

STRUCTURE NO. 02138

ROUTE 15
over
INLET TO RESERVOIR
GREENWICH

ndepth & Underwater Inspection
on
3/6/2008

Inspected by McLaren - 51
for Area 4

TEAM:	Forwarded to TE3	Jim Matulis	Date	5/2/2008
TE3:	Reviewed by TE3	Jim Matulis	Date	5/14/2008
	BMM Required		No	
	Town Bridge		No	
	Rating <= 5 (Items 58,59,60 or 62)		Yes	
	Forwarded to Supervisor	Sandra Dumas	Date	5/14/2008
	Forwarded to "To Be Copied Drawer"	<input type="checkbox"/>	Date	
	Date BRI-19 Entered		5/14/2008	
SUPERVISOR:	Reviewed by Supervisor		Date	
SUPPORT:	Date Copies Made		BMM No	

NBI: No

Bridge Number **02138**

Inspected By: J. St. Denis & D. Korkosz

Sufficiency Rating
Previous Inspection Date 2/22/2006

BS&E Received Data Entry By: Jan Matulis
Copies Made Data Entry Date: 5/8/2008

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
BRIDGE SAFETY & EVALUATION

STRUCTURE EVALUATION

SHEET 1 OF 2 FORM BRI-19 REV 10/00

SHEET 1 OF 2

90) Inspection Date	Inspection Team	91) Frequency	Class:
032708	51 51	24	01
Indepth Insp	Deck Survey	Access	Flagman
		0	

CRITICAL FEATURE INSPECTIONS			
Type	Frequency	Team	Date
Fracture:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Uwater:	24	19	2/22/2006
Special:	<input type="checkbox"/>	<input type="checkbox"/>	3/27/08

RED FLAG

IDENTIFICATION

Bridge Name **GREENWICH** Town Code **33620**

5) Inventory Route:
 A) Record Type **1**
 B) Signing Prefix **3** State Highway
 C) Level of Service **1** Mainline
 D) Route Number **00015**
 E) Directional Suffix **0** NA

6) Feature Intersected **INLET TO RESERVOIR**

7) Facility Carried: **ROUTE 15**

9) Location **.5 MI WEST OF BRIDGE #696**

11) Milepoint **5.31** Miles

16) Latitude **41deg 5 min 48.00 sec**
 17) Longitude **73deg 38 min 12.00 sec**

98) Border Bridge:
 A) State Code B) Percent Responsibility
 C) Border Town Name

99) Border Bridge Structure No

STRUCTURE TYPE AND MATERIAL

43) Structure Type, Main:
 A) Material **1** Concrete B) Design Type **19** Culvert (includes fram)

44) Structure Type, Approach:
 A) Material **0** Other B) Design Type **0** Other

45) Number of Spans, Main Unit **1**

46) Number of Approach Spans **0**

107) Deck Structure Type **N** Not Applicable

108) Wearing Surface/Protective System:
 A) Type of Wearing Surface **N** Not Applicable
 B) Type of Membrane **N** Not Applicable
 C) Type of Deck Protection **N** Not Applicable

AGE AND SERVICE

27) Year Built **1934** 106) Year Reconstructed **0000**

42) Type of Service:
 A) On **1** Highway B) Under **5** WATERWAY

28) Number of Lanes:
 A) On **4** B) Under **0**

29) Average Daily Traffic **52700** Half ADT?: **No**

109) Percent Truck **1%**

30) Year of ADT **2004**

19) Bypass, Detour Length **3** miles

GEOMETRIC DATA

48) Length of Max Span **8** ft

49) Structure Length **8** ft

50) Curb or Sidewalk Widths:
 A) Left **0.0** ft B) Right **0.0** ft

51) Brg Rdwy width, curb-curb **0.0** ft

52) Deck Width, Out-Out **0.0** ft

32) Approach Roadway Width **52** ft

33) Bridge Median **0** No Median

Deck Area **1021** sqft

34) Skew Angle **0** deg

35) Structure Flared **0**

10) Inv. Rte. Min. Vert Clearance **99** ft **99** in

47) Log Inv. Rte. Total Horiz Clr.: **30.0** ft

47) RLog Inv. Rte. Total Horiz. Clr.: **30** ft

53) Min Vert Clearance Over Bridge **99** ft **99** in

54) Min Vert Under Clearance **N** Ref **0** ft **0** in

55) Min Lat Under Clearance on Right **N** Ref **99.9** ft

56) Min Lat Under Clearance on Left **0.0** ft

BRIDGE COMMENTS

Deck area based on plan dimensions (8 FT span x 127.6 FT inlet-outlet). Diver measurements vary from 125.8 FT to 135.5 FT inlet outlet. RDJ 11/1/06

Item 47 - Estimated 2006. New guiderail installed since 1992 measurement. RDJ 11/1/06

CLASSIFICATION

112) NBIS Bridge Length	No		
104) Highway System	1	On System	
26) Functional Class	2	Rural Principal Arterial - Other	
100) Defense Highway	0	Not Defense Highway	
101) Parallel Structure	N	No parallel structure exists	
102) Direction of Traffic	2	2-way traffic	
103) Temporary Structure			
110) Designated National Network	0	Not on national network	
20) Toll	3	On Free Road	
21) Maintain	1	State Highway Agency	
22) Owner	1	State Highway Agency	
Report Class	S	STATE	
37) Historical Significance	5	Bridge is not eligible for National Register	

WATERWAY

DrainageBasinCode	7409		
38) Navigation Control	0	No navigation control on waterway	
39) Navigation Vert Clr.	0		
116) Vert-Lift Brg Nav Min			
111) Pier Abutment Protection			
40) Navigation Horiz Clr.	0		

PROPOSED IMPROVEMENTS

75A) Type of Work Proposed			
75B) Work Done By			
76) Length of Struct. Improvement		ft	
94) Bridge Improvement Cost	\$		
95) Roadway Improvement Cost	\$		
96) Total Project Cost	\$		
97) Year of Improvement	Cost Est.		
114) Future ADT			
115) Year Future ADT			
List No. 21	Project No.	Advertised	

POSTED SIGNS & UTILITIES

Other Posted Signs 1			
Other Posted Signs 2			
Actual P.L. Single Unit Truck	tons		
Rec. P.L. Single Unit Truck	tons		
Actual P.L. Semi-Trailer Truck	tons		
Rec. P.L. Semi-Trailer Truck	tons		
Rec. P.L. All Vehicles	tons		
Posted Vert Clearance On Bridge	ft	in	
Posted Vert Under Clearance	ft	in	
Posted Speed Limit	mph		
Utility			
Actual P.L. 4Axle Truck	tons		
Rec. P.L. 4Axle Truck	tons		
Actual P.L. 3S2 Truck	tons		
Rec. P.L. 3S2 Truck	tons		
Actual P.L. All Vehicles	tons		

STRUCTURE EVALUATION

SHEET 2 OF 2 FORM BRI-19 REV 10/00

SHEET 2 OF 2

Bridge Number	02138	NBIS Length	
Town Name	GREENWICH	No	8
Facility Carried	ROUTE 15		
Feature Crossed	INLET TO RESERVOIR		

Inspected By: J. St. Denis & D. Korkosz

LOAD RATING AND POSTING

31) Design Load	4			Evaluation Code	J		
63) Operating Rating Type	5			Year of Evaluation	2000		
64) Operating Rating	58.0			70) Bridge Posting	5		
65) Inventory Rating Type	5			41) Structure Status	R		
66) Inventory Rating	34.0						

CONDITION

APPRAISALS

	Rating	By		Rating	By
58) Deck	N	JJD	67) Structure Evaluation	4	GFA
59) Superstructure	N	JJD	68) Deck Geometry	N	JJD
60) Substructure	N	JJD	69) Under Clear Vert & Horiz	N	JJD
61) Channel & Chan. Protection	5	JJD	71) Waterway Adequacy	6	JJD
62) Culverts	4	JJD	72) Approach Rdwy Alignment	8	JJD
			113) Scour Critical		

Items 58 Thru 72 Checked By: Craig J. Jantzen

36) Traffic Safety Features:

A) Bridge Railings	N	N
B) Transitions	N	N
C) Approach Guardrail	N	N
D) Approach Guardrail End	N	N

OTHER FEATURES

Fence Required	No		Barrel Ladder	No	
Fence Present	No		Stand Pipes	No	
Fence Height	0.0	ft	Cat Walks	No	
Fence Type			Movable Inspection System	No	
Fence Material			Loose Concrete Checked?	No	
Fence Top Type					

INSPECTION COMMENTS

Proposed Next Indepth Insp Year	2008		
Senior Supervisor	jantzenrd		
	kozlowskijc		

REVIEWED BY: Craig J. Jantzen Date 4/25/08

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

subject: Bridge No. 02138
Route 15 over Inlet to Reservoir
Greenwich

memorandum

date: May 22, 2008

to: Mr. Robert P. Mongillo
Trans. Maintenance Administrator
Bureau of Engineering and
Highway Operations

from: Sandra A. Dumas *Sandra A. Dumas*
Trans. Supervising Engineer
Bridge Safety & Evaluation
Bureau of Engineering
and Highway Operations

1. Transmitted are the following:

- Two copies of inspection report for above bridge
 Other
 Specifications

2. Comments:

This structure is on List 21.

3. Please take the following action:

- Please review and forward to:
 For your use and information.
 For your comments.

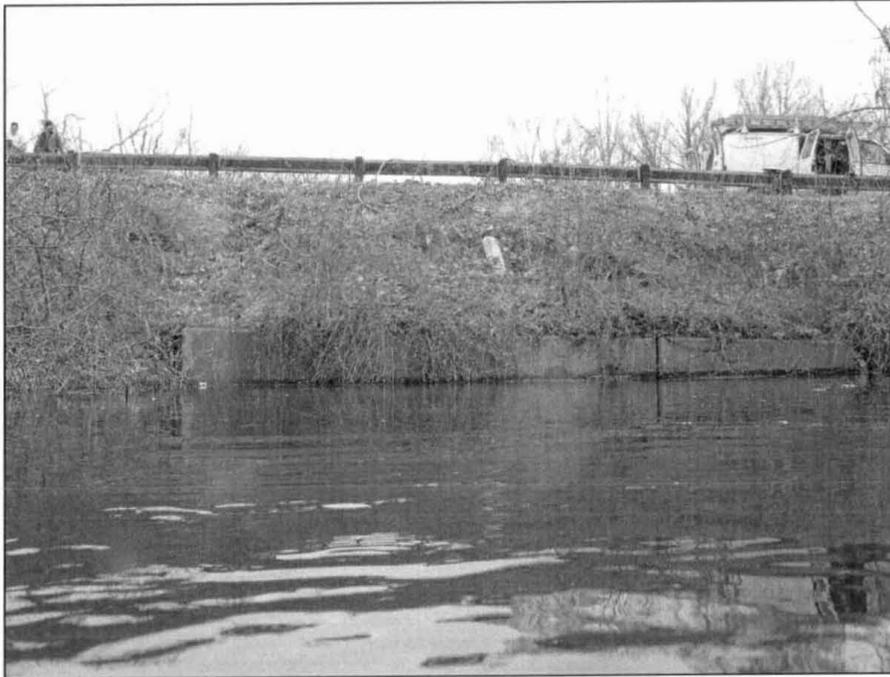
Should you have any questions concerning this matter, please contact me at extension 2072.

