



July 26, 2018

Mr. Adam G. Fox, P.E.
Principal Engineer
Environmental Compliance Section
Bureau of Engineering and Construction
State of Connecticut Department of Transportation
2800 Berlin Turnpike, P.O. Box 317546
Newington, CT 06131-7546

Attention: Amie Maines, P.E. / Robert Reilly

Subject: On-Call Asbestos, Lead, Air Quality & Demolition Compliance
Agreement No. 04.27-01(15)
HazMat Inspection – Bridge Nos. 06840, 06841 & 06842 (Culverts/ACCMPA),
Under Route 2, Colchester, CT
ConnDOT Assignment No. 514-5740
ConnDOT Project No. 28-202
TRC Project No. 222165.5740.0710

Dear Mr. Fox:

TRC performed a limited hazardous materials site investigation associated with the planned replacement or rehabilitation of Bridge Nos. 06840, 06841 & 06842 (Culverts/ACCMPA) under Route 2 in Colchester, Connecticut. There were no painted surfaces identified on the bridge/culvert components scheduled for impact at Bridge Nos. 06840, 06841 & 06842, therefore no lead paint was identified at the sites. The black asphalt material on the metal pipe arches that were associated with Bridge Nos. 06840, 06841 & 06842, were each sampled and found to contain no asbestos. Laboratory results, inspector notes, TRC Mobile Data Solutions report and site description are attached.

If you have any questions, please call TRC at (860) 298-9692.

Very Truly Yours,

TRC

A handwritten signature in black ink, appearing to read "Stephen R. Arienti".

Stephen R. Arienti, CHMM
Project Manager – Program Manager

A handwritten signature in black ink, appearing to read "Erik R. Plimpton".

Erik R. Plimpton, P.E., CHMM, CMC
Vice President – Engineer in Charge



21 GRIFFIN ROAD NORTH
WINDSOR, CONNECTICUT 06095
TELEPHONE (860) 298-9692
FAX (860) 298-6380

ASBESTOS BULK SAMPLING CHAIN OF CUSTODY

Edition: October 2009
Supersede Previous Edition

LAB ID #. 52550

PROJECT NUMBER 222165.5740.0710			PROJECT NAME ConnDOT Rt 2 Culverts Colchester, CT-2 E, Colchester, CT			PARAMETERS			TURNAROUND TIME							
									PLM:		8hr		24hr	X	48hr	
SIGNATURE 			INSPECTOR David Webster, Tom Martin			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					
FIELD SAMPLE NUMBER	DATE	TIME	TYPE		SAMPLE LOCATION											
			COMP	GRAB												
1	7/20/18	09:33		X	Bridge 08640	X				X	T1 – Black tar on corrugated pipe.					
2	7/20/18	09:33		X	Bridge 06840	X					T1 – Black tar on corrugated pipe.					
3	7/20/18	10:48		X	Bridge 06841	X				X	T2 – Black tar on corrugated pipe					
4	7/20/18	10:49		X	Bridge 06841	X					T2 – Black tar on corrugated pipe					
5	7/20/18	11:30		X	Bridge 06842	X				X	T3 – Black tar on corrugated pipe					
6	7/20/18	11:30		X	Bridge 06842	X					T3 – Black tar on corrugated pipe					

Relinquished by: (Signature) 	Date: 7-20-18	Received by: (Signature) <u>7/20/18</u> 	Relinquished by: (Signature)	Date:	Received by: (Signature)
(Printed) David Webster	Time: 1325	(Printed) 1400 	(Printed)	Time:	(Printed)
Remarks:			Condition of Samples: Acceptable: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		Page 1 of 1

BULK ASBESTOS ANALYSIS REPORT

CLIENT: CT Department of Transportation

Lab Log #: 0052550
 Project #: 222165.5740.0710
 Date Received: 07/20/2018
 Date Analyzed: 07/20/2018

Site: Rt. 2 & CT-2 E, Culverts, Colchester, CT

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

Sample No.	Color	Homogenous	Multi-Layered	Layer No.	Other Matrix Materials	Asbestos %	Asbestos Type
1	Black (tar)	Yes	No	--	---	ND	None
2	Black (tar)	Yes	No	--	---	ND	None
3	Black (tar)	Yes	No	--	---	ND	None
4	Black (tar)	Yes	No	--	---	ND	None
5	Black (tar)	Yes	No	--	---	ND	None
6	Black (tar)	Yes	No	--	---	ND	None

Reporting limit- asbestos present at 1%
 ND - asbestos was not detected
 Trace - asbestos was observed at level of less than 1%
 NA/PS - Not Analyzed / Positive Stop
 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, 2018. TRC is accredited by the AIHA Laboratory Accreditation Programs (AIHA-LAP), LLC in the Industrial Hygiene Program (IHLAP) for PLM effective through October 1, 2018. 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.

