

# REHABILITATION STUDY REPORT

State Project No. 063-703  
Bridge No. 03614 in Hartford, CT  
I-91 TR 828, 15-161 over Drainage

*Prepared For:*

State of Connecticut  
Department of Transportation  
Newington, Connecticut



*Submitted:* February, 2016



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*Approved Repair Code*

Recommended Primary Repair Code

<b>D, F, G, Q</b>

## EXECUTIVE SUMMARY

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### Scope of Rehabilitation Work

Based upon the inspection and evaluation of Bridge No. 03614, the scope of work at this site is limited to the installation of protective fence at the inlet and outlet.

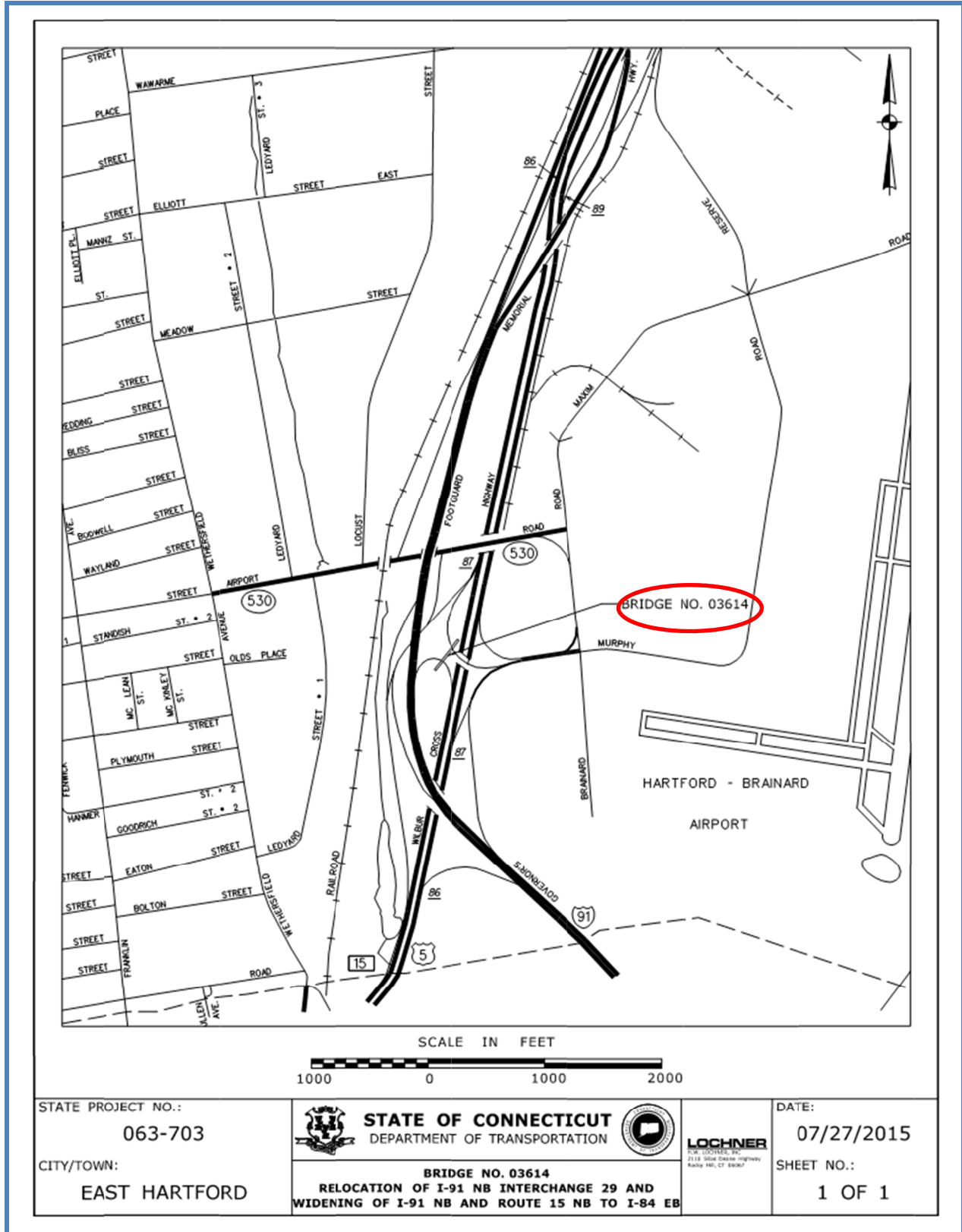
### Maintenance and Protection of Traffic

Maintenance and protection of traffic on I-91 is not required for the recommended work at this site.

### Notable Facts

Estimated Construction Cost:	\$27,000
ROW Involvement:	None anticipated
Utilities Impacted:	None
Permits Required:	None
Potential Design Exceptions:	No
Sufficiency Rating:	39.10 (Per 2015 CTDOT Inspection Report)
Load Rating after Repairs:	HS-20 (min)
Estimated 2009 ADT:	6600

## LOCATION MAP





## INTRODUCTION

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CME Associates, Inc. has been retained by the Connecticut Department of Transportation (ConnDOT) to perform the rehabilitation evaluation for this bridge as part of State Project No. 63-703. Field inspections were conducted during May 2015 and a video inspection of the culvert was conducted during December 2015.

This report describes the findings of the comprehensive evaluation of this bridge and presents our recommendation.

## DESCRIPTION

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### General

The Interstate 91/84 Interchange and Charter Oak Bridge Project includes widening I-91 Northbound. Bridge No. 03614 is a single-cell box culvert structure which carries one lane of I-91 Northbound Exit 28 off-ramp to Route 5/15 Southbound (TR-828) and one lane of Route 5/15 Southbound off-ramp to Brainard Road (TR 15-161) over drainage in the City of Hartford. The bridge was originally constructed in 1963 and consists of a single barrel, reinforced concrete box culvert, with an opening of 6 feet wide by 4 feet high, and length of 194 feet.

The I-91 Northbound off-ramp will be raised and shifted to the north as part of the widening project. No adjustment to alignment or profile is planned for the Route 5/15 Southbound off-ramp to Brainard Road.

### Highway Geometrics

#### I-91 Northbound Off-Ramp (TR 828)

The designed roadway across Bridge No. 03614, is the I-91 Northbound Exit 28 off-ramp to Route 5/15 Southbound (TR-828). Exit 28 has a design speed of 25MPH though not all criteria can achieve this value due to the proximity of the two roadways this ramp connects. In order to provide comfortable transitions throughout the ramp along the substandard 135' radius, the superelevation needed to be lower than what is required. These deficiencies are being addressed as design exceptions.

I-91 TR 828 is classified as Urban Principal Arterial-Interstate according to the functional classification maps. It is on the Nation Highway System (NHS) and is part of the Strategic Highway Network (STRAHNET).

The existing curb to curb roadway width of I-91 TR 828 above the structure is 26 feet which includes 1-4' left shoulder, 1-12' off-ramp lane and 1-10' right shoulder. Current ConnDOT Ramp design criteria specify a minimum paved width of 24' which consists of 1-12' lanes, a 4' left shoulder, and a 10' right shoulder. Therefore, overall curb-to-curb width of I-91 TR828 meets current ConnDOT Ramp design standards.

#### Route 5/15 Southbound Off-Ramp (TR 15-161)

Route 5/15 TR 15-161 is also classified as Urban Principal Arterial-Interstate according to the functional classification maps. It is on the Nation Highway System (NHS) and is part of the Strategic Highway Network (STRAHNET). The existing curb to curb roadway width above the structure is approximately 33 feet. Current ConnDOT Ramp design criteria specify a minimum paved width of 26' which consists of 1-12' lanes, a 4' left shoulder, and a 10' right shoulder. Therefore, overall curb-to-curb width of Route 5/15 TR 15-161 meets current ConnDOT Ramp design standards.



The Route 5/15 TR 15-161 is not changed in the final design or through any of the stages for this project. The existing pavement, roadside safety, and slopes will remain untouched.

## Traffic

According to the most recent inspection report, dated January 16, 2015, the estimated 2009 Average Daily Traffic (ADT) on the bridge is approximately 6,600 vehicles per day with 9% truck traffic.

## FIELD OBSERVATIONS

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The NBIS condition rating for Item 61, Channel and Channel Protection was found to be in fair condition (Rating = 5), and Item 62, Culverts & Retaining Wall, was found to be in satisfactory condition (Rating=6); therefore the bridge is not considered structurally deficient. Note that the condition ratings are from the latest inspection report, dated January 16, 2015.

Results of the video inspection performed in December 2015 on behalf of CME were consistent with CTDOT's underwater inspection performed during January 2015. No additional deficiencies noted that require repair.

## Culvert

The culvert is a 6' x 4' reinforced concrete box culvert below approximately 6' and 20' of fill below I-91 TR828 and Route 5/15 TR15-161 respectively. The culvert consists of a 1' high sub headwall, up to 10' long wingwalls, and a 3' high cutoff wall. Due to the limited clearance within the structure, a video inspection was completed.

The concrete is in good condition (Rating =7) which exhibits the following:

- Up to 1/8" deep scale from the mudline to 4" above the water line.
- Intermittent honeycombing up to 1/2" deep.

The barrel is in satisfactory condition (Rating = 6) and exhibits the following:

- Joint filler material missing within structure.
- Construction joint misaligned up 2.5" and open up to 1.5" wide.
- Erosion at northerly embankments at wingwalls.

The headwalls, cutoff walls, and wingwalls are in good condition (Rating=7). The headwall and wingwalls have scale up to 1/8" deep. The southwest wingwall has damage from backhoe teeth up to 1/2" deep.

Debris is in fair condition (Rating = 5). There is up to 1.5' of silt covering the culver floor.

## Approaches

Approach pavement in satisfactory condition (Rating=6) and exhibits minor transverse cracking up to 1/2" width at I-91 TR 828. No notable deterioration at Route 5/15 TR 15-161.

The approach guide rail is in satisfactory condition (Rating = 5) and the I-91 TR 828 metal beam rail has collision damage with minor scrapes and a few bent posts.

## Channel

Water flows through the culvert from north to south.



The channel is in fair condition (Rating=5) and has heavy vegetation growth which is restricting flow.

Erosion is in good condition (Rating = 7) and exhibits erosion at both northerly wingwalls; approximately 1.5' long x 1.5' wide x 0.8' behind the Northwest Wingwall, 2.5' long x 4' wide x 1.8' deep behind the Northeast Wingwall.

The inlet and outlet to the culvert have silt and debris up to 1.5' deep covering the culvert floor.

## Utilities

The existing 12" CMP which outlets at the Southwest Wingwall is severely deteriorated with up to 50% section loss.

## Property

Bridge 03614 is surrounded entirely by state property.

## Cultural Resources

Developed commercial areas are present all around the bridge. Hartford Brainard Airport is located approximately 0.8 miles east of the bridge, Hartford Hospital is located approximately 1.5 miles north of the bridge, and Bulkeley High School is located approximately 1.2 miles north of the bridge.

## Environmental Resources

The Connecticut River is located approximately 1.0 miles to the east with access at Charter Oak Landing in Hartford, approximately 1.2 miles to the northeast.

## LOAD RATING

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The existing bridge is not posted for live load restriction. No independent load rating analyses were performed. ConnDOT's latest inspection report dated January 16, 2015 indicates that a rating analysis is not necessary due to the depth of fill over the structure; Item 64 coded as "99.0".

## SEISMIC CONSIDERATIONS

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According to AASHTO LRFD Bridge Design Specifications in Section 3.10 Earthquake Effects, seismic effects for buried structures need not be considered, except where they cross active faults. Connecticut does not cross any active fault lines; however, AASHTO states that potential for soil liquidation and slope movements shall be considered for these structures.

## RECOMMENDATION FOR REHABILITATION

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Based on field inspections, engineering analysis, and a review of ConnDOT's Bridge Inspection Reports, Bridge No. 03614 was not found to be functionally obsolete or structurally deficient. No rehabilitation is recommended for this structure.

We recommend that Protective Fence be installed at both the Headwall and Endwall as fall protection.



## Cost Estimate

Appendix B contains an itemized cost estimate for the protective fence. The table below provides a summary of the total costs.

<b>Rehabilitation Measures</b>	<b>Structure Items</b>	<b>Additional Costs</b>	<b>Rounded Total Costs</b>
1 – Install Protective Fence	\$ 11,200	\$ 15,189	\$ 27,000
<b>Additional Costs – Breakdown</b>		<b>Alternate 1</b>	
Roadway Items	\$ 0		
Clearing & Grubbing	\$ 420		
Maintenance and Protection of Traffic	\$ 490		
Mobilization	\$ 1,050		
Construction Staking	\$ 140		
Minor Items (25% of Structure Items)	\$ 2,800		
Incidentals and Contingencies	\$ 8,050		
Escalation to Midpoint Construction Year	\$ 2,239		
Total:	\$ 15,189		

## Recommended Repairs

Based on work performed to date, the observations in the field, we recommend that Protective Fence be installed at both the Headwall and Endwall.

## UTILITY IMPACTS

Existing CMP that outlets at the Southwest Wingwall will be replaced as part of the drainage revisions for the project.



## APPENDICES

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- Appendix A – Photographs
- Appendix B – Cost Estimate
- Appendix C – Existing Bridge Plans
- Appendix D – Proposed Bridge Plans
- Appendix E – Inspection and Maintenance Reports



## Appendix A: Photographs





**1: South Endwall, Outlet.**  
**Note CMP outlet at SW Wingwall**



**2: North Headwall, Inlet**  
**Note erosion at both wingwalls**





**3: TR 15-191, Looking northerly up off-ramp**



**4: TR-828, Looking westerly towards I-91**





**5: TR-828, Transverse cracks in bituminous**



**6: TR-828, Damaged MBR at right EOR**





**7: Inside culvert**  
**Note sediment and debris**



**8: CMP at Southwest Wingwall**  
**Note section loss of pipe**





**9-: Outlet looking downstream**  
**Note vegetation blocking channel**



**10: Headwall looking upstream**  
**Note vegetation blocking channel**



## Appendix B: Cost Estimate



<b>LOCHNER</b>	COMPUTATION BY	DGG	DATE	2-5-16	SHEET	1	OF	1
	CHECKED BY		DATE		HWL PROJECT NO.	10326		
	CLIENT				CLIENT PROJECT NO.	63-703		
ITEM Bridge No. 3613 Estimate for Alternate 1								

**Alternate 1: Increase Headwall & wingwall heights (1.5:1 slope)**

**STRUCTURE ITEMS**

<u>ITEM NO.</u>	<u>ITEM DESCRIPTION</u>	<u>UNIT</u>	<u>QUANTITY</u>	<u>UNIT PRICE</u>	<u>TOTAL</u>
0913952	PROTECTIVE FENCE (5' HIGH)	LF	56	\$ 200.00	\$11,200.00
STRUCTURE TOTAL					\$11,200.00

**ROADWAY ITEMS**

All roadway items included in roadway estimate	STRUCTURE + ROADWAY = SUBTOTAL 1	\$11,200.00
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**MINOR ITEMS**

<u>UNIT</u>	<u>QUANTITY</u>	<u>UNIT PRICE</u>	<u>TOTAL</u>
LS	1	\$2,800.00	\$2,800.00
SUBTOTAL 2			\$2,800.00

**LUMP SUM ITEMS**

<u>UNIT</u>	<u>QUANTITY</u>	<u>UNIT PRICE</u>	<u>TOTAL</u>
LS	1	\$420.00	\$420.00
LS	1	\$490.00	\$490.00
LS	1	\$1,050.00	\$1,050.00
LS	1	\$140.00	\$140.00
SUBTOTAL 3			\$2,100.00

**ENGINEERING PERCENTAGES**

	<u>TOTAL</u>	
Incidentals (30% of Subtotal 1, 2, and 3)	30% INCIDENTALS \$6,440.00	
Contingency (10% of Subtotal 1, 2, and 3)	10% CONTINGENCY \$1,610.00	
SUBTOTAL 4		\$8,050.00

**ESCALATION TO MIDPOINT YEAR OF CONSTRUCTION**

Say 3% Per Year to 2018	n = 3 years		SUBTOTAL 5	\$2,239.36
	i = 3 %			

**ADDITIONAL COSTS FOR ABC**

Say 5% of Total	SUBTOTAL 6	
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TOTAL \$26,389.36

