



## BRIDGE NO.01218

52980 - NEWTOWN  
INTERSTATE 84 EASTBOUND  
over  
HOUSATONIC RIVER

Underwater Inspection  
7/18/2018  
Inspected by: Infrastructure



---

---

## TABLE OF CONTENTS

| <u>Section</u>                             | <u>Page Number</u> |
|--|--------------------|
| Report Title Page                          | 1                  |
| Location Map                               | 2                  |
| Structure Inventory and Appraisal (BRI-19) | 3                  |
| Underwater Inspection (BRI-59)             | 7                  |
| Underwater Inspection (BRI-58)             | 8                  |
| UW Drawings                                | 11                 |
| Photos                                     | 21                 |
| Back-Up Material                           | 32                 |



## Report Title Page

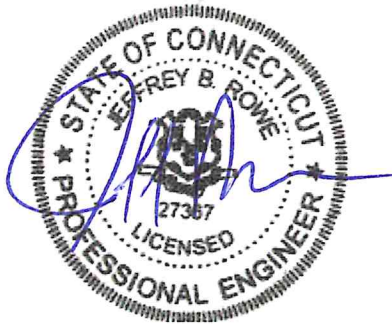
**Project No.:** 170-3339 (Underwater Inspections – NHS)

**Structure:** 01218, Interstate 84 Eastbound over Housatonic River, Newtown

**Inspected By:** Infrastructure Engineers, Inc. **Inspection Date:** 7/18/2018

### **Professional Certification:**

I hereby certify that this report, including all of its contents, has been approved by me, and that I am a duly licensed professional engineer under the laws of the State of Connecticut.



**Jeffrey Rowe, PE** (Infrastructure Engineers, Inc.)

**PM / QAQC:** Jeffrey Rowe, PE

**CT License No.:** 27367

**Date:** 8/10/2018

**Form: Location**

**Inspection type:** Underwater

**Inspection Date:** 7/18/2018

**Inspected by:** Infrastructure Engineers

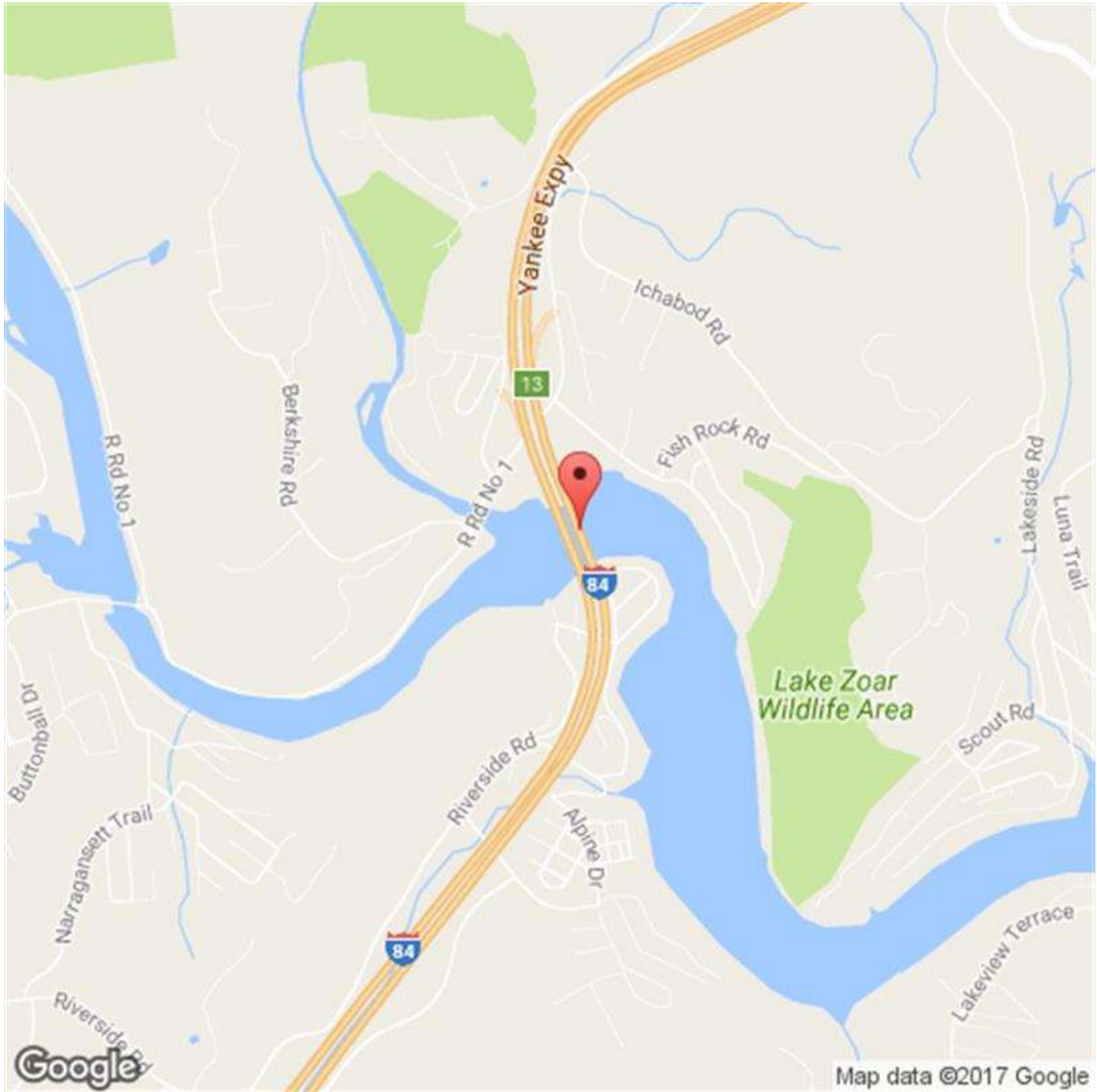
**Bridge No:** 01218

**Town:** NEWTOWN

**Carried:** INTERSTATE 84 EASTBOUND

**Crossed:** HOUSATONIC RIVER

**Inventory Route:** NHS



Location Map # 1  
Bridge No. 01218  
Interstate 84 Eastbound over Housatonic  
River  
Newtown, CT

Form: BRI-19, Rev. 2/15  
Inspection type: Underwater  
Inspection Date: 7/18/2018  
Inspected by: Infrastructure Engineers

Bridge No: 01218

Town: NEWTOWN  
Carried: INTERSTATE 84 EASTBOUND  
Crossed: HOUSATONIC RIVER  
Inventory Route: NHS

## STRUCTURE INVENTORY & APPRAISAL

### INSPECTION

Structurally Deficient  Functionally Obsolete

Sufficiency Rating

(90) Inspection Date  (91) Frequency

Indepth Insp  Proposed next Indepth Year

Deck Survey Date  Class

Access  Flagman

|            | Frequency                       | Date                                    | Type   |
|------------|---------------------------------|---|--|
| Fracture   | <input type="text" value="24"/> | <input type="text"/>                    | <input type="text" value="D Two Girder System, riveted / bolted plate girders"/> |
| Underwater | <input type="text" value="24"/> | <input type="text" value="07/18/2018"/> | <input type="text" value="B Underwater Only"/>                                   |
| Special    | <input type="text"/>            | <input type="text"/>                    | <input type="text"/>   |

### IDENTIFICATION

Bridge Name

Town Code - Name

(5) Inventory Route

(A) Record Type

(B) Signing Prefix

(C) Level of Service

(D) Route Number.

(E) Dir Suffix

(6A) Featured Intersected

(6B) Critical Facility Indicator

(7) Facility Carried

(9) Location

(11) Mile Post  Miles

(16) Latitude  Deg.  Min.  Sec.

(17) Longitude  Deg.  Min.  Sec.

(98) Border Bridge

(A) State Code  (B) Percent Responsibility %

(C) Border Town Name

(99) Border Bridge Structure No.

### STRUCTURE TYPE & MATERIALS

(43) Structure Type, Main

A) Material

B) Design Type

(44) Structure Type, Approach

A) Material

B) Design Type

(45) Number of Spans, Main Unit

(46) Number of Approach Spans

(107) Deck Structure Type

(108) Wearing Surface/Protection Systems

A) Type of Wearing Surface

B) Type of Membrane

C) Type of Deck Protection

Substructure

A) Material

B) Design Type

Paint

Type

Year

Comment

### GEOMETRIC DATA

(48) Length of Maximum Span  ft.

(49) Structure Length  ft.

(50) Curb or Sidewalk Widths

A) Left  ft.  in. B) Right  ft.  in.

(51) Bridge Roadway Width Curb to Curb  ft.  in.

(52) Deck Width, Out to Out  ft.  in.

(32) Approach Roadway Width  ft.

(33) Bridge Median

Deck Area  sq. ft.

(34) Skew Angle  deg.

(35) Structure Flared

(10) Inv. Rte. Min. Vert. Clearance  ft.  in.

(47) Inv. Rte. Total Horiz. Clr.  ft.  in.

Log Inv. Rte. Total Horiz. Clr.  ft.  in.

RLog Inv. Rte. Total Horiz. Clr.  ft.  in.

(53) Min. Vert. Clearance Over Bridge  ft.  in.

(54) Log-Min. Vert. Underclearance  ref.  ft.  in.

(55) Min. Lat Underclearance on Right  ref.  ft.  in.

(56) Min. Lat Underclearance on Left  ft.  in.

**CONDITION**

(58) Deck

(59) Superstructure

(60) Substructure

(61) Channel & Channel Protections

(62) Culverts

(36) Traffic Safety Features

A) Bridge Railings

B) Transitions

C) Approach Guardrail

D) Approach Guardrail Ends

**WATERWAY**

Drainage Basin Waterway

(38) Navigation Control

(39) Navigation Vertical Clearance  ft.

(40) Navigation Horiz. Clr.  ft.

(111) Pier/Abutment Navigation

(116) Vert-Lift Brg Nav Min  ft.  in.

**AGE AND SERVICE**

Year Built  (106) Year Reconstructed

(42) Type of Service

A) On

B) Under

(28) Number of Lanes

A) On  B) Under

(29) Average Daily Traffic

Is Above Half ADT?

(109) Percent Truck  %

(30) Years of ADT

(19) Bypass, Detour Length  Miles

**APPRAISALS**

(67) Structural Evaluation

(68) Deck Geometry

(69) Underclearances, Vert. & Horiz.

