15 December 2014

AMEC Project No.: VA06726.800.03

VIA EMAIL

BC Ministry of Transportation and Infrastructure
South Coast Region
310 - 1500 Woolridge
Coquitlam BC V3K 0B8
Attention: Doug Hyde
Project Manager

Dear Mr. Hyde:

RE: Asphalt Asbestos and Lead Paint Testing
001481V Lions Gate North Approach Viaduct

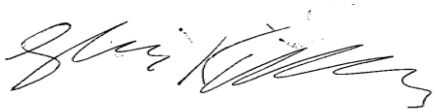
Enclosed are the analytical results for the asphalt and primer samples collected from the North Approach Viaduct of the Lions Gate Bridge.

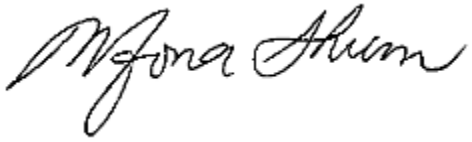
If you require any additional information or clarification, please do not hesitate to contact me at 604-295-1632

Yours truly,

AMEC Environment & Infrastructure
a division of AMEC Americas Limited

Reviewed by:





Levi Kimble, MSc
Industrial Hygienist

Mona Shum, MSc, CIH
Occupational Health & Safety Team Lead
Project Manager

Cc: Giesila Decker, MOTI SCR
Alfred Ho, MOTI SCR

AMEC Environment & Infrastructure
a division of AMEC Americas Limited
Suite 600, 4445 Lougheed Highway
Burnaby, BC
Canada V5C 0E4
Tel (604) 294-3811
Fax (604) 294-4664
www.amec.com

Applicable Regulations

Asbestos

Sections 6.1 to 6.32, in Part 6 (Substance Specific Requirements), of the WorkSafeBC OHSR apply to workplaces where a worker is, or may be, exposed to potentially hazardous levels of asbestos fibres. These Sections of the OHSR, along with the associated guidelines, detail the specific requirements relating to the identification, handling, repair, and abatement of asbestos-containing materials in the workplace. In addition, WorkSafeBC has published a manual titled *Safe Work Practices for Handling Asbestos.* This manual outlines basic information on asbestos, and asbestos products, as well as information on worker protection and safe work procedures and principles that should be followed in determining the most suitable technique for safely abating ACMs. This document provides a guide to current practices that should be followed by employers and contractors in British Columbia.

According to the OHSR, an “asbestos-containing material” refers to any manufactured article, or other material, that contains 0.5% or more asbestos by weight at the time of manufacture, or contains 0.5% or more asbestos as determined by NIOSH Method 9002, Issue 2 or other method acceptable to WorkSafeBC. WorkSafeBC accepts US EPA Method 600/R-93/116 for asbestos analysis, which was used by the laboratory for this HBMA.

In British Columbia, the Hazardous Waste Regulation (BC Reg. 63/88) defines "waste asbestos" as a waste containing friable asbestos fibres or asbestos dust in a concentration greater than 1% by weight either at the time of manufacture, or as determined using one of the following methods:

(a) Method 600-R-93-116, as amended from time to time, published by the United States Environmental Protection Agency;

(b) NIOSH Method 9002, as amended from time to time, from the NIOSH Manual of Analytical Methods, 4th Edition, published by the National Institute for Occupational Safety and Health, United States.

Waste asbestos must be transported according to the *Transportation of Dangerous Goods Act* (1996) and Regulation (BC Reg. 203/85; TDG), and transported and managed according to the provincial *Environmental Management Act* (2003) and Hazardous Waste Regulation (BC Reg. 63/88).

Lead Paint

Health Canada, through the *Hazardous Products Act* (HPA; 1985) Surface Coating Materials Regulation (SOR/2005-109), defines products containing more than 90 mg/kg (0.009%) lead in surface coating materials (e.g., metal touch-up or anticorrosive material) as LCPs. While currently banned, except in some industrial applications, old paints may contain lead at concentrations exceeding this current limit.

Sections 6.59 to 6.69 (Part 6 Substance Specific Requirements) of the WorkSafeBC OHSR apply to workplaces where a worker is, or may be, exposed to potentially hazardous levels of

lead. Part 20 of the WorkSafeBC OHSR states that a notice of project must be filed with WorkSafeBC if significant lead-containing paints are going to be disturbed during a renovation/demolition project.

WorkSafeBC also released the publication *Lead-Containing Paints and Coatings: Preventing Exposure in the Construction Industry* (2011), which explains the OHSR requirements and describes how employers can meet their legal obligations to provide a safe environment when working with LCPs. In this publication, WorkSafeBC states that the improper removal of paints containing ≥600 mg/kg of lead may generate airborne concentrations of lead dust greater than 50% of the Exposure Limit of 0.05 mg/m^3 for an eight-hour work shift (based on studies by the US Occupational Safety and Health Authority (OSHA)). This publication further states, that concentrations as low as 90 mg/kg may pose a risk to pregnant women and children.

For the purposes of this assessment, all surface coatings containing ≥90 mg/kg or ≥0.009% will be considered to be lead-containing paints. Paints containing ≥600 mg/kg or ≥0.06% lead will be considered to represent a higher risk of exposure to workers if disturbed during renovation activities. Removal or disturbance of paint coatings exceeding this concentration will require implementation of appropriate lead dust controls.

Results

Asbestos

Samples of asphalt were collected at various locations from two distinct regions of the wear surface along the North Approach Viaduct. The East and West outer edges contained a 200 to 300 mm narrow strip of epoxy asphalt which is estimated to have been originally placed sometime in the 1970s. This material is referred to as “1970s Epoxy Asphalt” in the results Table 1 below.

The majority of the wear surface, between the outer edges, represented the second region analyzed during this project. This asphalt is referred to as the “Inner Field Asphalt” in the results Table 1 below. The “Inner Field Asphalt” samples were collected down to the steel-deck substrate, therefore in most cases both asphalt and the membrane layer beneath were included in the asbestos analysis. Please refer to Photos in Appendix C for further information regarding sampled materials.

No asbestos was detected in the asphalt (or membrane) samples collected. Please refer to Table 1 below for sample summary and to Appendix A for complete laboratory results.

Table 1. **Lions Gate North Approach Viaduct Asphalt Asbestos Analysis Results**

Sample No.	Location	Reference Point[1]	Coordinates	Material	Asbestos %	Sample Date
1	Joint # 17	East Parapet	4 inches west; 12 inches south	1970s Epoxy Asphalt	ND	Nov. 13/14
2	Joint # 16	East Parapet	62 inches west; 12 inches south	Inner Field Asphalt	ND	Nov. 13/14
3	Joint # 15	West Parapet	3 inches east; 12 inches north	1970s Epoxy Asphalt	ND	Nov. 14/14
4	Joint # 15	West Parapet	72 inches east; 12 inches north	Inner Field Asphalt	ND	Nov. 14/14
5	Joint # 15	East Parapet	5 inches west; 5 inches north	1970s Epoxy Asphalt	ND	Nov. 16/14
6	Joint # 15	East Parapet	36 inches west; 12 inches south	Inner Field Asphalt	ND	Nov. 16/14
7	Joint # 14	East Parapet	5 inches west; 15 inches south	1970s Epoxy Asphalt	ND	Nov. 17/14
8	Joint # 14	East Parapet	120 inches west; 12 inches north	Inner Field Asphalt	ND	Nov. 17/14
9	Joint # 14	West Parapet	6 inches east; 11 inches south	1970s Epoxy Asphalt	ND	Nov. 19/14
10	Joint # 14	West Parapet	72 inches east; 10 inches south	Inner Field Asphalt	ND	Nov. 19/14
11	Joint # 12	West Parapet	7 inches east; 5 inches south	1970s Epoxy Asphalt	ND	Nov. 19/14
12	Joint # 12	West Parapet	98 inches east; 10 inches south	Inner Field Asphalt	ND	Nov. 19/14
13	Joint # 8	West Parapet	5 inches east; 5 inches south	1970s Epoxy Asphalt	ND	Dec. 1/14
14	Joint # 6	East Parapet	36 inches west; 10 inches south	Inner Field Asphalt	ND	Dec. 2/14
15	Joint # 6	East Parapet	6 inches west; 10 inches south	1970s Epoxy Asphalt	ND	Dec. 2/14
16	Joint # 6	East Parapet	204 inches west; 14 inches north	Inner Field Asphalt	ND	Dec. 2/14

Notes: [1]The reference point for the coordinates of each sample is the parapet referenced for the east/west direction and the joint referenced for the north/south direction.

Lead Paint

Samples of primer were collected at various locations from the steel bridge deck at two distinct regions of along the North Approach Viaduct. Primer collected from beneath the outer edge 1970s epoxy asphalt is referred to as “1970s Epoxy” substrate in Table 2 below.

Primer collected from beneath the Inner Field asphalt is referred to as “Inner Field” substrate in Table 2 below. Please refer to Photos in Appendix C for further information regarding sampled materials.

Lead was detected at various concentrations from the primer samples collected. Primer from the 1970s Epoxy substrate was identified to contain lead between **0.27 – 0.0052 %wt**. Primer from the Inner Field substrate was identified to contain lead between**<0.0055 % - 0.022 %wt**. Please refer to Table 2 below for sample summary and Appendix B for complete laboratory results.