This report shall not be reproduced, except in full, without the written approval of TRC. This report must not be used by the client to claim product endorsement by NVLAP or any agency of the U.S. Government. This report relates only to the items tested.

Analyzed by: K. Williamson Reviewed by: Cathryn Lemire Date Issued: 07/22/2018
 Kathleen Williamson, Laboratory Manager Cathryn Lemire, Approved Signatory

TRC LABORATORY ASBESTOS ANALYTICAL ACCREDITATIONS

NVLAP Lab Code 101424-0 AIHA-LAP, LLC #100122 CT #PH-0426 ME LA-0075, LB-0071 MA #AA000052 NY #10980 WV# LT000411
 RI #AAL-007 TX #300354 VT #AL014538 LA#05011 VA #3333 000283 AZ #A20944 HI #L-09-004 NJ #CT004 CA #2907
 CO# AL-15020 PHIL# 461 PA#68-03387

NT 11332

Proscience Analytical Services, Inc.

22 Cummings Park, Woburn, MA 01801 Ph. 781-935-3212 Fax 781-932-4857

TEM Bulk Chain of Custody Record

Date: 07/20/18

PO#: C222165

Analysis Type: Chatfield EPA N.O.B Qualitative

Client: TRC

Client Job#: 222165.5740.0710

Client Job Ref./Loc.: CT DOT- Rt. 2 Culverts, Colchester, CT

Relinquished by: K. Williamson- KWilliamson@tresolutions.com

Received by: *Paola Keuff- Cole 7/23/18 9:15*

Report to: E. Plimpton- EPlimpton@tresolutions.com & SArienti@tresolutions.com

Samplers Name: D. Webster, T. Martin

Turnaround Time: <12 Hour <24 Hour <48 Hour <3 Day 5 Day Other:

				For Lab Use Only		
Client ID #	Lab ID#	Description	Location	Acceptable on Receipt	Comments	
1	52550	Tar	See COC			
3	52550	Tar				
5	52550	Tar				
For Lab Use Only	# Spies	Total	Client #	Batch #	Results Reported	Comments

ProScience Analytical Services, Inc.

22 Cummings Park, Woburn, Massachusetts 01801
781-935-3212 ~ Fax: 781-932-4857 ~ E-Mail general@proscience.net

Laboratory Report


Client Project #: 222165.5740.0710
Client Reference: CT DOT - Rt. 2 Culverts, Colchester, CT
PO #: N/A
Client #: 297
Client Name: TRC Environmental Corp. (CT)

Batch: NT 17332
Method: NOB
Date Received: 7/23/2018
Date Analyzed: 7/25/2018
Date of Report: 7/25/2018

LAB ID	Field ID	Description:	Color	Initial Weight	% Asbestos Types					% Other Non-asb.	% Organic	% Carb.	Total % Asbestos	Analyzed / Charged	Preped / Charged	
					CHR	AMO	ACT	CRO	ANT							TRE
NT130668	1	Black Tar		.2640	.00	.00	.00	.00	.00	.00	.49	99.32	.19	ND	Yes	No
NT130669	3	Black Tar		.1559	.00	.00	.00	.00	.00	.00	.38	99.49	.13	ND	Yes	No
NT130670	5	Black Tar		.1493	.00	.00	.00	.00	.00	.00	1.94	82.92	15.14	ND	Yes	No

Comments:

Key: CHR = Chrysotile AMO = Amosite CRO = Crocidolite ACT = Actinolite TRE = Tremolite ANT = Anthophyllite TR = Trace = < 1% ND = None Detected


Mark Derosier, Analyst



SUBJECT RT2 culvert insp's

1st culvert (marker o/s south opening CP211) (#06840)

- 6' dia; \approx 100 yds
- galv (no paint) ^{ext}
- tar covered (partially) ^{T3 ✓✓} \rightarrow throughout interior

#06841

- 6' dia; \approx 300+ yds
- galv (no paint)
- tar covered (int only) T4
- * partial collapse mid way *

