Task 210

Subsurface Site Investigation Report

ConnDOT Project Number 173-468

August 2019

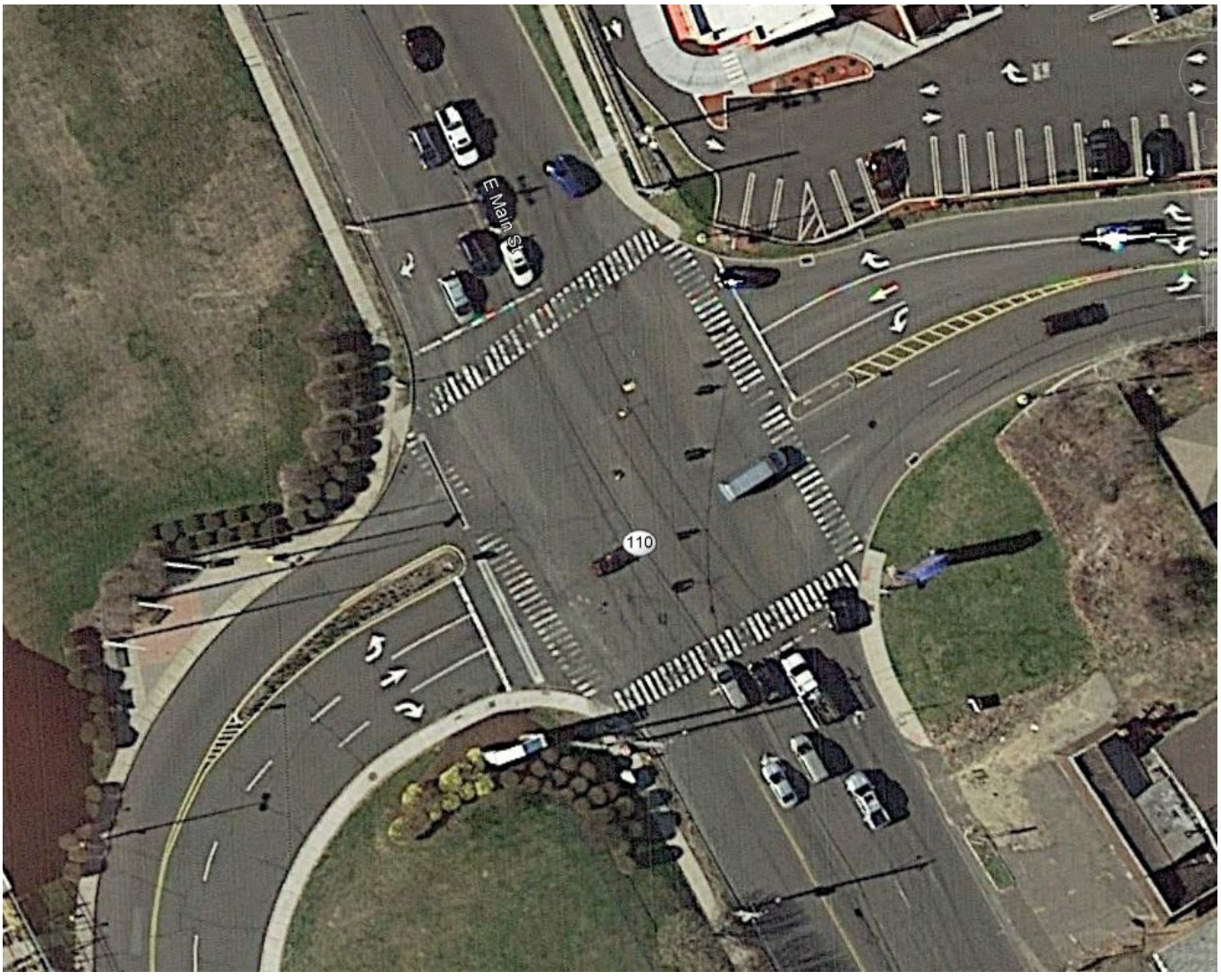
Stratford Signalization Project

Prepared For:

State of Connecticut Department of Transportation
Division of Environmental Compliance
Newington, Connecticut

Prepared By:

TRC
21 Griffin Road North
Windsor, Connecticut 06095



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1.0 Introduction

1.1 Overview

Pursuant to TRC's Connecticut Department of Transportation (ConnDOT) Contract for On-Call Environmental Services, TRC performed a Task 210 Subsurface Site Investigation at Intersection 138-250 (Route 110 at the Dock Shopping Center and the Stratford Crossing Shopping Center) in Stratford, Connecticut (Figure 1 and ENV-02). This investigation was conducted as part of the preliminary activities associated with the proposed signalization project improvements under ConnDOT project number 173-468. Specifically, this investigation was conducted within or in the immediate vicinity of proposed work areas, including proposed mast arms, pedestal foundations, and several handholds as identified on project plans provided to TRC for review to determine soil quality to anticipated excavation depths.

Note that a Task 210 Subsurface Investigation was previously conducted by TRC in 2017 within areas of proposed signalization improvements at the intersections of Ferry Boulevard, Barnum Avenue Cutoff, and several private driveways. The results of that investigation were documented in the report entitled *Task 210 Subsurface Site Investigation Report – Stratford Signalization Project* that was prepared by TRC in February 2018.

1.2 Objectives

The primary objectives of this Task 210 site investigation were to:

- Determine if the impermeable cap installed at the Raymark Superfund Site (the present-day Stratford Crossing Shopping Center) is present within the proposed construction depths;
- Determine soil quality in the project area;
- Determine if "Raymark Waste", as defined by the USEPA (see Section 3.0) exists within the project area limits, given its proximity to the former Raymark Industries, Inc. (Raymark) Superfund Site;
- Utilize the gathered data to determine how best to manage soil during excavation activities.

1.3 Background

Based on a review of project plans provided to TRC by ConnDOT, the Stratford signalization improvements to be conducted as part of this project will include modifications to the existing Connecticut State Route 110 northbound and southbound vehicular and pedestrian traffic. Specifically, the project will involve the reconfiguration of traffic control signals and sidewalk ramps at the driveways to the Stratford Crossing Shopping Center and the Dock Shopping Center.

Proposed improvements include traffic control devices mounted on mast arms and pedestal foundations to a maximum depth of 10 feet below existing grade, and along the proposed sidewalk to a maximum depth of two feet below existing grade.

1.3.1 Raymark Superfund Site

As indicated previously, the entire project area is located in close proximity to and partially on the Raymark Superfund Site; specifically, Raymark was previously located at the location of the present-day Stratford Crossing Shopping Center. According to the most recent Five-Year Review Report for the Raymark site prepared by the USEPA in September 2015, the Raymark facility operated from 1919 until 1989 and manufactured friction materials containing asbestos and non-asbestos containing components, metals, phenol-formaldehyde resins and various adhesives. Soils at the facility became contaminated with metals, asbestos, dioxins and polychlorinated biphenyls (PCBs). Groundwater is documented to have become contaminated with volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs) and metals. During the operational history of the Raymark facility, it was common practice to dispose of manufacturing waste as fill material both on the Raymark facility property and at locations throughout the Town of Stratford. Extensive environmental investigations and remedial activities were conducted both on and off the Raymark site from the early 1990s through the present day. USEPA sampling of process waste found on the former Raymark property identified lead, asbestos, PCBs and copper as the four most common constituents of "Raymark Waste". Remediation of the former Raymark facility itself (designated as Operable Unit (OU) 1 by the USEPA) was completed in 1997 and the site was redeveloped into the present-day Stratford Crossing Shopping Center in the early 2000s. Remediation of OU1 included the installation of an impermeable cap across the majority of the property. A total of nine OUs have since been identified by USEPA in connection with the Raymark Facility. OU2 is related to contaminated groundwater within and downgradient of the former Raymark Facility. OU3 through OU9 are all related to areas where Raymark Waste, as defined by USEPA, is known to have been deposited throughout the Town of Stratford.