<b>GRAND TOTAL</b>	<b>\$27,000.00</b>
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<b>LOCHNER</b>	COMPUTATION BY DGG	DATE 1-20-16	SHEET 1	OF 1
	CHECKED BY	DATE	HWL PROJECT NO. 10326	
	CLIENT	CLIENT PROJECT NO. 63-703		
ITEM <b>Bridge No. 3614 Estimate</b>				

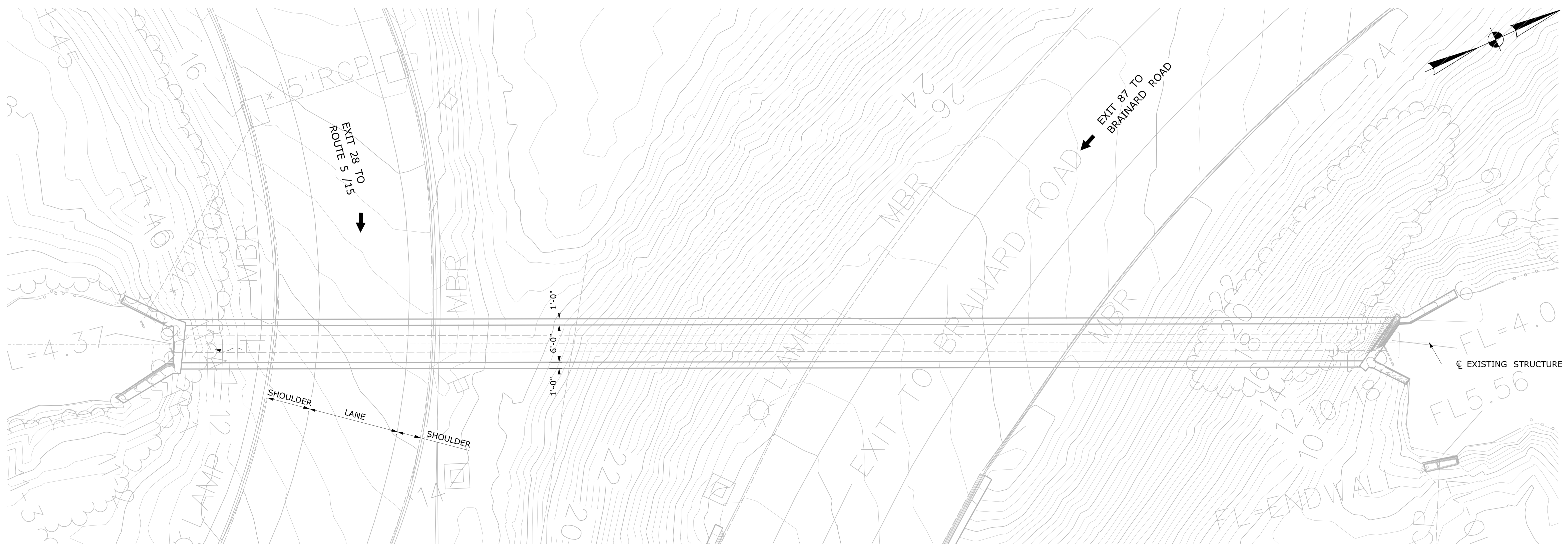
<u>ITEM DESCRIPTION</u>	<u>UNIT</u>	<u>QUANTITY</u>	<u>UNIT PRICE</u>	<u>TOTAL</u>
0913952 PROTECTIVE FENCE (5' HIGH)	LF	56.0	\$200.00 \$	11,200.00
<b>SAY \$</b>				<b>12,000.00</b>
Headwall (north)      Length      8.3 FT      scaled from pdf)				
NW WW      Length      10.3 FT				
NE WW      Length      7.1 FT				
Endwall (south)      Length      6.4 FT				
SW WW      Length      10.2 FT, avg				
SE WW      Length      10.4 FT				
Subtotal		52.7		
Add 5% CONTINGENCY		55.3		
<b>Say</b>		<b>56.0 LF</b>		

**Unit Price Calc**  
 Ref: CTDOT weighted Unit price, July 2015  
 0913952 Protective fence (5' HIGH) \$106.20/LF, for small quantity & difficult access; say \$200.00

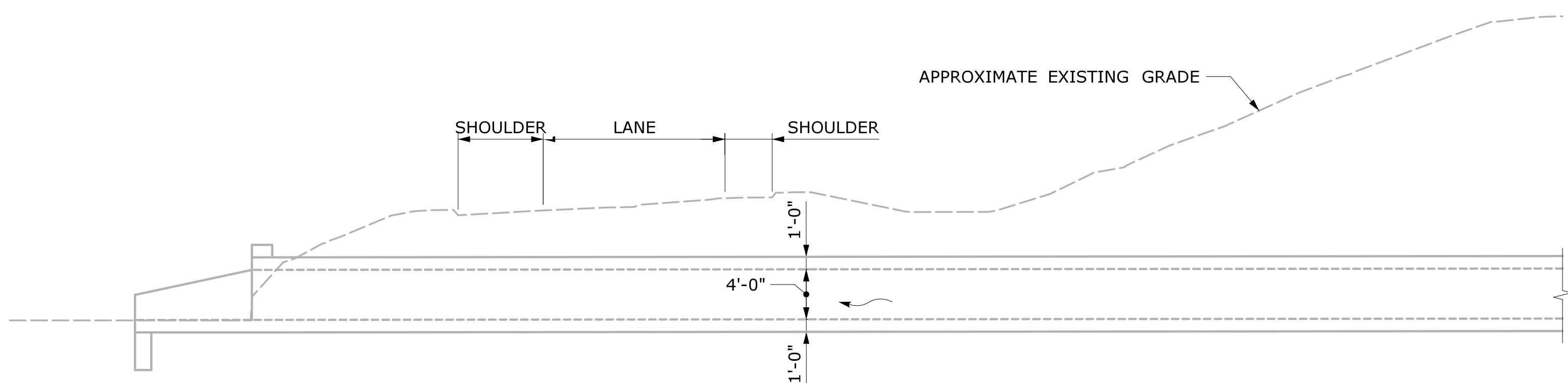
## Appendix C: Existing Bridge Plans







**EXISTING PLAN**  
SCALE: 1/8" = 1'-0"



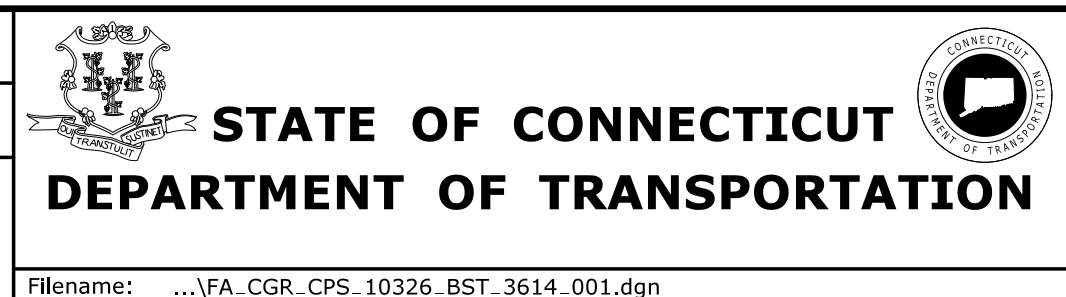
**EXISTING SECTION ALONG CULVERT CENTERLINE (LOOKING DOWNSTATION)**  
SCALE: 1/8" = 1'-0"

**REHABILITATION OF BRIDGE NO. 03614  
I-91 NB EXIT 28 & CT-15 SB EXIT 87 OVER DRAINAGE**

REV.	DATE	REVISION DESCRIPTION	SHEET NO.

Plotted Date: 2/9/2016

DESIGNER/DRAFTER:  
**H. MARTINDALE**  
CHECKED BY:  
**D. GEISSERT**  
SCALE AS NOTED



SIGNATURE/  
BLOCK:  
**LOCHNER**  
H.W. LOCHNER, INC  
55 Hartland Street  
East Hartford, CT 06108

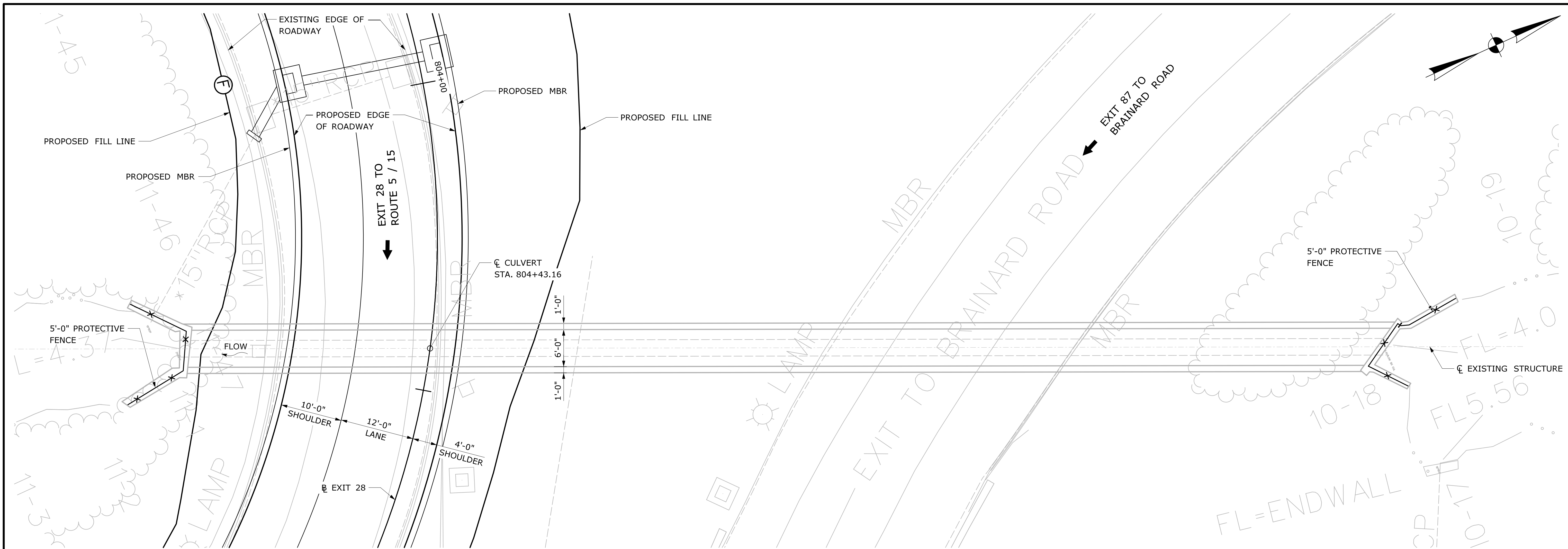
PROJECT TITLE:  
**RELOCATION OF I-91 NB  
INTERCHANGE 29 AND WIDENING  
OF I-91 NB AND ROUTE 15 NB  
TO I-84 EB**

TOWN:  
**CITY OF HARTFORD**  
DRAWING TITLE:  
**BRIDGE NO. 03614  
EXISTING PLAN & ELEVATION**

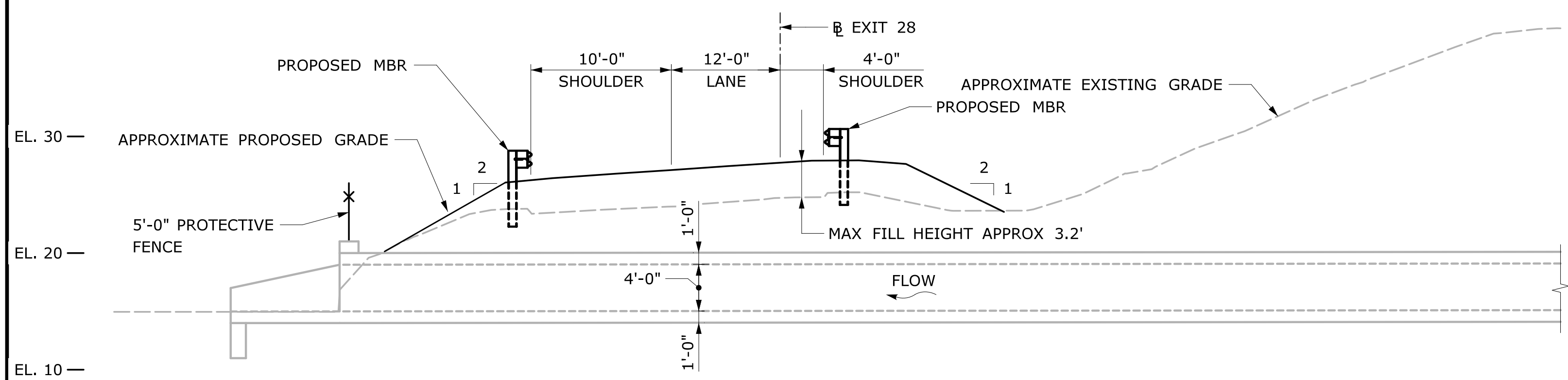
PROJECT NO.  
**63-703**  
DRAWING NO.  
**BST-001**  
SHEET NO.

## Appendix D: Proposed Bridge Plans





**PROPOSED PLAN**  
SCALE: 1/8" = 1'-0"



**PROPOSED SECTION ALONG CULVERT CENTERLINE (LOOKING DOWNSTATION)**  
SCALE: 1/8" = 1'-0"

**REHABILITATION OF BRIDGE NO. 03614  
I-91 NB EXIT 28 & CT-15 SB EXIT 87 OVER DRAINAGE**

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.		DESIGNER/DRAFTER: <b>H. MARTINDALE</b> CHECKED BY: <b>D. GEISSERT</b>	<b>STATE OF CONNECTICUT</b> DEPARTMENT OF TRANSPORTATION	SIGNATURE/BLOCK:  <b>LOCHNER</b> H.W. LOCHNER, INC. 55 Hartland Street East Hartford, CT 06108	PROJECT TITLE: <b>RELOCATION OF I-91 NB INTERCHANGE 29 AND WIDENING OF I-91 NB AND ROUTE 15 NB TO I-84 EB</b>	TOWN: <b>CITY OF HARTFORD</b>	PROJECT NO. <b>63-703</b> DRAWING NO. <b>BST-002</b> SHEET NO.
REV.	DATE	REVISION DESCRIPTION	SHEET NO.	Plotted Date: 1/21/2016	Filename: ...FA_CGR_CPS_10326_BST_3614_002.dgn	DRAWING TITLE: <b>BRIDGE NO. 03614 PROPOSED PLAN &amp; ELEVATION</b>	

## Appendix E: ConnDOT Inspection and Maintenance Reports



**CCTV Inspections  
Charter Oak Bridge—CT DOT 63-703  
Hartford, CT  
December 2015**

**FOR:**

**CME  
333 East River Drive, Suite 400  
East Hartford, CT 06108**

**Sewer System Maintenance  
Rehabilitation Programs  
C.C.T.V. Inspection  
Flow Reduction Programs  
System Surveys  
Hydraulic Flow Studies  
Trenchless Rehabilitation**

**Phone (860) 274-5469  
Fax (860) 945-3219**

**PRD North Division  
HEITKAMP, Inc.**

**99 CALLENDER ROAD  
P.O. BOX 730  
WATERTOWN CT 06795-0730**



PRD North Division Heitkamp, Inc.  
 99 Callender Road  
 Watertown, CT 06795  
 Phone: (860) 274.5469  
 Fax: (860) 945.3219



