
 NYS 198.8 (Vermiculite SM-V)

TEM - Bulk

TEM EPA NOB
 NYS NOB 198.4 (Non-Friable - NY)
 TEM EPA 600/R-93/116 w Milling Prep (0.1%)

Other Tests (please specify)

Positive Stop - Clearly Identified Homogeneous Areas (HA)

Sample Number	HA Number	Sample Location	Material Description
241-01	A	SW	Concrete Bents
241-02	A	SW	Concrete Bents
241-03	A	NW	Concrete Bents
241-04	B	SW	Abutment Slopes
241-05	B	SW	Abutment Slopes
241-06	B	NW	Abutment Slopes
241-07	C	SW	Concrete Wall
241-08	C	SW	Concrete Wall
241-09	C	NW	Concrete Wall
241-10	D	SW	Textured Bent Paint

Special Instructions and/or Regulatory Requirements (Sample Specifications, Processing Methods, Limits of Detection, etc.)

Method of Shipment: *EMSL for 7904 55715045* Sample Condition Upon Receipt:

Relinquished by: *[Signature]* Date/Time: 8/12/22 0100 Received by: *NS* Date/Time: 8/15/22 9:00

Relinquished by: Date/Time: Received by: Date/Time:

Controlled Document - Asbestos Bulk R7 9/14/2021 AGREE TO ELECTRONIC SIGNATURE (By checking, I consent to signing this Chain of Custody document by electronic signature)

EMSL Analytical, Inc.'s Laboratory Terms and Conditions are incorporated into this Chain of Custody by reference in their entirety. Submission of samples to EMSL Analytical, Inc. constitutes acceptance and acknowledgment of all terms and conditions by Customer.



EMSL Analytical, Inc.

706 Gralin Street Kernersville, NC 27284

Tel/Fax: (336) 992-1025 / (336) 992-4175

<http://www.EMSL.com> / greensborolab@emsl.com

EMSL Order: 022206832

Customer ID: KSWA77

Customer PO:

Project ID:

Attention: Will Vanderslice
K.S. Ware LLC
52 Lindsley Avenue, Suite 101
Nashville, TN 37210

Phone: (615) 742-7476

Fax: (615) 256-5873

Received Date: 09/15/2022 9:30 AM

Analysis Date: 09/15/2022

Collected Date:

Project: 100-22-0052

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
241-28 <small>022206832-0001</small>	Joint South	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
241-29 <small>022206832-0002</small>	Joint South	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
241-30 <small>022206832-0003</small>	Joint South	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
241-31 <small>022206832-0004</small>	Joint Middle	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
241-32 <small>022206832-0005</small>	Joint Middle	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
241-33 <small>022206832-0006</small>	Joint Middle	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
241-34 <small>022206832-0007</small>	Joint North	Gray/Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
241-35 <small>022206832-0008</small>	Joint North	Gray/Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
241-36 <small>022206832-0009</small>	Joint North	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
241-37 <small>022206832-0010</small>	Deck Patching	Gray/Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
241-38 <small>022206832-0011</small>	Deck Patching	Gray/Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
241-39 <small>022206832-0012</small>	Deck Patching	Gray/Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected

Initial report from: 09/16/2022 08:18:00



EMSL Analytical, Inc.

706 Gralin Street Kernersville, NC 27284

Tel/Fax: (336) 992-1025 / (336) 992-4175

<http://www.EMSL.com> / greensborolab@emsl.com

EMSL Order: 022206832

Customer ID: KSWA77

Customer PO:

Project ID:

Analyst(s)

Jurnee West (8)

Philip Szabo (4)

Stephen Bennett, Laboratory Manager
or Other Approved Signatory

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Samples analyzed by EMSL Analytical, Inc. Kernersville, NC NVLAP Lab Code 102104-0, Virginia 3333-000228, West Virginia LT000321

Initial report from: 09/16/2022 08:18:00



EMSL ANALYTICAL, INC.
LABORATORY PRODUCTS TRAINING

Asbestos Bulk Building Materials - Chain of Custody

EMSL Order Number / Lab Use Only

022206832

EMSL Analytical, Inc
706 Gralin Street

Kernersville, NC 27284

PHONE: (336) 992-1025

EMAIL: greensborolab@emsl.com

Customer Information Customer ID: Company Name: K S. Ware LLC Contact Name: Will Vanderslice Street Address: 52 Lindsley Avenue, Suite 101 City, State, Zip: Nashville TN 37219 Country: US Phone: 615-742-7476 Email(s) for Report: wvanderslice@kswarellc.com	Billing Information Billing ID: Company Name: K S. Ware LLC Billing Contact: Will Vanderslice Street Address: 52 Lindsley Avenue, Suite 101 City, State, Zip: Nashville TN Country: US Phone: 615-742-7476 Email(s) for Invoice:
--	--

