

## Supplemental Supporting Information for a Finding of Effect

Project: Houlton 24345.00

Scope: Railroad Bridge Rehabilitation

Finding of Effect: **No Adverse Effect**

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### **Purpose and Need**

The purpose of the action is to improve safety and efficiency for railroad shipping and connectivity along the Houlton Subdivision of the Northern Maine Railway.

The need for this project is to address deficiencies in Bridge #7750 that result in potentially unsafe conditions and local slow down orders, which include track deterioration, track misalignment, and substructure deficiencies.

### **Project Background**

Bridge #7750 is a 410-foot long, five-span, deck plate girder bridge with an open timber deck. It carries the Houlton Subdivision of the Maine Northern Railway over the Meduxnekeag River in Houlton. The girders are supported on two granite masonry abutments and four granite masonry piers. The superstructure was built and erected on the existing piers and abutments in 1931. The abutment and piers were constructed in the late 1800s.

Over 450 of the bridge timbers on Bridge #7750 are in serious to poor condition. In addition, based on observations of track settlement and shifting, the south abutment is moving forward and to the west and pier 3 and pier 4 have deteriorated structural components. Pier 3 is heavily undermined at its concrete apron and stone masonry blocks have shifted in pier 4.

### **Proposed Action**

The proposed action (Alternative 1) includes reestablishing the track alignment and profile and monitoring it for future settlement and movement. This alternative would include jacking the girders in span 1 to establish the correct track elevation and then resetting the girder on new steel shims, masonry plates, and anchor bolts. The approach track would be reset to establish the correct alignment and profile. Control points would be set up and a monitoring plan implemented to track future movement. The proposed work for pier 3 would include removing the concrete at the upstream side of the pier to form a pointed shape. All loose and deteriorated concrete would be removed and the apron encased in reinforced concrete. (A steel plated repair option would be provided as an option to the contractor in lieu of traditional concrete encapsulation.) At pier 4 the masonry blocks would be repointed and re-grouted and channels and tension rods would be used to secure the blocks and prevent future movement. All damaged timbers would be replaced along the bridge deck. Finally, the walkway on the north end of the bridge would be repaired and the missing grate replaced. The proposed construction cost is \$580,000.

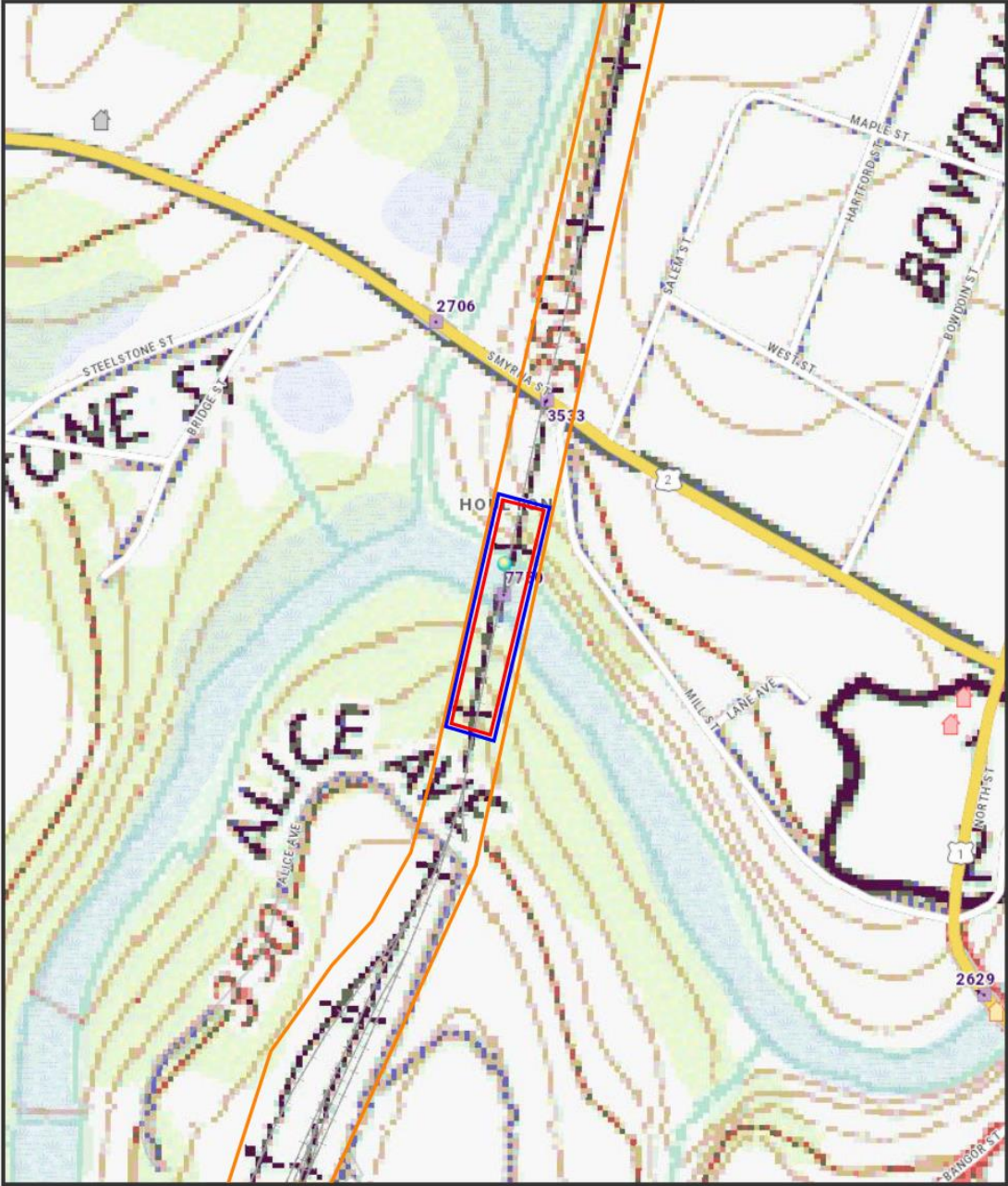
**Federal Action**

Federal permit.

**Definition of Area of Potential Effect (APE)**

The proposed project is located in Houlton. A map is attached below that shows the APE.

# HOULTON 24345.00



Bridge Improvements  
Houlton #17.16 Bridge #7750  
— APE — Survey Boundaries  
— Bangor & Aroostook Railroad HD

0.075 Miles  
1 inch = 0.08 miles



Figure 1. Houlton 24345.00 Area of Potential Effect

**Historic Properties**

The proposed project is located in Eastport. The following descriptions of historic properties found within the project area are based on Maine Historic Preservation Commission (MHPC) survey forms.

Bangor & Aroostook Railroad Historic District (MaineDOT, 15+00 to 20+00)



The Bangor and Aroostook Railroad Historic District at this location consists of Bridge #7750, a 1931 girder-floorbeam bridge, and the railroad tracks. The bridge features a deck girder design and has three-spans. It sits on cut stone abutments and piers. An open metal grate walkway is cantilevered off the east side of the bridge and has a thin metal railing. Survey for the line was completed in 1891 and 1892. In 1893, Albert Burleigh and his investors leased the Bangor and Piscataquis with service to Greenville, Old Town, Bangor, and Katahdin Iron Works. Burleigh soon looked to connect the extant Brownville Junction to Houlton and points north. The main line of the Bangor and Aroostook Railroad reached Van Buren in 1899. The railroad’s success is attributed to the need for reliable infrastructure for shipping lumber, paper, and agricultural goods from Aroostook County south. Its period of significance is from 1893 to circa 1960.