(71) Waterway Adequacy

(72) Approach Roadway Alignment

(113) Scour Critical

**COMMENTS**

Item 60(substructure) changed from 5 to 6 rating, See Divers Rpt. dated 7/12/10. RKD, 8/5/10.  
 New Section Loss information was submitted by Baker in July 28, 2010 report. This information was forwarded to Load Evaluation Group for evaluation. Ralph Phillips 02/17/2011

**CLASSIFICATION**

(112) NBIS Bridge Length

(104) Highway System

(26) Functional Class

(100) Defense Highway

(101) Parallel Structure

(102) Direction of Traffic

(103) Temporary Structure

(110) Designated National Network

(20) Toll

(21) Maintain

(22) Owner

Report Class

(37) Historical Significance

**POSTED SIGNS**

Other Posted Sign 1

Other Posted Sign 2

|                                  | Actual                      | Recomended               |      |
|----------------------------------|-----------------------------|--------------------------|------|
| Posted Load Single Unit Truck    | <input type="text"/>        | <input type="text"/>     | tons |
| Posted Load Semi-Trailer Truck   | <input type="text"/>        | <input type="text"/>     | tons |
| Posted Load 4 Axle Truck         | <input type="text"/>        | <input type="text"/>     | tons |
| Posted Load 3S2 Truck            | <input type="text"/>        | <input type="text"/>     | tons |
| All Vehicles                     | <input type="text"/>        | <input type="text"/>     | tons |
| Posted Vert. Clearance on Bridge | <input type="text"/> ft.    | <input type="text"/> in. |      |
| Posted Vert. Underclearance      | <input type="text"/> ft.    | <input type="text"/> in. |      |
| Posted Speed Limit on Bridge     | <input type="text"/> m.p.h. |                          |      |

**OTHER FEATURES**

Fence Required

Fence Present

Fence Type

Fence Height

Fence Material

Fence Top Type

Barrel Ladders

Stand Pipes

Catwalks

Moveable Inspection System

Haunches Present over Roadway

Utilities

**PROPOSED IMPROVEMENTS**

(75A) Type of Work Proposed

(75B) Work Done By

(76) Length of Structure Improvement  ft.

(94) Bridge Improvement Cost \$

(95) Roadway Improvement Cost \$

(96) Total Project Cost \$

(97) Year of Improvement Estimate

(114) Future ADT

(115) Year of Future ADT

DOT Bridge Program List No

Project No

Advertised Date

**LOAD RATING & POSTING**

(31) Design Load

(63) Operating Rating Type

(64) Operating Rating

(65) Inventory Rating Type

(66) Inventory Rating

Evaluation Code

Year of Evaluation

(70) Bridge Posting

(41) Structure Status

Form: BRI-19, Rev. 2/15

Inspection type: Underwater

Inspection Date: 7/18/2018

Inspected by: Infrastructure Engineers

Bridge No: 01218

Town: NEWTOWN

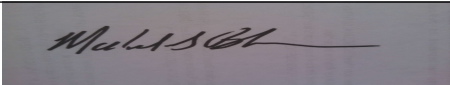
Carried: INTERSTATE 84 EASTBOUND

Crossed: HOUSATONIC RIVER

Inventory Route: NHS

**INSPECTOR'S SIGNATURES:**

1)  Date: 08/14/2018

2)  Date: 08/16/2018

3) \_\_\_\_\_ Date:

4) \_\_\_\_\_ Date:

P.E. SIGNATURE:  Date: 08/17/2018

P.E. # \_\_\_\_\_ 27367

Reviewed By:  Date: 09/04/2018



# UNDERWATER INSPECTION (BRI-59)



---

Bridge: 01218    Town: 52980 - NEWTOWN    Carried: INTERSTATE 84 EASTBOUND    Crossed: HOUSATONIC RIVER

---

Total Number of Piers: 3

Piers in the Water: 3

Boat Used? Yes

Boat Size: 26'

Dive Station Used? Yes

Access to Bridge: Boat

Access/ Equipment Comments U/W: Underwater Inspections performed in conjunction with Bridge No. 04180.  
Boat ramp located at the end of Scout Road in Southbury.

Type of water: Fresh

Marine Growth: Minor aquatic growth

Max Water Depth: 27.2'

Max Water Depth at Pier Or Abutment: 27.2'

Current Strength: 1 fps

U/W Visibility: 8'

Bottom Composition: Cobbles, river rock, and sand with up to 2.5' penetration into the channel bottom.

Form: BRI-58.

Inspection type: Underwater

Inspection Date: 7/18/2018

Inspected by: Infrastructure Engineers

Bridge No: 01218

Town: NEWTOWN

Carried: INTERSTATE 84 EASTBOUND

Crossed: HOUSATONIC RIVER

Inventory Route: NHS

UNDERWATER INSPECTION

| ITEM                    | RATING | REMARKS  |
|-------------------------|--------|--|
| <b>60. SUBSTRUCTURE</b> | 6      |  |
| <b>ABUTMENT 1:</b>      | N      | South Abutment. Located out of the channel.  |
| STEM                    | N      |  |
| FOOTING                 | N      |  |
| EROSION                 | N      |  |
| SETTLEMENT              | N      |  |
| SCOUR                   | N      |  |
| WINGWALLS               | N      |  |
| General Remarks:        |        |  |
| <b>ABUTMENT 2:</b>      | N      | North Abutment. Located out of the channel.<br>(See Photo 3)   |
| STEM                    | N      |  |
| FOOTING                 | N      |  |
| EROSION                 | N      |  |
| SETTLEMENT              | N      |  |
| SCOUR                   | N      |  |
| WINGWALLS               | N      |  |
| General Remarks:        |        |  |
| <b>PIER NO. 1</b>       | 6      |  |
| PILES                   | N      | • There is no exposure of the steel H-piles.   |
| STEM                    | 7      | The reinforced concrete pier has the following deficiencies:<br><br><ul style="list-style-type: none"> <li>• 5' high band of abrasion up to 1/4" deep extending from 1' above to 4' below the water surface.</li> <li>• There are steel H-piles intermittently extending out of the stem located above the step footing (formwork left in place from construction).</li> <li>• Random areas of zebra mussels up to 50% coverage x 1" thick on underwater substructure.</li> </ul> (See UW Drawings 5 & 6 and Photos 4 & 5)   |
| FOOTING                 | 7      | The step footing and footing have the following deficiencies:<br><br><ul style="list-style-type: none"> <li>• Step footing exposed up to 32' long x up to full-height (5.9' high) along both faces of the pier.</li> <li>• Footing exposed up to 6.8' vertically (previously 5' high) over a length of 30' on the South face and 8' on the North face near the Upstream (West) end of the pier with no undermining.</li> <li>• Exposed surfaces of the step footing and footing have abrasion up to 1/8" deep.</li> </ul> (See UW Drawings 5 & 6 and Photos 6 & 7) |

**Form: BRI-58.**

**Inspection type:** Underwater

**Inspection Date:** 7/18/2018

**Inspected by:** Infrastructure Engineers

**Bridge No: 01218**

**Town:** NEWTOWN

**Carried:** INTERSTATE 84 EASTBOUND

**Crossed:** HOUSATONIC RIVER

**Inventory Route:** NHS

|            |   |   |
|------------|---|---|
| SCOUR      | 5 | <ul style="list-style-type: none"><li>The channel bottom along Pier 1 primarily at the Upstream (West) nose and North face has had scour up to 4.1' high since the 2016 Underwater Inspection.</li><li>Step footing exposed up to 32' long x up to full-height (5.9' high) along both faces of the pier.</li><li>Footing exposed up to 6.8' vertically (previously 5' high) over a length of 30' on the south face and 8' on the north face near the Upstream (West) end of the pier with no undermining.</li></ul> <p>(See UW Drawings 5 &amp; 6 and Photos 6 &amp; 7)</p> |
| SETTLEMENT | 8 | <ul style="list-style-type: none"><li>No apparent settlement observed.</li></ul>  |

General Remarks:

|                   |   |  |
|-------------------|---|--|
| <b>PIER NO.</b> 2 | 6 |  |
| PILES             | N | <ul style="list-style-type: none"><li>There is no exposure of the steel H-piles.</li></ul>   |
| STEM              | 7 | <p>The reinforced concrete pier has the following deficiencies:</p> <ul style="list-style-type: none"><li>5' high band of abrasion up to 1/4" deep with isolated areas up to 3/4" deep extending from 1' above to 4' below the water surface.</li><li>Random areas of zebra mussels up to 50% coverage x 1" thick on underwater substructure.</li></ul> <p>(See UW Drawings 7 &amp; 8 and Photos 8 &amp; 9)</p>                                |
| FOOTING           | 7 | <ul style="list-style-type: none"><li>The step footing is exposed up to 26' long x 2.1' high (previously 2' high) on the South face of the pier and along the Upstream (West) Nose.</li><li>Exposed surfaces of the step footings footing exhibit scaling up to 1/8" deep.</li><li>Step footing has random chamfer spalls up to 6" long x 3" wide x 1" deep.</li></ul> <p>(See UW Drawings 7 &amp; 8 and Photo 10)</p>                         |
| SCOUR             | 5 | <ul style="list-style-type: none"><li>The channel bottom along Pier 2 North face has had scour up to 5.6' high since the 2016 Underwater Inspection.</li><li>The step footing is exposed up to 26' long x 2.1' high (previously 2' high) on the South face of the pier and along the Upstream (West) Nose</li><li>The Southwest corner has exposed sheet piling 3' long x 1.2' high.</li></ul> <p>(See UW Drawings 7 &amp; 8 and Photo 10)</p> |
| SETTLEMENT        | 8 | <ul style="list-style-type: none"><li>No apparent settlement observed.</li></ul>   |

General Remarks:

|                   |   |  |
|-------------------|---|--|
| <b>PIER NO.</b> 3 | 6 |  |
| PILES             | N | <ul style="list-style-type: none"><li>There is no exposure of the steel H-piles.</li></ul>   |
| STEM              | 7 | <p>The reinforced concrete pier has the following deficiencies:</p> <ul style="list-style-type: none"><li>Band of abrasion up to 1/2" deep extending from 1' above the water surface down to the channel bottom.</li><li>There are a few vertical hairline cracks up to 1.5' long near the water surface of the pier.</li></ul> <p>(See UW Drawings 9 &amp; 10 and Photos 11 &amp; 12)</p> |
| FOOTING           | N | <ul style="list-style-type: none"><li>There is no exposure of the step footing or footing at the pier.</li></ul>   |
| SCOUR             | 7 | <ul style="list-style-type: none"><li>The channel bottom along Pier 3 has remained relatively unchanged (less than 1.1' variations) as compared to the 2016 Underwater Inspection.</li></ul> <p>(See UW Drawings 9 &amp; 10)</p>   |
| SETTLEMENT        | 8 | <ul style="list-style-type: none"><li>No apparent settlement observed.</li></ul>   |

General Remarks:

**Form: BRI-58.**

**Inspection type:** Underwater

**Inspection Date:** 7/18/2018

**Inspected by:** Infrastructure Engineers

**Bridge No: 01218**

**Town:** NEWTOWN

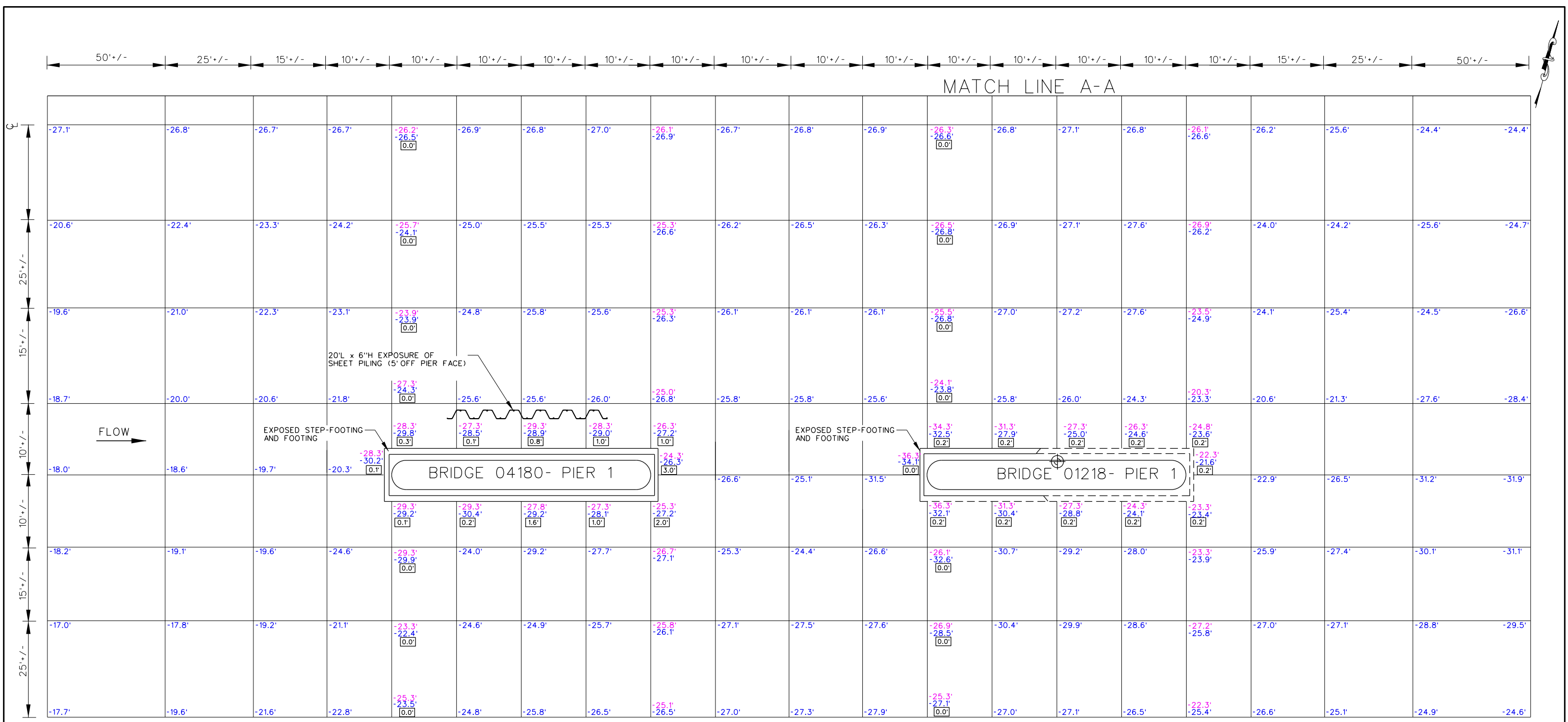
**Carried:** INTERSTATE 84 EASTBOUND

**Crossed:** HOUSATONIC RIVER

**Inventory Route:** NHS

**61. CHANNEL & CHANNEL PROTECTION:**

|                      |   |  |
|----------------------|---|--|
|                      | 5 | The Housatonic River is a fresh body of water that flows from West to East beneath the structure.  |
| CHANNEL SCOUR        | 5 | <ul style="list-style-type: none"><li>• The channel bottom along Pier 1 primarily at the nose and North face has had scour up to 4.1' high since the 2016 Underwater Inspection.</li><li>• The channel bottom along Pier 2 North face has had scour up to 5.6' high since the 2016 Underwater Inspection.</li><li>• The channel bottom along Pier 3 has remained relatively unchanged (less than 1.1' variations) since the 2016 Underwater Inspection.</li><li>• The channel bottom along the up and downstream fascias have had random areas of mostly aggradation up to 6.5' high since the 2016 Underwater Inspection.</li><li>• At Pier 1, the step footing is exposed up to 32' long x up to full-height (5.9' high) along both faces of the pier and the footing has been exposed up to 6.8' high (previously 5.0' high) over a length of 30' on the South face and 8' on the North face near the Upstream (West) end of the pier.</li><li>• At Pier 2, the step footing is exposed up to 26' long x 2.1' high (previously 2.0' high) on the South face of the pier and along the Upstream (West) nose.</li><li>• There is no exposure of the footings at Pier 3.</li></ul> <p>(See UW Drawings 1 - 10)</p> |
| EMBANKMENT EROSION   | 7 | There is no significant erosion along the channel embankments.<br><br>(See Photos 15 - 18)   |
| DEBRIS               | 6 | <ul style="list-style-type: none"><li>• There are three 30' long x 1' diameter fallen trees in the channel South of Pier 3.</li><li>• There is a 30' long x 12' high x 2' diameter area of timber debris on the Upstream (West) nose of Pier 1.</li></ul> <p>(See UW Drawings 1 - 10)</p>  |
| VEGETATION           | 7 | The channel embankments are well vegetated.  |
| CHANNEL CHANGE       | 6 | <ul style="list-style-type: none"><li>• There is no apparent change to the channel orientation.</li><li>• Bridge No. 04180 is located approximately 40' Upstream (West) of the bridge.</li><li>• There is approximately a 150' long x 20' wide x 3' high sandbar/area of aggradation located northwest of Pier 3 near Bridge No. 04180.</li></ul> <p>(See UW Drawings 1 - 3 and Photos 13 - 14)</p>  |
| FENDER SYSTEM        | N |  |
| SPUR DIKES & JETTIES | N |  |
| RIP RAP              | N |  |
| General Remarks:     |   | There are navigational lights on Pier 1, center of Span 2 and Pier 2 on the Downstream (East) Fascia. The lights were not on during this inspection.<br><br>(Photos 19 - 21)   |



SOUNDING PLAN  
N.T.S.


LEGEND FOR BOTTOM ELEVATIONS

JULY, 2018: -0.0'

JULY, 2016: -0.0'

LEGEND FOR SYMBOLS

- ⊕ DATUM ELEV. 0.0' TAKEN FROM THE EASTBOUND BRIDGE 01218 AT THE SECOND CONSTRUCTION JOINT DOWN FROM THE TOP OF THE PIER AT THE CENTERLINE OF THE NORTH FACE OF PIER 1
- ▽ W.S. ELEV. -7.3'
- ⊖ -7.3'
- ⓪ DEPTH OF PENETRATION



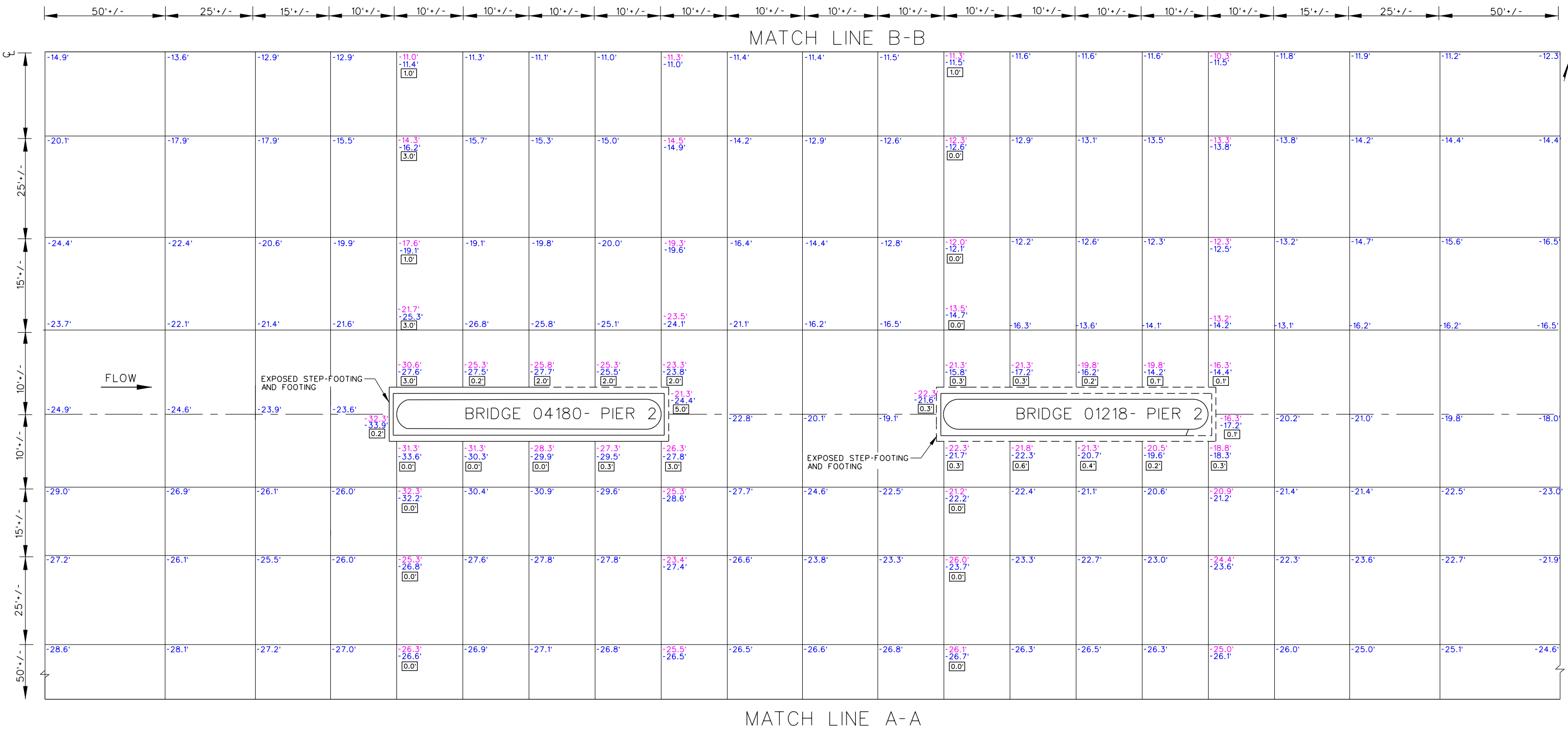
**INFRASTRUCTURE ENGINEERS, INC.**

1-888-451-6822

|   |                 |                                  |                     |
|---|-----------------|----------------------------------|---------------------|
| <b>CONNECTICUT DEPARTMENT OF TRANSPORTATION</b> |                 |                                  |                     |
| <b>BRIDGE NO. 01218</b>                         |                 |                                  |                     |
| ROUTE 84 EASTBOUND OVER HOUSATONIC RIVER        |                 |                                  |                     |
| NEWTOWN   |                 | CONNECTICUT                      |                     |
| <b>SOUNDING PLAN</b>                            |                 |                                  |                     |
| INSPECTED BY: JK, MB, JW                        | SCALE: AS SHOWN | DATE OF INSPECTION: 07 / 18 / 18 | DRAWING NO. 01218 A |
| REVISED BY: FH                                  |                 |                                  |                     |

UW DRAWING 1

MATCH LINE B-B



SOUNDING PLAN

N.T.S.