Project Information	
Project Name/No: 100-22-0052	Purchase Order:
EMSL LIMS Project ID: (if applicable, EMSL will provide)	US State where samples collected: TN State of Connecticut (CT) must select project location: <input type="checkbox"/> Commercial (Taxable) <input type="checkbox"/> Residential (Non-Taxable)
Sampled By Name: Will Vanderslice	Sampled By Signature: <i>[Signature]</i> Date Sampled: 9-13-22 No. of Samples in Shipment: 12

Turn-Around-Time (TAT)

3 Hour
 6 Hour
 24 Hour
 32 Hour
 48 Hour
 72 Hour
 96 Hour
 1 Week
 2 Week

Please call ahead for large projects and/or turnaround times 6 Hours or Less. *32 Hour TAT available for select tests only; samples must be submitted by 11:30am.

Test Selection

<p>PLM - Bulk (reporting limit)</p> <input checked="" type="checkbox"/> PLM EPA 600/R-93/116 (<1%) <input type="checkbox"/> PLM EPA NOB (<1%) <input type="checkbox"/> POINT COUNT <input type="checkbox"/> 400 (<0.25%) <input type="checkbox"/> 1,000 (<0.1%) <input type="checkbox"/> POINT COUNT w/ GRAVIMETRIC <input type="checkbox"/> 400 (<0.25%) <input type="checkbox"/> 1,000 (<0.1%) <input type="checkbox"/> NIOSH 9002 (<1%) <input type="checkbox"/> NYS 198 1 (Frable - NY) <input type="checkbox"/> NYS 198.6 NOB (Non-Frable - NY) <input type="checkbox"/> NYS 198 8 (Vermiculite SM-V)	<p>TEM - Bulk</p> <input type="checkbox"/> TEM EPA NOB <input type="checkbox"/> NYS NOB 198.4 (Non-Frable - NY) <input type="checkbox"/> TEM EPA 600/R-93/116 w Milling Prep (0.1%) <p style="text-align: center;">Other Tests (please specify)</p> <input type="checkbox"/> Positive Stop - Clearly Identified Homogeneous Areas (HA)
--	---

Sample Number	HA Number	Sample Location	Material Description
241-28	J	SE	Joint South
241-29	J	SE	Joint South
241-30	J	SE	Joint South
241-31	K	E	Joint Middle
241-32	K	E	Joint Middle
241-33	K	E	Joint Middle
241-34	L	NE	Joint North
241-35	L	NE	Joint North
241-36	L	NE	Joint North
241-37	M	SE	Deck Patching

Special Instructions and/or Regulatory Requirements (Sample Specifications, Processing Methods, Limits of Detection, etc.)

Separate out coatings

Method of Shipment:		Sample Condition Upon Receipt:	
Relinquished by: <i>[Signature]</i>	Date/Time: 9/14/22 0915	Received by: <i>[Signature]</i>	Date/Time: 9/14/22 0920
Relinquished by:	Date/Time:	Received by:	Date/Time:

Controlled Document - Asbestos Bulk R7 9/14/2021

AGREE TO ELECTRONIC SIGNATURE (By checking, I consent to signing this Chain of Custody document by electronic signature)

EMSL Analytical, Inc.'s Laboratory Terms and Conditions are incorporated into this Chain of Custody by reference in their entirety. Submission of samples to EMSL Analytical, Inc. constitutes acceptance and acknowledgment of all terms and conditions by Customer.

APPENDIX C: ASBESTOS 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:

K. S. Ware and Associates, LLC

54 Lindsley Avenue Nashville TN, 37210

**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-620-116276	November 01, 2021	November 30, 2022

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

This **15th** Day of **November 2021**

Division of Solid Waste Management
Toxic Substance Program

THE STATE OF TENNESSEE

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



Date Issued: 12/16/2021

Initial



William D Vanderslice

DOB: 27-Oct-1992 Sex: M HGT: 6'4" WGT: 280

Discipline: Inspector Accreditation: 44-19983-122080 Expiration: None-20-2027

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.