5740

#06842

- concrete abutments
- \approx 80 yds
- tar coated (int)

ConnDOT, Rt 2 Culverts Colchester , New London, , Colchester, 06415, CT, US, CT-2 E,

Created	2018-06-08 14:38:03 UTC by Jonathan Gentile
Updated	2018-07-20 17:33:20 UTC by Dave Webster
Location	41.5692050569147, -72.2796222009438
Status	■ Survey Complete

Job Information

Site Name	Rt 2 Culverts Colchester
Address	CT-2 E Colchester, CT 06415
TRC Project Number	222165.5740.0710
Project Manager	Erik Plimpton
Inspector(s)	Jonathan Gentile, Dennis Ryder, Tom Martin, David Webster
Client	ConnDOT
Additional Analysis for NOB Materials (Calc)	TEM NY NOB 198.4
PLM Turnaround Time (TAT)	48-hour
TEM Turnaround Time (TAT)	48-hour
Date	2018-06-08
General Notes	Replacement of Corrugated Metal Culverts under Rt 2

Bridge 06840 corrugated
Bridge 06841 corrugated
Bridge 06842 corrugated

No paint found

Overview Photo



Bridge 06840



Bridge 06840



Bridge 06841



Bridge 06841



Bridge 06841



Bridge 06841



Bridge 06842



Bridge 06842

Surveys Performed

Asbestos

Asbestos Section

(2), T1, Black tar on corrugated pipe.

Bridge 08640

Sample Location	Bridge 08640
Analyze by Layer	No
Asbestos Bulk Analysis	PLM EPA 600/R93/116
Grab or Composite	Grab
Date	2018-07-20
Time	09:33

Bridge 06840

Sample Location	Bridge 06840
Analyze by Layer	No
Asbestos Bulk Analysis	PLM EPA 600/R93/116
Grab or Composite	Grab
Date	2018-07-20
Time	09:33

Material Information

Sampled or Assumed?	Sampled
Material Acronym	T1
Material Description	Black tar on corrugated pipe.
Is Material a Non-Friable Organically Bound (NOB)	Yes
Homogeneous Area	Bridge 06840
Total Count	(2)

(2), T2, Black tar on corrugated pipe

Bridge 06841

Sample Location	Bridge 06841
Analyze by Layer	No
Asbestos Bulk Analysis	PLM EPA 600/R93/116
Grab or Composite	Grab
Date	2018-07-20
Time	10:48

Bridge 06841

Sample Location	Bridge 06841
Analyze by Layer	No
Asbestos Bulk Analysis	PLM EPA 600/R93/116
Grab or Composite	Grab
Date	2018-07-20
Time	10:49

Material Information

Sampled or Assumed?	Sampled
Material Acronym	T2
Material Description	Black tar on corrugated pipe
Is Material a Non-Friable Organically Bound (NOB)	Yes
Homogeneous Area	Bridge 06841
Total Count	(2)

(2), T3, Black tar on corrugated pipe

Bridge 06842

Sample Location	Bridge 06842
Analyze by Layer	No
Asbestos Bulk Analysis	PLM EPA 600/R93/116
Grab or Composite	Grab
Date	2018-07-20
Time	11:30

Bridge 06842

Sample Location	Bridge 06842
Analyze by Layer	No
Asbestos Bulk Analysis	PLM EPA 600/R93/116

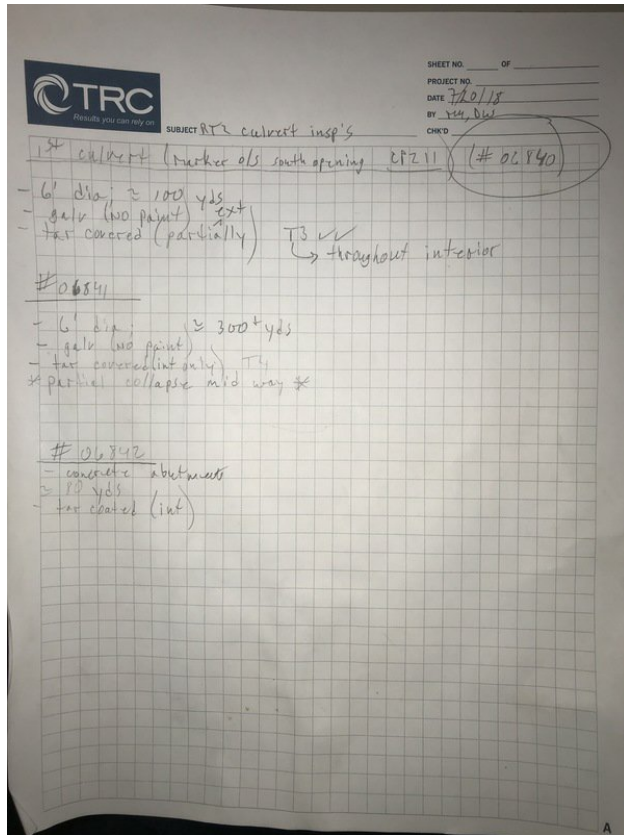
Grab or Composite	Grab
Date	2018-07-20
Time	11:30