## Project Summary

### CME HARTFORD-15-77-0049

Main ID	Date	Address	Start MH	Finish MH	Pipe	Asset length	Surveyed Length
CME-1	12/2/2015	AIRPORT ROAD	INLET 1-106 X 68	CHAMBER 1	RCP	277.0	277.0
CME-2	12/2/2015	AIRPORT ROAD	INLET 2-106 X 68	CHAMBER 1	RCP	276.0	276.0
CME-3	12/2/2015	UNDER 91	OUTLET 1	INLET 1	RCP	307.0	307.0
CME-4	12/2/2015	AIRPORT ROAD	84" OUTLET 1	CHAMBER 1	RCP	246.0	246.0
CME-5	12/2/2015	AIRPORT ROAD	84" OUTLET 2	CHAMBER 1	RCP	246.0	246.0
CME-6	12/2/2015	AIRPORT ROAD	84" OUTLET 3	CHAMBER 1	RCP	246.0	246.0
CME-7	12/2/2015	REGIONAL MARKET SOUTH	INLET 1 NORTH-48"-43-45	OUTLET 1 NORTH-43-45	RCP	149.0	149.0
CME-8	12/2/2015	REGIONAL MARKET SOUTH	INLET 1 SOUTH-48"-43-45	OUTLET 1 SOUTH-48"-43-45	RCP	149.0	149.0
CME-9	12/3/2015	RTE. 15-91	15 SOUTHBOUND	91 SOUTHBOUND	RCP	697.0	697.0

PRD North Division Heitkamp, Inc.  
 99 Callender Road  
 Watertown, CT 06795  
 Phone: (860) 274.5469  
 Fax: (860) 945.3219



Main ID	Date	Address	Start MH	Finish MH	Pipe	Asset length	Surveyed Length	
CME-10	12/3/2015	RTE 15	T-IN AT 84" PIPE	REGIONAL MARKET NORTH	RCP	198.0	198.0	
CME-11	12/3/2015	STRUCTURE 36-14	INLET	OUTLET	RCP	199.0	199.0	
CME-12	12/3/2015	STRUCTURE 36-13	INLET	OUTLET	RCP	343.0	343.0	
Number of inspections: 12						<b>Subtotal</b>	<b>3,333.0 ft</b>	<b>3,333.0 ft</b>
						<b>Total</b>	<b>3,333.0 ft</b>	<b>3,333.0 ft</b>

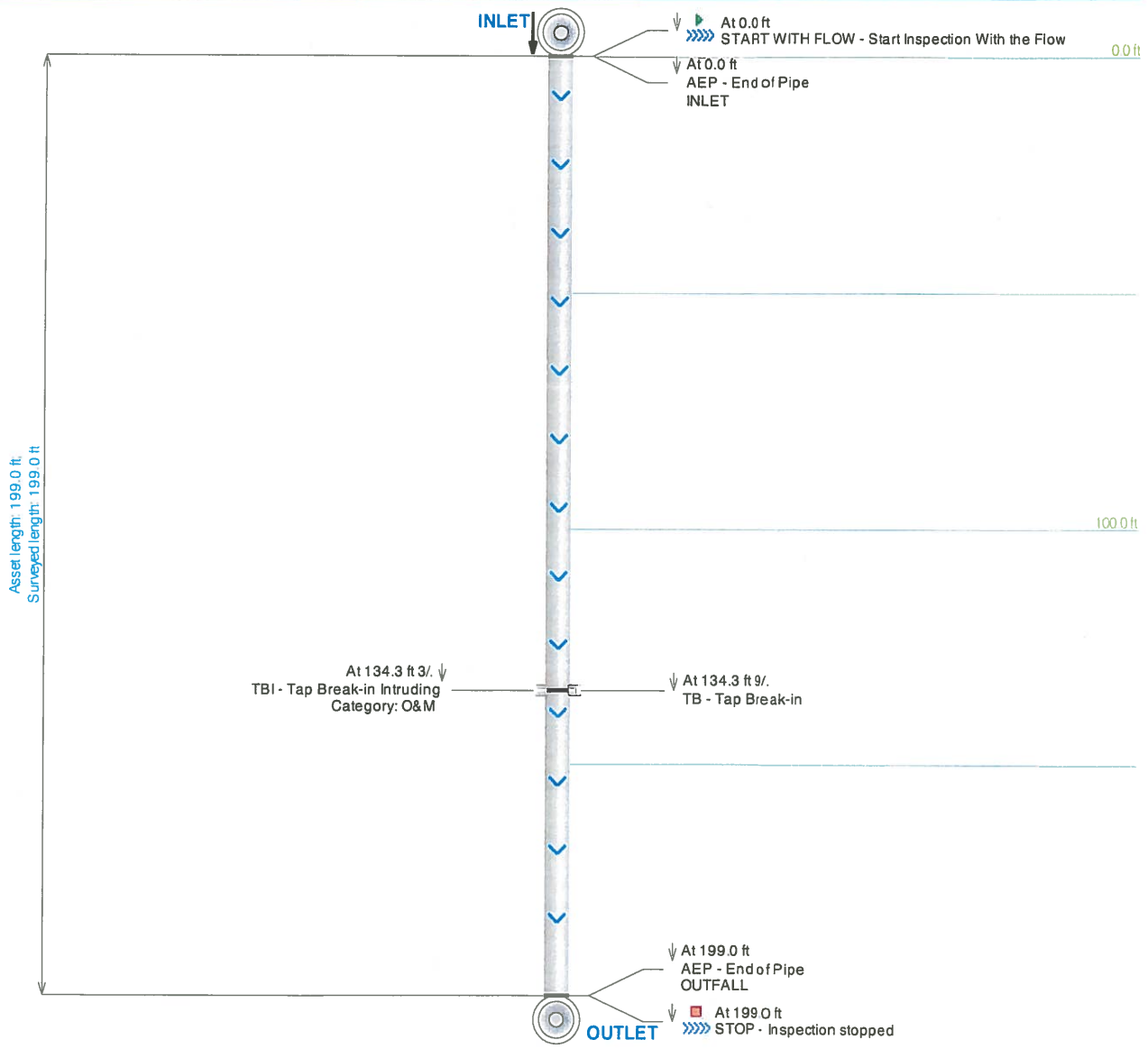


PRD North Division Heitkamp, Inc.  
 99 Callender Road  
 Watertown, CT 06795  
 Phone: (860) 274.5469  
 Fax: (860) 945.3219



## Main Inspection with Pipe-Run Graph

Project Name: CME HARTFORD-15-77-0049		Pipeline segment ref: <b>CME-11</b>		City: HARTFORD, CT.		Street: <b>STRUCTURE 36-14</b>	
Start date/time: 12/3/2015	Width: 72	Height: 48	Material: RCP	Location code: D	Weather: 6		
Direction: Downstream	Length surveyed: 199.0	Surveyed by: RICK SMITH		Additional info:			



PRD North Division Heitkamp, Inc.  
 99 Callender Road  
 Watertown, CT 06795  
 Phone: (860) 274.5469  
 Fax: (860) 945.3219



## PACP Sewer Report

Surveyed by: **RICK SMITH**      Certificate No: **U-906-2854**      Owner:      Survey Customer: **CME**      Drainage area:      Sheet number:

Work order:      Pipeline segment ref: **CME-11**      Start date/time: **2015/12/03 11:11**      Street: **STRUCTURE 36-14**      City: **HARTFORD, CT.**

Location details:      Upstream manhole No: **INLET**      Rim to invert:      Grade to invert:      Rim to grade:

Downstream manhole No: **OUTLET**      Rim to invert:      Grade to invert:      Rim to grade:      Sewer use:      Direction: **D**      Flow control:      Height: **48**

Width: **72**      Shape: **R**      Material: **RCP**      Ln. method:      Pipe joint length:      Total length: **199.0**      Length surveyed: **199.0**      Year laid:      Year renewed:      Media label: **0**

Purpose: **F**      Sewer category:      Pre-cleaning: **N**      Date cleaned: **2015/12/03**      Weather: **6**      Location code: **D**      Additional info:

**Starting access point:**      Easting:      Northing:      Elevation:      Coordinate system:      GPS accuracy:

Distance (Feet) (Meters)	Video Ref.	Group/ Descriptor	Modifier/ Severity	Continuous Defect S/M/L	Value		Joint	Circumferential Location		Image Ref.	Remarks
					Inches (mm) 1st	2nd		%	At/From		
0.0	25	AEP									INLET
134.3	378	TBI			24	2		3			
134.3	416	TB			18			9			
199.0	522	AEP									OUTFALL

# STRUCTURE NO. 03614

I-91 TR 828,15-161

over

DRAINAGE

HARTFORD

*Routine & Underwater Inspection*

*on*

*1/16/2015*

*Inspected by Collins - 52*

*for Area 6*

<b>TEAM:</b>	Forwarded to TE3 Emmanuel Akosa	Date	2/19/2015
<b>TE3:</b>	Reviewed by TE3 Emmanuel Akosa	Date	2/26/2015
	BMM Required	No	
	Town Bridge	No	
	Rating <= 5 (Items 58,59,60 or 62)	No	
	Rating Change 2 or More Values	No	
	Forwarded to Supervisor	Date	
	Forwarded to "To Be Copied Drawer" <input checked="" type="checkbox"/>	Date	2/26/2015
	Date BRI-19 Entered	2/26/2015	
<b>SUPERVISOR:</b>	Reviewed by Supervisor	Date	
<b>SUPPORT:</b>	Date Copies Made	BMM N	
	Scanned By:	Date Scanned	PDF Box No

**NBI: No**

**NHS: Yes**



# CONNECTICUT DEPARTMENT OF TRANSPORTATION

STATE PROJECT NO. 170-1940  
BRIDGE SAFETY INSPECTION

BRIDGE NO. 03614  
I-91 TR 828 & ROUTE 15 RAMP 161  
OVER  
DRAINAGE  
HARTFORD, CONNECTICUT



ROUTINE & UNDERWATER INSPECTION  
JANUARY 16, 2015



Prepared By:

**COLLINS**  
**ENGINEERS**  
101 HAMMER MILL ROAD  
ROCKY HILL, CT 06067

*02/13/2015*  
*Ralph A. Phillips, Jr.*  
**Garg Consulting Services, Inc.**  
ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS  
2096A Silas Deane Hwy  
ROCKY HILL, CT 06067



Bridge Number **03614**

Inspected By: J. Karalekas & J. Figueroa

Sufficiency Rating **39.10**  
Previous Inspection Date **1/24/2013**

BS&E Received  Data Entry By: RKA  
Copies Made  Data Entry Date: 2-26-15

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 **01/16/15** Inspection Team **5252** 91) Frequency **24** Class: **01**  
Indepth Insp **1/1/1900** Deck Survey **1/1/1900** Access **000** Flagman **00**

CRITICAL FEATURE INSPECTIONS				
Type	Frequency	Team	Date	
Fracture:	<input type="checkbox"/>			
Uwater:	<input checked="" type="checkbox"/>	24	19	52 1/24/2013
Special:	<input type="checkbox"/>			1/16/2015

RED FLAG

**IDENTIFICATION**

Bridge Name **HARTFORD** Town Code **37070**

5) Inventory Route:  
 A) Record Type **1** D) Route Number **00091**  
 B) Signing Prefix **1** Interstate High  E) Directional Suffix **0** NA   
 C) Level of Service **7** Ramp, Wye, Co

6) Feature Intersected **DRAINAGE**

7) Facility Carried: **I-91 TR 828,15-161**

9) Location **91 N EXIT 28/15 S EXIT 87**

11) Milepoint **0.35** Miles

16) Latitude **41deg 44 min 9.58 sec** deg min sec  
 17) Longitude **72deg 39 min 50.67 sec** deg min 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 **1963** 106) Year Reconstructed

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

28) Number of Lanes:  
 A) On **2** B) Under

29) Average Daily Traffic **6600** Half ADT?: **No**

109) Percent Truck **9%**

30) Year of ADT **2009**

19) Bypass, Detour Length **2** miles

**GEOMETRIC DATA**

48) Length of Max Span **6** ft

49) Structure Length **6** 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 **26** ft

33) Bridge Median **0** No Median

Deck Area **1164** 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.: **26.0** ft

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

CLASSIFICATION	
112) NBIS Bridge Length	No
104) Highway System	1 On System
26) Functional Class	11 Urban Principal Arterial - Interstate
100) Defense Highway	1 Route is on a Interstate STRAHNET Route
101) Parallel Structure	N No parallel structure exists
102) Direction of Traffic	1 1-way traffic
103) Temporary Structure	
110) Designated National Network	1 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	4099
38) Navigation Control	0 No navigation control on waterway
39) Navigation Vert Clr.	0
40) Navigation Horiz Clr.	0
116) Vert-Lift Brg Nav Min	
111) Pier Abutment Protection	

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.	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	

## STRUCTURE EVALUATION

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

Bridge Number	03614	NBIS Length	
Town Name	HARTFORD	No	6
Facility Carried	I-91 TR 828,15-161		
Feature Crossed	DRAINAGE		

Inspected By: J. Karalekas & J. Figueroa

LOAD RATING AND POSTING	
31) Design Load	0
63) Operating Rating Type	0
64) Operating Rating	99.0
65) Inventory Rating Type	0
66) Inventory Rating	99.0
Evaluation Code	J
Year of Evaluation	1992
70) Bridge Posting	5
41) Structure Status	A

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

Items 58 Thru 72 Checked By: Paul A. Hilling

36) Traffic Safety Features:

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

OTHER FEATURES	
Fence Required	No
Fence Present	No blank
Fence Height	00 ft
Fence Type	
Fence Material	
Fence Top Type	
Barrel Ladder	No
Stand Pipes	No
Cat Walks	No
Movable Inspection System	No
Loose Concrete Checked?	Yes

**INSPECTION COMMENTS**

Proposed Next Indepth Insp Year 9999

Senior Emmanuel Akosa  
Supervisor Steve Keedy

REVIEWED BY: Paul A. Hilling Date 02/13/2015  
#23005  
Karalekas 2-26-15



### Structure Inventory and Appraisal Sheet (English Units)

Bridge Key: 03614 Agency ID: 03614 SR: 96.0 SD/FO:

#### IDENTIFICATION

State 1: 09 Connecticut Struc Num 8: 03614  
 Facility Carried 7: I-91 TR 628,15-161 Location 9: I-91 N EX 28,15 S EXIT 87  
 Rte (On/Under) 5A: Route On Structure Rte. Signing Prefix 5B: 1 Interstate Hwy  
 Level of Service 5C: 7 Ramp Route Number 5D: 00091  
 Directional Suffix 5E: 0 NA (NBI) % Responsibility: 0.00  
 SHD District 2: 01 County Code 3: Hartford  
 Place Code 4: HARTFORD Mile Post 11: 0.350 mi  
 Feature Intersected 6: DRAINAGE  
 Latitude 16: 41° 44' 10" Longitude 17: 072° 39' 51"  
 Border Bridge Code 58: Not Applicable (P)  
 Border Bridge Number 99: NA

#### INSPECTION

Frequency 91: 24 months Inspection Date 90: 1/16/2015 Next Inspection: 1/16/2017  
 FC Frequency 92A: NA FC Inspection Date 93A: NA Next FC Inspection: NA  
 UW Frequency 92B: 24 months UW Inspection Date 93B: 1/16/2015 Next UW Inspection: 1/16/2017  
 SI Frequency 92C: NA SI Date 93C: NA Next SI: NA  
 Element Frequency: 24 months Element Insp. Date: 1/16/2015 Next Elem. Insp.: 1/16/2017

#### CLASSIFICATION

Defense Highway 100: 1 STRAHNET hwy Parallel Structure 101: No || bridge exists  
 Direction of Traffic 102: 1 1-way traffic Temporary Structure 103: Not Applicable (P)  
 Highway System 104: 1 On the NHS NBIS Length 112: Too Short  
 Toll Facility 20: 3 On free road Functional Class 26: 11 Urban Interstate  
 Defense Hwy 110: 1 STRAHNET hwy Historical Significance 37: 5 Not eligible for NRHP  
 Owner 22: 01 State Highway Agency  
 Custodian 21: 01 State Highway Agency

#### STRUCTURE TYPE AND MATERIALS

Number of Approach Spans 45: 0 Number of Spans Main Unit 45: 1  
 1 Concrete 19 Culvert  
 Deck Type 107: N NA (NBI)  
 Wearing Surface 108A: N NA (no deck (NBI))  
 Membrane 108B: N NA (no deck (NBI))  
 Deck protection 108C: N NA (no deck (NBI))

#### CONDITION

Deck 58: N NA (NBI) Super 59: N NA (NBI) Sub 60: N NA (NBI)  
 Culvert 62: 6 Deterioration Channel/Channel Protection 61: 5 Bank Prot Eroded