Table 2. **Lions Gate North Approach Viaduct Lead-Paint (Primer) Analysis Results**

Sample No.	Location	Reference Point[1]	Coordinates	Substrate	Lead Concentration (% wt.)	Sample Date
LP1	Joint # 15	West Parapet	3 inches east; 12 inches north	1970s Epoxy	**0.026**	Nov. 14/14
LP2	Joint # 15	West Parapet	72 inches east; 12 inches north	Inner Field	0.0038	Nov. 14/14
LP3	Joint # 15	East Parapet	3 inches west; 19 inches north	1970s Epoxy	**0.037**	Nov. 16/14
LP4	Joint # 15	East Parapet	36 inches west; 20 inches south	Inner Field	**0.022**	Nov. 16/14
LP5	Joint # 14	East Parapet	5 inches west; 8 inches north	1970s Epoxy	**0.016**	Nov. 17/14
LP6	Joint # 14	East Parapet	60 inches west; 10 inches south	Inner Field	< 0.0058	Nov. 17/14
LP7	Joint # 14	West Parapet	101 inches east; 10 inches south	Inner Field	< 0.0060	Nov. 19/14
LP8	Joint # 14	West Parapet	10 inches east; 8 inches north	1970s Epoxy	**0.070**	Nov. 19/14
LP9	Joint #12	West Parapet	75 inches east; 10 inches north	Inner Field	< 0.0078	Nov. 19/14
LP10	Joint #12	West Parapet	5 inches east; 8 inches south	1970s Epoxy	**0.058**	Nov. 19/14
LP11[2]	Joint # 8	West Parapet	5 inches east; 5 inches south	1970s Epoxy	**0.27**	Dec. 1/14
LP12	Joint # 6	East Parapet	5 inches west; 14 inches south	1970s Epoxy	**0.083**	Dec. 2/14
LP13	Joint # 6	East Parapet	72 inches west; 11 inches north	Inner Field	< 0.0055	Dec. 2/14
LP14	Joint # 8	East Parapet	84 inches west; 6 inches north	Inner Field	0.0085	Dec. 2/14
LP15	Joint # 8	East Parapet	7 inches west; 6 inches south	1970s Epoxy	0.0052	Dec. 2/14
LP16	Joint # 6	East Parapet	156 inches west; 14 inches north	Inner Field	< 0.0080	Dec. 2/14

Notes: [1]The reference point for the coordinates of each sample is the parapet referenced for the east/west direction and the joint referenced for the north/south direction.
[2]Sample was collected following minimal jack-hammering. An approximate 36 square inch piece of asphalt was cut and then removed via jack-hammer prior to primer sampling (refer to Photo.4 of Appendix C). This may have led to less disturbance of the substrate than during collection of all other samples, which were collected following “demolition of the majority of asphalt (and associated membrane, when applicable) from the area surrounding the joints (refer to Photo 3 of Appendix C).

APPENDIX A

ASBESTOS ANALYSIS RESULTS

IATL **International Asbestos Testing Laboratories**

9000 Commerce Parkway Suite B Mt. Laurel, NJ 08054
Telephone: 856-231-9449 Fax: 856-231-9818

CERTIFICATE OF ANALYSIS

Client: AMEC Environment & Infrastructu
4445 Lougheed Hwy;Ste 600
Burnaby BC V5C0E4

Report Date: 11/24/2014
Report No.: 350683
Project: Lions Gate-MOT
Project No.: VA06726.800.02

BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 5483619 **Description / Location:** Black Tar
Client No.: 1 Joint 17 East Lane-Outer Edge 1970 Epoxy

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	None Detected	None Detected	100

Lab No.: 5483620 **Description / Location:** Black Asphalt
Client No.: 2 Joint 16 East Lane-Inner Field

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	None Detected	None Detected	100

Lab No.: 5483621 **Description / Location:** Black Tar
Client No.: 3 Joint 15 West Lane-Outer Edge 1970 Epoxy

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	None Detected	None Detected	100

Accreditations: **NIST-NVLAP No. 101165-0** **NY-DOH No. 11021** **AIHA-LAP, LLC No. 100188**

Analytical Method: US EPA 600/R-93/116 by Polarized Light Microscopy, (ELAP 198.1 where applicable)

Comments: Quantification at <0.25% by volume is possible with this method. (PC) Indicates Stratified Point Count Method performed. (PC-Trace) means that asbestos was detected but is not quantifiable under the Point Counting regimen. Analysis includes all distinct separable layers in accordance with EPA 600 Method. If not reported or otherwise noted, layer is either not present or the client has specifically requested that it not be analyzed (ex. analyze until positive instructions). Small asbestos fibers may be missed by PLM due to resolution limitations of the optical microscope. Therefore, PLM is not consistently reliable in detecting asbestos in non-friable organically bound (NOB) materials. Quantitative transmission electron microscopy (TEM) is currently the only method that can pronounce materials as non-asbestos containing.

Analysis Performed By: R. Shumate

Approved By: Frank E. Ehrenfeld, III
Laboratory Director

Date: 11/24/2014

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Telephone: 856-231-9449 Fax: 856-231-9818

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4445 Lougheed Hwy;Ste 600
Burnaby BC V5C0E4

Report Date: 11/24/2014
Report No.: 350683
Project: Lions Gate-MOT
Project No.: VA06726.800.02

BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 5483622 **Description / Location:** Black Asphalt
Client No.: 4 Joint 15 West Lane-Inner Field

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	None Detected	None Detected	100

Lab No.: 5483622 **Description / Location:** Black Epoxy **Layer No.:** 2
Client No.: 4 Joint 15 West Lane-Inner Field

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	None Detected	None Detected	100

Accreditations: **NIST-NVLAP No. 101165-0** **NY-DOH No. 11021** **AIHA-LAP, LLC No. 100188**

Analytical Method: US EPA 600/R-93/116 by Polarized Light Microscopy, (ELAP 198.1 where applicable)

Comments: Quantification at <0.25% by volume is possible with this method. (PC) Indicates Stratified Point Count Method performed. (PC-Trace) means that asbestos was detected but is not quantifiable under the Point Counting regimen. Analysis includes all distinct separable layers in accordance with EPA 600 Method. If not reported or otherwise noted, layer is either not present or the client has specifically requested that it not be analyzed (ex. analyze until positive instructions). Small asbestos fibers may be missed by PLM due to resolution limitations of the optical microscope. Therefore, PLM is not consistently reliable in detecting asbestos in non-friable organically bound (NOB) materials. Quantitative transmission electron microscopy (TEM) is currently the only method that can pronounce materials as non-asbestos containing.

Analysis Performed By: R. Shumate

Date: 11/24/2014

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CERTIFICATE OF ANALYSIS

Client: AMEC Environment & Infrastructu
4445 Lougheed Hwy;Ste 600
Burnaby BC V5C0E4

Report Date: 11/26/2014
Report No.: 350882
Project: Lions Gate-MOT
Project No.: VAU6726-800-02

BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 5488550 **Description / Location:** Black Asphalt
Client No.: 5 Joint 15 East Lane-1970 Epoxy

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	None Detected	None Detected	100

Lab No.: 5488551 **Description / Location:** Black Asphalt
Client No.: 6 Joint 15 East Lane-Inner Field

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	None Detected	None Detected	100

Lab No.: 5488551 **Description / Location:** Black Epoxy **Layer No.: 2**
Client No.: 6 Joint 15 East Lane-Inner Field

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	None Detected	None Detected	100

Lab No.: 5488552 **Description / Location:** Black Asphalt
Client No.: 7 Joint 14 East Lane-1970 Epoxy

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	None Detected	None Detected	100

Accreditations: **NIST-NVLAP No. 101165-0** **NY-DOH No. 11021** **AIHA-LAP, LLC No. 100188**

Analytical Method: US EPA 600/R-93/116 by Polarized Light Microscopy, (ELAP 198.1 where applicable)

Comments: Quantification at <0.25% by volume is possible with this method. (PC) Indicates Stratified Point Count Method performed. (PC-Trace) means that asbestos was detected but is not quantifiable under the Point Counting regimen. Analysis includes all distinct separable layers in accordance with EPA 600 Method. If not reported or otherwise noted, layer is either not present or the client has specifically requested that it not be analyzed (ex. analyze until positive instructions). Small asbestos fibers may be missed by PLM due to resolution limitations of the optical microscope. Therefore, PLM is not consistently reliable in detecting asbestos in non-friable organically bound (NOB) materials. Quantitative transmission electron microscopy (TEM) is currently the only method that can pronounce materials as non-asbestos containing.

Analysis Performed By: L. Solebello

Approved By: Frank Ehrenfeld

Date: 11/26/2014

Frank E. Ehrenfeld, III
Laboratory Director

IATL International Asbestos Testing Laboratories

9000 Commerce Parkway Suite B Mt. Laurel, NJ 08054
Telephone: 856-231-9449 Fax: 856-231-9818

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4445 Lougheed Hwy;Ste 600
Burnaby BC V5C0E4

Report Date: 11/26/2014
Report No.: 350882
Project: Lions Gate-MOT
Project No.: VAU6726-800-02

BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 5488553 **Description / Location:** Black Asphalt
Client No.: 8 Joint 14 East Lane-Inner Field

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	None Detected	None Detected	100

Lab No.: 5488553 **Description / Location:** Black Epoxy **Layer No.: 2**
Client No.: 8 Joint 14 East Lane-Inner Field

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	None Detected	None Detected	100

Accreditations: **NIST-NVLAP No. 101165-0** **NY-DOH No. 11021** **AIHA-LAP, LLC No. 100188**

Analytical Method: US EPA 600/R-93/116 by Polarized Light Microscopy, (ELAP 198.1 where applicable)

Comments: Quantification at <0.25% by volume is possible with this method. (PC) Indicates Stratified Point Count Method performed. (PC-Trace) means that asbestos was detected but is not quantifiable under the Point Counting regimen. Analysis includes all distinct separable layers in accordance with EPA 600 Method. If not reported or otherwise noted, layer is either not present or the client has specifically requested that it not be analyzed (ex. analyze until positive instructions). Small asbestos fibers may be missed by PLM due to resolution limitations of the optical microscope. Therefore, PLM is not consistently reliable in detecting asbestos in non-friable organically bound (NOB) materials. Quantitative transmission electron microscopy (TEM) is currently the only method that can pronounce materials as non-asbestos containing.

