CONSENT

# Commission Memo

Prepared by: Michael McElwee
Date: July 9, 2019
Re: SBE Contract

---

The Port has retained Stafford Bandlow Engineering (SBE) on several occasions in the last few years to carry various out engineering tasks associated with the Hood River Bridge Lift Span. SBE has provided excellent services to the Port and has been instrumental in restoration of the fully functionality and safe operations of the lift span.

Now SBE has entered into an agreement to merge with Wiss, Janney, Elstner Associates (WJE), a leading global firm of engineers, architects, and materials scientists specializing in infrastructure projects. Due to this merger, SBE is seeking the Port's consent to the assignment of our only current contract, the design and engineering of the new span drive motors and skew system. The only significant remaining work on this contract is delivery of the as-built drawings for the recently completed work.

The assignment contract is attached.

**RECOMMENDATION:** Authorize Consent to Assignment of Contract with Stafford Bandlow Engineering subject to legal counsel review.

This page intentionally left blank.

CONSENT

# STAFFORD BANDLOW ENGINEERING

June 28, 2019

Mr. Michael McElwee
Executive Director
Port of Hood River
1000 E. Port Maria Drive
Hood River, OR 97031

Dear Mr. McElwee,

We are excited to share some very important news regarding Stafford Bandlow Engineering (SBE). We have entered into an agreement to have our professionals join with Wiss, Janney, Elstner Associates (WJE) on July 1, 2019. WJE is a leading global firm of engineers, architects, and materials scientists specializing in solving problems in the built world.

As part of one of the world's premier problem-solving firms, we can now offer you a broad range of engineering, architectural, laboratory, design, and forensics services from WJE's twenty-eight offices around the world. This immediately expands the breadth of services our professionals can offer to better meet your needs.

While this may be the most significant change in our long history, we assure you that it will not be one that disrupts our service to you. Your existing contacts and relationships at SBE will not change. In order to transfer your agreement from Stafford Bandlow Engineering to Wiss, Janney, Elstner Associates, please sign the attached document and send it back to Andrew Katz (akatz@sbengineering.net) at Stafford Bandlow Engineering by July 15, 2019.

Please give me a call or send me a note if you have any questions or would like to discuss in more detail. We look forward to a new and exciting future as Stafford Bandlow Engineering, a division of WJE.

Sincerely,

Paul Bandlow
Principal

This page intentionally left blank.

SBE Job Number: SB796D

SBE Project Name: ElecDriveDesign

Client: Port of Hood River

**CONSENT TO**
**ASSIGNMENT OF CONTRACT**

Stafford Bandlow Engineering (SBE) entered into an agreement with Port of Hood River on January 29, 2018 (the "contract"). SBE wishes to assign all rights and delegate all duties remaining on that contract to Wiss, Janney, Elstner Associates, Inc. (WJE) effective July 1, 2019. Port of Hood River agrees to that assignment and delegation.

Port of Hood River

Design and Engineering of a New Skew System for Hood River Interstate Bridge Lift Span

By: _____

Name: _____

Title: _____

Date: _____

*Please return this signed document to Andrew Katz (akatz@sbengineering.net) at Stafford Bandlow Engineering by July 15, 2019.*

Form **W-9**
(Rev. October 2018)
Department of the Treasury
Internal Revenue Service

# Request for Taxpayer Identification Number and Certification

▶ Go to www.irs.gov/FormW9 for instructions and the latest information.

**Give Form to the requester. Do not send to the IRS.**

Print or type. See Specific Instructions on page 3.

1 Name (as shown on your income tax return). Name is required on this line; do not leave this line blank.
Wiss, Janney, Elstner Associates, Inc.

2 Business name/disregarded entity name, if different from above

3 Check appropriate box for federal tax classification of the person whose name is entered on line 1. Check only **one** of the following seven boxes.

☐ Individual/sole proprietor or single-member LLC ☑ C Corporation ☐ S Corporation ☐ Partnership ☐ Trust/estate

☐ Limited liability company. Enter the tax classification (C=C corporation, S=S corporation, P=Partnership) ▶ _____

**Note:** Check the appropriate box in the line above for the tax classification of the single-member owner. Do not check LLC if the LLC is classified as a single-member LLC that is disregarded from the owner unless the owner of the LLC is another LLC that is **not** disregarded from the owner for U.S. federal tax purposes. Otherwise, a single-member LLC that is disregarded from the owner should check the appropriate box for the tax classification of its owner.

☐ Other (see instructions) ▶

4 Exemptions (codes apply only to certain entities, not individuals; see instructions on page 3):
Exempt payee code (if any) 5
Exemption from FATCA reporting code (if any) _____
(Applies to accounts maintained outside the U.S.)

5 Address (number, street, and apt. or suite no.) See instructions.
330 Pfingsten Road

Requester's name and address (optional)

6 City, state, and ZIP code
Northbrook, IL 60062

7 List account number(s) here (optional)

## Part I Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. The TIN provided must match the name given on line 1 to avoid backup withholding. For individuals, this is generally your social security number (SSN). However, for a resident alien, sole proprietor, or disregarded entity, see the instructions for Part I, later. For other entities, it is your employer identification number (EIN). If you do not have a number, see *How to get a TIN*, later.

**Note:** If the account is in more than one name, see the instructions for line 1. Also see *What Name and Number To Give the Requester* for guidelines on whose number to enter.

**Social security number**
___ - ___ - ____

or

**Employer identification number**
3 6 - 2 7 5 7 9 5 6

## Part II Certification

Under penalties of perjury, I certify that:

1. The number shown on this form is my correct taxpayer identification number (or I am waiting for a number to be issued to me); and
2. I am not subject to backup withholding because: (a) I am exempt from backup withholding, or (b) I have not been notified by the Internal Revenue Service (IRS) that I am subject to backup withholding as a result of a failure to report all interest or dividends, or (c) the IRS has notified me that I am no longer subject to backup withholding; and
3. I am a U.S. citizen or other U.S. person (defined below); and
4. The FATCA code(s) entered on this form (if any) indicating that I am exempt from FATCA reporting is correct.

