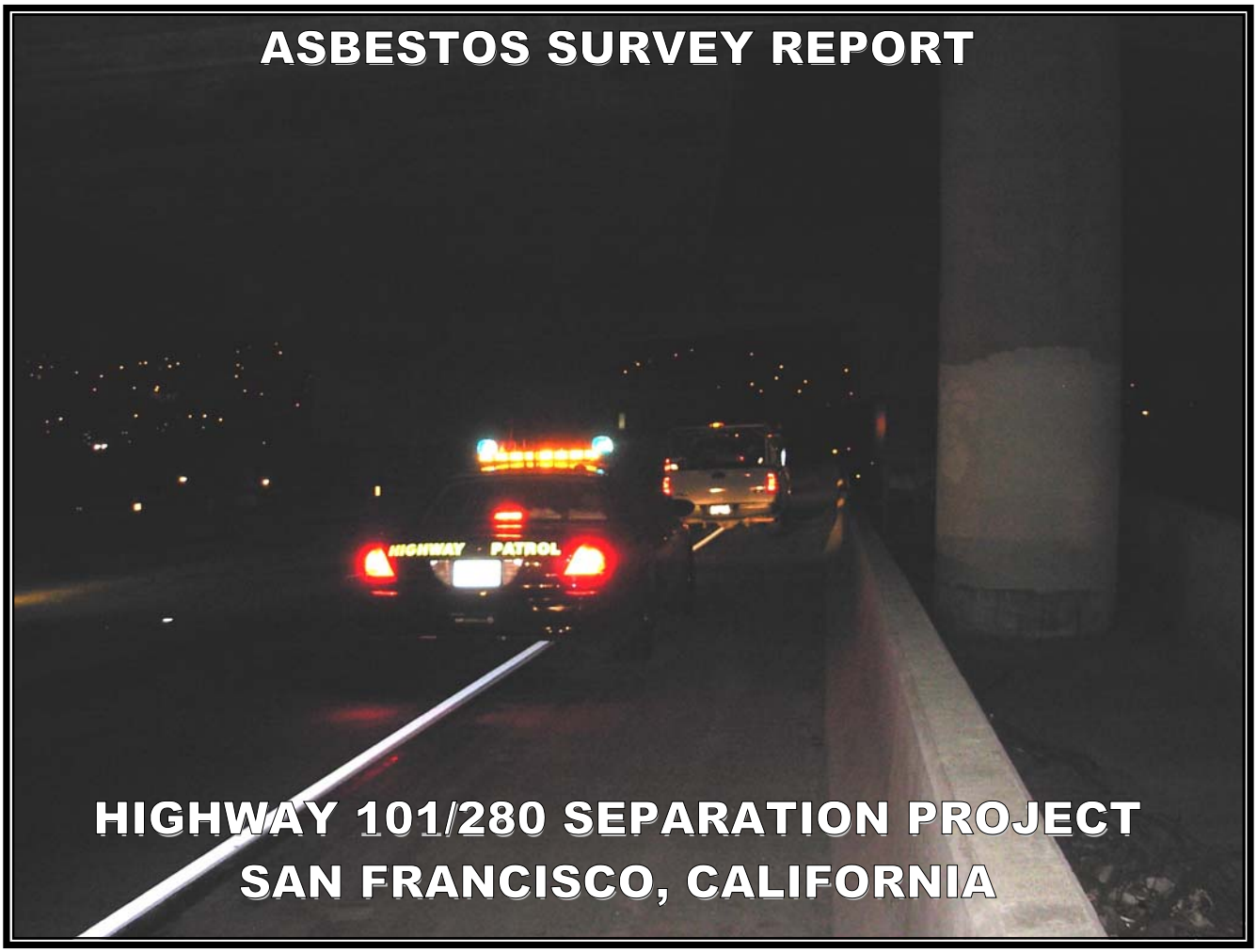
INFORMATION HANDOUT

For Contract No. 04-1A5514
At 04-SF-101/280-1.5/1.8,R4.1/R4.4

Identified by
Project ID 0400000496

MATERIALS INFORMATION

Asbestos Survey Report



ASBESTOS SURVEY REPORT

HIGHWAY 101/280 SEPARATION PROJECT
SAN FRANCISCO, CALIFORNIA

PREPARED FOR:
CALTRANS DISTRICT 4
111 GRAND AVENUE, MS8C
OAKLAND, CALIFORNIA 94612

PREPARED BY:
GEOCON CONSULTANTS, INC.
6671 BRISA STREET
LIVERMORE, CALIFORNIA 94550

GEOCON PROJECT NO. E8435-06-44
CALTRANS EA 04-1A5510

DECEMBER 2009

TABLE OF CONTENTS

ASBESTOS SURVEY REPORT Page
REPORT LIMITATIONS i
PROJECT TEAM iii
EXECUTIVE SUMMARY iv
1.0 INTRODUCTION 1
1.1 Site Description and Proposed Improvements 1
1.2 Purpose 1
2.0 BACKGROUND 1
3.0 SCOPE OF SERVICES 2
3.1 Pre-Field Activities 2
3.2 Field Activities 2
4.0 INVESTIGATIVE METHODS 3
5.0 INVESTIGATIVE RESULTS 3
6.0 CONCLUSIONS 3

TABLE
1. Summary of Analytical Laboratory Test Results – Asbestos

FIGURES
1. Vicinity Map
2. Site Plan

SITE PHOTOGRAPHS (1 through 33)

APPENDIX
A. Laboratory Analytical Report and Chain-of-Custody Documentation

REPORT LIMITATIONS

This asbestos survey was performed to identify and evaluate asbestos in bridges. Due to the nature of asbestos surveys, asbestos use, and laboratory analytical limitations, some asbestos in the structures may not have been identified. Spaces such as cavities, crawlspaces, and pipe chases were not surveyed. Previous structure renovation work may have concealed or covered spaces or materials, or may have partially demolished materials and left debris in inaccessible areas. Additionally, renovation activities may have partially replaced asbestos with indistinguishable non-asbestos. Asbestos may exist in areas of the structures not accessible or sampled in conjunction with this Task Order.

