

# **ASBESTOS ASSESSMENT REPORT FOR BRIDGE STRUCTURES**

## **I-5 HOV Improvement Project PCH to San Juan Creek Road Orange County, California**

EA 12-0F96E1

*Submitted to*

### **California Department of Transportation District 12**

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TRC Project No. 181348

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*Prepared by*

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# TABLE OF CONTENTS

<b><u>SECTION</u></b>	<b><u>PAGE</u></b>
EXECUTIVE SUMMARY	ES-1
1.0 INTRODUCTION .....	1
Project Description.....	1
Background.....	1
Scope of Work .....	2
2.0 PRE-FIELD ACTIVITIES.....	3
3.0 FIELD ACTIVITIES .....	3
Traffic Control .....	3
Asbestos Sampling.....	4
Sampling Procedures .....	4
Decontamination Procedures .....	4
Waste Disposal.....	4
4.0 LABORATORY ANALYSIS .....	5
Bulk Sample Analysis Methodology .....	5
Quality Control .....	5
Interpretation of Asbestos Results .....	6
5.0 FINDINGS .....	7
Asbestos Containing Materials .....	7
Sampled Materials Where No Asbestos Was Detected .....	7
Presumed Asbestos-Containing Materials .....	7
6.0 CONCLUSIONS.....	8
7.0 RECOMMENDATIONS.....	10
8.0 REFERENCES .....	11

## **TABLE OF CONTENTS (Continued)**

### **LIST OF TABLES**

TABLE	TITLE
1	Asbestos Containing Materials
2	Sampled Materials Where No Asbestos Was Detected

### **LIST OF FIGURES**

FIGURE	TITLE
1	Vicinity Map
2	Project Location Maps
3 to 5	Asbestos Sample Location Maps
6	Asbestos Sample Location Photos

### **LIST OF APPENDICES**

A	Laboratory Analytical Reports
B	Field Logs and Chain of Custody
C	Consultant and Laboratory Certifications

## EXECUTIVE SUMMARY

On behalf of the Orange County Transportation Authority (OCTA), TRC Solutions, Inc. (TRC) in Irvine, California conducted asbestos surveys of three bridges along an approximately 2.5 mile section of the Interstate 5 (I-5) in Orange County, California.

TRC performed a survey, inspection, assessment, sampling, and quantification of suspect asbestos containing building materials at the bridges that will be impacted by the proposed partial demolition as part of the I-5 High Occupancy Vehicle (HOV) Improvement project. The objective of the asbestos survey was to investigate the bridge structures for suspect asbestos containing materials and to provide the California Department of Transportation (Caltrans), a report that would consist of a comprehensive listing of the findings, material locations, condition and approximate quantities of regulated asbestos containing materials in the bridge structures prior to proposed partial demolition as part of the I-5 HOV Improvement project.

The asbestos survey was conducted by Erik Paquette, a Certified Asbestos Consultant (#07-4157) on December 9, 2011. The sample analysis was performed by LA Testing, in Garden Grove, California, a state certified asbestos analytical laboratory.

### ASBESTOS FINDINGS

Asbestos was detected in concentrations exceeding one tenth of one percent ( $>0.1\%$ ) in the following suspect asbestos material sampled and analyzed by the asbestos analytical laboratory:

- **Bridge #55-0227 at I-5 / Camino Capistrano Undercrossing** - the Grayish shim material found at the interface of the metal guardrail and the concrete bridge was found to contain 70% Chrysotile asbestos. This asbestos material is expected to be disturbed during the partial demolition work.
- **Bridge #55-0510 at I-5 / Camino Las Ramblas Undercrossing** - the Black / Grayish shim material found at the interface of the metal guardrail and the concrete bridge was found to contain 40% Chrysotile asbestos. This asbestos material is expected to be disturbed during the partial demolition work.

- **Bridge #55-0226 at NB I-5 to NB Pacific Coast Highway Connector** - the Grayish shim material found at the interface of the metal guardrail and the concrete bridge was found to contain 70% Chrysotile asbestos. This asbestos material is expected to be disturbed during the partial demolition work.

Asbestos was not detected in concentrations exceeding one tenth of one percent (>0.1%) in the other suspect asbestos containing materials sampled and analyzed by the laboratory from the bridge structures located between the I-5 NB connector to PCH and the Las Camino Capistrano Undercrossing along the I-5 HOV Improvement project.

## **1.0 INTRODUCTION**

### **PROJECT DESCRIPTION**

The California Department of Transportation (Caltrans), in coordination with the Orange County Transportation Authority (OCTA), proposes to extend the Interstate 5 (I-5) HOV lane from 0.4 miles south of Avenida Pico to 0.1 miles south of San Juan Creek Road in the cities of San Clemente, Dana Point, and San Juan Capistrano. The project has been split into three segments and this scope of work focuses on Segment Three which begins south of Via California to San Juan Creek Road. The site vicinity map (Figure 1) and site plan (Figure 2) depict the locations of the work areas.

The TRC report supplements a limited asbestos survey report by Kleinfelder, dated July 20, 2011, where asbestos containing materials were identified in bridge guard rail structures that will be impacted during the HOV Improvement project. The survey activities were conducted during the final design (PS&E) phase of the project and will assist in the preparation of the Standard Special Provisions (SSP) that will need to be approved by the District and HQ Office Engineer.

For the proposed project, the I-5 would be widened in both the northbound and southbound directions to accommodate the HOV lane. The existing median structural section and barrier would be improved or replaced as required. The total length of this segment of the project is approximately 2.5 miles.

On behalf of the OCTA, TRC Solutions, Inc. (TRC) in Irvine, California conducted an asbestos survey of the bridges that will be impacted by the proposed partial demolition as part of the I-5 HOV Improvement project in Orange County California. The asbestos survey was conducted pursuant to the scheduled partial demolition activities for widening of the bridges so that two additional lanes may be added. The asbestos survey was conducted by Erik Paquette, a Certified Asbestos Consultant (#07-4157) on December 9, 2011. Copies of relevant training certificates and state licenses (where applicable) are presented in the appendices section of the report.

### **BACKGROUND**

I-5 is a major north-south route that is used for interregional, interstate, and international travel and goods movement. It connects San Diego County from the south to Los Angeles County to the north and traverses many cities, including cities in Orange County. Within the project limits, I-5 is four lanes in each direction from Avenida Pico to Camino Las Ramblas/PCH and five lanes

in each direction from just north of Camino Las Ramblas/PCH to San Juan Creek Road. Auxiliary lanes exist between Avenida Pico and Avenida Vista Hermosa and from Avenida de Estrella to Camino Las Ramblas/PCH.

The existing I-5 within the project limits is located in a mostly urbanized area of the Cities of San Juan Capistrano, Dana Point, and San Clemente and provides the primary thoroughfare through these cities. The area surrounding the proposed project is characterized by residential, commercial, retail, hotel, and community facility uses.

### **SCOPE OF WORK**

The scope of work included the collection of bulk material samples for laboratory analysis and a report of the findings. The asbestos survey activities were comprised of assessing the various materials that comprise the bridge structure by the Certified California Asbestos Consultant and sampling of suspect asbestos containing materials to be submitted for laboratory analysis.

The following three freeway bridges were inspected for asbestos containing materials:

- NB I-5 to NB Pacific Coast Highway Connector (Bridge No. 55-0226)
- I-5 / Camino Las Ramblas Undercrossing (Bridge No. 55-0510)
- Camino Capistrano Undercrossing (Bridge No. 55-0227)

Inspection, sampling, and analytical procedures for asbestos-containing building materials were performed in general accordance and conformance with the Environmental Protection Agency's (EPA) National Emission Standards for Hazardous Air Pollutants (NESHAP) - EPA 40 Code of Federal Regulations (CFR) 61 Subpart M, the EPA Asbestos Hazard Emergency Response Act (AHERA) 40 CFR Part 763, and the Occupational Safety and Health Administration (OSHA) 29 CFR 1926.1101 guidelines and the Segment 3 – Asbestos Assessment Workplan for Bridge Structures approved by Caltrans (October 21, 2011).

