

**ASBESTOS CONTAINING
MATERIALS INVESTIGATION
REPORT**

**US-21 (SEA ISLAND PARKWAY)
BRIDGE OVER HARBOR RIVER
BEAUFORT COUNTY, SC
SCDOT BRIDGE #072002100200
SCDOT PROJECT # P026862**

PREPARED FOR:



PREPARED BY:

F&ME Consultants
3112 Devine Street
Columbia, South Carolina 29205
(803) 254-4540

February 10, 2017

Yes, asbestos was found.
 No, asbestos was not found.

G5396.000

February 20, 2017

Mr. Michael Darby, P.E.
HDR, Inc.
3955 Faber Place Drive, Suite 300
North Charleston, South Carolina 29405

Re.: Asbestos Containing Materials Investigation Report
US-21 (Sea Island Parkway) Bridge over Harbor River
Beaufort County, South Carolina
F&ME Project No.: G5396.000

Dear Mr. Darby:

As requested, F&ME Consultants has completed an Asbestos Containing Materials (ACM) Investigation for the above-referenced bridge. The investigation of the subject bridge identified the following fifteen (15) suspect materials: Fabric Felt, black expansion joint material, gray expansion joint material, black tar-like material, gray epoxy-like material, block pipe thermal systems insulation (TSI), tan crack sealer, gray crack sealer, black coating on piles, cementitious lining in piping, white coating on foam insulated tank, black caulking, green caulking, cove base and mastic and dark gray sheet vinyl. Laboratory results indicate that none of the suspect materials sampled and submitted for analysis tested positive for asbestos content. However, two (2) materials that were not sampled during the investigation due to the destructive measures necessary to collect representative samples have been assumed positive. These two (2) materials are a felt vapor barrier noted on construction drawings for the control house and brake pads for the locking mechanism that locks the swing bridge in place when the road is open. Attached is the report of our findings.

We appreciate the opportunity to assist you in this matter. If you have any questions or require additional information, please feel free to contact our office at (803) 254-4540.

Sincerely,

F&ME CONSULTANTS

A handwritten signature in blue ink, appearing to read "Glynn M. Ellen". The signature is fluid and cursive, with the first name being the most prominent.

Glynn M. Ellen
Asbestos Consultant/ Management Planner
SCDHEC License No: ASB-22641
Expiration Date 03/31/2017

TABLE OF CONTENTS

I. Introduction	3
II. Existing Bridge Structure	4
III. Investigation Results.....	5
IV. Recommendations	7

APPENDIX A

- Site Vicinity Map (Figure 1)
- Sample Location Plan (Figure 2 thru 4)

APPENDIX B

- Summary of Samples (Table I)
- Summary of Asbestos Containing Materials (Table II)
- Bulk Suspect Materials Analytical Reports
- Chain of Custody

APPENDIX C

- Photographs

APPENDIX D

- Personnel Certifications

I. INTRODUCTION

As requested, F&ME Consultants has completed an Asbestos Containing Materials (ACM) investigation on US-21 (Sea Island Parkway) Bridge over Harbor River in Beaufort County, South Carolina. The field investigation was performed on January 4 and 5, 2017. On January 4th, F&ME personnel began the investigation utilizing a Trailer Mounted Hydra Platform to access and sample materials that could be obtained from the underside of the bridge and portions of the topside requiring a lane closure. The field investigation continued with the lift through January 5th and concluded with investigation of the existing swing bridge. Traffic lane closures were utilized throughout the duration of the investigation. This investigation was conducted pursuant to SCDHEC, USEPA, NESHAP, and OSHA regulations requiring an ACM investigation prior to any demolition and/or renovation activities.

During the planning stages of the project F&ME reached out to HDR regarding previous environmental reports that may have been prepared associated with past repairs and structural up fits that have been completed over the years to the existing bridge structure. It was recommended that we reach out to Tim Hunter, Environmental Operations Manager with the SCDOT to see if he could assist in locating previous reports. No previous environmental reports were provided for the existing bridge structure.

It is our understanding that the proposed project will include the complete demolition/removal of the existing bridge structure and construction of a new bridge off the existing horizontal alignment. The purpose of this investigation is to determine if asbestos is present associated with various suspect materials found associated with the existing bridge structure. This task included identifying and sampling suspect ACM; obtaining analytical results to determine if asbestos is present; quantifying confirmed ACM; and assessing the physical condition of the ACM, where possible.

During the inspection, all bridge components (i.e. concrete bent caps, piles, columns, expansion joints and swing bridge) were visually inspected for suspect ACM's. In addition, portions of the original bridge plans were provided for review along with drawings from February 1997 that were prepared for structural repairs and upgrades. These drawings included the plans for the construction of the existing control house. The results, conclusions, and recommendations of this

investigation are representative of the conditions observed at the site on the dates of the field inspection. F&ME does not assume responsibility for any changes in conditions or circumstances that occur after the inspection.

This report has been prepared exclusively for the HDR Engineering, Inc. of the Carolinas and shall not be disseminated in whole or part to other parties without prior consent from the HDR Engineering, Inc. of the Carolinas or F&ME Consultants, Inc. No other environmental issues were addressed as part of this report.

II. EXISTING BRIDGE STRUCTURE

The existing bridge structure (SCDOT Bridge #072002100200) crosses over the Harbor River. The bridge is part of US-21 highway located in Beaufort County. The actual date of construction for the bridge is unknown, but it is believed to have been constructed in the late 1930's. The bridge is a two-lane concrete deck bridge (~2,851.2'L x ~21.0'W, measured from outside edge to outside edge) on precast concrete piles



Photo 1 – US Highway 21 over the Harbor River.

and is constructed with concrete curb and gutters as well as concrete guardrails and post. The bridge has two (2) end bents and sixty-seven (67) interior bents. Bent caps for the fixed stationary portions of the bridge are poured in place concrete supported by four (4) precast concrete piles per bent. Deck supports between the interior bents have concrete beams and diaphragms with the same support structure as the steel beams. The end bents have concrete bent caps, but the bent cap supports are covered with soil and rip-rap.