#### AGE AND SERVICE

Year Built 27: 1963 Year Reconstructed 106:  
 Type of Service on 42A: 1 Highway  
 Type of Service under 42B: 5 Waterway  
 Lanes on 28A: 2 Lanes under 28B: 0 Detour Length 19: 2.0 mi  
 ADT 29: 6,600 TruckADT 109: 9% Year of ADT 30: 2009

#### LOAD RATING AND POSTING

Inventory Rating Method 65: 0 Field eval and docs Operating Rating Method 63: 0 Field eval and docs  
 Inventory Rating 66: HS55 0 Operating Rating 64: HS55 0  
 Design Load 31: 0 Other or Unknown Posting 70: 5 A/Above Legal Loads  
 Posting Status 41: A Open, no restriction

#### GEOMETRIC DATA

Length Max Span 48: 6.00 ft Structure Length 49: 6.00 ft  
 Curb/Sdwlk Width L 50A: 0.00 ft Curb/Sidewalk Width R 50B: 0.00 ft  
 Width Curb to Curb 51: 0.00 ft Width Out to Out 52: 0.00 ft  
 Approach Roadway width 32: (w/ shoulders) 26.00 ft Median 33: 0 No median  
 Deck Area: 1,164.00 sq ft  
 Skew 34: 0.00° Structure Flared 35: 0 No flare  
 Vertical Clearance 10: 328.05 ft Horizontal Clearance 47: 26.00 ft  
 Minimum Vertical Clearance Over Bridge 53: 328.05 ft  
 Minimum Vertical Underclearance Reference 54A: N Feature not hwy or RR  
 Minimum Vertical Underclearance 54B: 0.00 ft  
 Minimum Lateral Underclearance Reference R 55A: N Feature not hwy or RR  
 Minimum Lateral Underclearance R 55: 327.76 ft  
 Minimum Lateral Underclearance L 56: 0.00 ft

#### APPRAISAL

Bridge Rail 36A: N NA or not required Approach Rail 36C: N NA or not required  
 Transition 36B: N NA or not required Approach Rail Ends 36D: N NA or not required  
 Str Evaluation 67: 6 Equal Min Criteria Deck Geometry 68: N Not applicable (NBI)  
 Underclearance, Vertical and Horizontal 69: N Not applicable (NBI)  
 Waterway Adequacy 71: 5 Above Tolerable Approach Alignment 72: 6 Equal Min Criteria  
 Scour Critical 113: 8 Stable Above Footing

#### PROPOSED IMPROVEMENTS

Bridge Cost 94: \$1,000 Type of Work 75: 39 Other Structural  
 Roadway Cost 95: \$1,000 Length of Improvement 76: 0.3 ft  
 Total Cost 96: \$2,000 Future ADT 114: 250  
 Year of Cost Estimate 97: 2000 Year of Future ADT 115: 2019

#### NAVIGATION DATA

Navigation Control 38: Permit Not Required  
 Vertical Clearance 39: 0.0 ft Horizontal Clearance 40: 0.0 ft  
 Pier Protection 111: Not Applicable (P) L/R Bridge Vertical Clearance 116



### Structure Inventory and Appraisal Sheet (English Units)

ELEMENT CONDITION STATE DATA												
Str Unit	Elm/Env	Description	Units	Total Qty	% in 1	Qty. St. 1	% in 2	Qty. St. 2	% in 3	Qty. St. 3	% in 4	Qty. St. 4
UNIT0	241/3	Re Conc Culvert	ft	194	100%	194	0%	0	0%	0	0%	0
UNIT0	510/3	Wearing Surfaces	sq ft	372	95%	355	0%	0	5%	17	0%	0
UNIT0	330/3	Metal Bridge Railing	ft	24	83%	20	0%	0	17%	4	0%	0
UNIT0	515/3	Steel Protective Coating	sq ft	48	100%	48	0%	0	0%	0	0%	0
UNIT0	1,020/3	Connection	ft	4	0%	0	0%	0	100%	4	0%	0
UNIT0	3,220/3	Crack (Wearing Surface)	sq ft	17	0%	0	0%	0	100%	17	0%	0

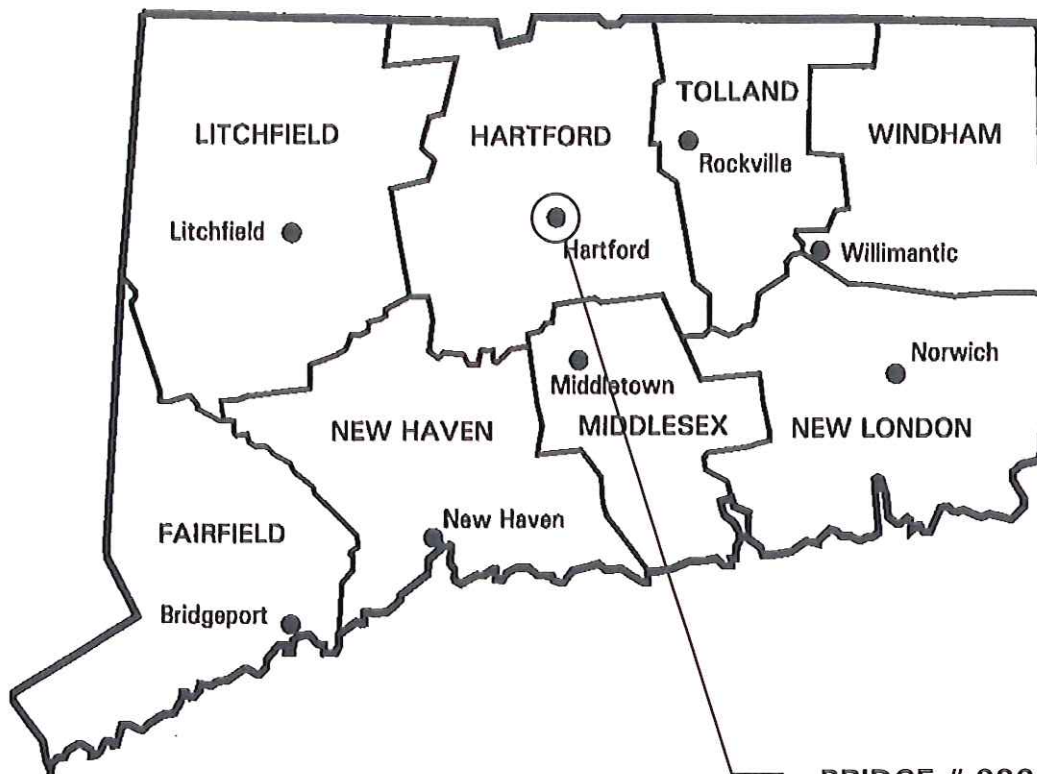
Structure No. 03614 Town Hartford

Inspectors J. Karalekas, J. Figueroa (Collins), C. Sorensen (Garg) Date 1/16/2015

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Maintenance Memo.....	--
Flagging Memos.....	--
BRI-11, Seismic Screening Data Sheet.....	--
BRI-12, Fracture Critical Inspection Data Sheet.....	--
BRI-19, HWY Bridge SI&A Form .....	2
BRI-25, Under Entry SI&A Form.....	--
BRI-39, RR Bridge SI&A Form .....	--
BRI-49, Sign Structure SI&A Form.....	--
National Bridge Element Data Collection Form .....	2
Plan Sheets: Proj. No. 159-92, Date: 1961	Check here if already on file: <input checked="" type="checkbox"/>

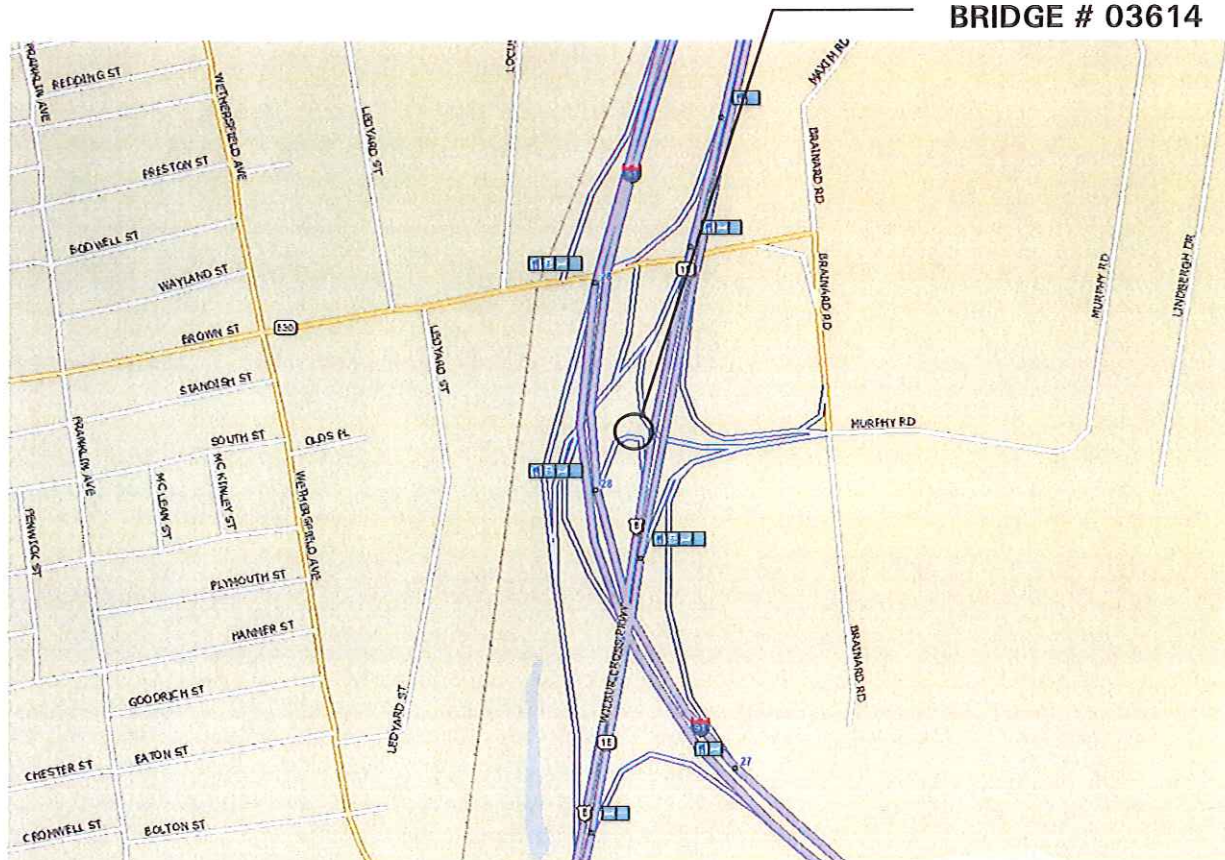
<u>Bound Report Pages</u>	<u>Sheet Numbers</u>
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Location Map .....	3
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BRI-59, Underwater Inspection Form.....	4
BRI-18, Bridge Inspection Form.....	5-11
Field Notes (Include Forms <del>BRI-10, BRI-13, BRI-14, BRI-15,</del> <del>BRI-16, BRI-17, BRI-29, BRI-30</del> ).....	12-17
Calculations:	
Load Rating Evaluation.....	--
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BRIDGE # 03614  
HARTFORD

Vicinity Map

BRIDGE # 03614



Location Map



Connecticut Department of Transportation  
**UNDERWATER INSPECTION**

4/26

BRI-59 Form

Bridge No: 03614 Date Inspected: 1/16/2015

Job Number: 170-1940

Client: Connecticut D.O.T.

Route: 91 TR 828

Mile point: 0.35

City: Hartford

Feature Crossed: Drainage

State: CT

Inspector: J. Karalekas, P.E.

Assistants: J. Figueroa, C. Sorensen

Time Arrived: 10:30 AM

Time Departed: 12:30 PM

Time In Water: 10:45 AM

Time Out of Water: 12:15 PM

Type of Inspection: Routine

Year built: 1963

Total Length: 6.0'

No. Spans: 1

Bridge Type: Reinforced Concrete Culvert

Total Number of Piers: 0

Piers in the Water: N/A

Type of Piers: N/A

Abutments: N/A

Bottom Composition: Silt and sand with up to 6.0' penetration into the streambed.

Previous U/W Insp: 1/24/2013

Marine Growth: None

Max. Water Depth: 2.4'

Max. Depth at Pier: 2.4'

Current Strength: None

U/W Visibility: <1.0'

Type of Water: Fresh

Access to Bridge: Shore

Remarks:

Inspection Equipment

Number of Boats: 0

RR Protection: No

Boat Size: 0

Equipment Comments:

Dive Station: No

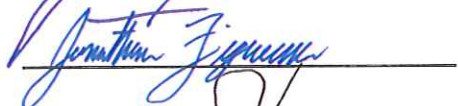
Inspected by:



Date:

2/12/2015

Inspected by:



Date:

2/12/2015

D.O.T. reviewed by:



Date:

2-26-15

## Connecticut Department of Transportation

### Bridge Inspection Report BRI-18

Bridge #: 03614

Inspection Date: 01/16/2015

Inspection Type:	Routine	Previous Inspection Date:	1/24/2013	Snooper Required:	No
Inspection Performed By:	Collins Engineers	Feature Carried:	I-91 TR 828,15-161	Snooper Used:	No
Town:	HARTFORD	Feature Intersected:	DRAINAGE	Year Built:	1963
Location:	91 N EXIT 28/15 S EXIT 87	Main Design:	Culvert (includes frame culverts)	Year Rebuilt:	-
Main Material:	Concrete				

**Visits**

Visit Date:	Temp:	Start Time:	End Time:
1/16/2015	30	10:30:00 AM	12:30:00 PM

**Inspectors:**

Inspector:	Task:
J. Karalekas	Lead Inspector
J. Figueroa	Inspector
C. Sorensen	Inspector

**DECK:**

Bituminous concrete pavement over ±6' of fill (I-91, Ramp 828) and over ±20' of fill (Route 15, Ramp 161) over concrete box culvert.

Per ConnDOT BIM Section 10.1, for structures where the approach pavement is carried across the structure on fill material, the overall deck rating shall be rated an "N".

P

Overall Rating:

**Rating**

<b>OVERLAY:</b>	6	I-91 Ramp 828 has full width transverse cracking up to 1" wide and two longitudinal cracks up to 1/4" wide.  Route 15 Ramp 161 has no notable deficiencies.  See Sheet 12 and Photo 10.
<b>DECK-STR. CONDITION:</b>	N	-
<b>CURBS:</b>	6	Bituminous concrete curbs have isolated vertical cracks up to 1" wide and scrape marks.
<b>MEDIAN:</b>	N	There is a grass swale between ramps.
<b>SIDEWALKS:</b>	N	-
<b>PARAPET:</b>	N	-
<b>RAILING:</b>	5	Metal beam rail is continuous across culvert.