## **2.0 PRE-FIELD ACTIVITIES**

TRC obtained encroachment permit number 1211-NSV-0428 from the Caltrans Permit Unit prior to starting field activities as described in the scope of work on the I-5 HOV Improvement Project. The Asbestos Assessment for Bridge Structures Work Plan dated October 21, 2011 for the I-5 HOV Improvement Project (TRC, 2011) was provided to Caltrans District 12 for approval.

TRC coordinated with California Barricade to provide traffic control services for the sampling event.

A site-specific health and safety plan was prepared for the asbestos assessment activities and was used at the site to review the health and safety hazards associated with the sampling activity.

## **3.0 FIELD ACTIVITIES**

Prior to the asbestos sampling activities, TRC conducted a tailgate safety meeting with the personnel providing the traffic control services. Hazards associated with vehicle traffic and health hazards from asbestos were reviewed at the safety meeting.

### **TRAFFIC CONTROL**

During the asbestos sampling activities, traffic control was provided by California Barricade. The traffic control vehicles ensured the safety of the sampling team and alerted freeway traffic of the sampling work. Two traffic control trucks with flashing lights and warning signs were positioned behind the TRC crew during the asbestos sampling activities. The traffic control was performed on the freeway shoulder at each sampling location.

## **ASBESTOS SAMPLING**

Asbestos sampling was conducted December 9, 2012 from 8:00 A.M. to approximately 11:00 AM. TRC collected a total of nineteen (19) suspect asbestos bulk samples from the three bridges along the I-5 freeway from south of Via California to San Juan Creek Road in Orange County, California. The samples were obtained utilizing hand tools such as hammers, chisels, and a drill with a concrete bit. Plastic drop cloths were used to catch any debris that may have fallen outside of the sample container. Representative bulk samples of suspect asbestos-containing building materials were randomly collected from each of the inspected bridges from each homogeneous material. The sampling area was wetted with amended water to reduce the possible release of fibers during sampling. Each sample location was filled with concrete sealant after the sample was obtained.

## **SAMPLING PROCEDURES**

Representative bulk samples of suspect asbestos-containing building materials were randomly collected. Homogenous material determinations were assessed based on the following criteria:

- Similar physical characteristics (same color and texture, etc.);
- Application (sprayed-on, assembly into a system, etc.); and
- Material function (poured in place concrete, caulking, etc.).

The collected bulk material samples were approximately the size of a US quarter dollar. Each of the samples were collected into an air tight plastic container and identified with a unique identification number. The sample information, such as sample description, color, location, and friability, was logged on a bulk sample data field sheet. The bulk samples were submitted under the chain of custody protocol to LA Testing in Garden Grove California, an accredited analytical laboratory for asbestos analysis, the bulk samples were analyzed for asbestos content utilizing polarized light microscopy (PLM) EPA Method 600/R-93/116 asbestos analysis methodology.

## **DECONTAMINATION PROCEDURES**

Asbestos sampling equipment was decontaminated prior to sampling at each location by rinsing with potable water to avoid cross-contamination between samples.

## **WASTE DISPOSAL**

Waste generated during sampling and equipment decontamination activities was removed from the site and discarded with other TRC asbestos sampling wastes.

## **4.0 LABORATORY ANALYSIS**

### **BULK SAMPLE ANALYSIS METHODOLOGY**

Laboratory services were provided by LA Testing located at 11652 Knott Street, Unit F5, Garden Grove, California. LA Testing is accredited by the National Institutes of Standards and Technology Voluntary Laboratory Accreditation Program (NVLAP #181384-0). Each bulk sample was analyzed by polarized light microscopy (PLM) in accordance with the EPA's Test Methods: Methods for the determination of Asbestos in Bulk Building Materials (EPA 600/R-93/116, July 1993) and the McCrone Research Institute's The Asbestos Particle Atlas. Additional treatment(s) and test(s) were performed as required to accurately define material composition (i.e., ashing, extraction, acetone treatment).

Analysis consisted of using the bulk sample for slide preparation for visual observation through a microscopic examination and identification. All samples were analyzed and examined for asbestos (Chrysotile, Amosite, Crocidolite, Anthophyllite, Actinolite and Tremolite), fibrous non-asbestos constituents (mineral wool, cellulose, etc.), and non-fibrous constituents. Using a stereo microscope, the asbestos analyst visually estimated the relative amounts of each constituent by determining the area of each constituent in proportion to the total area of the sample.

### **QUALITY CONTROL**

Standard laboratory quality control procedures were followed by the analytical laboratory during analysis of the asbestos bulk samples. Point Count Analysis is performed if a result of a bulk asbestos sample is determined to be less than one percent asbestos, by polarized light microscopy (PLM) (EPA Method 600/R-93/116). A portion of the bulk sample is used to prepare 10 slides and re-analyzed by PLM dispersion staining methodology. Visible asbestos fiber points are counted for the point counting method. The detection limit of the 1,000 point count analysis is 0.1 % asbestos content. The point count analysis provides a lower detection limit for asbestos containing materials and reduces the potential for false positive or negative reporting of asbestos content. No point count samples were analyzed as part of this sampling activity.

## **INTERPRETATION OF ASBESTOS RESULTS**

Federal Occupational Safety and Health Administration (OSHA), and National Emissions Standards for Hazardous Air Pollutants (NESHAP) define an asbestos-containing material (ACM) as any material containing more than one percent (>1.0%) asbestos. Both agencies have certain classifications for ACM types as well as requirements that apply when ACM is removed and disposed. Additionally, the California Division of Occupational Safety and Health (DOSH) includes the term asbestos-containing construction material (ACCM); which is any manufactured construction material containing >0.1% asbestos. The ACCM designation has been established by Cal/DOSH as a criterion for the registration and certification of contractors and consultants respectively, who provide services which involve such materials.

The lower limit of reliable detection for asbestos using the PLM analytical method is one percent (1.0%) by volume. When less than one percent (<1.0%) appears in a laboratory analysis report, it should be interpreted as meaning that asbestos was present in the sample, but the exact percentage is unknown. Any sample indicating a concentration of <1.0% can be subjected to the more stringent PLM point count method of analysis to more precisely determine the actual asbestos content. Cal/DOSH states that employers performing construction activities on materials containing >0.1% asbestos must comply with all applicable provisions of Title 8, Section 1529 of CCR. Therefore, those materials which fall outside the NESHAP definition of an ACM are regulated by Cal/DOSH, and should be handled as ACCM by personnel trained to handle/disturb asbestos.

Per the United States EPA NESHAP regulations, “friable” materials with PLM results of less than ten percent (<10%) asbestos must be assumed ACM unless it is further analyzed using the EPA point count method to more precisely determine the actual asbestos content. If this material is found to contain less than 1% asbestos by point counting, then it may be disposed of as non-hazardous waste. However, if asbestos was detected above 0.1% concentration following the point count analysis, Cal/DOSH rules would still apply, and the contractor performing removal or demolition must comply with the worker protection, training, and medical surveillance portions of the asbestos standard. Note that the term “friable asbestos-containing material” means any asbestos-containing material which when dry may be crumbled, pulverized, or reduced to powder by hand pressure.

## 5.0 FINDINGS

### ASBESTOS CONTAINING MATERIALS

Table 1 lists the regulated asbestos-containing materials and the locations where the samples were obtained. Asbestos was detected in concentrations exceeding one tenth of one percent (>0.1%) in the following suspect asbestos material sampled and analyzed by the asbestos analytical laboratory:

- **Bridge #55-0227 at I-5 / Camino Capistrano Undercrossing** - the Grayish shim material found at the interface of the metal guardrail and the concrete bridge was found to contain 70% Chrysotile asbestos. This asbestos material is expected to be disturbed during the partial demolition work. There are approximately 50 shims on this bridge.
- **Bridge #55-0510 at I-5 / Camino Las Ramblas Undercrossing** - the Black / Grayish shim material found at the interface of the metal guardrail and the concrete bridge was found to contain 40% Chrysotile asbestos. This asbestos material is expected to be disturbed during the partial demolition work. There are approximately 40 shims on this bridge.
- **Bridge #55-0226 at NB I-5 to NB Pacific Coast Highway Connector** - the Grayish shim material found at the interface of the metal guardrail and the concrete bridge was found to contain 70% Chrysotile asbestos. This asbestos material is expected to be disturbed during the partial demolition work. There are approximately 55 shims on this bridge.