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
Toxic Substances Program
William R. Snodgrass Tennessee Tower
312 Rosa L. Parks Avenue, 14th Floor
Nashville TN 37243

CN-1334

(Rev 6/13)

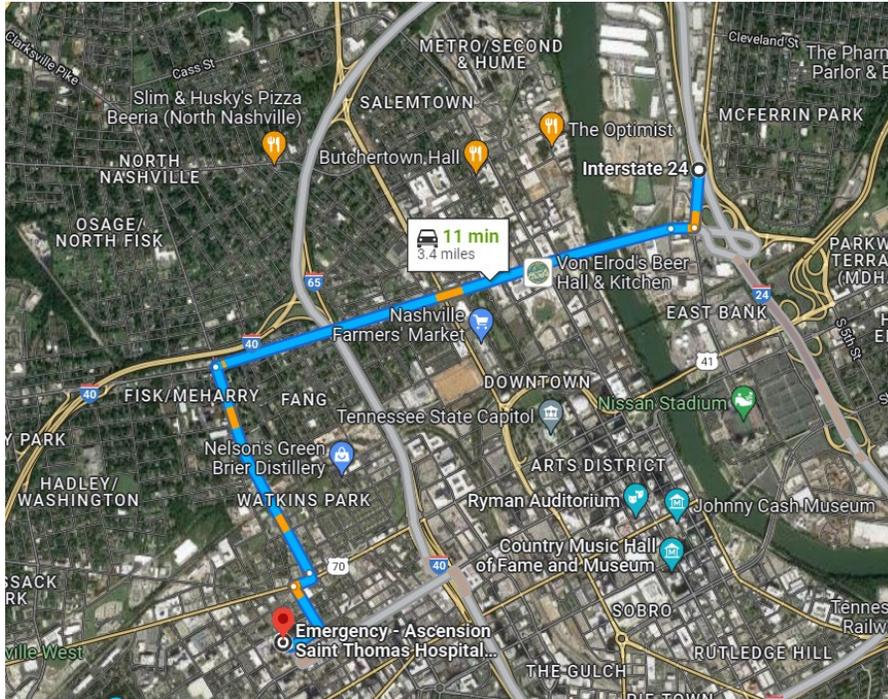
RDA-3020

APPENDIX D: HEALTH AND SAFETY PLAN

**HEALTH AND SAFETY PLAN FOR
ASBESTOS CONTAINING MATERIALS SURVEY SERVICES
I-24 OVER NORTH 1ST STREET LM 13.79 (19-I0024-13.79),
DAVIDSON COUNTY, TENNESSEE**

K. S. WARE AND ASSOCIATES, L.L.C.

52 Lindsley Ave.
Suite 101
Nashville, Tennessee 37210



**Ascension Saint
Thomas Hospital
Midtown - ER**

2000 Church St.
Nashville, TN 37203
615-284-5555

Directions to Hospital

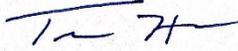
- Head South on N 1st St 0.2mi
- Turn right onto Spring Street 466ft
- Continue onto Jefferson St 1.8 mi
- Turn left onto Dr DB Todd Jr
Blvd 0.8mi
- Turn right onto Charlotte Ave 0.1mi
- Turn left onto 19 Ave N 0.2mi
- Turn right onto State St 0.1mi
- Continue Straight 59ft
- Destination is on the right

Project Number: 100-22-0052
Name: I-24 Over North 1st Street 13.70 (19-I0024-13.79)
Location: Davidson Co, Tennessee
Client: Tennessee Department of Transportation
Client Contact : Kyle Kirschenmann
Phone No.: (615) 598-1522

KSWA Personnel Contact Information:

<u>Title</u>	<u>Name</u>	<u>Work</u>	<u>Mobile</u>
Field Safety Coordinator	Will Vanderslice	(615) 255-9702	(615) 339-3296
Project Manager	Tanner G. Hess	(615) 255-9702	(224) 500-5430
Health and Safety QA	Kelley Spence	(615) 255-9702	(616) 780-2508

Review and Approval:

Field Safety Coordinator		8/5/2022
	Will Vanderslice	Date
Project Manager		8/5/2022
	Tanner G. Hess	Date
Health and Safety QA		8/5/2022
	Kelley A. Spence	Date

Responsibilities for Field Safety Coordinator:

- Primary on-site contact for KSWA's health and safety procedures during field activities.
- Has the authority to stop KSWA operations if conditions are judged to be hazardous to on-site personnel or the public.
- Perform discretionary audits to determine compliance of Health and Safety Plan requirements.
- Responsible for providing access to the health and safety for all on-site employees.
- Responsible for instructing on-site personnel on the location of emergency communication equipment (i.e. phones and radios as necessary).
- Has no responsibility for health and safety procedures of any contractor, subcontractor, client personnel or others on the site.