**Certification instructions.** You must cross out item 2 above if you have been notified by the IRS that you are currently subject to backup withholding because you have failed to report all interest and dividends on your tax return. For real estate transactions, item 2 does not apply. For mortgage interest paid, acquisition or abandonment of secured property, cancellation of debt, contributions to an individual retirement arrangement (IRA), and generally, payments other than interest and dividends, you are not required to sign the certification, but you must provide your correct TIN. See the instructions for Part II, later.

**Sign Here** Signature of U.S. person ▶ Teresa Garbutt Date ▶ 5-9-19

## General Instructions

Section references are to the Internal Revenue Code unless otherwise noted.

**Future developments.** For the latest information about developments related to Form W-9 and its instructions, such as legislation enacted after they were published, go to www.irs.gov/FormW9.

## Purpose of Form

An individual or entity (Form W-9 requester) who is required to file an information return with the IRS must obtain your correct taxpayer identification number (TIN) which may be your social security number (SSN), individual taxpayer identification number (ITIN), adoption taxpayer identification number (ATIN), or employer identification number (EIN), to report on an information return the amount paid to you, or other amount reportable on an information return. Examples of information returns include, but are not limited to, the following.

- Form 1099-INT (interest earned or paid)
- Form 1099-DIV (dividends, including those from stocks or mutual funds)
- Form 1099-MISC (various types of income, prizes, awards, or gross proceeds)
- Form 1099-B (stock or mutual fund sales and certain other transactions by brokers)
- Form 1099-S (proceeds from real estate transactions)
- Form 1099-K (merchant card and third party network transactions)
- Form 1098 (home mortgage interest), 1098-E (student loan interest), 1098-T (tuition)
- Form 1099-C (canceled debt)
- Form 1099-A (acquisition or abandonment of secured property)

Use Form W-9 only if you are a U.S. person (including a resident alien), to provide your correct TIN.

*If you do not return Form W-9 to the requester with a TIN, you might be subject to backup withholding.* See What is backup withholding, later.

Cat. No. 10231X Form **W-9** (Rev. 10-2018)

# Commission Memo

Prepared by: Michael McElwee
Date: July 9, 2019
Re: Bridge Approach Ramps Test Report

---

Concrete testing of the WA and OR approach ramps was carried out by HRD Engineering on May 15th. Mark Libby, P.E., the lead bridge engineer will attend the Commission meeting to discuss the test results and his recommendations.

**RECOMMENDATION:** Informational.

This page intentionally left blank.

# Memo

| | |
|---|---|
| Date: | Friday, June 28, 2019 |
| Project: | Hood River – White Salmon Bridge |
| To: | Michael McElwee, Executive Director<br>John Mann, Facilities Manager |
| From: | Mark Libby, PE<br>Kurt Schweitzer, PE |
| Subject: | **WA and OR Approach Spans Bridge Deck Inspection** |

## Background

The 2018-19 Task Order 08 included a review of the condition of the concrete approach span decks and joints and the need for deck overlay and joint rehabilitation.

The 2018 Routine Bridge Inspection Report lists a bridge deck condition rating of 5 (fair). The report notes transverse cracks in Spans D and E of the Oregon approach and spans 20 through 27 of the Washington approach, diagonal hairline cracks in the ends of the deck near the abutment with minor leaching, and some rutting in the wearing surface of the Washington approach spans with polished aggregate.

Based on comments from the Port about the condition of the overlay on the Washington approach spans, a brief walk of the deck was performed during a site visit in January 2019. The existing polymer overlay is worn through in multiple locations, several small potholes with exposed rebar are present and other areas of cracking indicate more are forming. Sample photos of the Washington approach spans deck condition are provided in *Attachment C - Deck Walk Photos*.

Based on the findings of similar inspection and chloride testing of deck cores at Bridge of the Gods that HDR conducted, chloride testing of deck cores in the Washington approach spans was recommended. The Washington Department of Transportation (WSDOT) uses rock salt on SR-14 to aid with icy conditions in winter months and salts are tracked on to the bridge approach spans.

With nighttime closures of the bridge for the 2019 Miscellaneous Truss and Steel Repairs project, the deck inspection work was targeted to occur during one of the nighttime closures.

We set our initial coring plan to collect four cores in the southbound (SB) lane (toward Oregon) and one core in the northbound (NB) lane (toward Washington).

## Field Inspection

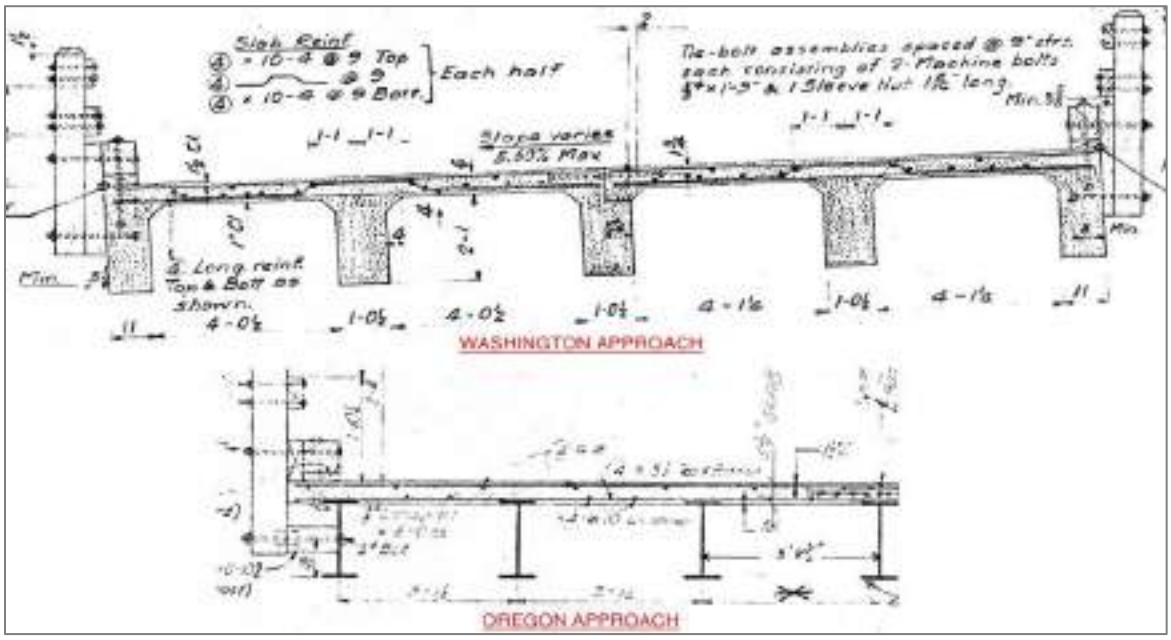
On May 15th, 2019 HDR staff performed the bridge deck inspection of the reinforced concrete deck on the Washington and Oregon approach spans of the Hood River - White Salmon Bridge. The inspection consisted of chain-dragging the deck to detect delaminations and collecting

concrete core samples for chloride testing. American Concrete Company performed the core-drilling of the deck. The work was performed during a nighttime bridge closure for another project and Port staff patched the core holes along with several pot holes in the deck.