### SAMPLED MATERIALS WHERE NO ASBESTOS WAS DETECTED

Table 2 lists the suspect asbestos-containing materials and the locations where the samples were obtained. These materials were determined by laboratory analysis, not to contain detectable amounts of asbestos.

### PRESUMED ASBESTOS-CONTAINING MATERIALS (PACM)

Presumed asbestos containing materials were not noted during the asbestos containing materials assessment of the three bridges along the I-5 freeway from south of Via California to San Juan Creek Road in Orange County, California.

## 6.0 CONCLUSIONS

Results of the laboratory analysis of suspect asbestos containing materials samples that were collected and submitted to the laboratory confirmed that regulated asbestos-containing materials are present in concentrations greater than 1% in the following locations:

- **Bridge #55-0227 at I-5 / Camino Capistrano Undercrossing**
  - The Grayish shim material found at the interface of the metal guardrail and the concrete bridge was found to contain 70% Chrysotile asbestos.
  - There are approximately 50 shims located on this bridge.
  
- **Bridge #55-0510 at I-5 / Camino Las Ramblas Undercrossing**
  - The Black / Grayish shim material found at the interface of the metal guardrail and the concrete bridge was found to contain 40% Chrysotile asbestos.
  - There are approximately 40 shims located on this bridge.
  
- **Bridge #55-0226 at NB I-5 to NB Pacific Coast Highway Connector**
  - The Grayish shim material found at the interface of the metal guardrail and the concrete bridge was found to contain 70% Chrysotile asbestos.
  - There are approximately 55 shims located on this bridge.

Asbestos was not detected in concentrations exceeding one tenth of one percent (>0.1%) in the concrete, roadway seam sealant or the expansion joint materials collected from the bridge structures by TRC and analyzed by the laboratory.

The content presented in this report is based on data collected during the site inspection and survey, review of pertinent regulations, requirements, guidelines and commonly followed industry standards, and information provided by OCTA, their clients, agents, and representatives.

The work has been conducted in an objective and unbiased manner and in accordance with generally accepted professional practice for this type of work. TRC believes the data and analysis to be accurate and relevant, but cannot accept responsibility for the accuracy or completeness of available documentation or possible withholding of information of other parties.

This asbestos survey report is designed to aid the property owner, architect, construction manager, general contractor, and asbestos abatement contractor in identifying and/or locating

ACM identified in this report. This report is not intended for, and may not be utilized as a bidding document or as an abatement specification document.

## 7.0 RECOMMENDATIONS

The White/Black/Grayish asbestos containing shim material found at the interface of the metal guardrail and the concrete bridge is expected to be disturbed by the planned partial demolition activities at Bridge #55-0227, Bridge #55-0510, and Bridge #55-0226 as part of Segment Three of the I-5 HOV Improvement project. Therefore, recommendations regarding disturbance, handling and disposal of this asbestos containing material must be adhered to.

The White/Black/Grayish asbestos containing shim material found at the interface of the metal guardrails on all three bridges referenced above, must be abated by a California licensed asbestos abatement contractor prior to any construction activity that will disturb the friable shim material.

However, if suspect asbestos containing materials not listed in this report are uncovered during demolition/renovation activities, the contractor must stop work and have these materials tested for asbestos content.

Any demolition or renovation of a structure that contains asbestos will require notification and submittal of fees to the South Coast Air Quality Management District (SCAQMD) at least 10 days prior to proceeding with demolition work (SCAQMD Rule 1403); failure to do so may result in being fined for regulatory non-compliance.

## 8.0 REFERENCES

California Occupational Safety and Health Regulations (CAL/OSHA) *Asbestos - Related Work Sections 341.6 - 341.14.*

California Occupational Safety and Health Regulations (CAL/OSHA) *Asbestos Section 5208.*

McCrone Research Institute, *The Asbestos Particle Atlas.*

South Coast Air Quality Management District (SCAQMD), *Rule 1401 & 1403.*

Federal Clean Air Act (CAA) United States Code of Federal Regulations, *40 CFR Part 61, sub part M, National Emissions Standards for Hazardous Air Pollutants (NESHAP).*

United States Code of Federal Regulations, *40 CFR 763 Part 61, Asbestos Hazard Emergency Response Act (AHERA).*

United States Environmental Protection Agency, *Test Methods: Methods for the determination of Asbestos in Bulk Building Materials* (EPA 600/R-93/116, July 1993).

## TABLES

**TABLE 1**  
**ASBESTOS CONTAINING MATERIALS**

**Bridge #55-0227 at I-5 / Camino Capistrano Undercrossing**

Sample Number	Material Description	Sample Location	Material Condition	Approx. Quantity	Asbestos Content	Friable/ Non-Friable
03	Black fibrous spacer material	At interface of metal guardrail and concrete bridge	Good	50 Ea.	70% Chrysotile	Friable

**Bridge #55-0510 at I-5 / Camino Las Ramblas Undercrossing**

Sample Number	Material Description	Sample Location	Material Condition	Approx. Quantity	Asbestos Content	Friable/ Non-Friable
07	Black/Grayish fibrous spacer material	At interface of metal guardrail and concrete bridge	Good	40 Ea.	40% Chrysotile	Friable
08	Grayish fibrous spacer material	At interface of metal guardrail and concrete bridge	Good		40% Chrysotile	Friable

**Bridge #55-0226 at NB I-5 to NB Pacific Coast Highway Connector**

Sample Number	Material Description	Sample Location	Material Condition	Approx. Quantity	Asbestos Content	Friable/ Non-Friable
15	White/Grayish fibrous spacer material	At interface of metal guardrail	Good	55 Ea.	40% Chrysotile	Friable

		and concrete bridge				
16	White/Black fibrous spacer material	At interface of metal guardrail and concrete bridge	Good		70% Chrysotile	Friable

**TABLE 2**  
**SAMPLED MATERIALS WHERE NO ASBESTOS WAS DETECTED**

**Bridge #55-0227 at I-5 / Camino Capistrano Undercrossing**

Sample Number	Material Description	Sample Location
01	Concrete at Guardrail	Southbound West Side-Vertical
02	Concrete at Guardrail	Southbound West Side-Vertical

**Bridge #55-0510 at I-5 / Camino Las Ramblas Undercrossing**

Sample Number	Material Description	Sample Location
04	Concrete at Guardrail	Southbound West Side-North
05	Concrete at Guardrail	Northbound East Side-North
06	Concrete at Ledge	Southbound West Side-North
09	Roadway Seam Sealant	Southbound West Side-South
10	Concrete at Guardrail	Southbound West Side-Middle
11	Roadway Seam Sealant	Southbound West Side-Middle
12	Roadway Seam Sealant	Southbound West Side-Middle
13	Expansion Joint Material	Southbound West Side-Middle

**Bridge #55-0226 at NB I-5 to NB Pacific Coast Highway Connector**

Sample Number	Material Description	Sample Location
14	Expansion Joint Material	Northbound East Side
17	Concrete at Guardrail	Northbound West Side
18	Concrete at Guardrail	Northbound East Side
19	Concrete at Guardrail	Northbound West Side-Vertical

FIGURE 1  
VICINITY MAP

PS=1:1 L:\Graphics\Projects\Name\OCTA (I-5 HOV PS&E)\CADD\OCTA-I5 HOV-VM.dwg Sep 23, 2011 - 11:43am Rcollins



SOURCE:

United States Geological Survey  
7.5 Minute Topographic Map:  
San Clemente Quadrangle