According to the OU6 Remedial Investigation (RI) prepared by Tetra Tech NUS, areas of Raymark Waste have been identified in close proximity to the project corridor, specifically on several properties along East Main Street (Connecticut State Route 110), located within the Stratford signalization project area.

1.4 Geologic/Physical Setting

As indicated by the Surficial Materials Map of Connecticut (Stone et al, 1992), the site is located in an area underlain by sand. Surficial materials are composed mainly of very coarse to fine sand, commonly in well-sorted layers. Coarser layers may contain up to 25 percent gravel particles, generally granules and pebbles; finer layers may contain some very fine sand, silt and clay (interpreted as delta-foreset beds, very distal fluvial deposits, or windblown sediment).

Based on the descriptions of the soil cores collected during the Task 210 field investigation, the site is generally underlain by sand with varying amounts of silt and gravel. Test pits completed on the Raymark Superfund site indicate that soils above the Raymark liner are comprised of fine processed material mixed with Portland cement.

As indicated by the Bedrock Geological Map of Connecticut (Rogers, 1985), the site is located within an area of Oronoque Schist. The sand deposits at the site are underlain by gray to silver, medium- to fine grained schist and granofels.

The topography in the immediate project area can be characterized as generally flat. Groundwater generally flows from high topographic points to low topographic points, but can also

be heavily influenced by aquifer type, depth to bedrock, nearby watercourses, groundwater use (e.g., withdrawal wells) and subsurface structures. Based on the local topography and features, groundwater is anticipated to flow to the east towards the Housatonic River. Groundwater contour maps presented in the various EPA reports and studies for the Raymark site confirm this generalized direction of groundwater flow.

According to the Connecticut Department of Energy and Environmental Protection (CTDEEP) groundwater classification maps reviewed by TRC, groundwater beneath the site is classified as "GB". Class GB groundwater designated uses are industrial process water, cooling waters and baseflow for hydraulically connected surface water bodies. It is presumed not suitable for human consumption without treatment.

2.0 Technical Approach

This section of the report summarizes the soil sampling methods employed during the Task 210 field investigation. Observations made in the field are also summarized in this section.

As indicated above, the focus of the Task 210 Subsurface Site Investigation was to determine if the impermeable cap installed at the Stratford Crossing Shopping Center is present within the proposed construction depths and to determine soil quality in the project area. Specifically, the focus on soil quality was to identify if Raymark Waste (see definition below) is present in the project area. As such, four test pit locations were proposed at the locations of proposed improvements on the western side of Intersection 138-250, specifically to determine if the impermeable liner was present. Note that only three of the original four proposed test pit locations could be completed due to utility conflicts at one location. Each of these test pits was advanced to the depth of the warning layer that is present above the actual liner, approximately two and a half feet below grade. Additionally, two soil borings were advanced to a depth of ten feet below grade on the eastern side of Intersection 138-250.

A total of 15 soil samples were collected (six from the test pits and nine from the soil borings) and submitted to the laboratory for analysis. Samples were generally collected continuously from the test pits/borings at two-foot intervals. Note that at soil boring SIG-SB-1, the 0-2- and 2-4-foot sample intervals, and the 4-6- and 6-8-foot sample intervals were combined as the soil cores contained primarily fractured rock mixed with a small amount of soil.

As the Stratford signalization improvements project is located in close proximity to the former Raymark Superfund Site, soil sample results were also evaluated against "Raymark Waste" criteria. Note that the Raymark Waste definition was developed by USEPA so that Raymark Waste could be uniquely distinguished from other contaminants that may be present in a given area. As previously indicated, lead, asbestos, PCBs and copper were the most common constituents found in Raymark Waste at the former Raymark Facility. Based on these constituents, and the concentration and frequency of their co-location in a single sample, the following definition of the Raymark Waste was formally developed by USEPA in a statement released in May 2010 (see Appendix C): "Raymark Waste" is defined as soil from a single soil sample at a same depth interval that contains lead above 400 milligrams per kilogram (mg/kg), asbestos (chrysotile only) greater than 1 percent and either PCBs (Aroclor 1268 only) above 1 mg/kg or copper above 288 mg/kg.

Historically, data reproducibility issues (particularly with respect to lead and asbestos concentrations) have been documented during investigations of Raymark Waste. As documented in the URS report entitled *Raymark Waste Delineation Final Report – Airport Property Portion of Additional Properties Operable Unit 6* dated March 2014, these issues have been attributed to the heterogeneity of the Raymark Waste Material. Based on this information, URS developed a modified process for determining if the material sampled was or was not Raymark Waste. Specifically, analytical protocols were modified to allow for further evaluation of lead results between 300 and 400 mg/kg and the criteria for chrysotile asbestos relative to its percentage in Raymark Waste was modified to 0.5%. This modified approach involved the use of primary and replicate sample data for lead. Specifically, if the primary results of the lead analysis was greater than 300 mg/kg, the replicate sample would also be analyzed. If the results of the replicate analysis was greater than 400 mg/kg, and the sample also contained the requisite concentrations of chrysotile asbestos (modified to 0.5%), Aroclor 1268 (1 mg/kg) or copper (288 mg/kg), the

material was determined to be Raymark Waste. Further, if the results of the primary and replicate lead analyses were below 400 mg/kg but the relative percent difference (RPD) between the results was greater than 50%, and the sample contained the requisite concentrations of asbestos, Aroclor 1268 or copper, the material was also determined to be Raymark Waste.

Each of the soil samples collected was sent to the TRC Industrial Hygiene Laboratory in Windsor, Connecticut for Asbestos analysis by EPA Method 600/R-93/116. Sample aliquots were also sent to Phoenix Environmental Laboratories, Inc. (Phoenix) in Manchester, Connecticut and held for potential analysis of volatile organic compounds, (VOCs) by EPA Method 8260, semi-volatile organic compounds (SVOCs) by EPA Method 8270, extractable total petroleum hydrocarbons (ETPH), polychlorinated biphenyls (PCBs) by EPA Method 8082, RCRA 8 metals and copper by EPA Method 6000/7000 pending the results of the asbestos analysis.

2.1 Preliminary Activities

Preliminary activities included the preparation of a Health and Safety Plan (HASP) to address the field work to be completed as part of this Task 210. Prior to beginning the investigation, TRC marked the proposed test pit/boring locations at the site with white paint on the ground surface. "Call Before You Dig" (CBYD) was contacted to mark the locations of buried utilities in the proposed work zones. In addition, a private utility mark-out service (Underground Surveying of Brookfield, CT) was contracted to conduct a more detailed mark-out given the presence of several utilities within the work areas.

2.2 Test Pitting / Soil Boring Program

Test Pitting Methodology

A total of three test pits were excavated by Cisco Environmental, LLC (Cisco) of New Haven, Connecticut on April 3, 2019 on the western side of Intersection 138-250. The test pits were completed by Cisco, under direct supervision of TRC, with a mini excavator outfitted with a grading bucket to avoid potential damage to the Raymark liner. Representatives from ConnDOT and the Connecticut Department of Energy and Environmental Protection (CTDEEP) were present as well. Test pits typically measured 2.5 feet wide by 2.5 feet long and were advanced to the depth of the warning layer for the Raymark liner (generally 2.5 to 3.0 feet below grade (ftbg)).

Soil borings were advanced on April 4, 2019 by Cisco Geotechnical, LLC (Cisco) of New Haven, Connecticut, under the direct supervision of TRC personnel. These borings were advanced utilizing a track-mounted GeoProbe™. At both sample locations, soil cores were collected in an acetate Macro-Core® liner continuously from the ground surface to a maximum depth of 10 ftbg (which represents the proposed maximum depth of construction).

Soils within the test pits and each four-foot soil core was logged with respect to soil characteristics (i.e., grain size, moisture content and any other physical characteristics) and indications of potential impacts (e.g., stains and odors). In addition, soils from the test pits and cores were field-screened using a photo ionization detector (PID) prior to the collection of soil samples for analysis. Test pit / soil boring logs are presented in Appendix A. The test pit / soil boring locations are shown on ENV-02.