## Deck Coring

According to the 1951 plans, the Washington approach deck is 6 inches thick with 1.5 inches of clear cover to the top transverse reinforcement, No. 4 bars at 9 inches, plus No. 4 “truss” bars at 9 inches (Figure 1). The top longitudinal reinforcement is No. 4 bars at about 2-foot centers. The Oregon approach deck is 5.25 inches thick with 1.5 inches of clear cover to the top transverse reinforcement, No. 4 bars at 5.5 inches. The top longitudinal reinforcement is No. 4 bars at 18 inches. The desired core size for chloride testing is 4 inches in diameter with a depth at least 2 inches below the range for testing; in this case, 4.5-inch deep cores. Deck cores were only taken on the Washington approach.

**Figure 1. Reinforced Deck Section**



At each core hole ground penetrating radar scanning was used to locate the deck reinforcement. A vacuum was used to collect the water that keeps the coring bit cool then the core was broken free by tapping a screwdriver into the perimeter cut (Figure 2). The core was then photographed and placed into a sealed bag (Figure 3). Photographs were also taken of the hole (Figure 4) to evaluate concrete condition, and then the hole was patched. The core samples were delivered to the Oregon Department of Transportation (ODOT) laboratory facility in Salem, Oregon for testing. The core locations are shown on *Attachment A - Core and Delamination Location Plan*.

**Figure 2. Core Drilling Apparatus**

**Figure 3. Core No. 4**


**Figure 4. Core No. 4 Hole**

## Deck Chain Drag

One of the best ways of detecting delaminated concrete on a flat surface is to drag a chain back and forth across the surface. The hollow-sounding ring of delaminated concrete is readily detectable. When delaminated areas were located the area was outlined with spray paint and the area and location were measured for mapping (Figure 5). The chain drag inspection covered the entire deck of the Washington and Oregon concrete approach spans. The areas of

delamination are shown on *Attachment A - Core and Delamination Location Plan*. Multiple locations of exposed deck rebar were observed during the deck inspection, with broken and corroded bars present.

**Figure 5. Chain Drag Equipment**

## Deck Joints

The bridge deck joints in the concrete approach spans were not inspected closely during the deck inspection due to the nighttime conditions. A cursory observation was made of the Washington approach spans during the deck walk in January as well as a review of the inspection reports. The joint at Bent 28, Washington abutment, is in poor condition due to cracked and spalling concrete on the bridge side of the joint. The intermediate bent joints are generally in satisfactory condition. These joints consist of 0.5-inch joint filler between concrete diaphragms with an asphaltic sealer filled at the deck surface. The steel angle header at Bent 20, interface with the metal grid deck, has a 7-inch long section that is broken out in the SB lane. The inspection notes also indicate a vertical misalignment of 1-1/2-inch between the grid deck and the steel header (Attachment C - Deck Walk Photos).

The ODOT inspection notes indicate that the strip seal at Oregon Abutment E has lost adhesion and is leaking.

## Laboratory Results

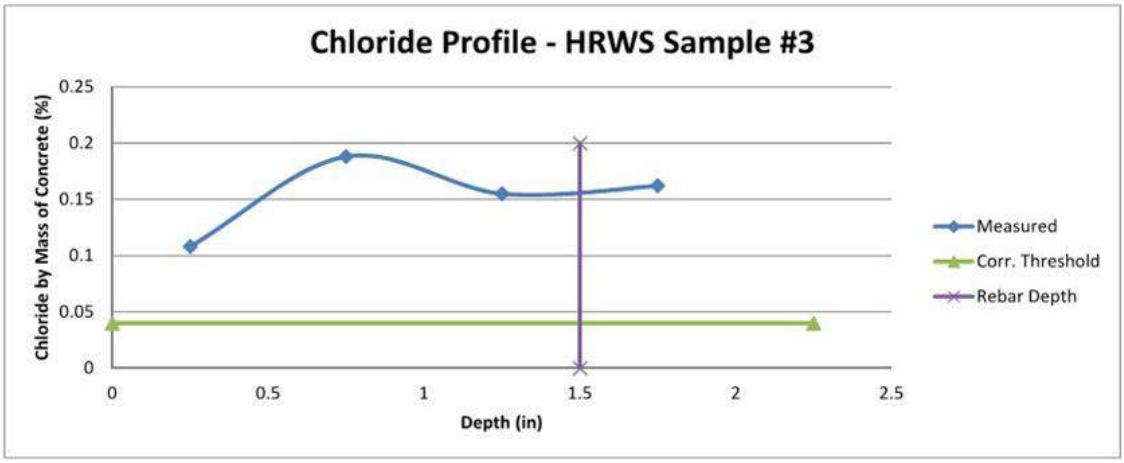
### Deck Core Samples

Five core samples were tested in accordance with AASHTO T-260 (Chloride Content) test criteria. Each core is sliced into 0.5-inch-thick sections from the surface down. Each 0.5-inch slice is tested and the chloride content is reported as a percentage of the sample. Ideally five test samples would be obtained from a 4-inch x 4.5-inch core, however due to the large aggregate encountered the cores broke in a fashion that did not allow the lab to get five samples. Three of the cores only allowed for three samples while the other two allowed for four samples. The laboratory test results are shown in *Attachment B - Chloride Testing Results*,

which includes the raw lab report and graphical plots of these results. The graphical plot shows the chloride content at the mid-depth of each 0.5-inch sample, the assumed depth to reinforcement, and the corrosion threshold (Figure 6). The corrosion threshold is based on an industry accepted value of 0.04 percent or approximately 1.5 pounds of chloride per cubic yard of concrete. When this concentration of chloride reaches the depth of reinforcement, a corrosive condition is considered to exist. When the plotted curve connecting the test points is above the corrosion threshold at the location of the reinforcement, then active corrosion is occurring.