The existing swing bridge (170' swing span) is a riveted through truss swing bridge on a single center concrete pier foundation. The all metal swing bridge portion of the bridge houses a control building for its operation.

III. INVESTIGATION RESULTS

During the investigation, the following suspect materials were observed on the subject bridge:

- Gray Felt - Behind Rip-Rap
- Black Expansion Joint Material
- Gray Expansion Joint Material
- Black Tar-like Material
- Gray Epoxy-Like Material
- Block Pipe Insulation
- Tan Crack Sealer
- Gray Crack Sealer
- Black Coating on Precast Concrete Piles
- Cementitious Lining in Piping
- White Coating on Foam Tank Jacketing
- Black Caulking (Exterior of Control House)
- Green Caulking (Exterior of Control House)
- Cove Base and Mastic (Control House)
- Dark Gray Sheet Vinyl (Control House)

Random samples of the suspect materials were collected for laboratory analysis and their physical characteristics were recorded. The remaining structural materials (i.e. concrete, steel, etc.) are not considered suspect and were not sampled.

The samples of the suspect material were analyzed by polarized light microscopy (PLM) in accordance with EPA 600/R-93/116. A “first positive stop” protocol was requested, meaning that if the first sample of a material was positive for asbestos content, subsequent samples were not to be analyzed. In addition, confirmation transmission electron microscopy (TEM) analysis was required for non-friable, organically-bound materials that were found to be negative for asbestos (as per SCDHEC regulations effective June 27, 2008). Appropriate sampling and

chain-of-custody protocols were followed to ensure proper handling and delivery of samples to the analytical laboratory.

A total of forty-five (45) samples were collected from the subject bridge. Thirty-five (35) samples were analyzed by PLM and thirteen (13) were TEM-confirmed. Analysis of samples collected during the investigation of suspect materials that were identified indicated no asbestos content.

The Appendices include a Site Vicinity Map (Figure 1), a Sample Location Plan (Figure 2), a Summary of Samples (Table I), Bulk Sample Analysis Reports, the Chain of Custody, Photographs, and Personnel Certifications.

IV. ACM DESCRIPTION & ASSESSMENT

- HA-1 – Roofing Felt/Vapor Barrier (~1,000 SF)

Review of the original construction drawings for the control house dated February 1997 showed that a felt vapor barrier was utilized behind the siding on the exterior metal walls, on top of the concrete slab and under the existing copper roofing system of the control house. Due to the damage that would be necessary to access this material it has been assumed positive for asbestos content. Also, due to the inaccessibility the condition of the material is unknown. This material is to be removed, handled and disposed of as ACM by a licensed abatement contractor during the demolition of the existing bridge structure.

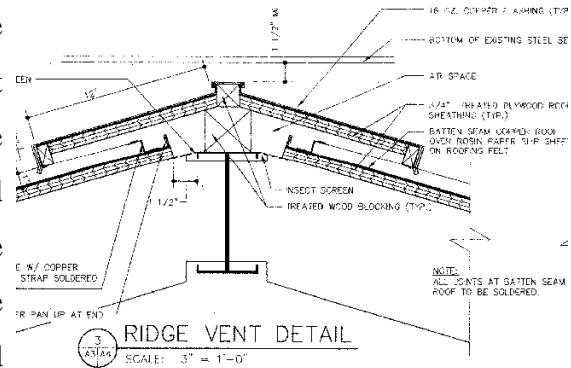


Photo 2 – Roofing Felt/Vapor Barrier noted on original construction drawings for control house.

- HA-2 – Swing Bridge Brake Pads (~ 4 SF)

In addition, the underside of the existing swing bridge was reviewed during the investigation. The locking mechanism that locks the bridge in place when the bridge is open to road traffic was noted to have brake pads. Due to the destructive measures required to collect samples of this type of material and the potential for damage to the mechanical systems, samples were not collected of the brake pads and they have been assumed to be positive for asbestos content for the purposes of this report. Overall, the brake pads appeared intact with no damage being noted. This material is to be removed, handled and disposed of as ACM by a licensed abatement contractor during the demolition of the existing bridge structure.



Photo 3 – Brake pads associated with the mechanical locking mechanism for the swing bridge.