Soil samples slated for potential analysis of VOCs were collected in accordance with EPA Method 5035. This method outlines the collection of soil samples, without homogenization and with minimal disturbance, and transfer into extraction solvents. The remaining soil was then homogenized utilizing dedicated/decontaminated stainless-steel bowls and spoons, placed in the appropriate laboratory-supplied sample containers and then placed on ice, in a cooler, for delivery to the laboratories.

The probe tip and Macro-Core® sampler were decontaminated between uses to minimize the potential for cross-contamination. The decontamination was completed by washing with an Alconox and tap water mixture, followed by a tap water rinse and a final deionized water rinse.

Field Observations

At each of the test pit locations, the top of the Raymark liner was encountered at approximately 2.5 to 3 feet below grade. Soils above the liner were comprised of fine-grained sand and silt with varying amounts of fine-grained processed gravel. A layer of dense compacted sand was encountered directly above the orange warning layer that is present above the Raymark liner at each test pit location. According to CTDEEP personnel present during the test pitting program, this sand layer was mixed with Portland cement to achieve compaction specifications during construction of the cap at the Raymark site.

Soils observed in the soil cores collected on the eastern side of Intersection 138-250 were generally comprised of sand with varying amounts of gravel and silt.

Each soil core was screened with a PID for volatile organic vapors. No elevated PID readings were observed in soils, and TRC did not observe any odors or staining.

3.0 Investigation Results

The following sections provide a summary of the analytical results related to the soil sampling conducted at the site. A total of 15 soil samples were collected and analyzed for asbestos. The asbestos results are summarized in Table 1. Copies of the laboratory reports are provided in Appendix B.

3.1 Soil Sample Results

A summary of the asbestos soil sample analytical results is presented in Table 1. A copy of the laboratory analytical reports for the soil samples is included as Appendix B.

Asbestos

As indicated in the results summary in Table 1, asbestos was not identified in the 15 soil samples collected as part of this investigation. As such, in accordance with the methodology described in Section 2, the soil samples were not submitted for further chemical analysis.

4.0 Conclusions and Recommendations

This section briefly summarizes the findings of the Task 210 exploratory site investigation activities conducted at the site in April of 2019. Also included are recommendations based on these findings/conclusions.

4.1 Soil

1. At each of the test pit locations, the top of the Raymark liner was encountered at approximately 2.5 to 3 feet below grade. Soils above the liner were comprised of fine-grained sand and silt with varying amounts of fine-grained processed gravel. A layer of dense compacted sand was encountered directly above the orange warning layer that is present above the Raymark liner at each test pit location. According to CTDEEP personnel present during the test pitting program, this sand layer was mixed with Portland cement to achieve compaction specifications during construction of the cap at the Raymark site.

2. Soils observed in the soil cores collected on the eastern side of Intersection 138-250 were generally comprised of sand with varying amounts of gravel and silt.

3. Asbestos was not present in any of the soil samples that were collected as part of this investigation. As such, the soil samples were not subjected to further chemical analysis.

Recommendation: Based on the results of this investigation, TRC recommends that appropriate Plans, Specifications, and Estimate (Task 310) be prepared. It is recommended that a Notice To Contractor be prepared to notify all redevelopment contractors of the presence of Raymark liner on the western side of the intersection. Additionally, while asbestos was not identified in samples collected as part of this investigation, its presence at nearby locations (including beneath the liner at the Raymark Superfund site) warrants the preparation of appropriate plans and specifications.

5.0 References

Environmental Protection Agency, 2015. Fourth Five-Year Review Report For Raymark Industries, Inc. Superfund Site, Fairfield County, Connecticut.

Rogers, J. 1985. Bedrock Geological Map of Connecticut. State Geological and Natural History of Connecticut. Scale 1:125,000.

Stone, J.R. 1992. Surficial Materials Map of Connecticut. U.S. Department of the Interior, U.S. Geological Survey. Scale1:125,000.

Tetra Tech NUS, Inc. 2005. Final Remedial Investigation, Raymark – OU6 – Additional Properties. Stratford, Connecticut.

URS Corporation, March 2014. Raymark Waste Delineation Final Report – Airport Property Portion of Additional Properties Operable Unit 6.

Figures

0 2000
Approximate Scale FT

0 1
Approximate Scale MILE

1:24000
BASE CREATED WITH TOPO ©
www.topo.com 7.5' USGS TOPOGRAPHIC MAPS
BRIDGEPORT AND MILFORD, CT QUADRANGLE 2018

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21 Griffin Road North
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Phone: 860.298.9692

STRATFORD SIGNALIZATION PROJECT
STRATFORD, CONNECTICUT
DOT PROJECT NO. 173-468

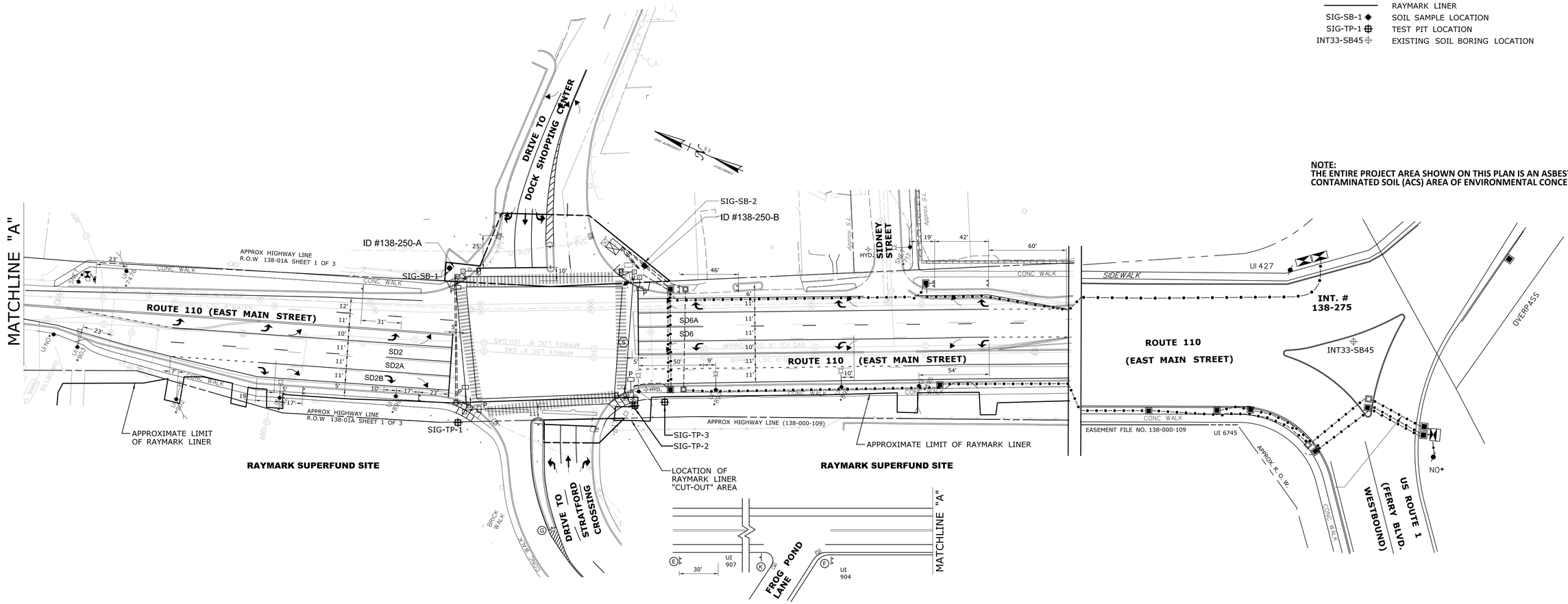
FIGURE 1
SITE LOCATION MAP

DATE: 08/2019	PROJECT NO. 237612.5905.000910

LEGEND

———	RAYMARK LINER
SIG-SB-1 ●	SOIL SAMPLE LOCATION
SIG-TP-1 ⊞	TEST PIT LOCATION
INT33-SB45 ⊕	EXISTING SOIL BORING LOCATION

NOTE:
THE ENTIRE PROJECT AREA SHOWN ON THIS PLAN IS AN ASBESTOS CONTAMINATED SOIL (ACS) AREA OF ENVIRONMENTAL CONCERN (AOEC)



REV.	DATE	REVISION DESCRIPTION	SHEET NO.

THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.

Plotted Date: 9/18/2019

DESIGNER/DRAFTER: CL/KDH

CHECKED BY: MM

SCALE IN FEET
0 40 80
SCALE 1"=40'

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

Filename: ...\TR_MSH_138_250_021_ENV-02_A.dgn

SIGNATURE/ BLOCK:

PROJECT TITLE:
RT. 110 (EAST MAIN ST.) AT DRIVE TO DOCK SHOPPING CENTER AND STRATFORD CROSSING STREET

TOWN: **STRATFORD**

DRAWING TITLE:
AREA OF ENVIRONMENTAL CONCERN

PROJECT NO. **0173-0468**

DRAWING NO. **ENV-02**

SHEET NO. **6.02**

Tables

Table 1
Asbestos Soil Sample Analytical Results
Task 210 Subsurface Investigation
Stratford Signalization Project, Stratford, Connecticut
TRC Project No. 237612.5905.210
ConnDOT Project No. 173-468

Sample Identification	Sample Date	Sample Interval (ftbg)	Notes	Asbestos EPA 600/R-93/166	Asbestos Type
SIG-TP-1(0-2)	4/3/2019	0-2	--	ND	None
SIG-TP-1(2-2.5)	4/3/2019	2-2.5	--	ND	None
SIG-TP-2(0-2)	4/3/2019	0-2	--	ND	None
SIG-TP-2(2-2.5)	4/3/2019	2-2.5	--	ND	None
SIG-TP-3(0-2)	4/3/2019	0-2	--	ND	None
SIG-TP-3(2-3)	4/3/2019	2-3	--	ND	None
SIG-SB-1(0-4)	4/4/2019	0-4	--	ND	None
SIG-SB-1(4-8)	4/4/2019	4-8	--	ND	None
SIG-SB-1(8-9)	4/4/2019	8-9	--	ND	None
SIG-SB-1(9-10.6)	4/4/2019	9-10.6	--	ND	None
SIG-SB-2(0-2)	4/4/2019	0-2	--	ND	None
SIG-SB-2(2-4)	4/4/2019	2-4	--	ND	None
SIG-SB-2(4-6)	4/4/2019	4-6	--	ND	None
SIG-SB-2(6-8)	4/4/2019	6-8	--	ND	None
SIG-SB-2(8-10)	4/4/2019	8-10	--	ND	None

NOTES:
ftbg - feet below grade
ND - Not Detected

Appendix A Test Pit / Soil Boring Logs

TRC
21 Griffin Road North
Windsor, CT 06095
Telephone: 860-989-5416

BORING NUMBER: **SIG-SB-1**

PROJECT INFORMATION

Project Name:	**Stratford Signalization Project**
Project Location:	**Stratford, Connecticut**
Project Number:	**237612.005423**
Client:	**Connecticut Department of Transportation**
Logged By:	**C. Warner**
Checked By:	

BORING INFORMATION

Boring Depth:	**12**	Hole Diameter:	
Date Started:	**4/4/19**	Date Completed:	**4/4/19**
Coordinate System:			
North:	**Not Surveyed**	East:	**Not Surveyed**
Vertical Datum:		Ground Elevation:	**Not Surveyed**

DRILLING INFORMATION

Drilling Contractor:	**Cisco, LLC**
Driller(s):	
Drilling Method:	
Equipment/Model:	
Sampler:	**48" Macrocore**

GROUND WATER OBSERVATIONS

MEASUREMENT	▽ At Time of Drilling	▼ At End of Drilling	▼ After Drilling
DATE	**4/4/2019**		
DEPTH (ft.bgs.)	**10**		
REFERENCE			
STABILIZATION			

DEPTH (FT.)	SAMPLE NUMBER	SAMPLE TYPE	PENETRATION (FT.)	RECOVERY (FT.)	LITHOLOGY	MATERIAL DESCRIPTION	◆ VOC SCREENING RESULTS (ppm)
							2 4 6 8
1						0 '- 0.5 ' **TOPSOIL**.	
						0.5 '- 2.5 ' **GRAVEL**.	
2			4.0	2.5			
3							
4							
5						4 '- 6.25 ' **C-SAND**.	
6			4.0	2.3			
7							
8							
9						8 '- 10.6 ' **C-SAND**.	
10			4.0	2.8		▽	
11							
12							
13						Bottom of borehole at 12.0 feet.	

Notes: Collected SIG-SB-1(0-4), SIG-SB-1(4-8), SIG-SB-1(8-9), and SIG-SB-1(9-10.6) for asbestos analysis and potential analysis of VOCs, SVOCs, ETPH, PCBs, and RCRA 8 Metals.

SOIL BORING/WELL COMPLETION WITH NOTES - TRC_WINDSOR_STD.GDT - 9/20/19
H:\HAZMAT\GINT\CHRIS\STRATFORD SIGNALIZATION PROJECT.GPJ

TRC
21 Griffin Road North
Windsor, CT 06095
Telephone: 860-989-5416

BORING NUMBER: **SIG-SB-2**

PROJECT INFORMATION

Project Name:	**Stratford Signalization Project**
Project Location:	**Stratford, Connecticut**
Project Number:	**237612.005423**
Client:	**Connecticut Department of Transportation**
Logged By:	**C. Warner**
Checked By:	

BORING INFORMATION

Boring Depth:	**12**	Hole Diameter:	
Date Started:	**4/4/19**	Date Completed:	**4/4/19**
Coordinate System:			
North:	**Not Surveyed**	East:	**Not Surveyed**
Vertical Datum:		Ground Elevation:	**Not Surveyed**

DRILLING INFORMATION

Drilling Contractor:	**Cisco, LLC**
Driller(s):	
Drilling Method:	
Equipment/Model:	
Sampler:	**48" Macrocore**

GROUND WATER OBSERVATIONS

MEASUREMENT	▽ At Time of Drilling	▼ At End of Drilling	▼ After Drilling
DATE			
DEPTH (ft.bgs.)	**Not Observed**		
REFERENCE			
STABILIZATION			

DEPTH (FT.)	SAMPLE NUMBER	SAMPLE TYPE	PENETRATION (FT.)	RECOVERY (FT.)	LITHOLOGY	MATERIAL DESCRIPTION	◆ VOC SCREENING RESULTS (ppm)
							2 4 6 8
1						0 '- 0.5 ' **TOPSOIL**.	
						0.5 '- 3 ' Medium brown, **F-SAND**.	
2			4.0	3.0			
3							
4							
						4 '- 6 ' Medium gray, **F-M SAND**.	
5							
6			4.0	3.0			
						6 '- 7 ' Medium gray, **C-SAND**, some rock fragments.	
7							
8							
						8 '- 9 ' Medium gray, **M-C SAND**, moist.	
9							
						9 '- 10 ' Medium gray, **C-SAND**, some rock fragments, moist.	
10			4.0	2.0			
11							
12							
						Bottom of borehole at 12.0 feet.	
13							

Notes: Collected SIG-SB-2(0-2), SIG-SB-2(2-4), SIG-SB-2(4-6), SIG-SB-2(6-8) and SIG-SB-2(8-10) and analyzed for asbestos and potential analysis of VOCs, SVOCs, ETPH, PCBs, and RCRA 8 Metals.