**Figure 6. Core No. 3 Profile**

| Hood River - White Salmon Bridge | Field Test Data | | | | |
|---|---|---|---|---|---|
| Sample #: 3 | Depth, in | 0.25 | 0.75 | 1.25 | 1.75 |
| Date: 5/15/2019 | Chloride Concentration | 0.108 | 0.188 | 0.155 | 0.162 |




Core No. 3 (Figure 6) is notably the worst sample with all four of the sections testing well above the corrosion threshold. Cores No. 2 and 4, are the next worse with all of the testable sections well above the corrosion threshold. While cores No. 2 and 4 did not have a test sample below the reinforcement depth, the chloride level would not be expected to suddenly drop below the corrosion threshold. All sections of core No. 5, which is the only core taken in the NB lane, are also above the corrosion threshold. All sections of core No. 1, which was taken the farthest away from the centerline in the SB lane and closest to the Washington abutment, are below the corrosion threshold.

Cores No. 1 and 3 are in the approximate wheel paths for the SB lane while cores Nos. 2 and 4 are in the middle of the SB lane. Core No. 5 is in the inside wheel path of the NB lane.

## Conclusions and Recommendations

The results of core No. 1 is unexpected as this location would presumably have the highest chloride concentrations, being closest to source of salt (SR-14). Core No. 5 results also indicate that the high chloride content is not restricted to the SB lane. However, these tests are individual spot locations, and if five more cores were tested, five different concentrations could result. What is more indicative of an active corrosion condition is the high level of chloride in cores No. 2 through 5 (2-to-4 times the corrosion threshold) and the high frequency of delaminations

in the SB lane of the Washington approach. As corrosion occurs, the steel volume expands and eventually causes a crack in the concrete. The impact of traffic in these areas further separates the concrete, eventually leading to failure and potholes. These cracks near the surface of the reinforcement are what give the hollow-sounding ring from the chain drag.

The concentration of delaminations in the NB lane of Spans 23-24 is also unexpected as these spans are within a supposed superelevated section, such that stormwater run-off is draining toward the SB lane. In discussions with John Mann, Facilities Manager, this section of the roadway routinely ponds water. This information helps explain the presence and concentration of delaminations in this area. It should be noted that while high chloride content is a leading cause of reinforcement corrosion, it is not the only cause of corrosion and deck delaminations.

The high chloride content in Core Nos. 2 through 5 and the high frequency of deck delaminations are good indications of an active corrosion condition in the deck reinforcement. This active condition will likely continue and result in additional deck delaminations and potholes in the future unless the condition is mitigated.

For the Oregon approach, Spans SD and SE have a high concentration of delaminations in the NB lane and only a few delaminations in the SB lane. The high level of delaminations in the NB lane may be indicative of vehicles tracking salts used around the toll booth onto the bridge.

The polymer overlay on both approach sections is worn through in much of the wheel paths and no longer providing much protection to the deck. Installing a new overlay on top of the deck in its current condition is not recommended due to the findings of high chloride content. The concern is that the level of chlorides trapped beneath the overlay will continue the corrosion of reinforcement, causing continued delamination and spalling of concrete and the overlay.

Washington approach Spans 20 to Span 22 are in more moderate condition with only a few delaminations, but no cores were tested in these spans. It is possible that the majority of salt brine being carried onto the bridge from SR-14 is deposited before getting to Span 22. Similarly the SB lane of Oregon approach Spans SD and SE are in more moderate condition than the NB lane.

For long term solutions, the chloride contaminated concrete needs to be removed. Short of a full deck replacement, this consists of removing the top 2.0 to 2.5 inches of concrete and replacing with a structural concrete overlay. This depth of removal gets at or below the top mat of reinforcement. Typically, when partial depth repairs in a bridge deck extend below mid-depth of reinforcement, removal needs to extend at least 0.5-inch beneath the reinforcement. This potentially involves a minimum of half of the deck in Spans 23 through 27. The cost and the impacts to traffic for this will be significant as this lane may be out of service for several weeks.

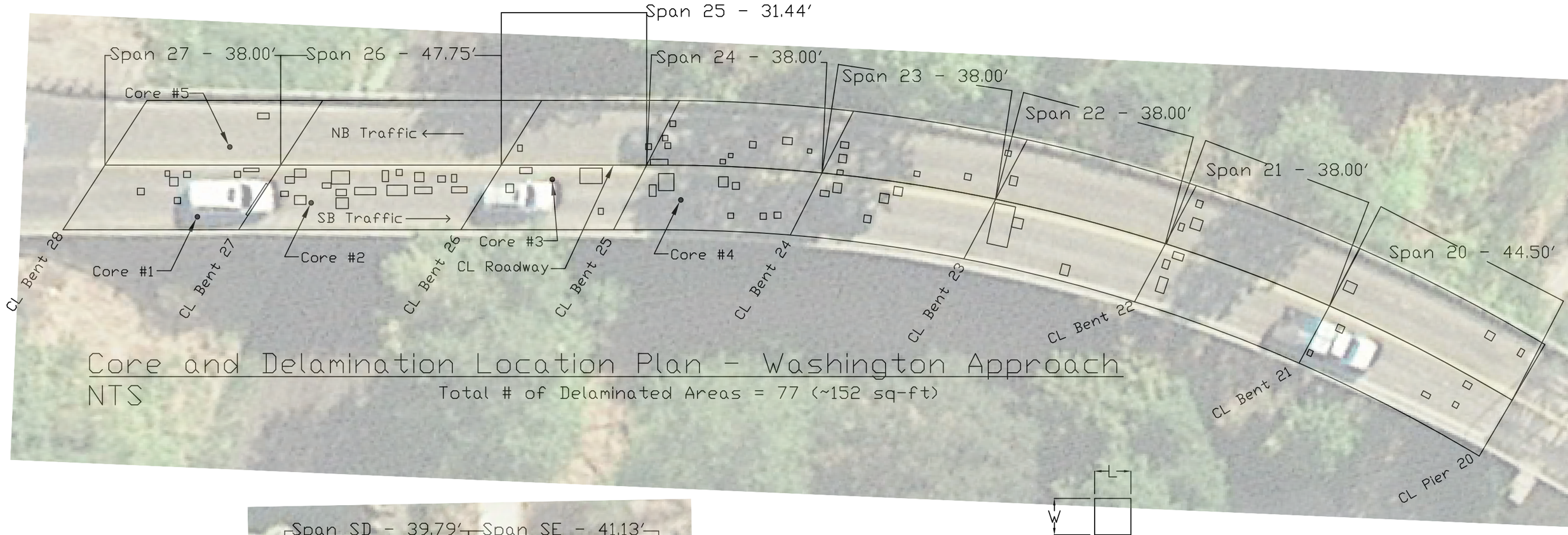
Before proposing a recommended solution additional information is warranted. We recommend taking additional cores in both the Oregon and Washington concrete approach span decks to better define the limits of chloride contamination. We recommend two additional cores in the Oregon spans, one each in NB lane of Spans SD and SE, and four additional cores in the Washington spans; NB lane of Span 23, 24, and 26, and the SB lane of Span 23.