		See 'Approach Guide Rail' below.
<b>PAINT:</b>	N	-
<b>FENCE:</b>	N	-
<b>DRAINS:</b>	N	-
<b>LIGHTING STANDARD:</b>	N	-
<b>UTILITIES TYPE/SIZE:</b>	7	There is a 36" diameter outfall in the west wall near Sta 0+60 and a 15" diameter outfall in the east wall near Sta 0+90. The 15" diameter outfall has minor chamfer spalls around the outlet.
<b>CONSTR JOINTS:</b>	N	-
<b>EXPANSION JOINTS:</b>	N	-

59. SUPERSTRUCTURE:

Overall Rating:

60. SUBSTRUCTURE:

Overall Rating:

Rating

61. CHANNEL & CHANNEL PROTECTION:

Overall Rating:

Rating

CHANNEL SCOUR:	7	<p>The channel bottom consists of silt and sand with up to 6' of penetration into the stream bed outside of the culvert.</p> <p>The upstream channel has areas of degradation up to 2.2'. The downstream channel has an isolated area of 2.5' aggradation along the southwest wingwall. Otherwise, the downstream channel bottom is relatively unchanged since the 2013 Inspection.</p> <p>The toe of the cutoff wall is exposed up to 0.5' high at the inlet.</p> <p>See Sheets 13 - 15.</p>
EMBANKMENT EROSION:	7	<p>There is 1.5' long x 1.5' wide x 0.8' deep erosion behind the end of the northwest wingwall and 2.5' long x 4' wide x 1.8' deep erosion behind the northeast wingwall. The northeast embankment has erosion up to 1' deep.</p> <p>See Sheet 13.</p>
DEBRIS:	5	<p>There is sediment buildup within the entire structure up to 1.5' high (38% of culvert height). Infilling is relatively unchanged since the 2013 Inspection. Minor timber debris is overhanging the southwest wingwall and north headwall and wingwalls.</p> <p>See Sheets 13 - 15 and Photos 6 &amp; 7.</p>
VEGETATION:	6	<p>Upstream and downstream embankments exhibit moderate to heavy vegetation growth that is overhanging the channel, southwest wingwall, and north headwall and wingwalls.</p> <p>See Sheet 13 and Photos 6 - 9.</p>
CHANNEL CHANGE:	5	<p>The upstream channel has areas of degradation up to 2.2'. The downstream channel has an isolated area of 2.5' aggradation along the southwest wingwall. Otherwise, the downstream channel bottom is relatively unchanged since the 2013 Inspection. Long term aggradation of the channel bottom has infilled the culvert up to 1.5' high.</p> <p>See Sheets 13 - 15.</p>



FENDER SYSTEM:	N	-
SPUR, DIKES & JETTIES:	N	-
RIP RAP:	N	-

**62. CULVERTS & RETAINING WALL:**

Reinforced concrete box culvert 6' wide x 4' high.

Overall Rating: 6

Rating

BARREL:	6	The construction joints have up to 70% missing packing with up to 1.5' penetration at chamfer sections. The remaining joint material is typically loose and ineffective. The construction joints are open up to 1.5" wide. Construction joint 7 at Sta 1+86 is vertically misaligned 2.5" (no change since the 2001 Inspection) and is open up to 1.5" wide. Active water and or soil infiltration was not observed. There were no sink holes or evidence of soil infiltration into the pipe. See Sheet 15 and Photos 11 & 12.
CONCRETE:	7	The barrel has up to 1/8" deep scale from the mudline to 4" above the waterline. The barrel has intermittent honeycombing up to 1/2" deep. See Sheet 15 and Photos 11 & 13.
STEEL:	N	-
TIMBER:	N	-
HEADWALL:	7	Concrete headwalls have scale up to 1/8" deep from the mudline to 4" above the waterline.
CUTOFF WALL:	7	The toe of the cutoff wall is exposed up to 0.5' high at the inlet. See Sheet 14.
DEBRIS:	5	There is sediment build-up within the entire structure up to 1.5' high (38% of culvert height). Minor timber debris is overhanging the southwest wingwall and north headwall and wingwalls. See Sheets 13 - 15 and Photos 6 & 7.
RETAINING WALL STEM:	7	Concrete wingwalls have scale up to 1/8" deep from the mudline to 4" above the waterline. There is missing joint material from the mudline to the top of the wingwalls with up to 0.9' penetration. The southeast wingwall has minor damage from backhoe teeth consisting of scrapes and two mechanical spalls 1' long x 0.5' high x up to 1/2" deep.
FOOTING:	N	-

**65. APPROACH CONDITION**

Bituminous concrete pavement.

Overall Rating: 6

Rating

APPROACH SLAB:	N	-
----------------	---	---

9/10

RELIEF JOINTS:	N	-
APPROACH GUIDE RAIL:	5	<p>There are metal beam rails at both sides of both ramps.</p> <p>I-91 Ramp 828 metal beam rails have scrapes, dents and areas of minor impact damage throughout. South rail has three consecutive disconnected posts. The rail is unsupported for ±45' and is loose. North rail has two disconnected posts. The rail is not loose.</p> <p>Route 15 Ramp 161 metal beam rails have random minor scrapes.</p> <p>See Sheet 12 and Photo 14.</p>
APPROACH PAVEMENT:	6	<p>I-91 Ramp 828 approach pavement has random transverse and longitudinal cracks up to full roadway width x up to 1/2" wide.</p> <p>Route 15 Ramp 161 approach pavement has no notable deficiencies.</p> <p>See Sheet 12.</p>
APPROACH EMBANKMENT:	7	The embankments have minor erosion due to run-off.

**TRAFFIC SAFETY FEATURES**

Rating

BRIDGE RAILINGS:	Last Inspection: N Current: N	-
TRANSITIONS:	Last Inspection: N Current: N	-
APPROACH GUARDRAILS:	Last Inspection: N Current: N	-
APPR. GUARDRAIL ENDS:	Last Inspection: N Current: N	-

**66. LOAD POSTING**

- Posted Loading -

SINGLE UNIT (TONS):	Last Inspection: - Current: -	-
SEMI TRAILER (TONS):	Last Inspection: - Current: -	-

4 AXLE (TONS):	Last Inspection: - Current: -	-
3S2 (TONS):	Last Inspection: - Current: -	-
ADVANCE WARNING (Y/N):	-	-
LEGIBILITY:	-	-
VISIBILITY/LOCATION:	-	-

67. MISCELLANEOUS

Rating

MIN. VERT. UNDERCLEARANCE:	Last Inspection: 0' 0" Current: -' -"	Structure spans a waterway.
POSTED CLR. UNDER BRIDGE:	Last Inspection: -' -" Current: -' -"	-
POSTED CLR. ON BRIDGE:	Last Inspection: -' -" Current: -' -"	-
ADVANCED WARNING (YES/NO):	No	-
SPEED LIMIT (IF ANY):	Last Inspection: - Current: -	-
CHARACTER OF TRAFFIC:		Moderate to heavy volume, mixed traffic weights.

ADDITIONAL NOTES:

Inventory direction is west to east.  
The bridge identification number posted at the I-91 Ramp 828 is faded.  
Above water and underwater inspection performed concurrently.

ADDITIONAL COMMENTS:

A Priority C & D BMM was issued during the 2013 Inspection with the following deficiencies and repairs:  
1) I-91 Ramp 828 metal beam rails have impact damage on both sides with a total of six disconnected posts. - Straighten posts and attach the metal beam rail to the 6 posts (LS). No repair has been made since the 2013 Inspection.  
2) Timber debris and vegetation is overhanging the southwest wingwall and north headwall and wingwalls. - Remove timber debris and trim back live vegetation from the southwest wingwall and north headwall and wingwalls (LS). No repair has been made since the 2013 Inspection.

Repair Recommendations:  
1) Seal the culvert joints and wingwall joints (130 LF).  
2) Seal the cracks in the I-91 Ramp 828 pavement (150± LF).

Inspectors' Signatures:

1) *[Signature]*  
 2) *Jonathan Figueroa*  
 3) \_\_\_\_\_  
 4) \_\_\_\_\_

Date: 2/12/2015  
 ---  
 Date: 2/12/2015  
 ---  
 Date: ---/---/---  
 ---  
 Date: ---/---/---  
 ---

P.E. Signature:

*[Signature]*

Date: 02/13/2015  
---

P.E. #:

23005

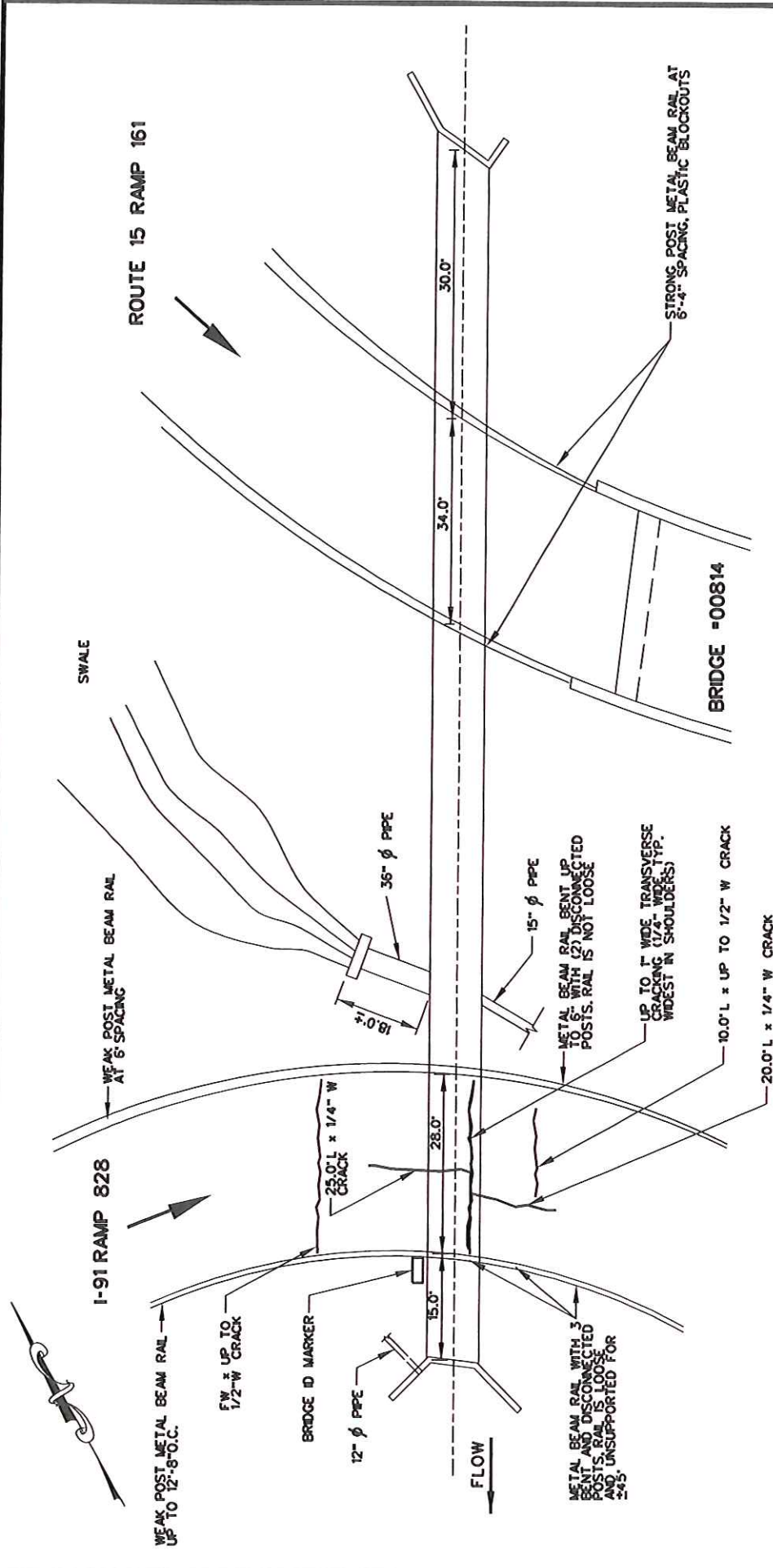
Date: ---/---/---  
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Reviewed by:

*[Signature]* conndot

Date: 2/26/15  
---





**LEGEND FOR SYMBOLS**

- ⊕ DATUM ELEV. 0.0 TAKEN FROM BOTTOM OF CEILING AT MIDSPAN (NORTH ELEVATION).
- ▽ W.S. ELEV. -2.1' -2.1' -2.1' -2.2' -1.4' -2.5' -1.9'

**NOTES:**

1. I-91 RAMP 828 CURBS HAVE ISOLATED VERTICAL CRACKS UP TO 1" WIDE AND SCRAPE MARKS.
2. I-91 RAMP 828 METAL BEAM RAIL HAS SCRAPES, DENTS AND AREAS OF MINOR COLLISION DAMAGE THROUGHOUT.
3. ROUTE 15 RAMP 161 METAL BEAM RAIL HAS RANDOM MINOR SCRAPES.

**COLLINS ENGINEERS** INC

101 HAMMER MILL ROAD  
ROCKY HILL, CT 06067  
Phone: (860) 571-0384  
Fax: (860) 571-0385

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**CONNECTICUT DEPARTMENT OF TRANSPORTATION**

**BRIDGE NO. 03614**

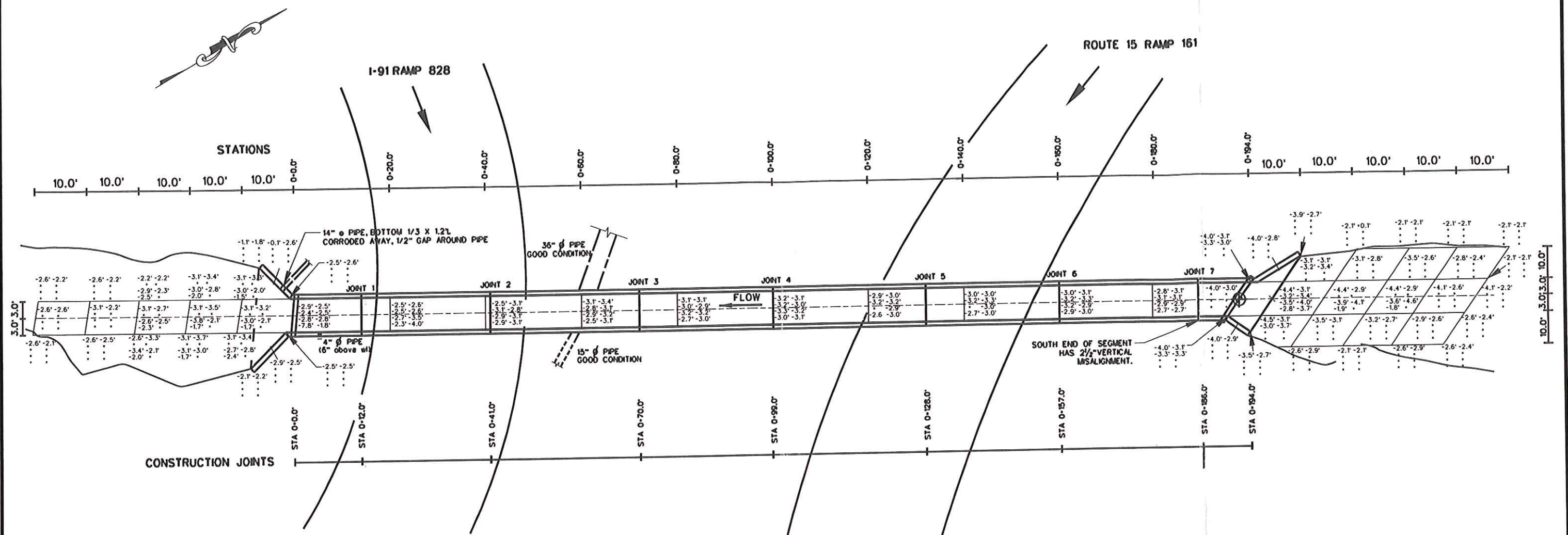
INTERSTATE 91 TR 828 AND ROUTE 15 RAMP 161 OVER DRAINAGE CONNECTICUT

---

**DECK PLAN**

---

INSPECTED BY: K. J. CS    SCALE: AS SHOWN    DATE OF INSPECTION: 01 / 16 / 15  
REVISED BY: CS    DRAWING NO. **03614A**



- NOTES (DOWNSTREAM)**
- JOINT MATERIAL AT HEADWALL & WINGWALL MISSING, FROM MUDLINE TO TOP OF WINGWALLS, 0.9' PEN.
  - 1.5' OF SILT BUILD-UP AT SOUTH END.

- NOTES (UPSTREAM)**
- MINOR EROSION AT END OF NW WINGWALL, UP TO 1.5'L x 1.5'W x 0.8'D.
  - AREAS OF EROSION BEHIND NE WINGWALL, UP TO 2.5'L x 4.0'W x 1.8'D.
  - NE EMBANKMENT HAS MINOR EROSION UP TO 1.0'D.
  - NW EMBANKMENT IS WELL VEGETATED AND OVERLAYING THE CHANNEL.
  - MINOR TIMBER DEBRIS GROWING AND LAYING ON HEADWALL, WINGWALL AND INLET.