Archeological Resources

There are no archaeological resources in the project area.

**Impacts to Property**

The following addresses potential impacts to properties as a result of the proposed action.

Bangor & Aroostook Railroad Historic District (MaineDOT, 15+00 to 20+00)

*National Register-eligible Criteria A & C, Industry, Transportation*

The proposed action would result in **No Adverse Effect** to the Bangor & Aroostook Railroad Historic District. The resetting of the approach track and girder would be an in-kind repair that retains existing materials. The repair of the pier 3 apron using reinforced concrete would be an in-kind replacement using the same material currently in place. Should the contractor utilize a steel plate repair option, the apron location would minimize the effects of this material choice. The location for this repair is near or below the typical water line in the Meduxnekeag River, which would reduce its visibility and minimize impacts to the district's integrity of materials, workmanship, feeling, or setting. The repair of masonry at pier 4 would retain the existing stone blocks and maintain integrity of materials. The addition of tension rods secured with channel and shim plates would introduce new materials to the bridge pier. However, this introduction is minimized by its restriction to four courses of the pier at the top near the steel girder, which would have a minimal effect on the historic district's integrity of workmanship, feeling, and setting. The replacement of bridge timbers and repairs to the walkway would also constitute in-kind replacements that retain all aspects of integrity for the historic district. Further, considering the expansive nature of the historic district, these changes would not significantly diminish the district's aspects of integrity.

#### Archaeological Resources

No archaeological properties would be affected by the proposed undertaking.

#### **Avoidance and Minimization Efforts**

The proposed action avoids significant impacts to historic resources within the project area. For minimization efforts, the proposed action would repair and retain original materials, such as stone block piers, and would introduce new materials such as steel in locations that are typically not visible or are not in prominent locations on the bridge.

#### **Dismissed Alternatives**

##### No Build

The No Build alternative does not meet the purpose and need of the project and was therefore removed from further consideration.

##### Alternative 2

This alternative would reset the girders and the approach track and would prevent future lateral movement in the south abutment. The action would include excavating behind the abutment to a depth of 10-15' and a length of 40-50' and drilling through the abutment approximately 3' below the bridge seat and installing back rods from the front of the abutment back to a concrete deadman. The deadman would be installed 25' behind the abutment. A 20' approach slab would be installed on the back of the abutment with backfilling and resetting the approach track. The same actions would be taken for pier 3, pier 4, bridge timbers, and walkway. Construction costs for the abutment work is estimated at \$230,000. As the risk for catastrophic failure at the abutment is low, this alternative was dismissed for its significant cost and potential impacts.

Alternative 3                      This alternative would re-establish the track alignment and profile by installing a new south abutment. The same actions would be taken for pier 3, pier 4, bridge timbers, and walkway. Construction costs for a new abutment is estimate at over \$400,000. As the risk for catastrophic failure at the abutment is low, this alternative was dismissed for its significant cost and potential impacts.

**Proposed Materials**

Bridge timbers, steel track, steel girders, metal grate, and concrete.

**Public Involvement**

MaineDOT contacted the four federally recognized Native American tribes in Maine. The Penobscot Nation and Passamaquoddy Tribe replied with no concern about the undertaking. The Houlton Band of Maliseets requested more information, which was provided on March 12, 2021. MaineDOT is awaiting a reply.

The Aroostook County Office was notified of the project initiation and asked to provide comments and information regarding historic resources in the project area. No replies were received.

The public involvement process is ongoing.

**Plans**

Maine Railroad Bridge Rehabilitation Projects Presque Isle-Houlton Sub. Aroostook, WIN 024345.00, Maine Department of Transportation, February 9, 2021.

**Attachments**

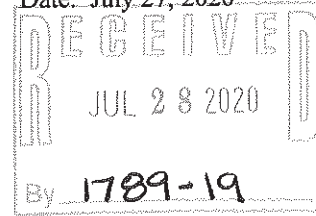
Kirk F. Mohny, MHPC, to Julie Senk, MaineDOT, August 11, 2020  
Arthur Spiess, MHPC, to Julie Senk, MaineDOT, April 9, 2021



# STATE OF MAINE

## Memorandum

Date: July 27, 2020



To: Kirk F. Mohney, MHPC  
From: Julie Senk, Maine DOT/ENV  
Subject: Section 106 request for concurrence  
Project: Houlton 24345.00  
Scope: Bridge Improvements

The Maine DOT has reviewed this project pursuant to the Maine Programmatic Agreement (PA) and Section 106 of the National Historic Preservation Act of 1966, as amended.

The proposed project consists of bridge improvements to Houlton #17.6 Bridge #7750 carrying the Bangor and Aroostook Railroad over Meduxnekeag River in Houlton.

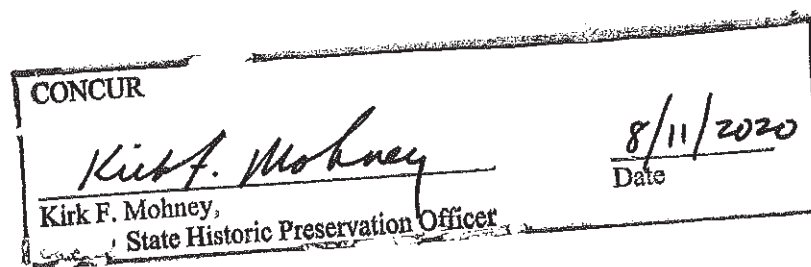
In accordance with 36 CFR Part 800.4, the following identification efforts of historic properties were made:

- 800.4(a) (1) – The Area of Potential Effect (APE) includes properties/structures adjacent to the bridge and within the project limits. The project limits are defined by the structure and the immediately adjacent area. Properties/structures adjacent to this project limit are considered to be within the APE. The APE is shown as a red polygon on the attached map.
- 800.4(a) (2) – Review of existing information consisted of researching the National Register and MHPC survey databases. The Maine Historic Preservation Commission Archaeological staff is currently reviewing this undertaking.
- 800.4(a) (3) – The Town of Houlton and applicable historical societies were contacted via letter and asked to comment on knowledge of, or concerns with, historic properties in the area, and any issues with the undertaking's effect on historic properties. The Town was also requested to provide information regarding local historic societies or groups. No responses have been received to date.
- 800.4(a) (4) – Letters outlining project location and scope were sent to the 4 federally recognized Tribes in Maine. The Passamaquoddy Tribe and Penobscot Nation replied with no concern about the undertaking. The Houlton Band of Maliseets requested more information on the undertaking.
- 800.4(c) – The Maine DOT conducted historic architectural surveys within the APE to determine if properties met National Register criteria. Maine Historic Preservation Commission Archaeological staff is currently reviewing the undertaking. **The MaineDOT has determined that 2 architectural history properties are eligible for listing in the National Register of Historic Places.**