During renovation or demolition operations, suspect materials may be uncovered which are different from those accessible for sampling during this assessment. Personnel in charge of renovation/demolition should be alerted to note materials uncovered during such activities that differ substantially from those included in this or previous assessment reports. If suspect materials are found, additional sampling and analysis should be performed to determine if the materials contain asbestos.

This report has been prepared exclusively for the State of California Department of Transportation (Caltrans) District 4. The information contained herein is only valid as of the date of the report, and will require an update to reflect additional information obtained.

This report is not a comprehensive site characterization and should not be construed as such. The findings as presented in this report are predicated on the results of the limited sampling and laboratory testing performed. In addition, the information obtained is not intended to address potential impacts related to sources other than those specified herein. Therefore, the report should be deemed conclusive with respect to only the information obtained. We make no warranty, express or implied, with respect to the content of this report or any subsequent reports, correspondence, or consultation. Geocon strived to perform the services summarized herein in accordance with the local standard of care in the geographic region at the time the services were rendered.

The contents of this report reflect the views of the authors who are responsible for the facts and accuracy of the data presented herein. The contents do not necessarily reflect the official views or policies of the State of California or the Federal Highway Administration. This report does not constitute a standard, specification, or regulation.

GEOCON CONSULTANTS, INC

David Watts, CAC
Senior Project Scientist

Chris Giuntoli, CAC
Senior Project Scientist

CALIFORNIA DEPARTMENT OF TRANSPORTATION – DISTRICT 4
OFFICE OF ENVIRONMENTAL ENGINEERING

Reviewed By:	Recommended by:	Approved By:
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EXECUTIVE SUMMARY

The project consists of 11 bridges at the Highway 101/280 Separation in San Francisco, California. The project location is depicted on the Vicinity Map, Figure 1, and Site Plan, Figure 2. Individual bridge identification information is presented on Figure 2. We understand that Caltrans proposes to perform various bridge improvement activities at the project location.

The primary objective of our survey was to determine and quantify asbestos on the subject bridges. Caltrans will use the information obtained from our investigation to coordinate proposed bridge improvement activities, determine appropriate abatement/disposal costs, and identify health and safety concerns during improvements.

We completed the field investigation on November 19, 2009. The following field activities were performed during asbestos sampling efforts:

- Collected 63 bulk suspect asbestos samples at the project location; and
- Transported samples to a Caltrans-approved, California-certified environmental laboratory.

Samples were collected from bridge locations as shown on Figure 2. Suspect asbestos sample identification numbers are presented in Table 1. Materials represented by the samples collected are presented in the Site Photographs.

Bulk suspect asbestos samples were collected after first wetting the material with a light mist of water. The samples were then cut from the substrate and transferred to labeled containers and sealed. When multiple samples were collected, the sampling locations were distributed throughout the homogeneous area (spaces where the material was observed).

Geocon relinquished bulk samples for asbestos analyses using standard chain-of-custody documentation. Asbestos content was determined using EPA Test Method 600/R-93/116 for polarized light microscopy (PLM). Laboratory analyses were requested within a 24-hour turn-around-time.

No asbestos fibers were detected in samples of suspect materials collected at the project location. Laboratory results for the asbestos samples are summarized in Table 1. Reproductions of the laboratory report and chain-of-custody documentation are presented in Appendix A.

Since no asbestos was detected, the Cal/OSHA asbestos standard does not apply for activities disturbing suspect materials represented by samples collected during our survey. In addition, suspect materials represented by samples collected during our survey would not be considered a California hazardous waste based on asbestos content.

ASBESTOS SURVEY REPORT

1.0 INTRODUCTION

This asbestos survey report was prepared for the Highway 101/280 Separation Project in San Francisco, California. This report documents the investigation sampling methods and laboratory analytical data.

1.1 Site Description and Proposed Improvements

The project location is depicted on the Vicinity Map, Figure 1, and Site Plan, Figure 2. Individual bridge identification information is presented on Figure 2. We understand that Caltrans proposes to perform various bridge improvement activities at the project location.

1.2 Purpose

This report documents the investigation sampling methods and laboratory analytical data. The primary objective of our survey was to determine and quantify asbestos on the subject bridges. Caltrans will use the information obtained from our investigation to coordinate proposed bridge improvement activities, determine appropriate abatement/disposal costs, and identify health and safety concerns during improvements.

2.0 BACKGROUND

The *Code of Federal Regulations (CFR),* 40 CFR 61, Subpart M, National Emissions Standards for Hazardous Air Pollutants (NESHAP) and Federal Occupational Safety and Health Administration (FED OSHA) classify asbestos-containing material (ACM) as any material or product that contains *greater than* 1% asbestos. Nonfriable ACM is classified by NESHAP as either Category I or Category II material defined as follows:

- **Category I** – asbestos-containing packings, gaskets, resilient floor coverings, and asphalt roofing products.
- **Category II** – all remaining types of nonfriable asbestos-containing material not included in Category I that when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure.

Regulated asbestos-containing material (RACM), a hazardous waste when friable, is classified as any manufactured material that contains *greater than* 1% asbestos by dry weight *and* is:

- Friable; or
- Category I material that has become friable; or
- Category I material that has been subjected to sanding, grinding, cutting, or abrading; or
- Category II nonfriable material that has a high probability of becoming crumbled, pulverized, or reduced to a powder during demolition or renovation activities.

Activities that disturb materials containing *any* amount of asbestos are subject to certain requirements of the Cal/OSHA asbestos standard contained in Title 8, CCR Section 1529. Typically, removal or disturbance of more than 100 square feet of material containing more than 0.1% asbestos must be performed by a registered asbestos abatement contractor, but associated waste labeling is not required if the material contains 1% or less asbestos. When the asbestos content of a material exceeds 1%, virtually all requirements of the standard become effective.

Materials containing more than 1% asbestos are also subject to NESHAP regulations (40 CFR Part 61, Subpart M). RACM (friable ACM and nonfriable ACM that will become friable during demolition operations) must be removed from structures prior to demolition. Certain nonfriable ACM and materials containing 1% or less asbestos may remain in structures during demolition; however, there are waste handling/disposal issues and Cal/OSHA work requirements that must be followed. Contractors are responsible for segregating and characterizing waste streams prior to disposal.

With respect to potential worker exposure, notification, and registration requirements, Cal/OSHA defines asbestos-containing construction material (ACCM) as construction material that contains more than 0.1% asbestos (Title 8, CCR 341.6).