Material Information

Sampled or Assumed?	Sampled
Material Acronym	T3
Material Description	Black tar on corrugated pipe
Is Material a Non-Friable Organically Bound (NOB)	No
Homogeneous Area	Bridge 06842
Total Count	(2)

General Information

Site Sketch Diagrams



Signature

Y. D. Chen

Signed 2018-07-20 17:11:53 UTC

Asbestos Samples Submitted to TRC Lab	Yes
Date Submitted to Lab	2018-07-20
App Name	WinBSI HBM Survey 1.0

Project Description

Applicant: State of Connecticut, Department of Transportation
Project No. 28-202 (Constr.), 170-3250 (P.E.)
Rehabilitation of Bridge Nos. 06839, 06840, 06841, 06842
Various location along Route 2 in Colchester

3 CULVERTS

5740

This project involves the replacement of Bridge No. 06839 and the rehabilitation of Bridge Nos. 06840, 06841, and 06842 in the town of Colchester.

Bridge No. 06839 (removed from scope)

Bridge No. 06839 carries Route 2 Westbound on and off ramps over unnamed brook. The existing structure is a 6-foot by 4-foot corrugated metal pipe arch culvert with concrete wingwalls. The arch is topped with approximately 8 feet of ballast material and a bituminous concrete overlay. The roadway width over the culvert is 44 feet. The roadway consists of one lane of traffic with narrow shoulders in each direction and a raised median approximately 15 feet wide. The inlet to outlet length of the culvert is approximately 95 feet. The structure is located off Exit 21 of Route 2 WB. The estimated 2013 Average Daily Traffic (ADT) on the structure is 2,200 vehicles.

Based upon field investigation and engineering analysis of this structure, the existing structure is found to be structurally deficient due to the deteriorated condition of the existing steel pipe arch. The steel exhibits heavy laminar rust along the corner and bottom plates with perforations and section loss. The inlet contains a small, 16-inch deep, scour hole adjacent to the northeast wingwall.

The proposed project consists of replacing the existing structure with a 6 ft. x 10ft. reinforced concrete box culvert with flared wingwalls upstream and downstream. The culvert invert will be set 1 foot below the existing channel grade. Due to the amount of cover over the structure, metal beam rail will continue from the approaches over the structure, similar to the existing condition. The ramps will be repaved for a limited distance beyond the structure. A pumping operation will be utilized for water handling during removal of the existing structure and construction of the proposed structure.

The majority of construction will be performed utilizing a weekend closure of the ramps. Signage will be posted to alert motorists of the closure and traffic will be directed to use Exit 18 of Route 2 WB. Temporary lane shifts will be required before and after the detour period to perform certain activities.

The unnamed brook flows in a northwesterly direction. The contributing drainage area at the bridge is approximately 0.37 square miles. The bridge is not located in a FEMA regulated floodplain. The brook is aligned with the structure upstream but takes a 90 degree turn at the outlet. The culvert has no skew with respect to the roadway. Moderate vegetation is present on all embankments. Minor brush is accumulating in the channel. The inlet contains a small, 16-inch deep, scour hole adjacent to the northeast wingwall. The downstream embankment on the west side displays some undercutting.

The hydraulic analyses performed in the Preliminary Hydraulic Analysis Report indicate that for the 50-year design storm flow, the existing and proposed structures are hydraulically inadequate.

The computed velocity for the 50-year storm at the outlet for the proposed condition is 3.33 fps. This velocity is 0.17 fps less than the existing condition. There is no anticipated scour for the proposed condition since there is no evidence of scour currently at the structure. The computed velocity for the Average Spring Flow at the outlet for the proposed condition is 0.38 fps. This velocity is 0.53 fps less than the existing condition.