Attachments

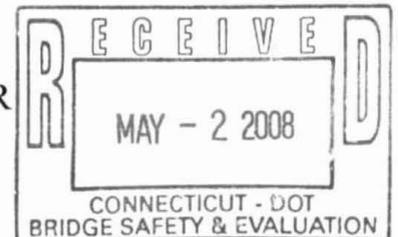
Sandra A. Dumas/sad

cc: Julie Georges (1 copy attached)
Robert P. Zaffetti – Sandra A. Dumas – James Matulis
Haks Engineers
Team 4

COMBINED UNDERWATER AND ROUTINE INSPECTION



BRIDGE NO. 02138
ROUTE 15 OVER INLET TO RESERVOIR
GREENWICH, CONNECTICUT
MARCH 27, 2008



BRIDGE SAFETY INSPECTION STATE PROJECT NO. 170-1940



Prepared by



97 West Main Street, Unit 4, Niantic, CT 06357
100 Snake Hill Road, West Nyack, NY 10994

Structure No. 02138 Town Greenwich

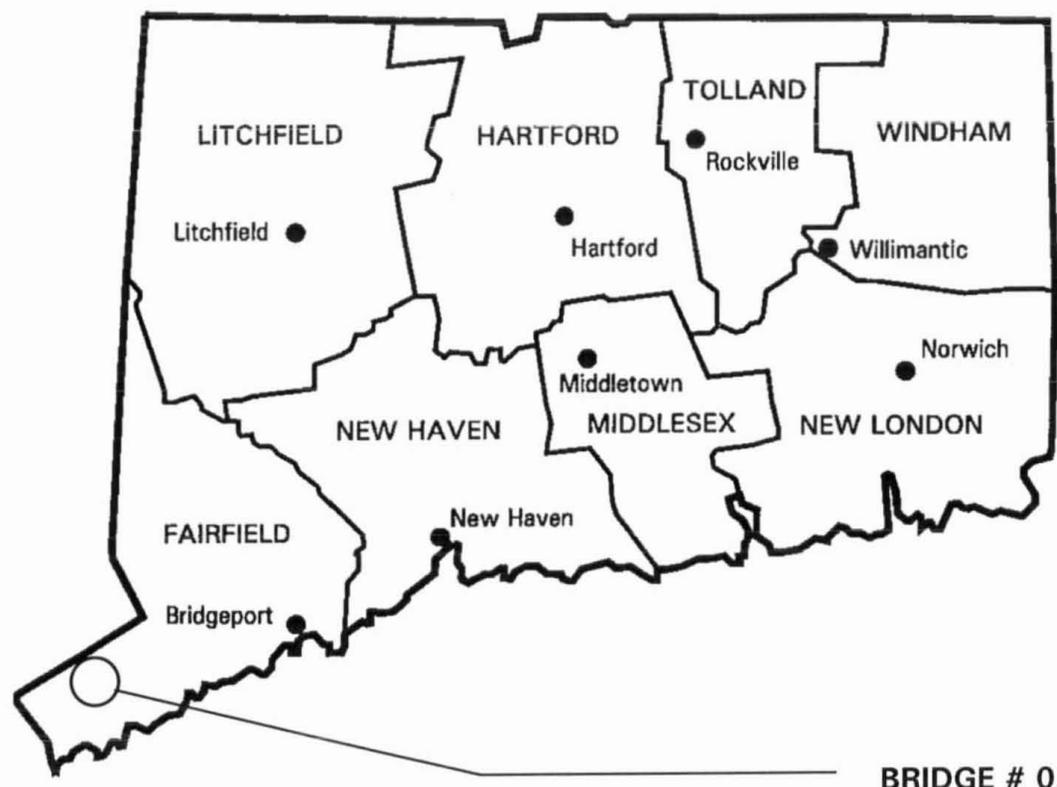
Inspectors McLaren Engineering (J. St. Denis, D. Korkosz, B. Fischer) Date 03/27/08

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BRI-25, Under Entry SI&A Form.....	--
BRI-39, RR Bridge SI&A Form.....	--
BRI-49, Sign Structure SI&A Form.....	--
PONTIS Element Data Collection Form.....	1
Plan Sheets:	Check here if already on file: <input checked="" type="checkbox"/>

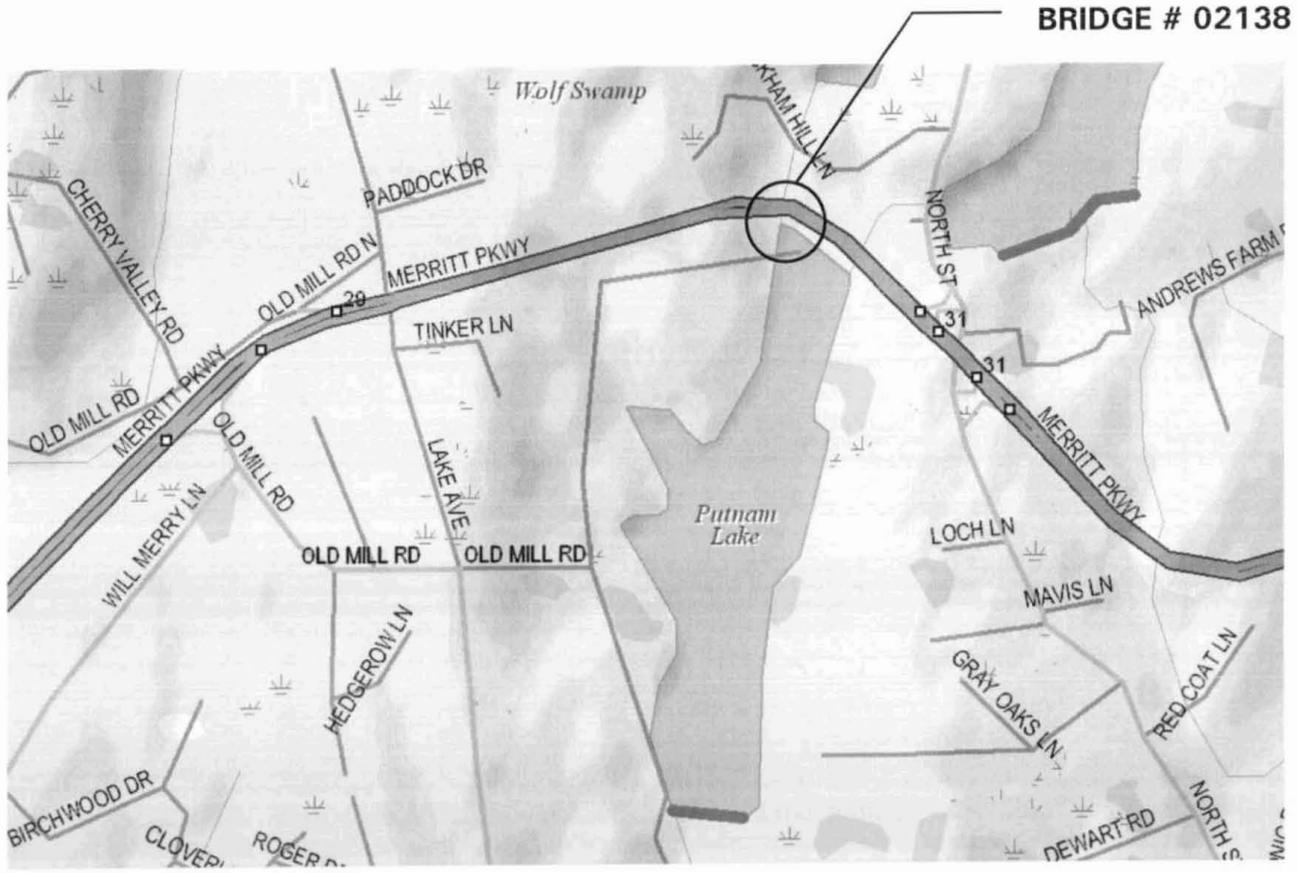
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**BRIDGE # 02138
GREENWICH**

General Map



BRIDGE # 02138

Bridge Location Plan

EXECUTIVE SUMMARY

03/27/08

Bridge No. 02138 carries Route 15 over the Inlet to Reservoir in Greenwich, Connecticut. The bridge was constructed in 1934, and consists of an 8 ft long by 135.5 ft wide single barrel steel reinforced concrete box culvert. There is no record of any major rehabilitation. According to information on file at ConnDOT, the structure has an inventory rating capacity of 34 tons.

The March 27, 2008 combined underwater and routine inspection resulted in the following observed deficiencies and repair recommendations:

Deck:

The deck is in good condition (Overall Rating=7), but has been downrated from "8" due to the following:

- 1) The bituminous concrete overlay contains several longitudinal cracks up to 1/8" wide. Seal cracks (20 LF).
- 2) The Bridge Identification Number marker plate is damaged and the post upon which it is attached was found lying along the northbound roadway embankment. Replace damaged marker plate, and re-install marker post.

Channel and Channel Protection:

The channel is in fair condition (Overall Rating=5) due to the following:

- 1) The channel bottom exhibits aggradation up to 1.3 ft at the inlet (north) and up to 0.7 ft at the outlet (south) since the 2006 inspection, and is now largely flush with the culvert floor. No repairs required.
- 2) Timber debris restricts flow at the inlet (north). Remove timber debris (3 CY).
- 3) The channel is moderately susceptible to change based on the sand and silt composition of the streambed; and the controlled flow of the downstream reservoir.

Culverts and Retaining Walls:

The culvert and retaining walls are in poor condition (Overall Rating=4) due to the following:

- 1) Both barrel walls exhibit ¼" scale, an isolated spall up to 7.5 ft long x 4" high x 2" deep, and honeycombing up to 1" deep. Repair honeycombing and spall (2 CY).

- 2) The barrel soffit contains numerous spalls up to 7.0 ft long and up to 7" deep with exposed and heavily corroded reinforcement. Clean and repair reinforcement, and patch spalls (0.1 CY).
- 3) Downstream concrete headwall and retaining wall exhibits several hairline cracks with efflorescence up to 3 ft long; light to moderate scale; and isolated exposed and heavily corroded reinforcement. Clean and repair exposed reinforcement, and patch (15 LF).

Approach Condition:

The approaches are in satisfactory condition (Overall Rating=6) due to the following:

- 1) The bituminous concrete overlay displays several ¼" to ½" wide longitudinal and transverse cracks in both approaches of the northbound and southbound roadway. Seal cracks in overlay (150 LF).

6/28

Connecticut Department of Transportation UNDERWATER INSPECTION

BRI-59 Form

Bridge No: 02138 Date Inspected: 3/27/2008

Job Number: 170-1940

Client: Connecticut D.O.T.

Route: Route 15

Mile point: 5.31

City: Greenwich

Feature Crossed: Inlet to Reservoir

State: CT

Inspector: John St. Denis

Assistants: Korkosz/Molison/Fischer

Time Arrived: 8:30 AM

Time Departed: 1:00 PM

Time In Water: 9:30 AM

Time Out of Water: 12:00 AM

Type of Inspection: Routine

Year built: 1934

Total Length: 8.0'

No. Spans: 1

Bridge Type: R.C. box culvert

Total Number of Piers: 0

Piers in the Water: 0

Type of Piers: N/A

Abutments: R.C.

Bottom Composition: Riprap, sand and silt with 2.0' penetration and 0.5' diameter riprap at north end.

Previous U/W Insp: 2/22/2006

Marine Growth: Moderate

Max. Water Depth: 6.2'

Max. Depth at Pier: 6.2'

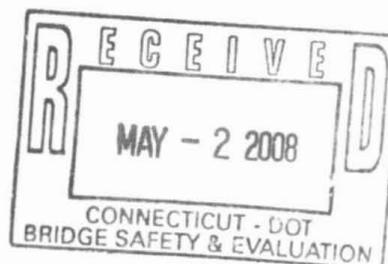
Current Strength: None

U/W Visibility: 5.0'

Type of Water: Fresh

Access to Bridge: Shore

Remarks: The water level was above the culvert ceiling at the time of inspection. Dive penetration was performed.



Inspection Equipment

Number of Boats:

RR Protection: No

Boat Size:

Equipment Comments:

Dive Station: Yes

Inspected by:

John St. Denis

Date:

4/29/08

Inspected by:

[Signature]

Date:

4/29/08

D.O.T. reviewed by:

James P. [Signature]

Date:

5/8/2008

Connecticut Department of Transportation
Bridge Inspection Report BRI-18

8/28

BRIDGE #: 02138

INSPECTION DATE: 3/27/08

61. CHANNEL PROTECTION	The channel bottom exhibits aggradation up to 1.3' along the inlet (north) and up to 0.7' at the outlet (south) since the 2006 inspection, and is now largely flush with the culvert floor. Hydraulic conditions are fair due to the heavy timber debris at the inlet.	OVERALL RATING 5
DEBRIS	5 The inlet (north) contains a heavy accumulation of timber debris (Sheets 13 & 15).	
VEGETATION	6 The inlet (north) and both upstream/downstream embankments contain heavy vegetation (Photos 16 thru 19).	
CHANNEL CHANGE	N Unable to assess due to high water level.	
FENDER SYSTEM	N	
PUR DIKES & JETTIES	N	
RIP RAP	7 Riprap up to 0.5' diameter is in place at the culvert inlet and outlet (Sheets 16 & 17).	