3.0 SCOPE OF SERVICES

The following scope of services was performed:

3.1 Pre-Field Activities

- Prepared a Workplan, dated November 17, 2009, to summarize the scope of services to be performed by Geocon.
- Prepared a Health and Safety Plan, dated October 30, 2009, to provide guidelines on personal safety during the field activities.
- Retained the services of EMSL, a Caltrans-approved laboratory accredited by the National Voluntary Laboratory Accreditation Program (NVLAP), to perform the asbestos analyses.

As-built drawings or previous asbestos survey reports of the subject bridges were not available for our review.

3.2 Field Activities

Mr. David Watts, a California-certified Asbestos Consultant (CAC), certification No. 98-2404 (expiration September 16, 2010), completed the asbestos survey on November 19, 2009. A total of 63 bulk samples of suspect ACM were collected.

4.0 INVESTIGATIVE METHODS

Samples were collected from bridge locations as shown on Figure 2. Suspect asbestos sample identification numbers are presented in Table 1. Materials represented by the samples collected are presented in the Site Photographs.

Suspect ACM was grouped into homogeneous areas with representative samples collected from each suspect material. In addition, each potential ACM was evaluated for friability. Bulk suspect asbestos samples were collected after first wetting the material with a light mist of water. The samples were then cut from the substrate and transferred to labeled containers and sealed. When multiple samples were collected, the sampling locations were distributed throughout the homogeneous area (spaces where the material was observed).

Geocon relinquished bulk samples for asbestos analyses using standard chain-of-custody documentation. Asbestos content was determined using EPA Test Method 600/R-93/116 for polarized light microscopy (PLM). Laboratory analyses were requested within a 24-hour turn-around-time.

5.0 INVESTIGATIVE RESULTS

No asbestos fibers were detected in samples of suspect materials collected at the project location. Laboratory results for the asbestos samples are summarized in Table 1. Reproductions of the laboratory report and chain-of-custody documentation are presented in Appendix A.

6.0 CONCLUSIONS

Since no asbestos was detected, the Cal/OSHA asbestos standard does not apply for activities disturbing suspect materials represented by samples collected during our survey. In addition, suspect materials represented by samples collected during our survey would not be considered a California hazardous waste based on asbestos content.

TABLE 1
SUMMARY OF ANALYTICAL LABORATORY TEST RESULTS - ASBESTOS
HIGHWAY 101/280 SEPARATION IN SAN FRANCISCO, CALIFORNIA

Polarized Light Microscopy (PLM) - EPA Test Method 600/R-93/116

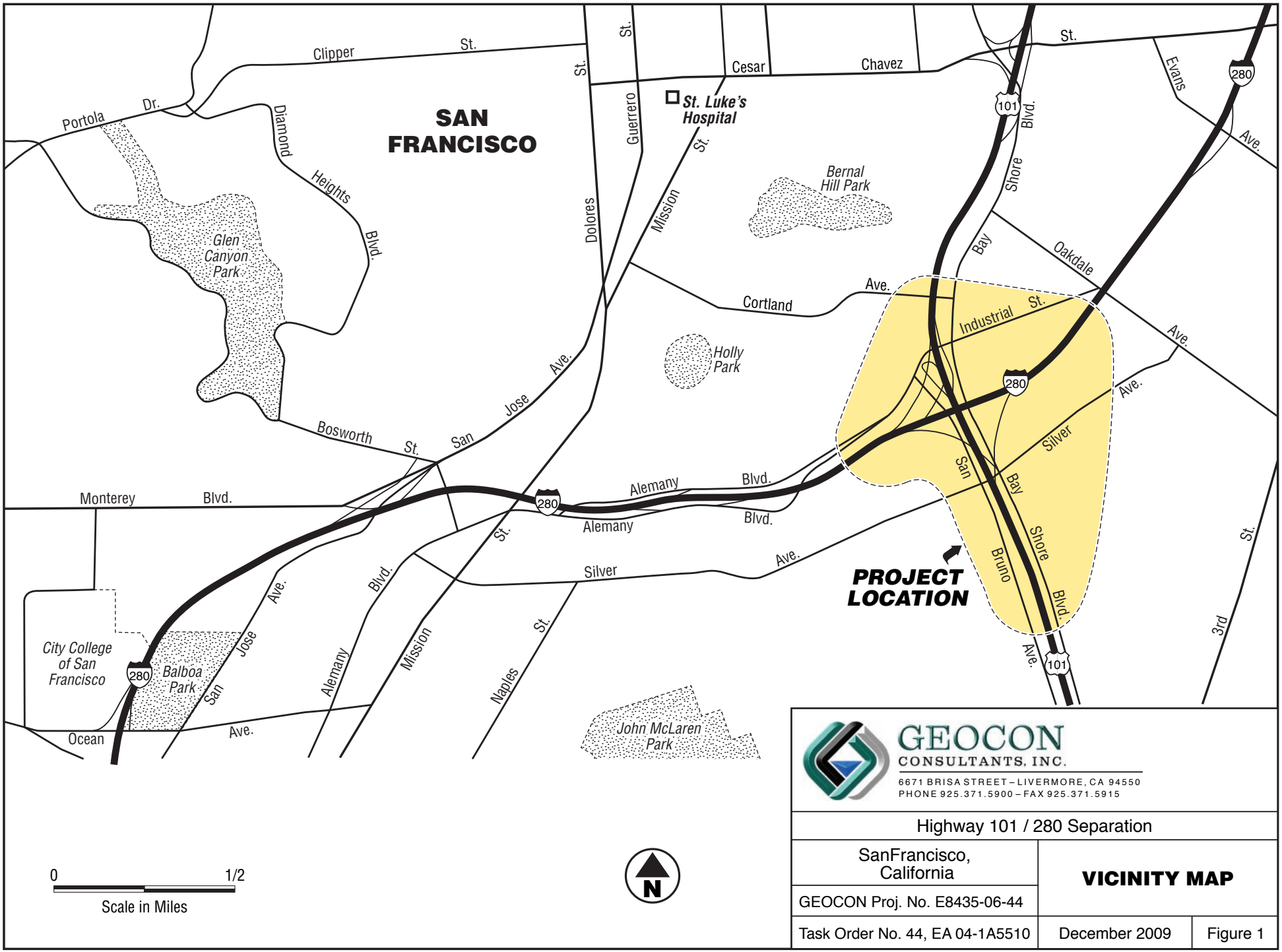
Bridge No.	Sample Group No.	Description of Material	Approximate Quantity	Friable	Site Photos	Asbestos Content
34-0070E	0070E-1	Deck joint seal	NA	NA	2	ND
34-0046	0046-1	Deck joint seal	NA	NA	5	ND
	0046-2	Expansion joint fill material	NA	NA	5	ND
34-0070	0070-1	Deck joint seal	NA	NA	8	ND
	0070-2	Expansion joint fill material	NA	NA	8	ND
34-0135G	0135G-1	Deck joint seal	NA	NA	11	ND
	0135G-2	Expansion joint fill material	NA	NA	11	ND
34-0133R	0133R-1	Deck joint seal	NA	NA	14	ND
	0133R-2	Expansion joint fill material	NA	NA	14	ND
34-0132R	0132R-1	Deck joint seal	NA	NA	17	ND
	0132R-2	Expansion joint fill material	NA	NA	17	ND
34-0131L	0131L-1	Deck joint seal	NA	NA	20	ND
	0131L-2	Expansion joint fill material	NA	NA	20	ND
34-0134G	0134G-1	Deck joint seal	NA	NA	23	ND
	0134G-2	Expansion joint fill material	NA	NA	23	ND
34-0071F	0071F-1	Deck joint seal	NA	NA	26	ND
	0071F-2	Expansion joint fill material	NA	NA	26	ND