Due to the limited samples obtained from the original set of cores we will attempt to get a slightly deeper core. This will likely not be possible in the Oregon spans due to the thinner deck and may be limited in Washington spans as well if bottom mat reinforcement is encountered.

The Capital/Maintenance Plan currently has Phase 1 seismic retrofit for Oregon approach spans in 2021-2022 and Washington approach spans in 2023-2024. Oregon approach span replacement is shown in 2030-2031 and Washington approach span replacement in 2034-2036. Consideration should be given to how this new information impacts those schedules and how projects may be combined or sequenced.

# Attachment A - Core and Delamination Location Plan

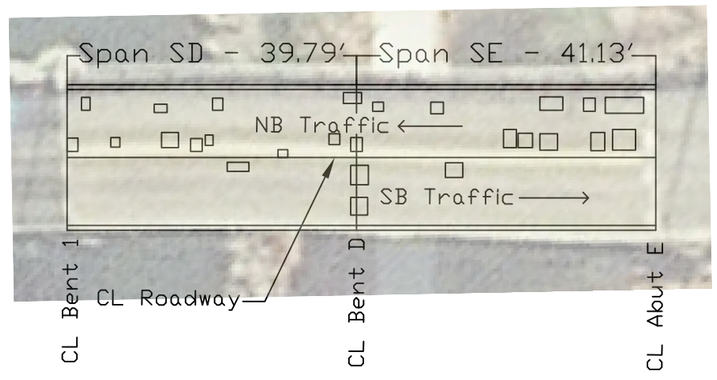
This page intentionally left blank.




Core and Delamination Location Plan - Washington Approach

NTS

Total # of Delaminated Areas = 77 (~152 sq-ft)







Delaminated Area Legend

Core and Delamination Location Plan - Oregon Approach

NTS

Total # of Delaminated Areas = 26 (~104 sq-ft)

## *Washington Approach Delminations*

Hood River - White Salmon Bridge
Deck Delamination Locations - Washington Approach
SB Lane, Going South

| Distance From Bent 28 (ft) | WxL (in) | Distance from CL, West (in) |
|---|---|---|
| 7 | 17x18 | 60 |
| 13 | 14x12 | 15 |
| 14 | 22x22 | 32 |
| 15 | 16x16 | 84 |
| 17 | 16x18 | 16 |
| 28 | 16x16 | 16 |
| 30 | 9x40 | 8 |
| 37 | 96x6 | 43 |
| 38 | 13x20 | 68 |
| 39 | 17x24 | 30 |
| 41 | 21x30 | 10 |
| 41 | 23x30 | 79 |
| 47 | 14x23 | 46 |
| 49 | 34x47 | 15 |
| 50 | 16x27 | 63 |
| 50 | 28x32 | 85 |
| 54 | 19x55 | 58 |
| 60 | 29x16 | 14 |
| 61 | 27x53 | 52 |
| 63 | 16x16 | 11 |
| 67 | 24x24 | 19 |
| 67 | 17x45 | 57 |
| 72 | 16x20 | 28 |
| 75 | 20x13 | 24 |
| 75 | 16x40 | 56 |
| 87 | 22x20 | 49 |
| 90 | 16x32 | 6 |
| 103 | 40x58 | 8 |
| 107 | 16x13 | 112 |
| 118 | 30x18 | 51 |
| 120 | 44x40 | 22 |
| 133 | 26x25 | 28 |
| 135 | 14x15 | 121 |
| 136 | 18x18 | 41 |
| 142 | 169x16 | 117 |
| 145 | 16x18 | 112 |
| 157 | 15x23 | 45 |
| 159 | 25x22 | 22 |
| 168 | 19x18 | 96 |
| 169 | 24x24 | 35 |
| 171 | 23x23 | 12 |
| 195 | 108x54 | 9 |
| 199 | 26x27 | 36 |
| 213 | 28x22 | 124 |
| 233 | 23x16 | 39 |
| 234 | 40x23 | 85 |
| 234 | 18x28 | 12 |
| 270 | 15x12 | 125 |
| 273 | 18x19 | 34 |
| 296 | 12x22 | 92 |
| 303 | 14x14 | 77 |
| 303 | 16x20 | 16 |

Total Delaminated Area = 95.0 $ft^2$
# of Delaminated Areas = 52

Hood River - White Salmon Bridge
Deck Delamination Locations - Washington Approach
NB Lane, Going South

| Distance From Bent 28 (ft) | WxL (in) | Distance from CL, East (in) |
|---|---|---|
| 33 | 15x30 | 120 |
| 87 | 16x12 | 36 |
| 117 | 15x15 | 40 |
| 118 | 15x46 | 0 |
| 118 | 15x15 | 43 |
| 118 | 15x15 | 100 |
| 119 | 14x14 | 63 |
| 131 | 12x14 | 6 |
| 132 | 11x12 | 23 |
| 135 | 17x17 | 51 |
| 141 | 18x25 | 66 |
| 152 | 11x11 | 48 |
| 156 | 16x21 | 70 |
| 157 | 21x20 | 32 |
| 158 | 12x16 | 0 |
| 173 | 13x15 | 22 |
| 183 | 16x17 | 35 |
| 190 | 14x16 | 116 |
| 194 | 24x19 | 44 |
| 232 | 19x13 | 44 |
| 233 | 18x16 | 116 |
| 234 | 28x28 | 59 |
| 270 | 26x30 | 53 |
| 302 | 21x21 | 106 |
| 310 | 20x12 | 108 |