62. CULVERTS & RETAINING WALL	Barrel walls and soffit exhibit moderate scale, honeycombing and scattered spalls up to 7" deep, particularly at the north third of the barrel. Exposed reinforcement at scattered spalls in soffit exhibit heavy corrosion.	OVERALL RATING 4
	<small>RATING</small>	
BARREL	4 Both barrel walls exhibit 1/4" scale, an isolated spall up to 7.5' long x 0.3' high x 2" deep and honeycombing. The soffit displays numerous spalls up to 7" deep with exposed and heavily corroded reinforcement (Sheets 12, 16 & 17).	
CONCRETE	4 See Item 62.CULVERTS & RETAINING WALLS - Barrel.	
STEEL	N	
TIMBER	N	
HEADWALL	6 Downstream (south) headwall exhibits isolated exposed and heavily corroded reinforcement along the vertical joint at the east retaining wall; a 2' long horizontal hairline crack with efflorescence; and light to moderate scale (Sheet 14).	
CUTOFF WALL	8 Both inlet and outlet cut-off walls are obscured by silt; however, the 2006 inspection noted that the inlet was exposed and in good condition.	
DEBRIS	5 The inlet (north) contains a heavy accumulation of timber debris (Sheets 13 & 15).	
RETAINING WALL STEM	6 Downstream (south) retaining walls display light scale and several hairline cracks with efflorescence up to 3' long (Sheet 14).	
FOOTING	N	

APPROACH CONDITION	Bituminous Concrete Overlay	OVERALL RATING 6
	<small>RATING</small>	
APPROACH SLAB	N	
RELIEF JOINTS	N	
APPROACH GUIDE RAIL	8 Timber guide rails display no notable defects.	
APPROACH PAVEMENT	6 Overlay contains several 1/4" to 1/2" wide longitudinal and transverse cracks in both approaches of the northbound and southbound roadway (Sheet 11; Photos 4 thru 9 & 20).	
APPROACH EMBANKMENT	8 No notable deficiencies observed.	
TRAFFIC SAFETY FEATURES:		
BRIDGE RAILINGS	N	
TRANSITIONS	N	
APPROACH GUARDRAILS	N	
APPR. GUARDRAIL ENDS	N	

**Connecticut Department of Transportation
Bridge Inspection Report BRI-18**

9/28

BRIDGE #: 02138

INSPECTION DATE: 3/27/08

LOAD POSTING

SINGLE UNIT (TONS)	<input type="checkbox"/>	<input style="width: 95%;" type="text"/>
HS (TONS)	<input type="checkbox"/>	<input style="width: 95%;" type="text"/>
4 AXLE (TONS)	<input type="checkbox"/>	<input style="width: 95%;" type="text"/>
3S2 (TONS)	<input type="checkbox"/>	<input style="width: 95%;" type="text"/>
ADVANCE WARNING Y/N	<input type="checkbox"/>	<input style="width: 95%;" type="text"/>
LEGIBILITY	<input type="checkbox"/>	<input style="width: 95%;" type="text"/>
VISIBILITY/LOCATION	<input type="checkbox"/>	<input style="width: 95%;" type="text"/>

MISC.

MIN VERT. UNDERCLR.	<input type="text" value="0"/>	<input type="text" value="0"/>	"	<input style="width: 95%;" type="text"/>
POSTED CLR. UNDER BRIDGE	<input type="text"/>	<input type="text"/>	"	<input style="width: 95%;" type="text"/>
POSTED CLR. ON BRIDGE	<input type="text"/>	<input type="text"/>	"	<input style="width: 95%;" type="text"/>
ADVANCE WARNING (Y/N)	<input type="text" value="No"/>			<input style="width: 95%;" type="text"/>
SPEED LIMIT (IF ANY)	<input type="text"/>	MPH		<input style="width: 95%;" type="text"/>
CHARACTER OF TRAFFIC	<input style="width: 95%;" type="text"/>			

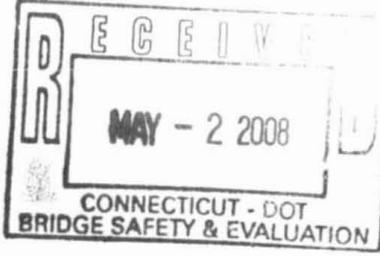
ADDITIONAL NOTES

Bridge Identification Number is attached to a post that has been damaged and knocked to the ground along the northbound embankment (Photo 21).

ADDITIONAL COMMENTS:

Dive inspection necessitated closure of the Northbound right lane to stage dive station and equipment near the culvert outlet.

Inspectors' Signatures:	1)	<i>[Signature]</i> <i>Log J. St. Denis</i>	Date: <i>4/29/08</i>
	2)	<i>[Signature]</i>	Date: <i>4/29/08</i>
	3)		Date: <i>__/__/__</i>
	4)		Date: <i>__/__/__</i>
P.E. Signature:		<i>George Anis</i>	Date: <i>4/25/08</i>
P.E.#:		<i>24536</i>	
Reviewed by:		<i>[Signature]</i>	CDOT Date: <i>5/09/2008</i>



CONCRETE DETERIORATION WORKSHEET

		Deterioration By Span - In Square Feet										
		Span Number										
Deterioration Type	<input checked="" type="checkbox"/>	1	2	3	4	5	6	7	8	9	10	Total
Spalled and Delaminated Areas	<i>Top</i>											0
	<i>Bot.</i>	4.8										4.8
Scale (Moderate to Severe Only)	<i>Top</i>											0
	<i>Bot.</i>											0
Cracks:with Efflorescence (Use 6" width x length)	<i>Bot.</i>											0
Cracks w/o Efflo. (Use 3" width x Length)	<i>Top</i>											0
	<i>Bot.</i>											0
Map Cracking: w/Efflorescence (Use full Area)	<i>Bot.</i>											0
Map Cracking w/o Efflo. (Use 50% of Area)	<i>Top</i>											
	<i>Bot.</i>											0
Honeycombed Areas (only areas more than 1 1/2" deep)	<i>Bot.</i>											0
Total Deterioration	<i>Bot.</i>	4.8										4.8
Span Area		1021										1021
% Spalled and Delaminated on top	<i>Top</i>	0.0%										<input checked="" type="checkbox"/>
% Deterioration on Bottom	<i>Bot.</i>	0.5%										0.5%

SUPPLEMENTAL SHEET

BRIDGE NO. 02138

DATE: 2/22/04

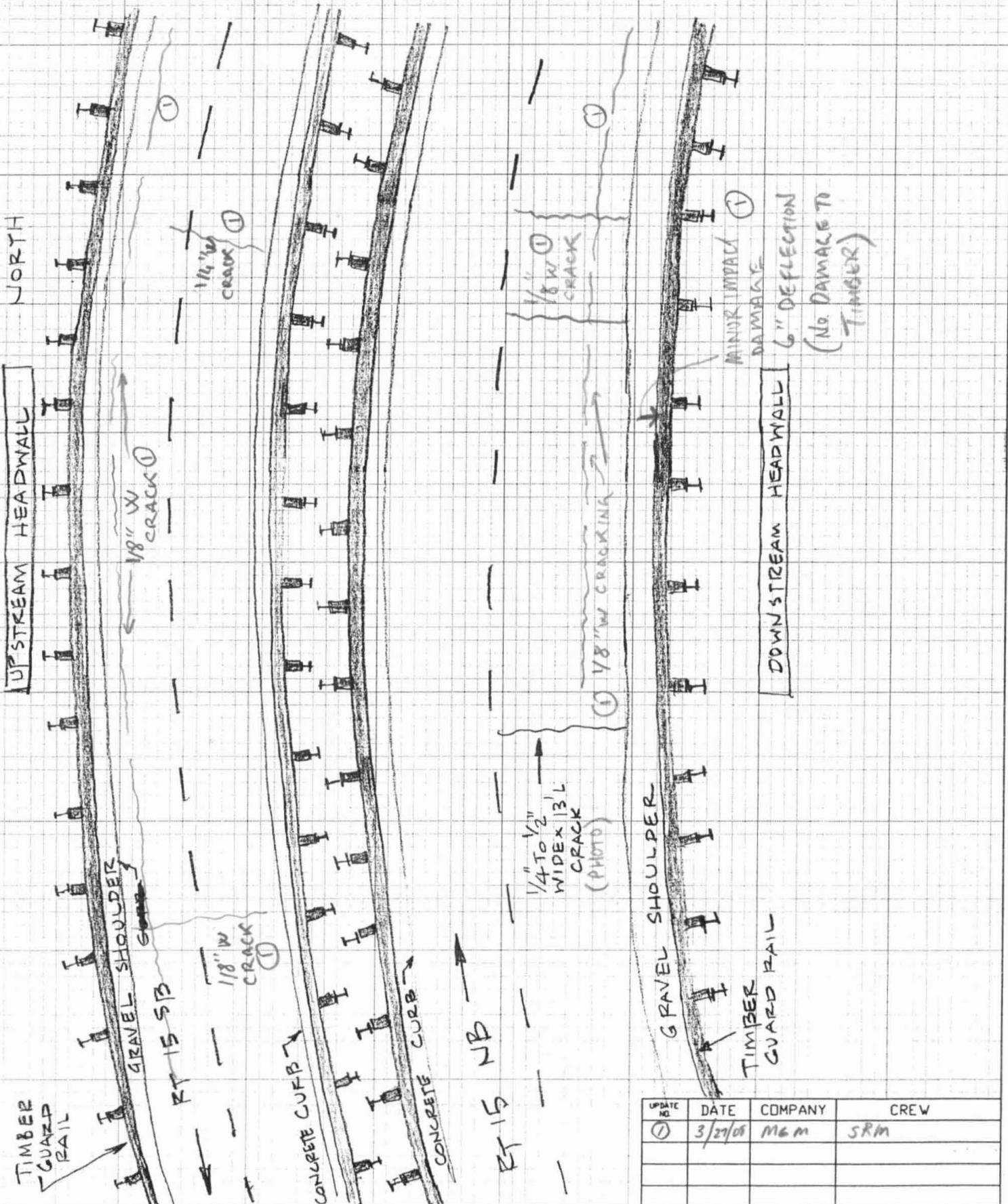
CREW: MSB, JSD,
DSK, BF

SHEET 11 OF 2128

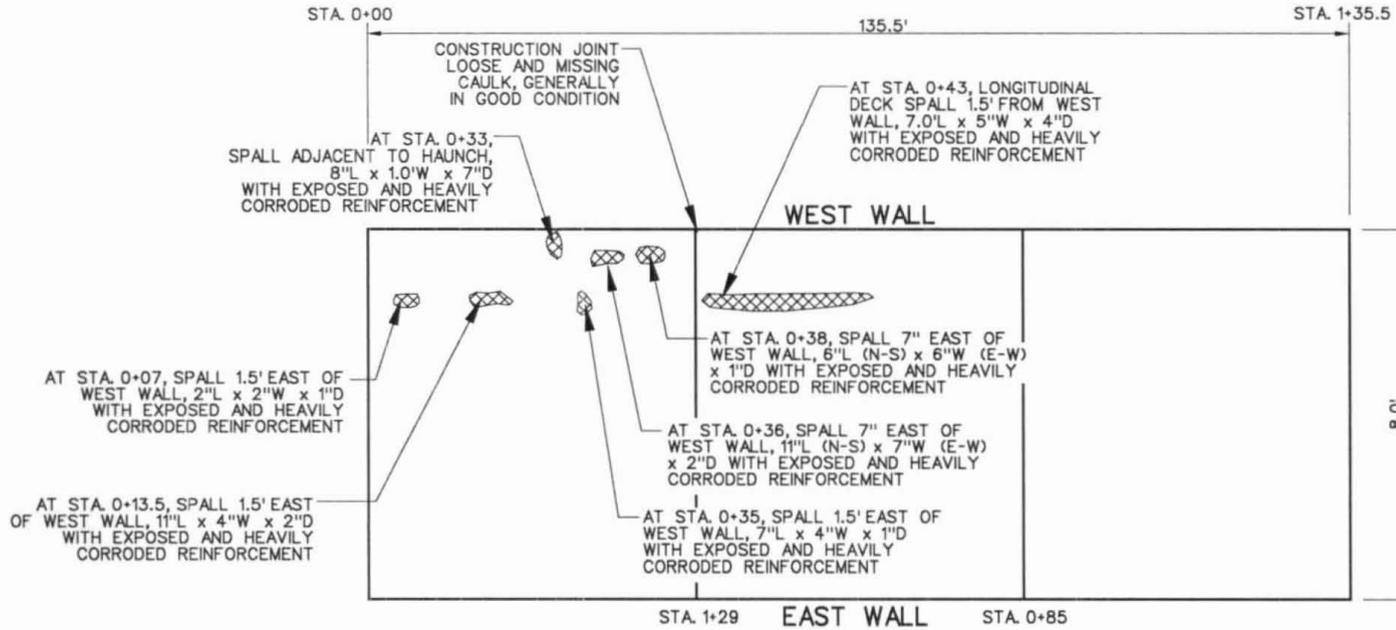
FIELD ORIGINAL

TRANSCRIBED BY: _____

DESCRIPTION: ROADWAY



UPDATE DATE	DATE	COMPANY	CREW
①	3/27/08	MGM	SRM



NOTES:

1. ENTIRE DECK EXHIBITS HONEYCOMBING UP TO 1" D.

UNDERSIDE DECK

N.T.S.