TABLE 1
SUMMARY OF ANALYTICAL LABORATORY TEST RESULTS - ASBESTOS
HIGHWAY 101/280 SEPARATION IN SAN FRANCISCO, CALIFORNIA

Polarized Light Microscopy (PLM) - EPA Test Method 600/R-93/116

Bridge No.	Sample Group No.	Description of Material	Approximate Quantity	Friable	Site Photos	Asbestos Content
34-0136G	0136G-1	Deck joint seal	NA	NA	29	ND
	0136G-2	Expansion joint fill material	NA	NA	29	ND
34-0070H	0070H-1	Deck joint seal	NA	NA	32	ND
	0070H-2	Expansion joint fill material	NA	NA	32	ND

Notes:
NA = Not applicable (no asbestos detected)
ND = No asbestos fibers detected



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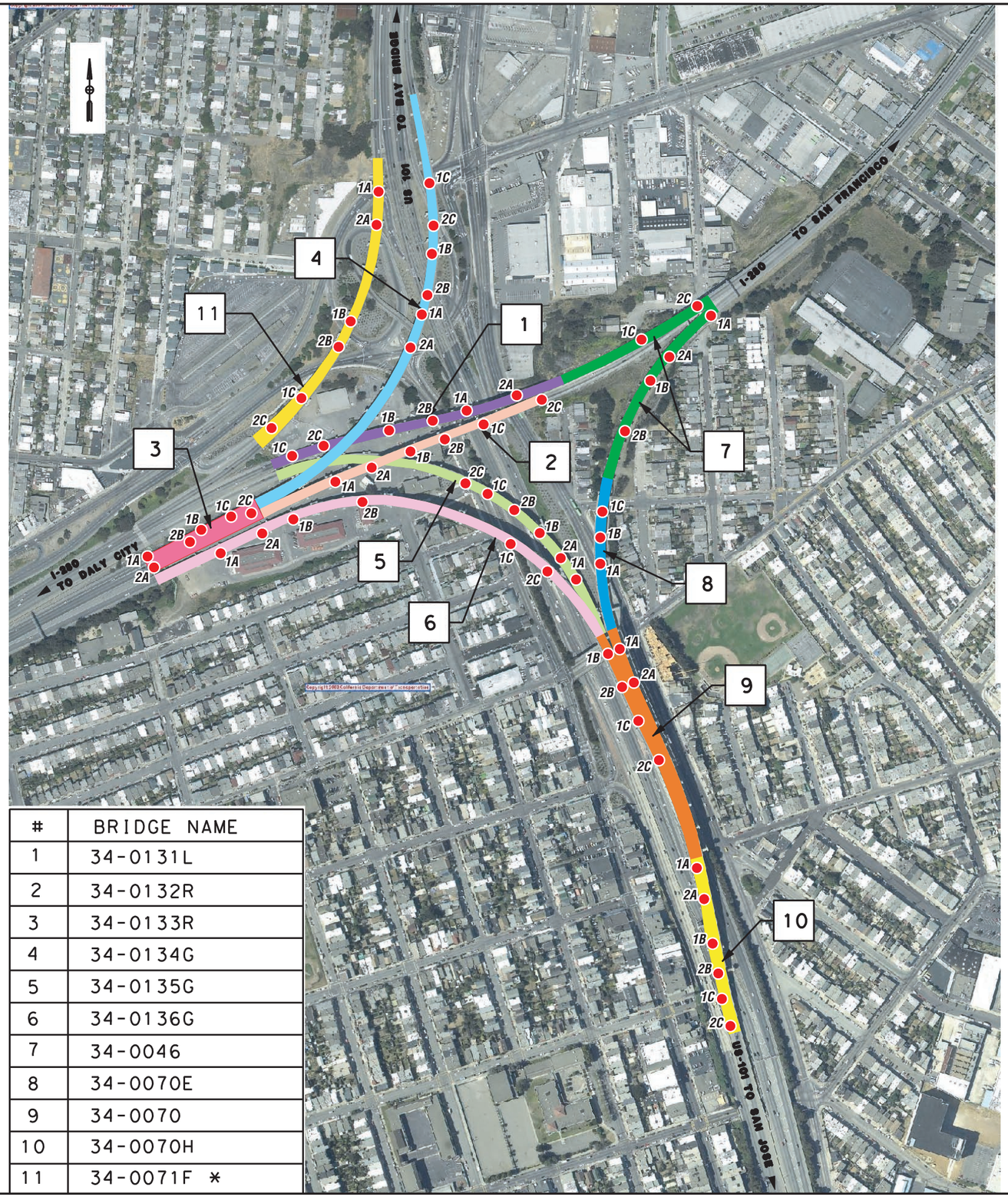
Highway 101 / 280 Separation