Total Delaminated Area = 57.2 $ft^2$
# of Delaminated Areas = 25

## *Oregon Approach Delminations*

Hood River - White Salmon Bridge
Deck Delamination Locations - Oregon Approach
SB Lane, Going South

| Distance From Bent 1 (ft) | WxL (in) | Distance from CL, West (in) |
|---|---|---|
| 22 | 15x36 | 8 |
| 39 | 32x29 | 13 |
| 39 | 29x28 | 66 |
| 52 | 24x29 | 9 |

Total Delaminated Area = 20.7 $ft^2$
# of Delaminated Areas = 4

Hood River - White Salmon Bridge
Deck Delamination Locations - Oregon Approach
NB Lane, Going South

| Distance From Bent 1 (ft) | WxL (in) | Distance from CL, East (in) |
|---|---|---|
| 0 | 22x18 | 10 |
| 2 | 21x14 | 78 |
| 6 | 16x15 | 17 |
| 12 | 14x21 | 74 |
| 13 | 25x28 | 16 |
| 17 | 21x19 | 10 |
| 19 | 17x13 | 20 |
| 20 | 20x17 | 78 |
| 29 | 13x16 | 0 |
| 36 | 18x18 | 21 |
| 38 | 18x30 | 89 |
| 39 | 23x19 | 10 |
| 42 | 15x18 | 76 |
| 50 | 19x21 | 72 |
| 60 | 30x21 | 16 |
| 62 | 24x24 | 16 |
| 65 | 27x29 | 12 |
| 65 | 22x38 | 78 |
| 71 | 22x19 | 76 |
| 72 | 30x23 | 11 |
| 74 | 26x63 | 73 |
| 75 | 34x38 | 12 |

Total Delaminated Area = 82.8 $ft^2$
# of Delaminated Areas = 22

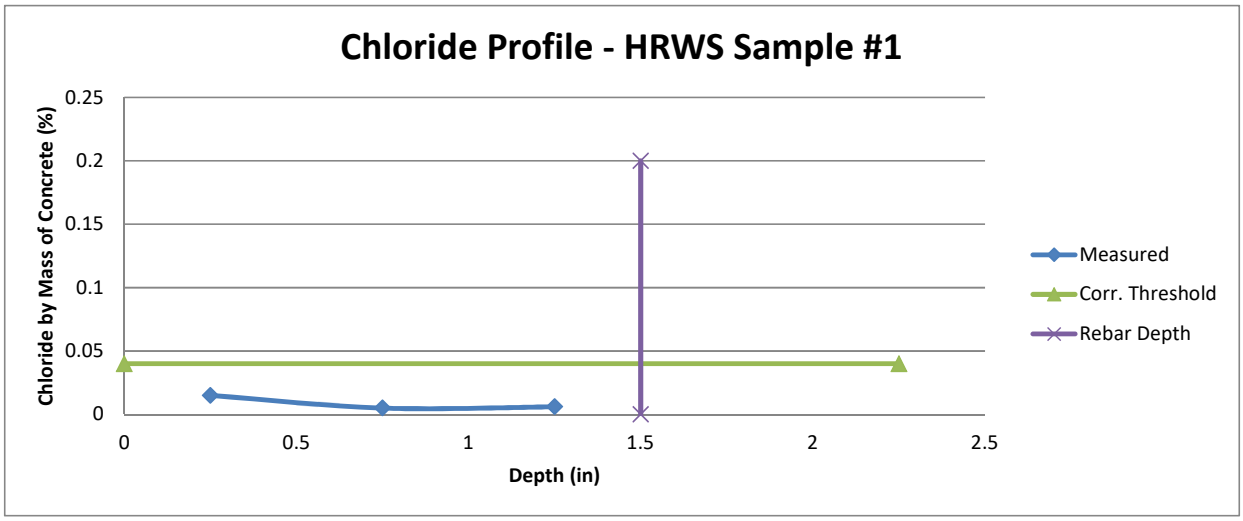
## *Core Locations*

| Core # | Distance from Bent 28, South (ft) | Lane | Distance from CL, West (in) | Distance from CL, East (in) |
|---|---|---|---|---|
| 1 | 20.0 | SB | 134 | - |
| 2 | 48.0 | SB | 98 | - |
| 3 | 96.8 | SB | 37 | - |
| 4 | 127.2 | SB | 90 | - |
| 5 | 27.0 | NB | - | 47 |

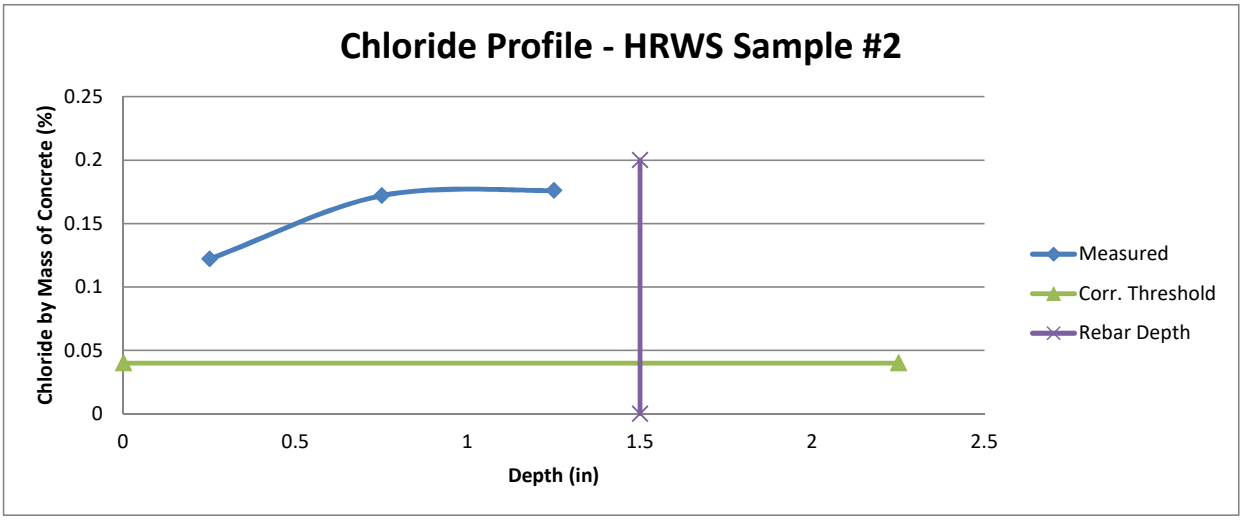
# Attachment B - Chloride Testing Results