QUADRANGLE  
LOCATION



STATE HIGHWAY  
IN ORANGE COUNTY FROM 0.43  
MILES NORTH OF CAMINO DE  
ESTRELLA OVERCROSSING TO 0.24  
MILE SOUTH OF SAN JUAN CREEK  
ROAD UNDERCROSSING

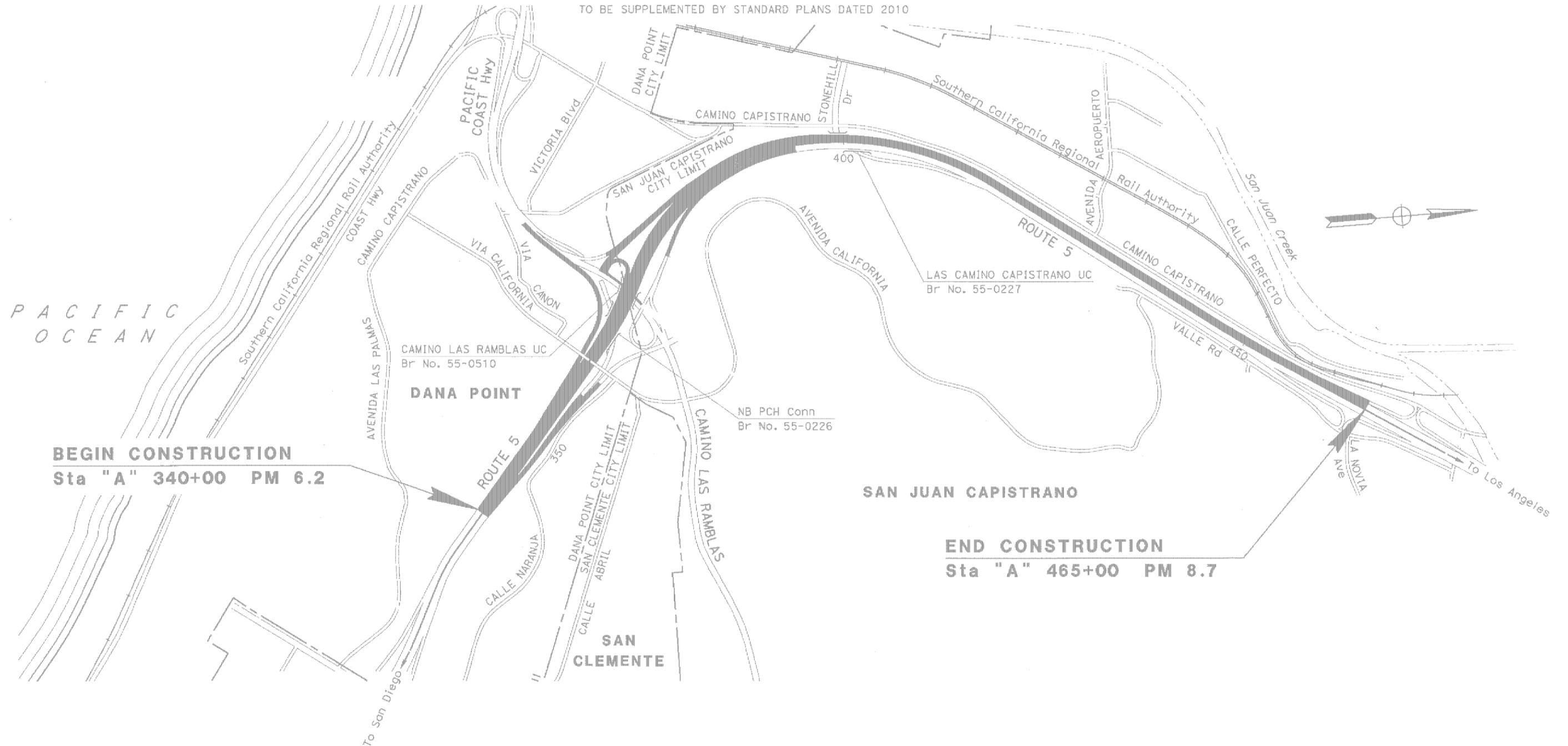
VICINITY MAP

FIGURE 1

FIGURE 2

PROJECT LOCATION MAPS

TO BE SUPPLEMENTED BY STANDARD PLANS DATED 2010



**BEGIN CONSTRUCTION**  
Sta "A" 340+00 PM 6.2

**END CONSTRUCTION**  
Sta "A" 465+00 PM 8.7

MS=1:1 L:\Graphics\Projects\ByName\OCTA (I-5 HOV PS&E)\CADD\OCTA-I5 HOV SP.dwg Sep 29, 2011 - 4:32pm Rcollins

<p>NOT TO SCALE</p>		<p>PROJECT: EA 12-0F96E1 FACILITY: STATE HIGHWAY IN ORANGE COUNTY FROM 0.43 MILES NORTH OF CAMINO DE ESTRELLA OVERCROSSING TO 0.24 MILE SOUTH OF SAN JUAN CREEK ROAD UNDERCROSSING</p>	<p><b>SITE PLAN</b></p> <hr/> <p><b>FIGURE 2</b></p>
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FIGURE 3