SanFrancisco, California

VICINITY MAP

GEOCON Proj. No. E8435-06-44

Task Order No. 44, EA 04-1A5510 | December 2009 | Figure 1



#	BRIDGE NAME
1	34-0131L
2	34-0132R
3	34-0133R
4	34-0134G
5	34-0135G
6	34-0136G
7	34-0046
8	34-0070E
9	34-0070
10	34-0070H
11	34-0071F *

LEGEND:

● Approximate Asbestos Sample Location

* NOT INCLUDED IN THE ORIGINAL SCOPE,
MAY OR MAY NOT BE INCLUDED IN THE REVISED SCOPE (TBD)

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Highway 101 / 280 Separation

SanFrancisco, California

SITE PLAN

GEOCON Proj. No. E8435-06-44

Task Order No. 44, EA 04-1A5510 | December 2009 | Figure 2

Photo 1 – Bridge 34-0070E

Photo 2 – Bridge 34-0070E deck joint seal

Photo 3 – Bridge 34-0070E barrier rail system (non-suspect)

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PHOTOGRAPHS 1, 2, & 3		
Highway 101/280 Separation Project San Francisco, California		
E8435-06-44	Task Order No. 44	December 2009

Photo 4 – Bridge 34-0046

Photo 5 – Bridge 34-0046 deck joint seal and expansion joint fill material

Photo 6 – Bridge 34-0046 metallic barrier rail shims (non-suspect)

Photo 7 – Bridge 34-0070

Photo 8 – Bridge 34-0070 deck joint seal and expansion joint fill material

Photo 9 – Bridge 34-0070 metallic barrier rail shims (non-suspect)

Photo 10 – Bridge 34-0135G

Photo 11 – Bridge 34-0135G deck joint seal and expansion joint fill material

Photo 12 – Bridge 34-0135G metallic barrier rail shims (non-suspect)

Photo 13 – Bridge 34-0133R

Photo 14 – Bridge 34-0133R deck joint seal and expansion joint fill material

Photo 15 – Bridge 34-0133R metallic barrier rail shims (non-suspect)

Photo 16 – Bridge 34-0132R

Photo 17 – Bridge 34-0132R deck joint seal and expansion joint fill material

Photo 18 – Bridge 34-0132R metallic barrier rail shims (non-suspect)

Photo 19 – Bridge 34-0131L

Photo 20 – Bridge 34-0131L deck joint seal and expansion joint fill material

Photo 21 – Bridge 34-0131L metallic barrier rail shims (non-suspect)

Photo 22 – Bridge 34-0134G

Photo 23 – Bridge 34-0134G deck joint seal and expansion joint fill material

Photo 24 – Bridge 34-0134G metallic barrier rail shims (non-suspect)

Photo 25 – Bridge 34-0071F

Photo 26 – Bridge 34-0071F deck joint seal and expansion joint fill material

Photo 27 – Bridge 34-0071F metallic barrier rail shims (non-suspect)

Photo 28 – Bridge 34-0136G

Photo 29 – Bridge 34-0136G deck joint seal and expansion joint fill material

Photo 30 – Bridge 34-0136G metallic barrier rail shims (non-suspect)

Photo 31 – Bridge 34-0070H

Photo 32 – Bridge 34-0070H deck joint seal and expansion joint fill material

Photo 33 – Bridge 34-0070H metallic barrier rail shims (non-suspect)

APPENDIX A

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Project: **E8435-06-44, 101 /280 IC, SF, CA**

Customer ID: GECN21
Customer PO: E8435-06-44
Received: 11/19/09 8:00 AM
EMSL Order: 090909408

EMSL Proj: E8435-06-**
Analysis Date: 11/19/2009

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

Sample	Description	Appearance	Non-Asbestos %	Fibrous	Non-Asbestos %	Non-Fibrous	Asbestos %	Type
0070E-1A-Joint Seal *090909408-0001*		Black Non-Fibrous Homogeneous			100%	Non-fibrous (other)		**None Detected**
0070E-1B-Joint Seal *090909408-0002*		Black Non-Fibrous Homogeneous			100%	Non-fibrous (other)		**None Detected**
0070E-1C-Joint Seal *090909408-0003*		Black Non-Fibrous Homogeneous			100%	Non-fibrous (other)		**None Detected**
0046-1A-Joint Seal *090909408-0004*		Black Non-Fibrous Heterogeneous			100%	Non-fibrous (other)		**None Detected**
0046-1B-Joint Seal *090909408-0005*		Black Non-Fibrous Heterogeneous			100%	Non-fibrous (other)		**None Detected**
0046-1C-Joint Seal *090909408-0006*		Black Non-Fibrous Heterogeneous			100%	Non-fibrous (other)		**None Detected**
0046-2A-Joint Fill Material *090909408-0007*		Black Fibrous Homogeneous	90%	Cellulose	10%	Non-fibrous (other)		**None Detected**

Analyst(s)

Grant Mays (43)
Michael Schaumloeffel (20)

Baojia Ke, Laboratory Manager
or other approved signatory

Due to magnification limitations inherent in PLM, asbestos fibers in dimensions below the resolution capability of PLM may not be detected. Samples reported as <1% or none detected may require additional testing by TEM to confirm asbestos quantities. The above test report relates only to the items tested and may not be reproduced in any form without the express written approval of EMSL Analytical, Inc. EMSL's liability is limited to the cost of analysis. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client.Samples received in good condition unless otherwise noted.
Samples analyzed by EMSL Analytical, Inc San Leandro 2235 Polvorosa Ave , Suite 230, San Leandro CA NVLAP Lab Code 101048-3, MA AA000201, WA C2007

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			Non-Asbestos				Asbestos
Sample	**Description**	**Appearance**	**%**	**Fibrous**	**%**	**Non-Fibrous**	**% Type**
0046-2B-Joint Fill Material *090909408-0008*		Black Fibrous Homogeneous	90%	Cellulose	10%	Non-fibrous (other)	**None Detected**
0046-2C-Joint Fill Material *090909408-0009*		Black Fibrous Homogeneous	90%	Cellulose	10%	Non-fibrous (other)	**None Detected**
0070-1A-Joint Seal *090909408-0010*		Various Non-Fibrous Heterogeneous			100%	Non-fibrous (other)	**None Detected**
0070-1B-Joint Seal *090909408-0011*		Various Non-Fibrous Heterogeneous			100%	Non-fibrous (other)	**None Detected**
0070-1C-Joint Seal *090909408-0012*		Various Non-Fibrous Heterogeneous			100%	Non-fibrous (other)	**None Detected**
0070-2A-Joint Fill Material *090909408-0013*		Black Fibrous Homogeneous	90%	Cellulose	10%	Non-fibrous (other)	**None Detected**