**PLAN**  
N.T.S.

**LEGEND FOR BOTTOM ELEVATIONS**

JAN, 2015	→ -0.0' -0.0'	← JAN, 2013
DEC, 2010	→ -0.0' -0.0'	← NOV, 2008
DEC, 2004	→ -0.0' -0.0'	← MAR, 2001
JAN, 1999	→ -0.0' -0.0'	← 1997

• INDICATES NO INFORMATION

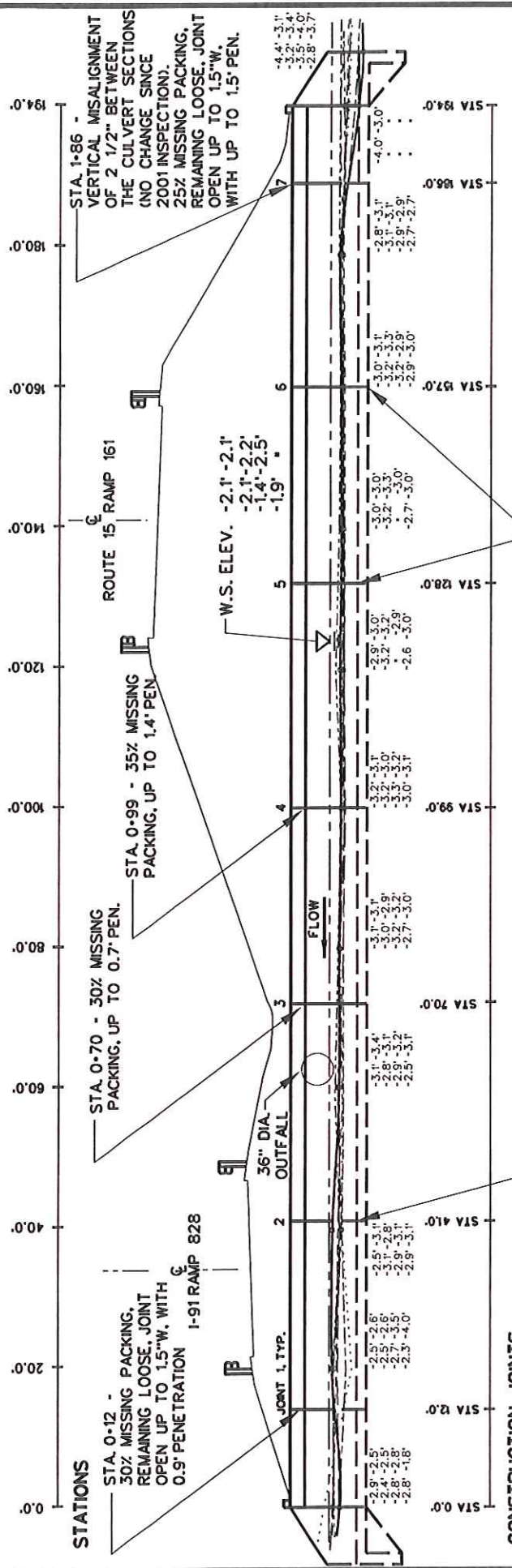
**COLLINS ENGINEERS INC.**  
101 HAMMER MILL ROAD  
ROCKY HILL, CT 06067  
Phone: (860) 571-0384  
Fax: (860) 571-0385

**CONNECTICUT DEPARTMENT OF TRANSPORTATION**  
BRIDGE NO. 03614  
INTERSTATE 91 TR 828 AND ROUTE 15 RAMP 161 OVER DRAINAGE  
HARTFORD CONNECTICUT

**SOUNDING PLAN**

INSPECTED BY: JK, JF, CS	SCALE: AS SHOWN	DATE OF INSPECTION: 01/16/15	DRAWING NO. <b>03614B</b>
REVISED BY: CS			





**CONSTRUCTION JOINTS**

- NOTES:**
1. THE TOE OF THE CULVERT AT THE UPSTREAM END IS EXPOSED UP TO 0.5' HIGH.
  2. THE SOUNDINGS WERE TAKEN ALONG THE CENTERLINE OF THE CULVERT.
  3. THE EAST WALL HAS A 15" DIAMETER OUTFALL AT STA 0+90. THE OUTFALL HAS MINOR CHAMFER SPALLS.
  4. SCALING UP TO 1/8" DEEP FROM MUDLINE TO 4" ABOVE WATERLINE.
  5. INTERMITTENT HONEYCOMBING THROUGHOUT THE CULVERT UP TO 1/2" DEEP.

**CULVERT (WEST WALL)**

N.T.S.

**LEGEND FOR MUDLINE ELEVATIONS**

---	JAN 2015
---	JAN 2010
---	DEC 2010
---	NOV 2008
---	DEC 2004
---	MAR 2001
---	JAN 1999
.....	1997

**LEGEND FOR BOTTOM ELEVATIONS**

---	JAN, 2015
---	JAN, 2013
---	NOV, 2008
---	MAR, 2001
---	1997

• INDICATES NO INFORMATION

**LEGEND FOR SYMBOLS**

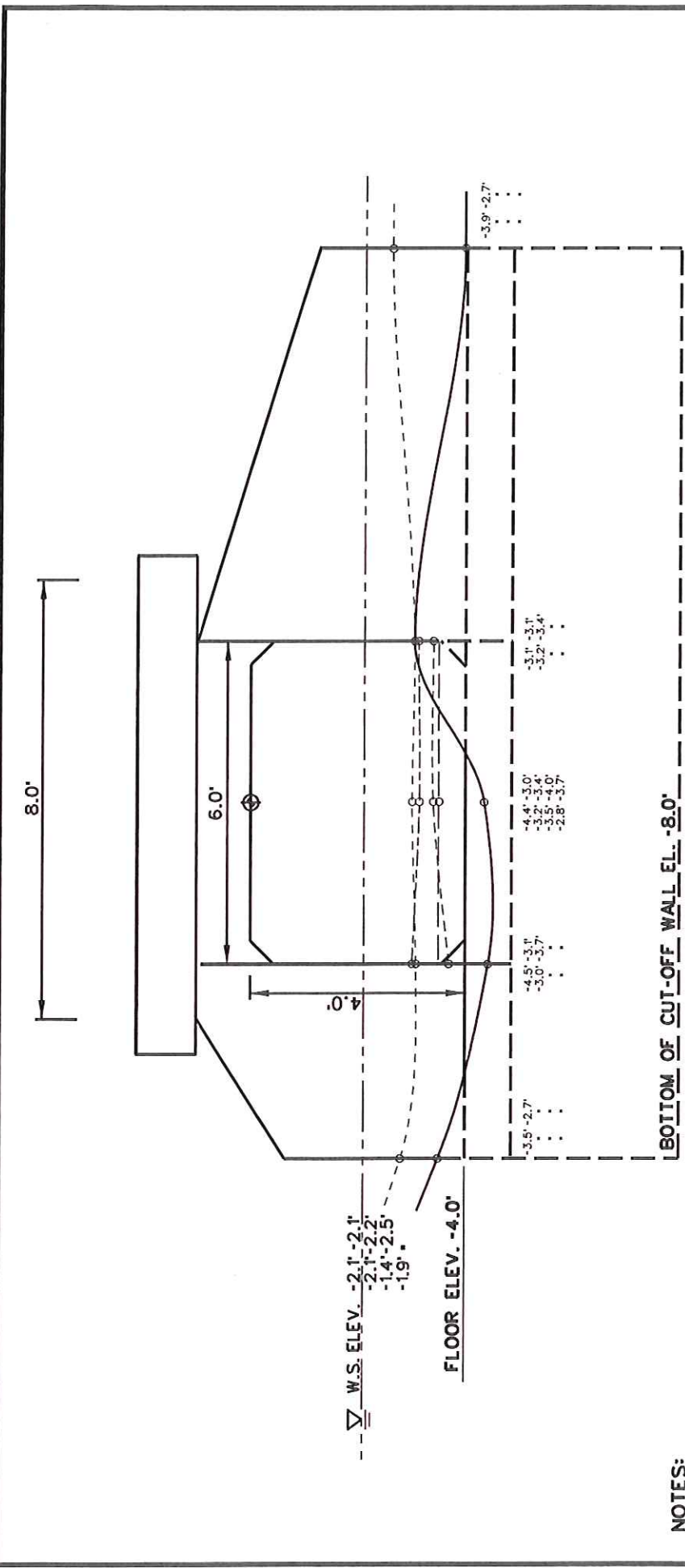
- ⊗ DATUM ELEV. 0.0 TAKEN FROM BOTTOM OF CEILING AT MIDSPAN (NORTH ELEVATION).
- ▽ W.S. ELEV. -2.1' -2.1' -2.1' -2.2' -1.4' -2.5' -1.9'

**COLLINS ENGINEERS** INC.  
 101 HAMMER MILL ROAD  
 ROCKY HILL, CT 06067  
 Phone: (860) 571-0384  
 Fax: (860) 571-0385

**CONNECTICUT DEPARTMENT OF TRANSPORTATION**  
 BRIDGE NO. 03614  
 INTERSTATE 91 TR 828 AND ROUTE 15 RAMP 151 OVER DRAINAGE CONNECTICUT  
 HARTFORD

**CULVERT (WEST WALL)**

INSPECTED BY: JK, JF, CS  
 REVISIONS: AS SHOWN  
 DATE OF INSPECTION: 01 / 16 / 15  
 DRAWING NO. 03614D



**NOTES:**

1. THE TOE OF THE CULVERT FLOOR AT THE UPSTREAM END IS EXPOSED UP TO 0.5' HIGH.
2. CULVERT FLOOR EXTENDS TO END OF WINGWALLS.
3. UPSTREAM ELEVATION MEASUREMENTS TAKEN IN FRONT OF CULVERT TOE.

**LEGEND FOR BOTTOM ELEVATIONS**

JAN, 2015	→ -0.0' -0.0'	← JAN, 2013
DEC, 2010	→ -0.0' -0.0'	← NOV, 2008
DEC, 2004	→ -0.0' -0.0'	← MAR, 2001
JAN, 1999	→ -0.0' -0.0'	← 1997

• INDICATES NO INFORMATION

**NORTH ELEVATION (UPSTREAM PROFILE)**

N.T.S.

**LEGEND FOR MUDLINE ELEVATIONS**

-----	JAN 2015
-----	JAN 2010
-----	DEC, 2010
-----	NOV, 2008
-----	DEC, 2004
-----	MAR, 2001
-----	JAN, 1999
-----	1997

**LEGEND FOR SYMBOLS**

- ⊕ DATUM ELEV. 0.0 TAKEN FROM BOTTOM OF CEILING AT MIDSPAN (NORTH ELEVATION).
- ▽ W.S. ELEV. -2.1' -2.1' -2.1' -2.2' -1.4' -2.5' -1.9'

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 Fax: (860) 571-0385

CONNECTICUT DEPARTMENT OF TRANSPORTATION

BRIDGE NO. 03614  
 INTERSTATE 91 TR 828 AND ROUTE 15 RAMP 151 OVER DRAINAGE CONNECTICUT HARTFORD

NORTH ELEVATION (UPSTREAM PROFILE)

INSPECTED BY: J.N. JF. CS  
 REVISIONS BY: CS  
 SCALE: AS SHOWN  
 DATE OF INSPECTION: 01/16/15  
 DRAWING NO. 03614C









Garg Consulting Thumbnails



03614\_G\_01.JPG



03614\_G\_02.JPG



03614\_G\_03.JPG



03614\_G\_04.JPG



03614\_G\_05.JPG



03614\_G\_06.JPG



03614\_G\_07.JPG



03614\_G\_08.JPG



03614\_G\_09.JPG



03614\_G\_10.JPG



03614\_G\_11.JPG



03614\_G\_12.JPG



03614\_G\_13.JPG



03614\_G\_14.JPG



03614\_G\_15.JPG



03614\_G\_16.JPG



03614\_G\_17.JPG

Collins Engineers Thumbnails

19/26



03614\_C\_01.JPG



03614\_C\_02.JPG



03614\_C\_03.JPG



03614\_C\_04.JPG



03614\_C\_05.JPG



03614\_C\_06.JPG



03614\_C\_07.JPG



03614\_C\_08.JPG



03614\_C\_09.JPG



03614\_C\_10.JPG



03614\_C\_11.JPG



03614\_C\_12.JPG



03614\_C\_13.JPG



Bridge No.	03614	Inspected by:	J. Karalekas, P.E.
Town:	Hartford	Inspected by:	J. Figueroa, C. Sorensen
Feature Carried:	I-91 TR 828 & Rte. 15 Ramp 161	Date Inspected:	01/16/14
Feature Crossed:	Drainage	Project No.:	170-1940

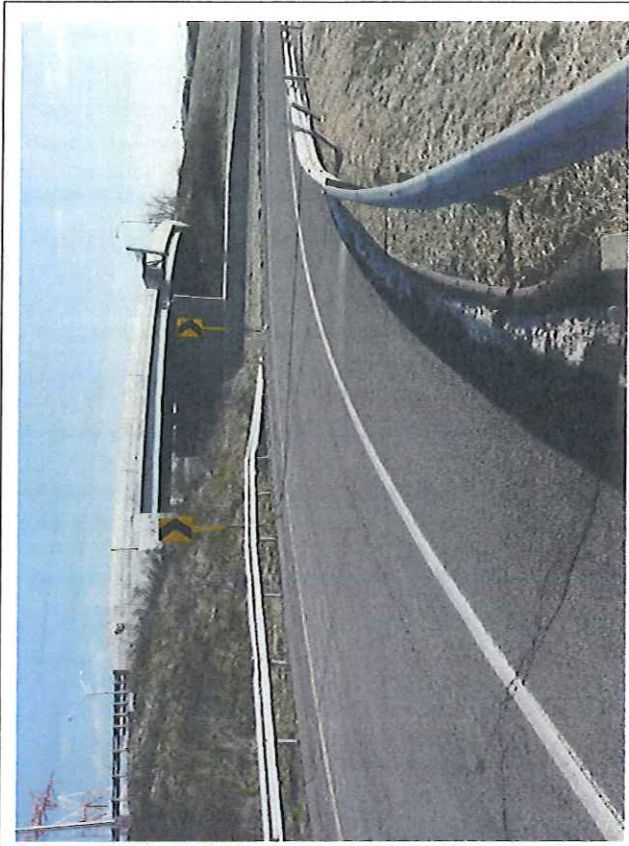


Photo # 2: I-91 TR 828, West Approach Looking East

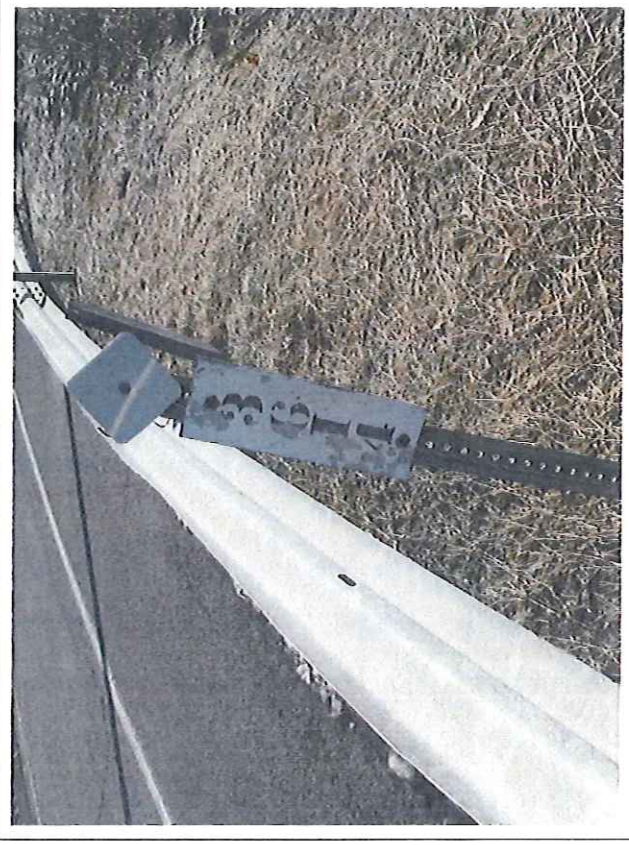


Photo # 1: Bridge Identification Number

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Bridge No.	03614	Inspected by:	J. Karalekas, P.E.
Town:	Hartford	Inspected by:	J. Figueroa, C. Sorensen
Feature Carried:	I-91 TR 828 & Rte. 15 Ramp 161	Date Inspected:	01/16/14
Feature Crossed:	Drainage	Project No.:	170-1940