Date of Plan Preparation

August 5, 2022

Dates of Planned Field Activities

August 2022

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1.0 PURPOSE

The purpose of this health and safety plan (HASP) is to provide standards for worker safety and protection during field activities conducted on a frequent or routine basis. The plan outlines standards and mandatory procedures relative to physical and chemical hazards encountered at sites, communication, training, worker health monitoring, decontamination procedures and levels of personal protection. Any questions concerning this information should be directed to the K.S. Ware and Associates, L.L.C. (KSWA) Project Manager identified at the beginning of this Health and Safety Plan, at 615-255-9702.

2.0 APPLICABILITY

This plan is applicable to all KSWA personnel working at the above referenced site, where mandatory worker health and safety training is required by State or Federal agencies. It is intended for use at the above referenced site where information regarding potential site hazards is available in the form of background research, personal communication with past or present property owners or workers, previous sampling results, etc.

A site specific hazard evaluation is included in Section 4. Available information should be provided to site workers as outlined in Section 5.

Sampling of items that may contain asbestos containing material (ACM) and other routine field activities are activities for which this plan is applicable. Activities involving contact with unknown substances and activities on sites where little background information is available will require more extensive and specific HASP development.

This plan does not cover procedures for entry into confined spaces. Project-specific attachments should be prepared and appended to this Health and Safety Plan if those activities are planned. Work of this nature shall be performed in accordance with 29 CFR 1926.250 subpart P "Excavation, Trenching and Shoring", 29 CFR 1910.146 "Permit Required Confined Space Entry" and the KSWA "Employee Confined Space Entry Program".

3.0 SITE DESCRIPTION AND HISTORY

The project consists of performing an asbestos bridge survey on a bridge located at I-24 over North 1st Street LM 13.79 (19-I0024-13.79). Bridge No. 19I00240107 I-24 over North 1st Street LM 13.79 (19-I0024-13.79), is a seven-lane, 379-foot, four-span bridge constructed of steel I-beams with a concrete deck and asphalt wearing surface. The bridge was constructed in 1961 and was widened and rehabilitated in 1986. This repair project is targeting the approach joints and deck repairs. Topside samples are needed and coordination with Region 3 for traffic control is required.

3.1 INSPECTION EQUIPMENT

KSWA will be on site to perform an asbestos containing materials (ACM) survey on Bridge No. 19I00240107 I-24 over North 1st Street. Equipment to be used during these surveys will include asbestos sample collection equipment and a 10-foot extension ladder.

3.2 WORK PRECAUTIONS

- No eating, drinking, using tobacco products, chewing gum, or putting hands in mouth while on the site.
- Wear the TDOT required roadway safety gear (hard hat, Class II reflective vest, boots) at all times while on the project site.
- Wear appropriate safety harness when working from elevated equipment.
- Wear gloves at applicable times while at the work site.
- Wear protective eyewear at applicable times while at the work site.
- Wash all exposed skin areas with soap and water before departing from the site.
- Remove and change any non-impervious clothing that becomes contaminated during site activities.
- Do not go anywhere on the site other than where directed by the Field Safety Coordinator.
- Use safe and legal procedures for sample storage and shipment.

3.3 DISPOSAL RESTRICTIONS

Treat disposable items as ordinary refuse except when gross contamination is expected. In the event that refuse including disposable personnel protective equipment is suspected of being contaminated, the refuse will be collected and stored on site for future disposal.

4.0 HAZARD EVALUATION

4.1 PHYSICAL HAZARDS

4.1.1 Operational Hazards

Prior to commencement of field activities, the Field Safety Coordinator will conduct a site reconnaissance to identify any visible or operational hazards.

Additionally, because there is a possibility that asbestos may be present at the site, the appropriate Personal Protective Equipment (PPE) will be worn at all times that work is being performed.

4.1.2 Fall Hazards

Field activities can have the potential for fall hazards. Be aware of any uneven terrain, clear paths of debris and materials that may be a hazard. When on a ladder, always maintain a 3-point contact on the ladder. While in lifts or reach-all trucks, wear appropriate fall restraint systems.

4.1.3 Heat Stress

Field activities in hot climates create a potential for heat stress. The warning symptoms of heat stress include fatigue; loss of strength; reduced accuracy, comprehension and retention; and reduced alertness and mental capacity. To prevent heat stress, personnel shall drink adequate amounts of water and/or electrolyte replacement fluids, and maintain scheduled work/rest periods.

4.1.4 Tools and Equipment

Tools and equipment used by KSWA shall be inspected and maintained to be safe and adequate for their designated use. Housekeeping of the site shall be maintained as to prevent tripping hazards.

4.1.5 Traffic Hazard

Field activities will encounter traffic on this project. Be aware of surroundings and watch for traffic. Traffic control will be utilized for field activities on and near the decks of the bridges.

4.1.6 Noise Hazard

Operation of equipment may present a noise hazard to workers. KSWA personnel will be provided with hearing protection to be utilized when noise levels are excessive.