Analysis Performed By: L. Solebello

Date: 11/26/2014

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Telephone: 856-231-9449 Fax: 856-231-9818

CERTIFICATE OF ANALYSIS

Client: AMEC Environment & Infrastructu
4445 Lougheed Hwy;Ste 600
Burnaby BC V5C0E4

Report Date: 12/5/2014
Report No.: 351663
Project: Lions Gate MOT
Project No.: VA06726.800.02

BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 5492734 **Description / Location:** Black Epoxy
Client No.: 9 Joint 14 West Lane-Outer Edge 1970

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	None Detected	None Detected	100

Lab No.: 5492734 **Description / Location:** Black Asphalt **Layer No.:** 2
Client No.: 9 Joint 14 West Lane-Outer Edge 1970

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	None Detected	None Detected	100

Lab No.: 5492735 **Description / Location:** Black Epoxy
Client No.: 10 Joint 14 West Lane-Inner Field

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	None Detected	None Detected	100

Lab No.: 5492735 **Description / Location:** Black Asphalt **Layer No.:** 2
Client No.: 10 Joint 14 West Lane-Inner Field

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	None Detected	None Detected	100

Accreditations: **NIST-NVLAP No. 101165-0** **NY-DOH No. 11021** **AIHA-LAP, LLC No. 100188**

Analytical Method: US EPA 600/R-93/116 by Polarized Light Microscopy, (ELAP 198.1 where applicable)

Comments: Quantification at <0.25% by volume is possible with this method. (PC) Indicates Stratified Point Count Method performed. (PC-Trace) means that asbestos was detected but is not quantifiable under the Point Counting regimen. Analysis includes all distinct separable layers in accordance with EPA 600 Method. If not reported or otherwise noted, layer is either not present or the client has specifically requested that it not be analyzed (ex. analyze until positive instructions). Small asbestos fibers may be missed by PLM due to resolution limitations of the optical microscope. Therefore, PLM is not consistently reliable in detecting asbestos in non-friable organically bound (NOB) materials. Quantitative transmission electron microscopy (TEM) is currently the only method that can pronounce materials as non-asbestos containing.

Analysis Performed By: L. Solebello

Approved By: Frank E. Ehrenfeld, III
Laboratory Director

Date: 12/5/2014

IATL **International Asbestos Testing Laboratories**

9000 Commerce Parkway Suite B Mt. Laurel, NJ 08054
Telephone: 856-231-9449 Fax: 856-231-9818

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Client: AMEC Environment & Infrastructu
4445 Lougheed Hwy;Ste 600
Burnaby BC V5C0E4

Report Date: 12/5/2014
Report No.: 351663
Project: Lions Gate MOT
Project No.: VA06726.800.02

BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 5492736 **Description / Location:** Black Epoxy
Client No.: 11 Joint 12 West Lane-Outer Edge 1970 Epoxy

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	None Detected	None Detected	100

Lab No.: 5492736 **Description / Location:** Black Asphalt **Layer No.:** 2
Client No.: 11 Joint 12 West Lane-Outer Edge 1970 Epoxy

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	None Detected	None Detected	100

Lab No.: 5492737 **Description / Location:** Black Epoxy
Client No.: 12 Joint 12 West Lane-Inner Field

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	None Detected	None Detected	100

Lab No.: 5492737 **Description / Location:** Black Asphalt **Layer No.:** 2
Client No.: 12 Joint 12 West Lane-Inner Field

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	None Detected	None Detected	100

Accreditations: **NIST-NVLAP No. 101165-0** **NY-DOH No. 11021** **AIHA-LAP, LLC No. 100188**

Analytical Method: US EPA 600/R-93/116 by Polarized Light Microscopy, (ELAP 198.1 where applicable)

Comments: Quantification at <0.25% by volume is possible with this method. (PC) Indicates Stratified Point Count Method performed. (PC-Trace) means that asbestos was detected but is not quantifiable under the Point Counting regimen. Analysis includes all distinct separable layers in accordance with EPA 600 Method. If not reported or otherwise noted, layer is either not present or the client has specifically requested that it not be analyzed (ex. analyze until positive instructions). Small asbestos fibers may be missed by PLM due to resolution limitations of the optical microscope. Therefore, PLM is not consistently reliable in detecting asbestos in non-friable organically bound (NOB) materials. Quantitative transmission electron microscopy (TEM) is currently the only method that can pronounce materials as non-asbestos containing.

Analysis Performed By: L. Solebello

Date: 12/5/2014

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9000 Commerce Parkway Suite B Mt. Laurel, NJ 08054
Telephone: 856-231-9449 Fax: 856-231-9818

CERTIFICATE OF ANALYSIS

Client: AMEC Environment & Infrastructu
4445 Lougheed Hwy;Ste 600
Burnaby BC V5C0E4

Report Date: 12/10/2014
Report No.: 351996
Project: Lions Gate-MOT
Project No.: VA06726-800-02

BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 5497081 **Description / Location:** Black Asphalt
Client No.: 13 Joint 8 West Ln-Outer Edge 1970 Epoxy

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	None Detected	None Detected	100

Lab No.: 5497082 **Description / Location:** Black Asphalt
Client No.: 14 Joint 6 East Ln-Inner Field

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	None Detected	None Detected	100

Lab No.: 5497083 **Description / Location:** Black Asphalt
Client No.: 15 Joint 6 East Ln-Outer Edge 1970 Epoxy

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	None Detected	None Detected	100

Lab No.: 5497084 **Description / Location:** Black Asphalt
Client No.: 16 Joint 6 Centre Lane-Inner Field

% Asbestos	Type	% Non-Asbestos Fibrous Material	Type	% Non-Fibrous Material
None Detected	None Detected	None Detected	None Detected	100

Accreditations: **NIST-NVLAP No. 101165-0** **NY-DOH No. 11021** **AIHA-LAP, LLC No. 100188**

Analytical Method: US EPA 600/R-93/116 by Polarized Light Microscopy, (ELAP 198.1 where applicable)

Comments: Quantification at <0.25% by volume is possible with this method. (PC) Indicates Stratified Point Count Method performed. (PC-Trace) means that asbestos was detected but is not quantifiable under the Point Counting regimen. Analysis includes all distinct separable layers in accordance with EPA 600 Method. If not reported or otherwise noted, layer is either not present or the client has specifically requested that it not be analyzed (ex. analyze until positive instructions). Small asbestos fibers may be missed by PLM due to resolution limitations of the optical microscope. Therefore, PLM is not consistently reliable in detecting asbestos in non-friable organically bound (NOB) materials. Quantitative transmission electron microscopy (TEM) is currently the only method that can pronounce materials as non-asbestos containing.

Analysis Performed By: R. Caran

Approved By: Frank E. Ehrenfeld, III
Laboratory Director

Date: 12/10/2014

APPENDIX B

LEAD-PAINT ANALYSIS RESULTS

IATL International Asbestos Testing Laboratories

9000 Commerce Parkway Suite B Mt. Laurel, NJ 08054
Telephone: 856-231-9449 Fax: 856-231-9818

CERTIFICATE OF ANALYSIS

Client: AMEC Environment & Infrastruct
4445 Lougheed Hwy;Ste 600
Burnaby BC V5C0E4

Report Date: 11/21/2014
Report Number: 350634
Project: Lions Gate - MOT
Project No.: VA06726.800-02

LEAD PAINT SAMPLE ANALYSIS SUMMARY

Lab No.	Client No.	Location / Description	Concentration Lead By Weight (%)
5486631	LP1	Lead Paint Joint 15;West Lane 19705;Epoxy Substrate	0.026***
5486632	LP2	Lead Paint Joint 15;West Lane; Inner Field;Sustrate	0.0038***

Accreditations: NATIONAL LEAD LABORATORY ACCREDITATION PROGRAM (NLLAP)
AIHA-LAP, LLC No. 100188 NYSDOH-ELAP No. 11021

Analytical Methods: ASTM D3335-85A "Standard Method To Test For Low Concentrations Of Lead In Paint By Atomic Absorption Spectrophotometry"
EPA SW846-(3050B:7000B) "Standard Method To Test For Low Concentrations Of Lead In Soils, Sludges and Sediments By AAS"

Comments: Regulatory limit is 0.5% lead by weight (EPA/HUD guidelines). Recommend multiple sampling for all samples less than regulatory limit for confirmation. All results are based on the samples as received at the lab. IATL assumes that appropriate sampling methods have been used and the data upon which these results are based have been accurately supplied by the client. Method Detection Limit (MDL) per EPA Method 40CFR Part 136 Apendix B. Reporting Limit (RL) based upon Lowest Standard Determined (LSD) in accordance with AIHA-ELLAP policies. LSD=0.2 ppm MDL=0.0044% by weight. RL= 0.010% by weight (based upon 100 mg sampled). * Insufficient sample provided to perform QC reanalysis (<200 mg) ** Not enough sample provided to analyze (<50 mg) *** Matrix / substrate interference possible. Sample results are not corrected for contamination by field or analytical blanks. This confidential report relates only to those item(s) tested and does not represent an endorsement by NIST-NVLAP, AIHA or any government agency. This report shall not be reproduced except in full, without written approval of the laboratory.

Date Received: 11/17/2014
Date Analyzed: 11/21/2014
Analyst: D. Graham

Approved By: Frank E. Ehrenfeld, III
Laboratory Director

IATL **International Asbestos Testing Laboratories**

9000 Commerce Parkway Suite B Mt. Laurel, NJ 08054
Telephone: 856-231-9449 Fax: 856-231-9818

CERTIFICATE OF ANALYSIS

Client: AMEC Environment & Infrastruct
4445 Lougheed Hwy;Ste 600
Burnaby BC V5C0E4

Report Date: 11/25/2014
Report Number: 350853
Project: Lions Gate-MOT
Project No.: VA06726-800-02

LEAD PAINT SAMPLE ANALYSIS SUMMARY

Lab No.	Client No.	Location / Description	Concentration Lead By Weight (%)
5484802	LP 3	Lead Paint Joint 15-East Lane 1970 Epoxy Substrate	0.037
5484803	LP 4	Lead Paint Joint 15-East Lane Inner Field Substrate	0.022
5484804	LP 5	Lead Paint Joint 14-East Lane 1970 Epoxy Substrate	0.016
5484805	LP 6	Lead Paint Joint 14-East Lane Inner Field Substrate	<0.0058

Accreditations: **NATIONAL LEAD LABORATORY ACCREDITATION PROGRAM (NLLAP)**
AIHA-LAP, LLC No. 100188 NYSDOH-ELAP No. 11021

Analytical Methods: ASTM D3335-85A "Standard Method To Test For Low Concentrations Of Lead In Paint By Atomic Absorption Spectrophotometry"
EPA SW846-(3050B:7000B) "Standard Method To Test For Low Concentrations Of Lead In Soils, Sludges and Sediments By AAS"

Comments: Regulatory limit is 0.5% lead by weight (EPA/HUD guidelines). Recommend multiple sampling for all samples less than regulatory limit for confirmation. All results are based on the samples as received at the lab. IATL assumes that appropriate sampling methods have been used and the data upon which these results are based have been accurately supplied by the client. Method Detection Limit (MDL) per EPA Method 40CFR Part 136 Apendix B. Reporting Limit (RL) based upon Lowest Standard Determined (LSD) in accordance with AIHA-ELLAP policies. LSD=0.2 ppm MDL=0.0044% by weight. RL= 0.010% by weight (based upon 100 mg sampled). * Insufficient sample provided to perform QC reanalysis (<200 mg) ** Not enough sample provided to analyze (<50 mg) *** Matrix / substrate interference possible. Sample results are not corrected for contamination by field or analytical blanks. This confidential report relates only to those item(s) tested and does not represent an endorsement by NIST-NVLAP, AIHA or any government agency. This report shall not be reproduced except in full, without written approval of the laboratory.