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

			Non-Asbestos				Asbestos
Sample	**Description**	**Appearance**	**%**	**Fibrous**	**%**	**Non-Fibrous**	**% Type**
0070-2B-Joint Fill Material *090909408-0014*		Black Fibrous Homogeneous	90%	Cellulose	10%	Non-fibrous (other)	**None Detected**
0070-2C-Joint Fill Material *090909408-0015*		Black Fibrous Homogeneous	90%	Cellulose	10%	Non-fibrous (other)	**None Detected**
0135G-1A-Joint Seal *090909408-0016*		Black Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**
0135G-1B-Joint Seal *090909408-0017*		Black Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**
0135G-1C-Joint Seal *090909408-0018*		Black Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**
0135G-2A-Joint Fill Material *090909408-0019*		Various Fibrous Heterogeneous	30%	Cellulose	70%	Non-fibrous (other)	**None Detected**

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Baojia Ke, Laboratory Manager
or other approved signatory

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Sample	Description	Appearance	Non-Asbestos %	Fibrous	Non-Asbestos %	Non-Fibrous	Asbestos % Type
0135G-2B-Joint Fill Material *090909408-0020*		Black Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**
0135G-2C-Joint Fill Material *090909408-0021*		Black Fibrous Homogeneous	50%	Cellulose	50%	Non-fibrous (other)	**None Detected**
0133R-1A-Joint Seal *090909408-0022*		Black Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**
0133R-1B-Joint Seal *090909408-0023*		Black Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**
0133R-1C-Joint Seal *090909408-0024*		Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**
0133R-2A-Joint Fill Material *090909408-0025*		Black Fibrous Homogeneous	90%	Cellulose	10%	Non-fibrous (other)	**None Detected**

Analyst(s)

Grant Mays (43)
Michael Schaumloeffel (20)

Baojia Ke, Laboratory Manager
or other approved signatory

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Samples analyzed by EMSL Analytical, Inc San Leandro 2235 Polvorosa Ave , Suite 230, San Leandro CA NVLAP Lab Code 101048-3, MA AA000201, WA C2007

EMSL Analytical, Inc
2235 Polvorosa Ave , Suite 230, San Leandro, CA 94577
Phone: (510) 895-3675 Fax: (510) 895-3680 Email: milpitaslab@emsl.com

Attn: **David Watts**
Geocon Consultants
6671 Brisa Street
Livermore, CA 94550

Fax: (925) 371-5915 Phone: (925) 371-5900
Project: **E8435-06-44, 101 /280 IC, SF, CA**

Customer ID: GECN21
Customer PO: E8435-06-44
Received: 11/19/09 8:00 AM
EMSL Order: 090909408

EMSL Proj: E8435-06-**
Analysis Date: 11/19/2009

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

Sample	Description	Appearance	Non-Asbestos %	Fibrous	Non-Asbestos %	Non-Fibrous	Asbestos % Type
0133R-2B-Joint Fill Material *090909408-0026*		Black Fibrous Homogeneous	90%	Cellulose	10%	Non-fibrous (other)	**None Detected**
0133R-2C-Joint Fill Material *090909408-0027*		Black Fibrous Homogeneous	90%	Cellulose	10%	Non-fibrous (other)	**None Detected**
0132R-1A-Joint Seal *090909408-0028*		Black Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**
0132R-1B-Joint Seal *090909408-0029*		Black Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**
0132R-1C-Joint Seal *090909408-0030*		Black Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**
0132R-2A-Joint Fill Material *090909408-0031*		Black Fibrous Homogeneous	90%	Cellulose	10%	Non-fibrous (other)	**None Detected**

Analyst(s)

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

Sample	Description	Appearance	Non-Asbestos %	Fibrous	Non-Asbestos %	Non-Fibrous	Asbestos % Type
0132R-2B-Joint Fill Material *090909408-0032*		Black Fibrous Homogeneous	90%	Cellulose	10%	Non-fibrous (other)	**None Detected**
0132R-2C-Joint Fill Material *090909408-0033*		Black Fibrous Homogeneous	90%	Cellulose	10%	Non-fibrous (other)	**None Detected**
0131L-1A-Joint Seal *090909408-0034*		Black Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**
0131L-1B-Joint Seal *090909408-0035*		Black Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**
0131L-1C-Joint Seal *090909408-0036*		Black Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**
0131L-2A-Joint Fill Material *090909408-0037*		Black Fibrous Homogeneous	90%	Cellulose	10%	Non-fibrous (other)	**None Detected**

Analyst(s)

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

Sample	Description	Appearance	Non-Asbestos %	Fibrous	Non-Asbestos %	Non-Fibrous	Asbestos % Type
0131L-2B-Joint Fill Material *090909408-0038*		Black Fibrous Homogeneous	90%	Cellulose	10%	Non-fibrous (other)	**None Detected**
0131L-2C-Joint Fill Material *090909408-0039*		Black Fibrous Homogeneous	90%	Cellulose	10%	Non-fibrous (other)	**None Detected**
0134G-1A-Joint Seal *090909408-0040*		Black Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**
0134G-1B-Joint Seal *090909408-0041*		Black Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**
0134G-1C-Joint Seal *090909408-0042*		Black Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**
0134G-2A-Joint Fill Material *090909408-0043*		Black Fibrous Homogeneous	95%	Cellulose	5%	Non-fibrous (other)	**None Detected**

Analyst(s)