SOIL BORING/WELL COMPLETION WITH NOTES - TRC_WINDSOR_STD.GDT - 9/20/19
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TRC
21 Griffin Road North
Windsor, CT 06095
Telephone: 860-989-5416

BORING NUMBER: **SIG-TP-1**

PROJECT INFORMATION

Project Name:	**Stratford Signalization Project**
Project Location:	**Stratford, Connecticut**
Project Number:	**237612.005423**
Client:	**Connecticut Department of Transportation**
Logged By:	
Checked By:	

BORING INFORMATION

Boring Depth:	**2.75**	Hole Diameter:	
Date Started:	**4/3/19**	Date Completed:	**4/3/19**
Coordinate System:			
North:	**Not Surveyed**	East:	**Not Surveyed**
Vertical Datum:		Ground Elevation:	**Not Surveyed**

DRILLING INFORMATION

Drilling Contractor:	**Cisco, LLC**
Driller(s):	
Drilling Method:	
Equipment/Model:	
Sampler:	

GROUND WATER OBSERVATIONS

MEASUREMENT	▽ At Time of Drilling	▼ At End of Drilling	▼ After Drilling
DATE			
DEPTH (ft.bgs.)	**Not Observed**		
REFERENCE			
STABILIZATION			

DEPTH (FT.)	SAMPLE NUMBER	SAMPLE TYPE	PENETRATION (FT.)	RECOVERY (FT.)	LITHOLOGY	MATERIAL DESCRIPTION	◆ VOC SCREENING RESULTS (ppm)
0						0 '- 2.75 ' FINE PROCESSED GRAVEL AND PORTLAND CEMENT. Test pit dimensions 32" by 32".	2 4 6 8
3						2.75 ' Warning layer for Raymark cap at 33 inches below grade. Bottom of borehole at 2.8 feet.	

Notes: Collected SIG-TP-1(0-2) and SIG-TP-1(2-2.5) for asbestos.

SOIL BORING/WELL COMPLETION WITH NOTES - TRC_WINDSOR_STD.GDT - 9/20/19
H:\HAZMAT\GINT\CHRIS\STRATFORD SIGNALIZATION PROJECT.GPJ

TRC
21 Griffin Road North
Windsor, CT 06095
Telephone: 860-989-5416

BORING NUMBER: **SIG-TP-2**

PROJECT INFORMATION		BORING INFORMATION			
Project Name:	**Stratford Signalization Project**	Boring Depth:	**2.7**	Hole Diameter:	
Project Location:	**Stratford, Connecticut**	Date Started:	**4/3/19**	Date Completed:	**4/3/19**
Project Number:	**237612.005423**	Coordinate System:			
Client:	**Connecticut Department of Transportation**	North:	**Not Surveyed**	East:	**Not Surveyed**
Logged By:		Vertical Datum:		Ground Elevation:	**Not Surveyed**
Checked By:					

DRILLING INFORMATION	
Drilling Contractor:	**Cisco, LLC**
Driller(s):	
Drilling Method:	
Equipment/Model:	
Sampler:	

GROUND WATER OBSERVATIONS			
MEASUREMENT	▽ At Time of Drilling	▼ At End of Drilling	▼ After Drilling
DATE			
DEPTH (ft.bgs.)	**Not Observed**		
REFERENCE			
STABILIZATION			

DEPTH (FT.)	SAMPLE NUMBER	SAMPLE TYPE	PENETRATION (FT.)	RECOVERY (FT.)	LITHOLOGY	MATERIAL DESCRIPTION	◆VOC SCREENING RESULTS (ppm) 2 4 6 8
1						0 '- 2.7 ' FILL/PROCESSED GRAVEL. Test pit dimensions 32" by 32".	
2							
3						2.7 ' Warning layer for Raymark cap at 32 inches below grade. Bottom of borehole at 2.7 feet.	
4							
5							
6							
7							
8							
9							
10							

Notes: Collected SIG-TP-2(0-2) and SIG-TP-2(2-2.5) for asbestos.

SOIL BORING/WELL COMPLETION WITH NOTES - TRC_WINDSOR_STD.GDT - 9/20/19
H:\HAZMAT\GINT\CHRIS\STRATFORD SIGNALIZATION PROJECT.GPJ

TRC
21 Griffin Road North
Windsor, CT 06095
Telephone: 860-989-5416

BORING NUMBER: **SIG-TP-3**

PROJECT INFORMATION

Project Name:	**Stratford Signalization Project**
Project Location:	**Stratford, Connecticut**
Project Number:	**237612.005423**
Client:	**Connecticut Department of Transportation**
Logged By:	
Checked By:	

BORING INFORMATION

Boring Depth:	**2.9**	Hole Diameter:	
Date Started:	**4/3/19**	Date Completed:	**4/3/19**
Coordinate System:			
North:	**Not Surveyed**	East:	**Not Surveyed**
Vertical Datum:		Ground Elevation:	**Not Surveyed**

DRILLING INFORMATION

Drilling Contractor:	**Cisco, LLC**
Driller(s):	
Drilling Method:	
Equipment/Model:	
Sampler:	

GROUND WATER OBSERVATIONS

MEASUREMENT	▽ At Time of Drilling	▼ At End of Drilling	▼ After Drilling
DATE			
DEPTH (ft.bgs.)	**Not Observed**		
REFERENCE			
STABILIZATION			

DEPTH (FT.)	SAMPLE NUMBER	SAMPLE TYPE	PENETRATION (FT.)	RECOVERY (FT.)	LITHOLOGY	MATERIAL DESCRIPTION	◆VOC SCREENING RESULTS (ppm)
1						0 '- 2.9 ' FINE PROCESSED GRAVEL . Test pit dimensions 32" by 32".	2 4 6 8
2							
3						2.9 ' Warning layer for Raymark cap at 35 inches below grade. Bottom of borehole at 2.9 feet.	
4							
5							
6							
7							
8							
9							
10							

Notes: Collected SIG-TP-3(0-2) and SIG-TP-3(2-3) for asbestos.

SOIL BORING/WELL COMPLETION WITH NOTES - TRC_WINDSOR_STD.GDT - 9/20/19
H:\HAZMAT\GINT\CHRIS\STRATFORD SIGNALIZATION PROJECT.GPJ

Appendix B Laboratory Analytical Reports

Industrial Hygiene Laboratory
21 Griffin Road North
Windsor, CT 06095
(860) 298-6308

Results you can rely on

BULK ASBESTOS ANALYSIS REPORT

CLIENT: CT Department of Transportation

Lab Log #:	0053569
Project #:	237612.5905.0210
Date Received:	04/04/2019
Date Analyzed:	04/05/2019

Site: Proposed Signal Project, Stratford, CT

POLARIZED LIGHT MICROSCOPY by EPA 600/R-93/116

Sample No.	Color	Homogenous	Multi-Layered	Layer No.	Other Matrix Materials	Asbestos	Asbestos Type
SIG-TP-1 (0-2')	Brown (soil sample)	- -	- -	- -	- - -	ND	None
SIG-TP-1 24"-33")	Brown (soil sample)	- -	- -	- -	- - -	ND	None
SIG-TP-2 (0-2')	Brown (soil sample)	- -	- -	- -	- - -	ND	None
SIG-TP-2 (24"-33")	Brown (soil sample)	- -	- -	- -	- - -	ND	None
SIG-TP-3 (0-2')	Brown (soil sample)	- -	- -	- -	- - -	ND	None
SIG-TP-3 (24"-35")	Brown (soil sample)	- -	- -	- -	- - -	ND	None

Reporting limit-
ND - asbestos was not detected
Present- asbestos was detected

SNA- Sample Not Analyzed- See Chain of Custody for details

Note: Polarized-light microscopy is not consistently reliable in detecting asbestos in floor coverings and similar non-friable organically bound materials. In those cases, EPA recommends, and certain states (e.g. NY) require, that negative results be confirmed by quantitative transmission electron microscopy.