4.1.7 Asbestos Containing Material

Collecting samples from bridge components may release asbestos fibers into the air. KSWA personnel will wear a respirator while sampling, and all sampling equipment will be properly decontaminated between sample collection and after field activities. KSWA personnel will limit exposure by adhering to this health and safety plan.

4.2 CHEMICAL HAZARDS

Chemical hazards are not anticipated at this site.

4.3 BIOLOGICAL HAZARDS

4.3.1 Stinging Insects

The most common stinging insects are bees, wasps, and ants. Few species of ants have medically significant stings. While most bees possess a defensive sting, and will sting if grasped or crushed, only a few social species sting often enough, or

have sufficiently venomous stings to be of medical significance. These include the honeybees and the bumblebees. Most fatalities from bee and wasp stings occur in hypersensitive individuals; death is most often induced by a single sting, and occurs most often within 1 hour after the sting. The victim is typically over 40 years of age and stung on the head or neck. Most deaths are caused by respiratory dysfunction with the second most common cause being anaphylaxis; arteriosclerosis may be a compounding factor. If stung, seek medical attention immediately.

4.3.2 Ticks, Spiders, and Mosquitos

Transit through areas near water and/or overgrown with vegetation expose personnel to potential contact with ticks, spiders, and mosquitos. Ticks and mosquitos can transmit disease and bites from any insect can cause discomfort and potential allergic reactions, itching, and severe pain. Personnel should take precautions against contact with insects by using insect repellent sprays and wearing long pants and shirts with long sleeves. Immediately following field work, personnel should inspect their body and clothing for ticks.

4.3.3 Other Wildlife

Wildlife, such as raccoons, opossum, armadillo, coyote and wild dogs, black bears, cougars, wild boars, and snakes, can be found across Tennessee. Many of these animals will bite and/or scratch if they, or their young, are provoked or feel threatened. In addition to physical harm, some of these animals can be venomous or carry dangerous diseases like leprosy and rabies. Care should be taken to avoid contact with any wild animals observed during field work. If a sick or injured animal is present on site, the local animal control should be contacted to remove the animal safely.

5.0 COMMUNICATIONS AND TRAINING

Workers at State and Federally listed or recognized sites must be provided with adequate information and training to recognize and evaluate potential hazards. Training shall comply with applicable regulations including 29 CFR 1910.1200 "Hazard Communication Standard".

5.1 COMMUNICATION

The Field Safety Coordinator shall supply all on site personnel with readily available access to this Health and Safety Plan. This plan shall cover, at a minimum, the following topics:

- A. A brief description of the history of the location with regard to health and environmental hazards.
- B. A description of the activities to which the hazard evaluation summary is applicable.
- C. A description of any hazards which may be encountered, including:
 1. Physical Hazards - terrain, traffic, equipment, severe weather (heat stress and frostbite), electrical hazards, noise, water hazards.
 2. Biological Hazards - insects, plants, animals, pathogens, and infectious materials.
- D. A description of the levels of protection selected for the operation.
- E. Equipment decontamination procedure if different from those specified herein.
- F. Summary of emergency contacts for use in the event of fire, explosion, medical emergency or other emergency, including the project address and phone number to provide to emergency personnel. Use for all structure sites.

1. Emergency	911
2. Metropolitan Nashville Police Department	(615) 862-7600
3. Nashville Fire Department Station 3	(615) 862-5421
- G. A map showing the route to the nearest hospital.

Prior to any employee or subcontractor beginning work on the site, the Field Safety Coordinator shall brief all KSWA employees as well as subcontractors on the contents of this plan. Personnel will have the opportunity to review the plan, and ask questions about the planned work or hazards. Also, the Field Safety Coordinator will conduct site reconnaissance in order to familiarize all personnel with site conditions, boundaries, and physical hazards.

By KSWA voluntarily sharing this information with subcontractors and contractors, those firms are not relieved of the responsibility to provide their personnel with adequate and proper supervision, safety information, instruction, and equipment.

5.2 HEALTH AND SAFETY TRAINING

All personnel will be provided with approved health and safety training as outlined in 29 CFR 1910.120(e). Documentation for KSWA employees should also be maintained at a central location at the KSWA office.

5.3 RESPIRATOR USAGE TRAINING AND FIT TESTING

Prior to assignment to a site where respirator use may be required, employees will be provided with respirator training as outlined in 29 CFR 1910.134(e)(5). Respirator fit tests are to be conducted at 6 to 10 month intervals, or at any time when

a condition that may change the fit of a respirator has occurred, such as change in weight, change in facial structure, extensive dental work, etc. All use of respirators shall comply with KSWA's written respiratory program.