V. RECOMMENDATIONS

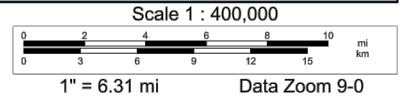
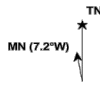
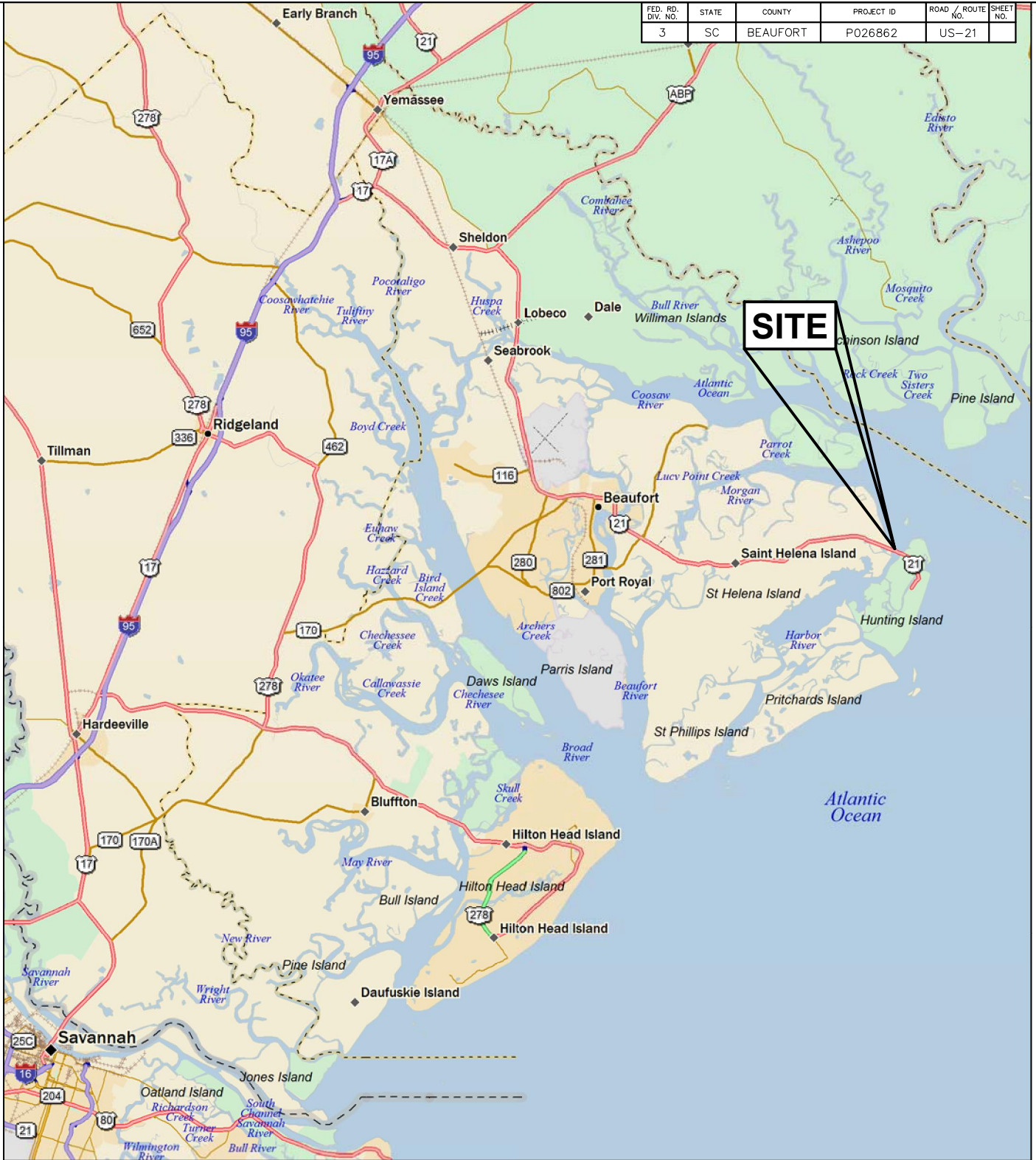
It is our understanding that the subject structure is to be demolished in anticipation of constructing a new bridge. All accessible suspect materials have been sampled and analyzed by an accredited laboratory and found to contain no asbestos containing materials (ACM). However, two (2) materials were identified that were assumed positive for asbestos content and will need to be address during the demolition operations. Contractor should plan on hiring a licensed abatement contractor to remove and handle these materials as asbestos containing materials.

If any concealed and/or inaccessible ACM are encountered during the demolition activities, the affected contractor(s) must stop work, take appropriate actions, and notify the Owner/Asbestos Consultant for an appropriate response action. The SCDHEC must be notified in the event that any suspect ACM is discovered.

APPENDIX A

Site Vicinity Map (Figure 1)
Sample Location Plans (Figure 2 thru 4)