LEGEND FOR SYMBOLS

- ⊕ DATUM ELEV. 0.0' TAKEN FROM THE EASTBOUND BRIDGE 01218 AT THE SECOND CONSTRUCTION JOINT DOWN FROM THE TOP OF THE PIER AT THE CENTERLINE OF THE NORTH FACE OF PIER 1
- ▽ W.S. ELEV. -7.3'
- ☐ DEPTH OF PENETRATION

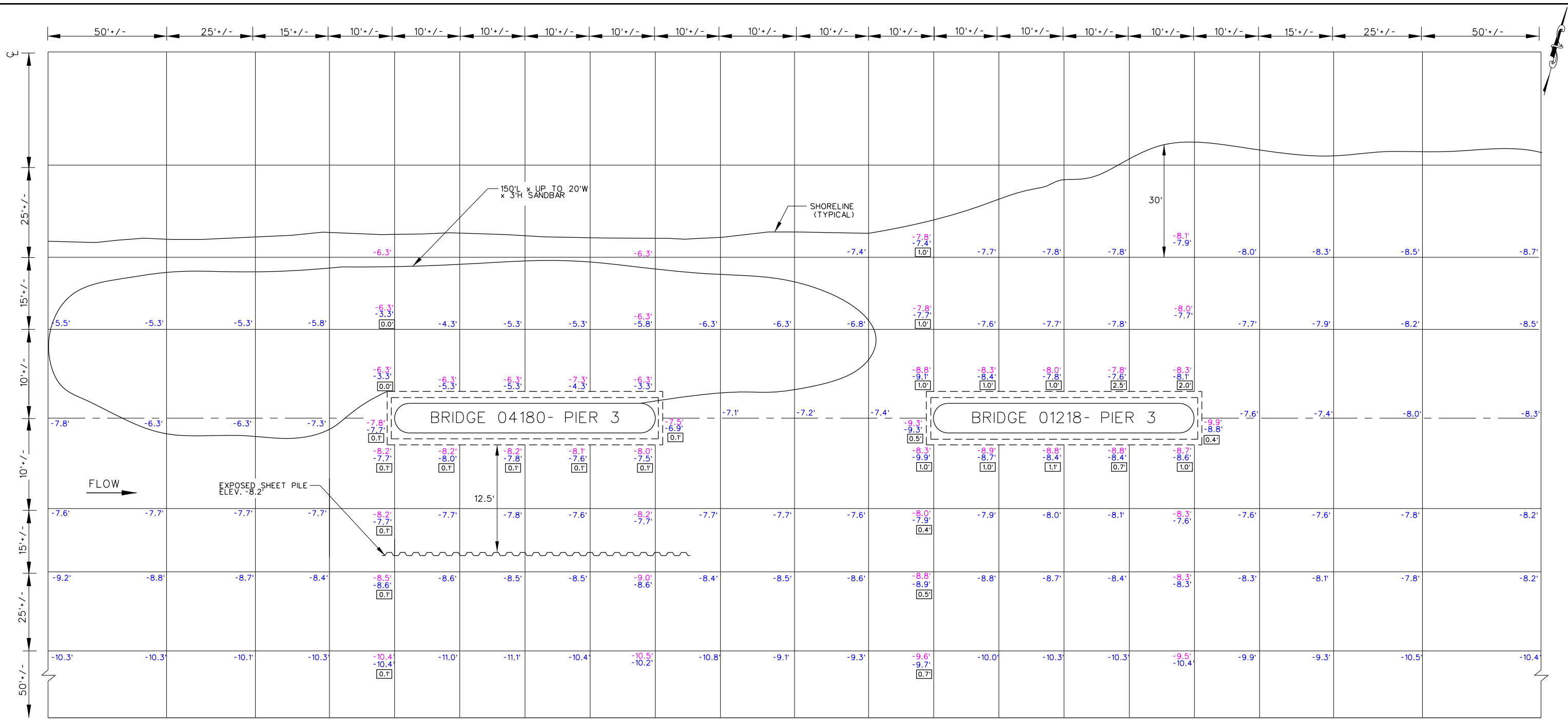
LEGEND FOR BOTTOM ELEVATIONS

JULY, 2018: -0.0'  
 JULY, 2016: -0.0'

**INFRASTRUCTURE ENGINEERS, INC.**  
 1-888-451-6822

|  |                 |                                  |                     |
|--|-----------------|----------------------------------|---------------------|
| CONNECTICUT DEPARTMENT OF TRANSPORTATION |                 |                                  |                     |
| BRIDGE NO. 01218                         |                 |                                  |                     |
| ROUTE 84 EASTBOUND OVER HOUSATONIC RIVER |                 |                                  |                     |
| NEWTOWN                                  |                 |                                  | CONNECTICUT         |
| SOUNDING PLAN                            |                 |                                  |                     |
| INSPECTED BY: JK, MB, JW                 | SCALE: AS SHOWN | DATE OF INSPECTION: 07 / 18 / 18 | DRAWING NO. 01218 B |
| REVISED BY: FH                           |                 |                                  |                     |

UW DRAWING 2



MATCH LINE B-B

SOUNDING PLAN  
N.T.S.

LEGEND FOR BOTTOM ELEVATIONS

JULY, 2018: -0.0'  
JULY, 2016: -0.0'

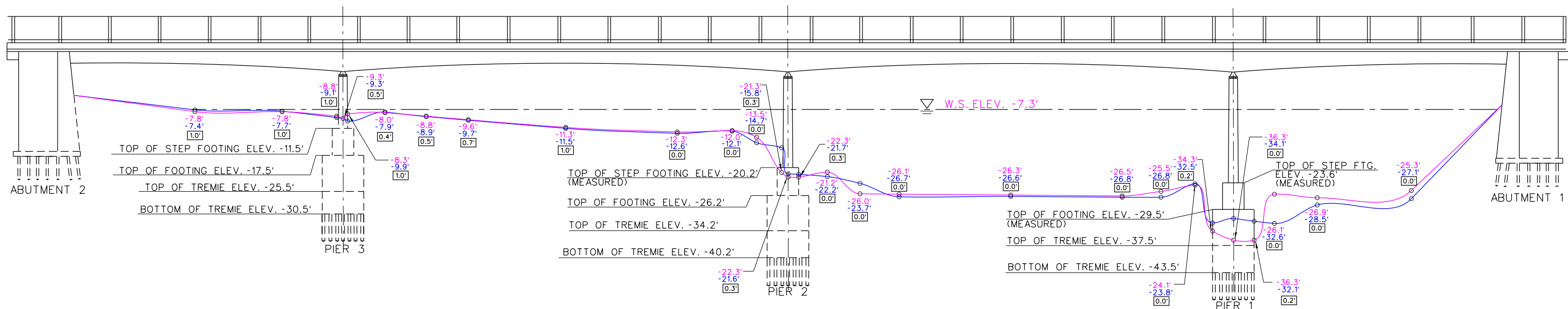
LEGEND FOR SYMBOLS

- DATUM ELEV. 0.0' TAKEN FROM THE EASTBOUND BRIDGE 01218 AT THE SECOND CONSTRUCTION JOINT DOWN FROM THE TOP OF THE PIER AT THE CENTERLINE OF THE NORTH FACE OF PIER 1
- W.S. ELEV. -7.3'  
-7.3'
- DEPTH OF PENETRATION

**INFRASTRUCTURE ENGINEERS, INC.**  
1-888-451-6822

|  |                 |                                  |                     |
|--|-----------------|----------------------------------|---------------------|
| CONNECTICUT DEPARTMENT OF TRANSPORTATION |                 |                                  |                     |
| BRIDGE NO. 01218                         |                 |                                  |                     |
| ROUTE 84 EASTBOUND OVER HOUSATONIC RIVER |                 |                                  |                     |
| NEWTOWN                                  |                 |                                  | CONNECTICUT         |
| SOUNDING PLAN                            |                 |                                  |                     |
| INSPECTED BY: JK, MB, JW                 | SCALE: AS SHOWN | DATE OF INSPECTION: 07 / 18 / 18 | DRAWING NO. 01218 C |
| REVISED BY: FH                           |                 |                                  |                     |

UW DRAWING 3



UPSTREAM (WEST) ELEVATION  
N.T.S.

NOTES:

- PIER ELEVATIONS SHOWN ARE BASED ON EXISTING PLANS, UNLESS OTHERWISE NOTED.

LEGEND FOR BOTTOM ELEVATIONS

JULY, 2018: -0.0'  
JULY, 2016: -0.0'

LEGEND FOR MUDLINE ELEVATIONS

JULY 2018  
JULY 2016

LEGEND FOR SYMBOLS

- DATUM ELEV. 0.0' TAKEN FROM THE EASTBOUND BRIDGE 01218 AT THE SECOND CONSTRUCTION JOINT DOWN FROM THE TOP OF THE PIER AT THE CENTERLINE OF THE NORTH FACE OF PIER 1
- W.S. ELEV. -7.3'
- DEPTH OF PENETRATION