LEGEND FOR BOTTOM ELEVATIONS

MAR, 2008 → -0.0' -0.0'
 DEC, 2003 → -0.0' -0.0' → JUNE, 2001
 JULY, 1999 → -0.0' -0.0' → JAN, 1997

▪ INDICATES NO INFORMATION

LEGEND FOR SYMBOLS

⊕ DATUM ELEV. 0.0 TAKEN FROM
BOTTOM OF HEADWALL AT THE
CENTERLINE OF THE NORTH END.

▽ W.S. ELEV. +0.2' +0.4'
+0.4' +0.4'
-3.5' -1.5'

McLaren
ENGINEERING GROUP

E-mail: mgmclaren@mgmclaren.com
 100 Snake Hill Road, West Nyack, NY 10994
 Tel. (845) 353-8400 Fax. (845) 353-8509

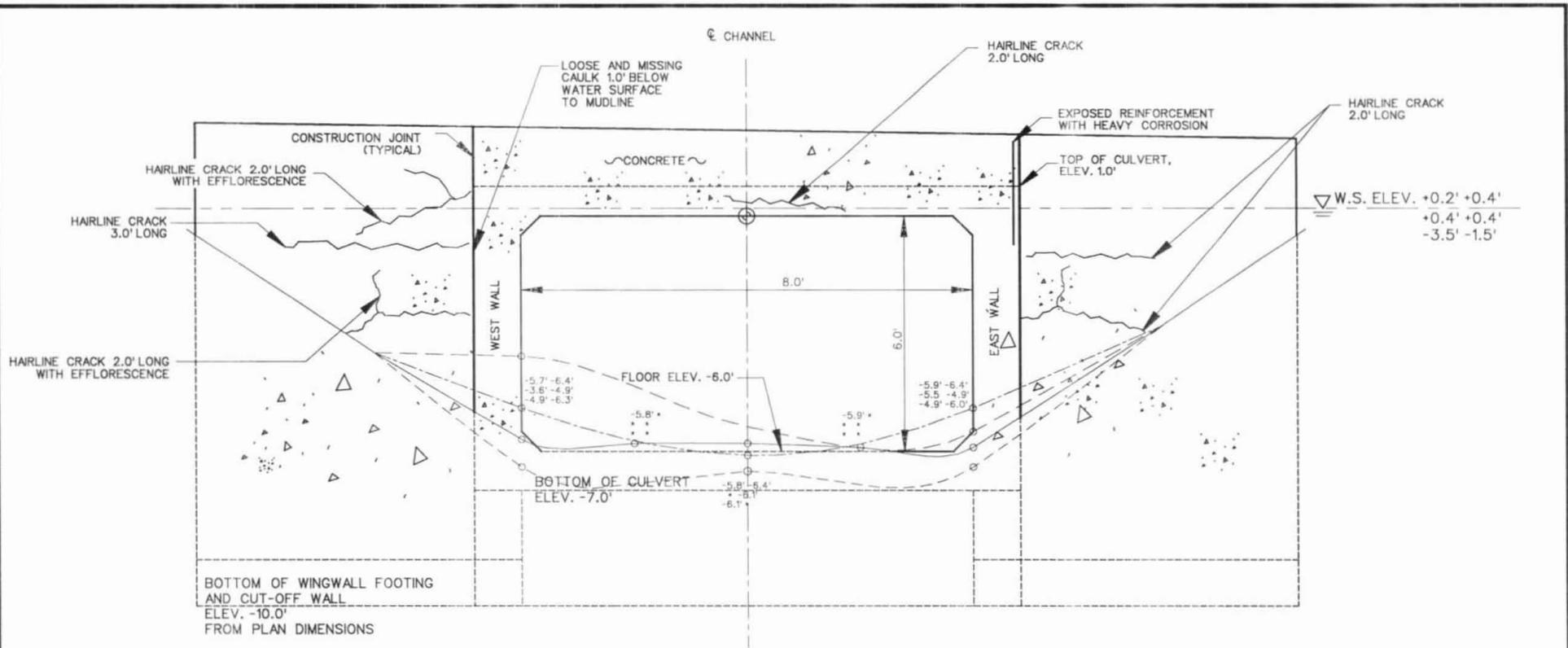
CONNECTICUT DEPARTMENT OF TRANSPORTATION

BRIDGE NO. 02138
ROUTE 15 OVER INLET TO RESERVOIR

GREENWICH CONNECTICUT

UNDERSIDE DECK

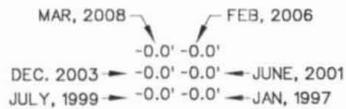
INSPECTED BY: JSD	SCALE: AS SHOWN	DATE OF INSPECTION: 03 / 27 / 08	DRAWING NO. 02138
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DOWNSTREAM PROFILE (SOUTH ELEVATION)

N.T.S.

LEGEND FOR BOTTOM ELEVATIONS



LEGEND FOR MUDLINE ELEVATIONS



LEGEND FOR SYMBOLS

- ⊕ DATUM ELEV. 0.0 TAKEN FROM BOTTOM OF HEADWALL AT THE CENTERLINE OF THE NORTH END.
- ▽ W.S. ELEV. +0.2' +0.4'
+0.4' +0.4'
-3.5' -1.5'

* INDICATES NO INFORMATION

McLaren
ENGINEERING GROUP

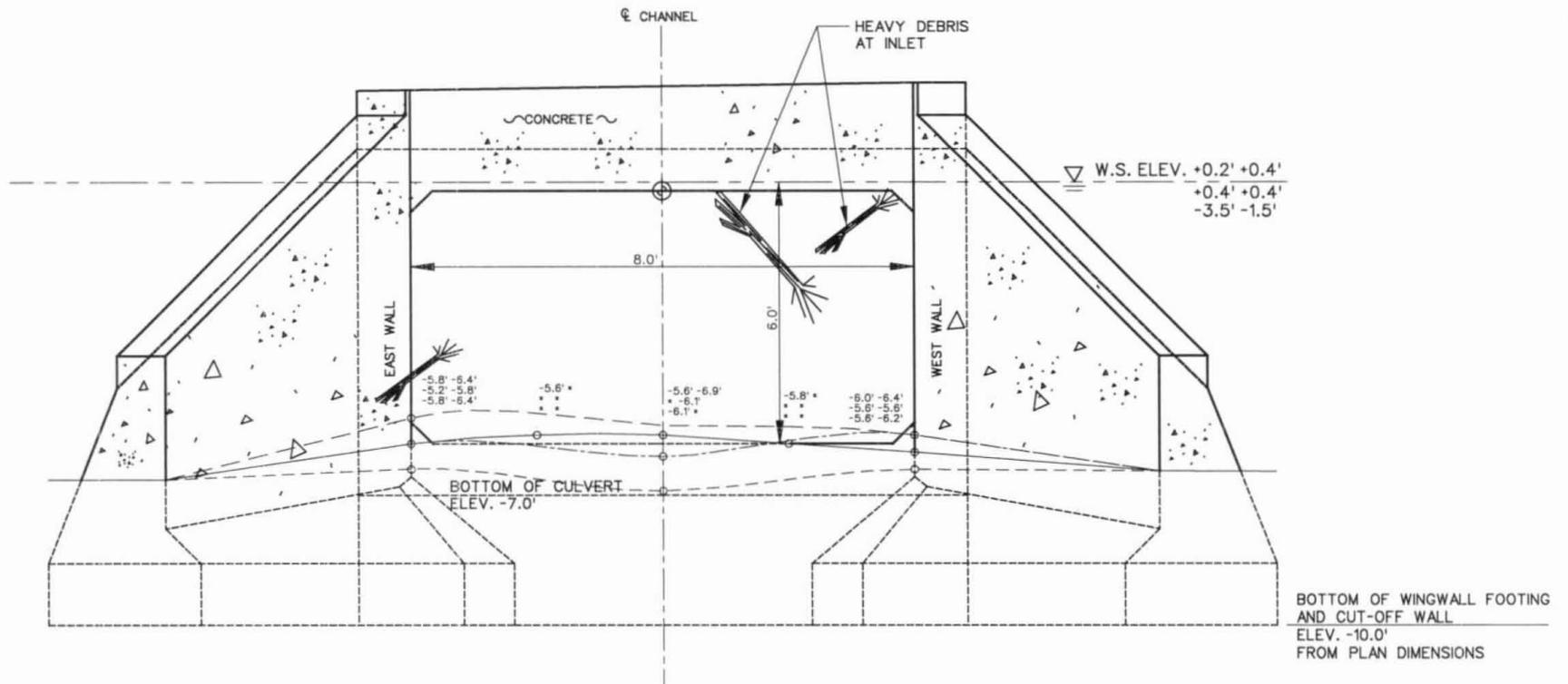
E-mail: mgmclaren@mgmclaren.com
100 Snake Hill Road, West Nyack, NY 10994
Tel. (845) 353-6400 Fax. (845) 353-6509

CONNECTICUT DEPARTMENT OF TRANSPORTATION

BRIDGE NO. 02138
ROUTE 15 OVER INLET TO RESERVOIR
GREENWICH CONNECTICUT

DOWNSTREAM PROFILE (SOUTH ELEVATION)

INSPECTED BY: JSD	SCALE: AS SHOWN	DATE OF INSPECTION: 03 / 27 / 08	DRAWING NO. 02138B
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NOTE:
FLOOR IS EXPOSED END TO END.

UPSTREAM PROFILE (NORTH ELEVATION)
N.T.S.

LEGEND FOR BOTTOM ELEVATIONS

MAR, 2008 ———— FEB, 2006
 -0.0' -0.0'
 DEC. 2003 ———— JUNE, 2001
 -0.0' -0.0'
 JULY, 1999 ———— JAN, 1997
 -0.0' -0.0'

LEGEND FOR MUDLINE ELEVATIONS

————— MAR, 2008
 - - - - - FEB, 2006
 - - - - - DEC. 2003
 - - - - - JUNE 2001

LEGEND FOR SYMBOLS

⊕ DATUM ELEV. 0.0 TAKEN FROM
BOTTOM OF HEADWALL AT THE
CENTERLINE OF THE NORTH END.
 ▽ W.S. ELEV. +0.2' +0.4'
 +0.4' +0.4'
 -3.5' -1.5'

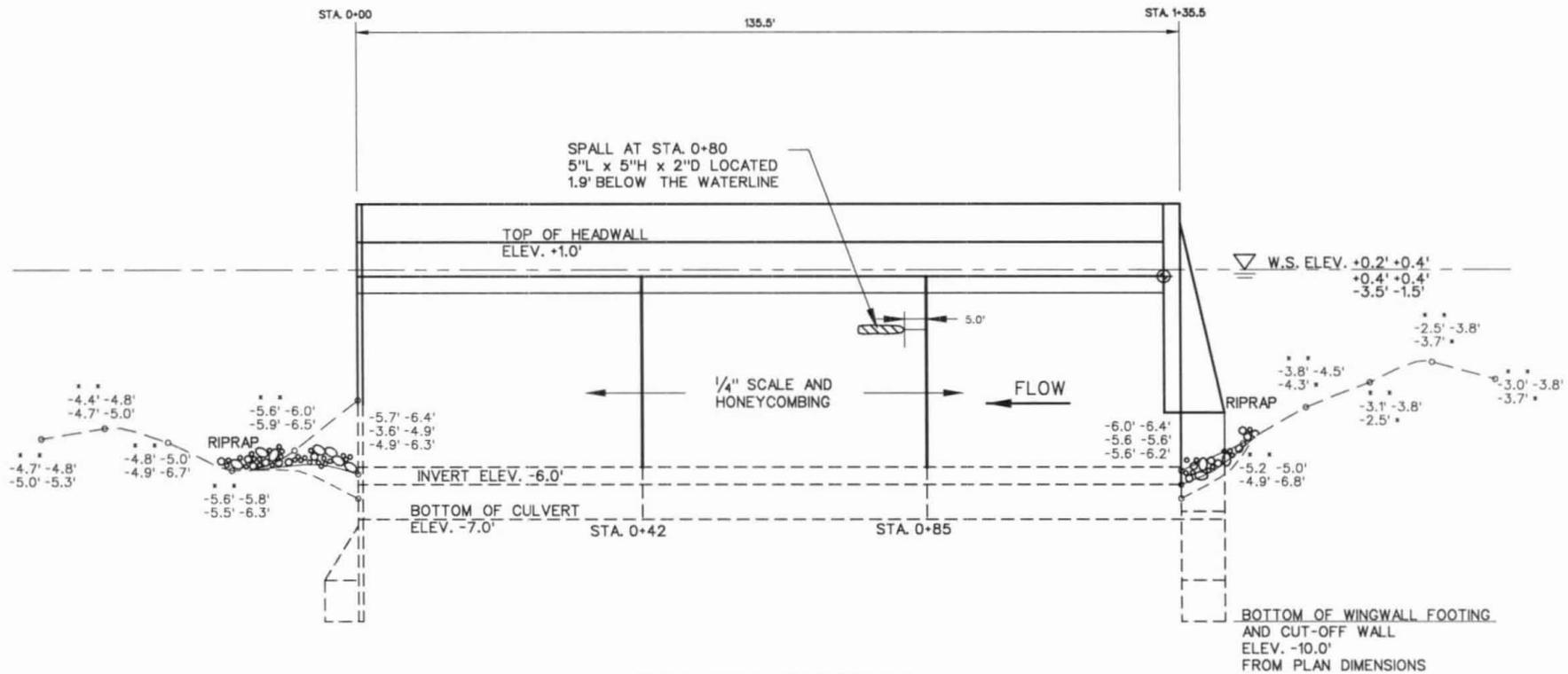
▪ INDICATES NO INFORMATION

McLaren
ENGINEERING GROUP
 E-mail: mgmclaren@mgmclaren.com
 100 Snake Hill Road, West Nyack, NY 10994
 Tel. (845) 353-6400 Fax. (845) 353-6509

CONNECTICUT DEPARTMENT OF TRANSPORTATION
BRIDGE NO. 02138
 ROUTE 15 OVER INLET TO RESERVOIR
 GREENWICH CONNECTICUT

UPSTREAM PROFILE (NORTH ELEVATION)

INSPECTED BY: JSD
 REVISOR BY: BGM
 SCALE: AS SHOWN
 DATE OF INSPECTION: 03 / 27 / 08
 DRAWING NO. **02138C**



WEST WALL (ELEVATION)
N.T.S.