Date Received: 11/19/2014
Date Analyzed: 11/25/2014
Analyst: C. Shaffer

Approved By: Frank E. Ehrenfeld, III
Laboratory Director

IATL **International Asbestos Testing Laboratories**

9000 Commerce Parkway Suite B Mt. Laurel, NJ 08054
Telephone: 856-231-9449 Fax: 856-231-9818

CERTIFICATE OF ANALYSIS

Client: AMEC Environment & Infrastruct
4445 Lougheed Hwy;Ste 600
Burnaby BC V5C0E4

Report Date: 12/3/2014
Report Number: 351647
Project: Lions Gate MOT
Project No.: VA06726.800.02

LEAD PAINT SAMPLE ANALYSIS SUMMARY

Lab No.	Client No.	Location / Description	Concentration Lead By Weight (%)
5493000	LP7	Lead Paint; Joint 14 W Lane; Inner Field Substrate	<0.0060
5493001	LP8	Lead Paint; Joint 14 W Lane; 1970 Epoxy Substrate	0.070
5493002	LP9	Lead Paint; Joint 12 W Lane; Inner Field Substrate	0.0078
5493003	LP10	Lead Paint; Joint 12 W Lane; 1970 Epoxy Substrate	0.058

Accreditations: **NATIONAL LEAD LABORATORY ACCREDITATION PROGRAM (NLLAP)**
AIHA-LAP, LLC No. 100188 NYSDOH-ELAP No. 11021

Analytical Methods: ASTM D3335-85A "Standard Method To Test For Low Concentrations Of Lead In Paint By Atomic Absorption Spectrophotometry"
EPA SW846-(3050B:7000B) "Standard Method To Test For Low Concentrations Of Lead In Soils, Sludges and Sediments By AAS"

Comments: Regulatory limit is 0.5% lead by weight (EPA/HUD guidelines). Recommend multiple sampling for all samples less than regulatory limit for confirmation. All results are based on the samples as received at the lab. IATL assumes that appropriate sampling methods have been used and the data upon which these results are based have been accurately supplied by the client. Method Detection Limit (MDL) per EPA Method 40CFR Part 136 Apendix B. Reporting Limit (RL) based upon Lowest Standard Determined (LSD) in accordance with AIHA-ELLAP policies. LSD=0.2 ppm MDL=0.0044% by weight. RL= 0.010% by weight (based upon 100 mg sampled). * Insufficient sample provided to perform QC reanalysis (<200 mg) ** Not enough sample provided to analyze (<50 mg) *** Matrix / substrate interference possible. Sample results are not corrected for contamination by field or analytical blanks. This confidential report relates only to those item(s) tested and does not represent an endorsement by NIST-NVLAP, AIHA or any government agency. This report shall not be reproduced except in full, without written approval of the laboratory.

Date Received: 11/28/2014
Date Analyzed: 12/3/2014
Analyst: C. Shaffer

Approved By:

Frank E. Ehrenfeld, III
Laboratory Director

IATL **International Asbestos Testing Laboratories**

9000 Commerce Parkway Suite B Mt. Laurel, NJ 08054
Telephone: 856-231-9449 Fax: 856-231-9818

CERTIFICATE OF ANALYSIS

Client: AMEC Environment & Infrastruct
4445 Lougheed Hwy;Ste 600
Burnaby BC V5C0E4

Report Date: 12/9/2014
Report Number: 351973
Project: Lions Gate MOT
Project No.: VA06726.800.02

LEAD PAINT SAMPLE ANALYSIS SUMMARY

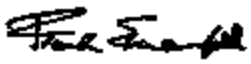
Lab No.	Client No.	Location / Description	Concentration Lead By Weight (%)
5496929	LP11	Lead Paint; Joint 8 W Lane; 1970 Epoxy Substrate	0.27
5496930	LP12	Lead Paint; Joint 6 E Lane; 1970 Epoxy Substrate	0.083
5496931	LP13	Lead Paint; Joint 6 E Lane; Inner Field Substrate	<0.0055
5496932	LP14	Lead Paint; Joint 8 E Lane; Inner Field Substrate	0.0085
5496933	LP15	Lead Paint; Joint 8 E Lane; 1970 Epoxy Substrate	0.0052
5496934	LP16	Lead Paint; Joint 6 Centre Lane; Inner Field Substrate	<0.0080

Accreditations: **NATIONAL LEAD LABORATORY ACCREDITATION PROGRAM (NLLAP)**
AIHA-LAP, LLC No. 100188 NYSDOH-ELAP No. 11021

Analytical Methods: ASTM D3335-85A "Standard Method To Test For Low Concentrations Of Lead In Paint By Atomic Absorption Spectrophotometry"
EPA SW846-(3050B:7000B) "Standard Method To Test For Low Concentrations Of Lead In Soils, Sludges and Sediments By AAS"

Comments: Regulatory limit is 0.5% lead by weight (EPA/HUD guidelines). Recommend multiple sampling for all samples less than regulatory limit for confirmation. All results are based on the samples as received at the lab. IATL assumes that appropriate sampling methods have been used and the data upon which these results are based have been accurately supplied by the client. Method Detection Limit (MDL) per EPA Method 40CFR Part 136 Apendix B. Reporting Limit (RL) based upon Lowest Standard Determined (LSD) in accordance with AIHA-ELLAP policies. LSD=0.2 ppm MDL=0.0044% by weight. RL= 0.010% by weight (based upon 100 mg sampled). * Insufficient sample provided to perform QC reanalysis (<200 mg) ** Not enough sample provided to analyze (<50 mg) *** Matrix / substrate interference possible. Sample results are not corrected for contamination by field or analytical blanks. This confidential report relates only to those item(s) tested and does not represent an endorsement by NIST-NVLAP, AIHA or any government agency. This report shall not be reproduced except in full, without written approval of the laboratory.

Date Received: 12/4/2014
Date Analyzed: 12/9/2014
Analyst: C. Shaffer

Approved By: 

Frank E. Ehrenfeld, III
Laboratory Director

APPENDIX C

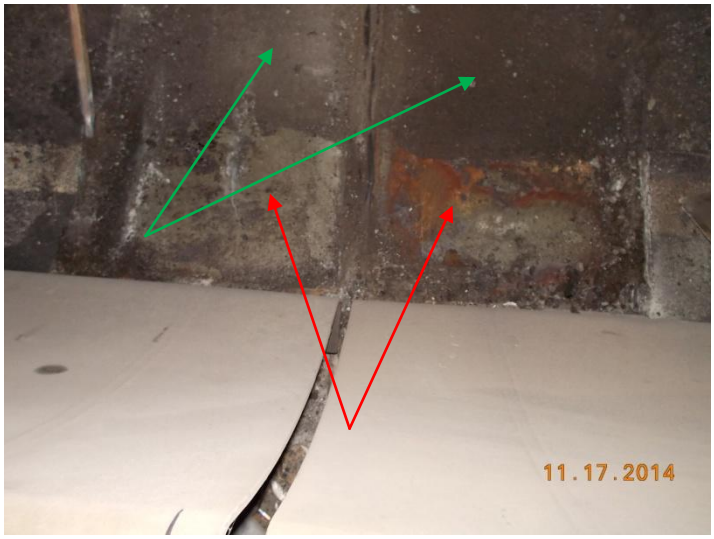
SITE PHOTOGRAPHS

Photo 1:

Description: Joint 12 Prior to Demolition

Lions Gate Bridge North Approach Viaduct – facing Southward. West parapet shown on right hand side of photo. 1970s Epoxy asphalt shown with red arrow and newer asphalt (inner field) shown with green arrow.

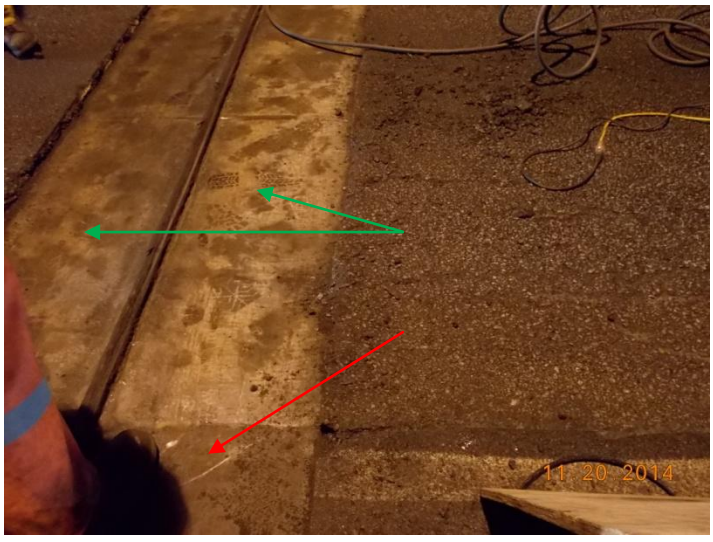
Photo 2:



Description: Joint 14 During Demolition

Lions Gate Bridge North Approach Viaduct. East parapet shown at bottom of photo. 1970s Epoxy asphalt removed and substrate now visible (steel deck and primer), shown with red arrow. Newer asphalt (inner field) removed, but membrane bottom layer still present (shown with green arrow). This membrane layer was included in the majority of the "Inner Field Asphalt" samples analyzed for asbestos content.