**INFRASTRUCTURE ENGINEERS, INC.**  
1-888-451-6822

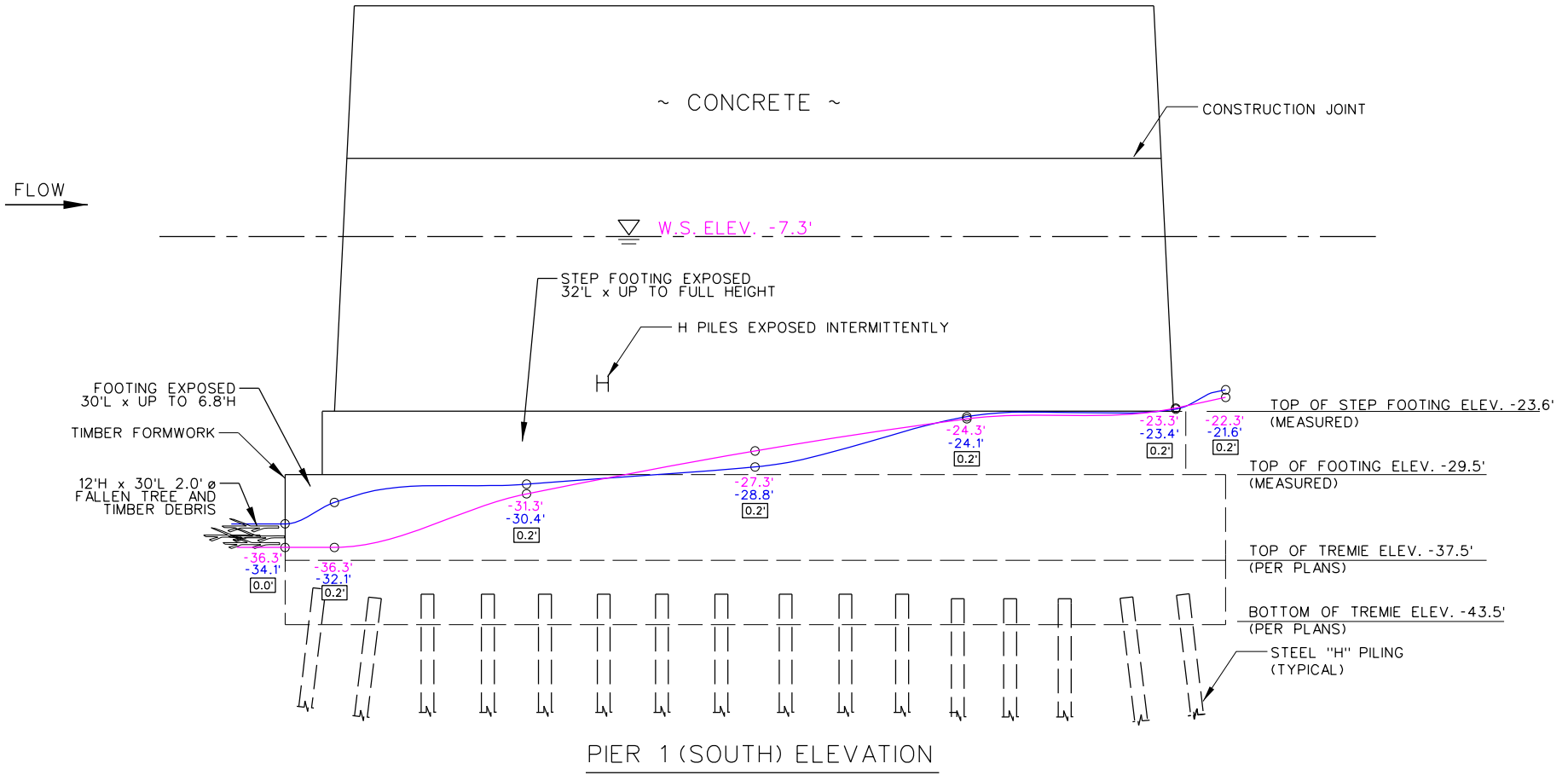
CONNECTICUT DEPARTMENT OF TRANSPORTATION

BRIDGE NO. 01218  
ROUTE 84 EASTBOUND OVER HOUSATONIC RIVER  
NEWTOWN CONNECTICUT

UPSTREAM (WEST) ELEVATION

INSPECTED BY: JK, MB, JW SCALE: AS SHOWN DATE OF INSPECTION: 07 / 18 / 18 DRAWING NO. 01218 D  
REVISED BY: FH





**NOTE:**

1. BAND OF ABRASION UP TO 5'H x 1/4"D FROM 1' ABOVE WATERLINE TO 4' BELOW.
2. ISOLATED AREAS OF ABRASION UP TO 1/8" DEEP ON EXPOSED STEP FOOTING AND FOOTING.
3. RANDOM AREAS OF ZEBRA MUSSELS UP TO 50% COVERAGE x 1" THICK ON UNDERWATER SUBSTRUCTURE.
4. FOOTING 1' WIDE.

**LEGEND FOR SYMBOLS**

- ⊕ DATUM ELEV. 0.0' TAKEN FROM THE EASTBOUND BRIDGE 01218 AT THE SECOND CONSTRUCTION JOINT DOWN FROM THE TOP OF THE PIER AT THE CENTERLINE OF THE NORTH FACE OF PIER 1
- ▽ W.S. ELEV. -7.3'
- 7.3'
- [0.0'] DEPTH OF PENETRATION

**LEGEND FOR BOTTOM ELEVATIONS**

JULY, 2018: -0.0'  
JULY, 2016: -0.0'

**LEGEND FOR MUDLINE ELEVATIONS**

— JULY, 2018  
— JULY, 2016



**INFRASTRUCTURE  
ENGINEERS, INC.**  
1-888-451-6822

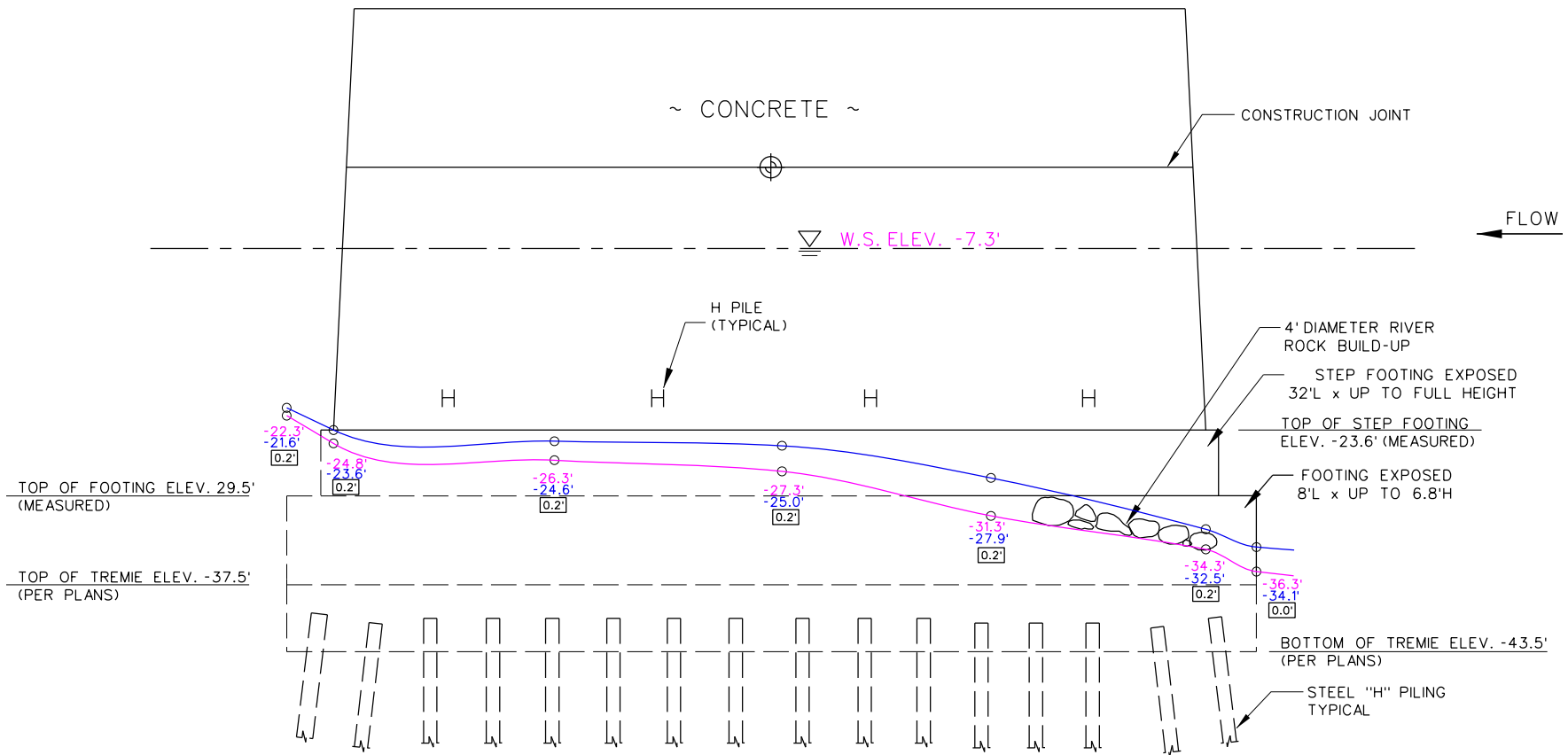
**CONNECTICUT DEPARTMENT OF TRANSPORTATION**

**BRIDGE NO. 01218**  
ROUTE 84 EASTBOUND OVER HOUSATONIC RIVER  
CONNECTICUT

**PIER 1 (SOUTH) ELEVATION**

|                          |                 |                                  |                     |
|--------------------------|-----------------|----------------------------------|---------------------|
| INSPECTED BY: JK, MB, JW | SCALE: AS SHOWN | DATE OF INSPECTION: 07 / 18 / 18 | DRAWING NO. 01218 E |
| REVISED BY: FH           |                 |                                  |                     |

UW DRAWING 5



PIER 1 (NORTH) ELEVATION  
N.T.S.

**NOTES:**

1. BAND OF ABRASION UP TO 5' HIGH x 1/2" DEEP FROM 1' ABOVE THE WATERLINE TO 4' BELOW.
2. ISOLATED AREAS OF ABRASION UP TO 1/8" DEEP ON EXPOSED STEP FOOTING AND FOOTING.
3. RANDOM AREAS OF ZEBRA MUSSELS UP TO 50% COVERAGE x 1" THICK ON UNDERWATER SUBSTRUCTURE.
4. FOOTING 1' WIDE.