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

Sample	Description	Appearance	Non-Asbestos %	Fibrous	Non-Asbestos %	Non-Fibrous	Asbestos % Type
0134G-2B-Joint Fill Material *090909408-0044*		Black Fibrous Homogeneous	95%	Cellulose	5%	Non-fibrous (other)	**None Detected**
0134G-2C-Joint Fill Material *090909408-0045*		Black Fibrous Homogeneous	90%	Cellulose	10%	Non-fibrous (other)	**None Detected**
0071F-1A-Joint Seal *090909408-0046*		Black Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**
0071F-1B-Joint Seal *090909408-0047*		Black Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**
0071F-1C-Joint Seal *090909408-0048*		Black Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**
0071F-2A-Joint Fill Material *090909408-0049*		Black Fibrous Homogeneous	90%	Cellulose	10%	Non-fibrous (other)	**None Detected**

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

			Non-Asbestos				Asbestos
Sample	**Description**	**Appearance**	**%**	**Fibrous**	**%**	**Non-Fibrous**	**% Type**
0071F-2B-Joint Fill Material *090909408-0050*		Black Fibrous Homogeneous	90%	Cellulose	10%	Non-fibrous (other)	**None Detected**
0071F-2C-Joint Fill Material *090909408-0051*		Black Fibrous Homogeneous	90%	Cellulose	10%	Non-fibrous (other)	**None Detected**
0136G-1A-Joint Seal *090909408-0052*		Black Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**
0136G-1B-Joint Seal *090909408-0053*		Black Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**
0136G-1C-Joint seal *090909408-0054*		Black Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**
0136G-2A-Joint Fill Material *090909408-0055*		Black Fibrous Homogeneous	90%	Cellulose	10%	Non-fibrous (other)	**None Detected**

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

Sample	Description	Appearance	Non-Asbestos %	Fibrous	Non-Asbestos %	Non-Fibrous	Asbestos % Type
0136G-2B-Joint Fill Material *090909408-0056*		Black Fibrous Homogeneous	90%	Cellulose	10%	Non-fibrous (other)	**None Detected**
0136G-2C-Joint Fill Material *090909408-0057*		Black Fibrous Homogeneous	90%	Cellulose	10%	Non-fibrous (other)	**None Detected**
0070H-1A-Joint Seal *090909408-0058*		Black Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**
0070H-1B-Joint Seal *090909408-0059*		Black Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**
0070H-1C-Joint Seal *090909408-0060*		Black Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**
0070H-2A-Joint Fill Material *090909408-0061*		Black Fibrous Homogeneous	90%	Cellulose	10%	Non-fibrous (other)	**None Detected**

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Analysis Date: 11/19/2009

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

			Non-Asbestos				Asbestos
Sample	**Description**	**Appearance**	**%**	**Fibrous**	**%**	**Non-Fibrous**	**% Type**
0070H-2B-Joint Fill Material *090909408-0062*		Black Fibrous Homogeneous	90%	Cellulose	10%	Non-fibrous (other)	**None Detected**
0070H-2C-Joint Fill Material *090909408-0063*		Black Fibrous Homogeneous	90%	Cellulose	10%	Non-fibrous (other)	**None Detected**

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THIS IS THE LAST PAGE OF THE REPORT.

090909408

Chain of C[illegible]ly Form

Pg 1 of 2

Project No.: E8435-06-44 | Client Name: GEOCON | Analyze sample sets until pos[illegible] Yes ☒ No

Report Results to: D. WATTS | Office Location: LIVERMORE CA | Analytical Fee (per sample): $ PLM | Date(s) Inspected: 18/19 NOV 2009

Consultants Ph. #: (925) 371-5900 | Consultants Fax #: (925) 371-5915 | Other Comments: 24-HR TAT

Site Name: 101/280 IC | Building No. — | Site Address: SF, CA

Material Code	Site No.	Sample Number	Material Link No.	A	B	C	D	E	F	G	H	I	J	K	Not Sampled	Material Description
		0090E	1	X	X	X										JOINT SEAL
		0046	1	X	X	X										" "
		0046	2	X	X	X										JOINT FILL MATERIAL
		0070	1	X	X	X										" SEAL
		0070	2	X	X	X										" FILL MATERIAL
		0135G	1	X	X	X										" SEAL
		0135G	2	X	X	X										" FILL MATERIAL
		0133R	1	X	X	X										" SEAL
		0133R	2	X	X	X										" FILL MATERIAL
		0132R	1	X	X	X										" SEAL
		0132R	2	X	X	X										" FILL MATERIAL
		0131L	1	X	X	X										" SEAL
		0131L	2	X	X	X										" FILL MATERIAL
		0134G	1	X	X	X										" SEAL
		0134G	2	X	X	X										" FILL MATERIAL
		0071F	1	X	X	X										JOINT SEAL

Relinquished by: Print Name: D. WATTS Signature: [illegible] Date/Time: 19 NOV 2009 0300 | Received by: Print Name: Signature: EMSL Date/Time: 19 NOV 2009 0300

Relinquished by: Print Name: Signature: Date/Time: | Received by: Print Name: Signature: Todd [illegible] Date/Time: 11/19/09 8:00 AM D/O

Flooring
- CFT = Ceramic floor tile grout/mastic (M)
- F = Floor material-Generic(M)
- FMAS = Floor mastic(M)
- FT = Vinyl composite tile floor (M)
- FS = Vinyl composite sheet floor (M)
- FLC = Floor leveling compound (M)
- TERR = Terrazzo flooring (M)

Wall/Ceiling/Other
- ACOU = Textured acoustical (sprayed) (S)
- BBM = Baseboard mastic (M)
- CM = Ceiling (unspecified type) (M)
- CS = Ceiling (unspecified type) (S)
- CP = Ceiling panel - Lay-in (M)
- CMAS = Ceiling mastic (M)
- CT = Ceiling tile - Splined or nailed (M)
- CTG = Ceiling tile - Glued (M)
- CWT = Ceramic wall tile grout & mastic(M)
- DEBM = Debris (unspecified) (M)
- DEBS = Debris (unspecified) (S)
- DEBT = Debris (unspecified) (TSI)
- DOOR = Door core insulation - Fire door (M)
- OFM = Other friable material (M)
- OFS = Other friable material (S)
- ONFM = Other nonfriable material (M)
- ONFS = Other nonfriable materials (S)
- PL = Plaster (wall or ceiling) (S)
- SHR = Sheetrock (no joint compound) (M)
- SHRJC = Sheetrock with joint compound (M)
- STUC = Stucco (S)
- FP = Structural fireproofing (S)
- TRAN = Transite panel (M)
- TX = Surface texturing on walls/ceiling (S)
- WM = Wall (unspecified type) (M)
- WS = Wall (unspecified type) (S)
- WT = Wall tile - Splined or nailed (M)
- WTG = Wall tile - Glued on (M)