Photo 3:



Description: Joint 14 Post Demolition

Lions Gate Bridge North Approach Viaduct (West lane). All asphalt and membrane has been removed, therefore exposing the steel deck and primer applied to the substrate. Substrate from below the 1970s Epoxy asphalt (outer edge) is shown with red arrow, and the inner field substrate is shown with green arrows.

Photo 4:

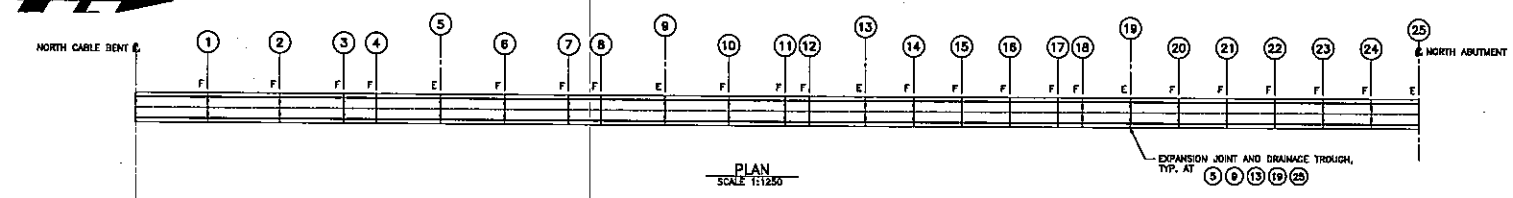
Description: Joint 8 During Primer Sampling

Lions Gate Bridge North Approach Viaduct (West lane). Due to delays associated with the scheduled demolition work, the usual process of jack-hammering the entire area surrounding the joint (as shown in Photo.3) prior to primer collection was not performed. Instead a small square of asphalt was cut and jack-hammered out. This process required minimal jack-hammering, relative to the "normal" procedure which occurred prior to primer sample collection at all other joints.

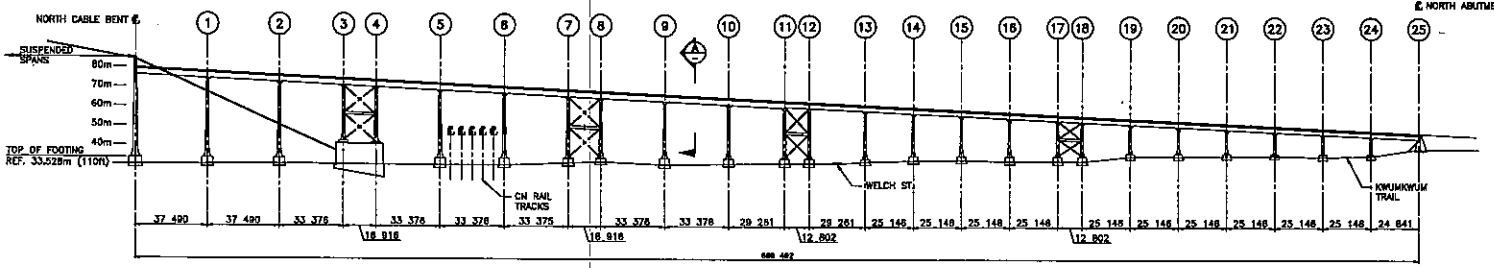
APPENDIX D

SAMPLE LOCATION DIAGRAMS

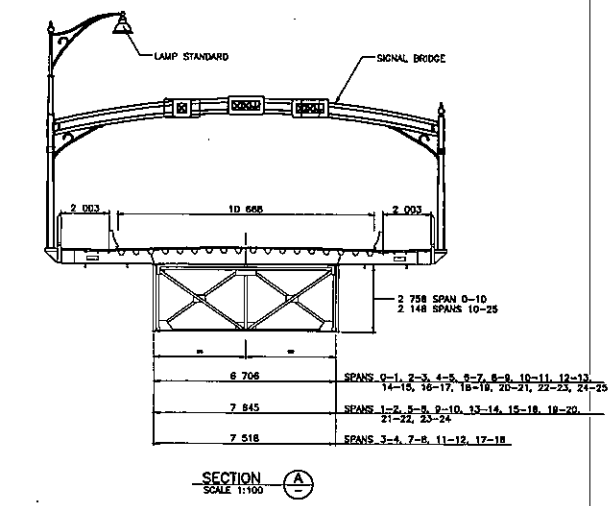
Please note that diagrams have been acquired by altering the BC Ministry of Transportation Drawing No. 1481V-601. Due to alterations of this drawing, the diagrams depicting sample locations are NOT to scale and are merely intended to give a reasonable graphical representation of the sampling locations. Please refer to Tables 1 and 2 for actual measured values with respect to the reference points indicated.



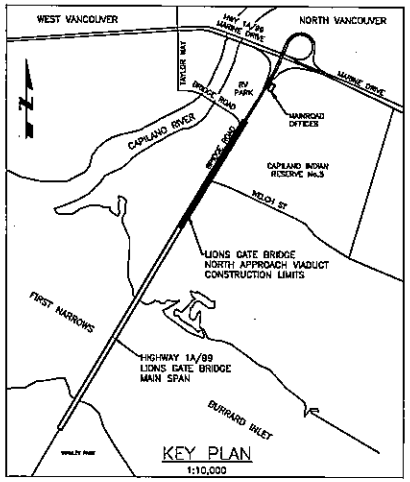
PLAN
SCALE 1:1250



ELEVATION
SCALE 1:1250



SECTION A
SCALE 1:100



LEGEND:

F FIXED (BREATHER) JOINT
E EXPANSION JOINT

REFERENCE DRAWINGS	
DWG. No.	TITLE
1481-501	JOINT LOCATION GENERAL ARRANGEMENT
1481-502	EXPANSION JOINT BENT #5, #9, #13 AND #19
1481-503	STAINLESS STEEL DRAINAGE TROUGH PROFILE
1481-504	EXPANSION JOINT PLATES DETAILS
1481-505	DRAINAGE TROUGH SECTIONS BENT #5, #9, #13 AND #19
1481-1376	ROADWAY EXPANSION JOINT NORTH CABLE BENT DETAILS 1
1481-1377	ROADWAY EXPANSION JOINT NORTH CABLE BENT DETAILS 2
1481-1378	ROADWAY EXPANSION JOINT NORTH CABLE BENT DETAILS 3
1481-1379	ROADWAY EXPANSION JOINT NORTH CABLE BENT DETAILS 4
1481-1600-01	NORTH VIADUCT KEY PLAN, GENERAL NOTES & DWG. INDEX
1481-1600-02	NORTH VIADUCT DESIGN CRITERIA - SH. 1 OF 2
1481-1600-03	NORTH VIADUCT DESIGN CRITERIA - SH. 2 OF 2
1481-1600-04	NORTH VIADUCT GENERAL LAYOUT
1481-1600-20	NORTH VIADUCT EXISTING DECK AS-BUILT SECTIONS
1481-1600-27	NORTH VIADUCT DECK EXPANSION & INTERMEDIATE JOINT DETAILS
1481-1501	GENERAL NOTES - SHEET 1
1481-1502	GENERAL NOTES - SHEET 2
1481-1503	GENERAL ARRANGEMENT - SHEET 1
1481-1504	GENERAL ARRANGEMENT - SHEET 2
1481-1505	TRANSVERSE GRADE BEAMS
1481-1506	PILED TRANSVERSE GRADE BEAMS - SHEET 1
1481-1507	PILED TRANSVERSE GRADE BEAMS - SHEET 2
1481-1508	LONGITUDINAL GRADE BEAMS
1481-1509	H BENT CROSS-BRACING - SHEET 1
1481-1510	H BENT CROSS-BRACING - SHEET 2
1481-1511	BENT STRENGTHENING - SHEET 1
1481-1512	BENT STRENGTHENING - SHEET 2
1481-1513	BENT STRENGTHENING - BENTS 23 AND 24
1481-1514	COLUMN STRENGTHENING - SHEET 1
1481-1515	COLUMN STRENGTHENING - SHEET 2
1481-1516	NEW DIAPHRAGM - SHEET 1
1481-1517	NEW DIAPHRAGM - SHEET 2
1481-1518	NEW DIAPHRAGM - SHEET 3
1481-1519	NEW DIAPHRAGM - SHEET 4
1481-1520	BASE PLATE MODIFICATIONS
1481-1521	TEMPORARY JACKING BRACKETS
1481-1522	NORTH ABUTMENT - CONCRETE AND STEEL DETAILS
1481-1523	CABLE BENT GIRDER RESTRAINT
1481-1524	SEISMIC RESTRAINERS