6.0 SITE CONTROL - WORK ZONES

The work zone for this bridge is I-24 over North 1st Street LM 13.79 (19-I0024013.79). The work will be performed along the topside and underneath the bridge.

Additional caution should always be applied when in proximity to the roadway, parking and entering and exiting the vehicle. Be aware of your surroundings, watch for traffic when performing work in areas that have moving vehicles. Maintain safe positioning. Use "Men Working" signs to delineate the work area and slow down drivers. Use a spotter or traffic control when sampling in the roadway or shoulders or crossing the road. All vehicles will be fitted with a cab-top rotating or strobe light bar. Light bar is to be active when vehicle is on site. The work zone can be further designated with illuminated and non-illuminated signage, cones, traffic spotter, traffic control etc. as necessary.

7.0 PERSONAL PROTECTION

PPE and safety requirements must be appropriate to protect against the known or worst potential hazards on the site. Protective equipment should be selected based on the concentrations and possible routes of exposure to known or potential worst case substances. All KSWA engineering or assessment personnel engaged in work on site will be participants in the KSWA medical monitoring program described in Section 11, or a similar program.

KSWA anticipates that Level D protection and basic site safety measures will be sufficient at this project site. Level D PPE is described in Section 8. Any conditions warranting upgrading of the required level of protection to Level C, B, or A will be cause for all personnel to immediately leave the work site. The site will be re-evaluated and a new site Health and Safety Plan will be prepared which incorporates the additional site information.

8.0 LEVELS OF PROTECTION

This plan is not intended for use at sites where levels of protection above Level D is required. Levels D is described below.

8.1 LEVEL D

Level D is the basic work uniform for all site operations. Level D should be selected when performing environmental sampling involving dilute concentrations of contaminants on sites that have been characterized by previous analyses or research.

8.1.1 Personal Protective Equipment

The following equipment is necessary for Level D personal protection:

- Standard work clothing.
- Optional disposable chemical-resistant clothing appropriate for known or expected levels of contamination.
- Boots/Shoes - safety or chemical-resistant boots.
- Safety glasses or safety goggles.
- Gloves - disposable latex or nitrile.
- Optional moisture resistant outer gloves.
- Hardhat.

8.1.2 Criteria for Use of Level D

The following criteria indicate situations where Level D personal protection is adequate:

- No indication of airborne health hazards present.
- No gross indication, above background concentrations, on the photoionization detector and/or organic vapor analyzer.

Additionally, a half-face, full-face, or powered air purifying respirator will be used with appropriate particulate filter(s).

9.0 DECONTAMINATION PROCEDURES

9.1 PERSONNEL DECONTAMINATION

If Level D protection is used, any disposable inner gloves or protective clothing should be sealed in a plastic bag and disposed of properly. Moisture resistant outer gloves and outer boots should be scrubbed with a stiff brush in soapy water, then rinsed to remove possible residual contamination. Disposable equipment should be used whenever possible.

9.2 EQUIPMENT DECONTAMINATION

Proper decontamination of all equipment is necessary to avoid transferring contaminants from the site, thereby increasing potential for exposure of on site and off site personnel. The measures described below should be followed prior to leaving all sites, as applicable to the equipment being used. Any variations from the procedures described below for reasons of worker health or safety must be described by the Project Manager in the site-specific hazard summary.

These measures are separate from, and may not be substituted for, other decontamination procedures associated with proper sampling protocol.

- A. The equipment may be thoroughly rinsed with clean water or an appropriate cleaning solution and wiped dry with paper towels before leaving the work site. Alternatively, the equipment may be wrapped in absorbent material and/or stored in plastic bags sealed to prevent contact with workers, vehicles, etc.
- B. The rinse water from this operation will be allowed to percolate into the ground or as specified.

10.0 EMERGENCY PROCEDURES

10.1 INHALATION

If warning signals such as: dizziness, nausea, headache, shortness of breath, burning sensation in mouth, throat or lung or symptoms specific to hazard found at the site are apparent, the victim should leave the contaminated air space immediately. Have someone contact emergency services and obtain health and safety information about potential contaminants.

If unconscious, the victim should be pulled out of the contaminated area immediately if they do not have any injuries which would prohibit moving them (i.e. spinal injury). The rescuers should make sure that the area is safe to enter. If the area cannot be safely entered, attempt to ventilate this area. Do not attempt a rescue. Rescuers should make sure they are properly trained in First Aid and rescue and that they are wearing proper respiratory and protective equipment before attempting the rescue.

If the victim is no longer breathing, mouth-to-mouth resuscitation or some other form of artificial respiration should be administered by a person who is properly trained and certified in a location away from the contaminated area. Medical attention should be obtained immediately.