FED. RD. DIV. NO.	STATE	COUNTY	PROJECT ID	ROAD / ROUTE NO.	SHEET NO.
3	SC	BEAUFORT	P026862	US-21	



F&ME
CONSULTANTS
GEOTECHNICAL – ENVIRONMENTAL – MATERIALS
COLUMBIA, SOUTH CAROLINA

US-21 (SEA ISLAND PKWY)
BRIDGE REPLACEMENT OVER HARBOR RIVER

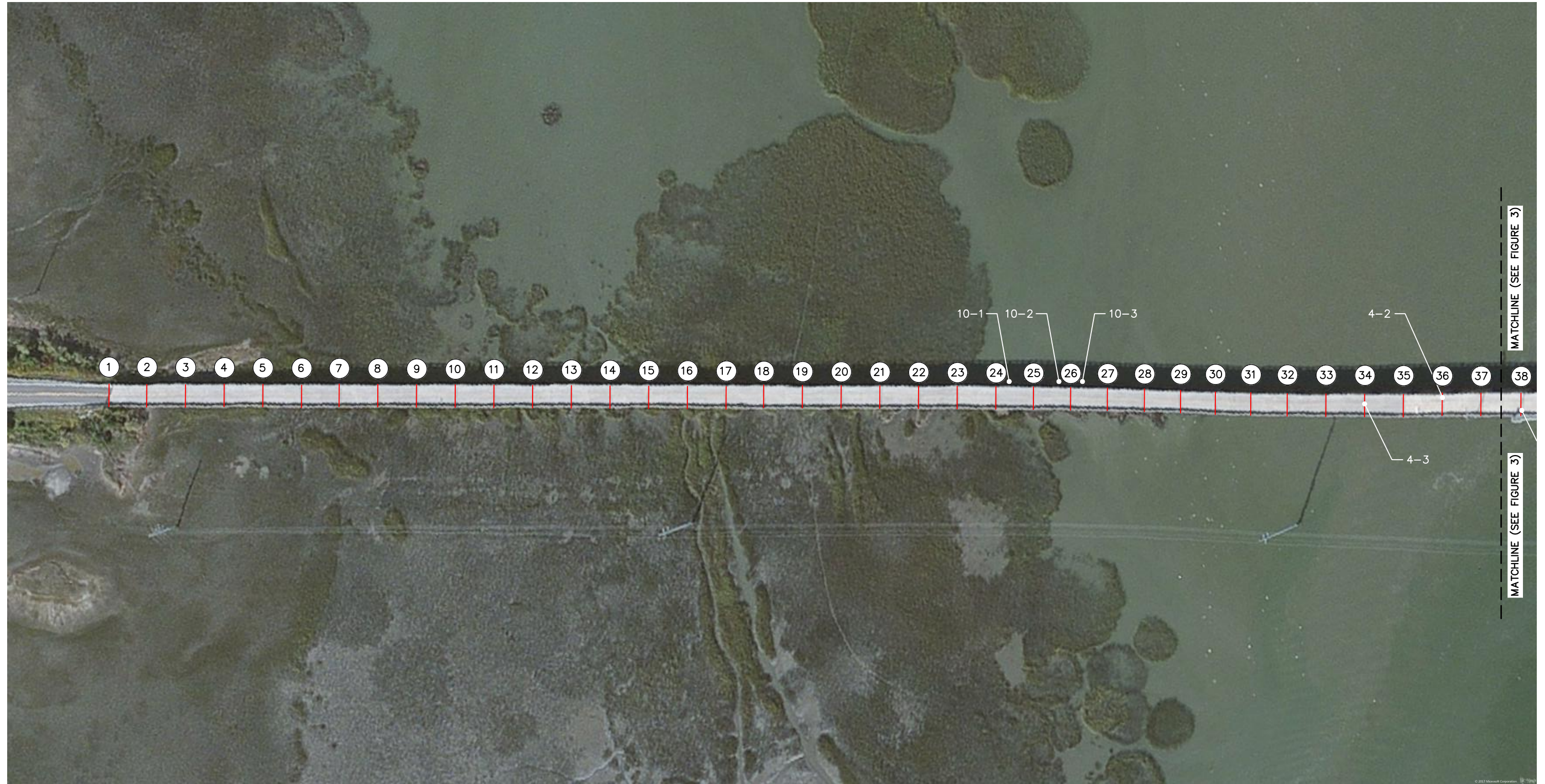
SITE LOCATION PLAN

4			
3			
2			
1			
REV. NO.	BY	DATE	DESCRIPTION OF REVISION
TOPO.		DATE	
DWG.	CTC	DATE 2/9/2017	GROUP -- --
R/W		DATE	

SCALE = NTS

FIGURE 1

FED. RD. DIV. NO.	STATE	COUNTY	PROJECT ID	ROAD / ROUTE NO.	SHEET NO.
3	SC	BEAUFORT	P026862	US-21	



LEGEND:

①	BENT NUMBER
	BRIDGE BENT



F&ME
CONSULTANTS
GEOTECHNICAL – ENVIRONMENTAL – MATERIALS
COLUMBIA, SOUTH CAROLINA

US-21 (SEA ISLAND PKWY)
BRIDGE REPLACEMENT OVER HARBOR RIVER

SAMPLE LOCATION PLAN

SCALE = NTS

FIGURE 2

REV. NO.	BY	DATE	DESCRIPTION OF REVISION
4			
3			
2			
1			
TOPO.	DATE		
DWG. CTC	DATE 2/9/2017	GROUP	
R/W	DATE		

FED. RD. DIV. NO.	STATE	COUNTY	PROJECT ID	ROAD / ROUTE NO.	SHEET NO.
3	SC	BEAUFORT	P026862	US-21	



LEGEND:

①	BENT NUMBER
	BRIDGE BENT



F&ME
CONSULTANTS
GEOTECHNICAL – ENVIRONMENTAL – MATERIALS
COLUMBIA, SOUTH CAROLINA

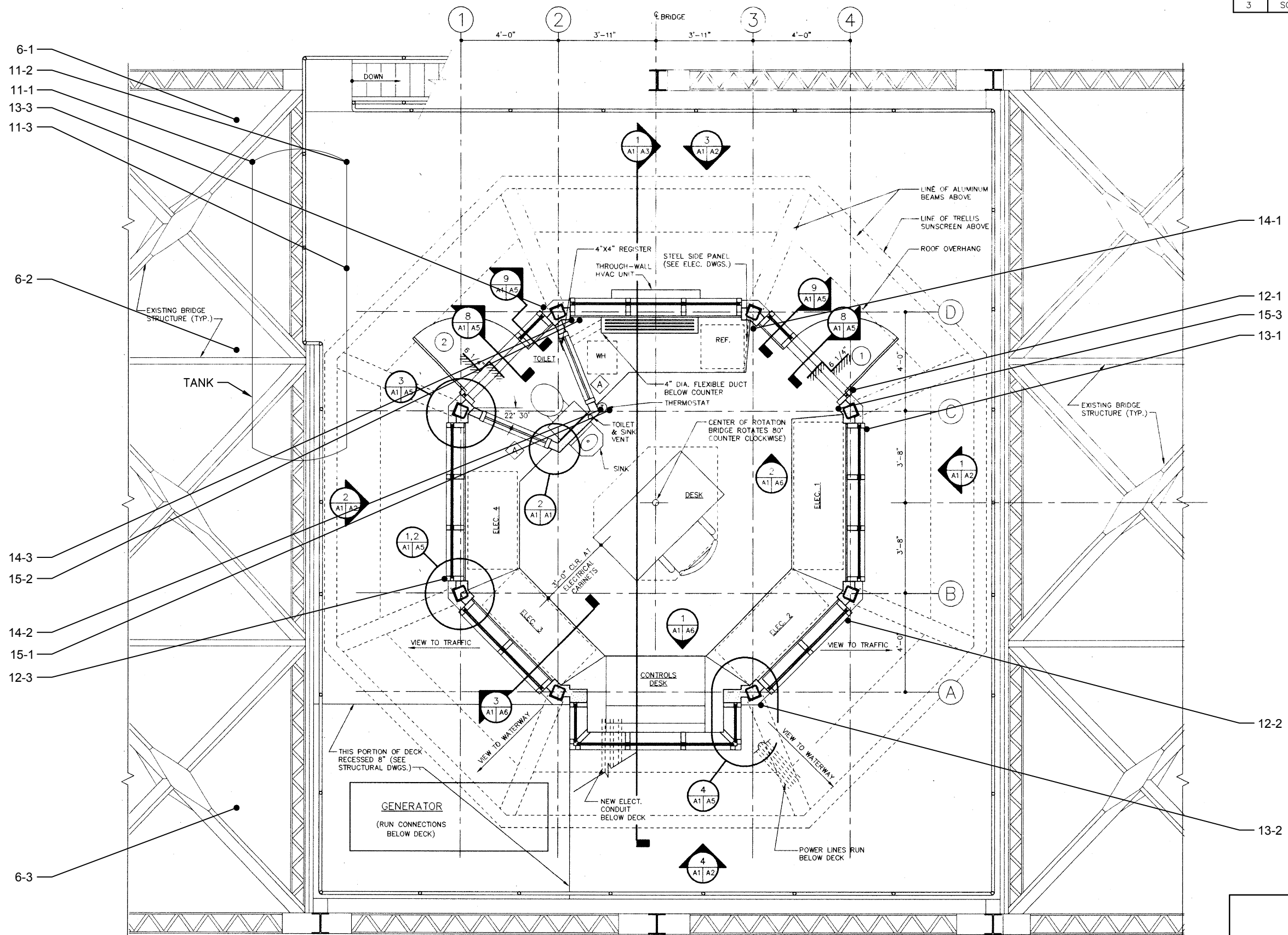
US-21 (SEA ISLAND PKWY)
BRIDGE REPLACEMENT OVER HARBOR RIVER