| | | | | |
|---|---|---|---|---|
| Project: POHR TO8 | Computed: | KFS | Date: | 5/28/2019 |
| Subject: Hood River - White Salmon Bridge Deck Insp | Checked: | MAL | Date: | 6/21/2019 |
| Task: Chloride Sample Testing Results | Page: | | of: | |
| Job #: 10134023 | No: | | | |

| **Hood River - White Salmon Bridge** | **Field Test Data** | | | |
|---|---|---|---|---|
| **Sample #: 1** | Depth, in | 0.25 | 0.75 | 1.25 |
| **Date: 5/15/2019** | Chloride Concentration | 0.015 | 0.005 | 0.006 |

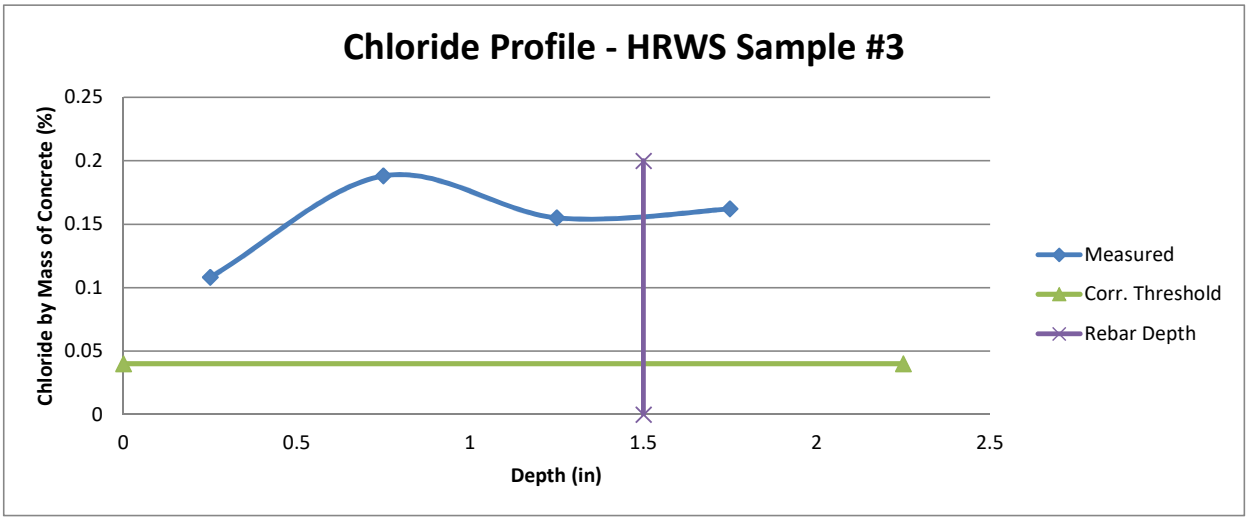



| **Hood River - White Salmon Bridge** | **Field Test Data** | | | |
|---|---|---|---|---|
| **Sample #: 2** | Depth, in | 0.25 | 0.75 | 1.25 |
| **Date: 5/15/2019** | Chloride Concentration | 0.122 | 0.172 | 0.176 |

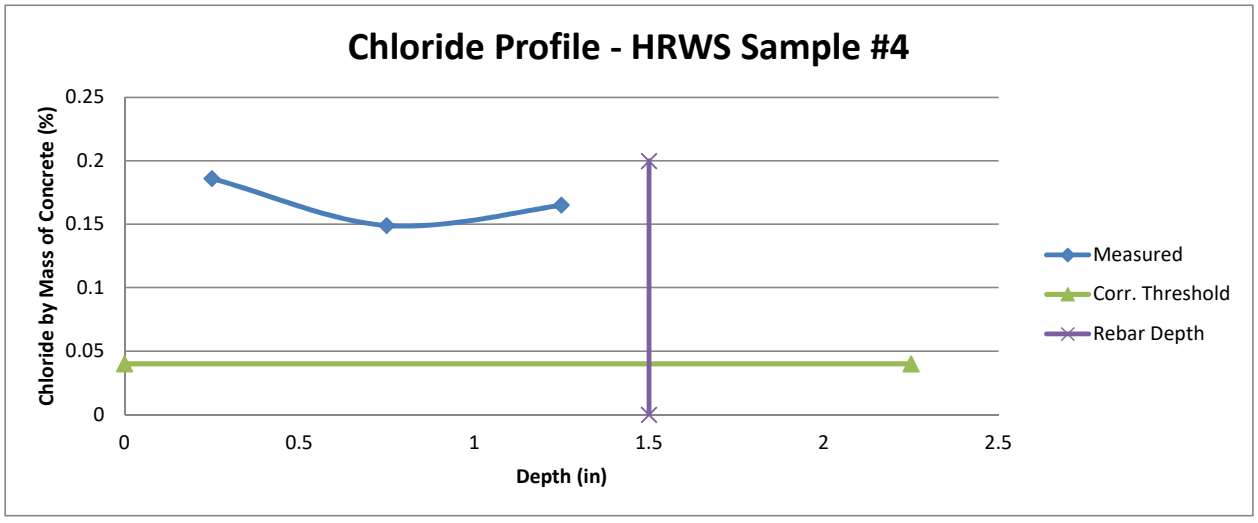


| | | | | |
|---|---|---|---|---|
| Project: POHR TO8 | Computed: | KFS | Date: | 5/28/2019 |
| Subject: Hood River - White Salmon Bridge Deck Insp | Checked: | MAL | Date: | 6/21/2019 |
| Task: Chloride Sample Testing Results | Page: | | of: | |
| Job #: 10134023 | No: | | | |

| **Hood River - White Salmon Bridge** | **Field Test Data** | | | | |
|---|---|---|---|---|---|
| **Sample #: 3** | Depth, in | 0.25 | 0.75 | 1.25 | 1.75 |
| **Date: 5/15/2019** | Chloride Concentration | 0.108 | 0.188 | 0.155 | 0.162 |