LEGEND FOR BOTTOM ELEVATIONS

MAR, 2008 ———— FEB, 2006
 DEC. 2003 ———— JUNE, 2001
 JULY, 1999 ———— JAN, 1997

LEGEND FOR MUDLINE ELEVATIONS

————— MAR, 2008
 - - - - - FEB, 2006
 - - - - - DEC. 2003

LEGEND FOR SYMBOLS

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 BOTTOM OF HEADWALL AT THE
 CENTERLINE OF THE NORTH END.
 ▽ W.S. ELEV. +0.2' +0.4'
 +0.4' +0.4'
 -3.5' -1.5'

* INDICATES NO INFORMATION

McLaren
ENGINEERING GROUP

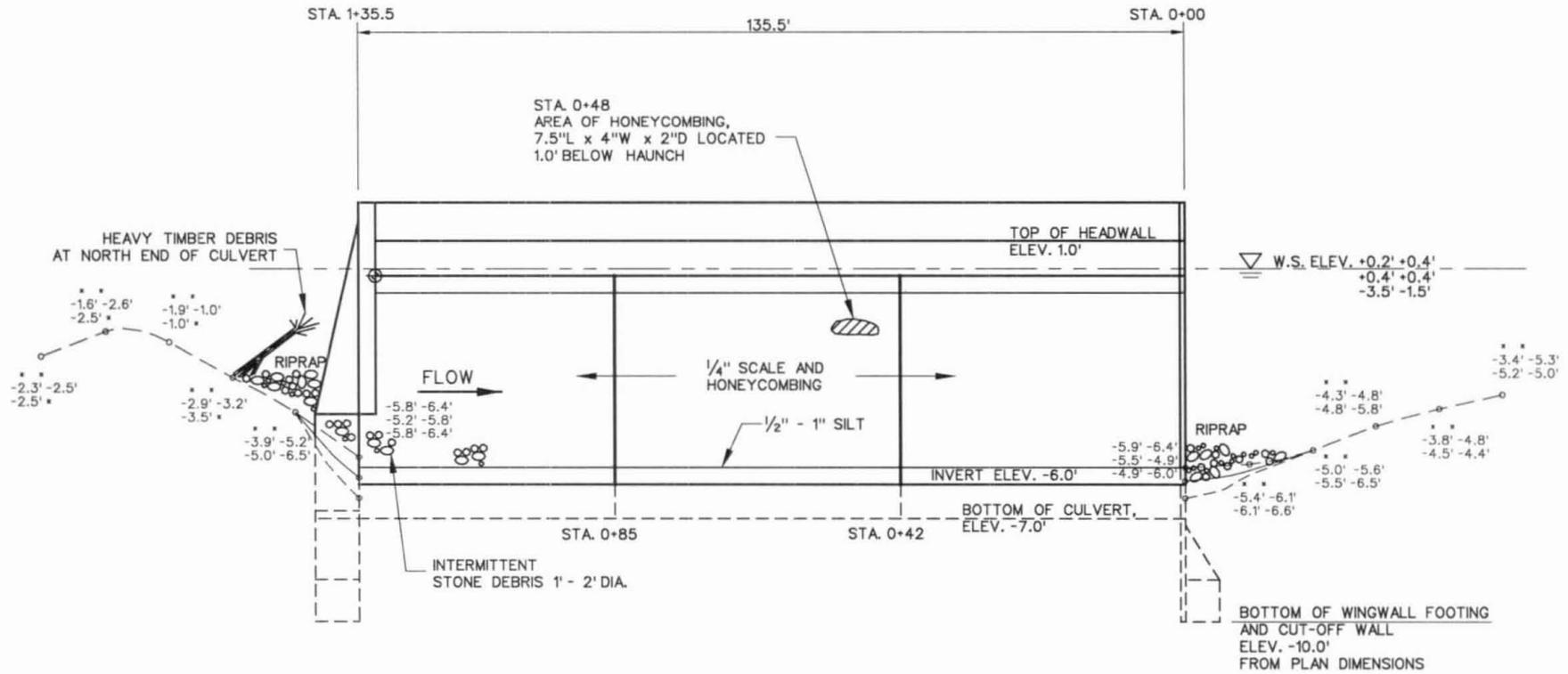
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CONNECTICUT DEPARTMENT OF TRANSPORTATION

BRIDGE NO. 02138
 ROUTE 15 OVER INLET TO RESERVOIR
 GREENWICH CONNECTICUT

WEST WALL ELEVATION

INSPECTED BY: JSD	SCALE: AS SHOWN	DATE OF INSPECTION: 03 / 27 / 08	DRAWING NO. 02138D
REVISED BY: BGM			



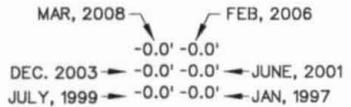
EAST WALL (ELEVATION)

N.T.S.

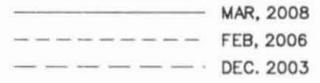
NOTE:

1. CULVERT BOTTOM EXPOSED WITH INTERMITTENT AREA OF SILT AND GRAVEL.

LEGEND FOR BOTTOM ELEVATIONS



LEGEND FOR MUDLINE ELEVATIONS



LEGEND FOR SYMBOLS

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- ▽ W.S. ELEV. +0.2' +0.4'
+0.4' +0.4'
-3.5' -1.5'

* INDICATES NO INFORMATION

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CONNECTICUT DEPARTMENT OF TRANSPORTATION

BRIDGE NO. 02138
ROUTE 15 OVER INLET TO RESERVOIR
GREENWICH CONNECTICUT

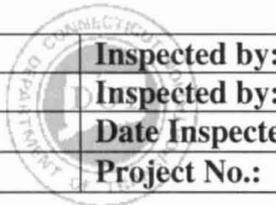
EAST WALL ELEVATION

INSPECTED BY: JSD
REVISED BY: BGM

SCALE: AS SHOWN

DATE OF INSPECTION: 03 / 27 / 08

DRAWING NO. **0238E**



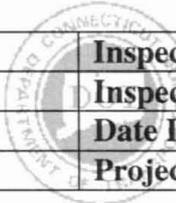
Bridge No.	02138	Inspected by:	John St. Denis
Town:	Greenwich	Inspected by:	Dan Korkosz
Feature Carried:	Route 15	Date Inspected:	03/27/08
Feature Crossed:	Inlet To Reservoir	Project No.:	170-1940

02138



Photo # 1: Bridge Identification Number.

Photo # 2: Southbound deck overlay.



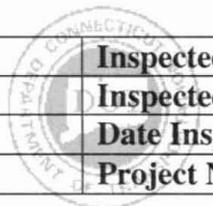
Bridge No.	02138	Inspected by:	John St. Denis
Town:	Greenwich	Inspected by:	Dan Korkosz
Feature Carried:	Route 15	Date Inspected:	03/27/08
Feature Crossed:	Inlet To Reservoir	Project No.:	170-1940



Photo # 3: Northbound deck overlay.



Photo # 4: Southbound West Approach.



Bridge No.	02138	Inspected by:	John St. Denis
Town:	Greenwich	Inspected by:	Dan Korkosz
Feature Carried:	Route 15	Date Inspected:	03/27/08
Feature Crossed:	Inlet To Reservoir	Project No.:	170-1940



Photo # 5: Southbound East Approach.



Photo # 6: Northbound West Approach.

Bridge No.	02138	Inspected by:	John St. Denis
Town:	Greenwich	Inspected by:	Dan Korkosz
Feature Carried:	Route 15	Date Inspected:	03/27/08
Feature Crossed:	Inlet To Reservoir	Project No.:	170-1940



Photo # 7: Northbound East Approach.



Photo # 8: Southwest guide rail, Southbound.



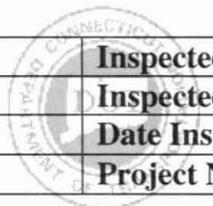
Bridge No.	02138	Inspected by:	John St. Denis
Town:	Greenwich	Inspected by:	Dan Korkosz
Feature Carried:	Route 15	Date Inspected:	03/27/08
Feature Crossed:	Inlet To Reservoir	Project No.:	170-1940



Photo # 9: Southeast guide rail, Southbound.



Photo # 10: Northwest guide rail, Southbound.



Bridge No.	02138	Inspected by:	John St. Denis
Town:	Greenwich	Inspected by:	Dan Korkosz
Feature Carried:	Route 15	Date Inspected:	03/27/08
Feature Crossed:	Inlet To Reservoir	Project No.:	170-1940



Photo # 11: Northeast guide rail, Southbound.



Photo # 12: Southwest guide rail, Northbound.



Bridge No.	02138	Inspected by:	John St. Denis
Town:	Greenwich	Inspected by:	Dan Korkosz
Feature Carried:	Route 15	Date Inspected:	03/27/08
Feature Crossed:	Inlet To Reservoir	Project No.:	170-1940



Photo # 13: Southeast guide rail, Northbound.

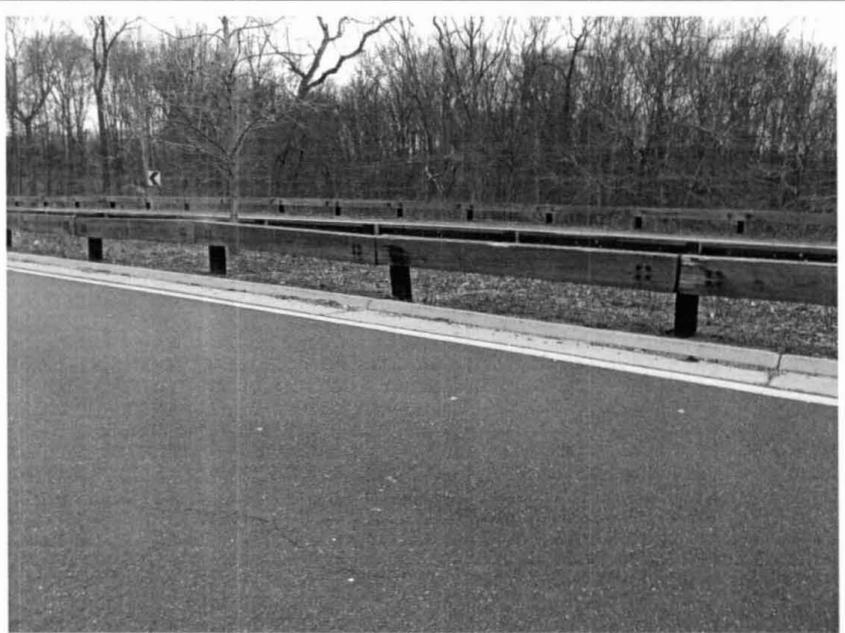
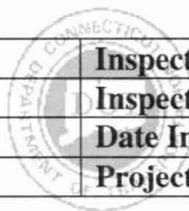


Photo # 14: Northwest guide rail, Northbound.