*In accordance with the PA and 36 CFR Part 800, please reply with your concurrence or objection to the determination of eligibility for listing in the National Register of Historic Places within 30 days. If more information is deemed necessary, please supply a list of the specific resources in question.*

Please contact me at Julie.Senk@maine.gov or 592-3486 if you have any questions. Thank you.

cc: CPD e-file  
enc: Architectural survey package



## Senk, Julie

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**From:** Senk, Julie  
**Sent:** Tuesday, April 13, 2021 8:29 AM  
**To:** Senk, Julie  
**Subject:** FW: win 24345, Houlton railroad bridge over Meduxnekeag

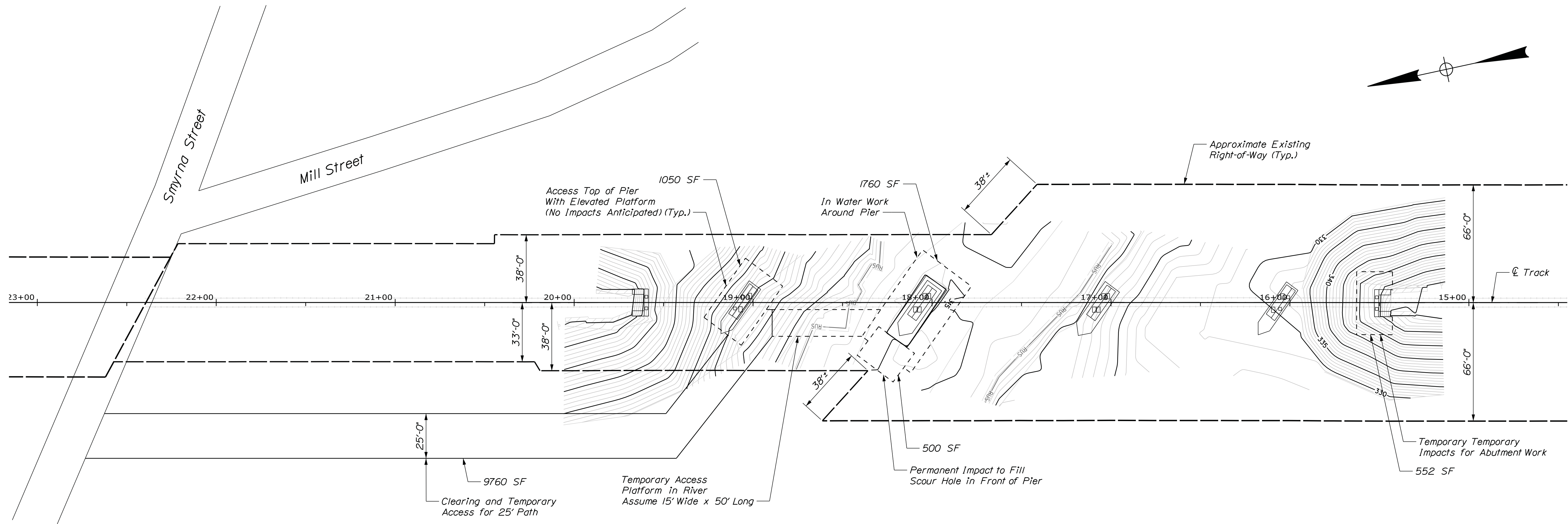
**From:** Spiess, Arthur <Arthur.Spiess@maine.gov>  
**Sent:** Friday, April 09, 2021 7:36 AM  
**To:** Senk, Julie <Julie.Senk@maine.gov>  
**Subject:** Re: win 24345, Houlton railroad bridge over Meduxnekeag

Hi Julie:

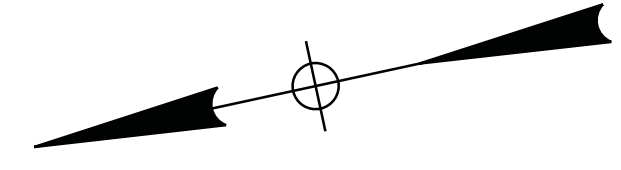
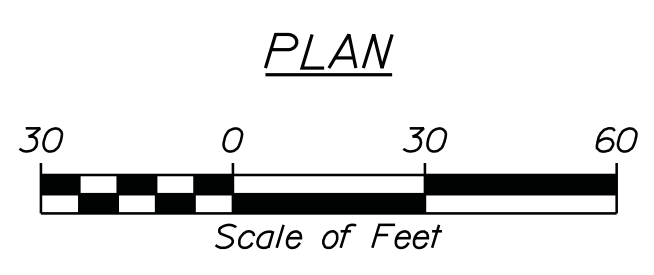
No effect to archaeological sites on this one, as designed. Thanks for asking. (I'll print out and log in to our records.)