Photo # 3: I-91 TR 828, East Approach Looking West



Photo # 4: Rte. 15 Ramp 161, West Approach Looking East



Bridge No.	03614	Inspected by:	J. Karalekas, P.E.
Town:	Hartford	Inspected by:	J. Figueroa, C. Sorensen
Feature Carried:	I-91 TR 828 & Rte. 15 Ramp 161	Date Inspected:	01/16/14
Feature Crossed:	Drainage	Project No.:	170-1940



Photo # 5: Rte. 15 Ramp 161, East Approach Looking West



Photo # 6: North (Upstream) Elevation

Bridge No.	03614	Inspected by:	J. Karalekas, P.E.
Town:	Hartford	Inspected by:	J. Figueroa, C. Sorensen
Feature Carried:	I-91 TR 828 & Rte. 15 Ramp 161	Date Inspected:	01/16/14
Feature Crossed:	Drainage	Project No.:	170-1940



Photo # 7: South (Downstream) Elevation



Photo # 8: Channel Looking Upstream (North)



Bridge No.	03614	Inspected by:	J. Karalekas, P.E.
Town:	Hartford	Inspected by:	J. Figueroa, C. Sorensen
Feature Carried:	I-91 TR 828 & Rte. 15 Ramp 161	Date Inspected:	01/16/14
Feature Crossed:	Drainage	Project No.:	170-1940

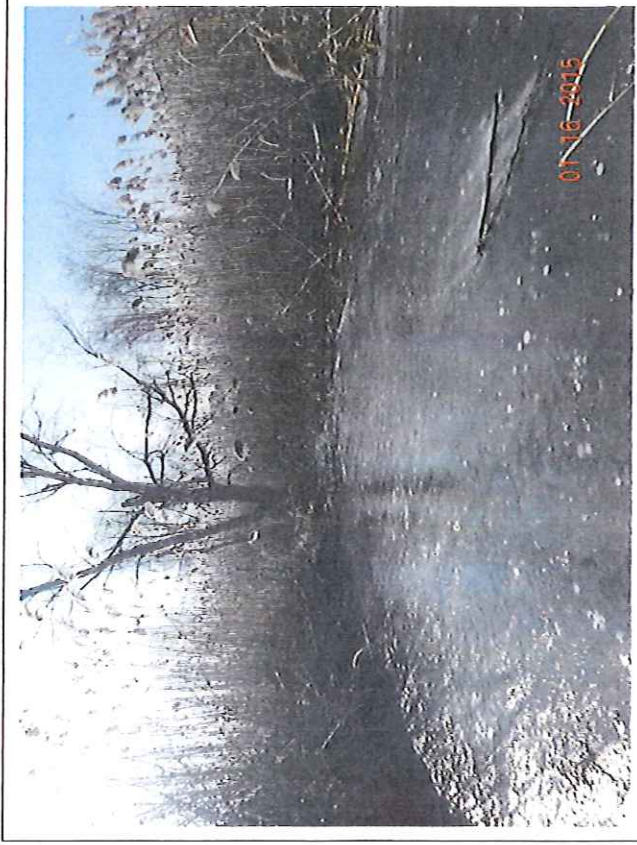


Photo # 9: Channel Looking Downstream (South)



Photo # 10: I-91 TR 828, Bituminous Concrete Pavement Over the Culvert, Looking South

Note: The pavement has transverse cracking.

Bridge No.	03614	Inspected by:	J. Karalekas, P.E.
Town:	Hartford	Inspected by:	J. Figueroa, C. Sorensen
Feature Carried:	I-91 TR 828 & Rte. 15 Ramp 161	Date Inspected:	01/16/14
Feature Crossed:	Drainage	Project No.:	170-1940

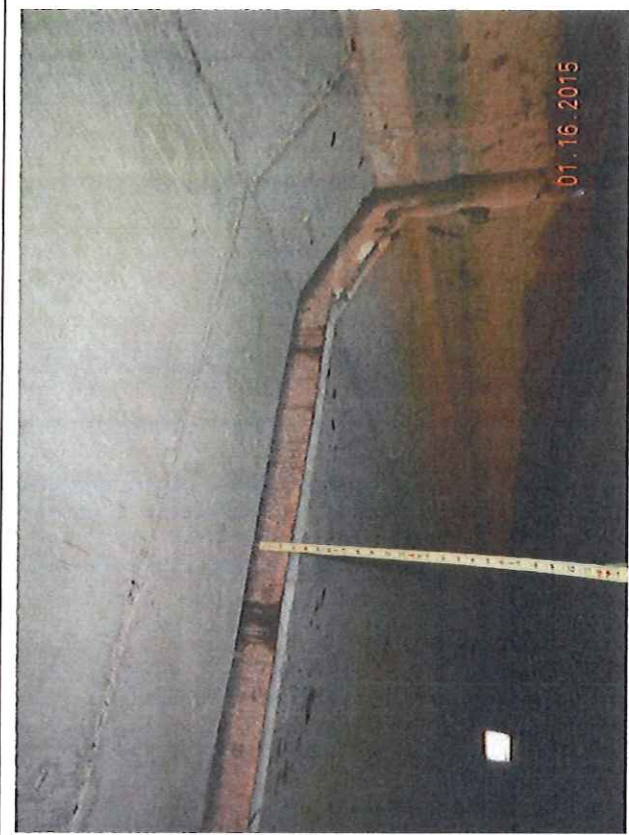


Photo # 12: Culvert Near the North End, Looking Southwest

Note: The culvert sections are misaligned.

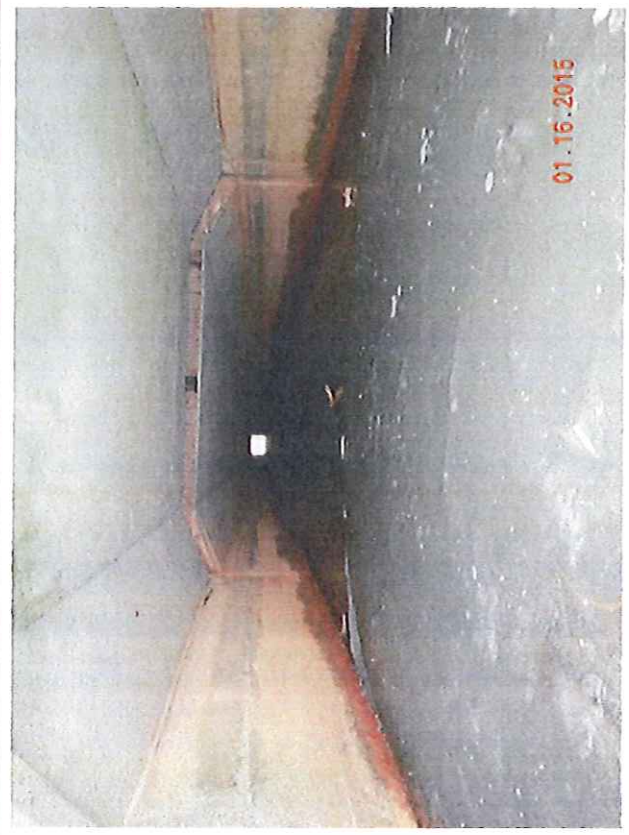
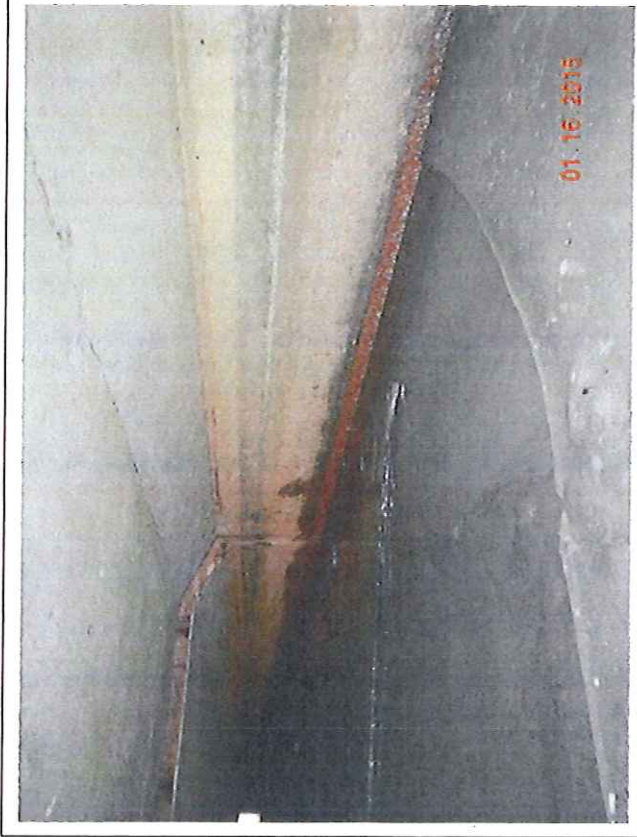


Photo # 11: Typical View Through Culvert at North End, Looking South



<b>Bridge No.</b>	03614	<b>Inspected by:</b>	J. Karalekas, P.E.
<b>Town:</b>	Hartford	<b>Inspected by:</b>	J. Figueroa, C. Sorensen
<b>Feature Carried:</b>	I-91 TR 828 & Rte. 15 Ramp 161	<b>Date Inspected:</b>	01/16/14
<b>Feature Crossed:</b>	Drainage	<b>Project No.:</b>	170-1940



**Photo # 13: Typical Condition of Culvert Wall, Looking Southwest**

**Note:** There is a band of light scale along the waterline.



**Photo # 14: I-91 TR 828, South Metal Beam Rail, Looking East**

**Note:** There are three disconnected posts and the rail is loose.

# APPENDIX

BRIDGE NO. 03614  
ADDITIONAL FIELD NOTES  
DATE: 01/16/2015



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# Connecticut Department of Transportation UNDERWATER INSPECTION

BRI-59 Form

Bridge No: 03614 Date Inspected: ~~1/24/2013~~ 1/16/15

Job Number: 170-1940 Client: Connecticut D.O.T.

Route: 91 TR 828 Mile point: 0.35 City: Hartford

Feature Crossed: Drainage State: CT

Inspector: B. Quadrini, P.E. JK Assistants: H. Elmakky, A. Przeszlow JF, CS

Time Arrived: 12:00 PM 1030 Time Departed: 4:00 PM 1230

Time In Water: 1:30 PM 1045 Time Out of Water: 3:00 PM 1215

Type of Inspection: Routine ✓ No. Spans: 1

Year built: 1963 ✓ Total Length: 6.0' Piers in the Water: N/A ✓

Bridge Type: Reinforced Concrete Culvert ✓

Total Number of Piers: 0 Piers in the Water: N/A ✓

Type of Piers: N/A ✓

Abutments: N/A ✓

Bottom Composition: Silt, sand, with up to 3.0' penetration into the streambed. ✓

Previous U/W Insp: ~~12/1/2010~~ 1/24/13

Marine Growth: Minimal ✓

Max. Water Depth: 1.6'

Max. Depth at Pier: 1.3'

Current Strength: None ✓

U/W Visibility: <1.0' ✓

Type of Water: Fresh ✓

Access to Bridge: Shore ✓

Remarks:

### Inspection Equipment

Number of Boats: 0 ✓ RR Protection: No

Boat Size: 0 ✓ Equipment Comments:

Dive Station: No ✓

Inspected by: Brendan Paul Date: 2/19/13

Inspected by: Hester Date: 2/19/13

D.O.T. reviewed by: \_\_\_\_\_ Date: \_\_\_\_\_

5/27

## Connecticut Department of Transportation

### Bridge Inspection Report BRI-18

Bridge #: 03614

Inspection Date: 01/24/2013

Inspection Type:	Routine	Previous Inspection Date:	12/1/2010	Snooper Required:	No
Inspection Performed By:	Collins Engineers	Feature Carried:	I-91 TR 828, 15-161	Snooper Used:	No
Town:	HARTFORD	Feature Intersected:	DRAINAGE	Year Built:	1963
Location:	91 N EXIT 28/15 S EXIT 87	Main Design:	Culvert (includes frame culverts)	Year Rebuilt:	-
Main Material:	Concrete				

**Visits**

Visit Date:	Temp:	Start Time:	End Time:
1/24/2013	10	12:00:00 PM	4:00:00 PM

**Inspectors:**

Inspector:	Task:
A. Przeszlowski	Inspector
B. Quadrini	Lead Inspector
H. Elmakky	Inspector

**DECK:**

Bituminous pavement over 6' +/- fill (I-91, Ramp 828) and over 20' +/- fill (Route 15, Ramp 161) over concrete box culvert.

Overall Rating: P

Rating

OVERLAY:	6	I-91 Ramp 828 has a full width transverse crack up to <sup>1" w</sup> 1/4" wide and two longitudinal cracks up to 25' long x 1/4" wide. Route 15 Ramp 161 has no notable deficiencies. ✓ See Sheet 12 and Photos 2 & 3.
DECK-STR. CONDITION:	N	-
CURBS:	6	Bituminous curbs have isolated vertical cracks up to 1" wide and scrape marks.
MEDIAN:	N	There is a grass swale between ramps.
SIDEWALKS:	N	-
PARAPET:	N	-
RAILING:	N 5	Metal beam rail is continuous across culvert. See approach guide rail below.
PAINT:	N	-
FENCE:	N	-
DRAINS:	N	-
LIGHTING STANDARD:	N	-

6/27

UTILITIES TYPE/SIZE:	7	There is a 36" diameter outfall in the west wall near Sta 0+60 and a 15" diameter outfall in the east wall near Sta 0+90. The 15" diameter outfall has minor chamfer spalls around the outlet.
CONSTR JOINTS:	N	-
EXPANSION JOINTS:	N	-



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59. SUPERSTRUCTURE:

Overall Rating:

60. SUBSTRUCTURE:

Overall Rating:

Rating

61. CHANNEL & CHANNEL PROTECTION:

The drainage channel is a freshwater body that flows from north to south.

Overall Rating:

Harsh

Rating

The channel bottom consist of silt & sand with up to

CHANNEL SCOUR:

7 ✓

The channel bottom is relatively unchanged (<= 1' changes) since the previous 12/1/2010 inspection. There are areas of minor erosion located behind the end of the northwest wingwall 1.5' L x 1.5' W x 0.8' D, behind the northeast wingwall up to 2.5' L x 4' W x 1.8' D, and along the northeast embankment with root exposure up to 1'H with 1.3' penetration.

6' of Penetration

See Sheets 13 - 15.

EMBANKMENT EROSION:

7 ✓

There are areas of minor erosion located behind the end of the northwest wingwall 1.5' L x 1.5' W x 0.8' D, behind the northeast wingwall up to 2.5' L x 4' W x 1.8' D, and along the northeast embankment with root exposure up to 1'H with 1.3' penetration.

See Sheet 13.

DEBRIS:

5 ✓

Long term sediment infilling has partially blocked the upstream and downstream opening up to 1.1' and 1.5' respectively. There is sediment buildup within the entire structure up to 1.5' H (38% of culvert height). Infilling is relatively unchanged since the previous inspection. Minor timber debris is overhanging the southwest wingwall and north headwall and wingwalls.

See Sheets 13 - 15 and Photos 6 & 7.

VEGETATION:

5/6

Brush and trees have been cut down from above the culvert to 15' +/- downstream of the culvert and are lying on the ground. The southeast embankment has no vegetation along the bank where brush has been removed. All other areas of the upstream and downstream embankments exhibit moderate to heavy vegetation growth that is overhanging the channel, southwest wingwall, and north headwall and wingwalls.

See Sheet 13 and Photos 6 - 9.

CHANNEL CHANGE:

5OK

The channel remains relatively unchanged since the previous 12/1/2010 inspection. However, long term aggradation of the channel bottom has infilled the culvert up to 1.5' H. ✓

See Sheets 13 - 15.