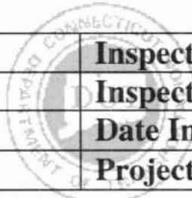
Bridge No.	02138	Inspected by:	John St. Denis
Town:	Greenwich	Inspected by:	Dan Korkosz
Feature Carried:	Route 15	Date Inspected:	03/27/08
Feature Crossed:	Inlet To Reservoir	Project No.:	170-1940



Photo # 15: Northeast guide rail, Northbound.



Photo # 16: Downstream (South) channel.



Bridge No.	02138	Inspected by:	John St. Denis
Town:	Greenwich	Inspected by:	Dan Korkosz
Feature Carried:	Route 15	Date Inspected:	03/27/08
Feature Crossed:	Inlet To Reservoir	Project No.:	170-1940



Photo # 17: Upstream (North) channel.

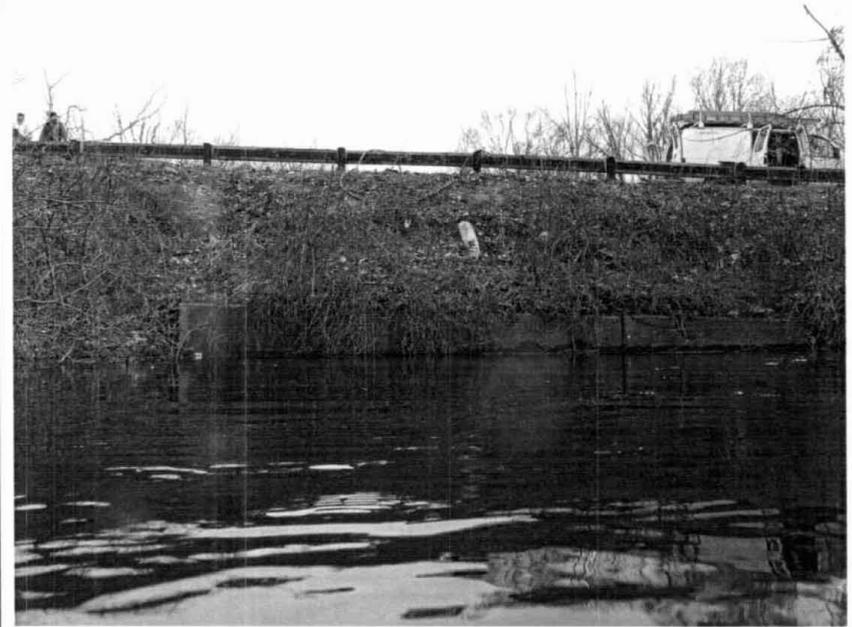
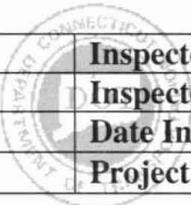


Photo # 18: Downstream (South) Elevation.



Bridge No.	02138	Inspected by:	John St. Denis
Town:	Greenwich	Inspected by:	Dan Korkosz
Feature Carried:	Route 15	Date Inspected:	03/27/08
Feature Crossed:	Inlet To Reservoir	Project No.:	170-1940

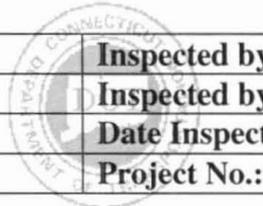


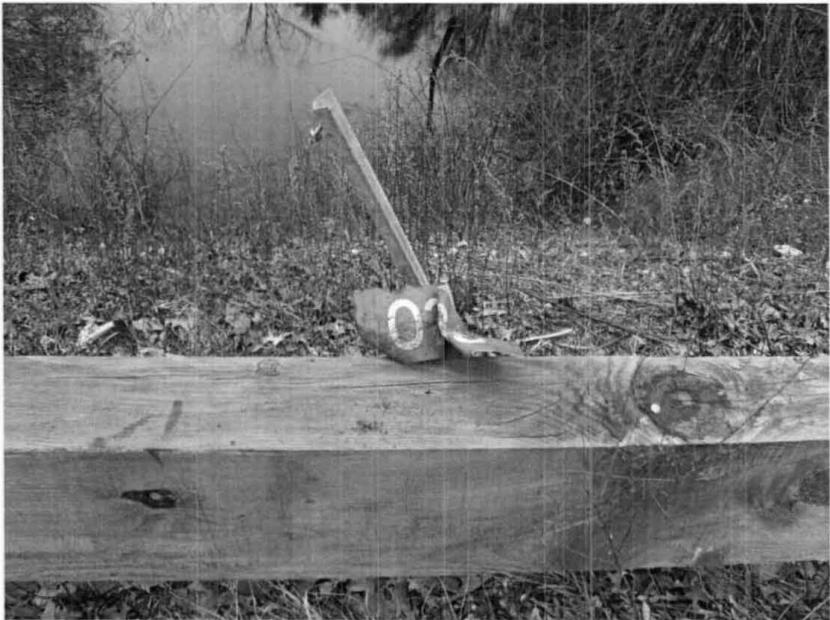
Photo # 19: Upstream (North) Elevation.



Photo # 20: Typical transverse crack, Northbound.

Bridge No.	02138	Inspected by:	John St. Denis
Town:	Greenwich	Inspected by:	Dan Korkosz
Feature Carried:	Route 15	Date Inspected:	03/27/08
Feature Crossed:	Inlet To Reservoir	Project No.:	170-1940



 <p>A black and white photograph showing a metal bridge ID marker with the number '021' on it. The marker is bent and lying on a wooden plank. The background shows a wooded area with trees and brush.</p>	<p>This cell left intentionally blank.</p>
<p>Photo # 21: Damaged Bridge ID.</p>	

M.G. McLAREN P.C.

BRIDGE # 02138

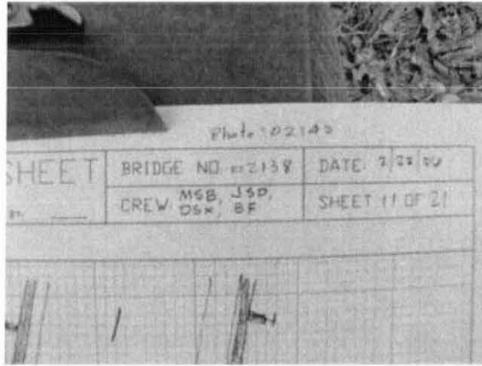
ADDITIONAL FIELD NOTES

(BACK-UP MATERIAL)

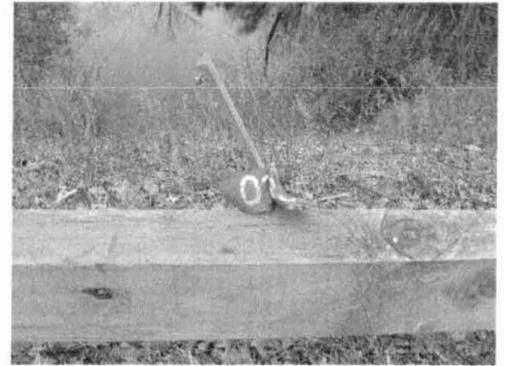
DATE: 03/27/08



1 – Downstream (South) channel.



2 – ID number.



3 – Damaged Bridge ID.



4 – Northbound lanes, west approach.



5 – Northbound lanes, east approach.



6 – Southwest guide rail, Northbound.



7 – Northwest guide rail, Northbound.



8 – Northeast guide rail, Northbound.



9 – Northbound overlay.



10 – Northbound lanes exhibit transverse crack.



11 – Downstream elevation.



12 – Southeast guide rail, Northbound.



13 – Upstream view.



14 – Upstream elevation.



15 – Southbound, East approach.



16 – Southbound overlay.



17 – Southbound, west approach.



18 – Southbound lanes display 1/4" transverse crack on the east approach.



19 – Southeast guide rail, Southbound lane.



20 – Southwest guide rail, Southbound lane.



21 – Northwest guide rail, Southbound lane.



22 – Northeast guide rail, Southbound lane.

6/21

Connecticut Department of Transportation UNDERWATER INSPECTION

BRI-59 Form

3/27/08

Bridge No: 02138 Date Inspected: ~~2/22/2006~~

Job Number: 170-2687 Client: Connecticut D.O.T.

Route: Route 15 Mile point: 5.31 City: Greenwich

Feature Crossed: Inlet to Reservoir State: CT *mollison*

Inspector: Mark Bujtas *J. St Denis* Assistants: Korkosz/~~St Denis~~/Fischer

Time Arrived: ~~8:15 AM~~ *8:30* ✓ Time Departed: ~~12:00 PM~~ *1:00 PM*

Time In Water: 9:00 AM *9:30* Time Out of Water: ~~11:00 AM~~ *12:00 PM*

Type of Inspection: Routine

Year built: 1934 Total Length: 8.0' No. Spans: 1

Bridge Type: R.C. box culvert

Total Number of Piers: 0 Piers in the Water: 0

Type of Piers: N/A

Abutments: R.C.

Bottom Composition: Riprap, sand and silt with 2.0' penetration and 0.5' diameter riprap at north end.

Previous U/W Insp: ~~12/23/2003~~ *2/22/06*

Marine Growth: Moderate ✓

Max. Water Depth: 6.8'

Max. Depth at Pier: 6.8'

Current Strength: None ✓

U/W Visibility: ~~2.0~~ *5.0*

Type of Water: Fresh ✓

Access to Bridge: Shore ✓

Remarks: The waterlevel was above the culvert ceiling at the time of inspection. ✓

Inspection Equipment

Number of Boats: RR Protection: No

Boat Size: Equipment Comments:

Dive Station: Yes

Inspected by: *Mark S. Bujtas*

Date: *3/24/06*

Inspected by: *[Signature]*

Date: *3/24/06*

D.O.T. reviewed by: _____

Date: _____

Connecticut Department of Transportation Bridge Inspection Report BRI-18

7/21

BRIDGE #: **02138**

INSPECTION DATE: **2/22/06**

INSPECTION TYPE: **Routine** PREVIOUS INSPECTION DATE: **12/23/03** SNOOPER REQUIRED: **No**

INSPECTION PERFORMED BY: **M.G. McLaren P.C.** SNOOPER USED: **No**

TOWN: **GREENWICH** FEATURE CARRIED: **ROUTE 15** YEAR BUILT: **1934**

LOCATION: **.5 MI WEST OF BRIDGE #696** FEATURE INTERSECTED: **INLET TO RESERVOIR** YEAR REBUILT: **0**

MAIN MATERIAL: **Concrete** MAIN DESIGN: **Culvert (includes frame culve**

INSPECTION VISITS:

Inspection Date: **2/22/06** Start Time: **8:15 AM**
 Temperature: **40** °F End Time: **12:00 PM**

INSPECTORS:

Inspector: **M. Bujtas** Task: **Team Leader**
 Inspector: **D. Korkosz** Task: **Diver**
 Inspector: **J. St. Denis** Task: **Diver**
 Inspector: **B. Fischer** Task: **Tender**

58. DECK

OVERALL RATING **P**

	RATING	
OVERLAY	8	
DECK STR. CONDITION	N	
CURBS	N	
MEDIAN	8	
SIDEWALKS	N	
PARAPET	N	
RAILING	8	
PAINT	N	
FENCE	N	
DRAINS	N	
LIGHTING STANDARD	N	
UTILITIES TYPE/SIZE	N	
CONSTRUCTION JOINTS	N	
EXPANSION JOINTS	N	

59. SUPERSTRUCTURE

OVERALL RATING **N**

60. SUBSTRUCTURE

OVERALL RATING **N**

61. CHANNEL PROTECTION

Scour up to 0.8' occurs at the inlet and up to 0.3' at the outlet since the 2003 inspection. Hydraulic conditions are fair due to heavy timber debris. As a result, the Northeast, Southeast and Southwest shorelines have narrowed and receded.

OVERALL RATING **5**

	RATING	
CHANNEL SCOUR	5	Scour up to 0.8' occurs at the inlet and up to 0.3' at the outlet since the 2003 inspection. Hydraulic conditions are fair due to heavy timber debris. The Northeast, Southeast and Southwest shorelines have narrowed and receded. Both outlet embankments have eroded, particularly the southwest embankment which displays a 4.6' wide x 0.8' deep gully.
EMBANKMENT EROSION	5	Both outlet embankments have eroded, particularly the southwest embankment which displays a 4.6' wide x 0.8' deep gully.