The Laboratory at TRC follows the EPA's Interim Method for the Determination of Asbestos in Bulk Insulation 1982 (EPA 600/M4-82-020) Bulk Analysis Code 18/A01 and the EPA recommended Method for the Determination of Asbestos in Bulk Building Materials July 1993, R.L. Perkins and B.W. Harvey, (EPA/600/R-93/116) Bulk Analysis Code 18/A03, which utilize polarized light microscopy (PLM). Our analysts have completed an accredited course in asbestos identification. TRC's Laboratory is accredited under the National Voluntary Laboratory Accreditation Program (NVLAP), for Bulk Asbestos Fiber Analysis, NVLAP Code 18/A01, effective through June 30, 2019. TRC is accredited by the AIHA Laboratory Accreditation Programs (AIHA-LAP), LLC in the Industrial Hygiene Program (IHLAP) for PLM effective through October 1, 2019. Asbestos content is determined by visual estimate unless otherwise indicated. Quality Control is performed in-house on at least 10% of samples and QC data related to the samples is available upon written request from client.

Analyzed by: K. Williamson — Kathleen Williamson, Laboratory Manager

Reviewed by: Cathryn Lemire — Cathryn Lemire, Approved Signatory

Date Issued
04/05/2019

Edition: October 2009
Supersede Previous Edition

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ASBESTOS BULK SAMPLING CHAIN OF CUSTODY

LAB ID #. 53569

PROJECT NUMBER	PROJECT NAME	PARAMETERS	TURNAROUND TIME
237612.5905.0210	Proposed Signal Project Stratford, CT		PLM: 8hr 24hr (X) 48hr 3day TEM: 24hr 48hr 3day 5day
SIGNATURE: Calvin D Warner Jr	INSPECTOR: Calvin D Warner Jr		

FIELD SAMPLE NUMBER	DATE	TIME	TYPE: COMP	TYPE: GRAB	SAMPLE LOCATION	PLM EPA 600/R93/116 (POSITIVE STOP)	PLM EPA 600/R93/116 (w/ gravimetric reduction) (POSITIVE STOP)	ANALYZE BY LAYER	POINT COUNT (IF >1% & <10%)	TEM NY NOB 198.4 (IF PLM SERIES NEG)	MATERIAL
SIG-TP-1 (0-2')	4-3-19	9:20	X		Controller (Stake 4)	✓					Soil
SIG-TP-1 (24"-33")	4-3-19	9:53	X		Controller (Stake 4)	✓					Soil
SIG-TP-2 (0-2')	4-3-19	10:12	X		Pedestal (Stake 2)	✓					Soil
SIG-TP-2 (24"-33")	4-3-19	10:28	X		Pedestal (Stake 2)	✓					Soil
SIG-TP-3 (0-2')	4-3-19	11:03	X		Pedestal (Stake 1)	✓					Soil
SIG-TP-3 (24"-35")	4-3-19	11:42	X		Pedestal (Stake 1)	✓					Soil

Relinquished by: (Signature)	Date:	Received by: (Signature)	Relinquished by: (Signature)	Date:	Received by: (Signature)
Calvin D Warner Jr.	4-3-19	4/4/19			
(Printed) Calvin D Warner Jr	Time: 16:05	(Printed) 0900	(Printed)	Time:	(Printed)

Remarks: See Chris Lindahl for project #

Condition of Samples:
Acceptable: Yes ✓ No
Comments:

Page of

Industrial Hygiene Laboratory
21 Griffin Road North
Windsor, CT 06095
(860) 298-6308

TRC
Results you can rely on

BULK ASBESTOS ANALYSIS REPORT

CLIENT: CT Department of Transportation

Lab Log #:	0053572
Project #:	237612.5905.0210
Date Received:	04/05/2019
Date Analyzed:	04/05/2019

Site: Proposed Signal Project, Stratford, CT

POLARIZED LIGHT MICROSCOPY by EPA 600/R-93/116

Sample No.	Color	Homogenous	Multi-Layered	Layer No.	Other Matrix Materials	Asbestos	Asbestos Type
SIG-SB-1 (0-4')	Brown (soil sample)	- -	- -	- -	- - -	ND	None
SIG-SB-1 (4'-8')	Brown (soil sample)	- -	- -	- -	- - -	ND	None
SIG-SB-1 (8'-9')	Brown (soil sample)	- -	- -	- -	- - -	ND	None
SIG-SB-1 (9'-10.6')	Brown (soil sample)	- -	- -	- -	- - -	ND	None
SIG-SB-2 (0-2')	Brown (soil sample)	- -	- -	- -	- - -	ND	None
SIG-SB-2 (2'-4')	Brown (soil sample)	- -	- -	- -	- - -	ND	None
SIG-SB-2 (4'-6')	Brown (soil sample)	- -	- -	- -	- - -	ND	None
SIG-SB-2 (6'-8')	Brown (soil sample)	- -	- -	- -	- - -	ND	None
SIG-SB-2 (8'-10')	Brown (soil sample)	- -	- -	- -	- - -	ND	None

Industrial Hygiene Laboratory
21 Griffin Road North
Windsor, CT 06095
(860) 298-6308

POLARIZED LIGHT MICROSCOPY by EPA 600/R-93/116

Sample No.	Color	Homogenous	Multi-Layered	Layer No.	Other Matrix Materials	Asbestos %	Asbestos Type

Reporting limit-
ND - asbestos was not detected
Present- asbestos was detected

SNA- Sample Not Analyzed- See Chain of Custody for details

Note: Polarized-light microscopy is not consistently reliable in detecting asbestos in floor coverings and similar non-friable organically bound materials. In those cases, EPA recommends, and certain states (e.g. NY) require, that negative results be confirmed by quantitative transmission electron microscopy.

The Laboratory at TRC follows the EPA's Interim Method for the Determination of Asbestos in Bulk Insulation 1982 (EPA 600/M4-82-020) Bulk Analysis Code 18/A01 and the EPA recommended Method for the Determination of Asbestos in Bulk Building Materials July 1993, R.L. Perkins and B.W. Harvey, (EPA/600/R-93/116) Bulk Analysis Code 18/A03, which utilize polarized light microscopy (PLM). Our analysts have completed an accredited course in asbestos identification. TRC's Laboratory is accredited under the National Voluntary Laboratory Accreditation Program (NVLAP), for Bulk Asbestos Fiber Analysis, NVLAP Code 18/A01, effective through June 30, 2019. TRC is accredited by the AIHA Laboratory Accreditation Programs (AIHA-LAP), LLC in the Industrial Hygiene Program (IHLAP) for PLM effective through October 1, 2019. Asbestos content is determined by visual estimate unless otherwise indicated. Quality Control is performed in-house on at least 10% of samples and QC data related to the samples is available upon written request from client.

Analyzed by: K. Williamson — Kathleen Williamson, Laboratory Manager

Reviewed by: Cathryn Lemire — Cathryn Lemire, Approved Signatory

Date Issued
04/05/2019

Edition: October 2009
Supersede Previous Edition

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ASBESTOS BULK SAMPLING CHAIN OF CUSTODY

237612.5905.0210

LAB ID #. 53572

PROJECT NUMBER	PROJECT NAME	PARAMETERS	TURNAROUND TIME
~~CTDOT # 0173-0468~~	Signal Project Stratford CT		PLM: 8hr [X] 24hr 48hr 3day
			TEM: 24hr 48hr 3day 5day

SIGNATURE	INSPECTOR
Calvin D Warner Jr.	Cal Warner

FIELD SAMPLE NUMBER	DATE	TIME	TYPE COMP	TYPE GRAB	SAMPLE LOCATION	PLM EPA 600/R93/116 (POSITIVE STOP)	PLM EPA 600/R93/116 (w/ gravimetric reduction) (POSITIVE STOP)	ANALYZE BY LAYER	POINT COUNT (IF >1% & <10%)	TEM NY NOB 198.4 (IF PLM SERIES NEG)	MATERIAL
SIG-SB-1 (0-4')	4-4-19	9:20	X		Span Pole ID# 138-250-A	✓					Soil
SIG-SB-1 (4'-8')		9:30	X			✓					
SIG-SB-1 (8'-9')		9:39	X			✓					
SIG-SB-1 (9'-10')		9:45	X			✓					
SIG-SB-2 (0-2')		9:56	X		Span Pole ID# 138-250-B	✓					
SIG-SB-2 (2'-4')		10:10	X			✓					
SIG-SB-2 (4'-6')		10:18	X			✓					
SIG-SB-2 (6'-8')		10:30	X			✓					
SIG-SB-2 (8'-10')		10:43	X			✓					