SAMPLE LOCATION PLAN

SCALE = NTS	FIGURE 3
-------------	----------

REV. NO.	BY	DATE	DESCRIPTION OF REVISION
4			
3			
2			
1			
TOPO.	DATE		
DWG. CTC	DATE 2/9/2017	GROUP	-- --
R/W	DATE		

FED. RD. DIV. NO.	STATE	COUNTY	PROJECT ID	ROAD / ROUTE NO.	SHEET NO.
3	SC	BEAUFORT	P026862	US-21	



F&ME
CONSULTANTS
GEOTECHNICAL - ENVIRONMENTAL - MATERIALS
COLUMBIA, SOUTH CAROLINA

US-21 (SEA ISLAND PKWY)
BRIDGE REPLACEMENT OVER HARBOR RIVER

SAMPLE LOCATION PLAN

4			
3			
2			
1			
REV. NO.	BY	DATE	DESCRIPTION OF REVISION
TOPO.		DATE	
DWG.	CTC	DATE 2/9/2017	GROUP
R/W		DATE	

SCALE = NTS

FIGURE 4

APPENDIX B

Summary of Samples (Table I)

Summary of Asbestos Containing Materials (Table II)

Bulk Suspect Materials Analytical Reports

Chain of Custody

TABLE I. SUMMARY OF SAMPLES

Sample ID	Sample Description	Location
1-1	Gray Felt - Behind Rip-Rap	End Bent
1-2	Gray Felt - Behind Rip-Rap	End Bent
1-3	Gray Felt - Behind Rip-Rap	End Bent
2-1	Black Expansion Joint Material	Bent 62
2-2	Black Expansion Joint Material	Bent 60
2-3	Black Expansion Joint Material	Bent 39
3-1	Gray Expansion Joint Material	Bent 66
3-2	Gray Expansion Joint Material	Bent 56
3-3	Gray Expansion Joint Material	Bent 38
4-1	Black Tar-like Material	Bent 66
4-2	Black Tar-like Material	Bent 36
4-3	Black Tar-like Material	Bent 34
5-1	Gray Epoxy-Like Material	Bent 59
5-2	Gray Epoxy-Like Material	Bent 52
5-3	Gray Epoxy-Like Material	Bent 44
6-1	Block Pipe Insulation	(Swing Bridge)
6-2	Block Pipe Insulation	(Swing Bridge)
6-3	Block Pipe Insulation	(Swing Bridge)
7-1	Tan Crack Sealer	Bent 45
7-2	Tan Crack Sealer	Bent 45
7-3	Tan Crack Sealer	Bent 45
8-1	Gray Crack Sealer	Bent 45
8-2	Gray Crack Sealer	Bent 45
8-3	Gray Crack Sealer	Bent 45
9-1	Black Coating on Piles	Bent 66
9-2	Black Coating on Piles	Bent 59
9-3	Black Coating on Piles	Bent 44

TABLE I

TABLE I. SUMMARY OF SAMPLES

10-1	Cementitious Lining in Piping	
10-2	Cementitious Lining in Piping	
10-3	Cementitious Lining in Piping	
11-1	White Coating on Foam Tank Jacketing	(Swing Bridge)
11-2	White Coating on Foam Tank Jacketing	(Swing Bridge)
11-3	White Coating on Foam Tank Jacketing	(Swing Bridge)
12-1	Black Caulking	(Swing Bridge)
12-2	Black Caulking	(Swing Bridge)
12-3	Black Caulking	(Swing Bridge)
13-1	Green Caulking	(Swing Bridge)
13-2	Green Caulking	(Swing Bridge)
13-3	Green Caulking	(Swing Bridge)
14-1	Cove Base and Mastic	(Swing Bridge)
14-2	Cove Base and Mastic	(Swing Bridge)
14-3	Cove Base and Mastic	(Swing Bridge)
15-1	Dark Gray Sheet Vinyl	(Swing Bridge)
15-2	Dark Gray Sheet Vinyl	(Swing Bridge)
15-3	Dark Gray Sheet Vinyl	(Swing Bridge)

TABLE I



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: 021700092

Customer ID: FMEC62

Customer PO: G5396.00

Project ID:

Attention: Glynn Ellen
F & ME Consultants
3112 Divine Street
Columbia, SC 29205

Phone: (803) 254-4540

Fax: (803) 254-4542

Received Date: 01/09/2017 9:45 AM

Analysis Date: 01/10/2017 - 01/11/2017

Collected Date: 01/06/2017

Project: G5396.00 ACM Investigation - US-21 Bridge Over Harbor River

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
1-1 021700092-0001	Gray Felt-Behind Rip-Rap	Gray Fibrous Homogeneous	100% Synthetic		None Detected
1-2 021700092-0002	Gray Felt-Behind Rip-Rap	Gray/Tan Fibrous Homogeneous	1% Cellulose 99% Synthetic		None Detected
1-3 021700092-0003	Gray Felt-Behind Rip-Rap	Gray Fibrous Homogeneous	100% Synthetic		None Detected
2-1 021700092-0004	Black Expansion Joint Material	Black Non-Fibrous Heterogeneous	2% Cellulose	10% Quartz 88% Non-fibrous (Other)	None Detected
2-2 021700092-0005	Black Expansion Joint Material	Black Non-Fibrous Homogeneous	5% Cellulose	5% Quartz 90% Non-fibrous (Other)	None Detected
3-1 021700092-0006	Gray Expansion Joint Material	Gray/Black Non-Fibrous Heterogeneous	<1% Cellulose	1% Quartz 99% Non-fibrous (Other)	None Detected
3-2 021700092-0007	Gray Expansion Joint Material	Gray/Black Non-Fibrous Homogeneous	<1% Cellulose	1% Quartz 99% Non-fibrous (Other)	None Detected
4-1 021700092-0008	Black Tar-Like Material	Gray/Tan/Black Non-Fibrous Heterogeneous	<1% Cellulose <1% Synthetic <1% Fibrous (Other)	5% Quartz 1% Mica 94% Non-fibrous (Other)	None Detected
4-2 021700092-0009	Black Tar-Like Material	Gray/Black/Silver Non-Fibrous Homogeneous	<1% Cellulose	2% Quartz 98% Non-fibrous (Other)	None Detected
5-1 021700092-0010	Gray Epoxy-Like Material	Gray/Tan/Beige Non-Fibrous Homogeneous		3% Quartz 97% Non-fibrous (Other)	None Detected
5-2 021700092-0011	Gray Epoxy-Like Material	Gray/Tan Non-Fibrous Homogeneous		5% Quartz 95% Non-fibrous (Other)	None Detected
6-1 021700092-0012	Block Pipe Insulation	Beige Fibrous Homogeneous	10% Cellulose	90% Non-fibrous (Other)	None Detected
6-2 021700092-0013	Block Pipe Insulation	Beige Fibrous Homogeneous	10% Cellulose	90% Non-fibrous (Other)	None Detected
6-3 021700092-0014	Block Pipe Insulation	Beige Fibrous Heterogeneous	10% Cellulose	90% Non-fibrous (Other)	None Detected
7-1 021700092-0015	Tan Crack Sealer	Gray/Tan/Beige Non-Fibrous Heterogeneous		10% Quartz 90% Non-fibrous (Other)	None Detected
7-2 021700092-0016	Tan Crack Sealer	Gray/Tan/Beige Non-Fibrous Homogeneous		10% Quartz 90% Non-fibrous (Other)	None Detected

Initial report from: 01/12/2017 08:51:30



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: 021700092
Customer ID: FMEC62
Customer PO: G5396.00
Project ID:

Attention: Glynn Ellen
F & ME Consultants
3112 Divine Street
Columbia, SC 29205
Phone: (803) 254-4540
Fax: (803) 254-4542
Received Date: 01/09/2017 9:45 AM
Analysis Date: 01/14/2017
Collected Date: 01/06/2017
Project: G5396.00 ACM Investigation - US-21 Bridge Over Harbor River

Test Report: Asbestos Analysis of Non-Friable Organically Bound Materials by TEM via EPA/600/R-93/116 Section 2.5.5.1

Sample ID	Description	Appearance	% Matrix Material	% Non-Asbestos Fibers	Asbestos Types
2-3 021700092-0034	Black Expansion Joint Material	Black Non-Fibrous Homogeneous	100	None	No Asbestos Detected
3-3 021700092-0035	Gray Expansion Joint Material	Gray Non-Fibrous Homogeneous	100	None	No Asbestos Detected
4-3 021700092-0036	Black Tar-Like Material	Black Non-Fibrous Homogeneous	100	None	No Asbestos Detected
5-3 021700092-0037	Gray Epoxy-Like Material	Gray Non-Fibrous Homogeneous	100	None	No Asbestos Detected
7-3 021700092-0038	Tan Crack Sealer	Tan Non-Fibrous Heterogeneous	100	None	No Asbestos Detected
8-3 021700092-0039	Gray Crack Sealer	Gray Non-Fibrous Homogeneous	100	None	No Asbestos Detected
9-3 021700092-0040	Black Coating on Piles	Black Non-Fibrous Heterogeneous	100	None	No Asbestos Detected
11-3 021700092-0041	White Coating on Foam Tank Jacketing	White Non-Fibrous Heterogeneous	100	None	No Asbestos Detected
12-3 021700092-0042	Black Caulking	Black Non-Fibrous Homogeneous	100	None	No Asbestos Detected
13-3 021700092-0043	Green Caulking	Green Non-Fibrous Homogeneous	100	None	No Asbestos Detected
14-3-Cove Base 021700092-0044	Cove Base and Mastic	Black Non-Fibrous Homogeneous	100	None	No Asbestos Detected
14-3-Mastic 021700092-0045	Cove Base and Mastic	Beige Non-Fibrous Homogeneous	100	None	No Asbestos Detected

This laboratory is not responsible for % asbestos in total sample when the residue only is submitted for analysis. The above report relates only to the items tested. This report may not be reproduced, except in full, without written approval by EMSL Analytical, Inc. Samples received in good condition unless otherwise noted. Unless requested by the client, building materials manufactured with multiple layers (i.e. linoleum, wallboard, etc.) are reported as a single sample.

Samples analyzed by EMSL Analytical, Inc. Kernersville, NC

Initial report from: 01/16/2017 09:16:54



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: 021700092
Customer ID: FMEC62
Customer PO: G5396.00
Project ID:

Attention: Glynn Ellen
F & ME Consultants
3112 Divine Street
Columbia, SC 29205
Phone: (803) 254-4540
Fax: (803) 254-4542
Received Date: 01/09/2017 9:45 AM
Analysis Date: 01/14/2017
Collected Date: 01/06/2017
Project: G5396.00 ACM Investigation - US-21 Bridge Over Harbor River

Test Report: Asbestos Analysis of Non-Friable Organically Bound Materials by TEM via EPA/600/R-93/116 Section 2.5.5.1

Sample ID	Description	Appearance	% Matrix Material	% Non-Asbestos Fibers	Asbestos Types
15-3 021700092-0046	Dark Gray Shee Vinyl	Gray Non-Fibrous Homogeneous	100	None	No Asbestos Detected

Analyst(s)

Nicole Shutts (13)

Stephen Bennett, Laboratory Manager
or other approved signatory

This laboratory is not responsible for % asbestos in total sample when the residue only is submitted for analysis. The above report relates only to the items tested. This report may not be reproduced, except in full, without written approval by EMSL Analytical, Inc. Samples received in good condition unless otherwise noted. Unless requested by the client, building materials manufactured with multiple layers (i.e. linoleum, wallboard, etc.) are reported as a single sample.