Connecticut Department of Transportation

Bridge Inspection Report BRI-18

8/21

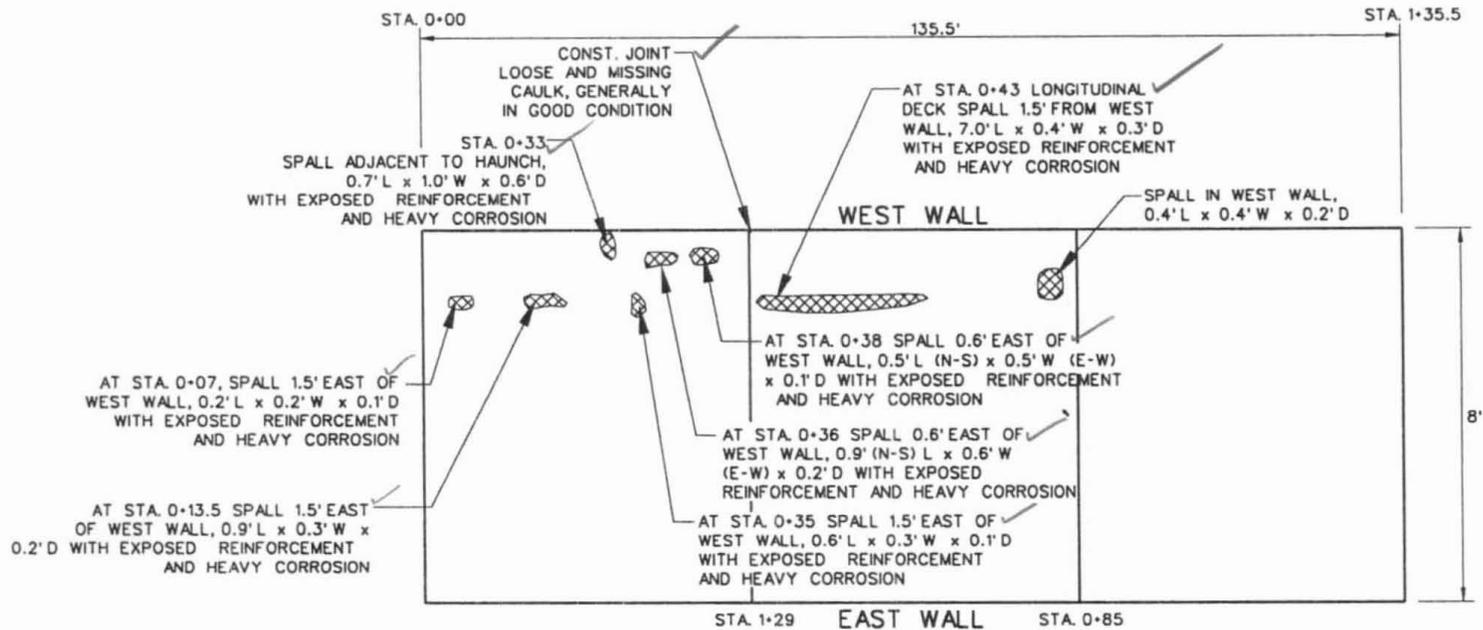
BRIDGE #: **02138**

INSPECTION DATE: **2/22/06**

61. CHANNEL PROTECTION	Scour up to 0.8' occurs at the inlet and up to 0.3' at the outlet since the 2003 inspection. Hydraulic conditions are fair due to heavy timber debris. As a result, the Northeast, Southeast and Southwest shorelines have narrowed and receded.	OVERALL RATING 5
DEBRIS	5 Heavy timber debris occurs at the channel bottom of the north inlet. ✓	
VEGETATION	6 Marsh growth submerged at the south outlet. Heavy embankment vegetation along the south side. ✓	
CHANNEL CHANGE	N Unable to assess due to high water level. ✓	
FENDER SYSTEM	N	
SPUR DIKES & JETTIES	N	
RIP RAP	7 Riprap up to 0.5' diameter exists at the north end of culvert. ✓	

62. CULVERTS & RETAINING WALL	Barrel walls and soffit exhibit moderate scale, honeycombing and scattered spalls up to 0.6' deep, particularly at the north third of the barrel. Exposed reinforcement at scattered spalls in soffit exhibit heavy corrosion. ✓	OVERALL RATING 5
	RATING	
BARREL	5 Both barrel walls exhibit 1/4" scale, an isolated spall up to 7.5' long x 0.3' high x 0.2' deep and honeycombing. The soffit displays numerous spalls up to 0.6' deep with exposed and heavily corroded reinforcement. ✓	
CONCRETE	5 Both barrel walls exhibit 1/4" scale, an isolated spall up to 7.5' long x 0.3' high x 0.2' deep and honeycombing. The soffit displays numerous spalls up to 0.6' deep with exposed and heavily corroded reinforcement. ✓	
STEEL	5 Exposed reinforcement in soffit spalls exhibits heavy corrosion. ✓	
TIMBER	N	
HEADWALL	7 Light to moderate scale and intermittent hairline cracks with efflorescence. ✓	
CUTOFF WALL	8 0.5' high x 2.3' long cutoff wall at west side of inlet exposed and in good condition. ✓	
DEBRIS	6 Heavy accumulation of timber debris. ✓	
RETAINING WALL STEM	6 Downstream retaining walls display light scale and scattered hairline cracks with efflorescence up to 3' long. ✓	
FOOTING	N	

APPROACH CONDITION	Overlay exhibits isolated 1/4" to 1/2" wide x 13' long transverse crack in the right lane at the North Approach of the Northbound roadway.	OVERALL RATING 8
	RATING	
APPROACH SLAB	N	
RELIEF JOINTS	N	
APPROACH GUIDE RAIL	9 New timber guide rail in excellent condition.	
APPROACH PAVEMENT	7 Overlay exhibits isolated 1/4" to 1/2" wide x 13' long transverse crack in the right lane at the North Approach of the Northbound roadway. <i>MULTIPLE (SEE SKETCH)</i>	
APPROACH EMBANKMENT	8	
TRAFFIC SAFETY FEATURES:		
BRIDGE RAILINGS	1	
TRANSITIONS	1	
APPROACH GUARDRAILS	1	
APPR. GUARDRAIL ENDS	N	



NOTES:

1. ENTIRE DECK EXHIBITS HONEYCOMBING
UP TO 1" D.

UNDERSIDE DECK

N.T.S.

LEGEND FOR BOTTOM ELEVATIONS

FEB, 2006 ↘
-0.0'
DEC. 2003 → -0.0' -0.0' → JUNE, 2001
JULY, 1999 → -0.0' -0.0' → JAN, 1997

* INDICATES NO INFORMATION



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CONNECTICUT DEPARTMENT OF TRANSPORTATION

BRIDGE NO. 02138
ROUTE 15 OVER INLET TO RESERVOIR

GREENWICH

CONNECTICUT

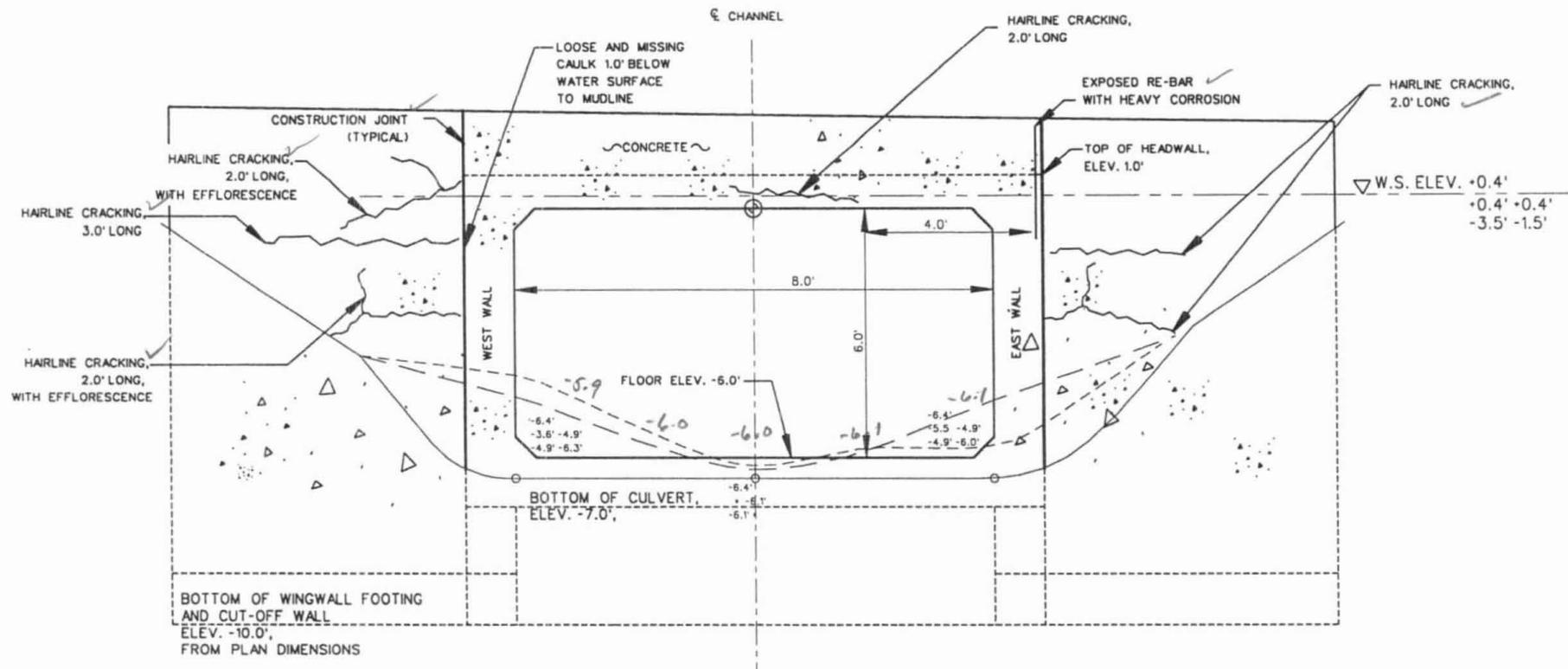
UNDERSIDE DECK

INSPECTED BY: JSD
REVISED BY: JGI

SCALE:
AS SHOWN

DATE OF INSPECTION
02 / 22 / 06

DRAWING NO. 02138F



DOWNSTREAM PROFILE (SOUTH ELEVATION)

N.T.S.

LEGEND FOR BOTTOM ELEVATIONS

FEB, 2006 — 0.0'
 DEC. 2003 — 0.0' - 0.0' — JUNE, 2001
 JULY, 1999 — 0.0' - 0.0' — JAN, 1997

• INDICATES NO INFORMATION

LEGEND FOR MUDLINE ELEVATIONS

— FEB, 2006
 - - - DEC. 2003
 - - - JUNE 2001

LEGEND FOR SYMBOLS

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 -3.5' -1.5'



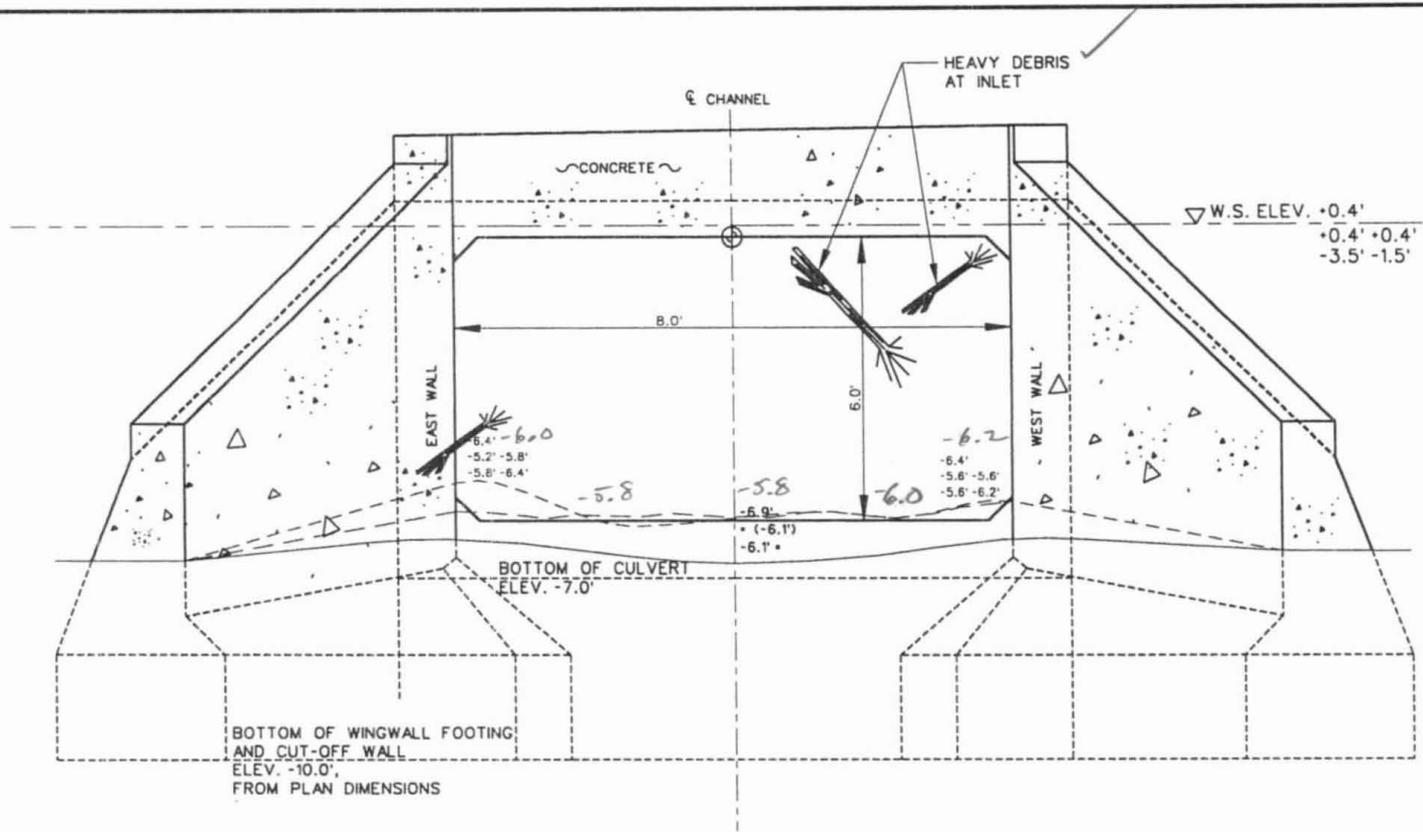
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CONNECTICUT DEPARTMENT OF TRANSPORTATION