Relinquished by: (Signature)	Date:	Received by: (Signature)	Relinquished by: (Signature)	Date:	Received by: (Signature)
Calvin D Warner Jr	4-4-19	4/5/19			
(Printed) Calvin D Warner Jr	Time:	(Printed) 0815	(Printed)	Time:	(Printed)

Remarks: See Chris Lindahl for TRC Project #

Condition of Samples: ____
Acceptable: Yes ✓ No ____
Comments:

Page of

Appendix C Raymark Waste Definition

DEFINITION OF RAYMARK WASTE

Raymark Industries, Inc. Superfund Site

Stratford, Connecticut

The 33.5 acre Raymark Industries Inc. Superfund Site (Site) located in Stratford, Connecticut, has a long history of disposal of Raymark waste. Low lying areas on the property were filled in with Raymark waste for facility building expansions between 1919 and 1974. The Raymark waste used as fill was the by-product of on-site manufacturing operations and has been determined to contain volatile organic compounds, semi-volatile organic compounds, asbestos, lead, copper, and other metals, waste acids (pickling waste from metal parts cleaning), caustics (used to clean process kettles), and PCBs.

During the initial investigations of the Site, the on-site soils were characterized as fill (imported and process), native materials, and peat. These distinctions were the result of soil borings and an attempt to develop an understanding of which soils contained Raymark waste (ELI RCRA Facility Investigation Report, February 10, 1995) (See Attached Table 1).

When the on-site drilling was occurring, the soils that were categorized as fill were identified as either a granular imported fill (oftentimes with construction debris) or a fibrous process fill (manufacturing waste). The distinctions in fill type are described below:

> **Imported fill** – consisted predominately of sand, or sand and gravel, and may have included construction material (i.e. bricks, metal, etc). The level of chemical constituents (contamination) detected within this fill were generally lower (by an order of magnitude) than the process fill. Generally, imported fill was found directly below the pavement at over seventy-five percent of the Site (due to the systematic filling of the property over the years) and varied in thickness from one to two feet. Because the imported fill overlaid the process fill it is considered to have been placed in its location more recently than the process fill.
>
> **Process fill** – consisted of a black, fine grained aggregate that contained asbestos. This unit was typically fibrous and spongy in nature and contained asbestos rope, metal wire, and friction material fragments (brake liners). The distinguishing feature of this material was the visible asbestos fibers and black organic material that is similar in texture to peat. The process fill was found on approximately fifty percent of the Site, usually beneath the imported fill.

RJ draft 5/13/10
JK Comments 5/4/10
RJ draft 4/30/10

Data in historic reports presenting the results of these soil borings indicated that both fill units contained contamination, however, the process fill contained more of the manufacturing wastes from Raymark. In 2004, EPA, in consultation with CTDEP and a technical consultant of the Raymark Advisory Committee (RAC), performed an evaluation of the OU1 soil sampling results comparing historic data of process fill in an effort to develop a definition of Raymark waste (See Attached Table 1). From EPA's previous sampling and work at the Site, it was known that lead, asbestos, PCBs, and copper were the most common constituents of Raymark waste. The 2004 effort focused on these four constituents in an effort to determine the frequency of finding concentrations above risk based levels and to evaluate the frequency of these four constituents being located together (co-location). The risk based levels were lead above 400 ppm (residential exposure level), asbestos above 1% (NESHAPS criteria for indoor workplace), PCBs (Aroclor 1268 only) above 1 ppm (residential exposure level), and copper above 288 ppm (10x background, not risk based). These four constituents were individually found in a high percentage of the samples as follows:

- Lead above 400 ppm was found in 22 of the 27 samples;
- Asbestos (chrysotile only) above 1% was found in 27 of the 27 samples;
- Copper above 288 ppm was found in 23 of the 27 samples; and
- PCBs (Aroclor 1268) above 1 ppm were found in 19 of the 22 samples.

The issue of co-location of the individual constituents was then evaluated. Individually, lead above background (81 ppm) was found consistently in process fill (96% frequency, 26 of 27 samples) as was asbestos above 1% (100% frequency, 27 of 27 samples). However, a strong relationship was observed in their co-location (97% frequency, 26 of 27 samples). When the risk based level of 400 ppm for lead was applied (with asbestos remaining greater than 1%), their relationship remained significant (81% frequency, 22 of 27 samples). Because it was known that both lead and asbestos were widely used by Raymark in their manufacturing processes and because of the frequency of co-location of these two constituents, both lead and asbestos were determined to be inherent components in the identification of Raymark waste. These two constituents alone, however, were not unique to Raymark. Other manufacturers in Stratford (Tilo Industries, Carpenter Steel, and perhaps others) had also disposed of manufacturing wastes as fill throughout the Town that contained asbestos and/or lead as well.

Other constituents that were also used widely in the manufacturing processes at Raymark were then examined. Individually, copper 10x background (288 ppm) was found fairly consistently in process fill (85% frequency, 23 of 27 samples) as was PCBs (Aroclor 1268) above background (background was non-detect) (100% frequency, 27 of 27 samples). The following observations

were made concerning the co-location of copper and PCBs (Aroclor 1268) with that of lead and asbestos:

- The frequency of co-location of lead (400 ppm), asbestos (greater than 1%), **and** copper (above 288 ppm) was slightly less (78% frequency, 21 of 27 samples) than that of lead and asbestos alone (81% frequency, 22 of 27 samples).

- The frequency of co-location of lead (400 ppm), asbestos (greater than 1%), **and** PCBs (Aroclor 1268) was also slightly less (77% frequency, 17 of 22 samples) than that of lead and asbestos alone (81% frequency, 22 of 27 samples).

- The frequency of co-location of lead (400 ppm), asbestos (greater than 1%), **and either** copper (288 ppm) **or** PCBs (Aroclor 1268) was found to be the same as that of lead and asbestos alone (81% frequency, 22 of 27 samples).

With the frequency of the co-location of either copper and/or PCBs (Aroclor 1268) with both lead and asbestos (81%) being similar to that of observing just lead and asbestos together (81%), a definition of Raymark waste was determined. Given that there are other possible non-Raymark sources of lead and asbestos, requiring either copper and/or PCBs (Aroclor 1268) to be co-located with both lead and asbestos, provides further certainty that the waste originated from the former Raymark facility.

Based on the above, the following is the definition of Raymark waste:

> *Raymark waste in soil is defined as a single soil sample containing lead above 400 parts per million (ppm), and asbestos (chrysotile only) greater than 1 percent, and either copper above 288 ppm or polychlorinated biphenyls (PCBs) (Aroclor 1268 only) above 1 ppm.*

While other contaminants are present in Raymark waste, these four constituents are used as a "fingerprint" to identify Raymark waste locations. Again, the frequency of process fill meeting this definition was 81% (22 of 27 samples).