10.2 SKIN EXPOSURE

The skin should be washed with copious amounts of soap and water. If clothing is contaminated, it should be removed immediately and the skin washed thoroughly with running water. If a shower is available, it should be used immediately. Clothes should be removed while showering. This procedure may be life-saving as certain highly toxic chemicals are rapidly absorbed through the skin.

All contaminated parts of the body, including the hair, should be thoroughly decontaminated. It may be necessary to wash repeatedly.

10.3 INGESTION

A poison control center or emergency service should be contacted immediately to determine an appropriate course of action. If possible, have health and safety information on the poison available when you call for help. Vomiting should not be induced except when the substance presents an aspiration hazard, such as from a petroleum product; or when the substance is a strong acid or base. To induce vomiting, a tablespoon of salt or powdered mustard in a glass of warm water, or syrup of ipecac from the First Aid Kit, can be taken as an emetic.

Drinking plenty of water and placing a finger down the throat may also be effective in inducing vomiting. The treatment should be repeated until vomit is clear. Medical attention should be obtained immediately.

10.4 EYES

If a toxicant should get in the eyes, they should be washed with plenty of water. The eye itself should be held open, rotated, and flooded with water so that all surfaces are washed thoroughly. Washing should be continued for at least 15 minutes. Medical attention should be obtained immediately.

10.5 EXPOSURE TO HEAT

When working under severe weather conditions, personnel should be aware of the signs of heat stress.

Heat Stress - If a worker shows signs of heat stroke (dry, hot, red skin, high body temperature) or heat exhaustion (cool, moist, pale or red skin, dilated pupils, nausea, dizziness), the worker must be removed from the work area and cooled. Loosen clothing, elevate feet, and provide cool liquids. Heat stroke can be life threatening and requires rapid action.

10.6 STINGS AND BITES

If still present, remove stinger with fingernail. Wash the the location of the sting with soap and water, cover with bandage and apply ice. If severe allergic reactions appear (hives, itching, rash, nausea, vomiting, dizziness, swelling) seek medical attention immediately.

10.7 PERSONAL INJURY

A first aid kit shall be readily available in case of an injury. Administer first aid and/or seek medical help, if necessary. Medical emergencies take precedence over decontamination procedures. A map showing the route to the nearest hospital is provided at the beginning of this Health and Safety Plan. It is the responsibility of the field safety coordinator to ensure that a phone is readily available on-site, and to identify which personnel have phones and provide this information to all on site personnel.

10.8 SPILL OR RELEASE OF HAZARDOUS MATERIAL

Clean up, isolate or contain spill as appropriate. Contact emergency response personnel, project manager, and/or client company officials as appropriate.

10.9 POTENTIAL OR ACTUAL FIRE/EXPLOSION

If it is safe to do so, on site personnel may use available fire fighting equipment to control or extinguish the fire, and remove or isolate materials which may contribute to the fire. Contact the fire department project manager and/or client company officials as appropriate.

10.10 EVACUATION

In the event of an emergency that requires an evacuation of the site, verbal instruction will be given by the Field Safety Coordinator to evacuate the area. Personnel will immediately exit the site to the pre-designated upwind "clean" location. The Field Safety Coordinator will account for KSWA personnel, and will advise personnel of further instructions, if necessary. The Field Safety Coordinator will also advise responding off site emergency personnel, if necessary. Personnel shall not re-enter the site until the emergency conditions have been corrected and the Field Safety Coordinator has authorized re-entry.

11.0 MEDICAL MONITORING

All engineering and assessment personnel engaged in on site activities shall be participants in a medical monitoring program similar to the following. As participants in this program, these individuals will have had recent physical examinations.

The following personnel will be accessing the site during field activities and the dates at which their medical monitoring program was last updated:

- | | |
|---------------------|-----------|
| 1. Tanner Hess | July 2022 |
| 2. Will Vanderslice | June 2022 |

The primary goal of this medical monitoring program is to provide evaluation and ongoing surveillance of the health status of employees potentially exposed to toxic substances as a result of their work-related activities. An active health monitoring program for those employees potentially at risk is an important tool in evaluating the effects of chronic low-level exposures or acute exposures related to operations at hazardous waste sites. The effects of low-level exposures may not become apparent until years after the initial exposure.

This medical monitoring program includes laboratory testing, personnel medical history evaluation, physical examination and other specific testing.