Samples analyzed by EMSL Analytical, Inc. Kernersville, NC

Initial report from: 01/16/2017 09:16:54



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: 021700092
Customer ID: FMEC62
Customer PO: G5396.00
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
8-1 <small>021700092-0017</small>	Gray Crack Sealer	Brown/Gray/Tan Fibrous Heterogeneous	<1% Cellulose 3% Glass 3% Fibrous (Other)	94% Non-fibrous (Other)	None Detected
8-2 <small>021700092-0018</small>	Gray Crack Sealer	Brown/Gray/Tan Non-Fibrous Homogeneous	<1% Cellulose 3% Glass 3% Fibrous (Other)	94% Non-fibrous (Other)	None Detected
9-1 <small>021700092-0019</small>	Black Coating on Piles	Black/Rust Non-Fibrous Homogeneous	<1% Cellulose	3% Quartz 97% Non-fibrous (Other)	None Detected
9-2 <small>021700092-0020</small>	Black Coating on Piles	Black Non-Fibrous Homogeneous	<1% Cellulose	5% Quartz 95% Non-fibrous (Other)	None Detected
10-1 <small>021700092-0021</small>	Cementitious Lining in Piping	Gray/Tan/Rust Non-Fibrous Heterogeneous		30% Quartz 70% Non-fibrous (Other)	None Detected
10-2 <small>021700092-0022</small>	Cementitious Lining in Piping	Brown/Gray/Rust Non-Fibrous Heterogeneous		20% Quartz 80% Non-fibrous (Other)	None Detected
10-3 <small>021700092-0023</small>	Cementitious Lining in Piping	Brown/Gray/Beige Non-Fibrous Homogeneous		20% Quartz 80% Non-fibrous (Other)	None Detected
11-1 <small>021700092-0024</small>	White Coating on Foam Tank Jacketing	White/Blue/Beige Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
11-2 <small>021700092-0025</small>	White Coating on Foam Tank Jacketing	White/Blue/Beige Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
12-1 <small>021700092-0026</small>	Black Caulking	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
12-2 <small>021700092-0027</small>	Black Caulking	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
13-1 <small>021700092-0028</small>	Green Caulking	Green Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
13-2 <small>021700092-0029</small>	Green Caulking	Green Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
14-1-Cove Base <small>021700092-0030</small>	Cove Base and Mastic	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
14-1-Mastic <small>021700092-0030A</small>	Cove Base and Mastic	Tan/Beige Non-Fibrous Homogeneous	<1% Cellulose 1% Synthetic	99% Non-fibrous (Other)	None Detected
14-2-Cove Base <small>021700092-0031</small>	Cove Base and Mastic	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
14-2-Mastic <small>021700092-0031A</small>	Cove Base and Mastic	Tan Non-Fibrous Homogeneous	<1% Cellulose	100% Non-fibrous (Other)	None Detected
15-1 <small>021700092-0032</small>	Dark Gray Shee Vinyl	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
15-2 <small>021700092-0033</small>	Dark Gray Shee Vinyl	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected

Initial report from: 01/12/2017 08:51:30



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: 021700092

Customer ID: FMEC62

Customer PO: G5396.00

Project ID:

Analyst(s)

Nicole Shutts (16)

Scott Combs (19)

Stephen Bennett, Laboratory Manager
or Other Approved Signatory

EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the federal government. Non-friable organically bound materials present a problem matrix and therefore EMSL recommends gravimetric reduction prior to analysis. Samples received in good condition unless otherwise noted. Estimated accuracy, precision and uncertainty data available upon request. Unless requested by the client, building materials manufactured with multiple layers (i.e. linoleum, wallboard, etc.) are reported as a single sample. Reporting limit is 1%

Samples analyzed by EMSL Analytical, Inc. Kernersville, NC NVLAP Lab Code 102104-0, CA ELAP 2689, Virginia 3333-000228, West Virginia LT000321

Initial report from: 01/12/2017 08:51:30

(92)

706 Galin Street
Kernersville, NC 27284

Phone: (336) 992-1025
Fax: (336) 992-4175
<http://www.emsl.com>

Please print all information legibly.

Company:	F&ME Consultants	Bill To:	F&ME Consultants
Address 1:	3112 Devine Street	Address 1:	P.O. Box 5855
Address 2:		Address 2:	
City, State:	Columbia, South Carolina	City, State:	Columbia, South Carolina
Zip/Post Code:	29205	Zip/Post Code:	29250
Country:	USA	Country:	USA
Contact Name:	Glynn Ellen	Attn:	Jim Kelleher
Phone:	803 254-4540	Phone:	803 777-1208
Fax:	803 254-4542	Fax:	803 777-1028
Email:	glynn@fmecol.com;	Email:	jkelleher@fmecol.com
EMSL Rep:	Jason McDonald	P.O. Number:	G5396.00
Project Name/Number:	G5396.00 ACM Investigation - US-21 Bridge over Harbor River		

MATRIX			TURNAROUND			
<input type="checkbox"/> Air	<input type="checkbox"/> Soil	<input type="checkbox"/> Micro-Vac	<input type="checkbox"/> 3 Hours	<input type="checkbox"/> 6 Hours	<input type="checkbox"/> Same Day or 12 Hours*	<input type="checkbox"/> 24 Hours (1day)
<input checked="" type="checkbox"/> Bulk	<input type="checkbox"/> Drinking Water		<input type="checkbox"/> 48 Hours (2 days)	<input type="checkbox"/> 72 Hours (3 days)	<input checked="" type="checkbox"/> 96 Hours (4 days)	<input checked="" type="checkbox"/> 120 Hours (5 days)
<input type="checkbox"/> Wipe	<input type="checkbox"/> Wastewater		<input type="checkbox"/> 144+ hours (6-10 days)			

TEM AIR, 3 hours, 6 hours, Please call ahead to schedule. There is a premium charge for 3-hour tat, please call 1-800-220-3675 for price prior to sending samples. You will be asked to sign an authorization form for this service.
*12 hours (must arrive by 11:00a.m. Mon -Fri.), Please Refer to Price Quote