TABLE 1

EVALUATION OF SOIL RESULTS FROM RAYMARK OU1
LEAD, ASBESTOS, COPPER AND **AROCLOR 1268 IN COLOCATED SAMPLES**
RAYMARK INDUSTRIES, INC. SITE
STRATFORD, CONNECTICUT

			Process Fill				Imported Fill				Native Materials			
BORING	DEPTH_RANGE	Raymark Waste Present?	Lead (mg/kg)	Asbestos(%)	Copper (mg/kg)	Aroclor 1268 (ug/kg)	Lead (mg/kg)	Asbestos(%)	Copper (mg/kg)	Aroclor 1268 (ug/kg)	Lead (mg/kg)	Asbestos(%)	Copper (mg/kg)	Aroclor 1268 (ug/kg)
MW G4	2 - 10	No					23.2	**5**	34.4	**2800**				
MW I4	0 - 6	No					197	**10**	116	**1200**				
MW J4	2 - 8	**Yes**	**26000**	**20**	**28000**	**4300**								
MW K4-1	2 - 4	**Yes**	**23500**	**10**	**23900**	**60000**								
MW K4-1	6 - 12	No	284	**5**	**257**									
MW L4	2 - 8	**Yes**	**52700**	**20**	**1580**									
MW M4	4 - 8	**Yes**	**10900**	**10**	**8520**	**97000**								
MW O4	2 - 4	**Yes**					**3840**	**5**	**4010**					
MW W4	2 - 8	**Yes**	**34500**	**15**	**16900**	**130000**								
SB 1	2 - 6	**Yes**	**10800**	**10**	**7220**	**2800**								
SB 6	4 - 10	**Yes**	**16200**	**10**	**7530**	**43000**								
SB 7	8 - 12	**Yes**	**16700**	**15**	**7680**	**750000**								
SB 8	4 - 10	**Yes**	**10300**	**15**	**19900**									
SB 9-1	0 - 2	**Yes**					**5840**	**10**	**18300**	**6200**				
SB 10	2 - 6	No	374	**5**	113	**6400000**								
SB 12	6 - 10	**Yes**	**8760**	**10**	**13200**									
SB 13	2 - 6	**Yes**	**31700**	**20**	**19300**	**16000**								
SB 14	1 - 2	**Yes**	**1910**	**15**	**1960**	**15000**								
SB 19	6 - 10	**Yes**	**2450**	**10**	**4050**	1000								
SB 20	6 - 8	**Yes**	**47100**	**15**	**56900**	**150000**								
SB 21	2 - 8	**Yes**	**33000**	**15**	**8510**	**150000**								
SB 23	3 - 5	**Yes**					**900**	**15**	65.5	**4800**				
SB 24	2 - 6	No	122	**5**	**440**	**2700**								
SB 26	4 - 8	**Yes**	**16500**	**15**	**2480**	**130000**								
SB 26-1	0.5 - 2	No					57.2	**20**	49	**25000**				
SB 29	3 - 5	No					206	**5**	22.6	177				
SB 30	0.583 - 3	**Yes**					**5060**	**5**	**2380**	**60000**				
SB 30	5 - 7	**Yes**	**43800**	**20**	**3360**	**450000**								
SB 33	1 - 4	**Yes**					**740**	**10**	**4100**	**1100**				
SB 41	4 - 6	**Yes**	**1990**	**25**	82.7	**160000**								
SB 42	0 - 6	**Yes**	**2530**	**15**	**2970**	**39000**								
SB 44	1.5 - 4	No					320	**5**	**360**	**1100**				
SB 47	2 - 4	No					208	**5**	46.6					
SB 48-2	1 - 2	**Yes**					**3180**	**20**	**1220**	**99000**				
SB 48-2	5 - 6	No	319	**10**	**8240**	380								
SB 49	8 - 9.5	**Yes**									**2090**	**10**	**713**	
SB 50	2 - 6	No					151	**10**	55.1	**2700**				
SB 52-1	2 - 6	**Yes**	**7940**	**15**	**19200**									
SB 54	2 - 6	**Yes**	**5220**	**20**	**3300**	**2300**								
SB 55	2 - 6	No					149	**5**	14.8	**3300**				
SB 58	2 - 4	No					8.9	**5**	16	0				

TABLE 1

EVALUATION OF SOIL RESULTS FROM RAYMARK OU1
LEAD, ASBESTOS, COPPER AND **AROCLOR 1268 IN COLOCATED SAMPLES**
RAYMARK INDUSTRIES, INC. SITE
STRATFORD, CONNECTICUT

			Process Fill				Imported Fill				Native Materials			
BORING	DEPTH_RANGE	Raymark Waste Present?	Lead (mg/kg)	Asbestos(%)	Copper (mg/kg)	Aroclor 1268 (ug/kg)	Lead (mg/kg)	Asbestos(%)	Copper (mg/kg)	Aroclor 1268 (ug/kg)	Lead (mg/kg)	Asbestos(%)	Copper (mg/kg)	Aroclor 1268 (ug/kg)
SB 60	1 - 4	No					297	**5**	228	**1800**				
SB 68	4 - 8	**Yes**	**30200**	**10**	**13400**	**230000**								
SB 70	4 - 8	No					5.2	**15**	17.5	40				
SB 71	2 - 4	No					18	0	13.9	470				
SB 75	5 - 6	No					1.7	0	13.5	0				
SB 77	1 - 4	No					79.9	**10**	63.8	**4400**				
SB 77	5.25 - 8	No	55.2	**10**	146	220								
# Samples			27	27	27	22	20	20	20	18	1	1	1	0
#Detects			27	27	27	22	20	18	20	16	1	1	1	0
minimum concentration (mg/kg)			55	5	83	220	2	0	14	0	2,090	10	713	0
maximum concentration (mg/kg)			52,700	25	56,900	6,400,000	5,840	20	18,300	99,000	2,090	10	713	0
mean concentration (mg/kg)			16,143	14	10,338	401,532	1,064	8	1,556	11,894	2,090	10	713	
median concentration (mg/kg)			10,800	15	7,530	51,500	202	5	59	2,250	2,090	10	713	
# Samples>bkg			26 (96%)	27 (100%)	27 (100%)	22 (100%)	13 (65%)	18 (90%)	14 (70%)	16 (89%)	1 (100%)	1 (100%)	1 (100%)	NA
# Samples>10xbkg			22 (81%)	27 (100%)	23 (85%)	22 (100%)	7 (21%)	18 (90%)	6 (30%)	16 (89%)	1 (100%)	1 (100%)	1 (100%)	NA
# Samples>100xbkg			16 (59%)	27 (100%)	19 (70%)	22 (100%)	0 (0%)	18 (90%)	3 (15%)	16 (89%)	0 (0%)	1 (100%)	0 (0%)	NA
# Samples>Raymark Waste Criterion			22 (81%)	27 (100%)	23 (85%)	19 (86%)	6 (30%)	18 (90%)	5 (25%)	13 (72%)	1 (100%)	1 (100%)	1 (100%)	NA
# Samples with Lead>bkg where Asb>1			26 of 27 (97%)				13 of 20 (65%)				1 of 1 (100%)			
# Samples with Lead>400 mg/kg where Asb>1			22 of 27 (81%)				6 of 20 (30 %)				1 of 1 (100%)			
# Samples Meeting the Definition of Raymark Waste (Exceeding lead, asbestos, and copper)			21 of 27 (78%)				5 of 20 (25 %)				1 of 1 (100%)			
# Samples Meeting the Definition of Raymark Waste (Exceeding lead, asbestos, and Aroclor 1268)			17 of 22 (77%)				5 of 18 (28%)				0 of 0 (0%)			
# Samples Meeting the Definition of Raymark Waste (Exceeding lead, asbestos, and either copper or Aroclor 1268)			22 of 27 (81%)				6 of 20 (30%)				1 of 1 (100%)			

Notes:

-Evaluated data only include Phase IIB soil samples collected by ELI from OU1.

-Bolded values exceed the criterion from the Raymark Waste definition (400mg/kg lead; 1% asbestos; 288 mg/kg copper; 1,000 ug/kg Aroclor 1268).

-Background (bkg) lead and copper concentrations were calculated as the average of results from samples collected at schools, daycare facilities and parks where it was assumed Raymark waste was not disposed (80.8 mg/kg lead;28.8 mg/kg copper; No PCBs and No asbestos).

-48 samples were analyzed for both lead and asbestos. Only 2 samples analyzed for asbestos had no asbestos. Those samples also had lead less than background.

-26 of 27 samples from process fill contained lead above background and asbestos >1.

-22 of 27 samples from process fill contained lead above 400 mg/kg and asbestos >1.

-22 of 27 samples from process fill met the definition of Raymark Waste.