ASBESTOS SAMPLE LOCATION MAPS



FIGURE 4

ASBESTOS SAMPLE LOCATION MAPS

Bridge # 55-0510 12/19/11 Sample Locations Map

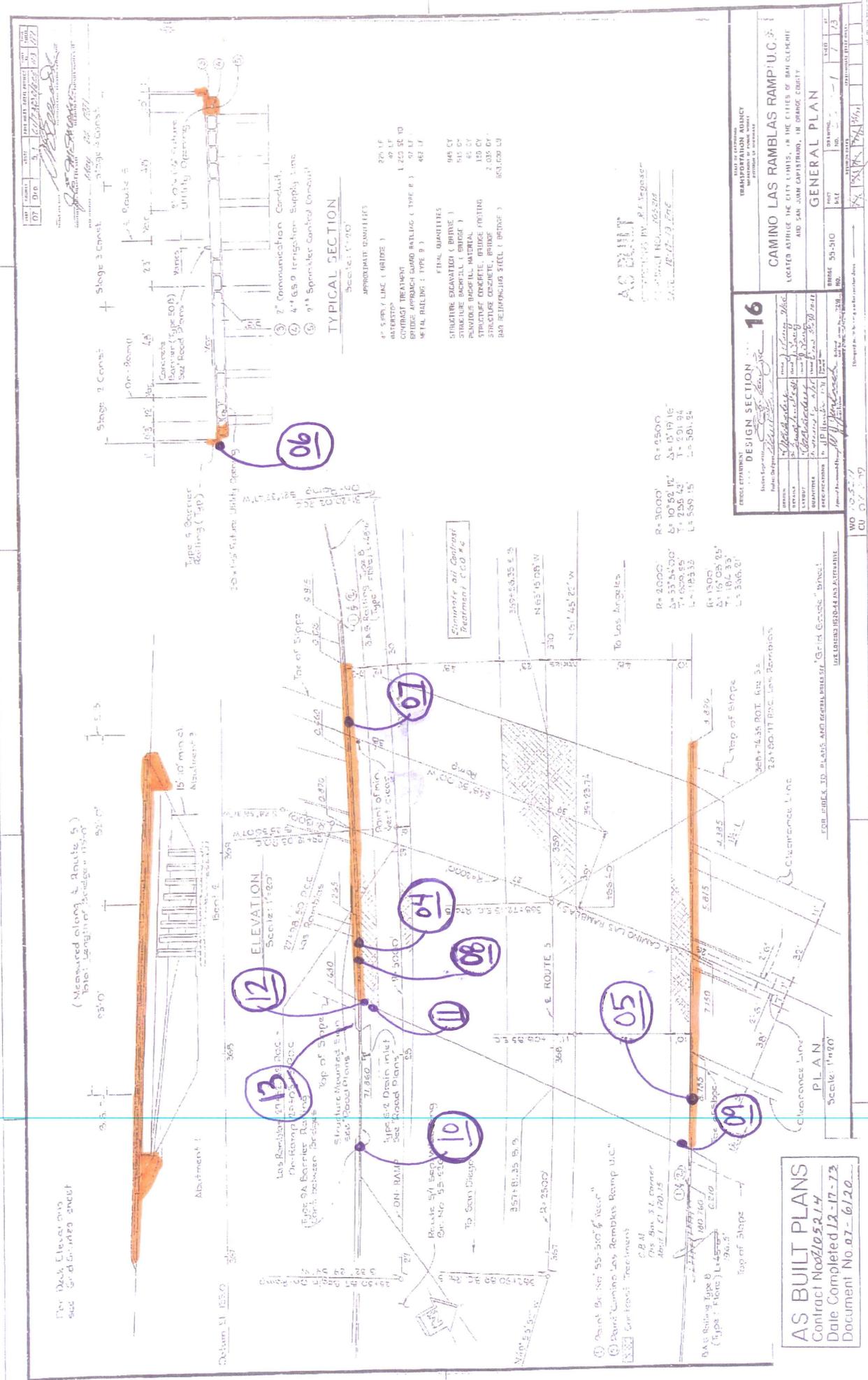


Fig. 4

FIGURE 5

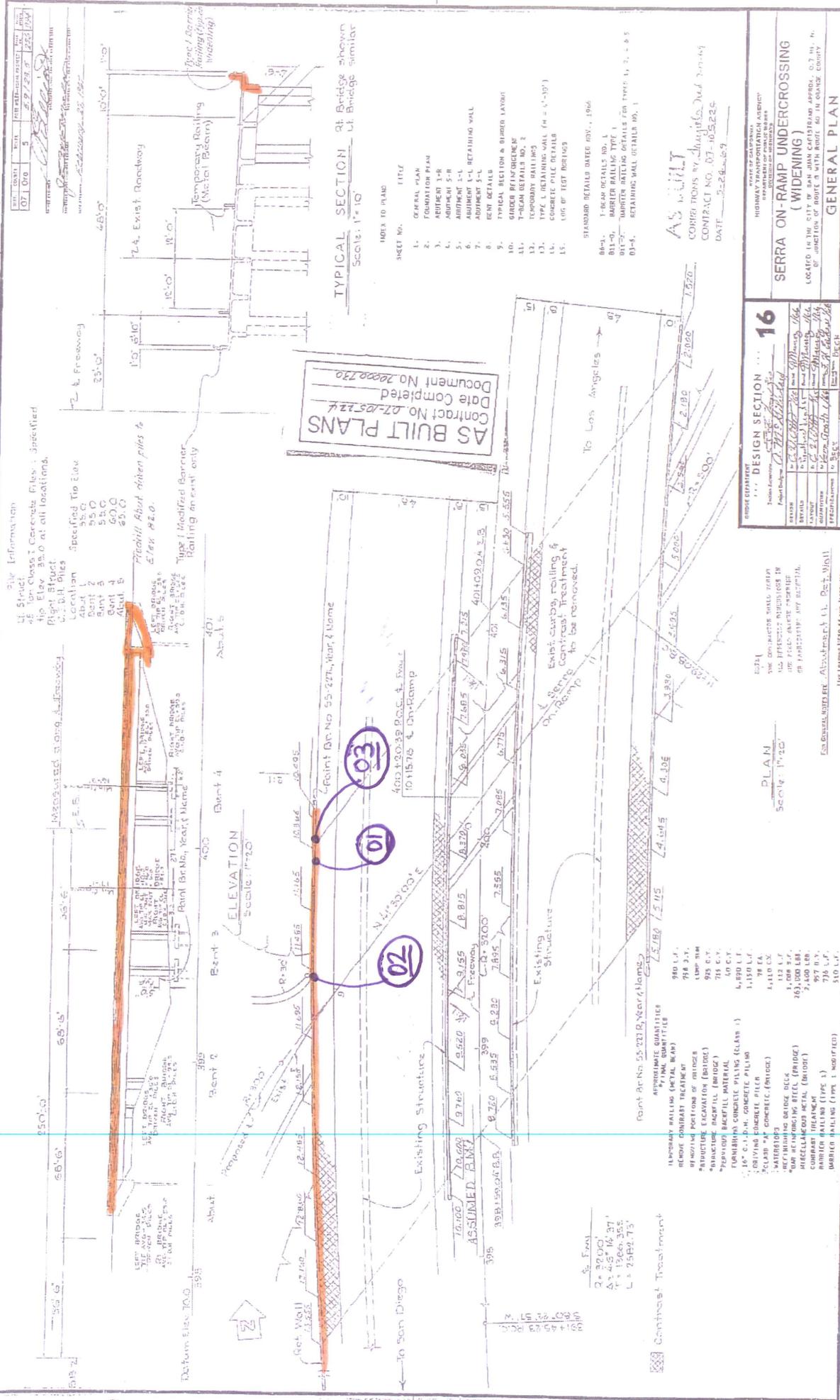
ASBESTOS SAMPLE LOCATION MAPS

Bridge # 55-0227

12/9/11

Sample Locations Map

I-005-2(136)79



**DESIGN SECTION 16**

**SERRA ON-RAMP UNDERCROSSING (WIDENING)**

LOCATION: IN THE CITY OF SAN DIEGO, CALIFORNIA, LOCATED AT THE INTERSECTION OF ROUTE 5 WITH ROUTE 160 IN SAN DIEGO COUNTY

**GENERAL PLAN**

PROJECT NO. 55-0227-1  
 SHEET NO. 17 OF 25

**APPROXIMATE QUANTITIES**

ITEM	QUANTITY
TEMPORARY RAILING (FACTORY MANUFACTURED)	900 L.F.
REMOVE CONCRETE TREATMENT	718 S.F.
REMOVE EXISTING STRUCTURE	928 S.F.
STRUCTURE EXCAVATION (BRIDGE)	718 S.F.
STRUCTURE BACKFILL (BRIDGE)	10 C.Y.
PERMANENT BACKFILL MATERIAL	4,490 L.F.
TURBINE CONCRETE PILING (GLASS)	1,150 L.F.
DRIVING CONCRETE PILE	4,440 C.Y.
GLASS FOR CONCRETE (BRIDGE)	78 EA.
REINFORCING BARS (BRIDGE)	112 L.F.
REINFORCING BARS (PIER)	3,100 L.F.
REINFORCING BARS (PIER)	957 B.F.
REINFORCING BARS (PIER)	738 L.F.
REINFORCING BARS (PIER)	510 L.F.

Fig. 5

FIGURE 6

ASBESTOS SAMPLE LOCATION PHOTOS

I-5 HOV Improvement Project – Segment 3  
Asbestos Assessment Photos  
Orange County, California



Photo 1 - Bridge #55-0227, Las Camino Capistrano Undercrossing. Sample 01 of concrete - close-up view.



Photo 2 - Bridge #55-0227, Las Camino Capistrano Undercrossing. Sample 01 of concrete - wide view.



Photo 3 - Bridge #55-0227, Las Camino Capistrano Undercrossing. Sample 02 of concrete - close up view.

I-5 HOV Improvement Project – Segment 3  
Asbestos Assessment Photos  
Orange County, California



Photo 4 - Bridge #55-0227, Las Camino Capistrano Undercrossing. Sample 02 of concrete - wide view.