**LEGEND FOR SYMBOLS**

- ⊕ DATUM ELEV. 0.0' TAKEN FROM THE EASTBOUND BRIDGE 01218 AT THE SECOND CONSTRUCTION JOINT DOWN FROM THE TOP OF THE PIER AT THE CENTERLINE OF THE NORTH FACE OF PIER 1
- ▽ W.S. ELEV. -7.3'
- 7.3'
- [0.0'] DEPTH OF PENETRATION

**LEGEND FOR BOTTOM ELEVATIONS**

JULY, 2018: -0.0'  
JULY, 2016: -0.0'

**LEGEND FOR MUDLINE ELEVATIONS**

— JULY, 2018  
— JULY, 2016



**INFRASTRUCTURE ENGINEERS, INC.**  
1-888-451-6822

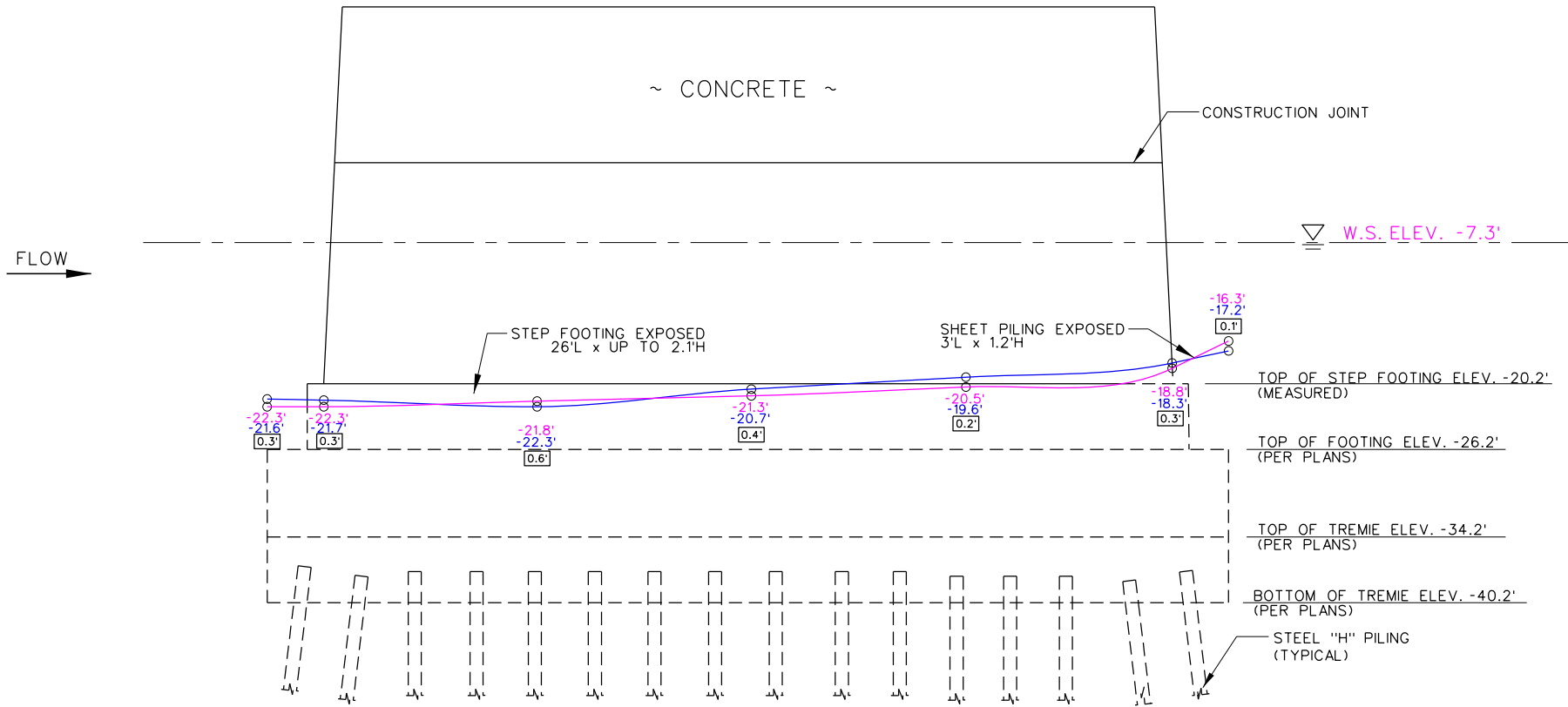
CONNECTICUT DEPARTMENT OF TRANSPORTATION

BRIDGE NO. 01218  
ROUTE 84 EASTBOUND OVER HOUSATONIC RIVER  
CONNECTICUT  
NEWTOWN

PIER 1 (NORTH) ELEVATION

INSPECTED BY: JK, MB, JW  
REVISOR: FH  
SCALE: AS SHOWN  
DATE OF INSPECTION: 07 / 18 / 18  
DRAWING NO. 01218 F

UW DRAWING 6



PIER 2 (SOUTH) ELEVATION  
N.T.S.

NOTES:

- BAND OF ABRASION 5' HIGH x UP TO 1/4" DEEP WITH ISOLATED AREAS UP TO 3/4" DEEP FROM 1' ABOVE WATERLINE TO 4' BELOW.
- RANDOM CHAMFER SPALLS ON EXPOSED STEP FOOTING UP TO 6" LONG x 3" WIDE x 1" DEEP.
- RANDOM AREAS OF ZEBRA MUSSELS UP TO 50% COVERAGE x 1" THICK ON UNDERWATER SUBSTRUCTURE.
- FOOTING 1' WIDE.

LEGEND FOR BOTTOM ELEVATIONS


JULY, 2018: -0.0'  
JULY, 2016: -0.0'

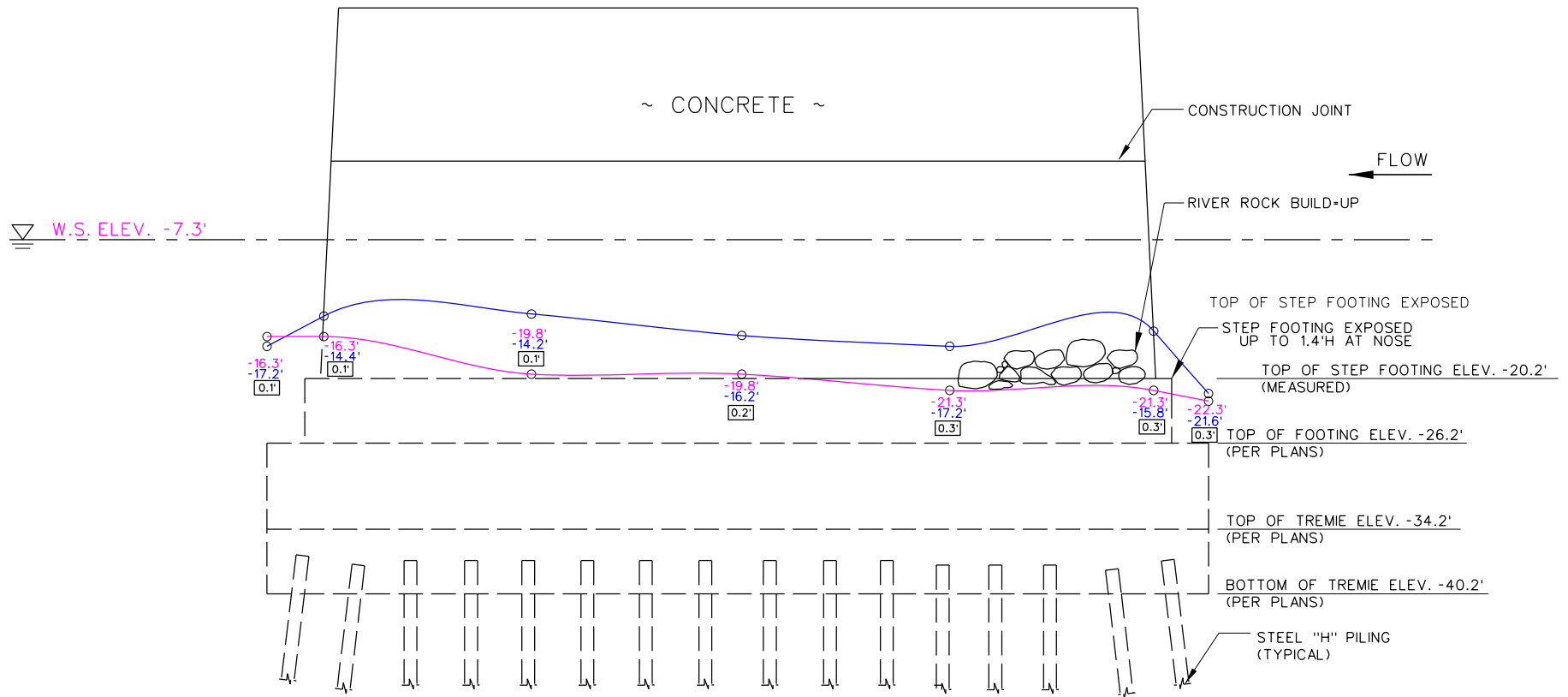
LEGEND FOR MUDLINE ELEVATIONS

— JULY, 2018  
— JULY, 2016

LEGEND FOR SYMBOLS

- DATUM ELEV. 0.0' TAKEN FROM THE EASTBOUND BRIDGE 01218 AT THE SECOND CONSTRUCTION JOINT DOWN FROM THE TOP OF THE PIER AT THE CENTERLINE OF THE NORTH FACE OF PIER 1
- W.S. ELEV. -7.3'
- DEPTH OF PENETRATION

|  |   |                                    |                     |  |              |
|--|---|------------------------------------|---------------------|--|--------------|
| <br><b>INFRASTRUCTURE ENGINEERS, INC.</b><br>1-888-451-6822 | CONNECTICUT DEPARTMENT OF TRANSPORTATION                        |                                    |                     |  | UW DRAWING 7 |
|  | BRIDGE NO. 01218  |                                    |                     |  |              |
|  | ROUTE 84 EASTBOUND OVER HOUSATONIC RIVER<br>NEWTOWN CONNECTICUT |                                    |                     |  |              |
| PIER 2 (SOUTH) ELEVATION   |   |                                    |                     |  |              |
| INSPECTED BY: JK, MB, JW<br>REVISED BY: FH   | SCALE:<br>AS SHOWN  | DATE OF INSPECTION<br>07 / 18 / 18 | DRAWING NO. 01218 G |  |              |



PIER 2 (NORTH) ELEVATION  
N.T.S.

NOTE:

- BAND OF ABRASION 5' HIGH x 1/2" DEEP WITH ISOLATED AREAS UP TO 3/4" DEEP FROM 1' ABOVE THE WATERLINE TO 4' BELOW.
- RANDOM AREAS OF ZEBRA MUSSELS UP TO 50% COVERAGE x 1" THICK ON UNDERWATER SUBSTRUCTURE.
- FOOTING 1' WIDE.