Regards, Art

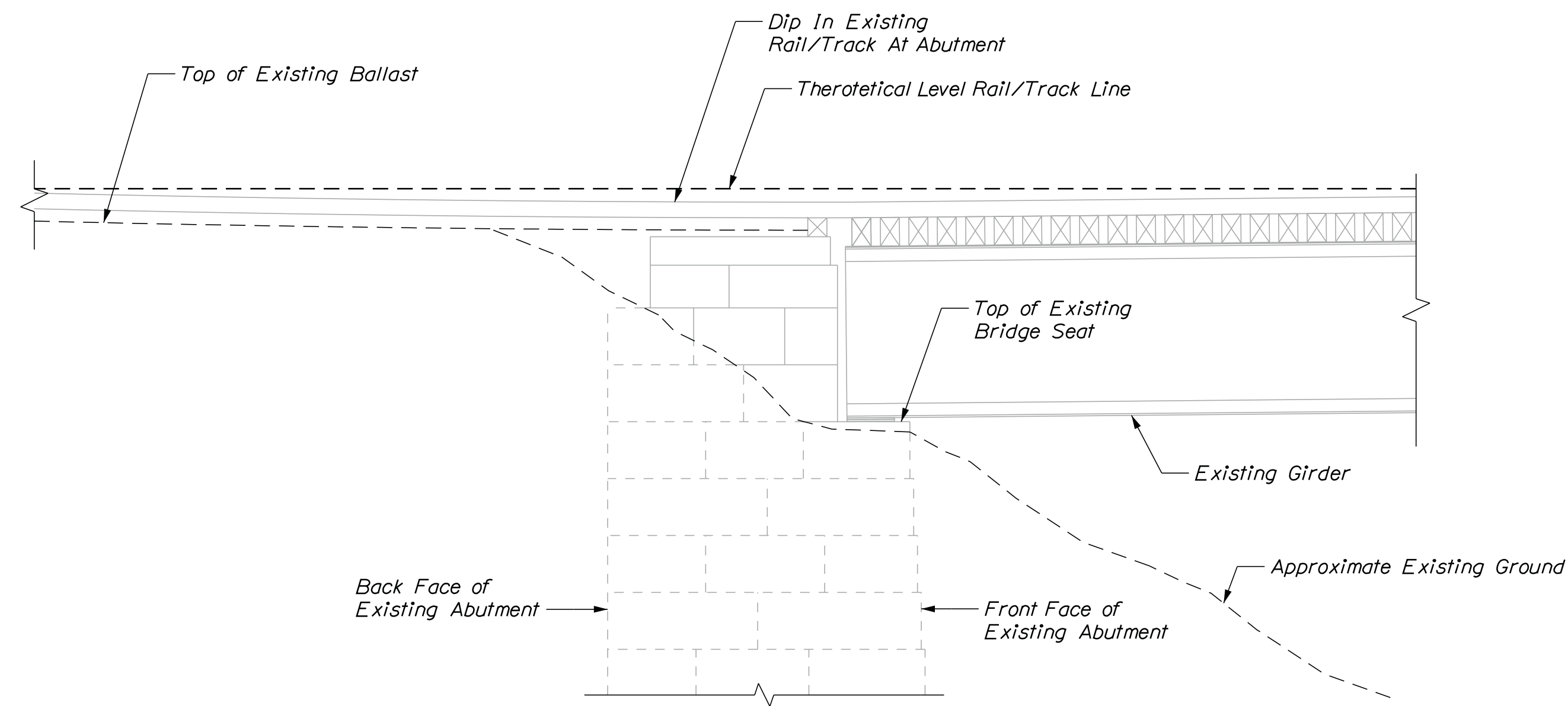




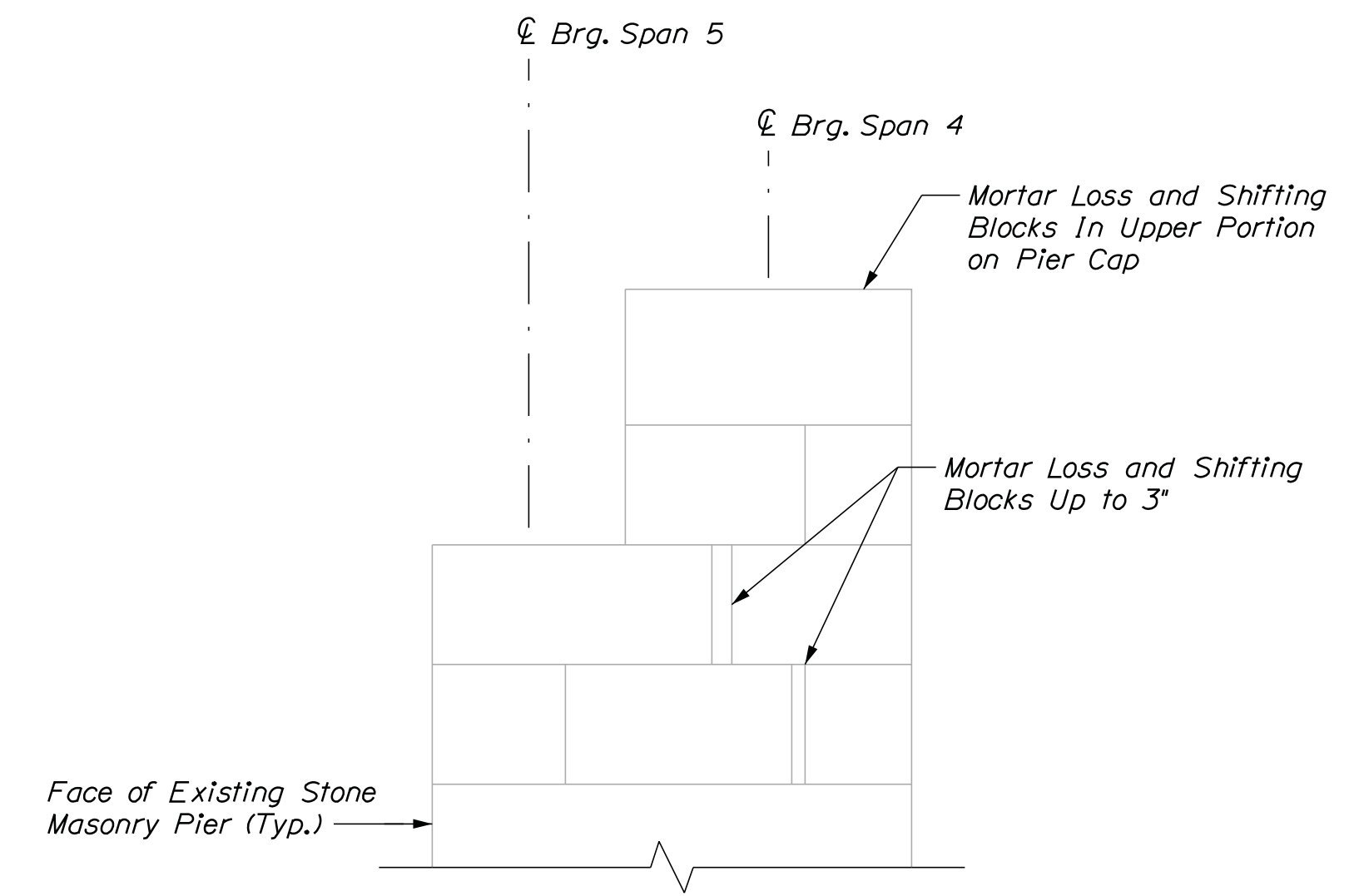
**BRIDGE NO. 7750  
MILE POINT 17.16  
OVER MEDUXNEKEAG RIVER**