<u>PCM - Air</u>	<u>TEM Air</u>	<u>TEM WATER</u>
<input type="checkbox"/> NIOSH 7400(A) Issue 2: August 1994	<input type="checkbox"/> AHERA 40 CFR, Part 763 Subpart E	<input type="checkbox"/> EPA 100.1
<input type="checkbox"/> OSHA w/TWA	<input type="checkbox"/> NIOSH 7402	<input type="checkbox"/> EPA 100.2
<input type="checkbox"/> Other:	<input type="checkbox"/> EPA Level II	<input type="checkbox"/> NYS 198.2
<u>PLM - Bulk</u>	<u>TEM BULK</u>	<u>TEM Microvac/Wipe</u>
<input checked="" type="checkbox"/> EPA 600/R-93/116	<input type="checkbox"/> Drop Mount (Qualitative)	<input type="checkbox"/> ASTM D 5755-95 (quantative method)
<input type="checkbox"/> EPA Point Count	<input type="checkbox"/> Chatfield SOP - 1988-02	<input type="checkbox"/> Wipe Qualitative
<input type="checkbox"/> NY Stratified Point Count	<input checked="" type="checkbox"/> TEM NOB (Gravimetric) NYS 198.4	
<input type="checkbox"/> PLM NOB (Gravimetric) NYS 198.1	<input type="checkbox"/> EMSL Standard Addition:	<u>XRD</u>
<input type="checkbox"/> NIOSH 9002:		<input type="checkbox"/> Asbestos
<input type="checkbox"/> EMSL Standard Addition:	<u>PLM Soil</u>	<input type="checkbox"/> Silica NIOSH 7500
<u>SEM Air or Bulk</u>	<input type="checkbox"/> EPA Protocol Qualitative	
<input type="checkbox"/> Qualitative	<input type="checkbox"/> EPA Protocol Quantitative	<u>OTHER</u>
<input type="checkbox"/> Quantitative	<input type="checkbox"/> EMSL MSD 9000 Method fibers/gram	<input type="checkbox"/>

(92)



Chain of Custody

Asbestos Lab Services

EMSL Analytical, Inc.
 706 Gralin Street
 Kernersville, NC 27284

Phone: (336) 992-1025
 Fax: (336) 992-4175
<http://www.emsl.com>

Please print all information legibly.

Client Sample # 1-1 to 15-3

Total Samples #: 45

Relinquished: Glynn Ellen

Date: 1/6/17

Time: 5:00

Received:

Date: 1/9/17

Time: 9:45

Relinquished:

NS
EMSC FX 8018 3871 3588

Date:

Time:

Received:

Date:

Time:

SAMPLE NUMBER	SAMPLE DESCRIPTION/LOCATION	VOLUME (if applicable)
NOTE: FIRST POSITIVE STOP PROTOCOL. ALSO, FOR SAMPLES DENOTED WITH AN ASTERICK (*), RUN ALL SAMPLES' AS PLM AND TEM ONE OF THE SAMPLES FOR NEGATIVE CONFIRMATION. IF JOINT COMPOUND IS POSITIVE THEN ALSO USE FIRST-STOP POSITIVE ON DRYWALL. SOUTH CAROLINA GUIDELINES.		
01	1-1 Gray Felt - Behind Rip-Rap	End Bent
02	1-2 Gray Felt - Behind Rip-Rap	End Bent
03	1-3 Gray Felt - Behind Rip-Rap	End Bent
04	2-1 Black Expansion Joint Material	Bent 62
05	2-2 Black Expansion Joint Material	Bent 60
06	*2-3 Black Expansion Joint Material	Bent 39
07	3-1 Gray Expansion Joint Material	Bent 66
08	3-2 Gray Expansion Joint Material	Bent 56
09	*3-3 Gray Expansion Joint Material	Bent 38
10	4-1 Black Tar-like Material	Bent 66
11	4-2 Black Tar-like Material	Bent 36
12	*4-3 Black Tar-like Material	Bent 34
13	5-1 Gray Epoxy-Like Material	Bent 59
14	5-2 Gray Epoxy-Like Material	Bent 52
15	*5-3 Gray Epoxy-Like Material	Bent 44
16	6-1 Block Pipe Insulation	(Swing Bridge)
17	6-2 Block Pipe Insulation	(Swing Bridge)
18	6-3 Block Pipe Insulation	(Swing Bridge)
19	7-1 Tan Crack Sealer	Bent 45
20	7-2 Tan Crack Sealer	Bent 45
21	*7-3 Tan Crack Sealer	Bent 45
22	8-1 Gray Crack Sealer	Bent 45
23	8-2 Gray Crack Sealer	Bent 45
24	*8-3 Gray Crack Sealer	Bent 45

APPENDIX C

Photographs











APPENDIX D

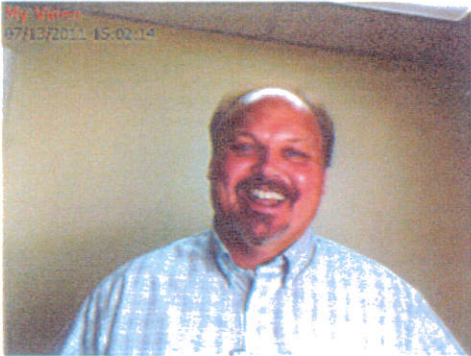
Personnel Certifications

SCDHEC ISSUED

Asbestos ID Card

Glynn M Ellen

Expiration Date



CONSULTPD	PD-00098	06/09/17
AIRSAMPLER	AS-00079	02/16/17
CONSULTMP	ASB-22641	03/31/17
SUPERAHERA	SA-00455	02/16/17

This card is nontransferable and considered invalid if loaned or given to another person for identification. This card will also be invalid if altered or defaced. This card is property of SCDHEC. It must be returned to the department if the holder's accreditation is revoked or this card is invalidated. Any person performing regulated asbestos activities without current accreditation shall be subject to legal sanction. This card must be returned upon expiration and/or issuance of a new card.

YOU MUST HAVE THIS IDENTIFICATION CARD WITH YOU ON THE JOB.

For information or corrections contact: SCDHEC - Asbestos Section
2600 Bull Street
Columbia, SC 29201
(803) 898-4289