LEGEND FOR SYMBOLS


- DATUM ELEV. 0.0' TAKEN FROM THE EASTBOUND BRIDGE 01218 AT THE SECOND CONSTRUCTION JOINT DOWN FROM THE TOP OF THE PIER AT THE CENTERLINE OF THE NORTH FACE OF PIER 1
- W.S. ELEV. -7.3'
- DEPTH OF PENETRATION

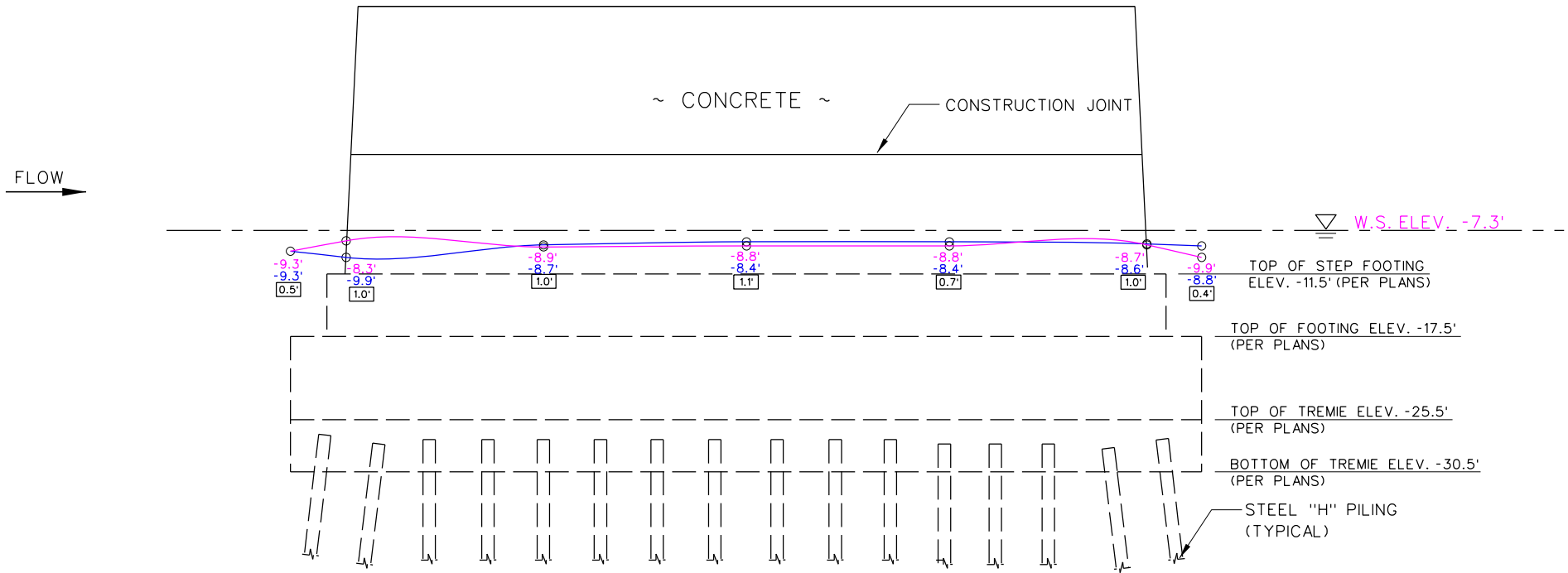
LEGEND FOR BOTTOM ELEVATIONS

JULY, 2018: -0.0'  
JULY, 2016: -0.0'

LEGEND FOR MUDLINE ELEVATIONS

JULY, 2018  
JULY, 2016

|  |   |                                    |                     |  |              |
|--|---|------------------------------------|---------------------|--|--------------|
| <br><b>INFRASTRUCTURE ENGINEERS, INC.</b><br>1-888-451-6822 | CONNECTICUT DEPARTMENT OF TRANSPORTATION                |                                    |                     |  | UW DRAWING 8 |
|  | BRIDGE NO. 01218  |                                    |                     |  |              |
|  | ROUTE 84 EASTBOUND OVER HOUSATONIC RIVER<br>CONNECTICUT |                                    |                     |  |              |
| PIER 2 (NORTH) ELEVATION   |   |                                    |                     |  |              |
| INSPECTED BY: JK, MB, JW<br>REVISED BY: FH   | SCALE:<br>AS SHOWN                                      | DATE OF INSPECTION<br>07 / 18 / 18 | DRAWING NO. 01218 H |  |              |



**NOTE:**

1. ABRASION UP TO 1/2" DEEP FROM MUDLINE TO 1' ABOVE WATERLINE.
2. A FEW RANDOM VERTICAL HAIRLINE CRACKS UP TO 1.5' LONG NEAR WATER SURFACE.

**PIER 3 (SOUTH) ELEVATION**  
N.T.S.

**LEGEND FOR SYMBOLS**

- ⊕ DATUM ELEV. 0.0' TAKEN FROM THE EASTBOUND BRIDGE 01218 AT THE SECOND CONSTRUCTION JOINT DOWN FROM THE TOP OF THE PIER AT THE CENTERLINE OF THE NORTH FACE OF PIER 1
- ▽ W.S. ELEV. -7.3'
- 7.3'
- [0.0] DEPTH OF PENETRATION

**LEGEND FOR BOTTOM ELEVATIONS**

JULY, 2018: -0.0'  
JULY, 2016: -0.0'

**LEGEND FOR MUDLINE ELEVATIONS**

— JULY, 2018  
— JULY, 2016



**INFRASTRUCTURE ENGINEERS, INC.**  
1-888-451-6822

**CONNECTICUT DEPARTMENT OF TRANSPORTATION**

**BRIDGE NO. 01218**  
ROUTE 84 EASTBOUND OVER HOUSATONIC RIVER  
CONNECTICUT

**PIER 3 (SOUTH) ELEVATION**

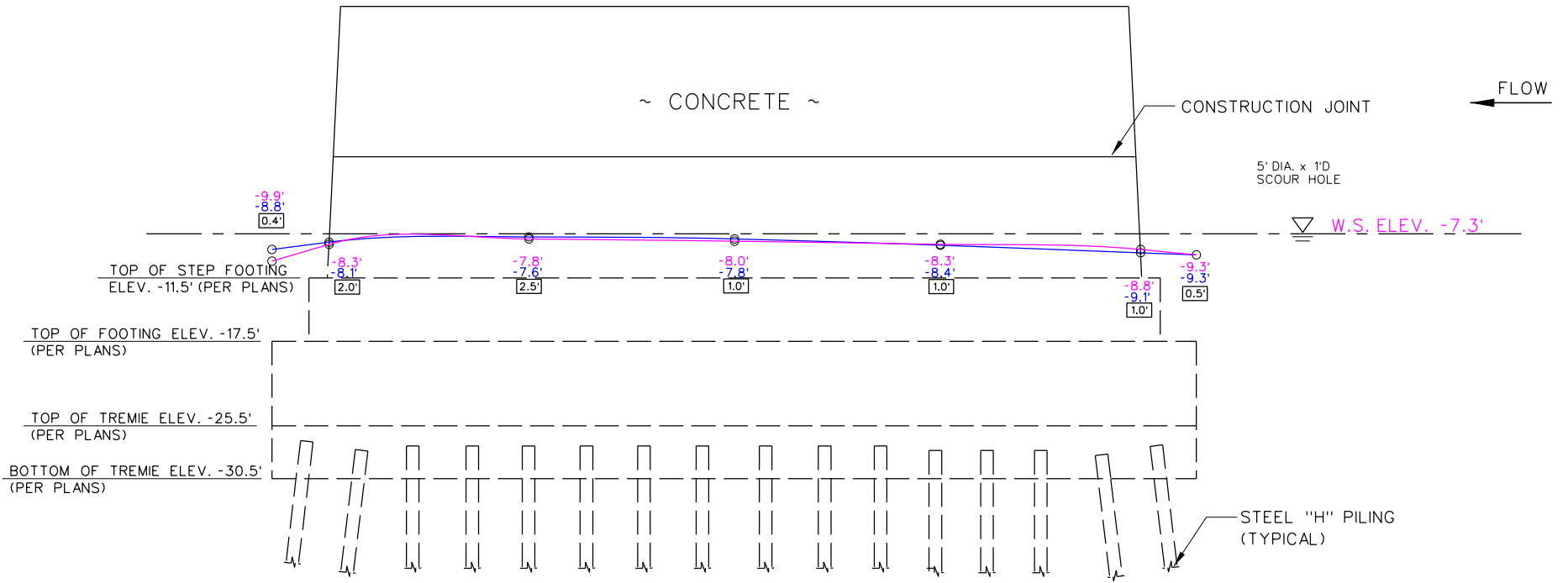
INSPECTED BY: JK, MB, JW  
REVISOR: FH

SCALE: AS SHOWN

DATE OF INSPECTION: 07 / 18 / 18

DRAWING NO. 01218 |

UW DRAWING 9



**NOTES:**

1. ABRASION UP TO 1/2" DEEP FROM MUDLINE TO 1' ABOVE THE WATERLINE.
2. A FEW RANDOM VERTICAL HAIRLINE CRACKS UP TO 1.5' LONG NEAR WATER SURFACE.

PIER 3 (NORTH) ELEVATION  
N.T.S.

LEGEND FOR SYMBOLS

- ⊕ DATUM ELEV. 0.0' TAKEN FROM THE EASTBOUND BRIDGE 01218 AT THE SECOND CONSTRUCTION JOINT DOWN FROM THE TOP OF THE PIER AT THE CENTERLINE OF THE NORTH FACE OF PIER 1
- ▽ W.S. ELEV. -7.3'
- 0.0' DEPTH OF PENETRATION

LEGEND FOR BOTTOM ELEVATIONS

JULY, 2018: -0.0'  
JULY, 2016: -0.0'

LEGEND FOR MUDLINE ELEVATIONS

— JULY, 2018  
— JULY, 2016



**INFRASTRUCTURE ENGINEERS, INC.**  
1-888-451-6822

CONNECTICUT DEPARTMENT OF TRANSPORTATION

BRIDGE NO. 01218  
ROUTE 84 EASTBOUND OVER HOUSATONIC RIVER  
CONNECTICUT  
NEWTOWN

PIER 3 (NORTH) ELEVATION

|                          |                 |                                  |                     |
|--------------------------|-----------------|----------------------------------|---------------------|
| INSPECTED BY: JK, MB, JW | SCALE: AS SHOWN | DATE OF INSPECTION: 07 / 18 / 18 | DRAWING NO. 01218 J |
| REVISED BY: FH           |                 |                                  |                     |