Bridge No. 06840

Bridge No. 06840 carries Route 2 over unnamed brook. The existing structure, built in 1971, is a 72-inch diameter corrugated metal pipe. There is a 40-foot long section of reinforced concrete pipe at the outlet. Route 2 carries two lanes of traffic in each direction, with each direction separated by a heavily vegetated median approximately 110 feet wide. The curb-to-curb roadway width is approximately 40 feet in each direction. The structure has a skew angle of 6 degrees and an overall length of 379 feet. There are no formal end treatments at either the inlet or outlet of the structure. The sloped embankments are held back with riprap and vegetation. The structure is situated 0.6 miles east of Exit 21 off of Route 2. The estimated 2013 Average Daily Traffic (ADT) for this bridge is 24,100 vehicles.

Based upon field investigation and engineering analysis of this structure, the existing structure is found to be structurally deficient due to the deteriorated condition of the pipe. The concrete pipe extension at the outlet exhibits light surface scale at the invert, exposed rebar, and severe scale. The corrugated metal pipe exhibits advanced section loss, heavy rust, and an area of perforation that is 17 feet long by 4 feet wide. The first 36 feet of the metal pipe, which is not located under Route 2 is flattened due to construction defects.

The proposed project consists of rehabilitating the culvert by relining the existing structure with centrifugally cast concrete. Approximately 1.5 inches of concrete will be sprayed on the inside walls of the existing pipe providing an opening of 5.75 feet. Before the culvert is relined, the existing pipe will be cleaned of debris and holes will be pressure grouted. The existing 40 ft. of concrete pipe at the outlet will be removed and an intermediate riprap basin and apron will be constructed to reduce the outlet velocity prior to the existing scour hole. Approximately 15 feet of pipe at the inlet will be removed as well, and new concrete end treatments will be constructed at both ends. The culvert will be installed with baffles to help decrease the outlet velocities and promote aquatic habitat.

Construction will be performed with minimal interruptions to Route 2 traffic. Temporary off-peak lane closures will be utilized to deliver material and equipment to the site. Temporary water handling facilities during construction will consist of pumping operations utilized to direct the flow around the work area.

The hydraulic analyses performed in the Preliminary Hydraulic Analysis Report indicate that for the 50-year design storm flow, the existing and proposed structures are hydraulically adequate.

The computed velocity for the 50-year storm at the outfall for the proposed condition is 9.19 fps. This velocity is 0.75 fps less than the existing condition. The ConnDOT Drainage Manual states that the maximum velocity at the culvert outlet shall be consistent with the velocity in the natural channel or shall be mitigated with outlet protection measures, energy dissipation and, if required, channel stabilization. There are currently no energy dissipation or channel stabilization methods in place. The most recent bridge inspection report states there is a scour pool at the outlet that is 30 feet in diameter with water depths up to 48 inches. The scour has eroded under the last section of concrete pipe and has caused the pipe to drop 8 inches. The existing 40 ft. of concrete pipe will be removed and a riprap basin and apron will be constructed to reduce the outlet velocity prior to the existing scour hole. Concrete weirs, 9" high, will be placed within the culvert barrel to reduce the velocity. The computed velocity for the Average Spring Flow at the outfall for the proposed condition is 1.93 fps. This velocity is 0.64 fps more than the existing condition.

Bridge No. 06841

Bridge No. 06841 carries Route 2 over unnamed brook. The existing structure is an 84-inch diameter asphaltic coated corrugated metal pipe culvert with mitered end treatments on the south inlet and concrete headwall and wingwalls on the north outlet. The inlet of the culvert has a height of about 7 feet and a width of 6.75 feet. The culvert outlet has a height of 7.33 feet and a width of 6.5 feet. At the 75-foot mark, there is a catch basin which encompasses the culvert and allows the pipe to change direction under Route 2. The curb-to-curb roadway width of Route 2 is approximately 40 feet in either direction. Each direction of Route 2 is separated by an approximately 215-foot wide vegetated median. The structure runs perpendicular to Route 2 from the catch basin to the outlet and has an overall length of approximately 475 feet. The structure is situated approximately 1 mile east of Exit 21 on Route 2. The estimated 2013 Average Daily Traffic (ADT) for Route 2 is 24,100 vehicles.