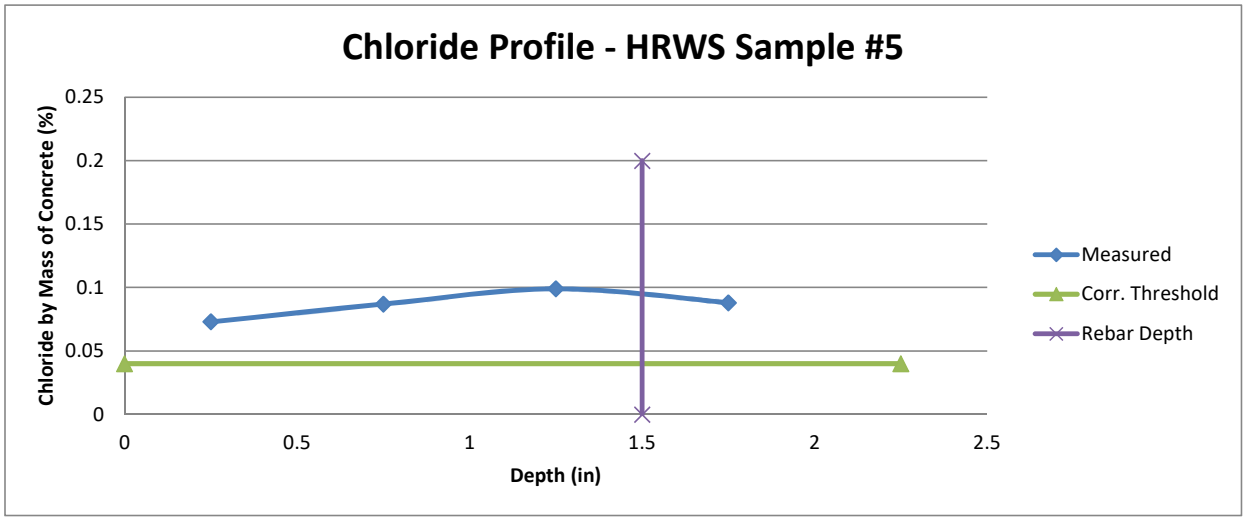



| **Hood River - White Salmon Bridge** | **Field Test Data** | | | |
|---|---|---|---|---|
| **Sample #: 4** | Depth, in | 0.25 | 0.75 | 1.25 |
| **Date: 5/15/2019** | Chloride Concentration | 0.186 | 0.149 | 0.165 |



| | | | | |
|---|---|---|---|---|
| Project: POHR TO8 | Computed: | KFS | Date: | 5/28/2019 |
| Subject: Hood River - White Salmon Bridge Deck Insp | Checked: | MAL | Date: | 6/21/2019 |
| Task: Chloride Sample Testing Results | Page: | | of: | |
| Job #: 10134023 | No: | | | |

| **Hood River - White Salmon Bridge** | **Field Test Data** | | | | |
|---|---|---|---|---|---|
| **Sample #: 5** | Depth, in | 0.25 | 0.75 | 1.25 | 1.75 |
| **Date: 5/15/2019** | Chloride Concentration | 0.073 | 0.087 | 0.099 | 0.088 |



OREGON DEPARTMENT OF TRANSPORTATION
MATERIALS LABORATORY
800 AIRPORT RD. SE SALEM, OR 97301-4792


(503)986-
FAX(503)986-3096

Contract No.: PRIVATE EA No.: PRIVATE TESTING: Lab No.: 19-001195
Project: PRIVATE TESTING - HOOD RIVER BRIDGE DECK MAINTENANCE
Highway:
Contractor: HDR ENGINEERING
Project Manager: MARK LIBBY
Submitted By: MARK LIBBY
Material Source:
Sampled At: BR06646
County:
Org Unit:
Org Unit:
Sampled By:
Data Sheet No.: F7420 281
FA No.:
Bid Item No.:
Sample No.
Qty Represented:
Witnessed By:
DATE-Sampled: 19/ 5/15 Received: 19/ 5/21 Tested: 19/ 5/22 Date Reported: 19/ 5/23
Class/Type: Quality Control Use:

## TEST REPORT: CONCRETE CHLORIDE - BRIDGE

| Sample ID | % CaO | % Cement | % Chlor by Sample | % Chlor by Cement |
|---|---|---|---|---|
| 1 1 | | | 0 015 | |
| 1-2 | | | 0.005 | |
| 1-3 | | | 0.006 | |
| 2-1 | | | 0.122 | |
| 2-2 | | | 0.172 | |
| 2-3 | | | 0.176 | |
| 3-1 | | | 0.108 | |
| 3-2 | | | 0.188 | |
| 3-3 | | | 0.155 | |
| 3-4 | | | 0.162 | |
| 4-1 | | | 0.186 | |
| 4-2 | | | 0.149 | |
| 4-3 | | | 0.165 | |
| 5-1 | | | 0.073 | |
| 5-2 | | | 0.087 | |
| 5-3 | | | 0.099 | |
| 5-4 | | | 0.088 | |

170 525X=$ 32.
308 233X= 75.

TOTAL CHARGES: $ 2794.00

REMARKS:
INFORMATION ONLY
Test method 233x is for the concrete core prep work.
*

KEVIN BROPHY - LABORATORY SERVICES MANAGER



C: FILES : PROJ MGR: MARK LIBBY , HDR ENGINEERING : K SCOTT - CHEMISTRY
MARK LIBBY@HDRINC COM

# Attachment C - Deck Walk Photos

Joint at Washington Abutment (Bent 28).

Pothole in Span 26, Joint at Bent 27.

Worn overlay near Bent 25.

Pothole in Span 22, Joint at Bent 23.

Worn overlay near Bent 22.

Broken steel header at Bent 20.

This page intentionally left blank.