Each participant in this medical monitoring program undergoes a complete occupational history evaluation and baseline physical examination including the following parameters:

- Pulmonary Function Studies
- Complete Blood Count
- Chemical Blood Profile
- Urinalysis
- Chest X-Ray
- Electrocardiogram
- Specific parameters as necessary dependent upon exposure

Following the establishment of each participant's baseline values for the above parameters, an annual re-evaluation is conducted to monitor potential changes due to work with hazardous materials.

In addition to this annual re-examination, provisions are made for specific post-exposure examinations in the event of a suspected exposure during a particular field event.

The program shall meet or exceed the minimum requirements established in OSHA standard 20 CFR 1910.120.

APPENDIX E: ACTIVITY HAZARD ANALYSIS

ACTIVITY HAZARD ANALYSIS

Asbestos Survey
I-24 OVER NORTH 1ST STREET LM 13.79 (19-I0024-13.79)
Davidson County, Tennessee

PIN: 131713.00

Const: 19I024-M3-010

Bridge No.: 19I00240107

KSWA Project Number: 100-22-0052

Prepared by:



K. S. WARE AND ASSOCIATES, L.L.C
52 Lindsley Avenue
Suite 101
Nashville, Tennessee 37210

August 8, 2022

ACTIVITY HAZARD ANALYSIS FOR ASBESTOS SURVEY

EM 385-1-1 Reference:

Hard hats and safety toe boots are mandatory. Eye and hearing protection are mandatory during sampling and as appropriate.

Principal Steps	Potential Hazards	Action to Minimize Hazard
1. Asbestos exposure	1. Inhalation, skin irritation	1. All personnel that will be present on the project must wear the proper PPE. Use all safety precautions to ensure that all state and federal guidelines are followed and to limit the exposure to asbestos. Asbestos samplers are to use a respirator when sampling.
2. Heat stress exposure	2. Heat stroke	2. Monitor all personnel for signs of fatigue, dizziness or other physical abnormalities. Personnel should wear clothing suited for the weather conditions and breaks will be given for intake of fluids, etc. Ensure that water or sports hydration fluid (Gatorade, PowerAde) is available on site.
4. Traffic Hazards	4. Moving vehicles	3. Field activities will encounter traffic on this project. Be aware of your surroundings, watch for traffic when performing in areas that have moving vehicles. Use a spotter or traffic control when sampling in the roadway or crossing the road. Maintain safe positioning. Use "Men Working" signs to delineate the work area and slow down drivers. All vehicles will be fitted with a cab-top rotating or strobe light bar. Light bar is to be active when vehicle is on site.
5. Site Maintenance	5. Slip, trip, and fall.	4. Prior to field activities, the Field Safety Coordinator should observe the terrain on site and monitor the conditions throughout the survey. Be aware of steep and/or rocky slopes. Also, be aware of potholes around the bridge.
6. Overhead Utilities	6. Electrocution, explosion, fire	5. Be aware of fallen or low hanging utility lines while on the ground level. Remain at least 10 feet from all utility lines with all equipment.
7. Biological Hazards	7. Small animals, insects	6. Be aware of animal habitat in and around the work area. Do not put hands into areas you cannot inspect for potential insects, mammals, and reptiles. Beware of snakes, colonies of stinging insects, and vector species that could transmit disease.
8. Noise	8. Damage to hearing	7. Operations that generate sound levels 85 dBA and above require hearing protection. Either muffs or plugs are acceptable. Heavy traffic can be a cause.

Principal Steps	Potential Hazards	Action to Minimize Hazard
9. Hand/Finger Protection	9. Physical injury to personnel	8. Wear gloves when there is exposure to potential hazards that could produce scrapes and cuts. Do not wear jewelry. Any jewelry can be dangerous. Handle sharp or pointed tools with extreme care. Be careful when using a hammer to not smash hand or fingers. Use the proper gloves for the job at hand.
10. Hand Tools and Equipment	10. Physical injury to personnel	9. Use the right tool or piece of equipment for the job. Use only tools in safe condition. Tools and equipment must be used properly and not abused. Take precautions to avoid injury by cutting tools by keeping them sheathed until use.
11. Ladders	11. Fall from excessive height	10. Use caution and maintain three points of contact when climbing a ladder. Always have other site personnel support the ladder while in use. Maintain a safe distance from overhead utilities and obstructions. Always place the ladder on stable, even ground.
12. Severe Weather	12. Thunderstorms, lightning hazard	11. Cease work immediately and take cover in a vehicle or structure until lightning has ceased.

This Activity Hazard Analysis has been prepared by K.S. Ware and Associates.

The KSWA field safety coordinator for this project will be Mr. Will Vanderslice. Mr. Vanderslice's health and safety training and certifications include:

- Completed OSHA 10 Hour Construction Safety Course
- Completed OSHA 40 Hour HAZWOPER Course