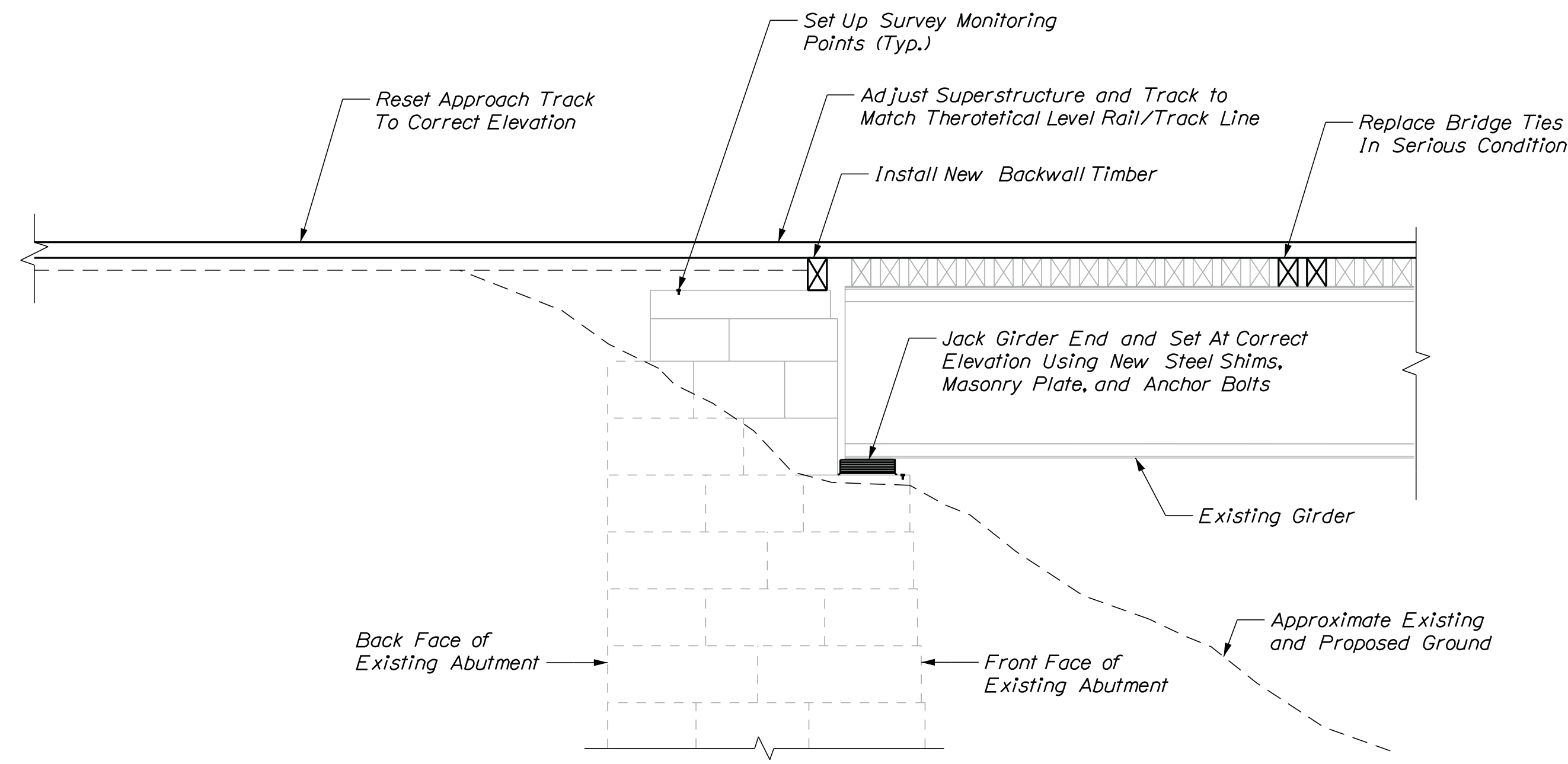
|      |  | STATE OF MAINE<br>DEPARTMENT OF TRANSPORTATION | BRIDGE NO. 7750<br>WIN<br>24345.00<br>BRIDGE PLANS |    |      |                 |          |     |  |                  |          |     |  |                 |  |  |  |             |  |  |  |             |  |  |  |             |  |  |  |             |  |  |  |               |  |  |  |                             |  |
|---|--|--|--|----|------|-----------------|----------|-----|--|------------------|----------|-----|--|-----------------|--|--|--|-------------|--|--|--|-------------|--|--|--|-------------|--|--|--|-------------|--|--|--|---------------|--|--|--|-----------------------------|--|
| MAINE RAILROAD BRIDGE<br>REHABILITATION PROJECTS<br>PRESQUE ISLE-HOULTON SUB. AROOSTOOK | <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>PROJ. MANAGER</th> <th>DATE</th> <th>BY</th> <th>DATE</th> </tr> </thead> <tbody> <tr> <td>DESIGN-DETAILED</td> <td>2/7/2021</td> <td>JCM</td> <td></td> </tr> <tr> <td>CHECKED-REVIEWED</td> <td>2/7/2021</td> <td>CSG</td> <td></td> </tr> <tr> <td>DESIGN-DETAILED</td> <td></td> <td></td> <td></td> </tr> <tr> <td>REVISIONS 1</td> <td></td> <td></td> <td></td> </tr> <tr> <td>REVISIONS 2</td> <td></td> <td></td> <td></td> </tr> <tr> <td>REVISIONS 3</td> <td></td> <td></td> <td></td> </tr> <tr> <td>REVISIONS 4</td> <td></td> <td></td> <td></td> </tr> <tr> <td colspan="4" style="text-align: center;">FIELD CHANGES</td> </tr> </tbody> </table> | PROJ. MANAGER                                  | DATE   | BY | DATE | DESIGN-DETAILED | 2/7/2021 | JCM |  | CHECKED-REVIEWED | 2/7/2021 | CSG |  | DESIGN-DETAILED |  |  |  | REVISIONS 1 |  |  |  | REVISIONS 2 |  |  |  | REVISIONS 3 |  |  |  | REVISIONS 4 |  |  |  | FIELD CHANGES |  |  |  | PRELIMINARY REPAIR CONCEPTS |  |
| PROJ. MANAGER   | DATE   | BY   | DATE   |    |      |                 |          |     |  |                  |          |     |  |                 |  |  |  |             |  |  |  |             |  |  |  |             |  |  |  |             |  |  |  |               |  |  |  |                             |  |
| DESIGN-DETAILED   | 2/7/2021   | JCM  |  |    |      |                 |          |     |  |                  |          |     |  |                 |  |  |  |             |  |  |  |             |  |  |  |             |  |  |  |             |  |  |  |               |  |  |  |                             |  |
| CHECKED-REVIEWED  | 2/7/2021   | CSG  |  |    |      |                 |          |     |  |                  |          |     |  |                 |  |  |  |             |  |  |  |             |  |  |  |             |  |  |  |             |  |  |  |               |  |  |  |                             |  |
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| REVISIONS 1   |  |  |  |    |      |                 |          |     |  |                  |          |     |  |                 |  |  |  |             |  |  |  |             |  |  |  |             |  |  |  |             |  |  |  |               |  |  |  |                             |  |
| REVISIONS 2   |  |  |  |    |      |                 |          |     |  |                  |          |     |  |                 |  |  |  |             |  |  |  |             |  |  |  |             |  |  |  |             |  |  |  |               |  |  |  |                             |  |
| REVISIONS 3   |  |  |  |    |      |                 |          |     |  |                  |          |     |  |                 |  |  |  |             |  |  |  |             |  |  |  |             |  |  |  |             |  |  |  |               |  |  |  |                             |  |
| REVISIONS 4   |  |  |  |    |      |                 |          |     |  |                  |          |     |  |                 |  |  |  |             |  |  |  |             |  |  |  |             |  |  |  |             |  |  |  |               |  |  |  |                             |  |
| FIELD CHANGES   |  |  |  |    |      |                 |          |     |  |                  |          |     |  |                 |  |  |  |             |  |  |  |             |  |  |  |             |  |  |  |             |  |  |  |               |  |  |  |                             |  |
| FIGURE<br><span style="font-size: 2em; font-weight: bold;">1</span>                     |  | OF 3   |  |    |      |                 |          |     |  |                  |          |     |  |                 |  |  |  |             |  |  |  |             |  |  |  |             |  |  |  |             |  |  |  |               |  |  |  |                             |  |