FENDER SYSTEM:

N



8/27

SPUR, DIKES & JETTIES:	N	-
RIP RAP:	N	-

**62. CULVERTS & RETAINING WALL:**

Reinforced concrete box culvert 6' W x 4' H. ✓

Overall Rating: 6 ✓

Rating

BARREL:	6 ✓	The construction joints exhibit up to 70% missing packing with up to 1.5' penetration at chamfer sections. The remaining joint material is typically loose and ineffective. Joint packing was previously reported as up to 100% missing with up to 6" penetration. The construction joints are open up to 1.5" W. Construction joint 7 at Sta 1+86 is vertically misaligned 2.5" (no change since the 2001 inspection), and is open up to 1.5" W. Active water and or soil infiltration was not observed. There were no sink holes or evidence of soil infiltration into the pipe. ✓ See Sheet 14 and Photos 10 & 11.
CONCRETE:	7 ✓	The first 20' +/- of the barrel upstream and downstream exhibits up to 1/8" D scaling from the mudline to 4" above the waterline. The remaining areas of the barrel exhibit light scaling and intermittent honeycombing up to 1/2" deep. ✓ See Sheet 14 and Photos 10 & 12.
STEEL:	N	-
TIMBER:	N	-
HEADWALL:	7 ✓	Headwalls have scale up to 1/8" deep from the mudline to 4" above the waterline. ✓
CUTOFF WALL:	N	-
DEBRIS:	5 ✓	There is sediment buildup within the entire structure up to 1.5' H (38% of culvert height). Minor timber debris is overhanging the southwest wingwall and north headwall and wingwalls. ✓ See Sheets 13 - 15 and Photos 6 & 7.
RETAINING WALL STEM:	7 ✓	Wingwalls have scale up to 1/8" deep from the mudline to 4" above the waterline. There is missing joint material from the mudline to the top of the wingwalls with up to 0.9' penetration. The southeast wingwall has minor damage from backhoe teeth consisting of scrapes and two mechanical spalls 1'L x 0.5' H x up to 1/2" D. ✓
FOOTING:	N	-

**65. APPROACH CONDITION**

Bituminous pavement.

Overall Rating: 6

Rating

APPROACH SLAB:	N	-
RELIEF JOINTS:	N	-
APPROACH GUIDE		

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RAIL:	5	Metal beam rails at both sides of both ramps. I-91 Ramp 828 metal beam rails have minor impact damage on both sides with a total of six disconnected posts. South mbr has 3 consecutive disconnected posts. The rail is unsupported for ± 45' and is loose. North mbr has 2 disconnected posts. See Sheet 12 and Photos 3, 14 & 15. The rail is not loose, Rte 15 Ramp 161 has random minor scrapes
APPROACH PAVEMENT:	6 I-91 Ramp 828	Bituminous pavement has random transverse cracks up to full length and longitudinal. Rte 15 Ramp 161 bit. conc. pavement has no notable deficiencies. See Sheet 12 and Photos 2 - 5, & 13. Roadway width up to 1/2' wide
APPROACH EMBANKMENT:	7	Minor erosion of the banks due to run-off.

**TRAFFIC SAFETY FEATURES**

	Rating	
BRIDGE RAILINGS:	Last Inspection: N Current: N	-
TRANSITIONS:	Last Inspection: N Current: N	-
APPROACH GUARDRAILS:	Last Inspection: N Current: N	-
APPR. GUARDRAIL ENDS:	Last Inspection: N Current: N	-

**66. LOAD POSTING**

	- Posted Loading -	
SINGLE UNIT (TONS):	Last Inspection: - Current: -	-
SEMI TRAILER (TONS):	Last Inspection: - Current: -	-
4 AXLE (TONS):	Last Inspection: - Current: -	-
3S2 (TONS):	Last Inspection: - Current: -	-
ADVANCE WARNING	N	-

10/27

(Y/N):		
LEGIBILITY:	N	-
VISIBILITY/LOCATION:	N	-

67. MISCELLANEOUS

Rating

MIN. VERT. UNDERCLEARANCE:	Last Inspection: - 0' 0" Current: -' -"	
POSTED CLR. UNDER BRIDGE:	Last Inspection: - ' -" Current: -' -"	
POSTED CLR. ON BRIDGE:	Last Inspection: - ' -" Current: -' -"	
ADVANCED WARNING (YES/NO):	No	
SPEED LIMIT (IF ANY):	Last Inspection: - - Current: -	
CHARACTER OF TRAFFIC:	Moderate to heavy volume, mixed weights.	

ADDITIONAL NOTES:

1) Inventory direction is west to east.  
 2) The bridge identification number posted at the I-91 Ramp 828 is faded and the bridge identification number posted at the Route 15 Ramp 161 is in good condition.  
 3) Above water and underwater inspection performed concurrently.

ADDITIONAL COMMENTS:

Repair Recommendations:  
 1) Repair the damaged I-91 Ramp 828 Guide Rail (LS).  
 2) Remove timber debris and overhanging vegetation from the north and south headwalls and wingwalls (LS).  
 3) Seal the culvert joints and wingwall joints (130 LF).  
 4) Seal the cracks in the overlay (150± LF).

Inspectors' Signatures:

1) Brandon Paul

Date: 2/19/13

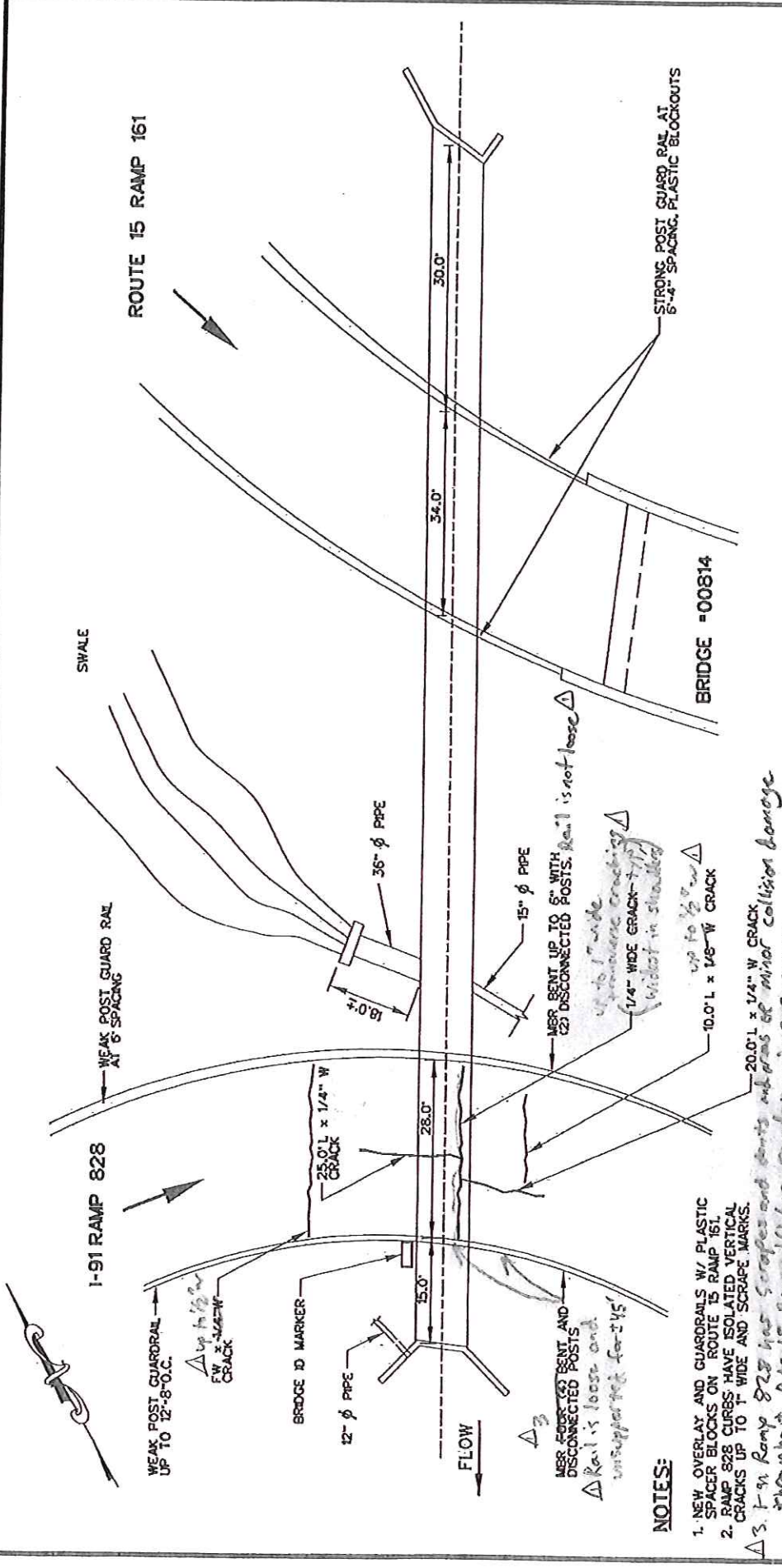
2) Ashley

Date: 2/19/13

3) \_\_\_\_\_

Date: / /





**NOTES:**

1. NEW OVERLAY AND GUARDRAILS W/ PLASTIC SPACER BLOCKS ON ROUTE 15 RAMP 161.
2. RAMP 828 CURBS HAVE ISOLATED VERTICAL CRACKS UP TO 1" WIDE AND SCRAPE MARKS.
3. I-91 Ramp 828 has scrapes and bits of minor collision damage throughout. Route 15 Ramp 161 has random minor scrapes.

**LEGEND FOR BOTTOM ELEVATIONS**

JAN, 2015	-0.0'	NOV, 2008
DEC, 2010	-0.0' -0.0'	NOV, 2008
DEC, 2004	-0.0' -0.0'	MAR, 2001
JAN, 1999	-0.0' -0.0'	1997

\* INDICATES NO INFORMATION

**LEGEND**

- HOLLOW AREA
- SHALLOW REINFORCEMENT
- SPALL AREA
- SPALL AREA WITH EXPOSED REINFORCEMENT
- MAP CRACKS OR HAIRLINE MAP CRACKS
- HAIRLINE CRACKS (HLC) OR CRACKS (CR)
- HONEYCOMB AREA
- SCALE AREA (HYV, MED, OR LT)

**LEGEND FOR MUDLINE ELEVATIONS**

JAN, 2015	1997
DEC, 2010	
NOV, 2008	
DEC, 2004	
MAR, 2001	
JAN, 1999	

**LEGEND FOR SYMBOLS**

- DATUM ELEV. O.D TAKEN FROM BOTTOM OF CEILING AT MIDSPAN (NORTH ELEVATION).
- W.S. ELEV. -2.1
- 2.1 -2.2'
- 1.4 -2.5'
- 1.9'

**COLLINS ENGINEERS**  
 101 HAMMER MILL ROAD  
 ROCKY HILL, CT 06067  
 Phone: (860) 571-0385  
 Fax: (860) 571-0385

**CONNECTICUT DEPARTMENT OF TRANSPORTATION**  
 BRIDGE NO. 03614  
 INTERSTATE 91 TR 828 AND ROUTE 15 RAMP 161 OVER DRAINAGE CONNECTICUT  
 HARTFORD

**DECK PLAN**

INSPECTED BY: DD/ME/AP  
 SCALE: AS SHOWN  
 DATE OF INSPECTION: 01/24/13  
 REVISED BY: TNO  
 DRAWING NO. 03614A

*Collins/Geog: ST, SF/CS*

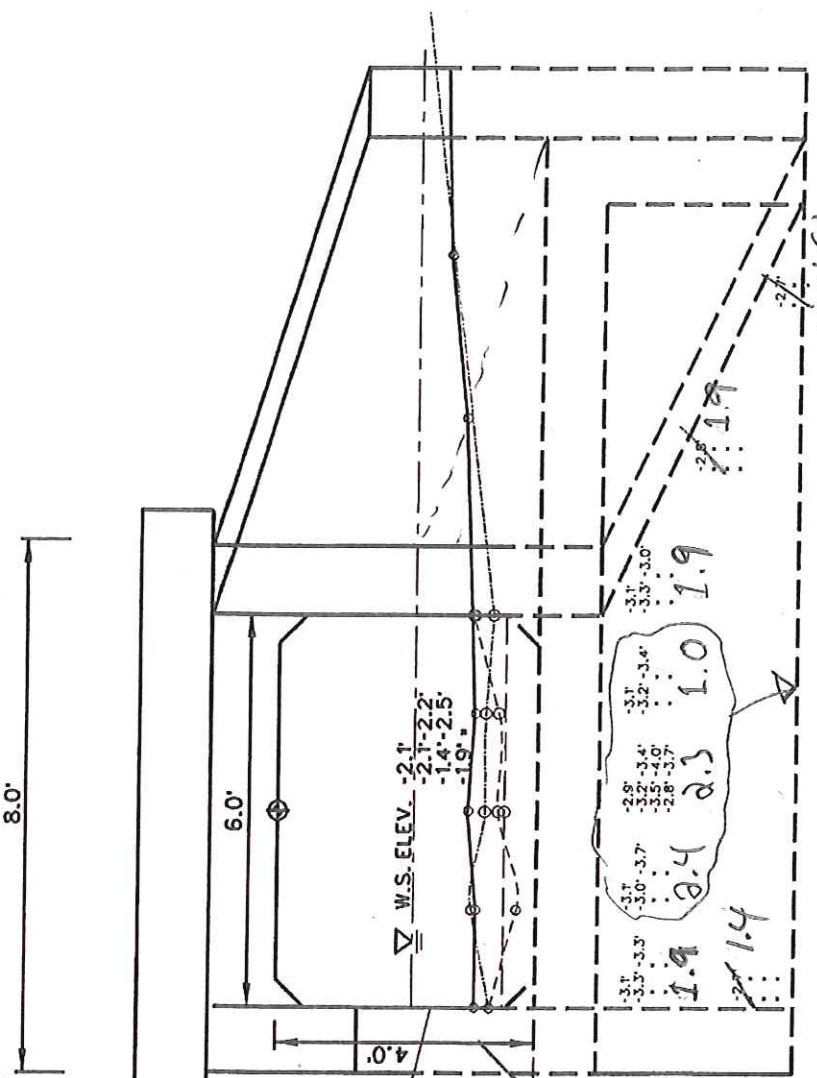








15/27



*silt penetrations 6' deep*

*- up to 0.5' of exposed vert face of floor*

*- Culvert flow extends to end of wingwalls*

*- upstream channel elevation taken at ends of wingwall*

**NORTH ELEVATION (UPSTREAM PROFILE)**

N.T.S.

**LEGEND FOR MUDLINE ELEVATIONS**

---	JAN 2013
---	DEC 2010
---	NOV 2008
---	DEC 2004
---	MAR 2001
---	JAN 1999
---	1997

**LEGEND FOR SYMBOLS**

⊕	DATUM ELEV. 0.0 TAKEN FROM BOTTOM OF CEILING AT MIDSPAN (NORTH ELEVATION)
▽	W.S. ELEV. -2.1'
	-2.1'-2.2'
	-1.4'-2.5'
	-1.9'

**LEGEND FOR BOTTOM ELEVATIONS**

---	JAN 2013
---	DEC 2010
---	NOV 2008
---	DEC 2004
---	MAR 2001
---	JAN 1999
---	1997

**LEGEND**

[Symbol]	HOLLOW AREA
[Symbol]	SHALLOW REINFORCEMENT
[Symbol]	SPALL AREA
[Symbol]	SPALL AREA WITH EXPOSED REINFORCEMENT
[Symbol]	MAP CRACKS OR HARLINE MAP CRACKS
[Symbol]	HARLINE CRACKS (HLC) OR CRACKS (CR)
[Symbol]	HONEYCOMB AREA
[Symbol]	SCALE AREA (HVT, MED, OR LT)

**COLLINS ENGINEERS**  
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**CONNECTICUT DEPARTMENT OF TRANSPORTATION**  
 BRIDGE NO. 03614  
 INTERSTATE 91 TR E28 AND ROUTE 5 RAMP 151 OVER DRAINAGE CONNECTICUT MARLIFORD

**NORTH ELEVATION (UPSTREAM PROFILE)**

INSPECTED BY: BOJ.M.P. AS SHOWN  
 SCALE: AS SHOWN  
 DATE OF INSPECTION: 01 / 24 / 13  
 DRAWING NO. 036140



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