Photo 5 - Bridge #55-0227, Las Camino Capistrano Undercrossing. Sample 03 of shim/spacer material - wide view



Photo 6 - Bridge #55-0227, Las Camino Capistrano Undercrossing. Sample 03 of shim/spacer material – close up view

I-5 HOV Improvement Project – Segment 3  
Asbestos Assessment Photos  
Orange County, California



Photo 7 - Bridge #55-0227, Las Camino Capistrano Undercrossing. Sample 03 of shim/spacer material - close up view



Photo 8 - Bridge #55-0510, Camino Las Ramblas Undercrossing. Sample 07 of shim/spacer material - close up view



Photo 9 - Bridge #55-0510, Camino Las Ramblas Undercrossing. Sample 07 of shim/spacer material - wide view

I-5 HOV Improvement Project – Segment 3  
Asbestos Assessment Photos  
Orange County, California



Photo 10 - Bridge #55-0510, Camino Las Ramblas Undercrossing. Sample 04 of concrete - close up view



Photo 11 - Bridge #55-0510, Camino Las Ramblas Undercrossing. Sample 04 of concrete - wide view



Photo 12 - Bridge #55-0510, Camino Las Ramblas Undercrossing. Sample 08 of shim/spacer material - close up view

I-5 HOV Improvement Project – Segment 3  
Asbestos Assessment Photos  
Orange County, California



Photo 13 - Bridge #55-0510, Camino Las Ramblas Undercrossing. Sample 08 of shim/spacer material - wide view



Photo 14 - Bridge #55-0510, Camino Las Ramblas Undercrossing. Sample 10 of concrete - close up view



Photo 15 - Bridge #55-0510, Camino Las Ramblas Undercrossing. Sample 10 of concrete - wide view

I-5 HOV Improvement Project – Segment 3  
Asbestos Assessment Photos  
Orange County, California



Photo 16 - Bridge #55-0510, Camino Las Ramblas Undercrossing. Sample 11 of roadway seam sealant - wide view



Photo 17 - Bridge #55-0510, Camino Las Ramblas Undercrossing. Sample 11 of roadway seam sealant – close-up view



Photo 18 - Bridge #55-0510, Camino Las Ramblas Undercrossing. Sample 12 of roadway seam sealant – wide view

I-5 HOV Improvement Project – Segment 3  
Asbestos Assessment Photos  
Orange County, California



Photo 19 - Bridge #55-0510, Camino Las Ramblas Undercrossing. Sample 12 of roadway seam sealant – close-up view



Photo 20 - Bridge #55-0226, Northbound PCH Connector. Sample 15 of shim/spacer material – wide view



Photo 21 - Bridge #55-0226, Northbound PCH Connector. Sample 15 of shim/spacer material – close-up view

I-5 HOV Improvement Project – Segment 3  
Asbestos Assessment Photos  
Orange County, California



Photo 22 - Bridge #55-0226, Northbound PCH Connector. Sample 17 of concrete – wide view



Photo 23 - Bridge #55-0226, Northbound PCH Connector. Sample 17 of concrete – close-up view



Photo 24 - Bridge #55-0510, Camino Las Ramblas Undercrossing. Sample 06 of concrete ledge – close-up view

I-5 HOV Improvement Project – Segment 3  
Asbestos Assessment Photos  
Orange County, California



Photo 25 - Bridge #55-0510, Camino Las Ramblas Undercrossing. Sample 06 of concrete ledge – wide view



Photo 26 - Bridge #55-0510, Camino Las Ramblas Undercrossing. Sample 13 of expansion joint material – wide view



Photo 27 - Bridge #55-0510, Camino Las Ramblas Undercrossing. Sample 13 of expansion joint material – close-up view

I-5 HOV Improvement Project – Segment 3  
Asbestos Assessment Photos  
Orange County, California



Photo 28 - Bridge #55-0226, Northbound PCH Connector. Sample 14 of expansion joint material – wide view



Photo 29 - Bridge #55-0226, Northbound PCH Connector. Sample 14 of expansion joint material – close-up view



Photo 30 - Bridge #55-0226, Northbound PCH Connector. Sample 19 of vertical concrete – wide view

I-5 HOV Improvement Project – Segment 3  
Asbestos Assessment Photos  
Orange County, California



Photo 31 - Bridge #55-0226, Northbound PCH Connector. Sample 19 of vertical concrete – close-up view



Photo 32 - Bridge #55-0226, Northbound PCH Connector. Sample 16 of shim/spacer material – wide view



Photo 33 - Bridge #55-0226, Northbound PCH Connector. Sample 16 of shim/spacer material – close-up view

I-5 HOV Improvement Project – Segment 3  
Asbestos Assessment Photos  
Orange County, California



Photo 34 - Bridge #55-0226, Northbound PCH Connector. Sample 18 of concrete – wide view



Photo 35 - Bridge #55-0226, Northbound PCH Connector. Sample 18 of concrete – close-up view

I-5 HOV Improvement Project – Segment 3  
Asbestos Assessment Photos  
Orange County, California



Photo 37 - Bridge #55-0510, Camino Las Ramblas Undercrossing. Sample 09 of roadway seam sealant – wide view



Photo 37 - Bridge #55-0510, Camino Las Ramblas Undercrossing. Sample 05 of concrete – wide view

APPENDIX A

LABORATORY ANALYTICAL REPORTS



**LA Testing**

11652 Knott Street Unit F5, Garden Grove, CA 92841

Phone: (714) 828-4999 Fax: (714) 828-4944 Email: losalamitoslab@latesting.com

Attn: **David Lennon**  
**TRC Environmental Corp.**  
**123 Technology Drive**  
  
**Irvine, CA 92618**

Customer ID: 32TRCS62  
Customer PO: 181348  
Received: 12/12/11 9:10 AM  
LA Testing Order: 331114254

Fax: Phone: (949) 788-9990  
Project: **OCTA I-5 HOV IMPROVEMENT 1 #181348**

LA Testing Proj:  
Analysis Date: 12/15/2011

**Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 and/or EPA 600/M4-82-020 Method(s) using Polarized Light Microscopy**

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
01 331114254-0001	Concrete Guardrail-#55-0227 Undercrossing	Grayish Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
02 331114254-0002	Concrete Guardrail-#55-0227 Undercrossing	Grayish Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
03 331114254-0003	Metal Guardrail- #55-0227 Undercrossing	Black Fibrous Homogeneous		30% Non-fibrous (other)	70% Chrysotile
04 331114254-0004	Concrete Guardrail/W/N- #55-0510 Undercrossing	Beige/Grayish Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
05 331114254-0005	Concrete Guardrail/E/N-#55-0510 Undercrossing	Grayish Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
06 331114254-0006	Concrete Ledge/W/N-#55-0510 Undercrossing	Grayish Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected

Initial report from 12/15/2011 07:57:55

Analyst(s)  
  
Jeffrey Deboo (19)

  
Derrick Tanner, 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 LA Testing's. LA Testing's liability is limited to the cost of analysis. LA Testing 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. Estimated accuracy, precision and uncertainty data available upon request.  
Samples analyzed by LA Testing Garden Grove, CA NVLAP Lab Code 101384-0, CA ELAP 1406



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Customer PO: 181348  
Received: 12/12/11 9:10 AM  
LA Testing Order: 331114254

Fax: Phone: (949) 788-9990  
Project: **OCTA I-5 HOV IMPROVEMENT 1 #181348**

LA Testing Proj:  
Analysis Date: 12/15/2011

**Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 and/or EPA 600/M4-82-020 Method(s) using Polarized Light Microscopy**

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
07 331114254-0007	Metal Guardrail- #55-0510 Undercrossing	Black/Grayish Fibrous Heterogeneous		60% Non-fibrous (other)	<b>40% Chrysotile</b>
08 331114254-0008	Metal Guardrail- #55-0510 Undercrossing	Grayish Fibrous Homogeneous		60% Non-fibrous (other)	<b>40% Chrysotile</b>
09 331114254-0009	Roadway S.S.-#55- 0510 Undercrossing	Black Non-Fibrous Homogeneous	3% Synthetic	97% Non-fibrous (other)	<b>None Detected</b>
10 331114254-0010	Concrete Guardrail-W/Mid Roadway S.S.-#55- 0510	Grayish Non-Fibrous Homogeneous		100% Non-fibrous (other)	<b>None Detected</b>
11 331114254-0011	Concrete Guardrail-W/Mid Roadway S.S.-#55- 0510	Black Fibrous Heterogeneous	40% Cellulose	60% Non-fibrous (other)	<b>None Detected</b>
12 331114254-0012	Concrete Guardrail-W/Mid Roadway S.S.-#55- 0510	Black Non-Fibrous Homogeneous	8% Cellulose	92% Non-fibrous (other)	<b>None Detected</b>