UW DRAWING 10

**Form: Asset Photos**

**Inspection type:** Underwater

**Inspection Date:** 7/18/2018

**Inspected by:** Infrastructure Engineers

**Bridge No:** 01218

**Town:** NEWTOWN

**Carried:** INTERSTATE 84 EASTBOUND

**Crossed:** HOUSATONIC RIVER

**Inventory Route:** NHS



Photo Number: 1

Upstream (North) Bridge Elevation

Photo Taken: 07/18/2018



Photo Number: 2

Downstream (South) Bridge Elevation

Photo Taken: 07/18/2018

**Form: Asset Photos**

**Inspection type:** Underwater

**Inspection Date:** 7/18/2018

**Inspected by:** Infrastructure Engineers

**Bridge No:** 01218

**Town:** NEWTOWN

**Carried:** INTERSTATE 84 EASTBOUND

**Crossed:** HOUSATONIC RIVER

**Inventory Route:** NHS

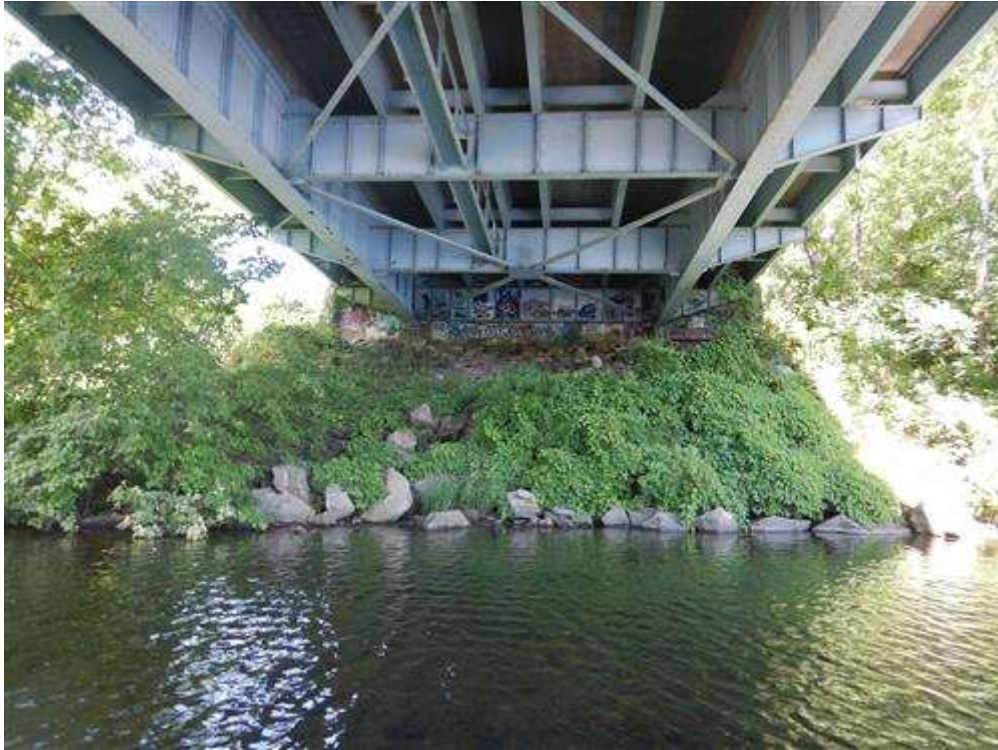


Photo Number: 3

Photo Taken: 07/18/2018

Abutment 2



Photo Number: 4

Photo Taken: 07/18/2018

Pier 1 South Elevation



**Form: Asset Photos**

**Inspection type:** Underwater

**Inspection Date:** 7/18/2018

**Inspected by:** Infrastructure Engineers

**Bridge No:** 01218

**Town:** NEWTOWN

**Carried:** INTERSTATE 84 EASTBOUND

**Crossed:** HOUSATONIC RIVER

**Inventory Route:** NHS



Photo Number: 5

Photo Taken: 07/18/2018

Pier 1 North Elevation



Photo Number: 6

Photo Taken: 07/18/2018

Pier 1 Footing

Note: Vertical exposure.

**Form: Asset Photos**

**Inspection type:** Underwater

**Inspection Date:** 7/18/2018

**Inspected by:** Infrastructure Engineers

**Bridge No:** 01218

**Town:** NEWTOWN

**Carried:** INTERSTATE 84 EASTBOUND

**Crossed:** HOUSATONIC RIVER

**Inventory Route:** NHS



Photo Number: 7

Photo Taken: 07/18/2018

Pier 1 Footing

Note: Up to 1" of zebra mussels.



Photo Number: 8

Photo Taken: 07/18/2018

Pier 2 South Elevation

**Form: Asset Photos**

**Inspection type:** Underwater

**Inspection Date:** 7/18/2018

**Inspected by:** Infrastructure Engineers

**Bridge No:** 01218

**Town:** NEWTOWN

**Carried:** INTERSTATE 84 EASTBOUND

**Crossed:** HOUSATONIC RIVER

**Inventory Route:** NHS



Photo Number: 9

Pier 2 South Elevation

Photo Taken: 07/18/2018



Photo Number: 10

Pier 2

Photo Taken: 07/18/2018

Note: Sheet piles on top of step exposed 3' long x up to 1.2' high.

**Form: Asset Photos**

**Inspection type:** Underwater

**Inspection Date:** 7/18/2018

**Inspected by:** Infrastructure Engineers

**Bridge No:** 01218

**Town:** NEWTOWN

**Carried:** INTERSTATE 84 EASTBOUND

**Crossed:** HOUSATONIC RIVER

**Inventory Route:** NHS

---



Photo Number: 11

Pier 3 South Elevation

Photo Taken: 07/18/2018



Photo Number: 12

Pier 3 North Elevation

Photo Taken: 07/18/2018

**Form: Asset Photos**

**Inspection type:** Underwater

**Inspection Date:** 7/18/2018

**Inspected by:** Infrastructure Engineers

**Bridge No:** 01218

**Town:** NEWTOWN

**Carried:** INTERSTATE 84 EASTBOUND

**Crossed:** HOUSATONIC RIVER

**Inventory Route:** NHS

---



Photo Number: 13

Photo Taken: 07/18/2018

Channel Looking Upstream (West)



Photo Number: 14

Photo Taken: 07/18/2018

Channel Looking Downstream (East)

**Form: Asset Photos**

**Inspection type:** Underwater

**Inspection Date:** 7/18/2018

**Inspected by:** Infrastructure Engineers

**Bridge No:** 01218

**Town:** NEWTOWN

**Carried:** INTERSTATE 84 EASTBOUND

**Crossed:** HOUSATONIC RIVER

**Inventory Route:** NHS



Photo Number: 15

Photo Taken: 07/18/2018

Northwest Channel Embankment



Photo Number: 16

Photo Taken: 07/18/2018

Southwest Channel Embankment

**Form: Asset Photos**

**Inspection type:** Underwater

**Inspection Date:** 7/18/2018

**Inspected by:** Infrastructure Engineers

**Bridge No:** 01218

**Town:** NEWTOWN

**Carried:** INTERSTATE 84 EASTBOUND

**Crossed:** HOUSATONIC RIVER

**Inventory Route:** NHS



Photo Number: 17

Photo Taken: 07/18/2018

Northeast Channel Embankment



Photo Number: 18

Photo Taken: 07/18/2018

Southeast Channel Embankment

**Form: Asset Photos**

**Inspection type:** Underwater

**Inspection Date:** 7/18/2018

**Inspected by:** Infrastructure Engineers

**Bridge No:** 01218

**Town:** NEWTOWN

**Carried:** INTERSTATE 84 EASTBOUND

**Crossed:** HOUSATONIC RIVER

**Inventory Route:** NHS



Photo Number: 19

Photo Taken: 07/18/2018

Pier 1 Navigational Light (Downstream)



Photo Number: 20

Photo Taken: 07/18/2018

Downstream (East) Fascia Navigational Light in Span 2



**Form: Asset Photos**

**Inspection type:** Underwater

**Inspection Date:** 7/18/2018

**Inspected by:** Infrastructure Engineers

**Bridge No:** 01218

**Town:** NEWTOWN

**Carried:** INTERSTATE 84 EASTBOUND

**Crossed:** HOUSATONIC RIVER

**Inventory Route:** NHS



Photo Number: 21

Photo Taken: 07/18/2018

Pier 2 Navigational Light (Downstream)



---

**INFRASTRUCTURE  
ENGINEERS, INC.**

---

BACK-UP MATERIAL

**NATIONAL BRIDGE ELEMENTS RECORDING SHEET \***

| Structure No. 01218    |      | By: Infrastructure Engineers         |            |       | Date: 7/18/2018          |     |     |     |   |  |
|------------------------|------|--------------------------------------|------------|-------|--------------------------|-----|-----|-----|---|--|
| Element /Str. Unit No. | Env  | Element/Structure Unit Description   | Total Qty. | Units | Condition State Quantity |     |     |     |   |  |
|                        |      |                                      |            |       | CS1                      | CS2 | CS3 | CS4 |   |  |
| <b>SUBSTRUCTURE</b>    |      |                                      |            |       |                          |     |     |     |   |  |
| Pier 1                 |      |                                      |            |       |                          |     |     |     |   |  |
| 210                    | Mod. | Reinforced Concrete Pier Wall        | 42         | LF    | 0                        | 42  | 0   | 0   | 0 |  |
| 1190                   |      | Abrasion / Wear (PSC/RC)             | 42         | LF    |                          | 42  |     |     |   |  |
| 220                    | Mod. | Reinforced Concrete Pile Cap/Footing | 32         | LF    | 0                        | 14  | 18  |     | 0 |  |
| 6000                   |      | Scour                                | 32         | LF    |                          | 14  | 18  |     |   |  |

- 5' high band of abrasion up to 1/4" deep extending from 1' above to 4' below the water surface.
- There are steel H-piles intermittently extending out of the stem located above the step footing (formwork left in place from construction).
- Random areas of Zebra Mussels up to 50% x 1" thick on underwater substructure.
- Step Footing exposed up to 32' long x up to full-height (5.9' high) along both faces of the pier.
- Footing exposed up to 6.8' vertically (previously 5.0') over a length of 30' on the South face and 8' on the North face near the Upstream (West) end of the pier.
- Exposed surfaces of the step footing and footing have abrasion up to 1/8" deep.

|        |      |                                      |    |    |   |    |   |   |   |  |
|--------|------|--------------------------------------|----|----|---|----|---|---|---|--|
| Pier 2 |      |                                      |    |    |   |    |   |   |   |  |
| 210    | Mod. | Reinforced Concrete Pier Wall        | 42 | EA | 0 | 42 | 0 | 0 | 0 |  |
| 1190   |      | Abrasion / Wear (PSC/RC)             | 42 | LF |   | 42 |   |   |   |  |
| 220    | Mod. | Reinforced Concrete Pile Cap/Footing | 21 | LF | 0 | 21 | 0 | 0 | 0 |  |
| 6000   |      | Scour                                | 21 | LF |   | 21 |   |   |   |  |

- 5' high band of abrasion up to 1/4" deep with isolated areas up to 3/4" deep extending from 1' above to 4' below the water surface.
- Random areas of Zebra mussels up to 50% coverage x 1" thick on the underwater substructure.
- The step footing is exposed up to 26' long x 2' high (previously 2' high) on the South face of the pier and along the Upstream (West) nose.
- Exposed surfaces of the step footings footing exhibit scaling up to 1/8" deep.
- Step footing has random chamfer spalls up to 6" long x 3" wide x 1" deep.

|        |      |                               |    |    |   |    |   |   |   |  |
|--------|------|-------------------------------|----|----|---|----|---|---|---|--|
| Pier 3 |      |                               |    |    |   |    |   |   |   |  |
| 210    | Mod. | Reinforced Concrete Pier Wall | 42 | LF | 0 | 42 | 0 | 0 | 0 |  |
| 1190   |      | Abrasion / Wear (PSC/RC)      | 42 | LF |   | 42 |   |   |   |  |

- Band of abrasion up to 1/2" deep extending from 1' above the water surface down to the channel bottom.
- There are a few vertical hairline cracks up to 1.5' long near the water surface of the pier.
- Random areas of Zebra mussels up to 50% coverage x 1" thick on the underwater substructure.
- There is no exposure of the step footing or footing at the pier.

\* Includes only defects on Piers 1 through 3 from the high water mark to the channel bottom.