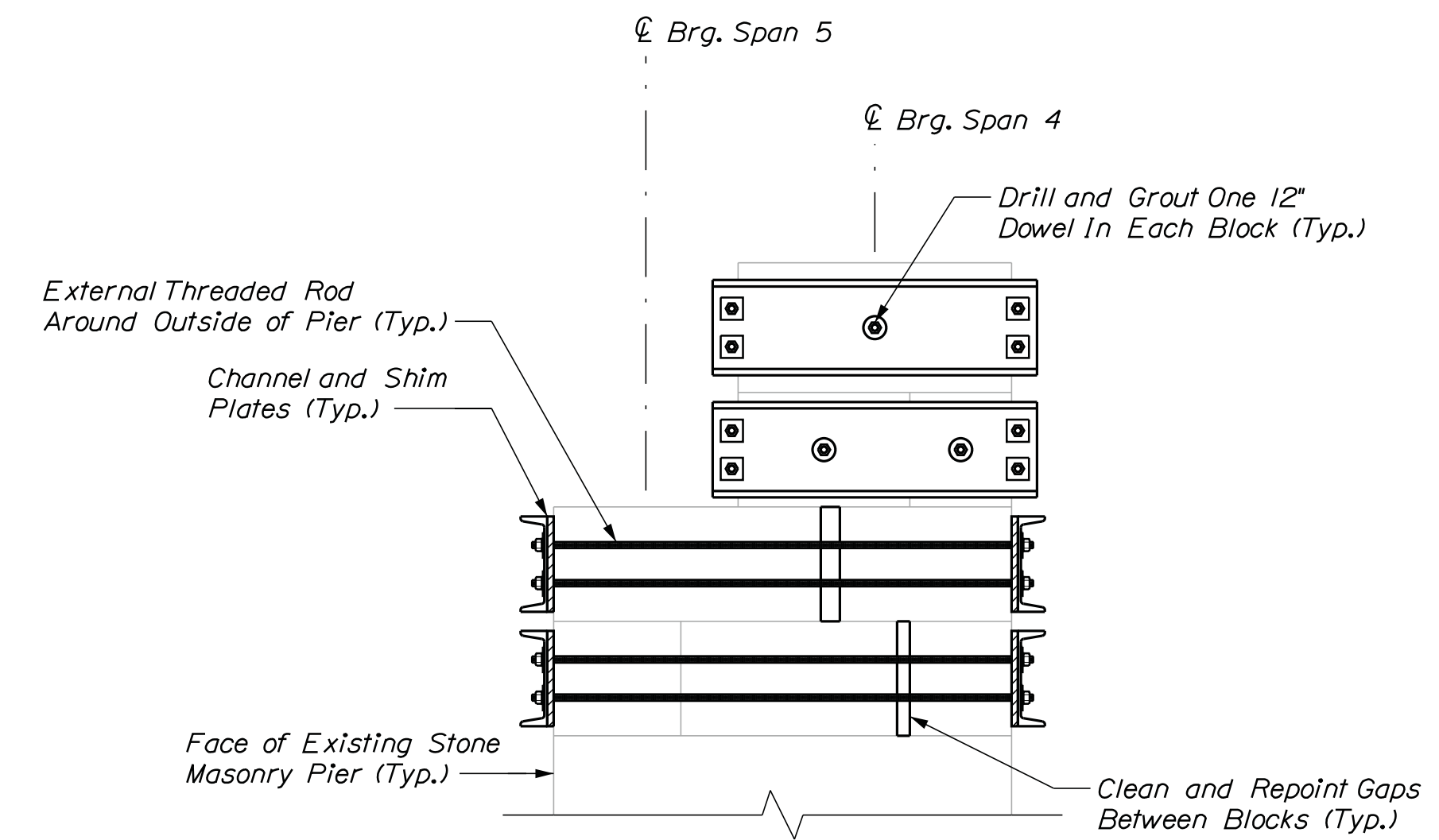
**EXISTING SOUTH ABUTMENT ELEVATION**  
(Shown Thru Centerline of Track)  
Scale: 1/4" = 1'-0"



**EXISTING PIER 4 PARTIAL ELEVATION**  
(West End Shown, East End Similar)  
Scale: 1/2" = 1'-0"



**PROPOSED SOUTH ABUTMENT ELEVATION**  
(Shown Thru Centerline of Track)  
Scale: 1/4" = 1'-0"

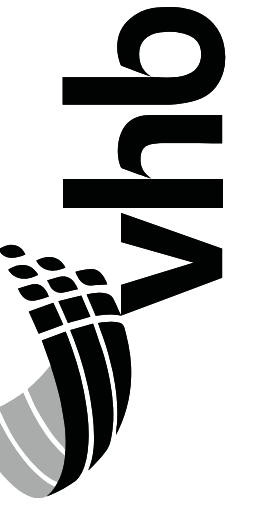


**PROPOSED PIER 4 PARTIAL ELEVATION**  
(West End Shown, East End Similar)  
Scale: 1/2" = 1'-0"

**PROPOSED WORK**

1. Jack and Reset Girder End to Proper Elevation and Set Up Survey Points (South Abutment Only)
2. Rebuild Approach Track to Proper Elevation (South Approach Only)
3. Repoint and Grout Gaps Between Upper Four Masonry Courses (Top of Pier 4 Only)
4. Install Channels and Tension Rods To Secure Upper Four Masonry Courses (Top of Pier 4 Only)
5. Replace Bridge Ties in Serious Condition (Approximately 45 Ties)

**BRIDGE NO. 7750 (M.P. H17.16) OVER MEDUXNEKEAG RIVER**



| PROJ. MANAGER        | DATE     | BY  | DATE     |
|----------------------|----------|-----|----------|
| DESIGN-DETAILED JCM  | 2/7/2021 | BJM | 2/7/2021 |
| CHECKED-REVIEWED JCM |          | GSG |          |
| DESIGN-DETAILED      |          |     |          |
| REVISIONS 1          |          |     |          |
| REVISIONS 2          |          |     |          |
| REVISIONS 3          |          |     |          |
| REVISIONS 4          |          |     |          |
| FIELD CHANGES        |          |     |          |