Piping/TSI
- FI = Fitting insulation (type not specified) (TSI)
- FICHW = Fitting - Chilled water system (TSI)
- FICON = Fitting - Condensate (TSI)
- FIDCW = Fitting - Domestic cold water (TSI)
- FIDHW = Fitting - Domestic hot water (TSI)
- FIHHW = Fitting - Heating hot water (TSI)
- FISTM = Fitting - Steam (TSI)
- DI = Duct insulation (TSI)
- DTAPH = HVAC - Duct joint tape/compound (M)
- DFLEX = HVAC - Flexible duct/flex duct joint (M)
- DFLUE = Mech. equipment - Flue insulation (TSI)
- MGSKT = Mech. equipment-Gasket (M)
- MTANK = Mech equipment-Tank insulation (TSI)
- PI = Pipe insulation (type not specified) (TSI)
- PICHW = Pipe insulation-Chilled water system (TSI)
- PICON = Pipe insulation-Condensate (TSI)
- PIDCW = Pipe insulation-Domestic cold water (TSI)
- PIDHW = Pipe insulation-Domestic hot water (TSI)
- PIHHW = Pipe insulation-Heating hot water (TSI)
- PISTM = Pipe insulation-Steam (TSI)
- PTRAN = Pipe-Transite (M)

Roofing
- RF = Roofing material (M)
- RFAG = Asphalt and gravel (M)
- RFAT = Asphalt roof tile (M)
- RFFLS = Flashing (M)
- RFFLT = Felt material (M)
- RFMAS = Penetration mastic (M)
- RFROL = Rolled sheet type (M)
- RTRAN = Transite shingle (M)

- (M) = Miscellaneous material
- (S) = Surfacing material
- (TSI) = Thermal System Insulation

48

090909408

090909408

Chain of C[illegible]ly Form

Pg 2 of 2

Project No.: E8435-06-44 Client Name: GEOCON

Analyze sample sets until posi[illegible] Yes ☒ No

Report Results to: D. WATTS Office Location: LIVERMORE, CA Analytical Fee (per sample): $ PLM Date(s) Inspected: 18/19 NOV 2009

Consultants Ph. #: (925) 371-5900 Consultants Fax #: (925) 371-5915 Other Comments: 24-HR TAT

Site Name: 101/280 I-C Building No. Site Address: SF, CA

Material Code	Sample Number: Site No.	Sample Number	Material Link No.	A	B	C	D	E	F	G	H	I	J	K	Not Sampled	Material Description
		0071F	2	X	X	X										JOINT FILL MATERIAL
		0136G	1	X	X	X										" SEAL
		0136G	2	X	X	X										" FILL MATERIAL
		0070H	1	X	X	X										" SEAL
		0070H	2	X	X	X										" FILL MATERIAL

Relinquished by: Print Name: D. WATTS Signature: [illegible] Date/Time: 19 NOV 2009 0300

Received by: Print Name: Signature: EMSL Date/Time: 19 NOV 2009 0300

Relinquished by: Print Name: Signature: Date/Time:

Received by: Print Name: Signature: Todd [illegible] Date/Time: 11/19/09 8AM D/O

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FMAS = Floor mastic(M)
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FLC = Floor leveling compound (M)
TERR = Terrazzo flooring (M)

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BBM = Baseboard mastic (M)
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CS = Ceiling (unspecified type) (S)
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CMAS = Ceiling mastic (M)
CT = Ceiling tile - Splined or nailed (M)
CTG = Ceiling tile - Glued (M)
CWT = Ceramic wall tile grout & mastic(M)
DEBM = Debris (unspecified) (M)
DEBS = Debris (unspecified) (S)
DEBT = Debris (unspecified) (TSI)
DOOR = Door core insulation - Fire door (M)
OFM = Other friable material (M)
OFS = Other friable material (S)
ONFM = Other nonfriable material (M)
ONFS = Other nonfriable materials (S)
PL = Plaster (wall or ceiling) (S)
SHR = Sheetrock (no joint compound) (M)
SHRJC = Sheetrock with joint compound (M)
STUC = Stucco (S)
FP = Structural fireproofing (S)
TRAN = Transite panel (M)
TX = Surface texturing on walls/ceiling (S)
WM = Wall (unspecified type) (M)
WS = Wall (unspecified type) (S)
WT = Wall tile - Splined or nailed (M)
WTG = Wall tile - Glued on (M)

Piping/TSI
FI = Fitting insulation (type not specified) (TSI)
FICHW = Fitting - Chilled water system (TSI)
FICON = Fitting - Condensate (TSI)
FIDCW = Fitting - Domestic cold water (TSI)
FIDHW = Fitting - Domestic hot water (TSI)
FIHHW = Fitting - Heating hot water (TSI)
FISTM = Fitting - Steam (TSI)
DI = Duct insulation (TSI)
DTAPE = HVAC - Duct joint tape/compound (M)
DFLEX = HVAC - Flexible duct/flex duct joint (M)
DFLUE = Mech. equipment - Flue insulation (TSI)
MGSKT = Mech. equipment-Gasket (M)
MTANK = Mech. equipment-Tank insulation (TSI)
PI = Pipe insulation (type not specified) (TSI)
PICHW = Pipe insulation-Chilled water system (TSI)
PICON = Pipe insulation-Condensate (TSI)
PIDCW = Pipe insulation-Domestic cold water (TSI)
PIDHW = Pipe insulation-Domestic hot water (TSI)
PIHHW = Pipe insulation-Heating hot water (TSI)
PISTM = Pipe insulation-Steam (TSI)
PTRAN = Pipe-Transite (M)

Roofing
RF = Roofing material (M)
RFAG = Asphalt and gravel (M)
RFAT = Asphalt roof tile (M)
RFFLS = Flashing (M)
RFFLT = Felt material (M)
RFMAS = Penetration mastic (M)
RFROL = Rolled sheet type (M)
RTRAN = Transite shingle (M)

(M) = Miscellaneous material
(S) = Surfacing material
(TSI) = Thermal System Insulation

15

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