Initial report from 12/15/2011 07:57:55

Analyst(s)  

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Jeffrey Deboo (19)

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Derrick Tanner, Laboratory Manager  
or other approved signatory

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Samples analyzed by LA Testing Garden Grove, CA NVLAP Lab Code 101384-0, CA ELAP 1406



**LA Testing**

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**TRC Environmental Corp.**  
**123 Technology Drive**  
  
**Irvine, CA 92618**

Customer ID: 32TRCS62  
Customer PO: 181348  
Received: 12/12/11 9:10 AM  
LA Testing Order: 331114254

Fax: Phone: (949) 788-9990  
Project: **OCTA I-5 HOV IMPROVEMENT 1 #181348**

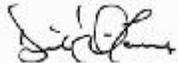
LA Testing Proj:  
Analysis Date: 12/15/2011

**Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 and/or EPA 600/M4-82-020 Method(s) using Polarized Light Microscopy**

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
13 331114254-0013	Exp. Joint Material- #55-0510 Undercrossing	Brown Fibrous Homogeneous	70% Cellulose	30% Non-fibrous (other)	None Detected
14 331114254-0014	Exp. Joint Material- #55-0226 N PCH Connector	Brown Non-Fibrous Homogeneous	70% Cellulose	30% Non-fibrous (other)	None Detected
15 331114254-0015	Metal Guardrail- #55-0226 N PCH Connector	White/Grayish Fibrous Homogeneous		60% Non-fibrous (other)	40% Chrysotile
16 331114254-0016	Metal Guardrail- #55-0226 N PCH Connector	White/Black Fibrous Homogeneous		30% Non-fibrous (other)	70% Chrysotile
17 331114254-0017	Concrete Guardrail-W-#55- 0226 N PCH Connector	Beige Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
18 331114254-0018	Concrete Guardrail-E-#55- 0226 N PCH Connector	Grayish Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected

Initial report from 12/15/2011 07:57:55

Analyst(s)  
  
Jeffrey Deboo (19)

  
  
Derrick Tanner, Laboratory Manager  
or other approved signatory

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Samples analyzed by LA Testing Garden Grove, CA NVLAP Lab Code 101384-0, CA ELAP 1406



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**TRC Environmental Corp.**  
**123 Technology Drive**  
  
**Irvine, CA 92618**

Customer ID: 32TRCS62  
Customer PO: 181348  
Received: 12/12/11 9:10 AM  
LA Testing Order: 331114254

Fax: Phone: (949) 788-9990  
Project: **OCTA I-5 HOV IMPROVEMENT 1 #181348**

LA Testing Proj:  
Analysis Date: 12/15/2011

**Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 and/or EPA 600/M4-82-020 Method(s) using Polarized Light Microscopy**

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
19 331114254-0019	Concrete Guardrail-W-Vert- #55-0226 N PCH Connector	Grayish Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected

Initial report from 12/15/2011 07:57:55

Analyst(s)  
  
Jeffrey Deboo (19)

  
  
Derrick Tanner, Laboratory Manager  
or other approved signatory

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Samples analyzed by LA Testing Garden Grove, CA NVLAP Lab Code 101384-0, CA ELAP 1406

APPENDIX B

FIELD LOGS AND CHAIN OF CUSTODY



# Asbestos Chain of Custody

## LA Testing Order Number (Lab Use Only):

# # 3 3 1 1 1 4 2 5 4

LA TESTING  
11652 KNOTT STREET  
UNIT F5  
GARDEN GROVE, CA 92841  
PHONE: (714) 828-4999  
FAX: (714) 828-4944

Company: <u>TRC</u>		LA Testing-Bill to: <input type="checkbox"/> Same <input type="checkbox"/> Different If Bill to is Different note instructions in Comments**	
Street: <u>123 TECHNOLOGY DRIVE</u>		Third Party Billing requires written authorization from third party	
City: <u>IRVINE</u>	State/Province: <u>CA</u>	Zip/Postal Code: <u>92618</u>	Country: <u>USA</u>
Report To (Name): <u>DAVID LENNON</u>		Fax #:	
Telephone #:		Email Address: <u>dlennon@trcsolutions.com</u>	
Project Name/Number: <u>OCTA I-5 HOV IMPROVEMENT / #181348</u>			
Please Provide Results: <input type="checkbox"/> Fax <input checked="" type="checkbox"/> Email		Purchase Order: <u>181348</u>	U.S. State Samples Taken:
<b>Turnaround Time (TAT) Options* - Please Check</b>			
<input type="checkbox"/> 3 Hour	<input type="checkbox"/> 6 Hour	<input type="checkbox"/> 24 Hour	<input type="checkbox"/> 48 Hour
<input checked="" type="checkbox"/> 72 Hour	<input type="checkbox"/> 96 Hour	<input type="checkbox"/> 1 Week	<input type="checkbox"/> 2 Week
*For TEM Air 3 hours through 6 hours, please call ahead to schedule. *There is a premium charge for 3 Hour TEM AHERA or EPA Level II TAT. You will be asked to sign an authorization form for this service. Analysis completed in accordance with LA Testing's Terms and Conditions located in the Analytical Price Guide.			
<b>PCM - Air</b> <input type="checkbox"/> NIOSH 7400 <input type="checkbox"/> w/ OSHA 8hr. TWA <b>PLM - Bulk (reporting limit)</b> <input checked="" type="checkbox"/> PLM EPA 600/R-93/116 (<1%) <input type="checkbox"/> PLM EPA NOB (<1%) Point Count <input type="checkbox"/> 400 (<0.25%) <input type="checkbox"/> 1000 (<0.1%) Point Count w/Gravimetric <input type="checkbox"/> 400 (<0.25%) <input type="checkbox"/> 1000 (<0.1%) <input type="checkbox"/> NYS 198.1 (friable in NY) <input type="checkbox"/> NYS 198.6 NOB (non-friable-NY) <input type="checkbox"/> NIOSH 9002 (<1%)		<b>TEM - Air</b> <input type="checkbox"/> 4-4.5hr TAT (AHERA only) <input type="checkbox"/> AHERA 40 CFR, Part 763 <input type="checkbox"/> NIOSH 7402 <input type="checkbox"/> EPA Level II <input type="checkbox"/> ISO 10312 <b>TEM - Bulk</b> <input type="checkbox"/> TEM EPA NOB <input type="checkbox"/> NYS NOB 198.4 (non-friable-NY) <input type="checkbox"/> Chatfield SOP <input type="checkbox"/> TEM Mass Analysis-EPA 600 sec. 2.5 <b>TEM - Water:</b> EPA 100.2 Fibers >10µm <input type="checkbox"/> Waste <input type="checkbox"/> Drinking All Fiber Sizes <input type="checkbox"/> Waste <input type="checkbox"/> Drinking	
		<b>TEM- Dust</b> <input type="checkbox"/> Microvac - ASTM D 5755 <input type="checkbox"/> Wipe - ASTM D6480 <input type="checkbox"/> Carpet Sonication (EPA 600/J-93/167) <b>Soil/Rock/Vermiculite</b> <input type="checkbox"/> PLM CARB 435 - A (0.25% sensitivity) <input type="checkbox"/> PLM CARB 435 - B (0.1% sensitivity) <input type="checkbox"/> TEM CARB 435 - B (0.1% sensitivity) <input type="checkbox"/> TEM CARB 435 - C (0.01% sensitivity) <input type="checkbox"/> EPA Protocol (Semi-Quantitative) <input type="checkbox"/> EPA Protocol (Quantitative) <b>Other:</b> <input type="checkbox"/>	
<input type="checkbox"/> Check For Positive Stop - Clearly Identify Homogenous Group			
Samplers Name: <u>ERIK PAQUETTE</u>		Samplers Signature:	
Sample #	Sample Description	Volume/Area (Air) HA # (Bulk)	Date/Time Sampled
	See TRC Asbestos Inspection Field Data Sheet		
Client Sample # (s): <u>01</u>		- <u>19</u>	Total # of Samples: <u>19</u>
Relinquished (Client): <u>ERIK PAQUETTE</u>		Date: <u>12/9/11</u>	Time: <u>3:19pm</u>
Received (Lab): <u>FX</u>		Date: <u>12/12/11</u>	Time: <u>9:10AM</u>
Comments/Special Instructions:			