REFERENCE DRAWINGS	
DWG. No.	TITLE
1481-20	NORTH VIADUCT DRAWING INDEX AND GENERAL NOTES
1481-21	NORTH VIADUCT EXISTING STRUCTURE - GENERAL LAYOUT
1481-22	NORTH VIADUCT TYPICAL SECTION NEW DECK SYSTEM
1481-23	NORTH VIADUCT PLAN OF SPANS BETWEEN BENTS 0 AND 4
1481-24	NORTH VIADUCT PLAN OF SPANS BETWEEN BENTS 4 AND 8
1481-29	NORTH VIADUCT TYPICAL SECTIONS
1481-32	NORTH VIADUCT SPLICES
1481-33	NORTH VIADUCT DECK JOINT
1481-34	NORTH VIADUCT DRAINAGE DETAILS 1
1481-35	NORTH VIADUCT TRAFFIC GUARD RAILS
9	NORTH VIADUCT DETAILS OF PEDESTALS 0-3-4
10	NORTH VIADUCT LAYOUT OF PEDESTALS 0-18
11	NORTH VIADUCT LAYOUT OF PEDESTALS 18-24
13	NORTH ABUTMENT GENERAL DETAILS
21	NORTH VIADUCT EXPANSION JOINTS
51	NORTH VIADUCT GENERAL LAYOUT
52	NORTH VIADUCT STRESS SHEET BENTS 1-4
53	NORTH VIADUCT STRESS SHEET BENTS 5-8
54	NORTH VIADUCT STRESS SHEET BENTS 8-12
55	NORTH VIADUCT STRESS SHEET BENTS 13-24
56	NORTH VIADUCT DETAILS BENT NO.1
57	NORTH VIADUCT DETAILS BENTS NO.3-4
58	NORTH VIADUCT DETAILS BENTS NO.17-18
59	NORTH VIADUCT DETAILS BENT NO.24
60	NORTH VIADUCT GIRDER SPANS DETAILS
61	NORTH VIADUCT 55'-6" & 42'-0" TOWER SPANS & CROSS SECTION DETAILS
62	NORTH VIADUCT STRESS SHEET FOR GIRDERS
63	NORTH VIADUCT LAMP STDS & INSP. LADDERS
64	NORTH VIADUCT SLAB DETAILS
65	NORTH VIADUCT SPECIAL SLAB DETAILS
100E	ELECTRICAL INSTALLATION
85-S139	NORTH VIADUCT REVISED EXPANSION JOINTS

LIST OF DRAWINGS	
DWG. No.	TITLE
1481V - 601	SITE PLAN
1481V - 602	GENERAL ARRANGEMENT
1481V - 603	BEARING REPLACEMENT LAYOUT - SHEET 1
1481V - 604	BEARING REPLACEMENT LAYOUT - SHEET 2
1481V - 605	BEARING DETAILS
1481V - 606	JACKING BRACKETS AND STIFFENERS - SHEET 1
1481V - 607	JACKING BRACKETS AND STIFFENERS - SHEET 2
1481V - 608	JACKING BRACKETS AND STIFFENERS - SHEET 3
1481V - 609	TYPICAL EXPANSION JOINT DETAILS - SHEET 1
1481V - 610	TYPICAL EXPANSION JOINT DETAILS - SHEET 2
1481V - 611	ABUTMENT EXPANSION JOINT DETAILS - SHEET 1
1481V - 612	ABUTMENT EXPANSION JOINT DETAILS - SHEET 2
1481V - 613	LINK DECK DETAILS

NOTES:
1. SURVEY BY: NOT APPLICABLE
2. DATUM: GEODETIC
3. BENCH MARK: NOT APPLICABLE
4. GEOTECHNICAL INVESTIGATION: NOT APPLICABLE

amec

Rev	Date	Description	Init

REVISIONS

BRITISH COLUMBIA
Ministry of Transportation and Infrastructure
South Coast Region

LOWER MAINLAND DISTRICT
HIGHWAY 99
1481V – LIONS GATE BRIDGE NORTH APPROACH VIADUCT
JOINT RENEWAL PROJECT
SITE PLAN

AUTHORIZED BY

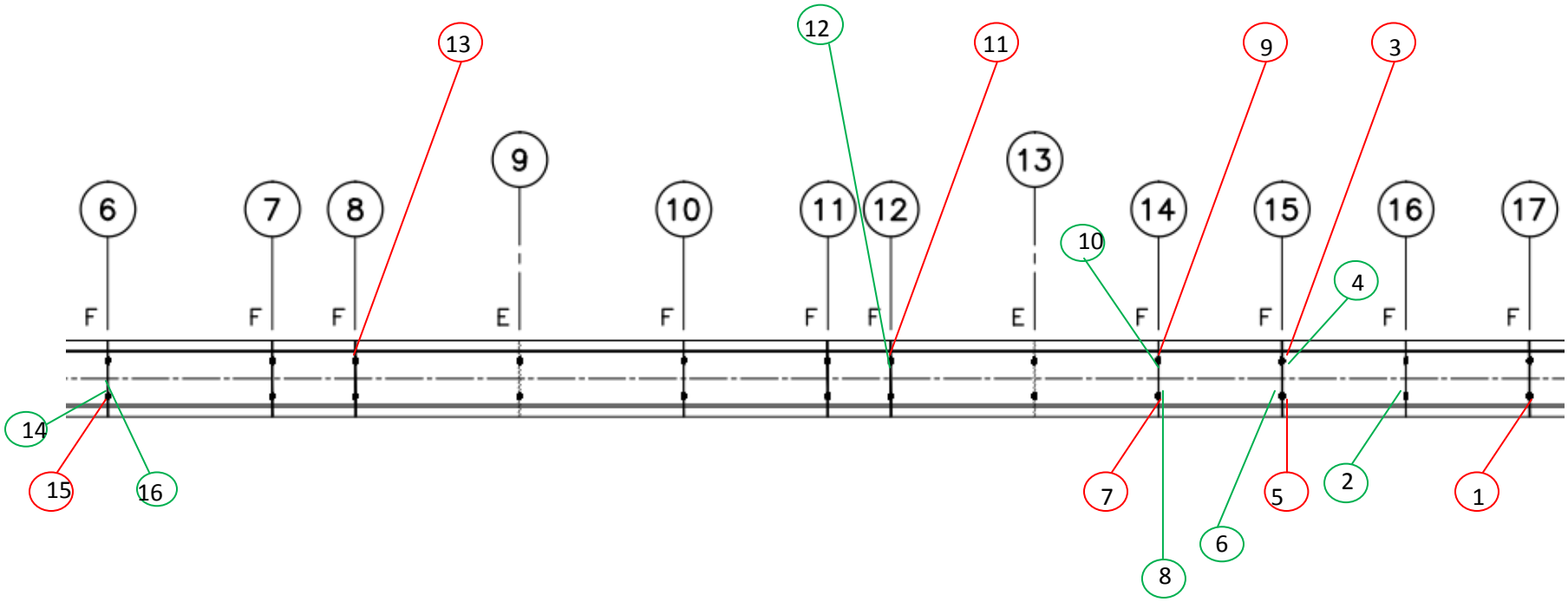
REGIONAL MANAGER, ENGINEERING — DATE
REGIONAL DIRECTOR, HIGHWAYS — DATE

PREPARED UNDER THE DIRECTION OF
JACK JIAO
ENGINEER OF RECORD
DATE 2013-12-13
ORIGINAL SIGNED BY JACK JIAO, P. ENG.

DESIGNED J.JIAO DATE 2013-12-13
CHECKED S.GOOK DATE 2013-12-13
DRAWN H.KIMMER DATE 2013-12-13
SCALE AS SHOWN
NEGATIVE No.

FILE No.
PROJECT No. 12258-0000
REG. 1
DRAWING No. 1481V–601

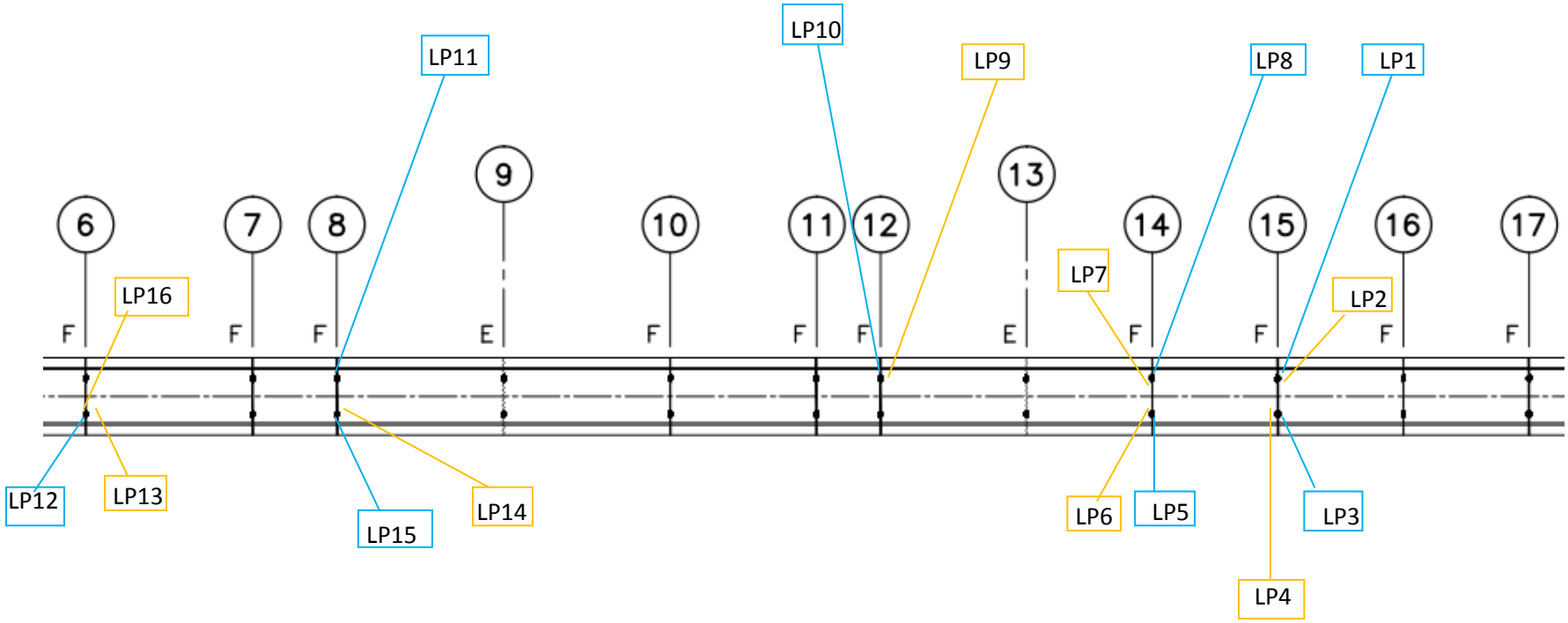
Asphalt Sample Locations



Asphalt sample from outer edges / beside parapets (1970s Epoxy Asphalt)