Based upon field investigation and engineering analysis of this structure, the existing structure is found to be structurally deficient due to the deteriorated condition of the existing metal pipe. The culvert exhibits heavy laminar rust, minor section loss, and perforations where the largest hole can be probed up to 9 inches. The concrete headwall at the outlet has some light scale at and below the waterline. The asphalt coating has section loss at and below the waterline throughout the culvert. Approximately 50 feet from the inlet, the top of the culvert is dented approximately 18 inches, which is likely the result of a construction defect, and is not located under Route 2.

The proposed project consists of rehabilitating the existing structure by lining the interior of the 84" pipe with structural concrete. Before the culvert is relined, the existing pipe will be cleaned of debris and holes will be pressure grouted. Weirs at 9" high will be placed through the culvert to promote fish passage and reduce outlet velocity. The initial 75' of the existing pipe and existing catch basin will be removed. A new headwall will be constructed at the new inlet location and the existing 30" Reinforced Concrete Pipe (RCP) will be realigned and exit through the new headwall.

Construction will be performed with minimal impacts to Route 2 traffic. Temporary off-peak lane closures will be utilized to deliver material and equipment to the site.

The hydraulic analyses performed in Preliminary Hydraulic Analysis Report indicate that for the 50-year design storm flow, the existing and proposed structures are hydraulically adequate.

The computed velocity for the 50-year storm at the outfall for the proposed condition is 8.23 fps. This velocity is 1.3 fps less than the existing condition. The outlet is very well armored with boulders and cobbles. There is no evidence of scour. Concrete weirs, 9" high, will be placed within the culvert barrel to reduce the velocity. The computed velocity for the Average Spring Flow at the outfall for the proposed condition is 3.07 fps. This velocity is 2 fps less than the existing condition.

Bridge No. 06842

Bridge No. 06842 carries Route 2 Eastbound over unnamed brook. The existing structure is a 72-inch diameter asphaltic coated corrugated metal pipe culvert with concrete end treatments. The roadway width of Route 2 Eastbound over the structure is 38 feet. Each direction of Route 2 is separated by a vegetated median. The structure has no skew angle relative to the roadway above and has an overall length of 218 feet. The structure is situated approximately 1.5 miles east of Exit 21 on-ramp on Route 2. The estimated 2013 Average Daily Traffic (ADT) for Route 2 Eastbound is 12,200 vehicles.

Based upon field investigation and engineering analysis of this structure, the existing structure is found to be structurally deficient due to the deteriorated condition and deformed shape of the existing 72-inch pipe. The corrugated metal pipe exhibits flattening of the crown, which is directly under Route 2 Eastbound. There are areas of asphaltic coating loss on the corner and bottom plates with heavy rust on the exposed steel. The pipe also exhibits several perforations with active water leakage. The reinforced concrete headwalls and wing walls have light map cracking and are in good condition overall.

The proposed project consists of rehabilitating the existing structure by relining the existing structure with structural concrete. Before the culvert is relined, the existing pipe will be cleaned of debris and holes will be pressure grouted. Weirs at 9" high will be placed through the culvert to promote fish passage and reduce outlet velocity. The existing end treatments will be repaired as necessary. The culvert will be installed with baffles to help decrease the outlet velocities and promote aquatic habitat. The decreased outlet velocities will also help minimize additional outlet protection needed.

Construction will be performed with minimal impacts to Route 2 Eastbound traffic. Temporary off-peak lane closures are anticipated to deliver materials and equipment to the site. The median and gore areas are large enough to accommodate construction equipment and temporary pull-off areas can be created. Temporary water handling facilities during construction will consist of pumping operations utilized to direct the flow around the work area.

The hydraulic analyses performed in the Preliminary Hydraulic Analysis Report indicate that for the 50-year design storm flow, the existing and proposed structures are hydraulically adequate.

The computed velocity for the 50-year storm at the outfall for the proposed condition is 11.42 fps. This velocity is 0.13 fps more than the existing condition. The outlet is very well armored with boulders and cobbles. There is no evidence of scour. Concrete weirs, 9" high, will be placed within the culvert barrel to reduce the velocity. The computed velocity for the Average Spring Flow at the outfall for the proposed condition is 2.9 fps. This velocity is 1.69 fps more than the existing condition.

The wetland resources at the site consist of State Regulated Wetlands and Watercourse and Federally Regulated Waters of the U.S. According to the July 18, 2011, Panel 09011C0160G New London County Flood Insurance Rate Map, the projects are not located within a FEMA Floodplain or Floodway.