Project #: 18/348/2000/2900  
 Name: OCTA I-5 HOV IMPROVEMENT  
 Location:

Inspector Name and License #: ERIK PARQUETTE #07-4157  
 Date of Inspection: 12/9/11  
 Inspector Signature: *[Signature]*

\* Attach sample location drawing to ALL inspection forms\*

Sample #	Material Description	Material Location	Quantity (SF or LF)	Friable (NF or F)	Damage (ND, D, SD)	Photo #
01	Concrete Guardrail	Bridge # 55-0227, Las Camino Capistrano	>	NF	ND	1, 2
02		↓ Undercrossing.	>			3, 4
03	Metal Guardrail Spacer	↓		F	ND	5, 6, 7
04	Concrete Guardrail - West Side - N	BRIDGE # 55-0510, Camino Las Ramblas		NF	ND	10, 11
05	Concrete Guardrail - East Side - N	Undercrossing.				38
06	Concrete Ledge - West Side - N	↓				24, 25
07	Metal Guardrail Spacer	Bridge # 55-0510, Camino Las Ramblas	>	F	ND	08, 09
08		Undercrossing	>	NF	ND	12, 13
09	Roadway Seam Sealant	↓		NF	ND	37
10	Concrete Guard Rail - West Side - Mid	↓		NF	ND	14, 15
11	Roadway Seam Sealant	↓		NF	ND	16, 17
12	↓	↓				18, 19
13	Expansion Joint Material	↓		F	D	26, 27
14	↓	↓		F	D	28, 29
15	Metal Guardrail Spacer	Bridge # 55-0226, Northbound	>	F	ND	20, 21
16	↓	PCH Connector	>			32, 33
17	↓ - West Side	↓				22, 23
18	Concrete Guardrail - East Side	↓		NF	ND	34, 35
19	Concrete Guardrail - West - Vert	↓				30, 31

APPENDIX C

CONSULTANT AND LABORATORY CERTIFICATIONS

State of California  
Division of Occupational Safety and Health  
**Certified Asbestos Consultant**



**Erik S Paquette**

Name

Certification No. 07-4157

Expires on 07/19/12

This certification was issued by the Division of Occupational Safety and Health as authorized by Sections 7180 et seq. of the Business and Professions Code.

State of California Department of Public Health

Lead-Related Construction Certificate	Certificate Type	Expiration Date
---	---------------------	--------------------

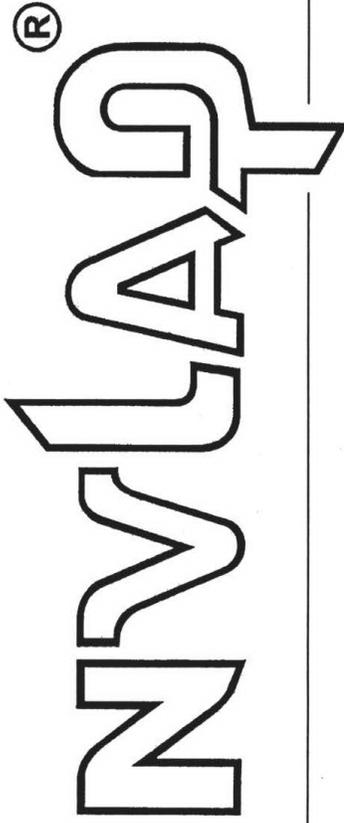
Inspector/Assessor	★	04/18/2012
--------------------	---	------------



**Erik S. Paquette**

ID #: **14356**

United States Department of Commerce  
National Institute of Standards and Technology



---

## Certificate of Accreditation to ISO/IEC 17025:2005

---

NVLAP LAB CODE: 101384-0

**LA Testing-Garden Grove**  
Garden Grove, CA

is accredited by the National Voluntary Laboratory Accreditation Program for specific services,  
listed on the Scope of Accreditation, for:

### **AIRBORNE ASBESTOS FIBER ANALYSIS**

*This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005.  
This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality  
management system (refer to joint ISO-ILAC-IAF Communique dated January 2009).*

2011-07-01 through 2012-06-30

Effective dates



*Dolly S. Bruce*  
For the National Institute of Standards and Technology



**National Voluntary  
Laboratory Accreditation Program**



**SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005**

**LA Testing-Garden Grove**  
11652 Knott Avenue, Unit F5  
Garden Grove, CA 92841  
Ms. Minh-Nguyet Hong  
Phone: 714-828-4999 Fax: 714-828-4944  
E-Mail: [mhong@emsl.com](mailto:mhong@emsl.com)  
URL: <http://www.latesting.com>

**AIRBORNE ASBESTOS FIBER ANALYSIS (TEM)**

**NVLAP LAB CODE 101384-0**

***NVLAP Code    Designation / Description***

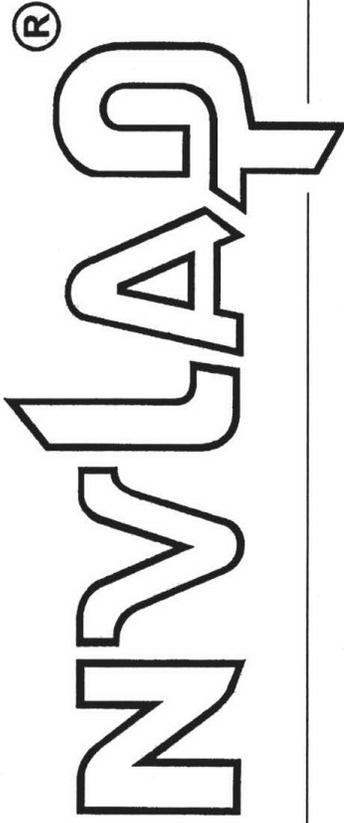
18/A02            U.S. EPA's "Interim Transmission Electron Microscopy Analytical Methods-Mandatory and Nonmandatory-and Mandatory Section to Determine Completion of Response Actions" as found in 40 CFR, Part 763, Subpart E, Appendix A.

2011-07-01 through 2012-06-30

*Effective dates*

*For the National Institute of Standards and Technology*

United States Department of Commerce  
National Institute of Standards and Technology



---

## Certificate of Accreditation to ISO/IEC 17025:2005

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NVLAP LAB CODE: 101384-0

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Garden Grove, CA

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listed on the Scope of Accreditation, for.

### **BULK ASBESTOS FIBER ANALYSIS**

*This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005.  
This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality  
management system (refer to joint ISO-ILAC-IAF Communique dated January 2009).*

2011-07-01 through 2012-06-30

Effective dates



*Dolly S. Bruce*  
For the National Institute of Standards and Technology



**National Voluntary  
Laboratory Accreditation Program**



**SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005**

**LA Testing-Garden Grove**  
11652 Knott Avenue, Unit F5  
Garden Grove, CA 92841  
Ms. Minh-Nguyet Hong  
Phone: 714-828-4999 Fax: 714-828-4944  
E-Mail: [mhong@emsl.com](mailto:mhong@emsl.com)  
URL: <http://www.latesting.com>

**BULK ASBESTOS FIBER ANALYSIS (PLM)**

**NVLAP LAB CODE 101384-0**

*NVLAP Code      Designation / Description*

18/A01            EPA-600/M4-82-020: Interim Method for the Determination of Asbestos in Bulk Insulation Samples

2011-07-01 through 2012-06-30

*Effective dates*

*For the National Institute of Standards and Technology*