MAINE RAILROAD BRIDGE  
REHABILITATION PROJECTS  
PRESQUE ISLE-HOULTON SUB. AROOSTOOK  
**PRELIMINARY REPAIR CONCEPTS**

FIGURE

2

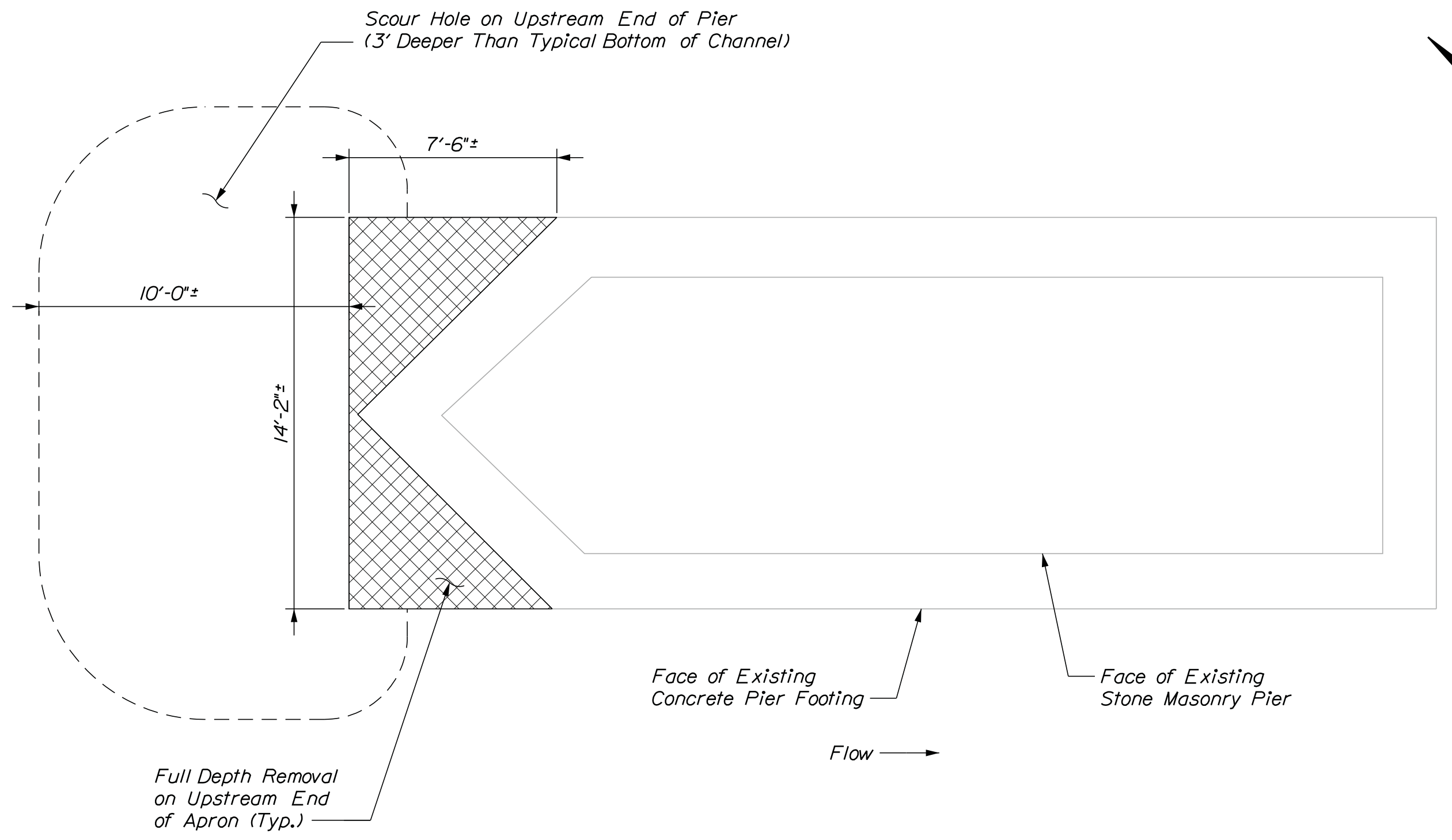
OF 3



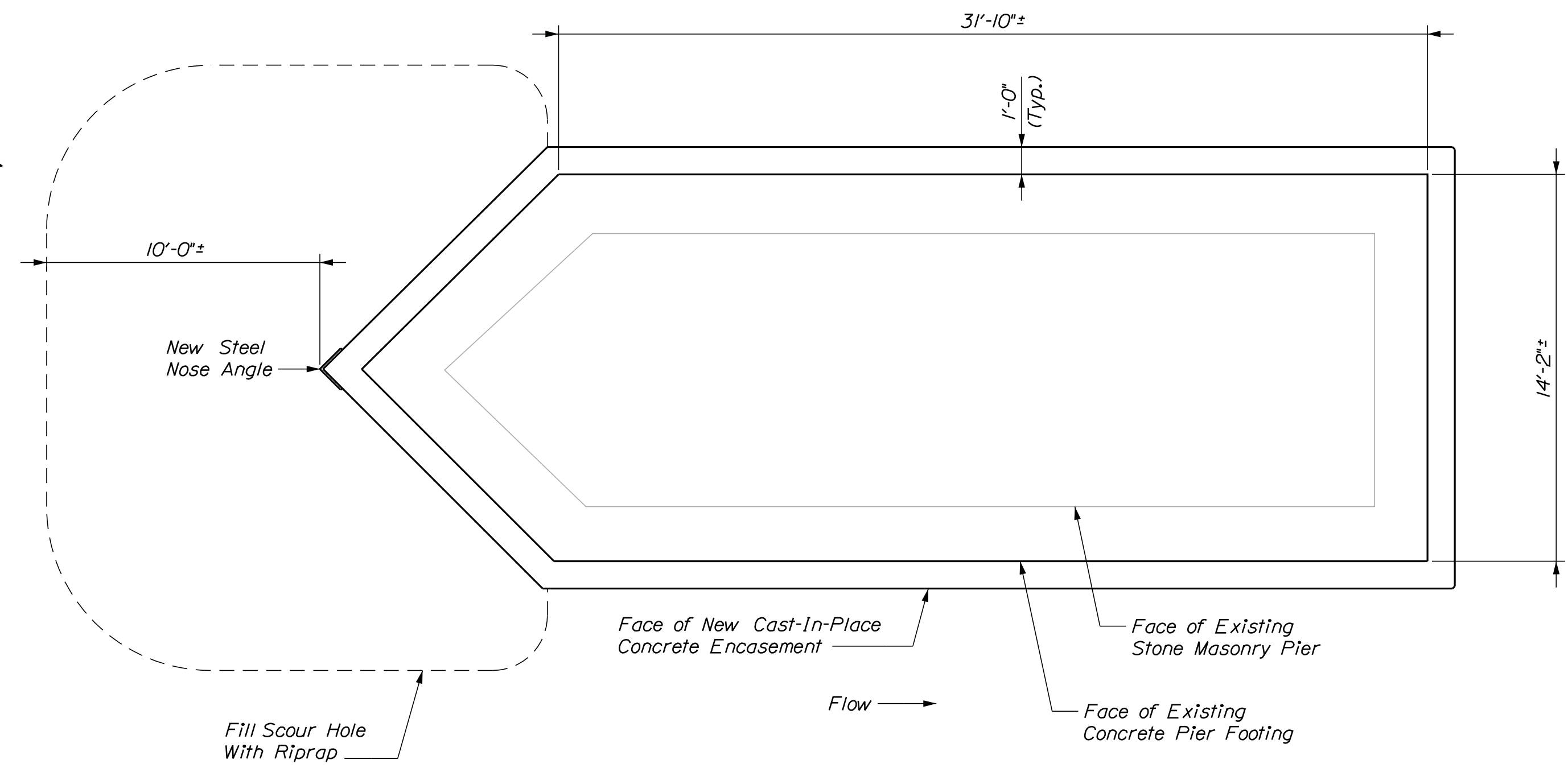
Date: 2/9/2021

Username: JMacpherson

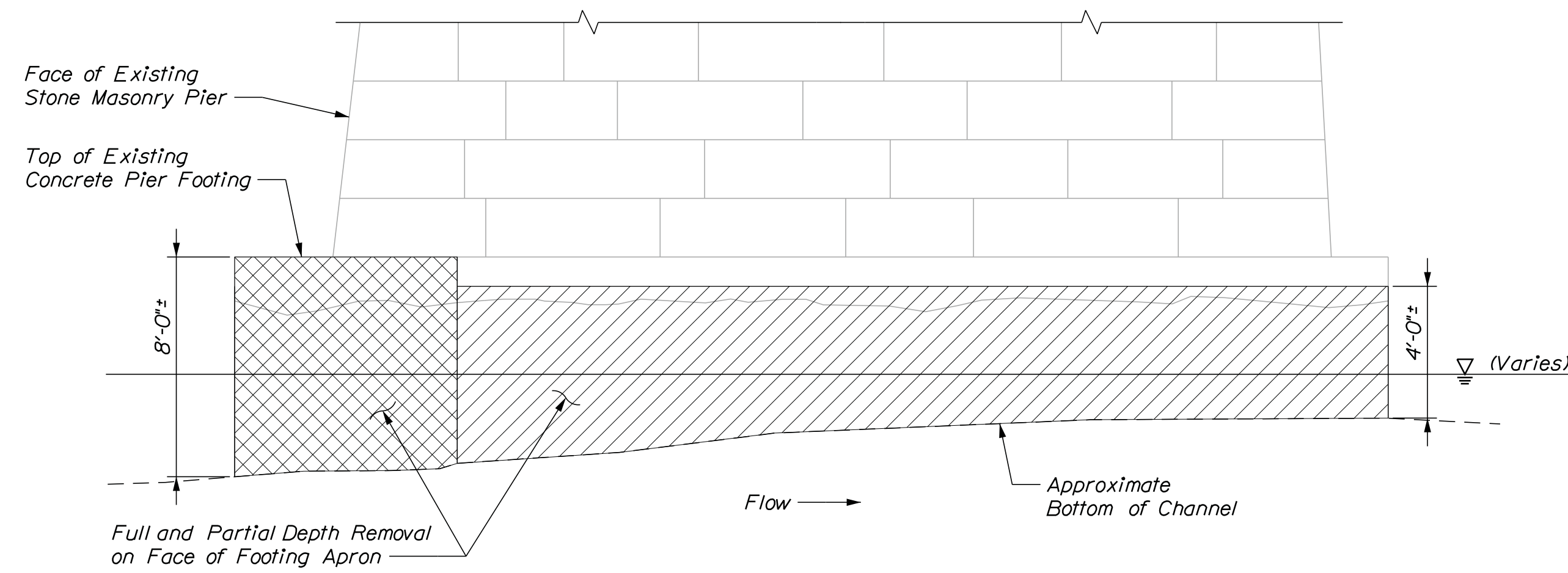
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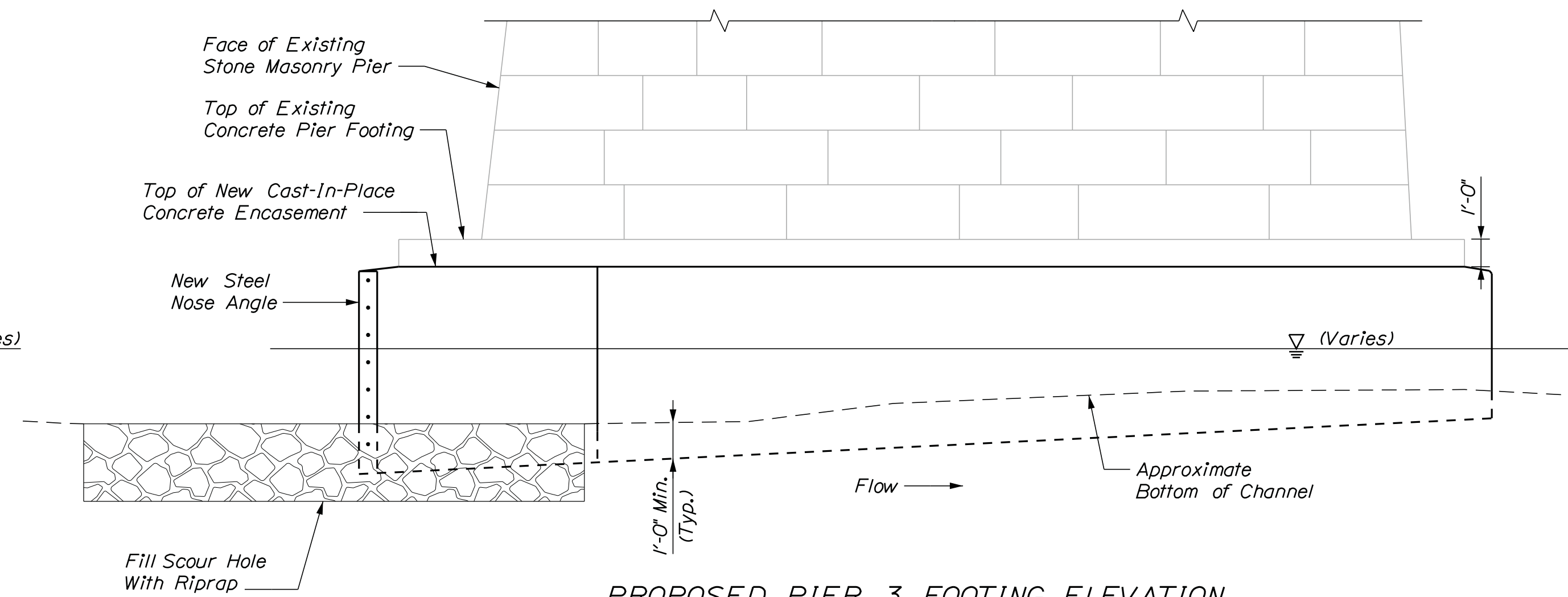
**EXISTING PIER 3 FOOTING PLAN - REMOVAL**  
Scale: 1/4" = 1'-0"



**PROPOSED PIER 3 FOOTING PLAN**  
Scale: 1/4" = 1'-0"



**EXISTING PIER 3 FOOTING ELEVATION - REMOVAL**  
Scale: 1/4" = 1'-0"



**PROPOSED PIER 3 FOOTING ELEVATION**  
Scale: 1/4" = 1'-0"

**LEGEND**

- Approximate Limits of Full Depth Removal/Repair
- Approximate Limits of Partial Depth Removal/Repair

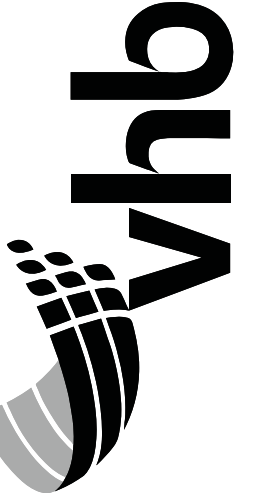
**BRIDGE NO. 7750 (M.P. H17.16) OVER MEDUXNEKEAG RIVER**

**PROPOSED WORK**

1. Install Concrete Encasement around Footing Apron (Pier 3 Only)
2. Fill Scour Hole in Front of Footing Apron (Pier 3 Only)

**PROPOSED WORK (NOT SHOWN)**

1. Repair Broken Walkway at North End of Bridge and Other Isolated Locations



| DATE     | BY  | DATE     |
|----------|-----|----------|
| 2/7/2021 | BAM | 2/7/2021 |
|          | CSG |          |

| PROJ. MANAGER    | DATE | BY | REVISIONS     |
|------------------|------|----|---------------|
| DESIGN-DETAILED  | JCM  |    | REVISIONS 1   |
| CHECKED-REVIEWED | JCM  |    | REVISIONS 2   |
| DESIGN-DETAILED  |      |    | REVISIONS 3   |
|                  |      |    | REVISIONS 4   |
|                  |      |    | FIELD CHANGES |