Asphalt sample from the inner field

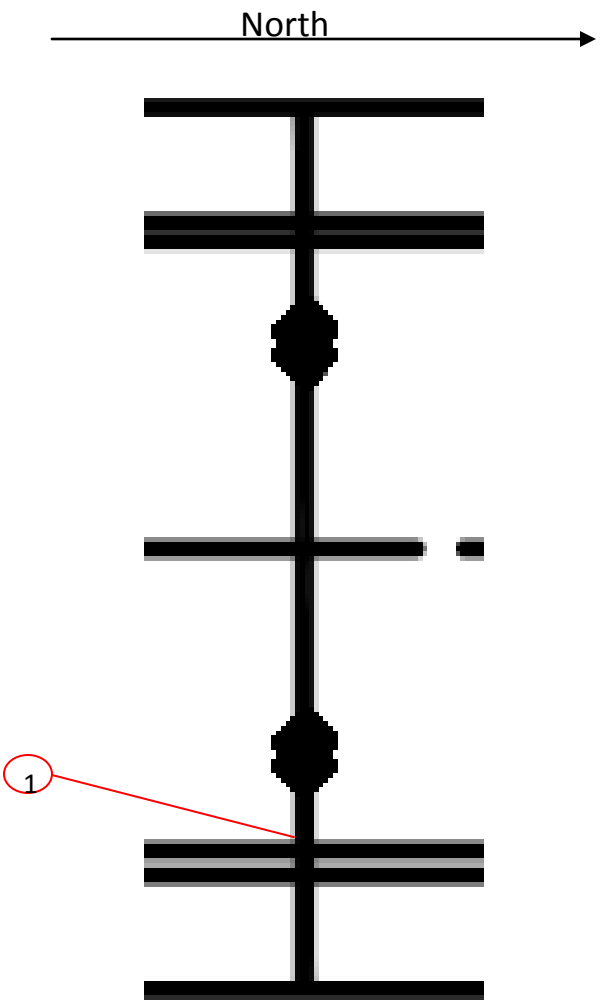
Primer Sample Locations



Primer sample from outer edges / beside parapets (Substrate of 1970s Epoxy Asphalt)

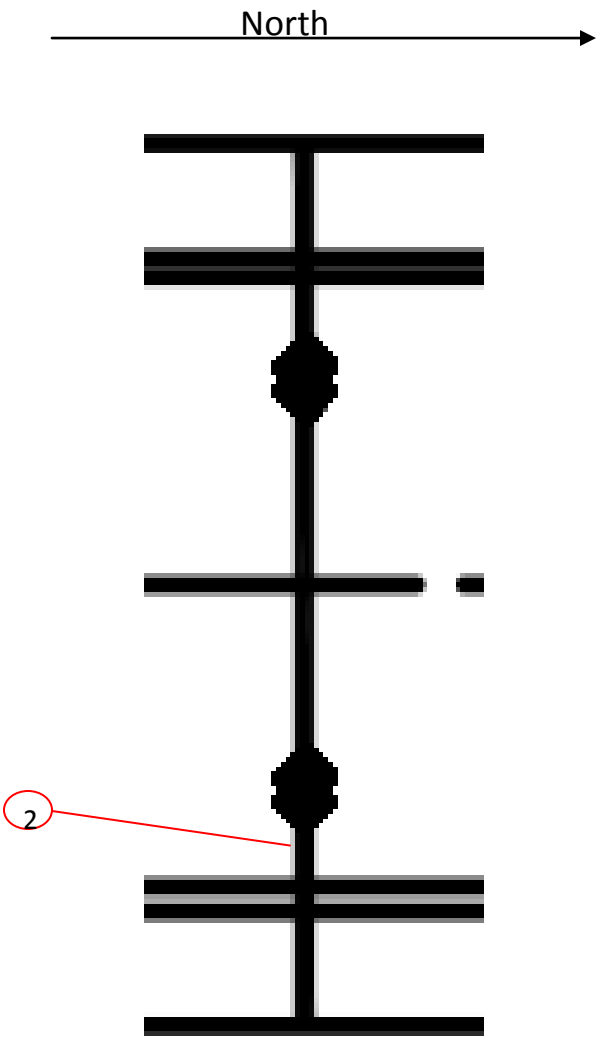
Primer sample from the inner field (Substrate of newer asphalt)