BRIDGE NO. 02138
 ROUTE 15 OVER INLET TO RESERVOIR
 GREENWICH CONNECTICUT

DOWNSTREAM PROFILE (SOUTH ELEVATION)

INSPECTED BY: JSD SCALE: AS SHOWN DATE OF INSPECTION: 02 / 22 / 06 DRAWING NO. **02138C**



NOTE:
FLOOR IS EXPOSED END TO END.

UPSTREAM PROFILE (NORTH ELEVATION)

N.T.S.

LEGEND FOR BOTTOM ELEVATIONS

FEB, 2006 \rightarrow -0.0'
 DEC. 2003 \rightarrow -0.0' -0.0' \rightarrow JUNE, 2001
 JULY, 1999 \rightarrow -0.0' -0.0' \rightarrow JAN, 1997

• INDICATES NO INFORMATION

LEGEND FOR MUDLINE ELEVATIONS

————— FEB, 2006
 - - - - - DEC. 2003
 - - - - - JUNE 2001

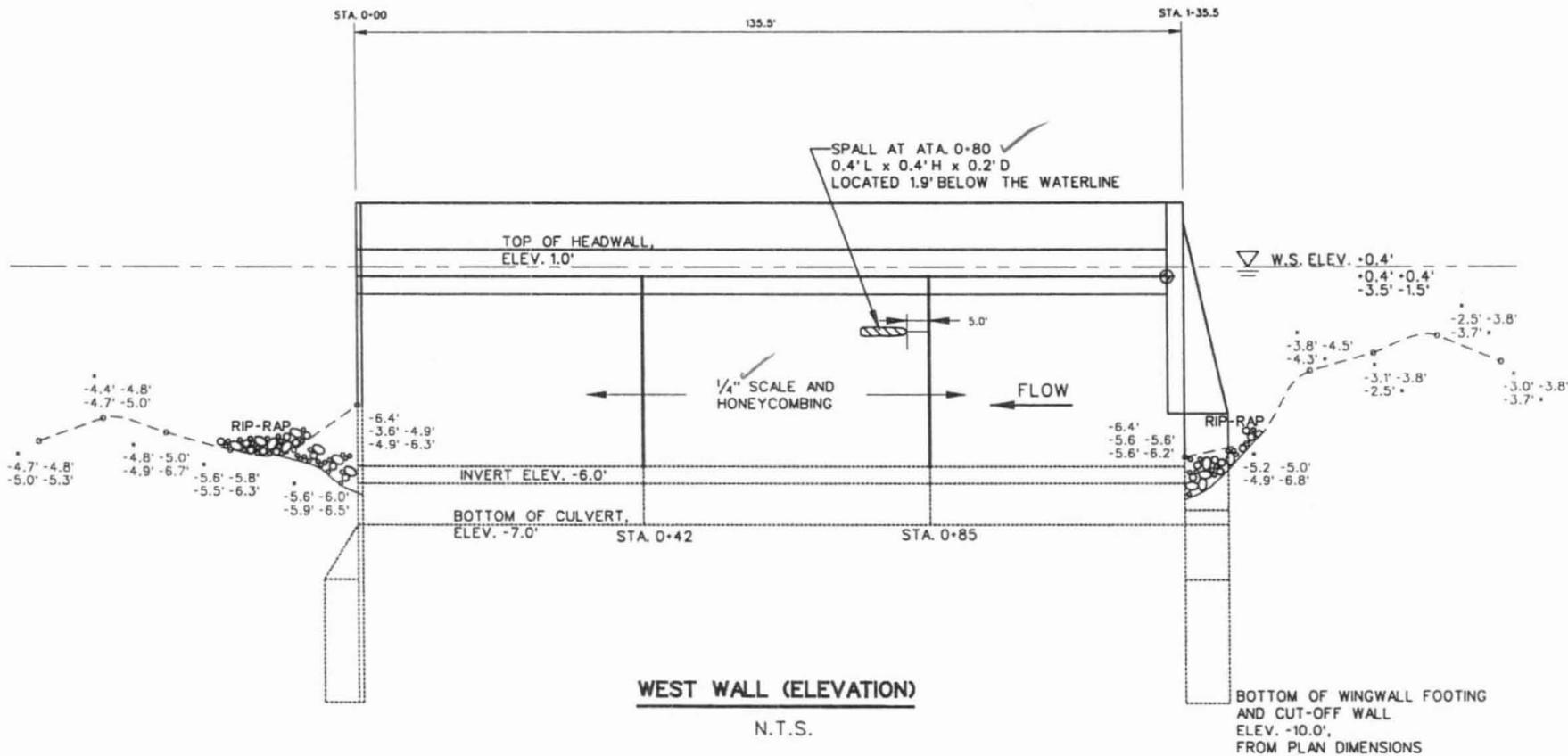
LEGEND FOR SYMBOLS

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 +0.4' +0.4'
 -3.5' -1.5'

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CONNECTICUT DEPARTMENT OF TRANSPORTATION			
BRIDGE NO. 02138			
ROUTE 15 OVER INLET TO RESERVOIR			
GREENWICH			CONNECTICUT
UPSTREAM PROFILE (NORTH ELEVATION)			
INSPECTED BY: JSD	SCALE: AS SHOWN	DATE OF INSPECTION: 02 / 22 / 06	DRAWING NO. 02138B
REVISED BY: JGI			



LEGEND FOR BOTTOM ELEVATIONS

FEB, 2006
DEC. 2003
JULY, 1999

-0.0'
-0.0' -0.0'
-0.0' -0.0'

JUNE, 2001
JAN, 1997

* INDICATES NO INFORMATION

LEGEND FOR MUDLINE ELEVATIONS

FEB, 2006
DEC. 2003

LEGEND FOR SYMBOLS

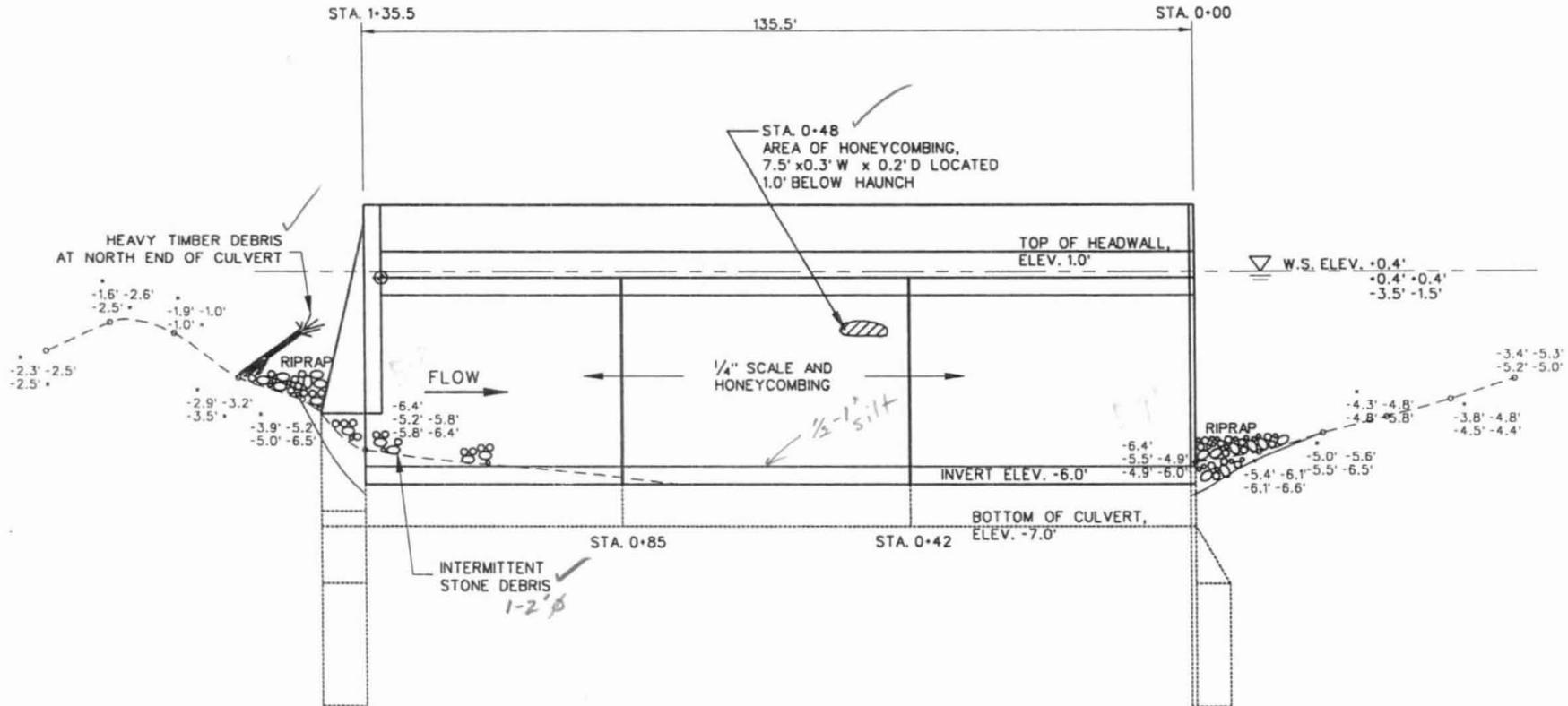
DATUM ELEV. 0.0 TAKEN FROM
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W.S. ELEV. +0.4'
+0.4' +0.4'
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CONNECTICUT DEPARTMENT OF TRANSPORTATION			
BRIDGE NO. 02138			
ROUTE 15 OVER INLET TO RESERVOIR			
GREENWICH			CONNECTICUT
WEST WALL ELEVATION			
INSPECTED BY: JSD	SCALE: AS SHOWN	DATE OF INSPECTION: 02 / 22 / 06	DRAWING NO. 02138D
REVISED BY: JGI			



EAST WALL (ELEVATION)

N.T.S.

NOTE:

1. CULVERT BOTTOM EXPOSED WITH INTERMITTENT AREA OF SILT AND GRAVEL.

LEGEND FOR BOTTOM ELEVATIONS

FEB. 2006 -0.0'
 DEC. 2003 -0.0' -0.0' - JUNE, 2001
 JULY, 1999 -0.0' -0.0' - JAN, 1997

LEGEND FOR MUDLINE ELEVATIONS

— FEB. 2006
 - - - DEC. 2003

LEGEND FOR SYMBOLS

⊕ DATUM ELEV. 0.0 TAKEN FROM BOTTOM OF HEADWALL AT THE CENTERLINE OF THE NORTH END.
 ▽ W.S. ELEV. +0.4'
 +0.4' +0.4'
 -3.5' -1.5'

* INDICATES NO INFORMATION

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CONNECTICUT DEPARTMENT OF TRANSPORTATION
 BRIDGE NO. 02138
 ROUTE 15 OVER INLET TO RESERVOIR
 GREENWICH CONNECTICUT

EAST WALL ELEVATION

INSPECTED BY: JSD SCALE: AS SHOWN DATE OF INSPECTION: 02 / 22 / 06 DRAWING NO. 0238E
 REVISED BY: JGI