Asphalt & Primer Sample Locations: Joint 17



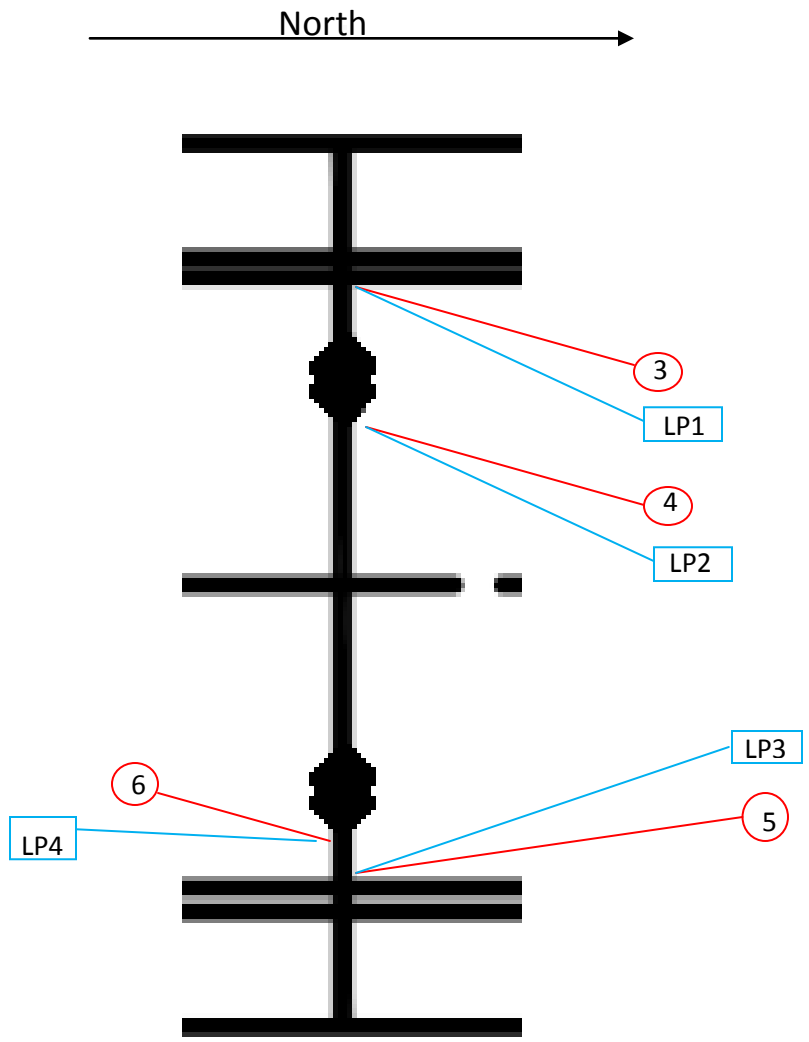
Asphalt sample
Primer sample

Asphalt & Primer Sample Locations: Joint 16



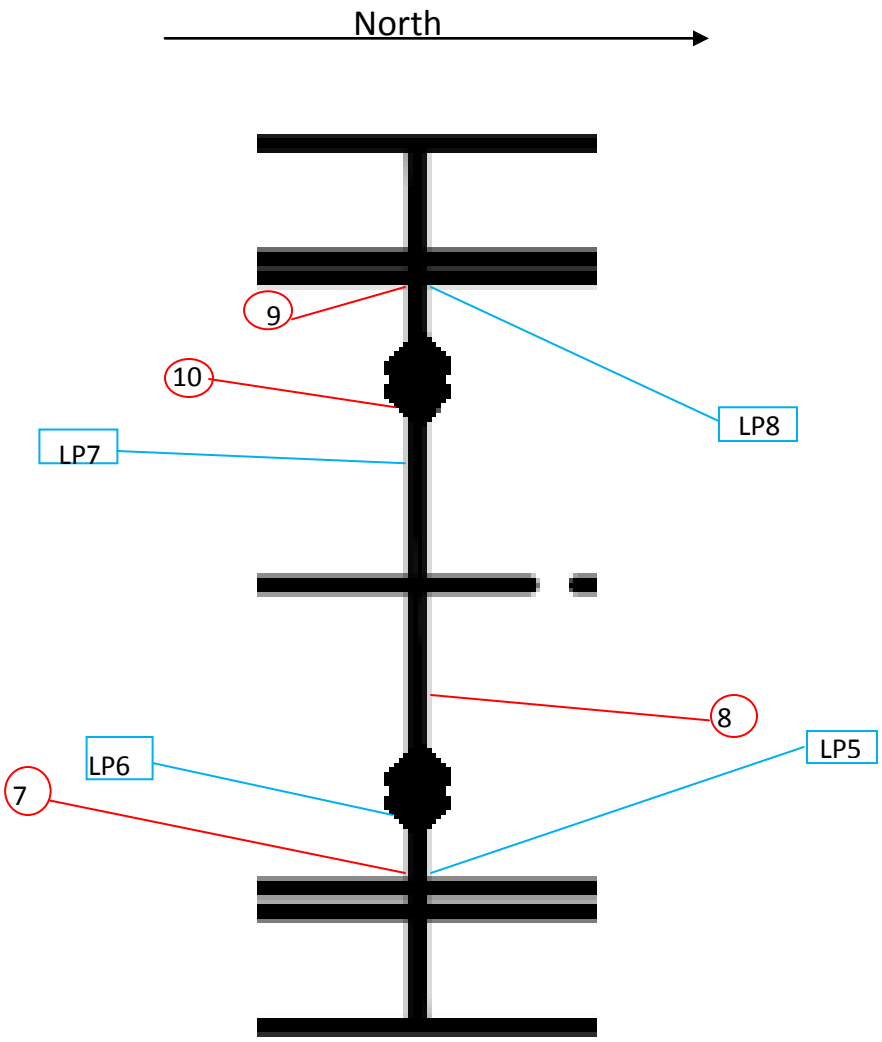
Asphalt sample
Primer sample

Asphalt & Primer Sample Locations: Joint 15



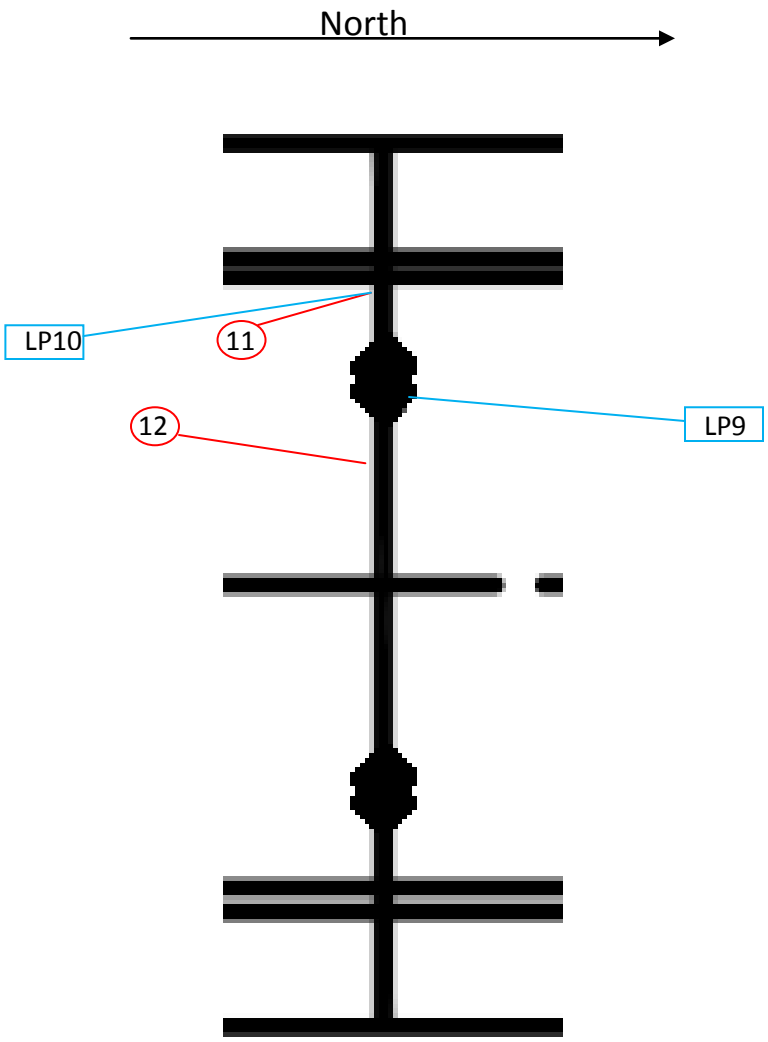
Asphalt sample
Primer sample

Asphalt & Primer Sample Locations: Joint 14



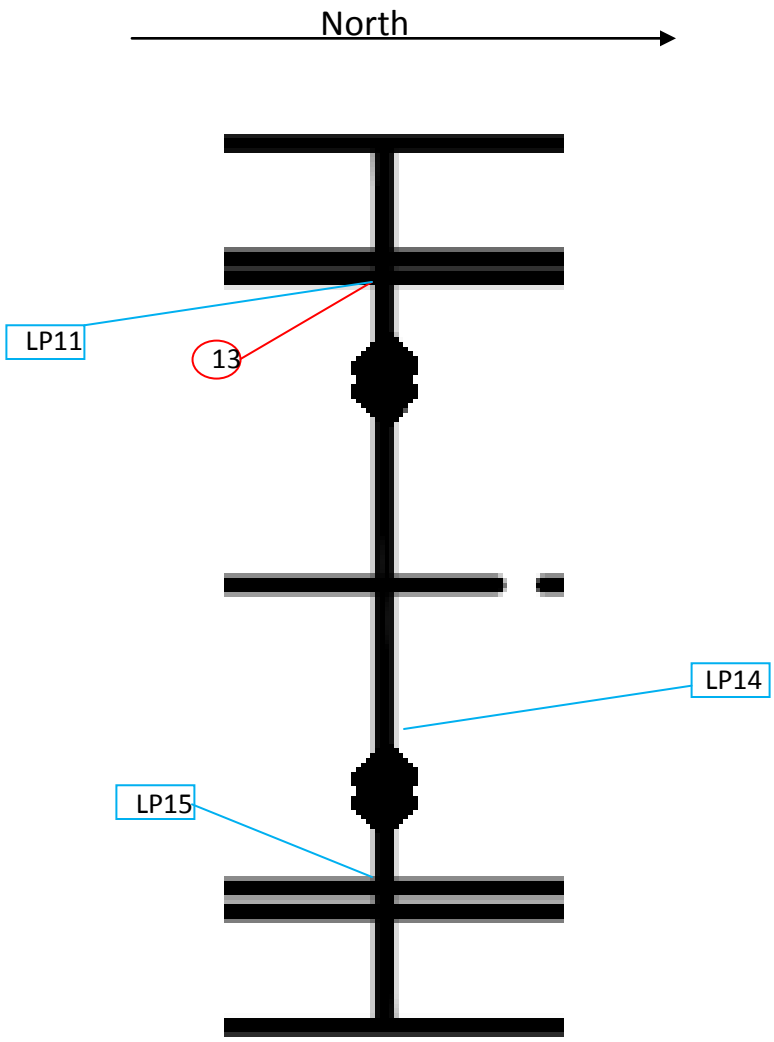
Asphalt sample
Primer sample

Asphalt & Primer Sample Locations: Joint 12



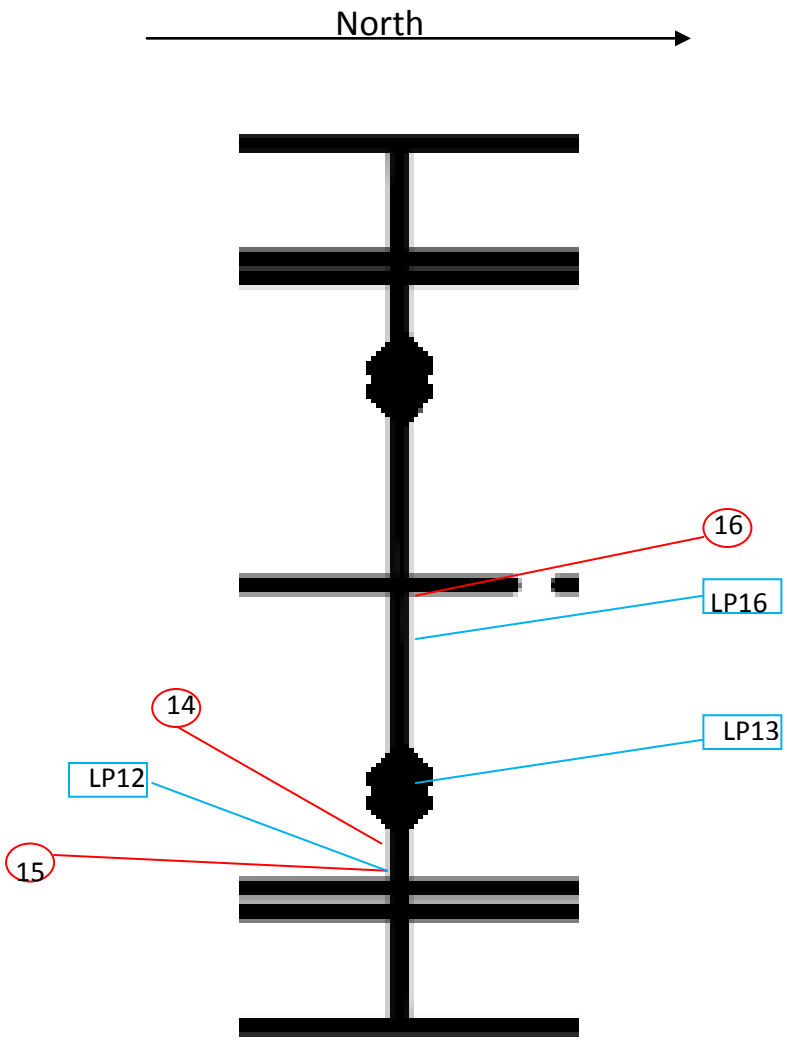
Asphalt sample
Primer sample

Asphalt & Primer Sample Locations: Joint 8



Asphalt sample
Primer sample

Asphalt & Primer Sample Locations: Joint 6



Asphalt sample
Primer sample

APPENDIX E

STATEMENT OF LIMITATIONS

Statement of Limitations

The work performed in this report was carried out in accordance with the Standard Terms of Conditions made part of our contract. The conclusions presented herein are based solely upon the scope of services and time and budgetary limitations described our contract.

The report has been prepared in accordance with generally accepted environmental study and/or engineering practices. No other warranties, either expressed or implied, are made as to the professional services provided under the terms of our contract and included in this report.

The services performed and outlined in this report were based, in part, upon visual observations of the site and attendant structures. Our opinion cannot be extended to portions of the site which were unavailable for direct observation, reasonably beyond the control of AMEC Environment & Infrastructure.

The objective of this report was to assess the environmental conditions at the site, given the context of our contract, with respect to existing environmental regulations within the applicable jurisdiction. Compliance of past owners with applicable local, provincial, and federal government laws and regulations was not included in our contract for services.

The site history research performed herein relies on information supplied by others, such as local, provincial, and federal agencies as well as plant personnel. No attempt has been made to independently verify the accuracy of such information, unless specifically noted in our report.

Our visual observations relating to potential contaminant materials in the environment at the site are described in this report. It should be noted that other compounds or material may be present in the site environment.

The conclusions of this report are based in part, on the information provided by others. The possibility remains that unexpected environmental conditions may be encountered at the site in locations not specifically investigated. Should such an event occur, AMEC Environment & Infrastructure must be notified in order that we may determine if modifications to our conclusions are necessary.

The utilization of AMEC Environment & Infrastructure's services during the implementation of any remedial measures will allow AMEC Environment & Infrastructure Limited to observe compliance with the conclusions and recommendations contained herein. It will also provide for changes as necessary to suit field conditions as they are encountered.

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